Bulk Water Dispensing **Computrol C6000 Master Diespenser**	***Doc. No.***	***Rev.: 0***	***Date:***
	CFSI No. ***Project No:***	***Discipline: Mechanical***	

1. WORK INCLUDED

.1 General requirements:

.1 Supply and install a computerized Bulk Water Dispensing System consisting of (1) one pedestal mounted (Optional) controller capable of simultaneously managing two (2) pumps/hoses; complete with a network version user configurable fuel management software program. System shall be scaleable, capable of controlling, with optional modular additions, up to 32 hoses.

.2 The Management software shall be installed on the client's server. All computers connected to the Client's Local Area Network (LAN) shall be capable, if licensed, of manipulating the software. The number of simultaneous users shall be limited to 10

.3 The microprocessor controller at the pump island shall be wired back to a LAN connection in the Office (Shop)Building. This connection may be accomplished in wireless mode, if practical, by the use of a matched pair of 900 MHz radio modems supplied by Computrol. If a hard wired data cable is employed, it shall be Category 5, eight (8) conductor, 24 AWG cable with RJ-45 end connectors. Communication shall be vendor specific protocol using TCP/IP (Transmission Control Protocol/Internet Protocol) over 100Base TX Ethernet. Serial Cable can also be employed.

.4 The microprocessor shall be provided complete with a network interface port to enable communication over Ethernet.

.5 Provide all necessary hardware and software to meet the system's functional specifications.

.6 Prepare individual hardware layouts, interconnection drawings, and software configuration from project design data.

.7 Implement the detailed design for all system databases, logs, and management reports based on drawings and owner-supplied, configuration data.

.8 Provide and install all interconnecting wiring between the microprocessor and the dispensers; the microprocessor and the Client's LAN; the pedestal-mounted microprocessor and the 120/1/60 power supply service panel; and

.9 Provide complete manufacturer's specifications for all items supplied. Include vendor name of every item supplied.

.10 Provide supervisory specialists and technicians at the job site to assist in all phases of system installation, start up, and commissioning.

.11 Provide a comprehensive operator and technician training program as described herein.

.12 Provide as-built documentation, diagrams, and all other associated project operational documentation (such as technical manuals) on approved media, the sum total of which accurately represents the final system.

1.2 APPROVED MANUFACTURERS

.1 The following are the approved Bulk Water Management System manufacturers for this project:

.1 Computrol Fuel Systems Inc.

.2 Authorized Distributor Johlin Measurement Ltd. 1-888-933-8979

1.3 QUALITY ASSURANCE

.1 Responsibility: The supplier of the Bulk Water Management System shall be responsible for inspection and Quality Assurance (QA) for all materials and workmanship furnished.

.2 Component Testing: Maximum reliability shall be achieved through extensive use of high-quality, pre-tested components. Each and every component shall be individually tested by the manufacturer prior to shipment.

.3 Tools, Testing and Calibration Equipment: The Bulk Water Management System supplier shall provide all tools, testing, and calibration equipment necessary to ensure reliability and accuracy of the system.

.4 The Bulk Water Management System installing contractor shall be an authorized installing contractor for the manufacturer of the System.

.5 The Fleet Fuel Management System shall be supported completely by representative's local office

1.4 SUBMITTALS

.1 Submit shop drawings and product data in accordance with Section 01340 - Shop Drawings, Product Data, Samples and Mock-ups.

.2 Drawings:

.1 The system supplier shall submit engineered drawings, and bill of materials for approval.

.2 Two (2) copies of submittal drawings shall be provided.

.3 System Documentation:

.1 Include the following in submittal package:

.1 System configuration diagrams in simplified block format.

.2 Electrical drawings that show all system internal and external connection points, terminal block layouts, and terminal identification.

.3 Complete bill of materials.

1.5 WARRANTY

.1 Warranty shall cover all costs for parts, labor, associated travel, and expenses for a period of one year from the date of project substantial completion.

NOTE: Computrol covers replacement of parts and software only

.2 Hardware and software personnel supporting this warranty agreement shall provide on-site or off-site service in a timely manner after failure notification to the vendor. The maximum acceptable response time to provide this service at the site shall be 24 hours Monday through Friday, 48 hours on Saturday and Sunday.

.3 This warranty shall apply equally to both hardware and software.

PART 2 - PRODUCTS

2.1 BULK WATER DISPENSING SYSTEM WITH REMOTE CARD READER TERMINAL

.1 General System Information

.1 System will consist of Main Controller with 3 (or more) Keypad /Reader terminals

.2 Capable of handling all liquid products including potable, raw, and hot water.

.3 Capable of supporting up to 8 remote card reader/printer stations.

.4 Capable of installation as a standalone unit or in customizable master/slave configuration.

.2 Master/Slave Hardware Configuration

.1 Reader Terminals installed in outside temperatures will be housed in a rugged aluminum cabinet and be equipped with thermostats and heaters for reliable cold weather operation. A powder coated stainless steel door is secured by lock with custom key

.2 Remote Terminals will be connected to the Main Control Board and pump boards with a RS485 - Cat 5 cable or minimum 4 x 20AWG twisted, shielded stranded cable .

.3 Reader terminals will be capable of supporting multiple card technologies including non-insert touch, proximity cards and key tags, with simultaneous keypad entry

.4 Remote terminals will be equipped with Card Reader, Keypad, and Display. The Remote shall have an internal heater and be supplied with 120VAC

.5 Keypads will be large vandal-proof stainless steel keypads with audible beeper.

.6 Remote terminal will be site programmable for one or multiple hoses.

.7 Main Control Enclosures with Main Control Board and pump control boards shall be located in a nema box located in a convenient inside location for access and service. Nema box will be provided with 120 VAC.

.8 Main Control Board will be connected to a computer fro programming and 'daily' data maintenance. Thjs connection may be Ethernet, or Serial RS232.

.3 Pump & Hose Information

.1 Pulser Ratios shall be field programmable

.2 Shall use standard control wiring.

.3 Capable of managing 1 to 32 hoses.

.4 Capable of managing any mix of mechanical and electronic meters and valves.

.5 On /Off switch (Emergency)over ride provided manual switches mounted externally in a convenient location.

.4 Memory

.1 Capable of managing and validating up to 100,000 employees, vehicles, or customers using cards and/or keypads.

.2 Up to 10,000 transactions shall be capable of being securely stored in each Site Controller prior to download.

.3 All authorization and transaction files shall be securely stored in 32mb of flash memory

.5 Security

- **.1 Access to the System memory shall be protected with both administrator and operator level passwords.**
- **.2 Users shall be capable of being restricted to certain groups only for site specific and product purposes.**
- **.3 Programmable PIN Numbers shall be capable of being assigned to individual customers.**
- **.6 Each hose can be assigned a programmable per fill volume limit.**

.6 Communications

- **.1 2 Serial ports for RS-232 communications shall allow for connectivity to a local workstation, a wired or cellular modem, a satellite modem, an in-yard wireless radio set and to an on-site audit printer.**
- **.2 The Control Board shall include a 10/100 Mps Ethernet Port with on-board IP Address to permit connectivity to the client's LAN/WAN**

.7 User Configurable Via Management System Software

- **.1 Volume limit on each pump shall be field programmable.**
- **.2 Custom messages shall be capable of being sent to users notifying them of a service flag or other event.**
- **.3 System shall be capable of setting different display instruction sets for different groups of employees (Eg; ENTER CARD, ENTER VEHICLE #).**
- **.4 All display instructions to the customers shall be programmable by the Owner.**
- **.5 Three additional configurable miscellaneous entry fields shall be available.**
- **.6 All cards and authorization data shall be capable of being instantly downloaded from the Management Software database, whether installed on Server or local workstation.**

.7 Specifications

- **.1 Dimensions: H 26.4cm, W 46.5cm, D 39.4cm.**
- **.2 Weight: 15.4 kg**
- **.3 Electrical: 120/230 VAC 50-60 Hz Dedicated Circuit.**
- **.4 Operating Temperature: -40C to 50C**

.8 Display

- **.1 Customer interface shall include a bright, easy-to-read 40 character VFD display which can be programmed with concurrent bilingual instructions.**
- **.2 Customer inputs shall be acknowledged on the display.**

.9 Acceptable Material: Computrol C6000.

2.2 BULK WATER DISPENSING MANAGEMENT SYSTEM SOFTWARE

.1 Versatility

- **.1 Capable of managing an unlimited number of cardlock sites**
- **.2 Capable of creating custom filling instructions for multiple cardholder groups or accounts.**
- **.3 Capable of maintaining individual configuration files for each cardlock in the network.**
- **.4 File access secured by tiered password levels.**
- **.5 Shall provide for entry of non-cardlock transactions.**
- **.7 Shall be capable of downloading custom messages to any or all cardholders.**

.2 Advanced Reporting

- **.1 Shall be capable of generating a wide range of on demand and date range selectable reports.**
- **.2 Shall report detailed usage by Customer.**
- **.3 Listing by Product/Site for each CUSTOMER..**
- **.4 Tank Activity Reports shall detail daily inventory changes.**
- **.5 Large List screens shall provide instant access to dbase records.**
- **.7 Operator Lists shall summarize filling frequency of users.**
- **.8 Export module provides for easy creation of custom export files in either ASCII or Excel.**

.5 Cash Prepayment Option

- **.1 Utility has option of setting up Account/User as an envoice or prepaid customer.**
- **.2 Prepaid selection allows for a Dollar amount to be entered on the users setup screen.**
- **.3 Display shows Dollar amount left when accessed by user.**
- **.4 Terminal will block access if insufficient funds. Additional funds may be added to user by utility.**
- **.5 Reporting functions are the same as an invoice customer.**

.4 Communications Options

- **.1 Capable of supporting cabled or wireless link at local sites.**
- **.2 Redirector module shall support network link to sites.**
- **.3 Shall support telnet, cellular, or satellite links to sites.**
- **.4 Shall support internet link to remote sites.**
- **.5 Shall provide data transfers in ASCII or FTP mode.**
- **.6 Shall enable baud rates from 2400 to 115mbps to each site.**

.5 Operating System Requirements

.1 Windows Vista, XP, or 2000.

.2 Network version of software with unlimited user access.

.6 Acceptable Material: Computrol ProFuel 2.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence.

.2 Notify the owners' representative in writing of conditions detrimental to the proper and timely completion of the work.

.3 Do not begin work until all unsatisfactory conditions are resolved.

3.2 INSTALLATION (GENERAL)

.1 Install in accordance with manufacturer's instructions.

.2 Provide all miscellaneous devices, hardware, software, interconnections installation and programming required to ensure a complete operating system.

3.3 ELECTRICAL

.1 All electrical wiring shall conform with the requirements of the local electrical authority and the Canadian Electrical Code.

.2 All wiring shall be run in conduit. See drawings for details.

3.4 COMMISSIONING

.1 Commissioning the Bulk Water Dispensing System is a mandatory documented performance requirement. Commissioning shall include verification of proper

installation practices by the installing Contractor, system/sequence of operation verification, and software network operation verification. Documentation shall be presented upon final completion.

3.5 TESTING PROCEDURE

.1 Upon completion of the installation, the Contractor shall start-up the system and perform all necessary testing and run diagnostic tests to ensure proper operation. Make changes as required to ensure system functions properly.

3.6 ACCEPTANCE PROCEDURES

.1 **Request completion acceptance in writing.**

.2 **Advise Engineer of situations that prevent a complete testing of overall system performance.**

.3 **Prior to placing the system into operation for usage by the Owner, a compete demonstration of system operation shall be performed in the presence of the Engineer. This demonstration, having satisfactorily met previously approved submittals, shall with the Engineer's written acceptance, allow start-up of the system for operation by the Owner.**

.4 **After completion of installation and in co-operation with other involved contractors, make system adjustments to ensure that the operations are in accordance with the Owner's requirements.**

3.7 OPERATION AND MAINTENANCE MANUALS

.1 **Submit two (2) copies of an operation and maintenance manual as follows:**

.2 **Bind data in 216 mm x 279 mm (8½" x 11") vinyl hard-cover 3-ring loose-leaf binder.**

.3 **Enclose title sheet complete with project name, date, and list of contents.**

.4 **Operating data shall include detailed instructions describing all components of the system, and all functions of the system, and related to the actual controlled equipment installed in the field. The manuals shall describe all functions which may be performed with details of adjustments which may be made to all devices and components.**

.5 **Maintenance instructions shall include instructions and schedules for inspection, cleaning, calibration, etc.**

.6 **Provide complete and approved as-built shop drawings detailing equipment, installation details, etc.**

3.8 TRAINING

.1 Provide practical instruction for personnel designated by the Owner. Such instruction to emphasize operation and operational maintenance of the entire system and must be carried out on site.

.2 Phase 1:

.1 This session of training is to introduce the concept of Fleet Fuel Management methods and equipment. It is intended that this session lay the ground work for the following two sessions. The topics to be covered are as follows:

.1 Introduction to Fleet Fuel Management System.
.2 Identification of Components.
.3 Review of shop drawings for the project.
.4 Detailed discussion of system operation.
.5 Walk through of system.

.2 Time period shall be 8 hours (1 day) and shall commence when the installation is 80% complete. This phase of training shall not require the systems to be fully functional, but is intended to give the attendees a familiarity with the equipment being installed and a solid ground work for Phase 2.

.3 Phase 2:

.1 This session of training is to acquaint the operator with the actual operation of the installed equipment. It shall concentrate on the operation of the card reader and the Fleet Fuel Management System software.

.2 Provide adequate time for each trainee in order that each trainee gains a sufficient level of expertise to control the Fleet Fuel Management System, including software.

.3 Time period shall be 8 hours (1 day) and shall commence when the installation is 100% complete. This phase of training shall require the systems to be fully functional, and is intended to give the attendees a familiarity with the day to day operations of the system.

.4 Phase 3:

.1 This session of training shall consist of a complete review of the Fleet Fuel Management System as installed. Ensure that at the conclusion of this training, the Owner's designated staff are competent to carry out the monitoring and control of the Fleet Fuel Management System.

.2 Time period shall be 4 hours (½ day) and shall commence directly at completion of Phase 2 training. This phase of the training is intended to highlight any deficiencies in the operators understanding of the Fleet Fuel Management System and identify if further training shall be required.

END OF SECTION