

Appendix **B**

Implementation Plan

IMPLEMENTATION PLAN

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1. IMPLEMENTATION PLAN

1.1 Overview

- .1 This document generally describes to tasks and sequence of work and will be a guiding document for coordination with City Operations.
- .2 Refer to Tender Document for the project Scope of Work.
- .3 Refer to Section 01 14 14 - Control of Work.

1.2 Contacts

- .1 Active parties unknown at this time; to be completed post-award.
 - .1 Owner: City of Winnipeg.
 - .2 Contractor: _____
 - .3 Contract Administrator: AECOM.

1.3 Safety Plan

- .1 Conform to all requirements of all federal, provincial and municipal legislation, City site specific safety procedures, and the Contractor's own safety procedures.
- .2 Refer to:
 - .1 City Site Safety Protocols: Section 01 14 14 - Control of Work, clause 1.8.
 - .2 City Prescribed Confined Spaces: Section 01 14 14 - Control of Work, clause 1.9.
 - .3 Safety Procedures: Section 01 35 29 - Safety Procedures.

1.4 Designated Work Areas

- .1 Refer to Drawings.
- .2 Refer to Section 01 14 14 - Control of Work, clause 1.12.
- .3 Refer to Section 01 14 14 - Control of Work, clause 1.13.

1.5 Temporary Service Interruptions/Shutdowns, Isolation, Lock Out Tag Out (LOTO)

- .1 Conform to own procedures and City procedures – these shall be documented in the accepted Contractor developed Safety Plan.
- .2 Contractor shall submit of Temporary Service Interruption Plans. A minimum of ten (10) working days before any planned service interruption.
- .3 Ensure timely City review and Contract Administrator release of the approve Contractor developed Temporary Service Interruption Plan.

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- .4 Ensure timely internal City coordination of City resources as needed for the approved Temporary Service Interruption Plan.
- .5 Complete all required modifications and installations in any isolated zone during a single shutdown/isolation.
- .6 Refer to Valve Isolation Procedure, identified for each RPS within this Implementation Plan. Pump shutdowns and start-ups and valve openings and closures shall be by City personnel only.
- .7 Refer to Section 01 14 14 - Control of Work, clause 1.5.

1.6 Electrical and Automation

- .1 Refer to Section 26 05 00 - Common Work Result for Electrical.
- .2 Refer to Section 40 90 00 - Instrumentation and Control for Process System.
- .3 All valve actuators shall be identified on the Contractor Temporary Service Interruption Plan and locked-out tagged-out as per the accepted safety plans.

1.7 Crane Certification and Crane Use

- .1 Advise City if a lifted load has to transit over an active pump or pipeline.
- .2 Refer to Section 01 14 14 - Control of Work, clause 1.11.

1.8 Insertion Flow Meter/"Hot" Tie Ins

- .1 Before any welding or cutting:
 - .1 Confirm locations of all heat and smoke alarms.
 - .2 Provide supplemental ventilation or other means to prevent triggering heat or smoke alarms.
 - .3 Follow Contractor submitted safety procedures including the development of the "hot work permit" and supplementary Contractor supplied Fire Watcher.

1.9 Schedule

- .1 Refer to Section 01 32 16 - Construction Progress Schedule.

1.10 Submittals

- .1 Refer to Section 01 33 00 - Submittal Procedures.

1.11 Quality Control

- .1 Refer to Section 01 45 00 - Quality Control.

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1.12 Temporary Utilities

- .1 Refer to Section 01 51 00 - Temporary Utilities.

1.13 Construction Facilities

- .1 Construction roads, access, scaffolding, hoisting, storage, parking, security, sanitary, signs, clean-up.
- .2 Refer to Section 01 52 00 - Construction Facilities.
- .3 Refer to Section 01 14 14 - Control of Work.

1.14 Materials and Equipment

- .1 Refer to Section 01 60 00 - Material and Equipment.

1.15 Start-up and Commissioning

- .1 Refer to Section 01 65 00 - Facility Start-Up and Commissioning.

1.16 Trial Testing and Performance Testing

- .1 Refer to Section 01 65 00 - Facility Start-Up and Commissioning.

1.17 Handover

- .1 Refer to Section 01 65 00 - Facility Start-Up and Commissioning.

1.18 Delivery, Storage and Handling

- .1 Refer to Section 01 66 10 - Delivery, Storage and Handling.

1.19 Construction and Final Cleaning

- .1 Refer to Section 01 74 23 - Cleaning.

1.20 Training

- .1 Refer to Section 01 78 00 - Closeout Submittals.

1.21 Closeout

- .1 Refer to Section 01 78 00 - Closeout Submittals.

1.22 O & M Manuals

- .1 Refer to Section 01 91 51 - Operation and Maintenance Manual.

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- .1 The Contractor shall comply with the requirements of the Contract and Specifications.

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- .2 Only one side of the discharge header at any RPS shall be taken out of service at a time. Once one new flowmeter is installed and commissioned, the next flowmeter replacement may commence.
- .3 All removal and installation work requiring isolation will be confined to days between October 1 to April 30 inclusive, as discharge headers **may not** be taken out of service between May 1 and September 30.
- .4 Single blocking requirement: In all cases (MacLean RSP and McPhillips RPS immediately after an old meter is removed, install blind flanges complete with gasket to seal the open ends of the header until the new meter is installed.
- .5 The valves at each RPS have open/close indicators. The SCADA system can also confirm the valve status.
- .6 The SCADA operation will remain in normal automatic control mode, with the below described settings for each isolation.
- .7 The Contractor should include provisions for preventing or controlling leakage if any valve fails to fully close.
- .8 Building drains are located near each flowmeter at the RPSs. Minor leaks could be diverted to floor drains; major leaks which have the potential to delay or complicate the work will need to be fixed before any piping is opened.
- .9 The Contractor should be aware of the City's health and safety requirements at each site. The Contractor should submit their Safety Plan no less than 14 Calendar Days before the start of the Work at any RPS.

1.24 McPhillips RPS - North Header

- .1 Pumps 1, 2, 3 and 4 valves and North discharge header must be hydraulically isolated for removal and installation of the North in-line meter (FE-M1521) and the FPI meter (FE-M1522). Pump 5 and pump 6 valves and South discharge header must be fully open and operational according to City's operation sequence while North header is isolated.
 - .1 Isolate pump 1:
 - .1 Shut down and lock out Pump 1. Set Pump 1 to OFF in SCADA.
 - .2 Fully close valve PSV1 (PS-041-PSV-1).
 - .3 Fully close valve PDV1 (PD-041-PDV-1).
 - .4 Fully close valve associated with 250Ø service water line (PWSV1).
 - .5 Where applicable, lock out all affected valves listed above.
 - .2 Isolate pump 2:
 - .1 Shut down and lock out Pump 2. Set Pump 2 to OFF in SCADA.

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- .2 Fully close valve PSV-2 (PS-042-PSV-2).
- .3 Fully close valve PDV2 (PD-042-PDV-2).
- .4 Where applicable, lock out all affected valves listed above.
- .3 Isolate pump 3:
 - .1 Shut down and lock out Pump 3. Set Pump 3 to OFF in SCADA.
 - .2 Fully close valve PSV3 (PS-043-PSV-3).
 - .3 Fully close valve PDV3 (PD-043-PDV-3).
 - .4 Where applicable, lock out all affected valves listed above.
- .4 Isolate pump 4:
 - .1 Shut down and lock out Pump 4. Set Pump 4 to OFF in SCADA.
 - .2 Fully close valve PSV4 (PS-044-PSV-4).
 - .3 Fully close valve PDV4 (PD-044-PDV-4).
 - .4 Where applicable, lock out all affected valves listed above.
- .5 Isolate North header:
 - .1 Fully close valve PDHV3 (PD-050-DHV-3). Lock out associated actuator.
 - .2 Fully close valve PDHV2 (PD-050-DHV-2). Lock out associated actuator.
 - .3 Fully close valve PDHV1 (PD-050-DHV-1). Lock out associated actuator.
 - .4 Fully close valve PBPV (PR-004-BPV-1).
 - .5 Disable SCADA automatic feedback loop for pressurization of the North header.
 - .6 Where applicable, lock out all affected valves listed above.
- .6 After applicable pump(s) shut down and valve(s) closed, disconnect and remove the flowmeter and adjacent piping as indicated in the drawings.
- .7 After applicable pump(s) shut down and valve(s) closed, disconnect and remove the flowmeter and adjacent piping as indicated in the drawings.
- .8 Install barriers, bulkheads, blind flanges as appropriate at the pipe ends on each side of the gap opened.
- .9 Demolish existing piping and equipment. Transport demolished components via hydraulic rolling cart. Utilize the existing fixed overhead bridge crane to relocate demolished items from the lower floor area to the main floor area for removal.

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.10 Install and Test Meters:

1. Utilize existing fixed overhead bridge crane to place the new flowmeter onto the lower process floor area.
2. Transport new flowmeter to location via hydraulic rolling cart.
3. Install new adjacent piping as indicated to position the new flowmeter at the correct position.
4. Install new meter.
5. Open isolation valve to admit water into the new segment; leak test. Tighten connections as needed.
6. Test and commission flow meter.
7. Return all shut-down and locked-out pump(s) and valve(s) to their normal state.

1.25 McPhillips RPS - South Header

- .1 Pump 5 and pump 6 valves and South discharge header must be hydraulically isolated for removal and installation of the south in-line meter (FE-M1531). Pumps 1, 2, 3 and 4 and North discharge must be fully open and operational according to City's operation sequence while South header is isolated.

.1 Isolate pump 5:

- .1 Shut down and lock out Pump 5. Set Pump 5 to OFF in SCADA.
- .2 Fully close valve PSV5 (PS-045-PSV-5).
- .3 Fully close valve PDV5 (PD-045-PDV-5).
- .4 Fully close valve associated with 250Ø service water line (PWSV2).
- .5 Where applicable, lock out all affected valves listed above.

.2 Isolate pump 6:

- .1 Shut down and lock out Pump 6. Set Pump 6 to OFF in SCADA.
- .2 Fully close valve PSV6 (PS-046-PSV-6).
- .3 Fully close valve PDV6 (PD-046-PDV-6).
- .4 Where applicable, lock out all affected valves listed above.

.3 Isolate South header:

- .1 Fully close valve PDHV3 (PD-050-DHV-3). Lock out associated actuator.

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- .2 Fully close valve PDHV5 (PD-050-DHV-4). Lock out associated actuator.
- .3 Fully close valve PBPV4 (PC-800-BPV-2).
- .4 Disable SCADA automatic feedback loop for pressurization of the South header.
- .5 Where applicable, lock out all affected valves listed above.
- .4 After applicable pump(s) shut down and valve(s) closed, disconnect and remove the flowmeter and adjacent piping as indicated in the drawings.
- .5 Install barriers, bulkheads, blind flanges as appropriate at the pipe ends on each side of the gap opened.
- .6 Demolish existing piping and equipment. Transport demolished components via hydraulic rolling cart. Utilize the existing fixed overhead bridge crane to relocate demolished items from the lower floor area to the main floor area for removal.
- .7 Install and Test Meters:
 - 1. Utilize existing fixed overhead bridge crane to place the new flowmeter onto the lower process floor area.
 - 2. Transport new flowmeter to location via hydraulic rolling cart.
 - 3. Install new adjacent piping as indicated to position the new flowmeter at the correct position.
 - 4. Install new meter.
 - 5. Open isolation valve to admit water into the new segment; leak test. Tighten connections as needed.
 - 6. Test and commission flow meter.
 - 7. Return all shut-down and locked-out pump(s) and valve(s) to their normal state.

1.26 MacLean RPS - North Header

- .1 Pumps 21 and 22 valves and North discharge header must be hydraulically isolated for removal and installation of the north in-line meter (FE-M1511). Pumps 23, 25 and 26 valves and South discharge header must be fully open and operational according to City's operation sequence while North header is isolated.
- .2 Pump shutdowns and valve operations are restricted to City employees ONLY:
 - .1 Isolate pump 21:
 - .1 Shut down and lock out Pump 21. Set Pump 21 to OFF in SCADA.
 - .2 Fully close valve LSV21 (LS-041-LSV-21).

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- .3 Fully close valve LDV21 (LD-041-LDV-21).
- .4 Fully close valve associated with 32-TWR line (the valve does not have a tag).
- .5 Where applicable, lock out all affected valves listed above.
- .2 Isolate pump 22:
 - .1 Shut down and lock out Pump 22. Set Pump 22 to OFF in SCADA.
 - .2 Fully close valve LSV22 (LS-042-LSV-22).
 - .3 Fully close valve LDV22 (LD-042-LDV-22).
 - .4 Fully close valve HV-M150A.
 - .5 Where applicable, lock out all affected valves listed above.
- .3 Isolate North header:
 - .1 Fully close valve LDHV2 (LD-050-LDHV-2). Lock out associated actuator.
 - .2 Fully close valve LDHV1 (LD-050-LDHV-1). Lock out associated actuator.
 - .3 Fully close valve HV-M1560 (LR-010-LBV-1) in the North Valve Chamber.
 - .4 Fully close valve HV-Y1610 (LR-101-LDV-1) in the North Valve Chamber.
 - .5 Fully close any and all other valves that may admit water into the isolated work zone.
 - .6 Disable SCADA automatic feedback loop for pressurization of the North header.
- .4 After applicable pump(s) shut down and valve(s) closed, disconnect and remove the flowmeter and adjacent piping as indicated in the drawings.
- .5 Install barriers, bulkheads, blind flanges as appropriate at the pipe ends on each side of the gap opened.
- .6 Demolish existing piping and equipment. Transport demolished components via hydraulic rolling cart. Utilize the existing fixed overhead bridge crane to relocate demolished items from the lower floor area to the main floor area for removal.
- .7 Install and Test Meters:
 - 1. Utilize existing fixed overhead bridge crane to place the new flowmeter onto the lower process floor area.
 - 2. Transport new flowmeter to location via hydraulic rolling cart.
 - 3. Install new adjacent piping as indicated to position the new flowmeter at the correct position.

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4. Install new meter.
5. Open isolation valve to admit water into the new segment; leak test. Tighten connections as needed.
6. Test and commission flow meter.
7. Return all shut-down and locked-out pump(s) and valve(s) to their normal state.

1.27 MacLean RPS - South Header

- .1 The pumps 23, 25 and 26 valves and South discharge header must be hydraulically isolated for the installation of the south in-line meter (FE-M15141) and the FPI meter (FE-M1531). Pumps 21 and 22 valves and North discharge header must be fully open and operational according to City's operation sequence while South header is isolated.
 - .1 Isolate pump 23:
 - .1 Shut down and lock out Pump 23. Set Pump 23 to OFF in SCADA.
 - .2 Fully close valve LSV23 (LS-043-LSV-23).
 - .3 Fully close valve LDV23 (LD-043-LDV-23).
 - .4 Fully close valve 32 mm diameter (the valve does not have a tag).
 - .5 Where applicable, lock out all affected valves listed above.
 - .2 Isolate pump 25:
 - .1 Shut down and lock out Pump 25. Set Pump 25 to OFF in SCADA.
 - .2 Fully close valve LSV 25 (LS-045-LSV-25).
 - .3 Fully close valve LDV25 (LD-045-LDV-25).
 - .4 Fully close valve HV-M150F.
 - .5 Where applicable, lock out all affected valves listed above.
 - .3 Isolate pump 26:
 - .1 Shut down and lock out Pump 26. Set Pump 26 to OFF in SCADA.
 - .2 Fully close valve LSV26 (LS-046-LSV-26).
 - .3 Fully close valve LDV26 (LD-046-LDV-26).
 - .4 Fully close valve associated with 32-TWR line (the valve does not have a tag).
 - .5 Where applicable, lock out all affected valves listed above.

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- .4 Isolate South header:
 - .1 Fully close valve LDVH2 (LD-050-LDHV-2). Lock out associated actuator.
 - .2 Fully close valve LDHV3 (LD-050-LDHV-3). Lock out associated actuator.
 - .3 Fully close valve LDHV4 (LD-050-DHV-4). Lock out associated actuator.
 - .4 Fully close any and all other valves that may admit water into the isolated work zone.
 - .5 Fully close valve HV-Y1610 (LR-101-LDV-1) in the South Valve Chamber.
 - .6 Fully close valve LR-009-V2-B in the South Valve Chamber.
 - .7 Disable SCADA automatic feedback loop for pressurization of the South header.
 - .8 Where applicable, lock out all affected valves listed above.
- .5 After applicable pump(s) shut down and valve(s) closed, disconnect and remove the flowmeter and adjacent piping as indicated in the drawings.
- .6 Install barriers, bulkheads, blind flanges as appropriate at the pipe ends on each side of the gap opened.
- .7 Demolish existing piping and equipment. Transport demolished components via hydraulic rolling cart. Utilize the existing fixed overhead bridge crane to relocate demolished items from the lower floor area to the main floor area for removal.
- .8 Install and Test Meters:
 - .1 Utilize existing fixed overhead bridge crane to place the new flowmeter onto the lower process floor area.
 - .2 Transport new flowmeter to location via hydraulic rolling cart.
 - .3 Install new adjacent piping as indicated to position the new flowmeter at the correct position.
 - .4 Install new meter.
 - .5 Open isolation valve to admit water into the new segment; leak test. Tighten connections as needed.
 - .6 Test and commission flow meter.
 - .7 Return all shut-down and locked-out pump(s) and valve(s) to their normal state.

END OF IMPLEMENTATION PLAN