



# The Ottawa Technology Centre Energy Savings Generator

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## The Executive Summary

A comprehensive [Energy Audit](#) was performed by [Efficiency Engineering Inc.](#) at the Ottawa Technology Centre, 875 Heron Drive, in Ottawa, Ontario. The facility is a 67,740 m<sup>2</sup> (729,000 ft<sup>2</sup>), 11 story Tower and 5 story Headquarters which both serve primarily as Canada's Revenue Agency. The facility consists of offices, computer rooms, loading docks, office processing areas, a cafeteria and kitchen.

All heat to the building is provided by district heating high temperature hot water which the surrounding buildings also receive from the Confederation Heights Plant. Chilled water is also received from the plant for cooling. Humidification is provided through the use of natural gas humidifiers on-site.

The equipment at this facility is maintained and controlled to a high standard. A building automation system (BAS) controls major pieces of HVAC equipment to occupancy schedules and monitors all of their mechanical systems.

Lighting has been extensively upgraded at this facility. A comprehensive lighting control system turns off most lights in the building during unoccupied hours. Lighting fixtures have been upgraded to standard 32W T8 lamps with electronic ballasts. Exit signs have been upgraded to LED. Exterior lighting was on continually during days of site visit.

Variable speed drives were installed previously on some supply and return air fans but have mostly been removed due to improper operation and to lower occupant complaints of discomfort. A data centre was decommissioned on the 10<sup>th</sup> floor of the Tower building in the summer of 2013 which would have made up a significant amount of the electrical consumption from the servers and also while using the cooling equipment required for this type of space.

As a result of the measures being removed, energy consumption at this facility is approximately 12% higher than ASHRAE benchmarking standards for buildings of this type, size and climate. This energy audit report exceeds the standards of an ASHRAE level II audit, and approaches the minimum standard requirements of an ASHRAE level III audit.

Energy consumption, utility models and the equipment at this facility have been analyzed. Based on our findings, [Efficiency Engineering Inc.](#) recommends the following energy conservation [Opportunities](#):

### Energy Savings Scenario

The following [Opportunities](#) are recommended based on their potential for utility savings.



Energy Savings Measure	Utility Savings						Emissions Reduction Annual Kg CO2 Avoided	Financials			
	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings		Implementation Cost	Simple Payback (years)	Capital Payback (years)	Net Present Value
	kWh	GJ	GJ	m <sup>3</sup>	m <sup>3</sup>						
<b>1</b> Lighting Upgrade: Incandescent to CFL	7,079	0	0	0	0	\$757	<b>1,572</b>	\$1,108	1.0	0.6	\$13,936
<b>2</b> Lighting Conversion: Halogen/Incandescent to LED	34,324	0	0	0	0	\$3,673	<b>7,620</b>	\$12,169	2.1	1.7	\$63,714
<b>3</b> Lighting Controls: Occupancy Sensors	184,676	0	0	0	0	\$19,760	<b>40,998</b>	\$77,247	3.9	3.5	\$216,738
<b>4</b> VSD's on Induction Zone Supply Fans and Properly Program	270,512	0	0	0	0	\$28,945	<b>60,054</b>	\$103,576	3.6	3.2	\$326,399
<b>5</b> VSD's on Interior Zone Supply Fans	799,391	0	0	0	0	\$85,535	<b>177,465</b>	\$543,615	6.4	5.5	\$743,187
<b>6</b> VSD on Domestic Water Booster Pump	33,534	0	0	0	0	\$3,588	<b>7,445</b>	\$11,911	3.3	3.0	\$41,328
<b>7</b> VSD on Heating Coil Circulator	12,390	0	0	0	0	\$1,326	<b>2,751</b>	\$8,680	6.5	5.6	\$11,283
<b>8</b> VSD's on Heating Distribution Pumps	130,098	0	0	0	0	\$13,921	<b>28,882</b>	\$121,811	8.8	7.2	\$89,883
<b>9</b> Schedule Operation and Install DCV on AHU Link	10,452	51	1	0	0	\$2,986	<b>7,327</b>	\$6,548	2.2	2.0	\$37,530
<b>10</b> DCV on Interior and Induction Unit Air Handlers	0	1,567	263	0	0	\$64,661	<b>157,288</b>	\$132,608	2.1	1.9	\$821,197
<b>11</b> Schedule DHW Recirculation Pumps	2,179	61	0	0	0	\$2,420	<b>6,407</b>	\$2,944	1.2	1.2	\$32,616
<b>12</b> Control Hot/Cold Deck to Highest/Lowest Demand Temperatures	0	44	3	0	0	\$1,684	<b>4,328</b>	\$10,168	6.0	5.2	\$15,133
<b>Total</b>	<b>1,484,636</b>	<b>1,723</b>	<b>268</b>	<b>0</b>	<b>0</b>	<b>\$229,256</b>	<b>502,135</b>	<b>\$1,032,384</b>	<b>4.5</b>	<b>3.4</b>	<b>\$2,412,943</b>

These Opportunities will result in an annual cost savings of \$229,256 on an installed cost of \$1,032,384 and a simple payback of 4.5 years (capital payback of 3.4 years). The energy intensity in the building will be reduced from 346.71 ekWh/m<sup>2</sup> to 316.63 ekWh/m<sup>2</sup> and the utility cost intensity will be reduced by \$3.38 /m<sup>2</sup>. Emissions will be reduced by 502,135 kilograms of CO<sub>2</sub> per year.

The "Implementation Cost" referenced in the Executive Summary Tables and throughout the report includes material costs, standard labor costs and general requirements. It also includes 15% for Project Management and Engineering as well as 10% as a contingency. The stated cost does not include any applicable Provincial or Federal taxes.



## 1.0 Interpreting This Report

### Terminology

#### Opportunities

**Opportunities** (or “Measures”) are individual portions of a recommended energy management strategy for the building. Although the Opportunities are shown as “stand alone”, it is often not that easy. One **Opportunity** may have an effect on the savings or costing of another **Opportunity**. Therefore, all savings and costing values for a particular **Opportunity** are based on the assumption that preceding **Opportunities** are also being implemented.

#### The Energy Savings Builder

The **Energy Savings Builder** involves a detailed investigation of your facility, your energy using equipment and your processes. It also involves discussions with key individuals within your organization that understand your building and operations. The **Energy Savings Builder** reports back to you and your staff with a proposed list of energy saving opportunities for your review. This review ensures that our recommendations meet your needs and goals and that all of the **Opportunities** you’d like explored will be included in the analysis. The **Energy Savings Builder** contains the following sections:

##### **The Executive Summary:**

- The **Executive Summary** is a brief synopsis of the scope and purpose of the Energy Audit Report including a brief description of the conditions observed during the initial site visit. It also includes a summary table of energy conservation **Opportunities** proposed by **Efficiency Engineering Inc.** along with the estimated energy savings and implementation costs.

##### **The Existing Building Profile:**

- The **Existing Building Profile** provides a high level overview of the conditions observed during the on site survey portion of the energy audit. It consists of a brief discussion of the building’s existing mechanical equipment, lighting fixtures, water fixtures, building envelope and current operating conditions.

#### The Energy Usage Report

The **Energy Usage Report** analyses your utility data to:

- Quantify your energy usage, taking into account weather, number of shifts, work schedule and any other variables that affect your utility consumption.
- Break out your energy consumption and demand into different components (lighting, HVAC, heat treatment furnaces, dryers, compressors, etc.). This is critical in setting base consumptions for all components, allowing for accurate savings calculations.
- Benchmark your building compared to other buildings of similar size, location and building type. How well you are doing compared to others in your industry can help you decide the depth of implementing the recommendations of **The Energy Generator**.
- Further investigate utility data anomalies such as jumps in demand or poor power
- Further **ManagingEnergy.com** Reports are provided in Appendix B: Utility Bill Analysis

#### The Energy Savings Expander

The **Energy Savings Expander** takes the energy conservation **Opportunities** uncovered in **The Energy Savings Builder**, and quantifies the energy savings and implementation costs. The **Energy Savings Expander** then reports to you the energy saving **Opportunities** with savings, costs and simple payback. Most **Opportunities** will have numerous benefits such as energy savings, capital upgrade and occupancy comfort. Further Financial



and **Opportunity** detail reports as well as recommended retrofit schematics are located in [Appendix E: Opportunity Details](#).

The **Energy Savings Expander** also contains the following information for each **Opportunity**:

#### ***The Detailed Financial Analysis***

The **Detailed Financial Analysis** incorporates a more advanced financial for each energy saving **Opportunity**. The analysis goes well beyond simple payback, using life-cycle costing methods to include utility savings, inflation, projected utility rates, avoided capital costs, changes in maintenance costs and bank rates. The Detailed Financial Analysis includes all relevant costs to give you a clear picture of which energy saving opportunities should be implemented.

#### ***The Next Steps***

The **Next Steps** outlines how to best proceed with implementation of the **Opportunity**. This may include contacting incentive sources or an engineering service or as simple as implementing the plan using in house resources.

#### ***Cost Estimates***

Cost estimates are calculated based on our experience, industry standards and market conditions. Market conditions can vary significantly between the writing of this report and the actual implementation of the recommendations.

PWGSC (Public Works and Government Services Canada) has defined classes of cost estimation for building construction or renovation. We provide Class C Cost Estimates as standard, however in many instances (especially with lighting opportunities) our work is closer to Class B.

Class D	Rule of thumb costing to get an order of magnitude – for study approval.
Class C	Measured quantities based on preliminary design – for project approval.
Class B	Measured quantities based on detailed engineering sizing calculations
Class A	Measured quantities based on design drawings

#### ***Limited Liability***

This report was prepared by [Efficiency Engineering Inc.](#) for the account of Public Works and Government Services Canada. The material in it reflects our best judgment in light of the information available to us at the time of preparation. Without express written permission, any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Efficiency Engineering Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

#### ***Further Help***

Further help, along with an extensive glossary of terms, is available on our web site. Go the main page at [www.encyengineering.com](http://www.encyengineering.com), click on **Knowledge Base** on the top menu, and pick **Energy Audit Report Guide**.



## 2.0 Available Incentives

### 2.1 Natural Gas Provider

Enbridge has incentives available strictly for government buildings which can be viewed on their website.

### 2.2 Local Distribution Company (LDC)

The Ontario Power Authority sponsors the SaveONenergy program for local distribution companies (LDC's) to implement, which has dozens of incentives available to conserve electricity. Applicable programs catered to the municipal/public sector are:

- **Demand Response** – The facility enters into a contract to disable selected motors, compressors, elevators, etc. during key peak grid demand periods.
- **Retrofit Program** – Each retrofit where premium efficiency electrical equipment is selected over the standard efficiency option is eligible for incentive funding. Incentives are available through three categories:
  1. **Prescriptive Measures** – Straight-forward retrofit opportunities exist where the incentive funding is simply based on the size of the premium efficient piece of equipment.
  2. **Engineered Measures** – These are opportunities where operational details have an effect on the degree of conservation achieved. The incentive is calculated based on whichever value is higher – the demand savings at \$800/kW, or the consumption savings at \$0.10/kWh.
  3. **Custom Measures** – Retrofit opportunities that cannot be compartmentalized are eligible for incentive through this path. Detailed custom calculations must be provided, and are reviewed for accuracy. A measurement and verification plan must also be submitted to validate claims made by the applicant. The same demand and consumption incentives listed above also apply here.

### ***Tax Savings: Renewable Energy and Energy Conservation***

Canadian tax law makes alternative energy sources, such as solar, wind and biofuels, more fiscally attractive for industry. Under Classes 43.1 and 43.2 in the Income Tax Regulations, certain capital expenditures on systems that produce heat and/or electric power efficiently from fossil fuels or from alternative renewable energy sources are eligible for accelerated capital cost write-offs, at 30 and 50 percent, respectively, on a declining balance basis. Without these accelerated write-offs, many of these assets would be depreciated at annual rates of 4 percent to 20 percent.

In addition to the Class 43.1 or Class 43.2 capital cost allowance, the Income Tax Regulations allow expenses incurred during the development and start-up of renewable energy and energy conservation projects (i.e. Canadian Renewable and Conservation Expenses [CRCE]) to be fully deducted or financed through flow-through shares. Inter-governmental incentives are often not applicable, so it is unclear as to whether or not the building qualifies for this tax break.



## 3.0 The Existing Building Profile

### Heating

All heating at this facility is provided by a district heating/cooling network from the Confederation Heights Plant. The district heating network supplies High Temperature Hot Water (HTHW) to the Ottawa Technology Centre and neighboring buildings. The HTHW is supplied to the building's multiple air handlers' heating and re-heating coils, and perimeter induction units controlled by the building automation system (BAS). The heat is transferred using shell and tube heat exchangers.

Heating from the air handlers is controlled to maintain supply air temperature set points by the building's BAS. Supply air volume in the headquarters is controlled via the VAV boxes while the Tower is a constant volume system with reheat coils. Induction units are controlled using wall mounted thermostats. All thermostats are monitored by the BAS.

### Domestic Hot Water (DHW)

Domestic hot water is supplied through 3 different DHW plants. The 3 plants serve the cafeteria, headquarters and the tower water fixtures. The DHW is heated using the high temperature hot water available within the building and transfers its heat through plate and frame heat exchangers.

### Cooling

All cooling at this facility is provided by a district heating/cooling network from the confederation plant. The district cooling network supplies chilled water to the Ottawa Technology Centre and neighboring buildings. The chilled water is supplied to the building's multiple air handlers' cooling coils and perimeter induction units controlled by the building automation system (BAS).

Cooling from the air handlers is controlled to maintain supply air temperature set points by the building's BAS. Supply air volume in the building is controlled via the VAV boxes controlled by the thermostats. Induction units are controlled using wall mounted thermostats. All thermostats are monitored by the BAS.

### Ventilation

Ventilation throughout the facility is provided by the air handling units which have outdoor air intakes and dampers which mix fresh air with return air. The outdoor air ventilation damper is controlled to maintain a minimum position in order to maintain indoor air quality; otherwise it is controlled for economizer mode. The BAS currently controls the air handlers to shut down to match the dedicated zone's occupancy schedule. The tower is a constant volume system with hot water coil reheats while the headquarters has VAV boxes, both terminal units are controlled by thermostats which are on the BAS.

Some supply and return fans are equipped with variable speed drives while others have been removed in the past due to occupancy discomfort complaints. These drives have been designed to vary the speed of the fans based on the supply air duct pressure, but some of the drives have been overridden on the BAS to maintain 100% speed.

### Humidification

Humidification is supplied through the production of steam. Natural gas humidifiers exist in the penthouses and mechanical rooms which supply steam to the air handlers' primary air stream for humidification.



Typical AHU Converter



Primary and Backup Induction Unit Pumps





### **Building Envelope**

The building envelope consists of an exterior concrete façade. The building has a large percentage of window area. The older windows tend to lose much of their insulation value over time. They are responsible for a large amount of heat loss in the winter and heat gain in the summer. However, the heat gain is reduced with external solar shading around the windows for the summertime.

Doors to the facility were observed to have weather stripping which was generally well maintained and in good condition.

Exterior wall finishing's of the Tower is clad with a precast concrete panel with vertical concrete sunshade louvers. The rigid insulation is installed at the edge of the exterior wall vapour barrier which ends at the roof construction. The exterior wall finishing's of the Headquarters is clad with a precast concrete panel with vertical concrete sunshade louvers. The roof level has rigid insulation adhered to the roof construction along the perimeter of the building.



**Tower (left) and Headquarters (right)**

### **Water Fixtures**

Water fixtures at the facility consist of low flow flushometer toilets and kitchen and washroom sinks with 1.5 gpm aerators. No running/leaking fixtures or damaged aerators were observed.

The basement water fixtures have recently been upgraded to ultra low flow flushometer valves for the toilets and urinals and 0.5 gpm aerators on the sink faucets. All new fixtures feature sensor control.

The DCW is supplied to the facility using booster pumps to create the necessary pressure at the fixtures for the highest elevations. The booster pumps are equipped to run on 'auto mode' which means one is operating 24/7, while a backup turns on when the required pressure falls below the set point.

### **Lighting**

Linear fluorescent lighting throughout office and common spaces consisted of standard 32W T8 lamps with electronic ballasts. Pot light fixtures house compact fluorescent lamps. Exit signs have been converted to LED.

Lighting is controlled primarily by relay/zone lighting control system. Time control and local wall switch control lighting throughout the space. Override switches are available in timed zones to turn lights on if required.

Stairs, main corridors and core washrooms are not controlled by the lighting control system and in most cases remain on 24/7.

Exterior lighting is set to turn off during the day using the lighting control system; however this system was not effective during the days of the site visit. During the site visit all parking lot fixtures were illuminated all day.

A complete room by room fixture count of the lighting at this facility is provided in Appendix C: Lighting

### **Building Occupancy**

The 2 buildings have multiple departments within them. Most departments are occupied throughout the weekdays (Monday to Friday), however some others have evening and weekend hours, and others are 24/7 (data centre and link). The Headquarters building has 929 occupants, while the data centre/tower building has approximately 1800.

A detailed breakdown of each department's documented schedule is located in Appendix D.

### **Service Contracts**

Existing service contracts within the taxation centre and can be summarized in the table below:

<b>Contractor</b>	<b>Service</b>
Fishburn/Sheridan Associates	Roof Inspection



Geofirma	Waste Water Effluent Testing
Simplex Grinnell	Fire Panel Maintenance
Bee Clean	Monthly Janitorial Service
Rentokil	Pest Control Service
Aevidas	Fluorescent Lamp Disposal
Soulard	Flag Maintenance
Cannon Hygiene	Feminine Hygiene Disposal
Genivar	Potable Water Testing
EHS Partnership	Indoor Air Quality
IRC Batten Sears	Roof Anchor Inspection
Siemens	BACS
Waste Management	Waste Removal
Baxtec	A/C Maintenance-Base building
Gal Power	Generator Maintenance
Hansler	Overhead(7)/Fire(5) Door Maintenance
Hansler	Dock Leveler(4) Maintenance
Rochester Midland	Water Treatment
Rock Fire	Sprinkler System, Extinguishers, Hoses
BFI	Garbage Compactor Maintenance
Ottawa Horticultural	Plant Maintenance
Thyssenkrupp	High Rise Elevator Maintenance

### **Previous Retrofit Projects**

Retrofits and maintenance projects performed in the last 6 years were documented with detail. Major retrofits within the last year include window glazing, check valve inspections, DHW tanks and re-heat coil replacements. A full list of the projects can be found in Appendix D.



## 4.0 The Energy Usage Report

### 4.1 Methodology

The purpose of performing a detailed utility bill analysis on the building is to:

- Normalize the consumption or demand for billing period, heating degree days (HDD), Cooling Degree Days (CDD) and any other independent variables.
- Calculate the energy use for benchmarking (comparison to typical buildings).
- Break out the consumption into weather dependent and weather independent portions.
- Calculate the heating and cooling balance point temperatures.
- Look for anomalies that may indicate heating plant efficiency, accuracy of the building automation system, building use, etc.
- Look for changes in the consumption over a period of time.
- Look for billing errors (over-billing) that may be recouped from the utility.

The utility meters have been modeled using the standard modeling calculations. Data received has been calculated to produce a "best fit" equation using linear regression. The data has been normalized for billing periods, HDD, CDD as well as up to three user-defined variables. We properly adjust the heating and cooling balance point temperatures to properly model the building.

The Modeling process creates an equation that allows us to calculate the consumption for any given period. A typical equation is as follows:

$$\text{Consumption (kWh)} = \text{Days} \times 5,000 + \text{HDD (13}^\circ\text{C)} \times 50 + \text{CDD (14}^\circ\text{C)} \times 100$$

Regression ( $R^2$  Value) = 0.92

Heating Degree Days (HDD) and Cooling Degree Days (CDD) are relative measurements of outdoor air temperature used as an index for heating and cooling energy requirements. Heating/cooling degree days are the number of degrees that the daily average temperature falls below or rises above a given balance point temperature. Coefficients are the constants in the baseline models. They are the values that are multiplied by the independent variables to get the model results, and are determined during the baseline model process.

The Regression value indicates how well the actual bills match the equation, with 1.0 being a perfect fit. Typical year data (Environment Canada) is used to calculate the consumption for an average year. This consumption is used in all of the savings calculations.

### 4.2 Utility Meters

The following utility meters were modeled as part of this report:

<b>Utility Meter</b>	<b>Account Number</b>	<b>Utility Type</b>	<b>Units</b>	<b>Marginal Rate</b>
Electricity	W400117.6202	Electricity Consumption	kWh	\$ 0.107
High Temperature Hot Water	W400117.6231	Heating Hot Water (Steam) Consumption	GJ	\$ 36.07
Chilled Water	W400117.6232	Chilled Water Consumption	GJ	\$ 30.89
Natural Gas	N/A	Natural Gas Consumption	m <sup>3</sup>	\$ 0.23*
Domestic Water	W400117.6211	Water Consumption	m <sup>3</sup>	\$ 3.58



\* The natural gas marginal rate per cubic meter ( $m^3$ ) was estimated as a copy of an actual bill was not received for this account.

These utility meters and account numbers can be used to cross-reference reports in *Appendix B: Utility Bill Analysis*.



### 4.3 Meter Modeling

The following utility meter models represent different time periods which relate to the building's energy usage prior to and post data centre removal process (beginning summer 2013). PWGSC should recalculate the baseline 12 months after the data centre has been removed for increased accuracy.

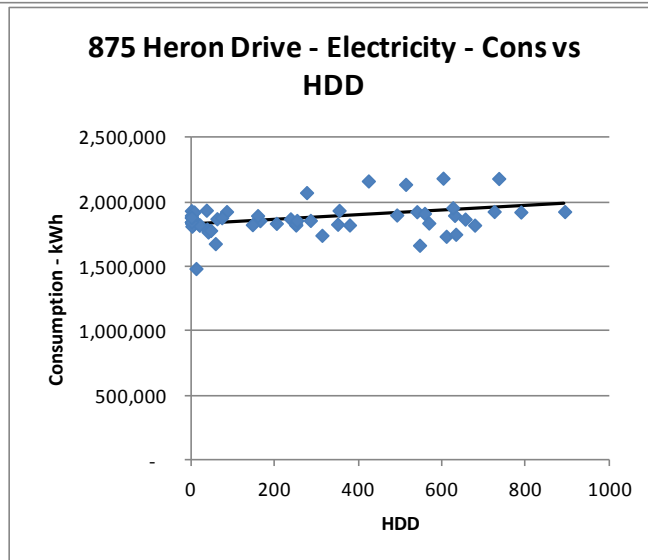
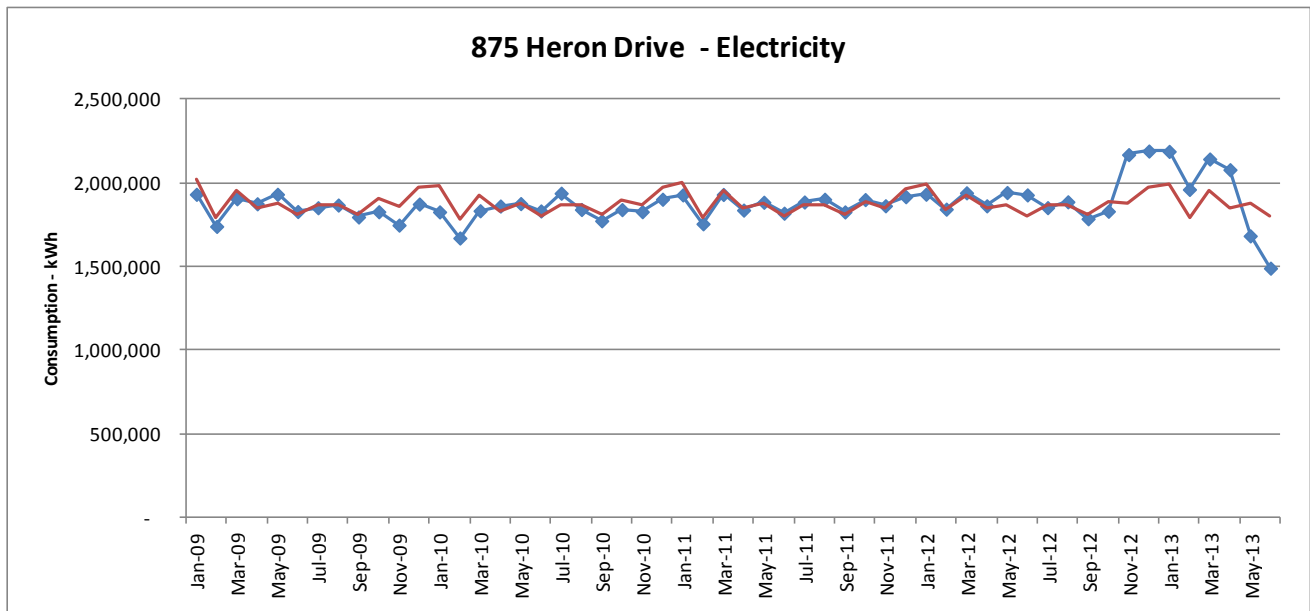
#### 4.3.1 – Electricity Consumption (Data Centre Installed)

Baseline Equation: kWh = Days x 60,095 + HDD x 174.16

The underlying regression of this baseline equation results in  $R^2 = 0.98$

HDD (Heating Degree Days) calculated using a balance point temperature of: 15 °C

In a typical year with the data centre in operation, consumption would have been 22,543,543 kWh





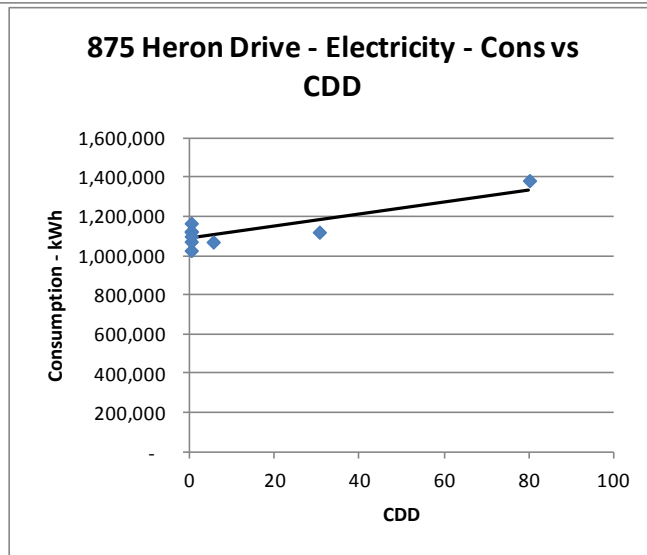
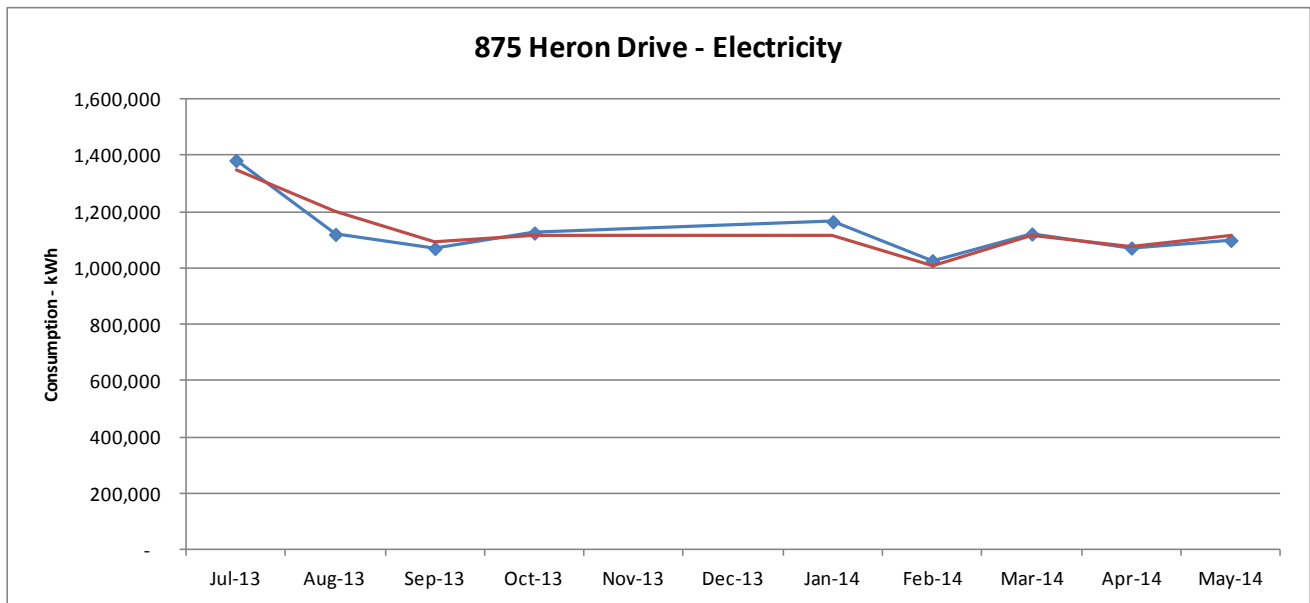
### 4.3.2 – Electricity Consumption (Data Centre Removed)

Baseline Equation: kWh = Days x 35,909.48 + CDD x 2963.46

The underlying regression of this baseline equation results in  $R^2 = 0.86$

CDD (Cooling Degree Days) calculated using a balance point temperature of: 20 °C

In a typical year, consumption will be 13,217,201 kWh





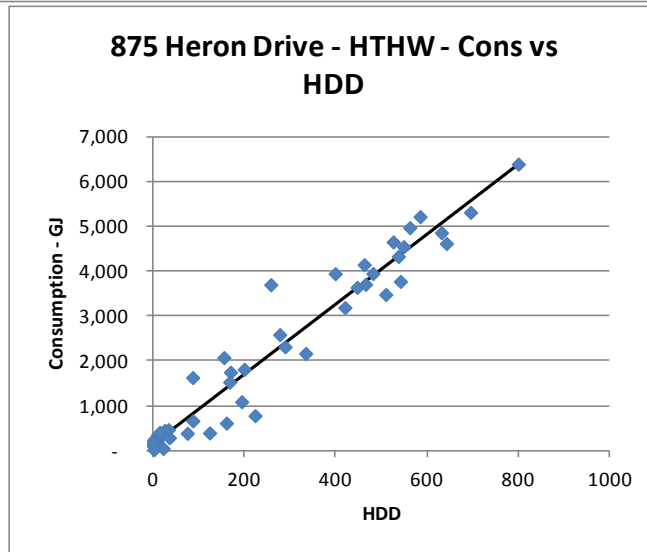
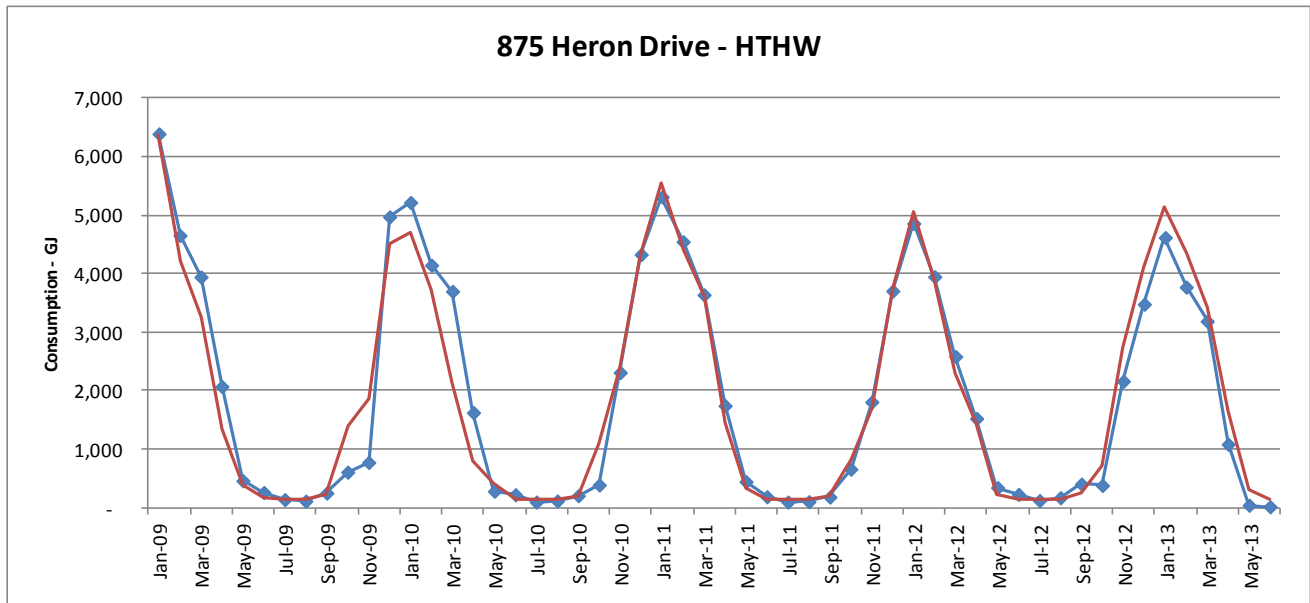
### 4.3.3 – High Temperature Hot Water Consumption (Data Centre Installed)

Baseline Equation:  $GJ = \text{Days} \times 4.95 + \text{HDD} \times 7.75$

The underlying regression of this baseline equation results in  $R^2 = 0.96$

HDD (Heating Degree Days) calculated using a balance point temperature of: 12 °C

In a typical year, consumption would have been 23,606 GJs





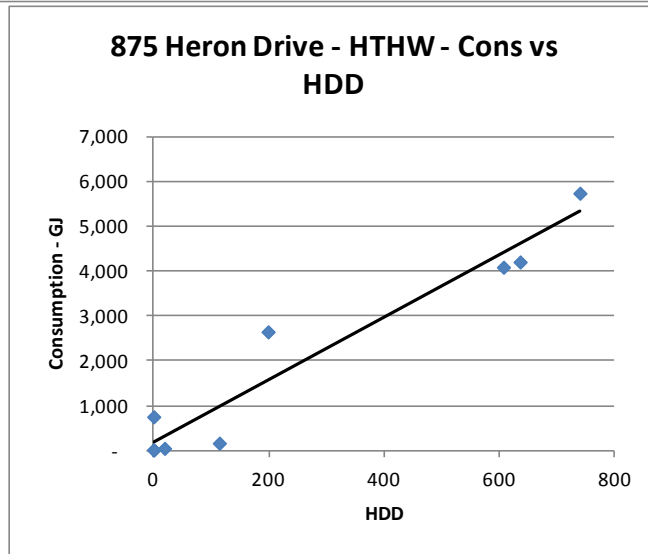
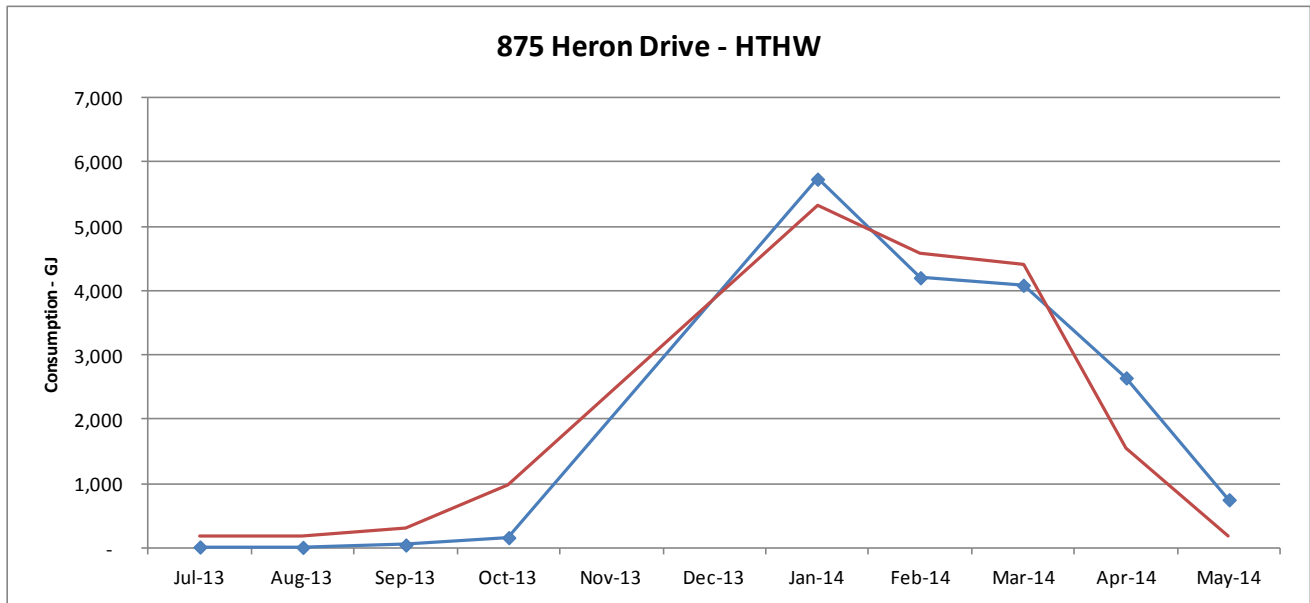
#### 4.3.4 – High Temperature Hot Water Consumption (Data Centre Removed)

Baseline Equation:  $GJ = \text{Days} \times 5.9 + \text{HDD} \times 6.9$

The underlying regression of this baseline equation results in  $R^2 = 0.82$

HDD (Heating Degree Days) calculated using a balance point temperature of: 13 °C

In a typical year, consumption will be 23,026 GJs







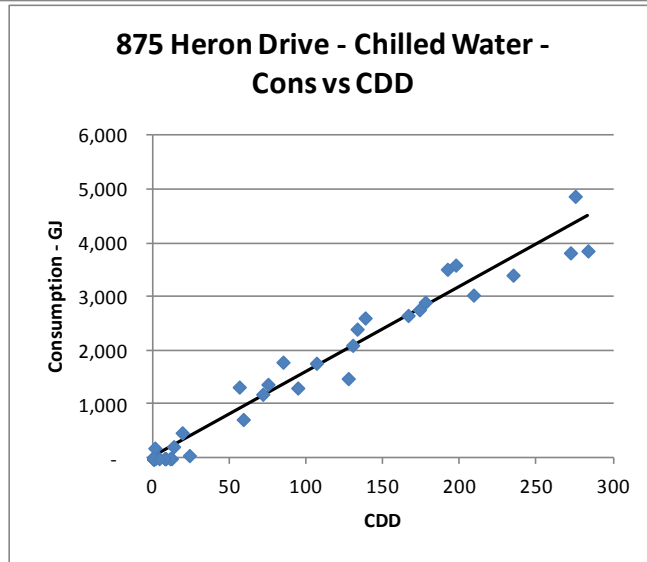
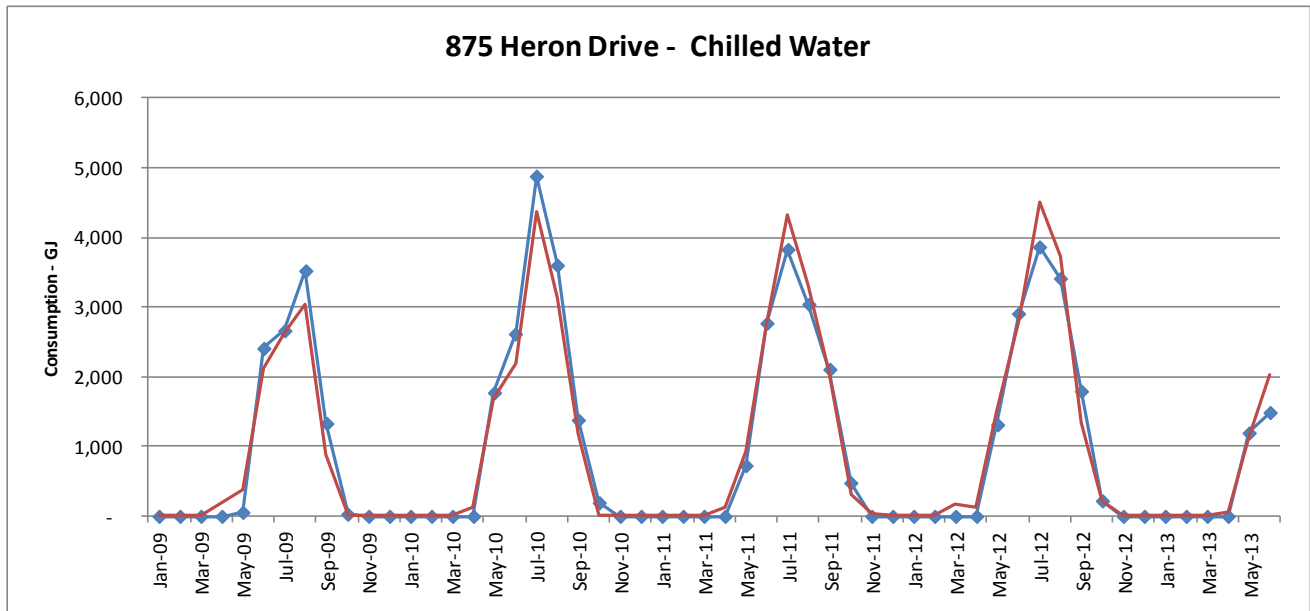
### 4.3.5 – Chilled Water Consumption (Data Centre Installed)

Baseline Equation:  $GJ = \text{Days} \times 0.29 + \text{CDD} \times 15.84$

The underlying regression of this baseline equation results in  $R^2 = 0.96$

CDD (Cooling Degree Days) calculated using a balance point temperature of: 14 °C

In a typical year, consumption would have been 9,390 GJs





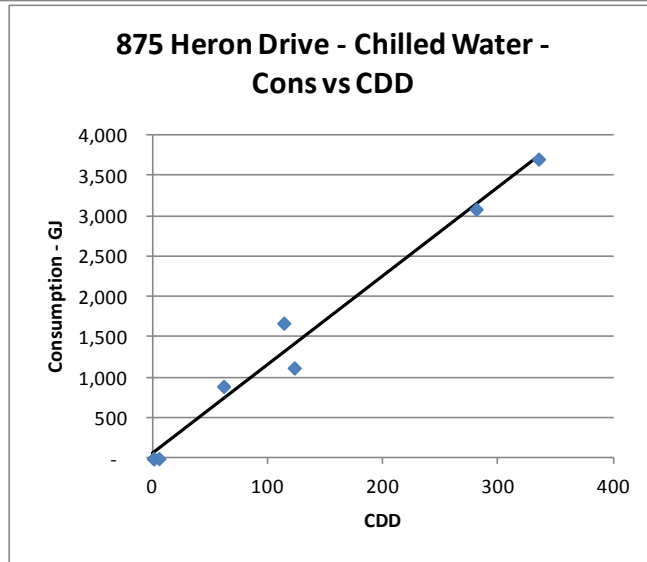
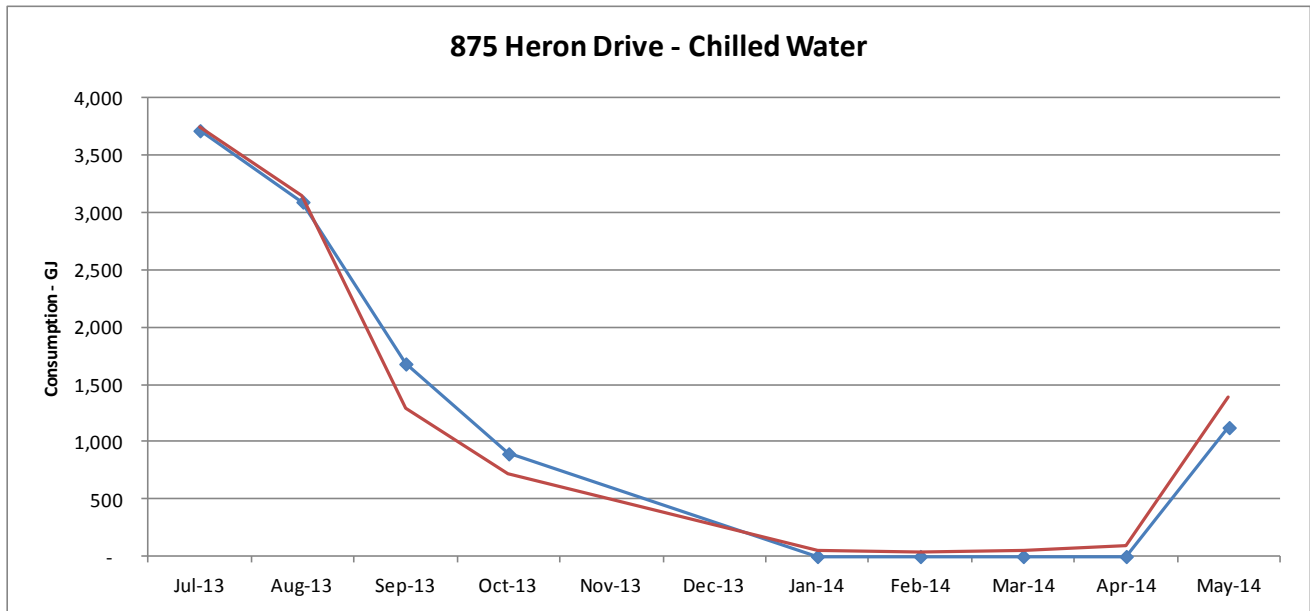
### 4.3.6 – Chilled Water Consumption (Data Centre Removed)

Baseline Equation:  $GJ = Days \times 1.42 + CDD \times 11.05$

The underlying regression of this baseline equation results in  $R^2 = 0.84$

CDD (Cooling Degree Days) calculated using a balance point temperature of: 11 °C

In a typical year, consumption will be 11,895 GJs





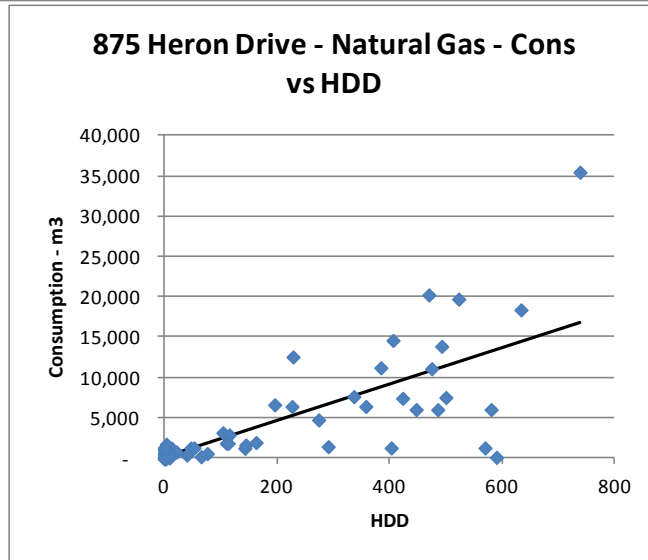
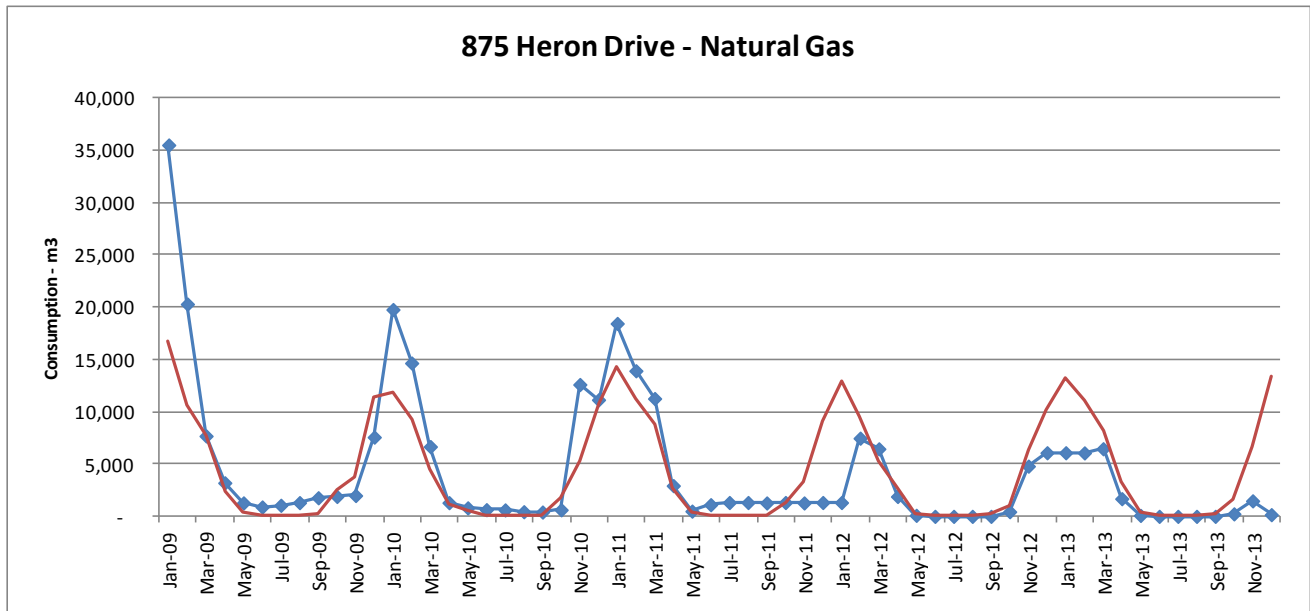
### 4.3.7 – Natural Gas Consumption (2009-2013)

Baseline Equation:  $GJ = \text{Days} \times 3.75 + \text{HDD} \times 22.46$

The underlying regression of this baseline equation results in  $R^2 = 0.66$

HDD (Heating Degree Days) calculated using a balance point temperature of: 10 °C

In a typical year, consumption will be 55,009 m<sup>3</sup>





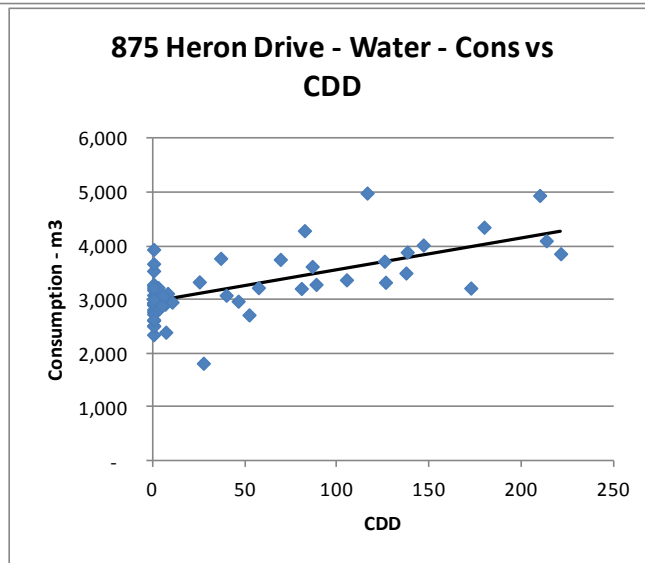
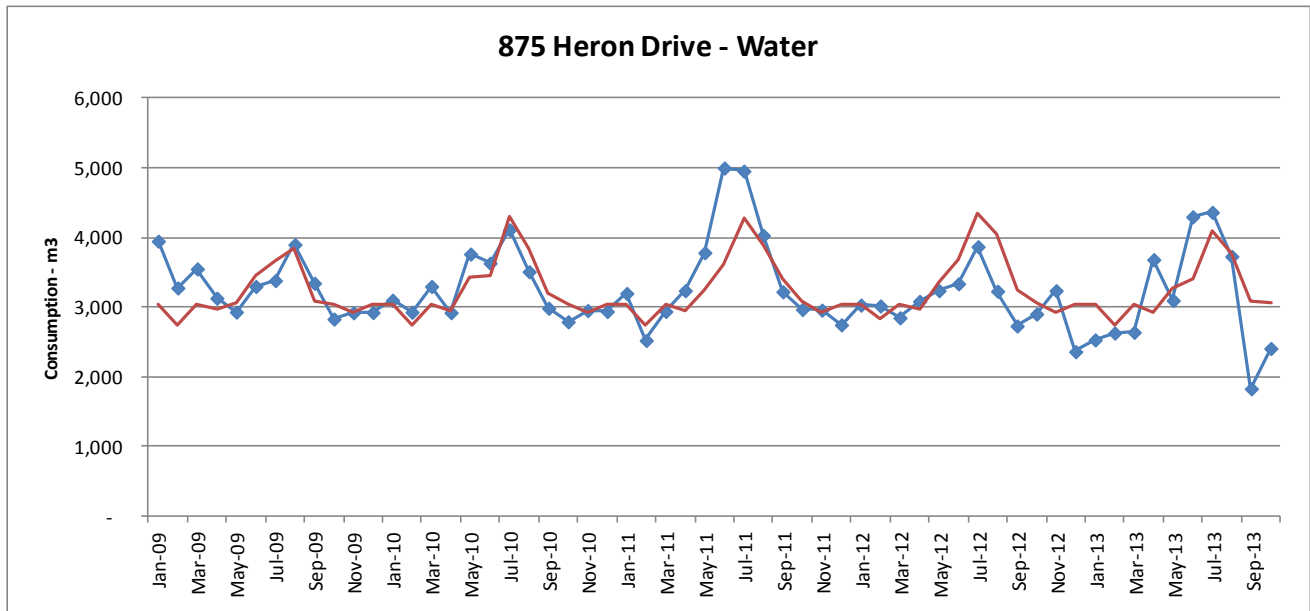
### 4.3.8 – Domestic Water Consumption (2009-2013)

Baseline Equation:  $GJ = \text{Days} \times 97.66 + \text{CDD} \times 5.91$

The underlying regression of this baseline equation results in  $R^2 = 0.96$

CDD (Cooling Degree Days) calculated using a balance point temperature of: 16 °C

In a typical year, consumption will be 37,702 m<sup>3</sup>





### 4.4 Benchmarking: Comparison to ASHRAE Benchmarking Standards

Electricity use in the buildings is high at 195.12 ekWh/m<sup>2</sup>/yr.

High temperature hot water use in the buildings is normal at 94.43 ekWh/m<sup>2</sup>/yr.

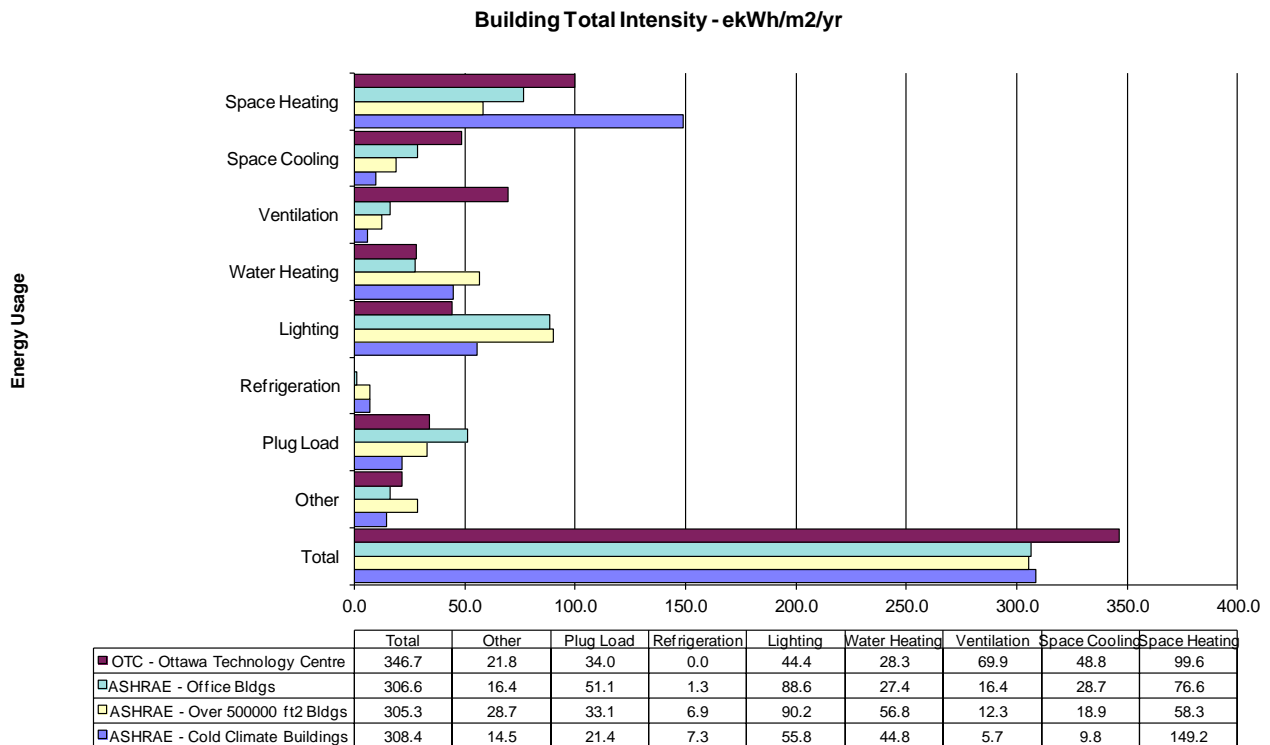
Chilled water (space cooling) use in the buildings is high at 48.78 ekWh/m<sup>2</sup>/yr.

Natural gas use in the building is low at 8.38 ekWh/m<sup>2</sup>/yr.

Compared to ASHRAE Benchmarking Standards, the intensity is high at 346.7 ekWh/m<sup>2</sup>/yr.

The facility's intensity numbers use the most recent utility data (2013-2014) where possible. Compared to other office buildings, the overall energy intensity of the Ottawa Technology Centre is high. A full year of consumption is not currently available since the data center has been fully removed. It is therefore suggested that PWGSC recalculates the baseline consumption 12 months after the data centre removal and after the next department has fully moved in to the empty space.

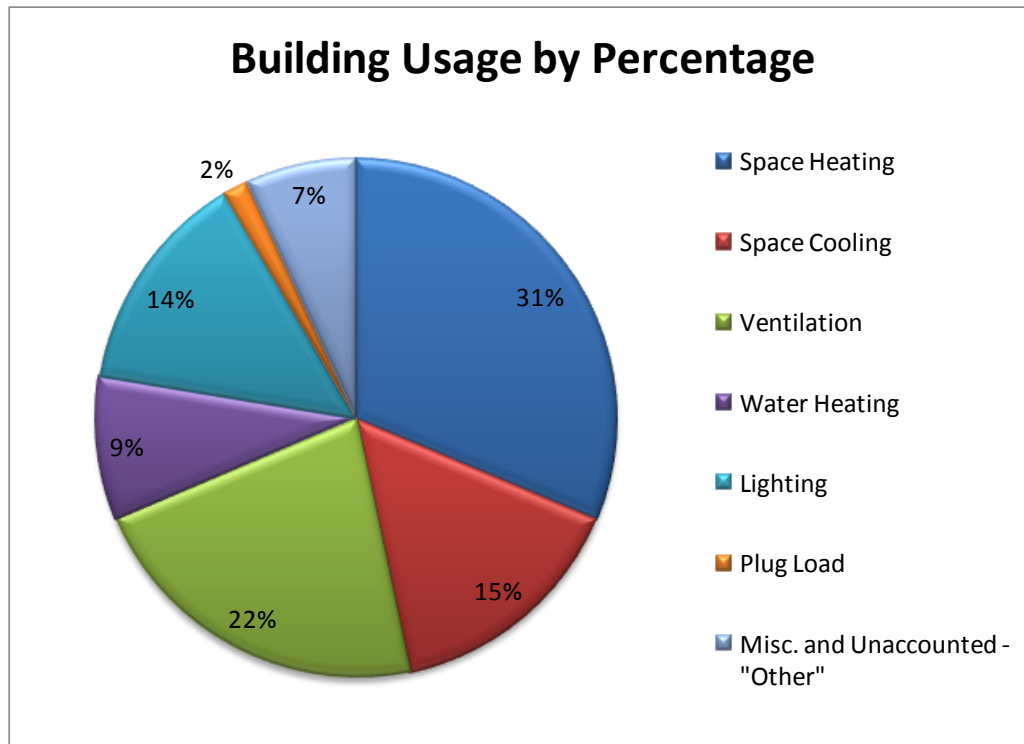
Data centers often have very high energy intensities as they require a large electrical plug load for the computer servers along with their cooling equipment. The data center has not been removed for a full year, so it is hard to accurately calculate what the new energy intensity will be. The data center was removed in the summer of 2013 (June-July), in which that year shows a considerable decrease in electricity consumption from the previous 3 years. Electrical consumption for the beginning of 2014 shows another decrease in electrical consumption.



Intensity - ekWh/m2



The "Other" category represents the remaining miscellaneous loads of the building. This makes up of equipment and systems which do not relate to the HVAC demands of the building. A process which is in this category includes cooking (cafeteria).



Another factor that cannot be predicted is what the remaining space will be used for. The data centre area was under construction during the site visit portion of the audit. The new purpose of the recently renovated space was unknown during the creation of this report.

Building Total Intensity Comparison to ASHRAE/DOE Benchmarking Data.<sup>1</sup>

A complete analysis of the utility bills is provided in Appendix B.

<sup>1</sup> ASHRAE 2003 Applications Handbook



## 5.0 The Energy Savings Expander

### **Scenarios:**

The Energy Savings Expander takes the energy conservation opportunities uncovered in the Energy Savings Builder, and quantifies the energy savings and implementation costs. The Energy Savings Expander then reports to you the energy saving **Opportunities** with savings, costs and simple payback. The energy saving **Opportunities** are organized into pre-determined **Scenarios** such as "Short Payback", "Longer Payback", "Capital Upgrade", etc. Most **Opportunities** will have numerous benefits such as energy savings, capital upgrade and occupancy comfort. The **Opportunity** will be placed in only one **Scenario** based on its greatest benefit to the building owner.

In addition to the information above, the **Energy Savings Expander** also contains **The Incentive Maximizer** and **The Detailed Financial Analysis** for each **Opportunity** as well as **The Next Steps** with recommendations on how to best proceed.

### **The Detailed Financial Analysis**

The Detailed Financial Analysis incorporates a more advanced financial for each energy saving opportunity. The analysis goes well beyond simple payback, using life-cycle costing methods to include utility savings, inflation, projected utility rates, avoided capital costs, changes in maintenance costs and bank rates. The Detailed Financial Analysis includes all relevant costs to give you a clear picture of which energy saving opportunities should be implemented.

#### **Terminology: Financial Factors**

- **Real Dollars:** Monetary units of constant purchasing power.
- **Real MARR:**  $MARR_R$ , The minimum acceptable rate of return when cash flows are expressed in real dollars.
- **Actual Dollars:** Monetary units at the time of payment.
- **Actual MARR:**  $MARR_A$ , The minimum acceptable rate of return for actual dollar cash flows. It is the real MARR adjusted upwards for inflation. (Also called discount rate)
- **Net Present Value (NPV):** Total value of all cash streams discounted to present day dollars, or Net Present Value.
- **Inflation:** The rate of increase in average prices of goods and services over a one year period; Also the rate year period of decrease in purchasing power of money over a one year period
- **Escalation:** Annual increase in utility costs over and above the base inflation rate, differential escalation rate

**Financial Factors:**

The following values have been used for the purposes of this financial analysis:

MARR <sub>R</sub>	5.0%
Inflation	2.2%
Electricity Escalation	2.5%
Natural Gas Escalation	2.5%
Water & Sewer Escalation	2.5%

The above factors were incorporated into the energy savings calculations as typical numbers. Standard financial factors may vary from one individual company or group to another. No standard factors were provided from PWGSC therefore these typical percentages were added.

**The Next Steps**

Included with each [Opportunity](#) are [The Next Steps](#) outlining how to best proceed with implementation of the project. This may include contacting possible incentive sources or an engineering service. It could also be as simple as implementing the plan using in house resources.





## 6.0 Energy Savings Scenario

The *Energy Savings Scenario* consists of all *Opportunities* that are recommended based primarily on the energy and utility cost saving benefits.

### ***M01 – Lighting Upgrade: Incandescent to CFL***

#### ***Existing Conditions***

Several fixtures in storage, electrical and janitorial rooms still house incandescent lamps.

#### ***Retrofit Conditions***

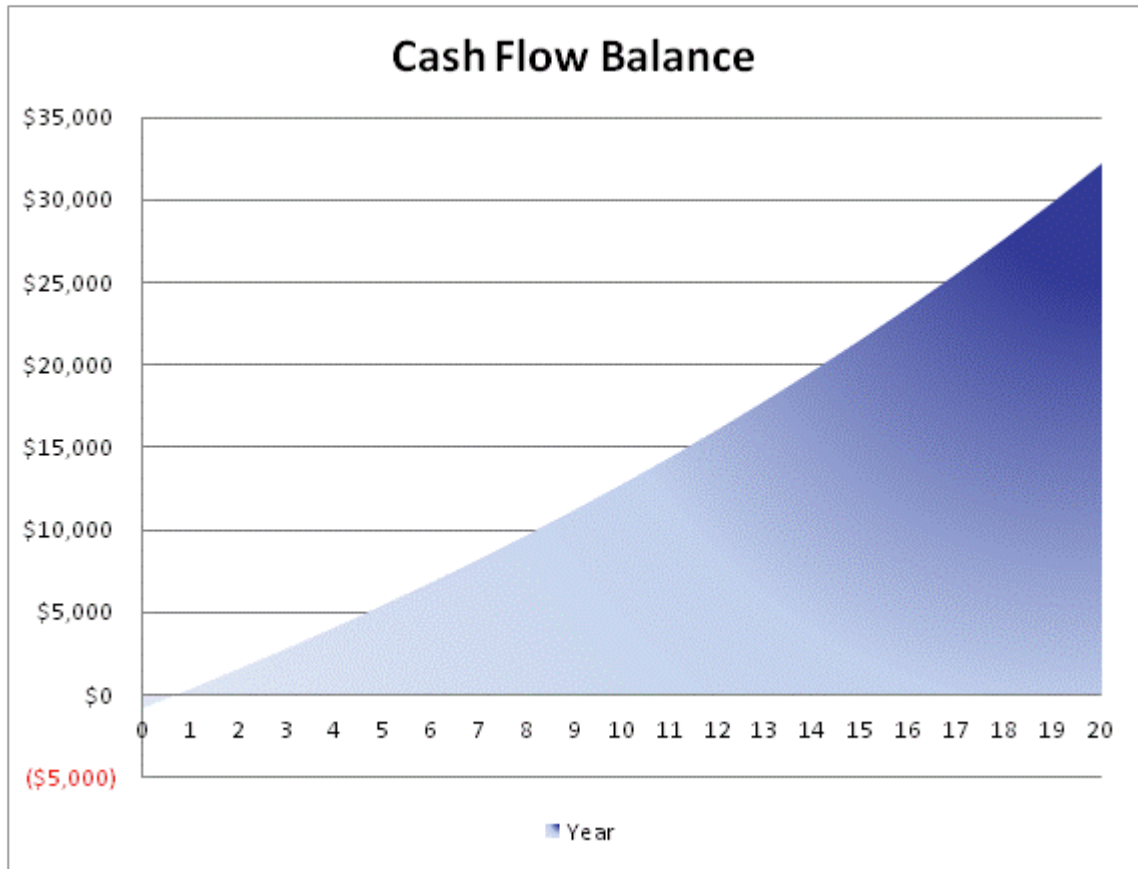
We recommend replacing incandescent lamps with equivalent compact fluorescent lamps (CFLs). There are compact fluorescent lamps (CFLs) on the market today to be utilized in almost any application. In preparation for the 2014 ban on “General Use” incandescent lamps, companies are producing quality CFLs which produce light of similar colour and lumen output as incandescent, all while consuming less than ¼ of the energy and lasting 10 times longer than standard incandescent bulbs.

In areas where lighting is not on for long periods of time changing to a cheaper energy efficient option (the CFL) generates savings while costing little up front.

Specific lighting recommendations, on a room-by-room basis, are listed in the Retrofit Description and Retrofit Location tables in Appendix C.



*The Detailed Financial Analysis*



**Graph of Cash Flow Balance Over the Projected Lifecycle**

The above graph represents the 20 year cash flow balance for this opportunity. Using the [Financial Factors](#) listed in this Section, this project results in the following Annual Utility Savings, Simple Payback and Net Present Value:

Energy Savings	Utility Savings						Emissions Reduction	Financials			
	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings		Annual Kg CO2 Avoided	Implementation Cost	Simple Payback (years)	Capital Payback (years)
Measure	kWh	GJ	GJ	m <sup>3</sup>	m <sup>3</sup>						
1 Lighting Upgrade: Incandescent to CFL	7,079	0	0	0	0	\$757	1,572	\$1,108	1.0	0.6	\$13,936

**The Next Steps**

The first step in proceeding with any measure for which rebates are being pursued is to initiate the incentive process through the program sponsors. In this case, your LDC representative will be responsible for reviewing and approving the SaveONenergy rebates.

Once the LDC has been engaged, quality CFLs should be selected and lamp replacement can be carried out by qualified on site staff.



## **M02 – Lighting Conversion: Halogen/Incandescent to LED**

### **Existing Conditions**

Several areas through the facility house fixtures with incandescent and halogen lamps. The main entrance has recently undergone a lighting retrofit to LED with much success.

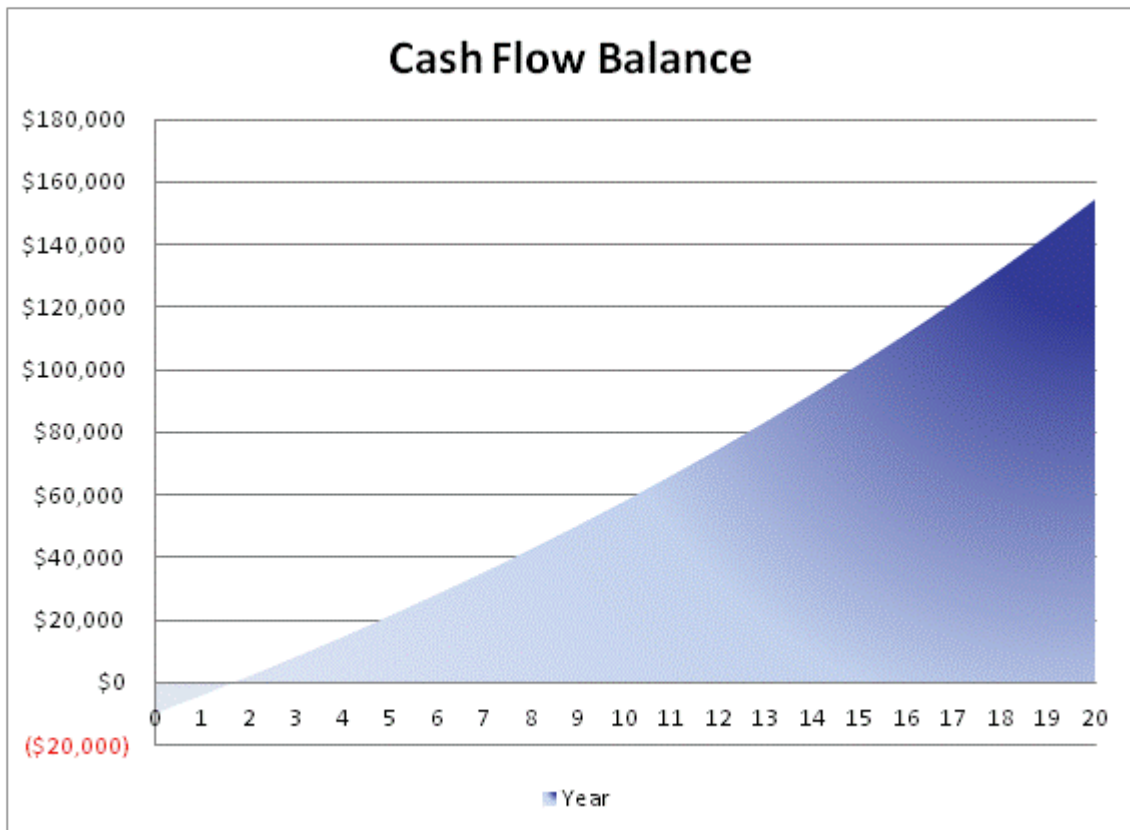
### **Retrofit Conditions**

We recommend extending the LED retrofit to include all existing incandescent and halogen lamps both interiorly and exteriorly.

Care should be taken in selecting a quality LED which meets the needs of the application while being supported by a reputable company guaranteeing a lengthy warranty. Energy Star certification requires that energy and other identified performance parameters of the LEDs can be consistently measured and verified through testing. Energy Star certification should be the minimum requirement in choosing any energy efficient lighting product.

Specific lighting recommendations, on a room-by-room basis, are listed in the Retrofit Description and Retrofit Location tables in Appendix C.

### **The Detailed Financial Analysis**



**Graph of Cash Flow Balance Over the Projected Lifecycle**

The above graph represents the 20 year cash flow balance for this opportunity. Using the [Financial](#)



Factors listed in this Section, this project results in the following Annual Utility Savings, Simple Payback and Net Present Value:

Energy Savings	Utility Savings						Emissions Reduction	Financials			
	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings	Annual Kg CO2 Avoided	Implementation Cost	Simple Payback (years)	Capital Payback (years)	Net Present Value
Measure	kWh	GJ	GJ	m <sup>3</sup>	m <sup>3</sup>						
2 Lighting Conversion: Halogen/Incandescent to LED	34,324	0	0	0	0	\$3,673	7,620	\$12,169	2.1	1.7	\$63,714

### *The Next Steps*

The first step in proceeding with any measure for which rebates are being pursued is to initiate the incentive process through the program sponsors. In this case, your LDC representative will be responsible for reviewing and approving the SaveONenergy rebates.

Once the LDC has been engaged, a quality LED should be selected and lamp replacement can be carried out by qualified on site staff.



## ***M03- Lighting Controls: Occupancy Sensors***

### ***Existing Conditions***

The existing lighting control system turns zones of lights on and off based on time through low voltage relays. An override switch is available for each zone so that lights can be turned on after scheduled hours. The existing system is set up to have lights on from 12 to 24 hours per day depending on zone use. In most cases lights are on much longer than space is actually occupied.

Existing settings shown below:

ZONE	# OF HOURS LIGHTING SYSTEM IS CURRENTLY SET FOR
Head Office Basement	14
Head Office Ground Floor	16-24
Head Office 2 <sup>nd</sup> Floor	12
Head Office 3 <sup>rd</sup> Floor	12
Head Office 4 <sup>th</sup> Floor	12
Head Office 5 <sup>th</sup> Floor	12
Head Office 6 <sup>th</sup> & 7 <sup>th</sup> Floors	Local Wall Switch Control (on much longer than actually occupied )
Tower Basement	18
Tower Ground Floor	12
Tower 2 <sup>nd</sup> Floor	12
Tower 3 <sup>rd</sup> Floor	14
Tower 4 <sup>th</sup> Floor	14
Tower 5 <sup>th</sup> Floor	14
Tower 6 <sup>th</sup> Floor	18
Tower 7 <sup>th</sup> Floor	18
Tower 8 <sup>th</sup> Floor	15
Tower 9 <sup>th</sup> Floor	14
Tower 10 <sup>th</sup> Floor	Under construction- Lighting controls disabled

Tower 11<sup>th</sup> FloorLocal Wall Switch Control (on much longer than  
actually occupied )

In most cases the core washrooms, elevator lobby, stairs, and main corridors are unscheduled and are on 24/7.

### ***Retrofit Conditions***

To achieve maximum savings utilizing the current lighting control system, time schedules should be reviewed regularly and updates made on the system to reduce the number of hours each zone is illuminated. Matching the time schedule with actual occupancy achieves the most savings. Since an override system is in place for all zones occasional late or early occupancy should not be a problem.

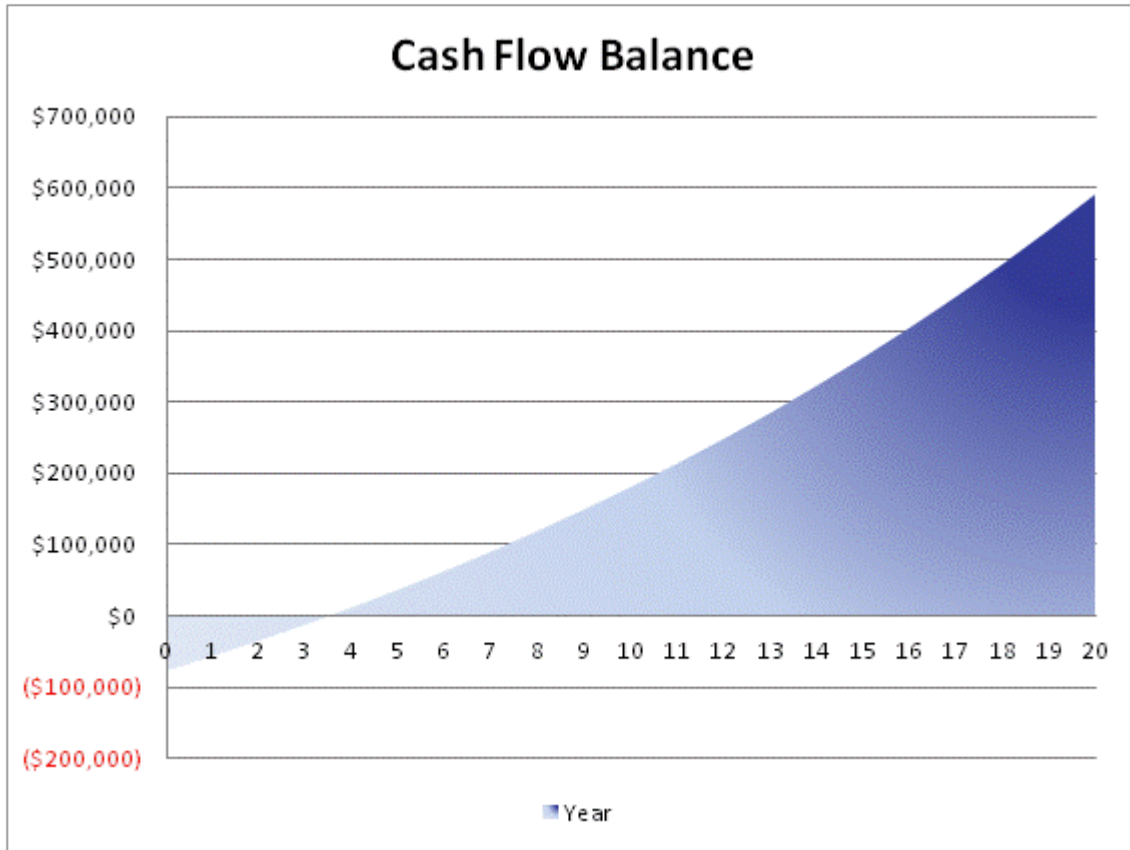
There are many areas throughout the building that could achieve significant savings if occupancy sensors were installed to control lighting. Occupancy sensors turn lights off when rooms or areas are unoccupied.

In general, we recommend installing occupancy sensors in core washrooms, stairwells and corridors. Occupancy control should also be considered in all mechanical areas since lights tend to be left on for extended periods of time. Some occupancy sensors are equipped with warning tones or a light flicker to notify the occupant that lights will soon be turn off.

It is important that qualified contractors are familiar with all building code and by law requirements regarding the installation of occupancy sensors, lighting level requirements and fire code. Safety of occupants should always be addressed when determining suitable applications for occupancy sensors.



*The Detailed Financial Analysis*



**20 Year Cash Flow Balance Over the Projected Lifecycle**

The above graph represents the projected 20 year cash flow balance for this Opportunity. Using the [Financial Factors](#) listed in this Section, this project results in the following Annual Utility Savings, Payback and Net Present Value:

Energy Savings	Utility Savings						Emissions Reduction	Financials			
	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings	Annual Kg CO2 Avoided	Implementation Cost	Simple Payback (years)	Capital Payback (years)	Net Present Value
Measure	kWh	GJ	GJ	m³	m³						
<b>3 Lighting Controls: Occupancy Sensors</b>	184,676	0	0	0	0	\$19,760	<b>40,998</b>	\$77,247	3.9	3.5	\$216,738

*The Next Steps*

The first step in proceeding with any measure for which rebates are being pursued is to initiate the incentive process through the program sponsors. In this case, your LDC representative will be responsible for reviewing and approving the SaveONenergy rebates.

Once the LDC has been engaged, a qualified electrical contractor should be contacted and provided an overview of the recommendations. It is important that contractors are aware and familiar with all building code and by law requirements regarding the installation of occupancy sensors, lighting level requirements and fire code. An experienced electrical contractor can recommend the appropriate type and location for occupancy sensors within each space.



## ***M04 – VSD's on Induction Zone Supply Fans and Properly Program Operation***

### ***Existing Conditions***

Multiple high pressure fan systems deliver air to induction units around the perimeter of the building. The induction units have heating and cooling coils. The high pressure air goes through nozzles at high speed, creating a venturi effect which 'induces' a flow of recirculated room air through the unit coils.

VSD's had been installed in the past on the induction fans. The VSD's were overridden and removed because the original measure was not implemented properly and the building operators had very little confidence in the measure. The original measure was implemented by Rose Technologies/Vestar. They were an ESCO that had a reputation of being extremely aggressive in their approach to energy efficiency, often not taking into account the actual needs of the occupants.

### ***Retrofit Conditions***

There are many conditions in which the high pressure air flow is not required to maintain a comfortable space temperature. When the air flow is reduced or turned off, the induction units perform more like traditional radiators. Under lower load conditions, radiant heat from the heating coil is usually sufficient to heat the space. So long as adequate ventilation air is being delivered, there is no reason not to slow down the induction fans. Also, space temperature can be reset (and air flow reduced or stopped) when the building is unoccupied.

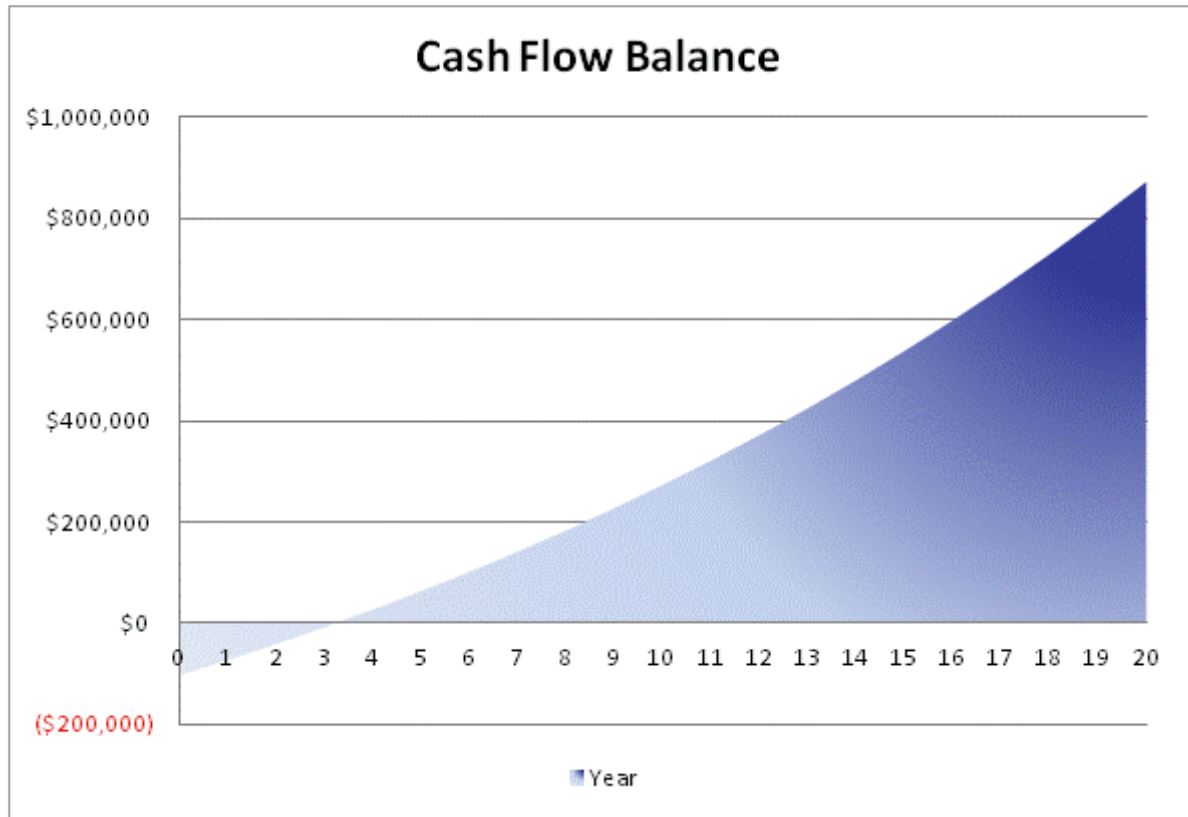
We recommend installing VSDs and inverter-duty motors on inductions fans, to slow down and turn off the fans in response to space temperature and occupancy schedules. This will save a significant amount of fan energy and reduce induction 'hissing' noise in the occupied space.

Since some air handling units serve both interior and induction zones while sharing return fans, it is recommended that this measure is paired with the following measure (M05).





*The Detailed Financial Analysis*



**Graph of Cash Flow Balance Over the Projected Lifecycle**

The above graph represents the 20 year cash flow balance for this opportunity. Using the [Financial Factors](#) listed in this Section, this project results in the following Annual Utility Savings, Simple Payback and Net Present Value:

Energy Savings		Utility Savings					Emissions Reduction	Financials				
Measure	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings	Annual Kg CO2 Avoided	Implementation Cost	Simple Payback (years)	Capital Payback (years)	Net Present Value	
	kWh	GJ	GJ	m³	m³							
4	VSD's on Induction Zone Supply Fans and Properly Program Operation	270,512	0	0	0	0	\$28,945	60,054	\$103,576	3.6	3.2	\$326,399

The following table represents numbers resulting if M05 is paired with this measure:

Energy Savings		Utility Savings					Emissions Reduction	Financials				
Measure	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings	Annual Kg CO2 Avoided	Implementation Cost	Simple Payback (years)	Capital Payback (years)	Net Present Value	
	kWh	GJ	GJ	m³	m³							
4	VSD's on Induction Zone Supply Fans and Properly Program Operation	270,512	0	0	0	0	\$28,945	60,054	\$98,387	3.4	3.1	\$331,235

**Next Steps**

The first step in proceeding with any measure for which rebates are being pursued is to initiate the incentive process through the program sponsors. In this case, your LDC representative will be responsible for reviewing and approving the SaveONenergy rebates.



Approach a qualified engineering firm to insure proper help with the detailed design and tender required for this measure. A third party project manager may be retained to assist with the creation of tender documents, vendor selection and construction management for best results.



## ***M05 – VSD's on Interior Zone Supply Fans***

### ***Existing Conditions***

A Constant Volume, Terminal Reheat (CVTR) system supplies conditioned air to the various zones in the building. Each zone has a hydronic reheat coil located in the branch duct. This type of system was popular in the '60's and '70's when the emphasis was entirely on installation cost and occupancy comfort.

### ***Retrofit Conditions***

We recommend retrofitting the CVTR system to a Variable Air Volume (VAV) system. The retrofit would include the following:

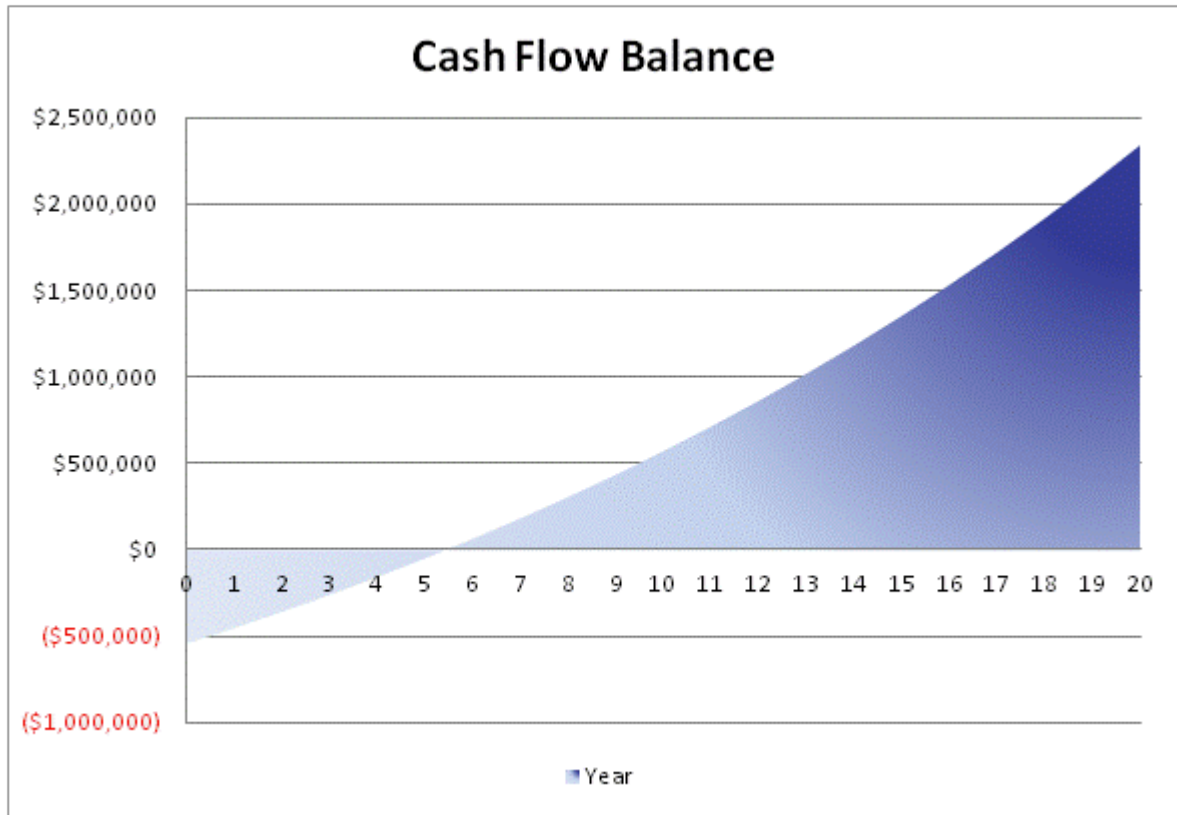
- Installation of VSD's and inverter duty motors on the supply and return fans.
- Removal of reheat coils on most interior zones.
- Installation of VAV box retrofit kits onto the existing ductwork

Conversion to a cooling-only variable air volume system will allow the air handlers to make use of all installed ductwork all of the time. By effectively doubling the available ducting under high load, fan electrical requirements would be drastically reduced. The zone thermostats would control temperature by throttling air flow in each zone to modulate cooling capacity. Energy savings would come from reducing air velocity and pressure, resulting in lower fan power requirements. In addition, simultaneous heating and cooling at the air handler would be eliminated.

Since some air handling units serve both interior and induction zones while sharing return fans, it is recommended that this measure is paired with the previous measure (M04).



*The Detailed Financial Analysis*



**Graph of Cash Flow Balance Over the Projected Lifecycle**

The above graph represents the 20 year cash flow balance for this opportunity. Using the [Financial Factors](#) listed in this Section, this project results in the following Annual Utility Savings, Simple Payback and Net Present Value:

Energy Savings	Utility Savings						Emissions Reduction	Financials			
	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings	Annual Kg CO2 Avoided	Implementation Cost	Simple Payback (years)	Capital Payback (years)	Net Present Value
Measure	kWh	GJ	GJ	m <sup>3</sup>	m <sup>3</sup>						
5 VSD's on Interior Zone Supply Fans	799,391	0	0	0	0	\$85,535	177,465	\$543,615	6.4	5.5	\$743,187

The following table represents numbers resulting if M04 is paired with this measure:

Energy Savings	Utility Savings						Emissions Reduction	Financials			
	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings	Annual Kg CO2 Avoided	Implementation Cost	Simple Payback (years)	Capital Payback (years)	Net Present Value
Measure	kWh	GJ	GJ	m <sup>3</sup>	m <sup>3</sup>						
5 VSD's on Interior Zone Supply Fans	799,391	0	0	0	0	\$85,535	177,465	\$538,426	6.3	5.4	\$748,023

**Next Steps**

The first step in proceeding with any measure for which rebates are being pursued is to initiate the incentive process through the program sponsors. In this case, your LDC representative will be



responsible for reviewing and approving the SaveONenergy rebates.

Approach a qualified engineering firm to insure proper help with the detailed design and tender required for this measure. A third party project manager may be retained to assist with the creation of tender documents, vendor selection and construction management for best results.



## M06 – VSD on Domestic Water Booster Pump

### Existing Conditions

P-28 and 29 are domestic water booster pumps which supply the necessary water pressure for the buildings. P-28 (7.5 hp) is the primary pump while P-29 (15 hp) is the secondary/backup. During the audit, it was observed that the primary pump was carrying the daily load.

These pumps are designed to supply a constant head pressure and flow rate. Pressure reducing valves (PRVs) at the outlet of the pumps substantially reduce the pressure, so that a specific amount of pressure is applied to the supply piping.

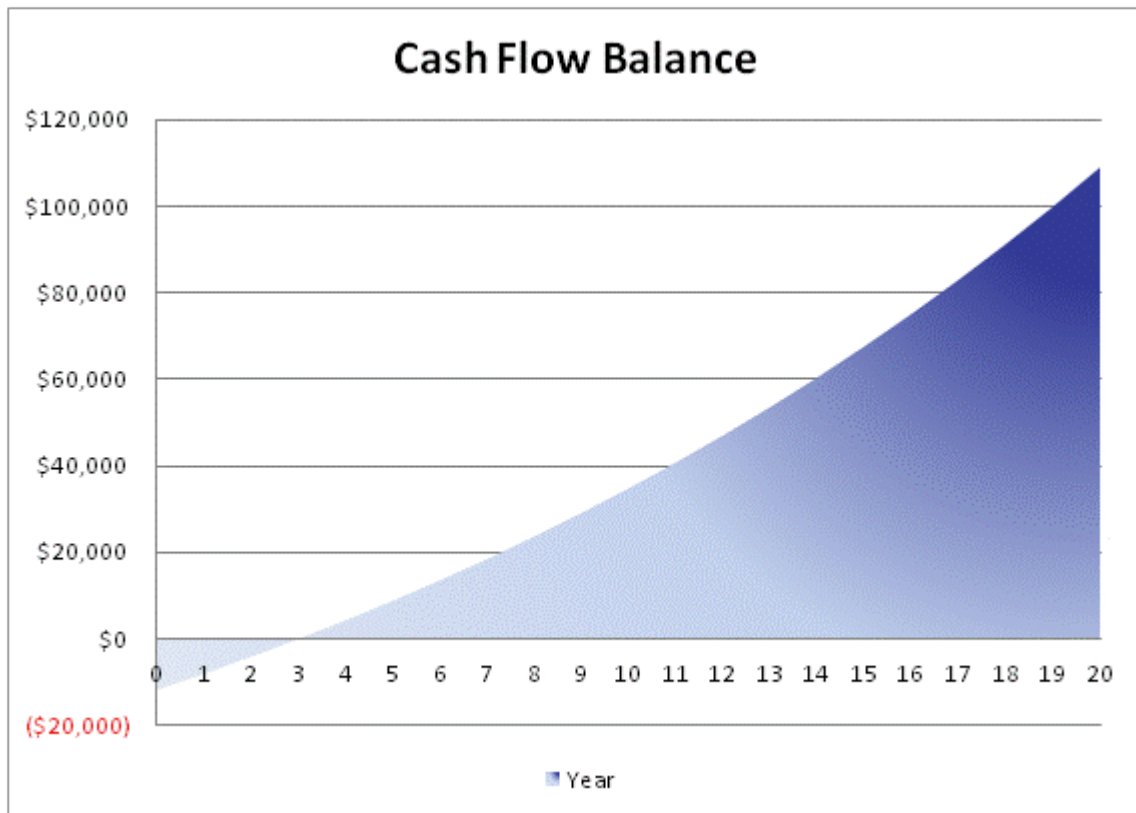
The pressure drop across the valves results in an excessive amount of energy and a significant drop in efficiency of the pump motors.

### Retrofit Conditions

We recommend installing a variable speed drive and inverter duty motor on the primary booster pump. The PRV on the main pump leading to the penthouse should be opened completely or entirely removed to reduce the system losses.

We recommend installing a pressure sensor on the piping at the highest elevation, and controlling the VSD to maintain a certain pressure (say 20 psig) during occupied hours.

### The Detailed Financial Analysis



**Graph of Cash Flow Balance Over the Projected Lifecycle**



The above graph represents the 20 year cash flow balance for this opportunity. Using the [Financial Factors](#) listed in this Section, this project results in the following Annual Utility Savings, Simple Payback and Net Present Value:

Energy Savings		Utility Savings					Emissions Reduction	Financials				
Measure	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings	Annual Kg CO2 Avoided	Implementation Cost	Simple Payback (years)	Capital Payback (years)	Net Present Value	
	kWh	GJ	GJ	m <sup>3</sup>	m <sup>3</sup>							
6	VSD on Domestic Water Booster Pump	33,534	0	0	0	0	\$3,588	7,445	\$11,911	3.3	3.0	\$41,328

**Next Steps**

The first step in proceeding with any measure for which rebates are being pursued is to initiate the incentive process through the program sponsors. In this case, your LDC representative will be responsible for reviewing and approving the SaveONenergy rebates.

Approach a qualified engineering firm to insure proper help with the detailed design and tender required for this measure. A third party project manager may be retained to assist with the creation of tender documents, vendor selection and construction management for best results.



## ***M07 – VSD on Heating Coil Circulator***

### ***Existing Conditions***

The heating coil circulator on AHU-5 (P-22) has a 10 HP pump motor and has a PRV on the outlet side set at 60% open.

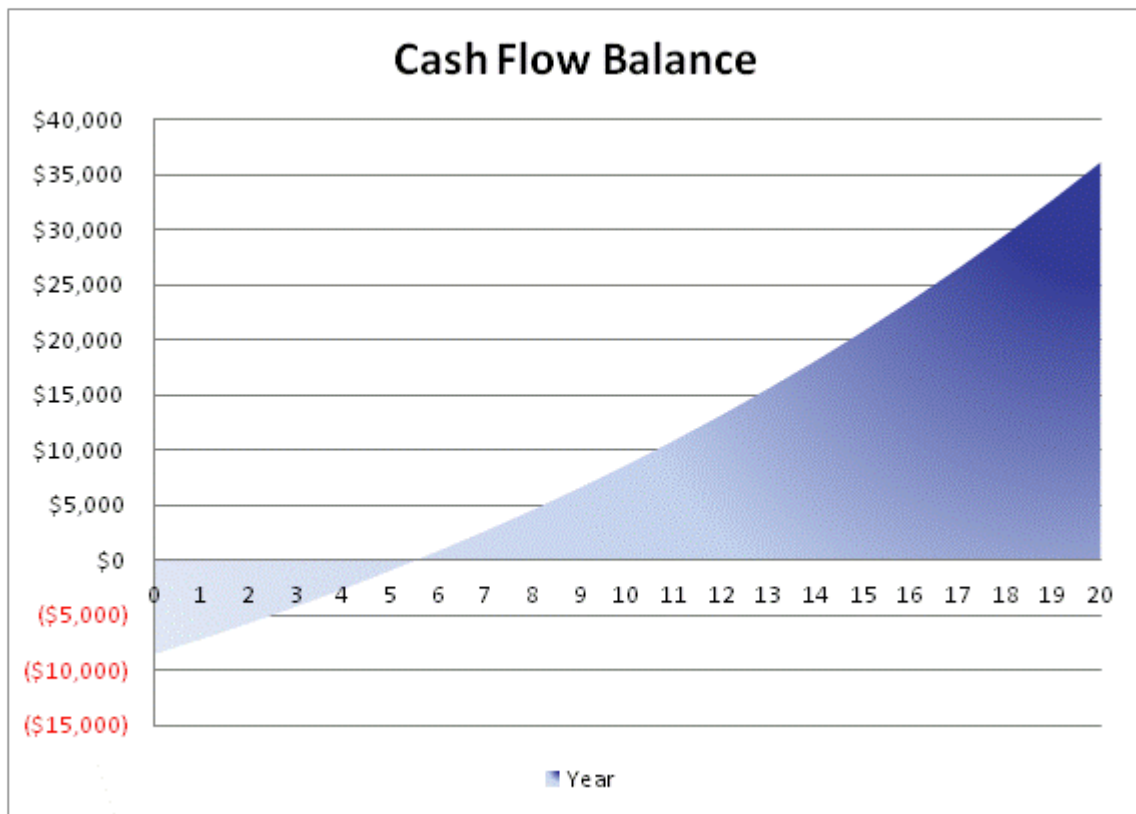
Pressure reducing valves (PRVs) at the outlet of the pumps substantially reduce the pressure, so that a specific amount of pressure is supplied by the motor.

The pressure drop across the valve results in an excessive amount of pumping and a significant drop in efficiency for the motor.

### ***Retrofit Conditions***

We recommend installing a variable speed drive and inverter duty motor on the circulation pump. The PRV on the main line leading to the coil should be opened completely. A VSD should be installed to control the flow of hot water through the heating coil based on the varying demand.

### ***The Detailed Financial Analysis***



**Graph of Cash Flow Balance Over the Projected Lifecycle**

The above graph represents the 20 year cash flow balance for this opportunity. Using the [Financial Factors](#) listed in this Section, this project results in the following Annual Utility Savings, Simple Payback and Net Present Value:





Energy Savings		Utility Savings					Emissions Reduction	Financials				
Measure	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings	Annual Kg CO2 Avoided	Implementation Cost	Simple Payback (years)	Capital Payback (years)	Net Present Value	
	kWh	GJ	GJ	m <sup>3</sup>	m <sup>3</sup>							
7	VSD on Heating Coil Circulator	12,390	0	0	0	0	\$1,326	2,751	\$8,680	6.5	5.6	\$11,283

**Next Steps**

The first step in proceeding with any measure for which rebates are being pursued is to initiate the incentive process through the program sponsors. In this case, your LDC representative will be responsible for reviewing and approving the SaveONenergy rebates.

Approach a qualified engineering firm to insure proper help with the detailed design and tender required for this measure. A third party project manager may be retained to assist with the creation of tender documents, vendor selection and construction management for best results.



## M08 – VSD’s on Heating Distribution Pumps

### Existing Conditions

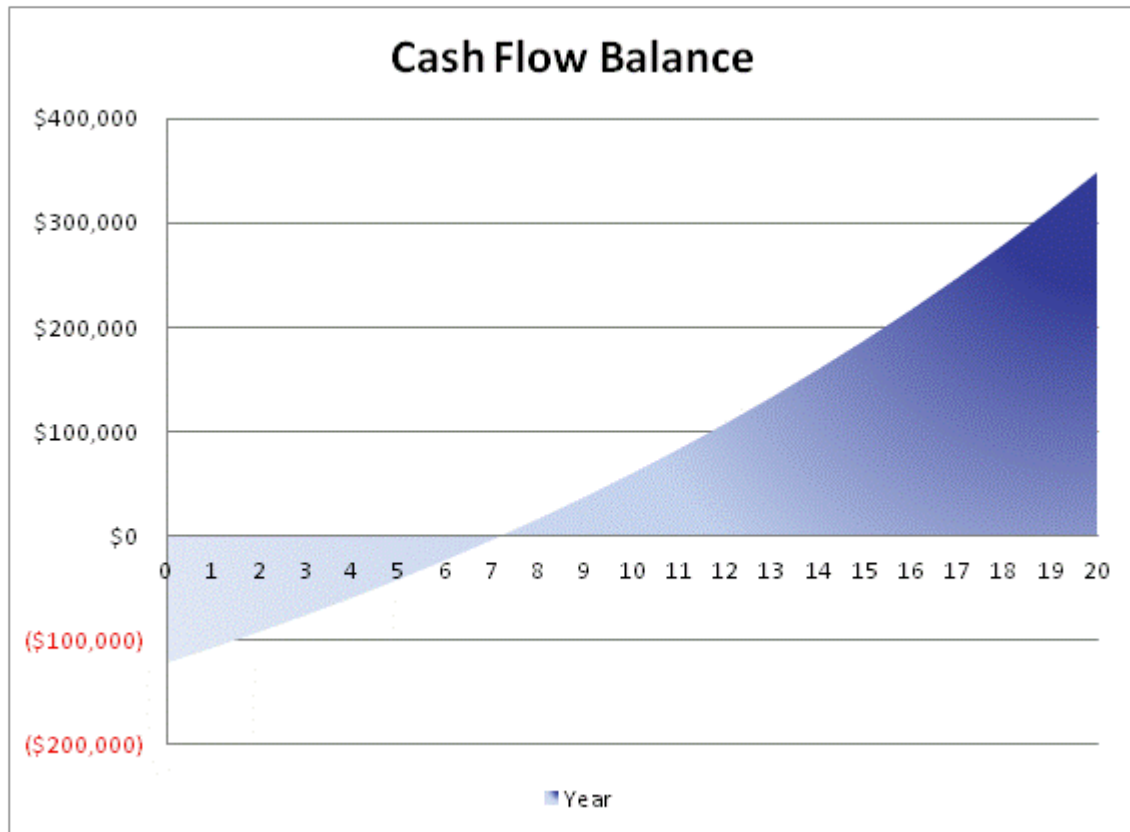
Hydronic loop pumps circulate heating hot water through the Headquarters and Tower. These pumps operate as if a constant flow volume is required, but control valves operate to throttle flow and reduce the pumping requirement. Most of the time, except under peak load conditions; the pumps generate a higher head pressure and use more electrical energy than necessary.

### Retrofit Conditions

We recommend installing variable speed drives on the heating pumps, and controlling pump speed to maintain a constant pressure at a fixed point in the distribution system. For maximum savings, the pressure setpoint would be adjusted to the lowest setting that will still deliver adequate flow to all areas.

Some analysis work would have to be done to identify the best sensing point. Generally, the best energy savings can be achieved by positioning the pressure sensor at a terminal unit rather than at the pumps. At the same time we also recommend changing existing three-way mixing valves to two-way control valves, in order to reduce flow requirements under partial heating loads.

### The Detailed Financial Analysis



**Graph of Cash Flow Balance Over the Projected Lifecycle**

The above graph represents the 20 year cash flow balance for this opportunity. Using the [Financial](#)



Factors listed in this Section, this project results in the following Annual Utility Savings, Simple Payback and Net Present Value:

Energy Savings	Utility Savings						Emissions Reduction	Financials			
	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings		Annual Kg CO2 Avoided	Implementation Cost	Simple Payback (years)	Capital Payback (years)
Measure	kWh	GJ	GJ	m <sup>3</sup>	m <sup>3</sup>						
8 VSD's on Heating Distribution Pumps	130,098	0	0	0	0	\$13,921	28,882	\$121,811	8.8	7.2	\$89,883

### Next Steps

The first step in proceeding with any measure for which rebates are being pursued is to initiate the incentive process through the program sponsors. In this case, your LDC representative will be responsible for reviewing and approving the SaveONenergy rebates.

Approach a qualified engineering firm to insure proper help with the detailed design and tender required for this measure. A third party project manager may be retained to assist with the creation of tender documents, vendor selection and construction management for best results.



## **M09 – Schedule Operation and Install DCV on AHU-Link**

### **Existing Conditions**

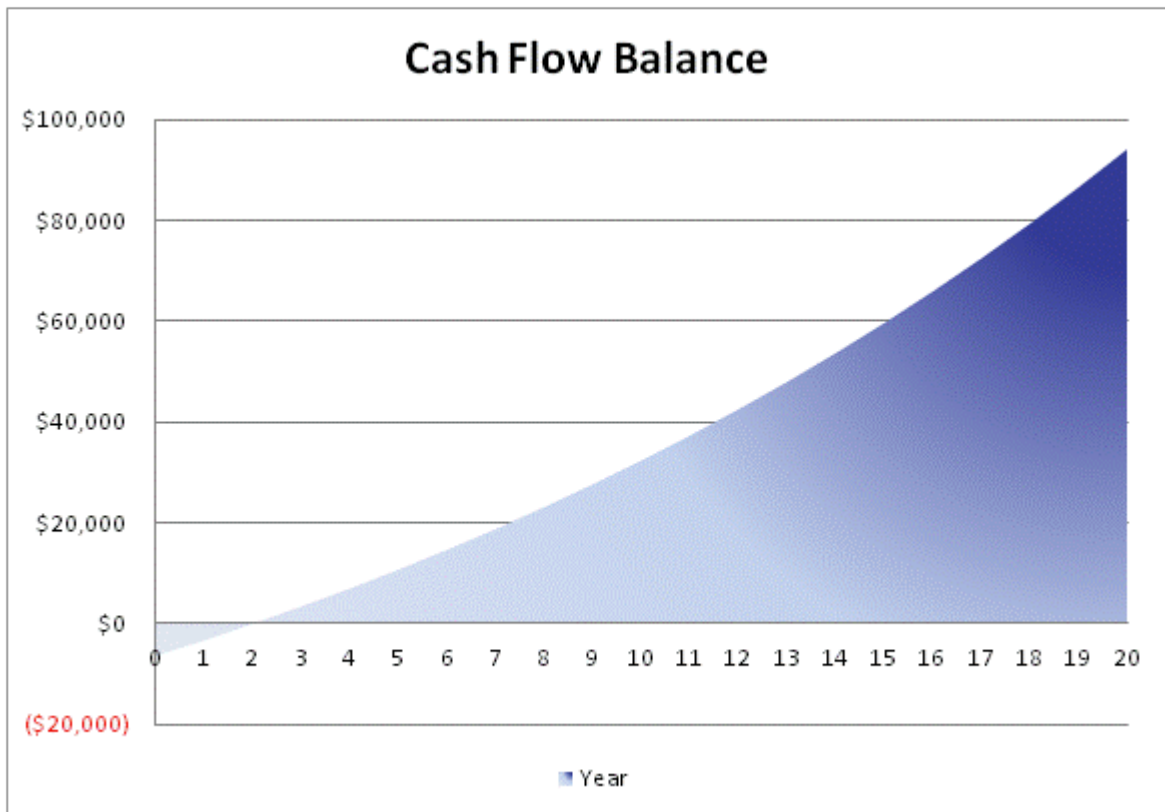
The Link's air handler provides cooling and ventilation to the area which connects the Headquarters and Tower. This unit operates by blending a fixed amount of fresh air with return air to a fixed mixed air temperature setpoint and operates 24/7. This provides temperature and humidity control in the space, but tends to bring in more ventilation air than needed, especially during unoccupied periods. Any outside air brought into the building has to be conditioned by heating or cooling equipment, so it is best to minimize it.

### **Retrofit Conditions**

CO2 control on the air handler would ensure that ventilation air volumes are matched to occupancy under all conditions. CO2 sensors would be installed in the occupied area. ASHRAE Standard 62 recognizes that ambient (outdoor) CO2 levels can fluctuate, and that a better measure of ventilation requirements in the space is to use the difference between indoor and ambient levels. An outside sensor would also be installed to determine the ambient CO2 levels. The new sensors would be connected to the building automation system, which would be reprogrammed to maintain the indoor air CO2 levels at 700 ppm above ambient.

The outside air and relief dampers would be replaced with low leakage dampers.

### **The Detailed Financial Analysis**



**Graph of Cash Flow Balance Over the Projected Lifecycle**



The above graph represents the 20 year cash flow balance for this opportunity. Using the [Financial Factors](#) listed in this Section, this project results in the following Annual Utility Savings, Simple Payback and Net Present Value:

Energy Savings		Utility Savings					Emissions Reduction	Financials			
Measure	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings	Annual Kg CO2 Avoided	Implementation Cost	Simple Payback (years)	Capital Payback (years)	Net Present Value
	kWh	GJ	GJ	m <sup>3</sup>	m <sup>3</sup>						
9 Schedule Operation and Install DCV on AHU-Link	10,452	51	1	0	0	\$2,986	7,327	\$6,548	2.2	2.0	\$37,530

**Next Steps**

The first step would be to approach a qualified engineering firm to insure proper help with the detailed design and tender required for this measure. A third party project manager may be retained to assist with the creation of tender documents, vendor selection and construction management for best results.

Care must be taken to ensure that proper building ventilation requirements are met at all times. This includes making sure that CO2 sensors are properly placed in areas that are most likely to be underventilated. The design should include a preliminary study to find the optimal CO2 sensor locations.



## **M10 – DCV on Interior and Induction Unit Air Handlers**

### **Existing Conditions**

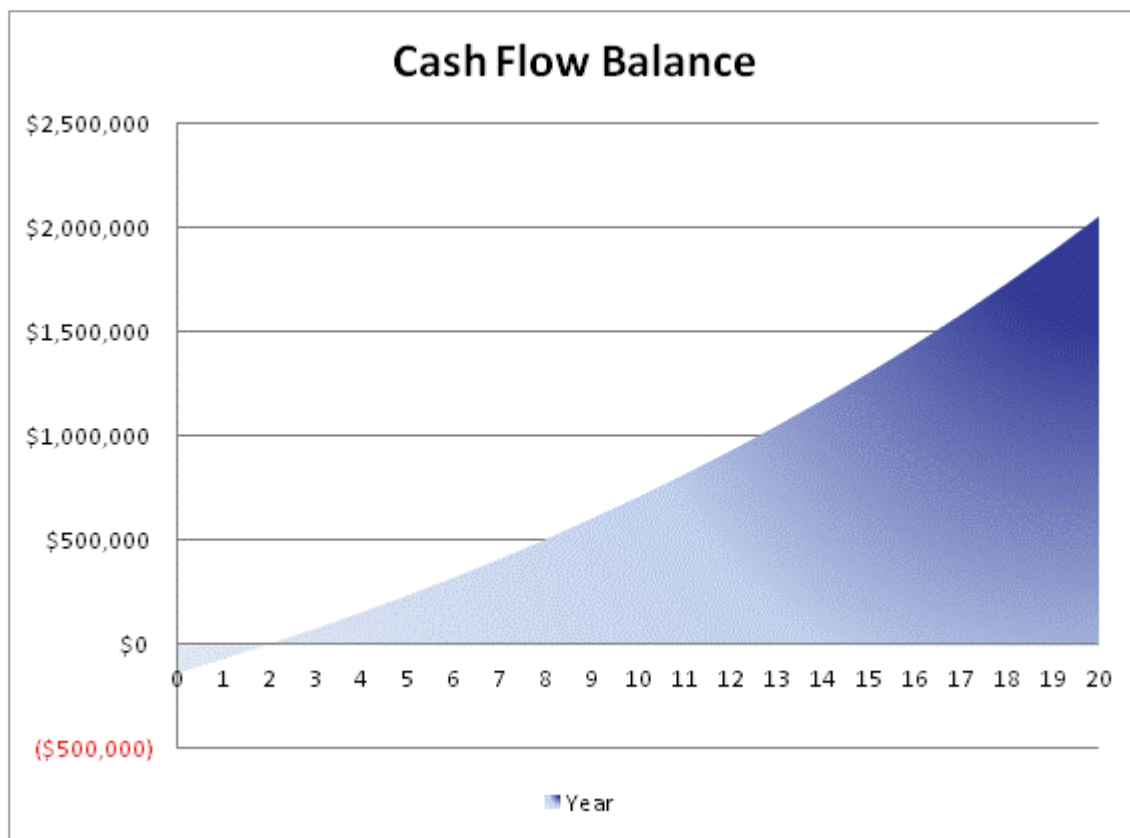
The interior and induction air-handling units provide heating, cooling and ventilation to the entire facility, blending fresh air and return air to a fixed mixed air temperature setpoint. This provides temperature and humidity control in the space, but tends to bring in more ventilation air than needed, especially during partial occupancy periods. Any outside air brought into the building has to be conditioned by heating or cooling equipment, so it is best to minimize it.

### **Retrofit Conditions**

CO2 control on the air handlers would ensure that ventilation air volumes are matched to occupancy under all conditions. CO2 sensors would be installed in occupied areas and return air ducts, as appropriate for each air handler. ASHRAE Standard 62 recognizes that ambient (outdoor) CO2 levels can fluctuate, and that a better measure of ventilation requirements in the space is to use the difference between indoor and ambient levels. An outside sensor would also be installed to determine the ambient CO2 levels. The new sensors would be connected to the building automation system, which would be reprogrammed to maintain the indoor air CO2 levels at 700 ppm above ambient.

The outside air and relief dampers would be replaced with low leakage dampers.

### **The Detailed Financial Analysis**



**Graph of Cash Flow Balance Over the Projected Lifecycle**



The above graph represents the 20 year cash flow balance for this opportunity. Using the [Financial Factors](#) listed in this Section, this project results in the following Annual Utility Savings, Simple Payback and Net Present Value:

Energy Savings		Utility Savings					Emissions Reduction	Financials			
Measure	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings	Annual Kg CO2 Avoided	Implementation Cost	Simple Payback (years)	Capital Payback (years)	Net Present Value
	kWh	GJ	GJ	m <sup>3</sup>	m <sup>3</sup>						
10 DCV on Interior and Induction Unit Air Handlers	0	1,567	263	0	0	\$64,661	157,288	\$132,608	2.1	1.9	\$821,197

**Next Steps**

The first step would be to approach a qualified engineering firm to insure proper help with the detailed design and tender required for this measure. A third party project manager may be retained to assist with the creation of tender documents, vendor selection and construction management for best results.

Care must be taken to ensure that proper building ventilation requirements are met at all times. This includes making sure that CO2 sensors are properly placed in areas that are most likely to be underventilated. The design should include a preliminary study to find the optimal CO2 sensor locations.



## M11 – Schedule DHW Recirculation Pumps

### Existing Conditions

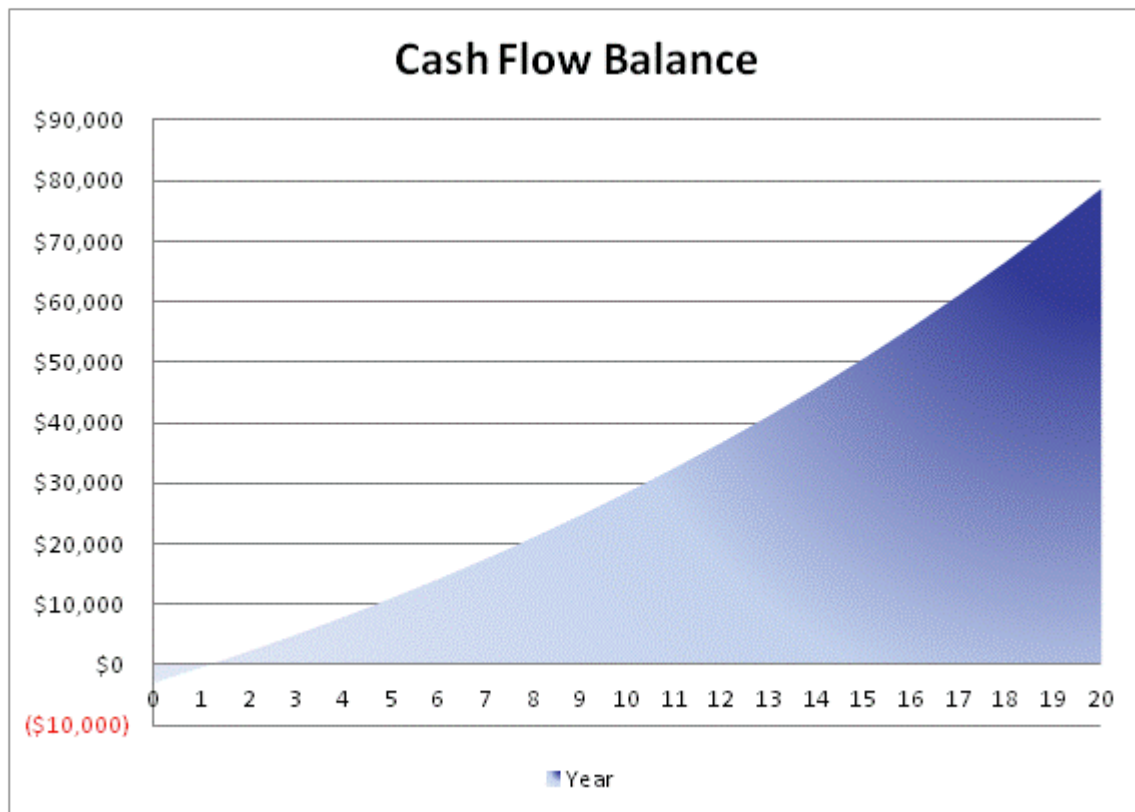
The existing domestic hot water recirculation pumps operate continually to deliver hot water to all fixtures in the facility. They operate even when the building is unoccupied, resulting in excess electrical consumption at the pump, and unnecessary pump wear. It also increases heat loss from the distribution piping, which can account for up to 20% of total energy used for DHW heating.

### Retrofit Conditions

It is recommended that the pumps are to be included in the BAS and scheduled to turn off during unoccupied periods. This will reduce pump electrical consumption, and will also eliminate heat loss from the DHW distribution pipe loop at night.

Additional benefits of this measure will be an increased lifespan of the pumps due to the introduction of reduced operating hours per day.

### The Detailed Financial Analysis



**Graph of Cash Flow Balance Over the Projected Lifecycle**

The above graph represents the 20 year cash flow balance for this opportunity. Using the [Financial Factors](#) listed in this Section, this project results in the following Annual Utility Savings, Simple Payback and Net Present Value:





Energy Savings		Utility Savings					Emissions Reduction	Financials				
Measure		Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings	Annual Kg CO2 Avoided	Implementation Cost	Simple Payback (years)	Capital Payback (years)	Net Present Value
		kWh	GJ	GJ	m <sup>3</sup>	m <sup>3</sup>						
11	Schedule DHW Recirculation Pumps	2,179	61	0	0	0	\$2,420	6,407	\$2,944	1.2	1.2	\$32,616

### *Next Steps*

This measure can be implemented with the contracted building automation service provider for this building.



## **M12 – Control Hot/Cold Deck to Highest/Lowest Demand Temperatures**

### **Existing Conditions**

AHU-9 is a dual multi zone air handling system. This unit has a hot and cold deck which allows the mixed air to be both heated and cooled based on the zone demands. A total of 6 individual pneumatic dampers mix the hot and cold air streams to a desired supply air temperature for their respective zones. It is known that the hot and cold deck temperatures were controlled to constant setpoints throughout the year.

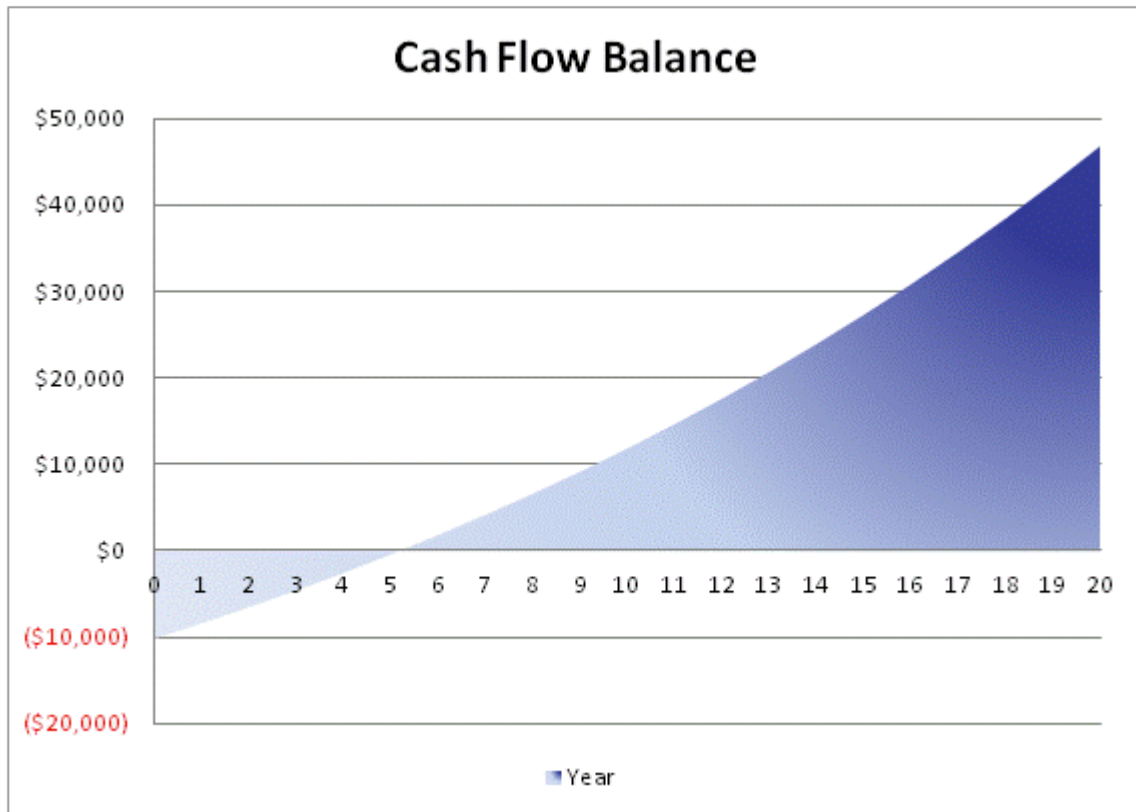
### **Retrofit Conditions**

Controlling the two deck temperatures to constant setpoints often results in simultaneous heating and cooling of the supply air stream. This does not occur during the peak heating and cooling seasons, as most if not all of the zones will require the same temperature demands. The losses tend to occur throughout the shoulder seasons where some zones require cooling and others heating.

It is recommended that a more efficient control strategy is implemented to reset both hot and cold deck temperatures based on the greatest zone requirements.

This will then always have one zone damper which is 100% open to the cooling side, and another 100% open to the heating side, and all other zone dampers will be somewhere in-between.

### **The Detailed Financial Analysis**



**Graph of Cash Flow Balance Over the Projected Lifecycle**



The above graph represents the 20 year cash flow balance for this opportunity. Using the [Financial Factors](#) listed in this Section, this project results in the following Annual Utility Savings, Simple Payback and Net Present Value:

Energy Savings	Utility Savings						Emissions Reduction	Financials			
	Electricity	Steam	Chilled Water	Water	Nat Gas	Annual Total Energy Savings		Implementation Cost	Simple Payback (years)	Capital Payback (years)	Net Present Value
	kWh	GJ	GJ	m <sup>3</sup>	m <sup>3</sup>	\$					
12 Control Hot/Cold Deck to Highest/Lowest Demand Temperatures	0	44	3	0	0	\$1,684	4,328	\$10,168	6.0	5.2	\$15,133

### Next Steps

The first step would be to approach a qualified engineering firm to insure proper help with the detailed design and tender required for this measure. A third party project manager may be retained to assist with the creation of tender documents, vendor selection and construction management for best results.



## 7.0 Further Recommendations

The *Further Recommendations Scenario* consists of all [Opportunities](#) that are not primarily recommended based on energy savings.

### ***M13 – DR3: Electrical Demand Response***

#### ***Existing Conditions***

There are many motors throughout the Ottawa Technology centre used for various mechanical systems. For example, 14 different motors serve elevators in the Headquarters and Tower buildings. Elevators make up a large portion of the electrical baseline consumption and demand. Elevators have large electrical motors required to carry heavy loads of people and equipment each day.

#### ***Retrofit Conditions***

It is recommended that Ottawa Hydro and a demand response provider are contacted to establish a contract to participate in the demand response (DR) program. Performance in DR is assessed by comparing your actual metered load during an activation period with a calculated baseline representing what your normal load would have otherwise been during the activation period. The difference will give a reduction in electrical demand (kW) and will include DR incentives that the building will receive for shedding the electrical load. Each response will be for 4 consecutive hours with a warning from the demand response provider a minimum 2.5 hours before each event. Most DR events will occur throughout the summer months when air conditioning is at its highest demands throughout the province.

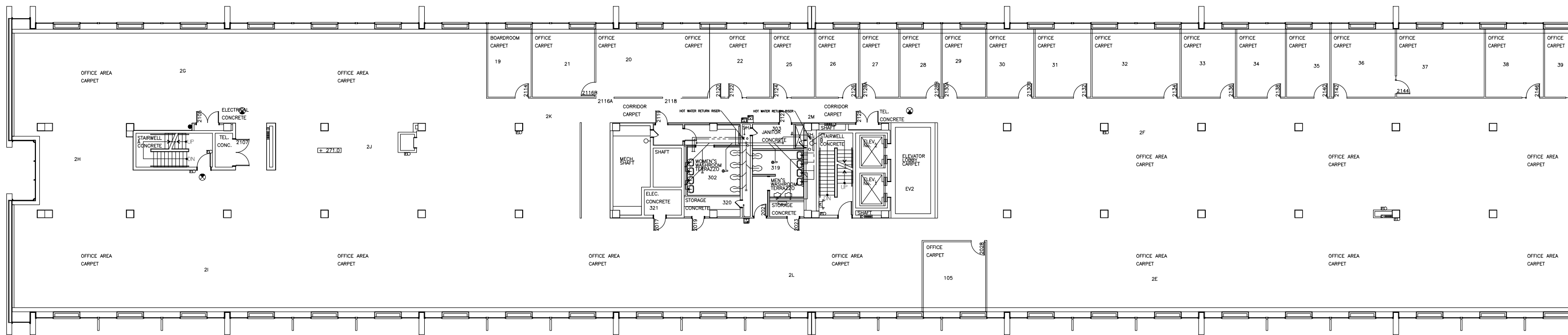
The savings from this measure are mostly made up of the DR3 program incentives from shedding electricity demand (kW) during peak times in the province. The OPA's demand response program was designed to reduce the stress on the electrical supply grid. By giving incentives to large consumers to reduce their consumption or produce electricity, the demand is greatly reduced when electricity is being used at a peak across the province.

#### ***Reasons Not Included***

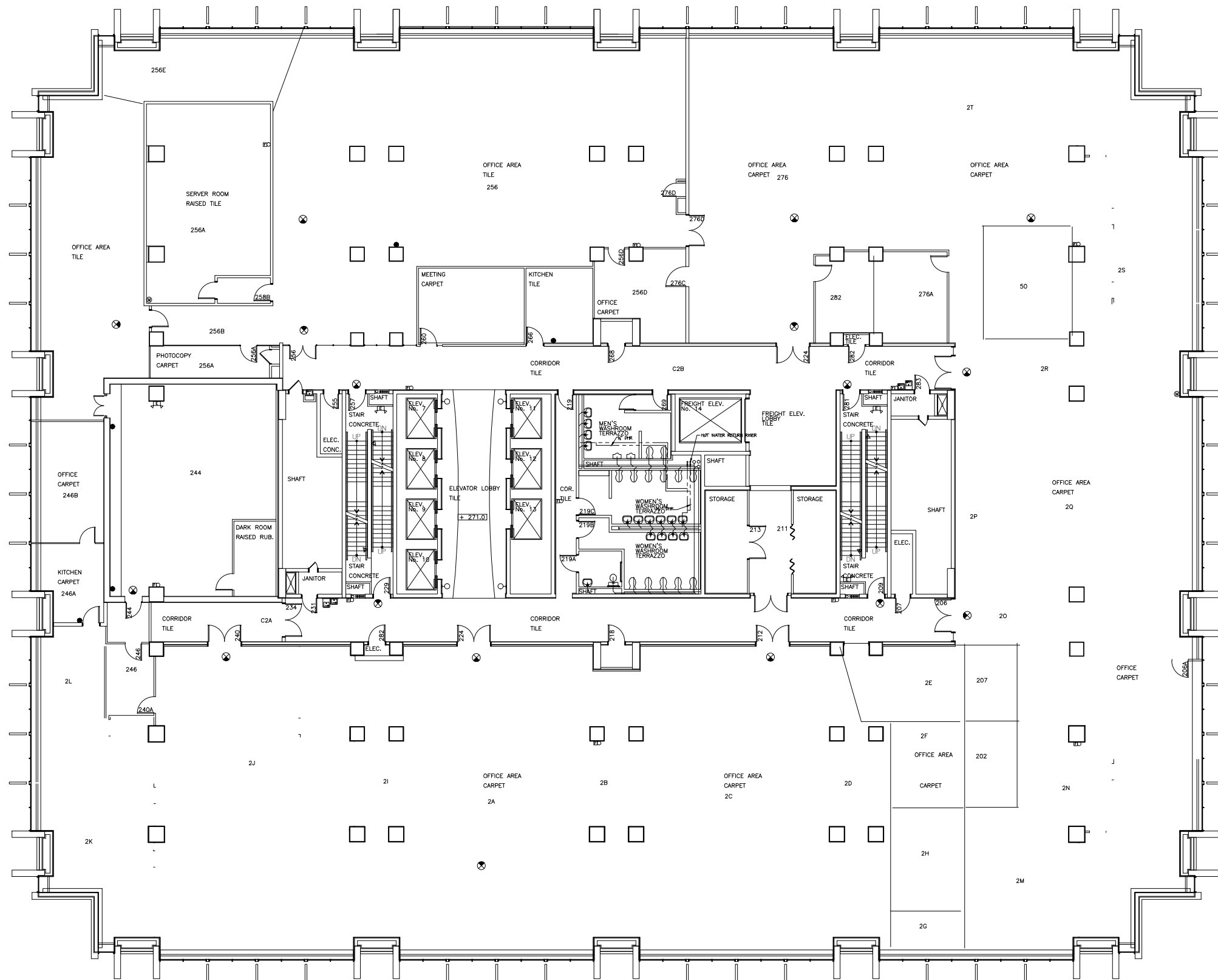
This measure was not included in the [Energy Savings Scenario](#) as it is unknown if the building will be able to meet peak reduction requirements. Also, it appears that the building is not measured or charged on a kW demand basis and only pays electricity through the level of consumption (kWh).



# Appendix A: Floorplans

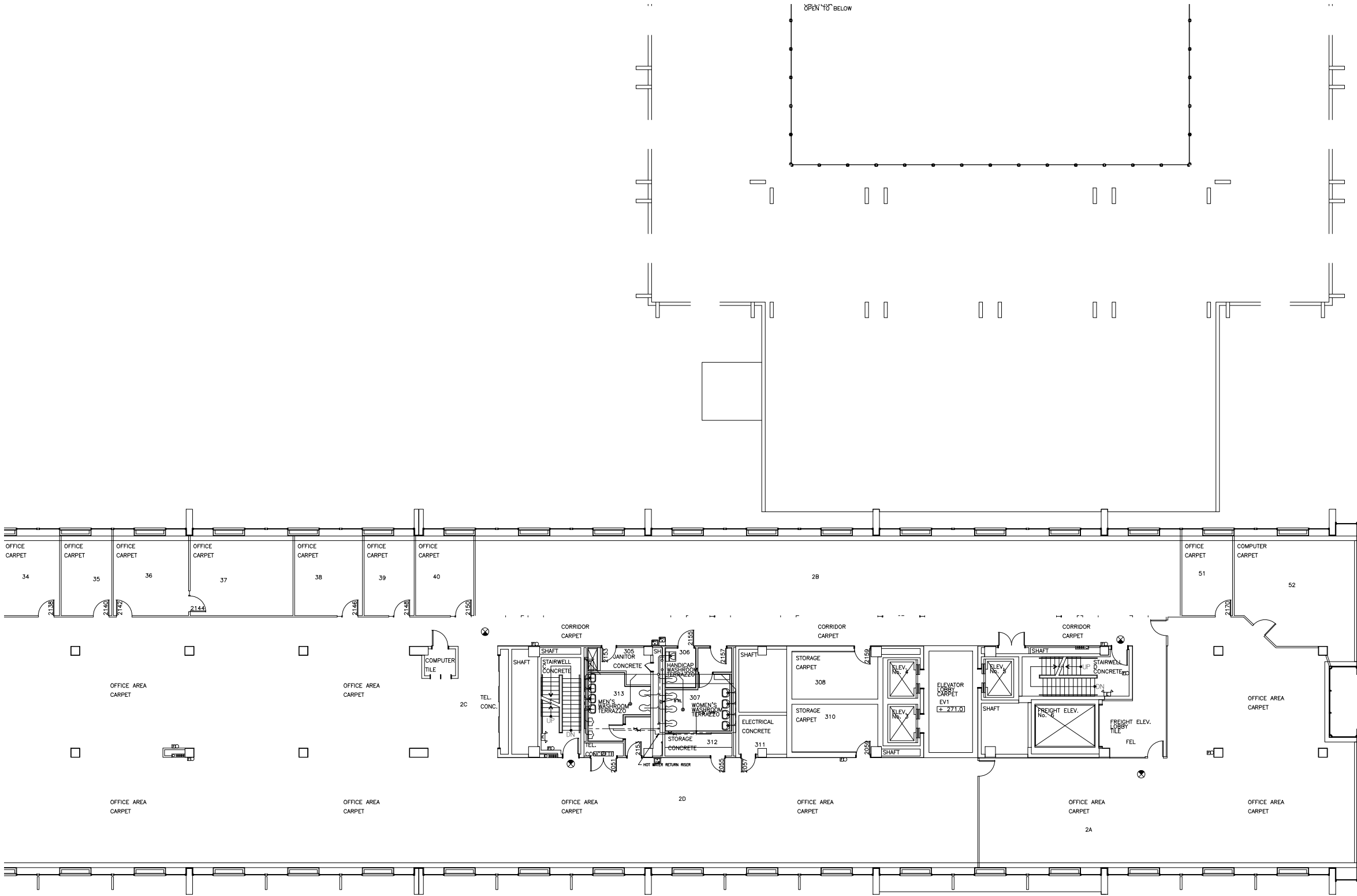


HQ - FLOOR 2, WEST



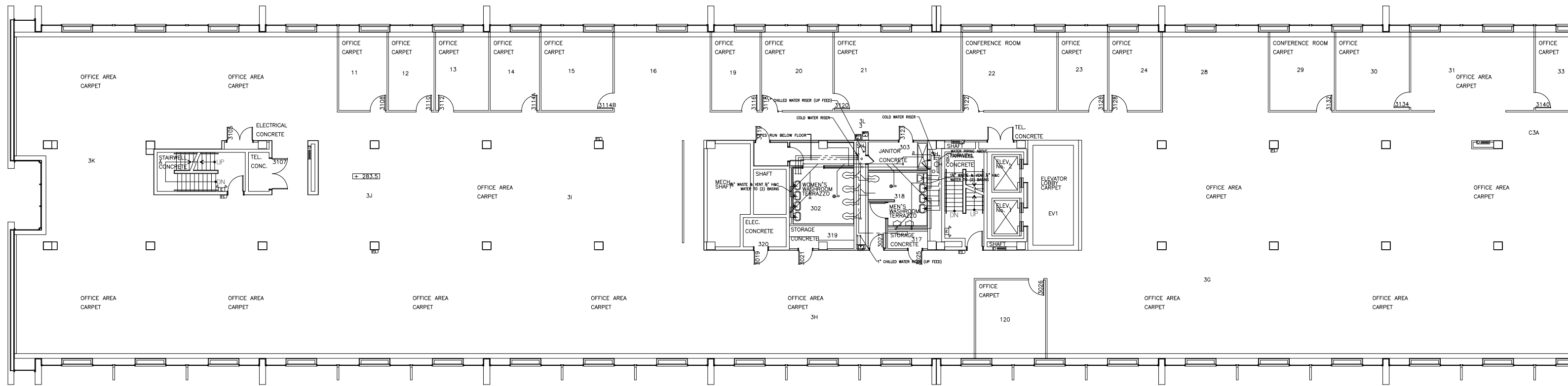
TC - FLOOR 2

HERON ROAD

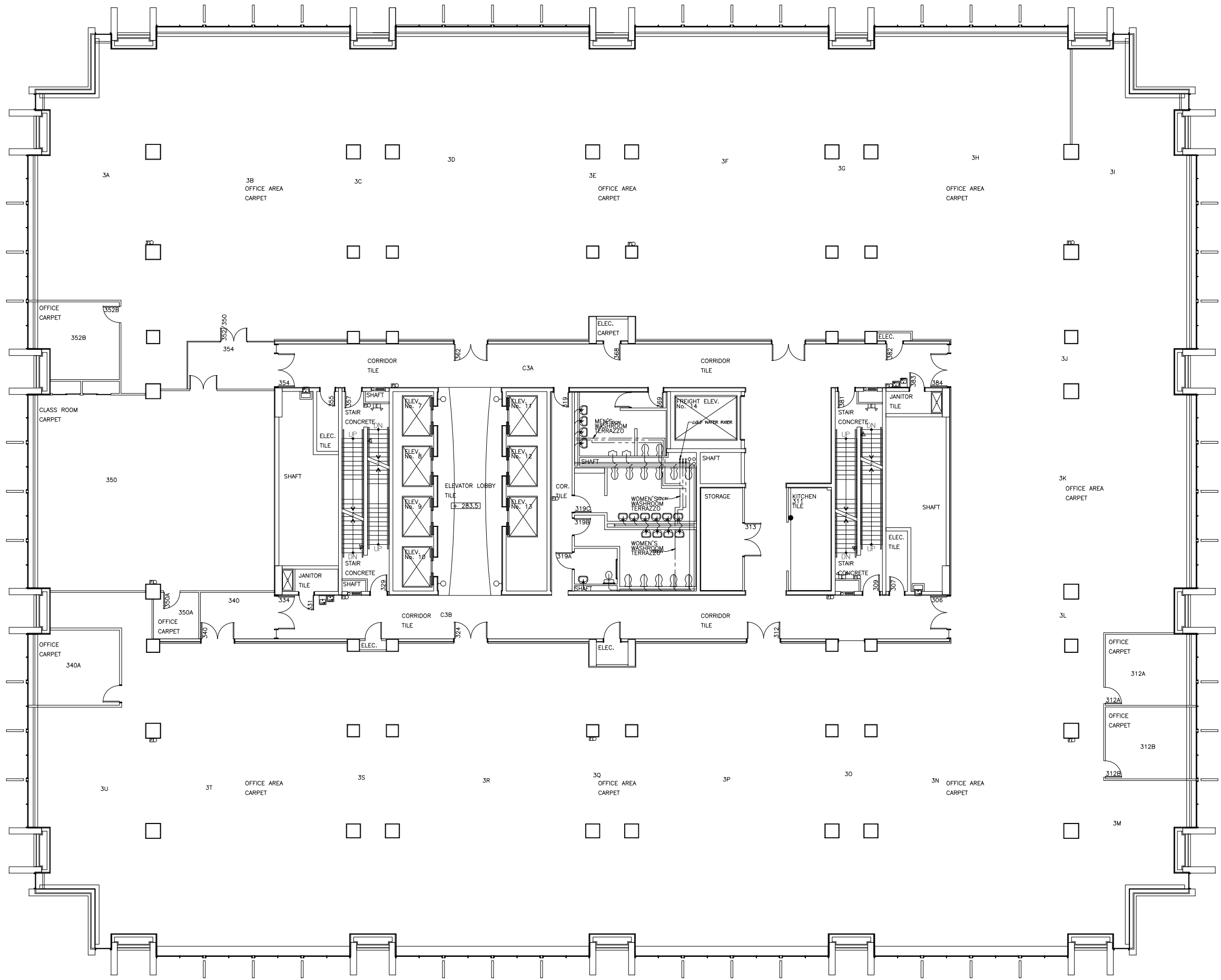


HQ - FLOOR 2, EAST

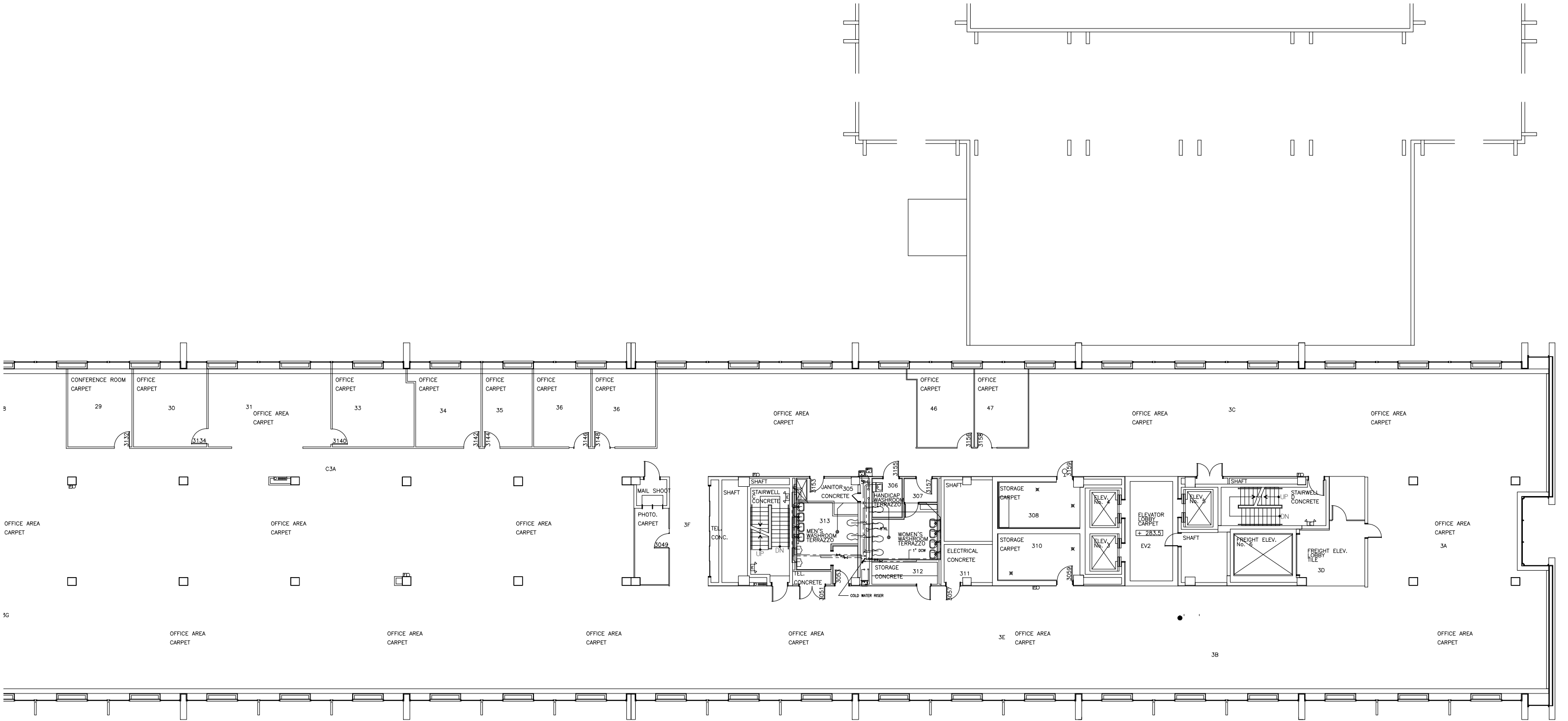




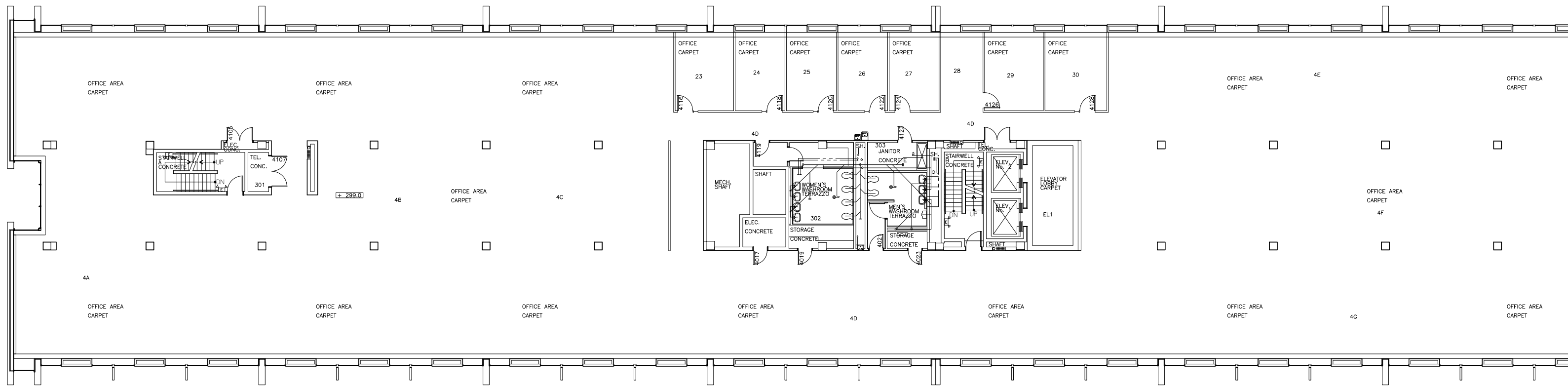
HQ - FLOOR 3, WEST



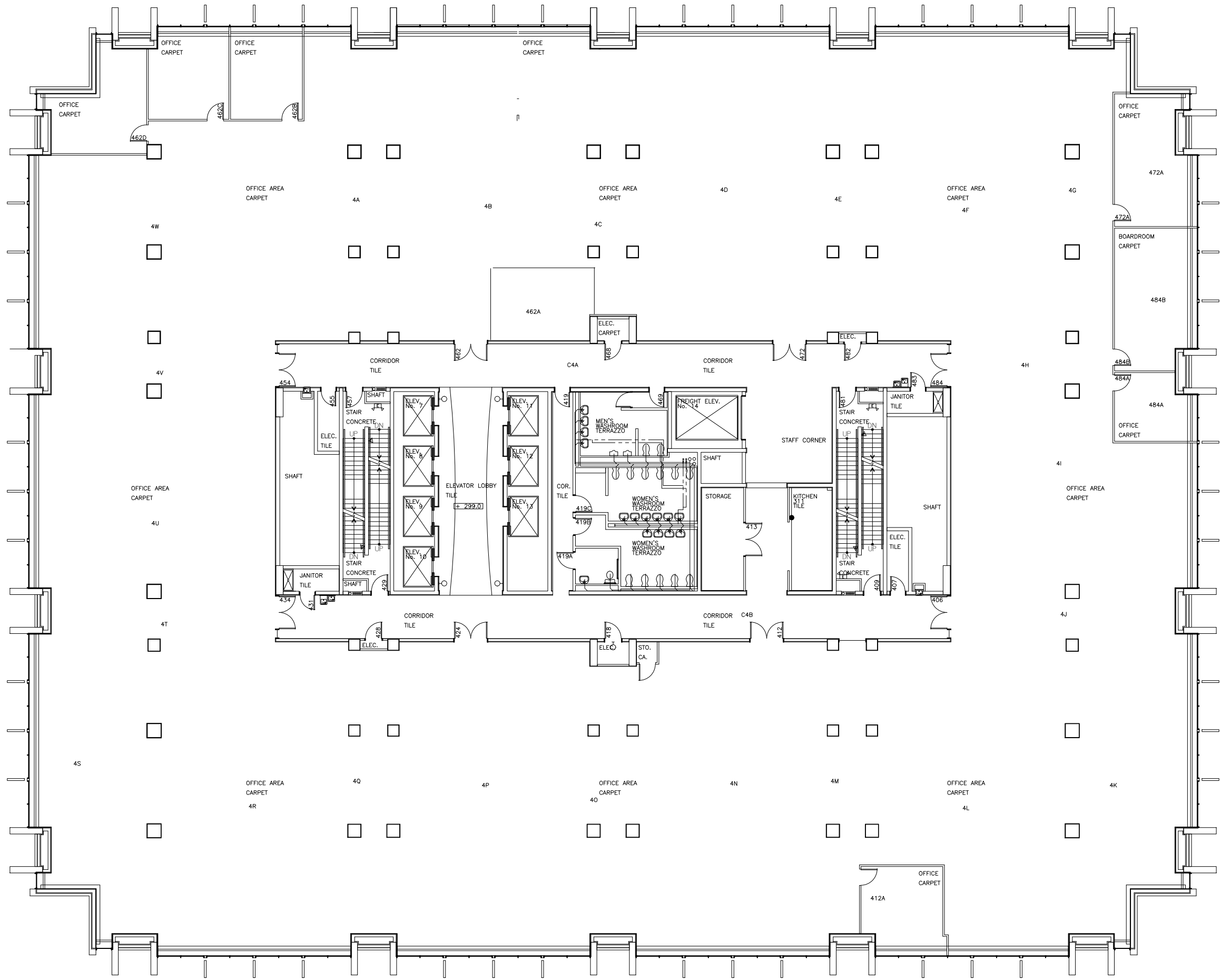
TC - FLOOR 3



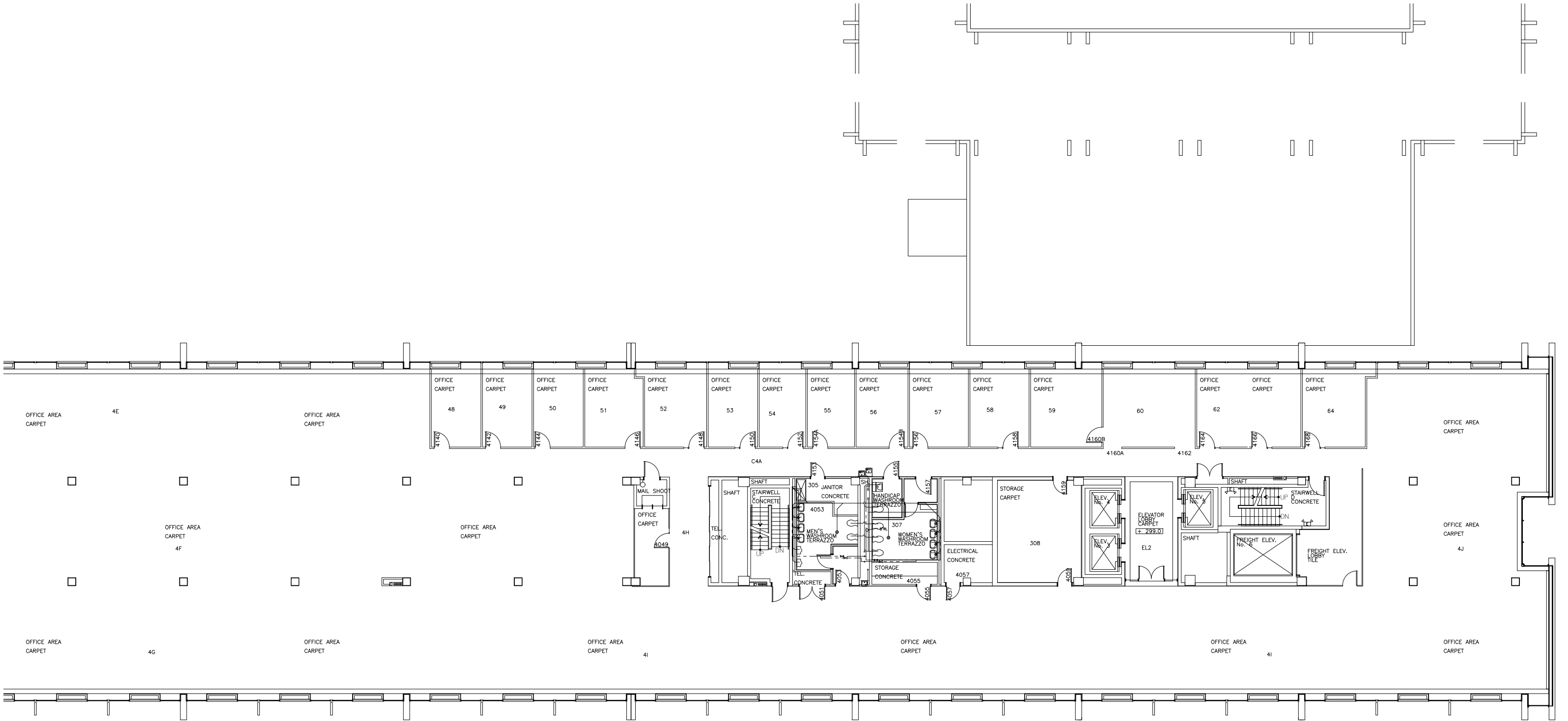
HQ - FLOOR 3, EAST



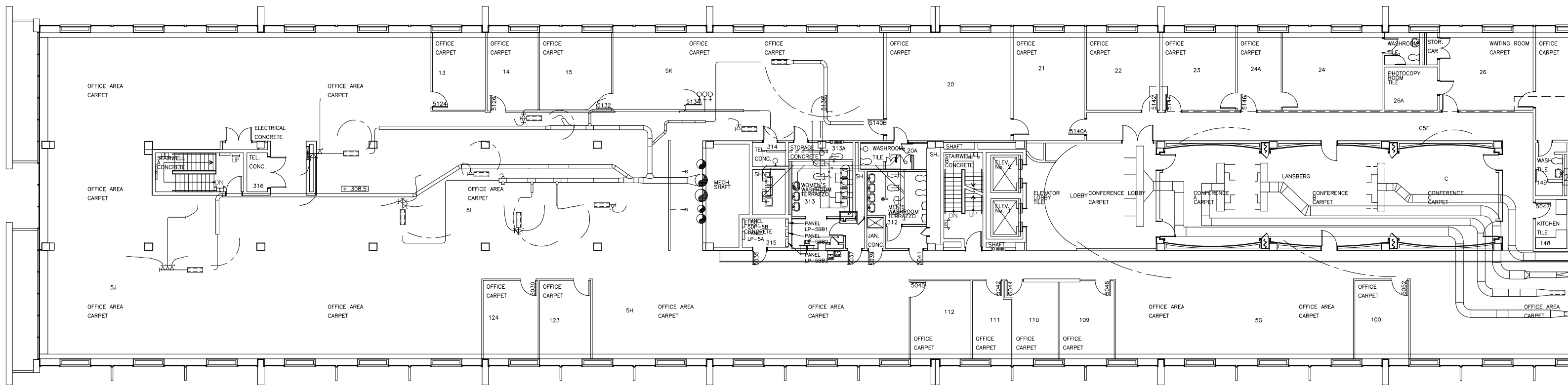
HQ - FLOOR 4, WEST



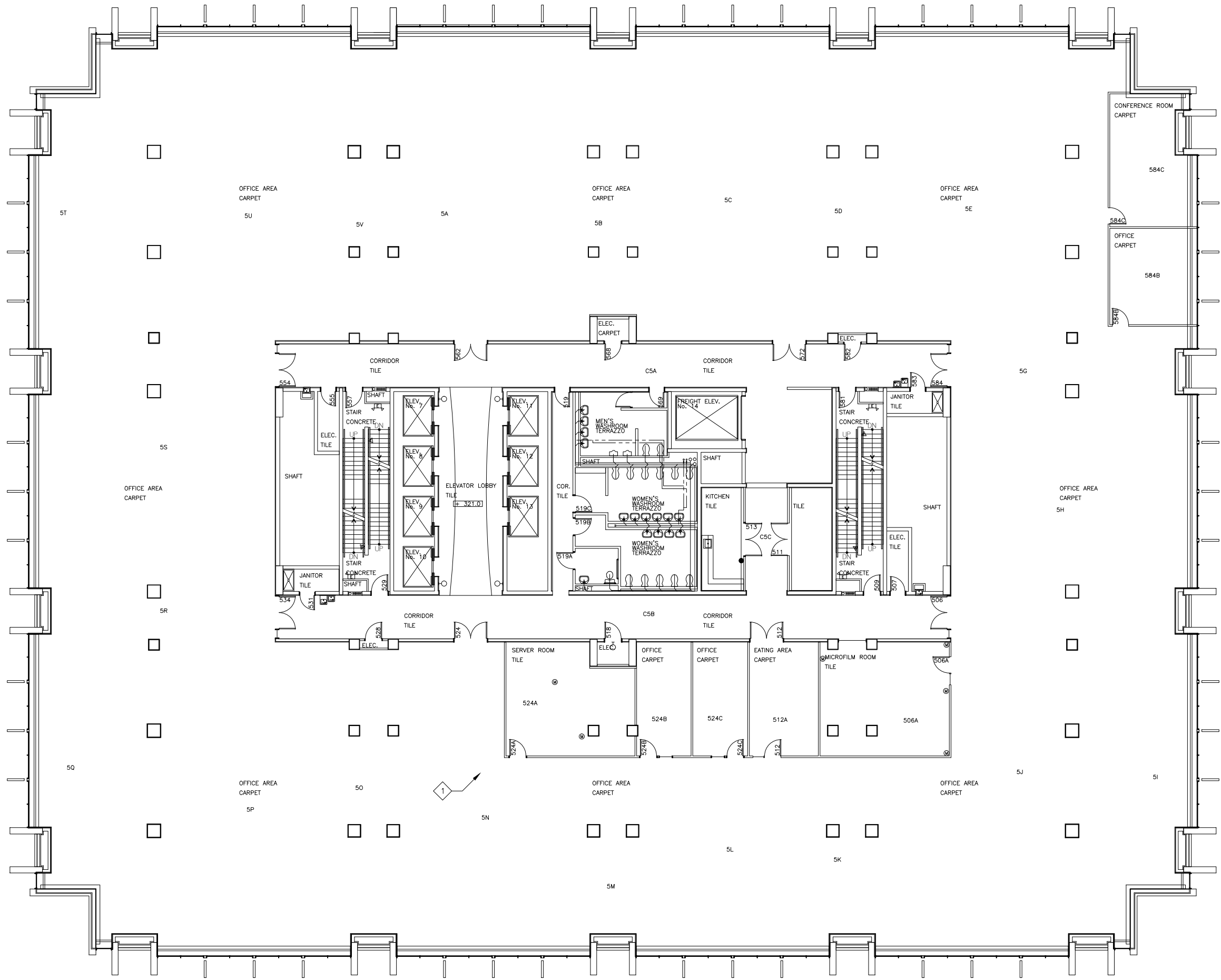
TC - FLOOR 4



HQ - FLOOR 4, EAST

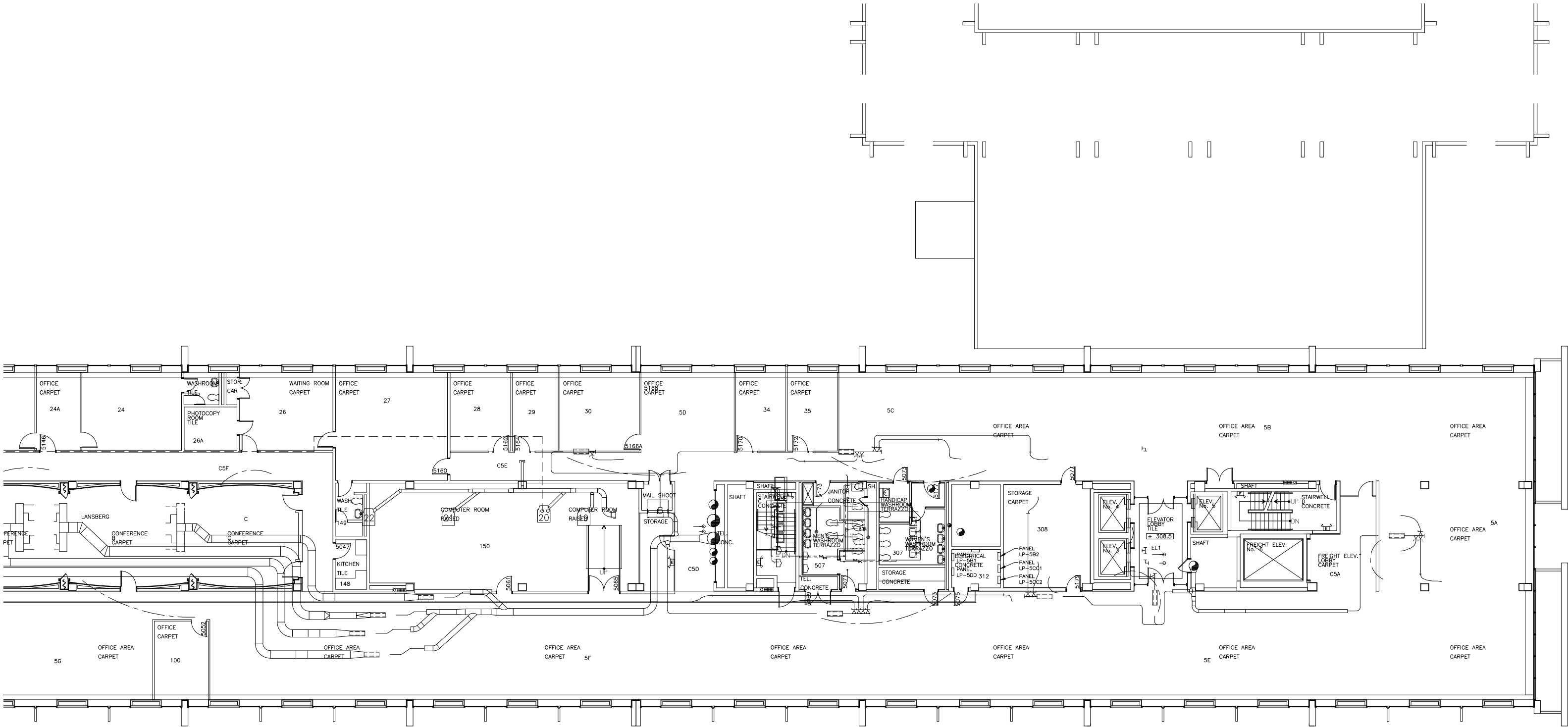


HQ - FLOOR 5, WEST

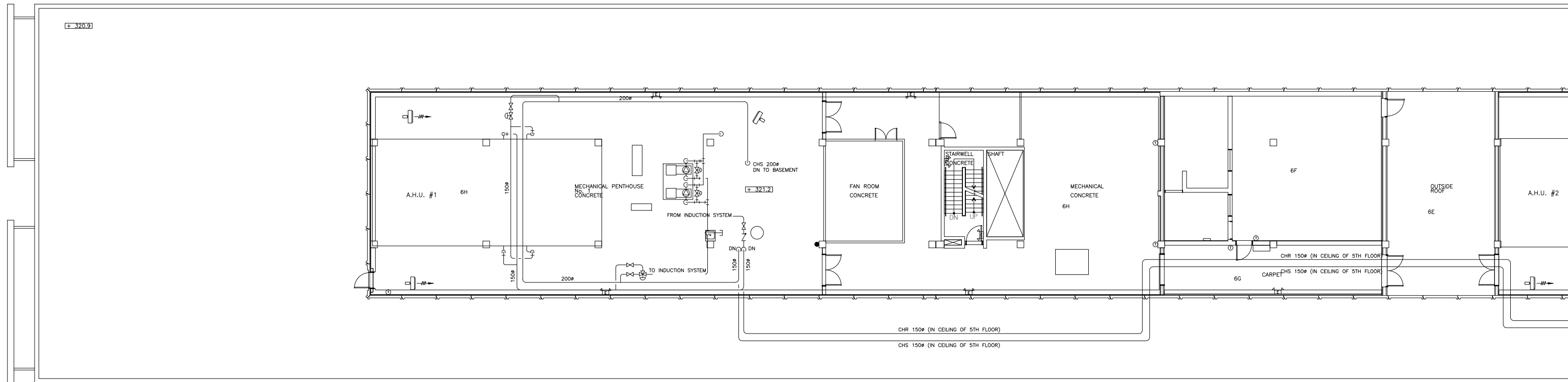


TC - FLOOR 5

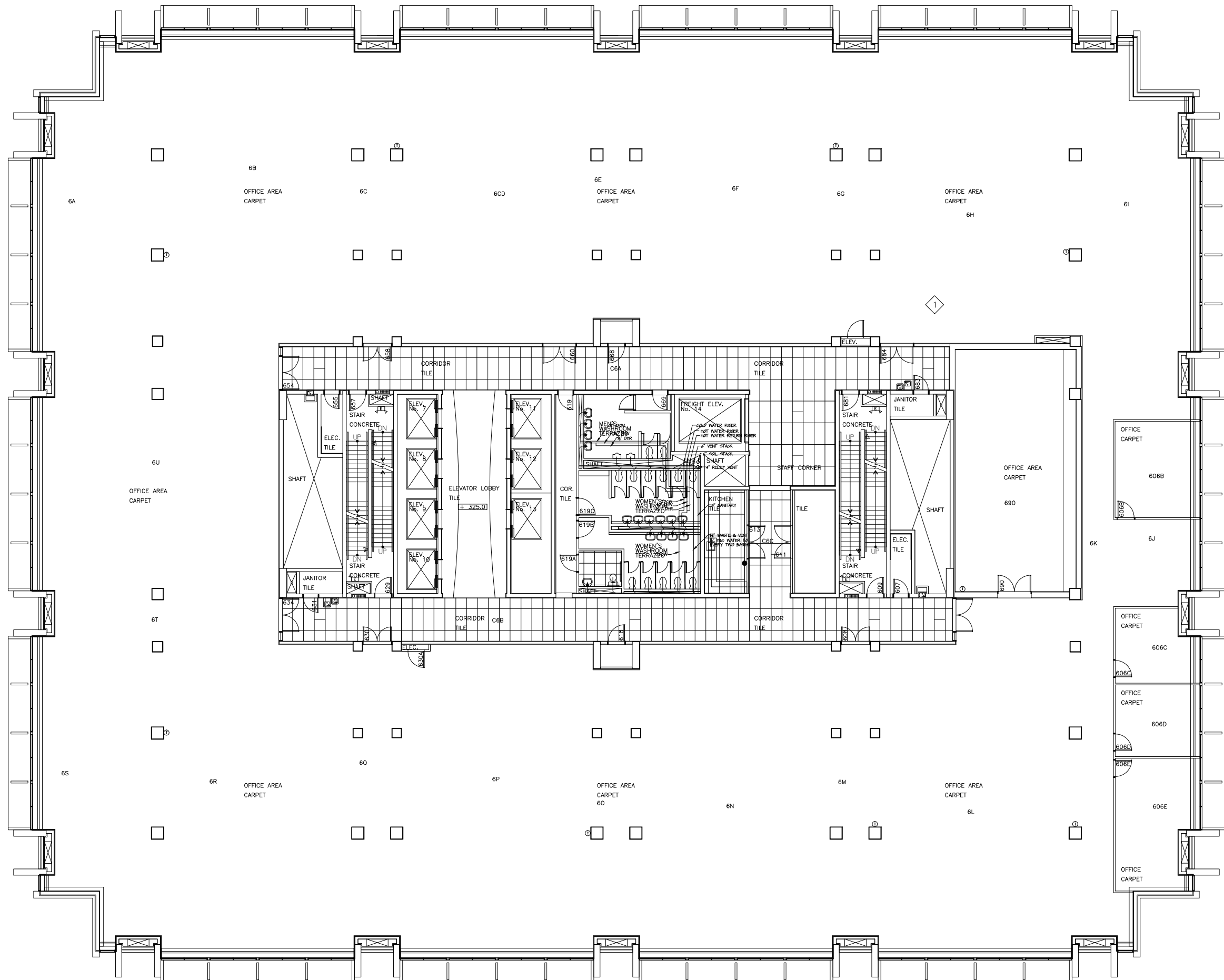




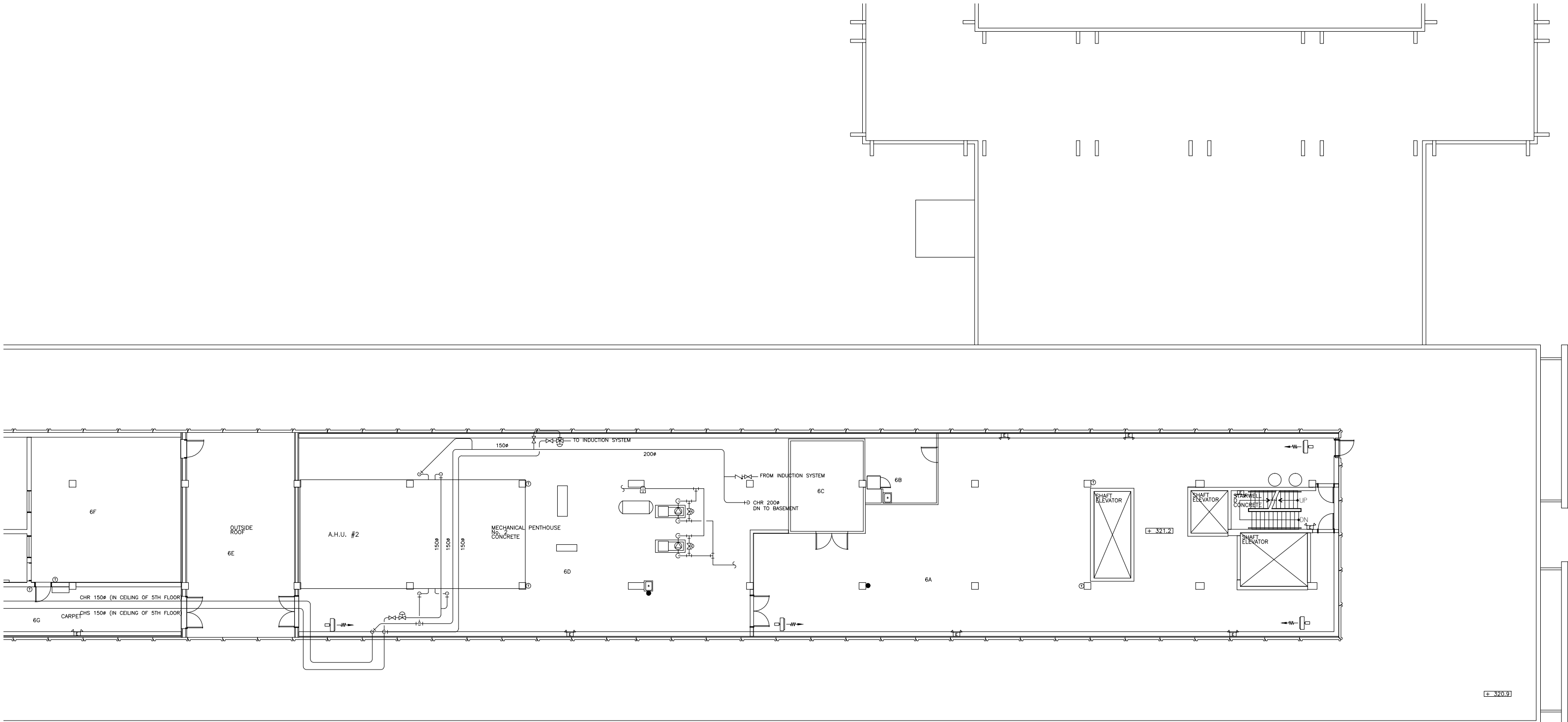
HQ - FLOOR 5, EAST



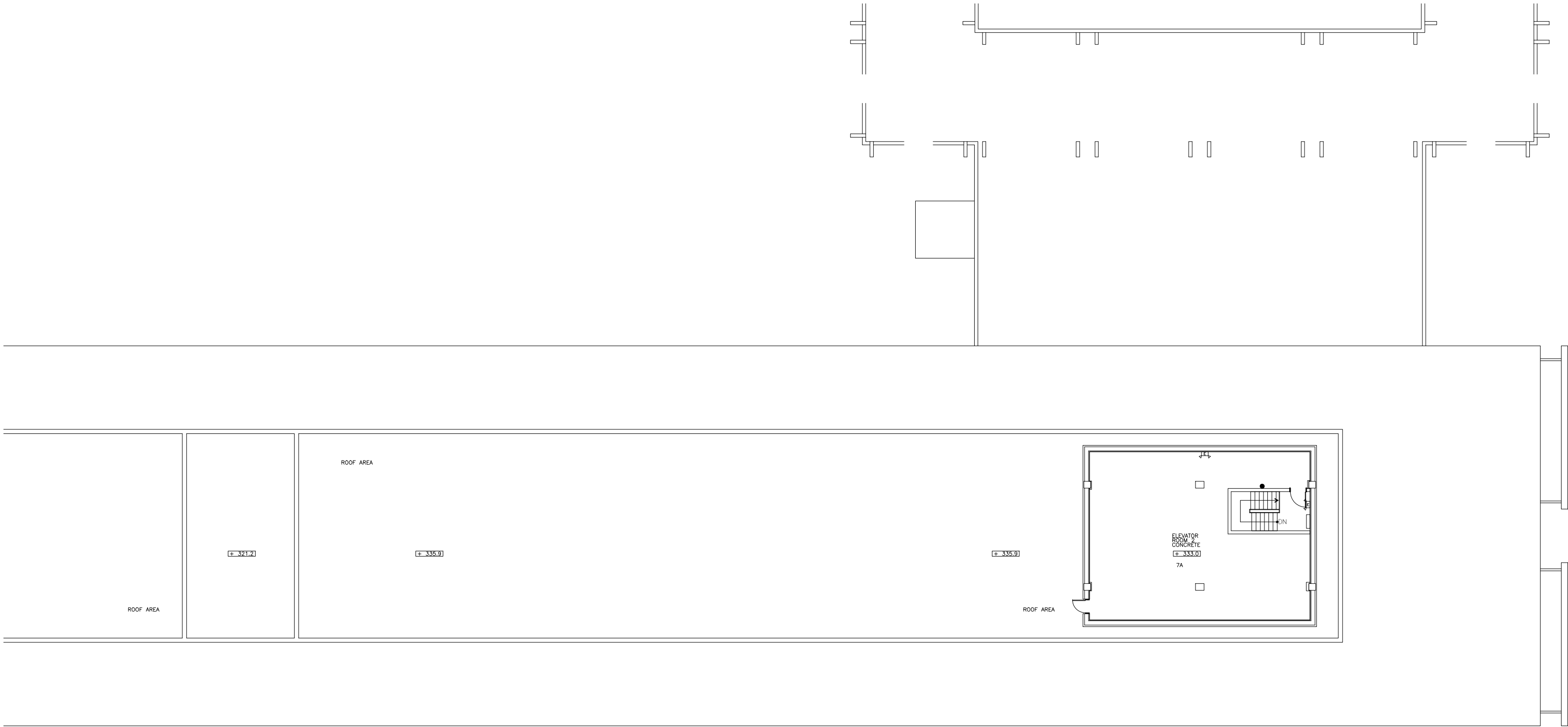
HQ - FLOOR 6, WEST



TC — FLOOR 6



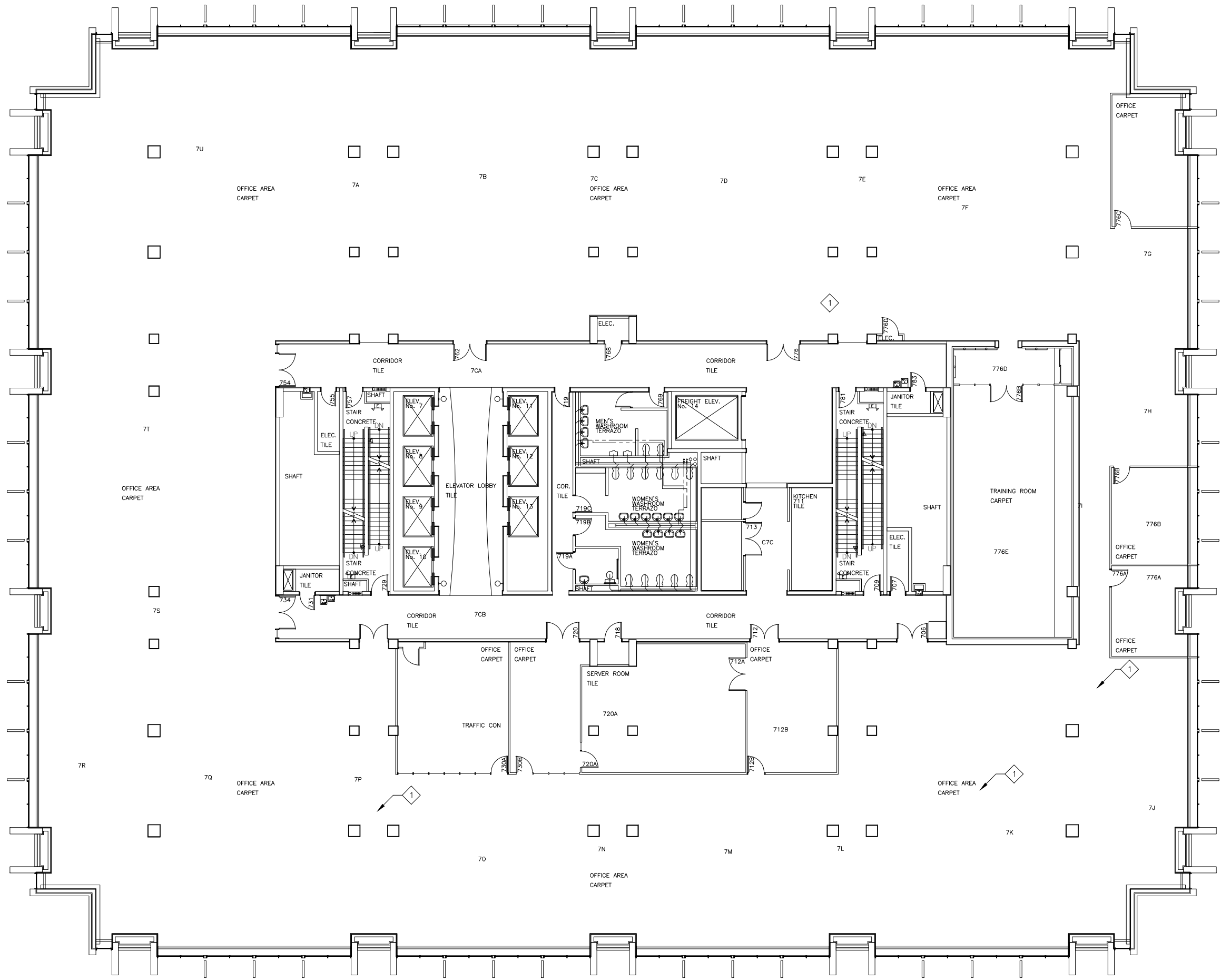
HQ - FLOOR 6, EAST



HQ — FLOOR 7, EAST

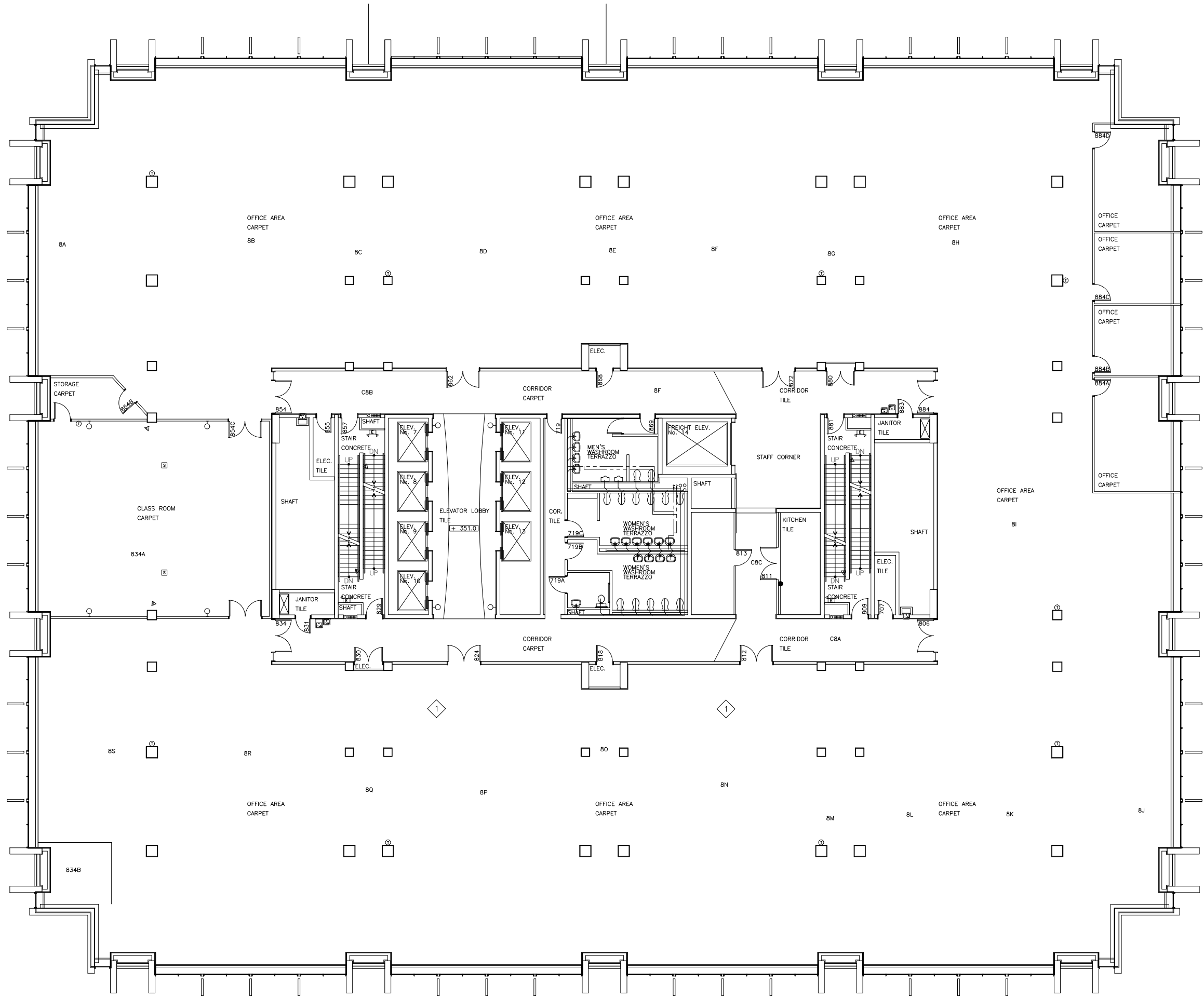


HQ - FLOOR 7, WEST



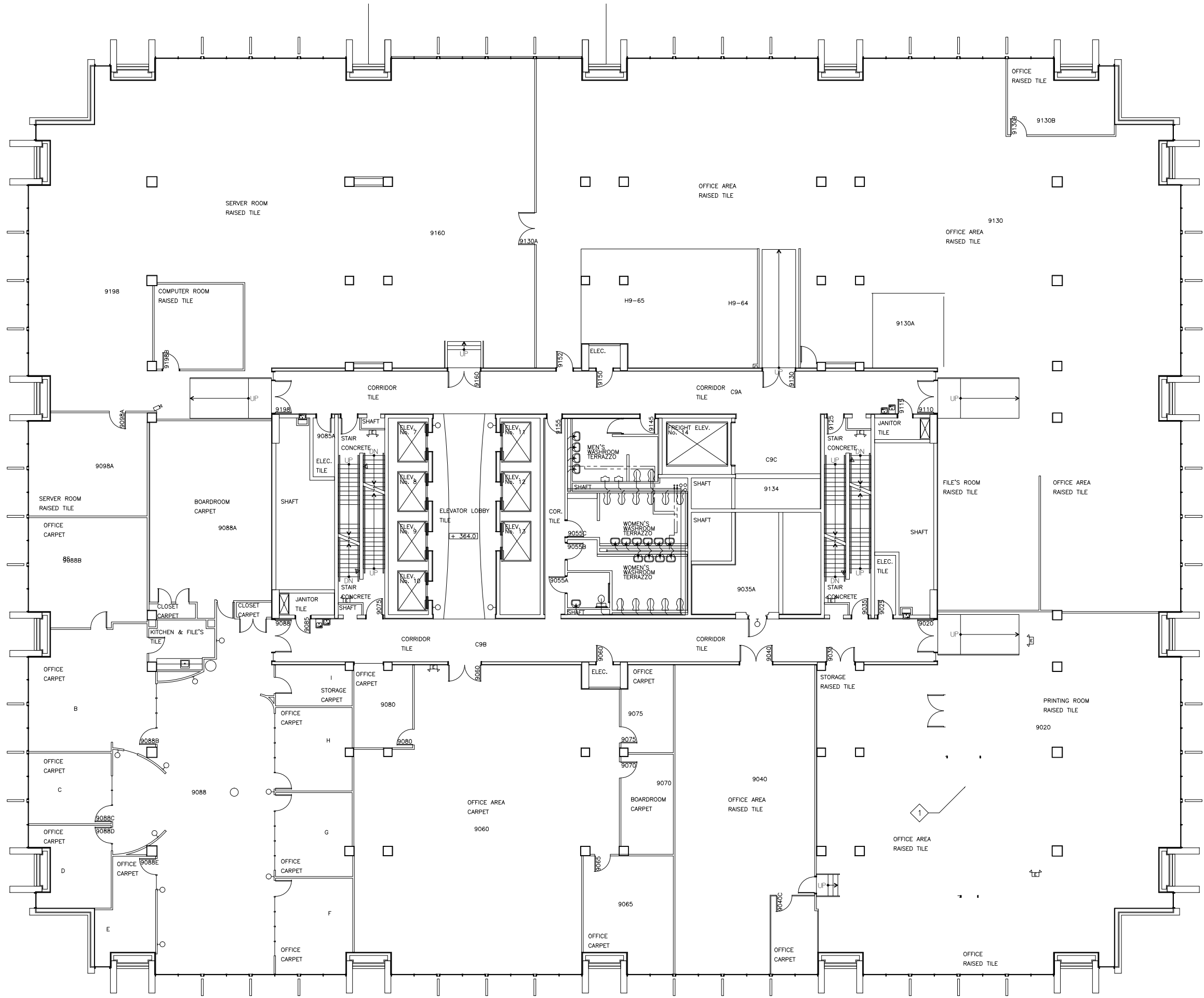
TC — FLOOR 7

HERON ROAD

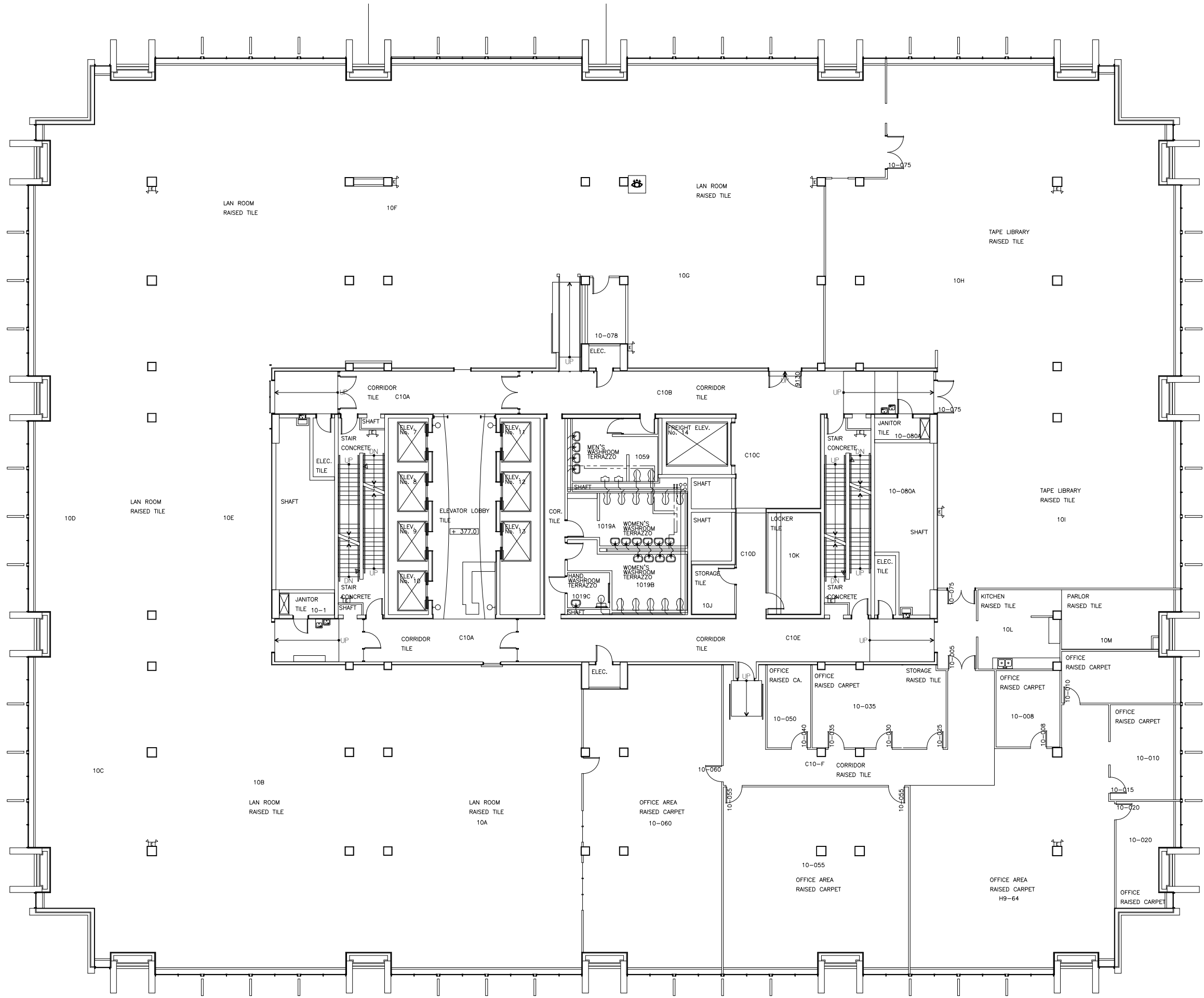


TC — FLOOR 8

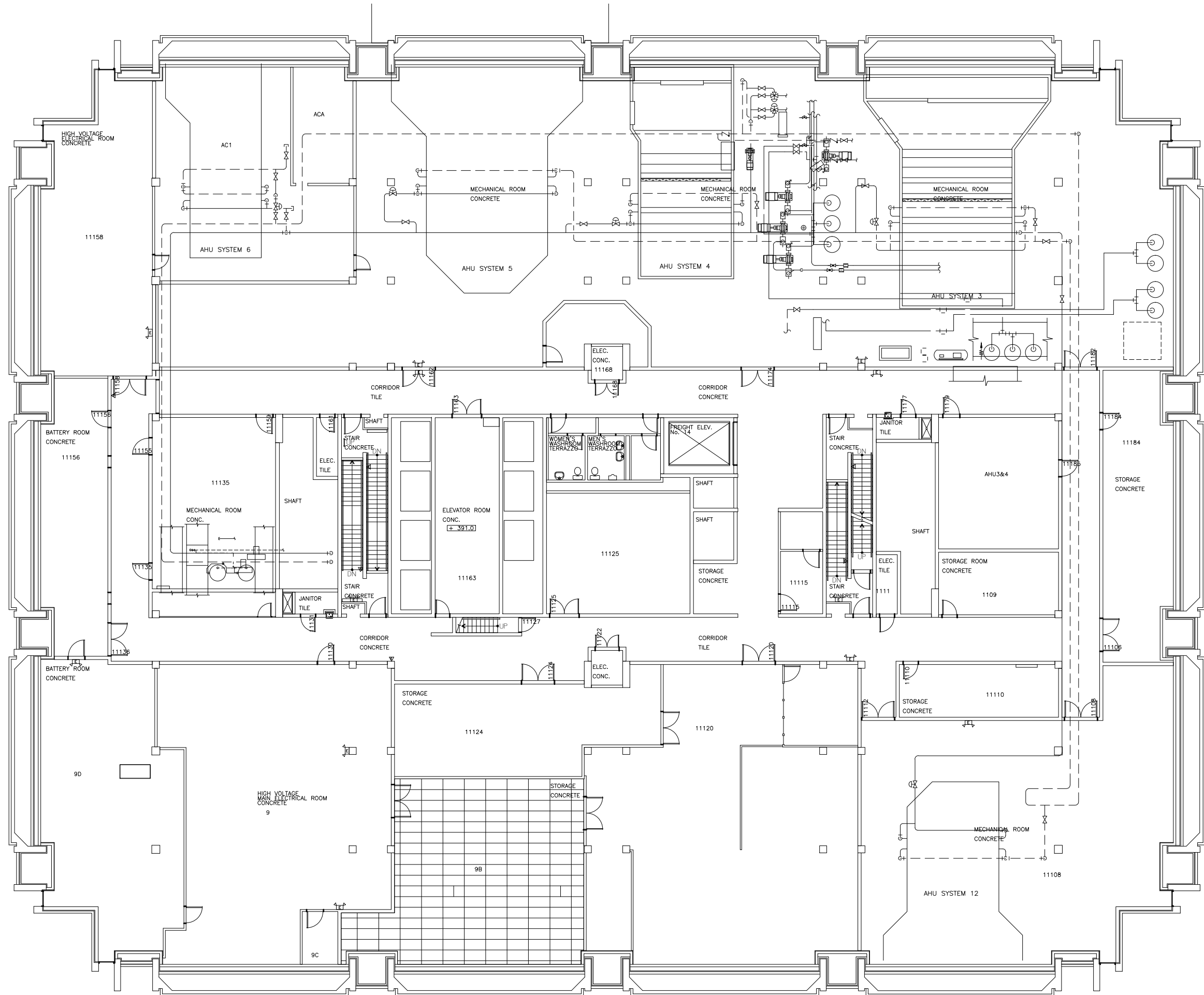




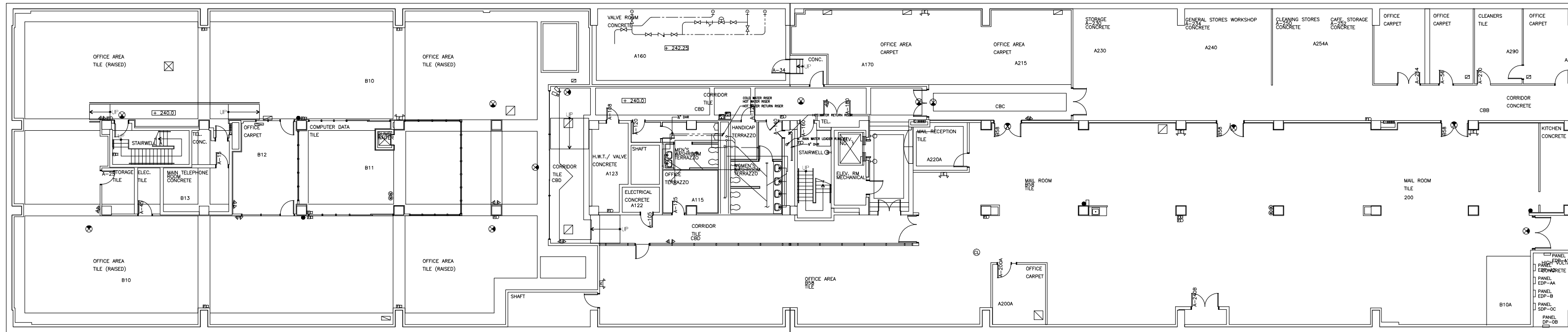
TC - FLOOR 9



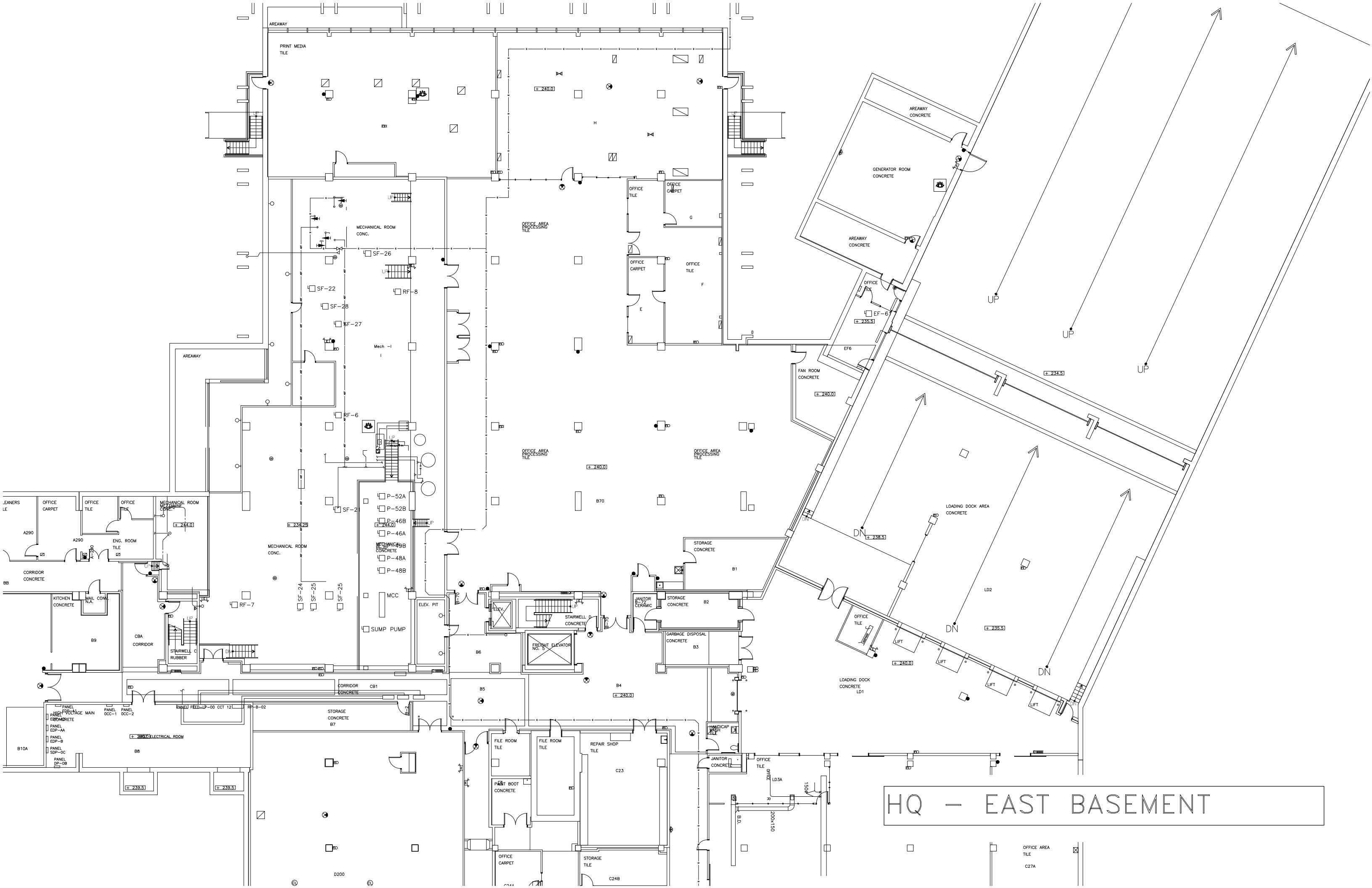
TC — FLOOR 10



TC — FLOOR 11

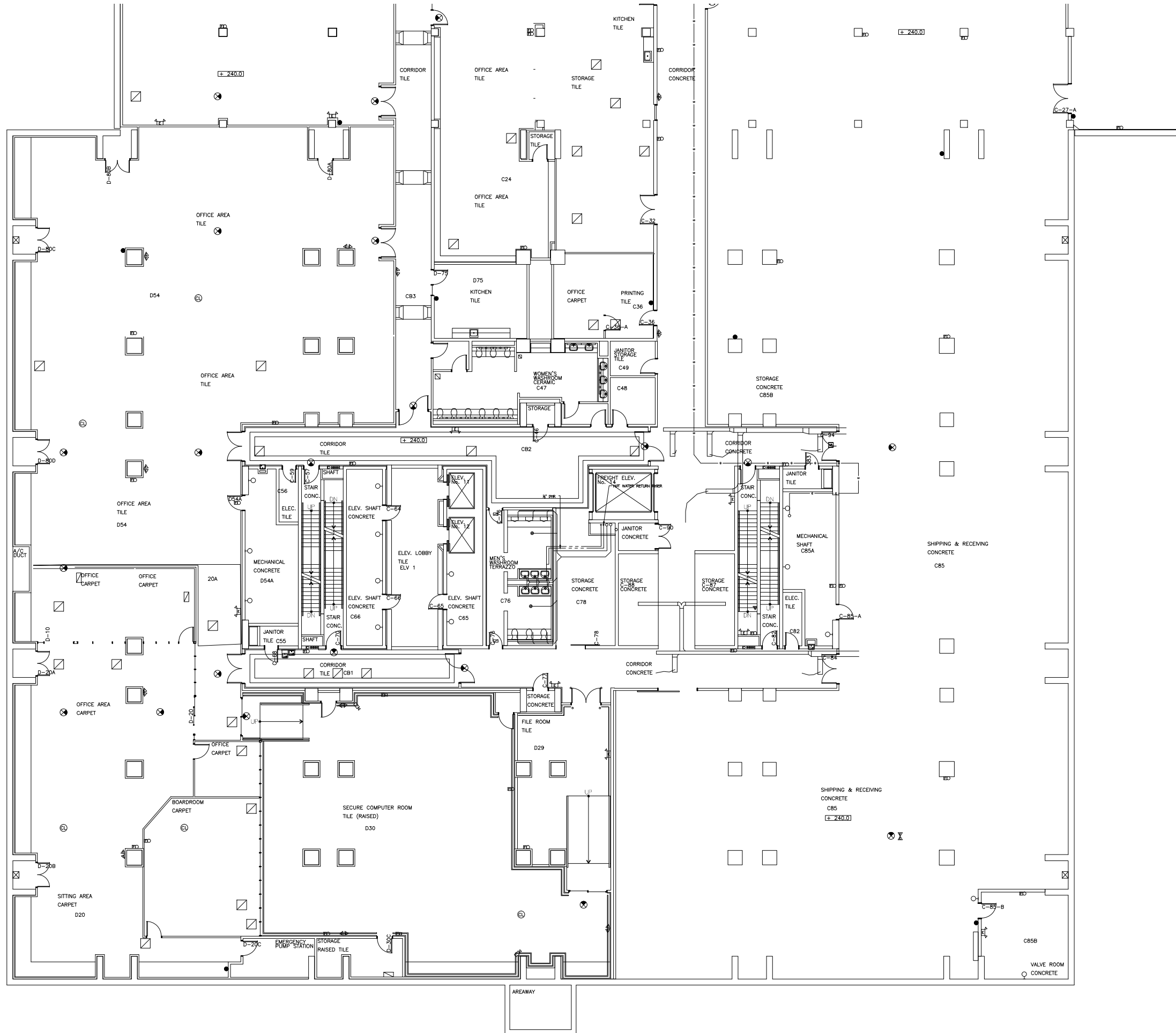


HQ – WEST BASEMENT

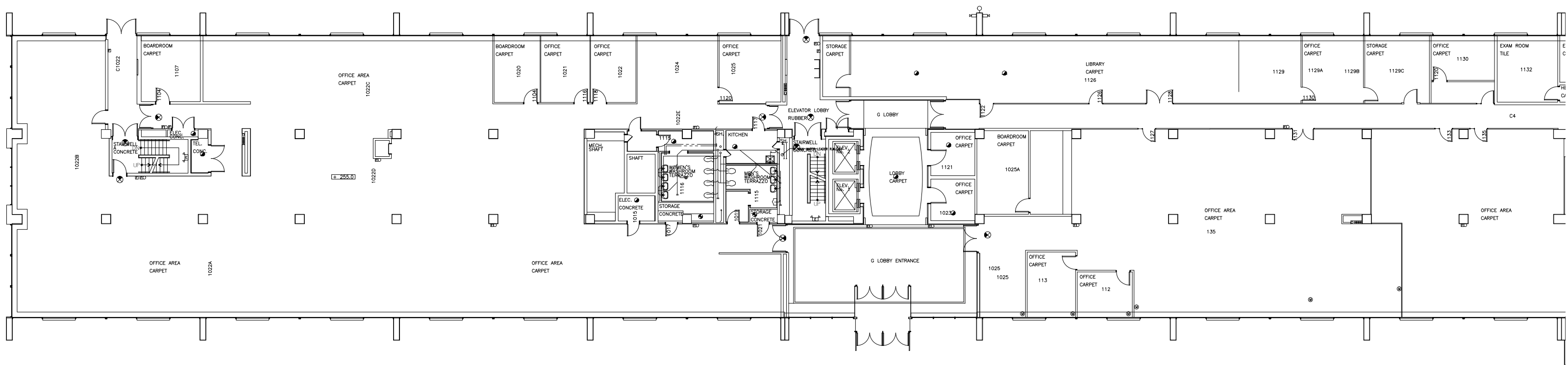


# HQ - EAST BASEMENT

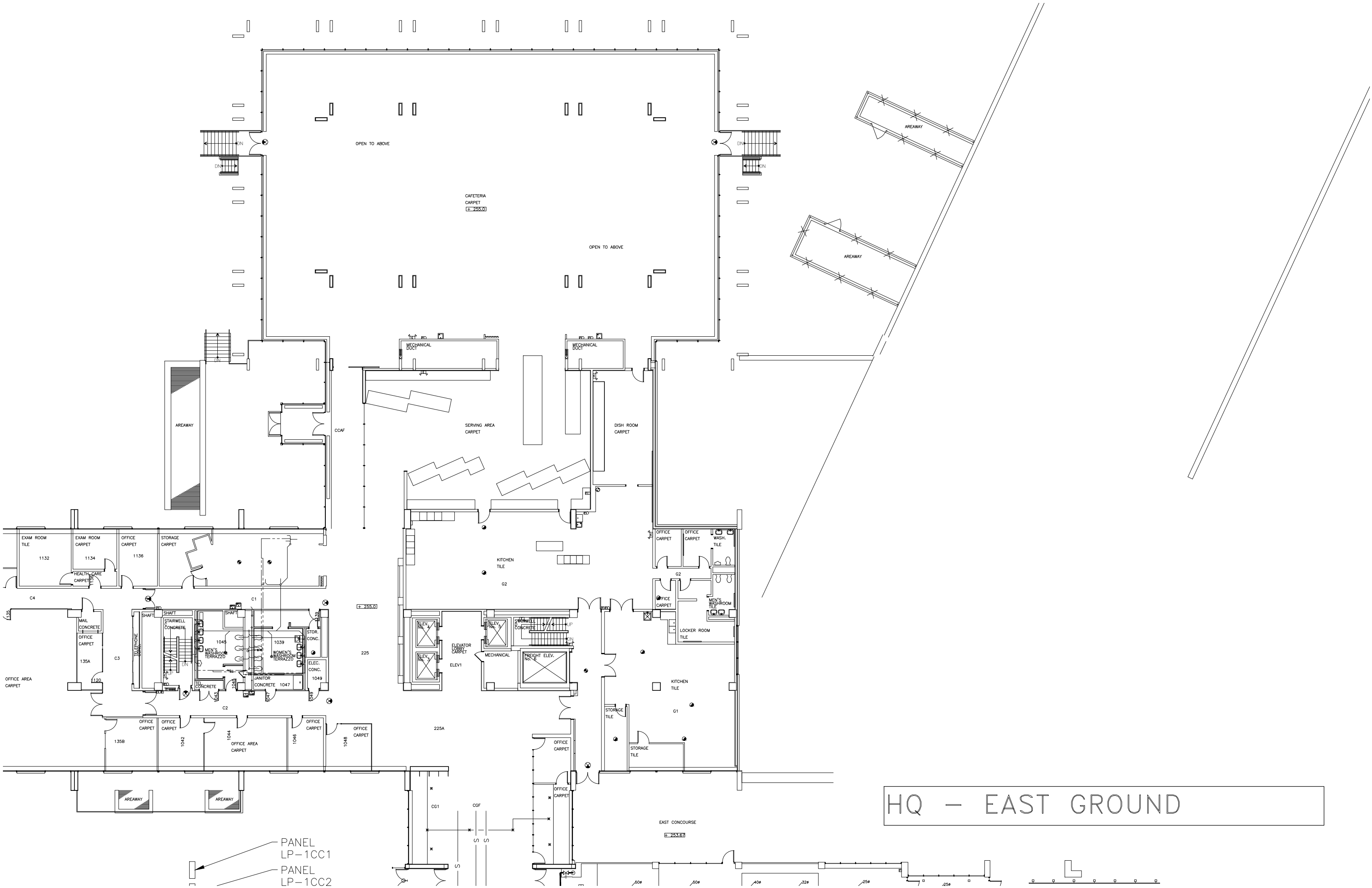
OFFICE AREA  
TILE  
C27A



TC - BASEMENT



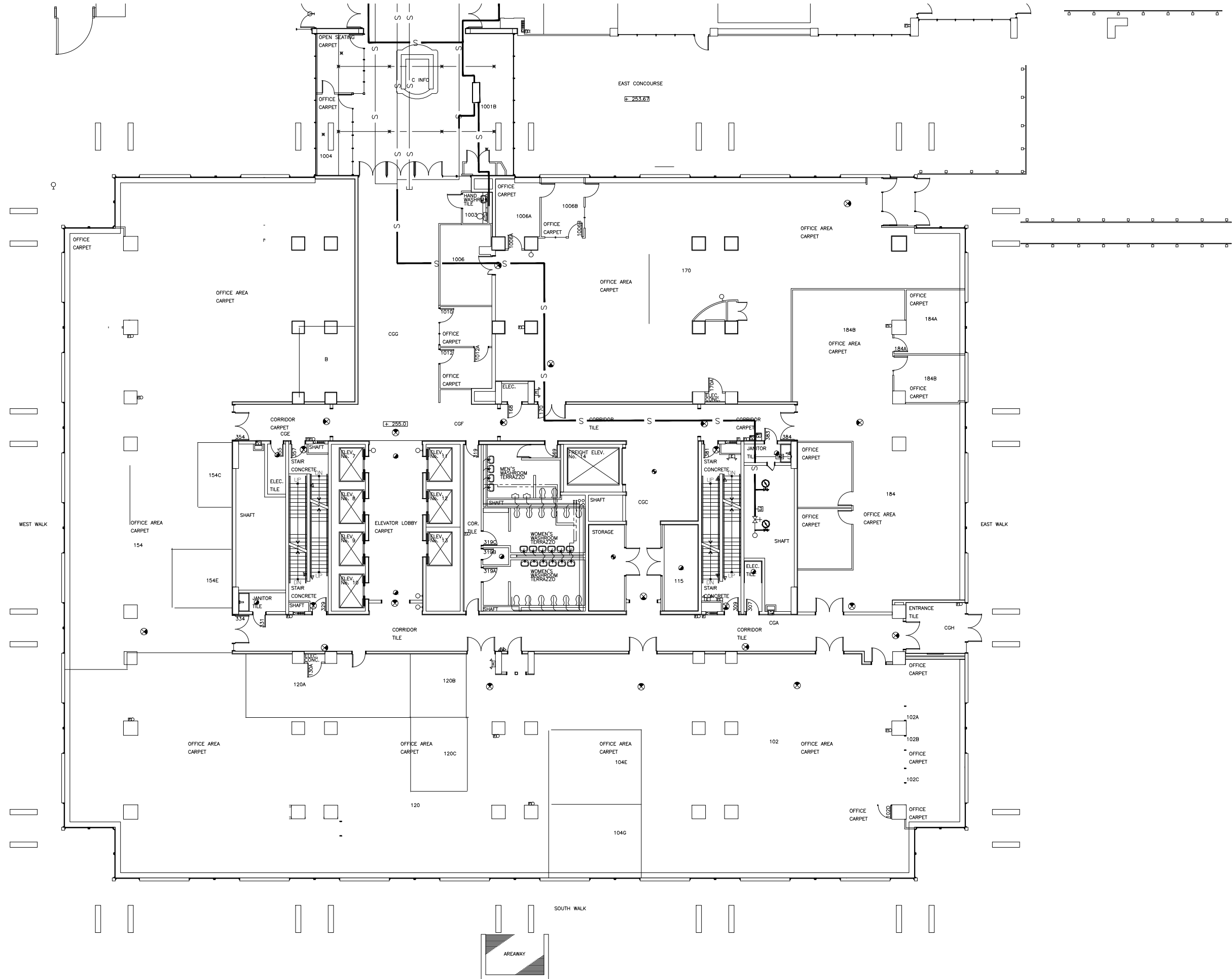
HQ - WEST GROUND



HQ - EAST GROUND

PANEL LP-1CC1  
 PANEL LP-1CC2





TC - GROUND



# Appendix B: Utility Bill Analysis

- Baseline Model Reports

## Consumption Model

**Utility** Electricity  
**Cons. Type** Consumption  
**Cons Units** kWh  
**Facility Code** Drive  
**Name** Electricity  
**Account Number** 4001176202

### Consumption Regression Inputs

Heating Dependent?	yes	HDD Bal Point	15	C
Cooling Dependent?	No	CDD Bal Point		C
Independent Variable 1?	No			
Independent Variable 2?	No			
Independent Variable 3?	No			

### Consumption Regression Outputs

	Constant	Tstat
Days	60,095.0561	
HDD	174.1645	3.2815
CDD	-	
IV1	-	-
IV2	-	-
IV3	-	-

Cons (kWh) = Days x 60095.0561 + HDD x 174.1645  
 R2 = 97.770%

Months	Include in Model?	Start Date	Reading Date	Month Allocation	Cons - kWh	Days	HDD	CDD	IV1	IV2	IV3
1	Yes	1-Jan-09	1-Feb-09	Jan-09	1,931,711	31	893.7	0	0	0	0
2	Yes	1-Feb-09	1-Mar-09	Feb-09	1,739,886	28	610	0	0	0	0
3	Yes	1-Mar-09	1-Apr-09	Mar-09	1,905,000	31	491.6	0	0	0	0
4	Yes	1-Apr-09	1-May-09	Apr-09	1,875,050	30	237.1	0	0	0	0
5	Yes	1-May-09	1-Jun-09	May-09	1,931,719	31	84.2	0	0	0	0
6	Yes	1-Jun-09	1-Jul-09	Jun-09	1,828,694	30	19.3	0	0	0	0
7	Yes	1-Jul-09	1-Aug-09	Jul-09	1,851,539	31	0	0	0	0	0
8	Yes	1-Aug-09	1-Sep-09	Aug-09	1,867,358	31	5.5	0	0	0	0
9	Yes	1-Sep-09	1-Oct-09	Sep-09	1,796,065	30	37.4	0	0	0	0
10	Yes	1-Oct-09	1-Nov-09	Oct-09	1,827,460	31	250	0	0	0	0
11	Yes	1-Nov-09	1-Dec-09	Nov-09	1,747,537	30	312.5	0	0	0	0
12	Yes	1-Dec-09	1-Jan-10	Dec-09	1,873,343	31	655.3	0	0	0	0
13	Yes	1-Jan-10	1-Feb-10	Jan-10	1,826,514	31	678.1	0	0	0	0
14	Yes	1-Feb-10	1-Mar-10	Feb-10	1,670,515	28	546.3	0	0	0	0
15	Yes	1-Mar-10	1-Apr-10	Mar-10	1,833,333	31	350.1	0	0	0	0
16	Yes	1-Apr-10	1-May-10	Apr-10	1,861,546	30	164.1	0	0	0	0
17	Yes	1-May-10	1-Jun-10	May-10	1,876,113	31	61.1	0	0	0	0
18	Yes	1-Jun-10	1-Jul-10	Jun-10	1,832,265	30	4.1	0	0	0	0
19	Yes	1-Jul-10	1-Aug-10	Jul-10	1,938,285	31	0	0	0	0	0
20	Yes	1-Aug-10	1-Sep-10	Aug-10	1,840,829	31	0.5	0	0	0	0

## Consumption Model

21	Yes	1-Sep-10	1-Oct-10	Sep-10	1,773,354	30	39.9	0	0	0	0
22	Yes	1-Oct-10	1-Nov-10	Oct-10	1,840,138	31	203.4	0	0	0	0
23	Yes	1-Nov-10	1-Dec-10	Nov-10	1,827,721	30	378.5	0	0	0	0
24	Yes	1-Dec-10	1-Jan-11	Dec-10	1,902,064	31	630.1	0	0	0	0
25	Yes	1-Jan-11	1-Feb-11	Jan-11	1,928,230	31	788.8	0	0	0	0
26	Yes	1-Feb-11	1-Mar-11	Feb-11	1,755,558	28	632.8	0	0	0	0
27	Yes	1-Mar-11	1-Apr-11	Mar-11	1,930,556	31	539.7	0	0	0	0
28	Yes	1-Apr-11	1-May-11	Apr-11	1,837,334	30	249.6	0	0	0	0
29	Yes	1-May-11	1-Jun-11	May-11	1,884,191	31	72.6	0	0	0	0
30	Yes	1-Jun-11	1-Jul-11	Jun-11	1,818,629	30	1.2	0	0	0	0
31	Yes	1-Jul-11	1-Aug-11	Jul-11	1,885,583	31	0	0	0	0	0
32	Yes	1-Aug-11	1-Sep-11	Aug-11	1,901,893	31	0	0	0	0	0
33	Yes	1-Sep-11	1-Oct-11	Sep-11	1,826,363	30	18.9	0	0	0	0
34	Yes	1-Oct-11	1-Nov-11	Oct-11	1,900,238	31	158.5	0	0	0	0
35	Yes	1-Nov-11	1-Dec-11	Nov-11	1,863,041	30	284.9	0	0	0	0
36	Yes	1-Dec-11	1-Jan-12	Dec-11	1,917,448	31	558.1	0	0	0	0
37	Yes	1-Jan-12	1-Feb-12	Jan-12	1,932,222	31	724.9	0	0	0	0
38	Yes	1-Feb-12	1-Mar-12	Feb-12	1,842,915	29	568.4	0	0	0	0
39	Yes	1-Mar-12	1-Apr-12	Mar-12	1,940,544	31	353.6	0	0	0	0
40	Yes	1-Apr-12	1-May-12	Apr-12	1,862,750	30	252.4	0	0	0	0
41	Yes	1-May-12	1-Jun-12	May-12	1,942,221	31	35.8	0	0	0	0
42	Yes	1-Jun-12	1-Jul-12	Jun-12	1,928,088	30	6.3	0	0	0	0
43	Yes	1-Jul-12	1-Aug-12	Jul-12	1,852,013	31	0	0	0	0	0
44	Yes	1-Aug-12	1-Sep-12	Aug-12	1,886,911	31	0	0	0	0	0
45	Yes	1-Sep-12	1-Oct-12	Sep-12	1,785,579	30	46.1	0	0	0	0
46	Yes	1-Oct-12	1-Nov-12	Oct-12	1,830,286	31	146	0	0	0	0
47	Yes	1-Nov-12	1-Dec-12	Nov-12	2,168,876	30	423.7	0	0	0	0
48	Yes	1-Dec-12	1-Jan-13	Dec-12	2,190,274	31	602.5	0	0	0	0
49	Yes	1-Jan-13	1-Feb-13	Jan-13	2,188,111	31	735.8	0	0	0	0
50	Yes	1-Feb-13	1-Mar-13	Feb-13	1,960,914	28	625.8	0	0	0	0
51	Yes	1-Mar-13	1-Apr-13	Mar-13	2,142,630	31	512.9	0	0	0	0
52	Yes	1-Apr-13	1-May-13	Apr-13	2,078,754	30	275.8	0	0	0	0
53	Yes	1-May-13	1-Jun-13	May-13	1,683,232	31	57.3	0	0	0	0
54	Yes	1-Jun-13	1-Jul-13	Jun-13	1,490,083	30	11	0	0	0	0
55				#N/A	#N/A		0	0	0	0	0
56				#N/A	#N/A		0	0	0	0	0
57				#N/A	#N/A		0	0	0	0	0
58				#N/A	#N/A		0	0	0	0	0
59				#N/A	#N/A		0	0	0	0	0
60				#N/A	#N/A		0	0	0	0	0

## Consumption Model

**Utility** Electricity  
**Cons. Type** Consumption  
**Cons Units** kWh  
**Facility Code** Drive  
**Name** Electricity  
**Account Number** 4001176202

### Consumption Regression Inputs

Heating Dependent?	No	HDD Bal Point	20	C
Cooling Dependent?	yes	CDD Bal Point	20	C
Independent Variable 1?	No			
Independent Variable 2?	No			
Independent Variable 3?	No			

### Consumption Regression Outputs

	Constant	Tstat
Days	35,909.4819	
HDD	2,963.4601	-
CDD	-	-
IV1	-	-
IV2	-	-
IV3	-	-

Cons (kWh) = Days x 35909.4819 + CDD x 2963.4601  
 R2 = 85.596%

Months	Include in Model?	Start Date	Reading Date	Month Allocation	Cons - kWh	Days	CDD	IV1	IV2	IV3
1	Yes	1-Jul-13	1-Aug-13	Jul-13	1,383,073	31	80	0	0	0
2	Yes	1-Aug-13	1-Sep-13	Aug-13	1,120,249	31	30.3	0	0	0
3	Yes	1-Sep-13	1-Oct-13	Sep-13	1,070,151	30	5.2	0	0	0
4	Yes	1-Oct-13	1-Nov-13	Oct-13	1,125,082	31	0	0	0	0
5	Yes	1-Jan-14	1-Feb-14	Jan-14	1,165,371	31	0	0	0	0
6	Yes	1-Feb-14	1-Mar-14	Feb-14	1,026,471	28	0	0	0	0
7	Yes	1-Mar-14	1-Apr-14	Mar-14	1,121,479	31	0	0	0	0
8	Yes	1-Apr-14	1-May-14	Apr-14	1,071,752	30	0	0	0	0
9	Yes	1-May-14	1-Jun-14	May-14	1,098,977	31	0	0	0	0
10				#N/A	#N/A		0	0	0	0
11				#N/A	#N/A		0	0	0	0
12				#N/A	#N/A		0	0	0	0
13				#N/A	#N/A		0	0	0	0
14				#N/A	#N/A		0	0	0	0
15				#N/A	#N/A		0	0	0	0
16				#N/A	#N/A		0	0	0	0
17				#N/A	#N/A		0	0	0	0
18				#N/A	#N/A		0	0	0	0
19				#N/A	#N/A		0	0	0	0
20				#N/A	#N/A		0	0	0	0

## Consumption Model

**Utility** Chilled Water  
**Cons. Type** Consumption  
**Cons Units** GJ  
**Facility Code** Drive  
**Name** 0  
**Account Number** W400117.6232

### Consumption Regression Inputs

Heating Dependent?	No	HDD Bal Point	C
Cooling Dependent?	yes	CDD Bal Point	14 C
Independent Variable 1?	No		
Independent Variable 2?	No		
Independent Variable 3?	No		

### Consumption Regression Outputs

	Constant	Tstat
Days	0.2900	
CDD	15.8447	-
HDD	-	-
IV1	-	-
IV2	-	-
IV3	-	-

Cons (GJ) = Days x 0.29 + CDD x 15.8447  
 R2 = 96.193%

Months	Include in Model?	Start Date	Reading Date	Month Allocation	Cons - GJ	Days	CDD	IV1	IV2	IV3
1	Yes	1-Jan-09	1-Feb-09	Jan-09	-	31	0	0	0	0
2	Yes	1-Feb-09	1-Mar-09	Feb-09	-	28	0	0	0	0
3	Yes	1-Mar-09	1-Apr-09	Mar-09	-	31	0	0	0	0
4	Yes	1-Apr-09	1-May-09	Apr-09	-	30	11.6	0	0	0
5	Yes	1-May-09	1-Jun-09	May-09	57	31	23.3	0	0	0
6	Yes	1-Jun-09	1-Jul-09	Jun-09	2,409	30	132.6	0	0	0
7	Yes	1-Jul-09	1-Aug-09	Jul-09	2,663	31	165.8	0	0	0
8	Yes	1-Aug-09	1-Sep-09	Aug-09	3,522	31	191.4	0	0	0
9	Yes	1-Sep-09	1-Oct-09	Sep-09	1,331	30	55.8	0	0	0
10	Yes	1-Oct-09	1-Nov-09	Oct-09	30	31	0	0	0	0
11	Yes	1-Nov-09	1-Dec-09	Nov-09	-	30	0	0	0	0
12	Yes	1-Dec-09	1-Jan-10	Dec-09	-	31	0	0	0	0
13	Yes	1-Jan-10	1-Feb-10	Jan-10	-	31	0	0	0	0
14	Yes	1-Feb-10	1-Mar-10	Feb-10	-	28	0	0	0	0
15	Yes	1-Mar-10	1-Apr-10	Mar-10	-	31	0	0	0	0
16	Yes	1-Apr-10	1-May-10	Apr-10	-	30	7.9	0	0	0
17	Yes	1-May-10	1-Jun-10	May-10	1,774	31	106.1	0	0	0
18	Yes	1-Jun-10	1-Jul-10	Jun-10	2,616	30	137.8	0	0	0
19	Yes	1-Jul-10	1-Aug-10	Jul-10	4,879	31	274.7	0	0	0
20	Yes	1-Aug-10	1-Sep-10	Aug-10	3,600	31	196.8	0	0	0

## Consumption Model

21	Yes	1-Sep-10	1-Oct-10	Sep-10	1,381	30	74.5	0	0	0
22	Yes	1-Oct-10	1-Nov-10	Oct-10	195	31	0.8	0	0	0
23	Yes	1-Nov-10	1-Dec-10	Nov-10	-	30	0	0	0	0
24	Yes	1-Dec-10	1-Jan-11	Dec-10	-	31	0	0	0	0
25	Yes	1-Jan-11	1-Feb-11	Jan-11	-	31	0	0	0	0
26	Yes	1-Feb-11	1-Mar-11	Feb-11	-	28	0	0	0	0
27	Yes	1-Mar-11	1-Apr-11	Mar-11	-	31	0	0	0	0
28	Yes	1-Apr-11	1-May-11	Apr-11	-	30	7.6	0	0	0
29	Yes	1-May-11	1-Jun-11	May-11	728	31	58.4	0	0	0
30	Yes	1-Jun-11	1-Jul-11	Jun-11	2,770	30	173.2	0	0	0
31	Yes	1-Jul-11	1-Aug-11	Jul-11	3,828	31	271.6	0	0	0
32	Yes	1-Aug-11	1-Sep-11	Aug-11	3,042	31	208.4	0	0	0
33	Yes	1-Sep-11	1-Oct-11	Sep-11	2,108	30	129.7	0	0	0
34	Yes	1-Oct-11	1-Nov-11	Oct-11	480	31	18.6	0	0	0
35	Yes	1-Nov-11	1-Dec-11	Nov-11	-	30	1	0	0	0
36	Yes	1-Dec-11	1-Jan-12	Dec-11	-	31	0	0	0	0
37	Yes	1-Jan-12	1-Feb-12	Jan-12	-	31	0	0	0	0
38	Yes	1-Feb-12	1-Mar-12	Feb-12	-	29	0	0	0	0
39	Yes	1-Mar-12	1-Apr-12	Mar-12	-	31	10.7	0	0	0
40	Yes	1-Apr-12	1-May-12	Apr-12	-	30	7.2	0	0	0
41	Yes	1-May-12	1-Jun-12	May-12	1,314	31	93.9	0	0	0
42	Yes	1-Jun-12	1-Jul-12	Jun-12	2,908	30	177	0	0	0
43	Yes	1-Jul-12	1-Aug-12	Jul-12	3,864	31	283	0	0	0
44	Yes	1-Aug-12	1-Sep-12	Aug-12	3,413	31	234.2	0	0	0
45	Yes	1-Sep-12	1-Oct-12	Sep-12	1,794	30	84.3	0	0	0
46	Yes	1-Oct-12	1-Nov-12	Oct-12	222	31	13	0	0	0
47	Yes	1-Nov-12	1-Dec-12	Nov-12	-	30	0	0	0	0
48	Yes	1-Dec-12	1-Jan-13	Dec-12	-	31	0	0	0	0
49	Yes	1-Jan-13	1-Feb-13	Jan-13	-	31	0	0	0	0
50	Yes	1-Feb-13	1-Mar-13	Feb-13	-	28	0	0	0	0
51	Yes	1-Mar-13	1-Apr-13	Mar-13	-	31	0	0	0	0
52	Yes	1-Apr-13	1-May-13	Apr-13	-	30	3.6	0	0	0
53	Yes	1-May-13	1-Jun-13	May-13	1,197	31	71.1	0	0	0
54	Yes	1-Jun-13	1-Jul-13	Jun-13	1,489	30	126.8	0	0	0
55				#N/A	#N/A		0	0	0	0
56				#N/A	#N/A		0	0	0	0
57				#N/A	#N/A		0	0	0	0
58				#N/A	#N/A		0	0	0	0
59				#N/A	#N/A		0	0	0	0
60				#N/A	#N/A		0	0	0	0

## Consumption Model

**Utility** Chilled Water  
**Cons. Type** Consumption  
**Cons Units** GJ  
**Facility Code** Drive  
**Name** 0  
**Account Number** W400117.6232

### Consumption Regression Inputs

Heating Dependent?	No	HDD Bal Point	C
Cooling Dependent?	yes	CDD Bal Point	11 C
Independent Variable 1?	No		
Independent Variable 2?	No		
Independent Variable 3?	No		

### Consumption Regression Outputs

	Constant	Tstat
Days	1.4174	
CDD	11.0510	-
HDD	-	-
IV1	-	-
IV2	-	-
IV3	-	-

Cons (GJ) = Days x 1.4174 + CDD x 11.051  
 R2 = 84.613%

Months	Include in Model?	Start Date	Reading Date	Month Allocation	Cons - GJ	Days	CDD	IV1	IV2	IV3
1	Yes	1-Jul-13	1-Aug-13	Jul-13	3,715	31	334.4	0	0	0
2	Yes	1-Aug-13	1-Sep-13	Aug-13	3,093	31	280.2	0	0	0
3	Yes	1-Sep-13	1-Oct-13	Sep-13	1,680	30	113.1	0	0	0
4	Yes	1-Oct-13	1-Nov-13	Oct-13	896	31	60.8	0	0	0
5	Yes	1-Jan-14	1-Feb-14	Jan-14	-	31	0	0	0	0
6	Yes	1-Feb-14	1-Mar-14	Feb-14	-	28	0	0	0	0
7	Yes	1-Mar-14	1-Apr-14	Mar-14	-	31	0	0	0	0
8	Yes	1-Apr-14	1-May-14	Apr-14	-	30	4.6	0	0	0
9	Yes	1-May-14	1-Jun-14	May-14	1,125	31	122.2	0	0	0
10				#N/A	#N/A		0	0	0	0
11				#N/A	#N/A		0	0	0	0
12				#N/A	#N/A		0	0	0	0
13				#N/A	#N/A		0	0	0	0
14				#N/A	#N/A		0	0	0	0
15				#N/A	#N/A		0	0	0	0
16				#N/A	#N/A		0	0	0	0
17				#N/A	#N/A		0	0	0	0
18				#N/A	#N/A		0	0	0	0
19				#N/A	#N/A		0	0	0	0
20				#N/A	#N/A		0	0	0	0



## Consumption Model

Utility	Steam
Cons. Type	Consumption
Cons Units	GJ
Facility Code	875 Heron Drive
Name	HTHW
Account Number	W400117.6231

### Consumption Regression Inputs

Heating Dependent?	yes	HDD Bal Point	12 C
Cooling Dependent?	No	CDD Bal Point	C
Independent Variable 1?	No		
Independent Variable 2?	No		
Independent Variable 3?	No		

### Consumption Regression Outputs

	Constant	Tstat
Days	4.9538	
HDD	7.7531	31.7300
CDD	-	
IV1	-	-
IV2	-	-
IV3	-	-

Cons (GJ) = Days x 4.9538 + HDD x 7.7531  
R2 = 95.562%

Months	Include in Model?	Start Date	Reading Date	Month Allocation	Cons - GJ	Days	HDD	CDD	IV1	IV2	IV3
1	Yes	1-Jan-09	1-Feb-09	Jan-09	6,389	31	800.7	0	0	0	0
2	Yes	1-Feb-09	1-Mar-09	Feb-09	4,653	28	526	0	0	0	0
3	Yes	1-Mar-09	1-Apr-09	Mar-09	3,945	31	398.6	0	0	0	0
4	Yes	1-Apr-09	1-May-09	Apr-09	2,073	30	154.1	0	0	0	0
5	Yes	1-May-09	1-Jun-09	May-09	465	31	32.2	0	0	0	0
6	Yes	1-Jun-09	1-Jul-09	Jun-09	265	30	2.9	0	0	0	0
7	Yes	1-Jul-09	1-Aug-09	Jul-09	143	31	0	0	0	0	0
8	Yes	1-Aug-09	1-Sep-09	Aug-09	117	31	0	0	0	0	0
9	Yes	1-Sep-09	1-Oct-09	Sep-09	255	30	8.4	0	0	0	0
10	Yes	1-Oct-09	1-Nov-09	Oct-09	612	31	159.6	0	0	0	0
11	Yes	1-Nov-09	1-Dec-09	Nov-09	778	30	222.5	0	0	0	0
12	Yes	1-Dec-09	1-Jan-10	Dec-09	4,972	31	562.3	0	0	0	0
13	Yes	1-Jan-10	1-Feb-10	Jan-10	5,217	31	585.1	0	0	0	0
14	Yes	1-Feb-10	1-Mar-10	Feb-10	4,145	28	462.3	0	0	0	0
15	Yes	1-Mar-10	1-Apr-10	Mar-10	3,700	31	257.1	0	0	0	0
16	Yes	1-Apr-10	1-May-10	Apr-10	1,628	30	85.5	0	0	0	0
17	Yes	1-May-10	1-Jun-10	May-10	286	31	34.4	0	0	0	0
18	Yes	1-Jun-10	1-Jul-10	Jun-10	227	30	0	0	0	0	0
19	Yes	1-Jul-10	1-Aug-10	Jul-10	101	31	0	0	0	0	0
20	Yes	1-Aug-10	1-Sep-10	Aug-10	120	31	0	0	0	0	0

## Consumption Model

21	Yes	1-Sep-10	1-Oct-10	Sep-10	210	30	6.9	0	0	0	0
22	Yes	1-Oct-10	1-Nov-10	Oct-10	393	31	122.7	0	0	0	0
23	Yes	1-Nov-10	1-Dec-10	Nov-10	2,314	30	288.5	0	0	0	0
24	Yes	1-Dec-10	1-Jan-11	Dec-10	4,329	31	537.1	0	0	0	0
25	Yes	1-Jan-11	1-Feb-11	Jan-11	5,313	31	695.8	0	0	0	0
26	Yes	1-Feb-11	1-Mar-11	Feb-11	4,547	28	548.8	0	0	0	0
27	Yes	1-Mar-11	1-Apr-11	Mar-11	3,640	31	446.7	0	0	0	0
28	Yes	1-Apr-11	1-May-11	Apr-11	1,747	30	168.6	0	0	0	0
29	Yes	1-May-11	1-Jun-11	May-11	450	31	24	0	0	0	0
30	Yes	1-Jun-11	1-Jul-11	Jun-11	192	30	0	0	0	0	0
31	Yes	1-Jul-11	1-Aug-11	Jul-11	101	31	0	0	0	0	0
32	Yes	1-Aug-11	1-Sep-11	Aug-11	108	31	0	0	0	0	0
33	Yes	1-Sep-11	1-Oct-11	Sep-11	187	30	5.9	0	0	0	0
34	Yes	1-Oct-11	1-Nov-11	Oct-11	663	31	86	0	0	0	0
35	Yes	1-Nov-11	1-Dec-11	Nov-11	1,811	30	198.8	0	0	0	0
36	Yes	1-Dec-11	1-Jan-12	Dec-11	3,707	31	465.1	0	0	0	0
37	Yes	1-Jan-12	1-Feb-12	Jan-12	4,859	31	631.9	0	0	0	0
38	Yes	1-Feb-12	1-Mar-12	Feb-12	3,949	29	481.4	0	0	0	0
39	Yes	1-Mar-12	1-Apr-12	Mar-12	2,586	31	276.7	0	0	0	0
40	Yes	1-Apr-12	1-May-12	Apr-12	1,528	30	166.9	0	0	0	0
41	Yes	1-May-12	1-Jun-12	May-12	348	31	8.4	0	0	0	0
42	Yes	1-Jun-12	1-Jul-12	Jun-12	232	30	0	0	0	0	0
43	Yes	1-Jul-12	1-Aug-12	Jul-12	127	31	0	0	0	0	0
44	Yes	1-Aug-12	1-Sep-12	Aug-12	176	31	0	0	0	0	0
45	Yes	1-Sep-12	1-Oct-12	Sep-12	408	30	13.3	0	0	0	0
46	Yes	1-Oct-12	1-Nov-12	Oct-12	385	31	73.8	0	0	0	0
47	Yes	1-Nov-12	1-Dec-12	Nov-12	2,165	30	333.7	0	0	0	0
48	Yes	1-Dec-12	1-Jan-13	Dec-12	3,480	31	509.5	0	0	0	0
49	Yes	1-Jan-13	1-Feb-13	Jan-13	4,618	31	642.8	0	0	0	0
50	Yes	1-Feb-13	1-Mar-13	Feb-13	3,772	28	541.8	0	0	0	0
51	Yes	1-Mar-13	1-Apr-13	Mar-13	3,189	31	419.9	0	0	0	0
52	Yes	1-Apr-13	1-May-13	Apr-13	1,088	30	193.1	0	0	0	0
53	Yes	1-May-13	1-Jun-13	May-13	47	31	20.7	0	0	0	0
54	Yes	1-Jun-13	1-Jul-13	Jun-13	21	30	0.5	0	0	0	0
55				#N/A	#N/A		0	0	0	0	0
56				#N/A	#N/A		0	0	0	0	0
57				#N/A	#N/A		0	0	0	0	0
58				#N/A	#N/A		0	0	0	0	0
59				#N/A	#N/A		0	0	0	0	0
60				#N/A	#N/A		0	0	0	0	0

## Consumption Model

Utility	Steam
Cons. Type	Consumption
Cons Units	GJ
Facility Code	Drive
Name	HTHW
Account Number	W400117.6231

### Consumption Regression Inputs

Heating Dependent?	yes	HDD Bal Point	13	C
Cooling Dependent?	No	CDD Bal Point		C
Independent Variable 1?	No			
Independent Variable 2?	No			
Independent Variable 3?	No			

### Consumption Regression Outputs

	Constant	Tstat
Days	5.8777	
HDD	6.9450	9.9399
CDD	-	
IV1	-	-
IV2	-	-
IV3	-	-

Cons (GJ) = Days x 5.8777 + HDD x 6.945  
R2 = 81.581%

Months	Include in Model?	Start Date	Reading Date	Month Allocation	Cons - GJ	Days	HDD	CDD	IV1	IV2	IV3
1	Yes	1-Jul-13	1-Aug-13	Jul-13	18	31	0	0	0	0	0
2	Yes	1-Aug-13	1-Sep-13	Aug-13	12	31	0	0	0	0	0
3	Yes	1-Sep-13	1-Oct-13	Sep-13	49	30	18.8	0	0	0	0
4	Yes	1-Oct-13	1-Nov-13	Oct-13	164	31	114	0	0	0	0
5	Yes	1-Jan-14	1-Feb-14	Jan-14	5,739	31	740	0	0	0	0
6	Yes	1-Feb-14	1-Mar-14	Feb-14	4,206	28	636.2	0	0	0	0
7	Yes	1-Mar-14	1-Apr-14	Mar-14	4,089	31	607.3	0	0	0	0
8	Yes	1-Apr-14	1-May-14	Apr-14	2,648	30	198.6	0	0	0	0
9	Yes	1-May-14	1-Jun-14	May-14	753	31	0	0	0	0	0
10				#N/A	#N/A		0	0	0	0	0
11				#N/A	#N/A		0	0	0	0	0
12				#N/A	#N/A		0	0	0	0	0
13				#N/A	#N/A		0	0	0	0	0
14				#N/A	#N/A		0	0	0	0	0
15				#N/A	#N/A		0	0	0	0	0
16				#N/A	#N/A		0	0	0	0	0
17				#N/A	#N/A		0	0	0	0	0
18				#N/A	#N/A		0	0	0	0	0
19				#N/A	#N/A		0	0	0	0	0
20				#N/A	#N/A		0	0	0	0	0

## Consumption Model

**Utility** Natural Gas  
**Cons. Type** Consumption  
**Cons Units** m3  
**Facility Code** Drive  
**Name** Natural Gas  
**Account Number** 001

### Consumption Regression Inputs

Heating Dependent?	yes	HDD Bal Point	10	C
Cooling Dependent?	No	CDD Bal Point		C
Independent Variable 1?	No			
Independent Variable 2?	No			
Independent Variable 3?	No			

### Consumption Regression Outputs

	Constant	Tstat
Days	3.7547	
HDD	22.4581	8.4306
CDD	-	
IV1	-	-
IV2	-	-
IV3	-	-

Cons (m3) = Days x 3.7547 + HDD x 22.4581  
 R2 = 66.276%

Months	Include in Model?	Start Date	Reading Date	Month Allocation	Cons - m3	Days	HDD	CDD	IV1	IV2	IV3
1	Yes	1-Jan-09	1-Feb-09	Jan-09	35,516	31	738.7	0	0	0	0
2	Yes	1-Feb-09	1-Mar-09	Feb-09	20,302	28	470	0	0	0	0
3	Yes	1-Mar-09	1-Apr-09	Mar-09	7,688	31	336.6	0	0	0	0
4	Yes	1-Apr-09	1-May-09	Apr-09	3,208	30	103.8	0	0	0	0
5	Yes	1-May-09	1-Jun-09	May-09	1,286	31	12.6	0	0	0	0
6	Yes	1-Jun-09	1-Jul-09	Jun-09	896	30	0.9	0	0	0	0
7	Yes	1-Jul-09	1-Aug-09	Jul-09	1,058	31	0	0	0	0	0
8	Yes	1-Aug-09	1-Sep-09	Aug-09	1,313	31	0	0	0	0	0
9	Yes	1-Sep-09	1-Oct-09	Sep-09	1,779	30	3.3	0	0	0	0
10	Yes	1-Oct-09	1-Nov-09	Oct-09	1,903	31	110.1	0	0	0	0
11	Yes	1-Nov-09	1-Dec-09	Nov-09	1,993	30	162.8	0	0	0	0
12	Yes	1-Dec-09	1-Jan-10	Dec-09	7,577	31	500.3	0	0	0	0
13	Yes	1-Jan-10	1-Feb-10	Jan-10	19,781	31	523.1	0	0	0	0
14	Yes	1-Feb-10	1-Mar-10	Feb-10	14,662	28	406.3	0	0	0	0
15	Yes	1-Mar-10	1-Apr-10	Mar-10	6,672	31	195.9	0	0	0	0
16	Yes	1-Apr-10	1-May-10	Apr-10	1,310	30	46.8	0	0	0	0
17	Yes	1-May-10	1-Jun-10	May-10	813	31	21.2	0	0	0	0
18	Yes	1-Jun-10	1-Jul-10	Jun-10	639	30	0	0	0	0	0
19	Yes	1-Jul-10	1-Aug-10	Jul-10	616	31	0	0	0	0	0
20	Yes	1-Aug-10	1-Sep-10	Aug-10	444	31	0	0	0	0	0

## Consumption Model

21	Yes	1-Sep-10	1-Oct-10	Sep-10	411	30	0.3	0	0	0	0
22	Yes	1-Oct-10	1-Nov-10	Oct-10	627	31	76.1	0	0	0	0
23	Yes	1-Nov-10	1-Dec-10	Nov-10	12,610	30	228.5	0	0	0	0
24	Yes	1-Dec-10	1-Jan-11	Dec-10	11,151	31	475.1	0	0	0	0
25	Yes	1-Jan-11	1-Feb-11	Jan-11	18,448	31	633.8	0	0	0	0
26	Yes	1-Feb-11	1-Mar-11	Feb-11	13,923	28	492.8	0	0	0	0
27	Yes	1-Mar-11	1-Apr-11	Mar-11	11,269	31	384.7	0	0	0	0
28	Yes	1-Apr-11	1-May-11	Apr-11	2,937	30	115.2	0	0	0	0
29	Yes	1-May-11	1-Jun-11	May-11	500	31	9.5	0	0	0	0
30	Yes	1-Jun-11	1-Jul-11	Jun-11	1,117	30	0	0	0	0	0
31	Yes	1-Jul-11	1-Aug-11	Jul-11	1,324	31	0	0	0	0	0
32	Yes	1-Aug-11	1-Sep-11	Aug-11	1,324	31	0	0	0	0	0
33	Yes	1-Sep-11	1-Oct-11	Sep-11	1,281	30	1	0	0	0	0
34	Yes	1-Oct-11	1-Nov-11	Oct-11	1,324	31	52.6	0	0	0	0
35	Yes	1-Nov-11	1-Dec-11	Nov-11	1,281	30	142.8	0	0	0	0
36	Yes	1-Dec-11	1-Jan-12	Dec-11	1,324	31	403.1	0	0	0	0
37	Yes	1-Jan-12	1-Feb-12	Jan-12	1,324	31	569.9	0	0	0	0
38	Yes	1-Feb-12	1-Mar-12	Feb-12	7,476	29	423.4	0	0	0	0
39	Yes	1-Mar-12	1-Apr-12	Mar-12	6,457	31	226.7	0	0	0	0
40	Yes	1-Apr-12	1-May-12	Apr-12	1,901	30	113.3	0	0	0	0
41	Yes	1-May-12	1-Jun-12	May-12	98	31	3.1	0	0	0	0
42	Yes	1-Jun-12	1-Jul-12	Jun-12	-	30	0	0	0	0	0
43	Yes	1-Jul-12	1-Aug-12	Jul-12	-	31	0	0	0	0	0
44	Yes	1-Aug-12	1-Sep-12	Aug-12	-	31	0	0	0	0	0
45	Yes	1-Sep-12	1-Oct-12	Sep-12	-	30	2	0	0	0	0
46	Yes	1-Oct-12	1-Nov-12	Oct-12	446	31	39.7	0	0	0	0
47	Yes	1-Nov-12	1-Dec-12	Nov-12	4,802	30	274.1	0	0	0	0
48	Yes	1-Dec-12	1-Jan-13	Dec-12	6,083	31	447.5	0	0	0	0
49	Yes	1-Jan-13	1-Feb-13	Jan-13	6,083	31	580.8	0	0	0	0
50	Yes	1-Feb-13	1-Mar-13	Feb-13	6,068	28	485.8	0	0	0	0
51	Yes	1-Mar-13	1-Apr-13	Mar-13	6,466	31	357.9	0	0	0	0
52	Yes	1-Apr-13	1-May-13	Apr-13	1,691	30	144.6	0	0	0	0
53	Yes	1-May-13	1-Jun-13	May-13	91	31	8.9	0	0	0	0
54	Yes	1-Jun-13	1-Jul-13	Jun-13	-	30	0	0	0	0	0
55	Yes	1-Jul-13	1-Aug-13	Jul-13	-	31	0	0	0	0	0
56	Yes	1-Aug-13	1-Sep-13	Aug-13	-	31	0	0	0	0	0
57	Yes	1-Sep-13	1-Oct-13	Sep-13	-	30	2.3	0	0	0	0
58	Yes	1-Oct-13	1-Nov-13	Oct-13	238	31	65.1	0	0	0	0
59	Yes	1-Nov-13	1-Dec-13	Nov-13	1,483	30	291.1	0	0	0	0
60	Yes	1-Dec-13	1-Jan-14	Dec-13	162	31	590.3	0	0	0	0

## Consumption Model

**Utility** Water  
**Cons. Type** Consumption  
**Cons Units** m3  
**Facility Code** Drive  
**Name** Water  
**Account Number** W400117.6202

### Consumption Regression Inputs

Heating Dependent?	No	HDD Bal Point	C
Cooling Dependent?	yes	CDD Bal Point	16 C
Independent Variable 1?	No		
Independent Variable 2?	No		
Independent Variable 3?	No		

### Consumption Regression Outputs

	Constant	Tstat
Days	97.6579	
CDD	5.9096	-
HDD	-	-
IV1	-	-
IV2	-	-
IV3	-	-

Cons (m3) = Days x 97.6579 + CDD x 5.9096  
 R2 = 96.442%

Months	Include in Model?	Start Date	Reading Date	Month Allocation	Cons - m3	Days	CDD	IV1	IV2	IV3
1	Yes	1-Jan-09	1-Feb-09	Jan-09	3,947	31	0	0	0	0
2	Yes	1-Feb-09	1-Mar-09	Feb-09	3,276	28	0	0	0	0
3	Yes	1-Mar-09	1-Apr-09	Mar-09	3,549	31	0	0	0	0
4	Yes	1-Apr-09	1-May-09	Apr-09	3,129	30	7.6	0	0	0
5	Yes	1-May-09	1-Jun-09	May-09	2,930	31	6.2	0	0	0
6	Yes	1-Jun-09	1-Jul-09	Jun-09	3,297	30	88.2	0	0	0
7	Yes	1-Jul-09	1-Aug-09	Jul-09	3,382	31	104.7	0	0	0
8	Yes	1-Aug-09	1-Sep-09	Aug-09	3,898	31	137.7	0	0	0
9	Yes	1-Sep-09	1-Oct-09	Sep-09	3,344	30	24.8	0	0	0
10	Yes	1-Oct-09	1-Nov-09	Oct-09	2,830	31	0	0	0	0
11	Yes	1-Nov-09	1-Dec-09	Nov-09	2,920	30	0	0	0	0
12	Yes	1-Dec-09	1-Jan-10	Dec-09	2,923	31	0	0	0	0
13	Yes	1-Jan-10	1-Feb-10	Jan-10	3,100	31	0	0	0	0
14	Yes	1-Feb-10	1-Mar-10	Feb-10	2,928	28	0	0	0	0
15	Yes	1-Mar-10	1-Apr-10	Mar-10	3,297	31	0	0	0	0
16	Yes	1-Apr-10	1-May-10	Apr-10	2,922	30	3.4	0	0	0
17	Yes	1-May-10	1-Jun-10	May-10	3,762	31	68.8	0	0	0
18	Yes	1-Jun-10	1-Jul-10	Jun-10	3,631	30	86.1	0	0	0
19	Yes	1-Jul-10	1-Aug-10	Jul-10	4,110	31	213.2	0	0	0
20	Yes	1-Aug-10	1-Sep-10	Aug-10	3,509	31	137	0	0	0

## Consumption Model

21	Yes	1-Sep-10	1-Oct-10	Sep-10	2,985	30	45.9	0	0	0
22	Yes	1-Oct-10	1-Nov-10	Oct-10	2,791	31	0	0	0	0
23	Yes	1-Nov-10	1-Dec-10	Nov-10	2,952	30	0	0	0	0
24	Yes	1-Dec-10	1-Jan-11	Dec-10	2,939	31	0	0	0	0
25	Yes	1-Jan-11	1-Feb-11	Jan-11	3,197	31	0	0	0	0
26	Yes	1-Feb-11	1-Mar-11	Feb-11	2,523	28	0	0	0	0
27	Yes	1-Mar-11	1-Apr-11	Mar-11	2,939	31	0	0	0	0
28	Yes	1-Apr-11	1-May-11	Apr-11	3,237	30	2.4	0	0	0
29	Yes	1-May-11	1-Jun-11	May-11	3,782	31	36.4	0	0	0
30	Yes	1-Jun-11	1-Jul-11	Jun-11	4,996	30	115.9	0	0	0
31	Yes	1-Jul-11	1-Aug-11	Jul-11	4,952	31	209.6	0	0	0
32	Yes	1-Aug-11	1-Sep-11	Aug-11	4,029	31	146.4	0	0	0
33	Yes	1-Sep-11	1-Oct-11	Sep-11	3,221	30	80.2	0	0	0
34	Yes	1-Oct-11	1-Nov-11	Oct-11	2,968	31	10	0	0	0
35	Yes	1-Nov-11	1-Dec-11	Nov-11	2,958	30	0	0	0	0
36	Yes	1-Dec-11	1-Jan-12	Dec-11	2,747	31	0	0	0	0
37	Yes	1-Jan-12	1-Feb-12	Jan-12	3,030	31	0	0	0	0
38	Yes	1-Feb-12	1-Mar-12	Feb-12	3,018	29	0	0	0	0
39	Yes	1-Mar-12	1-Apr-12	Mar-12	2,848	31	3	0	0	0
40	Yes	1-Apr-12	1-May-12	Apr-12	3,084	30	5.2	0	0	0
41	Yes	1-May-12	1-Jun-12	May-12	3,237	31	56.9	0	0	0
42	Yes	1-Jun-12	1-Jul-12	Jun-12	3,336	30	125.9	0	0	0
43	Yes	1-Jul-12	1-Aug-12	Jul-12	3,868	31	221	0	0	0
44	Yes	1-Aug-12	1-Sep-12	Aug-12	3,229	31	172.2	0	0	0
45	Yes	1-Sep-12	1-Oct-12	Sep-12	2,730	30	51.8	0	0	0
46	Yes	1-Oct-12	1-Nov-12	Oct-12	2,902	31	4.3	0	0	0
47	Yes	1-Nov-12	1-Dec-12	Nov-12	3,237	30	0	0	0	0
48	Yes	1-Dec-12	1-Jan-13	Dec-12	2,362	31	0	0	0	0
49	Yes	1-Jan-13	1-Feb-13	Jan-13	2,531	31	0	0	0	0
50	Yes	1-Feb-13	1-Mar-13	Feb-13	2,629	28	0	0	0	0
51	Yes	1-Mar-13	1-Apr-13	Mar-13	2,640	31	0	0	0	0
52	Yes	1-Apr-13	1-May-13	Apr-13	3,682	30	0	0	0	0
53	Yes	1-May-13	1-Jun-13	May-13	3,096	31	39.4	0	0	0
54	Yes	1-Jun-13	1-Jul-13	Jun-13	4,297	30	81.9	0	0	0
55	Yes	1-Jul-13	1-Aug-13	Jul-13	4,361	31	179.4	0	0	0
56	Yes	1-Aug-13	1-Sep-13	Aug-13	3,728	31	125.3	0	0	0
57	Yes	1-Sep-13	1-Oct-13	Sep-13	1,830	30	27	0	0	0
58	Yes	1-Oct-13	1-Nov-13	Oct-13	2,408	31	6.6	0	0	0
59				#N/A	#N/A		0	0	0	0
60				#N/A	#N/A		0	0	0	0



## **Appendix C: Lighting Summary**

- Lighting Survey Report
- Lighting Retrofit Descriptions Report
- Lighting Payback Analysis Report
- Average Annual Purchase Savings on Lamps and Ballasts Report



# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Exterior	Exterior	Exterior	lp1	polh	56	347	hps150	1	hps150ed17	1	1	24	7	52								1
Exterior	Exterior	Exterior	sp	sp	1	347	noballast	0	ht75par30	1	1	12	7	52								0
Exterior	Exterior	Exterior	sm1	canopy	1	347	mh100	1	mh100ed17	1	1	12	7	52								0
Exterior	Exterior	Exterior	wp2	wp	1	347	mh50	1	mh50ed17	1	1	12	7	52								0
Head Of f 2	105	Of f ice	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2A	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 2	2A	Open Of f ice	f 4	f 2x4r	37	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2A	Open Of f ice	f 2x2	f 2x2r	8	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 2	2B	Open Of f ice	f 4	f 2x4r	36	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2B	Open Of f ice	f 2x2	f 2x2r	13	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 2	2C	Corridor	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 2	2C	Corridor	f 2x2	f 2x2r	3	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 2	2D	Open Of f ice	f 4	f 2x4r	31	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2D	Open Of f ice	f 2x2	f 2x2r	11	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 2	2D	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 2	2E	Open Of f ice	f 2x2	f 2x2r	14	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 2	2E	Open Of f ice	f 4	f 2x4r	40	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2F	Open Of f ice	f 2x2	f 2x2r	15	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 2	2G	Open Of f ice	f 4	f 2x4r	48	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2G	Open Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2G	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 2	2H-19	Board Room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-20	Of f ice	f 4	f 2x4r	9	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-21	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-22	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-25	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-26	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-27	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Head Of f 2	2H-28	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-29	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-30	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-31	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-32	Lab,	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-33	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-34	Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-35	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-36	Conf erence Room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-37	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-38	Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-39	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-40	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-51	Meeting Room	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2H-52	Computer lab	f 4	f 2x4r	9	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2I	Open Office	f 4	f 2x4r	48	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2I	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 2	2J	Open Of f ice	f 4	f 2x4r	23	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2J	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 2	2K	Open Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2L	Open Of f ice	f 4	f 2x4r	26	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 2	2L	Open Of f ice	f 2x2	f 2x2r	9	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 2	2M	Corridor	f 2x2	f 2x2r	10	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 2	2M	Corridor	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 2	301	Telephone Room	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Head Of f 2	302	Women's washroom	f 2-17	f 1x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	12	5	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H	
Head Of f 2	302	Women's washroom	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52							1
Head Of f 2	303	Janitorial	k	key less	1	347	noballast	0	i100a	1	1	1	7	52							0.1
Head Of f 2	305	janitorial Handicap	k	key less	1	347	noballast	0	i100a	1	1	1	7	52							0.1
Head Of f 2	306	washroom	f 2x2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52							1
Head Of f 2	307	Women's washroom	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52							1
Head Of f 2	308	Kitchen Photocopy Room	f 4sm	f 2x4s	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52							1
Head Of f 2	310	Electrical Room	f 4sm	f 2x4s	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52							1
Head Of f 2	311	Room	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52							0.1
Head Of f 2	312	Storage Male	k	key less	1	347	noballast	0	i100a	1	1	1	7	52							0.1
Head Of f 2	313	washroom	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52							1
Head Of f 2	319	Women's washroom	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52							1
Head Of f 2	320	Janitorial Electrical Room	k	key less	1	347	noballast	0	i100a	1	1	1	7	52							0.1
Head Of f 2	321	Elevator Lobby	K	key less	1	347	noballast	0	i100a	1	1	1	7	52							0.1
Head Of f 2	EV1	Elev ator Lobby	st1	st1w	8	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52							1
Head Of f 2	EV2	Lobby	st1	st1w	8	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52							1
Head Of f 3	120	Board Room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 3	301	Telephone room	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52							0.1
Head Of f 3	302	Women's wash	f 2-17	f 1x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52							1
Head Of f 3	302	washroom	f 2	f 1x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52							1
Head Of f 3	303	Janitorial	k	key less	1	347	noballast	0	i100a	1	1	1	7	52							0.1
Head Of f 3	305	janitorial	k	key less	1	347	noballast	0	i100a	1	1	1	7	52							0.1
Head Of f 3	306	washroom	f 2x2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52							1
Head Of f 3	307	Washroom	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52							1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Head Of f 3	308	Kitchen	f 4sm	f 2x4s	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3A	Open Of f ice	f 4	f 2x4r	38	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3B	Open Of f ice	f 2x2	f 2x2r	5	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 3	3B	Open Of f ice	f 4	f 2x4r	12	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3C	Open Of f ice	f 2x2	f 2x2r	5	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 3	3C	Open Of f ice	f 4	f 2x4r	12	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3C	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 3	3D	Lobby	f 2x2	f 2x2r	3	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 3	3E	Open Of f ice	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3E	Open Of f ice	f 2x2	f 2x2r	9	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 3	3E	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 3	3F	Corridor	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3F	Corridor	f 2x2	f 2x2r	2	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 3	3G	Open Of f ice	f 4	f 2x4r	127	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3G	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 3	3H	Open Of f ice	f 4	f 2x4r	16	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H	Open Of f ice	f 2x2	f 2x2r	7	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 3	3H	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 3	3H-11	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-12	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-13	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-14	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-15	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-16	Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-19	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-20	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-21	Of f ice	f 4	f 2x4r	8	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-22	Room	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Head Of f 3	3H-23	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-24	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-28	Open Of f ice	f 4	f 2x4r	8	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-29	Meeting room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-30	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-31	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-33	Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-34	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-35	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-36	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-37	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-46	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3H-47	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3I	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 3	3I	Open Of f ice	f 2x2	f 2x2r	8	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 3	3I	Open Of f ice	f 4	f 2x4r	30	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3J	Open Of f ice	f 2x2	f 2x2r	3	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 3	3J	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3K	Open Of f ice	f 2x2	f 2x2r	7	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 3	3K	Open Of f ice	f 4	f 2x4r	51	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	3K	Open Of f ice	ex2	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 3	3L	Open Of f ice	f 2x2	f 2x2r	7	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 3	3L	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 3	C3A	Corridor Elev ator	f 2x2	f 2x2r	15	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 3	EV1	Lobby	st1	st1w	8	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Head Of f 3	EV2	Elev ator lobby Fr Elevator	st1	st1w	8	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Head Of f 3	Fr Elevator	Lobby	f 2x2	f 2x2r	3	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Head Of f 3	H3-310	Photocopy Room	f 4sm	f 2x4s	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 3	H3-311	Electrical Room	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Head Of f 3	H3-312	Storage	k	key less	1	347	noballast	0	i100a	1	1	1	7	52								0.1
Head Of f 3	H3-313	Male washroo	f 2-17	f 1x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
Head Of f 3	H3-313	Male washroo	f 2	f 1x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Of f 3	H3-317	Storage	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.2
Head Of f 3	H3-318	Male washroo	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Of f 3	H3-319	Storage	k	key less	1	347	noballast	0	i100a	1	1	1	7	52								0.1
Head Of f 3	H3-320	Electrical room	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.2
Head Of f 4	305	Janitorial	k	key less	1	347	noballast	0	i100a	1	1	1	7	52								0.1
Head Of f 4	306	Washroom	f 2x2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
Head Of f 4	307	shroom	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Of f 4	308	Room	f 4-4	f 2x4r	4	347	f 32v 347is88	1	f 32t8	4	4	12	7	52								1
Head Of f 4	4017	Electrical Ro	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Head Of f 4	4019	Storage	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Head Of f 4	402	Male washroo	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Of f 4	4023	Storage	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Head Of f 4	4049	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	4051	Tele	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Head Of f 4	4053	Male washroo	f 2-17	f 1x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
Head Of f 4	4053	washroom	f 2	f 1x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Of f 4	4055	Storage	k	key less	1	347	noballast	0	i100a	1	1	1	7	52								0.1
Head Of f 4	4057	Electrical Ro	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Head Of f 4	4A	Open Of f ice	f 2x2	f 2x2r	10	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 4	4A	Open Of f ice	f 4	f 2x4r	47	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	4A	Open Of f ice	ex2	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 4	4B	Open Of f ice	f 2x2	f 2x2r	8	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H	
Head Of f 4	4B	Open Of f ice	f 4	f 2x4r	34	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	4C	Open Of f ice	f 2x2	f 2x2r	6	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52							1
Head Of f 4	4C	Open Of f ice	f 4	f 2x4r	37	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	4D	Open Of f ice	f 4	f 2x4r	23	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	4D	Open Of f ice	f 2x2	f 2x2r	18	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52							1
Head Of f 4	4D	Open Of f ice	ex2	exit	2	347	ledv 347	1	led	1	1	24	7	52							1
Head Of f 4	4E	Open Of f ice	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	4F	Open Of f ice	f 4	f 2x4r	60	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	4F	Open Of f ice	f 2x2	f 2x2r	14	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52							1
Head Of f 4	4G	Open Of f ice	f 2x2	f 2x2r	6	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52							1
Head Of f 4	4G	Open Of f ice	f 4	f 2x4r	47	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	4H	Kitchenette	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	4H	Kitchenette	f 2x2	f 2x2r	4	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52							1
Head Of f 4	4H	Kitchenette	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52							1
Head Of f 4	4I	Open Of f ice	f 2x2	f 2x2r	13	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52							1
Head Of f 4	4I	Open Of f ice	f 4	f 2x4r	44	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	4I	Open Of f ice	ex2	exit	2	347	ledv 347	1	led	1	1	24	7	52							1
Head Of f 4	4J	Open Of f ice	f 4	f 2x4r	46	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	C4A	Corridor	f 2x2	f 2x2r	15	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52							1
Head Of f 4	C4A	Corridor	ex2	exit	2	347	ledv 347	1	led	1	1	24	7	52							1
Head Of f 4	EL2	Elevator Lobby	st1	st1w	8	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52							1
Head off 4	Elevator 1	Elevator lobby	st1	st1w	8	347	f32x1v347is88	1	f 32t8	1	1	24	7	52							1
Head Of f 4	H4-23	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	H4-24	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	H4-25	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	H4-26	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	H4-27	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1
Head Of f 4	H4-28	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Head Of f 4	H4-29	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-30	Of f ice Telephone Room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-301	Room	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Head Of f 4	H4-302	Women's wash f 2 Women'swa shroom	f 2-17	f 1x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Of f 4	H4-302	Storage	k	key less	1	347	noballast	0	i100a	1	1	1	7	52								0.1
Head Of f 4	H4-48	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-49	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-50	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-51	Of f ice Conf erence Room	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-52	Room	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-53	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-54	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-55	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-56	of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-57	of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4--58	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-59	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-60	Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-62	Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 4	H4-64	Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	112	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	123	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	124	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	149	washroom,	f 2	f 1x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Of f 5	149	washroom,	potc	pot	1	347	cf l13	1	cf l13quad	2	2	24	7	52								1
Head Of f 5	150	Serv er	f 4	f 2x4r	21	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1



# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Head Of f 5	20A	Washroom, eni	pot50	pot	2	347	noballast	0	ht50par30	1	1	24	7	52								1
Head Of f 5	24wr	washroom,	f 2	f 1x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Of f 5	312	Male Washroo	f 2	f 1x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Of f 5	313	Women's wash	f 2	f 1x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Of f 5	313A	Storage	k	key less	1	347	noballast	0	i100a	1	1	1	7	52								0.1
Head Of f 5	314	telecom	k	key less	1	347	noballast	0	i100a	1	1	1	7	52								0.1
Head Of f 5	315	Room	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Head Of f 5	316	Telephone roo	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Head Of f 5	507	washroom	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Of f 5	5073	Storage	k	key less	1	347	noballast	0	i100a	1	1	1	7	52								0.1
Head Of f 5	5A	Open Of f ice	f 2x2	f 2x2r	2	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	5A	Open Of f ice	f 4	f 2x4r	32	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	5B	Open Of f ice	f 4	f 2x4r	16	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	5B	Open Of f ice	f 2x2	f 2x2r	5	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	5B	Exit D	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 5	5C	Open Of f ice	f 4	f 2x4r	15	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	5C	Open Of f ice	f 2x2	f 2x2r	5	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	5D	Open Of f ice	f 2x2	f 2x2r	3	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	5D	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	5D	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 5	5E	Open Of f ice	f 2x2	f 2x2r	7	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	5E	Open Of f ice	f 4	f 2x4r	18	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	5F	Open Of f ice	f 4	f 2x4r	45	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	5F	Open Of f ice	f 2x2	f 2x2r	15	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	5FC	C	f 2x2rf	f 2x2r	6	347	f 17x2v 347is92	2	f 17t8	2	2	12	7	52								1
Head Of f 5	5G	Open Of f ice	f 4	f 2x4r	16	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	5G	Open Of f ice	f 2x2	f 2x2r	10	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	5G	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Head Of f 5	5H	Open Of f ice	f 4	f 2x4r	18	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	5H	Open Of f ice	f 2x2	f 2x2r	6	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	5H-312	Male washroo	f 2-17	f 1x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
Head Of f 5	5I	Open Of f ice	f 2x2	f 2x2r	10	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	5I	Open Of f ice	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	5I	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 5	5J	Open Of f ice	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 5	5J	Open Of f ice	f 4	f 2x4r	79	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	5J	Open Of f ice	f 2x2	f 2x2r	15	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	5K	Open Of f ice	f 4	f 2x4r	14	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	5K	Open Of f ice	f 2x2	f 2x2r	4	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	5K	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 5	C5A	Freight Lobby	f 2x2	f 2x2r	2	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	C5C	Corridor	f 2x2	f 2x2r	3	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	C5D	Kitchenette	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	C5D	Kitchenette	f 2x2	f 2x2r	2	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	C5E	Corridor	f 2x2	f 2x2r	4	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	C5F	Corridor	f 2x2	f 2x2r	11	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Head Of f 5	C5F	Corridor	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 5	EL1	Elev ator Lobby	st1	st1w	8	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Head Of f 5	H5 -100	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5 -109	Office	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-110	Office	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-111	Office	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-21	Office	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-22	Office	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-23	Office	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-24	Office	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Head Of f 5	H5-24A	Office	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	Lobby	Lobby	pot50	pot	30	347	noballast	0	ht50par30	1	1	12	7	52								1
Head Of f 5	H5-13	Office	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-14	Office	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-148	Kitchenette	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-15	Office	f 4	f 2x4r	15	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-20	Private Room	pot50	pot	20	347	noballast	0	ht50par30	1	1	12	7	52								1
Head Of f 5	H5-26	Waiting Photocopy Room	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-26A	Room	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-27	Board Room	st2	st2eo	5	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-27	Board Room	pot50	pot	16	347	noballast	0	ht50par30	1	1	12	7	52								1
Head Of f 5	H5-28	Meeting Room	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-29	Office	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-30	Office	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-305	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	1	7	52								0.1
Head Of f 5	H5-306	Handicap Wasl	f 2x2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
Head Of f 5	H5-307	Women's Wasl	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Of f 5	H5-308	File Room	f 4-4	f 2x4r	4	347	f 32	1	f 32t8	4	4	12	7	52								1
Head Of f 5	H5-34	Office	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Of f 5	H5-35	Office	f4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Head Off 5	Landberg	Boardroom	f 2x2rf	f 2x2r	12	347	f 17x2v 347is92	2	f 17t8	2	2	12	7	52								1
Head Of f 5	Landberg	Boardroom	potmr	pot	12	347	htmr	1	ht50mr16	1	1	12	7	52								1
Head Off 5	Landberg	Boardroom	potmr	pot	10	347	htmr	1	ht50mr16	1	1	12	7	52								1
Head Of f 6	6A	MechanicalRoc l		f 1x4s2o	20	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52								1
Head Of f 6	6B	MechanicalRoc st2		st2eo	1	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52								1
Head Of f 6	6C	AHU	K	key less	2	347	noballast	0	i100a	1	1	1	5	52								0.1
Head Of f 6	6D	MechanicalRoc l2		f 1x4s1o	25	347	f 32x1v 347is88	1	f 32t8	1	1	12	5	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Head Of f 6	6D	MechanicalRoc ex2		exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 6	6F	MechanicalRoc l2		f 1x4s1o	3	347	f 32x1v 347is88	1	f 32t8	1	1	12	5	52								1
Head Of f 6	6F	Mechanical Roc f 2sm		f 1x4s	5	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52								1
Head Of f 6	6G	MechanicalRoc l		f 1x4s2o	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52								1
Head Of f 6	6G	Mechanical Roc ex2		exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Head Of f 6	6H	MechanicalRoc f 4		f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52								1
Head Of f 6	6H	Mechanical Roc l		f 1x4s2o	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52								1
Head Of f 6	6H	MechanicalRoc l2		f 1x4s1o	22	347	f 32x1v 347is88	1	f 32t8	1	1	12	5	52								1
Head Of f 6	6I	Fan Room	i100a	key less	2	347	noballast	0	i100a	1	1	1	7	52								0.1
Head Of f 7	7A	elevator Mech	st2	st2eo	12	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								1
Head Of f 7	7A	Stairs	st2	st2eo	1	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Of f 7	7B	elev atorMech	st2	st2eo	7	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								1
Head Of f 7	7B	Stairs	st2	st2eo	1	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Head Off 5	200	Open Of f ice	f 4	f 2x4r	22	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
HeadOf f B	200	Open Of f ice	ex2	exit	3	347	ledv 347	1	led	1	1	24	7	52								1
Head off B	200A	Storage	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								1
HeadOf f B	A115	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Head Off B	A120	janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52								0.2
Head Off B	A121	Valv e room	st1	st1w	2	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2
HeadOf f B	A122	ElectricalRoom	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52								0.2
HeadOf f B	A15	Tele	st2	st2o	1	347	f 32x2v 347is88	2	f 32t8	2	2	1	7	52								0.1
HeadOf f B	A150	Male washroon	st1	st1w	4	347	f 32x1v 347is88	1	f 32t8	1	1	14	7	52								1
Head Off B	A160	Valv e room	f 2sm	f 1x4s	2	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
HeadOf f B	A160sb	SubBasement	f 2sm	f 1x4s	3	347	f 32x2v 347is88	1	f 32t8	2	2	1	5	52								0.1
HeadOf f B	A165	Women's wash	st1	st1w	5	347	f 32x1v 347is88	1	f 32t8	1	1	14	7	52								1
Head Off B	A170	Of f ice	f 4	f 2x4r	10	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
HeadOf f B	A200A	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Head Off B	A215	Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H	
HeadOf f B	A220A	Reception	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52							1
Head Off B	A230	Storage	l2	f 1x4s1o	3	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52							0.2
HeadOf f B	A240	chemical room	lv	f 1x4s2w	4	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52							0.2
HeadOf f B	A25	Storage	st2	st2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52							0.1
HeadOf f B	A254A	Janitorial	l2	f 1x4s1o	2	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52							0.2
HeadOf f B	A254B	Clean storage	st2	st2o	2	347	f 32x1v 347is88	1	f 32t8	2	2	2	7	52							0.2
Head Off B	A290	Prof ac Office	f 4-4	f 2x4r	13	347	f 32v 347is88	1	f 32t8	4	4	12	5	52							1
Head Off B	A45	Electrical Roon	st2	st2o	1	347	f 32x2v 347is88	2	f 32t8	2	2	1	7	52							0.1
Head Off B	B1	Storage	l	f 1x4s2o	4	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52							0.2
HeadOf f B	B10	Open Of f ice	st2	st2eo	75	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52							1
Head Off B	B10	Open Of f ice	potc	pot	76	347	cf l13	1	cf l13quad	2	2	14	7	52							1
HeadOf f B	B10	Open Of f ice	ex2	exit	4	347	ledv 347	1	led	1	1	24	7	52							1
Head Off B	B10	Open Of f ice	f 4	f 2x4r	59	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52							1
HeadOf f B	B11	Computer roon	st2	st2eo	10	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52							1
HeadOf f B	B12	Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52							1
HeadOf f B	B12	TelephoneRoon	st2	st2eo	4	347	f 32x2v 347is88	1	f 32t8	2	2	1	5	52							0.1
HeadOf f B	B13	Tel com	st2	st2o	4	347	f 32x2v 347is88	2	f 32t8	2	2	1	7	52							0.1
HeadOf f B	B2	Storage	k	key less	2	347	noballast	0	i100a	1	1	2	7	52							0.2
HeadOf f B	B3	Garbage	l2	f 1x4s1o	5	347	f 32x1v 347is88	1	f 32t8	1	1	14	7	52							1
HeadOf f B	B4	Corridor	f 4	f 2x4r	13	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52							1
HeadOf f B	B5	Open Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52							1
HeadOf f B	B6	Storage	l2	f 1x4s1o	5	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52							0.2
HeadOf f B	B7	Storage	l	f 1x4s2o	4	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52							0.2
HeadOf f B	B70	Open Of f ice	f 4	f 2x4r	107	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52							1
HeadOf f B	B70	Open Of f ice	ex2	exit	2	347	ledv 347	1	led	1	1	24	7	52							1
HeadOf f B	B70E	Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52							1
HeadOf f B	B70F	Of f ice	f 4	f 2x4r	10	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52							1
HeadOf f B	B70G	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52							1

# Lighting Survey

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Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
HeadOf f B	B70H	Open Of f ice	f 4	f 2x4r	33	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
HeadOf f B	B70H	Open Of f ice	f 4	f 2x4r	39	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
HeadOf f B	B70H	Open Of f ice	f 2x2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	14	7	52								1
HeadOf f B	B70H	Open Of f ice	ex2	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
HeadOf f B	B8	Mechanical Ro l		f 1x4s2o	12	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
HeadOf f B	B9	Kitchen	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52								1
HeadOf f B	CBA	Corridor	f 4	f 2x4r	15	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52								1
HeadOf f B	CBB	Corridor	l2	f 1x4s1o	12	347	f 32x1v 347is88	1	f 32t8	1	1	14	7	52								1
HeadOf f B	CBC	Corridor	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
HeadOf f B	CBD	Corridor	f 4	f 2x4r	21	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
HeadOf f B	CBD	Corridor	ex2	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
HeadOf f B	EF6	Of f ice	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
HeadOf f B	EF6	Of f ice	l	f 1x4s2o	3	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
HeadOf f B	Generator Ro	Generator Rm	l2	f 1x4s1o	9	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52								0.2
HeadOf f B	LD1	LoadingDock	l	f 1x4s2o	25	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
HeadOf f B	LD1	Of f ice	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
HeadOf f B	LD2	Exterior Loadin	HO	f 1x4s2o	44	347	f 48x2	1	f 48t12HO	2	2	24	7	52								1
HeadOf f B	Mech 1	MechanicalRoc	l2	f 1x4s1o	15	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2
HeadOf f B	Mech 1	MechanicalRoc	l	f 1x4s2o	20	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
HeadOf f B	Mech 1	Mechanical Ro st	1	st1w	10	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2
HeadOf f GR	1001	ID Of f ice	f 2sm	f 1x4s	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
HeadOf f GR	1015	Electrical Roon	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								0.2
HeadOf f GR	1022A	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
HeadOf f GR	1022A	Open Of f ice	f 2x2	f 2x2r	13	347	f 17x2v 347is92	1	f 17t8	2	2	16	7	52								1
HeadOf f GR	1022A	Open Of f ice	f 4	f 2x4r	38	347	f 32x2v 347is88	1	f 32t8	2	2	16	7	52								1
HeadOf f GR	1022B	Open Of f ice	f 4	f 2x4r	37	347	f 32x2v 347is88	1	f 32t8	2	2	16	7	52								1
HeadOf f GR	1022B	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
HeadOf f GR	1022C	Open Of f ice	f 4	f 2x4r	18	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1

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Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
HeadOf f GR	1022C	Open Of f ice	f 2x2	f 2x2r	9	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
HeadOf f GR	1022C	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
HeadOf f GR	1022D	Open Of f ice	f 4	f 2x4r	31	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	1022D	Open Of f ice	f 2x2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
HeadOf f GR	1022E	Open Of f ice	f 2x2	f 2x2r	6	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
HeadOf f GR	1022E	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
HeadOf f GR	1023	MeetingRoom	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	16	7	52								1
HeadOf f GR	1025	Open Of f ice	f 4	f 2x4r	54	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
HeadOf f GR	1025	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
HeadOf f GR	1025A	Board Room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
HeadOf f GR	1042	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
HeadOf f GR	1044	SNC Lav alin	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
HeadOf f GR	1045	Male washroon	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	1046	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
HeadOf f GR	1047	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52								0.2
HeadOf f GR	1048	Of f ice	f 4sm	f 2x4s	4	347	f 32x2v 347is88	1	f 32t8	2	2	17	7	52								1
HeadOf f GR	1049	Electrical Room		f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								0.2
HeadOf f GR	1107	Board Room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
HeadOf f GR	1115	Women's wash	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	1115	Women's wash	f 2-17	f 1x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
HeadOf f GR	1116	Male washroon	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	112	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	17	7	52								1
HeadOf f GR	1121	Meeting Room	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	17	7	52								1
HeadOf f GR	1126	Call Centre	f 4	f 2x4r	22	347	f 32x2v 347is88	1	f 32t8	2	2	17	7	52								1
HeadOf f GR	1129	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	17	7	52								1
HeadOf f GR	1129A	MeetingRoom	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	17	7	52								1
HeadOf f GR	1129B	Meeting Room	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	17	7	52								1
HeadOf f GR	1129C	Board Room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1

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Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
HeadOf f GR	113	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	1130	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	1130	Of f ice	f 2x2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
HeadOf f GR	1132	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	1134	HealthRoom	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	1134	Health Room	st1	st1w	3	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
HeadOf f GR	1134	HealthRoom	f 2x2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
HeadOf f GR	1136	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	1137	ElectricalRoom k		key less	1	347	noballast	0	i100a	1	1	1	7	52								0.1
HeadOf f GR	1139	Women's wash f 2		f 1x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	1139	Women's wash f 1		f 1x2s	1	347	f 17x1is92	1	f 17t8	1	1	24	7	52								1
HeadOf f GR	135	Human resourc f 4		f 2x4r	33	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	135A	Storage	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	135B	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	20	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	21	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	22	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	225	Corridor	f 4	f 2x4r	12	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	225A	Corridor	f 4	f 2x4r	10	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	225A	Seating	st1	st1w	2	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
HeadOf f GR	24	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	25	Board Room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	C-Caf eteria	Corridor	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	11	7	52								1
HeadOf f GR	C- Cafeteria	Corridor	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
HeadOf f GR	C1	Corridor	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	C1	Corridor	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
HeadOf f GR	C1022	Corridor	f 2x2	f 2x2r	3	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
HeadOf f GR	C2	Corridor	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1



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				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
HeadOf f GR	C2	Corridor	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	17	7	52								1
HeadOf f GR	C3	Corridor	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	C4	Corridor	f 4	f 2x4r	13	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	Caf eteria	Caf eteria,	Fpl	f 2x2r	84	347	cf l40	3	cf l40dual	3	3	11	7	52								1
HeadOf f GR	Caf eteria	Caf eteria,	f 4-1	f 2x4r	58	347	f 32x1v 347is88	1	f 32t8	1	1	11	7	52								1
HeadOf f GR	Caf eteria	Caf eteria,	ex2	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
HeadOf f GR	CGI	Corridor	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	11	7	52								1
HeadOf f GR	Elev atorLobb	Elev ator lobby AC1		accent	2	347	cf l13	1	cf l13dual	1	1	24	7	52								1
HeadOf f GR	EVG1	Elev ator lobby f 4		f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
HeadOf f GR	G Lobby	Main Lobby	potc	pot	8	347	cf l13	1	cf l13quad	2	2	24	7	52								1
HeadOf f GR	G Lobby	Elev ator lobby Ac2		accent	4	347	htmr	1	ht50mr16	1	1	24	7	52								1
HeadOf f GR	G Lobby	Elevator Lobby mr16		unknown	11	347	htmr	1	ht50mr16	1	1	24	7	52								1
HeadOf f GR	G Lobby	Elevator Lobby potc		pot	10	347	cf l13	1	cf l13quad	2	2	24	7	52								1
HeadOf f GR	G Lobby	Elevator Lobby v		accent	4	347	noballast	0	ht75par38	1	1	24	7	52								1
Head	G1	Storage	f 4	f 2x4r	17	347	f 32x2v 347is88	1	f 32t8	2	2	5	7	52								0.5
HeadOf f GR	Serv ery	Servey	pot2	pot	6	347	cf l13	1	cf l13quad	2	2	11	7	52								1
HeadOf f GR	Serv ery	Servey	f 2x2rf	f 2x2r	29	347	f 17x2v 347is92	2	f 17t8	2	2	11	7	52								1
Head	Serv ery	Servey	hot	unknown	7	347	noballast	0	hir100par38	1	1	11	7	52								1
HeadOf f GR	Serv ery	Servey	pot2	pot	11	347	cf l13	1	cf l13quad	2	2	11	7	52								1
Head	TrilliumCafe	Store	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	1	5	52								0.1
HeadOf f GR	TrilliumCafe	Store	tr	trackh	2	347	htmr	2	ht50mr16	2	2	1	5	52								0.1
Head	TrilliumCafe	Store	tr4	trackh	1	347	htmr	4	ht50mr16	4	4	1	5	52								0.1
HeadOf f GR	TrilliumCafe	Store	tr5	trackh	2	347	htmr	5	ht50mr16	5	5	1	5	52								0.1
HeadOf f GR	TrilliumCafe	Store	poti	pot	10	347	noballast	0	i100a	1	1	1	5	52								0.1
HeadOf f GR	TrilliumCafe	Storage	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	1	5	52								0.1
Roof	Roof	Rooftop	wp	wp	3	347	mh100	1	mh100ed17	1	1	12	7	52								0
Roof	Roof	Rooftop	wp	wp	2	347	mh100	1	mh100ed17	1	1	12	7	52								0
Roof	Roof	Rooftop	f 2x4	f 2x4s	1	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Roof	Roof	Rooftop	f 2x2sr	f 2x2sm	2	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
Roof	Roof	Rooftop	st2	st2eo	15	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52								1
Stairs	A stairs	Stairs	potQ	pot	2	347	cf l13	0	cf l13quad	1	1	24	7	52								1
Stairs	A stairs	Stairs	f 4sm	f 2x4s	13	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Stairs	B Stairs	Stairs	AC4	ws	13	347	cf l13	2	cf l13dual	2	2	24	7	52								1
Stairs	B Stairs	Stairs	potQ	pot	2	347	cf l13	0	cf l13quad	1	1	24	7	52								1
Stairs	C Stairs	Stairs	AC3	accent	15	347	cf l13	1	cf l13dual	3	3	24	7	52								1
Stairs	D Stairs	Stairs	f 4sm	f 2x4s	15	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Stairs	F Stairs	Stairs	f 2x2	f 2x2r	2	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
Stairs	F Stairs	Stairs	f 4	f 2x4r	12	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Stairs	F Stairs	Stairs	st2wm	st2eo	12	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Stairs	H Stairs	Stairs	potQ	pot	3	347	cf l13	0	cf l13quad	1	1	24	7	52								1
Stairs	H Stairs	Stairs	f 2x2sr	f 2x2sm	1	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
Stairs	H Stairs	Stairs	st2wm	st2eo	12	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Stairs	H stairs	Stairs	f 4sm	f 2x4s	12	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 10th	10-005	Open Of f ice	f 4	f 2x4r	22	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52								1
Tower 10th	10-005	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 10th	10-008	Storage	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52								0.5
Tower 10th	10-010	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52								0.5
Tower 10th	10-015	Board Room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52								0.5
Tower 10th	10-020	Board Room	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52								0.5
Tower 10th	10-035	Storage	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52								0.5
Tower 10th	10-050	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52								0.5
Tower 10th	10-055	Board Room	f 4	f 2x4r	16	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52								0.5
Tower 10th	10-055	Board Room	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 10th	10-060	Open Of f ice	f 4-12	f 2x4r	13	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52								0.5
Tower 10th	10-060	Open Of f ice	ex2	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 10th	10-060	Open Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52								0.5

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H	
Tower 10th	10-078	Data room	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10-078	Data room	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52							1
Tower 10th	10-080A	Sprinkler Room	st1	st1w	1	347	f32x1v347is88	1	f32t8	1	1	5	5	52							0.5
Tower 10th	10-1	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	5	5	52							0.5
Tower 10th	1019	Corridor	f 2x2r-	f 2x2r	5	120	f 17x4is90	1	f 17t8	4	4	24	7	52							1
Tower 10th	1019A	women'swashr	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	1019A	women's wash	st1-12	st1w	1	120	f 32x1v 347is88	1	f 32t8	1	1	5	5	52							0.5
Tower 10th	1019B	women's wash	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	1019C	Handicap wash	f 2x2r-	f 2x2r	1	120	f 17x4is90	1	f 17t8	4	4	5	5	52							0.5
Tower 10th	1059	Male washroom	f 2-12C	f 1x4r	4	120	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10A	ComputerServ	f 4	f 2x4r	37	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10B	ComputerServ	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52							1
Tower 10th	10B	Computer Serv	f 4	f 2x4r	37	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10C	Computer Serv	f 4	f 2x4r	19	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10D	Data room	f 4	f 2x4r	38	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10E	Data room	f 4	f 2x4r	39	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10E	Data room	ex	exit	3	347	ledv 347	1	led	1	1	24	7	52							1
Tower 10th	10F	Data room	f 4	f 2x4r	50	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10F	Data room	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52							1
Tower 10th	10G	Data room	f 4	f 2x4r	42	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10H	Data room	f 4	f 2x4r	60	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10I	Data room	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52							1
Tower 10th	10I	Data room	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10J	Storage	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10K	emptyof f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10L	Kitchen	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	5	5	52							0.5
Tower 10th	10M	Lounge	pot50	pot	2	347	noballast	0	ht50par30	1	1	5	5	52							0.5
Tower 10th	10M	Lounge	pot75	pot	4	347	noballast	0	ht75par38	1	1	5	5	52							0.5

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Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 10th	C10A	Corridor	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 10th	C10B	Corridor	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 10th	C10B	Corridor	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 10th	C10C	Corridor	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 10th	C10D	Corridor	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 10th	C10E	Corridor	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 10th	C10E	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 10th	C10F	Corridor	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 10th	C10F	Corridor	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 10th	Elevator Lobb	Elevator Lobby pot13		pot	8	347	cfl13	1	cfl13quad	2	2	5	5	52								0.5
Tower 10th	Elevator Lobb	Elevator Lobby Ac1		Accent	4	347	cfl13	1	cfl13dual	1	1	5	5	52								0.5
Tower 10th	Elevator Lobb	Elevator Lobby fV		f1x4p2wph	2	347	f32x2v347is88	1	f 32t8	2	2	5	5	52								0.5
Tower 11	11106	Storage	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 11	11108	MechanicalRoc	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 11	11108	MechanicalRoc	l2	f 1x4s1o	10	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2
Tower 11	11109	Storage	l	f 1x4s2o	2	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 11	1111	ElectricalRoom	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 11	11115	Storage	l2	f 1x4s1o	2	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2
Tower 11	11120	MechanicalRoc	l2	f 1x4s1o	21	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2
Tower 11	11124	Storage	l2	f 1x4s1o	8	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2
Tower 11	11124	Storage	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 11	11127	Elev ator Shaft	st2	st2eo	9	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 11	11131	Janitorial	k	key less	1	347	noballast	0	i100a	1	1	1	5	52								0.1
Tower 11	11135	Mechanical Ro	l2	f 1x4s1o	1	347	f 32x1v 347is88	1	f 32t8	1	1	12	5	52								1
Tower 11	11135	Mechanical Ro	l12	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52								1
Tower 11	11156	Corridor	l2	f 1x4s1o	4	347	f 32x1v 347is88	1	f 32t8	1	1	12	5	52								1
Tower 11	11158	Electrical Room	l	f 1x4s2o	13	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 11	11161	ElectricalRoom	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2

# Lighting Survey

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Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 11	11162	MechanicalRoc l		f 1x4s2o	2	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 11	11162	MechanicalRoc l3		f 1x4s1o	30	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2
Tower 11	11162	MechanicalRoc ex		exit	3	347	ledv 347	1	led	1	1	24	7	52								1
Tower 11	11163	Elev ator rm st2		st2eo	4	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 11	11163	Women's wash f 2		f 1x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 11	11163	Male washroon f 2		f 1x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 11	11163	Janitorial k		key less	1	347	noballast	0	i100a	1	1	1	5	52								0.1
Tower 11	11179	AHU3&4 k		key less	1	347	noballast	0	i100a	1	1	1	5	52								0.1
Tower 11	11184	Belt room l		f 1x4s2o	4	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 11	9	UPS/ Elevator l		f 1x4s2o	27	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 11	9	UPS/Elev ator ex		exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 11	9B	Elev ator Lobby f 4		f 2x4r	12	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52								1
Tower 11	9C	Of f ice l		f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52								1
Tower 11	9D	Battery Rm lv		f 1x4s2w	13	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 11	AC1	Air conditioning l3		f 1x4s1o	7	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2
Tower 11	ACA	MechanicalRoc k		key less	4	347	noballast	0	i100a	1	1	1	5	52								0.1
Tower 2nd	2-01	Storage f 4		f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2-02	Of f ice / Board f 4		f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	207	ElectricalRoom l		f 1x4s2o	2	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 2nd	213	Storage f 2		f 1x4r	9	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 2nd	219	Corridor f 2x2r-		f 2x2r	5	120	f 17x4is90	1	f 17t8	4	4	12	7	52								1
Tower 2nd	219A	Handicap Waslf 2x2r-		f 2x2r	1	120	f 17x4is90	1	f 17t8	4	4	24	7	52								1
Tower 2nd	219B	Women's wash f 2-12C		f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 2nd	219C	Women's wash f 2-12C		f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 2nd	219C	Women's wash st1-12		st1w	1	120	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Tower 2nd	231	Janitorial st1		st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52								0.2
Tower 2nd	244	Serv er ex		exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 2nd	244	Serv er f 4		f 2x4r	23	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1

# Lighting Survey

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Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 2nd	246	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	246A	Waiting Room	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	246B	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2-50	Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	255	Electrical Room	f 4	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								0.2
Tower 2nd	256	Open Of f ice	f 4	f 2x4r	47	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	256A	ElectricalRoom	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 2nd	256B	Inv entory	pot	pot	3	347	noballast	0	nolamp	0	0	0	0	0								0
Tower 2nd	256B	Inv entory	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 2nd	256B	Inv entory	f 4	f 2x4r	26	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	256C	Serv er room	f 4	f 2x4r	14	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	256D	Board Room	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	256E	Meeting Room	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	259	Male washroo	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 2nd	260	MeetingRoom	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	266	Kitchen	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	276	Open Of f ice	f 4	f 2x4r	38	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	276A	Storage	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 2nd	283	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52								0.2
Tower 2nd	2A	Open Of f ice	f 4	f 2x4r	27	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2A	Open Of f ice	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 2nd	2B	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2C	Open Of f ice	f 4	f 2x4r	27	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2C	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 2nd	2C	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 2nd	2D	Open Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2F	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2G	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 2nd	2H	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2H	Of f ice	f 2x2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Tower 2nd	2I	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2J	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2K	Open Of f ice	f 4	f 2x4r	11	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2L	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2M	Open Of f ice	f 4	f 2x4r	11	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2N	Open Of f ice	f 4	f 2x4r	16	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2O	Open Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2O	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 2nd	2P	Open Of f ice	f 4-s	f 2x4s	5	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 2nd	2Q	Open Of f ice	f 4	f 2x4r	24	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2R	Open Of f ice	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 2nd	2R	Open Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2S	Open Of f ice	f 4	f 2x4r	15	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	2T	Open Of f ice	f 4	f 2x4r	20	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	C2A	Corridor	f 4	f 2x4r	10	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 2nd	C2A	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 2nd	C2B	Corridor	f 4	f 2x4r	10	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 2nd	C2B	Corridor	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 2nd	Elev ator Lobt Elev ator Lobby	pot13	pot	pot	8	347	cf l13	1	cf l13quad	2	2	24	7	52								1
Tower 2nd	Elev ator Lobt Elev ator Lobby	Ac1	accent	accent	4	347	cf l13	1	cf l13dual	1	1	24	7	52								1
Tower 2nd	Elev ator Lobt Elev ator Lobby	f V	f 1x4p2wph	f 1x4p2wph	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 2nd	Ft elevator Lo Ft Elevator Lot	f 4	f 2x4r	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower 3rd	307	ElectricalRoom	f 4	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 3rd	311	Kitchen	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	312A	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	312B	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 3rd	313	Storage	f 2	f 1x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 3rd	319	Corridor	f 2x2	f 2x2r	5	347	f 17x2v 347is92	1	f 17t8	2	2	14	7	52								1
Tower 3rd	319A	Handicap Wasl	f 2x2r-	f 2x2r	1	120	f 17x4is90	1	f 17t8	4	4	24	7	52								1
Tower 3rd	319B	Women's wash	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 3rd	319C	Women's wash	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 3rd	319C	Women's wash	st1-12	st1w	1	120	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Tower 3rd	331	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	1	7	52								0.1
Tower 3rd	340	Vestibule	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 3rd	340A	of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	350	Classroom	f 4	f 2x4r	36	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	350	Classroom	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 3rd	350A	Of f ice	f 2x2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	14	7	52								1
Tower 3rd	352B	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	354	Vestibule	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 3rd	354	Vestibule	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 3rd	355	ElectricalRoom	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 3rd	359	Male Washroo	f 2-12C	f 1x4r	4	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 3rd	383	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	1	7	52								0.1
Tower 3rd	3A	Open Of f ice	f 4	f 2x4r	16	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3B	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3B	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 3rd	3C	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3D	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3D	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 3rd	3E	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3F	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3F	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 3rd	3G	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1



# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 3rd	3H	Open Of f ice	f 4	f 2x4r	34	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3I	Open Of f ice	f 4	f 2x4r	17	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3J	Open Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3J	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 3rd	3K	Open Of f ice	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3L	Open Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3L	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 3rd	3M	Open Of f ice	f 4	f 2x4r	11	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3N	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3O	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3P	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3P	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 3rd	3Q	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3R	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3S	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3T	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 3rd	3T	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	3U	Open Of f ice	f 4	f 2x4r	14	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	C3A	Corridor	f 4	f 2x4r	15	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	C3A	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 3rd	C3B	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 3rd	C3B	Corridor	f 4	f 2x4r	14	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	C3B	Corridor	f 2x2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	14	7	52								1
Tower 3rd	C3C	Corridor	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 3rd	Elev atorLobb	Elev atorLobby	Ac1	accent	4	347	cf l13	1	cf l13dual	1	1	24	7	52								1
Tower 3rd	Elev atorLobb	Elev atorLobby	f V	f 1x4p2wph	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 3rd	Elev atorLobb	Elev atorLobby	pot13	pot	8	347	cf l13	1	cf l13quad	2	2	24	7	52								1
Tower 3rd	Staf f Corner	Staf f Corner	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 4th	407	ElectricalRoom l		f 1x4s2o	2	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 4th	411	Kitchen	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	412A	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	413	Storage	f 2	f 1x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								0.2
Tower 4th	419	Corridor	f 2x2	f 2x2r	5	347	f 17x2v 347is92	1	f 17t8	2	2	24	7	52								1
Tower 4th	419A	Handicap wash	f 2x2r-	f 2x2r	1	120	f 17x4is90	1	f 17t8	4	4	24	7	52								1
Tower 4th	419B	Women'swash	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 4th	419C	Women's wash	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Tower 4th	419C	Women's wash	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 4th	431	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2
Tower 4th	455	Electrical Roon l		f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 4th	459	Men's wash	roof 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 4th	462A	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	462B	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	462C	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	462D	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	472A	Board Room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	472A	Board Room	f 2x2-2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	14	7	52								1
Tower 4th	483	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2
Tower 4th	484A	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	484B	Board Room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	484B	Board Room	f 2x2-2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	14	7	52								1
Tower 4th	4A	Open Of f ice	f 4	f 2x4r	8	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4B	Open Of f ice	f 4	f 2x4r	27	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4B	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 4th	4C	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4D	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 4th	4D	Open Of f ice	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 4th	4E	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4F	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4G	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4H	Open Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4H	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 4th	4I	Open Of f ice	f 4	f 2x4r	22	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4I	Open Of f ice	f 4sm	f 2x4s	5	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4J	Open Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4J	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 4th	4K	Open Of f ice	f 2x2	f 2x2r	2	347	f 17x2v 347is92	1	f 17t8	2	2	14	7	52								1
Tower 4th	4K	Open Of f ice	f 4	f 2x4r	17	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4L	Open Of f ice	f 4	f 2x4r	26	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4M	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4N	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 4th	4N	Open Of f ice	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4O	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4P	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 4th	4P	Open Of f ice	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4Q	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4R	Open Of f ice	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4S	Open Of f ice	f 4	f 2x4r	18	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4T	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4T	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 4th	4U	Open Of f ice	f 4sm	f 2x4s	5	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4U	Open Of f ice	f 4	f 2x4r	24	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4V	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	4V	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 4th	4W	Open Of f ice	f 4	f 2x4r	35	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 4th	C4A	Corridor	f 4	f 2x4r	15	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	C4A	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 4th	C4B	Corridor	f 2x2	f 2x2r	5	347	f 17x2v 347is92	1	f 17t8	2	2	14	7	52								1
Tower 4th	C4B	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 4th	C4C	Corridor	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 4th	Elev ator Lobt Elev ator LobbyAc1	accent		accent	4	347	cf l13	1	cf l13dual	1	1	24	7	52								1
Tower 4th	Elev ator Lobt Elev ator Lobbyf V	f 1x4p2wph		f 1x4p2wph	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 4th	Elev ator Lobt Elev ator Lobbypot13	pot		pot	8	347	cf l13	1	cf l13quad	2	2	24	7	52								1
Tower 4th	Staf f Corner	Staf f Corner Post Dated	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	506A	Cheques	f 4-4	f 2x4r	8	347	f 32v 347is88	1	f 32t8	4	4	14	7	52								1
Tower 5th	507	Room	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 5th	511	Storage	f 2	f 1x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 5th	512A	Lunch room	f 4-4	f 2x4r	3	347	f 32v 347is88	1	f 32t8	4	4	14	7	52								1
Tower 5th	513	Kitchen	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	519	Corridor	f 2x2r-	f 2x2r	5	120	f 17x4is90	1	f 17t8	4	4	14	7	52								1
Tower 5th	519A	Handicap Waslf	f 2x2r-	f 2x2r	2	120	f 17x4is90	1	f 17t8	4	4	24	7	52								1
Tower 5th	519B	Women's wash f 2-12C	f 1x4r	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 5th	519C	washroom	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 5th	519C	Women's wash st1-12	st1w	st1w	1	120	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Tower 5th	524A	Serv er	f 4-4	f 2x4r	6	347	f 32v 347is88	1	f 32t8	4	4	1	7	52								0.1
Tower 5th	524B	Of f ice	f 4-4	f 2x4r	3	347	f 32v 347is88	1	f 32t8	4	4	14	7	52								1
Tower 5th	524C	Of f ice	f 4-4	f 2x4r	3	347	f 32v 347is88	1	f 32t8	4	4	14	7	52								1
Tower 5th	531	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	1	7	52								0.1
Tower 5th	555	Room	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 5th	559	Washroom	f 2-12C	f 1x4r	4	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 5th	583	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	1	7	52								0.1
Tower 5th	584B	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	584C	Board Room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 5th	5A	Open Of f ice	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5A	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 5th	5B	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5C	Open Of f ice	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5C	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 5th	5D	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5E	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5F	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5G	Open Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5H	Open Of f ice	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5I	Open Of f ice	f 4	f 2x4r	21	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5J	Open Of f ice	f 4	f 2x4r	25	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5J	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 5th	5K	Open Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5L	Open Of f ice	f 4	f 2x4r	17	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5M	Open Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5N	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 5th	5N	Open Of f ice	f 4	f 2x4r	23	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5O	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5P	Open Of f ice	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5Q	Open Of f ice	f 4	f 2x4r	17	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5R	Open Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5R	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 5th	5S	Open Of f ice	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5T	Open Of f ice	f 4	f 2x4r	19	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5U	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 5th	5U	Open Of f ice	f 4	f 2x4r	32	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	5V	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 5th	C5A	Corridor	f 4	f 2x4r	16	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	C5A	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 5th	C5B	Corridor	f 4	f 2x4r	16	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	C5B	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 5th	C5C	Corridor	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 5th	Elev ator Lobby	Elev ator Lobby	f V	f 1x4p2wph	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 5th	Elev ator Lobby	Elev ator Lobby	Ac1	accent	4	347	cf l13	1	cf l13dual	1	1	24	7	52								1
Tower 5th	Elev ator Lobby	Elev ator Lobby	pot13	pot	8	347	cf l13	1	cf l13quad	2	2	24	7	52								1
Tower 5th	Staf f corner	Staf f corner	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 6th	606B	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	606B	Of f ice	f 2x2r	f 2x2r	2	347	f 17x4is90	1	f 17t8	4	4	18	7	52								1
Tower 6th	606C	Of f ice	f 2x2r	f 2x2r	2	347	f 17x4is90	1	f 17t8	4	4	18	7	52								1
Tower 6th	606C	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	606D	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	606D	Of f ice	f 2x2r	f 2x2r	1	347	f 17x4is90	1	f 17t8	4	4	18	7	52								1
Tower 6th	606E	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	607	Room	l	f 1x4s2o	2	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 6th	611	Storage	f 2	f 1x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 6th	613	Kitchen	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	619	Corridor	f 2x2r-	f 2x2r	5	120	f 17x4is90	1	f 17t8	4	4	18	7	52								1
Tower 6th	619A	Handicap Wash	f 2x2r-	f 2x2r	1	120	f 17x4is90	1	f 17t8	4	4	24	7	52								1
Tower 6th	619B	women's wash	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 6th	619C	women's wash	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 6th	619C	women's wash	st1-12	st1w	1	120	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Tower 6th	631	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	1	7	52								0.1
Tower 6th	655	ElectricalRoom	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 6th	659	Malewashroom	f 2-12C	f 1x4r	4	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 6th	683	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	1	7	52								0.1
Tower 6th	690	Call Centre	f 8	f 1x8sm	6	347	f 32x2v 347is88	2	f 32t8	4	4	18	7	52								1
Tower 6th	690	Call Centre	f 8	f 1x8sm	4	347	f 32x2v 347is88	2	f 32t8	4	4	18	7	52								1
Tower 6th	6A	Open Of f ice	f 4	f 2x4r	18	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6B	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6C	Open Of f ice	f 4	f 2x4r	9	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6C	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 6th	6D	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6D	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 6th	6E	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6F	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6G	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6H	Open Of f ice	f 4	f 2x4r	27	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6H	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 6th	6I	Open Of f ice	f 4	f 2x4r	23	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6I	Open Of f ice	f 2x2r	f 2x2r	2	347	f 17x4is90	1	f 17t8	4	4	18	7	52								1
Tower 6th	6I	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 6th	6J	Open Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6K	Open Of f ice	f 4	f 2x4r	11	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6K	Open Of f ice	f 2x2r	f 2x2r	1	347	f 17x4is90	1	f 17t8	4	4	18	7	52								1
Tower 6th	6K	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 6th	6L	Open Of f ice	f 2x2r	f 2x2r	2	347	f 17x4is90	1	f 17t8	4	4	18	7	52								1
Tower 6th	6L	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6L	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 6th	6M	Open Of f ice	f 4	f 2x4r	8	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6M	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 6th	6N	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6O	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 6th	6P	Open Of f ice	f 4	f 2x4r	27	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6Q	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6Q	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 6th	6R	Open Of f ice	f 4	f 2x4r	29	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6S	Open Of f ice	f 4	f 2x4r	17	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6T	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 6th	6T	Open Of f ice	f 4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6U	Open Of f ice	f 4	f 2x4r	33	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	6U	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 6th	C6A	Corridor	f 4	f 2x4r	10	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	C6A	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 6th	C6B	Corridor	ex	exit	3	347	ledv 347	1	led	1	1	24	7	52								1
Tower 6th	C6B	Corridor	f 4	f 2x4r	10	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	C6C	Corridor	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 6th	Elev ator Lobt Elev ator Lobby	f V	f 1x4p2wph	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52									1
Tower 6th	Elev atorLobb Elev atorLobby	Ac1	accent	4	347	cf l13	1	cf l13dual	1	1	24	7	52									1
Tower 6th	Elev ator Lobt Elev ator Lobby	pot13	pot	8	347	cf l13	1	cf l13quad	2	2	24	7	52									1
Tower 6th	Staf f corner	Staf f Corner	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower 7th	707	ElectricalRoom	l	f 1x4s2o	2	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 7th	711	Kitchen	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	711A	Electrical Room	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	5	52								0.1
Tower 7th	712B	Telecom. Rm	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	1	5	52								0.1
Tower 7th	713	Storage	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	1	5	52								0.1
Tower 7th	719	Corridor	f 2x2r	f 2x2r	5	347	f 17x4is90	1	f 17t8	4	4	14	5	52								1
Tower 7th	719A	Handicap wash	f 2x2r	f 2x2r	1	347	f 17x4is90	1	f 17t8	4	4	14	5	52								1
Tower 7th	719B	Women'swash	f 2	f 1x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	719C	Women's wash	f 2	f 1x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	719C	Women's wash	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	14	5	52								1



# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 7th	720	Traffic Control	f4	f 2x4r	15	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 7th	720A	Traffic Control	f4	f 2x4r	9	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	731	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2
Tower 7th	755	Electrical Room	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	2	5	52								0.2
Tower 7th	759	Male washroom	f2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	776A	Office	f4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	776B	Office	f4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	776C	office	f4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	776D	Photocopy /Stcf	wm	st1w	4	347	f 32x1v 347is88	1	f 32t8	1	1	14	5	52								1
Tower 7th	776E	Call Training R	f2sm	f 1x4s	12	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	783	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2
Tower 7th	7A	Open Office	f4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7B	Open Office	f4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7B	Open Office	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 7th	7C	Open Office	f4	f 2x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7CA	Corridor	f4	f 2x4r	10	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7CA	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 7th	7CB	Corridor	f4	f 2x4r	10	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7CB	Corridor	ex	exit	3	347	ledv 347	1	led	1	1	24	7	52								1
Tower 7th	7D	Open Office	f4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7E	Open Office	f4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7F	Open Office	f4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7G	Open Office	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 7th	7G	Open Office	f4	f 2x4r	13	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7H	Open Office	f4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7I	Corridor	f4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7J	Open Office	f4	f 2x4r	15	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7J	Open Office	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 7th	7K	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7K	Open Of f ice	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 7th	7L	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7M	Open Of f ice	f 4	f 2x4r	16	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7N	Open Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7O	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 7th	7O	Open Of f ice	f 4	f 2x4r	17	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7P	Open Of f ice	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 7th	7P	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7Q	Open Of f ice	f 4	f 2x4r	30	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7R	Open Of f ice	f 4	f 2x4r	20	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7S	Open Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7S	Open Of f ice	f 2x2r	f 2x2r	3	347	f 17x4is90	1	f 17t8	4	4	14	5	52								1
Tower 7th	7S	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 7th	7T	Open Of f ice	f 4	f 2x4r	35	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	7T	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 7th	7U	Open Of f ice	f 4	f 2x4r	42	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	C7C	Corridor	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	Elev atorLobb	Elev atorLobby	Ac1	accent	4	347	cf l13	1	cf l13dual	1	1	14	5	52								1
Tower 7th	Elev atorLobb	Elev atorLobby	f V	f 1x4p2wph	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 7th	Elev atorLobb	Elev atorLobby	pot13	pot	8	347	cf l13	1	cf l13quad	2	2	14	5	52								1
Tower 7th	Staf f Corner	Staf f corner	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 8th	807	ElectricalRoom	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 8th	811	Kitchen	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	813	Storage	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 8th	819	WWRCorridor	f 2x2r	f 2x2r	5	347	f 17x4is90	1	f 17t8	4	4	24	7	52								1
Tower 8th	819A	Handicap Wasl	f 2x2r	f 2x2r	1	347	f 17x4is90	1	f 17t8	4	4	24	7	52								1
Tower 8th	819B	Women's wash	f 2	f 1x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H	
Tower 8th	819C	Women's wash	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52							0.1
Tower 8th	819C	Women's wash	f 2	f 1x4r	5	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52							1
Tower 8th	831	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	1	7	52							0.1
Tower 8th	834A	Training room	f 4	f 2x4r	24	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1
Tower 8th	834A	Training room	potmr	pot	6	347	htmr	1	ht50mr16	1	1	15	7	52							1
Tower 8th	834B	MeetingRoom	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1
Tower 8th	854B	Storage	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52							0.1
Tower 8th	855	Electrical Room	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52							0.1
Tower 8th	859	Male washroom	f 2	f 1x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52							1
Tower 8th	883	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	1	7	52							0.1
Tower 8th	884A	Board Room	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1
Tower 8th	884B	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1
Tower 8th	884C	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1
Tower 8th	884D	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1
Tower 8th	885	Janitorial	l	f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52							0.1
Tower 8th	8A	TrainingRoom	f 4	f 2x4r	16	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1
Tower 8th	8B	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52							1
Tower 8th	8B	Open Of f ice	f 4	f 2x4r	35	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1
Tower 8th	8C	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1
Tower 8th	8D	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52							1
Tower 8th	8D	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1
Tower 8th	8E	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1
Tower 8th	8F	OPen Of f ice	f 2x2	f 2x2r	2	347	f 17x2v 347is92	1	f 17t8	2	2	15	7	52							1
Tower 8th	8F	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52							1
Tower 8th	8F	Open Of f ice	f 4	f 2x4r	30	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1
Tower 8th	8G	OPen Of f ice	f 4	f 2x4r	9	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1
Tower 8th	8G	OPen Of f ice	f 2x2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	15	7	52							1
Tower 8th	8H	Open Of f ice	f 4	f 2x4r	32	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52							1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 8th	8H	Open Of f ice	f 2x2	f 2x2r	4	347	f 17x2v 347is92	1	f 17t8	2	2	15	7	52								1
Tower 8th	8I	Open Lounge	f 4	f 2x4r	26	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	8I	OpenLounge	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 8th	8J	Open Of f ice	f 4	f 2x4r	19	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	8k	Open Of f ice	f 4	f 2x4r	15	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	8k	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 8th	8L	Open Of f ice	f 4	f 2x4r	14	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	8M	Open Of f ice	f 4	f 2x4r	19	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	8N	Open Of f ice	f 4	f 2x4r	28	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	8N	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 8th	8O	Open Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	8P	Open Of f ice	f 4	f 2x4r	27	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	8P	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 8th	8Q	Open Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	8R	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 8th	8R	Open Of f ice	f 4	f 2x4r	30	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	8S	Open Of f ice	f 4	f 2x4r	17	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	C8A	Corridor	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	C8A	Corridor	f 2x2r	f 2x2r	1	347	f 17x4is90	1	f 17t8	4	4	15	7	52								1
Tower 8th	C8A	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 8th	C8A	Corridor	f 4	f 2x4r	14	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	C8B	Corridor	f 4	f 2x4r	15	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	C8B	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 8th	C8C	Corridor	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1
Tower 8th	Elev atorLobb	Elev atorLobby f V	f 1x4p2wph	pot	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 8th	Elev atorLobb	Elev atorLobby pot13	pot	pot	8	347	cf l13	1	cf l13quad	2	2	24	7	52								1
Tower 8th	Elev atorLobb	Elev atorLobby Ac1	accent	accent	4	347	cf l13	1	cf l13dual	1	1	24	7	52								1
Tower 8th	Staf f corner	Staf f Corner	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	15	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 9th	9020	Open Of f ice ex		exit	3	347	ledv 347	1	led	1	1	24	7	52								1
Tower 9th	9020	Open Of f ice f 4		f 2x4r	61	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 9th	9025	Electrical Roon l		f 1x4s2o	2	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 9th	9035A	Kitchen	f 2r	f 1x4r	9	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 9th	9040	Open Of f ice t5		f 1x8p2wph	10	347	f 28x2t5	1	f 28t5	4	4	24	7	52								1
Tower 9th	9040C	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9055A	Handicap wash	f 2x2r-	f 2x2r	1	120	f 17x4is90	1	f 17t8	4	4	24	7	52								1
Tower 9th	9055B	Women's wash	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 9th	9055C	Women'swash	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 9th	9055C	Women's wash	st1-12	st1w	1	120	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Tower 9th	9060	Open Of f ice f 4		f 2x4r	37	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9060	Open Of f ice ex		exit	1	347	ledv 347	1	led	1	1	14	7	52								1
Tower 9th	9065	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 9th	9070	Board Room	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 9th	9075	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 9th	9080	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9085	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	1	7	52								0.1
Tower 9th	9088	Lobby	f 4	f 2x4r	22	347	f 32x2v 347is88	1	f 32t8	2	2	14	5	52								1
Tower 9th	9088A	Board Room	f 4	f 2x4r	8	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9088A	Board Room	f 2x2	f 2x2r	3	347	f 17x2v 347is92	1	f 17t8	2	2	14	7	52								1
Tower 9th	9088A	Board Room	l	f 1x4s2o	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9088B	Of f ice	f 4	f 2x4r	8	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9088BB	Of f ice	f 4	f 2x4r	7	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9088C	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9088D	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9088E	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9088F	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9088G	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower 9th	9088H	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9088I	Storage	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 9th	9095A	ElectricalRoom I		f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 9th	9098A	Storage	f 1x4s	f 1x4p2w	4	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower 9th	9098A	Storage	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower 9th	9115	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	1	7	52								0.1
Tower 9th	9130	Open Of f ice	f 2x2-1	f 2x2r	1	347	f 17x1is92	1	f 17t8	1	1	14	7	52								1
Tower 9th	9130	Open Of f ice	f 4	f 2x4r	103	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9130	Open Of f ice	ex	exit	2	347	ledv 347	1	led	1	1	14	7	52								1
Tower 9th	9130A	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9130B	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9145	Male Washroo f 2-12C		f 1x4r	4	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 9th	9160	Open Of f ice	f 4	f 2x4r	21	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9160	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	14	7	52								1
Tower 9th	9198	Computer Serv f 8s	f 1x8p2wph		24	347	f 32x2v 347is88	2	f 32t8	4	4	14	7	52								1
Tower 9th	9198	Computer Serv f 1x4s	f 1x4p2w		5	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	9198B	Computer roon	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	C9A	Corridor	f 2	f 1x4r	15	347	f 32x2v 347is88	1	f 32t8	2	2	24	5	52								1
Tower 9th	C9A	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 9th	C9B	Corridor	f 4	f 2x4r	15	347	f 32x2v 347is88	1	f 32t8	2	2	24	5	52								1
Tower 9th	C9B	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower 9th	C9C	Corridor	f 2	f 1x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	5	52								1
Tower 9th	Elev ator Lob t Elev ator Lobby	f V	f 1x4p2wph		2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower 9th	Elev ator Lob t Elev ator Lobby	pot13	pot		8	347	cf l13	1	cf l13quad	2	2	24	7	52								1
Tower 9th	Elev atorLobb Elev atorLobby	Ac1	accent		4	347	cf l13	1	cf l13dual	1	1	24	7	52								1
Tower 9th	H9-64	Of f ice	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower 9th	H9-65	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	14	7	52								1
Tower Base	883	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	5	52								0.2

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower Base	BF washroom	BF Washroom	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Base	C23	Repair Shop	f 2	f 1x4r	12	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	C23	Repair Shop	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	C24	Print room	f 4	f 2x4r	51	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	C24A	Of f ice	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	C24B	Storage	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								0.2
Tower Base	C24B	Storage	f 2x2	f 2x2r	4	347	f 17x2v 347is92	1	f 17t8	2	2	2	7	52								0.2
Tower Base	C27A	Open Of f ice	f 4	f 2x4r	42	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	C36	Storage	f 4	f 2x4r	6	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								0.2
Tower Base	C47	Women's wash	f 2	f 1x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower Base	C47	Women'swash	st1	st1w	12	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Tower Base	C48	Of f ice	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	C49	Janitorial	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								0.2
Tower Base	C55	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52								0.2
Tower Base	C56	ElectricalRoom	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52								0.2
Tower Base	C65	Elev ator Shaft	k	key less	2	347	noballast	0	i100a	1	1	18	7	52								1
Tower Base	C66	Elev atorshaf t	k	key less	4	347	noballast	0	i100a	1	1	18	7	52								1
Tower Base	C76	Male washroo	f 2	f 1x4r	8	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower Base	C78	Storage	st2	st2eo	4	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								0.1
Tower Base	C82	ElectricalRoom	st1	st1w	2	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52								0.2
Tower Base	C83	Janitorial	st2	st2o	1	347	f 32x2v 347is88	2	f 32t8	2	2	1	7	52								0.1
Tower Base	C85	Shipping & Rec l		f 1x4s2o	75	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	C85	Shipping &Rec l		f 1x4s2o	89	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	C85	Shipping & Rex ex		exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower Base	C85A	Mechanical Ro k		key less	3	347	noballast	0	i100a	1	1	18	7	52								1
Tower Base	C85B	Valv e room	l	f 1x4s2o	4	347	f 32x2v 347is88	1	f 32t8	2	2	1	7	52								0.1
Tower Base	C87	Storage	st2	st2eo	2	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								0.2
Tower Base	C88	Storage	st2	st2eo	2	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								0.2

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower Base	CB1	Corridor	f 4	f 2x4r	12	347	f 32x2v 347is88	1	f 32t8	2	2	12	5	52								1
Tower Base	CB1	Corridor	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower Base	CB2	Corridor	f 4	f 2x4r	9	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	CB2	Corridor	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower Base	CB2	Corridor	pot9	pot	31	347	cf l13	1	cf l13dual	1	1	18	7	52								1
Tower Base	CB3	Corridor	f 4	f 2x4r	10	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	CB3	Corridor	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower Base	CB3	Corridor	st1	st1w	4	347	f 32x1v 347is88	1	f 32t8	1	1	18	7	52								1
Tower Base	CB4	Corridor	f 4	f 2x4r	23	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	CB4	Corridor	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower Base	D20	File Room	f 4	f 2x4r	54	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	D20	File Room	f 2in	f 1x4sio	6	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	D20	File Room	potcf l	pot	24	347	noballast	1	f l23dimmpar38	1	1	18	7	52								1
Tower Base	D200	Open Space	f 4	f 2x4r	64	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	D200	Open Space	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower Base	D20A	Of f ice	f 2in	f 1x4sio	2	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	D29	File Room	f 4	f 2x4r	9	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	D30	Computer rm	f 4	f 2x4r	38	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	D30	Computer rm	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower Base	D30C	Storage	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								0.2
Tower Base	D30C	Storage	potcf l	pot	9	347	noballast	1	f l23dimmm par38	1	1	2	7	52								0.2
Tower Base	D54	File Room	potc	pot	16	347	cf l13	1	cf l13quad	2	2	18	7	52								1
Tower Base	D54	File Room	f 4	f 2x4r	60	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	D54	File Room	f 2rf	f 1x4p2wph	16	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	D54	File Room	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower Base	D54A	MechanicalRoc k		key less	3	347	noballast	0	i100a	1	1	18	7	52								1
Tower Base	D75	Kitchen	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	Elevator Lobb	Elevator Lobby Chan		Chand	2	347	cf l13	3	cf l13dual	3	3	18	7	52								1



# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower Base	File Room	File Room	st2	st2o	2	347	f 32x2v 347is88	2	f 32t8	2	2	1	7	52								0.1
Tower Base	File Room	File Room	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Base	File Room	File Room	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Base	Janitorial	Janitorial	st2	st2o	1	347	f 32x2v 347is88	2	f 32t8	2	2	1	7	52								1
Tower Base	LD3	Loading Dock	l	f 1x4s2o	38	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	LD3A	Loading Dock	l	f 1x4s2o	7	347	f 32x2v 347is88	1	f 32t8	2	2	18	7	52								1
Tower Base	Paint Booth	Paint booth	st2	st2o	4	347	f 32x2v 347is88	2	f 32t8	2	2	1	7	52								0.1
Tower Base	receiving Offic	Receiving Offic	st2	st2o	1	347	f 32x2v 347is88	2	f 32t8	2	2	12	7	52								1
Tower Base	Receiving Offi	Receiving Offic	f4	f2x4r	1	347	f32x2v347is88	1	f32t8	2	2	12	7	52								1
Tower Gr Fl	1001B	Vestibule	sq	pot9s	1	347	cf l13	2	cf l13dual	2	2	24	7	52								1
Tower Gr Fl	1003	Women's wash	st1-12	st1w	1	120	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Tower Gr Fl	1003	Women's wash	st1-12	st1w	1	120	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Tower Gr Fl	1006	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	1006A	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	1006B	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	102	Open Of f ice	f 4	f 2x4r	46	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	104E	Training room	f 3	f 2x4r	11	347	f 32x3v 347is88	1	f 32t8	3	3	12	7	52								1
Tower Gr Fl	104E	Training room	pot13	pot	2	347	cf l13	1	cf l13quad	2	2	12	7	52								1
Tower Gr Fl	104G	Trainingroom	f 3	f 2x4r	12	347	f 32x3v 347is88	1	f 32t8	3	3	12	7	52								1
Tower Gr Fl	113	Storage	f 2	f 1x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								1
Tower Gr Fl	119	Corridor	f 2x2r-	f 2x2r	5	120	f 17x4is90	1	f 17t8	4	4	12	7	52								1
Tower Gr Fl	119A	Womenswashr	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower Gr Fl	119A	Womens wash	st1-12	st1w	1	120	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Tower Gr Fl	119B	Janitorial	K	key less	1	347	noballast	0	i100a	1	1	1	7	52								0.1
Tower Gr Fl	119C	Women'swash	f 2-12C	f 1x4r	5	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower Gr Fl	119C	Women's wash	st1-12	st1w	1	120	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Tower Gr Fl	120	Open Of f ice	f 4	f 2x4r	64	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	120A	Board Room	f 4	f 2x4r	8	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1

# Lighting Survey

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Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower Gr Fl	120B	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	120C	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	131	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52								0.2
Tower Gr Fl	154	Open Of f ice	f 4	f 2x4r	65	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	154	Open Of f ice	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower Gr Fl	154B	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	154C	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	154E	Of f ice	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	154E	Of f ice	f 2x2-1	f 2x2r	2	347	f 17x1is92	1	f 17t8	1	1	12	7	52								1
Tower Gr Fl	155	Electrical Roon l		f 1x4s2o	1	347	f 32x2v 347is88	1	f 32t8	2	2	2	7	52								0.2
Tower Gr Fl	159	Male washroon f 2-12C		f 1x4r	4	120	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower Gr Fl	168	ElectricalRoomst1		st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52								0.2
Tower Gr Fl	170	Open Of f ice	f 4	f 2x4r	53	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	170	Open Of f ice	f 1x4-3	f 1x4r	20	347	f 32x3v 347is88	1	f 32t8	3	3	12	7	52								1
Tower Gr Fl	170	Open Of f ice	f 2x2	f 2x2r	1	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Tower Gr Fl	170	Open Of f ice	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower Gr Fl	183	Janitorial	st1	st1w	1	347	f 32x1v 347is88	1	f 32t8	1	1	2	7	52								0.2
Tower Gr Fl	184	Open Of f ice	f 4	f 2x4r	21	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	184	Open Of f ice	ex	exit	2	347	ledv 347	1	led	1	1	24	7	52								1
Tower Gr Fl	184	Open Of f ice	f 2x2	f 2x2r	2	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Tower Gr Fl	184A	Of f ice	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	184B	Security	f 4	f 2x4r	14	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	184B	Security	f 2x2	f 2x2r	2	347	f 17x2v 347is92	1	f 17t8	2	2	12	7	52								1
Tower Gr Fl	C3C	Corridor	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower Gr Fl	CGA	Corridor	f 4	f 2x4r	19	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	CGA	Corridor	ex	exit	3	347	ledv 347	1	led	1	1	24	7	52								1
Tower Gr Fl	CGB	Corridor	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	CGB	Corridor	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor	
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H		
Tower Gr Fl	CGC	Corridor	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	CGD	Corridor	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower Gr Fl	CGD	Corridor	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	CGE	Corridor	f 4	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	CGE	Corridor	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower Gr Fl	CGF	Corridor	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower Gr Fl	CGF	Corridor	f 4	f 2x4r	3	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	CGF-c	Lobby Corridor	f 428	f 2x4r	12	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower Gr Fl	CGG	Corridor	f 4	f 2x4r	8	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	CGG	Corridor	f 4	f 2x4r	9	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	CGH	Corridor	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower Gr Fl	CGH	Corridor	f 4	f 2x4r	1	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52								1
Tower Gr Fl	C-info	Info/ Corridor	f 428	f 2x4r	16	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower Gr Fl	Elevator Lobb	Elevator Lobby	Ac1	accent	3	347	cf l13	1	cf l13dual	1	1	24	7	52								1
Tower Gr Fl	Elevator Lobb	Elevator Lobby	f 2	f 1x4r	16	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower Gr Fl	Elevator Lobb	Elevator Lobby	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower Gr Fl	Entrance	Entrance	st1	st1w	48	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52								1
Tower Gr Fl	Entrance	Entrance	ex	exit	1	347	ledv 347	1	led	1	1	24	7	52								1
Tower Gr Fl	Exterior	Exterior Buildin	ext4	pot9s	29	347	noballast	0	ht75par38	1	1	12	7	52								0
Tower Gr Fl	Exterior	Exterior Buildin	ext5	sm	3	347	mh100	1	mh100ed17	1	1	12	7	52								0
Tower Gr Fl	Exterior	Exterior Buildin	ext6	f la	3	347	mh175	1	mh175ed17	1	1	12	7	52								0
Tower Gr Fl	Exterior	Exterior Buildin	ext7	poll	14	347	mh175	1	mh175ed17	1	1	12	7	52								0
Tower Gr Fl	Exterior	Exterior Buildin	wp	wp	16	347	mh150	1	mh150ed17	1	1	12	7	52								0
Tower Gr Fl	Exterior	Exterior Buildin	ext2	pot	2	347	noballast	1	ht75par38	1	1	12	7	52								0
Tower Gr Fl	Exterior	Exterior Buildin	lp	polh	18	347	noballast	0	led22	1	1	12	7	52								0
Tower Gr Fl	Exterior	Exterior Buildin	lp2	polh	7	347	mh100	1	mh100ed17	1	1	12	7	52								0
Tower Gr Fl	main Entranc	Main Entrance	f 428	f 2x4r	2	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52								1
Tower Gr Fl	main Entranc	main Entrance	potcf l	pot	1	347	noballast	1	cf l23par38	1	1	24	7	52								1

# Lighting Survey

4520082 - Ottawa Technology Centre

Energy Data      Consumption: 3007,997 ekWh

Floor/ Zone	Room	Task	User Code	Fixture			Ballast		Lamps			Operation			Footcandles			Room Size			Demand Factor
				Type	Qty	Volts	Type	Qty	Type	Qty	Used	Hrs	Days	Wks	Min	Task	Max	L	W	H	
Tower Gr Fl	main Entranc	main Entrance	f 428	f 2x4r	8	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52							1
Tower Gr Fl	Main Entranc	Main Entrance	f 428	f 2xr4	16	347	f 32x2v 347is88	1	f 32t8	2	2	24	7	52							1
Tower Gr Fl	Main Entranc	Main Entrance	potled	pot	8	347	noballast	0	led17par38	1	1	24	7	52							1
Tower Gr Fl	Main Entranc	Main Entrance	pot75	pot	1	347	noballast	0	ht75par38	1	1	24	7	52							1
Tower Gr Fl	Main Entranc	Main Entrance	st1	st1w	16	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52							1
Tower Gr Fl	Main Entranc	Main Entrance	st1	st1w	48	347	f 32x1v 347is88	1	f 32t8	1	1	24	7	52							1
Tower Gr Fl	Main Entranc	Main Entrance	sq	pot9s	6	347	noballast	2	led17par38	1	1	24	7	52							1
Tower Gr Fl	Main Entranc	Outside	ext1	unknown	4	347	mh175v347	1	mh175ed17	1	1	12	7	52							0
Tower Gr Fl	Main Entranc	Outside	ext2	pot	3	347	noballast	1	led17par38	1	1	12	7	52							0
Tower Gr Fl	Main Entranc	Outside	ext3	wp	1	347	mh100	1	mh100ed17	1	1	12	7	52							0
Tower Gr Fl	Main Entranc	Outside	ext2	pot	3	347	noballast	1	ht75par38	1	1	12	7	52							0
Tower Gr Fl	Main Entranc	Outside	ext3	wp	1	347	mh100	1	mh100ed17	1	1	12	7	52							0
Tower Gr Fl	Open Seating	Open Seating	ext3	pot9s	3	347	cf113	2	cf113dual	2	2	24	7	52							1
Tower Gr Fl	Seating	Seating	sq	pot9s	5	347	cf 113	2	cf 113dual	2	2	24	7	52							1
Tower Gr Fl	Staff Lunch R	Staff Lunch Ro	f 4	f 2x4r	4	347	f 32x2v 347is88	1	f 32t8	2	2	12	7	52							1

### Code Descriptions

Existing Code	Existing Description	Retrofit Code	Retrofit Description
i100a	100W Incandescent A shape lamp	cfl23ret-ms	23W Compact Fluorescent Mini Spiril
ht50mr16	50W MR16 Halogen	LED10mr16	10 W LED MR16 Retrofit lamp
ht50PAR30	50W PAR30 Halogen	LED12PAR30	12 W LED PAR30 Retrofit lamp
ht75PAR38	75W PAR38 Halogen	LED17PAR38	17 W LED PAR38 Retrofit lamp

# Retrofit Descriptions

## 4520082 - Ottawa Technology Centre

Retrofit Code	Qty.	Description
<b>cfl23ret-ms</b>	52	Replace existing 100 Watt incandescent w ith a 23W compact fluorescent mini spiral screw -in bulb. CRI=82.
		<u>Qty.</u> <u>Code</u> <u>Details</u>
	Fixture(s):	1    nf5                    No fixture, 5 minutes labour allocated
	Lamp(s):	1    cfl23ms                23 Watt Compact Fluorescent mini spiral w ith integral ballast, replaces 100-w att incandescent blub. CRI=82
Ballast(s):	1    noballast              No Ballast Required	
<b>LED10mr16</b>	48	Replace mr16 halogen lamp w ith LED mr16 lamp
		<u>Qty.</u> <u>Code</u> <u>Details</u>
	Fixture(s):	1    nf5                    No fixture, 5 minutes labour allocated
	Lamp(s):	1    LED10mr16            10 Watt MR16 LED Lamp
Ballast(s):	0    noballast              No Ballast Required	
<b>led12par30</b>	71	Replace PAR30 halogen lamp w ith LED equivalent
		<u>Qty.</u> <u>Code</u> <u>Details</u>
	Fixture(s):	1    nf5                    No fixture, 5 minutes labour allocated
	Lamp(s):	1    LED12PAR30           12 Watt PAR30 LED Lamp
Ballast(s):	0    noballast              No Ballast Required	
<b>LED17PAR38</b>	43	Replace PAR38 halogen lamp w ith LED Equivalent
		<u>Qty.</u> <u>Code</u> <u>Details</u>
	Fixture(s):	1    nf5                    No fixture, 5 minutes labour allocated
	Lamp(s):	1    LED17PAR38           17 Watt PAR38 LED Lamp
Ballast(s):	0    noballast              No Ballast Required	
<b>noretrofit</b>	10178	No retrofit required
		<u>Qty.</u> <u>Code</u> <u>Details</u>
	Fixture(s):	1    nf0                    No fixture required, no labour allocated
	Lamp(s):	1    nolamp                No lamp retrofit
Ballast(s):	1    noballast              No Ballast Required	

# Retrofit Locations

## 4520082 - Ottawa Technology Centre

### Retrofit ID: cfl23ret-ms

**Fixture:** nf5 Qty: 1

*No fixture, 5 minutes labour allocated*

**Lamp:** cfl23ms Qty: 1

*23 Watt Compact Fluorescent mini spiral with integral ballast, replaces 100-watt incandescent*

**Ballast:** blub. CRI=82

noballast Qty: 1

*No Ballast Required*

#### Location Information

Floor: Head Off 2

Quantity	Room Number
1	303
1	305
1	312
1	320
1	321

#### Location Information

Floor: Head Off 3

Quantity	Room Number
1	303
1	305
1	H3-312
1	H3-319

#### Location Information

Floor: Head Off 4

Quantity	Room Number
1	305
1	4055
1	H4-303

#### Location Information

Floor: Head Off 5

Quantity	Room Number
----------	-------------

1 ----- 313A

1 ----- 314

1 ----- 5073

#### Location Information

Floor: Head Off 6

Quantity	Room Number
2	6C
2	6I

#### Location Information

Floor: Head Off B

Quantity	Room Number
2	B2

#### Location Information

Floor: Head Off GR

Quantity	Room Number
1	1137
10	TrilliumCafe

#### Location Information

Floor: Tower 11

Quantity	Room Number
1	11131
1	11163
1	11179
4	ACA

#### Location Information

Floor: Tower Base

Quantity	Room Number
2	C65
4	C66
3	C85A
3	D54A

#### Location Information

Floor: Tower Gr Fl

Quantity	Room Number
1	119B

# Retrofit Locations

4520082 - Ottawa Technology Centre

Number of Rooms: 29  
Number of Retrofits: 52

## Retrofit ID: LED10mr16

Fixture: nf5 Qty: 1

*No fixture, 5 minutes labour allocated*

Lamp: LED10mr16 Qty: 1

*10 Watt MR16 LED Lamp*

Ballast: noballast Qty: 0

*No Ballast Required*

### Location Information

Floor: Head Off 5

<u>Quantity</u>		<u>Room Number</u>
12	-----	Landberg
10	-----	Landberg

### Location Information

Floor: Head Off GR

<u>Quantity</u>		<u>Room Number</u>
4	-----	G Lobby
11	-----	G Lobby
2	-----	TrilliumCafe
1	-----	TrilliumCafe
2	-----	TrilliumCafe

### Location Information

Floor: Tower 8th

<u>Quantity</u>		<u>Room Number</u>
6	-----	834A

Number of Rooms: 8  
Number of Retrofits: 48



# Retrofit Locations

## 4520082 - Ottawa Technology Centre

### Retrofit ID: LED12PAR30

**Fixture:** nf5 Qty: 1

*No fixture, 5 minutes labour allocated*

**Lamp:** LED12PAR30 Qty: 1

*12 Watt PAR30 LED Lamp*

**Ballast:** noballast Qty: 0

*No Ballast Required*

#### Location Information

**Floor:** Exterior

<u>Quantity</u>	<u>Room Number</u>
1	Exterior

#### Location Information

**Floor:** Head Off 5

<u>Quantity</u>	<u>Room Number</u>
2	20A
30	H5 Lobby
20	H5-20
16	H5-27

#### Location Information

**Floor:** Tower 10th

<u>Quantity</u>	<u>Room Number</u>
2	10M

**Number of Rooms:** 6

**Number of Retrofits:** 71

### Retrofit ID: LED17PAR38

**Fixture:** nf5 Qty: 1

*No fixture, 5 minutes labour allocated*

**Lamp:** LED17PAR38 Qty: 1

*17 Watt PAR38 LED Lamp*

**Ballast:** noballast Qty: 0

*No Ballast Required*

#### Location Information

**Floor:** Head Off GR

<u>Quantity</u>	<u>Room Number</u>
4	G Lobby

#### Location Information

**Floor:** Tower 10th

<u>Quantity</u>	<u>Room Number</u>
4	10M

#### Location Information

**Floor:** Tower Gr Fl

<u>Quantity</u>	<u>Room Number</u>
2	Exterior
29	Exterior
1	Main Entrance
3	Main Entrance

**Number of Rooms:** 6

**Number of Retrofits:** 43

## Payback Analysis

### 4520082 - Ottawa Technology Centre

Electrical Labour Rate: \$50.00/Hour

Room Number	Floor or Zone	Task	Cost	Existing		New		Annual Savings		\$	Simple Payback
				kW	kWh	kW	kWh	kW	kWh		
10M	Tower 10th	Lounge									
Existing Fixtures: 2	pot	Removal:	\$0.00	0.05	130						
Redesign: 2	led12par30		\$92.00			0.01	31				
Existing Fixtures: 4	pot	Removal:	\$0.00	0.15	390						
Redesign: 4	LED17PAR38		\$227.88			0.07	88				
Room Summary			\$320.00	0.20	520	0.08	120	0.16	400	\$43.00	7.5 yrs
11131	Tower 11	Janitorial									
Existing Fixtures: 1	keyless	Removal:	\$0.00	0.01	26						
Redesign: 1	cf123ret-ms		\$11.98			0.00	6				
Room Summary			\$12.00	0.01	26	0.00	6	0.01	20	\$2.00	5.6 yrs
11163	Tower 11	Janitorial									
Existing Fixtures: 1	keyless	Removal:	\$0.00	0.01	26						
Redesign: 1	cf123ret-ms		\$11.98			0.00	6				
Room Summary			\$12.00	0.01	26	0.00	6	0.01	20	\$2.00	5.6 yrs
11179	Tower 11	AHU3&4									
Existing Fixtures: 1	keyless	Removal:	\$0.00	0.01	26						
Redesign: 1	cf123ret-ms		\$11.98			0.00	6				
Room Summary			\$12.00	0.01	26	0.00	6	0.01	20	\$2.00	5.6 yrs
1137	Head Office GR	Electrical Room									
Existing Fixtures: 1	keyless	Removal:	\$0.00	0.01	36						
Redesign: 1	cf123ret-ms		\$11.98			0.00	8				
Room Summary			\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
119A	Tower Gr Fl	Janitorial									
Existing Fixtures: 1	keyless	Removal:	\$0.00	0.01	36						
Redesign: 1	cf123ret-ms		\$11.98			0.00	8				
Room Summary			\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
20A	Head Office 5	Washroom, Entrance									
Existing Fixtures: 2	pot	Removal:	\$0.00	0.10	874						
Redesign: 2	led12par30		\$92.00			0.02	210				
Room Summary			\$92.00	0.10	874	0.02	210	0.08	664	\$71.00	1.3 yrs
303	Head Office 3	Janitorial									

## Payback Analysis

### 4520082 - Ottawa Technology Centre

Electrical Labour Rate: \$50.00/Hour

Room Number	Floor or Zone	Task	Cost	Existing		New		Annual Savings		\$	Simple Payback
				kW	kWh	kW	kWh	kW	kWh		
Existing Fixtures: 1 keyless		Removal:	\$0.00	0.01	36						
Redesign: 1 cfl23ret-ms			\$11.98			0.00	8				
Room Summary			\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
305	Head Office 4	Janitorial									
Existing Fixtures: 1 keyless		Removal:	\$0.00	0.01	36						
Redesign: 1 cfl23ret-ms			\$11.98			0.00	8				
Room Summary			\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
312	Head Office 2	Storage									
Existing Fixtures: 1 keyless		Removal:	\$0.00	0.01	36						
Redesign: 1 cfl23ret-ms			\$11.98			0.00	8				
Room Summary			\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
313A	Head Office 5	Storage									
Existing Fixtures: 1 keyless		Removal:	\$0.00	0.01	36						
Redesign: 1 cfl23ret-ms			\$11.98			0.00	8				
Room Summary			\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
314	Head Office 5	telecom									
Existing Fixtures: 1 keyless		Removal:	\$0.00	0.01	36						
Redesign: 1 cfl23ret-ms			\$11.98			0.00	8				
Room Summary			\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
320	Head Office 2	Janitorial									
Existing Fixtures: 1 keyless		Removal:	\$0.00	0.01	36						
Redesign: 1 cfl23ret-ms			\$11.98			0.00	8				
Room Summary			\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
321	Head Office 2	Electrical Room									
Existing Fixtures: 1 keyless		Removal:	\$0.00	0.01	36						
Redesign: 1 cfl23ret-ms			\$11.98			0.00	8				
Room Summary			\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
4055	Head Office 4	Storage									
Existing Fixtures: 1 keyless		Removal:	\$0.00	0.01	36						

## Payback Analysis

### 4520082 - Ottawa Technology Centre

Electrical Labour Rate: \$50.00/Hour

Room Number	Floor or Zone	Task	Cost	Existing		New		Annual Savings		\$	Simple Payback
				kW	kWh	kW	kWh	kW	kWh		
Redesign:	1	cf123ret-ms	\$11.98			0.00	8				
Room Summary			\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
5073	Head Office 5	Storage									
Existing Fixtures: 1 keyless			Removal:	\$0.00	0.01	36					
Redesign:	1	cf123ret-ms	\$11.98			0.00	8				
Room Summary			\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
6C	Head Office 6	AHU									
Existing Fixtures: 2 keyless			Removal:	\$0.00	0.02	52					
Redesign:	2	cf123ret-ms	\$23.96			0.00	12				
Room Summary			\$24.00	0.02	52	0.00	12	0.02	40	\$4.00	5.6 yrs
6I	Head Office 6	Fan Room									
Existing Fixtures: 2 keyless			Removal:	\$0.00	0.02	73					
Redesign:	2	cf123ret-ms	\$23.96			0.00	17				
Room Summary			\$24.00	0.02	73	0.00	17	0.02	56	\$6.00	4.0 yrs
834A	Tower 8th	Training Room									
Existing Fixtures: 6 pot			Removal:	\$0.00	0.31	1671					
Redesign:	6	LED10mr16	\$142.44			0.06	328				
Room Summary			\$142.00	0.31	1671	0.06	328	0.25	1343	\$144.00	1.0 yrs
ACA	Tower 11	Mechanical Room									
Existing Fixtures: 4 keyless			Removal:	\$0.00	0.04	104					
Redesign:	4	cf123ret-ms	\$47.92			0.01	24				
Room Summary			\$48.00	0.04	104	0.01	24	0.03	80	\$9.00	5.6 yrs
B2	Head OfficeB	Storage									
Existing Fixtures: 2 keyless			Removal:	\$0.00	0.04	146					
Redesign:	2	cf123ret-ms	\$23.96			0.01	33				
Room Summary			\$24.00	0.04	146	0.01	33	0.03	112	\$12.00	2.0 yrs
C65	Tower Base	Elevator shaft room									
Existing Fixtures: 2 keyless			Removal:	\$0.00	0.20	1310					
Redesign:	2	cf123ret-ms	\$23.96			0.05	301				

## Payback Analysis

### 4520082 - Ottawa Technology Centre

Electrical Labour Rate: \$50.00/Hour

Room Number	Floor or Zone	Task	Cost	Existing		New		Annual Savings		\$	Simple Payback
				kW	kWh	kW	kWh	kW	kWh		
Room Summary			\$24.00	0.20	1310	0.05	301	0.15	1009	\$108.00	0.2 yrs
<b>C66</b>	Tower Base	Elevator shaft room									
Existing Fixtures: 4	keyless	Removal:	\$0.00	0.40	2621						
Redesign: 4	cf123ret-ms		\$47.92			0.09	603				
Room Summary			\$48.00	0.40	2621	0.09	603	0.31	2018	\$216.00	0.2 yrs
<b>C85A</b>	Tower Base	Mechanical Room									
Existing Fixtures: 3	keyless	Removal:	\$0.00	0.30	1966						
Redesign: 3	cf123ret-ms		\$35.94			0.07	452				
Room Summary			\$36.00	0.30	1966	0.07	452	0.23	1514	\$162.00	0.2 yrs
<b>D54A</b>	Tower Base	Mechanical Room									
Existing Fixtures: 3	keyless	Removal:	\$0.00	0.30	1966						
Redesign: 3	cf123ret-ms		\$35.94			0.07	452				
Room Summary			\$36.00	0.30	1966	0.07	452	0.23	1514	\$162.00	0.2 yrs
<b>Exterior</b>	Tower Gr Fl	Exterior, Building									
Existing Fixtures: 29	pot9s	Removal:	\$0.00	0.00	9500						
Redesign: 29	LED17PAR38		\$1,652.13			0.00	2153				
Existing Fixtures: 2	pot	Removal:	\$0.00	0.00	655						
Redesign: 2	LED17PAR38		\$113.94			0.00	149				
Existing Fixtures: 1	sp	Removal:	\$0.00	0.00	328						
Redesign: 1	led12par30		\$46.00			0.00	52				
Room Summary			\$1,812.00	0.00	10483	0.00	2354	0	8129	\$870.00	2.1 yrs
<b>G Lobby</b>	Head Office GR	Elevator Lobby									
Existing Fixtures: 4	accent	Removal:	\$0.00	0.20	1782						
Redesign: 4	LED10mr16		\$94.96			0.04	349				
Existing Fixtures: 11	unknown	Removal:	\$0.00	0.56	4901						
Redesign: 11	LED10mr16		\$261.14			0.11	961				
Existing Fixtures: 4	accent	Removal:	\$0.00	0.30	2621						
Redesign: 4	LED17PAR38		\$227.88			0.07	594				
Room Summary			\$584.00	1.06	9304	0.22	1904	0.85	7399	\$792.00	0.7 yrs

## Payback Analysis

### 4520082 - Ottawa Technology Centre

Electrical Labour Rate: \$50.00/Hour

Room Number	Floor or Zone	Task	Cost	Existing		New		Annual Savings		\$	Simple Payback	
				kW	kWh	kW	kWh	kW	kWh			
H3-312	Head Office 3	Storage										
Existing Fixtures: 1 keyless			Removal:	\$0.00	0.01	36						
Redesign: 1 cfl23ret-ms				\$11.98			0.00	8				
Room Summary				\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
H3-319	Head Office 3	Storage										
Existing Fixtures: 1 keyless			Removal:	\$0.00	0.01	36						
Redesign: 1 cfl23ret-ms				\$11.98			0.00	8				
Room Summary				\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
H4-303	Head Office 4	Storage										
Existing Fixtures: 1 keyless			Removal:	\$0.00	0.01	36						
Redesign: 1 cfl23ret-ms				\$11.98			0.00	8				
Room Summary				\$12.00	0.01	36	0.00	8	0.01	28	\$3.00	4.0 yrs
H5 lobby	Head Office 5	Lobby										
Existing Fixtures: 30 pot			Removal:	\$0.00	1.50	6552						
Redesign: 30 led12par30				\$1,380.00			0.36	1572				
Room Summary				\$1,380.00	1.50	6552	0.36	1572	1.14	4980	\$533.00	2.6 yrs
H5-20	Head Office 5	Private Rm										
Existing Fixtures: 20 pot			Removal:	\$0.00	1.00	4368						
Redesign: 20 led12par30				\$920.00			0.24	1048				
Room Summary				\$920.00	1.00	4368	0.24	1048	0.76	3320	\$355.00	2.6 yrs
H5-27	Head Office 5	Boardroom										
Existing Fixtures: 16 pot			Removal:	\$0.00	0.80	3494						
Redesign: 16 led12par30				\$736.00			0.19	839				
Room Summary				\$736.00	0.80	3494	0.19	839	0.61	2656	\$284.00	2.6 yrs
Landberg	Head Office 5	Boardroom										
Existing Fixtures: 12 pot			Removal:	\$0.00	0.61	2673						
Redesign: 12 LED10mr16				\$284.88			0.12	524				
Existing Fixtures: 10 pot			Removal:	\$0.00	0.51	2228						
Redesign: 10 LED10mr16				\$237.40			0.10	437				

## Payback Analysis

### 4520082 - Ottawa Technology Centre

Electrical Labour Rate: \$50.00/Hour

Room Number	Floor or Zone	Task	Cost	Existing		New		Annual Savings		\$	Simple Payback
				kW	kWh	kW	kWh	kW	kWh		
Room Summary			\$522.00	1.12	4901	0.22	961	0.9	3940	\$422.00	1.2 yrs
Main Entrance	Tower Gr Fl	Main Entrance									
Existing Fixtures: 1	pot	Removal:	\$0.00	0.08	655						
Redesign:	1 LED17PAR38		\$56.97			0.02	149				
Existing Fixtures: 3	pot	Removal:	\$0.00	0.00	983						
Redesign:	3 LED17PAR38		\$170.91			0.00	223				
Room Summary			\$228.00	0.08	1638	0.02	371	0.06	1267	\$136.00	1.7 yrs
Trillium Cafe	Head Office GR	store									
Existing Fixtures: 2	Trackh	Removal:	\$0.00	0.02	53						
Redesign:	2 LED10mr16		\$47.48			0.00	5				
Existing Fixtures: 1	trackh	Removal:	\$0.00	0.02	53						
Redesign:	1 LED10mr16		\$23.74			0.00	3				
Existing Fixtures: 2	trackh	Removal:	\$0.00	0.05	133						
Redesign:	2 LED10mr16		\$47.48			0.01	5				
Existing Fixtures: 10	pot	Removal:	\$0.00	0.10	260						
Redesign:	10 cfl23ret-ms		\$119.80			0.02	60				
Room Summary			\$239.00	0.19	499	0.03	73	0.16	426	\$46.00	5.2 yrs
Building Summary			\$7,478.00	8.05	53237	1.75	11835	6.16	41402	\$4,430.00	1.7 yrs

## Average Annual Maintenance Costs Savings ( Labour and Material)

4520082 - Ottawa Technology Centre

Floor	Room	Fixture Qty	Retrofit Lamp	Average Existing Annual	Average Retrofit Annual Maintenance	Average Annual Maintenance Savings
				Maintenance Cost	Cost	
Head Office 2	303	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 2	305	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 2	312	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 2	320	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 2	321	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 3	303	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 3	305	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 3	H3-312	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 3	H3-319	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 4	305	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 4	4055	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 4	H4-303	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 5	313A	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 5	314	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 5	5073	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office 6	6C	2	cfl23ret-ms	\$3.64	\$0.73	\$2.91
Head Office 6	6I	2	cfl23ret-ms	\$3.64	\$0.73	\$2.91
Head Office B	B2	2	cfl23ret-ms	\$7.28	\$1.46	\$5.82
Head Office GR	1137	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46
Head Office GR	Trillium Cafe	10	cfl23ret-ms	\$13.00	\$2.60	\$10.40
Tower 11	11131	1	cfl23ret-ms	\$1.30	\$0.26	\$1.04
Tower 11	11163	1	cfl23ret-ms	\$1.30	\$0.26	\$1.04
Tower 11	11179	1	cfl23ret-ms	\$1.30	\$0.26	\$1.04
Tower 11	ACA	4	cfl23ret-ms	\$5.20	\$1.04	\$4.16
Tower Base	C65	2	cfl23ret-ms	\$65.52	\$13.10	\$52.42
Tower Base	C66	4	cfl23ret-ms	\$131.04	\$26.21	\$104.83
Tower Base	C85A	3	cfl23ret-ms	\$98.28	\$19.66	\$78.62
Tower Base	D54A	3	cfl23ret-ms	\$98.28	\$19.66	\$78.62
Tower GR Fl	119B	1	cfl23ret-ms	\$1.82	\$0.36	\$1.46



Floor	Room	Fixture Qty	Retrofit Lamp	Average Existing Annual Maintenance Cost	Average Retrofit Annual Maintenance Cost	Average Annual Maintenance Savings
Head Office 5	Landberg	12	LED10mr16	\$99.59	\$47.17	\$52.42
Head Office 5	Landberg	10	LED10mr16	\$82.99	\$39.31	\$43.68
Head Office GR	G Lobby	4	LED10mr16	\$66.39	\$31.45	\$34.94
Head Office GR	G Lobby	11	LED10mr16	\$182.58	\$86.49	\$96.10
Head Office GR	Trillium Cafe	2	LED10mr16	\$0.99	\$0.47	\$0.52
Head Office GR	Trillium Cafe	1	LED10mr16	\$0.49	\$0.23	\$0.26
Head Office GR	Trillium Cafe	2	LED10mr16	\$0.99	\$0.47	\$0.52
Tower 8th	834A	6	LED10mr16	\$62.24	\$29.48	\$32.76
Exterior	Exterior	1	LED12PAR30	\$27.08	\$7.86	\$19.22
Head Office 5	20A	2	LED12PAR30	\$108.33	\$31.45	\$76.88
Head Office 5	H5 Lobby	30	LED12PAR30	\$812.45	\$235.87	\$576.58
Head Office 5	H5-20	20	LED12PAR30	\$541.63	\$157.25	\$384.38
Head Office 5	H5-27	16	LED12PAR30	\$433.31	\$125.80	\$307.51
Tower 10th	10M	2	LED12PAR30	\$16.12	\$4.68	\$11.44
Head Office GR	G Lobby	4	LED 17PAR38	\$83.87	\$40.19	\$43.68
Tower 10th	10M	4	LED 17PAR38	\$24.96	\$11.96	\$13.00
Tower GR Fl	Exterior	2	LED 17PAR38	\$41.93	\$20.09	\$21.84
Tower GR Fl	Exterior	29	LED 17PAR38	\$608.03	\$291.35	\$316.68
Tower GR Fl	Main Entrance	1	LED 17PAR38	\$41.93	\$20.09	\$21.84
Tower GR Fl	Main Entrance	3	LED 17PAR38	\$125.80	\$60.28	\$65.52
<b>Building Total</b>				<b>\$3,822.42</b>	<b>\$1,334.09</b>	<b>\$2,488.34</b>



# Appendix D: Existing Building Systems

- Audit technical data forms.
- Existing Schematics.

# Facility Overview

## 4520082 - Ottawa Technology Centre

**Address:** 875 Heron Rd  
Ottawa  
ON  
K1A1B1

**Property Manager:** Greg Verge  
**Phone:** (613) 978-1524  
**Bldg Operator:** Stephane Castonguay  
**Normal Occupancy:** 0

**Year Built /  
Built in:** 1969  
**1st:**  
**2nd:**  
**3rd:**  
**4th:**

**Floor Area:** 680,000 ft<sup>2</sup>

**Floor Area Note:**

.. Derived Area (not actual)

### Alternate Identifiers For This Facility:

### Weekly and Annual Occupancy Schedule:

ID: Zone Name:	Mon:	Tue:	Wed:	Thu:	Fri:	Sat:	Sun:	Wks/Yr:	Comments:
HQ- HQ Offices (Floors 1-5)	6a-6p	6a-6p	6a-6p	6a-6p	6a-6p	-	-	52	
Caf Cafeteria	5a-3p	5a-3p	5a-3p	5a-3p	5a-3p	-	-	52	Cafeteria sometimes occupied until 11:00 pm when testing is being performed.
Kit Kitchen	5a-3p	5a-3p	5a-3p	5a-3p	5a-3p	-	-	52	1 employee stays until 4pm.
LinkLink, Floor 1	24/7	24/7	24/7	24/7	24/7	24/7	24/7	52	Security station occupied 24/7 all year.
TC- TC Building Offices (Floors 1-7)	3a-11p	3a-11p	3a-11p	3a-11p	3a-11p	-	-	52	Floors are in "occupied" mode until 11:00 pm during tax season. Variations of occupancy by department, some working overtime.
TC- Data Centre (TC building floors 8-10)	24/7	24/7	24/7	24/7	24/7	24/7	24/7	52	Data centre has been removed as of July 2013.
B Basement	6a-8p	6a-8p	6a-8p	6a-8p	6a-8p	-	-	52	Some shift work in the mail room. Mail room has its own Dectron unit which has been shut down.

### Data Available:

**Mechanical & Electrical Drawings:** Some available  
**8-1/2" Floorplans or Fireplans:**

### Heating Plant Annual Schedule:

**Turn On Date:** Hot Water from Confe **Turn Off Date:** always available

### Service Contractors:

**Mechanical:** BKC Mechanical for Liebert units. Profac for ever  
**Controls:** Siemens for BAS. General Electric for Lighting BA

**Energy Source Details:** 575v, 3ø

**Max Bldg Voltage:**

**Asbestos:** Facility has asbestos, reliable report exists  
**Status:** Report available from Robert Lafleur  
**Exists in:**

### General Notes:

#### Details Of Difficult To Condition Areas

The induction units are two-pipe system with seasonal changeover. During a 1 or 2 week period in spring and fall, it can be difficult to get proper temperature control in some areas of the building. MTHW reheat coils downstream of the supply fan are used only when necessary during this time to properly condition the space; all other times of the year, they are deactivated.

#### General Notes

All utilities enter from the Confederation Heights central plant (Electricity, HTHW at ~145 °C, CHW).

HTHW temperature is reset with the outdoor air temperature.

### Controls Overview

#### Building Automation System exists

- On site computer
- Off site (remote) computer
- Point list collected during survey
- Equipment schedules collected during survey
- Control drawings available
- Thermostats connected to BAS

**BAS manufacturer:** Siemens

**BAS system type:** Apogee

**BAS panels:**

**BAS points:**

**Controls Notes:** All perimeter induction units operate on pneumatic thermostats controlling the local two-way valve. None are monitored by the BAS.

Some pneumatic valves existing for AHU's and piping, however, they only provide power to the actuator; all monitoring and calculations are done by computer BAS.

#### Unitary Controllers exist

- Pneumatic controllers
- Electronic controllers
- Timers
- Electric thermostats
- Programmable thermostats
- Heating reset controllers, pneumatic
- Heating reset controllers, electronic

#### Pneumatic Devices exist

- Pneumatic thermostats
- Pneumatic valve actuators
- Pneumatic temperature sensors
- Pneumatic vane actuators (fan volume control)
- Pneumatic/electric (PE) transducers
- Pneumatic damper actuators
- Compressed air dryer (at compressor)

## BUILDING SUMMARY

### Taxation Data Centre

<b>Property: P400038</b>	<b>MUB: -</b>	<b>RPU: 4000353</b>	DATE PRINTED	Tuesday, June 03, 2014, 02:01 PM
ADDRESS		875 Heron RD	FILENAME	TAXATIONDATA.BDG
CITY, PROVINCE		Ottawa, ON	BUILDING LAST UPDATED	Thursday, May 29, 2014
DESCRIPTION	Base Building As-Built Drawings		TECH2 SpaceAUDIT Version 9.1.0.25, 2013-05-21	

All AREAS are in SQUARE METRES.

DETAIL NAME	FLOOR NAME	USABLE [1]	ACCESSORY A (ACTUAL) [2]	ACCESSORY B (ACTUAL) [3]	BUILDING SERVICE	INSIDE PARKING	INSIDE GROSS
THQ12B01.DET	12	0.0	0.0	0.0	141.3	0.0	141.3
THQ11B01.DET	11	919.0	94.9	0.0	2206.0	0.0	3219.9
THQ10B01.DET	10	2766.4	283.9	0.0	241.0	0.0	3291.3
THQ09B01.DET	09	2793.6	242.4	0.0	255.4	0.0	3291.4
THQ08B01.DET	08	2760.5	297.0	0.0	233.9	0.0	3291.4
THQ07B01.DET	07	2559.7	497.5	0.0	234.2	0.0	3291.4
THQ06B01.DET	06	2755.4	303.2	0.0	232.8	0.0	3291.4
THQ05B01.DET	05	2754.3	304.4	0.0	232.8	0.0	3291.5
THQ04B01.DET	04	2750.7	307.9	0.0	232.8	0.0	3291.4
THQ03B01.DET	03	2747.0	312.3	0.0	232.2	0.0	3291.5
THQ02B01.DET	02	2740.3	317.1	0.0	234.0	0.0	3291.4
<b>TOTALS: ALL FLOORS</b>		25546.9	2960.6	0.0	4476.4	0.0	32983.9

TENANT NO.	TENANT NAME	HIGHEST & BEST USE	USABLE	ACCESSORY A (SHARE)	ACCESSORY B (SHARE)	RENTABLE
006016	Canada Revenue Agency	A	24627.9	2865.6	0.0	27493.5
006016	Canada Revenue Agency	C	919.0	94.8	0.0	1013.8
<b>TOTALS: ALL TENANTS</b>			25546.9	2960.4	0.0	28507.3

**[1]** In order to match WinFIS, the Floor Usable area in this report is the sum of rounded values for each Location on the floor. This may result in totals slightly different than those in the Stacking Diagram and "Floor Plan with Title Block" reports depending on the display mode used and, in some of the Room Summary reports.

**[2]** Accessory A on each floor is shared by the Locations on that floor.

**[3]** Accessory B is shared by all the Locations in the building.

## BUILDING SUMMARY

### Taxation Headquarters

**Property: P400038**      **MUB: -**      **RPU: 40000351**      DATE PRINTED      Tuesday, June 03, 2014, 02:03 PM  
 ADDRESS      875 Heron RD      FILENAME      TAXATION-HQ.BDG  
 CITY, PROVINCE      Ottawa, ON      BUILDING LAST UPDATED      Friday, May 30, 2014  
 DESCRIPTION      As-Built Architectural Base Drawing      TECH2 SpaceAUDIT Version 9.1.0.25, 2013-05-21

All AREAS are in SQUARE METRES.

DETAIL NAME	FLOOR NAME	USABLE [1]	ACCESSORY A (ACTUAL) [2]	ACCESSORY B (ACTUAL) [3]	BUILDING SERVICE	INSIDE PARKING	INSIDE GROSS
THQ07B01.DET	07	0.0	0.0	0.0	207.0	0.0	207.0
THQ06B01.DET	06	0.0	0.0	0.0	1478.6	0.0	1478.6
THQ05B01.DET	05	2624.1	429.9	0.0	213.1	0.0	3267.1
THQ04B01.DET	04	2701.6	407.3	0.0	212.0	0.0	3320.9
THQ03B01.DET	03	2697.0	411.5	0.0	212.8	0.0	3321.3
THQ02B01.DET	02	2697.5	408.7	0.0	214.7	0.0	3320.9
THQGRB01.DET	01	4359.5	967.1	924.6	1553.6	0.0	7804.8
THQBSB01.DET	B1	7171.4	1405.8	0.0	3458.6	0.0	12035.8
<b>TOTALS: ALL FLOORS</b>		22251.1	4030.3	924.6	7550.4	0.0	34756.4

TENANT NO.	TENANT NAME	HIGHEST & BEST USE	USABLE	ACCESSORY A (SHARE)	ACCESSORY B (SHARE)	RENTABLE
006016	Canada Revenue Agency	A	21372.3	3839.7	886.6	26098.6
027998	SNC Lavalin Operations and Maintenance Inc.	A	150.9	30.3	6.3	187.5
004028	The Recreation Association of PSC	A	698.2	153.7	30.0	881.9
009991	Vacant-Marketable-Nonfederal Tenant	A	29.7	6.6	1.3	37.6
<b>TOTALS: ALL TENANTS</b>			22251.1	4030.3	924.2	27205.6

**[1]** In order to match WinFIS, the Floor Usable area in this report is the sum of rounded values for each Location on the floor. This may result in totals slightly different than those in the Stacking Diagram and "Floor Plan with Title Block" reports depending on the display mode used and, in some of the Room Summary reports.

**[2]** Accessory A on each floor is shared by the Locations on that floor.

**[3]** Accessory B is shared by all the Locations in the building.

# Domestic Hot Water Plant

4520082 - Ottawa Technology Centre - PlantID: DHW-1

**Building Areas or Zones Served:** Kitchen DHW

**Heat Source:** HTHW from Confederation Heights to converter

**Temperature Control Sensing:** Aquastat on heater tank

**Regular Maintenance: Heater Descaling:**

**Separate Storage Tanks: Tank 1:** 120 Us gal

**DHW Recirculation Pump:** 117 W, on always

**Deficiencies:**

**Notes:** 2 parallel pumps circulate water between storage tank and heat exchangers, each is 1.5 hp, only one running.

**DHW from this Kitchen plant serves:**

**Boiler Tuning:**

**Tank 2:**

**This plant includes the following 0 Boiler(s), 0 Pump(s) and 0 Heater Tanks:**

**Domestic Hot Water Plant****4520082 - Ottawa Technology Centre - PlantID: DHW-2****Building Areas or Zones Served:** HQ Building**Heat Source:** HTHW from Confederation Heights to converter**Temperature Control Sensing:** Sensor on heater tank**Regular Maintenance: Heater Descaling:****Separate Storage Tanks: Tank 1:** (3) Diameter: 45", Height: 80"**DHW Recirculation Pump:** (2) 1/6 hp, on always**Deficiencies:****Notes:** DHW supply is controlled by 3-way "brain" valve control**DHW from this plant serves:****Boiler Tuning:****Tank 2:****This plant includes the following 0 Boiler(s), 4 Pump(s) and 0 Heater Tanks:****PUMP: P-3A****Function:** DHW heating from HTHW heat exchanger**Location:** B1 Mechanical Room**Observed:** Observed Running**Voltage:****Manufacturer:****Model:****Horsepower:** Not Found**Flow:****Head:****Impeller Dia.:****Control:** Turns on automatically with heating controller**Deficiencies:** 110W**Notes:****PUMP: P-3B****Function:** DHW heating from HTHW heat exchanger**Location:** B1 Mechanical Room**Observed:** Observed Running**Voltage:****Manufacturer:****Model:****Horsepower:** Not Found**Flow:****Head:****Impeller Dia.:****Control:** Turns on automatically with heating controller**Deficiencies:** 110W**Notes:****PUMP: P-4A****Function:** Domestic Hot Water Recirculation**Location:** B1 Mechanical Room**Observed:** Observed Running**Voltage:** 120v**Manufacturer:****Model:****Horsepower:** 110 W**Flow:****Head:****Impeller Dia.:****Control:** Runs Always**Deficiencies:****Notes:**



Mechanical

# Domestic Hot Water Plant

4520082 - Ottawa Technology Centre - PlantID: DHW-2

**PUMP: P-4B**

**Function:** Domestic Hot Water Recirculation

**Location:** B1 Mechanical Room

**Observed:** Observed Running

**Voltage:** 120v

**Manufacturer:**

**Model:**

**Horsepower:** 110 W

**Flow:**

**Head:**

**Impeller Dia.:**

**Control:** Runs Always

**Deficiencies:**

**Notes:**

**Domestic Hot Water Plant****4520082 - Ottawa Technology Centre - PlantID: DHW-3****Building Areas or Zones Served:** TC Building**Heat Source:** HTHW from Confederation Heights to converter**DHW from this plant serves:****Temperature Control Sensing:** Sensor on heater tank**Boiler Tuning:****Regular Maintenance: Heater Descaling:****Tank 2:****Separate Storage Tanks: Tank 1:** Diameter: 60", Length: 145"**DHW Recirculation Pump:** 1/6 hp, on always**Deficiencies:****Notes:** Storage tank contains two 60 kW electric heating elements for peak usage.**This plant includes the following 0 Boiler(s), 4 Pump(s) and 0 Heater Tanks:****PUMP: P-1A****Function:** DHW heating from HTHW heat exchanger**Location:** B1 of TC Building**Observed:** Observed Not Running**Voltage:** 120v**Manufacturer:** Bell and Gossett**Model:** NBF-25**Horsepower:** 125w**Flow:****Head:****Impeller Dia.:****Control:****Deficiencies:****Notes:****PUMP: P-1B****Function:** DHW heating from HTHW heat exchanger**Location:** B1 of TC Building**Observed:** Observed Not Running**Voltage:** 120v**Manufacturer:** Bell and Gossett**Model:** NBF-25**Horsepower:** 125w**Flow:****Head:****Impeller Dia.:****Control:****Deficiencies:****Notes:****PUMP: P-2A****Function:** Domestic Hot Water Recirculation**Location:** B1 of TC Building**Observed:** Observed Running**Voltage:** 120v**Manufacturer:** Bell and Gossett**Model:** NBF-45**Horsepower:** 130W**Flow:****Head:****Impeller Dia.:****Control:** Runs Always**Deficiencies:****Notes:**

Mechanical

# Domestic Hot Water Plant

4520082 - Ottawa Technology Centre - PlantID: DHW-3

**PUMP: P-2B**

**Function:** Domestic Hot Water Recirculation

**Location:** B1 of TC Building

**Observed:** Observed Running

**Voltage:** 120v

**Manufacturer:** Bell and Gossett

**Model:** NBF-45

**Horsepower:** 130W

**Flow:**

**Head:**

**Impeller Dia.:**

**Control:** Runs Always

**Deficiencies:**

**Notes:**

# Exhaust Fans

## 4520082 - Ottawa Technology Centre

Site ID	Our ID	Fan Location	Mount	Area Served	Fan			Control	Scheduling
					Voltage	Type	hp		
1	30-270-01			basement high voltage room			1.5	1,265	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
11	30-270-11			Battery Room (client)			1	1180	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
12	30-270-12			Toilet			1/2	990	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
13	30-270-13			HQ Elevator Room			1/2	4,100	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
14	30-270-14			TC Elevator Room			1/2	1,800	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
15	30-270-15			TC Elevator Room			1	1,325	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
16	30-270-16			TC 7th floor conference room			1/4		
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
17	30-270-17			electrical room			3	16,700	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
18	30-270-18			Janitor's Closet			1/3	835	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
19	30-270-19			electrical room			2	1,230	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
2	30-270-03			Electrical rooms			1/3	1,265	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
20	30-270-20			electrical room			2	1,600	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
21	30-270-								

# Exhaust Fans

## 4520082 - Ottawa Technology Centre

Site ID	Our ID	Fan Location	Mount	Area Served	Fan			Control	Scheduling
					Voltage	Type	hp		
	21			elevator room			1/4	1,980	
		<b>Site Visit Status:</b>			<b>Deficiencies:</b>			<b>Notes:</b>	
22	30-270-22			computer lock-up room C-27A			1/3	1,680	
		<b>Site Visit Status:</b>			<b>Deficiencies:</b>			<b>Notes:</b>	
24	30-270-24			turbine room			3	7,330	
		<b>Site Visit Status:</b>			<b>Deficiencies:</b>			<b>Notes:</b>	
25	30-270-25			turbine room			3	7,330	
		<b>Site Visit Status:</b>			<b>Deficiencies:</b>			<b>Notes:</b>	
26	30-270-26			turbine room			3	10,000	
		<b>Site Visit Status:</b>			<b>Deficiencies:</b>			<b>Notes:</b>	
27	30-270-27			turbine room			3	7,900	
		<b>Site Visit Status:</b>			<b>Deficiencies:</b>			<b>Notes:</b>	
28	30-270-28			Kohler generator room			7.5	22,000	
		<b>Site Visit Status:</b>			<b>Deficiencies:</b>			<b>Notes:</b>	
29	30-270-29			UPS room			1	8,860	
		<b>Site Visit Status:</b>			<b>Deficiencies:</b>			<b>Notes:</b>	
30	30-270-30			Loading Dock			20	58,700	
		<b>Site Visit Status:</b>			<b>Deficiencies:</b>			<b>Notes:</b>	
31	30-270-31			File Room			1/22		Manually plugged in by client
		<b>Site Visit Status:</b>			<b>Deficiencies:</b>			<b>Notes:</b>	
32	30-270-32			elevator room 11127			1.5	2,850	
		<b>Site Visit Status:</b>			<b>Deficiencies:</b>			<b>Notes:</b>	
33	30-270-33			elevator generator room			1/2	7,000	
		<b>Site Visit Status:</b>			<b>Deficiencies:</b>			<b>Notes:</b>	

# Exhaust Fans

**4520082 - Ottawa Technology Centre**

Site ID	Our ID	Fan Location	Mount	Area Served	Fan			Control	Scheduling
					Voltage	Type	hp		
34	30-270-34			toilet exhaust HQ			1	3,000	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
35	30-270-35			toilet exhaust HQ			1	2,300	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
36	30-270-26			toilet exhaust TC			5	8,000	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
37	30-270-37			loading dock guard office			1/2	415	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
38	30-270-38			9th floor electrical room			1/4	1,500	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
39	30-270-39			east elevator room			1/6	2,670	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
4	30-270-05			Electrical room (client)			1/2	870	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
40	30-270-40			turbine room			3	8,800	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
5	30-270-06			conference room "A"			1/4	430	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
7	30-270-07			deputy ministry washroom			1/4	800	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
8	30-270-08			Conference room "C"			1/4	925	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	
9	30-270-09			Conference room "B"			1/3	560	
		<b>Site Visit Status:</b>		<b>Deficiencies:</b>				<b>Notes:</b>	

# Hot Water or Steam Heating Plant

**4520082 - Ottawa Technology Centre - PlantID: Converter "A"**

Annual Turn On Date: September

Heating Distribution Zones: Glycol loop for basement AHU heating coils.

Annual Turn Off Date: April

Air Handlers Served by This Plant:	Preheat	Main Heat	Reheat Coils (qty)		Comments
	Coil:	Coil:	Electric	Hot Water	
AHU-7	..	p			glycol coil
AHU-8	..	p			glycol coil
AHU-9	..	p			glycol coil
AHU-10	..	p			glycol coil
AHU-11	..	p			glycol coil
	..	..			
	..	..			
	..	..			

**Supply Water Temperature Control:**

Piping Configuration:

Primary (Boiler) Temperature Control:

Primary Control Sensing:

Boiler Flue Gas Testing / Burner Tuning:

Boiler Tube / Heat Exchanger Cleaning:

Controls Checkup / Adjustment:

Steam Trap Inspection / Repair:

Steam to HW Converter Tube Cleaning:

**Steam Plant:**

Steam Pressure Range:

Steam Boiler Blow down:

Observations at Condensate Receiver or Deaerator

**Deficiencies:****Notes:**

Heat exchanger heating plant converting high temperature hot water from Confederation Plant into a heated glycol loop.

This plant includes the following **0 Boiler(s)**, **2 Pump(s)** and **0 Loop(s)**:

## PUMP: P-52A

**Function:** Heating Zone SUPPLY**Location:** Basement Mechanical Room**Observed:****Voltage:** 575v3ø**Manufacturer:** Taco**Model:** TA1224B2K1A2L0**Horsepower:** 25 hp**Flow:** 1015 us gpm**Head:** 69 feet**Impeller Dia.:** 9.4 in**Control:** Runs alternate weeks with P-52B**Deficiencies:****Notes:**

Mechanical

# Hot Water or Steam Heating Plant

4520082 - Ottawa Technology Centre - PlantID: Converter "A"

**PUMP: P-52B**

**Function:** Heating Zone SUPPLY

**Location:** Basement Mechanical Room

**Observed:**

**Voltage:** 575v3ø

**Manufacturer:** Taco

**Model:** TA1224B2K1A2L0

**Horsepower:** 25 hp

**Flow:** 1015 us gpm

**Head:** 69 feet

**Impeller Dia.:** 9.4 in

**Control:** Runs alternate weeks with P-52A

**Deficiencies:**

**Notes:**



Mechanical	<b>Hot Water or Steam Heating Plant</b>
<b>4520082 - Ottawa Technology Centre - PlantID: Converter "B"</b>	

Annual Turn On Date: Always on                      Heating Distribution Zones: HQ Reheat and DHW heating loop  
 Annual Turn Off Date: Always on

	Preheat Coil:	Main Heat Coil:	<u>Reheat Coils (qty)</u>		
Air Handlers Served by This Plant:			Electric	Hot Water	Comments
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			

**Supply Water Temperature Control:**  
 Piping Configuration:  
 Primary (Boiler) Temperature Control:  
 Primary Control Sensing:  
  
 Boiler Flue Gas Testing / Burner Tuning:  
 Boiler Tube / Heat Exchanger Cleaning:  
 Controls Checkup / Adjustment:  
 Steam Trap Inspection / Repair:  
 Steam to HW Converter Tube Cleaning:  
**Steam Plant:**  
 Steam Pressure Range:  
 Steam Boiler Blow down:  
 Observations at Condensate Receiver or Deaerator

**Deficiencies:**  
**Notes:**  
 Heat exchanger heating plant converting high temperature hot water from Confederation Plant into medium temperature hot water supply serving HQ reheat coils and DHW plants for HQ and TC.

**This plant includes the following 0 Boiler(s), 2 Pump(s) and 0 Loop(s):**

<b>PUMP: P-46A</b>
--------------------

**Function:** Main Distribution SUPPLY  
**Location:** Basement Mechanical Room  
**Observed:**  
**Voltage:** 575v3ø  
**Manufacturer:** Taco                      **Model:** TA1224B2J1A2L0                      **Horsepower:** 20 hp  
**Flow:** 1080 us gpm                      **Head:** 59 feet                      **Impeller Dia.:** 9.1 in  
**Control:** Runs alternate weeks with P-46B  
**Deficiencies:**  
**Notes:**

Mechanical

# Hot Water or Steam Heating Plant

4520082 - Ottawa Technology Centre - PlantID: Converter "B"

**PUMP: p-46B**

**Function:** Main Distribution SUPPLY

**Location:** Basement Mechanical Room

**Observed:**

**Voltage:** 575v3ø

**Manufacturer:** Taco

**Model:** TA1224B2J1A2L0

**Horsepower:** 20 hp

**Flow:** 1080 us gpm

**Head:** 59 feet

**Impeller Dia.:** 9.1 in

**Control:** Runs alternate weeks with P-46A

**Deficiencies:**

**Notes:**

Mechanical	<b>Hot Water or Steam Heating Plant</b>
<b>4520082 - Ottawa Technology Centre - PlantID: Converter "C"</b>	

Annual Turn On Date: September                      Heating Distribution Zones: TC Reheat  
 Annual Turn Off Date: April

	Preheat Coil:	Main Heat Coil:	<u>Reheat Coils (qty)</u>		
Air Handlers Served by This Plant:			Electric	Hot Water	Comments
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			

**Supply Water Temperature Control:**  
 Piping Configuration:  
 Primary (Boiler) Temperature Control:  
 Primary Control Sensing:

**Boiler Flue Gas Testing / Burner Tuning:**  
 Boiler Tube / Heat Exchanger Cleaning:  
 Controls Checkup / Adjustment:  
 Steam Trap Inspection / Repair:  
 Steam to HW Converter Tube Cleaning:

**Steam Plant:**  
 Steam Pressure Range:  
 Steam Boiler Blow down:

**Observations at Condensate Receiver or Deaerator**

**Deficiencies:**  
**Notes:**  
 Heat exchanger heating plant converting high temperature hot water from Confederation Plant into medium temperature hot water supply serving TC reheat coils.

**This plant includes the following 0 Boiler(s), 2 Pump(s) and 0 Loop(s):**

<b>PUMP: P-49A</b>
--------------------

**Function:** Heating Zone SUPPLY  
**Location:** Basement Mechanical Room  
**Observed:**  
**Voltage:** 575v3ø  
**Manufacturer:** Taco                      **Model:** TA1224B2J1A2L0                      **Horsepower:** 20 hp  
**Flow:** 866 us gpm                      **Head:** 56 feet                      **Impeller Dia.:** 8.6 in  
**Control:** Runs alternate weeks with P-49B  
**Deficiencies:**  
**Notes:**

Mechanical

# Hot Water or Steam Heating Plant

4520082 - Ottawa Technology Centre - PlantID: Converter "C"

**PUMP: P-49B**

**Function:** Heating Zone SUPPLY

**Location:** Basement Mechanical Room

**Observed:**

**Voltage:** 575v3ø

**Manufacturer:** Taco

**Model:** TA1224B2J1A2L0

**Horsepower:** 20 hp

**Flow:** 866 us gpm

**Head:** 56 feet

**Impeller Dia.:** 8.6 in

**Control:** Runs alternate weeks with P-49A

**Deficiencies:**

**Notes:**

# Hot Water or Steam Heating Plant

**4520082 - Ottawa Technology Centre - PlantID: Converter "D"**

Annual Turn On Date: September

Heating Distribution Zones: AHU heating supply for glycol converters

Annual Turn Off Date: April

Air Handlers Served by This Plant:	Preheat	Main Heat	Reheat Coils (qty)		Comments
	Coil:	Coil:	Electric	Hot Water	
AHU-1	..	p			feeds glycol converter
AHU-2	..	p			feeds glycol converter
AHU-3	..	p			feeds glycol converter
AHU-4	..	p			feeds glycol converter
AHU-5	..	p			feeds glycol converter
AHU-6	..	p			feeds glycol converter
AHU-7	..	p			feeds glycol converter
	..	..			

**Supply Water Temperature Control:**

Piping Configuration:

Primary (Boiler) Temperature Control:

Primary Control Sensing:

Boiler Flue Gas Testing / Burner Tuning:

Boiler Tube / Heat Exchanger Cleaning:

Controls Checkup / Adjustment:

Steam Trap Inspection / Repair:

Steam to HW Converter Tube Cleaning:

**Steam Plant:**

Steam Pressure Range:

Steam Boiler Blow down:

Observations at Condensate Receiver or Deaerator

**Deficiencies:****Notes:**

Heat exchanger heating plant converting high temperature hot water from Confederation Plant into medium temperature hot water supply serving all penthouse AHU's (TC and HQ) glycol converters for heating coils.

This plant includes the following **0 Boiler(s)**, **2 Pump(s)** and **0 Loop(s)**:

### PUMP: P-48A

Function: Heating Zone SUPPLY

Location: Basement Mechanical Room

Observed:

Voltage: 575v3ø

Manufacturer: Taco

Model: TA1224B2K1A2L0

Horsepower: 25 hp

Flow: 1237 us gpm

Head: 59 feet

Impeller Dia.: 9.5 in

Control: Runs alternate weeks with P-48B

Deficiencies:

Notes:

Mechanical

# Hot Water or Steam Heating Plant

4520082 - Ottawa Technology Centre - PlantID: Converter "D"

**PUMP: P-48B**

**Function:** Heating Zone SUPPLY

**Location:** Basement Mechanical Room

**Observed:**

**Voltage:** 575v3ø

**Manufacturer:** Taco

**Model:** TA1224B2K1A2L0

**Horsepower:** 25 hp

**Flow:** 1237 us gpm

**Head:** 59 feet

**Impeller Dia.:** 9.5 in

**Control:** Runs alternate weeks with P-48A

**Deficiencies:**

**Notes:**

Mechanical	<b>Hot Water or Steam Heating Plant</b>
<b>4520082 - Ottawa Technology Centre - PlantID: Converter "E"</b>	

Annual Turn On Date: September                      Heating Distribution Zones: Induction and Radiation loops for TC and HQ  
 Annual Turn Off Date: April

	Preheat Coil:	Main Heat Coil:	<u>Reheat Coils (qty)</u>		
Air Handlers Served by This Plant:			Electric	Hot Water	Comments
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			
	..	..			

**Supply Water Temperature Control:**  
 Piping Configuration:  
 Primary (Boiler) Temperature Control:  
 Primary Control Sensing:

**Boiler Flue Gas Testing / Burner Tuning:**  
**Boiler Tube / Heat Exchanger Cleaning:**  
**Controls Checkup / Adjustment:**  
**Steam Trap Inspection / Repair:**  
**Steam to HW Converter Tube Cleaning:**

**Steam Plant:**  
 Steam Pressure Range:  
 Steam Boiler Blow down:

**Observations at Condensate Receiver or Deaerator**

**Deficiencies:**  
**Notes:**  
 Heat exchanger heating plant converting high temperature hot water from Confederation Plant into medium temperature hot water supply serving radiation loops for TC and HQ buildings, and also TC and HQ penthouse mechanical rooms for the induction booster pumps.

**This plant includes the following 0 Boiler(s), 10 Pump(s) and 0 Loop(s):**

<b>PUMP: P-10</b>
-------------------

**Function:** Induction Supply, HQ building West  
**Location:** HQ West Penthouse Mech Room  
**Observed:** Observed Not Running  
**Voltage:** 575v3ø

**Manufacturer:** Taco                      **Model:** TA1024B2J1B2L0                      **Horsepower:** 20 hp  
**Flow:** 507 us gpm                      **Head:** 88 feet                      **Impeller Dia.:** 9.6 in

**Control:** Runs Always, except 2 weeks in shoulder season  
**Deficiencies:** Main pump with VFD.  
**Notes:**

# Hot Water or Steam Heating Plant

4520082 - Ottawa Technology Centre - PlantID: Converter "E"

## PUMP: P-12

**Function:** Induction Supply, HQ building East

**Location:** HQ East Penthouse Mech Room

**Observed:** Observed Not Running

**Voltage:** 575v3ø

**Manufacturer:** Taco

**Model:** TA1024B2J1B2L0

**Horsepower:** 20 hp

**Flow:** 507 us gpm

**Head:** 88 feet

**Impeller Dia.:** 9.6 in

**Control:** Runs Always, except 2 weeks in shoulder season

**Deficiencies:** Main pump with VFD.

**Notes:**

## PUMP: P-15

**Function:** Induction Supply, TC North and East

**Location:** TC Penthouse Mech Room

**Observed:** Observed Not Running

**Voltage:** 575v3ø

**Manufacturer:** Taco

**Model:** TA1229B2K1A2L0

**Horsepower:** 25 hp

**Flow:** 666 us gpm

**Head:** 98 feet

**Impeller Dia.:** 10.1 in

**Control:** Runs Always except 2 weeks in shoulder season

**Deficiencies:** Main pump on VFD.

**Notes:**

## PUMP: P-16

**Function:** Induction Supply, TC South and West

**Location:** TC Penthouse Mech Room

**Observed:** Observed Not Running

**Voltage:** 575v3ø

**Manufacturer:** Taco

**Model:** TA1229B2L1A2L0

**Horsepower:** 30 hp

**Flow:** 730 us gpm

**Head:** 105 feet

**Impeller Dia.:** 10.6 in

**Control:** Runs Always except 2 weeks in shoulder season

**Deficiencies:** Main pump on VFD.

**Notes:**

## PUMP: P-25

**Function:** Induction Supply, HQ building West

**Location:** HQ West Penthouse Mech Room

**Observed:** Observed Not Running

**Voltage:** 575v3ø

**Manufacturer:** Taco

**Model:** TA1038B2M1B2L0

**Horsepower:** 40 hp

**Flow:** 587 us gpm

**Head:** 141 feet

**Impeller Dia.:** 12.3 in

**Control:** Runs Always except 2 weeks in shoulder season

**Deficiencies:** backup for P-10

**Notes:**



# Hot Water or Steam Heating Plant

4520082 - Ottawa Technology Centre - PlantID: Converter "E"

## PUMP: P-26

**Function:** Induction Supply, HQ building East

**Location:** HQ East Penthouse Mech Room

**Observed:** Observed Not Running

**Voltage:** 575v3ø

**Manufacturer:** Taco

**Model:** TA1038B2M1B2L0

**Horsepower:** 40 hp

**Flow:** 587 us gpm

**Head:** 141 feet

**Impeller Dia.:** 12.3 in

**Control:** Runs Always except 2 weeks in shouder season

**Deficiencies:** backup for P-12

**Notes:**

## PUMP: P-27A

**Function:** Induction Supply, TC North and East

**Location:** TC Penthouse Mech Room

**Observed:** Observed Not Running

**Voltage:** 575v3ø

**Manufacturer:** Taco

**Model:** TA1238B2P1B2L0

**Horsepower:** 50 hp

**Flow:** 840 us gpm

**Head:** 154 feet

**Impeller Dia.:** 13 in

**Control:** Runs Always except 2 weeks in shoulder season

**Deficiencies:** backup for P-15

**Notes:**

## PUMP: P-27B

**Function:** Induction Supply, TC South and West

**Location:** TC Penthouse Mech Room

**Observed:** Observed Not Running

**Voltage:** 575v3ø

**Manufacturer:** Taco

**Model:** TA1028B2P1B2L0

**Horsepower:** 60 hp

**Flow:** 920 us gpm

**Head:** 164 feet

**Impeller Dia.:** 14.6 in

**Control:** Runs Always except 2 weeks in shoulder season

**Deficiencies:** Backup for P-16

**Notes:**

## PUMP: P-50A

**Function:** Heating Zone SUPPLY

**Location:** Basement Mechanical Room

**Observed:**

**Voltage:** 575v3ø

**Manufacturer:** Taco

**Model:** TA1024B2H1B2L0

**Horsepower:** 15 hp

**Flow:** 476 us gpm

**Head:** 59 feet

**Impeller Dia.:** 8.3 in

**Control:** Runs alternate weeks with P-50B

**Deficiencies:**

**Notes:**

Mechanical

# Hot Water or Steam Heating Plant

4520082 - Ottawa Technology Centre - PlantID: Converter "E"

PUMP: P-50B

**Function:** Heating Zone SUPPLY

**Location:** Basement Mechanical Room

**Observed:**

**Voltage:** 575v3ø

**Manufacturer:** Taco

**Model:** TA1024B2H1B2L0

**Horsepower:** 15 hp

**Flow:** 476 us gpm

**Head:** 59 feet

**Impeller Dia.:** 8.3 in

**Control:** Runs alternate weeks with P-50A

**Deficiencies:**

**Notes:**

**Interior AHU, Single Zone****4520082 - Ottawa Technology Centre****Unit ID:** AHU-1**Supplying Areas:** West half of building**Location:** HQ West Penthouseb **Additional perimeter heat exists for this zone****For Packaged Units:****Manufacturer:** Canadian Blower &  
Forge**Model:****Serial:****Heating:**

Glycol coil with 3-way control valve and coil circulator

**Burner Type:** No Burner**Burner Firing Rate:** No Burner**Supply Volume:** Variable Speed Drive(s) on interior zone fans**Mixing Arrangement:** Recirculatory Mixing**Dampers:** Mixing dampers which move freely and properly with controller**Cooling:** Chilled water coil with 2-way control valve**Humidification:** NG fired Nortec**Control / Scheduling:****Control:** DDC / EMS**Schedule:** Scheduled on/off, 6:00 am - 8:30 pm (for all fans)**Control - Temperatures:****Primary Air Handler Heating Controlled From:** Supply air**Setpoint:** Fixed at 14 °C**Air Handler Cooling Controlled From:** Supply air**Setpoint:** Fixed at 14 °C**Mixed Air Controlled to:** Fixed at 13 °C**Fan Motor Nameplate Data:****Site Visit Observations:** Observed Running**Fan Voltage:** 575V, 3Ø**Supply Fan:** See Notes**Return Fan:** 20 hp, with VSD**Dedicated Direct Expansion Refrigeration Systems Only:****DX Voltage:** N/A**DX Condenser Fans:** 1:**DX Compressors:** 1:

2:

2:

3:

3:

4:

5:

**Filter Condition:** Clean**Coil Condition:** Good**Discharge Duct Size:****Deficiencies:** VSD's for induction zones have been removed due to comfort complaints.

Reheat coils operate only for a couple weeks a year during switchover to address comfort issues; then they are disabled.

Supply air relative humidity setpoint on BAS is high at 80%.

<b>Notes:</b>	SF-1	25 hp	9,100 cfm	VSD maintains static pressure setpoint.	West North Interior
	SF-4	15 hp	11,675 cfm	VSD has been removed.	West End North Induction
	SF-3	20 hp	12,405 cfm	VSD has been removed.	West End South Induction
	SF-2	30 hp	19,580 cfm	VSD maintains static pressure setpoint.	West End South Interior

# Interior AHU, Single Zone

## 4520082 - Ottawa Technology Centre

Unit ID: AHU-10

Supplying Areas: Kitchen Interior

Location: Basement Main Mechanical Room

Additional perimeter heat exists for this zone

For Packaged Units:

Manufacturer:

Model:

Serial:

Heating:

    Burner Type:

    Burner Firing Rate:

Supply Volume:

    Mixing Arrangement:

    Dampers:

Cooling:

Humidification:

Control / Scheduling:

    Control:

    Schedule:

Control - Temperatures:

    Primary Air Handler Heating Controlled From:

    Setpoint:

    Air Handler Cooling Controlled From:

    Setpoint:

    Mixed Air Controlled to:

Fan Motor Nameplate Data:

Site Visit Observations: Observed Not Running

    Fan Voltage:

    Supply Fan: 7.5 hp

    Return Fan:

Dedicated Direct Expansion Refrigeration Systems Only:

    DX Voltage:

    DX Condenser Fans: 1:

    DX Compressors: 1:

    2:

    2:

    3:

    3:

    4:

    5:

Filter Condition:

Coil Condition:

Discharge Duct Size:

Deficiencies:

    Notes: heating coil is hot, yet fan is off

**Interior AHU, Single Zone****4520082 - Ottawa Technology Centre****Unit ID:** AHU-11**Supplying Areas:** Loading Dock Interior**Location:** Basement Main Mechanical Room**Additional perimeter heat exists for this zone****For Packaged Units:****Manufacturer:****Model:****Serial:****Heating:** Glycol coil with 3-way control valve, no coil circulator**Burner Type:** No Burner**Burner Firing Rate:** No Burner**Supply Volume:****Mixing Arrangement:****Dampers:****Cooling:****Humidification:****Control / Scheduling:****Control:** DDC / EMS**Schedule:** Thermostat can cycle fan, has On/Auto switch**Control - Temperatures:****Primary Air Handler Heating Controlled From:** Space temperature**Setpoint:** Fixed at 18 °C**Air Handler Cooling Controlled From:****Setpoint:****Mixed Air Controlled to:****Fan Motor Nameplate Data:****Site Visit Observations:****Fan Voltage:****Supply Fan:** 7.5 hp, 20,000 cfm**Return Fan:****Dedicated Direct Expansion Refrigeration Systems Only:****DX Voltage:****DX Condenser Fans:** 1:**DX Compressors:** 1:

2:

2:

3:

3:

4:

5:

**Filter Condition:****Coil Condition:****Discharge Duct Size:****Deficiencies:****Notes:** heating coil warm, yet fan was off

**Interior AHU, Single Zone****4520082 - Ottawa Technology Centre****Unit ID:** AHU-12**Supplying Areas:** TC Building Offices (Floors 8-10)**Location:** TC Penthouseb **Additional perimeter heat exists for this zone****For Packaged Units:****Manufacturer:** Canadian Blower &  
Forge**Model:****Serial:****Heating:**

Glycol coil with 3-way control valve

**Burner Type:** No Burner**Burner Firing Rate:** No Burner**Supply Volume:** Variable Speed Drive(s), see notes for cfm values**Mixing Arrangement:** Recirculatory Mixing**Dampers:** Mixing dampers which move freely and properly with controller**Cooling:** Chilled water coil with 2-way control valve**Humidification:** NG fired Nortec**Control / Scheduling:****Control:** DDC / EMS**Schedule:** Scheduled on/off, 6am-8:30pm Mon-Fri**Control - Temperatures:****Primary Air Handler Heating Controlled From:** Supply air**Setpoint:** Fixed at 14.5 °C**Air Handler Cooling Controlled From:** Supply air**Setpoint:** Fixed at 14.5 °C**Mixed Air Controlled to:** Fixed at 13.5 °C**Fan Motor Nameplate Data:****Site Visit Observations:** Observed Running**Fan Voltage:** 575V, 3Ø**Supply Fan:** see notes**Return Fan:** 20 hp, 34,500 cfm**Dedicated Direct Expansion Refrigeration Systems Only:****DX Voltage:**

<b>DX Condenser Fans:</b>	<b>1:</b>	<b>DX Compressors:</b>	<b>1:</b>
	<b>2:</b>		<b>2:</b>
	<b>3:</b>		<b>3:</b>
	<b>4:</b>		
	<b>5:</b>		

**Filter Condition:** Clean**Coil Condition:** Good**Discharge Duct Size:****Deficiencies:** Reheat coils operate only for a couple weeks a year during switchover to address comfort issues; then they are disabled.  
Supply air relative humidity setpoint is high @ 85%, when only achieving 33% RH and humidifier valve 100% open.**Notes:** SF-29 50 hp 20,250 cfm Floors 8-10 West Interior  
SF-30 50 hp 24,100 cfm Floors 8-10 East Interior

**Interior AHU, Single Zone****4520082 - Ottawa Technology Centre****Unit ID:** AHU-2**Supplying Areas:** East half of building**Location:** HQ East Penthouseb **Additional perimeter heat exists for this zone**

**For Packaged Units:**      **Manufacturer:** Canadian Blower & Forge      **Model:** 67-L--3126-T50      **Serial:**

**Heating:**

Glycol coil with 3-way control valve and coil circulator

**Burner Type:** No Burner**Burner Firing Rate:** No Burner**Supply Volume:** Variable Speed Drive(s) on interior units**Mixing Arrangement:** Recirculatory Mixing**Dampers:** Mixing dampers which move freely and properly with controller**Cooling:** Chilled water coil with 2-way control valve**Humidification:** NG fired Nortec**Control / Scheduling:****Control:** DDC / EMS**Schedule:** Scheduled on/off, 6:00 am - 8:30 pm (for all fans)**Control - Temperatures:****Primary Air Handler Heating Controlled From:** Supply air**Setpoint:** Fixed at 13 °C**Air Handler Cooling Controlled From:** Supply air**Setpoint:** Fixed at 13 °C**Mixed Air Controlled to:** Fixed at 13 °C**Fan Motor Nameplate Data:****Site Visit Observations:** Observed Running**Fan Voltage:** 575V, 3Ø**Supply Fan:** See Notes**Return Fan:** 20 hp, 44600 cfm, VSD@75%**Dedicated Direct Expansion Refrigeration Systems Only:****DX Voltage:** N/A

<b>DX Condenser Fans:</b>	<b>1:</b>		<b>DX Compressors:</b>	<b>1:</b>
	<b>2:</b>			<b>2:</b>
	<b>3:</b>			<b>3:</b>
	<b>4:</b>			
	<b>5:</b>			

**Filter Condition:** Clean**Coil Condition:** Good**Discharge Duct Size:****Deficiencies:** VSD's for induction zones have been removed due to comfort complaints.

Reheat coils operate only for a couple weeks a year during switchover to address comfort issues; then they are disabled.

<b>Notes:</b>	SF-5	30 hp	14,200 cfm	VSD on 100% during occ. hours.	East End North Interior
	SF-8	15 hp	9,250 cfm	VSD has been removed.	East End North Induction
	SF-7	15 hp	6,525 cfm	VSD has been removed.	East End South Induction
	SF-6	40 hp	18,300 cfm	VSD on 100% during occ. hours.	East End South Interior

**Interior AHU, Single Zone****4520082 - Ottawa Technology Centre****Unit ID:** AHU-3**Supplying Areas:** TC Building Offices (Floors 1-7 Interior)**Location:** TC Penthouseb **Additional perimeter heat exists for this zone****For Packaged Units:****Manufacturer:** Canadian Blower &  
Forge**Model:****Serial:****Heating:**

Glycol coil with 3-way control valve

**Burner Type:** No Burner**Burner Firing Rate:** No Burner**Supply Volume:** Constant Volume**Mixing Arrangement:** Recirculatory Mixing**Dampers:** Mixing dampers which move freely and properly with controller**Cooling:** Chilled water coil with 2-way control valve**Humidification:** NG fired Nortec**Control / Scheduling:****Control:** DDC / EMS**Schedule:** Scheduled on/off, 5:30am-11pm Mon-Fri, 6am-5pm Sat**Control - Temperatures:****Primary Air Handler Heating Controlled From:** Supply air**Setpoint:** Fixed at 14 °C**Air Handler Cooling Controlled From:** Supply air**Setpoint:** Fixed at 14 °C**Mixed Air Controlled to:** Fixed at 13 °C**Fan Motor Nameplate Data:****Site Visit Observations:** Observed Running**Fan Voltage:** 575V, 3Ø**Supply Fan:** see notes**Return Fan:** see notes**Dedicated Direct Expansion Refrigeration Systems Only:****DX Voltage:**

<b>DX Condenser Fans:</b>	<b>1:</b>	<b>DX Compressors:</b>	<b>1:</b>
	<b>2:</b>		<b>2:</b>
	<b>3:</b>		<b>3:</b>
	<b>4:</b>		
	<b>5:</b>		

**Filter Condition:** Clean**Coil Condition:** Good**Discharge Duct Size:****Deficiencies:** Reheat coils operate only for a couple weeks a year during switchover to address comfort issues; then they are disabled.

**Notes:** SF-9 75 hp 36,200 cfm Floors 1-7 South and West Interior  
 SF-10 60 hp 38,100 cfm Floors 1-7 North and East Interior

Shared RF with AHU-4: RF-3, 30hp, 62,500 cfm with VSD at 100%



**Interior AHU, Single Zone****4520082 - Ottawa Technology Centre****Unit ID:** AHU-4**Supplying Areas:** TC Building Offices (Floors 2-10 Induction)**Location:** TC Penthousep **Additional perimeter heat exists for this zone****For Packaged Units:****Manufacturer:** Canadian Blower &  
Forge**Model:****Serial:****Heating:**

Glycol coil with 3-way control valve

**Burner Type:** No Burner**Burner Firing Rate:** No Burner**Supply Volume:** Variable Speed Drive(s), see notes for cfm values**Mixing Arrangement:** Recirculatory Mixing**Dampers:** Mixing dampers which move freely and properly with controller**Cooling:** Chilled water coil with 2-way control valve**Humidification:** NG fired Nortec**Control / Scheduling:****Control:** DDC / EMS**Schedule:** Runs always**Control - Temperatures:****Primary Air Handler Heating Controlled From:** Supply air**Setpoint:** Fixed at 15 °C**Air Handler Cooling Controlled From:** Supply air**Setpoint:** Fixed at 15 °C**Mixed Air Controlled to:** Fixed at 15 °C**Fan Motor Nameplate Data:****Site Visit Observations:** Observed Running**Fan Voltage:** 575V, 3Ø**Supply Fan:** see notes**Return Fan:** see notes**Dedicated Direct Expansion Refrigeration Systems Only:****DX Voltage:**

<b>DX Condenser Fans:</b>	<b>1:</b>	<b>DX Compressors:</b>	<b>1:</b>
	<b>2:</b>		<b>2:</b>
	<b>3:</b>		<b>3:</b>
	<b>4:</b>		
	<b>5:</b>		

**Filter Condition:** Clean**Coil Condition:** Good**Discharge Duct Size:****Deficiencies:** Reheat coils operate only for a couple weeks a year during switchover to address comfort issues; then they are disabled.  
Supply air relative humidity setpoint high at 85%.**Notes:** SF-14 50 hp 30,600 cfm Floors 2-10 South and West Induction, VSD @ 100%  
SF-13 25 hp 11,000 cfm Floors 2-10 North and East Induction

Shared RF with AHU-3: RF-3, 25hp, 62,500 cfm, VSD @ 100%

**Interior AHU, Single Zone****4520082 - Ottawa Technology Centre****Unit ID:** AHU-5**Supplying Areas:** TC Building Offices (Floors 2-7 Interior)**Location:** TC Penthouseb **Additional perimeter heat exists for this zone****For Packaged Units:****Manufacturer:** Canadian Blower & Forge**Model:****Serial:****Heating:**

Glycol coil with 3-way control valve

**Burner Type:** No Burner**Burner Firing Rate:** No Burner**Supply Volume:** Constant Volume**Mixing Arrangement:** Recirculatory Mixing**Dampers:** Mixing dampers which move freely and properly with controller**Cooling:** Chilled water coil with 2-way control valve**Humidification:** NG fired Nortec**Control / Scheduling:****Control:** DDC / EMS**Schedule:** Scheduled on/off, 5:30am-11pm Mon-Fri, 6am-5pm Sat-Sun**Control - Temperatures:****Primary Air Handler Heating Controlled From:** Supply air**Setpoint:** Fixed at 14 °C**Air Handler Cooling Controlled From:** Supply air**Setpoint:** Fixed at 14 °C**Mixed Air Controlled to:** Fixed at 13 °C**Fan Motor Nameplate Data:****Site Visit Observations:** Observed Running**Fan Voltage:** 575V, 3Ø**Supply Fan:** see notes**Return Fan:** see notes**Dedicated Direct Expansion Refrigeration Systems Only:****DX Voltage:**

<b>DX Condenser Fans:</b>	<b>1:</b>	<b>DX Compressors:</b>	<b>1:</b>
	<b>2:</b>		<b>2:</b>
	<b>3:</b>		<b>3:</b>
	<b>4:</b>		
	<b>5:</b>		

**Filter Condition:** Clean**Coil Condition:** Good**Discharge Duct Size:****Deficiencies:** Reheat coils operate only for a couple weeks a year during switchover to address comfort issues; then they are disabled.

<b>Notes:</b>	SF-17	20 hp	7,600 cfm	Penthouse #3 Interior
	SF-16	50 hp	13,650 cfm	Floors 2-7 North and West Interior
	SF-15	60 hp	25,000 cfm	Floors 2-7 South and East Interior

Shared RF with AHU-6: RF-4, 30hp, 72,800 cfm

P-22, heating coil circulator TDV @ 60% open

**Interior AHU, Single Zone****4520082 - Ottawa Technology Centre****Unit ID:** AHU-6**Supplying Areas:** TC Building Offices (UPS Room)**Location:** TC Penthousep **Additional perimeter heat exists for this zone****For Packaged Units:****Manufacturer:** Canadian Blower &  
Forge**Model:****Serial:****Heating:**

Glycol coil with 3-way control valve

**Burner Type:** No Burner**Burner Firing Rate:** No Burner**Supply Volume:** Constant Volume**Mixing Arrangement:** Recirculatory Mixing**Dampers:** Mixing dampers which move freely and properly with controller**Cooling:** Chilled water coil with 2-way control valve**Humidification:** NG fired Nortec**Control / Scheduling:****Control:** DDC / EMS**Schedule:** see notes**Control - Temperatures:****Primary Air Handler Heating Controlled From:** Supply air**Setpoint:** Fixed at 14 °C**Air Handler Cooling Controlled From:** Supply air**Setpoint:** Fixed at 14 °C**Mixed Air Controlled to:** Fixed at 13 °C**Fan Motor Nameplate Data:****Site Visit Observations:** Observed Running**Fan Voltage:** 575V, 3Ø**Supply Fan:** see notes**Return Fan:** see notes**Dedicated Direct Expansion Refrigeration Systems Only:****DX Voltage:**

<b>DX Condenser Fans:</b>	<b>1:</b>	<b>DX Compressors:</b>	<b>1:</b>
	<b>2:</b>		<b>2:</b>
	<b>3:</b>		<b>3:</b>
	<b>4:</b>		
	<b>5:</b>		

**Filter Condition:** Clean**Coil Condition:** Good**Discharge Duct Size:****Deficiencies:** Reheat coils operate only for a couple weeks a year during switchover to address comfort issues; then they are disabled.

<b>Notes:</b>	SF-18	40 hp	11,700 cfm	Floors 1, 2 Link Interior	Scheduled On/Off, 5am-10pm Mon-Fri
	SF-19	25 hp	11,900 cfm	UPS and Battery Interior	Runs Always

Shared RF with AHU-5: RF-4, 30hp, 72,800 cfm

Dedicated RF: 10hp, 20,650 cfm, VSD @ 100%

**Interior AHU, Single Zone****4520082 - Ottawa Technology Centre****Unit ID:** AHU-7**Supplying Areas:** Link and TC First Floor**Location:** Basement Main Mechanical Room    **Additional perimeter heat exists for this zone****For Packaged Units:**      **Manufacturer:** Canadian Blower & Forge      **Model:**      **Serial:****Heating:**

Glycol coil with 3-way control valve

**Burner Type:** No Burner**Burner Firing Rate:** No Burner**Supply Volume:** Constant Volume**Mixing Arrangement:** Recirculatory Mixing**Dampers:** Mixing dampers which move freely and properly with controller**Cooling:** Chilled water coil with 2-way control valve**Humidification:** NG fired Nortec**Control / Scheduling:****Control:** DDC / EMS**Schedule:** See notes**Control - Temperatures:****Primary Air Handler Heating Controlled From:** Supply air**Setpoint:** Fixed at 14 °C**Air Handler Cooling Controlled From:** Supply air**Setpoint:** Fixed at 14 °C**Mixed Air Controlled to:** Fixed at 13 °C**Fan Motor Nameplate Data:****Site Visit Observations:** Observed Running**Fan Voltage:** 575V, 3Ø**Supply Fan:** see notes**Return Fan:** 10 hp, 24,000 cfm**Dedicated Direct Expansion Refrigeration Systems Only:****DX Voltage:**

<b>DX Condenser Fans:</b>	<b>1:</b>	<b>DX Compressors:</b>	<b>1:</b>
	<b>2:</b>		<b>2:</b>
	<b>3:</b>		<b>3:</b>
	<b>4:</b>		
	<b>5:</b>		

**Filter Condition:** Clean**Coil Condition:** Good**Discharge Duct Size:****Deficiencies:** Reheat coils operate only for a couple weeks a year during switchover to address comfort issues; then they are disabled.  
Supply air relative humidity setpoint is high @ 75%

<b>Notes:</b>	SF-25	20 hp	2,700 cfm	Link Interior, scheduled on/off, 5am-10pm Mon-Fri
	SF-24	10 hp	19,000 cfm	Floor 1 TC North, South, East, West Induction, runs always
	SF-23	10 hp	12,000 cfm	Floor 1 TC East and Link Induction, runs always

**Interior AHU, Single Zone****4520082 - Ottawa Technology Centre****Unit ID:** AHU-8**Supplying Areas:** Basement**Location:** Basement Main Mechanical Room    **Additional perimeter heat exists for this zone****For Packaged Units:**      **Manufacturer:** Canadian Blower & Forge      **Model:**      **Serial:****Heating:**

Glycol coil with 3-way control valve

**Burner Type:** No Burner**Burner Firing Rate:** No Burner**Supply Volume:** Constant Volume**Mixing Arrangement:** Recirculatory Mixing**Dampers:** Mixing dampers which move freely and properly with controller**Cooling:** Chilled water coil with 2-way control valve**Humidification:** NG fired Nortec**Control / Scheduling:****Control:** DDC / EMS**Schedule:** Scheduled On/Off, 5am-10pm Mon-Fri**Control - Temperatures:****Primary Air Handler Heating Controlled From:** Supply air**Setpoint:** Fixed at 14 °C**Air Handler Cooling Controlled From:** Supply air**Setpoint:** Fixed at 14 °C**Mixed Air Controlled to:** Fixed at 13 °C**Fan Motor Nameplate Data:****Site Visit Observations:** Observed Running**Fan Voltage:** 575V, 3Ø**Supply Fan:** see notes**Return Fan:** 25 hp, 103,300 cfm**Dedicated Direct Expansion Refrigeration Systems Only:****DX Voltage:**

<b>DX Condenser Fans:</b>	<b>1:</b>	<b>DX Compressors:</b>	<b>1:</b>
	<b>2:</b>		<b>2:</b>
	<b>3:</b>		<b>3:</b>
	<b>4:</b>		
	<b>5:</b>		

**Filter Condition:** Clean**Coil Condition:** Good**Discharge Duct Size:****Deficiencies:** Reheat coils operate only for a couple weeks a year during switchover to address comfort issues; then they are disabled.

<b>Notes:</b>	SF-21	40 hp	24,500 cfm	Basement East Interior
	SF-22	40 hp	10,275 cfm	Basement West Interior

Mechanical

## Interior AHU, Multi Zone

4520082 - Ottawa Technology Centre

**Unit ID:** AHU-9

**Supplying Areas:** Cafeteria Interior

**Location:** Basement main mechanical room    **Additional perimeter heat exists for this zone**

**For Packaged Units:**      **Manufacturer:** Canadian Blower &      **Model:**      **Serial:**  
Forge

**Heating:**

Glycol coil with 2-way control valve

**Burner Type:** No Burner

**Burner Firing Rate:** No Burner

**Mixing Arrangement:** Recirculatory Mixing

**Dampers:** Mixing dampers which move freely and properly with controller.

**Cooling:** Chilled water coil with 3-way control valve, no coil circulator

**Humidification:** Steam from other source

**Control / Scheduling:**

**Control:** DDC / EMS

**Schedule:**

**Number of Zones:** 6    **Thermostat Type:**

**Thermostat Manufacturer:**

**Control - Temperatures:**

**Zone Motor Manufacturer:**

**Hot Deck Heating Control From:** Supply air

**Setpoint:** Fixed

**Cold Deck Cooling Controlled From:** Supply air

**Setpoint:** Fixed

**Mixed Air Controlled to:** Varying setpoint

**Fan Motor Nameplate Data:**

**Site Visit Observations:** Observed Running

**Fan Voltage:** 575v, 3ø

**Supply Fan:** 10 hp

**Return Fan:** 7.5 hp

**Dedicated Direct Expansion Refrigeration Systems Only:**

**DX Voltage:**

**DX Condenser Fans:** 1:

**DX Compressors:** 1:

2:

2:

3:

3:

Mechanical

## Interior AHU, Multi Zone

4520082 - Ottawa Technology Centre

4:

5:

**Filter Condition:**

**Coil Condition:**

**Discharge Duct Size:**

**Deficiencies:** Thermostats are not on the BAS

**Notes:**

# Rooftop Air Handler

**4520082 - Ottawa Technology Centre****Unit ID:** AHU-Kitchen**Supplying Areas:** Kitchen**Location:** Cafeteria Roof**Additional perimeter heat exists for this zone****Manufacturer:** Halton**Model:** EF8-45-B8-OC8**Serial:** 507320/CO8-320**Heating Section:** No Heat**Burner Type:****Firing Rate:****Supply Volume:** Constant Volume 8,000 cfm**Mixing:** 100% RA**Dampers:****Cooling Section:****Control / Schedule:****Control:****Schedule:****Fan Motor Nameplate Data:****Site Visit Observations:****Fan Voltage:****Supply Fan:****Return Fan:** 7.5 hp, 7.9 FLA**Condenser (Outside) Fans:**

1:

**Compressors 1:**

2:

2:

3:

3:

4:

4:

**Multi Zone Units:****Number of Zones:****Thermostat Type:****Thermostat Manufacturer:****Zone Motor Manufacturer:****Filter Condition:****Coil Condition:****Discharge Duct Size:****Deficiencies:****Notes:** Kitchen Exhaust system with grease scrubbers.



# Rooftop Air Handler

**4520082 - Ottawa Technology Centre****Unit ID:** AHU-Link**Supplying Areas:** Antechamber Hallway of Link**Location:** Link Roofp **Additional perimeter heat exists for this zone****Manufacturer:** Engineered Air**Model:** DJ-40-CO**Serial:** M9307-AHU-1**Heating Section:** Natural Gas Furnace 400,000 Btuh input**Burner Type:** Forced Draft**Firing Rate:****Supply Volume:** Constant Volume 5,000 cfm**Mixing:** Recirculatory Mixing**Dampers:****Cooling Section:****Control / Schedule:****Control:****Schedule:****Fan Motor Nameplate Data:****Site Visit Observations:****Fan Voltage:** 575v, 3ø**Supply Fan:** 5 hp, 5.2 FLA**Return Fan:** 3 hp, 3.1 FLA**Condenser (Outside) Fans:**

1:

**Compressors 1:**

2:

2:

3:

3:

4:

4:

**Multi Zone Units:****Number of Zones:****Thermostat Type:****Thermostat Manufacturer:****Zone Motor Manufacturer:****Filter Condition:****Coil Condition:****Discharge Duct Size:****Deficiencies:****Notes:**

# Non-Operating Equipment

## 4520082 - Ottawa Technology Centre

The following equipment was not running at the time of the mechanical equipment survey. If there is nothing listed, all HVAC equipment was found operational under normal control.

### AIR HANDLING:

Unit ID:	Area Supplied/Location:	Mixing:	Heating/Cooling:	Notes:
AHU-10	Kitchen Interior Basement Main Mechanical Room			heating coil is hot, yet fan is off

### PUMPS:

Plant ID	Pump ID	Function	Make/	Notes
Converter "E"	P-10	Induction Supply, HQ building West	Taco TA1024B2J1B2L0 575v3ø 20 hp 88 feet 9.6 in	Main pump with VFD.
Converter "E"	P-12	Induction Supply, HQ building East	Taco TA1024B2J1B2L0 575v3ø 20 hp 88 feet 9.6 in	Main pump with VFD.
Converter "E"	P-15	Induction Supply, TC North and East	Taco TA1229B2K1A2L0 575v3ø 25 hp 98 feet 10.1 in	Main pump on VFD.
Converter "E"	P-16	Induction Supply, TC South and West	Taco TA1229B2L1A2L0 575v3ø 30 hp 105 feet 10.6 in	Main pump on VFD.
Converter "E"	P-25	Induction Supply, HQ building West	Taco TA1038B2M1B2L0 575v3ø 40 hp 141 feet 12.3 in	backup for P-10
Converter "E"	P-26	Induction Supply, HQ building East	Taco TA1038B2M1B2L0 575v3ø 40 hp 141 feet 12.3 in	backup for P-12
Converter "E"	P-27A	Induction Supply, TC North and East	Taco TA1238B2P1B2L0 575v3ø 50 hp 154 feet 13 in	backup for P-15
Converter "E"	P-27B	Induction Supply, TC South and West	Taco TA1028B2P1B2L0 575v3ø 60 hp 164 feet 14.6 in	Backup for P-16
DHW-3	P-1A	DHW heating from HTHW heatBell and Gossett exchanger	NBF-25	
DHW-3	P-1B	DHW heating from HTHW heatBell and Gossett exchanger	NBF-25	

### UNUSUAL SYSTEMS:

Unit ID:	Unit Type:	Notes:
HUM-1	Unusual Equipment	<p>Typical of 10. One unit each for AHU-1, AHU-2, AHU-3, AHU-4, AHU-5, AHU-6, AHU-7, AHU-8, AHU-9, AHU-12</p> <p>Manufacturer: Nortec Model: GHMC400N Serial Number: 610825GN4003 120V, 1 phase, 10A rated Max input: 476 MBH Min input: 65 MBH</p>

		Building W400116		519632 Taxation Headquarters		875 Heron Rd.		Ottawa		ON K1A1B1																	
Previous Project #	Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year Original Baseline	Revised Baseline	Committed Amount	Previously Reported % Completed	Invoiced Amount	Current Month Invoice % Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements	Fee 100% / 85%	15%	Year to Date Status % Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements	Fee 100% / 85%	15%	E1 Project#	Comments/ PFM Initials		
	W25A	Ottawa D. Project > 5K-25K																									
	2	Vote 15 - Repair																									
		PW 137354																									
		Utilities Charge Back Study							2,500.80	2,500.80		99.00	3,933.24		1.00	1,448.76-	1,391.77-	2.16	59.15-	10.44-	100.00	2,484.48	2,176.00	216.00	92.48	16.32	36132970
	Total of -	2	Vote 15 - Repair						2,500.80	2,500.80			3,933.24			1,448.76-	1,391.77-	2.16	59.15-	10.44-		2,484.48	2,176.00	216.00	92.48	16.32	
	Total of Business Unit -	W25A	Ottawa D. Project > 5K-25K						2,500.80	2,500.80			3,933.24			1,448.76-	1,391.77-	2.16	59.15-	10.44-		2,484.48	2,176.00	216.00	92.48	16.32	
	Grand Total of Building Number -	W400116	Taxation Headquarters						2,500.80	2,500.80			3,933.24			1,448.76-	1,391.77-	2.16	59.15-			2,484.48	2,176.00	216.00	92.48	16.32	

PWGSC APPROVAL

SNC-LAVALIN PROFAC APPROVAL

			Building W400117		519633 Taxation Data Centre		875 Heron Rd.		Ottawa		ON K1A1B1						Year to Date Status					Comments/			
Previous Project #	Project Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year Original Baseline	Revised Baseline	Committed Amount	Previously Reported % Completed	Invoiced Amount	Current Month Invoice % Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements	Fee 100% / 85%	15%	% Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements	Fee 100% / 85%	15%	E1 Project#	PFM Initials
	W25A	Ottawa D. Project > 5K-25K																							
	2	Vote 15 - Repair																							
		PW 120646 Pressure Piping					21,525.00	25,750.11	25,750.11	30.00	6,932.70	70.00	18,649.88	16,281.74	1,676.16	691.98	122.11	100.00	25,582.57	22,338.20	2,295.00	949.37	167.54	34020641	
		PW 132309 Life Safety Integrated Test		R.010977.003			23,250.00	41,220.11	41,220.11	98.00	40,131.05	2.00	819.00	720.16	68.24	30.60	5.40	100.00	40,950.05	36,007.82	3,411.90	1,530.33	270.06	34020712	
Total of -	2	Vote 15 - Repair					44,775.00	66,970.22	66,970.22		47,063.75		19,468.88	17,001.90	1,744.40	722.58	127.51		66,532.62	58,346.02	5,706.90	2,479.70	437.60		
Total of Business Unit -	W25A	Ottawa D. Project > 5K-25K					44,775.00	66,970.22	66,970.22		47,063.75		19,468.88	17,001.90	1,744.40	722.58	127.51		66,532.62	58,346.02	5,706.90	2,479.70	437.60		
	W25B	Ottawa D. Project 25K - 200K																							
	1	Vote 12 -Capital																							
		PW 137036 Roof Anchors Install						25,622.01	25,622.01			100.00	25,454.60	22,321.11	2,184.84	948.65	167.41	100.00	25,454.60	22,321.11	2,184.84	948.65	167.41	37961702	
Total of -	1	Vote 12 -Capital						25,622.01	25,622.01				25,454.60	22,321.11	2,184.84	948.65	167.41		25,454.60	22,321.11	2,184.84	948.65	167.41		
	2	Vote 15 - Repair																							
		PW 122247 Arc Flash Study		R.010977.004			36,800.00	45,786.52	45,786.52	99.00	45,033.19	1.00	454.86	397.95	40.01	16.90	2.98	100.00	45,488.05	39,795.35	4,001.40	1,691.30	298.47	34020819	
		PW 132298 Water Testing-Control Survey		R.010977.004			38,150.00	26,568.53	26,568.53	30.00	7,918.70	70.00	18,476.95	16,135.70	1,655.48	685.77	121.02	100.00	26,395.65	23,051.00	2,364.98	979.67	172.88	34021070	
		PW 137122 Designated Substance Assessment						8,453.40	8,453.40			100.00	8,398.65	7,300.00	788.40	310.25	54.75	100.00	8,398.65	7,300.00	788.40	310.25	54.75	37939847	
Total of -	2	Vote 15 - Repair					74,950.00	80,808.45	80,808.45		52,951.89		27,330.46	23,833.65	2,483.89	1,012.92	178.75		80,282.35	70,146.35	7,154.78	2,981.22	526.10		
Total of Business Unit -	W25B	Ottawa D. Project 25K - 200K					74,950.00	106,430.46	106,430.46		52,951.89		52,785.06	46,154.76	4,668.73	1,961.57	346.16		105,736.95	92,467.46	9,339.62	3,929.87	693.51		
	W25TP	Ottawa D. Project Tenant D.																							
	5	Tenant Service Project																							
		PW 130884 New Kitchenette Sinks for HO B						62,759.21	62,759.21		85.00	53,345.33	15.00	9,413.88	8,174.12	831.05	408.71	100.00	62,759.21	54,494.10	5,540.40	2,724.71		34469755	
		PW 131206 Alternative EPO Approach						1,207.50	1,207.50		75.00	1,811.26	25.00	603.76-	287.50	905.63-	14.37	100.00	1,207.50	1,150.00		57.50		34432784	
		PW 131347 UPS Room - Sprinkler/Lighting						28,628.35	28,628.35		98.00	27,585.14	2.00	1,043.21	486.63	532.25	24.33	100.00	28,628.35	24,331.37	3,080.41	1,216.57		34712436	
		PW 131405 Supply and Connect Temporary 2						241,647.92	241,647.92		75.00	181,235.94	25.00	60,411.98	52,452.88	5,598.72	2,360.38	100.00	241,647.92	209,811.52	22,394.88	9,441.52		34432725	
		PW 131487 Rewire Lighting System, 9, 10		R.022855.001				9,158.75	9,158.75		85.00	8,595.63	15.00	563.12	2,202.50	1,749.50-	110.12	100.00	9,158.75	7,175.00	1,625.00	358.75		34740744	

		Building W400117		519633 Taxation Data Centre		875 Heron Rd.		Ottawa		ON K1A1B1																
Previous Project #	Project Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year		Previously Reported		Current Month Invoice					Year to Date Status					E1 Project#	Comments/ PFM Initials				
							Original Baseline	Revised Baseline	Committed Amount	% Completed	Invoiced Amount	% Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements	Fee 100% / 85%	15%	% Completed	Invoiced Amount	Construction/ Design Costs			Labour/ Disbursements	Fee 100% / 85%	15%	
	PW 131543	ITB S&I MODBUS Cards						69,938.86	69,938.86	70.00	48,089.91	30.00	21,848.96	17,841.75	3,115.12	892.09		100.00	69,938.87	59,472.50	7,492.74	2,973.63		34770564		
	PW 131604	Replacement fire detection sys						7,825.75	7,825.75			100.00	7,825.75	6,215.00	1,300.00	310.75		100.00	7,825.75	6,215.00	1,300.00	310.75		34770636		
	PW 135514	Commissioning-Backup Power Sup						24,041.25	24,041.25	95.00	22,839.19	5.00	1,202.07	1,116.25	35.58	50.24		100.00	24,041.26	22,325.00	711.63	1,004.63		35775666		
	PW 136515	No Smoking Zones						62,539.46	62,539.46	98.00	61,805.71	2.00	733.75	1,080.89	401.18-	54.04		100.00	62,539.46	54,044.65	5,792.58	2,702.23		34799341		
	PW 136638	Annual A/C Maintenance Contrac						64,906.55	64,906.55	75.00	48,679.92	25.00	16,226.63	14,012.64	1,513.36	700.63		100.00	64,906.55	56,050.56	6,053.46	2,802.53		35077956		
	PW 136751	Emergency repairs to existing						92,003.83	92,003.83	98.00	90,163.76	2.00	1,840.07	1,589.48	171.12	79.47		100.00	92,003.83	79,473.83	8,556.31	3,973.69		35142210		
	PW 136756	Diesel Generator Maintenance□□						7,600.41	7,600.41	75.00	5,700.31	25.00	1,900.10	1,645.11	172.74	82.25		100.00	7,600.41	6,580.44	690.95	329.02		35338669		
	PW 136776	10th Floor Wall Removal						2,599.72	2,599.72	100.00	2,599.72							100.00	2,599.72	2,245.00	242.47	112.25		35334772		
	PW 136780	Re-locate 14 circuits in RDC #						2,895.00	2,895.00	100.00	2,895.00							100.00	2,895.00	2,500.00	270.00	125.00		35616577		
	PW 136878	PW 136878 - Computer Room Air						26,184.78	26,184.78	75.00	37,988.58	25.00	11,803.80-	10,200.00-	1,144.80-	459.00-		100.00	26,184.78	22,860.00	2,296.08	1,028.70		35404099		
	PW 136976	Electrical Maintenance and Upg						5,264.27	5,264.27	100.00	5,264.27							100.00	5,264.27	4,546.00	490.97	227.30		35440882		
	PW 136978	Provide Dual Power Distributio						251,946.47	251,946.47	85.00	216,753.84	15.00	35,192.63	30,449.35	3,373.06	1,370.22		100.00	251,946.47	217,960.20	24,178.06	9,808.21		35440971		
	PW 136986	UPS Maintenance						89,033.94	89,033.94	75.00	66,775.45	25.00	22,258.49	19,221.49	2,075.92	961.08		100.00	89,033.94	76,885.96	8,303.68	3,844.30		35443101		
	PW 136987	Pre-Action Fire Alarm Maintena						12,159.00	12,159.00	75.00	9,119.26	25.00	3,039.74	2,625.00	283.49	131.25		100.00	12,159.00	10,500.00	1,134.00	525.00		35616956		
	PW 137066	Supply and install of 24 sucur						1,787.95	1,787.95	99.00	3,154.95	1.00	1,367.00-	1,180.48-	127.50-	59.02-		100.00	1,787.95	1,544.00	166.75	77.20		35689629		
	PW 137122	Designated Substances Re-Asses								100.00	8,453.40	100.00-	8,453.40-	7,300.00-	788.40-	365.00-									35744641	
	PW 137145	Removal of 50 Computer Electri						4,342.50	4,342.50	100.00	4,342.50							100.00	4,342.50	3,750.00	405.00	187.50		35744771		
	PW 137247	UPS Transfer Inhibit and Trans						7,881.05	7,881.05	100.00	7,881.05							100.00	7,881.05	6,850.51	688.01	342.53		36033269		
	PW 137333	High Voltage Maintenance						144,494.44	144,494.44	95.00	137,269.72	5.00	7,224.72	6,246.52	665.88	312.32		100.00	144,494.44	124,930.40	13,317.52	6,246.52		36129391		
	PW 137539	Temporary Generator Cables						3,937.20	3,937.20			100.00	3,937.20	3,400.00	367.20	170.00		100.00	3,937.20	3,400.00	367.20	170.00		36547690		

		Building	W400117	519633	Taxation Data Centre	875 Heron Rd.	Ottawa	ON	K1A1B1																	
Previous Project #	Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year		Previously Reported		Current Month Invoice					Year to Date Status					Comments/ PFM Initials					
							Original Baseline	Revised Baseline	Committed Amount	% Completed	Invoiced Amount	% Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements	Fee 100% / 85%	15%	% Completed	Invoiced Amount	Construction/ Design Costs		Labour/ Disbursements	Fee 100% / 85%	15%	E1 Project#	
	PW 137630	10th Floor S&I 40' Blue Flex P							2,091.44	2,091.44	100.00	2,091.44	1,806.08	195.06	90.30		100.00	2,091.44	1,806.08	195.06	90.30		36808482			
	PW 137657	9th and 10th Floor Under Floor							30,407.34	30,407.34	100.00	30,407.35			.01-		100.00	30,407.35	26,258.50	2,835.92	1,312.93		36836459			
	PW 137919	Diesel Fuel Supply Mods to UST							7,419.00	7,419.00	100.00	7,419.00	6,500.00	594.00	325.00		100.00	7,419.00	6,500.00	594.00	325.00		37513281			
	PW 137941	Amperage Readings on Power Dis							492.15	492.15	100.00	492.15	425.00	45.90	21.25		100.00	492.15	425.00	45.90	21.25		37495019			
	PW 138197	Circuit Tracing Panel EDPT							689.01	689.01	100.00	689.01	595.00	64.26	29.75		100.00	689.01	595.00	64.26	29.75		37891741			
	PW 138198	DCH Emergency Repair UPS Site							6,946.59	6,946.59	100.00	6,946.59	5,998.78	647.87	299.94		100.00	6,946.59	5,998.78	647.87	299.94		37905436			
	PW 138199	Electrician for Generator Test							926.40	926.40	100.00	926.40	800.00	86.40	40.00		100.00	926.40	800.00	86.40	40.00		37905461			
	PW 138207	Generator Extra Repairs							2,483.91	2,483.91	100.00	2,483.91	2,145.00	231.66	107.25		100.00	2,483.91	2,145.00	231.66	107.25		37912628			
	PW 138231	Fuel Delivery CAT Generator							3,664.18	3,664.18	100.00	3,664.18	3,164.23	341.74	158.21		100.00	3,664.18	3,164.23	341.74	158.21		37943125			
Total of -	5	Tenant Service Project							1,279,904.18	1,279,904.18		1,082,757.19	197,147.01	171,800.72	17,125.37	8,220.92		1,279,904.21	1,106,788.63	120,140.91	52,974.67					
	6	Other																								
	PW 136752	After Hours Extra Cleaning							214.23	214.23	100.00	214.23	185.00	19.98	9.25		100.00	214.23	185.00	19.98	9.25		35338651			
Total of -	6	Other							214.23	214.23		214.23	185.00	19.98	9.25			214.23	185.00	19.98	9.25					
Total of Business Unit -		W25TP Ottawa D. Project Tenant D.							1,280,118.41	1,280,118.41		1,082,757.19	197,361.24	171,985.72	17,145.35	8,230.17		1,280,118.44	1,106,973.63	120,160.89	52,983.92					
	W25AIB	Ottawa D.AIP Project 25K -200K																								
	7	Vote 15 - AIP/PAJ Repair																								
	PW 112911	Replace 347 Volt Panels -Tower	R.031680.001						10,047.00	11,329.82	11,329.82	99.00	11,143.06	106.66	1.29	4.53	.80	100.00	11,255.54	9,903.58	931.06	420.90	74.28	34061725		
	PW 120604	120/208 V Electrical Panel Rep	R.031680.001						8,479.00	10,692.32	10,692.32	100.00	10,622.15					100.00	10,622.15	9,355.98	868.54	397.63	70.17	34020587		
	PW 120977	Cooling Valve Replacement - 11	R.031680.001		7/3/2009				105,991.00	116,784.36	116,784.36	98.00	114,834.40	1,038.40	110.53	44.13	7.79	100.00	116,027.46	100,920.00	10,818.36	4,289.10	756.90	34062120		
	PW 120978	Heating Valve Replacement - To	R.031680.001						56,300.00		100.00	58,567.50	51,000.00	5,400.00	2,167.50	382.50								34062197		
	PW 128045	New Flex Duct and Diffusers o	R.031680.001						13,550.00	3,480.94	3,480.94	88.00	39,361.41	12.00	35,903.13	28,791.00	5,888.51	1,223.62	215.93	100.00	3,458.28	3,021.00	308.89	128.39	22.66	34062234
	PW 128048	Reconfigure Cooling/Heating Sy	R.031680.001						63,018.00	81,120.68	81,120.68	95.00	76,564.30	5.00	3,981.17	9,981.71	6,424.76	424.22	74.86	100.00	80,545.47	76,695.18	590.74	3,259.55	575.21	34062285



		Building	W400117	519633	Taxation Data Centre	875 Heron Rd.	Ottawa	ON K1A1B1																						
Previous	Project	Project	PWGSC	PWGSC	Actual	Actual	Project Year		Previously Reported		Current Month Invoice			Year to Date Status																
<u>Project #</u>	<u>Project #</u>	<u>Name</u>	<u>Work Order #</u>	<u>Project #</u>	<u>Start Date</u>	<u>End Date</u>	<u>Original</u>	<u>Revised</u>	<u>Committed</u>	<u>%</u>	<u>Invoiced</u>	<u>%</u>	<u>Invoiced</u>	<u>Construction/</u>	<u>Labour/</u>	<u>Fee</u>	<u>%</u>	<u>Invoiced</u>	<u>Construction/</u>	<u>Labour/</u>	<u>Fee</u>	<u>15%</u>	<u>Completed</u>	<u>Amount</u>	<u>Design Costs</u>	<u>Disbursements</u>	<u>100% / 85%</u>	<u>15%</u>	<u>E1 Project#</u>	<u>Comments/</u>
							<u>Baseline</u>	<u>Baseline</u>	<u>Amount</u>	<u>Completed</u>	<u>Amount</u>	<u>Completed</u>	<u>Amount</u>	<u>Design Costs</u>	<u>Disbursements</u>	<u>100% / 85%</u>		<u>Completed</u>	<u>Amount</u>	<u>Design Costs</u>	<u>Disbursements</u>	<u>100% / 85%</u>	<u>15%</u>						<u>PFM Initials</u>	
3	Vote 12 - SIT/RPT Capital																													
	PW 128567	Passenger & Freight Elevator U						107,775.06	107,775.06	33.00	95,745.96	67.00	11,753.67	33,069.14-	45,806.61	983.80-	173.61-	100.00	107,499.62	52,463.30	53,475.54	1,560.78	275.43						35338255	
Total of -	3	Vote 12 - SIT/RPT Capital						107,775.06	107,775.06		95,745.96		11,753.67	33,069.14-	45,806.61	983.80-	173.61-		107,499.62	52,463.30	53,475.54	1,560.78	275.43							
Total of Business Unit -	W25SIT	Ottawa D. Project SIT						107,775.06	107,775.06		95,745.96		11,753.67	33,069.14-	45,806.61	983.80-	173.61-		107,499.62	52,463.30	53,475.54	1,560.78	275.43							
Grand Total of Building Number -	W400117	Taxation Data Centre					1,483,710.00	2,168,152.37	2,168,152.37		1,935,100.35		227,705.14	193,940.18	24,239.54	9,525.42			2,162,805.50	1,839,898.33	239,624.19	83,282.98	5,346.91							

PWGSC APPROVAL \_\_\_\_\_

SNC-LAVALIN PROFAC APPROVAL \_\_\_\_\_



		Building W400116		519632 Taxation Headquarters		875 Heron Rd.		Ottawa		ON K1A1B1																
Previous Project #	Project Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year			Previously Reported		Current Month Invoice				Year to Date Status					Comments/ PFM Initials					
							Original Baseline	Revised Baseline	Committed Amount	% Completed	Invoiced Amount	% Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements	Fee 100% / 85%	15%	% Completed	Invoiced Amount	Construction/ Design Costs		Labour/ Disbursements	Fee 100% / 85%	15%	E1 Project#	
W25A	Ottawa D. Project > 5K-25K																									
2	Vote 15 - Repair																									
PW 132487	1001565	Update HVAC Standard Operating		R.041050.003	9/23/2010	3/31/2011	22,000.00	17,837.23	17,837.23	75.00	13,290.09	25.00	4,430.03	3,903.62	360.50	165.91	29.28	100.00	17,720.12	15,614.50	1,442.00	663.62	117.11	38308836		
Total of -	2	Vote 15 - Repair					22,000.00	17,837.23	17,837.23		13,290.09		4,430.03	3,903.62	360.50	165.91	29.28		17,720.12	15,614.50	1,442.00	663.62	117.11			
Total of Business Unit -	W25A	Ottawa D. Project > 5K-25K					22,000.00	17,837.23	17,837.23		13,290.09		4,430.03	3,903.62	360.50	165.91	29.28		17,720.12	15,614.50	1,442.00	663.62	117.11			
W25B	Ottawa D. Project 25K - 200K																									
1	Vote 12 -Capital																									
PW 137036	1001247	Roof Anchor Installation Cafet		R.041052.003	5/22/2010	3/31/2011	78,697.79	127,858.57	127,858.57	85.00	108,248.10	15.00	18,777.59	16,359.83	1,722.47	695.29	122.70	100.00	127,025.69	111,050.44	11,255.61	4,719.64	832.88	38302012		
Total of -	1	Vote 12 -Capital					78,697.79	127,858.57	127,858.57		108,248.10		18,777.59	16,359.83	1,722.47	695.29	122.70		127,025.69	111,050.44	11,255.61	4,719.64	832.88			
2	Vote 15 - Repair																									
PW 003698	1001574	Building Exterior Cladding Ins		R.041050.004	9/24/2010	3/31/2011	32,000.01	44,091.08	44,091.08	75.00	32,852.41	25.00	10,950.80	9,595.40	947.60	407.80	71.97	100.00	43,803.22	38,381.60	3,790.40	1,631.22	287.86	38308924		
PW 154162	1005048	Program of Works-(Infrastructu		R.041050.004	12/3/2010	3/31/2011		63,521.40	63,521.40	30.00	19,169.98	70.00	43,937.65	38,391.00	3,915.03	1,631.62	287.93	100.00	63,107.63	55,170.00	5,592.90	2,344.73	413.78	40234899		
Total of -	2	Vote 15 - Repair					32,000.01	107,612.48	107,612.48		52,022.39		54,888.45	47,986.40	4,862.63	2,039.42	359.90		106,910.85	93,551.60	9,383.30	3,975.95	701.64			
Total of Business Unit -	W25B	Ottawa D. Project 25K - 200K					110,697.80	235,471.05	235,471.05		160,270.49		73,666.04	64,346.23	6,585.10	2,734.71	482.60		233,936.54	204,602.04	20,638.91	8,695.59	1,534.52			
W25C	Ottawa D. Project 200K-500K																									
1	Vote 12 -Capital																									
PW 152613	1005705	Base Control System Upgrades		R.041052.004	3/31/2011	3/31/2011		19,991.27	19,991.27	10.00	795.30	90.00	19,078.43	16,717.14	1,721.86	639.43	112.84	100.00	19,873.73	17,414.00	1,793.64	666.09	117.54	41523060		
Total of -	1	Vote 12 -Capital						19,991.27	19,991.27		795.30		19,078.43	16,717.14	1,721.86	639.43	112.84		19,873.73	17,414.00	1,793.64	666.09	117.54			
2	Vote 15 - Repair																									
PW 128045	1004623	New Flex Duct and Diffusers on		R.041050.005	1/5/2011	3/31/2011		152,863.15	152,863.15	88.00	89,655.66	12.00	62,302.74	54,698.00	5,512.54	2,092.20	369.21	100.00	151,958.40	134,036.93	12,794.56	5,126.91	904.75	39742589		
Total of -	2	Vote 15 - Repair						152,863.15	152,863.15		89,655.66		62,302.74	54,698.00	5,512.54	2,092.20	369.21		151,958.40	134,036.93	12,794.56	5,126.91	904.75			
Total of Business Unit -	W25C	Ottawa D. Project 200K-500K						172,854.42	172,854.42		90,450.96		81,381.17	71,415.14	7,234.40	2,731.63	482.05		171,832.13	151,450.93	14,588.20	5,793.00	1,022.29			
W25E	Ottawa D. Project > 1M																									
1	Vote 12 -Capital																									
PW 128567	1003455	Passenger &#38; Freight Elevat		R.019817.001	2/3/2011	3/31/2011		46,935.72	46,935.72	99.00	46,247.03	1.00	467.14	422.00	32.59	12.55	2.22	100.00	46,714.17	42,200.00	3,258.72	1,255.45	221.55	38705313		

			Building	W400116	519632	Taxation Headquarters	875 Heron Rd.	Ottawa	ON K1A1B1																	
Previous Project #	Project Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year			Previously Reported		Current Month Invoice					Year to Date Status					Comments/ PFM Initials				
							Original Baseline	Revised Baseline	Committed Amount	% Completed	Invoiced Amount	% Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements	Fee 100% / 85%	15%	% Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements		Fee 100% / 85%	15%	E1 Project#	
Total of - 1			Vote 12 -Capital																							
Total of Business Unit -			W25E Ottawa D. Project > 1M																							
W25TP Ottawa D. Project Tenant D.																										
5 Tenant Service Project																										
PW 131543	1003698	ITB Supply and Install Mod Bus		R.035466.001	5/12/2010	2/4/2011				22,960.92	22,960.92	95.00	21,188.52	5.00	1,772.40	1,541.00	154.35	77.05		100.00	22,960.92	19,990.00	1,971.42	999.50		38979550
PW 137919	1003714	Diesel Fuel Supply Mods to UST		R.040140.001	10/12/2010	3/31/2011				60,645.36	60,645.36	85.00	49,826.40	15.00	10,818.96	9,416.82	931.30	470.84		100.00	60,645.36	52,821.22	5,183.08	2,641.06		38983225
PW 152506	1003718	UPS Maintenance Contract		R.034970.001	6/4/2010	3/31/2011				88,722.61	88,722.61	75.00	70,456.06	25.00	18,266.55	15,842.63	1,631.79	792.13		100.00	88,722.61	76,949.36	7,925.78	3,847.47		38984033
PW 152562	1003719	Monthly Generator Inspections		R.035650.001	6/24/2010	3/31/2011				9,826.06	9,826.06	75.00	7,369.55	25.00	2,456.51	2,130.54	219.44	106.53		100.00	9,826.06	8,522.17	877.78	426.11		38984041
PW 136878	1003724	Computer Room Air Conditioning		R.034422.001	6/18/2010	8/20/2010				17,679.20	17,679.20	100.00	17,679.20							100.00	17,679.20	15,400.00	1,509.20	770.00		38984050
PW 152504	1003727	AC Maintenance Data Centre Her		R.033744.001	5/31/2010	3/17/2011				64,626.30	64,626.30	75.00	48,469.73	25.00	16,156.57	14,012.64	1,443.30	700.63		100.00	64,626.30	56,050.56	5,773.21	2,802.53		38984068
PW 131604	1003728	Replacement of Fire Detection		R.022878.001	11/24/2010	3/31/2011				9,517.69	9,517.69	95.00	9,041.80	5.00	475.89	398.94	57.00	19.95		100.00	9,517.69	7,978.75	1,140.00	398.94		38984076
PW 152602	1004064	Relocate AC-19 in 11th Floor U		R.042260.001	6/1/2010	6/17/2010				1,844.80	1,844.80	100.00	1,844.80							100.00	1,844.80	1,600.00	164.80	80.00		39000462
PW 152640	1004082	Re-feed Emergency Distribution		R.040139.001	6/14/2010	3/31/2011				12,220.98	12,220.98	100.00	12,220.98							100.00	12,220.98	10,621.00	1,068.93	531.05		39000657
PW 152606	1004111	Electrical for 10-015 Boardroo		R.041434.001	6/7/2010	6/23/2010				432.38	432.38	100.00	432.38							100.00	432.38	375.00	38.63	18.75		39091544
PW 152773	1004138	Repairs to Water Detection 10t		R.042535.001	6/18/2010	7/14/2010				1,141.47	1,141.47	100.00	1,141.47							100.00	1,141.47	990.00	101.97	49.50		39123340
PW 152754	1004140	Bulk Tenant Projects-CRA 875 H		R.041395.001	3/17/2011	3/31/2011				13,392.44	13,392.44	88.00	21,999.99	12.00	8,607.55-	7,465.36-	768.92-	373.27-		100.00	13,392.45	11,615.30	1,196.38	580.77		39123374
PW 152728	1004143	5th Floor Office Insulation		R.042808.001	10/15/2010	11/23/2010				27,180.09	27,180.09	100.00	27,180.09							100.00	27,180.09	23,748.40	2,244.27	1,187.42		39123382
PW 152624	1004164	Additional Training for Toromon		R.037571.001	6/8/2010	6/11/2010				3,675.00	3,675.00	100.00	3,675.00							100.00	3,675.00	3,500.00		175.00		39137733
PW 152628	1004165	Initial Training for Toromont		R.042591.001	6/18/2010	6/18/2010				5,250.00	5,250.00	100.00	5,250.00							100.00	5,250.00	5,000.00		250.00		39137741
PW 152569	1004191	Standby Electrician for Genera		R.043322.001	6/10/2010	6/11/2010				922.40	922.40	100.00	922.40							100.00	922.40	800.00	82.40	40.00		39138023
PW 152702	1004210	Sound Proofing H4-62 &#38; H4-		R.042100.001	8/19/2010	8/25/2010				5,188.50	5,188.50	100.00	5,188.50							100.00	5,188.50	4,500.00	463.50	225.00		39152845

			Building	W400116	519632	Taxation Headquarters	875 Heron Rd.	Ottawa	ON K1A1B1																
Previous Project #	Project Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year Original Baseline	Revised Baseline	Committed Amount	Previously Reported % Completed	Invoiced Amount	Current Month Invoice % Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements	Fee 100% / 85%	15%	Year to Date Status % Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements	Fee 100% / 85%	15%	E1 Project#	Comments/ PFM Initials
PW 152839	1004241	DCH Shutdown 22 May 2010		R.043324.001	7/20/2010	2/15/2011		18,261.82	18,261.82	100.00	18,261.82							100.00	18,261.82	15,862.65	1,606.04	793.13		39220908	
PW 152814	1004247	Commissioning - Backup Power S		R.023445.002	7/16/2010	8/20/2010		9,378.00	9,378.00	99.00	9,284.22	1.00	93.78	83.60	6.00	4.18		100.00	9,378.00	8,360.00	600.00	418.00		39220924	
PW 152858	1004277	Window Installation for Stairw		R.004306.001	7/12/2010	7/30/2010		818.63	818.63	100.00	818.63							100.00	818.63	710.00	73.13	35.50		39310399	
PW 152857	1004292	CRAC Repairs 875 Heron		R.042151.001	6/21/2010	7/22/2010		10,031.10	10,031.10	100.00	10,031.10							100.00	10,031.10	8,700.00	896.10	435.00		39310559	
PW 152859	1004306	Wall Installation Lower Level		R.044422.001	9/10/2010	3/10/2011		78,707.49	78,707.49	88.00	3,622.06	12.00	75,085.43	66,056.56	5,726.04	3,302.83		100.00	78,707.49	69,202.56	6,044.80	3,460.13		39310671	
PW 153037	1004625	Reconfigure Office for IT Room		R.043185.001	7/19/2010	8/31/2010		5,257.68	5,257.68	100.00	5,257.68							100.00	5,257.68	4,560.00	469.68	228.00		39742600	
PW 153103	1004764	AC Repairs Megher Test		R.044503.001	8/11/2010	12/1/2010		2,842.14	2,842.14	100.00	2,842.14							100.00	2,842.14	2,465.00	253.89	123.25		39836577	
PW 153104	1004766	AC Repairs - Oil Sample Testin		R.044502.001	9/17/2010	9/20/2010		6,353.03	6,353.03	100.00	6,353.03							100.00	6,353.03	5,510.00	567.53	275.50		39836622	
PW 153295	1004917	New Kitchenette in Zone A Base		R.044446.001	12/10/2010	3/4/2011		67,504.15	67,504.15	85.00	57,378.53	15.00	10,125.62	8,830.04	854.08	441.50		100.00	67,504.15	58,866.96	5,693.84	2,943.35		40083576	
PW 153717	1004968	Space Optimization 6th &#38; 7		R.045164.001	2/24/2011	3/31/2011		47,233.33	47,233.33	66.00	7,267.36	34.00	39,965.97	34,716.91	3,513.21	1,735.85		100.00	47,233.33	41,019.91	4,162.42	2,051.00		40195893	
PW 154324	1005114	Air Conditioner Repairs		R.042151.001	10/1/2010	10/31/2010		2,651.90	2,651.90	100.00	2,651.90							100.00	2,651.90	2,300.00	236.90	115.00		40295721	
PW 154991	1005212	Suppression and Annual Testing		R.045632.001	11/15/2010	2/15/2011		18,061.75	18,061.75	75.00	13,546.32	25.00	4,515.43	3,916.25	403.37	195.81		100.00	18,061.75	15,665.00	1,613.50	783.25		40580978	
PW 155977	1005361	A/C Repairs 2, 7 and 14		R.042151.001	12/21/2010	1/4/2011		6,549.04	6,549.04	95.00	6,221.59	5.00	327.45	284.00	29.25	14.20		100.00	6,549.04	5,680.00	585.04	284.00		40759097	
PW 156075	1005374	Replacement of Security Turnst		R.045166.001	2/2/2011	3/31/2011		340,787.17	340,787.17	25.00	85,196.79	75.00	255,590.38	223,121.16	22,428.76	10,040.46		100.00	340,787.17	297,494.88	29,905.02	13,387.27		40815968	
PW 156646	1005662	Supply and Connect Temporary 2		R.022850.001	1/24/2011	3/31/2011		136,615.06	136,615.06	95.00	125,631.20	5.00	10,983.86	9,707.65	839.36	436.85		100.00	136,615.06	121,799.05	9,335.05	5,480.96		41440109	
PW 156649	1005665	Replace 600V Circuit Breakers		R.044448.001	3/2/2011	3/31/2011		25,753.77	25,753.77	88.00	90,872.51	12.00	65,118.74	56,452.20	5,843.93	2,822.61		100.00	25,753.77	22,519.00	2,108.82	1,125.95		41440150	
PW 156680	1005686	Transfer Switch Scheduled Main		R.046324.001	12/3/2010	12/6/2010		3,009.33	3,009.33	100.00	3,009.33			2,610.00	268.83	130.50		100.00	3,009.33	2,610.00	268.83	130.50		41496954	
PW 156681	1005687	AC Test Repairs- High Rise		R.042151.001	12/3/2010	12/31/2010		3,954.79	3,954.79	95.00	3,757.06	5.00	197.73	171.50	17.66	8.57		100.00	3,954.79	3,430.00	353.29	171.50		41496920	
PW 157304	1006061	Purchase &#38; Install Power D		R.048391.001	3/17/2011	3/31/2011		14,315.65	14,315.65	100.00	14,315.65			12,550.00	1,138.15	627.50		100.00	14,315.65	12,550.00	1,138.15	627.50		42545228	
PW 157544	1006220	Diesel Fuel Delivery for Tenan		R.048767.001	3/22/2010	3/31/2011		6,800.22	6,800.22	100.00	6,800.22			5,897.85	607.48	294.89		100.00	6,800.22	5,897.85	607.48	294.89		43349309	
Total of -	5	Tenant Service Project						1,150,112.25	1,150,112.25		752,880.81		397,231.44	347,370.53	33,656.52	16,204.39			1,150,112.26	1,005,664.62	96,260.86	48,186.78			

			Building	W400116	519632	Taxation Headquarters	875 Heron Rd.	Ottawa	ON K1A1B1																
Previous Project #	Project Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year			Previously Reported		Current Month Invoice					Year to Date Status					Comments/ PFM Initials			
							Original Baseline	Revised Baseline	Committed Amount	% Completed	Invoiced Amount	% Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements	Fee 100% / 85%	15%	% Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements		Fee 100% / 85%	15%	E1 Project#
Total of Business Unit - W25TP Ottawa D. Project Tenant D.																									
W25AIB Ottawa D.AIP Project 25K -200K																									
7 Vote 15 - AIP/PAJ Repair																									
PW 129805	1001259	Repair Update All Unrated Fire		R.041050.010	7/27/2010	3/31/2011	149,997.60	169,888.03	169,888.03	85.00	144,523.71	15.00	24,255.97	21,240.53	2,112.72	902.72	159.30	100.00	168,779.68	147,779.83	14,719.21	6,280.64	1,108.35	38302127	
PW 008448	1001551	Accessibility Audit Corrective		R.041050.010	3/15/2011	3/31/2011	89,000.00	13,487.67	13,487.67	99.00	30,635.73	1.00	17,236.92-	15,189.74-	1,401.61-	645.57-	113.92-	100.00	13,398.81	11,847.63	1,047.66	503.52	88.86	38308692	
PW 000145	1001576	Re-pointing Brick Repairs-Pent		R.041050.010	11/4/2010	3/31/2011	34,000.01	65,044.08	65,044.08	70.00	102,501.86	30.00	37,882.08-	33,363.61-	3,100.51-	1,417.96-	250.23-	100.00	64,619.79	56,573.09	5,642.34	2,404.36	424.30	38308941	
PW 131934	1001598	Fire Alarm System Upgrade Stud		R.041050.010	6/30/2010	12/31/2010	145,000.01	8,035.31	8,035.31	100.00	7,982.34							100.00	7,982.34	7,062.14	620.06	300.14	52.97	38309169	
PW 128640	1001603	Replace Preheat Pumps for AHU		R.041050.010	3/1/2011	3/31/2011	94,000.00	29,744.59	29,744.59	88.00	28,761.00	12.00	787.16	722.81	33.63	30.72	5.42	100.00	29,548.16	26,189.70	2,245.40	1,113.06	196.42	38309265	
Total of - 7 Vote 15 - AIP/PAJ Repair							511,997.62	286,199.68	286,199.68		314,404.64		30,075.87-	26,590.01-	2,355.77-	1,130.09-	199.43-		284,328.78	249,452.39	24,274.67	10,601.72	1,870.90		
8 Vote 12 - AIP/PAJ Capital																									
PW 136845	1001397	New Sidewalk-North East Side o		R.041052.008	4/21/2010	5/28/2010	3,821.23	3,821.40	3,821.40	100.00	3,796.65							100.00	3,796.65	3,300.00	356.40	140.25	24.75	38303517	
Total of - 8 Vote 12 - AIP/PAJ Capital							3,821.23	3,821.40	3,821.40		3,796.65									3,796.65	3,300.00	356.40	140.25	24.75	
Total of Business Unit - W25AIB Ottawa D.AIP Project 25K -200K							515,818.85	290,021.08	290,021.08		318,201.29		30,075.87-	26,590.01-	2,355.77-	1,130.09-	199.43-		288,125.43	252,752.39	24,631.07	10,741.97	1,895.65		
W25AIC Ottawa D. Project 200K - 1M																									
7 Vote 15 - AIP/PAJ Repair																									
PW 129830	1001317	Asbestos Containment from Unde		R.041050.011	3/8/2011	3/31/2011	350,020.00	70,955.39	70,955.39	66.00	147,296.48	34.00	76,759.56-	67,479.42-	6,699.05-	2,581.09-	455.49-	100.00	70,536.92	61,996.25	6,169.31	2,371.36	418.47	38302725	
PW 003177	1001577	Replace Stairwell Railings-Dat		R.041050.011	10/27/2010	1/27/2011	365,000.00	118,161.97	118,161.97	80.00	93,970.28	20.00	23,492.58	20,714.46	1,985.79	792.33	139.82	100.00	117,462.86	103,572.28	9,928.94	3,961.64	699.11	38308967	
PW 137411	1003413	Repair Replace Cooling Coils		R.041052.004	11/16/2010	3/31/2011		479,377.25	479,377.25	80.00	419,015.80	20.00	57,533.26	50,549.94	5,049.78	1,933.54	341.21	100.00	476,549.05	418,993.07	41,529.50	16,026.48	2,828.20	38704901	
PW 132314	1004614	Waterproofing Repairs to the W		R.041050.011	1/5/2011	3/31/2011		116,074.42	116,074.42	99.00	110,589.28	1.00	4,798.52	4,045.47	598.31	154.74	27.31	100.00	115,387.80	101,721.35	9,775.61	3,890.84	686.62	39742466	
Total of - 7 Vote 15 - AIP/PAJ Repair							715,020.00	784,569.03	784,569.03		770,871.84		9,064.80	7,830.45	934.83	299.52	52.85		779,936.63	686,282.95	67,403.36	26,250.32	4,632.40		
8 Vote 12 - AIP/PAJ Capital																									
PW 152591	1004975	Washroom Accessibility Upgrade		R.041052.012	1/7/2011	3/31/2011		175,695.82	175,695.82	80.00	134,072.65	20.00	40,583.84	35,614.71	3,606.86	1,362.27	240.40	100.00	174,656.49	153,975.67	14,791.25	5,889.57	1,039.34	40201819	
PW 003195	1005930	Main Vault Replacement -OTC		R.041052.009	3/4/2011	3/4/2011		418.00	418.00	10.00	596.41	90.00	181.11-	131.62-	44.46-	5.03-	.89-	100.00	415.30	400.00		15.30	2.70	42268911	

			Building	W400116	519632	Taxation Headquarters	875 Heron Rd.	Ottawa	ON K1A1B1																	
Previous Project #	Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year Original Baseline	Revised Baseline	Committed Amount	Previously Reported % Completed	Invoiced Amount	Current Month Invoice % Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements	Fee 100% / 85%	15%	Year to Date Status % Completed	Invoiced Amount	Construction/ Design Costs	Labour/ Disbursements	Fee 100% / 85%	15%	E1 Project#	Comments/ PFM Initials	
PW 133340	1005934	Replace MCC #1and 2 and 6		R.041052.009	3/8/2011	3/31/2011		4,087.20	4,087.20	10.00	596.47	90.00	3,466.09	3,127.35	219.12	119.62	21.11	100.00	4,062.56	3,650.00	272.95	139.61	24.64	42268988		
Total of - 8		Vote 12 - AIP/PAJ Capital						180,201.02	180,201.02		135,265.53		43,868.82	38,610.44	3,781.52	1,476.86	260.62		179,134.35	158,025.67	15,064.20	6,044.48	1,066.68			
Total of Business Unit -		W25AIC Ottawa D. Project 200K - 1M					715,020.00	964,770.05	964,770.05		906,137.37		52,933.62	46,440.89	4,716.35	1,776.38	313.47		959,070.98	844,308.62	82,467.56	32,294.80	5,699.08			
W25SDS		Ottawa D. Project SDS																								
1		Vote 12 -Capital																								
PW 007326	1001556	Add VSDs on DCW Booster Pumps		R.041052.006	8/15/2010	3/25/2011		12,000.01	5,373.73	5,373.73	10.00	417.12	90.00	4,920.80	4,390.13	344.09	186.58	32.93	100.00	5,337.92	4,774.50	360.50	202.92	35.81	38308748	
PW 007324	1001578	Lighting Retrofit for OTC (SDS)		R.041052.006	3/17/2011	3/31/2011		81,000.01	12,188.81	12,188.81	10.00	2,816.35	90.00	9,291.61	8,291.51	647.72	352.38	62.19	100.00	12,107.97	10,778.75	871.12	458.10	80.84	38308959	
PW 007327	1001586	Add VSDs on Converter Heating		R.041052.006	8/15/2010	3/25/2011		36,000.00	5,373.73	5,373.73	10.00	1,251.63	90.00	4,086.28	3,658.70	272.09	155.49	27.44	100.00	5,337.92	4,774.50	360.50	202.92	35.81	38309046	
Total of - 1		Vote 12 -Capital						129,000.02	22,936.27	22,936.27		4,485.10		18,298.69	16,340.34	1,263.90	694.45	122.56		22,783.81	20,327.75	1,592.12	863.94	152.46		
Total of Business Unit -		W25SDS Ottawa D. Project SDS					129,000.02	22,936.27	22,936.27		4,485.10		18,298.69	16,340.34	1,263.90	694.45	122.56		22,783.81	20,327.75	1,592.12	863.94	152.46			
Grand Total of Building Number -		W400116 Taxation Headquarters					1,492,536.67	2,900,938.07	2,900,938.07		2,291,963.14		598,332.26	523,648.74	51,493.59	23,189.93			2,890,295.44	2,536,920.85	244,879.44	108,495.15	10,642.66			

PWGSC APPROVAL \_\_\_\_\_

SNC-LAVALIN PROFAC APPROVAL \_\_\_\_\_

			Building	W400116	519632	Taxation Headquarters	875 Heron Rd.	Ottawa	ON K1A1B1																
Previous Project #	Project Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year Original Baseline	Revised Baseline	Committed Amount	Previously Reported % Completed	Invoiced Amount	Current Month Invoice % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	Year to Date Status % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	E1 Project#	Comments/ PFM Initials
W25B	Ottawa D. Project 25K - 200K																								
1	Vote 12 -Capital																								
PW 137036	1010350	Roof Anchor Installation Cafet		R.041052.003	5/14/2011	3/31/2012	4,622.78	80,926.09	80,926.09			100.00	80,399.13	70,261.64	7,151.37	2,986.12	526.96	100.00	80,399.13	70,261.64	7,151.37	2,986.12	526.96	45042491	
PW 153924	1012245	Replace Domestic Water Pumps		R.041052.003	3/13/2012	3/29/2012	90,000.00	4,798.00	4,798.00	10.00	3,129.41	90.00	1,638.59	1,253.70	331.61	53.28	9.40	100.00	4,768.00	4,000.00	598.00	170.00	30.00	47497464	
PW 153928	1013249	Investigate Check Valves on Pr		R.041052.003	1/31/2012	3/29/2012	10,000.00	5,505.60	5,505.60	15.00	1,239.21	85.00	4,230.39	3,712.50	360.11	157.78	27.84	100.00	5,469.60	4,800.00	465.60	204.00	36.00	48440700	
PW 162225	1013865	Base Control Systems Upgrades		R.041052.003	2/13/2012	3/31/2012	64,905.60	47,083.91	47,083.91	40.00	18,711.98	60.00	28,067.96	24,318.00	2,716.44	1,033.52	182.39	100.00	46,779.94	40,530.00	4,527.41	1,722.53	303.98	49848563	
Total of -	1	Vote 12 -Capital					169,528.38	138,313.60	138,313.60		23,080.60		114,336.07	99,545.84	10,559.53	4,230.70	746.59		137,416.67	119,591.64	12,742.38	5,082.65	896.94		
2	Vote 15 - Repair																								
PW 000145	1008017	Re-pointing Brick Repairs-Pent		R.041050.004	5/24/2011	7/22/2011	83,600.01	69,305.00	69,305.00	85.00	69,004.57	15.00	149.95-	3,541.77	3,842.25-	150.53	26.56	100.00	68,854.63	60,049.77	6,252.74	2,552.12	450.37	43825432	
PW 008448	1007978	Accessibility Audit Corrective		R.041050.004	8/17/2011	3/29/2012	200,000.01	152,590.82	152,590.82	70.00	105,756.03	30.00	45,839.75	40,118.30	4,016.42	1,705.03	300.89	100.00	151,595.78	132,671.60	13,285.64	5,638.54	995.04	43824915	
PW 128640	1007972	Replace Preheat Pumps for AHU		R.041050.004	5/19/2011	7/22/2011	89,854.00	90,188.50	90,188.50	95.00	85,122.01	5.00	4,480.10	3,909.25	404.71	166.14	29.32	100.00	89,602.11	78,185.00	8,094.25	3,322.86	586.39	43824755	
PW 153486	1013247	Seismic Screening		R.041050.004	1/6/2012	3/29/2012	26,000.00	30,969.00	30,969.00	30.00	9,229.95	70.00	21,536.55	18,900.00	1,833.30	803.25	141.75	100.00	30,766.50	27,000.00	2,619.00	1,147.50	202.50	48440591	
PW 153915	1007955	Replace Expansion Joints for I		R.041050.004	3/14/2012	3/31/2012	74,385.00	5,704.30	5,704.30	65.00	16,820.46	35.00	11,152.91-	8,716.02-	2,066.46-	370.43-	65.37-	100.00	5,667.55	4,900.00	559.30	208.25	36.75	43824561	
PW 154162	1008022	Program of Works-(Infrastructu		R.041050.004	5/17/2011	9/29/2011	21,000.01	58,210.25	58,210.25	75.00	43,372.23	25.00	14,457.39	12,687.50	1,230.68	539.21	95.16	100.00	57,829.63	50,750.00	4,922.75	2,156.88	380.63	43825133	
PW 160141	1012289	Fuel Storage Tank - Deficiency		R.041050.004	3/7/2012	3/29/2012	149,566.00	51,907.42	51,907.42	66.00	34,323.84	34.00	17,249.21	14,460.91	2,173.71	614.59	108.46	100.00	51,573.05	44,582.75	5,095.53	1,894.77	334.37	47534704	
Total of -	2	Vote 15 - Repair					644,405.03	458,875.29	458,875.29		363,629.09		92,260.14	84,901.71	3,750.11	3,608.32	636.77		455,889.25	398,139.12	40,829.21	16,920.92	2,986.05		
Total of Business Unit -	W25B	Ottawa D. Project 25K - 200K					813,933.41	597,188.89	597,188.89		386,709.69		206,596.21	184,447.55	14,309.64	7,839.02	1,383.36		593,305.92	517,730.76	53,571.59	22,003.57	3,882.99		
W25C	Ottawa D. Project 200K-500K																								
1	Vote 12 -Capital																								
PW 003195	1008021	Main Vault Replacement -OTC		R.041052.004	7/22/2011	12/31/2011	205,000.00	65,216.20	65,216.20	65.00	42,139.97	35.00	22,690.75	19,987.45	1,938.78	764.52	134.92	100.00	64,830.72	57,107.00	5,539.38	2,184.34	385.47	43825125	
PW 133340	1007974	Replace MCC #1and 2 and 6		R.041052.004	7/29/2011	11/30/2011	270,000.00	214,770.23	214,770.23	95.00	202,828.98	5.00	10,675.20	9,378.12	938.37	358.71	63.30	100.00	213,504.18	187,562.37	18,767.55	7,174.26	1,266.05	43824721	
PW 159625	1013230	Replace 2 Domestic Hot Water T		R.041052.004	2/14/2012	3/29/2012	240,752.00	6,281.00	6,281.00	30.00	1,873.16	70.00	4,370.71	3,850.00	373.45	147.26	25.99	100.00	6,243.88	5,500.00	533.50	210.38	37.13	48436372	

			Building	W400116	519632	Taxation Headquarters	875 Heron Rd.	Ottawa	ON K1A1B1																	
Previous Project #	Project Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual		Project Year			Previously Reported		Current Month Invoice					Year to Date Status					Comments/ PFM Initials				
					Start Date	End Date	Original Baseline	Revised Baseline	Committed Amount	% Completed	Invoiced Amount	% Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	% Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other		Fee 100% / 85%	15%	E1 Project#	
Total of -	1	Vote 12 -Capital																								
	2	Vote 15 - Repair																								
PW 137411	1008011	Repair Replace Cooling Coils		R.041050.005	7/12/2011	12/1/2011	50,000.00	97,995.44	97,995.44	100.00	97,421.86															
PW 153916	1008041	Replace Re-heat Coils and Isol		R.041050.005	8/31/2011	3/31/2012	23,556.90	7,234.00	7,234.00	35.00	2,124.36	65.00	5,069.14	4,246.50	660.21	162.43	28.66	100.00	7,193.50	6,000.00	964.00	229.50	40.50	43825424		
PW 159162	1011986	3 Year Electrical Maintenance		R.041050.005	3/10/2012	3/31/2012	225,000.00	51,728.09	51,728.09	88.00	39,397.54	12.00	12,111.91	2,396.75	9,623.48	91.68	16.18	100.00	51,509.44	32,391.50	17,878.97	1,238.97	218.64	47084643		
PW 160485	1012960	Canopy Slab Rehabilitation Nor		R.041050.005	11/8/2011	3/31/2012	440,019.20	46,227.12	46,227.12	65.00	29,870.55	35.00	16,084.14	14,126.00	1,417.82	540.32	95.35	100.00	45,954.69	40,360.00	4,050.92	1,543.77	272.43	48247213		
Total of -	2	Vote 15 - Repair					738,576.10	203,184.65	203,184.65		168,814.31		33,265.19	20,769.25	11,701.51	794.43	140.19		202,079.50	163,725.82	32,091.17	6,262.51	1,105.15			
Total of Business Unit -		W25C Ottawa D. Project 200K-500K					1,454,328.10	489,452.08	489,452.08		415,656.42		71,001.85	53,984.82	14,952.11	2,064.92	364.40		486,658.28	413,895.19	56,931.60	15,831.49	2,793.80			
		W25E Ottawa D. Project > 1M																								
	1	Vote 12 -Capital																								
PW 128567	1009981	Passenger &#38; Freight Elevat		R.019817.001	6/9/2011	3/29/2012	958,797.01	845,913.16	845,913.16	77.00	741,660.42	23.00	100,298.38	91,152.48	6,434.11	2,711.79	478.55	100.00	841,958.80	753,211.55	66,339.21	22,408.04	3,954.36	44569725		
Total of -	1	Vote 12 -Capital					958,797.01	845,913.16	845,913.16		741,660.42		100,298.38	91,152.48	6,434.11	2,711.79	478.55		841,958.80	753,211.55	66,339.21	22,408.04	3,954.36			
Total of Business Unit -		W25E Ottawa D. Project > 1M					958,797.01	845,913.16	845,913.16		741,660.42		100,298.38	91,152.48	6,434.11	2,711.79	478.55		841,958.80	753,211.55	66,339.21	22,408.04	3,954.36			
		W25TP Ottawa D. Project Tenant D.																								
	5	Tenant Service Project																								
PW 137919	1010399	Diesel Fuel Supply Mods to UST		R.040140.001	5/13/2011	3/31/2012	7,828.75	3,962.89	3,962.89			100.00	3,962.89	3,455.00	335.14	172.75		100.00	3,962.89	3,455.00	335.14	172.75		45126598		
PW 156649	1010183	Replace 600V Circuit Breakers		R.044448.001	5/3/2011	11/11/2011	142,352.43	106,237.37	106,237.37	100.00	106,237.37							100.00	106,237.37	92,329.00	9,291.92	4,616.45		44895862		
PW 157304	1010361	Purchase &#38; Install Power D		R.048391.001	6/23/2011	10/15/2011	157,937.50	128,134.75	128,134.75	100.00	128,134.75							100.00	128,134.75	111,712.94	10,836.16	5,585.65		45042811		
PW 157679	1009986	Supply and Install Condenser U		R.049471.001	7/23/2011	3/31/2012	109,467.81	194,074.42	194,074.42	85.00	163,324.51	15.00	30,749.91	26,747.66	2,664.88	1,337.37		100.00	194,074.42	168,792.86	16,841.92	8,439.64		44569805		
PW 157760	1010022	Carpet Installation in Room 91		R.049883.001	10/29/2011	3/31/2012	52,100.59	42,676.46	42,676.46	85.00	36,274.99	15.00	6,401.47	5,553.75	570.03	277.69		100.00	42,676.46	37,025.00	3,800.21	1,851.25		44636529		
PW 157761	1010019	Security Upgrades-High Rise		R.049603.001	7/27/2011	8/31/2011	86,834.32	159,099.22	159,099.22	40.00	60,941.02	60.00	98,158.20	85,453.70	8,431.81	4,272.69		100.00	159,099.22	138,501.50	13,672.64	6,925.08		44636537		
PW 157762	1010337	9th Floor Directors Office Sui		R.049607.001	6/30/2011	8/15/2011	98,412.23	75,235.13	75,235.13	40.00	30,094.05	60.00	45,141.08	39,100.50	4,085.55	1,955.03		100.00	75,235.13	65,167.50	6,809.25	3,258.38		45020929		
PW 157863	1010013	CRA Staging Area Cooling		R.050724.001	10/3/2011	10/9/2011	29,095.23	63,750.58	63,750.58	85.00	52,618.15	15.00	11,132.43	9,011.84	1,670.00	450.59		100.00	63,750.58	54,412.89	6,617.05	2,720.64		44636406		

			Building	W400116	519632	Taxation Headquarters	875 Heron Rd.	Ottawa	ON K1A1B1																	
Previous Project #	Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year Original Baseline	Revised Baseline	Committed Amount	Previously Reported % Completed	Invoiced Amount	Current Month Invoice % Completed	Invoiced Amount	Construction/Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	Year to Date Status % Completed	Invoiced Amount	Construction/Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	E1 Project#	Comments/PFM Initials	
PW 157899	1010177	Fit-Up H2-32 Lab Space into 4		R.051634.001	6/24/2011	7/29/2011	16,962.28	25,337.58	25,337.58			100.00	25,337.58	21,755.50	2,494.30	1,087.78		100.00	25,337.58	21,755.50	2,494.30	1,087.78		44895811		
PW 158003	1010485	Floor Monuments Removal-Low Ri		R.050566.001	6/14/2011	9/26/2011	1,875.82	1,863.88	1,863.88	100.00	1,863.88							100.00	1,863.88	1,625.00	157.63	81.25		45302176		
PW 158056	1010696	Install Safety Mirror &#38; Pa		R.050789.001	6/24/2011	7/6/2011	1,558.37	1,548.45	1,548.45	100.00	1,548.45							100.00	1,548.45	1,350.00	130.95	67.50		45684805		
PW 158147	1011143	Electrical Outlet for UPS A-21		R.051779.001	8/23/2011	9/30/2011	692.61	607.91	607.91	100.00	607.91							100.00	607.91	530.00	51.41	26.50		45960822		
PW 158229	1011616	Bulk Project for Minor Work 87		R.051810.001	3/31/2012	3/31/2012	24,322.14	2,540.61	2,540.61	3.00	749.99	97.00	1,790.62	1,561.12	151.44	78.06		100.00	2,540.61	2,215.00	214.86	110.75		46468282		
PW 160610	1012815	Security Cage in Loading Dock		R.053257.001	1/1/2012	3/29/2012	35,843.75	34,289.92	34,289.92			100.00	34,289.92	29,132.00	3,701.32	1,456.60		100.00	34,289.92	29,132.00	3,701.32	1,456.60		48174173		
PW 161377	1012770	Mail Room D-95 - Fit Up		R.053164.001	1/24/2012	3/29/2012	120,785.00	143,890.87	143,890.87			100.00	143,890.86	125,079.21	12,557.69	6,253.96		100.00	143,890.86	125,079.21	12,557.69	6,253.96		48142139		
PW 162166	1013754	Electrical Decommissioning at		R.055925.001	2/16/2012	3/31/2012	15,750.00	3,742.10	3,742.10			100.00	3,742.10	3,262.50	316.47	163.13		100.00	3,742.10	3,262.50	316.47	163.13		49557441		
Total of - 5 Tenant Service Project							901,818.83	986,992.14	986,992.14		582,395.07		404,597.06	350,112.78	36,978.63	17,505.65			986,992.13	856,345.90	87,828.92	42,817.31				
Total of Business Unit - W25TP Ottawa D. Project Tenant D.							901,818.83	986,992.14	986,992.14		582,395.07		404,597.06	350,112.78	36,978.63	17,505.65				986,992.13	856,345.90	87,828.92	42,817.31			
Grand Total of Building Number - W400116 Taxation Headquarters							4,128,877.35	2,919,546.27	2,919,546.27		2,126,421.60		782,493.50	679,697.63	72,674.49	30,121.38				2,908,915.13	2,541,183.40	264,671.32	103,060.41	10,631.15		

PWGSC APPROVAL

SNC-LAVALIN PROFAC APPROVAL



Building W400117 519633 Taxation Data Centre 875 Heron Rd. Ottawa ON K1A1B1

Previous Project #	Project Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year		Committed Amount	Previously Reported		Current Month Invoice			Year to Date Status				E1 Project#	Comments/ PFM Initials						
							Original Baseline	Revised Baseline		% Completed	Invoiced Amount	% Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	% Completed			Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	
W25OW	Downtown Other O&M Project>40K																									
6	Other																									
OW48223027	OW48223027	AC Repairs IOD		R.050059.001	10/27/2011			88,923.38		100.00	88,923.38		88,923.38				100.00	88,923.38		88,923.38					48223027	
OW49150659	OW49150659	A/C Maintenance Baxtec IOD		R.050564.001	12/13/2011			16,528.51	50.00	8,264.26	50.00	8,264.25		8,264.25			100.00	16,528.51		16,528.51					49150659	
OW49150667	OW49150667	A/C Maintenance Baxtec ITB Low		R.052872.001	12/13/2011			11,614.64	50.00	5,807.33	50.00	5,807.31		5,807.31			100.00	11,614.64		11,614.64					49150667	
PW 157695		UPS Maintenance ITB		R.050175.001	10/2/2011			83,863.74	50.00	41,931.87	50.00	41,931.87		41,931.87			100.00	83,863.74		83,863.74					47683734	
PW 157696		AC Units Maintenance - ITB		R.050564.001	10/2/2011			25,549.71	100.00	25,549.71							100.00	25,549.71		25,549.71					47683742	
PW 157981		Semi-Ann & Ann Pre-action Insp		R.051195.001	10/2/2011			12,679.46	75.00	9,509.60	25.00	3,169.86		3,169.86			100.00	12,679.46		12,679.46					47683769	
PW 157985		Mthly Generator Insp High Rise		R.051197.001	10/2/2011			23,982.25	75.00	20,837.91	25.00	3,144.34		3,144.34			100.00	23,982.25		23,982.25					47683751	
PW 158037		Underfloor cleaning 9&10 Fl HR		R.050786.001	10/2/2011			26,216.07	100.00	26,216.07							100.00	26,216.07		26,216.07					47683785	
PW 158040		Supply Paper TIs for H4-308 LR		R.050787.001	10/2/2011			533.61	50.00	172.31	50.00	361.30		361.30			100.00	533.61		533.61					47683777	
PW 158068		HRSDC Fire Alarm Inspection		R.053344.001	10/27/2011			2,182.53	100.00	2,182.53							100.00	2,182.53		2,182.53					48225241	
TP44895820		A/C Unit repairs - High rise		R.050059.001	11/29/2011			10,458.64			100.00	10,458.64		10,458.64			100.00	10,458.64		10,458.64					48896344	
TP45894108		A/C temporary cooling 5th flr		R.051095.001	11/29/2011			14,846.00			100.00	14,846.00		14,846.00			100.00	14,846.00		14,846.00					48896361	
Total of -	6	Other						317,378.54		140,471.59		176,906.95		176,906.95				317,378.54		317,378.54						
Total of Business Unit -	W25OW	Downtown Other O&M Project>40K						317,378.54		140,471.59		176,906.95		176,906.95				317,378.54		317,378.54						
Grand Total of Building Number -	W400117	Taxation Data Centre						317,378.54		140,471.59		176,906.95		176,906.95				317,378.54		317,378.54						

PWGSC APPROVAL

SNC-LAVALIN PROFAC APPROVAL

		Building	W400116	519632	Taxation Headquarters	875 Heron Rd.	Ottawa	ON K1A1B1																	
Previous Project #	Project Project # Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year Original Baseline	Revised Baseline	Committed Amount	Previously Reported % Completed	Invoiced Amount	Current Month Invoice % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	Year to Date Status % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	E1 Project#	Comments/ PFM Initials	
W25A	Ottawa D. Project > 5K-25K																								
2	Vote 15 - Repair																								
PW 159524	1015159 Halocarbon Containing Equipmen		R.056778.003	6/22/2012	3/21/2013	9,153.00	15,126.31	15,126.31	75.00	11,344.73	25.00	3,781.58	13,978.00	10,196.42-			100.00	15,126.31	13,978.00	1,148.31			51506503		
Total of - 2	Vote 15 - Repair					9,153.00	15,126.31	15,126.31		11,344.73		3,781.58	13,978.00	10,196.42-				15,126.31	13,978.00	1,148.31					
Total of Business Unit -	W25A Ottawa D. Project > 5K-25K					9,153.00	15,126.31	15,126.31		11,344.73		3,781.58	13,978.00	10,196.42-				15,126.31	13,978.00	1,148.31					
W25B	Ottawa D. Project 25K - 200K																								
1	Vote 12 -Capital																								
PW 003214	1016603 Replacement of Snow Melting Ca		R.056779.002	3/8/2013	3/12/2013	32,168.00	3,211.17	3,211.17	10.00	864.69	90.00	2,328.30	1,910.09	337.03	81.18	14.33	100.00	3,192.98	2,425.00	664.92	103.06	18.19	53219102		
PW 007506	1016451 Install Isolation Valves for W		R.056779.002	2/19/2013	3/26/2013	109,499.75	27,798.12	27,798.12	88.00	25,862.59	12.00	1,770.82	1,354.58	358.67	57.57	10.16	100.00	27,633.41	21,961.00	4,739.07	933.34	164.71	53049756		
PW 153928	1016718 Investigate Check Valves on Pr		R.056779.002	9/27/2012	2/4/2013	38,185.50	15,953.10	15,953.10	95.00	15,028.87	5.00	825.98	655.00	143.15	27.83	4.91	100.00	15,854.85	13,100.00	2,198.10	556.75	98.25	53350910		
PW 155455	1016593 Replace Hydraulic Dock Leveler		R.056779.002	2/19/2013	3/21/2013	96,813.00	79,968.94	79,968.94	33.00	8,575.50	67.00	70,888.36	60,605.56	7,707.06	2,575.74	454.54	100.00	79,463.86	67,344.00	9,257.74	2,862.12	505.08	53218986		
PW 155562	1015055 Replace Emergency Lighting-Low		R.056779.002	7/17/2012	7/18/2012	149,215.00	367.50	367.50	100.00	367.50							100.00	367.50		367.50			51493212		
PW 156344	1015435 Window - Glazing Replacement -		R.056779.002	3/12/2013	3/27/2013	45,000.00	5,272.29	5,272.29	33.00	3,990.20	67.00	1,252.47	1,376.00	182.01-	58.48	10.32	100.00	5,242.67	3,950.00	1,124.79	167.88	29.63	51873565		
PW 161565	1018142 Window Glazing Replacement - L		R.056779.002	3/8/2013	3/14/2013	8,693.94	5,458.15	5,458.15			100.00	5,425.15	4,400.00	838.15	187.00	33.00	100.00	5,425.15	4,400.00	838.15	187.00	33.00	55731679		
PW 163244	1018147 Exterior Pathway Emergency Lig		R.056779.002	2/20/2013	3/22/2013	18,015.01	8,942.98	8,942.98	15.00	725.80	85.00	8,162.81	6,742.91	1,133.32	286.58	50.57	100.00	8,888.61	7,250.00	1,330.48	308.13	54.38	55731759		
PW 163376	1017497 Upgrade Building Draining Syst		R.056779.002	3/8/2013	3/22/2013	69,761.26	3,873.00	3,873.00	10.00	1,873.04	90.00	1,977.46	1,597.07	312.52	67.87	11.98	100.00	3,850.50	3,000.00	723.00	127.50	22.50	54556186		
PW 163571	1017440 Replace Expansion Joints for I		R.056779.002	12/1/2012	3/20/2013	72,411.00	35,049.26	35,049.26	38.00	15,739.69	62.00	19,082.22	17,050.27	1,307.32	724.63	127.88	100.00	34,821.91	30,313.03	3,220.58	1,288.30	227.35	54528994		
PW 165723	1019120 Asbestos Abatement for Low-Ris		R.056779.002	3/11/2013	3/27/2013	148,875.00	119,821.73	119,821.73			100.00	119,058.04	101,826.00	12,904.43	4,327.61	763.70	100.00	119,058.04	101,826.00	12,904.43	4,327.61	763.70	57583930		
Total of - 1	Vote 12 -Capital					788,637.46	305,716.24	305,716.24		73,027.88		230,771.61	197,517.48	24,859.64	8,394.49	1,481.39		303,799.48	255,569.03	37,368.76	10,861.69	1,916.79			
2	Vote 15 - Repair																								
PW 161082	1016476 3 Year Life Safety Compliance		R.056778.004	9/25/2012	9/25/2012	151,225.00	157.50	157.50	100.00	157.50							100.00	157.50		157.50			53050175		
PW 164727	1018176 Emergency Work Water Leak Lowe		R.056778.004	2/22/2013	3/22/2013	154,521.00	135,582.70	135,582.70			100.00	134,621.58	128,150.00	1,025.20	5,446.38	961.13	100.00	134,621.58	128,150.00	1,025.20	5,446.38	961.13	55741113		

			Building	W400116	519632	Taxation Headquarters	875 Heron Rd.	Ottawa	ON K1A1B1																
Previous Project #	Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year Original Baseline	Revised Baseline	Committed Amount	Previously Reported % Completed	Invoiced Amount	Current Month Invoice % Completed	Invoiced Amount	Construction/Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	Year to Date Status % Completed	Invoiced Amount	Construction/Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	E1 Project#	Comments/PFM Initials
PW 165784	1019137	Water Leak in Room D200 D300 a		R.056778.004	3/11/2013	3/31/2013	100,000.01	126,993.94	126,993.94			100.00	126,168.84	110,014.28	11,478.95	4,675.61	825.11	100.00	126,168.84	110,014.28	11,478.95	4,675.61	825.11	57624383	
Total of -	2	Vote 15 - Repair					405,746.01	262,734.14	262,734.14		157.50		260,790.42	238,164.28	12,504.15	10,121.99	1,786.24		260,947.92	238,164.28	12,661.65	10,121.99	1,786.24		
Total of Business Unit -		W25B Ottawa D. Project 25K - 200K					1,194,383.47	568,450.38	568,450.38		73,185.38		491,562.03	435,681.76	37,363.79	18,516.48	3,267.63		564,747.40	493,733.31	50,030.41	20,983.68	3,703.03		
W25C		Ottawa D. Project 200K-500K																							
1		Vote 12 -Capital																							
PW 003195	1016602	Main Vault Replacement		R.056779.003	3/4/2013	3/8/2013	348,835.00	18,641.40	18,641.40			100.00	18,534.08	15,900.00	2,025.90	608.18	107.33	100.00	18,534.08	15,900.00	2,025.90	608.18	107.33	53219111	
PW 128063	1016458	Replace South Entrance Main Do		R.056779.003	8/28/2012	3/1/2013	32,490.71	5,113.80	5,113.80	75.00	3,814.86	25.00	1,271.61	1,012.50	220.38	38.73	6.83	100.00	5,086.46	4,050.00	881.55	154.91	27.34	53049810	
PW 153916	1016484	Replace Re-heat Coils and Isol		R.056779.003	11/17/2012	3/26/2013	99,090.00	256,909.12	256,909.12	38.00	94,190.50	62.00	161,225.38	139,626.40	16,258.27	5,340.71	942.48	100.00	255,415.89	221,220.00	25,734.22	8,461.67	1,493.24	53050343	
PW 154365	1018729	Cabling Raceways and Bus Ducts		R.056779.003	2/22/2013	3/25/2013	10,000.00	12,534.02	12,534.02			100.00	12,463.54	10,442.00	1,622.13	399.41	70.48	100.00	12,463.54	10,442.00	1,622.13	399.41	70.48	56537501	
PW 159625	1018614	Replace 2 Domestic Hot Water T		R.056779.003	12/8/2012	3/26/2013	255,012.00	320,503.45	320,503.45	40.00	92,667.83	60.00	225,992.74	193,802.56	24,777.23	7,412.95	1,308.17	100.00	318,660.57	273,018.56	35,199.05	10,442.96	1,842.88	56353796	
Total of -	1	Vote 12 -Capital					745,427.71	613,701.79	613,701.79		190,673.19		419,487.35	360,783.46	44,903.91	13,799.98	2,435.29		610,160.54	524,630.56	65,462.85	20,067.13	3,541.27		
Total of Business Unit -		W25C Ottawa D. Project 200K-500K					745,427.71	613,701.79	613,701.79		190,673.19		419,487.35	360,783.46	44,903.91	13,799.98	2,435.29		610,160.54	524,630.56	65,462.85	20,067.13	3,541.27		
W25E		Ottawa D. Project > 1M																							
1		Vote 12 -Capital																							
PW 128567	1015610	Passenger & Freight Elevator U		R.019817.001	5/12/2012	3/28/2013	515,999.99	638,066.76	638,066.76	91.00	574,239.46	9.00	60,868.92	53,656.51	5,616.14	1,596.27	281.70	100.00	635,108.39	563,499.39	54,844.89	16,764.11	2,958.37	51937856	
Total of -	1	Vote 12 -Capital					515,999.99	638,066.76	638,066.76		574,239.46		60,868.92	53,656.51	5,616.14	1,596.27	281.70		635,108.39	563,499.39	54,844.89	16,764.11	2,958.37		
Total of Business Unit -		W25E Ottawa D. Project > 1M					515,999.99	638,066.76	638,066.76		574,239.46		60,868.92	53,656.51	5,616.14	1,596.27	281.70		635,108.39	563,499.39	54,844.89	16,764.11	2,958.37		
W25TP		Ottawa D. Project Tenant D.																							
5		Tenant Service Project																							
PW 163002	1016659	Bulk Project for Minor Work- 8		R.051810.001	3/4/2013	3/14/2013	27,508.99	9,039.77	9,039.77			100.00	9,039.77	7,895.00	750.02	394.75		100.00	9,039.77	7,895.00	750.02	394.75		53331508	
PW 163003	1016656	Bulk Project for Minor Work -		R.059103.009	1/30/2013	3/21/2013	27,508.99	10,980.97	10,980.97			100.00	10,980.97	9,609.07	891.45	480.45		100.00	10,980.97	9,609.07	891.45	480.45		53331479	
PW 163602	1017436	Re-Fit Room 9060		R.060301.001	3/6/2013	3/20/2013	99,108.75	9,976.82	9,976.82	10.00	1,661.21	90.00	8,315.61	6,887.50	1,083.74	344.37		100.00	9,976.82	8,075.00	1,498.07	403.75		54528986	
Total of -	5	Tenant Service Project					154,126.73	29,997.56	29,997.56		1,661.21		28,336.35	24,391.57	2,725.21	1,219.57			29,997.56	25,579.07	3,139.54	1,278.95			
Total of Business Unit -		W25TP Ottawa D. Project Tenant D.					154,126.73	29,997.56	29,997.56		1,661.21		28,336.35	24,391.57	2,725.21	1,219.57			29,997.56	25,579.07	3,139.54	1,278.95			

			Building	W400116	519632	Taxation Headquarters	875 Heron Rd.	Ottawa	ON K1A1B1																	
Previous Project #	Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year Original Baseline	Revised Baseline	Committed Amount	Previously Reported % Completed	Invoiced Amount	Current Month Invoice % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	Year to Date Status % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	E1 Project#	Comments/ PFM Initials	
W25SDS	1	Ottawa D. Project SDS																								
		Vote 12 -Capital																								
PW 007325	1015400	SDS - CO2 Control for Primary		R.056779.005	2/5/2013	3/7/2013	454,806.00	4,463.27	4,463.27	30.00	1,332.03	70.00	3,108.01	2,409.40	606.45	92.16	16.26	100.00	4,440.04	3,442.00	866.38	131.66	23.23	51848108		
PW 153472	1015115	SDS Recommissioning Assessment		R.056779.004	11/21/2012	2/7/2013	17,205.00	17,043.65	17,043.65	30.00	5,260.95	70.00	11,782.70		11,782.70			100.00	17,043.65		17,043.65				51506749	
Total of -	1	Vote 12 -Capital					472,011.00	21,506.92	21,506.92		6,592.98		14,890.71	2,409.40	12,389.15	92.16	16.26		21,483.69	3,442.00	17,910.03	131.66	23.23			
Total of Business Unit -		W25SDS Ottawa D. Project SDS					472,011.00	21,506.92	21,506.92		6,592.98		14,890.71	2,409.40	12,389.15	92.16	16.26		21,483.69	3,442.00	17,910.03	131.66	23.23			
W25SIT	3	Ottawa D. Project SIT																								
		Vote 12 - SIT/RPT Capital																								
PW 166015	1019389	Commissioning for Low Rise Ele		R.052232.001	3/13/2013	3/26/2013	1,069.99	1,070.00	1,070.00			100.00	1,070.00		1,070.00			100.00	1,070.00		1,070.00				58317385	
Total of -	3	Vote 12 - SIT/RPT Capital					1,069.99	1,070.00	1,070.00				1,070.00		1,070.00				1,070.00		1,070.00					
Total of Business Unit -		W25SIT Ottawa D. Project SIT					1,069.99	1,070.00	1,070.00				1,070.00		1,070.00				1,070.00		1,070.00					
Grand Total of Building Number -		W400116 Taxation Headquarters					3,092,171.89	1,887,919.72	1,887,919.72		857,696.95		1,019,996.94	890,900.70	93,871.78	35,224.46			1,877,693.89	1,624,862.33	193,606.03	59,225.53	10,225.90			

PWGSC APPROVAL \_\_\_\_\_

SNC-LAVALIN PROFAC APPROVAL \_\_\_\_\_

		Building	W400117	519633	Taxation Data Centre	875 Heron Rd.	Ottawa	ON K1A1B1																		
Previous Project #	Project Project # Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year Original Baseline	Revised Baseline	Committed Amount	Previously Reported % Completed	Invoiced Amount	Current Month Invoice % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	Year to Date Status % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	E1 Project#	Comments/ PFM Initials		
W25OW	Downtown Other O&M Project>40K																									
6	Other																									
	Fuel for Generator		R.059103.018	3/25/2013				3,906.71			100.00	3,906.71		3,906.71			100.00	3,906.71		3,906.71				58694615		
OW53096229	OW53096229 Emerg Service UPS		R.059103.008	6/22/2012				12,391.28			100.00	12,391.28		12,391.28			100.00	12,391.28		12,391.28				53096229		
OW53096270	OW53096270 AC Maint for IOD Baxtec		R.059103.010	6/22/2012				28,360.46	50.00	14,180.23	50.00	14,180.23		14,180.23			100.00	28,360.46		28,360.46				53096270		
OW53096456	OW53096456 AC Maint ITB Baxtec		R.059103.011	6/22/2012				19,929.04	50.00	9,964.52	50.00	9,964.52		9,964.52			100.00	19,929.04		19,929.04				53096456		
OW53107531	OW53107531 AC Maint CRA, 2011-54 Baxtec		R.059328.001	6/25/2012				39,310.54	50.00	19,655.27	50.00	19,655.27		19,655.27			100.00	39,310.54		39,310.54				53107531		
OW53107590	OW53107590 UPS Maint ITB/IOD NCA 09-161		R.059103.010	6/25/2012				82,607.24	50.00	41,303.62	50.00	41,303.62		41,303.62			100.00	82,607.24		82,607.24				53107590		
OW53107637	OW53107637 Diesel Gen Maint 4 IOD equip		R.059103.010	6/25/2012				7,550.90	75.00	5,672.53	25.00	1,878.37		1,878.37			100.00	7,550.90		7,550.90				53107637		
OW53107688	OW53107688 IOD safety server rm 200-45-A		R.059103.010	6/25/2012				13,042.36			100.00	13,042.36		13,042.36			100.00	13,042.36		13,042.36				53107688		
OW53107696	OW53107696 Diesel Gen Maint #3 2010-117		R.059103.010	6/25/2012				7,229.83	75.00	5,446.43	25.00	1,783.40		1,783.40			100.00	7,229.83		7,229.83				53107696		
OW53175218	OW53175218 AC Repair Fund 2011-54		R.059103.007	6/28/2012				24,457.27	75.00	18,749.96	25.00	5,707.31		5,707.31			100.00	24,457.27		24,457.27				53175218		
OW53304471	OW53304471 Monitor elec work of pwr bkup		R.059103.001	7/4/2012				876.00	100.00	876.00							100.00	876.00		876.00				53304471		
OW54004971	OW54004971 Replace Battery Chargers		R.059103.006	8/15/2012				4,733.07			100.00	4,733.07		4,733.07			100.00	4,733.07		4,733.07				54004971		
OW54264079	OW54264079 Bulk for AC Repair NCA 2011-54		R.059103.007	8/17/2012				24,112.36			100.00	24,112.36		24,112.36			100.00	24,112.36		24,112.36				54264079		
OW54335308	OW54335308 Bulk AC Unit Repair NCA2011-54		R.059103.007	8/22/2012				24,947.39			100.00	24,947.39		24,947.39			100.00	24,947.39		24,947.39				54335308		
OW55695049	OW55695049 Bulk AC Unit Repair		R.059103.014	10/22/2012				12,015.44			100.00	12,015.44		12,015.44			100.00	12,015.44		12,015.44				55695049		
OW55714086	OW55714086 Repair pre-action sys 10th fl		R.059103.013	10/24/2012				1,921.73			100.00	1,921.73		1,921.73			100.00	1,921.73		1,921.73				55714086		
Total of - 6 Other										307,391.62			115,848.56		191,543.06			307,391.62		307,391.62						
Total of Business Unit - W25OW Downtown Other O&M Project>40K										307,391.62			115,848.56		191,543.06			307,391.62		307,391.62		307,391.62				
Grand Total of Building Number - W400117 Taxation Data Centre										307,391.62			115,848.56		191,543.06			307,391.62		307,391.62		307,391.62				

			Building	W400116	519632	Taxation Headquarters	875 Heron Rd.	Ottawa	ON K1A1B1																
Previous Project #	Project Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year Original Baseline	Revised Baseline	Committed Amount	Previously Reported % Completed	Invoiced Amount	Current Month Invoice % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	Year to Date Status % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	E1 Project#	Comments/ PFM Initials
W25B	Ottawa D. Project 25K - 200K																								
1	Vote 12 -Capital																								
PW 153921	1020810	Replace 7 Disconnects In Loadi		R.065995.002	11/26/2013	3/31/2014	40,000.00	67,867.32	67,867.32	50.00	33,649.41	50.00	33,806.97	27,396.50	5,246.12	1,164.35	205.47	100.00	67,456.37	54,793.00	10,334.67	2,328.70	410.95	59810075	
PW 155455	1020111	Replace Hydraulic Dock Leveler		R.065995.002	4/5/2013	7/23/2013	20,000.00	29,010.82	29,010.82	100.00	28,840.22							100.00	28,840.22	22,746.40	5,127.10	966.72	170.60	58935466	
PW 156344	1020814	Window - Glazing Replacement -		R.065995.002	7/19/2013	3/31/2014	64,999.99	67,470.41	67,470.41	79.00	66,984.58	21.00	64.84	1,928.52	1,945.65-	81.97	14.46	100.00	67,049.42	56,132.00	8,531.81	2,385.61	420.99	59810147	
PW 163244	1020807	Exterior Pathway Emergency Lig		R.065995.002	8/2/2013	3/31/2014	140,000.01	90,562.71	90,562.71	79.00	71,092.29	21.00	18,905.85	15,807.78	2,426.24	671.83	118.56	100.00	89,998.14	75,275.15	11,523.80	3,199.19	564.56	59810059	
PW 163376	1021285	Upgrade Building Draining Syst		R.065995.002	9/3/2013	3/31/2014	18,843.96	15,817.50	15,817.50	65.00	10,946.33	35.00	4,775.54	3,845.00	767.13	163.41	28.84	100.00	15,721.88	12,750.00	2,430.00	541.88	95.63	60587819	
PW 163571	1020115	Replace Expansion Joints for I		R.065995.002	4/10/2013	5/16/2013	24,898.08	30,909.98	30,909.98	100.00	30,729.04							100.00	30,729.04	24,125.00	5,578.73	1,025.31	180.94	58935511	
PW 166618	1021356	Add Machine Guarding to Fan Be		R.065995.002	12/4/2013	3/15/2014	90,585.00	97,244.74	97,244.74	80.00	64,385.03	20.00	32,262.56	26,688.00	4,440.32	1,134.24	200.16	100.00	96,647.59	79,620.00	13,643.74	3,383.85	597.15	60662410	
Total of -	1	Vote 12 -Capital					399,327.04	398,883.48	398,883.48		306,626.90		89,815.76	75,665.80	10,934.16	3,215.80	567.49		396,442.66	325,441.55	57,169.85	13,831.26	2,440.82		
2	Vote 15 - Repair																								
PW 168232	1022920	Emergency Asbestos Compliance		R.065061.004	1/20/2014	3/10/2014	54,516.00	32,219.88	32,219.88	80.00	26,459.92	20.00	5,574.86	4,872.00	495.80	207.06	36.54	100.00	32,034.78	24,680.00	6,305.88	1,048.90	185.10	63103146	
Total of -	2	Vote 15 - Repair					54,516.00	32,219.88	32,219.88		26,459.92		5,574.86	4,872.00	495.80	207.06	36.54		32,034.78	24,680.00	6,305.88	1,048.90	185.10		
Total of Business Unit -	W25B	Ottawa D. Project 25K - 200K					453,843.04	431,103.36	431,103.36		333,086.82		95,390.62	80,537.80	11,429.96	3,422.86	604.03		428,477.44	350,121.55	63,475.73	14,880.16	2,625.92		
W25C	Ottawa D. Project 200K-500K																								
1	Vote 12 -Capital																								
PW 153916	1020109	Replace Re-heat Coils and Isol		R.065995.003	4/5/2013	3/15/2014	230,000.01	357,663.88	357,663.88	80.00	296,991.19	20.00	58,881.10	40,917.19	16,398.83	1,565.08	276.19	100.00	355,872.28	265,421.53	80,298.38	10,152.37	1,791.60	58935394	
PW 166065	1021289	Upgrade Five Humidifiers for t		R.065995.003	9/9/2013	3/31/2014	29,991.07	5,268.60	5,268.60	15.00	1,457.31	85.00	3,784.16	2,892.00	781.54	110.62	19.52	100.00	5,241.47	4,020.00	1,067.70	153.77	27.14	60587851	
Total of -	1	Vote 12 -Capital					259,991.08	362,932.48	362,932.48		298,448.50		62,665.26	43,809.19	17,180.37	1,675.70	295.71		361,113.75	269,441.53	81,366.08	10,306.14	1,818.74		
2	Vote 15 - Repair																								
PW 168356	1023004	Water Leak in Room D200 D300 a		R.065061.005	4/16/2013	11/29/2013	74,600.00	76,735.46	76,735.46	100.00	76,303.51							100.00	76,303.51	63,992.50	9,863.30	2,447.71	431.95	63268602	
Total of -	2	Vote 15 - Repair					74,600.00	76,735.46	76,735.46		76,303.51								76,303.51	63,992.50	9,863.30	2,447.71	431.95		
Total of Business Unit -	W25C	Ottawa D. Project 200K-500K					334,591.08	439,667.94	439,667.94		374,752.01		62,665.26	43,809.19	17,180.37	1,675.70	295.71		437,417.26	333,434.03	91,229.38	12,753.85	2,250.69		

			Building	W400116	519632	Taxation Headquarters	875 Heron Rd.	Ottawa	ON K1A1B1																
Previous Project #	Project Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year Original Baseline	Revised Baseline	Committed Amount	Previously Reported % Completed	Invoiced Amount	Current Month Invoice % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	Year to Date Status % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	E1 Project#	Comments/ PFM Initials
W25TP	Ottawa D. Project Tenant D.																								
5	Tenant Service Project																								
PW 163602	1020562	Re-Fit Room 9060		R.060301.001	5/27/2013	11/11/2013	90,445.60	103,716.04	103,716.04	100.00	103,716.04							100.00	103,716.04	84,749.62	14,728.94	4,237.48		59489251	
PW 165427	1021038	Investigation and Replacement		R.065688.007	3/12/2014	3/31/2014	50,450.00	9,023.25	9,023.25	99.00	7,673.24	1.00	1,350.01	1,059.50	237.54	52.97		100.00	9,023.25	6,950.00	1,725.75	347.50		60113015	
PW 166300	1020491	Bulk Project for Minor Work fo		R.065688.001	11/1/2013	12/10/2013	24,999.70	944.00	944.00	100.00	944.00							100.00	944.00	800.00	104.00	40.00		59391448	
PW 166329	1020538	Repair Drywall and Adjust Door		R.064861.001	5/28/2013	8/1/2013	1,184.50	1,464.67	1,464.67	100.00	1,464.67							100.00	1,464.67	1,241.25	161.36	62.06		59448011	
PW 166366	1020575	Install Handicap Paddle for En		R.068493.001	12/12/2013	1/6/2014	1,776.75	3,540.00	3,540.00	100.00	3,540.00							100.00	3,540.00	3,000.00	390.00	150.00		59502494	
PW 166378	1020585	Low Rise - Mould Air Sampling-		R.064862.001	5/27/2013	8/7/2013	1,421.40	1,386.50	1,386.50	100.00	1,386.50							100.00	1,386.50	1,175.00	152.75	58.75		59527309	
PW 166506	1021052	Re-feed From Normal Power Some		R.065688.009	12/12/2013	3/31/2014	36,540.00	99,075.08	99,075.08	80.00	69,374.88	20.00	29,700.20	22,395.31	6,185.12	1,119.77		100.00	99,075.08	79,091.31	16,029.20	3,954.57		60113251	
PW 166826	1023734	Security Lighting Fixtures on		R.069966.001	3/5/2014	3/28/2014	32,305.36	36,450.50	36,450.50			100.00	36,450.50	30,759.91	4,152.59	1,538.00		100.00	36,450.50	30,759.91	4,152.59	1,538.00		65275646	
PW 167748	1022525	DCH De-Commissioning for IT In		R.065688.013	10/22/2013	3/15/2014	64,821.00	23,188.39	23,188.39	30.00	7,210.91	70.00	15,977.48	13,212.50	2,104.35	660.63		100.00	23,188.39	18,875.00	3,369.64	943.75		62275982	
PW 168036	1022731	Install LAN Drop and Conduit f		R.067711.001	11/4/2013	2/11/2014	1,842.01	1,209.50	1,209.50	100.00	1,209.50							100.00	1,209.50	1,025.00	133.25	51.25		62772321	
PW 168129	1022732	Soundproofing Room 834B		R.068330.001	3/10/2014	3/15/2014	41,512.50	4,191.50	4,191.50	10.00	1,120.84	90.00	3,070.66	1,996.34	974.50	99.82		100.00	4,191.50	2,900.00	1,146.50	145.00		62772330	
PW 168397	1023046	Security Modifications as Per		R.069520.001	2/13/2014	3/15/2014	53,850.00	16,367.25	16,367.25			100.00	16,367.25	13,200.00	2,573.25	594.00		100.00	16,367.25	13,200.00	2,573.25	594.00		63419327	
PW 168515	1023130	Room A300- Install A New Dedic		R.069110.001	2/25/2014	3/15/2014	13,645.69	7,222.02	7,222.02	15.00	552.65	85.00	6,669.37	4,646.92	1,790.10	232.35		100.00	7,222.02	5,050.00	1,919.52	252.50		63588956	
PW 168876	1023418	Repair 3 MW SSC Generator		R.065688.016	1/28/2014	3/15/2014	4,298.01	3,199.87	3,199.87			100.00	3,199.87	2,711.75	352.53	135.59		100.00	3,199.87	2,711.75	352.53	135.59		64528971	
PW 168997	1023635	Removal of Distribution Cabine		R.065688.017	3/7/2014	3/15/2014	4,298.01	5,237.70	5,237.70			100.00	5,237.70	4,420.00	596.70	221.00		100.00	5,237.70	4,420.00	596.70	221.00		64968475	
Total of -	5	Tenant Service Project					423,390.53	316,216.27	316,216.27		198,193.23		118,023.04	94,402.23	18,966.68	4,654.13			316,216.27	255,948.84	47,535.98	12,731.45			
Total of Business Unit -	W25TP	Ottawa D. Project Tenant D.					423,390.53	316,216.27	316,216.27		198,193.23		118,023.04	94,402.23	18,966.68	4,654.13			316,216.27	255,948.84	47,535.98	12,731.45			
W25SIT	Ottawa D. Project SIT																								
3	Vote 12 - SIT/RPT Capital																								
PW 168973	1023633	Security Services for Building		R.053081.006	2/26/2014	3/15/2014	6,304.28	2,957.84	2,957.84			100.00	2,957.84		2,957.84			100.00	2,957.84		2,957.84			64968424	

		Building	W400116	519632	Taxation Headquarters	875 Heron Rd.	Ottawa	ON K1A1B1																							
Previous	Project	Project	PWGSC	PWGSC	Actual	Actual	Project Year			Previously Reported		Current Month Invoice			Year to Date Status																
<u>Project #</u>	<u>Project #</u>	<u>Name</u>	<u>Work Order #</u>	<u>Project #</u>	<u>Start Date</u>	<u>End Date</u>	<u>Original</u>	<u>Revised</u>	<u>Committed</u>	<u>%</u>	<u>Invoiced</u>	<u>%</u>	<u>Invoiced</u>	<u>Construction/</u>	<u>Disbursements</u>	<u>Fee</u>	<u>%</u>	<u>Invoiced</u>	<u>Construction/</u>	<u>Disbursements</u>	<u>Fee</u>	<u>15%</u>	<u>Completed</u>	<u>Amount</u>	<u>Design Costs</u>	<u>Labour/Other</u>	<u>100% / 85%</u>	<u>15%</u>	<u>E1 Project#</u>	<u>Comments/</u>	
							<u>Baseline</u>	<u>Baseline</u>	<u>Amount</u>	<u>Completed</u>	<u>Amount</u>	<u>Completed</u>	<u>Amount</u>	<u>Design Costs</u>	<u>Labour/Other</u>	<u>100% / 85%</u>		<u>Completed</u>	<u>Amount</u>	<u>Design Costs</u>	<u>Labour/Other</u>	<u>100% / 85%</u>	<u>15%</u>		<u>Amount</u>	<u>Design Costs</u>	<u>Labour/Other</u>	<u>100% / 85%</u>	<u>15%</u>	<u>E1 Project#</u>	<u>PFM Initials</u>
Total of -	3	Vote 12 - SIT/RPT Capital					6,304.28	2,957.84	2,957.84				2,957.84		2,957.84																
Total of Business Unit -		W25SIT					6,304.28	2,957.84	2,957.84				2,957.84		2,957.84																
Grand Total of Building Number -		W400116					1,218,128.93	1,189,945.41	1,189,945.41				279,036.76	218,749.22	50,534.85	9,752.69			1,185,068.81	939,504.42	205,198.93	40,365.46	4,876.61								

PWGSC APPROVAL \_\_\_\_\_

SNC-LAVALIN PROFAC APPROVAL \_\_\_\_\_



			Building	W400117	519633	Taxation Data Centre	875 Heron Rd.	Ottawa	ON K1A1B1																	
Previous Project #	Project Project #	Project Name	PWGSC Work Order #	PWGSC Project #	Actual Start Date	Actual End Date	Project Year Original Baseline	Revised Baseline	Committed Amount	Previously Reported % Completed	Invoiced Amount	Current Month Invoice % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	Year to Date Status % Completed	Invoiced Amount	Construction/ Design Costs	Disbursements Labour/Other	Fee 100% / 85%	15%	E1 Project#	Comments/ PFM Initials	
W25OW	Downtown Other O&M Project>40K																									
6	Other																									
OW58987080	OW58987080	SS - Ten Diesel Gen RT 1500kW		R.065688.005	4/15/2013				7,343.52	75.00	5,507.64	25.00	1,835.88		1,835.88			100.00	7,343.52		7,343.52				58987080	
OW58987101	OW58987101	SS Ten Diesel Gen 2250kW		R.065688.005	4/15/2013				7,651.67	75.00	5,738.75	25.00	1,912.92		1,912.92			100.00	7,651.67		7,651.67				58987101	
OW58987127	OW58987127	SS Pre-action System IOD		R.065688.005	4/15/2013				13,468.50	75.00	10,101.38	25.00	3,367.12		3,367.12			100.00	13,468.50		13,468.50				58987127	
OW58987151	OW58987151	SS UPS Prev Maint IOD/ITB		R.065688.005	4/15/2013				82,606.84	75.00	61,955.13	25.00	20,651.71		20,651.71			100.00	82,606.84		82,606.84				58987151	
OW58987186	OW58987186	SS AC Maint CRA		R.059328.001	4/15/2013				40,460.25	75.00	30,468.38	25.00	9,991.87		9,991.87			100.00	40,460.25		40,460.25				58987186	
OW58987207	OW58987207	SS AC Maint ITB		R.065688.008	4/15/2013				20,567.76	75.00	15,494.26	25.00	5,073.50		5,073.50			100.00	20,567.76		20,567.76				58987207	
OW58987231	OW58987231	SS AC Maint IOD		R.065688.005	4/15/2013				28,871.49	75.00	21,708.37	25.00	7,163.12		7,163.12			100.00	28,871.49		28,871.49				58987231	
OW59042475	OW59042475	SS Bulk funds for AC Unit Repa		R.065688.002	4/16/2013				31,942.39	50.00	24,999.95	50.00	6,942.44		6,942.44			100.00	31,942.39		31,942.39				59042475	
OW59528580	OW59528580	SS Tech Requirements DCH Facil		R.065688.006	5/8/2013				1,344.00	100.00	1,344.00							100.00	1,344.00		1,344.00				59528580	
OW60137412	OW60137412	SS Cleaning for DCCL Event		R.065688.006	6/8/2013				847.50	25.00	508.50	75.00	339.00		339.00			100.00	847.50		847.50				60137412	
OW60176323	OW60176323	SS Elev Tech for DCCL Maint		R.065688.006	6/12/2013				19,092.48	100.00	19,092.48							100.00	19,092.48		19,092.48				60176323	
OW61564758	OW61564758	Battery string replace 2nd fl		R.065688.010	8/16/2013				6,653.98	75.00	5,932.50	25.00	721.48		721.48			100.00	6,653.98		6,653.98				61564758	
OW62243411	OW62243411	SSC for 5th & 7th Floor A/C un	R.065688.014	R.065688.014	9/23/2013				926.60	100.00	926.60							100.00	926.60		926.60				62243411	
OW62506875	OW62506875	rmv oil & refrig on 25 ACunits		R.065688.012	10/9/2013				17,206.51	100.00	17,206.51							100.00	17,206.51		17,206.51				62506875	
Total of - 6 Other									278,983.49		220,984.45		57,999.04		57,999.04			278,983.49		278,983.49						
Total of Business Unit - W25OW Downtown Other O&M Project>40K									278,983.49		220,984.45		57,999.04		57,999.04				278,983.49		278,983.49					
Grand Total of Building Number - W400117 Taxation Data Centre									278,983.49		220,984.45		57,999.04		57,999.04				278,983.49		278,983.49					

**Project: Mechanical Systems Schematics  
Ottawa Technology Centre (OTC)  
875 Heron Road  
Ottawa, Ontario, K1A 1B1**

Managed by: Public Works and Government Services



Prepared By: Efficiency Engineering Inc.



Mechanical Legend			
Symbol	Description	Symbol	Description
	Pneumatic 3-way Valve		Pipe Thermometer
	Electric 3-way Valve		Pressure Gauge
	Pneumatic 2-way Valve		Thermal Well
	Electric 2-way Valve		Pump
	Butterfly Valve		Water Meter
	Gate Valve		Air/Dirt Separator
	Ball Valve		Shell & Tube Heat Exchanger
	Check Valve		Plate & Frame Heat Exchanger
	Strainer		Reciprocating Compressor
	Globe Valve		Centrifugal Chiller
	Circuit Balancing Valve		Cooling Tower
	Pressure Relief Valve		Firetube Boiler
	Pressure Reducing Valve		Flexible Water Tube Boiler
	Plug Valve		Atmospheric Boiler
	Gas Cock Valve		Cast Iron Boiler
	Air Vent		Vertical Coil Tube Boiler
	Triple Duty Valve		Storage Tank
	Suction Guide		Atmospheric DHW Heater
	Pneumatic Sensor		DHW Heater
	Electric Sensor		DHW Heat Exchanger Tank
	Pneumatic Thermostat		Centrifugal Fan
	Electric Thermostat		Axial Fan
	Electric OA Temp. Sensor		Heating Coil
	Pneumatic OA Temp. Sensor		Electric Damper

This Is A Standard Legend.  
All Symbols May Not be Used On Drawings.

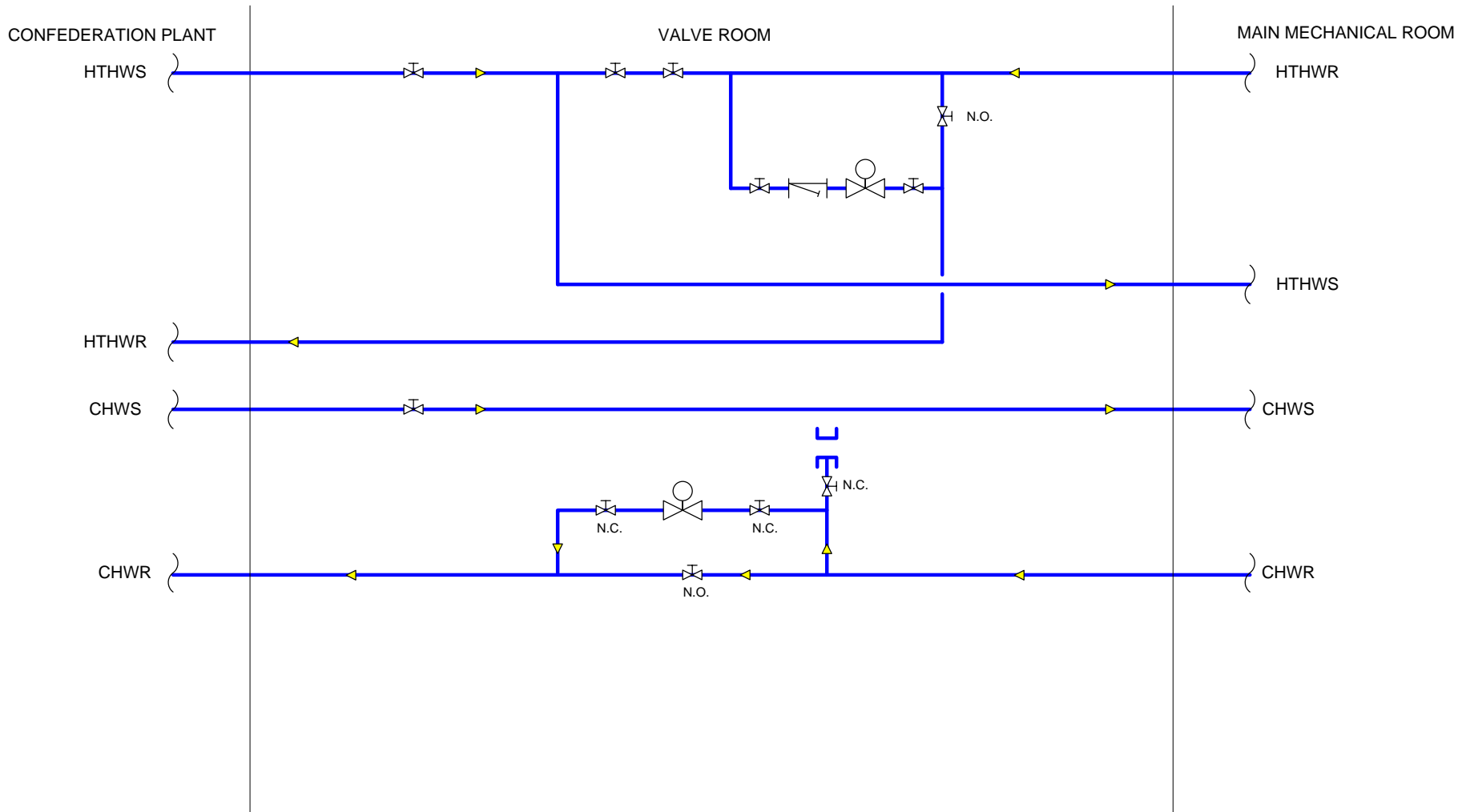
## OTC - HQ Building

### MS..2 - List of Drawings

MS..2 – List of Drawings (This Page)	MS..19 - Mech Room AHU-3,4,5,6
MS..3 - Incoming Services	MS..20 - AHU H/C Piping
MS..4 - HTHW Plant	MS..21 - AHU C/C Piping
MS..5 - Converter "A"	MS..22 - AHU-7
MS..6 - Converter "B"	MS..23 - AHU-8
MS..7 - Converter "C"	MS..24 - AHU-9
MS..8 - Converter "D"	MS..25 - AHU-10
MS..9 - Converter "E"	MS..26 - AHU-11
MS..10 - DHW-1 (Kitchen)	MS..27 - AHU -12
MS..11 - DHW-HQ, TC	MS..28 - AHU-Link
MS..12 - DCW	MS..29 - EAF - Caf
MS..13 - AHU-1	MS..30 - DCHW-1
MS..14 - AHU-2	MS..31 - HUM-1
MS..15 - AHU-3	
MS..16 - AHU-4	
MS..17 - AHU-5	
MS..18 - AHU-6	

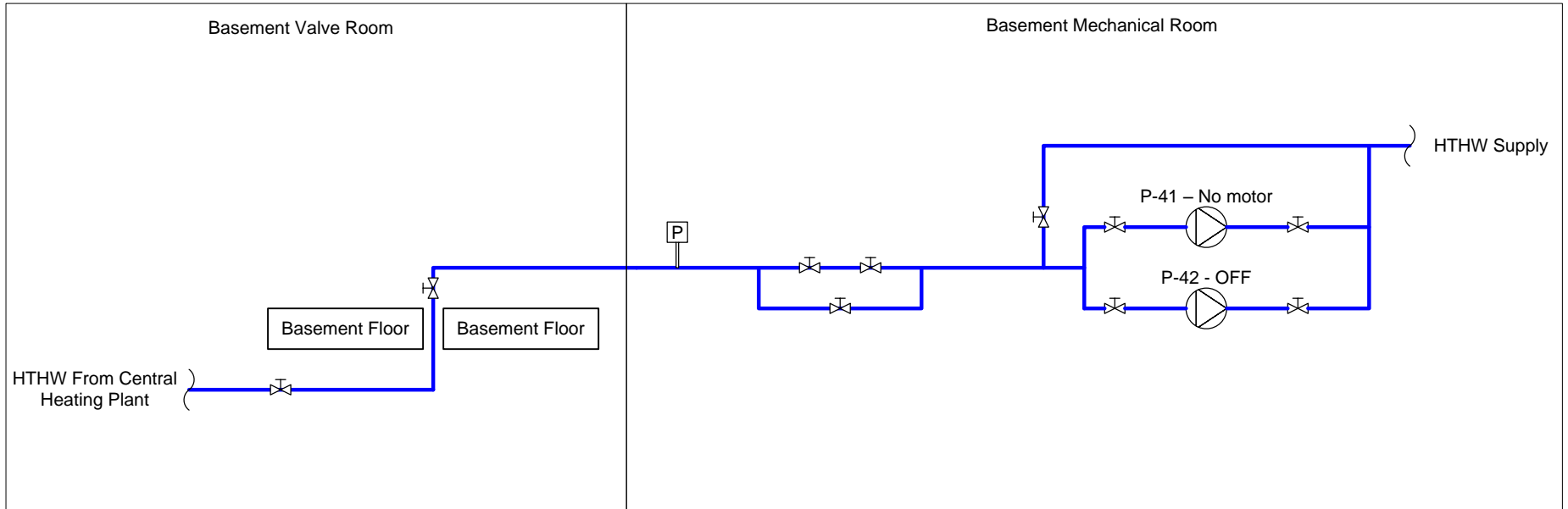
# OTC - HQ Building

## MS..3 - Incoming Services



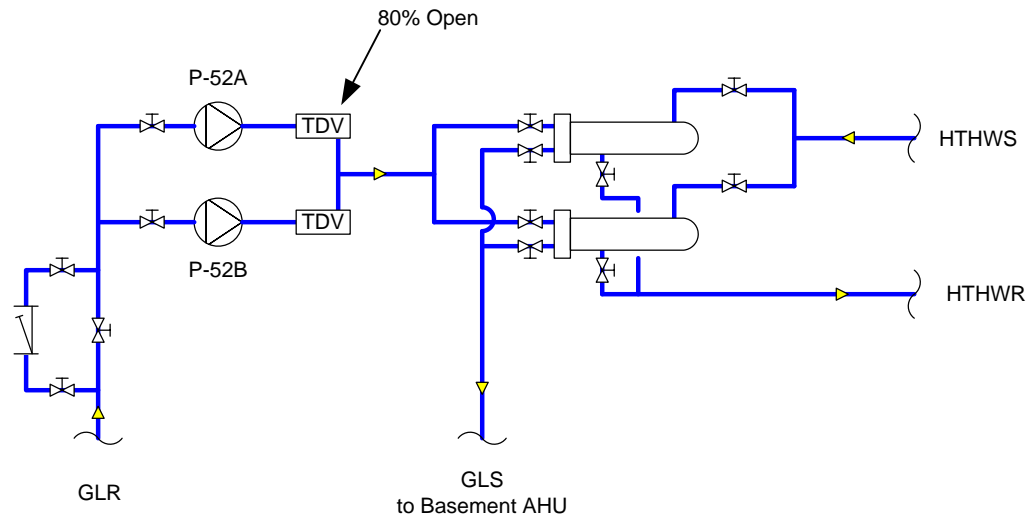
# OTC - HQ Building

## MS..4 - HTHW Plant



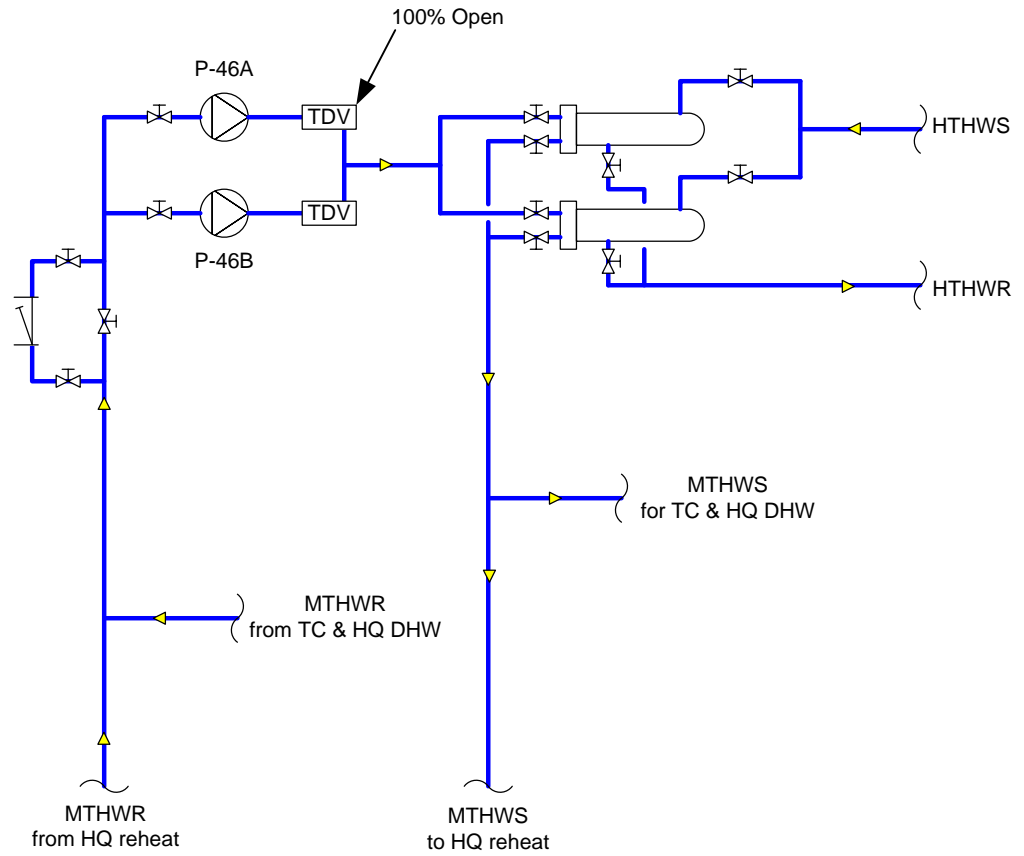
# OTC - HQ Building

## MS..5 - Converter "A"



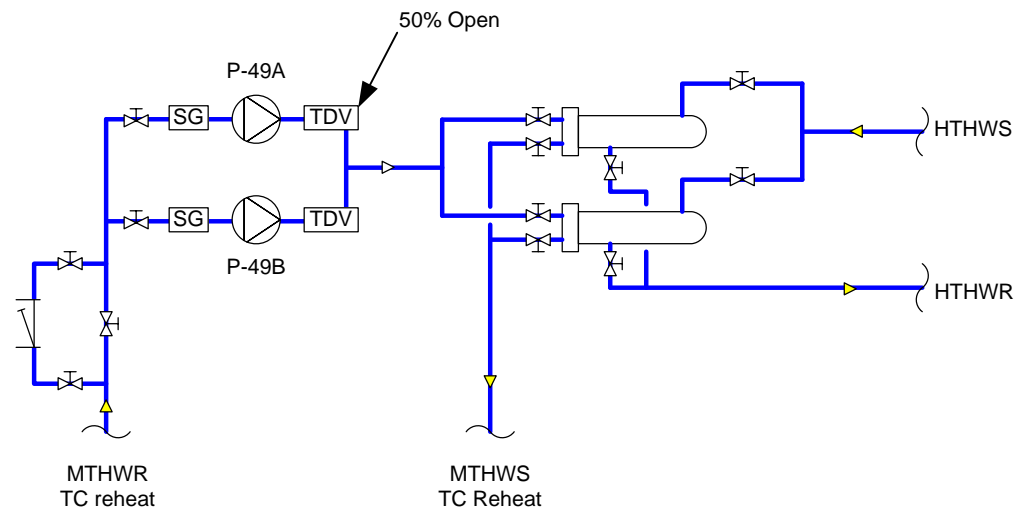
# OTC - HQ Building

## MS..6 - Converter "B"



# OTC - HQ Building

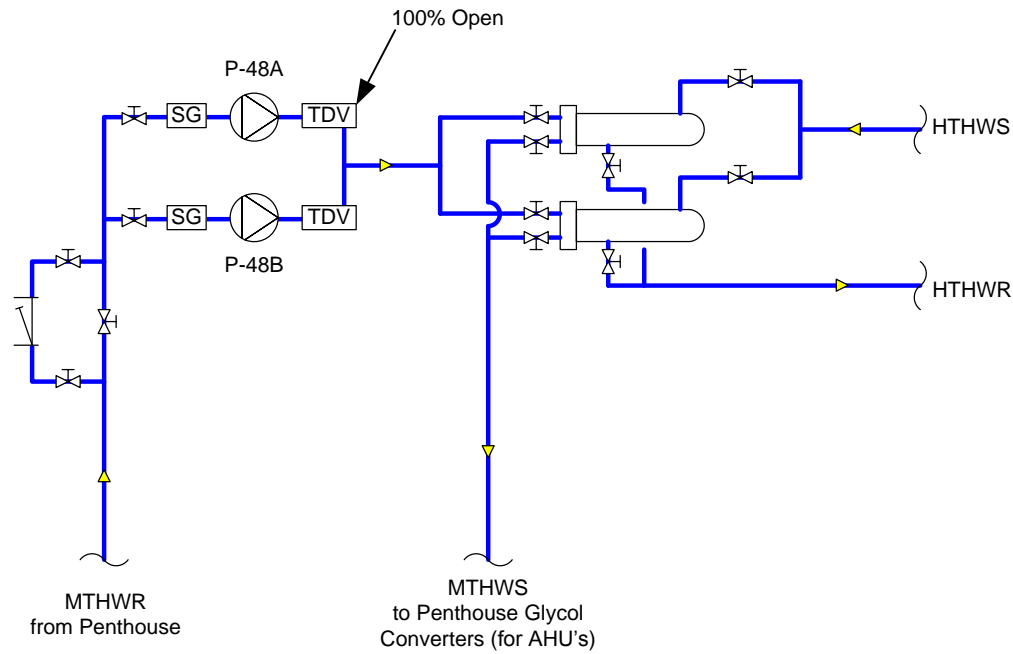
## MS..7 - Converter "C"





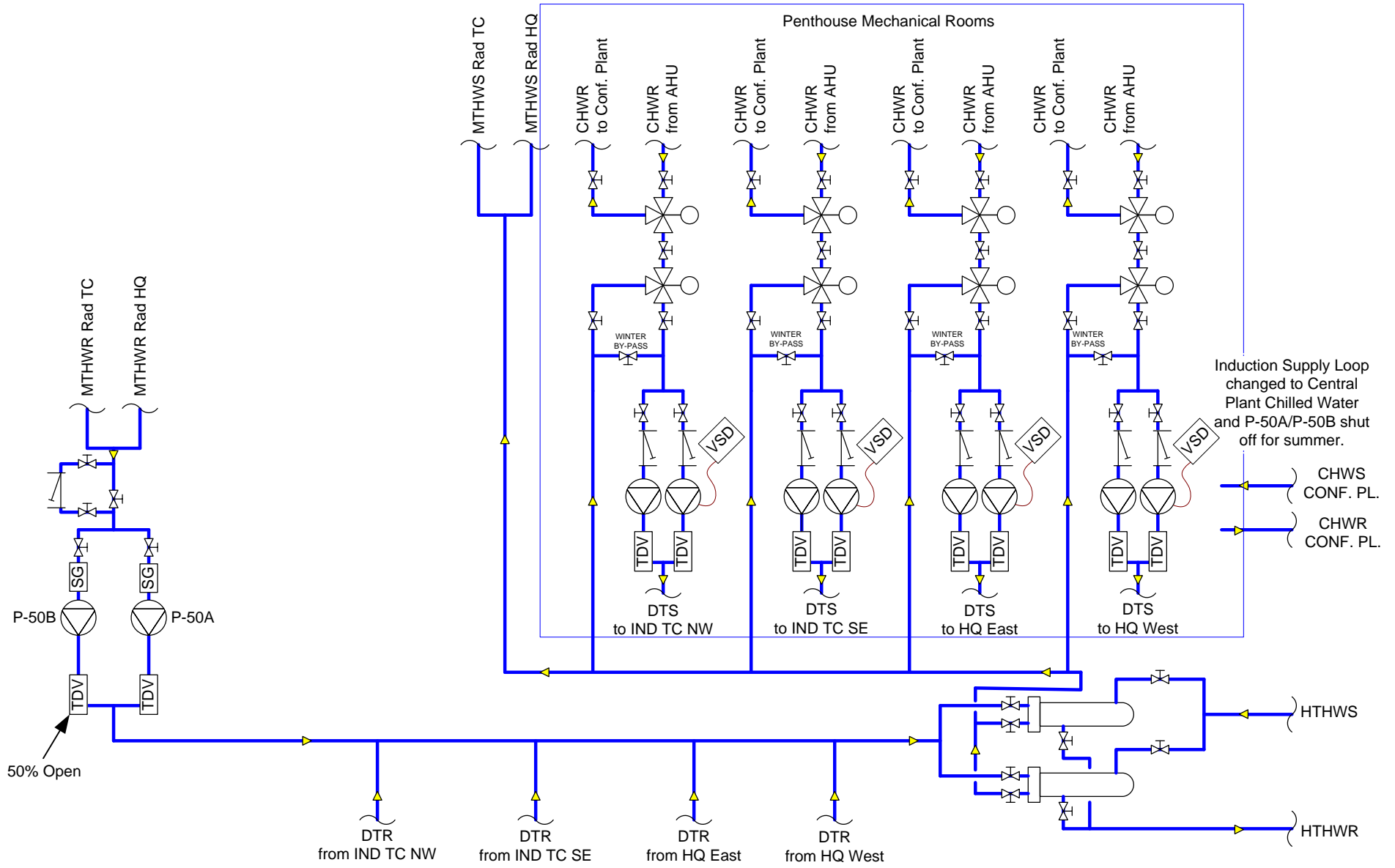
# OTC - HQ Building

## MS..8 - Converter "D"



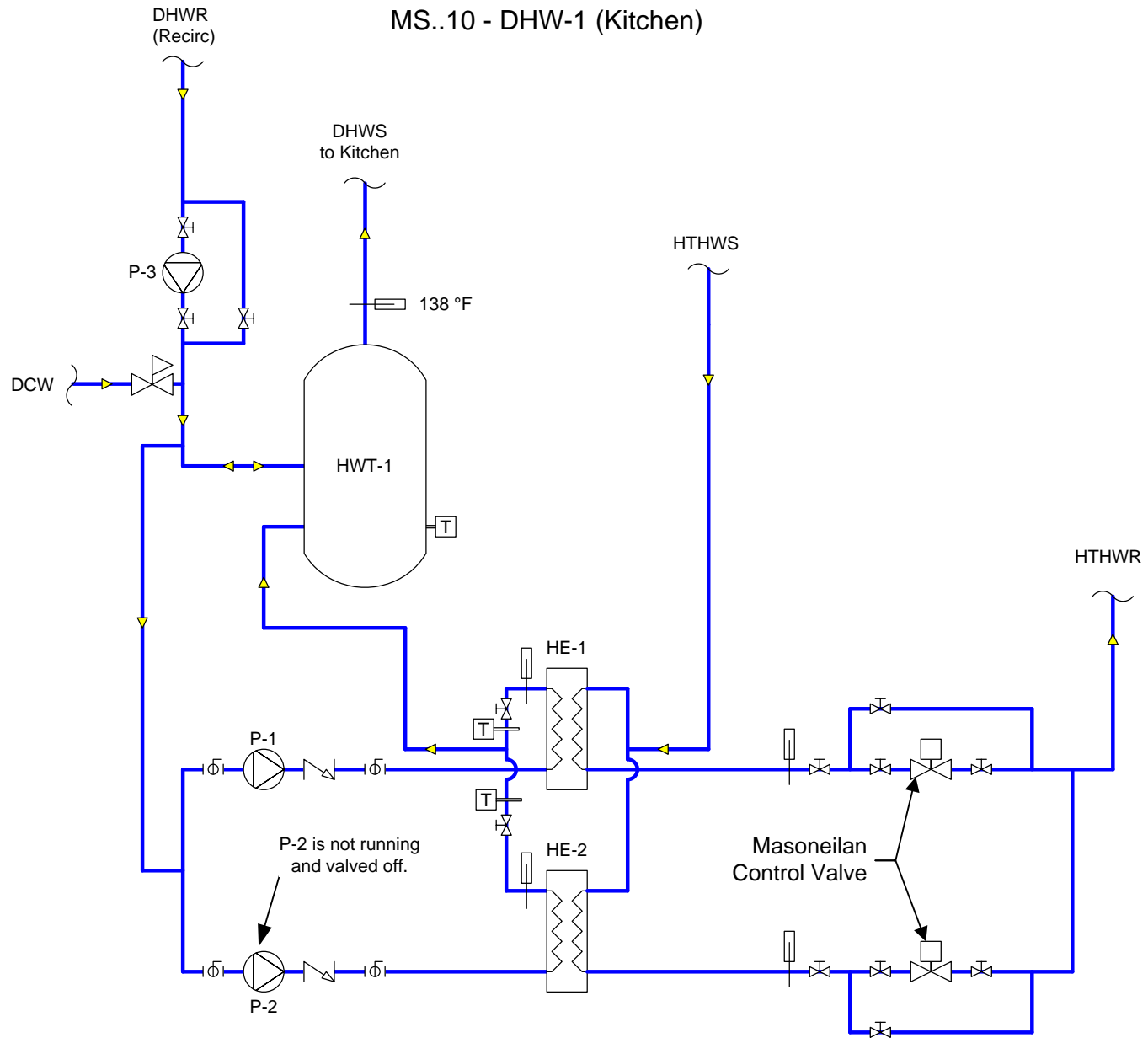
# OTC - HQ Building

## MS..9 - Converter "E"



# OTC - HQ Building

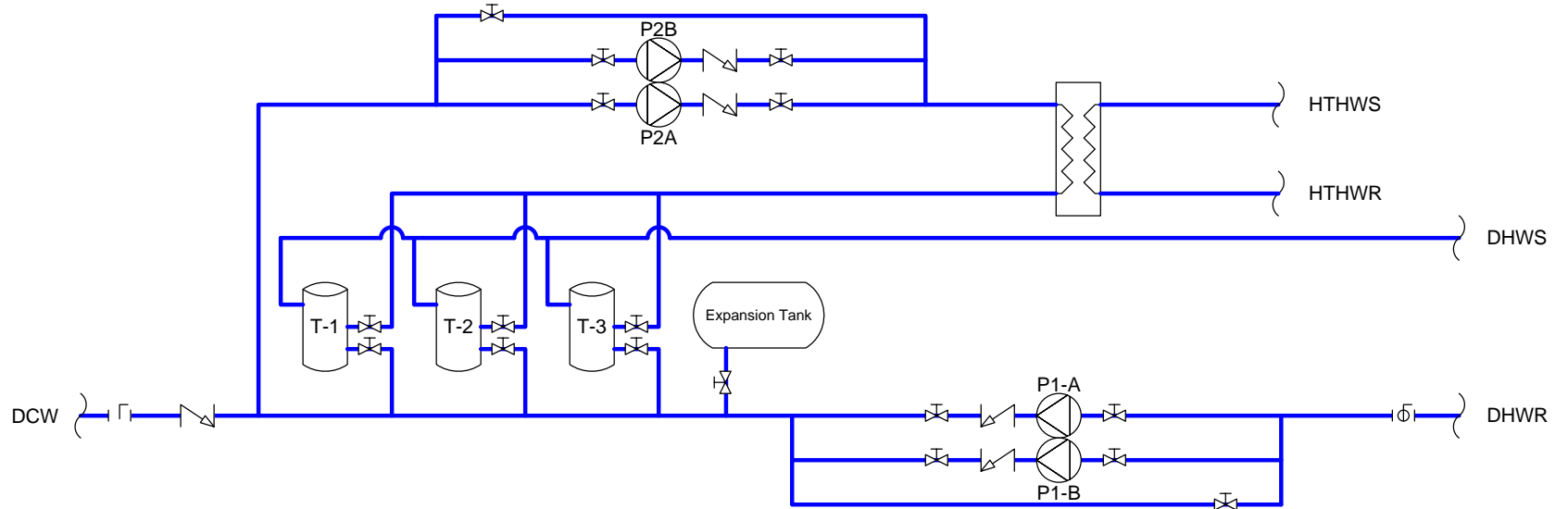
## MS..10 - DHW-1 (Kitchen)



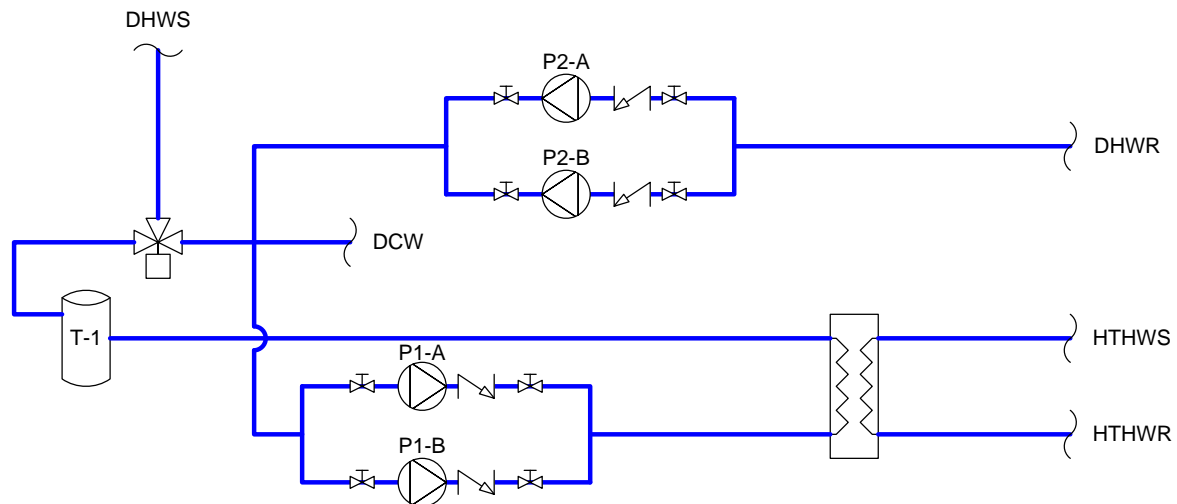
# OTC - HQ Building

## MS..11 - DHW-HQ, TC

### DHW-2 (HQ Building)

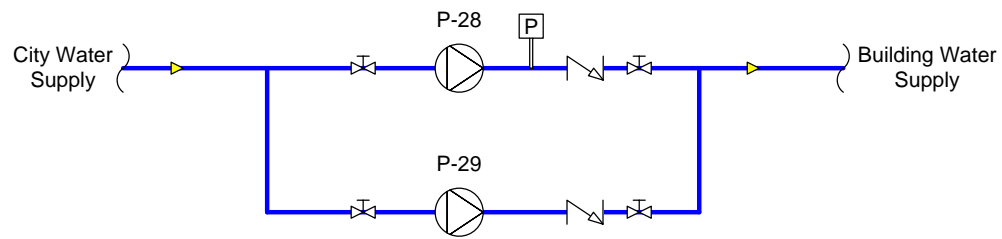


### DHW-3 (TC Building)



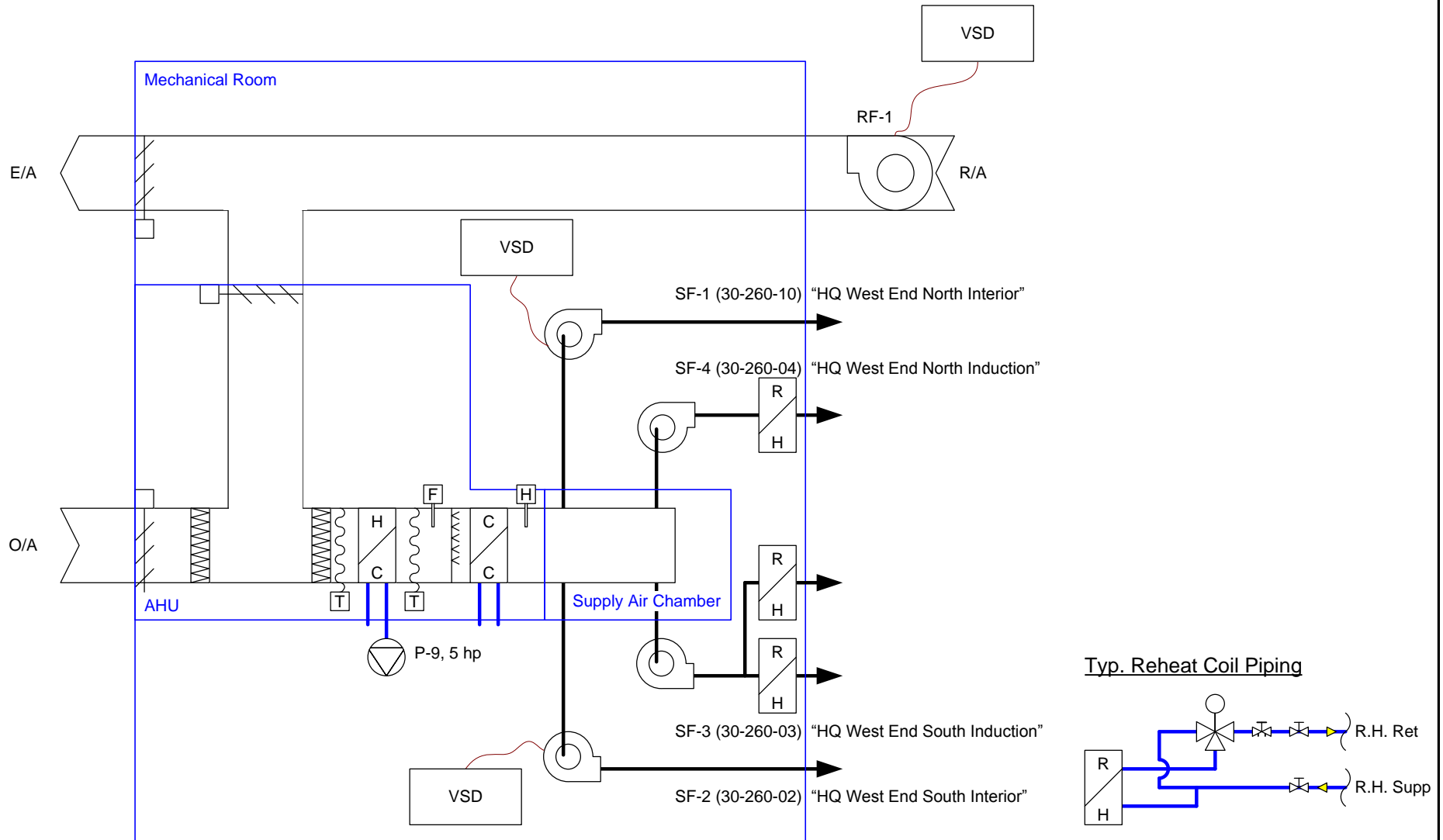
# OTC - HQ Building

MS..12 - DCW



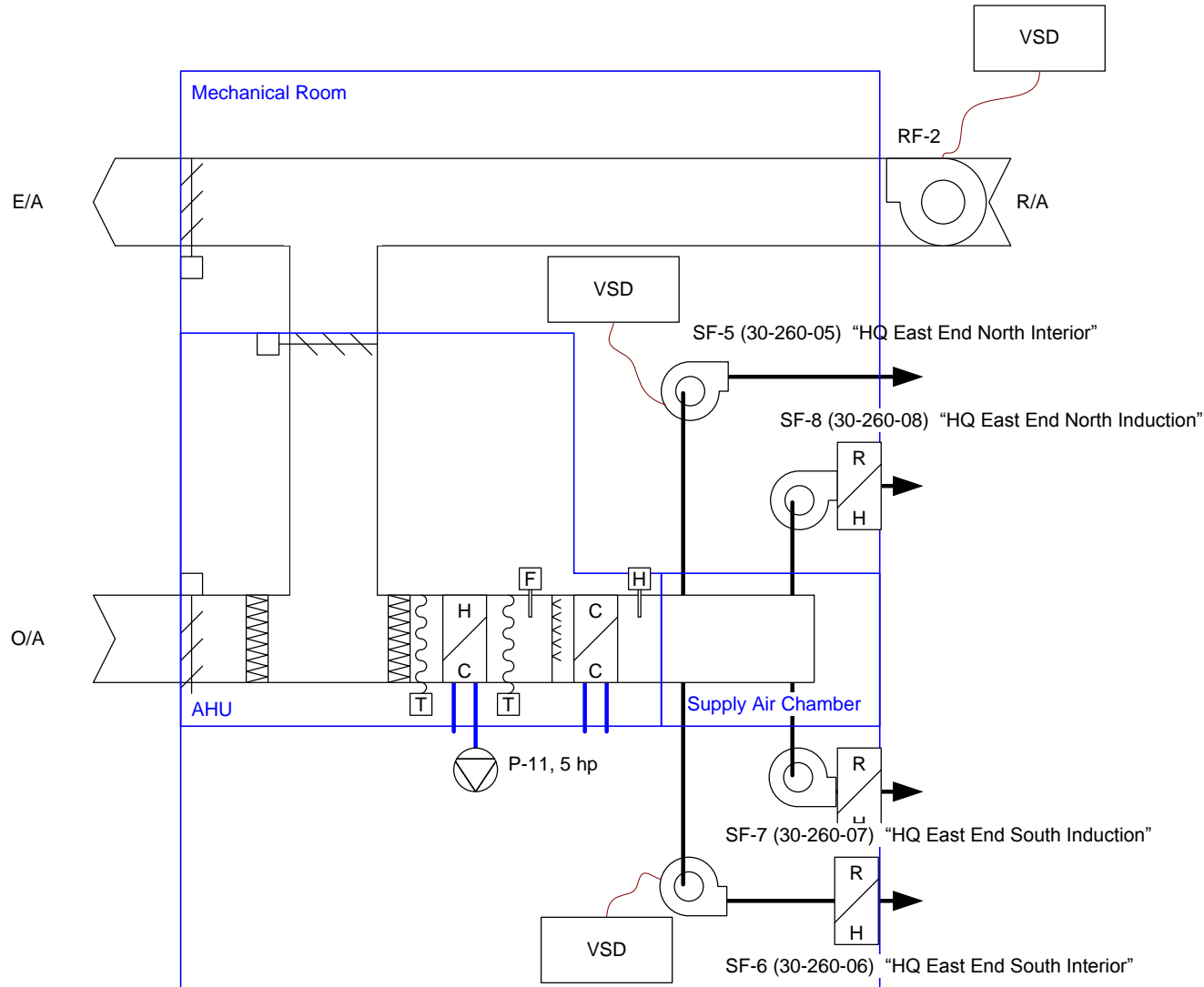
# OTC - HQ Building

## MS..12 - AHU-1

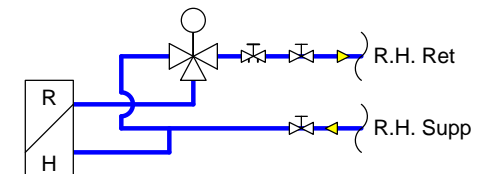


# OTC - HQ Building

## MS..13 - AHU-2

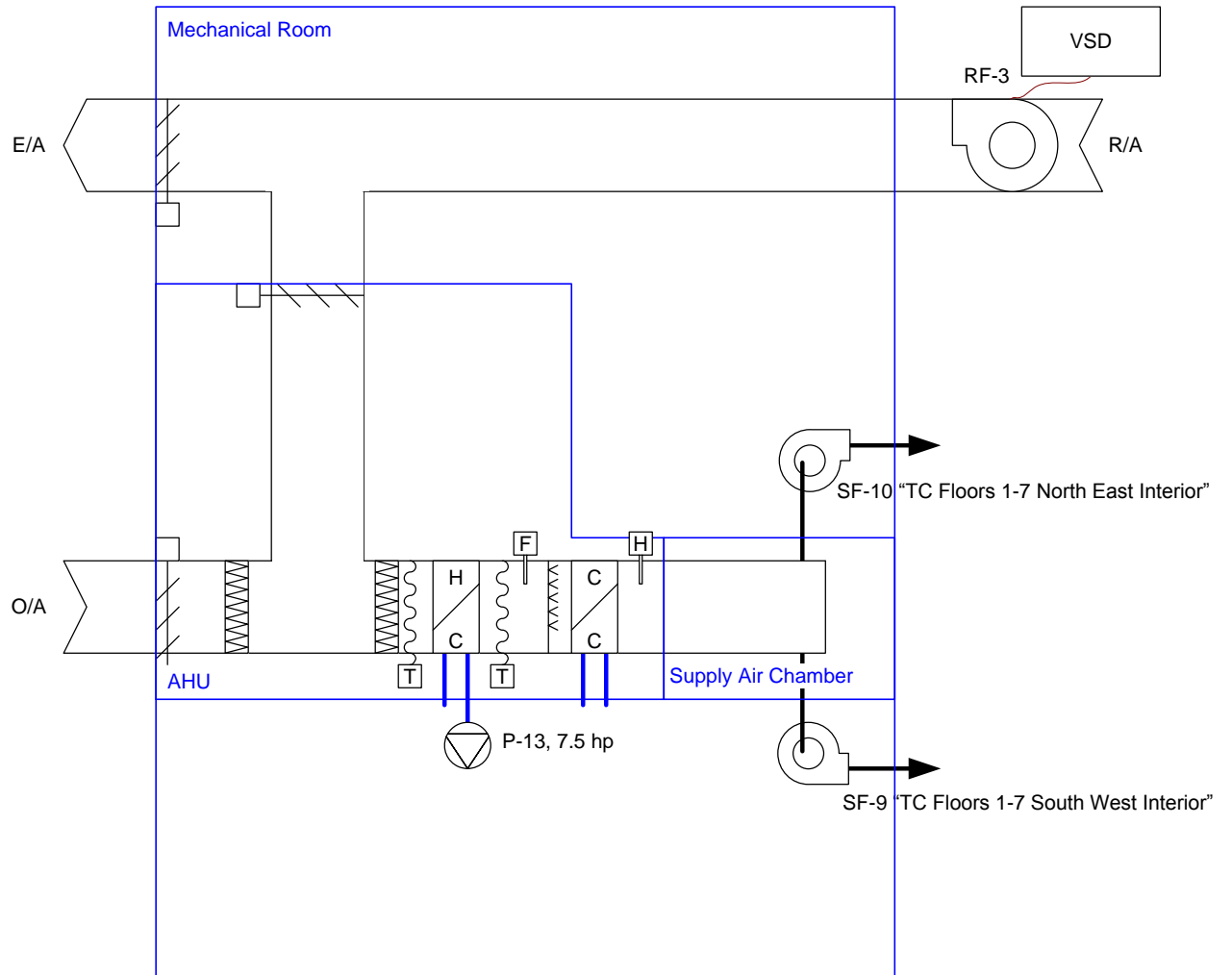


Typ. Reheat Coil Piping



# OTC - HQ Building

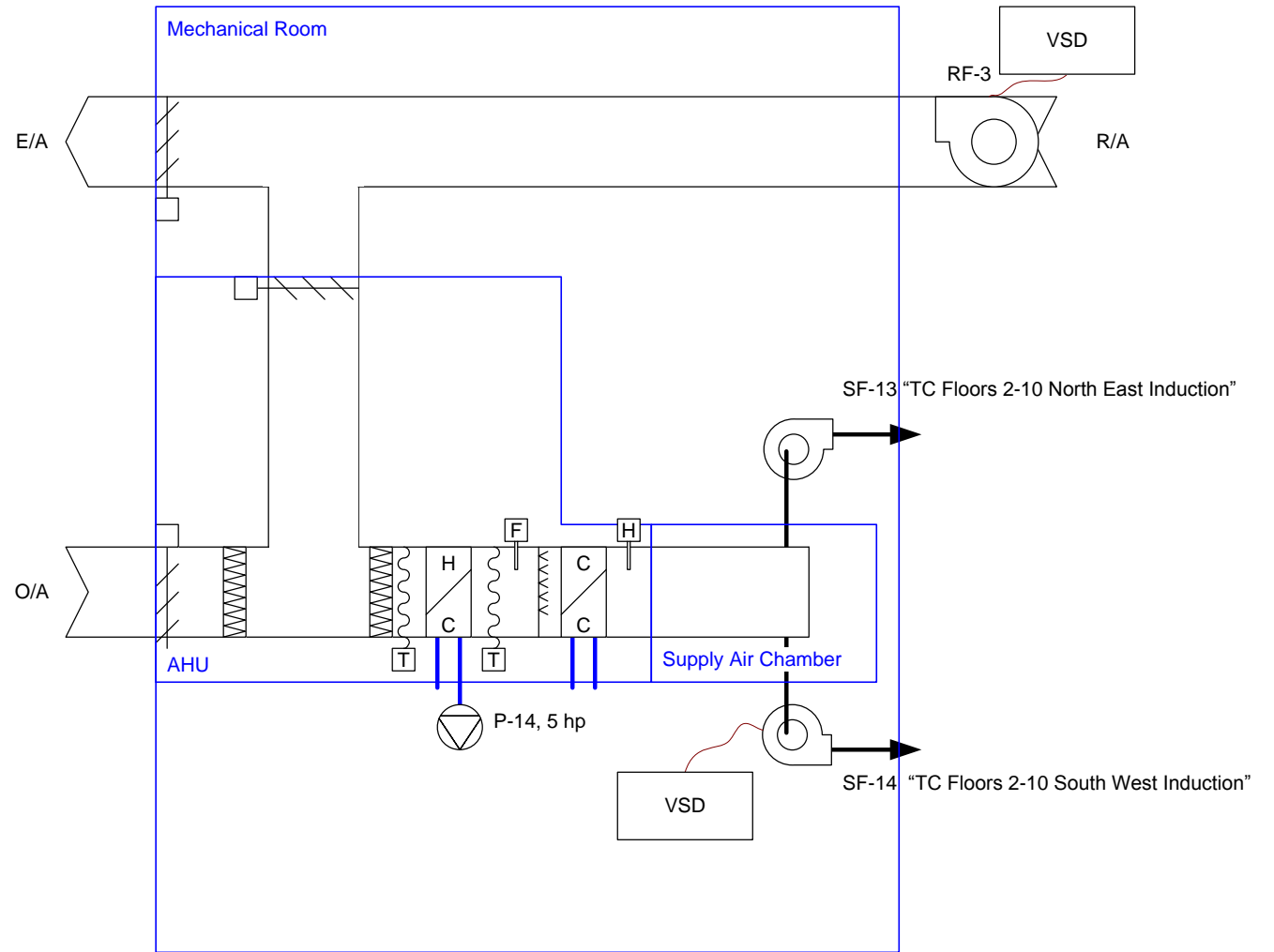
MS..14 - AHU-3





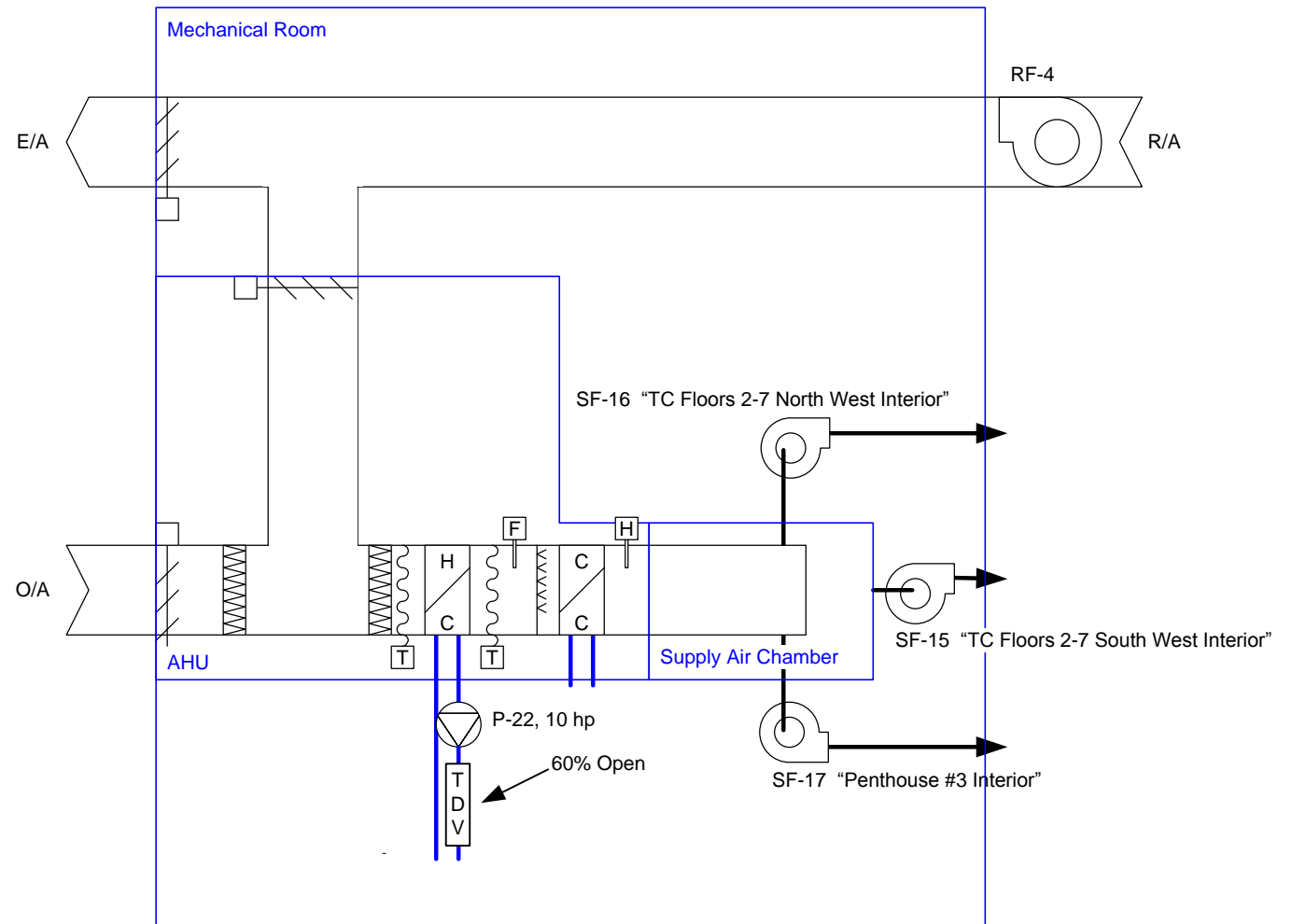
# OTC - HQ Building

MS..15 - AHU-4



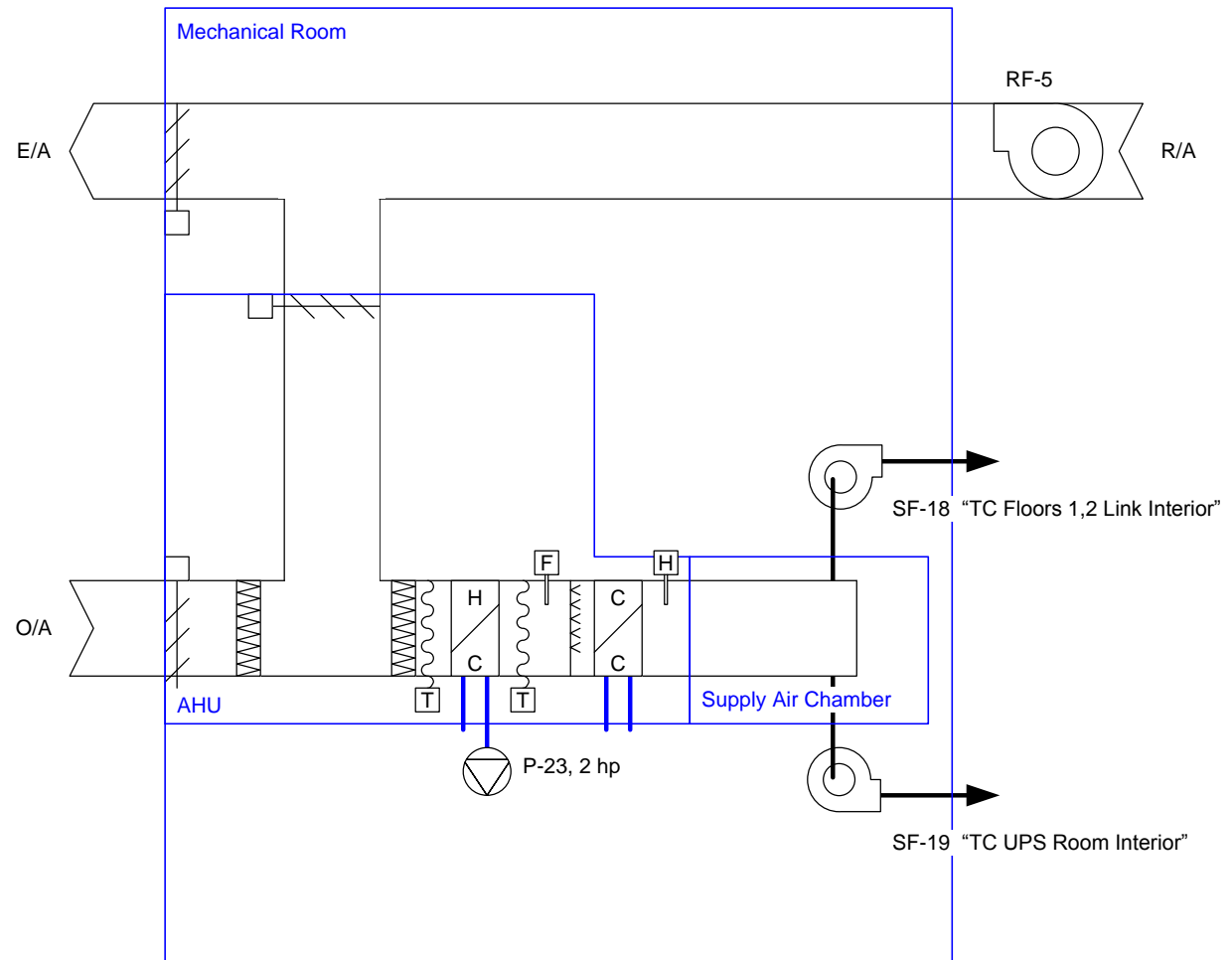
# OTC - HQ Building

MS..16 - AHU-5



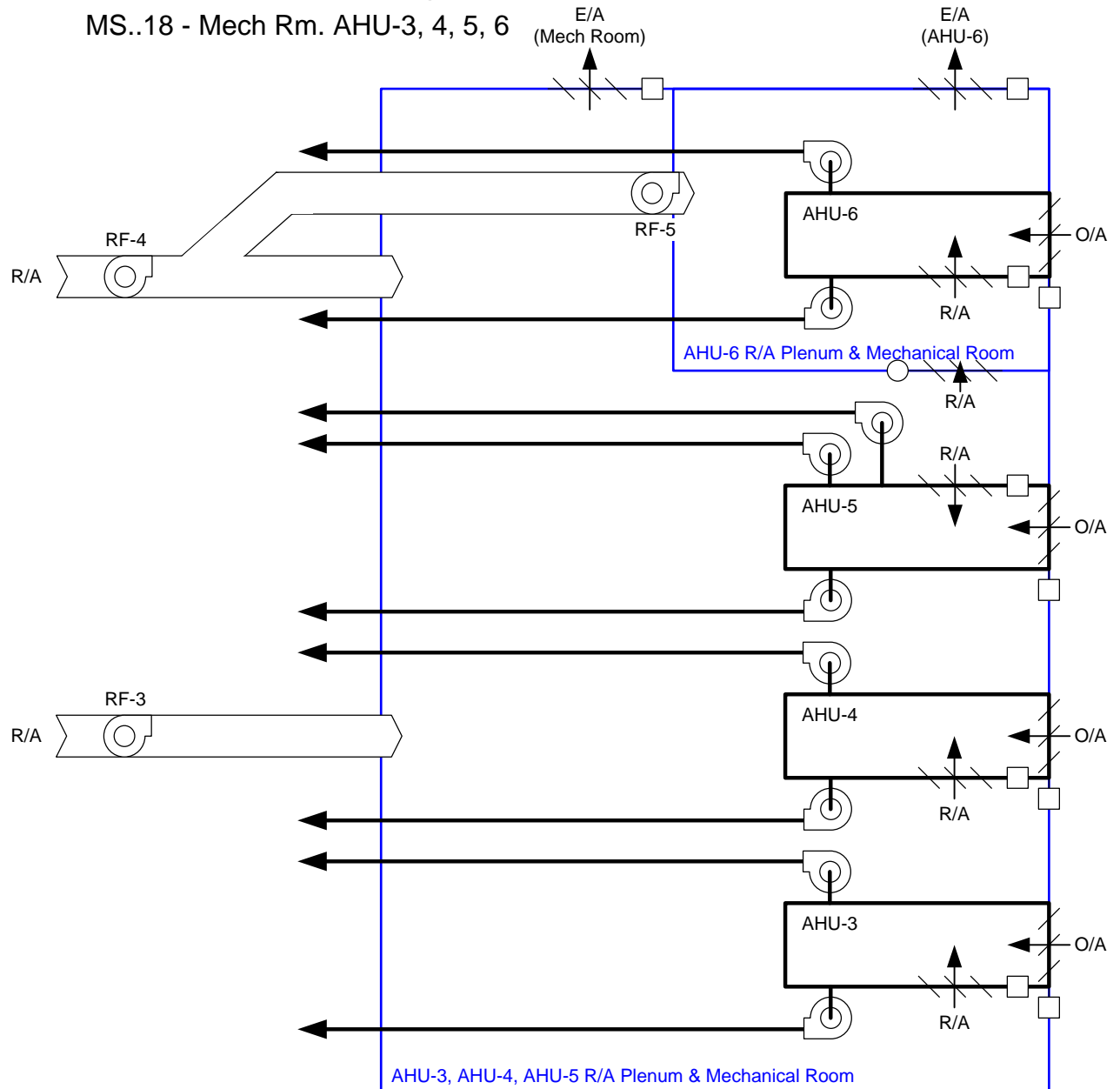
# OTC - HQ Building

MS..17 - AHU-6



# OTC - HQ Building

MS..18 - Mech Rm. AHU-3, 4, 5, 6

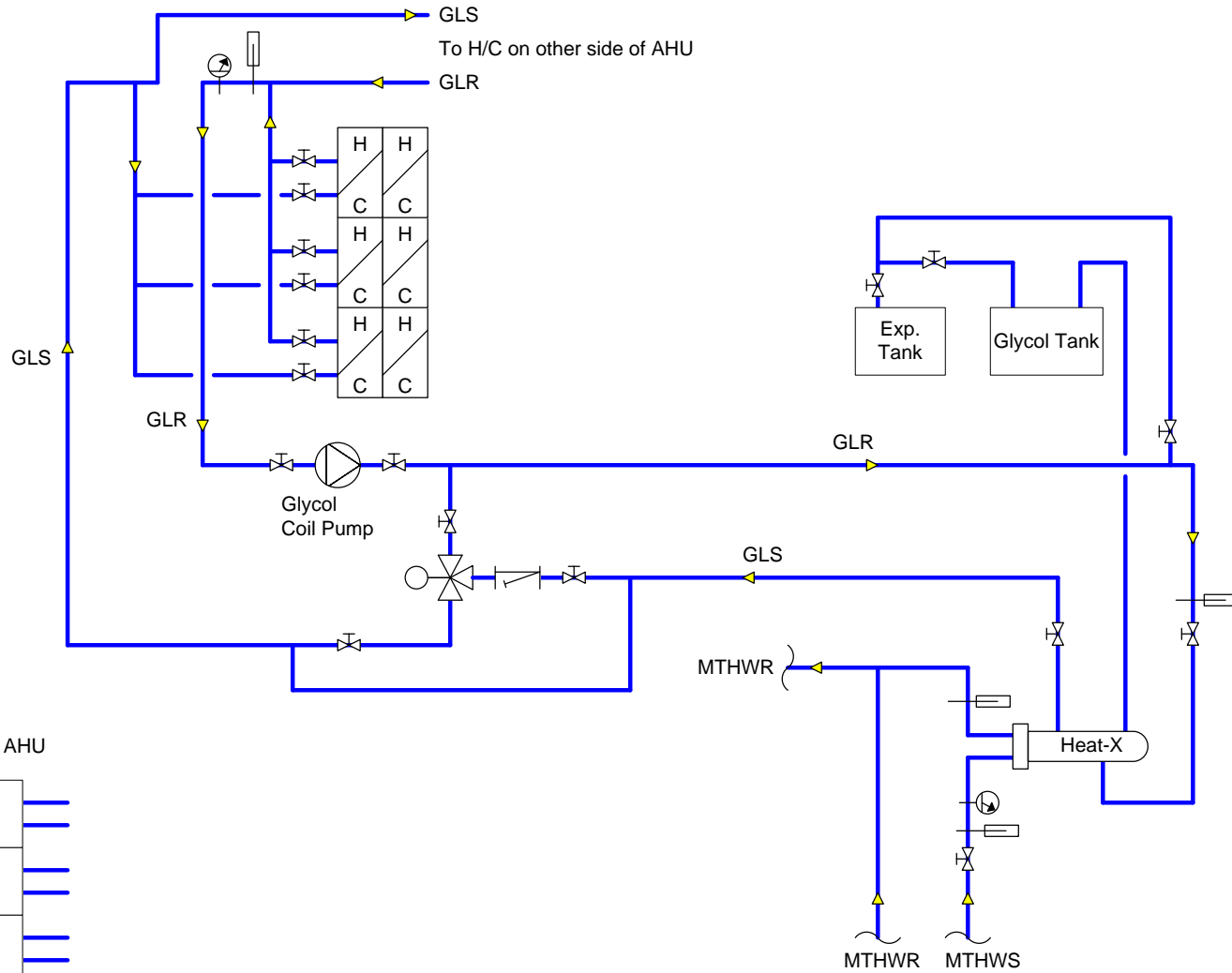


# OTC - HQ Building

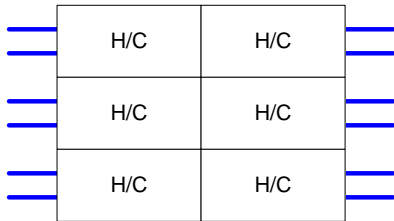
## MS..19 - AHU H/C Piping

Piping below is typical for the following AHU's:

- AHU-1
- AHU-2
- AHU-3
- AHU-4
- AHU-5
- AHU-6



H/C are 6 Coil Arrangement in AHU

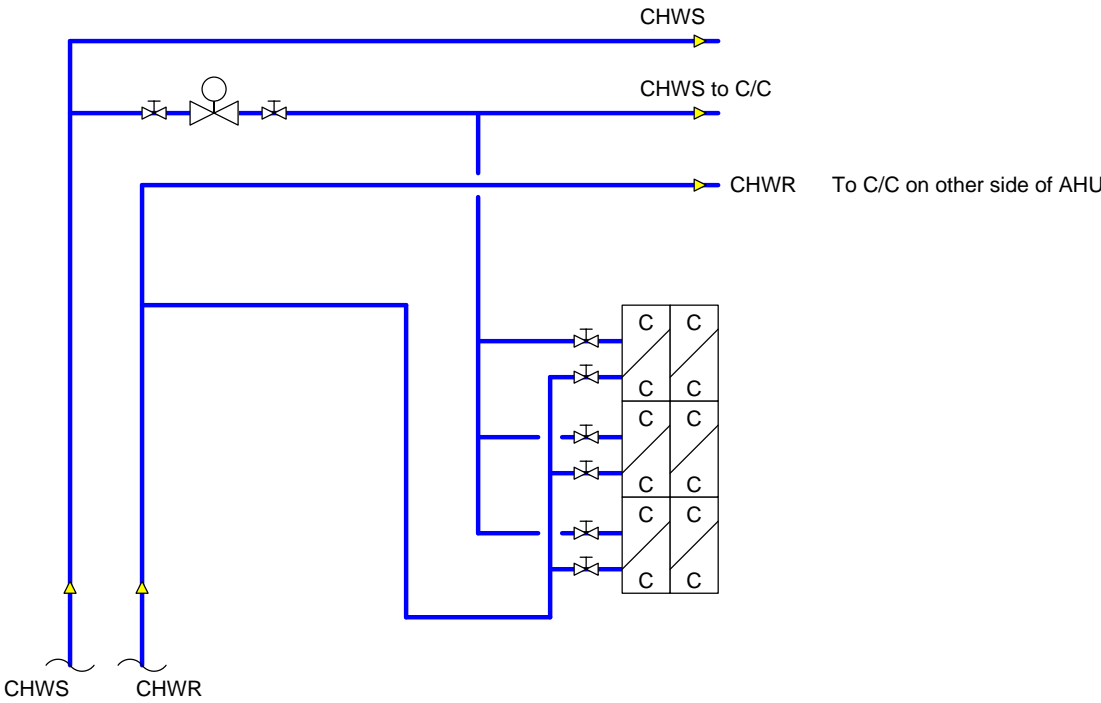


# OTC - HQ Building

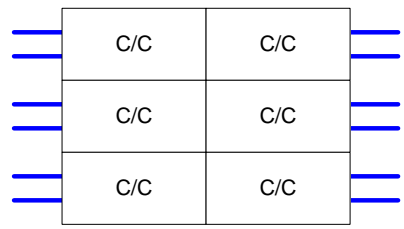
## MS..20 - AHU C/C Piping

Piping below is typical for the following AHU's:

- AHU-1
- AHU-2
- AHU-3
- AHU-4
- AHU-5
- AHU-6

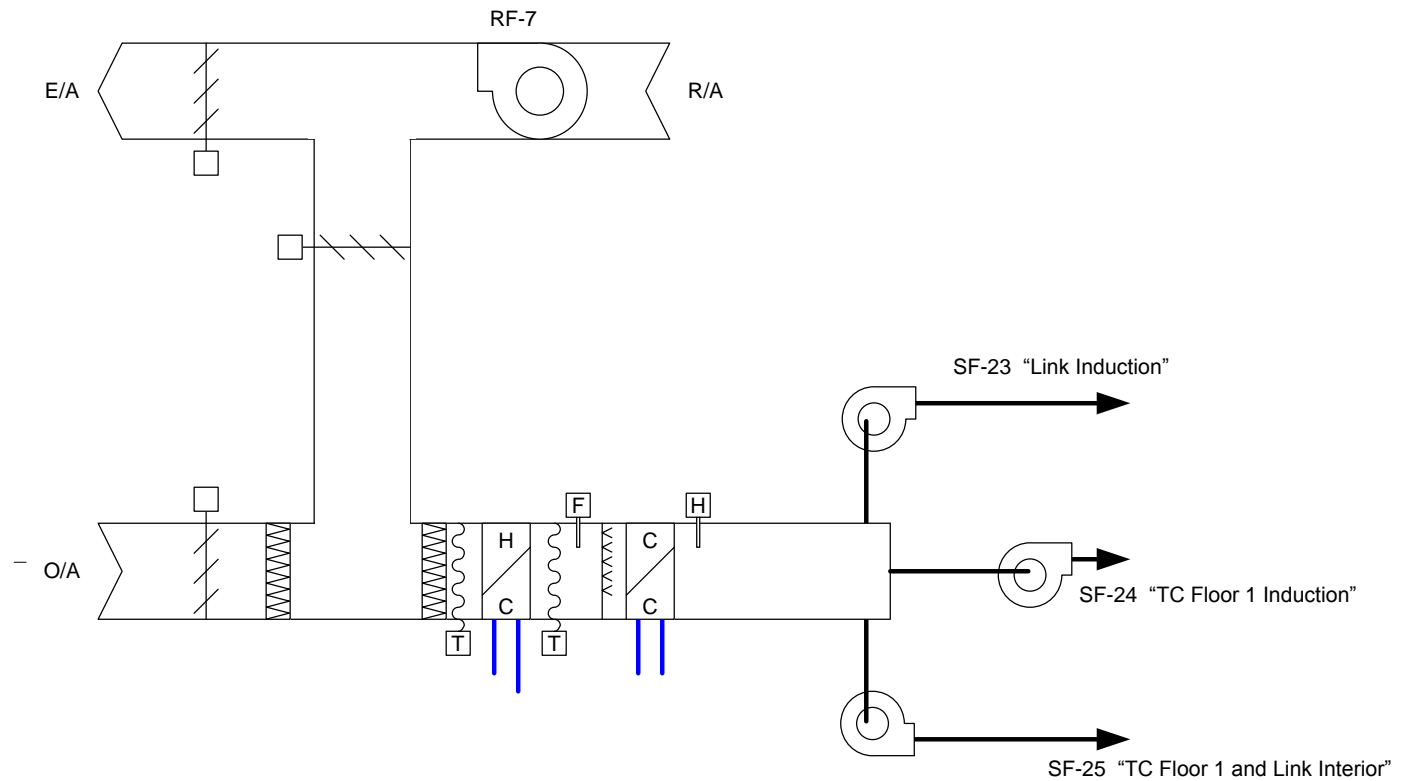


C/C are 6 Coil Arrangement in AHU



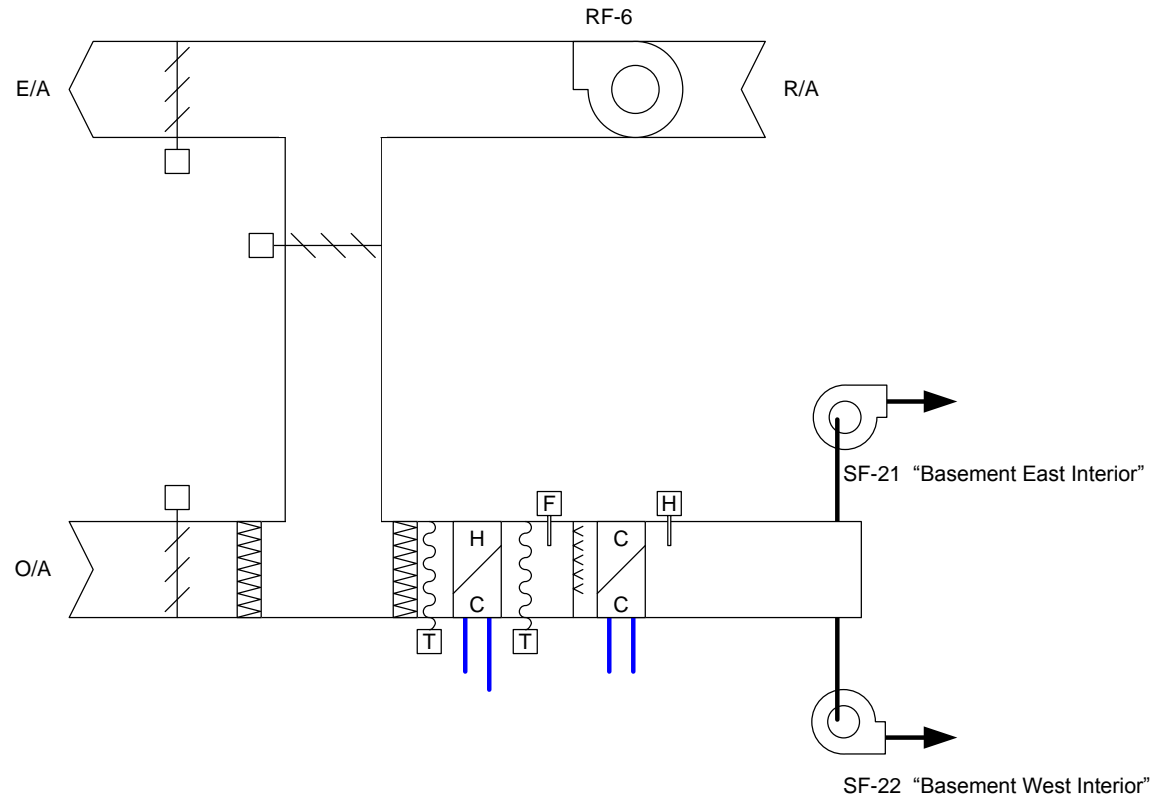
# OTC - HQ Building

MS..21 - AHU-7



# OTC - HQ Building

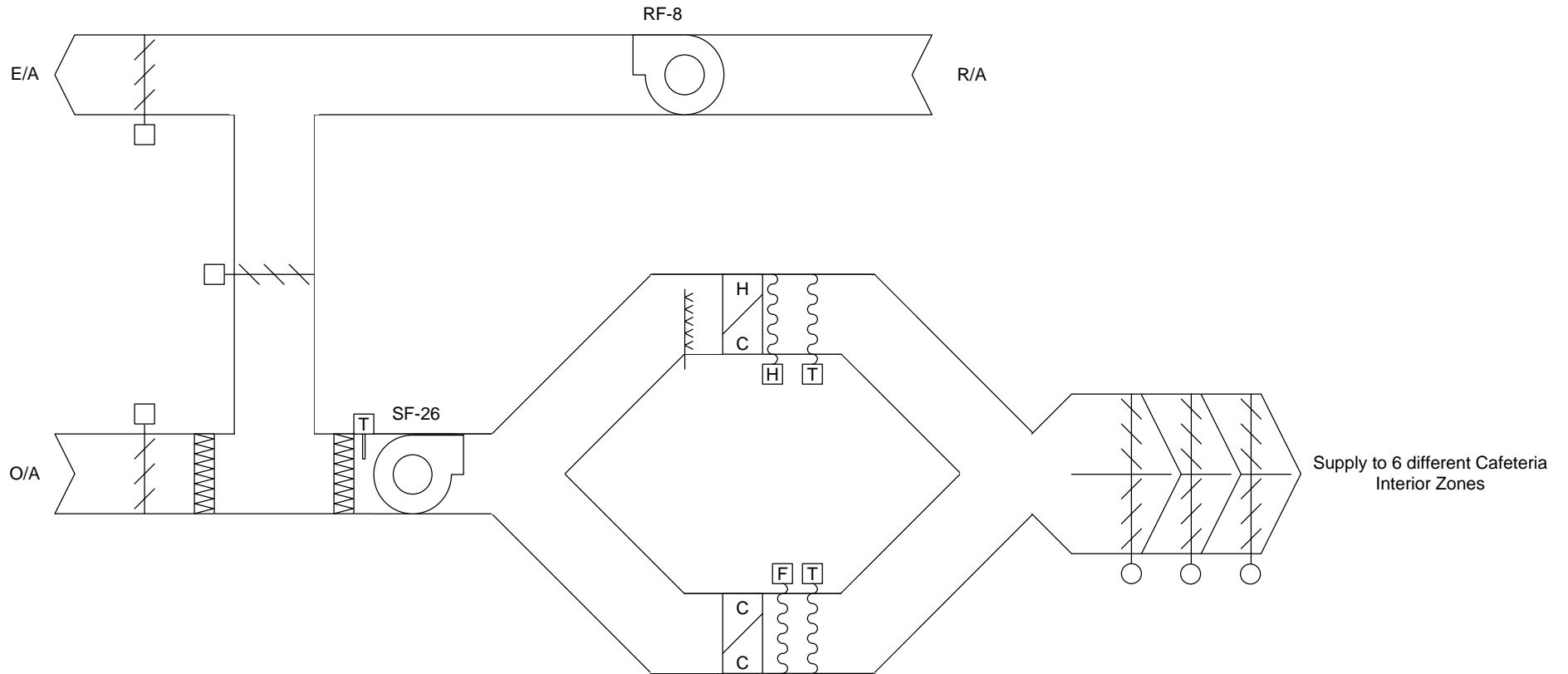
MS..22 - AHU-8





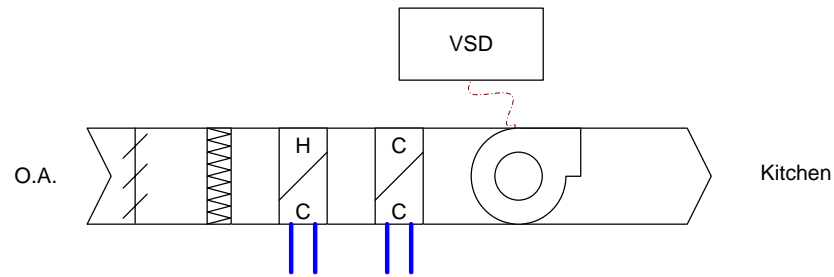
# OTC - HQ Building

MS..23 - AHU-9



# OTC - HQ Building

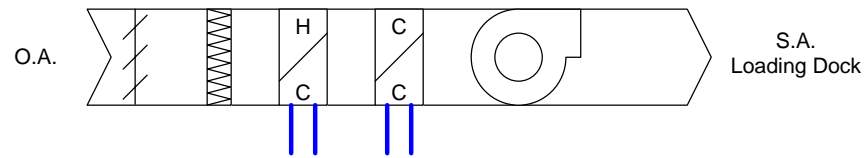
MS..24 - AHU-10



Heating coil observed hot, yet fan was off.

# OTC - HQ Building

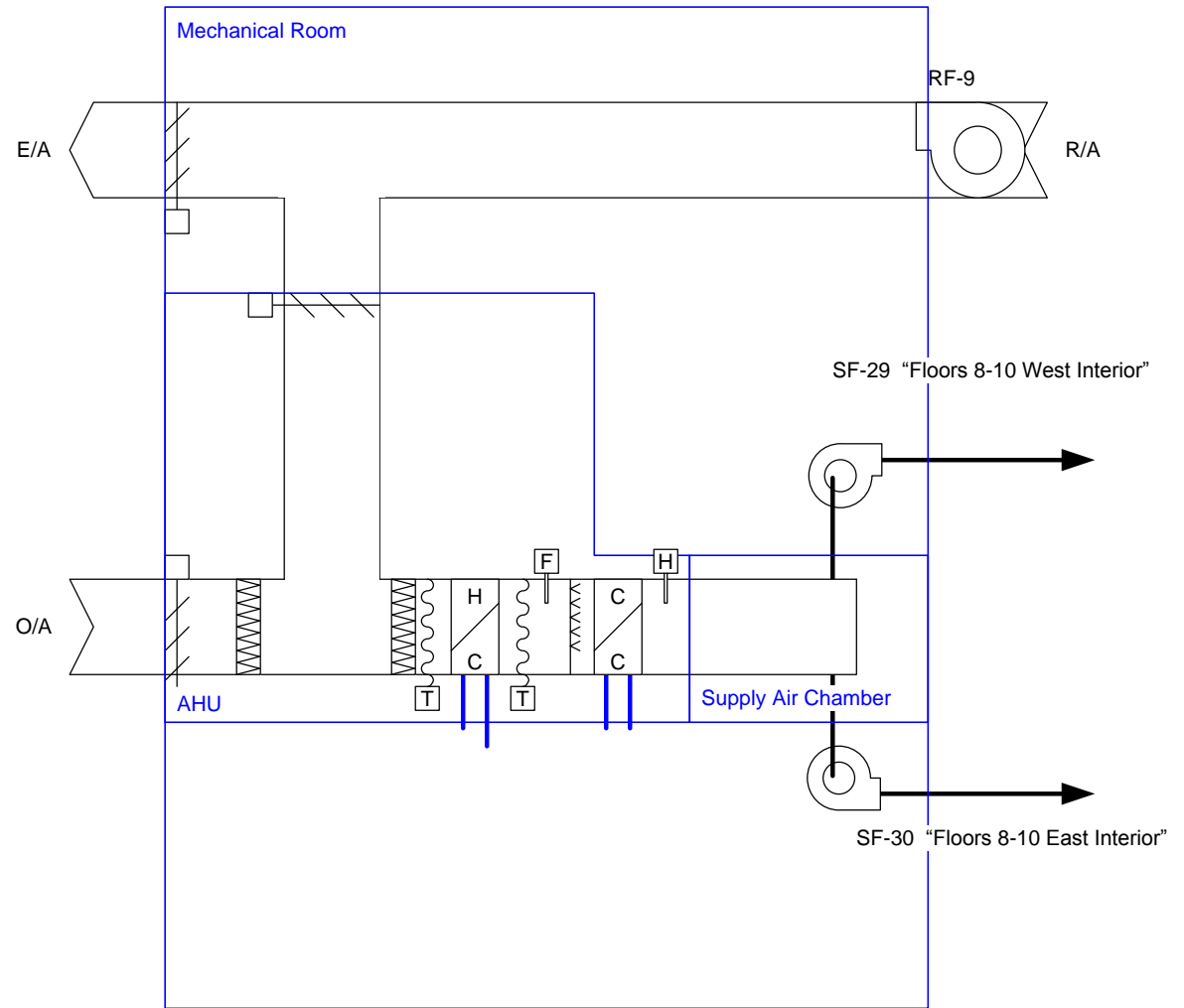
MS..24 - AHU-11



Heating coil observed hot, yet fan was off.

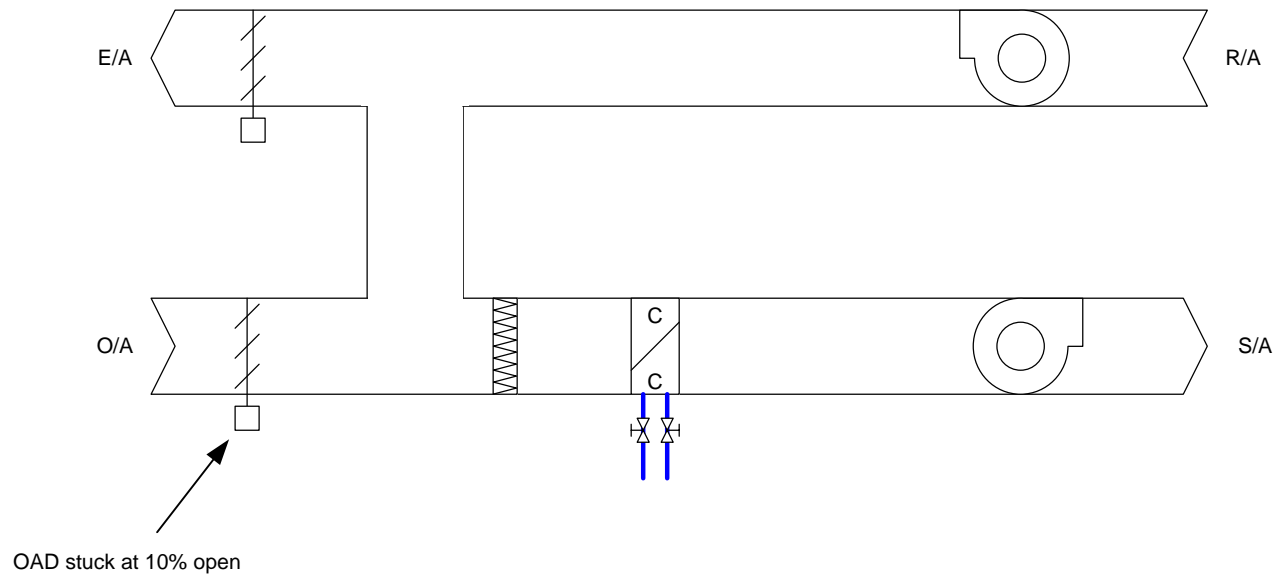
# OTC - HQ Building

MS..25 - AHU-12



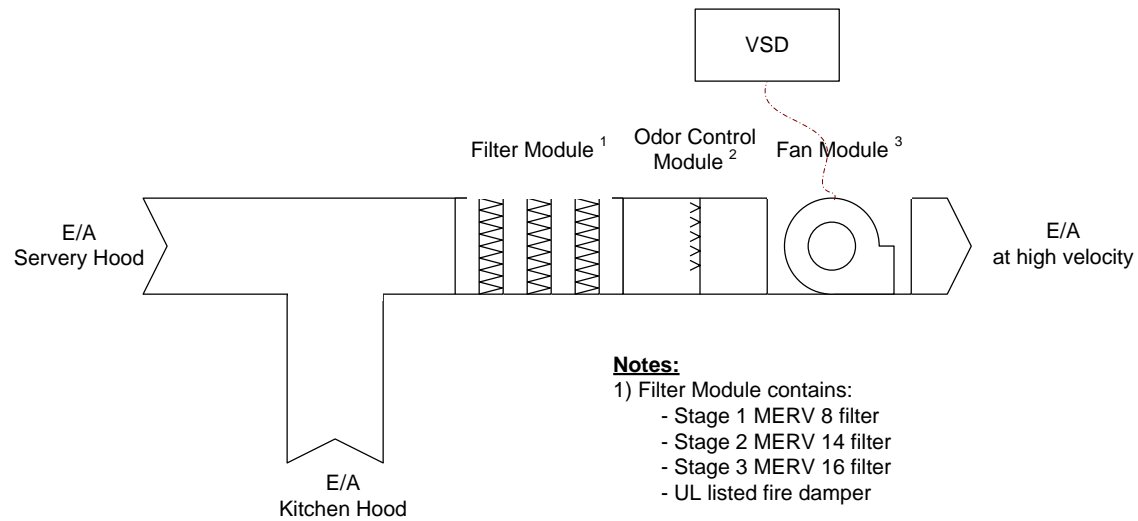
# OTC - HQ Building

## MS..26 - AHU-Link



# OTC - HQ Building

MS..27 - EAF-Caf



### Notes:

1) Filter Module contains:

- Stage 1 MERV 8 filter
- Stage 2 MERV 14 filter
- Stage 3 MERV 16 filter
- UL listed fire damper

2) Odor Control Module contains:

- spray chamber with adjustable nozzles
- 5 gallon chemical reservoir

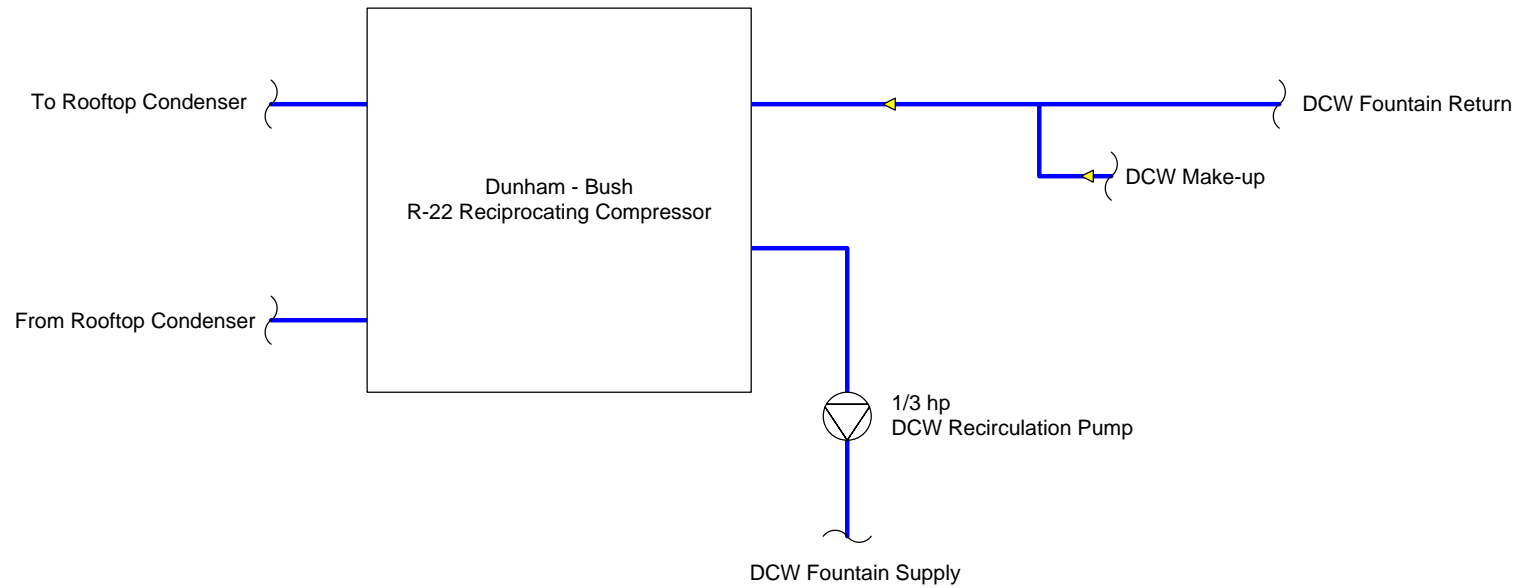
3) Fan Module contains:

- vibration isolated fan
- fire stat

# OTC - HQ Building

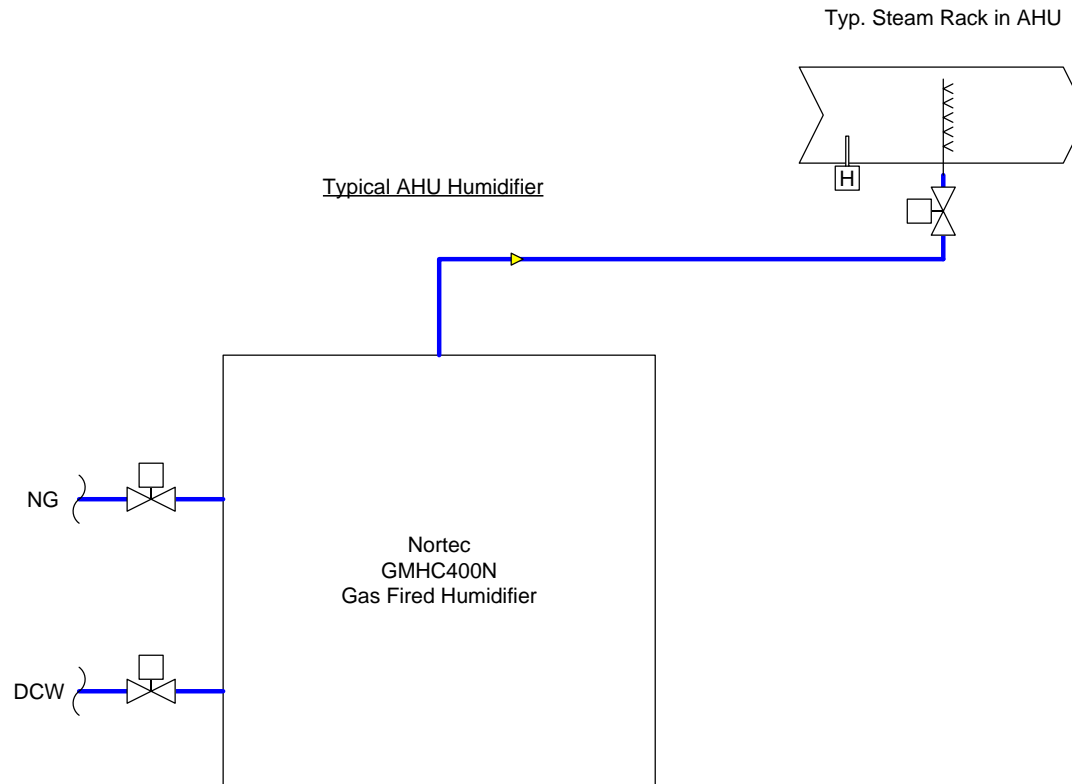
MS..29 - DCHW-1

1 of 2 DCW Coolers for Fountain Supply



# OTC - HQ Building

MS..30 - HUM-1







# Appendix E: Opportunity Details

- Retrofit Schematics

**Project: Mechanical Systems Schematics  
Ottawa Technology Centre (OTC)  
875 Heron Road  
Ottawa, Ontario, K1A 1B1**

Managed by: Public Works and Government Services



Prepared By: Efficiency Engineering Inc.

**Retrofit**

--- Existing Equipment  
 — New Equipment

Mechanical Legend			
Symbol	Description	Symbol	Description
	Pneumatic 3-way Valve		Pipe Thermometer
	Electric 3-way Valve		Pressure Gauge
	Pneumatic 2-way Valve		Thermal Well
	Electric 2-way Valve		Pump
	Butterfly Valve		Water Meter
	Gate Valve		Air/Dirt Separator
	Ball Valve		Shell & Tube Heat Exchanger
	Check Valve		Plate & Frame Heat Exchanger
	Strainer		Reciprocating Compressor
	Globe Valve		Centrifugal Chiller
	Circuit Balancing Valve		Cooling Tower
	Pressure Relief Valve		Firetube Boiler
	Pressure Reducing Valve		Flexible Water Tube Boiler
	Plug Valve		Atmospheric Boiler
	Gas Cock Valve		Cast Iron Boiler
	Air Vent		Vertical Coil Tube Boiler
	Triple Duty Valve		Storage Tank
	Suction Guide		Atmospheric DHW Heater
	Pneumatic Sensor		DHW Heater
	Electric Sensor		DHW Heat Exchanger Tank
	Pneumatic Thermostat		Centrifugal Fan
	Electric Thermostat		Axial Fan
	Electric OA Temp. Sensor		Heating Coil
	Pneumatic OA Temp. Sensor		Electric Damper

This Is A Standard Legend.  
All Symbols May Not be Used On Drawings.

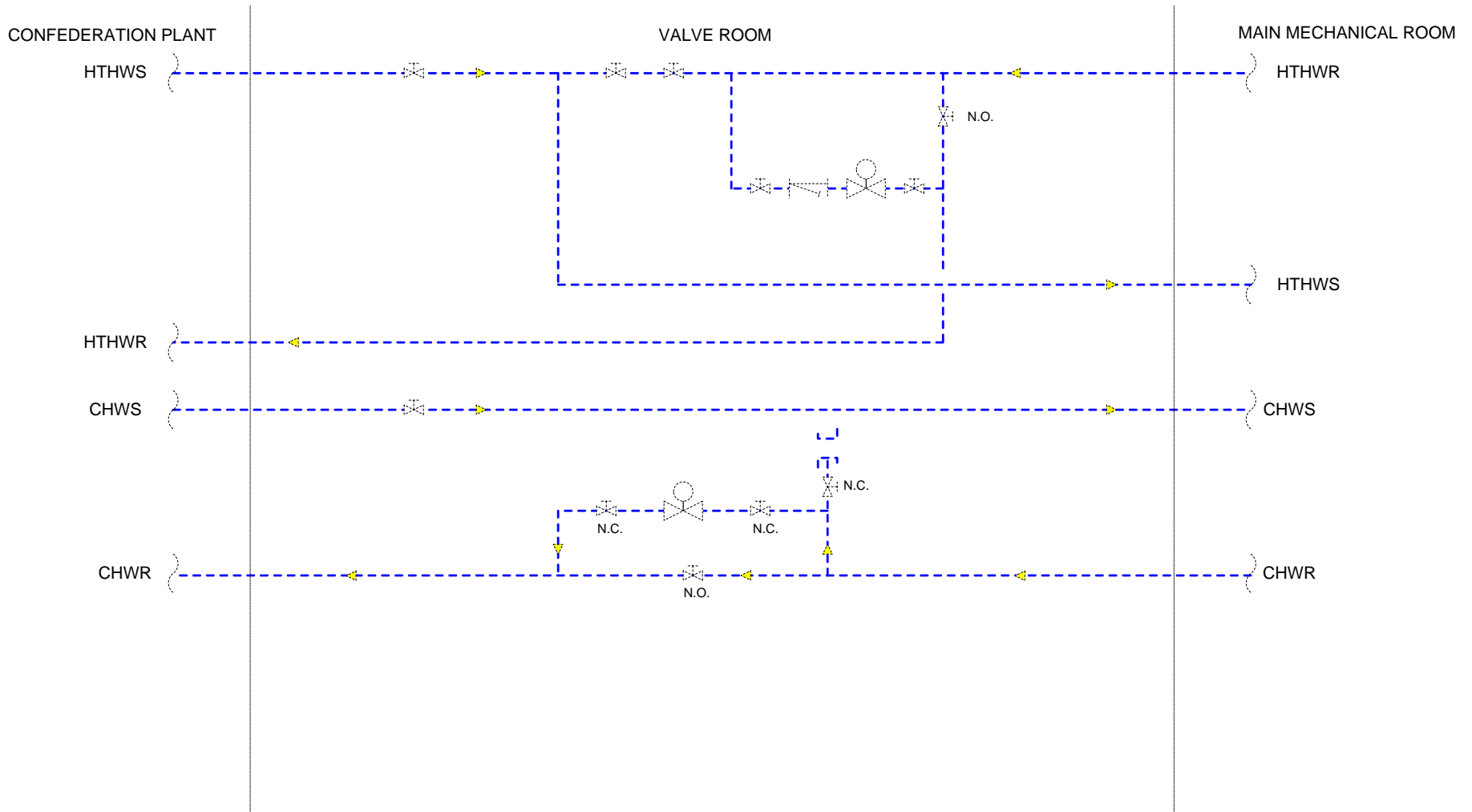
## OTC - HQ Building

### MS..2 - List of Drawings

MS..2 – List of Drawings (This Page)	MS..19 - Mech Room AHU-3,4,5,6
MS..3 - Incoming Services	MS..20 - AHU H/C Piping
MS..4 - HTHW Plant	MS..21 - AHU C/C Piping
MS..5 - Converter "A"	MS..22 - AHU-7
MS..6 - Converter "B"	MS..23 - AHU-8
MS..7 - Converter "C"	MS..24 - AHU-9
MS..8 - Converter "D"	MS..25 - AHU-10
MS..9 - Converter "E"	MS..26 - AHU-11
MS..10 - DHW-1 (Kitchen)	MS..27 - AHU -12
MS..11 - DHW-HQ, TC	MS..28 - AHU-Link
MS..12 - DCW	MS..29 - EAF - Caf
MS..13 - AHU-1	MS..30 - DCHW-1
MS..14 - AHU-2	MS..31 - HUM-1
MS..15 - AHU-3	
MS..16 - AHU-4	
MS..17 - AHU-5	
MS..18 - AHU-6	

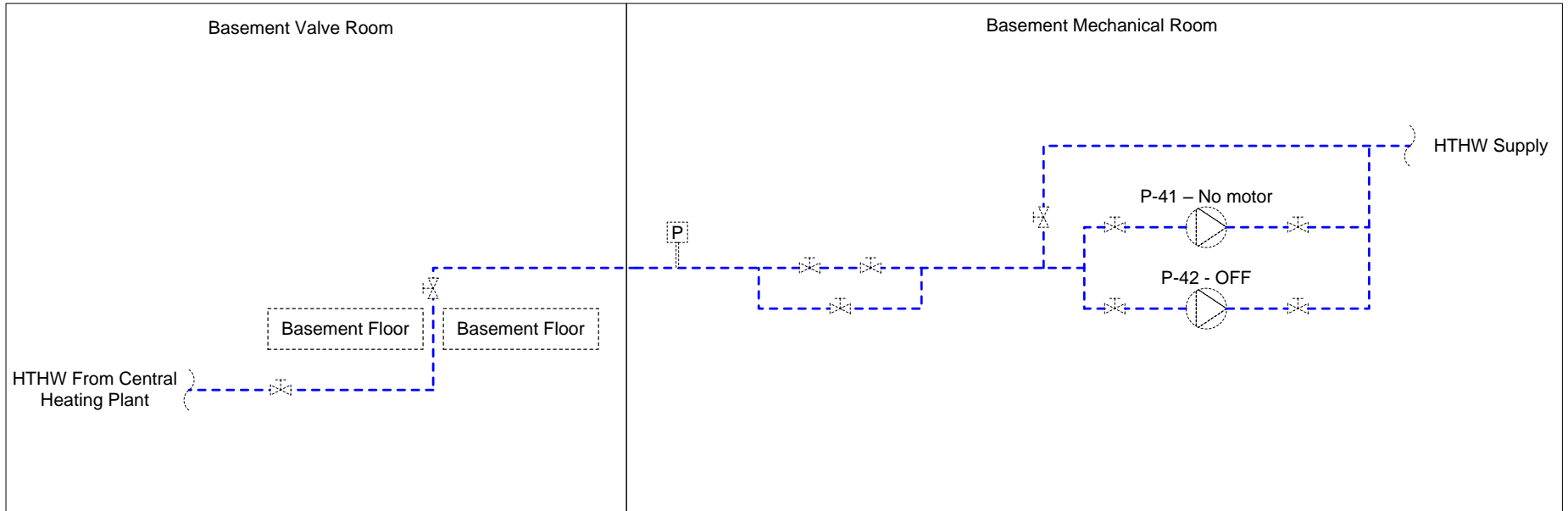
# OTC - HQ Building

## MS..3 - Incoming Services



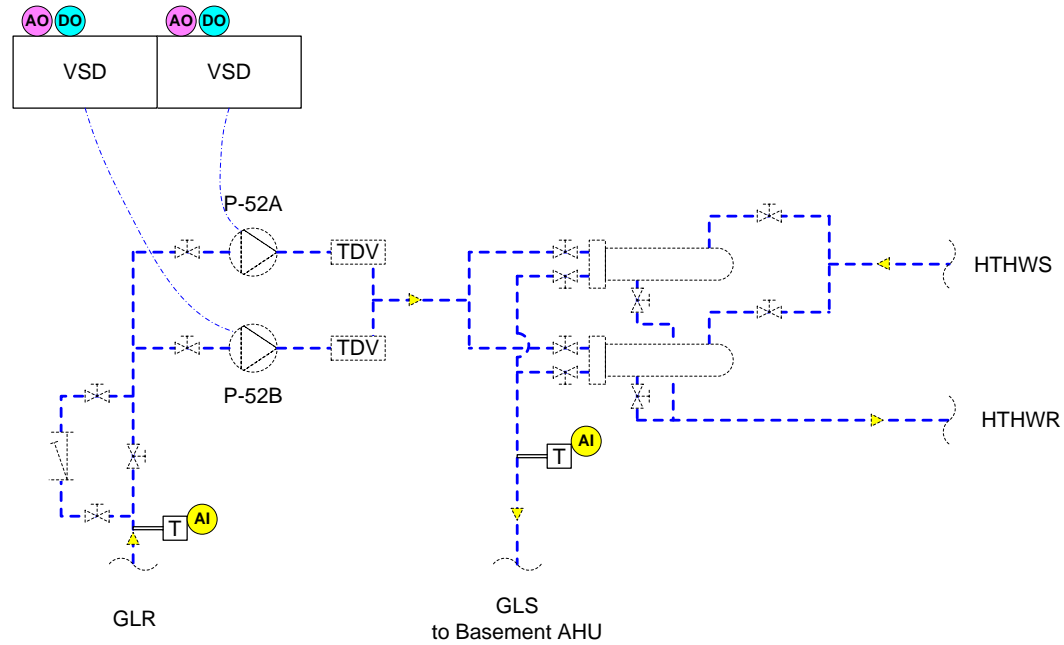
# OTC - HQ Building

## MS..4 - HTHW Plant



# OTC - HQ Building

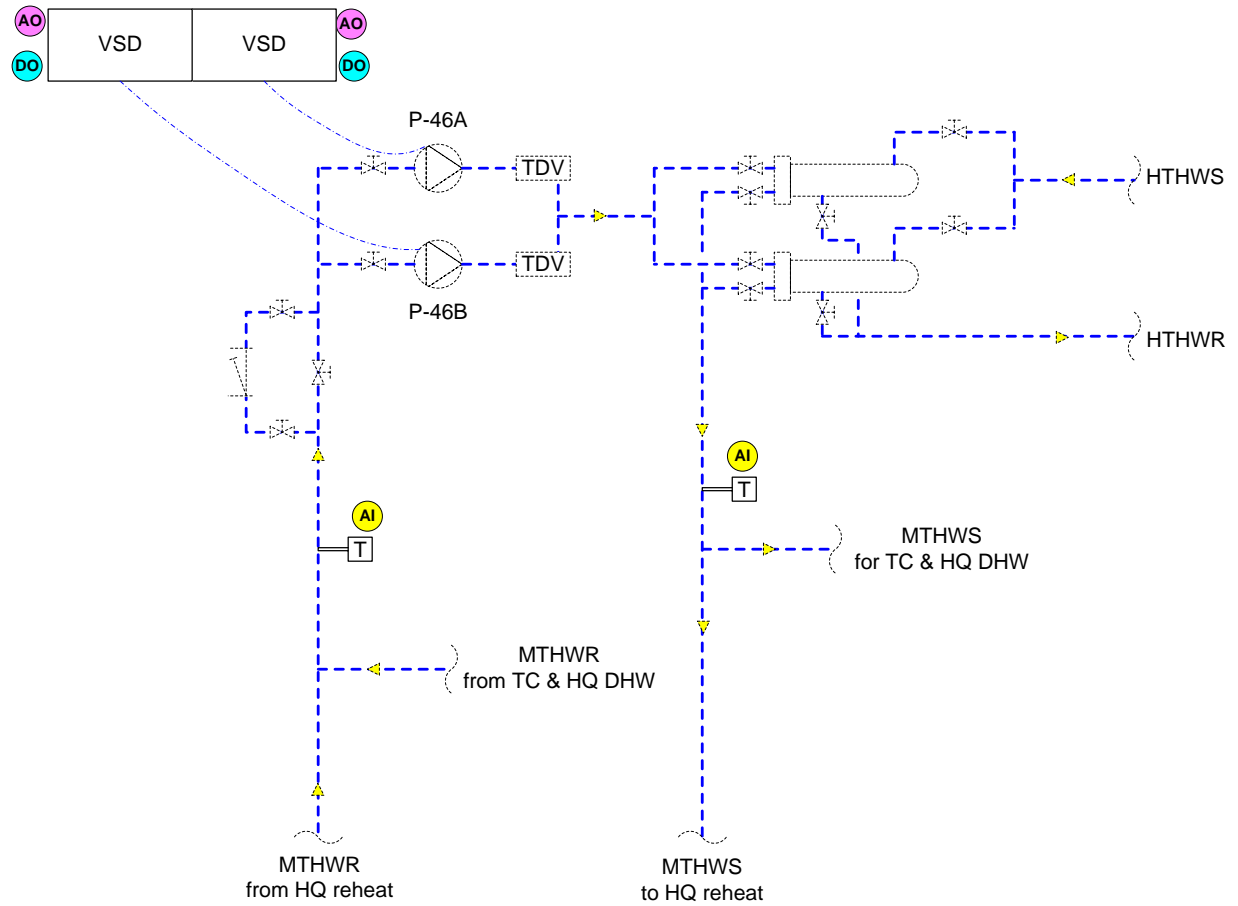
## MS..5 - Converter "A"



DDC Point List For Converter "A"							
Control Point	DO	DI	AO	AI	V	Sub-Type	Notes
Glycol Return				X		Temperature	
Glycol Supply				X		Temperature	
P-52A			X			Motor Speed Setpoint	
P-52A	X					Enable/Disable	
P-52B			X			Motor Speed Setpoint	
P-52B	X					Enable/Disable	
Point Totals:	2	0	2	2	0		

# OTC - HQ Building

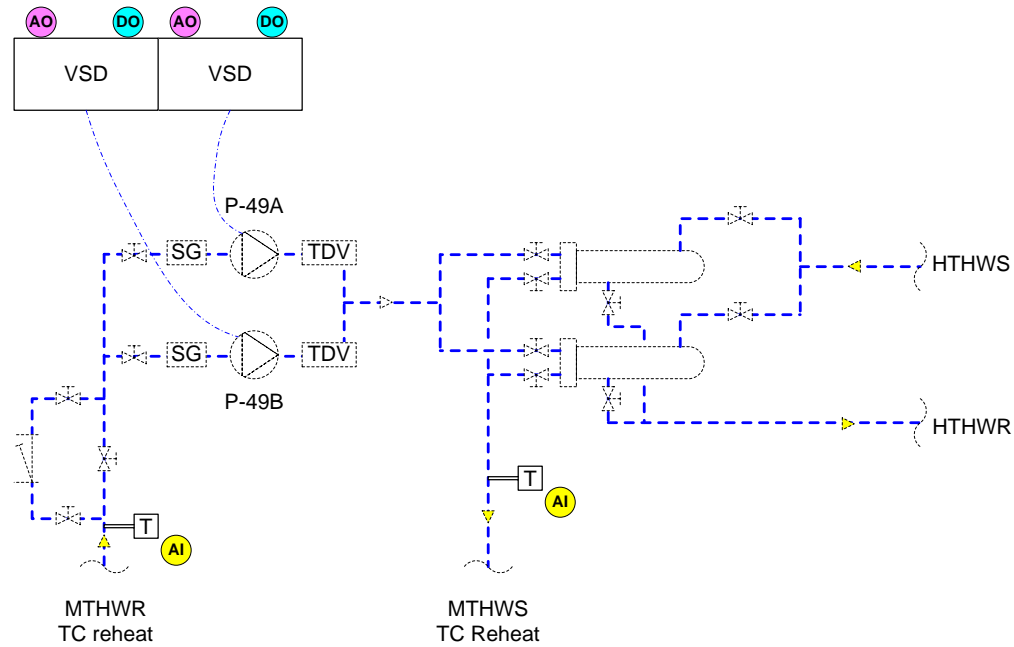
## MS..6 - Converter "B"



DDC Point List For Converter "B"							
Control Point	DO	DI	AO	AI	V	Sub-Type	Notes
MTHW-B Return				X		Temperature	
MTHW-B Supply				X		Temperature	
P-46A			X			Motor Speed Setpoint	
P-46A	X					Enable/Disable	
P-46B			X			Motor Speed Setpoint	
P-46B	X					Enable/Disable	
Point Totals:	2	0	2	2	0		

# OTC - HQ Building

## MS..7 - Converter "C"

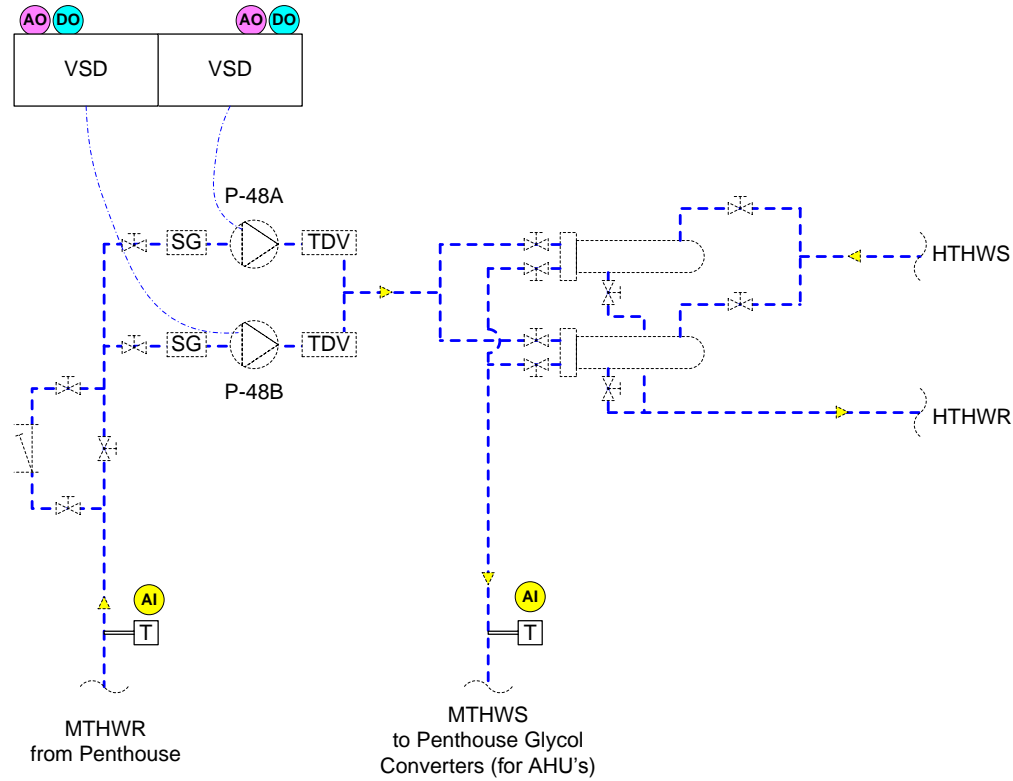


DDC Point List For Converter "C"							
Control Point	DO	DI	AO	AI	V	Sub-Type	Notes
P-49A	X					Enable/Disable	
P-49A			X			Motor Speed Setpoint	
P-49B	X					Enable/Disable	
P-49B			X			Motor Speed Setpoint	
Tower Reheat Return				X		Temperature	
Tower Reheat Supply				X		Temperature	
Point Totals:	2	0	2	2	0		



# OTC - HQ Building

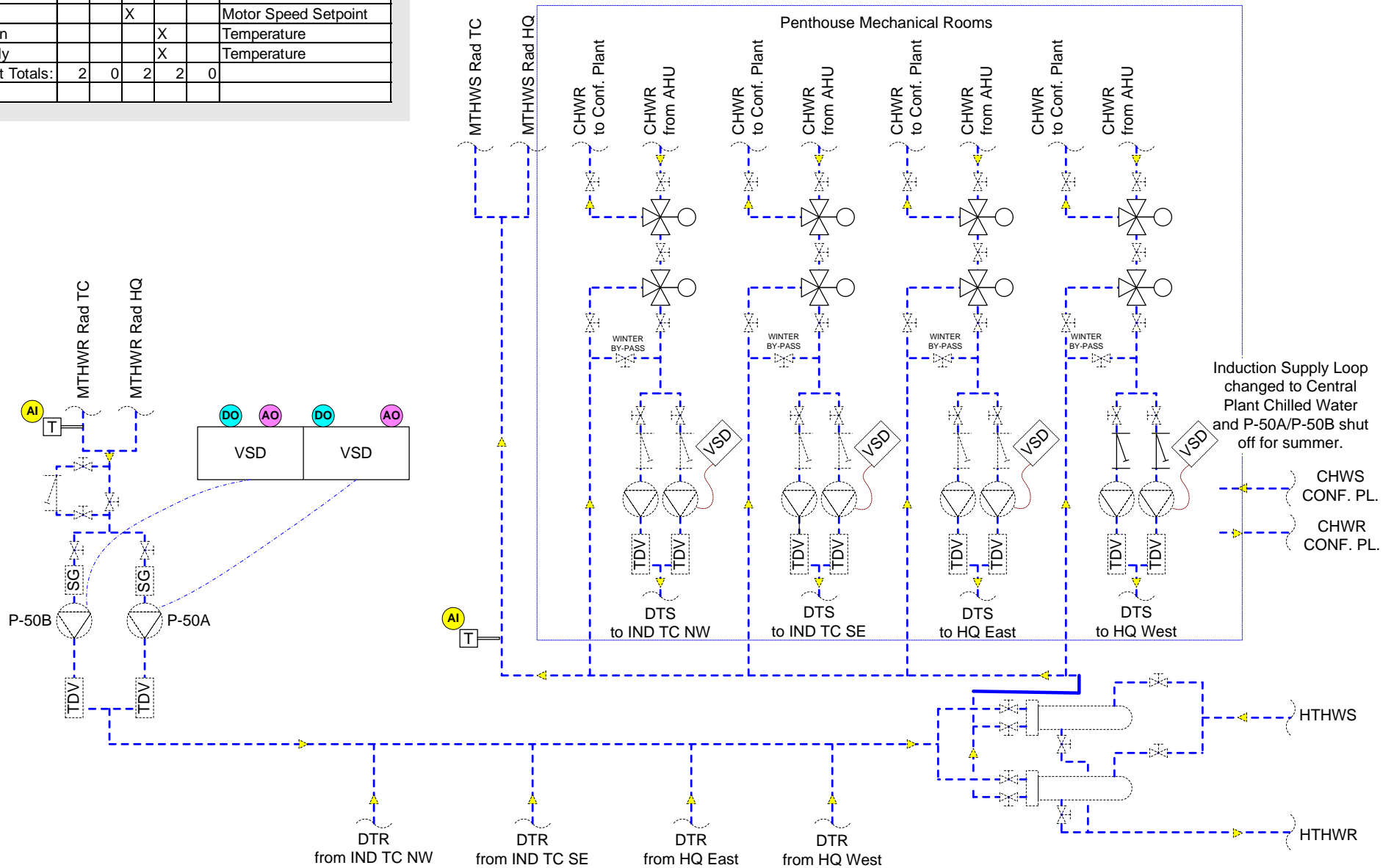
## MS..8 - Converter "D"



DDC Point List For Converter "D"							
Control Point	DO	DI	AO	AI	V	Sub-Type	Notes
MTHW-D Return				X		Temperature	
MTHW-D Supply				X		Temperature	
P-46B			X			Motor Speed Setpoint	
P-46B	X					Enable/Disable	
P-48A			X			Motor Speed Setpoint	
P-48A	X					Enable/Disable	
Point Totals:	2	0	2	2	0		

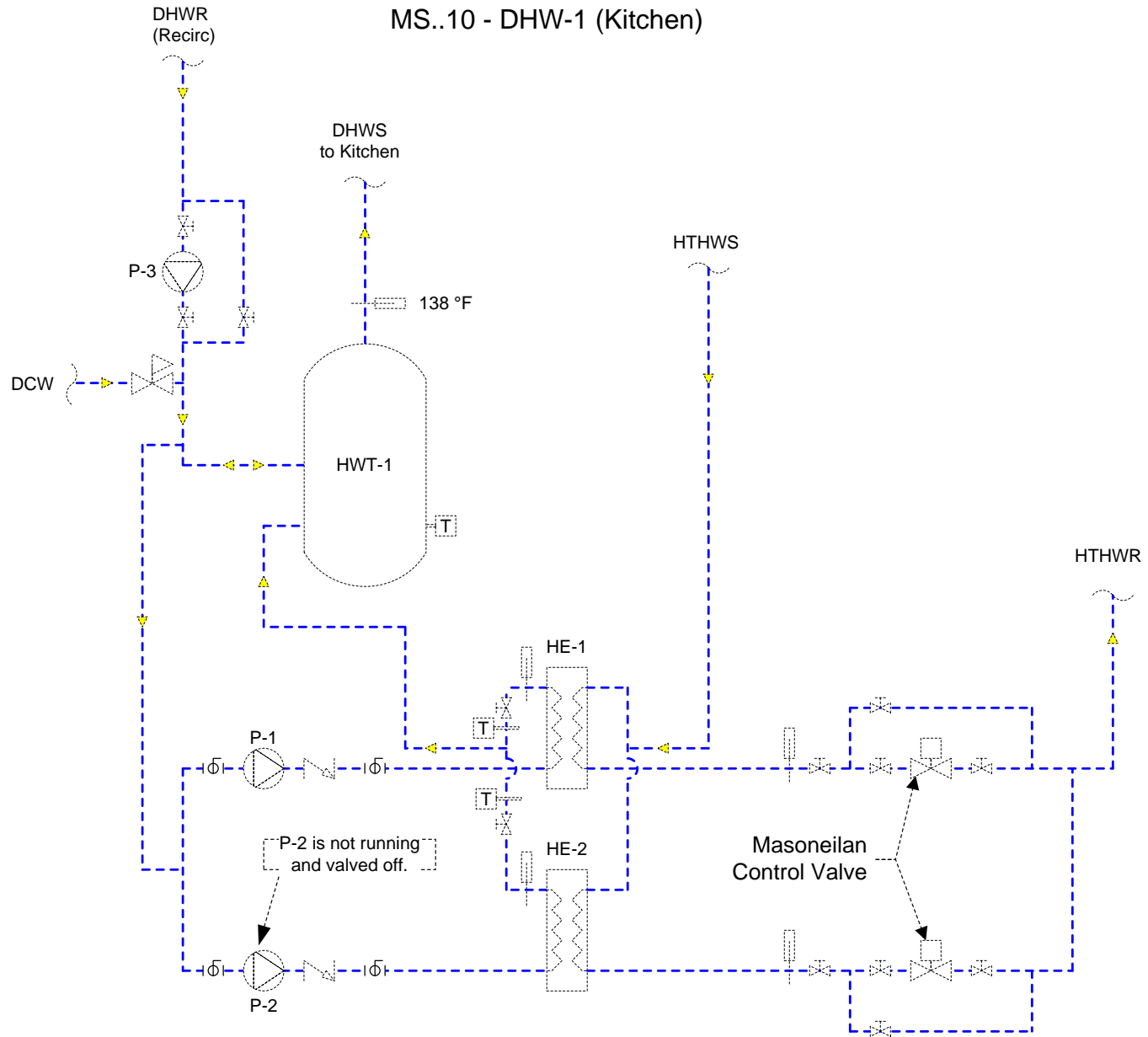
DDC Point List For Converter "E"						
Control Point	DO	DI	AO	AI	V	Sub-Type
P-50A	X					Enable/Disable
P-50A			X			Motor Speed Setpoint
P-50B	X					Enable/Disable
P-50B			X			Motor Speed Setpoint
Rad Return				X		Temperature
Rad Supply				X		Temperature
Point Totals:	2	0	2	2	0	

## OTC - HQ Building MS..9 - Converter "E"



# OTC - HQ Building

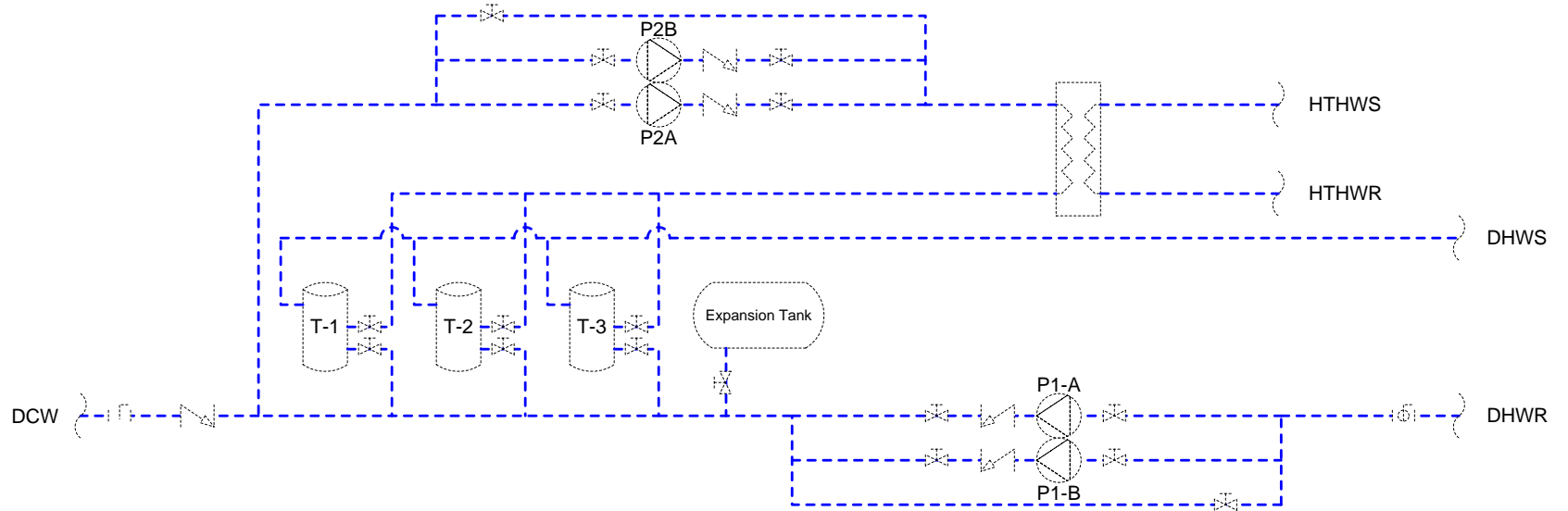
## MS..10 - DHW-1 (Kitchen)



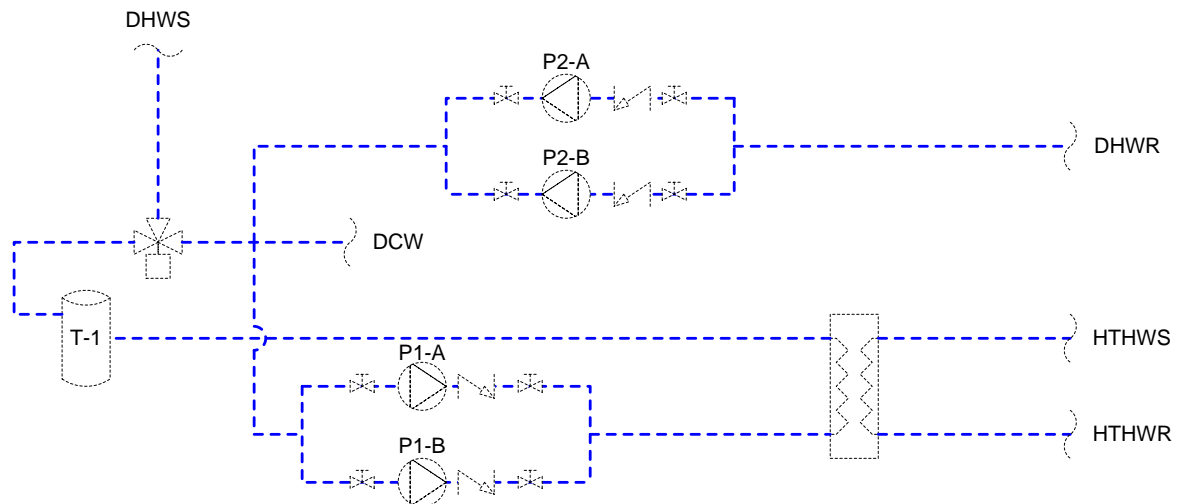
# OTC - HQ Building

## MS..11 - DHW-HQ, TC

### DHW-2 (HQ Building)

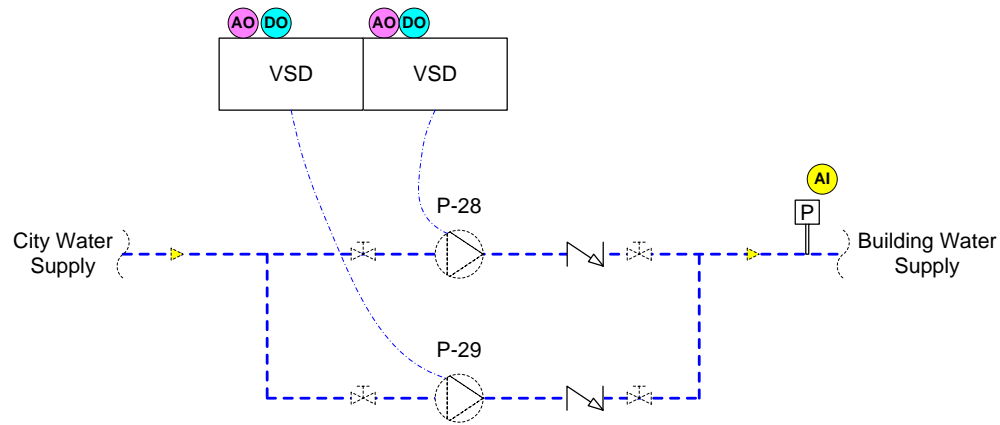


### DHW-3 (TC Building)



# OTC - HQ Building

MS..12 - DCW

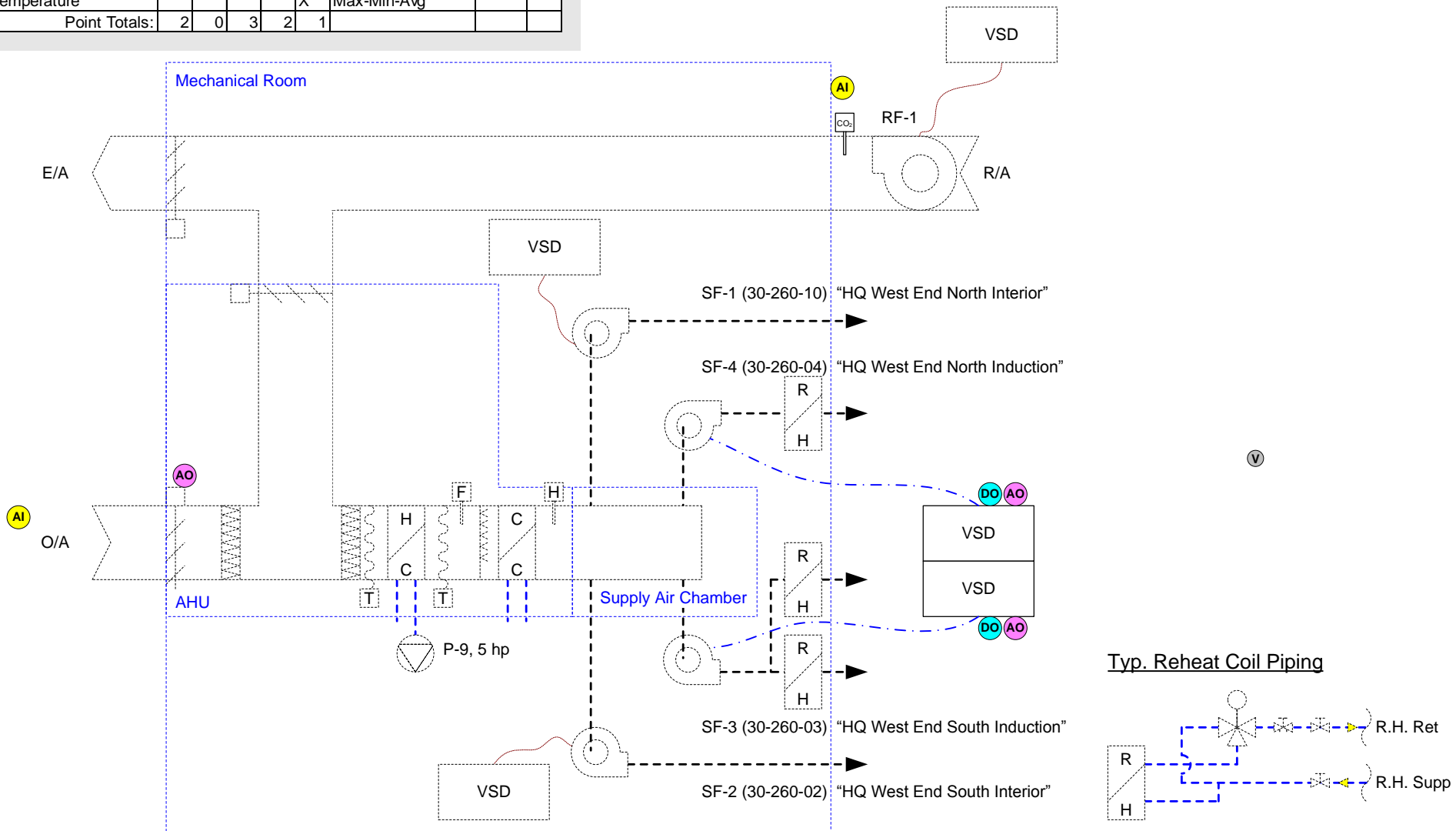


DDC Point List For DCW-1							
Control Point	DO	DI	AO	AI	V	Sub-Type	Notes
DCW				X		Pressure	
P-28			X			Motor Speed Setpoint	
P-28	X					Enable/Disable	
P-29	X					Enable/Disable	
P-29			X			Motor Speed Setpoint	
Point Totals:	2	0	2	1	0		

DDC Point List For		AHU-1							
Control Point	DO	DI	AO	AI	V	Sub-Type	Notes		
AHU1-OAD			X			Actuator Position			
AHU1-RAC				X		CO2			
OA				X		CO2			
SF-3			X			Motor Speed Setpoint			
SF-3	X					Enable/Disable			
SF-4			X			Motor Speed Setpoint			
SF-4	X					Enable/Disable			
Space Temperature					X	Max-Min-Avg			
Point Totals:		2	0	3	2	1			

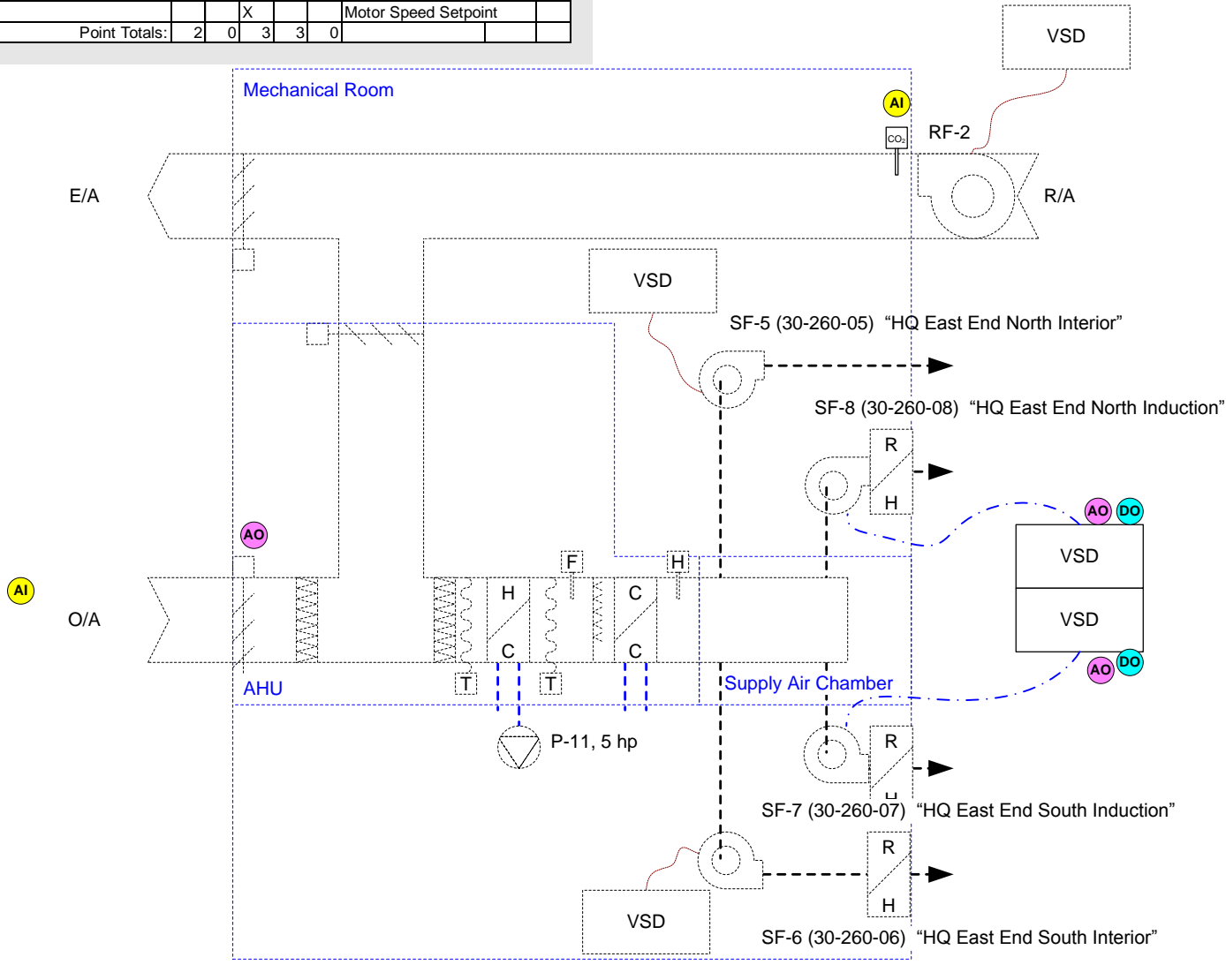
# TC - HQ Building

## MS..12 - AHU-1

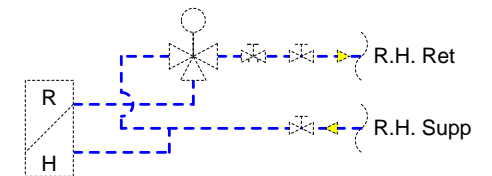


DDC Point List For	AHU-2						
Control Point	DO	DI	AO	AI	V	Sub-Type	Notes
AHU2-OAD			X			Actuator Position	
AHU2-RAC				X		CO2	
Highest Space Temperature				X		Temperature	
OA				X		CO2	
SF-7	X					Enable/Disable	
SF-7			X			Motor Speed Setpoint	
SF-8	X					Enable/Disable	
SF-8			X			Motor Speed Setpoint	
Point Totals:	2	0	3	3	0		

## OTC - HQ Building MS..13 - AHU-2



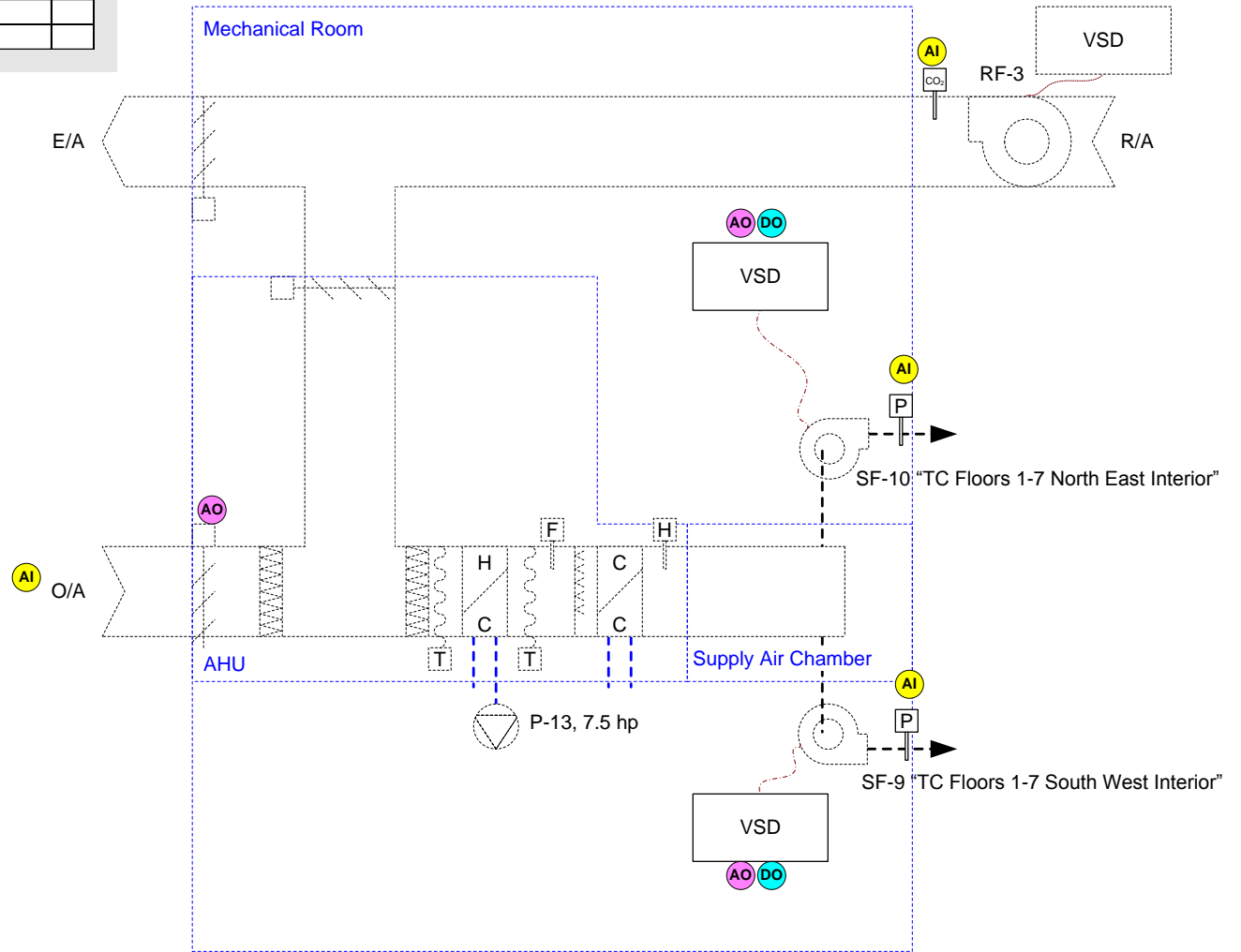
Typ. Reheat Coil Piping



DDC Point List For AHU-3							
Control Point	DO	DI	AO	AI	V	Sub-Type	Notes
AHU3-OAD			X			Actuator Position	
AHU3-RAC				X		CO2	
OA				X		CO2	
SF-10			X			Motor Speed Setpoint	
SF-10	X					Enable/Disable	
SF-10				X		Pressure	
SF-9			X			Motor Speed Setpoint	
SF-9	X					Enable/Disable	
SF-9				X		Pressure	
Point Totals:	2	0	3	4	0		

## OTC - HQ Building

### MS..14 - AHU-3

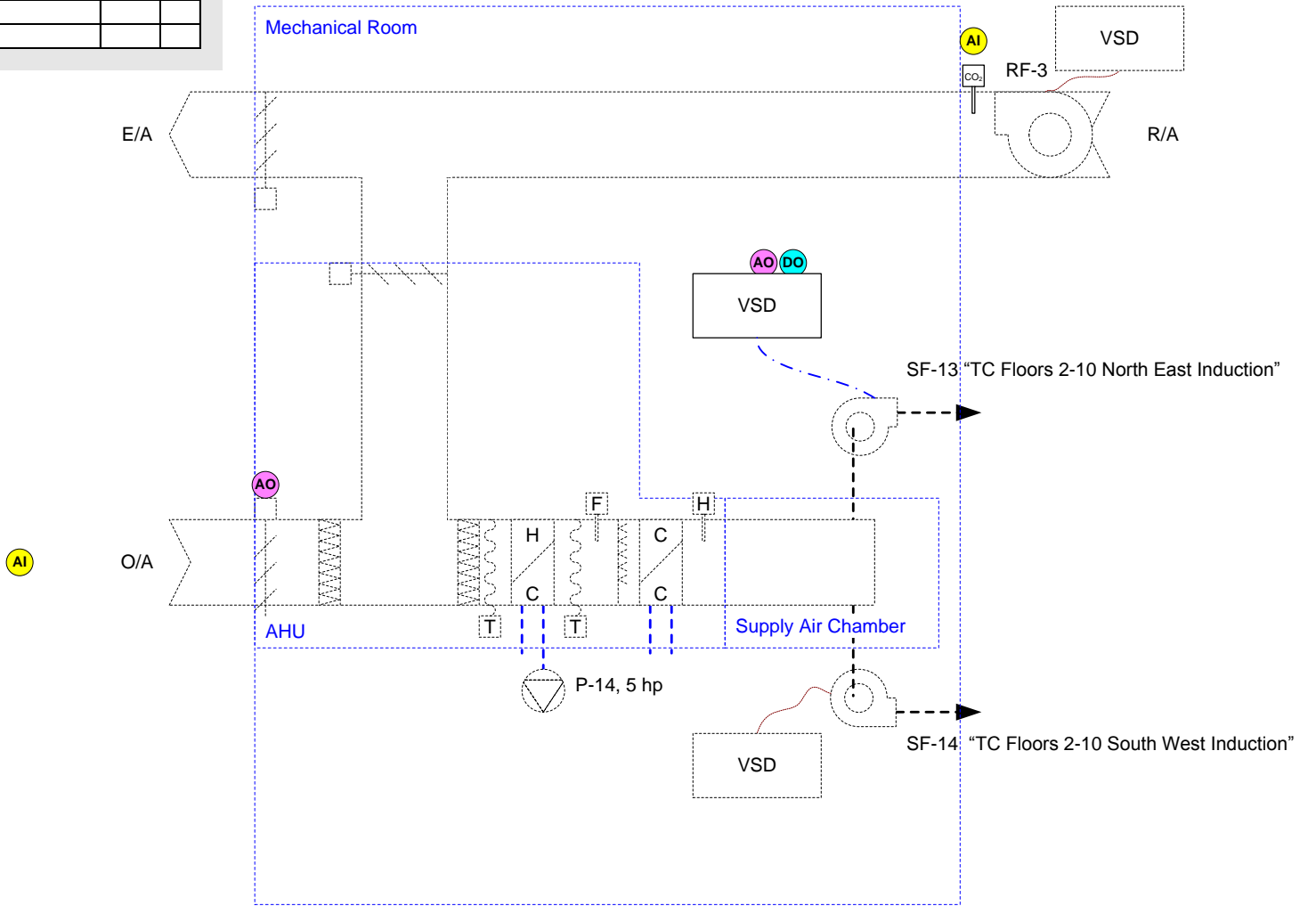




DDC Point List For AHU-4							
Control Point	DO	DI	AO	AI	V	Sub-Type	Notes
AHU4-OAD			X			Actuator Position	
OA				X		CO2	
RAC				X		CO2	
SF-13			X			Motor Speed Setpoint	
SF-13	X					Enable/Disable	
Space Temperature					X	Max-Min-Avg	
Point Totals:	1	0	2	2	1		

## OTC - HQ Building

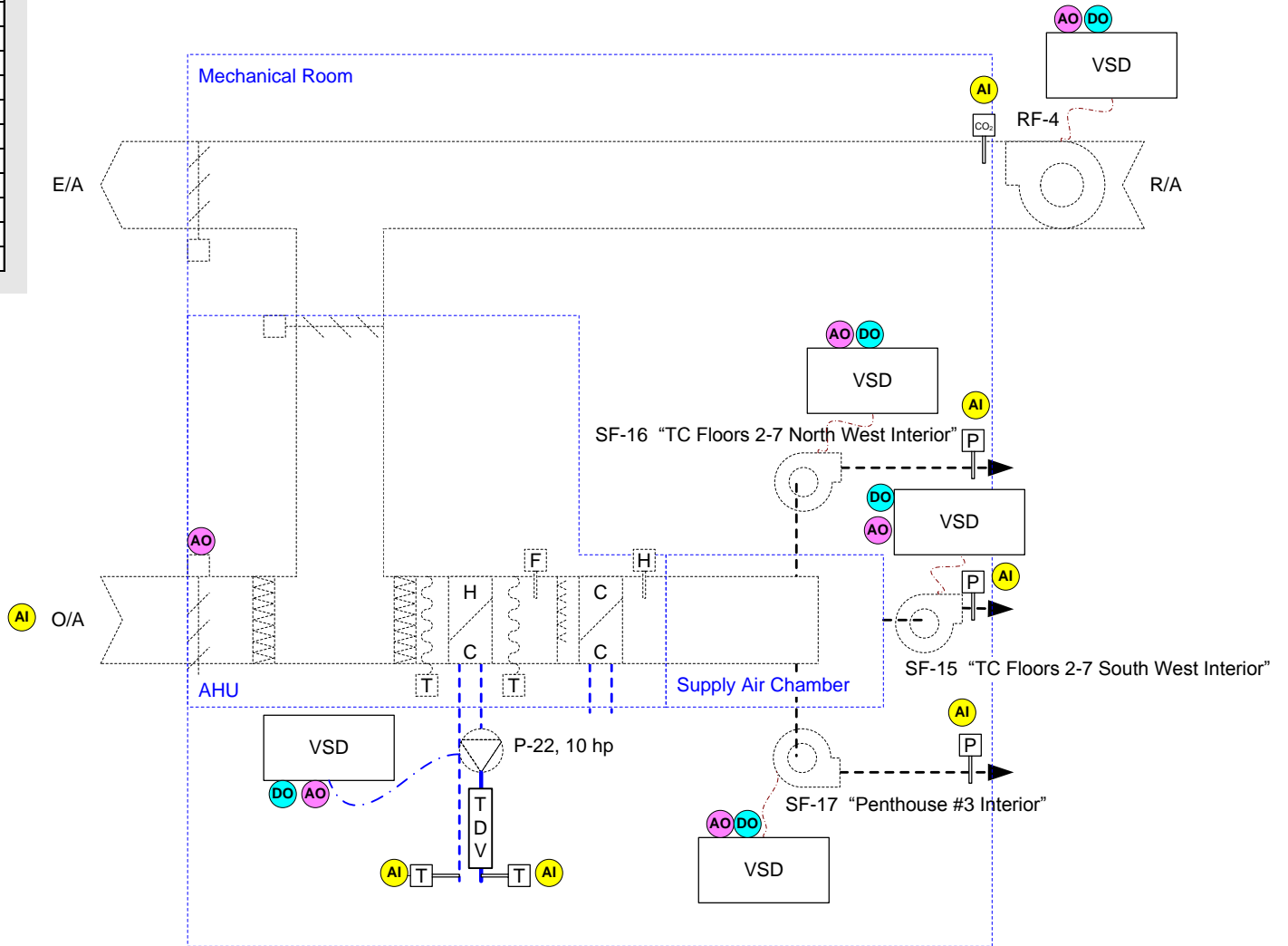
### MS..15 - AHU-4



DDC Point List AHU-5						
Control Point	DO	DI	AO	AI	V	Sub-Type
AHU5-HRWT				X		Temperature
AHU5-HSWT				X		Temperature
AHU5-OAD			X			Actuator Position
OA				X		CO2
P-22	X					Enable/Disable
P-22			X			Motor Speed Setpoint
RAC				X		CO2
RF-4			X			Motor Speed Setpoint
RF-4	X					Enable/Disable
SF-15			X			Motor Speed Setpoint
SF-15	X					Enable/Disable
SF-15				X		Pressure
SF-16			X			Motor Speed Setpoint
SF-16	X					Enable/Disable
SF-16				X		Pressure
SF-17				X		Pressure
SF-17			X			Motor Speed Setpoint
SF-17	X					Enable/Disable
Point Totals:	5	0	6	7	0	

## OTC - HQ Building

### MS..16 - AHU-5

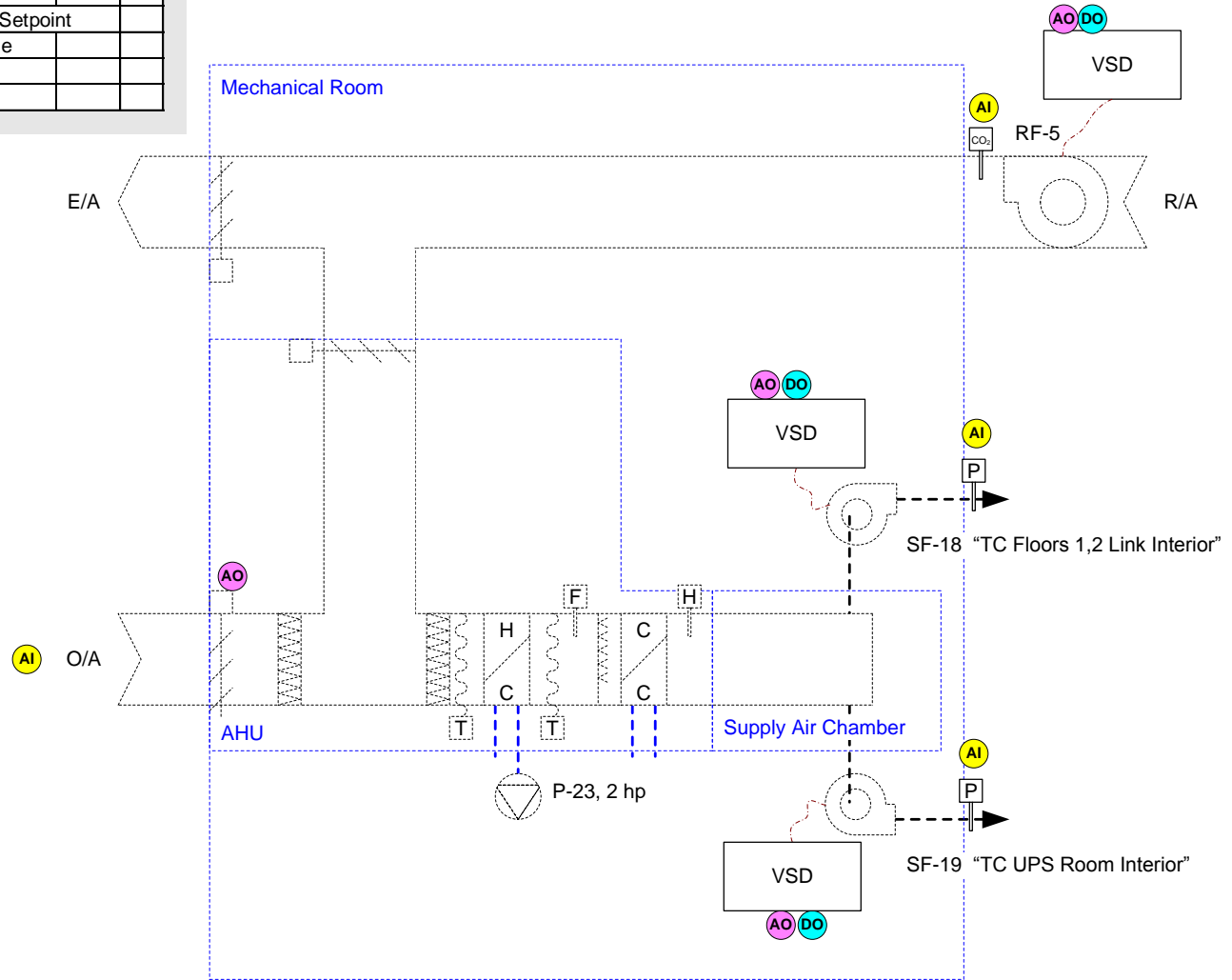


DDC Point List For AHU-6

Control Point	DO	DI	AO	AI	V	Sub-Type	Notes
AHU6-OAD			X			Actuator Position	
AHU6-RAC				X		CO2	
OA				X		CO2	
RF-5	X					Enable/Disable	
RF-5			X			Motor Speed Setpoint	
SF-18			X			Motor Speed Setpoint	
SF-18	X					Enable/Disable	
SF-18				X		Pressure	
SF-19			X			Motor Speed Setpoint	
SF-19	X					Enable/Disable	
SF-19				X		Pressure	
Point Totals:	3	0	4	4	0		

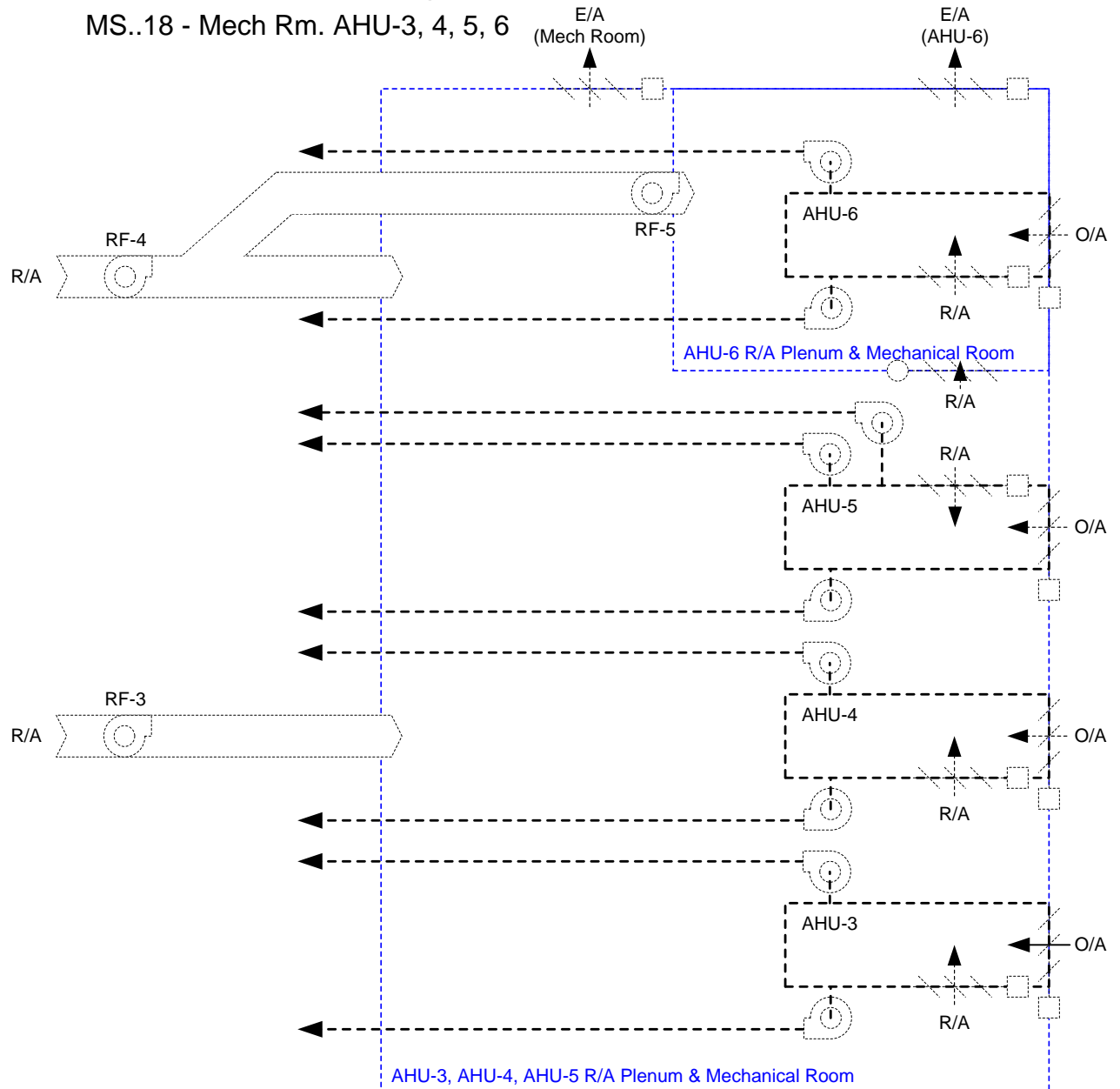
# OTC - HQ Building

## MS..17 - AHU-6



# OTC - HQ Building

MS..18 - Mech Rm. AHU-3, 4, 5, 6

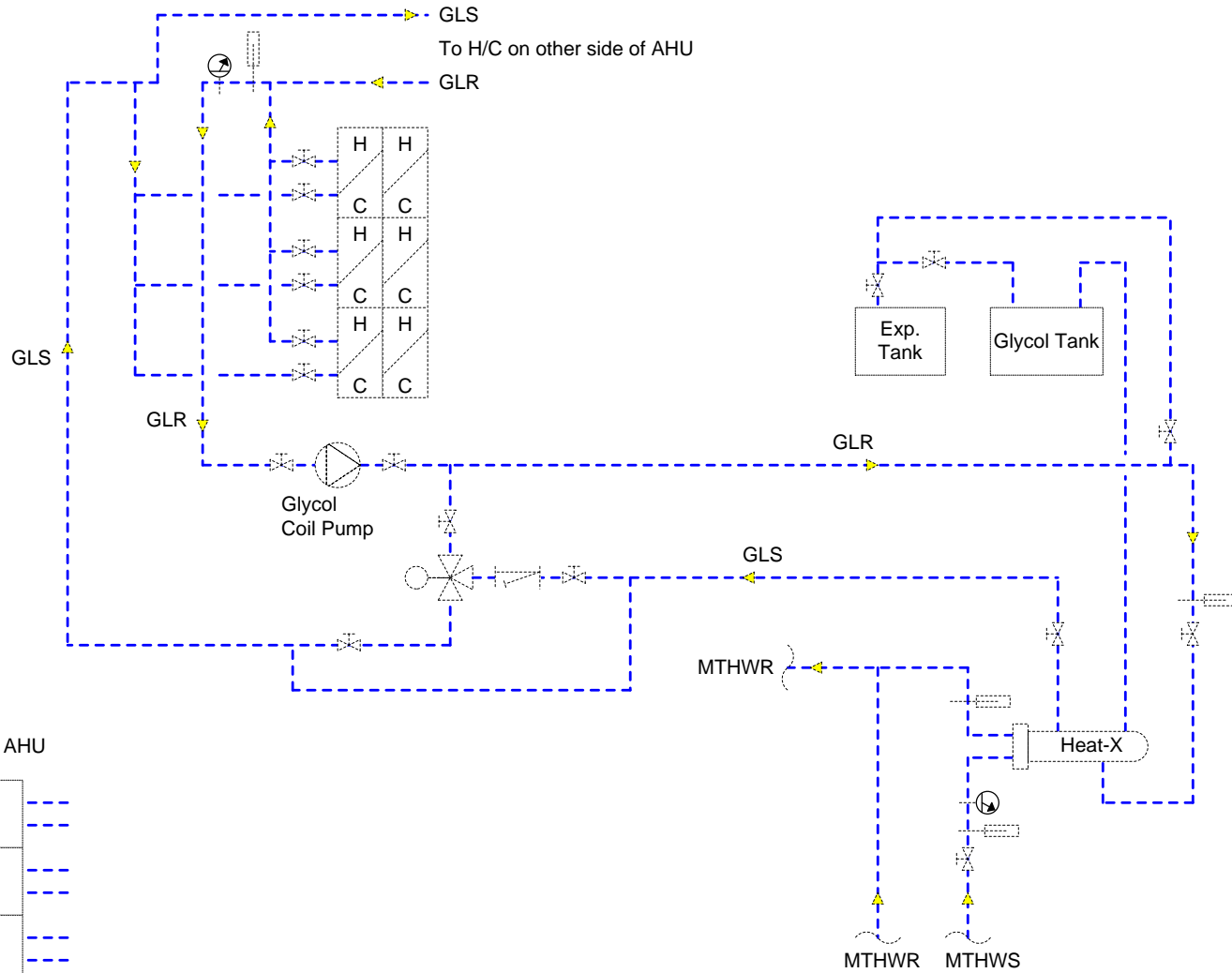


# OTC - HQ Building

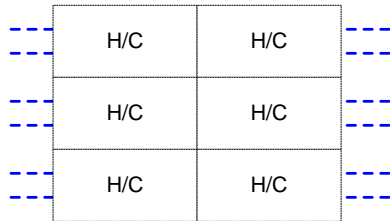
## MS..19 - AHU H/C Piping

Piping below is typical for the following AHU's:

- AHU-1
- AHU-2
- AHU-3
- AHU-4
- AHU-5
- AHU-6



H/C are 6 Coil Arrangement in AHU

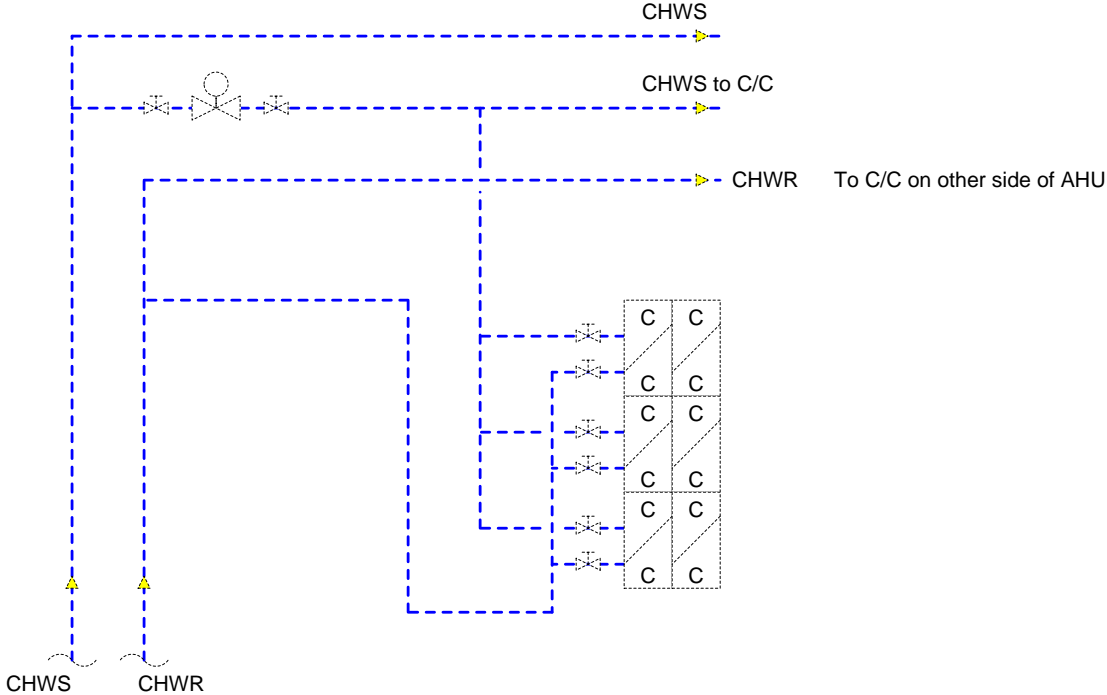


# OTC - HQ Building

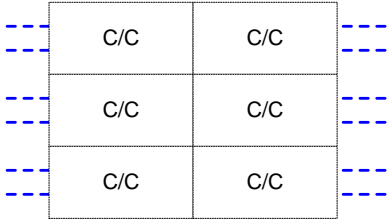
## MS..20 - AHU C/C Piping

Piping below is typical for the following AHU's:

- AHU-1
- AHU-2
- AHU-3
- AHU-4
- AHU-5
- AHU-6

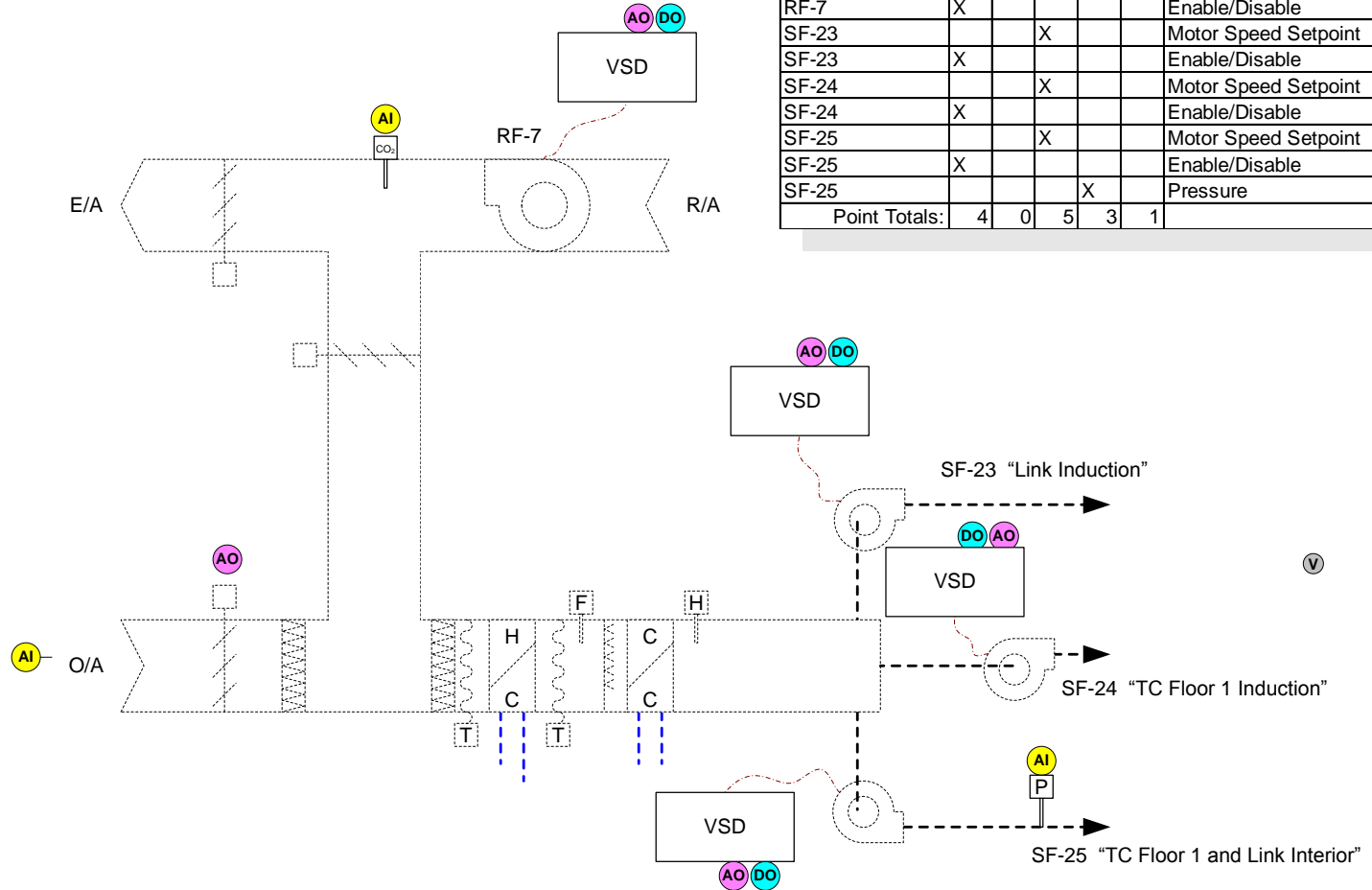


C/C are 6 Coil Arrangement in AHU



# OTC - HQ Building

## MS..21 - AHU-7

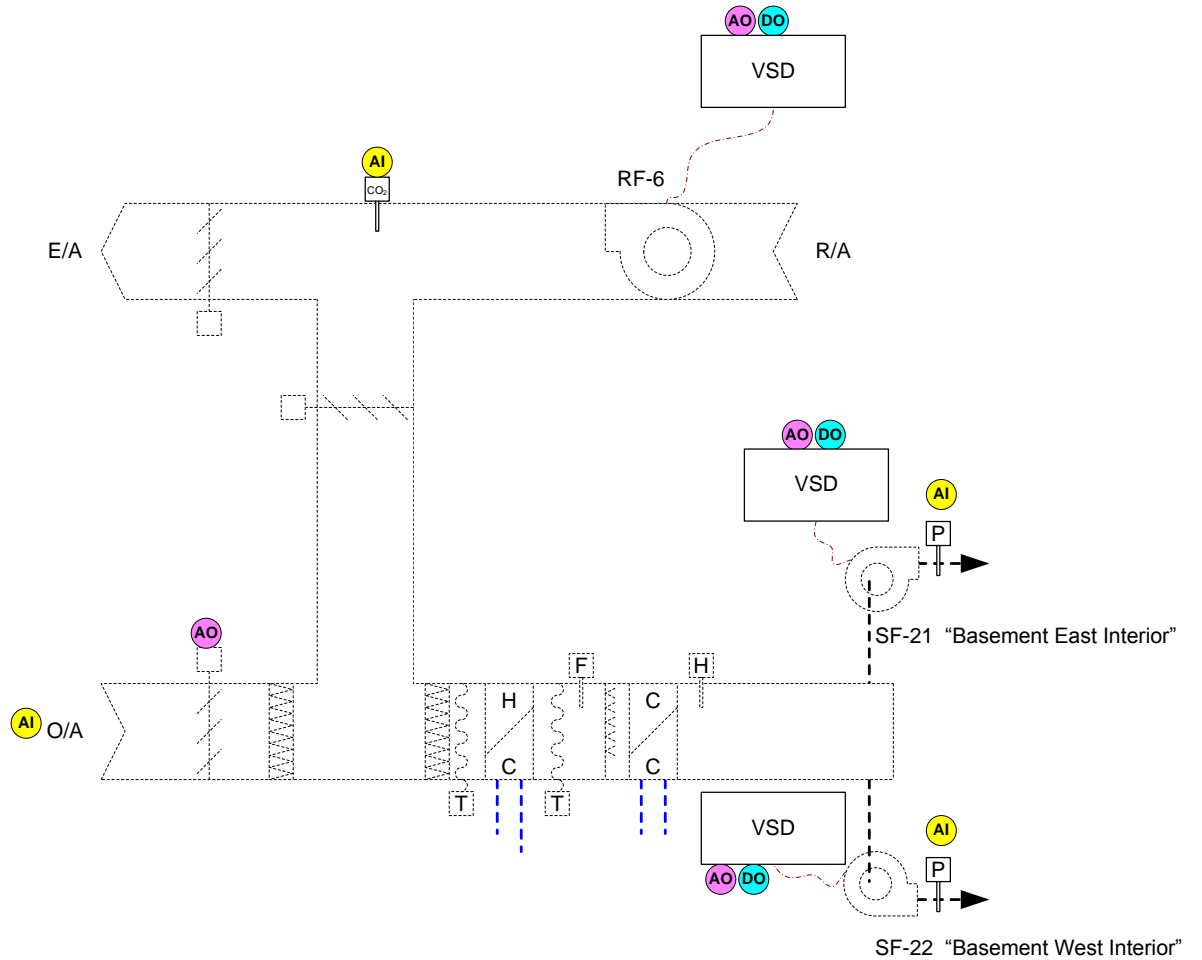


DDC Point List For AHU-7								
Control Point	DO	DI	AO	AI	V	Sub-Type	Notes	
AHU7-OAD			X			Actuator Position		
Highest Space Temperature					X	Max-Min-Avg		
OA				X		CO2		
RAC				X		CO2		
RF-7			X			Motor Speed Setpoint		
RF-7	X					Enable/Disable		
SF-23			X			Motor Speed Setpoint		
SF-23	X					Enable/Disable		
SF-24			X			Motor Speed Setpoint		
SF-24	X					Enable/Disable		
SF-25			X			Motor Speed Setpoint		
SF-25	X					Enable/Disable		
SF-25				X		Pressure		
Point Totals:	4	0	5	3	1			

# OTC - HQ Building

## MS..22 - AHU-8

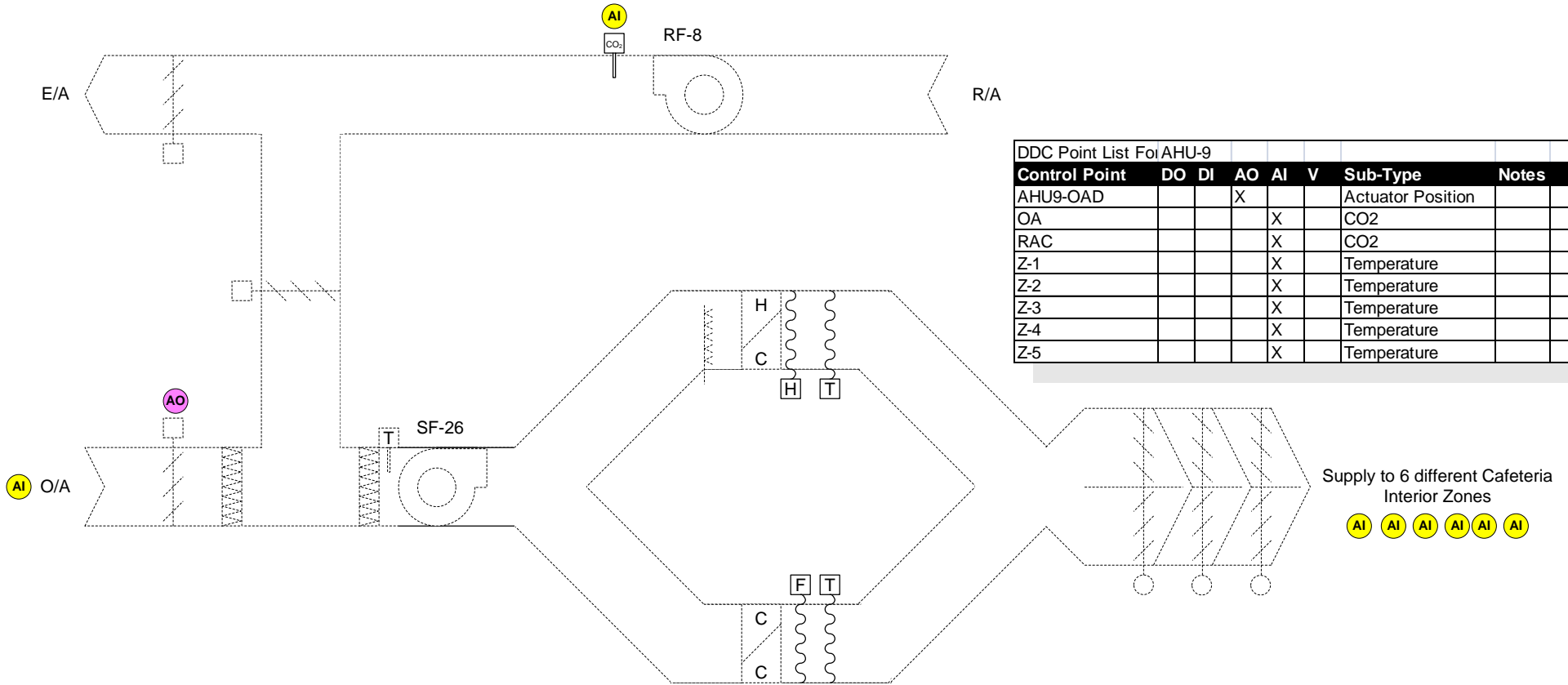
DDC Point List For AHU-8							
Control Point	DO	DI	AO	AI	V	Sub-Type	Notes
AHU8-OAD			X			Actuator Position	
OA				X		CO2	
RAC				X		CO2	
RF-6			X			Motor Speed Setpoint	
RF-6	X					Enable/Disable	
SF-21			X			Motor Speed Setpoint	
SF-21	X					Enable/Disable	
SF-21				X		Pressure	
SF-22			X			Motor Speed Setpoint	
SF-22	X					Enable/Disable	
SF-22				X		Pressure	
Point Totals:	3	0	4	4	0		





# OTC - HQ Building

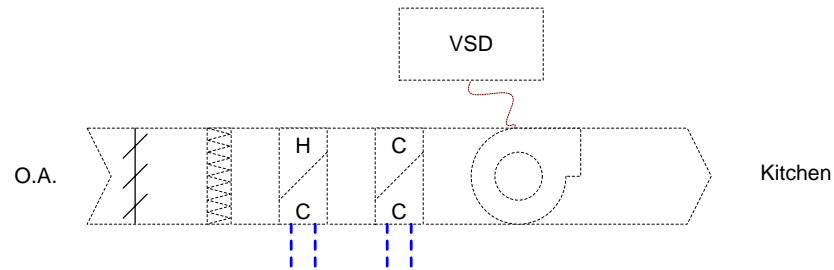
MS..23 - AHU-9



DDC Point List For AHU-9								
Control Point	DO	DI	AO	AI	V	Sub-Type	Notes	
AHU9-OAD			X			Actuator Position		
OA				X		CO2		
RAC				X		CO2		
Z-1				X		Temperature		
Z-2				X		Temperature		
Z-3				X		Temperature		
Z-4				X		Temperature		
Z-5				X		Temperature		

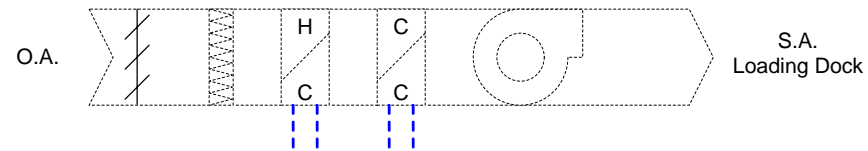
# OTC - HQ Building

MS..24 - AHU-10



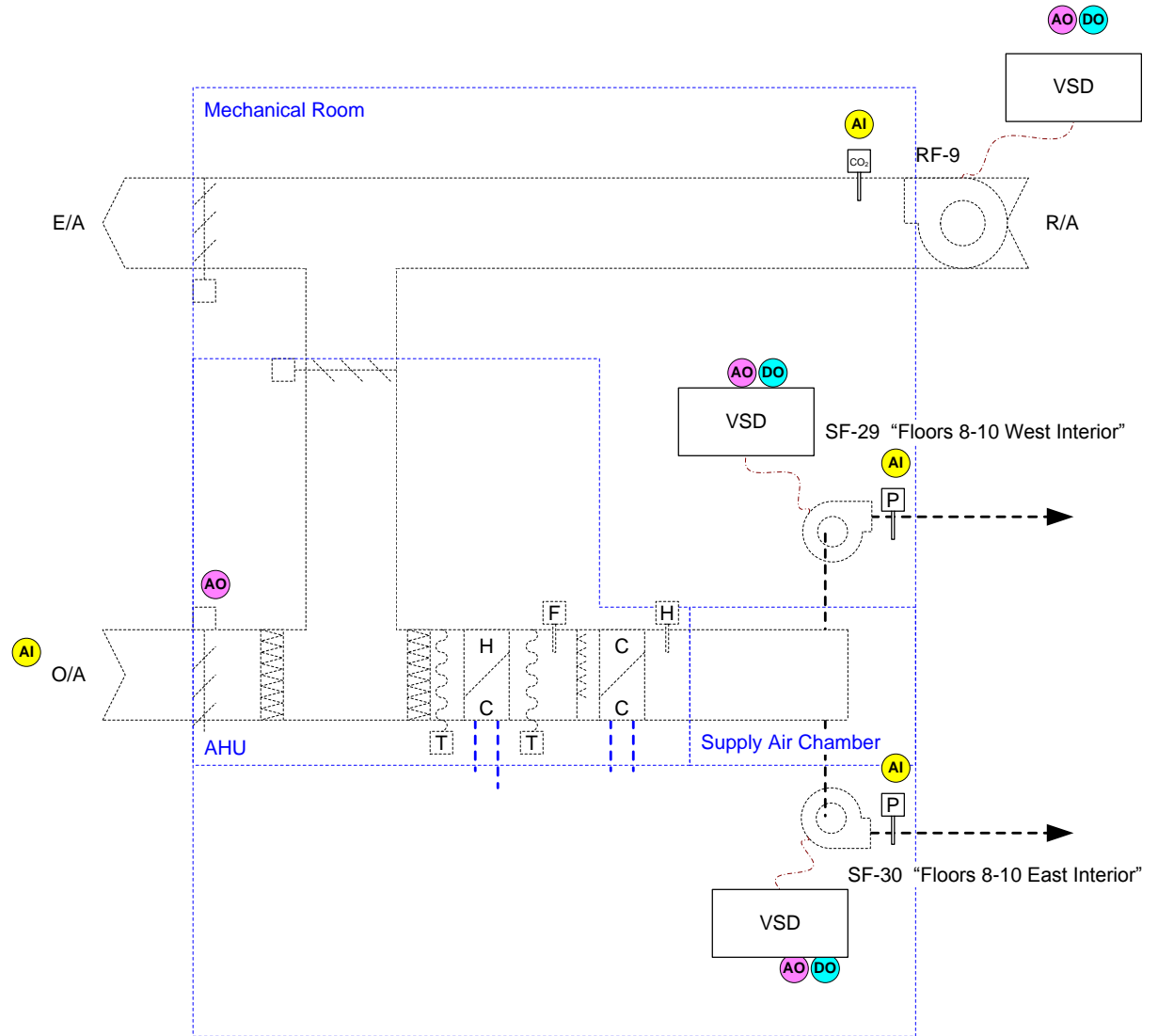
# OTC - HQ Building

MS..24 - AHU-11



Control Point	DO	DI	AO	AI	V	Sub-Type
AHU12-0AD			X			Actuator Position
OA				X		CO2
RAC				X		CO2
RF-9			X			Motor Speed Setpoint
RF-9	X					Enable/Disable
SF-29			X			Motor Speed Setpoint
SF-29	X					Enable/Disable
SF-29				X		Pressure
SF-30			X			Motor Speed Setpoint
SF-30	X					Enable/Disable
SF-30				X		Pressure
Point Totals:	3	0	4	4	0	

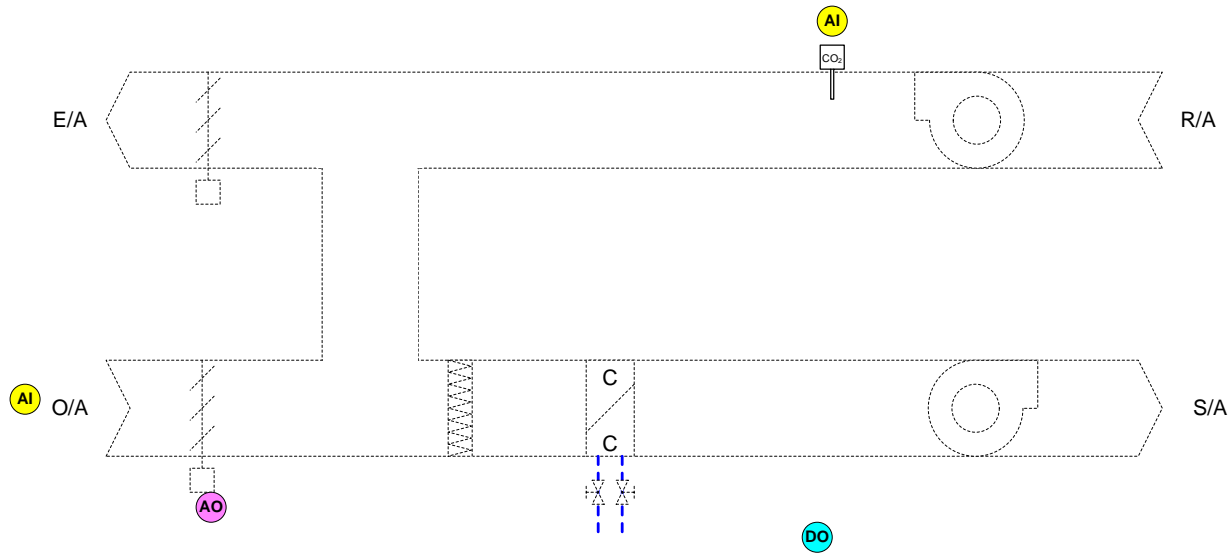
## OTC - HQ Building MS..25 - AHU-12



# OTC - HQ Building

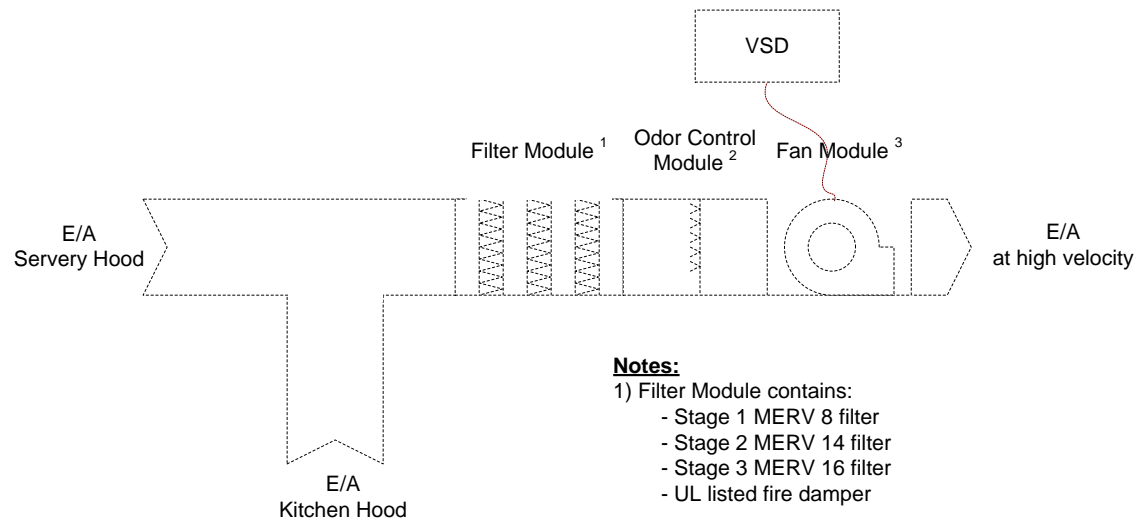
## MS..26 - AHU-Link

DDC Point List For AHU-Link							
Control Point	DO	DI	AO	AI	V	Sub-Type	Notes
AHU-Link	X					Enable/Disable	
AHU-Link OAD			X			Actuator Position	
OA				X		CO2	
RAC				X		CO2	
Point Totals:	1	0	1	2	0		



# OTC - HQ Building

MS..27 - EAF-Caf



### Notes:

1) Filter Module contains:

- Stage 1 MERV 8 filter
- Stage 2 MERV 14 filter
- Stage 3 MERV 16 filter
- UL listed fire damper

2) Odor Control Module contains:

- spray chamber with adjustable nozzles
- 5 gallon chemical reservoir

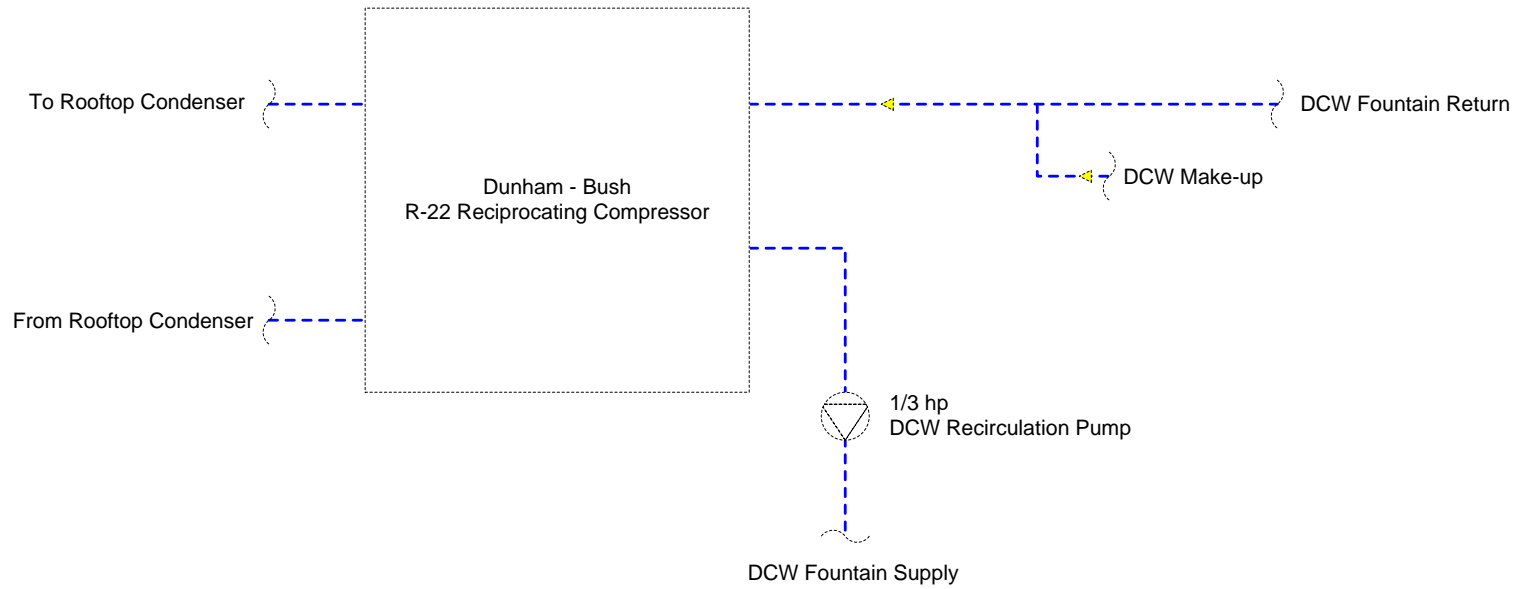
3) Fan Module contains:

- vibration isolated fan
- fire stat

# OTC - HQ Building

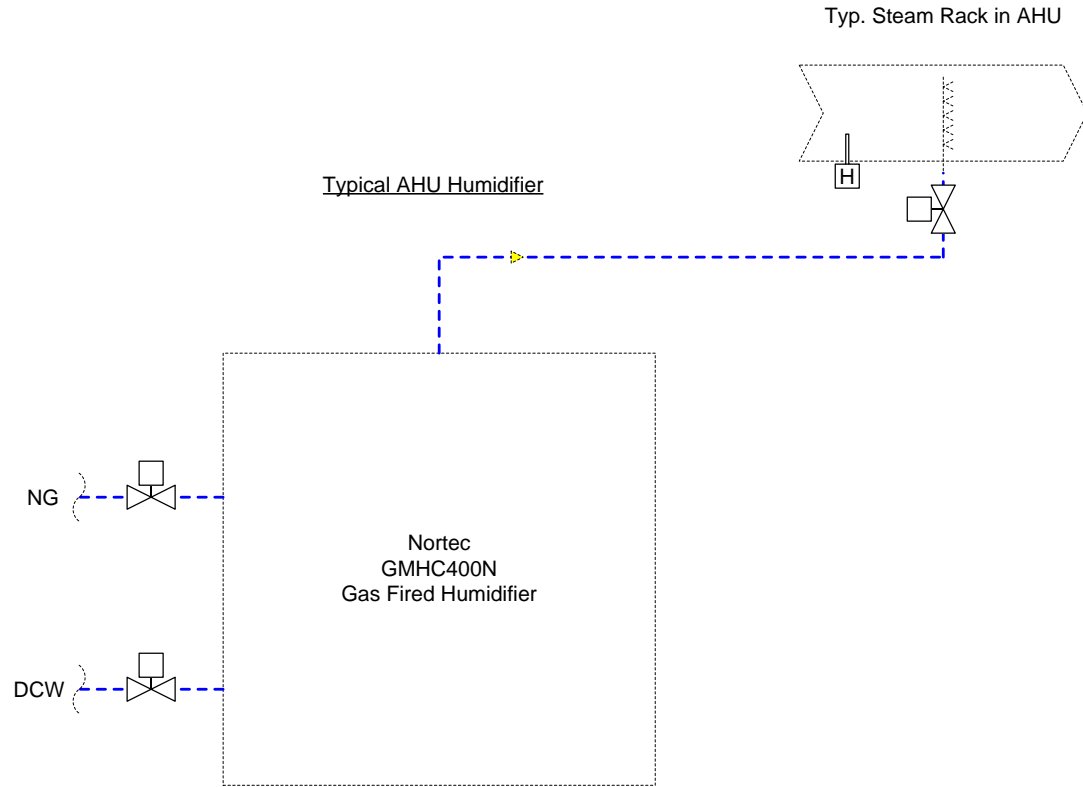
MS..29 - DCHW-1

1 of 2 DCW Coolers for Fountain Supply



# OTC - HQ Building

MS..30 - HUM-1







## Appendix F: Photos

- Media Log – Photos Report

Facility Code: 4520082

Facility Name: Ottawa Technology Centre



Identifier: 0064-tow er.JPG

Comment:



Identifier: 0065-Tow er and HQ.JPG

Comment:



Identifier: 0066-HQ.JPG

Comment:



Identifier: 0067-P41.JPG

Comment:



Identifier: 0068-P41 NO MOTOR.JPG

Comment:

Facility Code: 4520082

Facility Name: Ottawa Technology Centre



Identifier: 0069-P42.JPG

Comment:



Identifier: 0071-P42.JPG

Comment:



Identifier: 0072-P43.JPG

Comment:



Identifier: 0073-P43 NO MOTOR.JPG

Comment:



Identifier: 0074-P44.JPG

Comment:

Facility Code: 4520082

Facility Name: Ottawa Technology Centre



Identifier: 0075-P44 NO MOTOR.JPG

Comment:



Identifier: 0076-P42 NAMEPLATE.JPG

Comment:



Identifier: 0079-UNINSULATED PIPING (COLD).JPG

Comment:



Identifier: 0080-UNINSULATED PIPING (COLD).JPG

Comment:



Identifier: 0081-HTHW PIPING.JPG

Comment:

Facility Code: 4520082

Facility Name: Ottawa Technology Centre



Identifier: 0083-UNINSULATED PIPE END.JPG

Comment:



Identifier: 0085-SF-24 CONTROLS (VFD...).JPG

Comment:



Identifier: 0086-RF-6.JPG

Comment:



Identifier: 0087-SF-25.JPG

Comment:



Identifier: 0088-SF-26.JPG

Comment:

Facility Code: 4520082

Facility Name: Ottawa Technology Centre



Identifier: 0089-AHU-9 - 6 MULTIZONES.JPG

Comment:



Identifier: 0090-P-52 VFD.JPG

Comment:



Identifier: 0091-DRY-O-TRON UNIT ABOVE AHU-9.JPG

Comment:



Identifier: 0092-HEAT EXCHANGER HE-3.JPG

Comment:



Identifier: 0093-SF-3 VFD - REMOVED.JPG

Comment:

Facility Code: 4520082

Facility Name: Ottawa Technology Centre



Identifier: 0094-SF-4 VFD - REMOVED.JPG

Comment:



Identifier: 0095-P-10 , P-25.JPG

Comment:



Identifier: 0096-CONVERTER C4.JPG

Comment:



Identifier: 0097-P-9.JPG

Comment:



Identifier: 0098-EF-2.JPG

Comment:

Facility Code: 4520082

Facility Name: Ottawa Technology Centre



Identifier: 0099-CONDENSING UNITS ON ROOF.JPG

Comment:



Identifier: 0100-SF-14.JPG

Comment:



Identifier: 0101-DOMESTIC WATER COOLING.JPG

Comment:



Identifier: 0102-SUMMER AND WINTER VALVING FOR PERIMETER INDUCTION.JPG

Comment:



Identifier: 0103-P-27A.JPG

Comment:



Facility Code: 4520082

Facility Name: Ottawa Technology Centre



Identifier: 0104-P-15 VFD.JPG

Comment:



Identifier: 0105-P15, P27B, P16.JPG

Comment:



Identifier: 0106-P-16 VFD.JPG

Comment:



Identifier: 0107-PUMPS - COPPER PIPING - UNKNOWN USE.JPG

Comment:



Identifier: 0108-PUMPS - COPPER PIPING - UNKNOWN USE.JPG

Comment:

Facility Code: 4520082

Facility Name: Ottawa Technology Centre



Identifier: 0109.JPG

Comment: MCC-1



Identifier: 0110.JPG

Comment: MCC-2



Identifier: 0111.JPG

Comment: MCC-5



Identifier: 0112.JPG

Comment: MCC-4



Identifier: 0113.JPG

Comment: MCC-6

Facility Code: 4520082

Facility Name: Ottawa Technology Centre



Identifier: 0114.JPG

Comment: MCC-3



Identifier: 0115.JPG

Comment: MCC-3



Identifier: 0116- DHW-3 STORAGE TANK.JPG

Comment:



Identifier: 0118 - DHW-3 P1A,P1B,P2A,P2B.JPG

Comment:



Identifier: 0119 - DHW-3 - 3-WAY MIXING VALVE.JPG

Comment:

Facility Code: 4520082

Facility Name: Ottawa Technology Centre



Identifier: 0120-DHW-2 RECIRC PUMPS.JPG

Comment:



Identifier: 0121- DHW-2 CIRC PUMPS.JPG

Comment:



Identifier: 0122-DHW-2 STORAGE TANKS.JPG

Comment:



Identifier: 0123-DCW COOLER.JPG

Comment:



Identifier: 0124-DCW COOLER NAMEPLATE.JPG

Comment:

Facility Code: 4520082

Facility Name: Ottawa Technology Centre



Identifier: 0125-DCW COOLER NAMEPLATE.JPG

Comment:



Identifier: 0126-P-26 AND P-12.JPG

Comment:



Identifier: 0127-P28 AND P-29.JPG

Comment:



Identifier: 0128-P-28 AND P-29.JPG

Comment:



# Appendix G: Savings and Costing Calculations

- Opportunity Savings Calculations



### Savings Methodology

Savings for opportunities are calculated using rigorous scientific modeling tools to ensure accuracy. The first step in the savings calculations is to find the existing consumption(s) of the equipment, based on equipment nameplate data, operating parameters, logged data (when available) and modeling from the utility bill analysis. The next step is to calculate the retrofit consumption once the opportunity is implemented. The savings are simply the difference between the two.

The calculation method varies depending on the opportunity. For weather dependent savings, we would typically use a modified bin method from our own proprietary software. The underlying data used for creating the modified bins is ASHRAE WYEC (Weather Year for Energy Calculations). This ensures that the savings are based on a typical year, not an abnormally warm or abnormally cold year. When appropriate, we use other well-accepted methods such as Trane Trace 700 whole-building simulation.

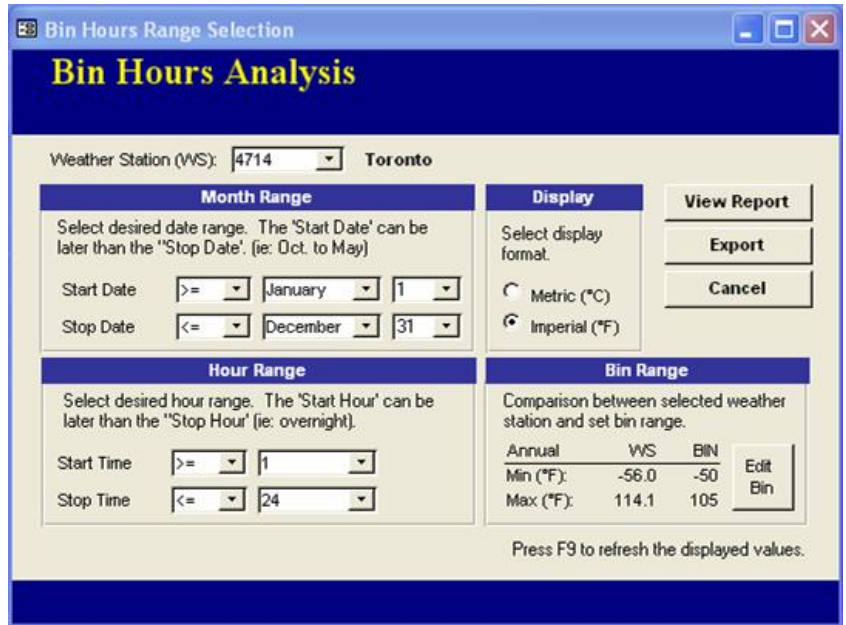


Table 5.1: Savings Summary Table. Includes columns for Meter, kWh Meter Name, Energy, kWh/yr, % of Total Consumption, and Savings. Below is a detailed table with columns for Fan Name, Return Fan #, Supply Fan #, etc., and a large data table for VAV Fans, Constant Volume Fans, and Retained Conditions.

Savings calculations for a particular opportunity assume that other opportunities listed ahead of it have been implemented. For example, if Opportunity 1 recommends reducing lighting hours and Opportunity 2 recommends upgrading to a better technology, the Opportunity 2 savings calculations will be based on the reduced lighting schedules. This ensures that savings are not “double counted”.

Project Name: 0  
 Job Number: 1225  
 Purpose: Savings Calculations  
 Created: 6/4  
 Facility: Ottawa Technology Centre  
 Facility Code: 07C  
 Facility Area: 62240 R2  
 Opportunity Name: 1326 on Induction Zone Supply Fans and Properly Program Operation

Select Measure Name:

Utility Breakdown		Water
Space Heating		
Space Cooling		
Water Heating		
Water Heating		
Lighting		
Cooking		
Refrigeration		
Other Equipment and Plug Load		
Other		

dedated motor load 75%  
 MWHP 0.746  
 cfm/HP 750

RF	HP	kW	existing v4?T
RF-1	20	11	yes, 60%
RF-2	20	11	yes, 75%
RF-3	30	17	yes, 100%
RF-4	30	17	no, interior fans only
RF-5	10	6	yes, 100%
RF-6	25	14	no, interior fans only
RF-7	30	6	no, induction and interior fans
RF-8	20	11	no, interior fans only
Total RPs		186	92

Motor Name	kW	kWh	% of Total Cons or Demand	Retrofit Cons or Demand	Savings		Annual Energy Savings \$26,945	Additional Annual Savings \$26,945
					Base	Summer		
M01 Electricity	13,217,201	0	0	287,202	270,512	16,690	16,690	16,690
M02 High Temperature Hot Water	23,026	0	0	0	0	63	0.00%	\$0.00
M03 Chilled Water	11,895	0	0	0	0	63	0.00%	\$0.00
M04 Domestic Water	27,792	0	0	0	0	61	0.00%	\$0.00
M05 Natural Gas	20,000	0	0	0	0	0	0.00%	\$0.00

End S.1 Savings

Induction SF's	HP	kWh	est. flow (cfm)	AHU	
SF-3	20	11	15,000	1	
SF-4	30	8	11,250	1	
SF-7	10	6	11,250	2	
SF-8	15	8	11,250	2	
SF-13	25	14	18,750	4	
SF-14	50	28	37,500	4	
SF-23	18	6	7,500	7	
SF-24	10	5	7,500	2	
Total		169	96	130,000	0

Start	Stop	Average	Avg T (°C)	Total	M01 Base	M01 Summer	M01 Winter	M01 Total	M02 Base	M02 Summer	M02 Winter	M02 Total	M03 Base	M03 Summer	M03 Winter	M03 Total	M04 Base	M04 Summer	M04 Winter	M04 Total	M05 Base	M05 Summer	M05 Winter	M05 Total	Induction Unit Heating/Cooling Fan Load	Induction/Interior SF Hours (6.30am-8.30pm)	Supply Fan Consumption - kWh	Retrofit SF Cons. - kWh	SF Savings - kWh	RF Load - %	RF 3 and 7 cons. - kWh	RF 3 and 7 savings - kWh	RF savings - kWh	
35	35	33	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65%	0	0	0	0	100%	0	0	0	
30	25	29	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65%	0	0	0	0	100%	0	0	0	
25	20	23	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65%	0	0	0	0	100%	0	0	0	
20	15	18	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65%	0	0	0	0	100%	0	0	0	
15	10	13	25	18	0	0	0	27,381	0	0	0	27,381	0	0	0	108,203	1	0	0	74	0	0	74	62%	10	602	328	574	100%	197	197	0	0	
10	5	8	22	104	0	0	0	104,170	0	0	0	104,170	26	0	0	1,069	1,074	6	0	0	6	465	0	0	471	62%	57	5,087	1,851	3,235	100%	1,113	1,113	0
5	0	3	19	106	0	0	0	251,672	0	0	0	251,672	41	0	0	1,556	1,557	15	0	0	15	684	0	0	699	62%	86	6,572	1,115	5,457	100%	1,827	1,827	0
0	5	3	16	225	0	0	0	336,230	0	0	0	336,230	55	0	0	1,899	1,954	13	0	0	13	914	0	0	914	62%	130	11,675	2,420	9,255	96%	2,354	2,315	239
5	10	8	14	278	0	0	0	415,778	0	0	0	415,778	68	0	0	2,126	2,124	16	0	0	16	1,131	0	0	1,131	62%	159	14,258	3,195	11,063	91%	3,115	3,115	0
10	15	13	11	341	0	0	0	510,609	0	0	0	510,609	85	0	0	2,338	2,422	20	0	0	20	1,399	0	0	1,399	62%	173	15,451	3,424	11,927	87%	3,380	2,489	891
15	20	18	8	469	0	0	0	701,833	0	0	0	701,833	115	0	0	2,893	3,055	28	0	0	28	1,909	0	0	1,909	62%	260	23,393	4,476	18,917	82%	5,099	3,263	1,735
20	25	21	5	581	0	0	0	869,207	0	0	0	869,207	141	0	0	3,623	3,126	34	0	0	34	2,364	0	0	2,364	62%	330	28,622	10,420	18,202	78%	6,262	4,691	1,571
25	30	28	4	724	0	0	0	1,044,404	0	0	0	1,044,404	170	0	0	4,453	2,864	34	0	0	34	2,411	0	0	2,411	62%	426	36,897	14,641	22,256	72%	8,809	2,705	6,104
30	35	31	6	904	0	0	0	1,234,038	0	0	0	1,234,038	210	0	0	5,466	2,266	34	0	0	34	2,494	0	0	2,494	62%	542	46,861	18,511	28,350	69%	11,314	2,660	8,654
35	40	38	3	1,051	0	0	0	1,444,003	0	0	0	1,444,003	260	0	0	6,761	2,021	39	0	0	39	2,646	0	0	2,646	62%	688	54,665	14,672	40,000	64%	14,014	2,888	11,126
40	45	41	6	1,292	0	0	0	1,694,038	0	0	0	1,694,038	320	0	0	8,324	1,365	35	0	0	35	2,808	0	0	2,808	62%	882	65,874	19,729	46,145	60%	17,856	3,568	14,287
45	50	48	9	1,549	0	0	0	1,984,059	0	0	0	1,984,059	400	0	0	10,129	867	34	0	0	34	2,979	0	0	2,979	62%	1,138	79,497	23,361	56,136	60%	22,202	2,899	19,303
50	55	51	11	1,814	0	0	0	2,304,091	0	0	0	2,304,091	500	0	0	12,164	1,058	38	105	0	124	3,157	0	0	3,157	62%	1,432	93,991	27,711	66,280	62%	27,721	4,468	22,253
55	60	58	14	2,092	0	0	0	2,654,024	0	0	0	2,654,024	620	0	0	14,340	1,000	40	1,610	0	1,650	3,341	0	0	3,341	68%	1,804	109,546	31,729	77,817	68%	33,110	5,223	27,887
60	65	61	17	2,377	0	0	0	3,034,050	0	0	0	3,034,050	760	0	0	16,660	920	42	2,285	0	2,325	3,626	0	0	3,626	76%	2,210	124,821	36,649	88,172	76%	38,620	6,148	32,472
65	70	68	20	2,669	0	0	0	3,454,079	0	0	0	3,454,079	910	0	0	19,110	820	42	2,849	0	2,891	3,985	0	0	3,985	81%	2,611	144,349	42,511	101,838	84%	45,341	8,826	36,515
70	75	72	23	3,010	0	0	0	3,914,106	0	0	0	3,914,106	1,070	0	0	21,740	720	42	3,413	0	3,455	4,657	0	0	4,657	92%	3,204	164,885	48,969	115,916	92%	52,361	9,341	43,024
75	80	78	25	3,366	0	0	0	4,414,133	0	0	0	4,414,133	1,240	0	0	24,560	620	42	3,914	0	3,956	5,529	0	0	5,529	100%	3,594	180,001	50,051	129,950	100%	59,951	9,951	50,000
80	85	83	28	3,833	0	0	0	4,954,160	0	0	0	4,954,160	1,420	0	0	27,620	420	42	4,365	0	4,407	6,401	0	0	6,401	100%	4,182	205,116	56,802	148,314	100%	69,802	10,802	59,000
85	90	88	31	4,311	0	0	0	5,534,187	0	0	0	5,534,187	1,610	0	0	30,920	220	42	4,826	0	4,868	7,473	0	0	7,473	100%	4,774	220,231	61,458	158,773	100%	78,773	10,773	68,000
90	95	93	34	4,800	0	0	0	6,154,214	0	0	0	6,154,214	1,810	0	0	34,460	120	42	5,287	0	5,329	8,603	0	0	8,603	100%	5,166	240,346	65,307	175,039	100%	89,039	10,039	79,000
95	100	98	36	5,300	0	0	0	6,804,241	0	0	0	6,804,241	2,010	0	0	38,240	160	42	5,748	0	5,790	9,723	0	0	9,723	100%	5,646	260,461	70,656	189,805	100%	99,805	10,805	89,000
100	105	103	39	5,810	0	0	0	7,484,268	0	0	0	7,484,268	2,210	0	0	42,260	200	42	6,209	0	6,251	10,843	0	0	10,843	100%	5,744	280,576	77,301	203,275	100%	109,275	10,275	99,000
				8,740	0	0	0	8,740	0	0	0	8,740	0	0	0	23,583	25,732	518	11,371	0	11,890	35,646	2,417	0	18,243	5,110	457,447	224,537	230,910	24	100,067	60,466	39,602	

chilled water CDD bat temp: 11 °C





Project Name: 0  
 Job Number: 1326  
 Purpose: Savings Calculations  
 Created: N/A  
 Facility: Ottawa Technology Centre  
 Facility Code: OTC  
 Facility Area: 67,740 ft2  
 Opportunity Name: YSD on Domestic Water Booster Pump

Select Measure Name:

Utility Breakout		Meter
Space Heating		
Space Cooling		
Ventilation		
Water Heating		
Lighting		
Cooking		
Refrigeration		
Office equipment and Plug Load		
Other		

Table S.1: Savings Summary Table

Meter	BOSS Meter Name	Utility	Utility Cons. or Demand	Component Cons. or Demand	% of Total Cons. or Demand	Retrofit Cons. or Demand	Savings			Units	Percent Savings	Annual Savings	Annual Energy Savings	\$3,588
							Base	Summer	Winter					
M01	Electricity	Electricity	0	0	0	0				KW	#DW/0f	\$0.00	Additional Annual Savings	
M02	Electricity	Electricity	13,217,201	76,582	0	43,047	33,534			KWh	0.25%	\$3,588.15	Total Annual Savings	\$3,588
M03	High temperature Hot Water	Steam	23,026	0	0	0				GJ	0.00%	\$0.00	Incentives	
M04	Chilled Water	Chilled Water	11,895	0	0	0				GJ	0.00%	\$0.00		
M05	Domestic Water	Water	37,792	0	0	0				m³	0.00%	\$0.00		
M06	Natural Gas	Nat Gas	35,009	0	0	0				m³	0.00%	\$0.00		

End S.1  
Savings

Start	Stop	Average	Avg I (°C)	Total	M01 Base	M01 Summer	M01 Winter	M01 Total	M02 Base	M02 Summer	M02 Winter	M02 Total	M03 Base	M03 Summer	M03 Winter	M03 Total	M04 Base	M04 Summer	M04 Winter	M04 Total	M05 Base	M05 Summer	M05 Winter	M05 Total	M06 Base	M06 Summer	M06 Winter	M06 Total	
-35	-30	-33	-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-30	-25	-28	-33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-25	-20	-23	-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-20	-15	-18	-28	0	0	0	0	0	150	0	0	150	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
-15	-10	-13	-25	18	0	0	0	0	27,381	0	0	27,381	4	0	0	198	203	1	0	1	74	0	0	74	3	0	595	598	
-10	-5	-8	-22	104	0	0	0	0	156,170	0	0	156,170	26	0	0	1,049	1,074	6	0	6	425	0	0	425	16	0	3,120	3,137	
-5	0	-3	-19	168	0	0	0	0	251,672	0	0	251,672	41	0	0	1,556	1,597	10	0	10	684	0	0	684	26	0	4,591	4,617	
0	5	3	-16	225	0	0	0	0	336,220	0	0	336,220	55	0	0	1,899	1,954	13	0	13	914	0	0	914	35	0	5,549	5,585	
5	10	8	-14	278	0	0	0	0	415,778	0	0	415,778	68	0	0	2,126	2,194	16	0	16	1,131	0	0	1,131	43	0	6,140	6,184	
10	15	13	-11	341	0	0	0	0	510,609	0	0	510,609	84	0	0	2,338	2,422	20	0	20	1,389	0	0	1,389	53	0	6,653	6,707	
15	20	18	-8	469	0	0	0	0	701,833	0	0	701,833	115	0	0	2,839	2,955	28	0	28	1,909	0	0	1,909	73	0	7,926	7,999	
20	25	23	-5	581	0	0	0	0	869,207	0	0	869,207	143	0	0	3,053	3,195	34	0	34	2,364	0	0	2,364	91	0	8,305	8,397	
25	30	28	-3	524	0	0	0	0	783,491	0	0	783,491	129	0	0	2,333	2,462	31	0	31	2,131	0	0	2,131	82	0	6,126	6,207	
30	35	33	0	570	0	0	0	0	853,293	0	0	853,293	140	0	0	2,086	2,226	34	0	34	2,321	0	0	2,321	89	0	5,189	5,278	
35	40	38	3	651	0	0	0	0	974,003	0	0	974,003	160	0	0	1,861	2,021	39	0	39	2,649	0	0	2,649	102	0	4,231	4,332	
40	45	43	6	592	0	0	0	0	885,318	0	0	885,318	145	0	0	1,219	1,365	35	0	35	2,408	0	0	2,408	92	0	2,307	2,400	
45	50	48	9	575	0	0	0	0	860,050	0	0	860,050	141	0	0	725	867	34	0	34	2,339	0	0	2,339	90	0	747	837	
50	55	53	11	646	0	0	0	0	966,091	0	0	966,091	159	0	0	299	458	38	116	154	2,627	0	0	2,627	101	0	0	101	
55	60	58	14	692	0	0	0	0	1,036,024	0	0	1,036,024	170	0	0	1,701	1,810	41	1,010	0	1,051	2,818	0	0	2,818	108	0	0	108
60	65	63	17	733	0	0	0	0	1,096,783	0	0	1,096,783	180	0	0	180	43	2,006	0	2,050	2,983	170	0	3,153	115	0	0	115	
65	70	68	20	769	0	0	0	0	1,061,359	0	0	1,061,359	174	0	0	174	42	2,849	0	2,891	2,886	650	0	3,537	111	0	0	111	
70	75	73	23	501	0	0	0	0	749,096	154,549	0	903,645	121	0	0	0	123	39	2,651	0	2,689	2,037	801	0	2,839	78	0	0	78
75	80	78	25	246	0	0	0	0	367,438	160,039	0	527,476	60	0	0	0	60	15	1,614	0	1,629	999	561	0	1,960	38	0	0	38
80	85	83	28	103	0	0	0	0	154,459	102,683	0	257,141	25	0	0	0	25	6	811	0	817	420	306	0	727	16	0	0	16
85	90	88	31	28	0	0	0	0	42,313	37,829	0	80,143	7	0	0	0	7	2	258	0	260	115	103	0	218	4	0	0	4
90	95	93	34	5	0	0	0	0	8,223	9,237	0	17,460	1	0	0	0	1	0	57	0	58	22	24	0	46	1	0	0	1
95	100	98	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	105	103	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>8,760</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13,106,960</b>	<b>464,337</b>	<b>0</b>	<b>13,571,297</b>	<b>2,154</b>	<b>0</b>	<b>23,583</b>	<b>25,737</b>	<b>518</b>	<b>11,371</b>	<b>0</b>	<b>11,890</b>	<b>35,646</b>	<b>2,617</b>	<b>0</b>	<b>38,263</b>	<b>1,369</b>	<b>0</b>	<b>61,484</b>	<b>62,852</b>	

booster pump info  
 P-29 (secondary) 15.0 hp 67%

P-28 (primary) 7.5 hp 33%

total power 12.6 kW  
 kW/HP 0.746  
 motor load factor 75%  
 days per year 365  
 min. pump speed 60%

Hour of Day	office buildings - (ASHRAE application handbook)	% water demand	Existing Conditions		Retrofit		Savings		
			DCWP-1 Cons - kWh	DCWP-2 Cons - kWh	DCWP-1 Cons - kWh	% of Total Pump Flow	DCWP-2 Pump Speed %	Pump Cons - kWh	
1	0.01	7%	1,532	0	588	0%	0%	974	
2	0.01	7%	1,532	0	588	0%	0%	974	
3	0.01	7%	1,532	0	588	0%	0%	974	
4	0.01	7%	1,532	0	588	0%	0%	974	
5	0.01	7%	1,532	0	588	0%	0%	974	
6	0.01	7%	1,532	0	588	0%	0%	974	
7	0.01	7%	1,532	0	588	0%	0%	974	
8	0.05	36%	1,532	3,063	1,532	2%	60%	1,948	
9	0.08	57%	1,532	3,063	1,532	24%	60%	1,115	1,948
10	0.08	57%	1,532	3,063	1,532	24%	60%	1,115	1,948
11	0.06	43%	1,532	3,063	1,532	10%	60%	1,115	1,948
12	0.07	50%	1,532	3,063	1,532	17%	60%	1,115	1,948
13	0.14	100%	1,532	3,063	1,532	67%	100%	3,073	-10
14	0.09	64%	1,532	3,063	1,532	31%	60%	1,115	1,948
15	0.11	79%	1,532	3,063	1,532	45%	68%	1,390	1,673
16	0.10	71%	1,532	3,063	1,532	38%	60%	1,115	1,948
17	0.11	79%	1,532	3,063	1,532	45%	68%	1,390	1,673
18	0.06	43%	1,532	3,063	1,532	10%	60%	1,115	1,948
19	0.05	36%	1,532	3,063	1,532	2%	60%	1,115	1,948
20	0.07	50%	1,532	3,063	1,532	17%	60%	1,115	1,948
21	0.02	14%	1,532	0	588	0%	60%	0	974
22	0.01	7%	1,532	0	588	0%	60%	0	974
23	0.01	7%	1,532	0	588	0%	60%	0	974
24	0.01	7%	1,532	0	588	0%	60%	0	974
			<b>36,759</b>	<b>39,822</b>	<b>26,044</b>			<b>17,004</b>	<b>33,534</b>

Project Name: 0  
 Job Number: 1326  
 Purpose: Savings Calculations  
 Created: N/A  
 Facility: Ottawa Technology Centre  
 Facility Code: OTC  
 Facility Area: 6.7.740 R2  
 Opportunity Name: VSD on Heating Coil Circulator

Select Measure Name:

Utility Breakout		Meter
Space Heating		
Space Cooling		
Ventilation		
Water Heating		
Lighting		
Cooking		
Refrigeration		
Office Equipment and Plug Load		
Other		

Table S.1: Savings Summary Table

Meter	BOSS Meter Name	Utility	Utility Cons. or Demand	Component Cons. or Demand	% of Total Cons. or Demand	Retrofit Cons. or Demand	Savings			Units	Percent Savings	Annual Savings	Annual Energy Savings \$1,326	Additional Annual Savings \$1,326	Total Annual Savings \$1,326	Incentives
							Base	Summer	Winter							
M02	Electricity	Electricity	13,217,201	32,126	0	19,736			12,390	kWh	0.09%	\$1,325.97				
M03	High Temperature Hot Water	Steam	23,026		0					GJ	0.00%	\$0.00				
M04	Chilled Water	Water	11,895		0	0				GJ	0.00%	\$0.00				
M05	Domestic Water	Water	37,792		0	0				m³	0.00%	\$0.00				
M06	Natural Gas	Nat Gas	55,009		0	0				m³	0.00%	\$0.00				

hp kW  
 P-22 10 5.6

HDD balance temp 13 °C

End S.1

Savings

Start	Stop	Average	Avg T (°C)	Total	M01 Base	M01 Summer	M01 Winter	M01 Total	M02 Base	M02 Summer	M02 Winter	M02 Total	M03 Base	M03 Summer	M03 Winter	M03 Total	M04 Base	M04 Summer	M04 Winter	M04 Total	M05 Base	M05 Summer	M05 Winter	M05 Total	M06 Base	M06 Summer	M06 Winter	M06 Total	Existing Pump Cons. - kWh	Heating Coil Load - %	Pump w/ VFD cons. - kWh		
-35	-30	-33	-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100%	0	
-30	-25	-28	-33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100%	0
-25	-20	-23	-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100%	0
-20	-15	-18	-28	0	0	0	0	0	150	0	0	150	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4	4	1	100%	1		
-15	-10	-13	-25	18	0	0	0	0	37,281	0	0	37,281	4	0	198	203	1	0	0	1	74	0	0	74	3	0	595	598	102	100%	102		
-10	-5	-8	-22	104	0	0	0	0	156,170	0	0	156,170	26	0	1,049	1,074	6	0	6	425	0	0	425	16	0	3,120	3,137	584	100%	584			
-5	0	-3	-19	168	0	0	0	0	251,672	0	0	251,672	41	0	1,556	1,597	10	0	10	684	0	0	684	26	0	4,591	4,617	941	100%	941			
0	5	3	-16	225	0	0	0	0	336,220	0	0	336,220	55	0	1,899	1,954	13	0	13	914	0	0	914	35	0	5,549	5,585	1,257	100%	1,257			
5	10	8	-14	278	0	0	0	0	415,778	0	0	415,778	68	0	2,126	2,194	16	0	16	1,131	0	0	1,131	43	0	6,140	6,184	1,555	96%	1,423			
10	15	13	-11	341	0	0	0	0	510,609	0	0	510,609	84	0	2,338	2,422	20	0	20	1,389	0	0	1,389	53	0	6,653	6,707	1,909	92%	1,596			
15	20	18	-8	469	0	0	0	0	701,833	0	0	701,833	115	0	2,839	2,955	28	0	28	1,909	0	0	1,909	73	0	7,526	7,599	2,624	88%	1,596			
20	25	23	-5	581	0	0	0	0	869,207	0	0	869,207	143	0	3,693	3,936	34	0	34	2,364	0	0	2,364	91	0	8,306	8,397	3,250	84%	2,442			
25	30	28	-3	724	0	0	0	0	783,491	0	0	783,491	129	0	2,333	2,462	31	0	31	2,131	0	0	2,131	82	0	6,126	6,207	2,930	80%	1,828			
30	35	33	0	870	0	0	0	0	853,293	0	0	853,293	140	0	2,086	2,226	34	0	34	2,311	0	0	2,311	89	0	5,189	5,278	3,191	70%	1,296			
35	40	38	3	951	0	0	0	0	974,003	0	0	974,003	160	0	1,861	2,031	39	0	39	2,649	0	0	2,649	102	0	4,231	4,332	3,642	72%	1,643			
40	45	43	6	992	0	0	0	0	885,318	0	0	885,318	145	0	1,219	1,365	35	0	35	2,408	0	0	2,408	92	0	2,307	2,400	3,311	68%	1,503			
45	50	48	9	975	0	0	0	0	860,050	0	0	860,050	141	0	725	867	34	0	34	2,339	0	0	2,339	90	0	747	837	3,216	64%	1,308			
50	55	53	11	946	0	0	0	0	966,691	0	0	966,691	159	0	299	458	38	116	154	2,627	0	0	2,627	101	0	101	3,613	100%	1,315				
55	60	58	14	692	0	0	0	0	1,036,024	0	0	1,036,024	170	0	0	170	41	1,010	1,051	2,818	0	0	2,818	108	0	0	108	0	0	0%	0		
60	65	63	17	733	0	0	0	0	1,096,783	0	0	1,096,783	180	0	0	180	43	2,006	2,050	2,983	170	0	3,153	115	0	0	115	0	0	0%	0		
65	70	68	20	709	0	0	0	0	1,051,359	0	0	1,051,359	174	0	0	174	42	2,849	2,891	2,886	150	0	3,537	111	0	0	111	0	0	0%	0		
70	75	73	23	501	0	0	0	0	749,096	154,549	0	903,645	123	0	0	123	30	2,651	0	2,680	2,037	801	0	2,839	78	0	0	78	0	0	0%	0	
75	80	78	25	246	0	0	0	0	367,438	160,039	0	527,476	60	0	0	60	15	1,614	0	1,629	999	561	0	1,560	38	0	0	38	0	0	0%	0	
80	85	83	28	103	0	0	0	0	154,459	102,683	0	257,141	25	0	0	25	6	811	0	817	420	306	0	727	16	0	0	16	0	0	0%	0	
85	90	88	31	28	0	0	0	0	42,313	37,829	0	80,143	7	0	0	7	2	258	0	260	115	103	0	218	4	0	0	4	0	0	0%	0	
90	95	93	34	5	0	0	0	0	8,223	9,237	0	17,460	1	0	0	1	0	57	0	58	22	24	0	46	1	0	0	1	0	0	0%	0	
95	100	98	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	0
100	105	103	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	0
<b>8,760</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>####</b>	<b>464,337</b>	<b>0</b>	<b>13,571,297</b>	<b>2,154</b>	<b>0</b>	<b>23,583</b>	<b>25,737</b>	<b>518</b>	<b>11,371</b>	<b>0</b>	<b>11,890</b>	<b>35,646</b>	<b>2,617</b>	<b>0</b>	<b>38,263</b>	<b>1,369</b>	<b>0</b>	<b>61,484</b>	<b>62,852</b>	<b>32,126</b>	<b>0</b>	<b>19,736</b>	<b>Savings</b>	
																																<b>22,290</b>	

Project Name: 0  
 Job Number: J326  
 Purpose: Savings Calculations  
 Created: N/A  
 Facility: Ottawa Technology Centre  
 Facility Code: OTC  
 Facility Area: 67,740 R2  
 Opportunity Name: VSD's on Heating Distribution Pumps

Select Measure Name:

Utility Breakout	Meter
Space Heating	
Space Cooling	
Ventilation	
Water Heating	
Lighting	
Cooking	
Refrigeration	
Office Equipment and Plug Load	
Other	

Table S.1.1 Savings Summary Table

Meter	BOSS Meter Name	Utility	Utility Cons. or Demand	Component Cons. or Demand	% of Total Cons. or Demand	Retrofit Cons. or Demand	Savings			Units	Percent Savings	Annual Savings	Annual Energy Savings
							Base	Summer	Winter				
M01	Electricity	Electricity	0	0	0	207,227				KWh	0.98%	\$13,920.54	\$13,921
M02	Electricity	Electricity	13,217,201	337,325	0	0			130,098				Additional Annual Savings
M03	High Temperature Hot Water	Steam Chilled	23,026	0	0	0				GJ	0.00%	\$0.00	Total Annual Savings
M04	Chilled Water	Water	11,895	0	0	0				GJ	0.00%	\$0.00	Incentives
M05	Domestic Water	Water	37,792	0	0	0				m³	0.00%	\$0.00	
M06	Natural Gas	Nat Gas	55,009	0	0	0				m³	0.00%	\$0.00	

	HP	KW
P-52 (A and B)	25	14
P-50 (A and B)	15	8
P-49 (A and B)	20	11
P-48 (A and B)	25	14
P-46 (A and B)	20	11
	106	59
M03 HDDbalance temp	13	°C

Only 1 pump from each set (A and B) operates at any given time.

End S.1 Savings

Start	Stop	Average	Avg T (°C)	Total	M01 Base	M01 Summer	M01 Winter	M01 Total	M02 Base	M02 Summer	M02 Winter	M02 Total	M03 Base	M03 Summer	M03 Winter	M03 Total	M04 Base	M04 Summer	M04 Winter	M04 Total	M05 Base	M05 Summer	M05 Winter	M05 Total	M06 Base	M06 Summer	M06 Winter	M06 Total	Existing Pump Cons. kWh	Heating Coil Load - %	Pump w/ VFD cons. - kWh	
-35	-30	-33	-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-30	-25	-28	-33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-25	-20	-23	-28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-20	-15	-18	-28	0	0	0	0	0	150	0	0	150	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	4	4	6	100%	
-15	-10	-13	-25	18	0	0	0	0	27,381	0	0	27,381	4	0	198	203	1	0	0	1	74	0	0	74	3	0	595	598	1,075	100%	1,075	
-10	-5	-8	-22	104	0	0	0	0	156,170	0	0	156,170	26	0	1,049	1,074	6	0	0	6	425	0	0	425	16	0	3,120	3,137	6,132	100%	6,132	
-5	0	-3	-19	168	0	0	0	0	251,672	0	0	251,672	41	0	1,556	1,597	10	0	0	10	684	0	0	684	26	0	4,591	4,617	9,882	100%	9,882	
0	5	3	-16	225	0	0	0	0	336,220	0	0	336,220	55	0	1,899	1,954	13	0	0	13	914	0	0	914	35	0	5,549	5,585	13,201	100%	13,201	
5	10	8	-14	278	0	0	0	0	415,778	0	0	415,778	68	0	2,126	2,194	16	0	0	16	1,131	0	0	1,131	43	0	6,140	6,184	16,325	96%	14,946	
10	15	13	-11	341	0	0	0	0	510,609	0	0	510,609	84	0	2,338	2,422	20	0	0	20	1,389	0	0	1,389	53	0	6,633	6,707	20,048	92%	16,754	
15	20	18	-8	469	0	0	0	0	701,833	0	0	701,833	115	0	2,839	2,955	28	0	0	28	1,909	0	0	1,909	73	0	7,926	7,999	27,557	88%	20,656	
20	25	23	-5	581	0	0	0	0	869,207	0	0	869,207	143	0	3,053	3,196	34	0	0	34	2,364	0	0	2,364	91	0	8,306	8,397	34,128	84%	23,546	
25	30	28	-3	524	0	0	0	0	783,491	0	0	783,491	129	0	2,333	2,462	31	0	0	31	2,131	0	0	2,131	82	0	6,126	6,207	30,763	80%	19,196	
30	35	33	0	570	0	0	0	0	853,293	0	0	853,293	140	0	2,086	2,226	34	0	0	34	2,321	0	0	2,321	89	0	5,189	5,278	33,503	76%	18,853	
35	40	38	3	651	0	0	0	0	974,003	0	0	974,003	160	0	1,861	2,021	39	0	0	39	2,649	0	0	2,649	102	0	4,231	4,332	38,243	72%	19,354	
40	45	43	6	592	0	0	0	0	885,318	0	0	885,318	145	0	1,219	1,365	35	0	0	35	2,408	0	0	2,408	92	0	2,307	2,400	34,761	68%	15,784	
45	50	48	9	575	0	0	0	0	860,050	0	0	860,050	141	0	725	867	34	0	0	34	2,339	0	0	2,339	90	0	747	837	33,769	64%	13,734	
50	55	53	11	546	0	0	0	0	966,091	0	0	966,091	159	0	299	458	38	116	0	154	2,627	0	0	2,627	101	0	0	101	37,932	60%	13,807	
55	60	58	14	692	0	0	0	0	1,036,024	0	0	1,036,024	170	0	0	170	41	1,010	0	1,051	2,818	0	0	2,818	108	0	0	108	0	0	0	
60	65	63	17	733	0	0	0	0	1,096,783	0	0	1,096,783	180	0	0	180	43	2,006	0	2,050	2,983	170	0	0	3,153	115	0	0	115	0	0	0
65	70	68	20	709	0	0	0	0	1,061,559	0	0	1,061,559	174	0	0	174	42	2,849	0	2,891	2,886	650	0	0	3,537	111	0	0	111	0	0	0
70	75	73	23	501	0	0	0	0	749,096	154,549	0	903,645	123	0	123	39	2,651	0	2,680	2,037	891	0	0	2,889	78	0	0	78	0	0	0	
75	80	78	25	246	0	0	0	0	367,438	160,039	0	527,476	60	0	60	15	1,614	0	1,629	999	561	0	0	1,560	38	0	0	38	0	0	0	
80	85	83	28	103	0	0	0	0	154,459	102,683	0	257,141	25	0	25	6	811	0	817	420	306	0	0	727	16	0	0	16	0	0	0	
85	90	88	31	78	0	0	0	0	43,313	37,828	0	81,141	7	0	7	2	258	0	260	115	103	0	0	218	4	0	0	4	0	0	0	
90	95	93	34	5	0	0	0	0	8,223	9,237	0	17,460	1	0	1	0	57	0	58	22	24	0	0	46	1	0	0	1	0	0	0	
95	100	98	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
100	105	103	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>8,760</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>464,337</b>	<b>0</b>	<b>0</b>	<b>464,337</b>	<b>2,154</b>	<b>0</b>	<b>23,583</b>	<b>25,737</b>	<b>518</b>	<b>11,371</b>	<b>0</b>	<b>11,890</b>	<b>35,646</b>	<b>2,617</b>	<b>0</b>	<b>38,263</b>	<b>1,369</b>	<b>0</b>	<b>61,484</b>	<b>62,852</b>	<b>337,325</b>	<b>0</b>	<b>207,227</b>	<b>130,098</b>

Project Name: 0  
 Job Number: 2385  
 Purpose: Savings Calculations  
 Created: N/A  
 Facility: Ottawa Technology Centre  
 Facility Code: OTC  
 Facility Area: 657,940 sq  
 Opportunity Name: Schedule Operation and Install DCV on AHU-Link

Select Measure Name:

Utility Breakout	
Meter	
Electric Heating	
Space Cooling	
Ventilation	
Water Heating	
Laundry	
Other	
Refrigeration	
OTEC Equipment	
and Plug Load	
Other	

Table S.1: Savings Summary Table

Meter	BOSS Meter Name	Utility	Utility Cons. or Demand	Component Cons. or Demand	% of Total Cons. or Demand	Rebuild Cons. or Demand	Savings			Units	Percent Savings	Annual Savings	Additional Annual Savings
							Base	Summer	Winter				
M01	Electricity	Electricity	11,217,201	41,807	0	31,355	10,962			kWh	0.08%	\$1,118.34	\$2,986
M02	High Temperature Hot Water	Steam	23,026	112	0	63		51		GJ	0.22%	\$1,845.68	
M04	Chilled Water	Chilled Water	11,895	3	0	2		1		GJ	0.01%	\$24.19	
M05	Domestic Water	Water	37,792	0	0	0				m <sup>3</sup>	0.00%	\$0.00	
M06	Natural Gas	Nat Gas	35,059	0	0	0				m <sup>3</sup>	0.00%	\$0.00	

CFM/HP 750

AHU-Link (cooling only)

HP CFM kW

SF 5 3,750 3.0

RF 3 1.8

OAD % 10%

Summer IAT 69 °F

Winter IAT 72

Heat Transfer Efficiency 88%

Retrofit average OAD % 7.5%

M03 hot bal. temp 13

M04 cold bal. temp 11

Start	Stop	Average	Avg T (°C)	Total	M01 Base	M01 Summer	M01 Winter	M01 Total	M02 Base	M02 Summer	M02 Winter	M02 Total	M03 Base	M03 Summer	M03 Winter	M03 Total	M04 Base	M04 Summer	M04 Winter	M04 Total	M05 Base	M05 Summer	M05 Winter	M05 Total	M06 Base	M06 Summer	M06 Winter	M06 Total	Fan Cons. - kWh	Heating/Cooling Load - MBH	Heating Consumption - GJ	Cooling Consumption - GJ	Link AHU Ratio Years (5am-11pm)	Heating/Cooling Load - MBH	Heating Consumption - GJ	Cooling Consumption - GJ	Fan Cons. - kWh					
-35	-30	-33	-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-30	-25	-28	-33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-25	-20	-23	-28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-20	-15	-18	-23	0	0	0	0	0	150	0	0	150	0	0	0	150	0	0	0	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-15	-10	-13	-18	0	0	0	0	0	27,381	0	0	27,381	0	0	0	27,381	0	0	0	27,381	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-10	-5	-8	-12	104	0	0	0	104	156,170	0	0	156,170	0	0	0	156,170	0	0	0	156,170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-5	0	-3	-10	106	0	0	0	106	333,672	0	0	333,672	0	0	0	333,672	0	0	0	333,672	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	5	3	-16	275	0	0	0	275	336,270	0	0	336,270	0	0	0	336,270	0	0	0	336,270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
5	10	8	-14	278	0	0	0	278	615,738	0	0	615,738	0	0	0	615,738	0	0	0	615,738	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
10	15	13	-11	343	0	0	0	343	1,030,609	0	0	1,030,609	0	0	0	1,030,609	0	0	0	1,030,609	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
15	20	18	-8	369	0	0	0	369	1,501,823	0	0	1,501,823	0	0	0	1,501,823	0	0	0	1,501,823	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
20	25	23	-5	381	0	0	0	381	1,969,207	0	0	1,969,207	0	0	0	1,969,207	0	0	0	1,969,207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
25	30	28	-3	524	0	0	0	524	2,783,491	128	0	2,783,491	128	0	0	2,783,491	128	0	0	2,783,491	128	0	0	1,231	82	0	6,126	6,207	2,999	18	11	0	391	14	6	0	1,887	0	0			
30	35	33	0	670	0	0	0	670	3,532,293	150	0	3,532,293	150	0	0	3,532,293	150	0	0	3,532,293	150	0	0	2,351	89	0	5,389	5,478	2,772	16	11	0	412	12	6	0	2,019	0	0			
35	40	38	3	851	0	0	0	851	4,774,003	0	0	4,774,003	160	0	0	4,774,003	160	0	0	4,774,003	160	0	0	2,649	102	0	4,231	4,332	3,107	14	13	0	472	10	6	0	2,252	0	0			
40	45	43	6	991	0	0	0	991	6,056,318	0	0	6,056,318	145	0	0	6,056,318	145	0	0	6,056,318	145	0	0	2,468	85	0	3,207	3,300	2,824	13	8	0	430	8	5	0	2,513	0	0			
45	50	48	9	1,175	0	0	0	1,175	7,860,050	141	0	7,860,050	141	0	0	7,860,050	141	0	0	7,860,050	141	0	0	2,339	90	0	2,937	3,027	2,763	10	7	0	388	7	3	0	1,851	0	0			
50	55	53	11	1,440	0	0	0	1,440	1,060,091	0	0	1,060,091	150	0	0	1,060,091	150	0	0	1,060,091	150	0	0	2,627	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
55	60	58	14	1,692	0	0	0	1,692	1,406,034	0	0	1,406,034	170	0	0	1,406,034	170	0	0	1,406,034	170	0	0	2,815	105	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
60	65	63	17	2,033	0	0	0	2,033	1,095,783	180	0	1,095,783	180	0	0	1,095,783	180	0	0	1,095,783	180	0	0	2,550	2,983	170	0	1,153	115	0	0	115	0	0	0	545	0	0	0	2,602	0	0
65	70	68	20	2,009	0	0	0	2,009	1,061,379	174	0	1,061,379	174	0	0	1,061,379	174	0	0	1,061,379	174	0	0	3,337	131	0	0	131	0	0	0	131	0	0	0	570	1	0	0	2,720	0	0
70	75	73	23	2,601	0	0	0	2,601	749,096	154,549	0	903,645	173	0	0	123	30	2,651	0	2,680	2,037	801	0	0	2,839	78	0	0	78	0	0	0	1	461	-1	0	1	2,201	0	0		
75	80	78	26	2,946	0	0	0	2,946	587,838	160,039	0	747,877	60	0	0	60	13	1,014	0	1,028	909	561	0	0	1,560	38	0	0	38	0	0	0	1	241	-3	0	1	1,149	0	0		
80	85	83	28	3,033	0	0	0	3,033	154,459	102,683	0	257,143	0	0	0	25	4	1,111	0	1,117	420	306	0	0	277	16	0	0	16	0	0	0	1	102	-4	0	1	689	0	0		
85	90	88	31	28	0	0	0	28	42,313	37,829	0	80,143	7	0	0	7	2	298	0	298	115	103	0	0	218	4	0	0	4	0	0	0	0	28	-5	0	0	335	0	0		
90	95	93	34	5	0	0	0	5	9,261	9,837	0	17,660	1	0	0	1	0	37	0	37	24	24	0	0	46	1	0	0	1	0	0	0	1	7	0	0	0	26	0	0		
95	100	98	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
100	105	103	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
				8,700	0	0	0	0	###	464,337	0	#####	2,154	0	23,283	25,727	518	11,371	0	11,890	35,646	2,617	0	38,263	1,369	0	63,484	62,852	41,807				112	3			61	2	31,355			

Heating Savings: 51 GJ's  
 cooling savings: 0.4 GJ's  
 Fan Savings: 16,452 kWh

948.1 GJ/MBTU



Project Name: 0  
 Job Number: 1326  
 Purpose: Savings Calculations  
 Created: N/A  
 Facility: Ottawa Technology Centre  
 Facility Code: OTC  
 Facility Area: 67,740 ft2  
 Opportunity Name: Schedule DHW Recirculation Pumps

Select Measure Name:  

Utility Breakout Meter
Space Heating
Space Cooling
Ventilation
Water Heating
Lighting
Cooking
Refrigeration
Office Equipment and Plug Load
Other

Table S.1: Savings Summary Table

Meter	BOSS Meter Name	Utility	Utility Cons. or Demand	Component Cons. or Demand	% of Total Cons. or Demand	Retrofit Cons. or Demand	Savings			Units	Percent Savings	Annual Savings	Annual Energy Savings
							Base	Summer	Winter				
M01	Electricity	Electricity	0	0	0	0				kWh	#DIV/0!	\$0.00	\$2,420
M02	Electricity	Electricity	13,217,201	5,230	0	3,051		2,179		kWh	0.02%	\$233.16	
M03	High Temperature Hot Water	Steam	23,026	146	0	85		61		GJ	0.26%	\$2,186.89	Incentives
M04	Chilled Water	Chilled Water	11,895	0	0	0				GJ	0.00%	\$0.00	
M05	Domestic Water	Water	37,792	0	0	0				m³	0.00%	\$0.00	
M06	Natural Gas	Nat Gas	35,009	0	0	0				m³	0.00%	\$0.00	

End S.1 Savings

Start	Stop	Average	Avg T (°C)	Total	M01			M02			M03						
					M01 Base	Summer	M01 Winter	M01 Total	M02 Base	Summer	M02 Winter	M03 Base	Summer	M03 Winter			
-33	-30	-33	-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-30	-25	-28	-33	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-25	-20	-23	-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-20	-15	-18	-28	0	0	0	0	0	150	0	0	0	0	0	0	0	0
-15	-10	-13	-25	18	0	0	0	0	37,381	0	0	0	0	0	0	0	0
-10	-5	-8	-22	104	0	0	0	0	156,170	0	0	0	0	0	0	0	0
-5	0	-3	-19	168	0	0	0	0	251,672	0	0	0	0	0	0	0	0
0	5	3	-16	226	0	0	0	0	336,230	0	0	0	0	0	0	0	0
5	10	8	-14	278	0	0	0	0	415,778	0	0	0	0	0	0	0	0
10	15	13	-11	341	0	0	0	0	510,609	0	0	0	0	0	0	0	0
15	20	18	-8	469	0	0	0	0	701,833	0	0	0	0	0	0	0	0
20	25	23	-5	581	0	0	0	0	869,207	0	0	0	0	0	0	0	0
25	30	28	-3	524	0	0	0	0	783,491	0	0	0	0	0	0	0	0
30	35	33	0	570	0	0	0	0	853,293	0	0	0	0	0	0	0	0
35	40	38	3	651	0	0	0	0	974,003	0	0	0	0	0	0	0	0
40	45	43	6	592	0	0	0	0	885,318	0	0	0	0	0	0	0	0
45	50	48	9	575	0	0	0	0	860,050	0	0	0	0	0	0	0	0
50	55	53	11	646	0	0	0	0	966,091	0	0	0	0	0	0	0	0
55	60	58	14	692	0	0	0	0	1,036,024	0	0	0	0	0	0	0	0
60	65	63	17	733	0	0	0	0	1,096,783	0	0	0	0	0	0	0	0
65	70	68	20	709	0	0	0	0	1,061,359	0	0	0	0	0	0	0	0
70	75	73	23	501	0	0	0	0	749,096	154,549	0	0	0	0	0	0	0
75	80	78	25	246	0	0	0	0	367,438	160,039	0	0	0	0	0	0	0
80	85	83	28	103	0	0	0	0	154,458	102,683	0	0	0	0	0	0	0
85	90	88	31	28	0	0	0	0	42,313	37,829	0	0	0	0	0	0	0
90	95	93	34	5	0	0	0	0	8,223	9,237	0	0	0	0	0	0	0
95	100	98	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	105	103	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				8,760	0	0	0	0	#####	464,337	0	0	0	0	0	0	0

Units	IP	SI or IP
Ambient Temperature	68	F
Water Temperature	120	F
Delta T	52	F

<-- Typical Value, Change if necessary

<-- Typical Value, Change if necessary

Pipe Size - in	Heat Loss - Btu/(hr-ft)	Length of Pipe - ft	DHW Plant Efficiency - %	Hours per Day	Hours per Year	Heat Loss - Btu	Retrofit Conditions			Savings
							Heating Value of Fuel - Btu/m³	Heat Loss - GJ	Heat Loss - Btu/(hr-ft)	
0.00	6.0	0	95%	24	8,760	0	7.9	0	0	0
0.75	22.3	0	95%	24	8,760	0	13.1	0	0	0
1.00	28.2	0	95%	24	8,760	0	15.1	0	0	0
1.25	33.4	0	95%	24	8,760	0	17.4	0	0	0
1.50	38.4	380	95%	24	8,760	131,059,611	948,100,000	346	18.5	62,806,701
1.75	43.4	380	95%	24	8,760	76,491,240	948,100,000	85	18.9	35,838,392
2.00	48.3	0	95%	24	8,760	0	948,100,000	0	25.1	0
3.00	69.8	0	95%	24	8,760	0	948,100,000	0	35.3	0
4.00	89.1	0	95%	24	8,760	0	948,100,000	0	36.0	0

When sizing DHW heaters, heat loss from pipes should be considered

heat loss Savings: 61 GJ

From ASHRAE Fundamentals 2007 Chapter 49: Service Water, Page 49.6, Table 2  
 Approximate Heat Loss from Copper Piping at 140°F Water Temp, 70°F Ambient

From ASHRAE Fundamentals 2003 Chapter 49: Service Water, Page 49.4, Table 1  
 Approximate Heat Loss from Copper Piping at 60°C Water Temp, 20°C Ambient

Pipe Nominal Size - in	Bare Copper Tubing - Btu/(hr-ft)	Bare Copper Tubing UA - Btu/(hr-ft²-F)	12"mm Glass Fibre Insulated Copper Tubing - Btu/(hr-ft)	1/2"mm Glass Fibre Insulated Copper Tubing UA - Btu/(hr²-F)	Nominal Pipe Size - mm	Bare Copper Tubing - W/(m²K)	Bare Copper Tubing UA - W/(m²K)	13mm Glass Fibre Insulated Copper Tubing - W/m	13mm Glass Fibre Insulated Copper Tubing UA - W/(m²K)
1.00	38.0	0.543	20.3	0.290	25	36.5	0.913	19.5	0.488
1.25	45.0	0.643	23.4	0.334	32	43.3	1.081	22.5	0.562
1.50	53.0	0.757	25.4	0.363	40	50.9	1.274	24.4	0.610
2.00	66.0	0.943	29.6	0.423	50	63.4	1.586	28.5	0.711
2.50	80.0	1.143	33.8	0.483	65	76.9	1.923	32.5	0.812
3.00	94.0	1.343	39.5	0.564	80	90.4	2.259	38.0	0.949
4.00	120.0	1.714	48.4	0.691	100	115.4	2.884	46.5	1.163

HP	kW	
DHWP-1	p-3	0.12
DHWP-2	P4-A	0.11
	P4-B	0.11
DHWP-3	P2-A	0.13
	P2-B	0.13
		0.60

existing hours	8,760	per year
existing cons.	5,230	kWh
retrofit hours	14	per day
retrofit cons.	5,110	per year
retrofit cons.	3,051	kWh
savings	2,179	kWh

time	365	days/year
water heating calc	2,729	
full time employees	1.0	oal/person/day
ASHRAE hot water demands	2.4	gal/meals/day
meals per day	819	
standby losses	90%	
DHW heater efficiency	90%	
BTU/GJ	948,100	
HW temp	120	
CW temp	55	
temp diff	65	
water cons.	1,713,266	oal
DHW heating cons	2,066	oal

Project Name: 0  
 Job Number: J236  
 Purpose: Savings Calculations  
 Created: N/A  
 Facility: Chinese Technology Centre  
 Facility Code: OTC  
 Facility Area: 67,740 sq ft  
 Opportunity Name: **Control AHU Cold Deck to Highest/Lowest Demand Temperatures**

Select Measure Name:

Utility Breakout		Meter
Space Heating		
Space Cooling		
Ventilation		
Water Heating		
Lighting		
Cooking		
Refrigeration		
Office Equipment and Plug Load		
Other		

Table S.1: Savings Summary Table

Meter	BOSS Meter Name	Utility	Utility Cons. or Demand	Component Cons. or Demand	% of Total Cons. or Demand	Retrofit Cons. or Demand	Savings			Units	Percent Savings	Annual Savings	Annual Energy Savings
							Base	Summer	Winter				
M02	Electricity	Electricity	0	0	0	0				kWh	100%/0%	\$0.00	\$1,684
M02	Electricity	Electricity	13,217,201	0	0	0				kWh	0.00%	\$0.00	\$1,684
M03	High Temperature Hot Water	Steam	23,026	91	0	48			44	GJ	0.19%	\$1,573.38	Incentives
M04	Chilled Water	Water	11,895	21	0	17		3		GJ	0.03%	\$106.80	
M05	Domestic Water	Water	37,792	0	0	0				m <sup>3</sup>	0.00%	\$0.00	
M06	Natural Gas	Nat Gas	35,009	0	0	0				m <sup>3</sup>	0.00%	\$0.00	

AHU-9	SF:26	10	6	7,500
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G.U.(after DDU) 17% Heat Transfer Efficiency 95%  
 Hot Deck Temp 80 °F  
 Cold Deck Temp 55 °F

End S.1 Savings

Start	Stop	Average	Avg T (°C)	Total	AHU-9 Hours (Sum-Spm Mon-Fri)	% Zones Heating	Hot Deck Heating Load - MBH	Heating Consumption - GJ	% Zones Cooling	Cold Deck Cooling Load - MBH	Cooling Cons. - GJ	Hot Deck Heating Load - MBH	Heating Consumption - GJ	Cold Deck Cooling Load - MBH	Cooling Cons. - GJ	M02 Base	M02 Summer	M02 Winter	M02 Total	M03 Base	M03 Summer	M03 Winter	M03 Total	M04 Base	M04 Summer	M04 Winter	M04 Total	M05 Base	M05 Summer	M05 Winter	M05 Total	M06 Base	M06 Summer	M06 Winter	M06 Total
-35	-30	33	-36	0	0	100%	155	0	0%	0	0.00	155	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-30	-25	-28	-33	0	0	100%	148	0	0%	0	0.00	148	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-25	-20	-23	-30	0	0	100%	141	0	0%	0	0.00	141	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-20	-15	-18	-28	0	0	100%	134	0	0%	0	0.00	134	0	0	0.00	150	0	0	150	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
-15	-10	-13	-25	18	8	100%	127	1	0%	0	0.00	127	1	0	0.00	27,391	0	0	27,391	4	0	198	203	1	0	0	1	24	0	0	24	3	0	27	598
-10	-5	-8	-22	194	43	100%	120	6	0%	0	0.00	120	6	0	0.00	156,170	0	0	156,170	26	0	1,949	1,974	6	0	0	6	425	0	0	425	16	0	3,120	3,137
-5	0	-3	-19	168	64	93%	106	8	7%	0	0.00	99	7	0	0.00	251,672	0	0	251,672	41	0	1,556	1,597	10	0	10	684	0	0	684	26	0	4,991	4,617	
0	5	3	-16	225	89	80%	92	9	13%	0	0.00	89	7	0	0.00	336,220	0	0	336,220	59	0	1,899	1,954	13	0	13	914	0	0	914	35	0	5,240	5,385	
5	10	8	-14	228	99	89%	80	9	20%	0	0.00	82	7	0	0.00	415,778	0	0	415,778	68	0	2,126	2,194	16	0	16	1,131	0	0	1,131	43	0	6,490	6,584	
10	15	13	-11	341	115	73%	68	9	27%	0	0.00	47	6	0	0.00	510,609	0	0	510,609	84	0	2,338	2,422	20	0	20	1,389	0	0	1,389	53	0	6,653	6,707	
15	20	18	-8	469	167	65%	57	11	33%	0	0.00	31	4	0	0.00	610,833	0	0	610,833	115	0	2,829	2,945	28	0	28	1,909	0	0	1,909	72	0	7,906	7,999	
20	25	23	-5	581	189	69%	46	10	40%	0	0.00	21	4	0	0.00	859,207	0	0	859,207	143	0	3,653	3,796	34	0	34	2,364	0	0	2,364	91	0	8,305	8,397	
25	30	28	-3	524	178	53%	39	8	47%	0	0.00	11	2	0	0.00	783,491	0	0	783,491	129	0	2,333	2,462	31	0	31	2,131	0	0	2,131	82	0	6,126	6,207	
30	35	33	0	570	202	43%	31	7	53%	0	0.00	3	1	0	0.00	852,293	0	0	852,293	140	0	2,286	2,236	34	0	34	2,321	0	0	2,321	89	0	5,189	5,278	
35	40	38	3	651	222	40%	23	6	60%	0	0.00	-3	0	0	0.00	974,003	0	0	974,003	160	0	1,861	2,011	39	0	39	2,649	0	0	2,649	102	0	4,231	4,332	
40	45	43	6	592	233	33%	17	4	67%	0	0.00	-7	0	0	0.00	885,318	0	0	885,318	145	0	1,219	1,365	35	0	35	2,408	0	0	2,408	92	0	2,307	2,400	
45	50	48	9	575	188	22%	12	2	73%	0	0.00	-10	0	0	0.00	860,650	0	0	860,650	141	0	725	867	34	0	34	2,339	0	0	2,339	90	0	2,727	2,817	
50	55	53	11	646	232	29%	8	2	80%	0	0.00	-10	0	0	0.00	966,091	0	0	966,091	159	0	2,999	458	38	116	0	154	2,627	101	0	0	0	0	0	101
55	60	58	14	692	233	13%	4	1	87%	-3	0.77	-9	0	0	0.00	1,036,924	0	0	1,036,924	170	0	0	170	41	1,010	0	1,051	2,818	10	0	2,818	108	0	0	108
60	65	63	17	733	251	7%	2	0	93%	-10	2.68	-5	0	0	0.00	1,096,783	0	0	1,096,783	180	0	180	43	2,056	0	2,236	2,983	170	0	3,153	115	0	0	115	
65	70	68	20	709	258	0%	0	0	100%	-17	4.93	0	0	0	0.00	1,061,359	0	0	1,061,359	174	0	0	174	42	2,849	0	2,891	2,886	650	0	3,537	111	0	0	111
70	75	73	23	501	203	0%	0	0	100%	-24	5.42	0	0	0	0.00	749,096	154,549	0	903,645	123	0	0	123	39	2,651	0	2,689	2,037	801	0	2,839	78	0	0	78
75	80	78	25	286	115	0%	0	0	100%	-31	3.96	0	0	0	0.00	387,438	160,039	0	547,476	60	0	60	15	1,614	0	1,629	991	961	0	1,960	38	0	0	38	
80	85	83	28	103	52	0%	0	0	100%	-38	2.19	0	0	0	0.00	154,459	103,683	0	257,141	25	0	0	25	6	811	0	817	450	306	0	727	16	0	0	16
85	90	88	31	28	16	0%	0	0	100%	-45	0.78	0	0	0	0.00	43,313	33,809	0	80,123	7	0	0	7	2	288	0	290	115	103	4	218	4	0	0	4
90	95	93	34	5	2	0%	0	0	100%	-52	0.13	0	0	0	0.00	8,223	5,237	0	13,460	1	0	0	1	0	57	0	58	22	24	0	46	1	0	1	
95	100	98	36	0	0	0%	0	0	100%	-59	0.00	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	105	103	39	0	0	0%	0	0	100%	-65	0.00	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>8,760</b>	<b>3,129</b>	<b>13</b>	<b>1,413</b>	<b>91</b>	<b>15</b>	<b>-343</b>	<b>20.88</b>	<b>1,138</b>	<b>48</b>	<b>-330</b>	<b>17.42</b>	<b>0</b>	<b>13,106,960</b>	<b>464,337</b>	<b>0</b>	<b>###</b>	<b>2,154</b>	<b>0</b>	<b>23,983</b>	<b>25,737</b>	<b>518</b>	<b>11,371</b>	<b>0</b>	<b>11,890</b>	<b>35,646</b>	<b>2,617</b>	<b>0</b>	<b>38,263</b>	<b>1,369</b>	<b>0</b>	<b>61,484</b>	<b>62,852</b>			

948.1 GJ/MBTU

Heating Savings: 44 GJ  
 Cooling Savings: 3 GJ