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SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires
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Issuing Office - Bureau de distribution
Maintenance & Professional Consulting Services Division (FK)
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Gatineau
Québec
K1A 0S5

Title - Sujet FEDERAL BUILDING INITIATIVE (FBI)	
Solicitation No. - N° de l'invitation EP168-171967/A	**Amendment No. - N° modif.** 002
Client Reference No. - N° de référence du client EP168-171967	**Date** 2017-03-17
GETS Reference No. - N° de référence de SEAG PW-$$FK-290-72564	
File No. - N° de dossier fk290.EP168-171967	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2017-04-20**	**Time Zone** **Fuseau horaire** Eastern Daylight Saving Time EDT
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☐ **Other-Autre:** ☐	
Address Enquiries to: - Adresser toutes questions à: Ghoumrassi, Hakim	**Buyer Id - Id de l'acheteur** fk290
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Canada

This solicitation amendment 002 is issued to update the Statement of work.

DELETE Annex A GENERAL STATEMENT OF WORK in its entirety**,**
INSERT Revised Annex A GENERAL STATEMENT OF WORK**.**

No other changes apply.

GENERAL STATEMENT OF WORK

The ESCo will be responsible for implementing an energy savings program at:

- Guy-Favreau Complex - 200 René Lévesque Blvd. West, Montréal, Québec
- Dominique Ducharme Building - 400 Place d'Youville & 105 McGill Street, Montréal, Québec.

Guy-Favreau Complex

Facility and mechanical system overview

History

The Guy-Favreau Complex consists of two office towers, one of 11 storeys and the other 12 stories, a basilaire, green spaces of the public and semi-public park types and 2 underground parking garages with a total of 459 parking spaces. The government of Canada owns the basilaire and the parking garages, while it has a 50-year lease on the office towers.

The Guy-Favreau Complex was built in 1984 and in general, meets all construction codes, standards and regulations. It has a total leasable area of 67,209 m^2. The area breaks down as 32,216 m^2 for the East Tower, 20,476 m^2 for the West Tower and 16,253 m^2 for the basilaire. It features eight (8) categories of spaces (office, commercial, storage, judicial, instructional, processing, recreation and parking), but the vast majority are office spaces (over 75% of the area of the property).

Heating

Boilers 1 and 3 are both hot-water boilers fired solely by natural gas. These are Volcano fire-tube package hot-water boilers used for the heating water network, the domestic hot water network and fresh-air heating by insertion of face and bypass hot-water coils into the air handling units. Nominal capacity of 2,250 KW each (8,380 MBH). They date back to 1984. Boiler 2 is a dual energy boiler that can run on gas or oil (originating from the generator oil tank). However, the oil has never been used. It is a Volcano fire-tube package hot-water boiler that is used for the heating water network, the domestic hot water network and fresh-air heating by insertion of face and bypass hot-water coils into the air handling units. Nominal capacity of 2250 KW (8380 MBH). It dates back to 1984. Boiler 5 is a Volcano package steam boiler whose only source of energy is natural gas and which serves as an air humidifier for the air handling units (replacing the air washers that were used before installation of this boiler). Nominal capacity of 3,360 KW (984 MBH). It dates back to 1997.

Boiler 4 is an electric hot-water heater with four 10-stage elements (stages 1, 2, 7 and 8 are 135 KW; stages 2 to 6, 9 and 10 are 90 KW), used for the heating water network, the domestic hot water network and fresh-air heating. This boiler operates throughout the year. In winter, it is used for the heating water network and in summer for the domestic hot water network. Nominal capacity of 1,080 KW (3,686 MBH). It dates back to 1993. The maximum heat demand requires operation of the electric boiler and one of the three gas boilers, at maximum, while a second one is on standby and the last one is off. During the day, a natural-gas boiler as well as an electric boiler are used to heat the hot water.

Ventilation and air conditioning

The property is ventilated by several systems, most of which are 100%-fresh air systems. Some systems are also mixed air systems. All ventilation systems are located in the sheds of the two (2) towers and in the various machinery rooms at level B1. They distribute fresh air to a series of heat pumps distributed throughout the building. The outside air supply, for the entire Guy-Favreau Complex, is as follows: the East Tower features 2 systems with 100% outside air. In winter, the air is preheated, humidified and

filtered. In summer, it is only filtered. A mixed air system is also present (floor 13) which processes air in all seasons. The West Tower features 3 systems with 100% outside air. In winter, the air is preheated, humidified and filtered. In summer, it is only filtered. A mixed air system is also present (floor 11) which processes air in all seasons.

The main central air handling units are:

- Distribution system 13-1a-02 services offices on floors 03 to 12 East (west side) and 13-1a-03 services the offices on floors 03 to 12 East (east side); 100% fresh air; 380 kW of hot-water heating using face and bypass coils; air flow rate of 7,700 l/s (16,315 CFM) and 15HP drive motor; a steam humidifier cabinet; freon recovery unit (associated exhaust fans for 13-1e-02, air flow rate of 3,350 l/s and 3HP motor and for 13-1e-01, air flow rate of 6,700 l/s and 7.6 HP motor). In 2009, a speed controller was added to 13-1a-02;

- Distribution system 13-1a-06 services offices on floor 12 East; mixed air system that supplies 100% fresh air; xx kW of hot-water heating using face and bypass coils; air flow rate of 1,109 l/s (2,350 CFM) and 7.5HP drive motor; a steam duct humidifier (associated return fan for 13-1r-06, air flow rate of xxxx l/s and 0.75HP motor);

- Distribution systems 11-4a-02 and 11-4a-03 service offices on floors 03 to 11 West (except for certain sections of floors 04 to 08, which are serviced by system 11-4/A-15, see next section); 100% fresh air; 242 kW of hot-water heating using face and bypass coils; air flow rate of 5,000 l/s (10,600 CFM) and 10HP drive motor for 11-4a-03; air flow rate of 10,000 l/s (21,000 CFM) and 10HP drive motor for 11-4a-03; a steam humidifier cabinet; freon recovery unit (associated exhaust fans for 11-4e-02, air flow rate of 2,700 l/s and 3HP motor and for 11-4e-01, air flow rate of 5,300 l/s and 7.6 HP motor). In 2009, a speed controller was added to 11-4a-02.

- Distribution system 11-4a-15 services offices on floors 04 to 08 West; mixed air system with recovery; a heat wheel enables recovery of 70% of exhaust heat; 234 kW of heating by hot-water coils; 184 kW of coiling using coil-cooled water; air flow rate of 8,221 l/s (17,400 CFM) and 41HP drive motor (associated exhaust fan for 11-4e-15, air flow rate of 822 l/s (1,700 CFM) and 20HP motor);

- Distribution system 11-4a-06 services offices on floor 10 West; mixed air system that supplies 100% fresh air; 80 kW of heating by hot-water coils and xx kW of cooling using 2 direct-expansion gas coils; air flow rate of xxxx l/s (xxxx CFM) and 10HP distribution drive motor and 5HP recovery drive motor;

- Distribution systems 11-4a-01 and 13-1a-01 service the east and west atriums on floors 03 and 05; mixed air systems; 96 kW each in hot-water heating using face and bypass coils; air flow rate of 3500 l/s (7,400 CFM) each and 5HP drive motor for each; steam duct humidifiers; (associated return fans for 11-4r-01 and 13-1r-01 with air flow rate of 3,500 l/s (7,400 CFM) for each and 3HP motor for each);

- Distribution systems for 11-4a-04 and 13-1a-04 servicing the west and east commercial areas; 100% fresh air; 53 kW each of hot-water heating using face and bypass coils; air flow rate of 1,100 l/s (2,331 CFM) each and drive motor of 2HP each; steam duct humidifiers;

- Distribution system S1-1a-19 services offices on floors 00 and 01 East; 100% fresh air; 83 kW of hot-water heating using face and bypass coils; air flow rate of 1,700 l/s (3,600 CFM) and 3HP drive motor; a downstream steam duct humidifier (associated exhaust fan for 00-1e-10; air flow rate of 550 l/s (1,200 CFM) and 0.5HP drive motor);

- Distribution system S1-4a-17 services offices on floors 01 and 02 West; 100% fresh air; 113 kW of hot-water heating using face and bypass coils; air flow rate of 2,300 l/s (4,800 CFM) and 5HP motor; a downstream steam duct humidifier (associated recovery fan for xx-xx-xx of 3,400 l/s (7,200 CFM) and 2HP drive motor);

- Distribution system S1-1a-41 services offices 010 on floor 01 East; mixed air system that supplies 100% fresh air; xx kW of heating using hot-water coils, xx kW of cooling using direct-expansion gas coils and xx kW of cooling using cooled-water coils; air flow rate of 2,800 l/s (5,933 CFM) and 5HP drive motor; a downstream steam duct humidifier (associated exhaust fan for S1-1e-41; air flow rate of 1,885 l/s (3,994 CFM) and 3HP drive motor);

- Distribution systems S1-2a-09, S1-4a-12, S1-3a-16 and S1-1a-33 service the retail units in the basilaire; 100% fresh air; 63 kW of hot-water heating using face and bypass coils for S1-2a-09, S1-3a-16 and S1-1a-33 and 120 kW for S1-4a-12; air flow rate of 1,200 l/s (2,542 CFM) and 3HP motor for S1-2a-09 and S1-3a-16; air flow rate of 2,300 l/s (4,873 CFM) and 5HP motor for S1-4a-12; air flow rate of 1,300 l/s (2,755 CFM) and 3HP motor for S1-1a-33; all steam duct humidifiers;

- Distribution systems S1-1a-18 and S1-2a-32 service the Passport office on floor 01 East; 100% fresh air; 39 kW of hot-water heating using face and bypass coils for S1-1a-18 and 93 kW for S1-2a-32; air flow rate of 600 l/s (1,271 CFM) and 1.5HP motor for S1-1a-18 and 1,900 l/s (4,026 CFM) and 3HP motor for S1-2a-32; steam duct humidifiers (associated exhaust fans of 300 l/s for S1-2e-26 and of 300 l/s for S1-2e-25 and 0.5HP drive motors);

- Distribution systems S1-3a-35 and S1-3a-36 service the YMCA gym and weight room on floor 01 West; 100% fresh air; 39 kW of hot-water heating using face and bypass coils for each system; air flow rate of 800 l/s (1,695 CFM) and 2HP motors for S1-1a-18 and 1,900 l/s (4,026 CFM) and 3HP motor for S1-2a-32 (associated exhaust fan for 00-3e-12, 1,175 l/s (2,500 CFM) and 1HP motor);

- Distribution systems S1-2a-05, S1-2a-06, S1-3a-08 and S1-3a-10 service the residential property corridors; 100% fresh air; 182 kW of hot-water heating using face and bypass coils for S1-2a-05, 234 kW for S1-2a-06, 183 kW for S1-3a-08 and 156 kW for S1-3a-10; air flow rate of 3,500 l/s (7,416 CFM) and 7.5HP motor for S1-2a-05 and S1-3a-08, 4,500 l/s (9,535 CFM) and 7.5HP for S1-2a-06 and 3,000 l/s (6,356 CFM) and 5HP motor for S1-3a-10; steam duct humidifier for the S1-2a-06;

- Distribution system S1-1a-11 services the generator room; mixed air system; hot-water heating; air flow rate of 23,500 l/s (49,794 CFM) and 25HP drive motor (associated recovery fan for S1-1r-01 of 15,000 l/s (31,783 CFM) and 25HP drive motor);

- Distribution system S1-1a-13 services the electrical substation; mixed air system; hot-water heating; air flow rate of 14,200 l/s (30,088 CFM) and 20HP drive motor (associated recovery fan for S1-1r-02 of xxxx l/s (xxxx CFM) and 15HP drive motor);

- Distribution system S1-1a-15 services the level-B1 machinery room; mixed air system; hot-water heating; air flow rate of 4,300 l/s (9,100 CFM) and 5HP drive motor (associated recovery fan for S1-1r-03 of xxxx l/s (xxxx CFM) and 2HP drive motor);

- Distribution system S1-1a-14 services the combustion air for the level-B1 boiler room; 100% fresh air; air flow rate of 2,100 l/s (4,450 CFM) and 5HP drive motor (associated recovery fan for S1-1r-03 of xxxx l/s (xxxx CFM) and 2HP drive motor);

- Distribution system S1-1a-03 services the level-B1 loading dock; 100% fresh air (only starts up if the carbon monoxide (CO) detection system displays a value that is too high); 405 kW of hot-water heating using face and bypass coils; air flow rate of 10,800 l/s (22,900 CFM) and 15HP drive motor (associated interlocked exhaust fan for S1-4e-03, 11,700 l/s (24,800 CFM) and 5HP drive motor). The system is also connected to machinery and electrical room return systems (S1-1a-13 and S1-1a- 15) enabling recirculation of hot air which would normally be removed from these areas. The total recirculation rate is 900 l/s (1,907 CFM);

- Distribution systems S1-2a-07 and S1-4a-39 service the east and west warehouses; 100% fresh air; air flow rate of xxxx l/s (xxxx CFM) and 1.5HP motors;

- Distribution systems S1-2a-01, S1-3a-02 and S1-4a-04 service the level-B1 residential parking garage; 100% fresh air; 488 kW of hot-water heating using face and bypass coils for each system; air flow rate of 13,320 l/s (28,225 CFM) and 20HP motors for each (associated interlocked exhaust fans for S1-2e-01, S1-2e-02 and S1-4e-04, 14,800 l/s (31,360 CFM) and 10HP drive motor);

- Distribution systems S2-1a-01, S2-2a-02 and S2-3a-03 service the level-B2 residential parking garage; 100% fresh air; 571 kW of hot-water heating using face and bypass coils for S2-1a-01 and S2-2a-02 and 541 kW for S2-3a-03; 20HP motors for each and air flow rate of 15,200 l/s (32,207 CFM) for S2-1a-01 and S2-2a-02 and 14,400 l/s (30,512 CFM) for S2-3a-03 (associated interlocked exhaust fans for S2-1e-01, S2-2e-02 and S2-4e-03 of 16,500 l/s (34,962 CFM) and 20HP drive motors).

Elevator wells have their own ventilation unit. The underground parking ventilation is monitored for CO levels by means of a centralized system. Other smaller systems are also used to pressurize elevator airlocks and to provide heating for small areas, some of which are located in the floor space. The section below further details the main ventilation systems on the property.

With regard to mechanical systems: two horizontal loop circuits, one peripheral circuit and an interior circuit provide heat and air conditioning to every floor of the East and West Towers. Air/water reverse-cycle, heating or air-conditioning heat pumps (approximately 1,050 units with a variable capacity of 7,000 to 50,000 BTU/h) located in the ceilings of the storeys provide target temperature control. The heat pumps supply fresh air to the ceiling space, heat or cool it as needed and distribute it through the ceiling diffusers. This fresh air is distributed in the ceiling space by centralized supply systems located in the sheds.

The original units were all of the make Markhot and almost all have been replaced with McQuay heat pumps. Almost 100% of the 149 original 1st-generation heat pumps (models from 1984 to 2004) still need to be replaced in the basilaire; nearly 17% of the 311 original 1st-generation heat pumps in the West Tower still need to be replaced (44 units), as do nearly 17% of the 593 original 1st-generation heat pumps in the East Tower (148 units). The 2nd-generation lots (2005 to 2011) will require replacement starting in 2022 for 267 heat pumps in the West Tower and 445 heat pumps in the East Tower.

Originally, the plan was to install heat pumps for completely open areas on every floor. This was only done for a brief period of time before the start of construction on the enclosed offices. Today, a large portion of the area of the different building floors features enclosed offices or conference rooms. Since the initial upgrade projects, the new enclosed areas have been handled individually by installing one heat pump for each enclosed area and one air transfer fan to improve air transfer between the areas. We are currently attempting to resolve the general issue of noise caused by operation of the 1st and 2nd-generation McQuay heat pumps.

Humidification

The systems are fitted with steam humidifiers powered by Volcano steam boilers (Boiler 5) with a capacity of 3,360 MBH from the thermal plant. Three types of humidifiers are used: fixed cabinet systems with a cabinet upstream of the air distribution fan that supply humidified air to the storeys; fixed duct systems downstream of the air distribution fan that supply humidified air to the storeys; installation of autonomous electrical steam humidifiers supplied with cold water heated by electrical elements, converted into steam that is supplied through a hose in the main supply duct of the fan units upstream of the air distribution fan cabinet. This humidifier type services an air handling unit not covered by the steam boiler.

Cooling

The cooled-water network for basic building systems is mainly comprised of the network of 1050 heat pumps described above that air-condition the spaces in the smaller areas adjacent to one another. The three existing coolers on the property are more dedicated to special, secondary and non-primary needs.

First, the level-B1 boiler room is fitted with a dual-compressor McQuay heat pump, S1-25.110.1-SYST REF. This R134a reciprocating cooler dates back to 1997 and has a service life of 20 years under normal operating conditions. This device, with a capacity of 130 tonnes, includes four (4) compressors: three (3) compressors of 35 tonnes each and one (1) compressor of 25 tonnes. The compressors operate in pairs or all at once, depending on demand. The cooler compressors serve to heat a 10,000-gallon water tank that preheats domestic hot water using three plate exchangers, servicing the high-pressure and low-pressure domestic water networks. Two shell and tube exchangers preheat the domestic water from the recovery unit.

In March of 2011, the initial setup with the first cooler from 1997 will be upgraded with a second 2011 McQuay cooler, which will provide relief for the 1997 model. This latter unit will then serve as a backup cooler in scheduled shifts in order to maintain capacity. Thanks to this setup, this 1997 cooler, which has been operating under high loads since its installation, will be able to reach its scheduled end of service life of 2017. A new plate exchanger in combination with a new circulation pump will complete this new setup.

The original design for the central cooling systems was based on a heat gain quantity estimated using factors such as number of occupants and the heat generating equipment. This is because since the year of construction, the number of heat generating devices has been constantly increasing, such as photocopiers and IT systems. This has resulted in an appreciable heat gain that was not originally planned and thus also in reaching the maximum capacity of the central cooling systems. In this regard, a report by Dessau-Soprin of October 2000 provides options to optimize and boost cooling capacity. It was recommended to install two additional water coolers and new coils inside the fresh air systems.

Finally, in 2004, we installed three (3) 425-tonne water towers for the East Tower and two (2) 450-tonne water towers for the West Tower. These water tower serve to cool the heating water network for the property. Typically, water towers keep the network temperature below 22 ºC. These 5 BAC towers are made from stainless steel. They cool the water in a cascade setup by drawing air from the sides toward the top using powerful, belt-driven, bladed fans. The tower water is collected in the interior tanks and pumped back up to the towers for cooling. The cooling water in closed loops of the water network of the towers is processed by a fixed filtration system with a Vortisand sand filter and a 304 stainless steel tank enabling separation of the coarsest particles. A Trane compressor air-cools the hot gases from the Trane cooler of 11-4a-15.

Controls

The Guy-Favreau Complex is fitted with a centralized digital control system that controls operation of all heating, ventilation and air conditioning system equipment and distribution and exhaust fans. The control system is of the centralized digital type enabling operation of electromechanical systems with over 2500 points. It includes a central control station connected to local programmable controllers and to interface devices. The entire physical system dates back to the construction of the building and has undergone past renovations. Pneumatic control is not present on this property. Electrical and electronic control is the exclusive operating mode for modulation of terminal mechanical devices such as valve and flap actuators. The centralized digital control system was updated for the turn of the year 2000 in its operating software and its system hardware (NCX-2000) at the time. In 2010, the new Envision software (version not known) by VCI Contrôles was installed, configured and programmed. The contract with VCI should provide for continuous updates. The old OWS server was replaced in 2010 with a new Envision server. The two other servers controlling the East and West Towers date from 1998 and have not been replaced.

Control of the building is managed by the company VCI Contrôles Inc. for advanced maintenance and DDC (Digital Direct Control) updates. The network architecture is comprised of around 52 PCUs (Programmable Control Units, model 9100) installed between 1992 and 1994, 26 programmable VECs (VCI Envision Controllers) installed between 2006 and 2009 and 180 non-programmable controllers known as FIDs (Field Interface Devices, model 8100) including 523 PCBs installed between 1992 and 1994. Onsite FIDs are in 4 sizes of cabinets containing a maximum of a single card, 4 cards, 9 cards and 16 cards. Twelve ASC network interfaces connect the programmable VECs and the non-programmable FIDs. The system output signals trigger electronic actuators which mechanically modulate the opening and closing of 2-way and 3-way hot and cold water valves and also mechanically modulate the opening and closing of blade dampers for primary and secondary air handling units, heat pumps and variable volume terminal boxes on the different storeys.

Plumbing

Cold and hot drinking water network: Cold drinking water comes from the municipal network of the City of Montreal via two inlets of DN 150 mm: one located to the east at St-Urbain Street and the other to the west at Jeanne-Mance Street. Each inlet is fitted with shut-off valves and a water meter with remote flow readout for the City and is also connected to the building automation system. Backflow preventer valves are not installed at water inlets. The main supply piping is made from steel. This piping dates back to the original construction in 1984. The monitoring valves date back to the late 1990s. Most of the distribution piping dates back to 1984 and appears to be steel for the large diameters and all copper for the small ones. The domestic cold water distribution system is divided into two (2) sectors: one at municipal pressure (without booster pump) to supply the lower floors of the Complex, i.e. the basement floors and floors 1 to 5, which vary between 517 kPa to 551 kPa (75 psi to 80 psi) and the other to supply the higher floors using 3 booster pumps. The domestic hot water networks are distributed in the same manner as the cold water networks. The service life of a copper piping network is on the order of 40 years. Domestic water circulators maintain the hot water temperature in the distribution network. The circulators are bronze, with flexible drives installed directly onto the piping.

Stormwater drainage network: Roofs are drained by downpipes connected to the sanitary and stormwater network. Several roof drains lead to stormwater downpipes connected to several storm sewer outlets of DN 200 mm, each draining into the municipal storm sewer network. Please note: Some roof drains are clogged, which is a completely unacceptable situation. Moreover, the piping connections with the roof drains have become corroded and stripped of their insulation.

As for wall outlets found in the service spaces along the outer peripheral walls, we identified four (4) along the wall facing René Lévesque Street west, one along the wall facing Jeanne-Mance Street, three

(3) along the wall facing La Gauchetière Street. It was not possible to visit the service space by St-Urbain Street southwest, but this space likely features a major sanitary outlet. The French drain network around the building foundation drains into the sumps at level-B2, which are fitted with submersible pumps with outlets connected to the stormwater drainage network. The stormwater drainage piping is in cast iron sections with mechanical joints to wall pipes which are connected there by packing seals. The parking garages at levels B1 and B2 are serviced by sumps with steel grilles dating back to 1984. We have identified 3 sand traps on the ceiling of level B2 which capture granules from level B1. Please note: Some floor drains on B1 drain to level B2 and are damaging highly corroded segments of air duct.

Essentially, the building features sanitary rooms one each of its floors. The plumbing fixtures in washrooms in the basilaire and sheds date from the original facilities installed in 1984. The washrooms servicing the building are fitted with: wall-mounted toilets with extended bowl and flush valves or floor-mounted ones with flush tanks; white enamelled steel sinks installed into the counter with adapted or non-adapted taps with two knobs; wall-mounted urinals with flush valve; floor drains and some washrooms with ceramic shower stalls on level B1 and on the floors for customers. The sanitary plumbing fixtures are of the make Crane and Crane Plumbing. The condition of all of these fixtures is still acceptable despite the age of most of the older fixtures, which dates back to 1984, which is to say they are 27 years old. In total, they come to approximately: 42 wall toilets with flush valve, 6 floor toilets with tank, 10 wall urinals, 40 enamelled steel sinks, 3 simple sinks and 3 showers.

However, 2008 and 2009 saw a major renovation project for the washrooms of the two office towers (mail floor 01 and floors 02 to 11 West and 13 East) which involved changing out all plumbing fixtures, toilets, sinks and urinals as well as the vanity tables, and installing new ones adapted to persons with reduced mobility. The new sanitary plumbing fixtures are of the make Crane Plumbing or Toto for urinals and Toto for toilets. The round stainless steel sinks are of an unknown make. All new toilets and urinals have concealed valves activated by proximity switches. The sinks have exposed valves activated by proximity switches. The fixture counts for the towers came to approximately 5 sinks and 5 toilets for women and 5 sinks, 3 toilets and 3 urinals for men times the number of floors and towers. We have identified around 32 sinks for tower customers.

The domestic cleaning facilities and main the machinery rooms are fitted with enamelled cast iron wall tanks or fibreglass floor tanks with taps with 2 knobs. The sanitary fixtures date from 1984. In total, the basilaire and sheds feature approximately the following: 6 enamelled steel wall tanks and around 21 enamelled steel wall tanks for the towers on floors 02 to 11 West and to 13 East.

The property currently features six emergency eyewash stations. A thermostatic mixer supplies each of these eyewash stations with the required controlled-temperature water. The property features adequate eyewash stations. Small wall eyewash stations are suspended at specific locations in the machinery rooms.

On the outside of the walls of the building, we find 11 hose taps built into the wall which are not necessarily of the frost-proof type and which do not feature backflow preventers. Most of the indoor hose taps, which is to say 18 of them, are fitted with extension hose reels. Backflow preventers shall be installed on these indoor taps. The large blue water-hose reels in the garages, around 18 in number, shall be replaced by new ones in 2011. However, in 2011, we must add 30 tanks to the taps, indoor and outdoor service hoses to 30 taps and vacuum breaker garage hose reels that screw onto the taps to 20 taps.

Fire Protection

The entire Guy-Favreau Complex is protected by a compete fire protection system with features such as: an addressable fire alarm system, an automatic sprinkler system, a fire riser network, fire hose outlets and a network of portable extinguishers. Maintenance for these networks is provided by specialized companies. An automatic sprinkler system receives water supply from 2 pumps from 1984

located in level B1 and connected to a "jockey pump" replaced in 2007. These pumps were designed to meet the water flow and pressure requirements of the automatic sprinkler system and for the fire line network. The security service surveillance room in the Complex is protected by a water extinguishing system from 1999 controlled by a pre-action system of the make Fireflex Total Pack, and is recognizable by the presence of a large red cabinet.

In the property, we have identified fans connected to all spaces, whose function is either to remove smoke to the outside of the property or to pressurize stairwells and the lobbies leading to them. These ensure smoke-free air for user outlets during a fire. In addition, we also identified carbon monoxide (CO) detectors in the garage at level B2 and detectors in the garage at level B1, for a total of 27 carbon monoxide (CO) detectors. Moreover, we have identified 7 methane detectors at undetermined locations on the property (perhaps in the vicinity of the sanitary sumps). Currently, no refrigerant gas detector is connected to the 3 coolers located at level B1 and at floor 12 West.

Dominique Ducharme Building

Facility and mechanical system overview

History

400 Place d'Youville, and 105 McGill Street are twin buildings sharing a central heating and cooling system. The total area of the two buildings is on the order of 39,725 m^2. Each building has a basement, 9 above-ground floors, and a shed. These buildings are mainly occupied during the day from 7:00 a.m. to 5:00 p.m., Monday to Friday, by a total of around 800 persons. Some sections may be occupied occasionally outside of these hours.

A major renovation affected 105 McGill in 2012-13 and in 2013-14. At that time, storage areas on floors 1, 3, 6 and 7 were converted into office space. Essentially, the air handling units on floors 3 and 6 were replaced and air handling units were added to floors 1 and 7. Moreover, the air intake unit of the shed garage was renovated, the basement welding workshop facilities were brought up to standards and two shed coolers (and associated compressors) dedicated to Environment Canada operations were replaced.

Heating

Building heating is provided by two new steam boilers (numbered 1 and 2) installed in 2010, with a capacity of 2,250 kW each (9,606 MBH, 287 BHP). These two boilers provide production of steam during the winter and supply the following networks: domestic hot water, air humidification, peripheral convector heating networks, ventilation system heating coil networks, steam unit heater and laboratory autoclave (105 McGill). One out of every two boilers is in operation in the winter, which is from the month of September to the month of May. Moreover, steam boiler 3 from 1995, with a capacity of 1,005 kW (3,347 MBH; 100 BHP) provides production of steam in the summer for the following needs: domestic hot water and laboratory autoclave (105 McGill Street, floor 9). The boilers are located in the boiler room in the basement of 105 McGill Street. Annual inspection of the flues of the boilers and the generators is obligatory. It is also necessary to renovate the boiler oil supply system and bring it up to standards, as was done for the generators in 2006. Please note: In January 2012, the combustion chamber in boiler 2 (the one installed between the other two) suffered an explosion and it burst open on both sides. It was repaired in late January/early February. Since then, the integrity of this boiler has been re-confirmed, in order to ensure initial approval and warranty.

Ventilation and air conditioning

400 Place d'Youville is ventilated and air-conditioned by 25 different ventilation systems. Out of these, 18 constant flow systems provide ventilation and air conditioning for office spaces and are supplied with fresh air by a variable flow system. Two variable flow systems serve to ventilate and air-condition the laboratories on floor 8. A system of the supply/return type used to service the cafeteria, but was removed because the cafeteria has since been converted into office space. Three systems provide ventilation or air conditioning for electrical rooms. Two air conditioning units service the server room and the IT room. These systems are located in the machinery rooms on each building floor and in the shed. Moreover, a total of 15 air extraction systems remove air from the laboratories, the kitchen exhaust hood, the washroom and the service rooms.

105 McGill Street is ventilated by 45 different ventilation and air conditioning systems. Out of these, 30 systems provide ventilation and air conditioning to office spaces. Fourteen of these systems are variable flow and sixteen are constant flow. These systems are located in the machinery rooms on each building floor and in the shed. A fresh-air intake system, located in shed D, supplies fresh air to systems located on floors 3, 4 and 5. A second fresh-air intake system, located in shed A, supplies fresh air to systems located on floors 6, 7 and 8. Seven systems supply the laboratories on floors 8 and 9. The latter are variable flow systems. The other systems provide ventilation to service rooms, such as the boiler room, cooler room, electrical station, garage, etc. For this report, renovation of the air handling units is intended to include replacement of their subcomponents such as coils, blades and motors. The units themselves will not be replaced within the 30-year time horizon for this report. As for exhaust, several exterior fans will be obsolete and require replacement in seven years. The large and medium interior fans will have to be renovated. The air handling units and their ducts are slated for a complete cleaning of all systems at regular intervals. They must also subsequently undergo balancing and an air quality study according to an accommodation sequence, in coordination with residential customers. Upgrades have been requested for partitioning devices such as fire dampers. Please note: Redo insulation on outdoor air ducts, located in the short natural gas inlet shed by Normand Street. These ducts originate from the deaerator room on floor 1 of 105 McGill Street.

Humidification

The ambient air for the entirety of the two buildings is humidified by steam humidifiers installed in 2011 in the ventilation cabinets. The steam originates from the boilers located in the basement of 105 McGill Street. A total of 46 humidifiers are used for all of the ventilation systems.

Cooling

The central cooling system is comprised of two centrifugal coolers with a cooling capacity of 575 tonnes each. Two water towers, with a cooling capacity of 425 tonnes, are connected to the coolers. Moreover, two water coolers are installed with a capacity of 60 to 90 tonnes each, one of which produces glycol water for laboratory systems at 105 McGill Street. A cooling unit, with a capacity of 125 tonnes, is connected to systems UC1 and UC2 at 400 Place d'Youville. There are also five other cooling units for the server rooms, the IT room, the elevator machinery room and the offices on floor 1 on the east side of 400 Place d'Youville. A water cooler is used during the summer to cool the water in the fish ponds on floor 8 of 105 McGill Street. The 125-tonne cooler needed for the operations of Environment Canada on floor 8 of 400 Place d'Youville is currently in need of replacement.

Regulation

All of the mechanical systems of the two twin buildings are regulated by a centralized Insight DDC system by Siemens, which enables electronic regulation of all systems. Upgrades in successive stages have been suggested, from a migration from the MBC generation in the 1990s to the PXC generation in the 2010s. Pneumatic regulation is present on the property and modulates all of the terminal

components of the blades and valves. The compressors and their air dryers supply control air and are in good condition except for one compressor, which was replaced in 2012.

Plumbing

Hot and cold drinking water network: cold drinking water comes from two inlets originating from the municipal network of the City of Montreal. Each inlet is fitted with shut-off valves and a water meter with remote flow readout for the City and is also connected to the building automation system. Backflow preventer valves are not installed at water inlets. This piping dates back to the original construction of the building in 1978, or to the time of the first major renovation. The monitoring valves date back to the late 1990s. The domestic cold water distribution system is divided into two sections. The first section operates at municipal pressure (without booster pump) to supply the lower levels of the 2 properties, i.e. the basement and floors 1 to 5, which vary from 517 kPa to 551 kPa (75 psi to 80 psi). The other section supplies the upper levels of floors 5 to 9 by means of 2 booster pumps located in the basement of 105 McGill Street. The domestic hot water networks are distributed in the same manner as the cold water networks. Domestic water pumps maintain the hot water temperature in the distribution network.

Stormwater drainage network: roofs are drained by downpipes connected to the sanitary and stormwater network. Several roof drains lead to stormwater downpipes which are connected to one storm sewer outlet for each property. The French drain network around the foundation of the two buildings drains into two sumps which are drained by two submersible pumps into the municipal storm sewer network. The parking garages in the basement of 105 McGill Street are serviced by sumps with steel grilles dating back to 1995.

Sanitary drainage network: the washrooms on the floors of the two buildings are connected to the sanitary drainage system by means of two sanitary risers and venting risers each descending into a vertical mechanical shaft and reconnecting in the basement.

The domestic hot water is mainly produced from a hot water production system comprised of two storage tanks, one of which is fitted with a steam/water exchanger and the other with two electrical elements (100 kW each). Interior renovation of two tanks is recommended in order to prolong their service life. In addition, we have identified a system comprised of one tank and one electric exchanger that services the laboratories at 400 Place d'Youville. Finally, two tanks with electric elements service the laboratories at 105 McGill Street which had to be replaced in 2012.

Essentially, the building features sanitary rooms on each of its floors. Most of the plumbing fixtures in the washrooms date from 1995. In 2000, several standard fixtures were replaced with models adapted for persons with reduced mobility. The condition of all of these fixtures is still acceptable, which means they can continue to be used. The property currently features three emergency eyewash stations. A thermostatic mixer supplies these eyewash stations with the required controlled-temperature water. The property needs two more eyewash stations, which must be installed in 2012. Each of these stations shall always be accompanied by a thermostatic water mixing valve and shall meet the latest version of installation standard ANSI Z358.1, Article 9.0, or its most up-to-date version. The vacuum breakers are safety devices necessary for the health and safety of users in order to protect against backflow as required in the anticontamination measures in the National Plumbing Code of Canada, Division B, Article 2.6.2. These must be added to mop sinks and indoor and outdoor taps.

Fire Protection

The 2 twin buildings are fitted with an automatic water sprinkler system with a separate inlet at 400 Place d'Youville servicing all spaces with sprinkler heads. Three fire pumps driven by electric motors pump the water to the heads. The jockey-type pump regulates the fire network pressure. A sprinkler network branch splits off to service 5 stairwells in the 2 twin buildings, with risers and fire hose outlets. All floor areas are adequately covered by portable fire extinguishers. CO, NO and R134a detectors

monitor to ensure that permitted concentrations of these gases are not exceeded in the occupied areas. However, refrigerant gas detectors will need to be added to two new coolers in the shed at 105 McGill Street. An old west stairwell pressurization fan for 105 McGill street ensures smoke-free air for user outlets during a fire. This must also be replaced in the renovation project.

The following is a statement of the general scope and conditions of work that are required from the successful ESCo for this project, but it is not an all-inclusive list.

1. The ESCo must undertake engineering and project management and related responsibilities and duties as required to implement energy efficiency improvements in the facility.

2. The ESCo must guarantee the performance in terms of a fixed payback period not exceeding 120 months. This must be worked out using financing cost at an interest rate as shown in Appendix "I", page 5.

3. This requirement applies to all buildings listed in the table above at CFB Shilo.

4. The ESCo must conduct an assessment, which must examine the existing facility, physical plant, systems and equipment, operating and maintenance procedures and existing space conditions, and assess the potential for reduction in energy consumption and energy demand. The ESCo must develop the concept of the energy efficiency improvements related to but not restricted to: lighting, motors, heating, ventilation and air conditioning, envelope improvements, control systems, load sharing and load shedding.

5. The existing environmental conditions and systems operating hours are based on the client department's program requirements and system capabilities and must be maintained. Any changes to these will have to be approved by Canada.

ADDITIONAL PROVISIONS

1. Canada reserves the right to review and reject any of the retrofit measure proposed by the ESCo in the Energy Audit Report, for inclusion in the Contract.

2. Client Requirements

2.1 Clients, with sensitive programs occupy these buildings. Any disruption during operating hours will be minimal. The operating hours vary from area to area. In computer rooms, the work affecting the operations can be implemented during a period coordinated with the occupants.

2.2 In occupied areas, the implementation of Measures must not disrupt the operation of the facility. On site modifications to equipment are to be coordinated through Canada, and, if need be, most of the Work must be performed during "off" hours and no premium must be charged for this.

2.3 Working Hours in occupied areas must be established before implementation of the Work in any area. The ESCo must give Canada adequate advance notice before start of the Work in any area.

2.4 The existing comfort level in terms of thermal conditions, humidity levels, air circulation and indoor air quality must not be lowered. If the codes allow levels below the existing levels, then approval must be obtained from Canada before making changes to present levels. Canada may require a change in baseline.

3. Applicable Codes, Standards & Guidelines

3.1 The design and implementation of all Improvements and systems and subsystems and modification and up-grading of all existing equipment, systems, and sub-systems must conform to ASHRAE 90.1, Canada Occupational Safety & Health Regulations pursuant to the Canada Labour Code Part II, Treasury Board Personnel Management Manual Occupational Safety & Health, Health & Safety Guidelines for Energy Management Projects under the Federal Buildings Initiative, the Department Environmental Standard for office accommodation - MD 15000, and all applicable building codes. Refer to the National Energy Code, (2011) where applicable.

4. Energy Audit Report

4.1 The first phase of this Contract will be the preparation of an Energy Audit Report consistent with the ESCo's Proposal within five (5) months after signing of the Contract to confirm the findings of the Proposal Brief. The Energy Audit Report must meet the requirements covered under Appendix "A", Definitions.

4.1.1 Preparation of the Energy Audit Report can be completed in stages. The last stage must be completed within the above referenced five (5) months.

4.2 The ESCo must supplement the Energy Audit Report with any additional Measures, as approved by Canada, before preparing Design Documents for that Measure.

4.3 If the Savings found in the Energy Audit Report do not total to at least 90% of the savings projected in the Proposal, there must be no payments from Canada should it exercise its right to Terminate the Contract.

4.4 The ESCo must define the equipment, systems and sub-systems that are affected by the Improvements in the Energy Audit Report.

4.5 Canada must review and accept for implementation several or all of the Measures identified in the Energy Audit Report. Canada reserves the right to reject any of the retrofit measures proposed by the ESCo in the Energy Audit Report, for inclusion in the Contract. The approved Measures must become part of the Contract.

5. Monthly Reporting By The ESCo

5.1 Monthly reporting must begin the month following signing of the Contract. Each monthly report must provide Canada with sufficient details as required under Appendix “F” and Annex “A” Section 13.1.8.5 to permit a thorough and accurate assessment of the report.

6. Related Work

6.1 The ESCo must select and implement an energy monitoring system, including all hardware and software required to quantify and qualify projected and actual Energy Savings. The ESCo must provide comprehensive training to Canada’s staff in the use of the system.

6.2 The ESCo must review and update existing operating manuals or prepare new operating manuals to reflect changes resulting from the Measures. The ESCo must provide all required troubleshooting manuals, operating manuals, as-built drawings and other written instructions for new and affected equipment and systems, and must incorporate this documentation into the existing manual inventory.

6.3 The ESCo must provide support to, and must participate with Canada in its task of providing

information to the occupants regarding the benefits of energy efficiency improvements and their effects on the workplace. Support must include, but not be limited to, all labour and material required for provision of such information kits, information seminars, videos and monitoring as may be required in complete coordination with the tenants as defined in the Energy Audit Report.

6.4 Additional work may be requested by Canada in addition to the requirements of this Contract, and the need for which is determined not to have resulted from the Implementation of the Measures. Canada may pay the ESCo directly for such work or may request that the ESCo extend the Guaranteed Payback Period in accordance with GC 32 of this document.

7. Construction Schedule

7.1 Upon approval of the Measures contained within the Energy Audit Report, the ESCo must submit for approval to Canada a proposed critical path schedule. This schedule must define, at a minimum, each phase of each Measure described in the Energy Audit Report, for the performance of the Work, and Commissioning, which must include a date for Completion of each Measure and a Commencement Date.

7.2 The ESCo must submit to Canada, on a monthly basis from the signing of the Contract, a report which must reasonably describe the status of the Work in accordance with Annex “A” Section 10.

7.3 The ESCo must complete and commission the last Measure of the Improvements within the time period specified in the ESCo’s Proposal Brief, beginning from the signing of the Contract.

7.4 Upon written approval by Canada, the ESCo may be authorized to modify the construction schedule, which can exceed the time period stated in Annex “A” Section 7.3.

8. Design And Working Documents

8.1 The ESCo must execute the following work for the accepted Measures following the Energy Audit Report:

8.1.1 Prepare, complete and furnish for review by Canada, as per agreed schedule, the Design Documents for each approved Measure, in accordance with the general design direction and philosophy expressed in the Energy Audit Report.

8.1.2 Upon acceptance of the Design Documents, prepare, complete and furnish for the approval of Canada, the Working Documents for the installation of the Improvements in accordance with the approved Design Documents and performance specifications;

8.1.2.1 A professional engineer, registered in the Province where the Work is located, must certify the Working Documents and Shop Drawings.

8.2 The ESCo must be responsible to ensure accuracy of all plans, specifications and any other documentation used to plan or design the Improvements. The ESCo must be liable for any damages arising from inaccuracy or incorrectness of any plans, drawings, specifications or other design documentation prepared by the ESCo and/or its Subcontractors.

8.3 No acceptance or review by Canada, whether expressed or implied, must be deemed to relieve the ESCo of any professional or technical responsibility for the plans, drawings, calculations or other material prepared or assembled by or on behalf of the ESCo. The review by Canada must be for the sole purpose of ascertaining general design concept and maintainability of systems, and must not

mean approval of the design detail inherent in the documents.

8.4 Without restricting the provisions of GC 56, the ESCo must comply with all statutes, regulations, by-laws and codes applicable to the Improvements, and must obtain the required permits, consents and/or approvals for the Work, as required by local, Provincial, and Federal jurisdictions.

8.5 For a new Direct Digital Control (DDC) system, the ESCo must meet the following Canada requirements:

8.5.1 In preparing project specifications, the ESCo must use the current edition of the National Master Specification, (NMS) Division 25, Section 250111-259001, in accordance with the "NMS User's Guide". The ESCo retains overriding responsibility for content and must edit, amend and supplement the NMS as deemed necessary to produce an appropriate project specification free from conflict and ambiguity. Project specifications will be subject to review by Canada.

8.5.2 The system must meet Canada's bilingual requirements.

9. Changes In Design And Working Documents

9.1 Notwithstanding any approvals previously given, the ESCo must make changes in the Design Documents when requested in writing by Canada. Prior to implementing such changes, the ESCo must advise and obtain approval from Canada in writing of the effect if any, of the said changes on the Improvements in terms of time to complete, the Total Cost of Project, the Guaranteed Payback Period, Energy use and any other implications that may arise.

10. Duties Of The Parties During The Construction Period

10.1 During the period of construction of the Improvements, the ESCo must be responsible for:

10.1.1 The preparation, issuance and administration of all tender calls, in accordance with generally accepted tendering practices.

10.1.2 Ensuring that subcontractors follow the instructions or protocols as established by Canada in conjunction with the occupant, to ensure that the functioning of any computer facility must not be interrupted.

10.1.3 Ensuring that the ESCo personnel or the ESCo's subcontractors' personnel working on the systems for any computer facility and related areas have experience in working on facilities of a similar nature.

10.1.4 The preparation, issuance and administration of purchase orders and subcontracts.

10.1.5 The verification and approval of shop and manufacturers' drawings.

10.1.6 The correspondence relating to the completion of the Improvements.

10.1.7 The approval of substitutions of methods and materials after consultation with Canada.

10.1.8 Submitting to Canada a copy of all subcontracts, with a summary of the scope of Work.

10.1.9 Developing an implementation schedule, consistent with the project schedule described in Annex "A" Section 7, showing the detail and extent of occupant spaces to be disturbed

during the Work and a plan to minimize the disturbances.

10.1.10 Providing appropriate site supervision to ensure that the progress of the Work and the quality of materials and workmanship are in conformity with the requirements of the design and the subcontracts entered into between the ESCo and the Subcontractors to complete the Improvements.

10.1.11 The preparation and provision to Canada of two (2) copies of project manuals, and of "as-built" architectural, structural, mechanical and electrical drawings of systems and areas only as they relate to the scope of Work required for the Measures. Canada must supply to the ESCo the original drawings, if available, of such systems and areas on reproducible paper or AutoCAD if available. The ESCo must execute its "as-built" drawings on AutoCAD (or most recent version), following Canada's standard practice, and proper computer drafting practice.

10.1.12 The final inspection of the installation of each of the Improvements and issuance of Measure completion certificates from the ESCo's design engineers, identifying the approval from the local inspection authority.

10.1.13 Ensuring that all federal, provincial and local regulations relating to occupational health and safety are respected throughout the construction period.

10.1.14 The supervision of the Work by the ESCo and its Subcontractors to ensure that the Work is completed in accordance with local bylaws and regulations and the applicable directives as referred to in Annex "A" Section 4 and any other applicable codes and standards.

10.1.15 The acceptance of the Work of the Subcontractors.

10.1.16 The start-up and Commissioning of the Improvements and affected systems.

10.1.17 Training of the personnel in accordance with Annex "A" Section 14, in order to ensure the proper operation and maintenance of the building equipment and systems affected by the Improvements.

10.1.18 Notifying Canada of any previously unknown or unexposed health hazards including, but not limited to, PCBs and asbestos that may be discovered through the course of the construction of the Work.

10.1.19 Assisting Canada in carrying out his or her duties as they relate to the Contract.

10.1.20 Permitting Canada access to the Work and its site at all times during the performance of the Contract.

10.1.21 Providing Canada with all necessary documents and information necessary to carry out the monitoring of the design and implementation of each Improvement.

10.1.22 Providing Material Safety Data Sheets (MSDS) for all WHMIS controlled materials used by the ESCo or its Subcontractors.

10.2 During the period of construction of the Improvements, Canada agrees:

10.2.1 To permit the implementation of the Improvements.

10.2.2 When repairs or replacements of existing equipment or systems are required for the

implementation of the Improvements, and when such repairs or replacements are not the result of improper actions of the ESCo, and the ESCo has notified Canada that such repairs or replacements are necessary, if these repairs or replacements are economically feasible, then Canada must immediately proceed to effect such repairs or replacements. Where such repairs or replacements are beneficial to the energy performance of the Facility, the Baseline Data and/or Guaranteed Payback Period must be adjusted accordingly.

10.2.3 To provide the ESCo with a storage room of approximately twelve square metres (12 m^2).

10.2.4 To provide power and water on site at no cost to the ESCo for the execution of the Work, which is to be used in a cost effective manner by the ESCo.

10.2.5 To perform monitoring of the design and implementation of the Improvements.

10.2.6 To participate in the Commissioning of the Improvements.

10.2.7 To make existing WHMIS information available to the ESCo.

10.2.8 To provide to the ESCo Energy use data within ten (10) Working Days of its receipt, and this provision must continue until the end of the Contract period or until the Contract is terminated.

11. The ESCo's Site Representative

11.1 The ESCo must, upon the award of the Contract, designate a project manager who must be in full charge of the operations, and who is authorized to accept any notice, consent, order, direction, decision or other communication on behalf of the ESCo.

11.2 The ESCo must, until the Work has been completed, provide qualified supervision at the work site during the Working Hours.

11.3 The ESCo must have a representative available on a 24-hour basis, during the construction period, to respond to trouble calls and emergencies. During Working Hours, the ESCO's response time for trouble calls during construction of the Improvements must be no more than four (4) hours.

11.4 The ESCo's response time for trouble calls after the Completion of Measures to the end of the Contract must not be more than 24 hours.

12. Cleaning Of The Work

12.1 The ESCo must, during the execution and upon completion of the Improvements, clear and clean the Work and its site, and dispose of all hazardous materials, to the satisfaction of Canada, and in accordance with relevant codes and standards.

12.2 If removed materials contain PCBs, these must be stored in approved containers provided by Canada, be labelled and marked as directed by Canada, and delivered to Canada for storage.

12.3 Removed fluorescent lamps must be recycled and not discarded into garbage or sold, and the cost of the recycling must be borne by the responsibility of Canada.

13. Duties Of The Parties After The Construction Of The Improvements

13.1 After the construction of the Improvements, the ESCo must provide all of the following services and documentation in connection with the Improvements, as agreed between the ESCo and Canada:

13.1.1 Except for the lighting systems, all material and labour to effect proper and recommended maintenance of the Improvements, during the warranty period defined in GC 18.

13.1.2 Training of the person(s) designated by Canada to receive instruction and training as is necessary to ensure the proper operation and maintenance of the Improvements.

13.1.3 A minimum of once every three (3) months, visits to the Facility to ensure that the ESCo's instructions have been followed and, if not, notification to Canada of any irregularities.

13.1.4 If the performance of the Improvements falls short of projections, investigate the cause, and issue a notice of irregularity indicating to Canada specifying what action must be taken to rectify the situation and improve performance.

13.1.5 Provide Canada with a detailed list of the various counters, meters (i.e. primary and secondary meters, and computer printout readings) to substantiate savings, and describe in detail the calibration procedures and protocols for all such equipment.

13.1.6 Review the Operating and Maintenance protocol to ensure the protocols are implemented and to ensure energy savings are achieved.

13.1.7 Maintain, fine tune, and revise the Direct Digital Control software used to maintain energy savings.

13.1.8 Complete and submit to Canada a regular written report of Energy performance addressing each utility. This report must be on a monthly basis. The report must show at least the following information for the period since the last report:

13.1.8.1 Actual consumption as per existing utility metering reported by Canada, and the ESCo's submeters.

13.1.8.2 Value of weather and any other independent variables, as relevant, for the associated metering period.

13.1.8.3 Baseline Data for the corresponding period, adjusted for independent variables, as relevant.

13.1.8.4 Energy Savings.

13.1.8.5 The reports must show expected savings for the period, based on the Energy Audit Report, adjusted for current weather and other independent variables as relevant.

13.1.9 Administer warranties on Canada’s behalf for materials or equipment installed as part of the Improvements, for a period of twelve (12) months from the acceptance of Measure (see GC 18).

13.1.10 Provide to Canada the manufacturers' warranties on all items installed by the ESCo.

Warranties must be provided in a binder.

13.2 After the construction of the Improvements, Canada undertakes:

13.2.1 To operate the Improvements and maintain the equipment installed by the ESCo, in the manner prescribed by the ESCo; the equipment to be so maintained by Canada is all systems including those installed by the ESCo as part of this Contract, except as mentioned in Annex “A” Section 13.1.1.

13.2.2 Where the recorded Energy use is greater than projected, and the ESCo has made all necessary investigations, and has advised Canada of any deficiencies with equipment owned and operated by Canada, and Canada has accepted the ESCo's recommendations, to rectify such deficiencies within agreed time frames.

13.2.3 To reasonably cooperate with the ESCo in order to optimize the performance of the Improvements including, if necessary, in an information campaign directed at the Tenants of the Facility.

13.2.4 To provide the ESCo with the information the ESCo requires if available, concerning results of preventive maintenance, irregularities in Energy consumption, the results of inspections or tests, or other information pertinent to the Improvements that may be requested by the ESCo.

13.2.5 To accept and ensure that the Improvements are operated as intended by and agreed with the ESCo.

14. Training

14.1 The ESCo must provide and arrange for all necessary training of facility managers and operating staff to ensure the proper operation of the Measures, to impart the necessary skills identified in the Energy Audit Report, to enable them to operate the systems efficiently.

15. Environmental Conditions

15.1 Any changes to the mechanical systems must be designed to comply with Part II of the Canada Labour Code, Canada Occupational Safety & Health Regulations, the National Building Code of Canada, and Treasury Board Directives on the use and occupancy of buildings, ASHRAE 55-92, ASHRAE 62-2001 and Comfort Conditions as defined in Appendix "A".

15.2 The existing environmental conditions and system operating hours are based on the Client Department’s program requirements and system capabilities and must be maintained. Any changes to the existing environmental conditions and system operating hours must be submitted to Canada for approval.

15.3 Due to the terms of the current collective agreement, occupants may be relocated or sent home due to environmental conditions beyond the range deemed acceptable. Should this occurrence result from the ESCo's work or actions, Canada must notify the ESCo of the costs associated with this occurrence and may charge such costs to the ESCo. These costs must not be charged to the Project Balance.

16. Electrical Power Quality

16.1 The electrical power quality (i.e. total harmonic distortion & power factor) of the building must not deteriorate during the implementation of the Improvements. The ESCo must measure power quality conditions in the presence of Canada, at locations identified by Canada, and must provide a written report, prior to commencement of the Work and at completion of the Work. The ESCo must take measures as required to correct power quality to initial conditions if deviations are noted.

16.2 Any costs incurred by Canada through a power factor penalty by the utility as a direct result of the Implementation of the Improvements must be paid for by the ESCo until such time as remedies to correct the power factor back to initial conditions is completed. The ESCo must pay for the costs of such remedies and these costs are eligible to be included in the Project Balance.