

CONSULTANT WORK ORDER

Date:	05/18/2026
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1. PROJECT INFORMATION:

Project Title:	SCADA and PLC Standards and Policies	
City Project Number:	26-0030-UT	
City Plan Set Number:	N/A	
Consultant Project Number:	0992-0275	

2. SCOPE OF SERVICES:

The City of Clearwater is preparing to replace their Citect SCADA system with VTScada and wishes to prepare SCADA and PLC standards and policies prior to the replacement to mitigate variations and improve the efficiency of the project.

SCADA systems are the central control elements of the water, wastewater and lift stations systems. Developing standards to document the necessary actions and results of implementing and maintaining the SCADA system will help the City staff maintain continuity through various projects, engineers, and integrators. These standards can be included in Request for Proposals to ensure they are followed, thus becoming part of the project contract language.

The standards are organized into three groups—General Standards, SCADA Standards, and PLC Standards based on the recommendations in the SCADA Master Plan and also in support of the City’s strategic goals, particularly Strategic Goal 1.2 of High Performing Government, which emphasizes on maintaining public infrastructure, mobility systems, natural lands, environmental resources, and historic features through systematic management to ensure sustainability and functionality of City assets.

Areas defined will include the following:

A. General Standards

1. Change Management
2. Tagging Standards according to ISA standard 5.1
3. Labeling terminology
4. Check-out Requirements

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5. Required Documentation
6. Instrumentation List (a template spreadsheet will be developed)
7. Report requirements (will provide a brief description of Hach WIMS)
8. Network hardware/architecture/configuration

B. SCADA Standards

1. Server/Client Architecture
2. Screen Layout
3. Development Standards
4. Alarming and call out (e.g. grouping, types)
5. Historical Logging & Trending
6. Cybersecurity - standard will adhere to the ISA/IEC 62443 standards

C. PLC Standards

1. Manufacturer/Hardware Family
2. I/O Modules
3. Component Requirements
4. Operator Interface
5. Programming Standards

Standards will be developed in written form for easy inclusion into design packages and RFP documents. These standards will assist the City in both present and future SCADA system development, ensuring that programs and applications maintain a consistent look, operation and functionality which will minimize troubleshooting and maintenance.

I. PROJECT MANAGEMENT:

Task 1.1: Project Management

1. Provide project management for the project. This will include project setup and coordination as well as QA/QC for project deliverables.
2. Monthly invoicing will include a status report, summarizing the work completed during the invoice period, a schedule update and projection of upcoming spending.
3. Task includes monthly invoicing and progress reports over the duration of the design and construction phases. The progress reports will include details of tasks completed during the respective invoice periods.
4. Task includes coordination with the City and internal design team.
Documentation will include emails and phone conversation summaries.

5. Task includes scheduling, developing meeting agendas, and meeting minutes. Project meetings will include a maximum of three of Consultant's staff unless approved by the City Project Manager. The following is a list of meetings anticipated for this scope of services:
 - a. Consultant internal kickoff meeting
 - b. Kickoff meeting with City

II. WORKSHOPS:

Task 2.1: SCADA Standards Workshops

1. Preparation of workshop, creating of materials and agenda.
2. Hold two onsite SCADA workshops with the City's stakeholders (operators, SCADA technicians, etc.). Topics of discussion include:
 - a. Migration of Citect to VTScada
 - b. Graphics resolution
 - c. Screen layouts
 - d. Screen navigation
 - e. Communication protocols
 - f. Local operator interfaces
 - g. Screen widgets
 - h. Static and dynamic text
 - i. Screen faceplates widgets
 - j. Tag types for pumps, motors, instrumentation, and other process equipment.
 - k. Security and user levels
 - l. Historical trend database
 - m. SCADA tag structure
 - n. SCADA tag descriptions
 - o. Reports
 - p. Alarm callout
 - q. Documentation control
 - r. Programming version
 - s. Change tracking procedures

Task 2.2: PLC Standards Workshop

Hold one onsite PLC workshop with the City's stakeholders (operators, SCADA technicians, etc.). Topics of discussion include:

1. PLC CPU firmware versions
2. Programming languages
3. Discuss development of Allen-Bradley (Rockwell) User Defined Data Types (UDT)

Task 2.3: Final Workshop

Hold one final onsite workshop with the City's stakeholders (operators, SCADA technicians, etc.) to present the final standards.

III. STANDARDS DEVELOPMENT:

Task 3.1: General Standards Development:

1. Change Management
 - a. Document Control
 - b. Program Version Control
 - c. System Change Tracking
2. Tagging Standards
 - a. Naming scheme
 - b. Historization requirements
3. Check-out Requirements
 - a. Factory Acceptance Testing
 - b. Operational Readiness Testing
 - c. Required Documentation
4. Instrumentation List template
5. Report requirements

Task 3.2: SCADA standards development:

1. Server/Client Architecture
2. Screen Layout
 - a. Location of Standard Objects
 - b. Alarm Banner
 - c. Login
 - d. Key Performance Indicators (KPIs)
3. Navigation
4. Process Flow Direction
5. Colors

6. Development Standards
 - a. Development of and Use of Objects
 - b. Use of Scripting
7. Alarming
 - a. Alarms will be grouped by type, with the ability to filter visibility for operators. Example groups include Critical, Maintenance, Warnings, and Communication.
 - b. Maintenance alarms including floats not operating as expected or a tripped pump.
 - c. Alarm warnings could including HOA statuses.
 - d. Communication alarms could include loss of communication with a PLC or remote site.
 - e. Plant alarms would include additional groups due to process differences.
 - f. Predefined notification rules should apply for both regular and after-hours notifications. For example, after-hours alerts should be triggered only for Critical or Communication alarms, while Maintenance and Warning alarms should not generate after-hours notifications.
8. Historical Logging & Trending
9. Cybersecurity - standard will adhere to the ISA/IEC 62443 standards

Task 3.3: PLC standards development:

1. Manufacturer/Hardware Family
2. I/O Modules
3. Development of and Use of Blocks (AOIs)
4. User Defined Tag Types (UDTs)
5. Passwords and Security
6. Use of PLC Programming Languages
7. Analog Scaling
8. Timers and Counters
9. Program Organization

3. PROJECT GOALS:

The main project goal is to provide a standards document for SCADA and PLC programming development.

Deliverables for the project will include:

- Meeting minutes
- Workshop minutes
- Progress Reports

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- Example Widgets. Approximately twenty (20).
- Written procedures and forms for:
 - Tagging Scheme
 - Alarm management using ISA 18.2
 - SCADA Standards in Task 3.2
 - VTScada HMI screens which include generic example screens for Water and Wastewater.
 - Change Management Record Form
 - Backup and restore procedures for the VTScada software (Changesets, etc)
 - Programming documentation for VTScada Widgets, UDT and AOIs.
Documentation to be in the form of procedures or report format (not specification format).
 - Creating new UDTs
- Code blocks for Allen Bradley AOI & UDTs. Approximately fourteen (14) UDTs.

All deliverables will comply with City requirements.

4. FEES:

This price includes all labor and expenses anticipated to be incurred by Consultant for the completion of these tasks in accordance with Professional Services Method "A" – Hourly Rate Task, for a fee not to exceed Two Hundred Sixty-Six Thousand, Seven Hundred Ninety-Six dollars (\$266,796).

5. SCHEDULE:

Project schedule will commence upon receipt of written authorization from the City. The design phase of the project is to be completed in approximately **245 calendar days** from issuance of notice-to-proceed. The project deliverables are to be phased as follows with each phase being scheduled days after the previous item in the list:

Kickoff Meeting	30 calendar days
Data Gathering and Research	30 calendar days
SCADA Workshop 1 & 2	15 calendar days
PLC Standards Workshop	30 calendar days
Standards Development	100 calendar days
Final Demonstration Workshop	15 calendar days
Deliver Final Documents	25 calendar days

6. STAFF ASSIGNMENT:

McKim & Creed:

Project Manager: Eric Brown, EI | ebrown@mckimcreed.com

Asst. Project Manager: Jack Carter | jcarter@mckimcreed.com

Project Engineer III: Flavio Velecela | fvelecela@mckimcreed.com

Programmer II: Dionte Hill | dhill@mckimcreed.com

Programmer II: Jimena Ibarra | ibarra@mckimcreed.com

Programmer II: Sam Brown | sbrown@mckimcreed.com

City of Clearwater:

Public Utilities Director: Michael Flanigan | 727-444-8784 | Michael.Flanigan@MyClearwater.com

PU Project Manager: Alyana Talaroc, EI | 727-294-1351 | Alyana.Talaroc@MyClearwater.com

PU Engineering Manager: Kaylynn Price | 727-444-8252 | Kaylynn.Price@MyClearwater.com

PU Infrastructure and Maintenance Manager: Wayne LaFleur | 727-3009-7386 | Wayne.Lafleur@MyClearwater.com

SCADA Specialist: Aaron Cornwell | 727-589-0902 | Aaron.Cornwell@MyClearwater.com

SCADA Specialist: Charles McAbee | 727-224-7736 | Charles.mcabee@MyClearwater.com

7. CORRESPONDENCE/REPORTING PROCEDURES:

Consultant's project correspondence shall be directed to:

Eric Brown

All City project correspondence shall be directed to:

Alyana Talaroc, EI with copies to Kaylynn Price, and Michael Flanigan.

8. INVOICING/FUNDING PROCEDURES:

City Invoicing Code: _____

For work performed, invoices shall be submitted monthly to:

CITY OF CLEARWATER, PUBLIC UTILITIES DEPARTMENT

ATTENTION: PU ENGINEERING

1650 N. ARCTURAS AVE

BUILDING C

CLEARWATER, FLORIDA 33765-1945

PUEngineering@myclearwater.com

Contingency services will be billed as incurred only after written authorization provided by the City to proceed with those services.

9. INVOICING PROCEDURES:

At a minimum, in addition to the invoice amount(s) the following information shall be provided on all invoices submitted on the Work Order:

1. Purchase Order, Project and Invoice Numbers and Contract Amount.
2. The time period (begin and end date) covered by the invoice.
3. A short narrative summary of activities completed in the time period.
4. Contract billing method – Lump Sum or Hourly Rate.
5. If Lump Sum, the percent completion, amount due, previous amount earned and total earned to date for all tasks (direct costs, if any, shall be included in lump sum amount).
6. If Hourly Rate, hours, hourly rates, names of individuals being billed, amount due, previous amount earned, the percent completion, total earned to date for each task and other direct costs (receipts will be required for any single item with a cost of \$50 or greater or cumulative monthly expenses greater than \$100).
7. If the Work Order is funded by multiple funding codes, an itemization of tasks and invoice amounts by funding code.

10. CONSIDERATIONS:

Consultant acknowledges the following:

1. The Consultant named above is required to comply with Section 119.0701, Florida Statutes, where applicable.
2. All City directives shall be provided by the City Project Manager.
3. "Alternate equals" shall not be approved until City Project Manager agrees.
4. All submittals must be accompanied by evidence each has been internally checked for QA/QC before providing to City.
5. Consultants/Contractors are not permitted to use City-owned equipment (i.e., sampling equipment, etc.).
6. Documents posted on City website must be ADA accessible.

11. ADDITIONAL CONSIDERATIONS:

All work orders should include considerations for the following:

1. Sea Level Rise and Flood Resilience, as applicable.
2. Submittal of a Critical Path Method (CPM) Schedule(s).
3. Submittal of a Project Catalog with the following items, as appropriate:
 - a. Data requests, assumptions, critical correspondence, meeting agenda, sign-in sheets, meeting minutes, document comment-response log(s), technical memorandum/reports, addenda, progress reports, regulatory correspondence, and other project-related documents.

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- b. If construction project, also include design plans, conformed plans, change orders, field orders, RFIs, work change directives, addenda, progress reports, shop drawing and progress submittals, as-builts, record drawings, and other project-related documents such as O&M manuals and warranty information.
- c. At the conclusion of the project, ENGINEER will combine this information into Project Catalog and submit it to the City for review and comment.
- 4. Arc Flash labeling requirements:
 - a. All electrical designs and construction shall adhere to NFPA 70 E "Standard for Electrical Safety in the Workplace".
 - b. Updated calculations of Fault and Arc Flash, and provisions for new or updated Arc Flash equipment labeling shall be included in the contract documents.

12. SPECIAL CONSIDERATIONS:

- 1. This proposal is valid for 60 days from the date of issue.
- 2. McKim & Creed will prioritize activities and sections based on feedback from the City.
- 3. The City will ensure the necessary staff are available and present for workshops and meetings.
- 4. The City will provide McKim and Creed access to their SCADA HMI and PLC systems while McKim and Creed is on site.
- 5. The City will review all SCADA Standards documents and submissions in a timely manner.
- 6. This scope of services is limited to the development of the tools to implement VTScada and PLC programming applications as mentioned above.

13. SIGNATURES:

PREPARED BY:

APPROVED BY:

Eric Brown
Florida E&I Manager
McKim & Creed, Inc
06/24/2026

Michael Flanigan
Public Utilities Director
City of Clearwater

Date

Date

ATTACHMENT "A"**CONSULTANT WORK ORDER – PROJECT FEES TABLE****CONSULTANT WORK ORDER**

SCADA Standards Development

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PROJECT FEES TABLE

Task	Description	Subconsultant Services	Labor	Total
1.0	Project Management			
1.1	Project Management Plan	\$0	\$15,598	\$15,598
Project Management Total:				\$15,598
2.0	Workshops			
2.1	SCADA Standards Workshops 1 & 2	\$0	\$15,996	\$15,996
2.2	PLC Standards Workshop	\$0	\$5,072	\$5,072
2.3	Final Workshop	\$0	\$5,072	\$5,072
Workshops Total:				\$26,140
3.0	Standards Development			
3.1	General Standards	\$0	\$36,428	\$36,428
3.2	SCADA Standards	\$0	\$93,360	\$93,360
3.3	PLC Standards	\$0	\$71,016	\$71,016
Standards Development Total:				\$200,804
SUBTOTAL, LABOR, AND SUB-CONTRACTORS:				\$242,542
Owner's Contingency:				\$24,254
GRAND TOTAL:				\$266,796

ATTACHMENT “B”

CONSULTANT WORK ORDER – CITY DELIVERABLES

CONSULTANT WORK ORDER

SCADA Standards Development

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CONSULTANT WORK ORDER CITY DELIVERABLES

1. FORMAT:

The documents shall be compiled utilizing the following methods:

1. Microsoft Word
2. Microsoft Excel
3. PDF

2. DELIVERABLES:

The documents shall be electronically produced. Upon completion the Consultant shall deliver all files in digital format. The VTScada HMI Application deliverable will be in the form of a VTScada changeset (backup) from the software.

All electronic files must be delivered upon completion of project or with final submittal to City of Clearwater.

CITY OF CLEARWATER, FLORIDA

Countersigned:

Bruce Rector
Mayor

Date: _____

Approved as to form:

Matthew Mytych
Sr. Assistant City Attorney

Date: _____

Attest:

Print Name: _____

Secretary

By: _____
Jennifer Poirrier
City Manager

Date: _____

Attest:

Rosemarie Call
City Clerk

Date: _____

McKim & Creed

By: _____

Print Name: Eric Brown

Title: Florida E&I Manager

Date: 06/24/2026