

TASK ORDER NO. 11151.a

Pursuant to the

MASTER AGREEMENT FOR PROFESSIONAL SERVICES BETWEEN

**CITY OF MERIDIAN (OWNER) AND JACOBS ENGINEERING GROUP INC.
(SYSTEMS PROGRAMMER)**

This Task Order is made this 12th Day of February, 2025 and entered into by and between the City of Meridian, a municipal corporation organized under the laws of the State of Idaho, hereinafter referred to as “Owner”, and accepted by Jacobs Engineering Group Inc., hereinafter referred to as “Systems Programmer” pursuant to the mutual promises, covenant and conditions contained in the Master Agreement (Category 7B) between the above-mentioned parties dated October 1, 2024. The Project Name for this Task Order is as follows:

WRRF MECHANICAL BUILDING PLC (SMCB1) PROGRAMMING UPDATE

PROJECT UNDERSTANDING-SUMMARY

The owner’s SCADA master plan identified several PLCs that are not up-to-date with the owner’s current programming standards. Due to this, the owner has prioritized a few PLCs to be updated. The following Scope of Work describes the services that will be provided by the System Programmer to complete the PLC and Wonderware programming upgrade to use the current SCADA Standards.

- Integration Services for updating the existing Mechanical Building PLC include updating the following:
 - Programming for (1) existing Programmable Logic Controllers (PLCs), associated Wonderware HMI objects:
 - Provision of import file for new alarm tags to be imported by Owner into TopView alarm notification software.

Work Approach

System Programmer will complete the work in a phased approach.

Phase 1 Software Planning: will include meetings with the Owner, to coordinate project schedule, loop descriptions, PLC code development, HMI graphics development, preliminary IO checkout, testing procedures, and testing coordination.

Phase 2 Software Development: will include PLC, HMI and Wonderware development, unwitnessed software test, and witnessed software factory acceptance test.

Phase 3 Software Implementation: will include onsite loop testing, process control strategy/functional testing, closed loop testing, and system acceptance test. This phase will also include training and final tuning.

SCOPE OF WORK

Task 1 - Project Management

The purpose of this task is to manage, coordinate and lead System Programmer activities and perform administration of the project control system software execution and control system software quality reviews. System Programmer will provide the resources necessary for project initiation and management throughout the project.

Activities include contract administration, project accounting, Health & Safety Plan preparation, project documentation, monitoring progress, change management, periodic invoicing, and closeout and archiving. The estimated level of effort associated with these functions is based on a 26-week duration from Owner-issued notice-to-proceed to completion for the tasks described herein.

Change Management

Request for Change (RFC): Changes made by the Owner that impact this scope of work and or schedule will be submitted as an RFC by the Owner to the System Programmer prior to implementing the change. The System Programmer shall review the RFC and submit a response including cost and schedule impacts. The System Programmer may begin working on the change once terms are agreed upon and authorization is received from the Owner.

System Programmer Change Proposal (CP): If the System Programmer wants to propose an alternate solution to the Conformed Contract Drawings and Specifications or to suggest a change to the Contract, it will be done using a CP form. The System Programmer will provide information describing the change and the cost or credit being proposed and the schedule impacts. If a CP is accepted or partially accepted by the Owner, the Owner will issue an RFC authorizing the change.

Request for Information (RFI): The System Programmer may request interpretation or clarification of the existing PLC program throughout the project. Either the Owner or System Programmer may request additional information from one of the other parties. The request section of the form will be filled out by the party initiating the request. It will be sent to the Owner or System Programmer. The written response will be returned to the Owner who will distribute copies. If the response to an RFI causes a change to this Contract, the Owner shall be notified. If the Systems Programmer and Owner concur, Owner will issue an RFC to the System Programmer.

Task 1.1 - Kickoff Meeting

- System Programmer Kickoff Meeting
 - Schedule and lead one 1-hour workshop at the project site.
 - Review procedures for exchanging information with Owner, including:
 - I/O Interface Summaries
 - Test Plans
 - Loop Descriptions
 - Training Plans
 - Review Programming Schedule and determine update frequency.

Deliverables:

- Completed RFC responses.
- Completed CP forms.
- Completed RFI forms.
- Monthly invoices and progress reports.
- Kickoff Meeting Minutes.

Task 2 - Software Planning (Phase 1)

The purpose of this task is to coordinate planning activities with the Owner to define roles and responsibilities. Workshops are included to allow System Programmer and Owner to review the loop descriptions, and to further define the details of the loop descriptions prior to beginning software development.

Task 2.1 - Database setup

- Populate Commissioning Database with PLC I/O tags, loop descriptions, and AOI assignments.

Task 2.2 - Loop Description Development

- Develop preliminary loop descriptions based on existing PLC code.
- Lead one 4-hour Software Function Definition Workshop at the project site with Owner staff to review the details of the preliminary loop descriptions necessary for programming all equipment in the Mechanical Building (SMCB1) PLC.
- Preliminary Loop Descriptions to be approved by the Owner. Once Preliminary Loop Descriptions are developed, the System Programmer will assess and submit Change Proposal forms if needed prior to developing preliminary code.

- All Loop Description document edits to be completed by the System Programmer and approved by the Owner.

Task 2.3 - I/O List Development

- System Programmer to develop IO lists for one Mechanical Building (SMCB1) PLC.

Task 2.4 - Existing IO Test Phase with Existing Program

- Test each instrument loop as an integrated system from the field instrument to the PLC with existing PLC program.
- Issues discovered during this test phase will be added to a list and addressed by owner before the Software Implementation phase.

Deliverables:

- Meeting minutes from System Programmer Kickoff meeting.
- Function definition workshop notes.
- Revised loop descriptions.
- IO list.
- Existing IO Test Phase with Existing Program Test Results

Task 3 - Software Development (Phase 2).

The purpose of this task is to complete the programming of the plant control system software, and to demonstrate the software functions to the Owner. Refer to enclosed Table 2, Subsystem Details, for a description of the systems included in this scope of work.

Task 3.1 - PLC and Wonderware Programming

PLC, HMI, and Wonderware programming based on the results of the Software Function Definition Workshop.

- Up to 10 process graphics.
- Up to 5 custom control pop-up graphics.
- Modify Navigation graphic and site plan graphic in Wonderware.
- Maintain electronic copies of Loop Descriptions and throughout the development and implementation phases of the project.

Task 3.2 - Draft HMI and Wonderware Graphics Review

- Provide Wonderware and HMI screenshots of major process graphics and custom control popups digitally for review by Owner staff. Lead one 2-hour workshop within one week of providing the screenshots for review to collect Owner feedback. Owner staff will provide marked-up copies of the graphics identifying the desired changes within 1 week from completion of the graphics review workshop.

Task 3.3 - Unwitnessed Software Demonstration

- Unwitnessed software demonstration test to confirm that the PLC and Wonderware programs are ready for the witnessed software demonstration test and that they meet the functional requirements of the project.

Task 3.4 - Witnessed Software Demonstration

- Witnessed software demonstration test is a repeat of the unwitnessed software demonstration test but witnessed by Owner to verify functionality of PLC and Wonderware programs meet the project requirements.

Deliverables:

- Draft Wonderware Graphics Review Meeting Notes
- Up to 10 preliminary process graphics.
- Up to 5 preliminary custom control pop-up graphics.
- Witnessed software demonstration notes.

Task 4 - Software Implementation (Phase 3)

The purpose of this task is to install the control system software additions, provide required field testing, provide Owner training, and to complete the system startup and tuning.

Mechanical Building PLC Software Implementation

System Programmer will provide the following for software implementation tasks:

- PLC software installation and configuration
- Wonderware software installation and configuration
- TopView Alarm Import file based on final loop descriptions for Owner import into system (up to 400 alarms).
- Testing
 - Component Test Phase
 - Test each instrument loop as an integrated system from the field instrument to the HMI. I/O counts based on preliminary IO quantity developed during scope development for the project. See Table 2 for I/O counts.
 - 2 people, 40 hours each for the equipment controlled by Mechanical Building (SMCB1) PLC.
 - Operational Test Phase
 - Perform System Acceptance Test (SAT):
 - Each component of the system operates correctly with all other components of the system.

- Hardwired and software equipment interlocks perform correctly.
- Process loop descriptions perform correctly.
- Analog control loops operate in a stable manner.
- PLC application program performs monitoring and control functions correctly.
- Operator interface graphics represent the monitoring and control functions correctly.
- 2 people, 48 hours each for the equipment controlled by Mechanical Building (SMCB1) PLC.
- Operational Test Phase is considered complete when the software performs the functions as described in the loop descriptions modified in Task 2.
- Training
 - Live control room training using Wonderware and functional PLCs, after Operational Test Phase. One 2-hour session.

Deliverables:

- Software test documentation forms for signature by an Owner representative authorized to witness and approve successful test completion.
 - Component test results
 - System test results
 - Final electronic copy of IO list
 - Final System Platform Galaxy Backup
 - Final PLC programs.
 - Final TopView Import.
 - Final Updated Loop Description Document with screenshots.

Assumptions:

While preparing our scope of services and fee schedule, we have made the following assumptions:

- Any software licenses required for this project are supplied by others and are not included in this scope of work.
- PLC, HMI, and Wonderware programming for this project will be done remotely from the site, primarily in the Jacobs Boise office.
- PLC I/O to be programmed and tested is based on the preliminary IO quantity developed during scope development for the project. Owner changes to the I/O list shall be issued as an RFC. System Programmer shall have no less than 30

working days prior to loop testing to implement each change or as agreed to in the RFC response.

- System Programmer to use the Owner standard Allen Bradley ControlLogix version 36 and Wonderware ArchestrA system platform version 2023 R2.
- Upgrading PLC or HMI firmware is not included in this scope.
- PanelView and/or local HMI programming not included in this scope.
- Owner will provide PLC programs within 2 weeks of Notice to Proceed.
- Owner will provide CAB backup of Wonderware within 2 weeks of Notice to Proceed.
- PLC programming effort is based on using the Owner's existing add-on instructions (AOIs) as listed in Table 3.
- Wonderware programming effort is based on using the Owner's existing ArchestrA object templates as listed in Table 3.
- PLC and HMI tagging format will be based on tags developed during the IO List Development portion of the project.
- Owner will use tags from the IO list development portion of this scope for entering and assigning tags within the Plant Maintenance Management System. Owner modification of tags to be completed prior to the software development phase of the project.
- TopView modifications will add up to 400 new alarms based on new PLC programs. Base setup, development, and conversion of TopView is being performed by others and therefore is not covered in this scope. System Programmer to provide Excel import file of alarms for Owner to implement.
- Existing IO Test Phase with Existing Programs to be completed prior to Software Development.
- Issues discovered during the Existing IO Test Phase with Existing Programs step will be addressed by Owner or through the change management procedures.
- No Factory Acceptance Test is required.
- Test results signed by Owner are confirmation that testing has been completed successfully. Repeat of tests following sign off or additional testing beyond what is described in this scope are not included and will be resolved using contract modification procedures described in Task 1.
- Test delays or interruptions due to Owner are not included and will be resolved using contract modification procedures described in Task 1.
- Failed tests resulting from existing PLC program IO assignment, equipment problems or issues outside the control of the System Programmer will be submitted by the System Programmer to the Owner for resolution. Impacts to programming will be resolved using contract modification procedures described in Task 1.

- Owner staff will be available for coordination and assistance with field equipment during software testing.
- System Programmer will use software test documentation forms for signature by an authorized Owner representative (similar to those used for previous work executed at the WWRF by System Programmer).
- Milestone schedule is based on Owner provided start date of March 1, 2025 and 30-week project duration.
- Installation, testing and configuration of radio or cell modem systems is not included in this scope of work.
- Configuration of VFD's and smart overload devices is not required and will not be changed.

TABLE 2: Subsystem Details

	Hardwired I/O				Ethernet I/O			
	DI	DO	AI	AO	DIE	DOE	AIE	AOE
Mechanical Building PLC (SMCB1)	95	33	18	4	35	13	5	5

TABLE 3: AOI and Archestra Template Standard Versions

AOI	Archestra Template
Analog_Input_Scaling_V1	\$AI_v1
Cycle_Timer_v1	\$CycleTimer
Discrete_Alarm	\$Alarm
CoM_LeadLag_v1	\$LeadSelect_v1
LeadStandby (selection)	\$LeadSelect
CoM_Interlock_v1	\$Interlocks
Motor_Fixed_Speed_v2	\$MotorFVNR_v2
Motor_VariableSpeed_v2	\$MotorASD_v2
PIDE_Control_v1	\$PIDE_v1
Totalizer1	\$Total
Valve_Modulating_v1_2	\$ValveMOD_v1
Valve_Open_Stop_Close_v1	\$ValveOC_v1
Valve_Solenoid_v1	\$ValveSOL_v1
CoM_Sequencer_Start_Immediate_v2	\$CoM_Seq_v2*
DayOfWeek	N/A

Milestone Schedule

Project Management (Task 1)

Notice to Proceed	March 1, 2025
System Programmer Kickoff Meeting	March 2025

Software Planning (Task 2)

Software Function Definition Workshop	April 2025
IO List Development	April 2025
Existing IO Testing	April 2025

Software Development (Task 3)

Software Development	April 2025-July 2025
Draft HMI and Wonderware Graphics Review	June 2025
Unwitnessed Software Demonstration	June 2025
Witnessed Software Demonstration	July 2025

Implementation (Task 4)

Component Test Phase	August 2025
Operational Test Phase	August 2025
Training	August 2025
Final Completion	September 2025

TIME OF COMPLETION AND COMPENSATION SCHEDULE

COMPENSATION AND COMPLETION SCHEDULE			
Task	Description	Estimated Due Date	Compensation
1	Project Management	▪ 3/1/25 - 9/30/25	\$7,510.00
2	Software Planning (Phase 1)	▪ 3/1/25 - 3/31/25	\$65,493.00
3	Software Development (Phase 2)	▪ 4/1/25 - 7/31/25	\$81,087.00
4	Software Implementation (Phase 3)	▪ 8/1/25 - 9/30/25	\$55,157..00
TASK ORDER TOTAL: \$209,247.00			

The Not-To-Exceed amount to complete all services listed above for this Task Order is Two Hundred Nine Thousand, Two Hundred Forty-Seven Dollars and 00/100 (\$209,247.00). No compensation will be paid over the Not-to-Exceed amount without prior written approval by the City in the form of a Change Order. Travel will be reimbursed at cost per the Master Agreement. No other expenses will be reimbursed through this agreement. All costs must be incorporated in the individual tasks within the Compensation and Completion Schedule above.

CITY OF MERIDIAN:

BY: _____
KEITH WATTS, Procurement Manager

Dated: _____

City Project Manager:
Marshal Latham

JACOBS ENGINEERING GROUP, INC.:

BY:  _____
JEFF HODSON, Manager of Projects

Dated: Feb 13, 2025