

ITB 2026-1200-0024  
TECHNICAL SPECIFICATIONS

**P/V Cama'i**  
**SHIPYARD**  
**FY-2026**

STATE OF ALASKA  
ALASKA WILDLIFE TROOPERS  
VESSEL SECTION  
5700 E. TUDOR ROAD  
ANCHORAGE, ALASKA 99507

907/269-0389 OFFICE  
907/269-5616 FAX



LENGTH 69.0 ft  
BREADTH 24.0 ft  
DEPTH 8.8 ft  
  
52.0 GROSS TONS

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## **1.0 TEMPORARY SERVICES**

The Temporary Services described in this Section shall be provided for the entire contract period.

### **1.01 MOORING**

Immediately upon the vessel arriving at the Contractor's facility, the Contractor shall provide adequate moorage, mooring fenders, and mooring lines to secure the 69-foot vessel pier-side throughout the Contract period. The vessel is to be moored to the assigned berth so that the vessel's crew, shipyard workers, and their materials and equipment have easy access. Appropriate fenders shall be strategically placed so wearing or damage to the vessel does not occur. TIRES SHALL NOT TO BE USED AS FENDERS.

If the Contractor intends to moor the vessel alongside a pier with tidal fluctuations, the Contractor shall ensure that the vessel can safely move up and down through any expected tidal range, without mooring line adjustment. The Skipper of the vessel will make the final determination that adequate mooring lines have been provided.

### **1.02 SHORE POWER**

Immediately upon the arrival of the vessel at the Contractor's facility, the Contractor shall provide shore power hook up for the vessel. The Contractor shall supply 240VAC 3 pole, 4 wire single phase, 100-amp service. Electrical shore power is required at all times, including while out of the water, except when the vessel is being shifted.

### **1.03 TELEPHONE**

The Contractor shall provide a telephone service line hooked into the vessel's standard telephone system. Telephone service is required at all times, including while the vessel is out of the water, except when the vessel is being shifted. The telephone service shall provide local, toll free and long distance incoming and outgoing access; however outgoing long distance shall require the use of a calling card. This item shall be bid as a lump sum and shall include the hookup charge, daily rate, and a disconnect fee, including additional disconnect/hook-up fees if required when shifting the vessel. The Owner will not be responsible for any long-distance charges accrued on this telephone service.

### **1.04 POTABLE WATER**

Contractor shall provide a 1½" fire hose with potable water, so that the vessel's crew may fill the vessel's potable water tanks after work is completed, but prior to the vessel departing the shipyard.

### **1.05 SHIP'S SERVICE AIR**

Contractor shall provide an air hose for ship's service air with a pressure of 125 PSI minimum and a volume of 10.0 CFM.

### **1.06 GANGWAY**

The Contractor shall provide an OSHA approved gangway system to provide personnel access

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to the main deck of the vessel and adequately safeguard the passage of persons coming and going from the vessel. Vessel access is required at all times, including while the vessel is out of the water, except when the vessel is being shifted.

**1.07 FIRE PROTECTION**

The Contractor shall provide one 2½" fire hose to the vessel's main deck to charge the vessel's fire-fighting system. In addition, the Contractor shall provide at least one shore-based fire station, with a stowed 2½" hose and nozzle that is capable of spraying a large stream of water anywhere on the vessel. Fire main pressure is required at all times, including while the vessel is out of the water, except when the vessel is being shifted.

In addition to fire main pressure, the Contractor shall provide a fire and safety plan to the Skipper of the vessel during the pre-shipyard meeting. This plan shall include 24 hour per day phone numbers for all safety, fire, and emergency response personnel. The plan shall also detail the yard's fire-fighting and safety procedures and capabilities. Emergency services response is required 24 hours per day, seven days per week. Emergency contact information shall be prominently posted by Contractor, on laminated or waterproof paper, at the entry points of the vessel's house.

**1.08 DECK COVERING**

Immediately upon the arrival of the vessel to the Contractor's facility, the Contractor shall provide and maintain, during the entire shipyard period, a protective covering to all areas inside the vessel's main deck, passageways, the wheel-house deck and any other internal areas or paths that will be used by the Contractor's crew. At the end of the shipyard period, the Contractor shall remove and discard the protective covering. Any internal or exterior areas soiled during the shipyard period are the sole responsibility of, and shall be cleaned and/or repaired by, the Contractor.

**1.09 GARBAGE**

The Contractor shall provide for one (1) standard size dumpster with regular dumping service for use by the vessel's crew, at the foot of the vessel gangway, during the entire shipyard period.

**1.10 PARKING**

The Contractor shall provide two (2) assigned parking spaces for use by the crew's rental vehicles at a location near the vessel and convenient for daily use during the entire shipyard period.

**1.11 TOILET FACILITIES**

The Contractor shall provide one (1) each portable toilet on the vessel's main deck during the entire contract period. Contractor shall provide regular cleaning services for the portable toilet, minimum of once per week.

**1.12 TANK ACCESS AND TESTING**

The Contractor shall open the following tanks and voids, test the air quality of these spaces, and re-install all covers after work in this specification is completed.

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1. Fuel Oil Tanks to be cleaned and inspected as required in Section 7.0
2. Starboard Void #1 (void forward of crew staterooms)
3. Void #3 (void forward of Engine Room)
4. Engine Room

Contractor shall remove applicable quick access covers and or bolt down covers on the voids, tanks and spaces listed above. Contractor shall ventilate and provide a Marine Chemist's "Safe for Entry Certificate/Safe for Hot-work Certificate" for the voids, tanks and spaces listed above. This item includes the cost of the Marine Chemist, travel, per diem, and any safety covers/protection, if required. The Contractor shall maintain the voids, tanks and spaces Safe for Entry/Safe for Hot Work certificates during the contract period unless otherwise indicated in writing by the Owner. If a transfer of the vessel requires new inspections by a Marine Chemist, then Contractor is responsible for re-certifying the spaces. At the completion of the shipyard period, or earlier if requested by Owner, Contractor shall reinstall covers with new gasket and existing hardware and visually ensure tanks and voids are properly sealed.

The Contractor is responsible for keeping all water and dirt out of open voids and tanks. Should water or dirt enter these spaces, the Contractor shall remove it at no additional cost to the owner. The Contractor shall provide suitable safety guards around open covers.

## **2.0 MISCELLANEOUS ACCOUNTS**

The Contractor shall provide the materials, equipment, and labor for each of the following subtasks, including any removal of items in providing the following services. The Bidder shall provide cost information for each subtask in the ITB Bid Schedule.

### **2.01 VESSEL ACCOUNT**

At the arrival of the shipyard, the Contractor shall set up a \$1,500 account at a local ship chandlery/commercial marine supply shop so that vessel crew can procure materials (such as zinc's and other minor needs) during the Contract period. The ITB Bid Schedule shall reflect a time and material bid item, with a not to exceed amount of \$1,500. The Owner will be invoiced only for cost of actual charges on the vessel chandlery account, plus a markup fee not to exceed 15 percent.

### **2.02 WELDING ACCOUNT**

The Contractor shall provide the services of a certified marine aluminum welder and all necessary welding equipment, supplies, and support systems. This item shall be bid as a unit price in dollars per hour for a welder. For purposes of bid comparison, the hourly rate bid on the ITB will be multiplied by 15, however the actual quantity of welding hours will be determined during the contract period. The Owner shall be invoiced only for the actual number of hours of welding, multiplied by the hourly rate shown in the ITB.

The intent of this item is to assist the vessel's crew to accomplish small miscellaneous work projects that may arise during the shipyard period. The Vessel Captain has authority to direct projects from this account.

### **2.03 GENERAL PAINTING ACCOUNT**

Not Used

### **2.04 CRANE AND/OR BOOM TRUCK SERVICE ACCOUNT**

The Contractor shall provide the services of a crane or boom truck to lift gear off and on the vessel. Crane/Boom truck shall be large enough to pick a 5 ton load from the deck of the vessel while it is both moored at the Contractor's facility and in dry dock.

This item shall be bid as a unit price in dollars per hour for crane/boom truck and qualified operator. For the purposes of bid comparison, the hourly rate bid on the ITB will be multiplied by 10, however the actual quantity of use hours will be determined during the Contract period.

The intent of this item is to assist the vessel's crew in removing and installing large and or bulky items on and off the vessel. The Owner's Representative has the authority to direct projects from this account.

## 3.0 DRY DOCKING

### 3.01 DRY DOCKING

#### REFERENCES

3A) Kvichak drawing 6461-232 Rev B Graving Arrangement

#### SCOPE

This work consists of safely lifting the vessel from the water, safely launching the vessel, and allows for the necessary time for the vessel to sit on the lifting facility (Lay Days), in order to complete all related definite bid items. The ITB schedule shall include all fees and costs associated with dry-docking, Lay Days, and moving the vessel in and out of the drydock, including tug fees if requires, as described in this section.

The Contractor shall provide labor, material, and equipment for dry-docking and un-docking the vessel to accomplish all work described herein. The Contractor is responsible for all docking and un-docking activities and shall thoroughly review the vessel's docking plan with regard to blocking in way of the keel, transducers, keel-coolers, propellers, anodes, and other sensitive areas.

It is the Contractor's responsibility to plan for a dry dock period of adequate length to accomplish all work items, both Definite and Contingent, so that all work occurs during the same dry dock period.

The Contractor shall own or be the primary or secondary leasor of the haul out facility. If the Contractor is the secondary leasor, a statement indicating this shall be included in the bid and a copy of the lease contract shall accompany the bid. The secondary lease shall indicate that the Contractor is the primary party responsible for all rights and responsibilities.

Contractor may drydock the vessel using a graving dock, drydock, synchrolift, Marine Travelift, or an alternate lifting method as indicated below. Contractor shall not use a marine tidal grid or homebuilt trailer for purposes of dry docking the vessel.

#### ***Graving dock, Drydock, or Synchrolift Facility:***

The Contractor shall provide the Owner a certificate for the dry dock/lifting facility (i.e. American Bureau of Shipping). Mechanical lifting facilities shall provide certificates indicating size, type, and age of any cables used for lifting or hauling the vessel.

The Contractor shall provide a diver to inspect the vessel to ensure that the vessel is properly landed on the docking blocks and that all appendages and sensitive areas are free and clear prior to lifting the vessel.

#### ***Marine Travelift:***

Mechanical lifting facilities shall provide a plan of action for approval by the Owner's Representative including number of lifting straps to be used, location of straps on hull, and certificates indicating size, type, and age of any rigging used for lifting or hauling the vessel. If vessel is lifted using straps, a minimum of four straps shall be used and the straps shall be tied

together longitudinally and secured to the vessel to alleviate vessel slippage during the lift and transport to and from blocking area. This is due to the fact that Intersleek bottom paint is applied to the underwater hull.

***Other Lifting and Hauling Methods:***

In the case of lifting or moving the vessel by a device not solely designed and dedicated to the lifting of marine vessels (like a crane or railroad), the Contractor shall provide a suitable written plan of action to the Owner's Representative for approval, stating specifically the equipment to be used, loads placed on the vessel, allowable equipment loads, and factors of safety, stamped by a professional engineer. This plan shall also include the rating and condition of all specific lifting and rigging gear and moving components, equipment certifications, a calculation of stress on the vessel's structure, and a drawing showing the location of lifting gear in relation to the vessel structure. The written plan must be submitted at least 7 days prior to this planned activity.

**BLOCKING PLAN**

Irrespective of the device used to lift the vessel, Contractor shall develop a blocking plan to safely support the vessel when out of the water in accordance with Reference 3A) and to meet the requirements of this section. The Contractor shall provide the Owner with calculations which demonstrate the pressure that the keel blocks will exert on the vessel's hull and the associated load rating of the lift facility. Special attention shall be paid to the pressure under the keel of this vessel.

- a) Keel blocks shall be sized and spaced in accordance with Reference 3A). Keel blocks shall support the vessel over the entire length of the keel.
- b) Individual blocks shall contact the vessel by at least 75% of the block's bearing area. A block's bearing area shall be assumed to be the entire upper face of the block, unless otherwise stated in the bearing calculations presented at the dry dock meeting. Blocking shall be considered inadequate if two total keel blocks fail to contact the vessel properly. Shoring of blocks is not acceptable. The Contractor shall immediately re-float the vessel if these requirements are not met.
- c) Block faces must be wood and must be smooth and level (plus or minus 1/4 inch) along the entire bearing length. If necessary, two inches of soft wood crush caps may be installed on blocks along the entire bearing length of vessel.
- d) All docking plugs, sea chests, transducers and other penetrations indicated on the docking plan must be well clear of blocking.

The Contractor shall lift the vessel such that work can occur on all parts of the vessel, including removing and installing both rudders, propellers, and shafts. The vessel shall be lifted such that it is protected from work, dirt, and overspray from adjacent vessels. If the Cama'i is impacted from adjacent vessels or vessel work, the Contractor shall remedy any impact, prior to launching.



### **DRY DOCK MEETING.**

A dry dock meeting shall take place at least two days prior to the vessel being moved, lifted, or dry-docked. At this time the Dockmaster will present his blocking plan and calculations (including lifting strengths, blocking plan, block and/or lifting pressures, and vessel structural stresses) and describe his plan for docking the vessel including schedule, weather, the use of engines, tugs, communications, and other relevant items. The Contractor shall present a plan for all waterborne movements of the vessel for review and approval by the Owner. If appropriate, the Contractor shall present, in detail, the plan for land transfer of the vessel.

The Contractor shall notify the Owner a minimum of 48 hours prior to dry-docking/un-docking the vessel. The Contractor shall not initiate docking activities without the expressed permission of the Owner. The Contractor may not undock and re-dock the vessel during the period that the work is in progress on the underwater hull items.

### **3.02 LAY DAYS**

Lay Days is defined as space rental and all necessary expenses to provide a suitable place to perform required construction work on the vessel, while it is out of the water.

Lay Days for the time required to complete all Definite Bid items are not included in this section and shall be included in the price for Dry Docking, as required in Section 3.01.

Lay Days shall not be charged for the day of lifting and the day of launching the vessel

Contractor shall price the Contingent Items to include cost of any additional Lay Days, if required. If a Contingent Item of work is activated, the Contractor shall add the required additional Lay Days to dry-dock period at no additional cost or impact to the Owner, other than the Contingent Item bid cost.

At the dry dock meeting (above) the Contractor' plan for work shall include the number of Lay Days required by the Contractor to perform the Definite Items and each Contingent item. The plan shall also indicate when each Contingent Item must be activated to permit completion within the dry dock period.

This item shall be bid as a unit price in dollars per one Lay Day. Using this daily price, the Owner may elect to extend the dry dock period for up to 10 consecutive days, as necessary to accomplish the Owner's unforeseen or delayed work. Owner is not responsible for Lay Days that are the result of Contractor's unforeseen or delayed work.

## **4.0 HULL SERVICES**

### **4.01 BEARING READINGS, PACKING REPLACEMENT, AND SHAFT/PROPELLER WORK**

#### **PROPELLERS**

The Contractor shall remove each of the vessel's two propellers and securely mount them on shipping pallets. Once mounted, propellers shall be enclosed in a plywood box for shipping to the satisfaction of the Owner's Representative. Contractor shall ship propellers to Sound Propeller in Seattle, Washington for reconditioning and re-balancing. Prior to returning the propellers to the vessel, 100% of the surfaces of both propellers shall be cleaned. After cleaning, the hubs and 10" up the blades shall be checked for cracks by means of an approved non-destructive test with dye penetrate. Contractor shall provide a Condition Found Report detailing the condition of the propellers including the actual propeller pitch, propeller balance, and the results of the dye penetrate test. In the CFR, the Contractor shall propose a method and cost to repair any deficiencies found. All required refurbishment work on the propellers shall be handled as a Change Order.

Following refurbishment, Contractor shall ship propellers back to shipyard. For shipping, propellers shall be securely mounted on shipping pallets and enclosed in a plywood box.

After re-installation of shafts as required by this Section, Contractor shall install propellers on the vessel by first checking the fit up of the taper using blue compound to demonstrate a minimum hub/shaft contact area of 80%. If a propeller fails testing, it shall be lapped with grinding compound and retested for fit up using blue compound. Once a contact area of 80% has been achieved, the Contractor shall provide a CFR to the Owner detailing the final contact area. Following approval of blue test, Contractor shall seating propellers and installing new Owner supplied zinc nuts. Owner's Representative shall witness taper blue fit.

Owner has indicated that the propeller is 5-Bladed, 30 inches in diameter, and 33½ inches pitch.

Contact:      Sound Propeller  
                    7916 8<sup>th</sup> Ave South  
                    Seattle, WA 98109  
                    (206) 788-4202

#### **RUDDERS**

Contractor shall remove the two existing rudders (one port and one starboard). Rudders are composite rudder blades with a stainless-steel shaft. Contractor shall carefully disassemble and remove the rudder tiller arms. Tiller arms, tiller key and steering linkages shall be cleaned and stored for reinstallation.

After removal, Contractor shall inspect the rudder bearings, thrust plates and tiller arms and provide the Owner's Representative with a CFR identifying any deficiencies. Condition Found Report shall also include two outside diameter (OD) measurements of the rudder shaft in way

of each rudder bearing (one measurement-oriented fore and aft and one measurement-oriented port and starboard). Any repairs to the rudder will be handled as a Change Order.

Contractor shall measure two internal diameters (ID) (one measurement fore and aft, and a second measurement port and starboard to match the rudder shaft OD measurements) of each rudder bearing for each rudder shaft. Contractor shall provide a CFR to the Owner's Representative detailing the rudder bearing internal diameters along with a comparison to the rudder shaft diameter measurements previously taken. Any rudder bearing replacements shall be handled as a Change Order.

Following the installation of new shafts, as described in this Section, Contractor shall re-install both the port and starboard rudder using existing thrust plates and tiller arms.

### **SHAFTING**

Contractor shall tag, remove, inspect, and store the Piranha line cutter from both the port and starboard shaft. Contractor shall provide a CFR detailing the condition of the Piranha line cutters. Any replacement parts required shall be handled as a change order.

Contractor shall remove both port and starboard 3' propulsion shaft and move to a clean workshop.

Both port and starboard shafts shall be mounted on a lathe to measure run-out and shaft outside diameters in way of cutlass bearings. Contractor shall provide a CFR to the Owner's Representative with shaft run-out measurements and shaft diameters prior to re-installation.

Contractor shall remove and dispose the existing cutlass bearing from both the port and starboard the strut barrels. Contractor shall supply and install two new Johnson Cutlass Non-Metallic Bearings, Code Laura, with 3.0" ID and 12" length, one for the port strut barrel and one for the starboard strut barrel. Prior to re-installation of shafts, Contractor shall measure the ID of both port and starboard cutlass bearings. Bearing internal diameters shall be taken in both the vertical and athwartship direction at both ends of the bearings (four measurements per bearing). Contractor shall provide a CFR with bearing dimensions and a comparison to the shaft diameters.

Prior to re-installation of shafts, Contractor shall remove and re-install both port and starboard gears as required by Section 6.

Contractor shall supply and install new Packless Sealing System (PSS) Drip-less shaft seals for both port and starboard shafts. New dripless shaft seals shall be a PSS shaft seal for a 3" diameter shaft, similar to the existing shaft seal.

Contractor shall re-install 3" propulsion shafts, and any associated equipment (including the previously removed Piranha line cutters). All coupler bolts shall be new. Contractor shall align propeller shaft prior to vessel launch and provide a CFR to the Owner's Representative. 24 hours after vessel launch, Contractor shall re-align propulsion shaft and provide a CFR to the Owner's Representative which details the amount of misalignment after vessel launch.

## **4.02 KEEL COOLER MAINTENANCE**

This Section not used

## **4.03 OILY WATER AND WASTE OIL REMOVAL**

This Section not used

## **4.04 BILGE CLEANING**

Both Port and Starboard Engine room spaces, Both Port and Starboard Lazarette spaces need bilge cleaning.

## **4.05 SERVICE SEA VALVES**

### **APPLICABLE DOCUMENTS**

– None –

### **SCOPE**

The Contractor shall tag and remove each of the 13 sea valves, 6 Fuel valves listed in this section and move them to a clean workshop.

For each removed valve the Contractor shall procure a new valve of identical model, material, and performance.

After all valves are purchased or repaired and reassembled, the Contractor shall move the valves back to the vessel and re-install the valves in the vessel. All non-threaded valves shall be installed with new gaskets and new marine grade stainless steel nuts, bolts, and washers using marine grade never-seize on all fasteners.

### **QUALITY ASSURANCE**

The Contractor shall insure that the Owner's Representative inspects all phases of this task and that all materials are of good marine grade.

### **DOCUMENTATION**

The Contractor shall provide a CFR documenting the condition of all valves and copies of any purchase orders associated with new valves or valve repair components.

### **SEA VALVES**

#### **Overboard valves:**

- 1 ea. – 3" Ball Valve Black Water overboard
- 1 ea. - 1½" check valve Head Sink
- 1 ea. - 1½" check valve Galley Sink
- 1 ea. - 1½" check valve Shower Drain
- 2 ea. - 1½" ball valve Generators Raw Water dump

#### **Sea Valves:**

- 2 ea. - 3" ball valve Main Engines Raw Water-cooling Sea suction
- 2 ea. - 2" ball valve Generators Raw Water-cooling Sea suction
- 1 ea. - 1½" ball valve Fire Pump Raw Water Sea suction

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1 ea. – 1 ½" ball valve Bilge Pump Raw Water Sea suction

1 ea. - 3/4" ball valve Watermaker Raw Water Sea suction

**4.06 FUEL VALVES**

2 ea. – ½" ball valve generator supply

2 ea. – ¾" ball valve Main Engine supply

2 ea. – ¾" ball valve Fuel Transfer pump supply

**4.07 INSPECTION AND REPLACEMENT OF HULL ZINC'S**

**APPLICABLE DOCUMENTS**

- None

**SCOPE**

The Contractor shall replace all hull zincs with new Owner supplied zincs. All zincs are to be removed and replaced with a zinc of appropriate size and weight. The majority of the zincs are the **bolt on** type. The Contractor shall utilize all new marine quality stainless steel hardware when installing new hull zincs. Conductivity testing will be done on each zinc and witnessed by the Owner's Representative. After completion of testing, Contractor shall provide the Owner's Representative with a CFR detailing the results of the conductivity testing.

There are 2 each twenty pound bolt-on hull zincs and 2 each twelve pound tear-drop shaped zincs to be replaced. The tear-drop zinc tabs will need to be drilled out to the proper size to facilitate bolting on new zincs in the location where the old zincs were removed.

**QUALITY ASSURANCE**

The Contractor shall insure that the Owner's Representative inspects all phases of this Task and all materials are of good marine grade.

**DOCUMENTATION**

The Contractor shall provide a CFR documenting the results of all conductivity tests.

**4.08 TANKS AND VOIDS VENT CHECK VALVES**

This Section not Used

**4.09 COMPASS SWINGING AND ADJUSTING**

This Section not Used

## **5.0 HULL PAINTING**

### **5.01 REFERENCE**

Not Used

### **5.02 PREREQUISITES TO PREPARATION AND COATING**

Welds and piping system joints or connections requiring pressure or water testing or visual inspection shall not be coated until after all tests and inspections are complete and the weld, piping joint, or connection has been accepted by the Owner.

Prior to the application of coatings, all surfaces shall be dry and free of foreign matter such as dirt, dust, crayon marks, grease, mill scale, residual abrasive, rust, salt deposits and weld spatter.

Scuppers and drains shall be sealed or extended as required to prevent moisture or water contamination on coated surfaces during the drying period.

Prior to any surface preparation or coating, all adjacent surfaces, fittings, ducts, wiring, components, equipment, etc. shall be fully protected to the satisfaction of the Owner's Representative. Protection shall be specifically provided for all bearings, shafts, stocks, transducers, keel coolers, zincs, and any other underwater appendages that may be damaged or affected by preparation or paint. Protection shall be provided for windows, doors, hinges/dogs, hoses, hydraulic fittings, and any machinery or electronic components on the exterior of the vessel that may be damaged or affected by preparation or paint. The Contractor shall protect all interior portions of the vessel at all times from blast grit, dust, and paint. The protection of ventilation systems shall be specifically addressed by the Contractor prior to preparation or painting.

Protection from sand blasting shall be inspected and approved by the Owner's Representative prior to blasting.

Any delays or damage to the vessel or its systems as a result of poor protection shall be addressed in accordance with Section 5.04 of this specification. The Contractor shall provide all labor, material, and equipment to complete preparation and painting of the vessel as follows:

### **5.03 PREPARATION AND COATING REQUIRED**

The vessel shall be prepared and painted in accordance with this section. Paint color, type, thickness, etc. shall be in accordance with Section 5.05 Paint Schedule (below), unless otherwise indicated.

### **5.03-A EXTERIOR HULL: KEELS TO TOP OF BOTTOM PAINT INCLUDING INSIDE SEA CHESTS AND GRATINGS**

#### **Required Surfaces:**

The surfaces applicable to this item are:

All hull surfaces from the top of the boot strip down to the keel, including rudders, struts, keels, sea chest, bow thruster tunnel and grating, etc.

#### **Preparation:**

Prior to surface preparation, all adjacent or sensitive surfaces shall be fully protected in accordance with this specification. For example: shaft and rudder bearings, sea chests, etc.

All required surfaces shall be washed immediately after vessel is hauled with fresh water high pressure wash (3500-5000 psi) to remove all salts, contaminants, oils etc. This includes any marine growth and dirt along the waterline of the vessel, propeller, rudder, and strut surfaces, etc. After washing, Contractor shall inspect the hull (with Owner's Representative) and report any deficiencies.

#### **Surface Coating:**

Contractor shall apply two coats of anti-corrosive paint and two coats of anti-foulant in accordance with the Paint schedule in Section 5.05.

**Note:** International Paint Representative to be on site during total bottom coatings application.

### **5.03-B EXTERIOR HULL: PORT AND STARBOARD SLASHES**

#### **Required Surfaces:**

The surfaces applicable to this item are:

All hull surfaces from the top of the boot strip down to the keel, to the bulwark cap.

#### **Preparation:**

Prior to surface preparation, all sensitive surfaces below, adjacent to, or up to 10 feet above the area of work shall be fully protected with plywood or rubber in accordance with this specification and to the satisfaction of the Owner's Representative. Any hydraulic rams or valves shall be carefully removed and stored or completely covered with wood and sealed to prevent any ingress of blasting grit and damage to sealing surfaces. Sensitive areas to be protected include vent check valves, such as air intakes, lights, wiring, hoses, doors, and windows, etc.

All required surfaces shall be washed immediately after vessel is hauled with fresh water high pressure wash (3500-5000 psi) to remove all salts, contaminants, oils etc. This includes any marine growth and dirt along the waterline of the vessel. After washing, Contractor shall inspect the hull (with Owner's Representative) and report any deficiencies.

Contractor shall carefully measure and record the location of the existing slashes on both port and starboard sides of the vessel. Contractor shall bead to bare aluminum the port and starboard slashes.

**Surface Coating:**

Contractor shall re-apply the port and starboard slashes with a coating system in accordance with the paint specification in Section 5.05 Paint Schedule.

Contractor shall re-paint gold trim stripes each side of the vessel and any other trim and draft marks in accordance with Section 5.05 Paint Schedule, except vinyl decals which are addressed in 5.03-C below.

**5.03-C STRIPES, TRIM, LETTERING**

Contractor shall remove and re-install vinyl decals and emblems if found to be re-usable as follows: two bow vessel names, one stern name, one stern hailing port, two gold badges. Vinyl decals and emblems will be supplied by the Owner if required to be replaced. **Note:** If the Owner's Representative finds the existing decals and emblems be in good shape, he may direct the Contractor to protect them with tape, etc and repaint slash around them or remove them and them reapply over the new paint.

Contractor shall touch up the paint on any disturbed trim stripes. Per paint schedule. Font selection must be approved by Owner prior to painting or lettering. Instead of painting letters, decals may be applied if approved by the Owner Representative.

**5.03-D SPARE PAINT**

The Contractor will supply the following quantities of spare paint to the vessel before the vessel departs the Contractor's facility.

1 gal Rodda 7361 Sky Blue  
1 qt Sign Painters 109-L Metallic Gold  
1 gal Rodda 74079 Galva-Cling Primer  
1 gal Rodda 7181994 Flat Black All Purpose Equipment Enamel

**5.04 GENERAL PREPARATION AND PAINTING REQUIREMENTS**  
**REQUIREMENTS DURING COATING APPLICATION AND CURING**

All surfaces shall be kept dry, clean and free of rust and foreign matter at the time of application of any coating and throughout the curing period.

Coatings shall be applied under environmental conditions conforming to the manufacturer's recommendations as listed on the manufacturer's published data sheets for the coatings being applied. Coatings shall not be applied at ambient or surface temperatures less than the minimum application temperature recommended by the manufacturer for the particular coating involved. No coating shall be applied when the dew point temperature is equal to or greater than the surface temperature of the surface to be coated.

For each coat applied, the Contractor shall take readings and produce a record of the ambient, surface, and dew point temperature as measured 1) before starting the coat application, 2) upon completion of the application, and 3) for every 4 hours in between (if applicable to the coat). The Contractor shall also take wet and dry film thickness measurements during and following coating applications and maintain records that map these readings to the coated



areas and indicate compliance or non-compliance with intended millage (for wet film) and required millage (for dry film).

All paint coats and required thickness of coatings shall be confirmed through spot checks in the presence of the Owner's Representative after each coat is applied.

The Contractor shall provide a copy of the temperature and wet film thickness records, including notations regarding compliance and non-compliance with requirements, to the Owner's Representative within 24 hours after the coating event. The Contractor shall provide a copy of the dry film thickness measurements, including notations regarding compliance and non-compliance with requirements, to the Owner's Representative and review the results with the Owner's Representative prior to application of the next coat. Timing between coats shall also be specifically addressed at this time.

Should the Contractor choose to paint hull structures or attachments which may be affected by condensation caused by the vessel being waterborne or another reason, extraordinary care shall be exercised to ensure that surfaces to be painted are thoroughly dry and remain dry throughout the coating and curing periods. Spaces shall be heated and dehumidified to levels in accordance with the paint manufacturer's preparation and application guidelines to obtain and maintain proper application and curing temperatures and prevent the onset of condensation.

A copy of the paint manufacturer's preparation and applications guidelines applicable to each coating system shall be provided to the Owner's Representative prior to application of any coatings.

### **CORRECTION OF DAMAGE FROM PAINT OVERSPRAY**

Any paint overspray applied to any of the equipment and surfaces shall be immediately and carefully removed.

### **CLEANING OF BLASTING GRIT**

All affected spaces and surfaces shall be cleaned free of grit and residue immediately after grit blasting and prior to any coating. Sequence of blasting shall be arranged to keep blasting grit off new paint.

Machinery, equipment, and surfaces damaged, marred, or contaminated shall be promptly repaired, replaced, or cleaned to pre-existing condition at the Contractor's expense.

### **SURFACE PREPARATION**

Prior to surface preparation, all adjacent surfaces shall be fully protected in accordance with Subsection 5.02 of this specification.

During a multi-day blasting effort, the Contractor shall apply an appropriate primer coat to blasted areas immediately upon completion of the day's sand blasting to avoid staining. Under no circumstances shall a freshly blasted steel surface be left more than six (6) hours without primer. Should freshly blasted steel be left unprimed, the Contractor shall re-blast to the originally required quality, removing all traces of rust bloom.

All welds and weld affected or burned areas not sandblasted shall be power ground to bare metal and prepared and painted in accordance with the paint schedule.

## **DOCUMENTATION**

The Contractor shall provide the following documentation and technical information:

A) Paint manufacturer's preparation and applications guidelines shall be available on site for review by Owner's Representative.

B) Paint Application Log. Create and keep on site for review and approval by Owner's Representative and submit to Owner's Representative after completion of painting. The log shall contain the information required in Subsection 5.04 and also specific paint catalog numbers and colors.

## **5.05 PAINT SCHEDULE**

### **PAINT MANUFACTURER**

In order to maintain paint compatibility, all paint used on this project shall be manufactured by the below listed paint manufacturers, unless approved otherwise in writing by the Owner. Paint reducer and accelerator (if necessary) shall also be manufactured by the below listed manufacturers in accordance with manufacturer's guidelines.

International Paint Representative:

Ph. 206-730-0143

Rodda Paint Representative:

Ph. 907-357-7401

The Contractor shall use the latest paint products in all phases of this item. All stock utilized shall not be more than 6 months old.

### **EXTERIOR HULLS: KEELS TO TOP OF BOTTOM PAINT**

Apply 1 full coat Intershield 300 Bronze @ 6.0 MDFT.

Apply 1 full coat Intershield 300 Aluminum @ 6.0 MDFT.

Apply 1 full coat Interspeed 5640 Red @ 5.0 MDFT.

Apply 1 full coat Interspeed 5640 Black @ 5.0 MDFT

**Note:** After paint has cured completely the vessel will be picked up and shifted forward or aft (Dockmaster's decision) 18 to 20 inches so that the hull areas that were covered by the keel blocks will be exposed and can be blasted and painted according to the specifications.

### **EXTERIOR HULL: PORT AND STARBOARD SLASHES**

Apply 1 coat 74079 Galva-Cling Primer 2 mils on spots water or bead blasted to exposed metal.

Apply 2 coats Rodda Polycoat High Solids Color 7361 - Sky Blue to entire slash surface area 1.5 mils each coat and Sign Painters 109-L Metallic Gold for diagonal stripes 2.0 mils each coat.

## **EXTERIOR DECKS**

-Not used -

## **ALL INTERIOR SPACES NOT COVERED WITH INSULATION**

-Not used-

# **6.0 Hull Plating Replacement**

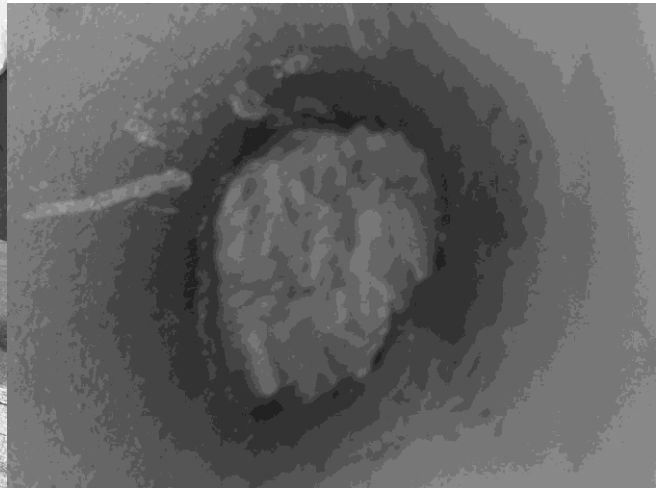
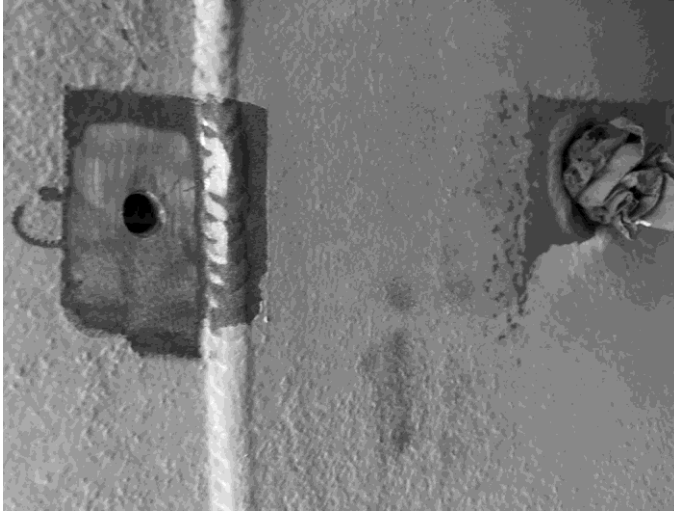
## **APPLICABLE DOCUMENTS**

### **SCOPE**

Crew has found that the aluminum hull plating in both engine rooms has deep pitting. Aluminum plates have been temporary welded to the outer hull in the previous shipyard. Exterior plating will need to be removed, and hull profile returned to clean uniform surface. Compromised sections of the hull plating will need to be removed and replaced with new Marine grade aluminum plating. The replaced sections will need to be finished smooth on the outer surface of the hull to not interfere with hydraulic flow through water. Any affected and repaired sections of hull plating will need to be secured to existing internal structure. Any interior structure affected in repairs will also need to be replaced and/or repaired as not to affect structural integrity.

Testing of the replaced areas of plating shall be done by the contractor in the presence of one of the Vessels representatives. The Contractor shall provide a CFR documenting the condition of all new plating and copies of any purchase orders associated with the installation.

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Holes in Haul Plated over in the Last shipyard.



Pitting in Port Engine Room

## **7.0 FRESH WATER HOLDING TANK– CONTINGENT ITEM**

### **APPLICABLE DOCUMENTS**

#### **SCOPE**

The current fresh water holding tank has pitting on the inside and needs to be repaired or replaced. It holds 300 gal of fresh water. There is a soft hatch above the freshwater tank where it can be removed for repair or replacement.

## **8.0 TRANSDUCERS – CONTINGENT ITEM**

### **APPLICABLE DOCUMENTS**

#### **SCOPE**

The P/V Cama'I currently has two thru-hull transducers installed. One is no longer functioning so both are to be replaced by owner provided equipment. Changing out of the transducers will

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require some welding to the transducer tubes as the dimensions of the transducers are different. The contractor will provide welding and machine work for fitment of new transducers and then any other required work to make sure transducer tubes do not allow water into hull. Transducers to be checked for leaks and repaired if necessary. This line of work should be completed before bottom painting of the hull or contractor is responsible for touch up painting to ensure bare metal is covered and to prevent marine fouling.