

PART 1 - GENERAL

1.1 General

- .1 Provide a control system to control splash pad water re-circulation system and related equipment as described in Section 15200.
- .2 Provide a splash pad emergency stop system as described in section 15200.

1.2 Related Work

- | | | |
|----|--------------------|-------------|
| .1 | Process Mechanical | Division 11 |
| .2 | Mechanical | Division 15 |
| .3 | Electrical | Division 16 |

1.3 Work Included

- .1 The following list generally describes the scope of Work under this section:
 - .1 New control panel.
 - .2 Surge tank level indicator.
 - .3 All control valves.
 - .4 All auxiliary relays and auxiliary control equipment shown in the drawings or described in the specifications.
- .2 Actuated valves are included in Section 11240. Co-ordinate supply with other trades as required for a complete system. Be responsible to install, wire and program electrical devices and equipment as required to provide all required monitoring and control to make all equipment and processes fully functional and monitored.
- .3 Control panel: New Control system to control the splash pad re-circulation system is included in Section 15200. Co-ordinate supply with other trades as required for a complete system. Be responsible to install, wire and program electrical devices and equipment as required to make them fully functional.
- .4 General description of Splash pad re-circulation system operations.
 - .1 See Section 15200.

1.4 Qualifications

- .1 Use qualified workers who are fully familiar with this Work and have a working knowledge of the system components.
- .2 Be thoroughly familiar with governing regulations having jurisdiction on this project.

1.5 Record Drawings

- .1 For complete record of equipment and services installed at variance with locations and methods shown on original drawings, obtain separate set of drawings and mark the variations as the Work progresses.
- .2 Provide written programming values entered into all electronic equipment whether factory or field programmed.

1.6 Existing Conditions

- .1 Examine specifications and drawings relating to Work of other trades which may affect installation of this Work.
- .2 Where contradictions in specifications and drawings are implied, obtain ruling from Contract Administrator. Where ruling is not obtained, include the item or arrangement of better quality, greater quantity, or higher cost.
- .3 Work or expenses arising by default of not having examined existing conditions prior to submitting bid shall be borne under this contract at no additional cost to the City.

1.7 Accessibility

- .1 Install equipment and piping with adequate clearances for head room, passage, operation and service.

1.8 Tests

- .1 Provide tests on equipment, systems and materials as may be requested by the Contract Administrator.
- .2 Carry out tests for such reasonable lengths of time and at such a time as determined by Contract Administrator before final completion and acceptance of Work to verify performance requirements.
- .3 Completion of tests is not evidence of acceptance of tested part of contract.
- .4 No claim for damage will be made for injury or breakage of parts due to tests.

1.9 Electrical

- .1 Electrical equipment supplied under this section shall be CSA approved and bear CSA labels. Motors shall be tested to CEMA MG.1 standards or CSA C22.2 #52 and shall conform to insulation and dielectric strength.
- .2 Motors shall have conduit terminal boxes and adequate starting protective equipment as defined by the local power utility and the applicable sections of the Manitoba Electrical Code.

1.10 Start Up

- .1 Retain fully qualified operators to start up all systems as may be required by the Contract Administrator.
- .2 Cycle all components of the complete system to duplicate normal operating conditions and test all level control system components.
- .3 Where adjustment devices, throttling devices, and gauges are installed, mark clearly and indelibly, the readings required for the intended performance of the system.

1.11 Shop Drawings

- .1 Submit shop drawings as per Section 01340.

1.12 O&M Manuals

- .1 Submit operation and maintenance manuals as per Section 01730.

1.12 Power Failure

- .1 Provide equipment and operations to automatically start up and properly operate after an electrical power failure without the attendance of an operator.
- .2 Provide a UPS is to be used to operate valves BUV-101 and BUV-102 during a power outage. See Section 15200.

1.13 CSA Approval

- .1 Panel assembly, subcomponents and all internal components shall be CSA approved.

1.14 Training

- .1 Be responsible to review Section 01730 and include training requirements as outlined in Section 01730 in scope of Work.

PART 2 - PRODUCTS

2.1 General

- .1 Use control equipment of one manufacturer wherever possible.

2.2 Surge Suppressers

- .1 Protect all control circuits from AC power line disturbances with Aegis CN series.

2.3 Control Panel

- .1 The control panel shall be complete with all items indicated on the drawings and described in Section 15200 and shall be complete with the following:
 - .1 Wall mount control panel in one grouping c/w distribution lightning arrestor to protect motors and equipment from induced line surge.
 - .2 All wiring is to have wire markers. All field wiring is to be made to terminal bars that have been clearly labeled in the shop drawings.
 - .3 All lights to be 24 V LED type, push to test.
 - .4 Low water level and high water level alarm lights colored "red".
 - .5 Provide interlocks as described in Section 15200.
 - .6 HOA switches and run lights as described in Section 15200.
 - .7 Lights and nameplates indicating the status of each of two valves (i.e. open or closed).
 - .8 Control relays.
 - .9 Relays as required c/w indicating pilot lights.
 - .10 Motor starter (magnetic contactor) as required for the following motor: drain water pump (DWP-101). Starter to provide phase loss protection.
 - .11 Provide field adjustable time delay capability as described in Section 15200.
 - .12 Identification nameplates on all components (i.e. switches, meters, lights).

2.4 Level Control
and Measurement

- .1 Surge Chamber: See Section 15200.

2.5 Programmable Logic
Controller)

- .1 Use a process controller consisting of a Programmable Logic relay controller/PLC or digital process meter with programming as required to provide process control features as required.
- .2 Provide programmable process controller that has an integral front panel display that is suitable to provide process control with minimum 2 line display. Inputs and outputs as required to complete process control and monitoring as outlined. Program display to provide a visual display of inputs and outputs.
- .3 Provide inputs and outputs as required.
- .4 Complete programming as required.
- .5 Power off retention: minimum 240 hours.
- .6 Program to remain in last state after power failure and continue from last point of process with retention of all timer values and bit status.
- .7 Provide details in O&M manual.
 - .1 On how to use keypad to view status of devices and registers in use and to access process parameters on display.
- .8 Standard of Acceptance depends upon required inputs and outputs: General standard of acceptance without evaluations of inputs and outputs is Teco SG2 V3, Schneider Zelio, Allen Bradley Micrologix, E&H rIA452, Precision Digital PD6000 or approved equal in accordance with B7.

2.6 Uninterruptable
Power Supply

- .1 Provide an uninterruptable power supply (UPS) with a minimum operating time as required to allow programmable logic relay controller/PLC to operate BUV-101 and 102 upon a power outage as described in Section 15200.

2.7 Auto Dialer

- .1 Provide an auto dialer to dial out alarm conditions as identified in Section 15200.
- .2 The dialer is to capable of initiating a telephone call using a standard telephone line and communicate by playing a pre-recorded message or by paging and leaving a numerical message.
- .3 Unit to be capable of monitoring 8 dry contact or 24 Vac/Vdc inputs.
- .4 Unit to have alarm buzzer and alarm cancellation button.
- .5 Unit to have a 20 hour rechargeable battery backup.
- .6 Wall mount telephone dialer near incoming telephone service and control panel in such a manner as not to infringe on space requirements for other wall mounted panels in the area.
- .7 Telephone dialer to be Omega OMA-6R or approved equivalent in accordance with B7.

PART 3 - EXECUTION

3.1 Installation

- .1 Furnish manufacturer's drawings and instructions for the installation of the equipment. Install equipment and piping in accordance with manufacturers' recommendations. Ensure all equipment is properly aligned and plumb.
- .2 Wall mount control panel.
- .3 Install and calibrate surge chamber level monitoring and pump control assemblies.
- .4 Make all mechanical and electrical connections between the various components, noted or implied.
- .5 Design overall electrical conduit and junction box system to allow easy removal of drain water pump (DWP-101) and ultrasonic.
- .6 Coordinate between the different manufacturers in the assembly of components.
- .7 Provide 120 V power supply and analog wiring as required c/w related circuit breakers to all actuated valves and other process equipment.
- .8 Integrate existing inground pool pump operation with all related process as described in section 15200.
- .9 Integrate and calibrate all panels and controls with all related components.

3.2 Start Up and Adjustment

- .1 Upon completion of installation, test, adjust and regulate controls or safety equipment provided under this and other sections.
- .2 Adjust and place in operating condition.

3.7 Level Control And Measurement

- .1 See Section 15200.

3.5 Identification

- .1 Provide lamicoid identification labels as specified in Section 15020 "Identification".

End Section 16900