 REGIONAL DISTRICT OF NANAIMO	<p align="center"><i>Request for Tenders No. 22-003</i> Chase River Pump Station Upgrades <u>Description of Work</u></p>	<p>Date: January 24, 2022 Revision: 0</p>
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1. The site of the Work is the Regional District of Nanaimo's (RDN's) Chase River Pump Station (CRPS) at 1174 Island Highway South, Nanaimo, BC.

2. **General Description**

In general, the Work shall consist of renewing submersible pump supports, piping and related structural steel in and about the pump station wet well, as well as renewing and upgrading the existing electrical, instrumentation and control systems.


3. **Definition of the Work**

The Work shall consist of supplying all materials, equipment, temporary facilities, tools, labour, supervision, overhead, and everything required to accomplish the Work described and called for in the Contract Documents.


4. **Included in the Work - General**

The Work shall include the supply of all materials, forms, temporary facilities, labour, supervision, plant equipment, and tools necessary to complete the Work described herein and shown on the drawings and standards. It shall generally consist of, but not specifically be limited to the following:

- 4.1. Supply all equipment, materials and consumables required to accomplish the Work, as indicated in the Contract Documents.
- 4.2. Supply skilled labour and supervision with the proper qualifications to accomplish the Work in a thoroughly substantial and workmanlike manner.
- 4.3. Receive and keep secure all RDN-supplied materials. Inspect all RDN-supplied materials to verify that they are not damaged and are complete and suitable for the intended purpose. Promptly notify the RDN if any issues are found.
- 4.4. Issue of submittals for RDN review and approval, including but not limited to equipment and prefabricated materials shop/spool drawings, E/I equipment datasheets, welding procedure specifications and concrete mix certificates as outlined in the Contract Documents, to the RDN for review and approval well in advance of construction.
- 4.5. Field-confirm all critical fabrication/construction measurements for the Work, to the extent practicable, before the Work begins.
- 4.6. Prefabricate/pre-cut structural, piping, electrical and other materials with necessary and judicious field trim and field joint allowances.
- 4.7. Conduct all work at the CRPS site in accordance with RDN policies and procedures, City of Nanaimo bylaws, the BC Occupational Health and Safety Regulation and other applicable provincial and federal regulations, including but not limited to:
 - 4.7.1. WorkSafe BC personal protective clothing and equipment procedures;
 - 4.7.2. WorkSafe BC confined space entry procedures to address gas and other hazards;

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- 4.7.3. WorkSafe BC fall protection procedures;
- 4.7.4. WorkSafe BC ladders, scaffolds and temporary work platforms procedures;
- 4.7.5. WorkSafe BC cranes and hoists procedures;
- 4.7.6. WorkSafe BC rigging procedures;
- 4.7.7. RDN Wastewater Services Environmental Management System contractor-supplier package, including training in situations where the Work could have a significant impact on the environment;
- 4.7.8. City of Nanaimo noise bylaw;
- 4.7.9. Canadian Electrical Code (CSA C22.1-2018) and any directives issued by Technical Safety BC.
- 4.8. Clean up all debris on a daily basis and leave the job site in a clean manner, prior to leaving the site.
- 4.9. Secure the construction site from access by the public and take precautions to prevent theft and/or damage.
- 4.10. Provide temporary single and multi-phase electrical power supplies for all of the site work (RDN can only provide limited 110VAC single phase power).
- 4.11. Provide all temporary crew facilities required for the Work, including but not limited to washroom, lunchroom and tool crib.
- 4.12. Provide potable water for use by the Contractor's crew.
- 4.13. Coordinate the Work amongst the mechanical, structural, electrical and instrumentation crews, who will be working, in parallel, in and about the pump station buildings, during the construction period.
- 4.14. In general, carry out the Work while commercial septage deliveries are being made adjacent to the pump station building and coordinating any limited septage receiving station shutdown days required to complete the Work with RDN Operations. The septage receiving station may be shut down occasionally between 9:00am and 3:00pm with advance notice.
- 4.15. Prepare, submit to Worksafe BC for approval and work in coordination with RDN Operations to implement a BC OH&S Regulation 9.22 isolation procedure to allow the shutdown work to be safely completed, including supply of all blanks, blinds, pigs or other materials required. Such procedure shall be maintained for the beneficial use of the Contractor, the RDN and other agents of the RDN as per the terms of the Agreement.
- 4.16. Design, submit plan for review by the RDN's Engineer, implement and continuously operate throughout the Work, on an *uninterruptible basis*, a complete wastewater bypass system, in general conformance with the CRPS Bypass Strategy framework prepared by the RDN's Engineer. In addition to bypassing the full sewer flow, the system must address any potential leaks into the wet well from incompletely seated gates, pigs or other

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isolation means. Such bypass system shall be maintained and *site monitored 24 hours per day* for the beneficial use of the Contractor, the RDN and other agents of the RDN as per the terms of the Agreement.

- 4.17. Provide red-lined project Drawings indicating as-built details, for preparation of record drawings by the Engineer.

5. Included in the Work – Mechanical and Structural

In addition to the general items in section 4.0 above, the mechanical and structural Work scope shall generally consist of, but not specifically be limited to the following:

- 5.1. Clean out existing pump station facilities as required to perform the Work and dispose of any resulting effluent/solids in an environmentally responsible manner. *This includes applying to the City of Nanaimo in advance for a permit to use any water required from an adjacent hydrant.* The RDN has successfully used cold water pressure washing for this purpose in the past; however, the Contractor must be prepared to take any cleaning measures necessary to prepare for the Work.
- 5.2. Remove existing submersible pumps and securely store for later reinstallation.
- 5.3. Demolish/dispose of existing submersible pump guide rails, pump bases, piping and structural steel as indicated on the Drawings.
- 5.4. Supply and install new submersible pump mounting plates, including replacement of anchor bolts.
- 5.5. Install new cast iron pump bases (supply by RDN).
- 5.6. Install new submersible pump guide bar rails (supply by RDN).
- 5.7. Supply and install new stainless-steel piping and galvanized structural steel pipe supports. Note that all stainless-steel piping must be welded with full-purge GTAW and all welds must be pickled and passivated after welding, all as more fully described in the specifications.
- 5.8. Supply and install new pre-painted structural steel and aluminum checker-plate platforms.
- 5.9. Inspect and pressure test piping according to ASME B31.3 Category D fluid service, including shop pressure test of prefabricated piping spools and service test of complete and installed piping systems.
- 5.10. Tie-in new wet well discharge piping to existing force main valve station inlet piping adjacent to the wet well.
- 5.11. Tie-in 200-RWW-316L-006 bypass pipeline to existing piping outside of the wet well.
- 5.12. Reinstall existing submersible pumps.
- 5.13. Work in coordination with RDN Operations to remove the OH&S Regulation 9.22 isolation procedure and wastewater bypass system.

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- 5.14. Provide a pipefitter and welder at CRPS site, along with their tools, equipment and consumables, for three 8 hour days of post construction commissioning, to work with RDN operations and resolve any minor leaks or other issues that may arise.


6. Not Included in the Work – Mechanical and Structural

- 6.1. Supply of a group lockout procedure box for all electrical lockout required by the Work (by RDN).
- 6.2. Ventilation system work (by Others).
- 6.3. Supply of new cast iron submersible pump bases to CRPS site (by RDN).
- 6.4. Supply of new submersible pump guide bar rails to CRPS site (by RDN).
- 6.5. Supply of pumps to CRPS site (reuse existing).
- 6.6. Supply of new automatic air/electrically operated valves to CRPS site (by RDN).
- 6.7. Supply of all manual valves greater than 50 mm (2") in diameter to CRPS site (by RDN).

7. Included in the Work – Electrical and Instrumentation

In addition to the general items in section 4.0 above, the electrical and instrumentation Work scope shall generally consist of, but not specifically be limited to the following:

- 7.1. Refer to the Allnorth E&I Work Package 2003251-000-1604-001 (EWP) for further definition of the Work. For the E&I scope for this project, this Description of Work is supplemental to the main project work defined in the EWP.
- 7.2. Supply and install miscellaneous E&I small equipment and materials as outlined in the EWP.
- 7.3. Application and payment of fees for an electrical installation permit.
- 7.4. Perform and document quality assurance, inspection and testing on the completed Work in accordance with the Contractor's standards. Provide an Inspection and Test Plan with procedures prior to use for review and approval by the RDN. Testing shall include, but not be limited to:
 - 7.4.1. Point-to-point testing;
 - 7.4.2. Insulation resistance testing;
 - 7.4.3. Phasing;
 - 7.4.4. Torque testing.
- 7.5. Perform setup, calibration and function testing for all new instruments.
- 7.6. Install equipment in accordance with the manufacturer's recommendations and requirements. Where manuals are not provided with the Owner-supplied equipment, request copies from the RDN.

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- 7.7. Provide permanent engraved labels for all new electrical equipment, junction boxes, and new field instrumentation.
- 7.8. The Contractor shall pick up all Owner-supplied E/I materials (including control panels and MCCs) at the RDN's GNPCC facility (4800 McGuffie Rd, Nanaimo, BC V9T 5B3). RDN will load the materials at GNPCC. The Contractor shall unload at CRPS.
- 7.9. Electrical lockout of new equipment for safe work, where required.
- 7.10. Re-energizing the station, in cooperation with the RDN.
- 7.11. Provide an experienced electrician at the CRPS site, along with tools, equipment and consumables, for three 8 hour days of post construction commissioning, to work with RDN operations to support troubleshooting or any other issues that may arise.

8. .Not Included in the Work – Electrical and Instrumentation

- 8.1. Supply of a group lockout procedure box for all electrical lockout required by the Work (by RDN).
- 8.2. Purchase of new motor control centre MCC-300 (by RDN).
- 8.3. Purchase of control panels CP-100 and HMI-100 (by RDN).
- 8.4. PLC and HMI programming (to be performed by Others).
- 8.5. Extend concrete pad for new larger control panel (by RDN).
- 8.6. Relocate the Gate UPS to the lunch room (by RDN).
- 8.7. Ready system for Pump 5 only operation (by RDN).
- 8.8. Refer to the Allnorth EWP for further details on work performed by RDN/Others and miscellaneous materials to be supplied by the RDN

9. Installation of New Submersible Pump Bases

- 9.1. Where required, provide anchor bolts, fasteners, washers, and templates needed for installation of RDN-furnished equipment.
- 9.2. Size and locate anchor bolts in accordance with the Drawings and installation instructions.
- 9.3. Level mounting plate by means of level nuts as shown on the Drawings.
- 9.4. Adjust pump assemblies so units are properly aligned, plumb, and level with all interconnecting components.
- 9.5. After pump mounting plate, with pump base plate attached, has been set in position, aligned, and set to proper elevation, grout the space between the bottom of mounting plate and the concrete foundation with a poured, non-shrinking grout of the proper category, as specified in Section 03600, Grout and Miscellaneous Concrete Work. *Note: Existing concrete shall be wetted with clean water for 6 hours and blown with clean compressed air to remove standing water (concrete shall be “saturated, surface dry”) before application of cementitious grout.*

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10. Project Schedule

- 10.1. All Owner-supplied materials are expected to be available to the Contractor for pickup at the GNPCC on or before March 31, 2021.
- 10.2. Pre-shutdown work while the station is in normal operation, and where station operations are not impacted, can commence in accordance with the Contractor's proposed schedule.
- 10.3. Pre-shutdown work with station operation on Pump 5 only should be limited to 5 days and should be coordinated such that the end of the 5-day period coincides with the station outage and starting of the bypass pumping operation. Power to Lighting Panel 'A' must be re-established within 24 hours of powering down. The station cannot be left unattended until power is restored to Lighting Panel 'A'.
- 10.4. The system energization and control system commissioning period, once work is complete, is intended to take place over 3 continuous days, in accordance with the Contractor's proposed schedule.
- 10.5. Please refer to the RDN Schedule Overview provided in the RFT documents for general schedule information to be observed in the Contractor's detailed Work schedule.