Agenda of April 24, 2013
Item No. 13-0273
Proposed Contract No. PC-773C
Time: 1,095 Calendar Days
Amount: $4,237,885.40

TO: The Honorable
Board of Water Commissioners
City of Detroit, Michigan

FROM: Sue F. McCormick Director
Water and Sewerage Department

DATE: April 24, 2013

RE: **Proposed DWSD Contract No. PC-773C**
"Consolidated Process Control System Upgrades for Treated Water System"
Contractor: Emerson Process Management

I. Motion:

Upon recommendation of Darryl Latimer, Deputy Director, the Board of Water Commissioners authorizes the Director **to enter into Contract No. PC-773C, "Consolidated Process Control System Upgrades for Treated Water System", with Emerson Process Management (Contractor), at a cost not-to-exceed $4,237,885.40 for a duration of 1,095 calendar days,** and also authorizes the Director to take such other action as may be necessary to accomplish the intent of this vote.

II. Justification:

The purpose of Contract No. PC-773C is to upgrade the obsolescent technology to the Detroit Water and Sewerage Department's (DWSD) process control systems at the Systems Control Center (SCC), seventeen (17) Treated Water Transmission System (TWTS) pumping stations, three (3) Water Treatment Plant High Lift System, and Water Works Park Low Lift System. Contract No. PC-713 was executed in November 1999, and the Ovation Control System was delivered to DWSD during the third quarter of the year 2000. The system was delivered with the most current technology available at that time. It was based on Windows NT and included Ovation version 2.1 utilizing Fiber Distributed Data Interface (FDDI) as the process data network. Since the PC-713 control system replacement, Microsoft Windows and Ovation hardware and software have continued to evolve and improve. The latest version of Ovation offers system enhancements that would further advance DWSD's efforts to improve operational efficiencies in delivering high-quality water and wastewater services. Due to improvements in technology, spare parts are no longer available for the current outdated Ovation Control System hardware and software.

In addition, other DWSD contracts installed standalone systems that are not connected to the Ovation Control System. Therefore, in order to meet operational requirements, these systems need to be integrated into the Ovation Control System to provide monitoring, data historization, data acquisition and reporting capabilities.

III. Project Tasks/Objectives:

The project tasks are described as follows:

A. Upgrade DWSD's existing Ovation Control Systems to the latest version available.

B. Replace Windows NT and other obsolescent and unsupported software and hardware with current technology for which support is available.

C. Resolve security concerns associated with obsolete technology.

D. Improve reliability by replacing aging hardware and software.

E. Improve operational efficiencies through system enhancements available in current generation Ovation software and hardware.

F. Maintain and improve all existing functionality and reliability.

G. Test new systems and coordinate implementation to minimize adverse impacts to DWSD operations.

H. Provide training and documentation that will facilitate DWSD's use of the new technology.

I. Provide support to interface and incorporate into Ovation Control System existing standalone control systems to improve facility control capabilities, allow uniform monitoring and control throughout all of DWSD's facilities, and enhance the effectiveness of the Ovation Control System.

IV. Project Management Status:

A.	Start Work Date:	To be established contingent upon BOWC Approval
B.	Final Completion Date:	1,095 days after the Start Work Date.
C.	Total Contract Cost (Not-To-Exceed):	$4,237,885.40

This recommendation was considered by the Board of Water Commissioners and action taken as noted below.

BOARD OF WATER COMMISSIONERS:

ACTION: _____ DATE: _____

BY: _____
Sue F. McCormick, Director

BACKGROUND

DWSD Contract No. PC-713, "Department Wide Instrumentation, Control and Computer Systems Program II," provided a real-time Distributed Monitoring and Control System (DMCS) at the Detroit Water and Sewerage Department's (DWSD) Wastewater Treatment Plant (WWTP) and a Supervisory Control and Data Acquisition (SCADA) system to monitor and control DWSD's Treated Water Transmission System (TWTS) and Wastewater Collection System (WWCS) from a Systems Control Center (SCC) located at DWSD's Central Services Facility (CSF). This replaced an existing Quindar control system at the SCC, and an existing Control Data System at the WWTP. PC-713 also added a number of control workstations, and a large number of sensors and control devices to DWSD processes to enable better monitoring, control and coordination of DWSD facilities and processes. The primary purpose of PC-713 was to provide uniform monitoring and control throughout all of DWSD's facilities with a standardized approach to accomplish it.

The current Ovation Control System is the backbone that provides uniform monitoring, control, data historization, acquisition and analysis. The control system is DWSD's only means to distribute water to our customers. PC-713 was executed in November 1999, and the Ovation Control System was delivered to DWSD during the third quarter of the year 2000. This current Ovation Control System is 14 years old. Since the purchase of this control system there have been five (5) releases of Microsoft Windows software and four (4) major releases of the Ovation Software application. The current hardware is not available for purchase as spare parts. The control system operates with constant maintenance. The Ovation System will not function properly without these upgrades. This upgrade will ensure the control systems reliability, ease and lower the cost of maintenance.

The Ovation Control System was installed on and dependent on many third party components. These third party components include operating systems, computer workstations and network switches. The use of third party components allows substantial savings in the cost of the modern day control system and their use is universally adopted by all major control system vendors. The difficulty for the end user is that many of these components have a much shorter lifecycle than the rest of the control system components. Operating systems, computer workstations and network switches often have life cycles in the range of 5 to 7 years.

PC-713 installed the version Ovation 2.1.7 Control System. This version of the Ovation Software runs on Windows NT Operating System which is no longer supported by Microsoft. The Microsoft Support ended in June 2004. Computers that can run the Windows NT Operating System are no longer commercially available.

The Ovation network equipment consists of Cisco FDDI Concentrators. The Cisco FDDI Concentrators have reached the end of sales date and is no longer available. Cisco ended support of this equipment in August 2006.

Most of the Ovation workstations are past five years old which is considered the normal useful life for such equipment. Many of the workstations are installed in a harsh environment. The workstation failure rate should be expected to accelerate as the equipment is continued to be in service beyond its useful life.

PC-773C tasks are described in the following table.

Bid Item	Description	Price
A1	Systems Control Center (SCC) Ovation Upgrade	$1,246,621
A2	Water Booster Station Ovation Upgrade - 17 pump stations (Adams Road, Franklin, Imlay, Joy Road, Newburgh, North Service Center, Rochester, West Service Center, Ypsilanti, Eastside, Electric Avenue, Ford Road, Haggerty, Michigan Avenue, Northwest, Orion, West Chicago)	$1,653,229
A3	Water Treatment Plant (High Lift System) Ovation Upgrade – 3 High Lift Stations (Lake Huron, Northeast, Water Works Park)	$337,982
A4	Water Works Park (Low Lift System) Ovation Upgrade	$233,288
A5	SCADAPACK Hardware Upgrade at 19 Pressure Monitoring Sites	$60,958
A6	Control System Console	$40,000
A7	Control System Graphics Programming	$37,500
A8	OSI PI Reporting	$75,000
A9	VFD Diagnostic Integration	$350,000
A10	Ovation Security Center Hardware/ Software	$204,954
A11	Ovation Operator and Engineer Training	$46,400
B1	Contingency	$175,000
	Sub Total	**$4,460,932**
	5% Discount	$223,046.60
	Total Contract Cost	**$4,237,885.40**

This is a budgeted project in CIP.

Procurement Method

PC-773C was procured as a sole source contract due to the proprietary nature of the hardware and software belonging to Emerson Process Management, and their experience under PC-713 with DWSD's systems.

DWSD and the Law Department held several negotiation meetings with Emerson Process Management beginning June 15, 2012 to finalize the cost and the terms and conditions of the contract. Negotiations pertaining to the terms and conditions were agreed upon and concluded on April 9, 2013.

The final negotiated price is $4,237,885.40 which includes a 5% discount ($223,046.60) offered by Emerson Process Management. The Engineer's estimate on this project was $5,669,225.75.