

FW Pipe Replacement Shutdown and Tie-in Procedure		Document Code:
		Revision 0
Client: City of Winnipeg	Project: 427-2016 – FW Pipe Replacement	Package / Area: Area S, Area P and Area H

PREPARATION	Notes:
Date: 2016-05-09	
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APPROVAL	
Client:	

REVISION REGISTER					
Rev.	Description	Date	By	Checked	Approved
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1.0 GENERAL DESCRIPTION

This document describes the requirements for shutting down equipment and systems at the WEWPCC to perform replacement of FW piping. Equipment and system shutdowns will be performed in the phases as indicated. Estimated durations for phases 1 through 4 are 4 weeks, 2 days, 1 week and 1 week, respectively, in accordance with the project schedule. New piping shall be pre-fabricated and pre-tested to the greatest extent practical to minimize outage of the emergency water supply for fire protection.

As tie-ins will require shutdown of the emergency water supply for fire protection the Contractor shall develop and implement a fire protection system impairment plan.

Note: All work performed by the Contractor is to be in accordance with all Contract requirements and industry good practices. The description in this document is not intended to supplant the Contractor's obligations under the Contract or to relieve the Contractor in any way of its responsibilities for the installation and start-up of the work as defined by the Contract documents.

2.0 PRE-SHUTDOWN REQUIREMENTS

2.1 Operational Notifications

Notice Required	Department to Contact	Notification Details	Responsibility
Phase 1/2		Notify Fire Department and other required authorities of fire protection system impairment.	Contractor
All Phases		Notify Contract Administrator and CoW of intended start dates for all shutdowns and tie-ins.	Contractor

2.2 Contractor Requirements

ID	Equipment	Action Required	Responsibility
-	General	The Contractor is to perform all pre-construction field measurements and checks as per the drawings and specifications. The Contractor is to ensure that inadvertent damage to other piping and services will not occur during construction.	Contractor
-	General	The Contractor shall ensure that all materials, tools, and any other required equipment are available during the shutdown.	Contractor
-	Piping	The Contractor shall pre-fabricate and pre-test the new piping to the greatest extent practical to minimize outage of the emergency water supply for fire protection.	Contractor

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ID	Equipment	Action Required	Responsibility
-	Emergency Water Supply	The Contractor shall ensure that the fire protection system impairment plan has been reviewed and approved by the Contract Administrator prior to shutdown of the emergency water supply for fire protection.	Contractor

3.0 OPERATIONAL REQUIREMENTS

ID	Equipment	Action Required	Responsibility
Phase 1/4	Effluent Water Filter (S235-FIL)	Shutdown and drain existing effluent water filter.	CoW
Phase 1	Emergency Water Supply (South Fire Hydrant)	The existing fire hydrant located at the south end of the plant will be temporarily offline.	Contractor
Phase 1	Flushing Water	Shutdown and lockout branch connections from existing 250mm header to point of use locations in the plant. Shutdowns shall be completed one at a time to facilitate piping tie-ins.	CoW
Phase 2	Emergency Water Pump (S240-FP)	Shutdown and lockout of pump and drain exterior watermain loop piping.	CoW
Phase 3	Flushing Water	System flow limited to 30 L/s. Shutdown and lockout jockey pump (S210-FWP). Operate duty pumps (S220-FWP & S230-FWP) in MANUAL mode and shutdown and lockout one at a time.	CoW

4.0 SHUTDOWN AND STARTUP REQUIREMENTS (COW AND CONTRACTOR)

4.1 Phase 1

Item	Description	Responsibility
1	The Contractor and CoW Operations personnel shall complete all pre-shutdown requirements and shall have all materials, tools, and any other required equipment available and ready for the shutdown.	Contractor / CoW
2	Install temporary valve TEMP-HV1 on filter.	-
2.1	Open filter bypass valve (S236-HV1), close filter inlet and outlet valves (S235-HV1 & S235-HV2), shutdown and drain filter.	CoW
2.2	Install new tee on filter outlet and temporary valve TEMP-HV1 for connection to 150mm temporary line and complete inspection and testing of tie-in to TEMP-HV1.	Contractor

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2.3	Open filter inlet and outlet valves (S235-HV1 & S235-HV2), close filter bypass valve (S236-HV1) restart filter and confirm correct operation of existing filter.	CoW
3	Install temporary header and portion of new header.	-
3.1	Install new 150mm temporary line from TEMP-HV1 to S250-HV4, section of new 250mm header from S250-HV2 to S250-HV3, and new 100mm temporary line from S250-HV5, including all branch isolation valves.	Contractor
3.2	Complete inspection and testing of all new 100mm and 150mm temporary headers and sections of new 250mm header including new branch connections. Following testing, open TEMP-HV1 to pressurize lines. DO NOT CLOSE S235-HV2.	Contractor
3.3	Inspect works.	Contract Administrator
4	Connect branches to temporary header and portion of new header.	-
4.1	Notify CoW of required branch line shutdowns from existing 250mm header.	Contractor
4.2	Shutdown existing branch lines one at a time.	CoW
4.3	Connect temporary branch connections to new 100mm and 150mm temporary headers c/w isolation valves for connection of permanent branch lines in item 5.7. Connect permanent branch connection to section of new 250mm header. Maximum allowable outage duration of each branch line is 1 hour.	Contractor
4.4	Complete inspection and testing of all new temporary and permanent branch connections.	Contractor
4.5	Turn on new temporary and permanent branch connections and verify correct operation.	CoW
4.6	Inspect works.	Contract Administrator
5	Remove and replace 250mm header.	-
5.1	Implement fire protection system impairment plan.	Contractor
5.2	Close existing valves (S250-HV1, S254-HV1, S255-HV1) and drain existing 250mm header. Replace section of 250mm header between existing valves S254-HV1 and S255-HV1, install 250 mm temporary cap as shown on the drawings, and connect 75mm branch lines to new 100mm temporary line. Pre-fabricate and pre-test to minimize interruption to fire protection water supply.	Contractor
5.3	Complete inspection and testing of new 250mm line between existing valves S254-HV1 and S255-HV1.	Contractor
5.4	Open isolation valves on temporary piping and in Headworks Area (S254-HV-1 & S255-HV1) to restore emergency water supply for fire protection.	Contractor
5.5	Demolish existing 250mm FW header from S250-HV1 new 250mm line Headworks Area.	Contractor

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5.6	Install new 250mm headers between existing valve S250-HV1 and new valve S250-HV2 and between new valve S250-HV3 and new 250mm line in Headworks Area. Final connection to new 250mm line in Headworks Area to be completed in Phase 2.	Contractor
5.7	Maintain temporary connections to branch lines from 100mm and 150mm temporary headers and connection permanent branch connections to new 250mm headers.	Contractor
5.8	Complete inspection and testing of new 250mm headers including new branch connections.	Contractor
5.9	Inspect works.	Contract Administrator

4.2 Phase 2

Item	Description	Responsibility
1	The Contractor and CoW Operations personnel shall complete all pre-shutdown requirements and shall have all materials, tools, and any other required equipment available and ready for the shutdown.	Contractor / CoW
2	Continue use of temporary FW distribution header and branch connections.	Contractor
3	Implement fire protection system impairment plan.	Contractor
4	Shutdown and lockout existing emergency water pump (S240-FP) and drain exterior water loop piping.	CoW
5	Install new 250mm piping downstream of existing valve S240-HV3 up to and including new valves S235-HV3, S250-HV1 and S256-HV1. Pre-fabricate and pre-test to minimize interruption to fire protection water supply.	Contractor
6	Relocate emergency water pump pressure switch S240-PS to new 250mm piping as shown on the drawings.	Contractor
7	Install new valves S254-HV1 and S255-HV1 in the Headworks Area.	Contractor
8	Remove 250mm temporary cap on new 250mm line in Headworks Area and connect to new 250mm FW supply header.	Contractor
9	Complete inspection and testing of new 250mm piping.	Contractor
10	Bring existing emergency water pump (S240-FP) back online.	CoW
11	Restore fire protection water supply. Switch over from temporary FW distribution system to new 250mm distribution system and demolish 100mm and 150mm temporary piping and branch connections.	Contractor
12	Inspect works.	Contract Administrator

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4.3 Phase 3

Item	Description	Responsibility
1	The Contractor and CoW Operations personnel shall complete all pre-shutdown requirements and shall have all materials, tools, and any other required equipment available and ready for the shutdown.	Contractor / CoW
2	Shutdown and lockout existing jockey pump (S210-FWP). Switch flushing water duty pumps (S220-FWP and S230-FWP) to operate in MANUAL mode.	CoW
3	Shutdown and lockout flushing water duty pump 1 (S220-FWP).	CoW
4	Install new 150mm temporary piping from S220-FWP discharge to new valve S250-HV6.	Contractor
5	Complete inspection and testing of new 150mm piping.	Contractor
6	Restart flushing water duty pump 1 (S220-FWP) and operate in MANUAL mode.	CoW
7	Shutdown and lockout flushing water duty pump 2 (S230-FWP).	CoW
8	Install new 150mm temporary piping from S230-FWP discharge to new 150mm piping from S220-FWP.	Contractor
9	Complete inspection and testing of new 150mm piping.	Contractor
10	Restart flushing water duty pump 2 (S230-FWP) and operate in MANUAL mode.	CoW
11	Install new 150mm piping downstream of existing valves S210-HV2, S220-HV2 and S230-HV2 up to valve S235-HV3 including new filter isolation (S235-HV1 & S235-HV2) and bypass (S236-HV1) valves and new flowmeter (S235-FE).	Contractor
12	Complete inspection and testing of new 150mm piping.	Contractor
13	Complete functional testing of new flowmeter (S235-FE).	Contractor and CoW
14	Demolish 150mm temporary from flushing water duty pumps (S220-FWP & S230-FWP) up to new valve S250-HV6.	Contractor
15	Inspect works.	Contract Administrator

4.4 Phase 4

Item	Description	Responsibility
1	The Contractor and CoW Operations personnel shall complete all pre-shutdown requirements and shall have all materials, tools, and any other required equipment available and ready for the shutdown.	Contractor / CoW
2	Install 150mm temporary line from new valve S236-HV2 upstream of the existing filter (S235-FIL) to new valve S250-HV6.	Contractor
3	Complete inspection and testing of 150mm temporary line.	Contractor
4	Shutdown existing filter (S235-FIL) and drain.	CoW
5	Install new filter (S235-FIL) and new inlet and outlet piping.	Contractor

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6	Complete inspection and testing of new piping.	Contractor
7	Startup and commission new filter (S235-FIL).	Contractor
8	Demolish 150mm temporary line.	Contractor
9	Inspect works.	Contract Administrator

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EMERGENCY CONTACTS

City of Winnipeg:

Name	Role	Phone #	Cell #
Mark Jacobson	CoW WEWPCC Supervisor	204-986-5220	204-805-3291
Jorge Martins	CoW WEWPCC Senior Operator	204-986-4244	204-479-5300
Bronwyn Jones	CoW Project Manager	204-986-8664	204-794-0540

Engineering Consultant – KGS Group:

Name	Role	Phone #	Cell #
Michael Kozarsky	Mechanical Engineer	204-896-1209	204-297-2447

Contractor:

Name	Role	Phone #	Cell #

In the event of an emergency, the Contractor shall be contacted in the order listed.