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			Revision 00
Client: City of Winnipeg	Project: South End Water Pollution Control Centre Ventilation Upgrades	Package / Area:	

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Professional Seal			
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REVISION REGISTER					
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1.0 OVERVIEW

This document is intended to provide a guideline for construction activities relating to the Ventilation Upgrades at the South End Water Pollution Control Centre. It is written from a technical perspective, and is intended to be read along with the associated drawings and specifications.

1.1 Associated Documents

The associated construction plan drawings are listed below.

Drawing Number	Description
1-0102A-M0009	Asbestos Abatement, Key Plan
1-0102B-M0005	Asbestos Abatement, Service Building Mechanical Rooms
1-0102B-M0006	Asbestos Abatement, Workshop
1-0102G-M0016	Asbestos Abatement, Grit Building Mechanical Room
1-0102S-M0002	Asbestos Abatement, Ventilation Room, Electrical Room

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2.0 FACILITY REQUIREMENTS

The ventilation systems at the South End Water Pollution Control Centre are critical as the processes must remain in continual operation. As such, ventilation shutdowns for critical air handling units will need to be limited during asbestos abatement. Shutdowns are limited to the constraints indicated in this document. Under no circumstance shall ventilation be taken out of service without prior approval.

CSA Approved safety footwear, hard hats, and safety glasses will be required at all times while working at the station.

Contractor personnel must acquire approval by the City of Winnipeg prior to using any City-owned equipment, such as hoists, cranes, and tools.

A Contractor sign-in book will be provided. All Contractor personnel are to sign in upon arrival at the station and sign out prior to leaving the station each day.

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3.0 CONSTRUCTION PLAN

The work identified in the Construction Plan are deemed to be significant tasks, however the omission of any task in the Construction Plan does not eliminate the requirement for the Contractor to complete the work. Where work not identified in this plan requires coordination, it is the responsibility of the Contractor to identify the work and associated coordination requirements to the Contract Administrator.

The Work items identified are not necessarily sequential, and it is expected in many cases that work items will be carried out in parallel to meet the schedule requirements.


Legend:

- D Day
- N Night

3.1 Phase G1 – Drywell Mechanical Room

Phase G1 of the abatement sequence includes removal of asbestos on the outdoor air duct servicing the Wet Well and Screen Room.


Item	Description of Work	D/N	Notes
G1.1	Preparation of work areas and decontamination enclosure including establishing a negative pressure system.	D	
G1.2	Block outdoor air intake at ceiling in wet well. Provide temporary outdoor air intake for wet well through wet well vestibule. Protect equipment from freezing as required.	D	
G1.3	In the event of gas detection on the Grit Area, air is normally drawn through the intake in the Wet Well Mechanical Room into the Screen Room and then through a transfer into the Grit Area. In order to provide a continuous supply of outside air into the 4,572mm x 914mm duct, disconnect the air supply to the damper actuator located on the north side of the Drywell Mechanical Room.	D	
G1.4	Perform asbestos removal on ductwork.	D	
G1.5	Obtain final clearance and deconstruct enclosures.		

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3.2 Phase G2 – Drywell Mechanical Room (East)

During Phase G2 of the abatement sequence, asbestos will be removed on the east side of the Drywell Mechanical Room including the outdoor air ductwork to G680-AHU and the return/relief air ductwork from the Motor Room. Contractor to provide 12-16 hour shifts to minimize equipment downtime.


Item	Description of Work	D/N	Notes
G2.1	Preparation of work areas and decontamination enclosure including establishing a negative pressure system.	D	
G2.2	Shutdown <ul style="list-style-type: none"> • G680-AHU – air handler serving the Motor Room 	D	Motor Room ventilation will be provided by G681-AHU
G2.3	Perform asbestos removal on ductwork.	D	Monitor temperature in the motor room.
G2.4	Obtain final clearance and deconstruct enclosures. At the end of each shift equipment must be restarted.	D	
G2.5	Coordinate with City to restart equipment.	D	

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3.3 Phase G3 – Drywell Mechanical Room (Central Area)

During Phase G3 of the abatement sequence, asbestos will be removed from the central area of the Drywell Mechanical Room. Sequence this work during non-freezing weather.


Item	Description of Work	D/N	Notes
G3.1	Preparation of work areas and decontamination enclosure including establishing a negative pressure system.	D	
G3.2	Provide temporary exhaust to ventilate wet well through wet well vestibule to the outdoors. Provide temporary ductwork and spark proof fan with a minimum air volume of 2,115 L/s (4,500 cfm).	D	
G3.3	Provide temporary fans in the control room doorway as required to maintain the temperature in the room below 30°C.	D	
G3.4	In the event of gas detection on the Grit Area, air is normally drawn through the intake in the Wet Well Mechanical Room into the Screen Room and then through a transfer into the Grit Area. In order to provide a continuous supply of outside air into the 4,572mm x 914mm duct, disconnect the air supply to the damper actuator located on the north side of the Drywell Mechanical Room.	D	
G3.5	Shutdown <ul style="list-style-type: none"> Wet well exhaust fans G686-EF and G687-EF 	D	By City Operations
G3.6	Shutdown <ul style="list-style-type: none"> G649-AHU – pressurization unit serving Grit Building Control Room. G651-AHU – recirculation unit serving Grit Building Control Room. G681-AHU – air handler serving the Motor Room. G683-AHU – air handler serving the viewing gallery, motor room, the pump well, and the drywell mechanical room. G684-AHU – air handler serving the screen room. 	D	By City Operations. Motor room ventilation is still provided by G680-AHU Pump Room off limits during work.
G3.7	Shutdown <ul style="list-style-type: none"> G685-EF – exhaust fan servicing Grit Building and Grit Dry Well. 	D	
G3.8	Perform asbestos removal on ductwork.	D	Monitor temperatures in the control room. Monitor gas levels in the Screen Room and Pump Well.
G3.9	Obtain final clearance and deconstruct enclosures. Remove temporary exhaust for Wet Well and restore the vestibule access to its original condition. At the end of each shift equipment must be restarted.	D	
G3.10	Coordinate with City to restart equipment.	D	

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3.4 Phase G4 – Drywell Mechanical Room (West)

During Phase G4 of the abatement sequence, asbestos will be removed from the west side of the Drywell Mechanical Room.


Item	Description of Work	D/N	Notes
G4.1	Preparation of work areas and decontamination enclosure including establishing a negative pressure system.	D	
G4.2	Shutdown <ul style="list-style-type: none"> • G681-AHU – air handler serving the motor room. • G682-AHU – air handler serving the blower and electrical rooms. 	D	Motor room ventilation will be provided by G680-AHU.
G4.3	Block outdoor air flow to Aeration Blowers G-541 and G-542 in blower room. Open duct access on suction side to allow air for blowers.	D	
G4.4	Provide temporary fan with minimum rate of 700 L/s to draw air from Gallery 1 through the open door into the Blower Room. Provide temporary fan with minimum rate of 1,400 L/s to draw air through open door from Gallery 2 into the Electrical Room. Open doors between Blower Room and Electrical Room and between Electrical Room and Motor Room.	D	Monitor temperature in Electrical Room.
G4.5	Perform asbestos removal on ductwork.	D	
G4.6	Obtain final clearance and deconstruct enclosures. At the end of each shift equipment must be restarted.	D	
G4.7	Coordinate with City to restart equipment.	D	

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3.5 Phase B1 – Service Building Mechanical Room

During Phase B1 of the abatement sequence, asbestos will be removed from the Service Building Mechanical Room. This phase must be done during warm weather to eliminate the need for a temporary boiler shutdown. Contractor to provide 12-16 hour shifts to minimize equipment downtime.

Item	Description of Work	D/N	Notes
B1.1	Preparation of work areas and decontamination enclosure including establishing a negative pressure system.	D	
B1.2	Provide temporary fans in the Electrical Room B107 doorway as required to maintain the temperature in the room below 30°C.	D	
B1.3	Shutdown <ul style="list-style-type: none"> • B681-AHU – air handler serving the following: <ul style="list-style-type: none"> ○ P667-AHU in Primary Clarifier Control Room ○ P666-AHU in Primary Clarifier Electrical Room ○ Sump Room P103 ○ Gallery 3 ○ Grit Building Gallery • B682-AHU – air handler serving Storage Room P113 • B683-AHU – air handler serving the following: <ul style="list-style-type: none"> ○ Electrical Room B107 ○ Storage Room B106 ○ Workshop B111 ○ Standby Generator Room B109 • B684-AHU – air handler boiler combustion air. 	D/N	Primary Clarifier Control Room and Electrical Room have cooling loops.
B1.4	Perform asbestos removal on ductwork, HWS, and HWR pipe fittings.	D/N	
B1.5	Obtain final clearance and deconstruct enclosures. At the end of each shift equipment must be restarted.	D	
B1.6	Coordinate with City to restart equipment.	D	

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3.6 Phase B2 – Exhaust Fans and Stairwell Ducting


During Phase B2 of the abatement sequence, asbestos will be removed from ducting at the ceiling level of the exhaust fan outlets in the Service Building Mechanical Room. Asbestos will also be removed from a duct in the stairwell servicing the Service Building Mechanical Room. Use Type 2 enclosures for this phase.

Item	Description of Work	D/N	Notes
B2.1	Preparation of work areas and decontamination enclosure including establishing a negative pressure system.	D	
B2.2	Perform asbestos removal on ductwork on exhaust fans and on ductwork in the stairwell.	D	
B2.3	Obtain final clearance and deconstruct enclosures.	D	

3.7 Phase B3 – Service Building Storage Room

During Phase B3 of the abatement sequence, asbestos will be removed from the ducts at the west side of Storage Room adjacent to the Workshop.


Item	Description of Work	D/N	Notes
B3.1	Preparation of work areas and decontamination enclosure including establishing a negative pressure system.	D	
B3.2	Provide temporary fans in the Electrical Room B107 doorway as required to maintain the temperature in the room below 30°C.	D	
B3.3	Shutdown <ul style="list-style-type: none"> • B681-AHU – air handler serving the following: <ul style="list-style-type: none"> ○ P667-AHU in Primary Clarifier Control Room ○ P666-AHU in Primary Clarifier Electrical Room ○ Sump Room P103 ○ Gallery 3 ○ Grit Building Gallery • B683-AHU – air handler serving the following: <ul style="list-style-type: none"> ○ Electrical Room B107 ○ Storage Room B106 ○ Workshop B111 ○ Standby Generator Room B109. 	D/N	
B3.4	Perform asbestos removal on ductwork.	D	
B3.5	Obtain final clearance and deconstruct enclosures. At the end of each shift equipment must be restarted.	D	
B3.6	Coordinate with City to restart equipment.	D	

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3.8 Phase B4 – Service Building Workshop

During Phase B4 of the construction sequence, asbestos will be removed from the duct at the west side of the Workshop.


Item	Description of Work	D/N	Notes
B4.1	Preparation of work areas and decontamination enclosure including establishing a negative pressure system.	D	
B4.2	Block duct opening in Boiler Room. Block louvered opening on exterior west wall of Workshop.	D	
B4.3	Perform asbestos removal on ductwork.	D	
B4.4	Obtain final clearance and deconstruct enclosures. At the end of each shift equipment must be restarted.	D	

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3.9 Phase S1 – Secondary Clarifier Ventilation Room (Central Area)

During Phase S1 of the abatement sequence, asbestos will be removed from ducts in the central area of the Secondary Clarifier Ventilation Room. The main area is the outside air plenum serving the air handling units. Contractor to provide 12-16 hour shifts to minimize equipment downtime.

Item	Description of Work	D/N	Notes
S1.1	Preparation of work areas and decontamination enclosure including establishing a negative pressure system.	D	
S1.2	Provide temporary fans to ventilate the following areas: <ul style="list-style-type: none"> • PSA Equipment room (500 L/s) • Electrical Room S108 (760 L/s) • Truck Bay Control Room doorways as required to maintain the temperature in the room below 30 °C. Provide relief for Secondary Pump Room S101 as the supply fan S685-AHU will still be in operation.	D	
S1.3	Shutdown <ul style="list-style-type: none"> • R682-AHU – air handler serving the following: <ul style="list-style-type: none"> ○ PSA Equipment Room • S683-AHU – air handler serving Electrical Room S108 • S684-AHU – air handler serving the following areas: <ul style="list-style-type: none"> ○ Truck Bay Control Room ○ Scrubber Room S112 • S686-EF – exhaust fan serving the Secondary Pump Room S101 • S689-AHU – air handler serving Gallery S118 	D/N	Monitor temperatures in the each affected area. Personnel not permitted in the galleries during shutdown.
S1.4	Perform asbestos removal on ductwork including the outside air plenum and ducts in roof pockets.	D/N	
S1.5	Obtain final clearance and deconstruct enclosures. At the end of each shift equipment must be restarted.	D	
S1.6	Coordinate with City to restart equipment.	D	

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3.10 Phase S2 – Secondary Clarifier Ventilation Room


During Phase S2 of the abatement sequence, the asbestos will be removed from the ducts on the east side of the Secondary Clarifier Ventilation Room.

Item	Description of Work	D/N	Notes
S2.1	Preparation of work areas and decontamination enclosure including establishing a negative pressure system. Block of relief air at wall.	D	
S2.2	Perform asbestos removal on ductwork shown on drawing 1-0102S-M0002.	D	
S2.3	Obtain final clearance and deconstruct enclosures. At the end of each shift equipment must be restarted.	D	
S2.4	Coordinate with City to restart equipment.	D	

3.11 Phase S3 – Secondary Clarifier Ventilation Room

During Phase S3 of the abatement sequence, the remaining asbestos will be removed from the ducts on the east side of the Secondary Clarifier Ventilation Room which mainly serve S685-AHU. Contractor to provide 12-16 hour shifts to minimize equipment downtime.


Item	Description of Work	D/N	Notes
S3.1	Preparation of work areas and decontamination enclosure including establishing a negative pressure system.	D	
S3.2	Shutdown <ul style="list-style-type: none"> • S685-AHU – air handler serving the following areas: <ul style="list-style-type: none"> ○ Secondary Pump Room S101 ○ Compressor Room ○ Blower Room • S686-EF – exhaust fan serving the Secondary Pump Room S101 	D/N	Monitor temperatures in the each affected area.
S3.3	Perform asbestos removal on ductwork shown on drawing 1-0102S-M0002.	D/N	
S3.4	Obtain final clearance and deconstruct enclosures. At the end of each shift equipment must be restarted.	D	
S3.5	Coordinate with City to restart equipment.	D	

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3.12 Phase S4 – Secondary Clarifier Electrical Room

During Phase S4 of the abatement sequence, asbestos will be removed from the supply ducts in the Secondary Clarifier Electrical Room.

Item	Description of Work	D/N	Notes
S4.1	Preparation of work areas and decontamination enclosure including establishing a negative pressure system. Maintain access to motor control centres in electrical room.	D	
S4.2	Provide temporary fans to ventilate the Electrical Room S108 (760 L/s).	D/N	
S4.3	Shutdown <ul style="list-style-type: none"> • S683-AHU – air handler serving Electrical Room S108 	D/N	Monitor temperatures in the Electrical Room.
S4.4	Perform asbestos removal on ductwork shown on drawing 1-0102S-M0002.	D/N	
S4.5	Obtain final clearance and deconstruct enclosures. At the end of each shift equipment must be restarted.	D	
S4.6	Coordinate with City to restart equipment.	D	

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4.0 SCHEDULE

The Contractor is responsible for developing the detailed schedule to meet the specified dates identified in the Bid Opportunity document. The following dates are provided as a guideline of key expectations to meet the City's requirements. These dates do not necessarily correspond to the Critical Stage and Substantial Performance Dates, which are "at-latest" deadlines.

Description of Work	Expected Completion
Phase G1	August 21, 2013
Phase G2	August 21, 2013
Phase G3	August 21, 2013
Phase G4	August 21, 2013
Phase B1	September 20, 2013
Phase B2	September 20, 2013
Phase B3	September 20, 2013
Phase B4	September 20, 2013
Phase B5	September 20, 2013
Phase S1	September 20, 2013
Phase S2	September 20, 2013
Phase S3	September 20, 2013
Phase S4	September 20, 2013