STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

May 23, 2018

Addendum No. 1

Contract No.: DA00418

WBS Element: 16.33001

M/V Sea Level Credit Drydock (CDD)

To Whom It May Concern:

Reference is made to the proposal and plans previously furnished for this project.

The following revision has been made to the proposal:

Page 1, "Proposal Cover" has been revised to change the Letting Date. Please void existing Page 1 and replace with the revised Page 1.

Page 27, "Description of Work" has been revised to delete the first sentence of the third paragraph. Please void existing Page 27 and replace with the revised Page 27.

Page 33, "Welding Onboard Vessel – (b)" has been revised to delete the first sentence. Please void existing Page 33 and replace with the revised Page 33.

Page 42, "Take Control and Dry Dock M/V Sea Level" has been revised to delete the last sentence of the first paragraph. Please void existing Page 42 and replace with the revised Page 42.

Page 44, "Take Control and Dry Dock M/V Sea Level" has been revised to delete the third paragraph. Please void existing Page 44 and replace with the revised Page 44.

Page 49, 5.4"Requirements" has been revised to delete the Fifth paragraph. Please void existing Page 49 and replace with the revised Page 49.

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Page 52, 7.3 “Owner Furnished Equipment – (a)” has been revised to replace the word “disassemble” with the word “Remove”. Please void existing Page 52 and replace with the revised Page 52.

Page 66, 14.4 “Requirements” has been revised to delete the last paragraph. Please void existing Page 66 and replace with the revised Page 66.

Page 74, 19.4.2 “Checkpoint – (e)” has been revised to change the description from “Hydraulic Couplings” to “Tapered Flange Key Couplings”. Please void existing Page 74 and replace with the revised Page 74.

Page 78, 21.0 “Line Shaft Bearing Replacement” has been revised to “Line Shaft Bearing Repair”. Please void existing Page 78 and replace with the revised Page 78.

Page 79, 21.6 “Payment” for “Line Shaft Bearing Replacement” has been revised to “Line Shaft Bearing Repair”. Please void existing Page 79 and replace with the revised Page 79.

Page 80, 22.4.1 “Checkpoint (b) & (c)” have been revised to clarify contractor responsibilities. Please void existing Page 80 and replace with the revised Page 80.

Page 82, 22.4.3 “Checkpoint (o)” has been revised to delete the last sentence. Please void existing Page 82 and replace with the revised Page 82.

Page 85, 23.4.5 “Checkpoint - (e)” has been revised and (f) has been included. Please void existing Page 85 and replace with the revised Page 85.

Page 87, 25.5 “Test, Trials and Documentation” has been revised to include supplemental agreement language. Please void existing Page 87 and replace with the revised Page 87.

Page 89, 1.4 “Requirements” has been revised to clarify pressure testing requirements and 1.5 “Payment” has been deleted. Please void existing Page 89 and replace with the revised Page 89.

Page 96, “Bid Form” the quantity for Line Item #1 “*Generic Miscellaneous Item (Berthing Days)*” has been revised. Line Item #3, the description has been revised to *“Generic Miscellaneous Item (Line Shaft Bearing Repair)”*. Please void existing Page 96 and replace with the revised Page 96.

Page 97, “Bid Form” has been revised to delete Line Item #23 for *“Generic Ferry Item (Repair Car Deck Sprinkler System)”*. Please void existing Page 97 and replace with the revised Page 97.

The amended EBS File (DA00418.001) has been uploaded to Bid Express. We apologize for any inconvenience.

Sincerely,

DocuSigned by:
CDAEAC77A6394FB...

C. E. Slachta
Division Proposals Engineer

cc: J. D. Jennings, PE
C. W. Bridgers, Jr, PE
G. A. Byrum, PE
S. D. Baker, PE

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 1

PROPOSAL

DATE AND TIME OF BID OPENING: JUNE 6, 2018 AT 2:00 PM

CONTRACT ID: DA00418

WBS ELEMENT NO.: 16.33001

FEDERAL AID NO.: STATE FUNDED

COUNTY: DARE

TIP NO.: NONE

MILES: N/A

ROUTE NO.: N/A

LOCATION: DARE COUNTY

TYPE OF WORK: M/V SEA LEVEL CREDIT DRYDOCK (CDD)

NOTICE:

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD BID IS $30,000. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

THIS IS A DIVISION LET PROJECT.

5% BID BOND OR BID DEPOSIT REQUIRED.

NAME OF BIDDER

ADDRESS OF BIDDER

The vessel is a U.S. Coast Guard (USCG) inspected and certificated vessel, and maintains a Certificate of Inspection (COI) issued by the USCG. The Contractor shall perform the dry docking, repairs, and improvements as required by the USCG and the Contract Documents and all items directed by the vessel's owner, NCDOT, to make the vessel suitable in all respects for unrestricted service on its USCG certificated route, in all normally encountered sea states and weather conditions, and to improve the vessel's general material condition.

A list of items and activities is included in various sections of the Contract Documents to emphasize major details of the requirements. It remains the responsibility of the Contractor to inspect the vessel and discern the detailed production requirements, including interference removal, before making an offer for this work.

~~The Contractor shall develop the detail design necessary to complete the work as specified herein.~~ It is not the intent of the Contract Documents to cover every minor detail of construction and equipment. Details and components that are not mentioned but are necessary to complete the installation to function as intended, or are usual and necessary in accordance with good ship repair practice for this class of ship, shall be provided by the Contractor to the satisfaction of NCDOT.

The Contractor shall provide all certificates, documentation, labor, material, equipment, tools, rigging, and staging, transportation, power, and supplies necessary to complete the work in accordance with the Contract Documents. Any material or part whose omission would be detrimental to either the seaworthiness or intended service, the inclusion of which is generally accepted good marine practice, shall be provided by the Shipyard at no additional cost to NCDOT. The Contractor shall complete all work per USCG Regulations, Title 46 Code of Federal Regulations (CFR), Subchapter H. At the completion of the work, demonstrate to the satisfaction of NCDOT that the vessel is complete in all respects, fully equipped, outfitted to the best current marine practice, clean, and ready to engage in unrestricted operations in its intended service, approved and certificated by the U.S. Coast Guard.

Tests and inspections called out in the Contract Documents shall be organized, directed, and documented by the Contractor.

DEFINITIONS

To clarify requirements in the Contract Documents, maintenance terms shall be defined as follows:

ADDITIONAL WORK: Any emergent or new work that is discovered during the course of accomplishing the defined work scopes of this specification.

ADJUST: To manipulate a system or component to conform or correspond to specifications, special provisions, and manufacturer settings and tolerances.

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Weld inspections shall occur prior to any painting of welds and shall be made by either visual, radiographic, ultrasonic, hydrostatic, air or magnetic tests, separately or in combination, as required by USCG or the Owner. All weld inspection equipment, inspection equipment operators and materials shall be furnished by the Contractor, at no expense to the Owner. No weld inspection shall take place without 24-hour notification of same.

Any internal/external defects or other welding deficiencies found to be unsatisfactory to USCG or the Owner, will be corrected by the Contractor and re-inspected/tested (the test method to be determined by either USCG and/or the Owner), at the Contractor's expense.

Continuous welding for sealing purposes shall be performed on both sides of all new structure and attachments exposed to the weather.

Welding Onboard Vessel

a) All welding, brazing, and allied processes shall be in accordance with the requirements 46 CFR Subchapter H, Subchapter F, and/or ABS Rules for Steel Vessels Under 90 meters.

b) ~~Welding shall only be permitted while the vessel is out of the water.~~ Welding machines and other welding power sources shall have both cables connected only to the ship hull structure where welding is done. The return ground cable shall never be grounded to anything but the ship's hull structure it is servicing, and shall always be grounded to structure in the immediate vicinity (as close as reasonably feasible) to where the welding is taking place. The total cross-sectional areas of the return ground cable shall be at least one million circular mils per 1,000 amperes per 100 feet, but not less than 85,000 circular mils. The ground cable shall be securely fastened to grounding plates or to an integral part of the ship’s hull structure, with contact areas thoroughly cleaned to bare metal.

c) When welding on equipment, machinery, pressure vessels, or piping, the return ground cable to the welding machine shall be connected in the immediate vicinity (as close as practical) of the work to ensure that current does not flow through bearings, pipehangers, machinery, electrical power distribution boxes and controller, or other areas where arcing or high resistance paths exist. Welding leads/cables shall <u>not</u> be run next to (within 3 feet) ship's electrical cable ways, communication, electronic, and DC Control system cables or components.

d) Coordinate with NCDOT Representative to open circuit breakers to ship sensitive equipment including: 12/24 VDC system: Navigation equipment, communication systems, Pilothouse 12/24 VDC components; Engine Room: 24 VDC power to main engine controls, steering controls, and engine 24 VDC Alarm Panel.

While under the Contractor's control, the Contractor shall maintain circuit breaker tag-out procedures as detailed in the "Take Control and Dry Dock the [M/V Sea Level]" section of the Specifications.

be blocked such that all underwater body painting and inspection detailed in the Contract Documents are accomplished. ~~The Contractor shall shift ("bump") the ship in dry dock to expose, inspect, and paint the areas covered by the docking blocks. The Contractor may use a removable block configuration (sand boxes) in lieu of shifting the ship in dry dock.~~

Provide all staging, tarpaulins, weather covers, closures, and aerial apparatus necessary to accomplish the repairs and/or inspection work detailed in the Contract Documents.

If the vessel is dry docked contrary to any of these conditions, the Contractor shall immediately undock the vessel. The condition responsible for the undocking shall be corrected and the vessel shall be dry docked as soon thereafter as possible. The undocking and follow-on dry dockings, under these circumstances, shall be performed by the Contractor at no additional expense to the NCDOT.

If strain or deformation is noted during or after the dry-docking, the Contractor shall immediately undock the vessel. The condition responsible for the undocking shall be corrected and the vessel shall be dry docked as soon thereafter as possible. The undocking and follow-on dry dockings, under these circumstances, if determined to be a result of a Contractor act, omission, or other failure to abide by the direction in the Contract Documents, shall be performed by the Contractor at no additional expense to the NCDOT.

The Contractor shall undock the ship, without strain or deformation, upon completion of all underwater work, topside painting, or at the direction of the NCDOT Representative.

Immediately preceding the undocking the Contractor shall conduct an inspection, in the company of the NCDOT Representative, to verify the ship is ready to undock. During this inspection, the Contractor shall demonstrate:

a) That all sea chest strainer plates are installed and fastened, with lock wired or tack welded stainless steel nuts or stainless steel Nylock style nuts, on all studs.

b) That all cover plates, plugs, or other protective devices are removed from transducers and hull openings and that the transducer windows are intact and undamaged.

c) That all anodes are in place and free of paint or other cover to permit immediate activation at undocking.

d) That the propeller nut locks are intact.

e) That all underwater body hull paint is intact and cured past the minimum dry to launch criteria established by the paint manufacturer.

f) That the ship's stability is suitable for undocking and that no significant changes in ship's displacement, trim, and heel, from that observed at dry docking, are likely at undocking.

g) That all gangways and shore services are disconnected.

h) That all sea valves are closed.

opened or closed each time it is operated. The circuit breaker tags and log shall be maintained for the entire duration of the contract. Upon returning the vessel to the NCDOT's control, all breakers shall be returned to their original position at the time the Contractor took possession of the vessel.

Additionally, the Contractor shall maintain a log, to be located in the Engine Room near the circuit breaker log discussed above, that will note any change to switches and equipment settings throughout the vessel. Any change to any switch or equipment setting for the duration of the contract shall be noted in the log. Upon returning the vessel to the NCDOT's control, all switches and equipment settings shall be returned to their original positions at the time the Contractor took possession of the vessel.

~~The Contractor shall shift ("bump") the ship in dry dock to expose, inspect, and paint the areas covered by the docking blocks. The Contractor may use a removable block configuration (sand boxes) in lieu of shifting the ship in dry dock. Surface preparation and paint schedule for the bumped areas shall be identical to the areas originally exposed.~~

1.5 Payment

The lump sum contract bid price for *Generic Ferry Item (Take Control And Dry Dock The M/V Sea Level)* shall be the total compensation for all labor, equipment, tools and materials to accomplish the work detailed in these Special Provisions and Supplemental Work Provisions, including testing and trials and all time necessary in dry dock to complete the work involved.

2 DOCK AND SEATRIALS

2.1 Description

This section describes the requirements for dock and sea trials, which shall be organized and carried out by the Contractor at the conclusion of the project.

2.2 References

None

2.3 Owner Furnished Equipment

None

2.4 Requirements

The Contractor shall organize and conduct formal dock trials and sea trials, per the Society Of Naval Architects and Marine Engineers SNAME T&R 3-39; "Guide for Shop and Installation Tests", and (SNAME) T&R 3-47; "Guide for Sea Trials", respectively and as applicable. Dock and Sea Trials' tests and agenda items shall also include all tests and trials required by equipment and engine manufacturers, for newly installed, re-built, or re-furbished equipment on board the vessel. Any and all items or equipment that has been disturbed in any way will require operational testing to the satisfaction of the NCDOT Representative, prior to final acceptance of the vessel.

The Contractor shall perform gas free testing for tanks, accessible voids, holds, and enclosed areas in way of the hull when directed by the NCDOT Representative at any time such testing is indicated for the protection of the vessel and the safety of personnel. If gas free certification is lost, the affected compartment(s) shall be re-certified by the NFPA-certified marine chemist. The NCDOT Representative will not accept re-certification by the competent person. If gas free certification is lost due to an act or omission of the Contractor, then additional cleaning, ventilating, and certification shall be accomplished at no cost to the NCDOT.

Compartments that are gas freed and certified per the Contract Documents shall remain in a gas free and certified condition until the Coast Guard and the NCDOT Representative approve closure of the compartment and until all Contractor work in the compartment is complete. Any gas free activity and certification required by the Contractor to conduct shipyard operations will be at the Contractor's expense and incidental to the various bid items involved.

Any gas free testing work directed by the NCDOT Representative in excess of two times per hold, tank or enclosed area, and that is not required by the Contractor to conduct his/her operations, will be considered and settled by the NCDOT Representative as Additional Work.

Before commencement of any cleaning or painting, and upon completion of work, the Contractor shall test all bilge high-level alarms. Any repairs required will be addressed as "Additional Work." Protect all bilge suction pockets and boxes from clogging. At the conclusion of all work, clean suction strainers and valves. Exercise all valves and verify that they are easily operable.

~~After opening, gas freeing and cleaning bilges, Contractor and NCDOT Representative shall jointly inspect all bilges for damaged coatings or structure. A report documenting this inspection shall be provided to the NCDOT Representative for review and approval of selected work scopes. The Contractor shall then spot prepare and paint areas in the bilge and voids as identified by the NCDOT Representative. Repair painting work shall be done to match existing paint in the selected areas.~~

The Contractor shall include in their bid for this item an allowance for spot prep and printing of bilge as directed by the NCDOT Representative Contractor shall take care to protect all equipment from overspray. Any equipment damaged by over spraying shall be restored to its original condition at no additional expense to NCDOT.

All paint work shall be accomplished as detailed in the Special Provision item "Painting – General."

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7.3 Owner Furnished Equipment

Requirements

The Contractor shall complete the following work on sea valves, overboard discharge valves and scupper valves:

a) Remove all sea valves, sea chest vent valves and all overboard discharge for USCG and NCDOT Representative inspection of the interior valve body, seats, under bonnet, stem and packing housing for valves over 2". Valves equal to or less than 2" shall be replaced with USCG approved in kind valves. The Contractor shall remove all cover plates in the bulkheads for unrestricted access to the valves and the voids, as indicated in the "Open, Clean and Certify Gas Free Holds and Enclosed Areas" section of these Special Provisions.

b) Blue the seat contact areas of the discs and perform a blue fit check of the valve seats in the presence of the USCG Inspector and NCDOT Representative.

c) Following approval of the USCG Inspector and NCDOT Representative, clean the valve components, renew the bonnet gasket or seal, lubricate the valve stem, repack the stem gland and reassemble the valves.

d) Open and inspect sea water system check valves as listed.

e) All valves condemned by the USCG Inspector or NCDOT Representative shall be replaced upon approval by the NCDOT Representative as "Additional Work."

f) Upon completion of valve overhaul and prior to installation, hydrostatically test all overhauled and new valves to the satisfaction of USCG and NCDOT Representative.

g) Reinstall all valves using new Contractor furnished gaskets (Garlock 3760 or equal) and 316 Stainless Steel fasteners.

h) Complete inspections and submit report no later than five (5) working days after dry-docking.

Table of Valves

Main Deck:

- Steering room vent – stbd aft – 4"vent
- Potable water fill – stbd aft – 2" ball valve
- Fuel oil fill – stbd aft – 2" gate valve
- Aft void exhaust air vent – stbd aft – 6" vent
- Aft void exhaust air vent – stbd aft – 6" vent
- Engine room exhaust air vent – stbd aft – 6" vent
- MSD room discharge – stbd – 3" gate valve
- Stbd storage room vent – stbd fwd – 4" vent
- Rope locker room vent – stbd fwd – 4" vent
- Shore fire connection – stbd fwd – 3" gate valve
- Fuel oil fill – stbd fwd – 2" gate valve
- Potable water fill – stbd fwd – 2" gate valve
- Forepeak vent – stbd fwd – 4" vent
- Potable water fill – port fwd – 2" gate valve

- Stripe Coat: Amercoat 370 grey applied @ 4.0-6.0 Mils DFT
- Third Coat: ABC #3 red applied @ 4.0-6.0 Mils DFT

~~Two coats of Anti-Fouling (AF) paint, ABC #3 applied in 2 coats @ 4.0-6-0 Mils DFT each coat, the first coat red the second coat red-brown, shall be applied over the new AC coating. This is in addition to the underwater body paint work detailed in the Special Provision item "Painting – Hull Below DLWL."~~

14.5 Tests, Trials and Documentation

None

14.6 Payment

The contract unit bid price per square foot for *Generic Miscellaneous Item (Spot Cleaning and Painting - Hull Below DLWL)* shall include all costs for spot paint repairing the hull below DLWL, except for the high-pressure water wash and application of Anti-Fouling paint. Payment for this item will be based upon the Contractor's unit bid price and the actual square footage of work completed. High-pressure water wash shall be paid for under the lump sum contract bid price for *(High- Pressure Water Wash – Hull Below DLWL*) and applying Anti-Fouling paint shall be paid for under the lump sum contract bid price for *(Painting - Hull Below DLWL).*

15 SPOT CLEANING AND PAINTING - HULL ABOVE DLWL

15.1 Description

After degreasing and high-pressure water washing of the hull, as outlined in the "High-Pressure Water Wash – Hull Above DLWL" section of these Special Provisions, the Contractor shall, in areas designated by the NCDOT Representative, spot repair the Primer.

15.2 References

15.2.1 "General Painting Instructions" as part of these Special

15.3 Provisions Owner Furnished Equipment

None

15.4 Requirements

The Contractor shall spot blast, hydro blast, or tool clean those areas designated by the NCDOT Representative to a SSPC SP6, Sa2 ISO8501-1, or other equivalent standard surface preparation. Paint at the perimeter of the blasted areas shall be feathered or otherwise made tight to eliminate paint failure points and present a clean mechanically etched surface for a secure bond with the new Primer applied to the blasted surfaces. The Contractor shall have the option to use UHP- WJ2, Ultrahigh-Pressure Water Jetting only if the hull profile is taken and is within the required profile and approved by the NCDOT Representative.

After surface preparation, dry the area with clean dry compressed air. The Contractor shall assure that the areas to be painted are free of dust, dirt, salt, loose paint, moisture, and other contaminants before painting.
Coat all bare metal areas the same day they are exposed by blasting. Apply Primer paint by conventional industrial airless spray or compressed air spray equipment.

Not less than 24 hours after un-docking, and following re-connection of all line shafting, Contractor is to check, document, and report on the waterborne line shaft alignments to the tail shafts and reduction gears, including bearing loads on all line and tail shaft bearings.

19.4.2 CHECK POINT:

NCDOT Representative is to witness all shafting alignments. Contractor is to provide the NCDOT Representative with a written procedure for accomplishing the required shaft alignments and bearing load assessments, at least two (2) business days prior to initiating these alignments and bearing load assessments. Contractor is to provide a post docking alignment report to the NCDOT Representative within five (5) business days of completing the alignment checks.

While the vessel is on dock, the Contractor shall perform the following work, inspections and measurements, and report the findings in writing to the NCDOT Representative within three (3) working days of dry-docking the vessel. Failure to perform these inspections in a timely manner may delay the undocking of the vessel and/or result in Liquidated Damages. A delay in vessel undocking due to late reports shall not be considered legitimate grounds for the accrual of "Lay Days," for additional undocking and re-docking charges, or for accrual of "Berthing Days."

a) Remove rope guard, clean and inspect the propeller hub and tail shaft interface.

b) Clean shaft scoops (as applicable) and flush the outer stern tube bearings with medium pressure (500 psi) water.

c) Remove propellers and prop nut.

d) Disassemble, remove, and inspect tail shaft couplings and shaft seals.

e) Disassemble and inspect the inner and outer sleeves of the tapered flange key couplings. Renew all seals upon re-installation.

19.4.3 CHECKPOINT:

Contractor shall provide NCDOT Representative with a tail shaft coupling inspection report prior to reassembly and reinstallation.

f) Tail shafts (and propellers if required) shall be removed inspected and possibly replaced (depending upon condition of existing equipment) replaced with refurbished, Owner furnished shafts and propellers.

g) Draw the tail shafts from the vessel. The couplings shall be dismounted (and later remounted) in accordance with the manufacturer's recommended procedures.

h) If required to be refurbished after removal, tail shafts and propellers shall be high pressure washed (2500 psig) to remove organic growth and shipped to the NCDOT shipyard facility at Contractor expense. NCDOT shipyard address is as follows:

of the bearings (both ends and the middle).

20.6 Payment

Include all costs associated with repairs and modifications to the various items outlined in this Special Provision in the unit contract price for *Generic Ferry Item (Tail Shaft Bearing Replacement)*. Unit price per each shall include all labor and expenses to renew one single tail shaft bearing. This unit price shall apply to the renewal of each tail shaft bearing up to (4) tail shaft bearings on the vessel. No further compensation will be made. No further compensation

21 LINE SHAFT BEARING REPAIR

This section describes the requirements to repair the line shaft bearings. Work on this section shall not begin until the contractor is given specific authorization to proceed by the NCDOT Representative. NCDOT Representative shall not authorize work under this item to proceed until they are given the line shaft bearing inspection report. This item may be canceled pending result of the line shaft bearing inspection report, in which case no payment will be made to the Contractor for this bid item.

21.2 References

21.2.1 DWG 09-060 243-01 Shaft Arrangement

21.3 Owner Furnished Equipment

None

21.4 Requirements

Prior to any disassembly of line shaft bearings, Contractor is to precisely index the position of the bearings on the line shafts, for future reference if needed.

Vessel is equipped with "2," Cooper pillow block [two, Split Cylindrical Roller Bearings, Craft Bearing Company, Model: S1 BCH 500] line shaft bearings. All maintenance under this work item shall be accomplished in accordance with manufacturer guidelines and by manufacturer certified technicians.

Unbolt and remove line shaft bearing from vessel. Bearings shall be transported to a machine shop for inspections and maintenance work. Following loosening and removal of bearing caps, Contractor is to carefully lift and support line shafting at the bearings.

Remove bearings from the bearing housings, wipe with clean rag removing all grease, and inspect both rollers and races.

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21.4.1 CHECK POINT:

Owner's Representative is to witness line shaft bearing inspections. Contractor is to provide an inspection / condition found report on the condition of all moving and wearing parts of the vessel's line shaft bearings. Contractor is required to obtain the services of the bearing manufacturer's authorized technical representative to inspect the bearings, or otherwise accomplish the inspection in accordance with the manufacturer's guidelines and recommendations. NCDOT Representative is to witness the condition and inspections of the line shaft bearings prior to re-assembly and / or ordering or replacement of any components. Final determination on replacement of line shaft and tail shaft bearings or any other shafting system components is dependent upon the results of accurate and timely inspections and measurements.

Once approved for re-use by NCDOT Representative, Contractor will re-pack the bearings using manufacturer approved grease and in accordance with manufacturer's recommendations.
Contractor is to re-install the bearings. (NOTE: Bearing caps will be positioned and secured in place, but are to remain un-torqued to final torque specifications until initial run in of shafts during sea trials. Bearing caps are then to be torqued to manufacturer's specifications, and this is to be witnessed by NCDOT Representative during dock and sea trials.)

New bearings and other bearing assembly parts replacements that are not specifically associated with the bearing manufacturer's documented maintenance procedure, or called out in this work item, shall be considered in accordance with the changes procedures detailed in the "Additional Work" section of the Specifications.

21.5 Tests, Trials and Documentation

All work is to be completed in advance of dock trials, except as noted above.

21.6 Payment

Include all costs associated with repairs and modifications to the various items outlined in this Special Provision in the unit contract price for *Generic Ferry Item (Line Shaft Bearing Repair).* Unit price per each shall include all labor and expenses to renew one single line shaft bearing. This unit price shall apply to the renewal of each line shaft bearing up to (2) shaft bearings on the vessel. No further compensation will be made.

22 RUDDER REMOVALS AND INSPECTIONS

22.1 Description

This section describes the requirements to unship, inspect, and re-install both rudders, rudder stocks (2 total), rudder stock bearings, and steering gear systems (not including the hydraulic, feedback, or rudder control systems).

22.2 References

22.2.1 DWG 09-060 562-01 – Rudder Arrangement

22.3 Owner Furnished Equipment

NCDOT furnished rudder stocks, rudder stock nuts, quadrants, and quadrant fasteners are available and will be owner furnished, if required.

22.4 Requirements

While in dry dock, the Contractor shall first exactly determine and mark positioning of the tiller arms when the rudder is at zero angle position. A durable mark parallel to rudder centerline shall be stamped on the tiller arm or upper end of the rudder stock and adjoining structure.

Alternatively, a fixed rigid removable alignment indicator with a mark at zero rudder angle shall be installed from adjoining structure. The zero-alignment indicator and the reference mark on the tiller or upper end of the rudder stock shall allow accurate lineup and viewing for determination as to when the rudder is in its zero-angle position. The alignment indicator shall be bolted in place and removable to facilitate rudder or tiller removal. Removal and reinstallation of the alignment indicator shall not cause loss of the zero-angle reference. The alignment indicator shall be rigid enough not to be bent or loss of zero angle reference from knocks from normal maintenance of the rudder and steering gear. Where new steel is installed or existing paint was damaged by the work performed under this requirement, the areas shall be prepared for and painted to the satisfaction of the NCDOT Representative.

The Contractor shall perform the following work, inspections and measurements, and report the findings in writing to the NCDOT Representative within two (2) work days of dry-docking the vessel. Failure to perform these inspections in a timely manner may delay the undocking of the vessel. A delay in vessel undocking due to late reports shall not be considered legitimate grounds the accrual of "Lay Days," or for additional undocking and re-docking charges.

a) Remove rudder drain plugs, drain, catch, and properly dispose of any water or excess preservative remaining in the rudder.

[NOTE: Contractor is advised that NCDOT skegs and rudders are typically "float coated" to preserve the internal steel, so all appropriate cautions and inspections are to be taken prior to initiation of any hot work to these areas.]

22.4.1 CHECKPOINT:

Static pressure test rudders for leaks in the presence of NCDOT Representative. Test pressure shall be 1.5 PSI. Accepted test is no leaks for one hour. Contractor shall provide written report of test results to NCDOT Representative.

b) Unbolt rudders from the rudder stock.

c) Lower and block up both rudders on the dry dock floor for inspection. Clean each rudder, exterior rudder stock, flange.

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m) Reassemble the rudder stocks and tillers to the steering gear in the reverse order of disassembly. Renew the lock plate bolts with SAE Grade 8.

n) Lubricate rudder carrier bearings and the carrier, by hand packing, before stock installation. Remove the existing grease fittings and replace them all with new stainless steel fittings. Renew the upper rudder stock 0-rings seals with the same type and size as removed. Secure all loose gland studs and double-nut the studs or use Nylock nuts after installation and adjusting of new o-rings seals. Check and lubricate the bearings again, through installed fittings and cavities prior to trials. Cycle the rudders from side to side and lubricate until grease extrudes from the bearing vents.

o) Hang the rudders and make them up to the rudder stocks in the reverse order of disassembly. ~~Renew all rudder palm bolts with SAE Grade 8 fitted fasteners.~~

p) Repack the rudder stock seal with new packing.

q) Re-install any rope guards removed with new Contractor furnished rope guards.

22.5 Tests, Trials and Documentation

Thoroughly clean all surfaces in the tillers, pins, rudder trunks, rudder stock bearings, rudder palms, and rudder stocks, particularly in way of the bearings. Visually inspect as appropriate all non-moving/non-wearing parts and assemblies. Inspect and measure all moving and wearing parts, and report findings in writing.

Upon re-install, measure and report lower rudder stock clearances. Provide a written report of all the measurements to the NCDOT Representative

Provide NCDOT Representative with target bolt torque for rudder palm bolts, prior to tightening. Measure and report the torque applied to the rudder palm bolts to the NCDOT Representative.

Contractor shall perform all tests and inspections as outlined in the "Requirements" section of this work item and shall provide all necessary reports to the NCDOT Representative and USCG Inspector.

22.6 Payment

The lump sum contract bid price for *Generic Ferry Item (Rudder Removals and Inspections)* shall be the total compensation for all labor, equipment, tools and materials to accomplish the work detailed in these Special Provisions for both rudders, including testing and trials and all time necessary in dry dock to complete the work involved. No further compensation will be made.

23.4.5 CHECKPOINT: REVISED 5/23/2018

Prior to purchase and installation of new gaskets, Contractor is to provide NCDOT Representative with cut sheets of proposed gaskets for approval.

e) Refill each MTU cooling system with a mixture of fresh potable water and one & half gallons (1-1/2) of PowerCool 2000SCA.

f) Refill each Generator and Bow Thruster Engine cooling system with Caterpillar ECL (Extended Life Coolant). Vessel total = 110 Gallons

23.4.6 CHECKPOINT:

After fit up of keel coolers but prior to vessel launch, Contractor shall pressure test all keel coolers and SW piping up to the machinery connections. NCDOT Representative shall be present for these tests. Any leaks discovered during this test shall be repaired by the Contractor at no additional expense to the NCDOT.

23.5 TESTS, TRIALS AND DOCUMENTATION

Upon completion of renewals, repairs, and pressure teats, Contractor is to electrically test the isolation (should be "0") between keel coolers and hull, to ensure that they are electrically bonded.

23.5.1 CHECK POINT:

NCDOT Representative is to witness the bonding test for all keel coolers. Testing shall be to the satisfaction of the NCDOT Representative.

23.6 Payment

Include all costs associated with repairs and modifications to the various items outlined in this Special Provision in the lump sum contract price for *Generic Ferry Item (Sea Water Cooling System Inspection and Maintenance)*. No further compensation will be made.

Include all costs associated with high-pressure water washing the sea chests in the lump sum bid item *(High-Pressure Water Wash – Hull Below Waterline)*. Include all costs associated with

24 REBUILD HYDRAULIC RAMS

24.1 Description

This section describes the requirements for rebuilding the hydraulic steering rams.

Work on this section shall not begin until given specific authorization by the NCDOT Representative. NCDOT Representative shall not authorize work under this item to proceed until they are given the hydraulic ram inspection report. This item may be canceled pending result of the hydraulic ram inspection report; in which case no payment will be made to the Contractor for this bid item.

25 BOW THRUSTER SYSTEM INSPECTION & MAINTENANCE

25.1 Description

This section describes the requirements to perform inspection on the bow thruster and the bow thruster diesel engine.

25.2 References

25.1.1 DWG 09-060 568-01 – Bow Thruster Installation

25.1.2 DWG 09-060 256-01– Engine Cooling Piping Schematic

25.1.3 DWG 09-060 256-02 – Engine Cooling System Arrangement & Details

25.3 Owner Furnished Equipment

None

25.4 Requirements

The Contractor shall flush the bow thruster engine aftercooler and gear expansion tank and the bow thruster engine jacket water expansion tank to assure cleanliness of systems. See Special Provisions, Section 24.4.5 for refill mixture.

25.5 Tests, Trials and Documentation

Contractor shall pressure test expansion tanks and piping up to the machinery connections. NCDOT Representative shall be present for these tests. Any leaks discovered during this test shall be documented by the Contractor and a repair price will be negotiated with a supplimental agreement.

25.6 Payment

The lump sum contract bid price for *Generic Ferry Item (Bow Thruster System Inspection and Maintenance)* shall be the total compensation for all labor, equipment, tools and materials to accomplish the work detailed in these Special Provisions, including testing and trials. No further compensation will be made.

26 DRAWINGS

Contractor is advised drawings are for general guidance only. Drawings may contain some inaccuracies. In instances where drawings conflict with the language in these Specifications, Contractor shall follow the Specifications. Inaccuracies in reference drawings shall not be considered cause for "Additional Work" or form the basis of a Change Order.

The following drawings and documents are included herein per attachment:

- Outboard Profile 09-060 101-01
- General Arrangement 09-060 101-02
- Sea Chest 09-060 163-01
- Schedule OF Openings Below Main Deck 09-060 167-01
- Shaft Arrangement 06-060 243-01
- Cooling Piping Schematic 09-060 256-01
- Cooling System Arrangement & Details 09-060 256-02

1.4 Requirements

The Contractor shall pressure test Car Deck Sprinkler System (to 125 PSI) to identify which joints are leaking. Leaks shall be documented and repair cost will be negotiated with a supplemental agreement.

1.5 Test, Trials and Documentation

Following repair of Car Deck Sprinkler System, Contractor shall prove integrity of system by pressure testing piping in the company of the NCDOT Representative.

Payment

~~The lump sum contract bid price for *Generic Ferry Item (Repair Car Deck Sprinkler System)* shall be the total compensation for all labor, equipment, tools and materials to accomplish the work detailed in these Supplemental Work Provisions and Special Provisions, including testing and trials. No further compensation will be made.~~

2 Replace Car Deck Light Fixtures

2.1 Description

This section describes the requirement to replace deteriorating Car Deck light fixtures.

2.2 References

2.2.1 DWG 09-060 320-03 – Electrical Miscellaneous

2.3 Owner Furnished Equipment

NCDOT to provide (13) LED Light Fixtures. Dynagen: model: NCFLED-4-48D1L850

2.4 Requirements

The Contractor shall remove deteriorating light fixtures and brackets and install (12) new LED light fixtures and brackets in original overhead design locations and (1) in the vestibule.

2.5 Test, Trials and Documentation

Following refurbishment of Car Deck Lighting System, Contractor shall prove operational of lights in the company of the NCDOT Representative.

County : Dare

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			ROADWAY ITEMS			
0001	0000820000-N	SP	GENERIC MISCELLANEOUS ITEM (BERTHING DAYS)	10 DAY		
0002	0000820000-N	SP	GENERIC MISCELLANEOUS ITEM (LAY DAYS)	1 DAY		
0003	0000915000-N	SP	GENERIC MISCELLANEOUS ITEM (LINE SHAFT BEARING REPAIR)	1 EA		
0004	0000915000-N	SP	GENERIC MISCELLANEOUS ITEM (RESTORE DECK PLATES)	39 EA		
0005	0000915000-N	SP	GENERIC MISCELLANEOUS ITEM (TAIL SHAFT BEARING REPLACEMEN T)	2 EA		
0006	0000915000-N	SP	GENERIC MISCELLANEOUS ITEM (ZINC ANODE REPLACEMENTS, KEEL COOLERS / BOLT ON PER KEEL COOLER SPECIF ICATIONS)	20 EA		
0007	0000915000-N	SP	GENERIC MISCELLANEOUS ITEM (ZINC ANODE REPLACEMENTS, RUDD ERS/ 6 LB)	12 EA		
0008	0000915000-N	SP	GENERIC MISCELLANEOUS ITEM (ZINC ANODE REPLACEMENTS, SEA CHEST & BOW THRUSTER - 5.3 LB.)	4 EA		
0009	0000915000-N	SP	GENERIC MISCELLANEOUS ITEM (ZINC ANODE REPLACEMENTS, VESS EL HULL / 23-24 LB.)	109 EA		
0010	0000950000-E	SP	GENERIC MISCELLANEOUS ITEM (SPOT CLEANING & PAINTING, HUL L ABOVE DLWL)	2,000 SF		
0011	0000950000-E	SP	GENERIC MISCELLANEOUS ITEM (SPOT CLEANING & PAINTING, HUL L BELOW DLWL)	7,000 SF		
0012	0005000000-N	SP	GENERIC FERRY ITEM (BOW THRUSTER SYSTEM INSPECTIO N & MAINTE NANCE)	Lump Sum	L.S.	
0013	0005000000-N	SP	GENERIC FERRY ITEM (DOCK AND SEA TRIALS)	Lump Sum	L.S.	

County : Dare

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0014	0005000000-N	SP	GENERIC FERRY ITEM (EXTERIOR DECK PAINTING)	Lump Sum	L.S.	
0015	0005000000-N	SP	GENERIC FERRY ITEM (HIGH-PRESSURE WATER WASH, HUL L ABOVE DLWL)	Lump Sum	L.S.	
0016	0005000000-N	SP	GENERIC FERRY ITEM (HIGH-PRESSURE WATER WASH, HUL L BELOW DLWL)	Lump Sum	L.S.	
0017	0005000000-N	SP	GENERIC FERRY ITEM (HIGH-PRESSURE WATER WASH, SUP ERSTRUCTUR E)	Lump Sum	L.S.	
0018	0005000000-N	SP	GENERIC FERRY ITEM (MAIN DECK HATCH MAINTENANCE & REPAIR)	Lump Sum	L.S.	
0019	0005000000-N	SP	GENERIC FERRY ITEM (OPEN, CLEAN & CERTIFY GAS FRE E: BILGES, HOLDS & ENCLOSED AREAS)	Lump Sum	L.S.	
0020	0005000000-N	SP	GENERIC FERRY ITEM (PAINTING HULL BELOW DLWL)	Lump Sum	L.S.	
0021	0005000000-N	SP	GENERIC FERRY ITEM (PAINTING SUPERSTRUCTURE)	Lump Sum	L.S.	
0022	0005000000-N	SP	GENERIC FERRY ITEM (REBUILD HYDRAULIC RAMS)	Lump Sum	L.S.	
0023	0005000000-N	SP	GENERIC FERRY ITEM (REPLACE CAR DECK LIGHT FIXTUR ES)	Lump Sum	L.S.	
0024	0005000000-N	SP	GENERIC FERRY ITEM (RUDDER REMOVALS & INSPECTIONS)	Lump Sum	L.S.	
0025	0005000000-N	SP	GENERIC FERRY ITEM (SEA VALVES)	Lump Sum	L.S.	
0026	0005000000-N	SP	GENERIC FERRY ITEM (SEA WATER COOLING SYSTEM INSP ECTION & MAINTENANCE)	Lump Sum	L.S.	

County : Dare

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0027	0005000000-N	SP	GENERIC FERRY ITEM (SEWAGE SYSTEM - CLEAN, INSPECT & PERFORM MAINTENANCE)	Lump Sum	L.S.	
0028	0005000000-N	SP	GENERIC FERRY ITEM (TAIL SHAFT & PROPELLER REMOVALS, INSPECTIONS & SHAFTING ALIGNMENTS)	Lump Sum	L.S.	
0029	0005000000-N	SP	GENERIC FERRY ITEM (TAKE CONTROL & DRY DOCK M/V SEA LEVEL)	Lump Sum	L.S.	

1319/May22/Q9216.0/D99945000/E29 **Total Amount Of Bid For Entire Project :**