

PROPERTY CONDITION ASSESSMENT REPORT

123 Inspection Road, Toronto, Ontario

DATE OF INSPECTION: **January 23, 201X** ||

FINAL REPORT SUBMITTED: **February 3, 201X**

COVER PHOTO

Mr. Client Name
Client Company
Client Address
City, Province, Postal Code

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GLOSSARY

January 23, 201X

Property Condition Assessment Report

Property: 123 Inspection Road, Toronto, Ontario

1.0 SUMMARY

This is a property condition assessment report (PCR) of the property at 123 Inspection Road, Toronto, Ontario.

This is a single-storey industrial building covering an estimated 63,000 square feet, as approximated from the roof surface. There are two-storey office portions at the north and west of the building. The offices cover an estimated 6,300 square feet in total.

The visible evidence suggests that the building was constructed in 1969.

The majority of the building is presently used by AAA Company Inc. as offices, a sheet metal fabrication facility and a warehouse. The west offices are used by BBB Company Inc.

This report has been prepared by Carson Dunlop Weldon & Associates Ltd. on behalf of our client, Mr. Client Name of Client Company.

Our client is a prospective purchaser of the property and this report has been prepared to provide general information on the condition of the property.

The site inspection was carried out on January 23, 201X, in the partial company of Mr. Real Estate Agent of Realty Ltd. Our inspection was limited to components that were readily visible and not obstructed by storage, finishes, vegetation, etc.

Overall Condition and Level of Maintenance:

The building is in serviceable overall condition. The general maintenance has been satisfactory, for the most part.

However, the interior finishes on the first floor of the north and west offices had been damaged due to recent flooding reportedly caused by a burst sprinkler head in the west office. The damaged interior finishes had been removed and the interiors were being dehumidified. The affected interior finishes will require replacement prior to occupancy. It should be verified which party is responsible for these repairs.

In regard to the building exterior, the priority improvements should be repairs to settled sidewalk sections, installing a guardrail at the south loading platform, providing a step at the west stairwell exit door and installing a handrail at the west exit staircase.



Structure:

No major structural deficiencies were noted. Several minor repairs are recommended.

Electrical:

Several repairs to the distribution equipment and wiring are required.

Evidence of arcing was noted at the main electrical disconnect switch. An electrician should be engaged to review the switch and determine if repairs to or replacement of the main disconnect switch is required.

Heating and Air-Conditioning:

The rooftop package units are 26, 21, 19 and six years old. The economic service lifespan of this equipment is considered to be 20 years. As such, the 19, 21 and 26-year old rooftop package equipment will likely require replacement in the short term. End of lifespan replacement of the newer rooftop package unit is not expected within the time frame considered by this report.

The unit heaters are approximately six to beyond 25 years old. The radiant heater appears to be less than five years old. The heat exchanger normally determines the life expectancy of this equipment. While it is impossible to predict with certainty when a heat exchanger will fail, the average life for heating systems of this type is 15 to 25 years. As such, end of lifespan replacement of four of the unit heaters should be budgeted for within the time frame considered by this report. Replacement of the remaining units is not expected within the next five years. End of lifespan replacement of the radiant tube heater is not expected within the time frame considered by this report.

There is a furnace located at the mezzanine at the southwest. This unit is 'red-tagged' indicating that the heat exchanger is cracked and as such, the unit is not safe to use. It was not verified what area of the building this is servicing, however, it is suspected that this unit has been replaced with one of the rooftop package units. Nonetheless, a cost for replacement of this unit has been provided. If this unit is no longer required, it should be removed.

Ventilation:

Three of the four roof-mounted exhaust fans are estimated to be 25 years old or more. The remaining exhaust fan is estimated to be 10 years old. These units have a typical life expectancy of 20 to 25 years. Although no major deficiencies were noted, budgeting for the short term replacement of the three older exhaust fans is recommended.



Plumbing:

The building is currently not equipped with a backflow prevention device at the main domestic water service entrance. The purpose of the backflow prevention device is to prevent contamination of the municipal water supply. Recent municipal and regional bylaws require the provision of such devices in all buildings. A backflow prevention device should be provided.

Replacement of the older and worn plumbing fixtures in the washrooms at the southeast and in the shop washroom is recommended.

Roofing:

The warehouse and office roof membranes are reported to be four years into a 22- to 25-year expected useful lifespan. As such, re-roofing is not expected within the time frame considered by this report. Minor repairs and improvements are recommended to maximize the service life of the roofing system.

Exterior Walls:

Localized repairs are recommended to deteriorated mortar joints and cracked bricks in the masonry walls.

No major deficiencies were noted with the metal cladding.

Several unseated concrete blocks at the top of the west wall should be replaced.

The renewal of caulking joints in the exterior walls is recommended in the short term.

The deteriorated and debonded stucco at the west office soffits should be repaired.

Exterior Windows and Doors:

Several cracked windows should be replaced. Moreover, localized renewal of the window perimeter caulking is recommended in the short term.

Three of the plywood overhead doors at the loading docks and at the drive-in door should be replaced. Budgeting for the replacement of the remaining plywood overhead doors is recommended within the next five years.

Site Work:

Previous repairs to the asphalt pavement were noted at the northeast driveway and at the east yard. Additional repairs to the asphalt pavement are recommended in these areas and at the southeast driveway and at the southwest and north parking lots. Updating sections of the asphalt pavement at the northeast and south driveways and at the south of the east yard is recommended in the within the next few years.

Sections of the sidewalk at the west are settled and create creating a trip hazard. The sidewalk should be re-levelled or replaced in the immediate term.

The loading platform at the south should be provided with a guardrail at the access steps. Furthermore, the damaged portions of the existing guardrails and handrails at the south loading platform require repairs.

The concrete at the underside and at the edge of the south loading platform is spalled and should be repaired.

Repairs are recommended to the leaning sections of the chain link fences are throughout the property.



Interior and Insulation:

The lower portions of the wall finishes in the offices, including the insulation and baseboard trim had been removed due to recent flooding caused by a burst sprinkler head. The interior finishes will require replacement prior to occupancy. It should be verified which party is responsible for these repairs.

As is typical for a building of this age, the roof insulation and some of the wall insulation levels are below modern standards. Increasing insulation levels is considered an improvement rather than a repair.

Fire Protection:

Further review is required to determine if a fire safety plan is required. A contingency cost for providing a fire safety plan has been included.

The standpipe should be equipped with a backflow prevention device.

The sprinkler heads will likely require replacement within the next five years.

In addition, repairs are required to the following:

- missing or inadequate fire separations
- improper or damaged door hardware
- inoperative or damaged exit signs and emergency lights

1.1 Five-Year Summary of Recommended Repairs

Please find the following table of recommendations made in this report, the priorities and associated cost estimates. A five-year time frame has been considered. Other minor recommendations can be found in the Recommendation Tables at the end of each building system section.

Five-Year Summary of Recommended Repairs
(201X Dollars)

Report Reference No.	RECOMMENDATION	Quantity	Units	Time Frame (years)	Present Cost of Replacement	Years out					
						0 2014	1 2015	2 2016	3 2017	4 2018	5 2019
ELECTRICAL											
3.2.2 & 3.2.3	General distribution equipment and wiring repairs	1	lump sum	0	\$ 3,000	3000					
MECHANICAL											
Heating and Air-Conditioning - Forced Air											
4.2.2	Replace 19, 21 and 26-year old rooftop package units *	20	tons	1	\$ 45,000		45000				
4.2.5	Replace 'red-tagged' furnace above mezzanine	1	lump sum	1	\$ 4,000		4000				
4.2.3	Budget to replace older unit heaters*	2	units	1	\$ 7,000		7000				
4.2.3	Budget to replace 15 to 20-year old unit heaters *	2	units	5	\$ 7,000						7000
Ventilation											
5.2.1 & 5.2.3	Replace rooftop exhaust fans; service remaining exhaust fan*	3	each	1	\$ 7,000		7000				
Plumbing											
6.2.6	Install backflow prevention device	1	lump sum	1	\$ 3,500		3500				
6.2.8	Replace older fixtures in washrooms at southwest offices	1	lump sum	1	\$ 5,000		5000				
6.2.8	Renovate shop washroom	1	lump sum	1	\$ 9,000		9000				
Fire Protection											
Appendix C	Necessary fire and life safety repairs	1	lump sum	0	\$ 17,550	17550					
Appendix C	Fire safety plan *	1	each	0	\$ 3,000	3000					
Appendix C	Wet-pipe sprinkler head replacement	1	lump sum	5	\$ 7,000						7000
Appendix C	Exit signs and emergency lighting units and batteries	1	lump sum	5	\$ 3,000						3000
Appendix C	Portable fire extinguishers	1	lump sum	5	\$ 500						500
ARCHITECTURAL											
Roof											
	No recommendations for major repairs at this time										
Interior											
8.2.4, 8.2.8 & 8.2.9	Provide handrail in west exit staircase; re-secure loose handrail; replace debonded flooring at the north office staircase	1	lump sum	0	\$ 1,000	1000					
Insulation											
9.2.4	Cover exposed fibreglass insulation in west offices	1	lump sum	1	\$ 3,000		3000				
Structure											
10.2.2	Replace deformed and corroded steel shelf angle and lintel; scrape clean, prime and repaint corroded lintels; remove caulking between the lintels and masonry; further review presence of lintel above west personnel door	18	linear ft	1	\$ 6,000		6000				
10.2.6 & 10.2.7	Further review and improve missing bolt connections in steel frame structure; provide support for roof deck openings	1	lump sum	0	\$ 6,000	6000					
10.2.5	Contingency to further review load carrying capacity and improve guardrails in catwalk structure*	1	lump sum	0	\$ 2,000	2000					
Exterior Cladding											
	General repairs to exterior walls and stucco soffits	1	lump sum	1	\$ 7,500		7500				



**Five-Year Summary of Recommended Repairs
(201X Dollars)**

Report Reference No.	RECOMMENDATION	Quantity	Units	Time Frame (years)	Present Cost of Replacement	Years out					
						0 2014	1 2015	2 2016	3 2017	4 2018	5 2019
Windows and Doors											
11.2.11 & 11.2.12	Replace cracked windows; localized window perimeter caulking renewal	1	lump sum	1	\$ 4,500		4500				
11.2.10	Replace delaminated overhead doors; general overhead door maintenance repairs	1	lump sum	1	\$ 7,250		7250				
11.2.10	Replace remaining plywood overhead doors	2	each	3	\$ 4,500				4500		
11.2.12	Renew upper window perimeter caulking	900	linear ft	5	\$ 5,000						5000
Site Work											
11.2.13, 11.2.18, 11.2.19 & 11.2.21	Concrete repairs to loading platforms and south platform stairs; replace north platform stairs; refinish exterior steel staircase; replace cracked poured-concrete sidewalk	1	lump sum	1	\$ 7,500		7500				
11.2.9, 11.2.13 & 11.2.17	Repairs to trip hazards in sidewalks; install guardrail at loading platforms; repair existing damaged guardrails and handrail; provide step at personnel west office stairwell exit door.	1	lump sum	0	\$ 3,500	3500					
11.2.14	Localized repairs to asphalt pavement on site	4000	sq ft	1	\$ 14,000		14000				
11.2.14	Update asphalt pavement at south driveway, northeast yard and in front of drive-in door	11000	sq ft	3	\$ 39,500				39500		
11.2.20	Repair leaning and damaged fence sections	200	linear ft	2	\$ 6,000			6000			
11.2.22	Contingency to replace pole-mounted sign**	1	each	1	\$ 3,000		3000				
					TOTALS	\$ 36,050	\$ 133,250	\$ 6,000	\$ 44,000	\$ -	\$ 22,500

*Note: * The time frame for replacement is estimated, as the exact time frame is unpredictable by nature.*

*** This item is discretionary and time frame for providing is an estimate.*

2.0 INTRODUCTION

2.1 Inspection Authorization and Scope

As per the request of The Client and in accordance with our Proposal dated January 14, 201X, a visual inspection was performed to identify the existing conditions of the following building components:

- Structure
- Heating system
- Plumbing system
- Ventilation system
- Insulation
- Fire Protection systems
- Electrical system
- Air-conditioning system
- Roofing system
- Exterior components
- Interior components

No equipment was operated as part of this assessment.

This report exceeds the ASTM Standard E2018-08 in that a five-year time frame for major repairs or replacements of building components has been considered. However, at the request of our client, a building code and fire code violation inquiry was not undertaken.

This report provides recommendations, preliminary cost estimates and priorities for:

- remedying major deficiencies,
- updating ageing major components, and
- undertaking further detailed investigations.

The recommendations are for remedial actions that are considered to be beyond the normal maintenance of the building. Costs are provided for recommendations expected to exceed \$3,000. The costs are only intended to provide an order of magnitude, and do not include any engineering design or construction management fees. Contractors should be contacted for exact quotations.

This report is intended for the exclusive use of our client. Use of the information contained within the report by any other party is not intended and, therefore, we accept no responsibility for such use.

This report is considered to be preliminary in nature. Before any major repairs are undertaken, we recommend that a specialist perform a detailed condition survey and develop a plan of action.

The site inspection was carried out on January 23, 201X, in the partial company of Our Client. Our inspection was limited to components that were readily visible and not obstructed by storage, finishes, vegetation, etc.

The following defined terms are used to describe the condition of the components and systems reviewed:

Satisfactory – Performing its intended function; no major defects noted.

Serviceable – Performing its intended function, but has visible defects or is aging. It will require minor to moderate repairs.

Fair – Barely performing its intended function. Has visible defects or is aging and will require moderate to major repairs in the short term.

Poor – Not properly performing its intended function. At or beyond its useful life. Component requires major repair or replacement.

Only the items specifically addressed in this report were examined. No comment is offered on building code and building bylaw compliance, or environmental concerns.

The weather at the time of the inspection was sunny, with an approximate outdoor temperature of -10 °C.

2.2 Building Description

This is a single-storey industrial building covering an estimated 63,000 square feet, as approximated from the roof surface. There are two-storey office portions at the north and west of the building. The offices cover an estimated 6,300 square feet in total.

It should be understood that all building sizes noted here are rough approximations based on site observations, and are for the purposes of this report only.

The visible evidence suggests that the building was constructed in 1969.

The majority of the building is presently used by AAA Company Inc. as offices, a sheet metal fabrication facility and a warehouse. The west offices are used by BBB Company Inc.

For the purpose of this report, the front of the building is considered to be facing east.

2.3 Documents Reviewed

As part of the Property Condition Assessment, a request was made to review available building plans, maintenance records, warranties and equipment lists.

No documentation was available at the time of this inspection.



3.0 ELECTRICAL

3.1 Description

The electrical service to the building is overhead supplied via three pole mounted transformers located at the east side of the property. There is no information on the transformer to indicate its size. This equipment is often the responsibility of the electric utility company.

The building is equipped with a 400-amp 600-volt, three-phase, three-wire electrical service. This capacity was determined by the size of the main fuses.

The main service is divided into the following areas:

<i>Load</i>	<i>Disconnect Switch Amperage Rating</i>
D-0	100 amps
D-2	100 amps
D-3	200 amps
D-81	30 amps
D-5	60 amps
D-6	60 amps
switchgear	400 amps
D-8	60 amps
D-7	100 amps

There is a single meter for the building.

Several transformers were noted in the building. These are as follows:

<i>Location</i>	<i>Size (kVA)</i>	<i>Area Serviced</i>
adjacent to north offices	30	north offices
near main electrical distribution equipment	30	panel 1
west side of warehouse	30	panel 2

A number of transformers are located throughout the warehouse. These are for use by process equipment and are beyond the scope of this assessment.

The distribution panels employ circuit breakers.

All wiring examined is copper. Wiring types noted include metallic and non-metallic sheathed.

The lighting fixtures for the building are of the T8 fluorescent, T12 fluorescent and high-intensity discharge type.

The building is not equipped with a standby generator.

The electricity is supplied to the building by Toronto Hydro.



3.2 Observations and Discussion

3.2.1 It is impossible on an inspection such as this to determine adequacy for commercial demands. However, the current occupants indicated that no power interruptions have been encountered.

3.2.2 The distribution equipment requires some improvement. Deficiencies noted at the distribution equipment are as follows:

- Storage should be kept at least one metre away from all electrical equipment and transformers.
- The main electrical equipment is dirty and requires cleaning and lubrication.
- The unprotected openings in the circuit breaker panels servicing the north office and the disconnect switch labeled "D-2" should be covered over.
- Some of the electrical disconnect switches are located too high above the floor level. Ideally, these should be relocated so that they can be easily turned off in the event of an emergency.
- Evidence of arcing was noted at the main disconnect switch. An electrician should be engaged to determine if repairs to or replacement of this switch is necessary.
- Several double-tap and triple-tap circuits were noted in the main splitter panel. Further review is recommended to determine if additional lug connectors should be provided.

3.2.3 Representative samples of accessible wiring were examined. No major deficiencies were noted. Repairs are recommended as follows:

- Ideally, ground fault circuit interrupter (GFCI) type outlets would be installed where the receptacles are in close proximity to water sources (i.e. at sinks).
- Many lights at the northwest corner of the warehouse are inoperative. These lights should be re-lamped, repaired, or replaced, as necessary.
- Extension cords were noted at the southeast corner of the building exterior and at the mezzanine. These should be replaced with permanent wiring.
- Missing cover plates on switches, outlets and junction boxes should be replaced where needed.
- The exposed, non-metallic-sheathed wire at the base of the wall in the north offices, on the office roof and at the west exterior should be protected in rigid conduit.

3.2.4 The electrical system and transformers appear to be properly grounded at the domestic water service entrance and the steel frame of the building.

3.2.5 For safety reasons, electrical repairs should be considered high priority.

3.3 Recommendations, Costs and Priorities

	Recommendation	Cost	Time Frame
3.3.1	General distribution equipment and wiring repairs	Up to \$3,000	Immediate



4.0 HEATING AND AIR CONDITIONING

4.1 Description

The office areas are heated and air conditioned by four roof-mounted, gas-fired, heating (electric cooling) units. The total heat output of these units is 631,250 BTUs per hour. The total available cooling capacity for the building is approximately 29 tons. The refrigerant used in the air-conditioning systems was identified as R-22.

Appendix C gives details of the roof-mounted and package HVAC equipment.

There is a gas-fired, forced-air furnace suspended from the ceiling at the southwest mezzanine. The writing on this unit indicates that the furnace services the ceiling space. The furnace has a heat output of 112,000 BTUs per hour.

The warehouse and plant sections of the building are heated by 12 gas-fired, ceiling-mounted unit heaters and one radiant tube heater.

There is a single gas meter for the building, located at the southeast interior.

The natural gas supplier to the building was not verified.

4.2 Observations and Discussion

4.2.1 The overall system condition is serviceable. Maintenance has been adequate, for the most part.

4.2.2 The rooftop package units are 26, 21, 19 and six years old. The economic service lifespan of this equipment is considered to be 20 years. As such, the 21 and 26-year old rooftop package equipment is at the end or beyond its typical useful life and will likely require replacement in the short term. Replacement of the 19-year old rooftop package equipment should also be budgeted for within the shorter term considered by this report. End of lifespan replacement of the newer rooftop package unit is not expected within the time frame considered by this report.

It should be understood that a package unit includes major components such as compressors and heat exchangers whose lifespans may be shorter than the unit's useful service life. Replacement of these components can be undertaken as needed, on a maintenance basis. Regular servicing helps manage these operating expenses.

4.2.3 The unit heaters range in age from approximately five to 25 years old or more. The heat exchanger normally determines the life expectancy of this equipment. While it is impossible to predict with certainty when a heat exchanger will fail, the average life for heating systems of this type is 15 to 25 years. The life expectancy for the ceiling-mounted equipment is dependent on location. A heater located close to an overhead door experiences greater thermal stress, which reduces its life expectancy.

As such, end of lifespan replacement of four of the unit heaters should be budgeted for within the time frame considered by this report. Replacement of the remaining units is not expected within the next five years.

4.2.4 The radiant heater appears to be less than five years old. Similar to the unit heaters, the heat exchanger normally determines the life expectancy of this equipment and the average life for heating systems of this type is 15 to 25 years. As such, end of lifespan replacement of the radiant tube heater is not expected within the time frame considered by this report.

- 4.2.5** The forced-air furnace is 'red-tagged' indicating that the heat exchanger is damaged and that the unit is not safe to use. The red-tag indicates that the unit was taken out of service in 1995. The writing on this unit indicates that the forced-air furnace is servicing the ceiling space at the west offices, however, this is considered to be an unusual arrangement as the ceiling space is used as a return air plenum. It is possible that this unit was replaced by one of the rooftop package units. Although the furnace has been out of service for almost 20 years, a cost for replacement of this unit has been provided. If it is deemed that this unit is no longer required as it has been replaced by a rooftop package unit, then it can be removed.
- 4.2.6** There is a smaller HVAC unit which appears to be servicing the vault at the west offices. This unit is older and appears to be beyond 25 years old. Replacement of this unit should be expected within the timeframe considered by this report. Based on the size of this unit, replacement is expected to be a minor expense.
- 4.2.7** The heating and air-conditioning equipment was not functionally tested. The rooftop package units and several unit heaters were observed in heating mode at the time of this inspection. No major deficiencies were noted
- 4.2.8** The gas lines on the exterior are corroded and require repainting.
- 4.2.9** The supply air registers in the north office areas are overhead.
- 4.2.10** The supply air ducts in the southwest offices are located below the floor slab. With this configuration, there is potential for corrosion of the ductwork from moisture infiltration. Water collecting in the ductwork can support mould growth, which may be a health risk.

Where spot-checked, no significant corrosion was noted in the ductwork, suggesting no major problems with moisture infiltration. However, the ductwork was noted to be dirty and should be professionally cleaned.

- 4.2.11** At the west offices, the space between the ceiling finish and the underside of the roof deck is used as the air return plenum. Air return is via grilles in the ceiling. At the second floor portions of the west offices the return air registers are ducted to the return air plenums.

Most of the office spaces contain return air registers or grilles.

- 4.2.12** The air return arrangement in the north offices is via centrally located ducts, as opposed to air returns in each office. With this arrangement, air circulation in the offices will suffer when the doors are kept closed. While it is not considered cost effective to provide individual air return ducts to each office, this improvement could be considered if undertaking renovations in the future.
- 4.2.13** An inquiry was made regarding the status of the heating and air-conditioning equipment maintenance contract. The On-site Contact reports that an active heating and air-conditioning equipment maintenance contract is in effect with Sensible Heating and Air-Conditioning.



4.3 Recommendations, Costs and Priorities

	Recommendation	Cost	Time Frame
4.3.1	Replace 19, 21 and 26-year old rooftop package units (20 tons)	\$40,000 to \$50,000	Unpredictable (One year)
4.3.2	Replace 'red-tagged' furnace above mezzanine	\$3,000 to \$5,000	One year
4.3.3	Budget to replace older unit heaters (2 units)	\$6,000 to \$8,000	Unpredictable (One year)
4.3.4	Budget to replace 15 to 20-year old unit heaters (2 units)	\$6,000 to \$8,000	Unpredictable (Five years)
4.3.5	Replace HVAC unit above mezzanine	Minor	Unpredictable
4.3.6	Professionally clean ductwork below floor slab in west offices	Minor	One year
4.3.7	Paint exterior gas lines	Minor	One year



5.0 VENTILATION

5.1 Description

There are four exhaust fan cabinets on the roof. These service the washrooms and the warehouse.

The two-piece washroom at the west offices and the plant washrooms at the east side of the building are ventilated by individual exhaust fan units.

The offices receive fresh air from the heating and cooling rooftop units. Three of the rooftop package units are equipped with fresh-air makeup ducts or economizer units, which allow fresh air from the exterior to mix with the return air stream. This introduction of fresh air helps to improve indoor air quality, and compensates for air that is expelled through exhaust fans.

5.2 Observations and Discussion

5.2.1 Three of the four roof-mounted exhaust fans are estimated to be 25 years old or more. The remaining exhaust fan is estimated to be 10 years old. These units have a typical life expectancy of 20 to 25 years. As such, budgeting for the short term replacement of three of the exhaust fans is recommended.

5.2.2 The overall ventilation system condition is serviceable. Maintenance has been adequate.

5.2.3 Two of the roof-mounted exhaust fans were observed in operation. No major deficiencies were noted.

The remaining two exhaust fans were not in operation. They may be idle or inoperative. These units should be serviced.

5.2.4 The rooftop package unit labelled A/C 3 is not equipped with a fresh-air makeup duct or an economizer unit. When the unit is replaced, one of these components should be installed to provide fresh air to the area the rooftop package unit services. The cost to do this is included in the replacement cost of the unit.

5.3 Recommendations, Costs and Priorities

	Recommendation	Cost	Time Frame
5.3.1	Replace rooftop exhaust fans (3); service remaining exhaust fan	\$6,000 to \$8,000	Unpredictable (One year)



6.0 PLUMBING

6.1 Description

There is an approximately 1.5-inch-diameter, galvanized steel domestic water supply line to the building. The main shutoff valve is located in the warehouse at the west side. There is a single water meter for the building. The building is not equipped with a backflow prevention device at the main domestic water service entrance.

Apart from the main domestic water service pipe, and a small section of exposed piping in the west offices, all remaining supply plumbing examined is copper. The visible drain, waste and vent piping is a combination of copper and ABS plastic. The visible storm drain piping is primarily cast iron.

There is a 170-litre, electric domestic water heater in the storage area adjacent to the lunch room. There is 114-litre electric domestic water heater above the warehouse washrooms at the east side of the building. The domestic hot water systems are not equipped with a re-circulation loop and pump.

Washrooms are located in the southwest offices, at the east side of the warehouse and near the lunch room. Two-piece washrooms are located on each floor of the north offices and at the southwest office.

There are no sump pumps noted in the building.

The supplier of domestic water to the building was not verified.

6.2 Observations and Discussion

- 6.2.1 The overall plumbing system condition is serviceable. Maintenance has been less than ideal.
- 6.2.2 The water flow was observed at several of the plumbing fixtures the building. The reduction in water flow noted with simultaneous fixture use was not considered excessive.
- 6.2.3 No active leaks were noted in the supply, waste or storm plumbing pipes.
- 6.2.4 As discussed, galvanized steel piping is noted. Over its lifespan, steel pipe develops interior corrosion that reduces pressure and eventually causes leakage. Replacement of the galvanized steel pipe within the building should be performed when leaks appear, when the pressure drop becomes excessive, or during renovations.
- 6.2.5 The exposed supply piping in the warehouse should be insulated to prevent condensation from occurring on the cold-water piping.
- 6.2.6 The building is currently not equipped with a backflow prevention device at the main domestic water service entrance. The purpose of the backflow prevention device is to prevent contamination of the municipal water supply. Recent changes in many municipal and regional bylaws require the provision of such devices in buildings. The provision of a backflow prevention device is recommended.



6.2.7 The larger domestic water heater is approximately seven years old while the smaller domestic water heater is approximately 16 years old. While it is impossible to predict with certainty when a domestic water heater will fail, these units typically last 15 years. Therefore, updating the six-year old water heater is not expected within the timeframe considered by this report. Updating the smaller water heater will likely be necessary within the next few years. This would be a minor expense.

The discharge from the pressure relief valves for the domestic water heaters should be piped to within six to twelve inches off the floor. This is a minor expense.

6.2.8 Several of the plumbing fixtures are in fair overall condition.

Replacement of the older plumbing fixtures in the men's washroom and two-piece washroom in the offices used by BBB Company Inc. is recommended. Furthermore, the fixtures and interior finishes in the shop washroom are in fair overall condition. The shop washroom nmjincludes a retrofitted shower stall which is abandoned and used for storage. Renovations to this washroom are recommended. This would include replacement of the interior finishes and removal of the abandoned shower stall.

6.3 Recommendations, Costs and Priorities

	Recommendation	Cost	Time Frame
6.3.1	Install backflow prevention device	\$3,000 to \$4,000	One year
6.3.2	Insulate exposed piping; pipe pressure relief discharge to floor	Minor	One year
6.3.3	Replace older fixtures in washrooms at southwest offices	\$4,000 to \$6,000	One year
6.3.4	Renovate shop washroom	\$8,000 to \$10,000 and up	One year
6.3.5	Replace smaller domestic water heater	Minor	Unpredictable



7.0 ROOFING

7.1 Description

The office and warehouse roofs are covered by built-up asphalt and gravel membranes. The office roof is subdivided into west and east portions via a roof area divider.

The warehouse and the west office roofs are drained via an interior collection system. There are five drains on the warehouse roof and a single drain on the west office roof. Additionally, the west office roof is equipped with a scupper drain at the roof perimeter. The east office roof is serviced by a single scupper drain. The scupper drains discharge the water above grade via aluminum downspouts.

There are 14 metal chimneys above the warehouse roof. These chimneys are for the ceiling-mounted unit heaters and radiant heater in the warehouse. There is also a chimney at the east of the warehouse roof, which is used for process-related equipment.

There are five vinyl-framed, acrylic-dome skylights above the warehouse roof.

7.2 Observations and Discussion

7.2.1 As the roofs are covered with gravel (as they should be), the membranes could not be closely examined.

7.2.2 The inspection of the roofing systems was limited due to snow.

7.2.3 The overall roofing system condition is satisfactory. Maintenance has been adequate, for the most part.

7.2.4 The warehouse and office roofs were reported to be four years old by On-site Contact of AAA Company Inc. This type of system has an average life expectancy of 20 to 25 years. As such, end of lifespan replacement of the office and warehouse roof membranes is not expected within the time frame considered by this report.

7.2.5 To maximize the life of the roof system, repairs are recommended to the following areas:

- The membrane is exposed to sunlight damage between the gravel and the metal flashing at rooftop equipment and at the roof perimeter. Areas of damage were noted at the roof area divider, at the east office roof scupper drain and at the east exhaust vent on the warehouse roof. These areas should be repaired.
- The pitch pockets and other penetrations using asphalt or sealant as waterproofing should be re-filled or re-sealed, and checked annually.
- Debris (tree branches, pine cones, etc) resting on the warehouse roof at the north should be removed as it may obstruct drainage.
- The concrete block at the southwest of the roof should be removed as it may damage the membrane.



- The storm collars at a number of the metal chimneys at the east and south portions of the warehouse roof were noted to be corroded. The corroded storm collars should be replaced.
- The chimney caps at two of the metal chimneys at the east and southwest of the warehouse roof are damaged and should be replaced. This should be undertaken concurrently with the replacement of the corroded storm collars discussed above.
- Debris deposits were noted around the exhaust vents at the southwest of the warehouse roof. As these substances may adversely affect the roof membrane, it is recommended that a filtration system be installed at the exhaust vents to capture this debris.
- Loose wiring was noted to be resting directly on the west office roof. This may impede drainage and damage the membrane. The wires should be lifted and properly supported above the roof surface.
- The metal counter flashing at the east perimeter of the west office roof is not regletted into the masonry wall and is unsealed at the northeast corner. The unsealed gap should be caulked and the flashing sealant should be monitored over the long term.

7.2.6 There is only one drain servicing the east office roof. It is recommended that an additional scupper drain be installed at this roof area to reduce the risk of flooding in the event the existing drainage system becomes clogged.

The downspout servicing the scupper drain on the west office roof should be extended to discharge water at least six feet away from the building.

7.3 Recommendations, Costs and Priorities

	Recommendation	Cost	Time Frame
7.3.1	General repairs to warehouse and office roofs; drainage improvements	Minor	One year
7.3.2	Replace storm collars (5 units) and damaged chimney caps (2 units)	Minor	Two years

7.4 Limitations

The inspection of the roofing systems was limited due to snow.



8.0 INTERIOR COMPONENTS

8.1 Description

In general, the plant, warehouse, mechanical and janitorial areas of a building are not finished. This section addresses the conditions noted in the finished areas of the building. Since the condition of interior components is subjective to some degree, comments here are general except where functional concerns are noted.

The finished area floor coverings consist of carpet and resilient tile.

The wall finishes consist of drywall and paneling.

The ceiling finishes consist of suspended tile and drywall.

There are wood staircases accessing the exit door and the second floor storage rooms and mezzanine at the west offices. There is a steel staircase accessing the second floor of the north offices.

8.2 Observations and Discussion

8.2.1 The overall condition of the interior components is serviceable. Maintenance has been somewhat lacking. However, portions of the wall finishes in the north and west offices, including the drywall, baseboard trim and insulation had been water-damaged and were removed due to recent flooding caused by a burst sprinkler head. The flooding reportedly occurred approximately one week prior to the inspection and had reportedly originated at the west offices, in a storage closet located adjacent to the exterior wall.

The offices were in the process of being dehumidified. In the closet where the sprinkler head leak had originated, all of the ceiling and wall finishes had been removed. Furthermore, the floor finishes throughout the south portion of the west offices had also been removed. It is suspected that the affected portions of the interiors are being prepared for replacement. It should be verified which party is responsible for these repairs.

It should be ensured that the insulation and vapour retarder removed from the bottom of the exterior walls as part of the flooding remediation are replaced when new finishes are installed.

8.2.2 Excluding the finishes affected by flooding, the walls, ceilings, and floors in the majority of the office areas show cosmetic deficiencies due to normal use. It is not difficult to eliminate these flaws during redecorating. Some of these flaws will require the replacement of the existing surface. Ideally, this work would be undertaken in conjunction with the flooding remediation.

8.2.3 The resilient tile floor in the first and second floor washrooms at the north offices was noted to be damaged and should be replaced.

8.2.4 Several of the resilient tiles have debonded from the staircase treads at the north offices. These tiles should be promptly replaced as they may create a trip hazard.



- 8.2.5** The resilient tile flooring in the warehouse offices occupied by BBB Company Inc. exhibits typical wear and is in fair condition. Ideally, the floor finishes here should be replaced in the short term. This is considered to be a discretionary improvement.
- 8.2.6** A number of ceiling tiles were noted to be missing at the west office second floor storage rooms. These finishes were likely removed when the previous roof flashing and plumbing leaks had occurred. The missing ceiling tiles should be replaced.
- 8.2.7** Excluding the water damage attributed to the flooding in the building, water stained or damaged finishes were noted in several locations. The locations noted and the suspected sources of moisture are as follows:

<i>Location of stain/damage</i>	<i>Suspected source</i>
Ceiling tiles in a number of second floor storage rooms in west offices (tenant space)	Previous roof flashing leaks in majority of locations. One of the locations (above the stained carpet discussed below) appears to have been caused by a previous sprinkler system leak.
Carpet in second floor storage room in west offices (BBB Company Inc. tenant space)	Previous sprinkler system leak
Wall along floor in first floor storage room in west offices, adjacent to domestic water heater	Previous plumbing leak
Window sill in second floor north offices (AAA Company Inc. tenant space)	Previous window leak or window left open during rain
Plywood floor in storage mezzanine in west offices (BBB Company Inc. tenant space), adjacent to "red-tagged" furnace	Previous roof flashing leaks at ductwork for heating and cooling rooftop unit
Ceiling of first floor kitchenette/storage area in west offices (BBB Company Inc. tenant space)	Previous roof flashing leaks

The water damaged finishes should be replaced. With respect to the stained plywood floor, no remedial action is required as this is located in an unfinished storage mezzanine.

- 8.2.8** The handrail in the west office staircase accessing the second floor storage rooms is loose and should be adequately secured to the wall.
- 8.2.9** A handrail is missing at the west staircase servicing the exit door and should be provided.

8.3 Recommendations, Costs and Priorities

	Recommendation	Cost	Time Frame
8.3.1	Replace damaged and deteriorated resilient floor tile in north office washrooms (approximately 200 square feet); replace missing ceiling tiles	Minor	One year
8.3.2	Replace missing interior finishes removed due to flooding	Depends on approach/ Confirm which party is responsible for repairs	Prior to occupancy/ Unpredictable
8.3.3	Replace warehouse office resilient tile floor (AAA Company Inc. tenant space)	Depends on approach	Discretionary
8.3.4	Provide handrail in west exit staircase; re-secure loose handrail; replace debonded flooring at the north office staircase	\$1,000 and up	Immediate



9.0 INSULATION

9.1 Description

It should be understood that a review of the thermal characteristics of the building envelope is beyond the scope of our assessment. Only general information is provided here.

The presence of insulation in the exterior walls was verified at penetrations and openings in the interior finishes. Fibreglass insulation was noted in the walls of north and west offices. This insulation is valued at an estimated R-12 and R-6 in the north and west offices, respectively. In the west offices, the R-6 insulation was observed only above the ceiling tiles while the portions of the exterior walls below the ceiling tiles were not insulated.

The presence of insulation in the warehouse roof was spot checked at the roof access hatch. Wood fibreboard was noted on the roof. The R-value of this material is marginal. The presence of insulation in the office roof assembly could not be confirmed.

9.2 Observations and Discussion

9.2.1 The current standard for exterior wall insulation is R-12 to R-20. The level of insulation in the north offices is consistent with modern standards.

In regard to the west office walls, there are several methods of retrofitting insulation into wall assemblies. Options include insulated claddings such as exterior insulating finish system (EIFS), or adding insulation to interior wall. Renovations allow the chance to offset some of the costs associated with insulating. Adding insulation to the exterior walls is recommended during any future renovations.

9.2.2 The recommended insulation level in a flat roof is R-10 to R-20. Per the Roofing section, the roof membranes on the warehouse and the office roofs were replaced approximately four years ago. A review of the documentation associated with the roof replacement could be undertaken to confirm if additional insulation has been provided in the roof assembly.

9.2.3 It should be understood that increasing insulation levels in a building is more an upgrade than a necessary repair. Overall building energy usage is, however, an on-going consideration.

9.2.4 The exterior wall fibreglass insulation above the ceiling tiles in the west offices is exposed. Per the Heating and Air-Conditioning section, the ceiling space is used as the return air plenum. The insulation may contaminate the airstream. There is also a risk of condensation and related water damage. The fibreglass insulation should be covered over.

The vapour retarder was noted to be missing from the wall assemblies above the ceiling tiles in the west offices. It is recommended that a vapour retarder be installed in the wall assembly when covering the exposed fibreglass insulation.

9.3 Recommendations, Costs and Priorities

	Recommendation	Cost	Time Frame
9.3.1	Cover exposed fibreglass insulation in west offices	Up to \$3,000	One year

9.4 Limitations

Where insulation was noted in the walls, it was spot-checked at openings in the wall finishes. The extent or continuity of the insulation cannot be determined from this sampling.



10.0 STRUCTURE

10.1 Description

The building is of slab-on-grade construction.

There is a wood subfloor at the south portion of the west offices. The subfloor has been installed over an auditorium-like pit.

The poured-concrete and concrete-block foundations support masonry and concrete-block exterior walls.

The second floor in the west offices is constructed of wood joists. The construction of the floor structure in the north offices could not be verified.

The steel roof deck is supported by open web steel joists. The joists are supported by the exterior walls, and steel beams and columns.

There is a steel-frame catwalk located at the northwest portion of the plant area. The catwalk is supported by a concrete-block demising wall and threaded rods suspended from the open web steel joists.

There is a wood-frame storage mezzanine at the south portion of the west offices.

There is a steel crane structure located in the plant area.

10.2 Observations and Discussion

10.2.1 The overall condition of the visible building structure is satisfactory. However, maintenance has been less than ideal.

10.2.2 The steel lintels above the windows and doors in the north façade of the north offices are corroded. It appears that the corrosion of the lintels above windows has been accelerated by caulking installed between the steel and the masonry. The caulking should be removed to prevent water from being trapped on the steel support members. One of these lintels is significantly corroded and requires replacement. The remaining lintels should be scraped clean, primed and repainted to limit further corrosion. Similarly, refinishing of other lintels above loading docks and the overhead door is recommended within the next few years.

The steel shelf angle above the north door and window at the north offices is badly corroded and deformed. This shelf angle is beyond repair and should be replaced.

The personnel door servicing Unit #60 appears to have been retrofitted into the exterior wall following the original construction of the building. It could not be confirmed if a lintel has been installed above this door opening. Further review is recommended to confirm if a lintel has been provided here.



10.2.3 Cracking was noted throughout the concrete floors of the warehouse. The cracking noted is consistent with shrinkage of the concrete and compaction of the fill below the floor slab. This cracking is typical for slab-on-grade structures and is usually not a major structural concern. However, the potential for future settlement of the floor slab is unpredictable. The cracking should be monitored over the long term.

10.2.4 Due to the presence of interior finishes, the review of the second floor and the mezzanine structure in the west offices was limited considerably.

The second floor structure in the north offices is concealed entirely beneath interior finishes. Further review into the construction and condition of this floor structure may be desirable.

10.2.5 This warehouse catwalk appears to have been built after the original construction of the building. The catwalk in the plant area is primarily supported by steel brackets which are mechanically fastened to the concrete-block demising wall in the plant. The steel-brackets are also supported by steel tension rods. The floor of the catwalk consists of plywood boards. It is reported by Mr. Gerardo Parente that the catwalk is no longer in use and access to it has been restricted. As such, consideration should be given to permanently removing the catwalk structure.

Should the catwalk be maintained, a structural evaluation of its load carrying capacity is advisable. Additionally, improvements to the openings in the guardrails would be required in the immediate term.

10.2.6 Several missing bolt connections were noted in the second floor storage mezzanine in the west offices and in the warehouse. These were noted at the open web steel joist to steel column connecting plates. No evidence of welding of the plates has been observed. These connections should be reviewed and improved as necessary. A budget cost to weld all of the noted connections has been included.

10.2.7 The roof deck has not been properly supported at several openings for rooftop equipment and ductwork above the west office storage rooms and mezzanine, as well as in the plant area. The roof deck requires additional support at these locations.

10.2.8 No major deficiencies were noted with the subfloor structure. However, it was noted that the knee-walls supporting the subfloor were installed directly on the carpeted floor of the auditorium pit. Ideally, a moisture break would be installed between the floor and sill plate of the knee walls. No evidence of moisture damage or rot was noted in the subfloor structure. As such, no remedial action is considered necessary at this time.

10.2.9 In a number of locations on the exterior of the building, the foundation supporting the curved concrete block walls at the west offices was noted to be damaged and open to water penetration. The extent of the damage is not significant. However, the affected foundations should be repaired to minimize the potential for future water damage.

10.3 Recommendations, Costs and Priorities

	Recommendation	Cost	Time Frame
10.3.1	Replace deformed and corroded steel shelf angle and lintel (approximately 18 linear feet); scrape clean, prime and repaint corroded lintels; remove caulking between the lintels and masonry; further review presence of lintel above west personnel door	\$5,000 to \$7,000	One year
10.3.2	Further review and improve missing bolt connections in steel frame structure; provide support for roof deck openings	\$5,000 to \$7,000	Immediate
10.3.3	Localized foundation wall repairs	Minor	One year
10.3.4	Remove catwalk structure	Minor	Immediate
	-OR- Contingency to further review load carrying capacity and improve guardrails in catwalk structure	\$2,000	Unpredictable

10.4 Limitations

The examination of the structural components was visual only; a design review was not undertaken.

The evaluation of the building's structure was limited because of the interior finishes in the offices and storage in the plant and warehouse areas.

Portions of the exterior foundations could not be closely reviewed due to snow.

11.0 EXTERIOR COMPONENTS

11.1 Description

The majority of the exterior walls are solid masonry and concrete block. The upper portions of the west office exterior walls are clad with metal siding. The west office façade includes overhangs above the doors and windows. The soffits of the overhangs are finished with stucco.

The front entrance doors are aluminum-framed, single-glazed units. The personnel doors are steel units.

There are seven loading docks in the north and east walls. There is a single drive-in door in the east façade. The majority of the overhead doors are plywood units. Three of the loading dock overhead doors are steel sectional units.

The warehouse and office windows are aluminum-framed, double-glazed units. The majority of the windows are fixed units. The operable windows are awning type.

There is a wood retaining wall at the northeast of the north offices.

The driveway entrances to the property at the northeast and southeast are paved with asphalt. There are asphalt paved parking lots at the north and south sides of the building. As the lines were not painted on the pavement, the number of parking spaces could not be confirmed. There is an asphalt paved yard at the east of the property.

There is a poured concrete apron at the south of the west offices.

There are poured concrete sidewalks at the entrances to the north and west offices.

There are eight-foot, chain link fences in several areas on the property.

The building includes lighted sign boxes on several façades. Additionally, a pole-mounted marquee sign is located at the west.

There are steel exterior staircases located at the personnel doors adjacent to leading docks in the north façade. There is a steel-framed loading ramp at the east-most loading dock.

There is a cantilevered reinforced concrete loading platform at the south of the south offices. This platform is accessed via poured-concrete steps. Portions of the platform are enclosed with steel guardrails.

There is a poured concrete loading platform at the front of the north offices. The south entrance to the west offices includes a cantilevered conventional reinforced concrete loading platform. The platform is accessed via steel and concrete stairs.



11.2 Observations and Discussion

Exterior Walls and Cladding

- 11.2.1** The overall condition of the exterior components is serviceable. Maintenance has been less than ideal.
- 11.2.2** Localized mortar joint deterioration was noted in the brick masonry, primarily along the lower portions of the walls in the south parking lot. Furthermore, deteriorated and cracked mortar joints were noted at the corroded steel lintels in the north wall (refer to Structure section). The affected brickwork should be re-pointed.
- In one location, several bricks were noted to have been displaced. This was observed in the north wall, adjacent to the upper office windows. The affected brickwork should be replaced when re-pointing the masonry walls.
- 11.2.3** It is reported by On-site Contact of BBB Company Inc., that the top portion of the south exterior wall at the southeast corner has been previously displaced and rebuilt. The displacement was caused by a previous electrical service mast and service wires. The mast had been relocated several feet to the west along the same wall. No major deficiencies were noted with the rebuilt masonry.
- 11.2.4** The caulking in the exterior wall expansion joints deteriorated and should be renewed.
- 11.2.5** No major deficiencies were noted with the concrete-block exterior walls. However, several unseated concrete blocks were observed at the upper portion of the east wall. These blocks are restrained by the metal flashing on the roof and are not at immediate risk of falling; however, the effected blocks should be replaced in the short term.
- 11.2.6** No major deficiencies were noted with the metal cladding
- 11.2.7** The stucco at two of the soffits was noted to be debonded and missing. These soffits should be refinished.
- 11.2.8** Where concrete block foundations were noted, the exterior face of the foundations was not parged. It is recommended that a cementitious parging be installed on the foundation walls in order to protect the foundations over the long term. This is considered to be more of an improvement rather than a repair.

Doors and Windows

- 11.2.9** No major deficiencies were noted with the entrance doors. However, storage in front of the north entrance to the north offices would ideally be removed to make the door accessible.

A step should be provided in front of the exit door servicing the staircase in the west offices. This should be a priority. Moreover, the stairwell behind the door was obstructed with storage. The stored items should be removed.



- 11.2.10** The plywood overhead doors noted in the north and east walls are generally in serviceable to fair condition. Three units were noted to be delaminated and in fair condition and should be replaced.

Typically, maintenance repairs are required at the loading docks and drive-in doors. These include:

- The rubber bumpers are damaged and missing in some areas. This should be corrected.
- Damaged weather stripping in the drive-in door and several of the loading dock doors should be replaced.

Budgeting for the eventual replacement of all remaining plywood overhead doors is recommended within the timeframe considered by this report.

- 11.2.11** The windows are in satisfactory overall condition. Several cracked windows were noted in the north façade at the north offices. The affected units should be replaced.

Two of the north-facing windows at the north offices have lost their seal and condensation has formed between the glazing. The glazing can be replaced. This is a discretionary repair.

- 11.2.12** Window perimeter caulking renewal is recommended at the west office windows and in localized areas at the upper windows at the north. The caulking at the perimeter of the remaining upper windows is recommended within the timeframe considered by this report.

Site Work

- 11.2.13** The sidewalk at the west of the west offices has settled in several locations, thus creating a trip hazard. Improvements to the affected sidewalk sections are required. Furthermore, one section of the sidewalk is cracked and should be replaced.

- 11.2.14** The inspection of the asphalt pavement on site was limited due to snow, parked vehicles and storage. However, the visible pavement was noted to be in serviceable to fair overall condition. Portions of the pavement at the northeast and southeast driveways and at the front yard were noted to have been replaced and several potholes were noted to have been patched.

Updating of the asphalt pavement at the south parking lot, in front of the drive-in door and at the northeast of the front yard is recommended in the short term.

For the remaining paved areas, the following maintenance repairs are recommended:

- All large cracks should be sealed with asphalt slurry.
- Localized surface deterioration noted at the southwest and north parking lots, at the northeast and the southeast driveways should be repaired or replaced.
- Cracks and depressions at the interface of the renewed and the older pavement in the front yard should be replaced.



- 11.2.15** The poured concrete apron was concealed beneath a waste bin and snow and could not be inspected.
- 11.2.16** The wood retaining wall at the north of the northeast offices exhibits minor bowing. The condition is not significant at this time, but should be monitored.
- 11.2.17** The damaged balusters in the existing guardrails and the handrail at the south loading platform and steps should be repaired. Moreover, it is recommended that a guardrail/handrail be installed at the south platform and at the steps to clearly identify the egress route.

The north loading platform is adjacent to an entrance door and is accessible to pedestrians. As such, it is recommended that a guardrail be installed at the entrance area of the platform.

- 11.2.18** The concrete slab edge of the south loading platform was noted to be spalled and the exposed reinforcing steel was corroded. Furthermore, portions of the underside of the concrete steps accessing this platform were also spalled. Repairs should be undertaken to the affected concrete.

The majority of the south platform was noted to be covered by carpet. The carpet should be removed as it allows for moisture retention, which may accelerate the deterioration of the concrete. Removal of the carpet is a minor cost.

- 11.2.19** The steps at the north loading platform are in fair overall condition, as evidenced by corroded steel and spalled concrete at the underside of the treads. The replacement of these stairs should be planned in the short term.
- 11.2.20** Some fence sections are damaged and leaning at the northeast of the property and at the north and south sides of the front yard. The affected areas should be repaired.
- 11.2.21** One of the north exterior steel staircases exhibits surface corrosion and should be refinished in the short term. The remaining staircases are in satisfactory to serviceable condition.
- 11.2.22** No major deficiencies were noted with the wall-mounted signs.

The pole-mounted sign is badly corroded. The casing on the sign can be replaced. Alternatively, the sign can be removed.

11.3 Recommendations, Costs and Priorities

	Recommendation	Cost	Time Frame
11.3.1	General repairs to exterior walls and stucco soffits	\$5,000 to \$10,000	One year
11.3.2	Replace cracked windows; localized window perimeter caulking renewal	\$4,000 to \$5,000	One year
11.3.3	Replace windows with failed seal	Minor	Discretionary
11.3.4	Renew upper window perimeter caulking (approximately 900 linear feet)	\$4,000 to \$6,000	Five years
11.3.5	Replace delaminated overhead doors (3 units); general overhead door maintenance repairs	\$6,500 to \$8,000	One year
11.3.6	Replace remaining plywood overhead doors (2 units)	\$4,000 to \$5,000	Three years
11.3.7	Concrete repairs to loading platforms and south platform stairs; replace north platform stairs; refinish exterior steel staircase; replace cracked poured-concrete sidewalk	\$5,000 to \$10,000	One year
11.3.8	Repairs to trip hazards in sidewalks; install guardrail at loading platforms; repair existing damaged guardrails and handrail; provide step at personnel west office stairwell exit door.	\$3,000 to \$4,000	Immediate
11.3.9	Localized repairs to asphalt pavement on site (approximately 4,000 square feet)	\$12,000 to \$16,000	One year
11.3.10	Update asphalt pavement at south driveway, northeast yard and in front of drive-in door (approximately 11,000 square feet)	\$37,000 to \$42,000	Three years
11.3.11	Repair leaning and damaged fence sections (approximately 200 linear feet)	\$5,000 to \$7,000	Two years
11.3.12	Contingency to replace pole-mounted sign	\$3,000	Discretionary

11.4 Limitations

Storage against the east wall of the building limited the inspection of the concrete block exterior here.

Storage, parked cars and snow on site limited the inspection of the asphalt paving and site grading.

12.0 CLOSING COMMENTS

This report provides you with an overview of the condition of the major components in the building. Should you have any questions, please do not hesitate to contact us.

Appendix A contains photographs documenting conditions noted in our report.

Please observe the Maintenance Recommendations for some of the building components, outlined in Appendix B.

Appendix C is a summary of the rooftop heating and cooling equipment.

Please find the fire protection systems report in Appendix D.

A statement of qualifications and a glossary of terms that may have been used in this report are also included for your reference.

Sincerely,

Signature of Engineer

Richard Weldon, P.Eng, LEED AP

Appendix A

PHOTOGRAPHS

**123 Inspection Road
Toronto, Ontario**



Photo 1. Partial view of the main roof, as seen in the east direction.



Photo 2. Partial view of the east portion of the office roof.



Photo 3. Partial view of the west portion of the office roof. Note the loose wiring resting on the roof surface.



Photo 4. Typical skylight above the warehouse roof.



Photo 5. Example of corroded storm collars at the metal chimneys.



Photo 6. Exhaust fan discharging debris onto the warehouse roof surface. This is at the southwest corner.





Photo 7. Deteriorated sealant at pitch pan penetrations for gas lines and conduit on the main roof.

Photo 8. Example of membrane exposed to sunlight damage between metal flashing and gravel at a process-related exhaust fan at the east of the main roof.



Photo 9. Unsealed metal flashing at the northeast corner of the west office roof. Note the downspout servicing the scupper drain discharges too close to the building foundation.

Photo 10. Typical modified bitumen roofs covering the curved office walls in the west façade.



Photo 11. Second floor offices at the north of the building.

Photo 12. First floor offices at the north of the building. Note the lower portions of the interior walls are water-damaged due to flooding caused by a burst sprinkler head.





Photo 13. Partial view of the storage mezzanine at the west of the building.

Photo 14. Second floor storage area at the west offices. Note the missing ceiling tiles and the stained carpet.



Photo 15. Interior view of the curved west office exterior walls where the sprinkler head had reportedly burst and caused flooding in the building. Note the interior finishes have been removed in this room.

Photo 16. Portion of the floor containing the subfloor at the west offices.



Photo 17. View above the office ceiling tiles along the west exterior wall. Note the office roof structure and wall insulation.

Photo 18. Underside of the subfloor in the west offices.





Photo 19. Catwalk structure located in the northwest plant area.

Photo 20. Damaged steel column at the southwest of the plant area.



Photo 21. South and east façades.

Photo 22. North and west façades.



Photo 23. North and east façades incorporating the overhead doors.

Photo 24. Detailed view showing the corroded and deformed steel shelf angle above the door and window opening at the north.





Photo 25. Example of deteriorated stucco on the soffits at the west side of the building.

Photo 26. Damaged concrete block foundation at the south of the west offices. Note the missing baluster in the handrail for the exterior stairs.



Photo 27. Spalled concrete slab edge located at the south loading platform. Note a guardrail should be provided along the full length of the platform.

Photo 28. Deteriorated mortar joints in the lower portion of the south masonry wall.



Photo 29. Main electrical distribution equipment located at the southeast corner of the plant.

Photo 30. View inside main disconnect switch. Note the evidence of arcing on the switch cover.





Photo 31. View inside main splitter panel.

Photo 32. Close-up of triple-tap lug nut connections in the main splitter panel.



Photo 33. Exposed non-metallic sheathed wiring in the north office area at the base of the north wall.

Photo 34. Exposed non-metallic sheathed wiring at the west exterior. This should be protected in a rigid conduit.



Photo 35. Extension cord used as permanent wiring at the southeast corner of the building. This should be replaced with permanent wiring.

Photo 36. Rooftop package unit denoted as A/C#1 in Appendix C. Note the corrosion on the casing.





Photo 37. Rooftop package unit denoted as A/C #2 in Appendix C. Note this equipment is older.

Photo 38. Rooftop package unit denoted as A/C #3 in Appendix C.



Photo 39. Newer rooftop package unit denoted as A/C #4 in Appendix C.

Photo 40. Ceiling-mounted forced-air furnace located above the southwest mezzanine. Note this unit is red-tagged and no longer serviceable.



Photo 41. Red tag on forced-air furnace above mezzanine. Note the red tag indicates this unit has a cracked heat exchanger and is dated October 1995.

Photo 42. HVAC unit which appears to be servicing the vault in the west offices.





Photo 43. Newer radiant heater above the loading area in the warehouse portion of the building.

Photo 44. Typical unit heaters in the warehouse portion of the building.



Photo 45. Typical relatively newer unit heater in the plant area of the building.

Photo 46. Typical older unit heater in the plant area of the building.



Photo 47. Gas meter at the southeast corner of the plant area.

Photo 48. View of interior of below-grade ductwork. Note the ductwork is dirty.





Photo 49. Older roof-mounted exhaust fan cabinet servicing the west office washrooms.

Photo 50. Exhaust fan cabinet servicing the washrooms at the north office washrooms.



Photo 51. Main domestic water service entrance located in the plant area. Note a backflow prevention device has not been provided.

Photo 52. Electric domestic water heater in the storage area at the west offices.



Photo 53. Smaller domestic water heater above the plant washrooms.

Photo 54. Typical two-piece washroom in the north offices.





Photo 55. Two-piece washroom in west offices. Note the fixtures here are older.

Photo 56. Men's washroom at the west offices.



Photo 57. Shop washroom. Note the fixtures are older and the interior components are worn. Note also the shower stall which is used for storage.

Photo 58. Typical plant washroom.

Appendix B

MAINTENANCE RECOMMENDATIONS

**123 Inspection Road
Toronto, Ontario**

This Appendix provides maintenance recommendations related to items mentioned in our report. These recommendations are intended to be general and should not be construed as all-inclusive. Maintenance should be undertaken by qualified personnel only.

Activity		As Necessary	As Directed	Weekly	Monthly	Quarterly	Semi-Annually	Annually
ELECTRICAL								
1	The area in front of electrical panels and disconnects should always be accessible (storage or debris should not be placed in front or on top of the equipment).	x						
2	Each circuit should be labelled to identify the area or equipment it controls.	x						
3	Circuit breakers should be manually tripped and reset semiannually.						x	
4	Dirt deposits on transformers and relays should be cleaned monthly to minimize operating temperature and maintain optimum efficiency.				x			
5	Hardware on all electrical equipment should be checked for looseness semiannually. Cable connections, fuse clips and circuit breakers are common areas where loose connections can be found.						x	
6	Electrical switches and other moving parts should not be lubricated unless specified by the manufacturer. The type and grade of lubricant specified should be strictly followed. Oil and grease should be kept away from conductor insulation to prevent damage.		x					
7	Extension cords should not be used as permanent wiring.	x						
8	Electrical modifications should be performed by qualified personnel only.	x						
9	Test buttons on ground fault circuit interrupters should be operated monthly.				x			
10	The switchgear internal connections should be checked and retightened annually.							x
HEATING + AIR-CONDITIONING								
1	The heating systems should be serviced annually by a qualified technician.							x
2	The fans and motors should be lubricated as directed by a serviceperson or the manufacturer.		x					
3	The casings on the rooftop units should be maintained weathertight.	x						
4	The filters should be inspected monthly and cleaned or replaced as necessary during heating system operation.				x			
5	Electric baseboard heaters should be tested periodically and replaced as necessary. Heating fins should be vacuumed annually.	x						x
7	The air-conditioning systems should be inspected and recharged as necessary by a serviceperson, before annual start-up.							x
8	The filters should be inspected monthly and cleaned or replaced as necessary during cooling system operation.	x			x			
9	The motorized dampers should be periodically inspected and repaired or replaced as necessary.				x			
VENTILATION								
1	Exhaust fans should be inspected semiannually.						x	
2	The motors should be cleaned annually, and lubricated as recommended by the manufacturer.							x
PLUMBING								
1	The main shutoff valve for the plumbing system (located at the west side of the plant) should be operated semiannually to ensure that it can be closed in an emergency.						x	
2	Every fall, the inside control valves for outdoor faucets should be closed. The outside pipes should be drained and the exterior faucets left open.							x
3	The domestic water heaters and associated equipment should be serviced annually by a qualified technician.							x
4	The plumbing fixtures should be inspected monthly for leakage and repairs made promptly.				x			



Activity		As Necessary	As Directed	Weekly	Monthly	Quarterly	Semi-Annually	Annually
ROOFING								
1	The roofs should be inspected semiannually. Particular attention should be paid to the flashings, edges and intersections.						x	
2	The roofs should be periodically examined for gravel scouring and improved as necessary.				x			
3	The roof drains should be periodically inspected to ensure that they are free of debris.				x			
4	The metal chimneys should be examined annually for corrosion, leaning and loose or missing rain caps.							x
INTERIOR COMPONENTS								
1	Windows should be inspected at least annually for damage resulting from leakage and condensation.							x
2	Wall and ceiling surfaces should be periodically examined for evidence of roof or plumbing leakage.				x			
3	Stairwells should be kept clear of storage and exit doors unobstructed.	x						
EXTERIOR COMPONENTS								
1	Tree limbs overhanging the roof should be kept cut back to avoid damaging the roofing system and clogging the drains.	x						
2	Exterior masonry should be inspected annually for deteriorated or missing mortar.							x
3	Stucco should be inspected at least annually for cracks. Minor cracks should be filled promptly.							x
4	Exterior trim should be inspected annually for paint failure. Repainting is usually required every 3 to 5 years.							x
5	The caulking and weather stripping should be inspected every fall.							x
6	The asphalt paving should be visually examined annually for cracks or depressions. Repairs should be made promptly.							x



Appendix C

SUMMARY OF ROOFTOP HEATING AND COOLING EQUIPMENT

**123 Inspection Road
Toronto, Ontario**

The following notes relate to comments made for the roof-mounted heating and cooling equipment:

- 1 The condensate trap is missing and should be provided.
- 2 The compressor at this unit is original.
- 3 The heat exchanger at this unit is downstream of the evaporator coil;
therefore, there is greater potential for condensation on the combustion side of the heat exchanger and corrosion.
- 4 The waterproofing and/or insulation on the ductwork is damaged and requires repair.
- 5 The information on the data plate was not legible.
- 6 The natural gas supply was turned off to this unit.
- 7 This is a condenser coil for a split air-conditioning system.

Unit #	Year Built	Cooling Capacity (Tons)	Heating Capacity (1,000 BTU's)	Operating Mode	Makeup-air	Manufacturer	Services	Comments
A/C 1	1993	161.5	7.5	Heating	Yes	York	Donpark front offices	2, R22 refrigerant, casing and electrical disconnect switch are corroded, damage to condenser coil fins
A/C 2	1988	187.5	7.5	Heating	Yes	Trane	Upper rental offices front	old, casing and electrical switch are corroded, 2, 1
A/C 3	1995	100.0	7.0	Heating	No	York	Lower front offices rental	R22 refrigerant
A/C 4	2008	182.250	7.5	Heating	Economizer	Rheem	58 offices	older corroded electrical disconnect switch



Appendix D

FIRE PROTECTION SYSTEMS REPORT

**123 Inspection Road
Toronto, Ontario**



Suite 105 – 6 Lansing Square
Toronto, Ontario, Canada M2J 1T5

p: 416.492.5886 | f: 416.492.1258
www.rbacodes.com

INSPECTION REPORT

Project: 123 Inspection Road
TORONTO ONTARIO
RBA File No. 1X-1234

Topic: OFC Inspection
Inspection Date: January 23, 201X

Date: January 27, 201X

1.0 INTRODUCTION

Randal Brown & Associates Engineering Ltd. (RBA Engineering) conducted a visual, non-destructive inspection of the existing two-storey building located at 123 Inspection Road, in Toronto, Ontario. Our inspection was conducted with respect to the fire protection and life safety requirements in Part 2 and Part 6 of the 2007 Ontario Fire Code (OFC, O.Reg. 213/07), and for the purpose of projecting anticipated replacement costs necessary over the next 5 years for the existing fire protection and life safety systems serving the building.

While on-site, building drawings, maintenance records and a Fire Safety Plan were not available for reference.

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It is not intended for use by any third party or subsequent owners.*

2.0 SCOPE OF INSPECTION

Our inspection consisted of a walk-through of the existing building, during which deficiencies were noted with respect to Part 2 and Part 6 of the 2007 Ontario Fire Code. The inspection was visual in nature and unless otherwise noted, did not incorporate any system testing or destructive analysis in order to determine the construction materials or operation of building systems. As such, this report is not intended to be all-inclusive list of building deficiencies.

During our inspection, access was provided to both tenant units. While the units were not alpha-numerically identified, they consisted of the following:

- AAA Company Inc.

This unit consists of an industrial warehouse that manufactures and sells HVAC and plumbing supplies. As such, this tenant unit contains subsidiary offices, a front of house sales area, storage warehouse and production warehouse.

This unit is a one-storey unit with one mezzanine level that contains subsidiary offices.

A crawl space is provided in this unit, which can be accessed via the ancillary spaces adjacent to the production warehouse.

- BBB Company Inc.

This unit consists of a two-storey office space.

With the exception of the City of Toronto Backflow Prevention By-Law, RBA Engineering has not reviewed municipal Property Standards or By-Laws associated with this building. This report does not consider the requirements for new construction under the Ontario Building Code.

Existing life safety systems serving the building were also reviewed for the purpose of projecting anticipated reserve costs necessary over the next 5 years (for items greater than \$ 3,000.00).

3.0 OFC INSPECTION MATRIX

Attachment A to this report is a matrix summary table of the existing building's construction and life safety systems as well as other information relevant to our inspection.

This high level summary table is intended to outline the condition of the building at the time of our inspection. Attachment A is not to be construed as a detailed description of the existing building.

4.0 OFC DEFICIENCIES

Attachment B to this report is a summary table of the items noted during our inspection which are not in compliance with the fire protection and life safety requirements in Parts 2 and 6 of the 2007 Ontario Fire Code.

RBA Engineering has not reviewed activities within the building that may be construed as hazardous activities (OFC, 2.1.2.2). As well, RBA Engineering has not reviewed sprinkler design requirements with respect to specific storage methods/commodities/processes etc. within the suite/building.

Attachment B to this inspection report also contains Recommended Budget Allowances associated with the required upgrading. These are ballpark figures only and are required to be verified by qualified contractors and may vary depending on the degree of outsourced work.

5.0 5 YEAR CAPITAL REPLACEMENT ESTIMATES

5.1 General Scope

This portion of the inspection report addresses the existing fire protection and life safety systems within the building and identifies the recommended replacement reserves necessary for a projection of 5 years on a per life safety item basis (for items over \$ 3,000.00).

Attachment C contains 5 year capital replacement estimates for the fire protection and life safety equipment. These costs do not include operating costs that may be associated with regular servicing and maintenance of these systems. The regular servicing and maintenance is necessary in order to provide the maximum life span for the life safety systems and to meet minimum legislated OFC requirements.

5.2 FP1 Fire Safety Plan

A Fire Safety Plan has not been prepared for this building.

Per OFC 2.8.1.1.(1)(f), a Fire Safety Plan is required to be provided if the occupant load exceeds 100 persons. Based on an approximate building area of 63,000 ft², the calculated occupant load would be 1,272 persons (63,000 ft² ÷ 49.5 ft² / persons for manufacturing and process areas - OBC 3.1.17.1). Confirmation is required if the actual occupant load will exceed 100 persons. Further review is required for this item.

5.3 FP2 Portable Fire Extinguishers

The maintenance and upkeep of portable fire extinguishers is considered as on-going operational costs. Portable fire extinguishers are required to be inspected monthly and tested annually (OFC, 6.2.7.1 and 6.2.7.2).

It is anticipated that all existing fire extinguishers will be required to be replaced at least once during the next five years.

5.4 FP3 Sprinkler Systems

NFPA 13, "*Standard for the Installation of Sprinkler Systems*" (2002 edition), states that a sprinkler system is required to be properly inspected, tested and maintained in accordance with NFPA 25, "*Standard for the Inspection, Testing and Maintenance of Water Based Fire Protection Systems*" (2002 edition). As such, sprinkler system maintenance is considered as an on-going requirement.

Table 5.1 of NFPA 25 states that all wet pipe sprinkler heads are required to be replaced or a representative sample tested to ensure that they operate as intended when the sprinkler system contains heads that are 50 years or more in age. Assuming new sprinkler heads were utilized when this building was constructed, which dates back to 1969 for the original construction, a representative sample of sprinkler heads from each sprinkler system are required to be tested within the timeframe for which this study is intended, to determine if any head replacements are necessary.

Due to the variables associated with determining costs for representative sample testing of sprinkler heads (e.g. vintages of additions to buildings, age of sprinkler systems, types of sprinkler heads in each system, number of heads in each system, etc. - which could not be determined during our visual inspections), an allowance for sample testing of the sprinkler heads has not been included. However, our allowances do include for a worst case scenario to replace all sprinkler heads within the building, if necessary.

While representative sample testing is a feasible option and may be more cost effective, the cost for the testing procedure is required to be provided by qualified contractors as the cost will be specific to this building. Sample sprinkler head testing is required to undergo the plunge test procedure described in the NFPA 25 Appendix Note to 5.3.1.1., which is to take place at an approved testing laboratory.

Sprinkler gauges are required to be replaced every 5 years or tested every 5 years by comparison with a calibrated gauge. Gauges not accurate to within 3% of the full scale are required to be recalibrated or replaced (NFPA 25, 5.3.2). The maintenance and upkeep of sprinkler system components (i.e., gauges) is considered as on-going operational costs, and as such, associated costs for replacement of the system components has not been included in our estimated reserve fund allowances.

For wet pipe systems, on-going annual and monthly inspections and testing is required for the sprinkler systems.

5.4 FP3 Sprinkler Systems (Cont'd)

A small hose system is provided for the warehouse portion of the AAA Company Inc. tenant space. The storage warehouse is only provided with 1½ hose valves while the production warehouse is provided with fire hose cabinets consisting of 1½ inch hose valves, 1½ inch lined fire hose, combination fog / straight stream nozzle and 5 lb portable fire extinguishers.

It is anticipated that system components will be required to be replaced every 15 years. However, the maintenance and upkeep of the small hose system components (including testing of hoses) is considered as on-going operational costs, and as such, associated costs for replacement of the system components has not been included in our estimated reserve fund allowances.

Replacement of the small hose system or associated parts (other than as required as part of the general maintenance program) is not anticipated within the next five years based on the approximate ages of the building.

5.5 FP4 Exit Signs and Emergency Lighting Units

The OFC and NFPA do not identify required replacement timelines for these devices. As well, on-site maintenance documents were not available at the time of our inspection.

In our opinion, the emergency lighting units have a life span of 20 years. The seal batteries for the emergency lighting units have a life span of 10 years (based on maintenance documentation from Lumacell). As such, based on the approximate age of the building being 45 years, it is anticipated that the exit signs and emergency lighting units / batteries will be required to be replaced within the period (5 years) for which this Study is intended.

6.0 SUMMARY

In summary, this inspection report outlines the items which are required to be upgraded in accordance with the 2007 Ontario Fire Code. This inspection report is based on our visual inspection that was conducted on January 23, 201X.

Attachment B to this inspection report contains a table identifying the noted OFC deficiencies as well as the Recommended Budget Allowances associated with the required repairs / upgrading. These costs are considered as budget estimates and are required to be confirmed by qualified contractors.

Attachment C to this correspondence includes a table identifying the estimated costs associated with the major capital expenditures which may be anticipated over the next 5 years. These costs are in Canadian 2014 figures. This study is for the purposes of capital planning only for major capital expenditures over the next 5 years. No guarantees are provided on the actual cost which may be incurred.

Prior to any modifications or demolition, appropriate building permits are required to be obtained from the local authorities.

Prepared by:

Reviewed by:

Signature on File

Signature on File

Harsh Desai, C.E.T., CFPS
Assistant Project Manager

David Johnson, LEL, C.E.T., CFPS
Senior Project Manager
Associate

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airhd.14-0069.doc

Attachment

ATTACHMENT A

OFC Inspection Matrix

BUILDING DESCRIPTION		NOTES
Major Occupancy:	<input type="checkbox"/> Group A Assembly <input type="checkbox"/> Group B Detention, Care or Treatment <input type="checkbox"/> Group C Residential <input checked="" type="checkbox"/> Group D Business and Personal Service <input type="checkbox"/> Group E Retail <input checked="" type="checkbox"/> Group F Industrial	The existing building contains two tenants. One tenant (AAA Company Inc.) is an industrial warehouse with subsidiary offices. The other tenant (BBB Company Inc.) is an office space.
Number of Storeys:	Above Ground: Two* Below Ground: None Mezzanine: One **	* the two-storey component is applicable to the tenant space occupied by BBB Company Inc. ** the mezzanine is applicable to the tenant space occupied by AAA Company Inc.
High Rise	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Building Area:	Approximately 63,000 ft ² (per CDW)	
Type of Construction:	<input checked="" type="checkbox"/> Combustible <input checked="" type="checkbox"/> Noncombustible Description: Exterior walls are concrete block. The roof is a metal pan roof with steel joists.	Note that the Second Floor floor assembly is constructed of a wood sub-floor and wood joists. This is also typical for the crawl space.
Approx Date of Construction:	Original: 1969 (per CDW) Additions: None	
Number of Suites / Units:	2	
Unique Characteristics:	<input type="checkbox"/> Atrium <input type="checkbox"/> Walkway Between Buildings <input type="checkbox"/> Firewall <input checked="" type="checkbox"/> Other: A crawl space is located in the tenant unit occupied by AAA Company Inc. It is accessed via an ancillary room off the production warehouse.	
FIRE SEPARATIONS		NOTES
Types of Fire Separations:	<input checked="" type="checkbox"/> Floor Assemblies <input checked="" type="checkbox"/> Exit Enclosures	<ul style="list-style-type: none"> Floor Assemblies: Wood joists with wood sub-floor. Exit Enclosure Construction: Drywall with steel studs. Major Occupancy Separation: Drywall with steel

	<input type="checkbox"/> Public Corridor <input type="checkbox"/> Service Rooms <input checked="" type="checkbox"/> Storage Rooms <input type="checkbox"/> Vertical Service Spaces <input type="checkbox"/> Garbage Chutes / Rooms <input type="checkbox"/> Janitor's Rooms <input type="checkbox"/> Electrical Closets <input checked="" type="checkbox"/> Suite Separations <input type="checkbox"/> Major Occupancy Separations <input type="checkbox"/> Parking Garage to Any Other Occupancy	studs. • Other Rooms / Areas: Drywall with wood studs.
Doors:	Labeled: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Self Closer: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Pos.Latch: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Mail Slot: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Door Frames:	Labeled: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Other: <input type="checkbox"/> _____	
Firestopping at Service Pen.:	<input type="checkbox"/> Yes <input type="checkbox"/> No	N/A
Fire Dampers at Duct Pen.:	<input type="checkbox"/> Yes <input type="checkbox"/> No	N/A
Wired Glass:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Steel Frame: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Location: Windows located in the office mezzanine in the AAA Company Inc. tenant unit. Specifically, the wall overlooking the warehouse.	

FIRE DEPARTMENT ACCESS		NOTES
Municipal Street(s):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name: Baywood Road	
Private Driveway:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Fire Route Posted:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Barrier to Access:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Description: N/A	
Main Entrance Location:	<input checked="" type="checkbox"/> North Face <input type="checkbox"/> East Face <input type="checkbox"/> South Face <input checked="" type="checkbox"/> West Face	The main entrance for AAA Company Inc. is located on the North face of the building. The main entrance for BBB Company Inc. is located on the West face of the building.
Access to Above Ground Floors:	<input type="checkbox"/> Elevators <input checked="" type="checkbox"/> Exit Stairs <input type="checkbox"/> Other	
Access to Below Ground Floors	<input type="checkbox"/> Elevators <input type="checkbox"/> Exit Stairs <input type="checkbox"/> Other	N/A

FIRE ALARM SYSTEM		NOTES
Provided	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Type:	<input type="checkbox"/> Single Stage <input type="checkbox"/> Two Stage	N/A
Make / Model:	_____	N/A
Approx. Age of System:	_____	N/A
Actuation Devices:	<input type="checkbox"/> Manual Pull Stations at Exits <input type="checkbox"/> Sprinkler Flow Switches <input type="checkbox"/> Smoke Detectors in Exit Stair Shafts <input type="checkbox"/> Smoke Detectors at Top of Stairwells <input type="checkbox"/> Smoke Detectors in Public Corridors <input type="checkbox"/> Duct Smoke Detectors <input type="checkbox"/> Heat Detectors in Corridors <input type="checkbox"/> Heat Detectors in Suites <input type="checkbox"/> Kitchen Extinguishing System <input type="checkbox"/> Duct Smoke Detectors <input type="checkbox"/> Other	N/A
Annunciator Panel:	<input type="checkbox"/> Yes <input type="checkbox"/> No	N/A

	Location: _____	
Fire Alarm Control Panel:	Location: _____	N/A
Audible Devices:	<input type="checkbox"/> Bells <input type="checkbox"/> Horns <input type="checkbox"/> Speakers	N/A
Standby Power:	<input type="checkbox"/> Batteries <input type="checkbox"/> Generator	N/A
Monitored:	<input type="checkbox"/> Yes <input type="checkbox"/> No Company: _____	N/A
Zoning:	N/A	
Voice Communication:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Firefighter Handsets <input type="checkbox"/> One Way Communication	N/A

EXITS		NOTES
Above Ground Floors::	Number of Exits: See Notes Panic Hardware: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The single storey (with one mezzanine level) tenant unit (AAA Company Inc.) is provided with exterior exit doors around the perimeter of the building. A set of open stairs is provided for egress from the mezzanine level. The two storey tenant unit (BBB Company Inc.) is provided exterior exit doors on the Ground Floor. One exit stair is provided for exiting from the Second Floor.
Below-Ground Floors:	Number of Exits: N/A Panic Hardware: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Pressurized:	Above Ground: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Below Ground: <input type="checkbox"/> Yes <input type="checkbox"/> No	N/A
Cross-Over Floors:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Identify Floors: _____	N/A
Exit Lobby:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Location: _____	
Fire Escape:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Location: _____	

Travel Distance (Retrofit):	<input checked="" type="checkbox"/> Not Reviewed (Retrofit N/A) <input type="checkbox"/> 30 m (non-sprinklered) <input type="checkbox"/> 45 m (sprinklered)	
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EMERGENCY LIGHTING	NOTES
Provided:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Type:	<input checked="" type="checkbox"/> Battery Powered <input type="checkbox"/> Dedicated Lights Powered by Generator <input type="checkbox"/> Both
Approx. Age of Units / System:	Unable to determine
Coverage:	<input checked="" type="checkbox"/> Exits <input type="checkbox"/> Access to Exits <input type="checkbox"/> Corridors <input type="checkbox"/> Assembly Areas <input type="checkbox"/> Floor Areas in Parking Garage Levels <input type="checkbox"/> Other:

EXIT SIGNAGE	NOTES
Provided:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Type:	<input checked="" type="checkbox"/> Battery Powered <input type="checkbox"/> Dedicated Lights Powered by Generator <input type="checkbox"/> Both
Approx. Age of Units:	Unable to determine
Coverage:	<input checked="" type="checkbox"/> Exits <input type="checkbox"/> Access to Exits <input type="checkbox"/> Corridors <input type="checkbox"/> Assembly Areas <input type="checkbox"/> Floor Areas in Parking Garage Levels <input type="checkbox"/> Other:

ELEVATORS	NOTES
Number of Elevators:	Passenger: None Freight: None

Pressurized:	<input type="checkbox"/> Yes <input type="checkbox"/> No	N/A
Elevator Recall:	<input type="checkbox"/> Yes <input type="checkbox"/> No Primary: _____ Alt: _____	N/A
Recall Switch Location:	_____	N/A
Firefighters Elevator:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Firefighters Hat: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Red <input type="checkbox"/> Yellow Emergency Power: <input type="checkbox"/> Yes <input type="checkbox"/> No	N/A

EMERGENCY POWER		NOTES
Type:	<input checked="" type="checkbox"/> Batteries <input type="checkbox"/> Generator <input type="checkbox"/> Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Electric	
Approx. Age of System:	Unable to determine	
Coverage:	<input checked="" type="checkbox"/> Emergency Lighting <input type="checkbox"/> Standpipe and Sprinkler Pump <input type="checkbox"/> Fire Alarm <input type="checkbox"/> Fire Pump <input type="checkbox"/> Firefighters Elevator <input type="checkbox"/> Passenger Elevator <input type="checkbox"/> Smoke Control System <input type="checkbox"/> Voice Communication System <input type="checkbox"/> Other:	
Location:	Battery packs located at emergency lighting units.	
Fuel Tanks:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Number of Tanks: _____ Tank Size: _____	

	Location: _____	
--	-----------------	--

FIRE EXTINGUISHERS	NOTES	
Type:	<input checked="" type="checkbox"/> Dry Chemical <input type="checkbox"/> Carbon Dioxide <input type="checkbox"/> Water <input type="checkbox"/> Halon	
General Locations:	<input checked="" type="checkbox"/> Entire Building <input type="checkbox"/> Select Compartments <input type="checkbox"/> Select Floor Areas	
Mounting:	<input checked="" type="checkbox"/> Brackets <input type="checkbox"/> Cabinets Height: <input checked="" type="checkbox"/> < 1.5 <input type="checkbox"/> > 1.5 m	While most of the extinguishers were mounted appropriately, various extinguishers throughout the building were found to be mounted in excess of 1.5 m above the floor.
Inspection Tags Provided:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Complete: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Inspection tags identified that the extinguishers were last inspection on November 27, 2013.
Last Inspected:	Varies. Most common date: November 27, 2013.	

SPRINKLER SYSTEMS	NOTES	
Provided	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Type	<input checked="" type="checkbox"/> Wet <input type="checkbox"/> Dry <input type="checkbox"/> Glycol <input type="checkbox"/> Pre-Action	A small hose system has been provided for the storage and production areas of the AAA Company Inc. tenant unit. The storage warehouse is only provided with 1 1/2 inch hose valves while the production warehouse is provided with fire hose cabinets consisting of 1 1/2 inch hose valves, 1 1/2 inch lined fire hose, combination fog / straight stream nozzle and 5 lb portable fire extinguishers.
Approx. Age of System(s):	Approximately 45 years	Based on age of building
Spare Sprinkler Cabinet:	Provided? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Number of Spare Heads 12 Sprinkler Wrench <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Location Adjacent to sprinkler risers	
Coverage	<input checked="" type="checkbox"/> Entire Building <input type="checkbox"/> Select Compartments	

	<input type="checkbox"/> Select Floor Areas	
Electrically Supervised:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Monitored:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No By security company (ADT)	
Sprinkler Fire Pump:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Other	
Fire Department Connection:	Location: West face of building	
Main Control Valve:	Location: Production warehouse (West face)	

STANDPIPE SYSTEMS		NOTES
Provided:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Type	<input type="checkbox"/> Wet <input type="checkbox"/> Dry	
Approx. Age of System(s):		
Hose Stations:	<input type="checkbox"/> Racks Only <input type="checkbox"/> Cabinets	Fire hose cabinets are provided in the production warehouse at the AAA Company Inc. tenant unit. Only hose valves have been provided in the storage warehouse portion of the tenant unit. Hose valve in both conditions are fed from overhead sprinkler cross mains.
Outlet Locations:	<input type="checkbox"/> Entire Building <input type="checkbox"/> Select Compartments <input type="checkbox"/> Select Floor Areas <input type="checkbox"/> N/A	
Outlet Sizes:	<input type="checkbox"/> 38 mm <input type="checkbox"/> 65 mm	
Hose (38 mm):	<input type="checkbox"/> 23 m <input type="checkbox"/> 30 m	
Coverage (33 m) (Retrofit):	<input type="checkbox"/> Not Reviewed (Retrofit N/A) <input type="checkbox"/> Yes <input type="checkbox"/> No	
Nozzles:	<input type="checkbox"/> Fog <input type="checkbox"/> Straight Stream <input type="checkbox"/> Combination	

Standpipe Fire Pump:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Other	
Main Control Valve:	Location: _____	
Fire Department Connection:	Location: _____	

FIRE PUMPS		NOTES
Provided:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Approx. Age of System:	_____	
Location:	_____	
Serves:	<input type="checkbox"/> Sprinklers <input type="checkbox"/> Standpipe <input type="checkbox"/> Both	

WATER SUPPLY		NOTES
Municipal Fire Hydrants:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Location: _____	
Private Fire Hydrants:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Location: _____ Approx. Age: _____	
Incoming Water Supply:	Size: 8 inch Location of Shut Off: West face of production warehouse (AAA Company Inc.)	

SMOKE CONTROL		NOTES
Elevator Pressurization:	<input type="checkbox"/> Yes <input type="checkbox"/> No	N/A
Exit Stair Pressurization:	Above Ground: <input type="checkbox"/> Yes <input type="checkbox"/> No Below Ground: <input type="checkbox"/> Yes <input type="checkbox"/> No	N/A
Smoke Shaft:	<input type="checkbox"/> Yes <input type="checkbox"/> No	N/A

KITCHEN EXTINGUISHING SYSTEM		NOTES
Provided:	<input type="checkbox"/> Yes <input type="checkbox"/> No	N/A

Approx. Age of System:	_____	N/A
Location	_____	N/A
Model	_____	N/A
Extinguishing Agent:	<input type="checkbox"/> Wet Chemical <input type="checkbox"/> Dry Chemical	N/A
Activation:	<input type="checkbox"/> Fusible Link <input type="checkbox"/> Manual Station <input type="checkbox"/> Both	N/A
Fire Alarm Connection:	<input type="checkbox"/> Yes <input type="checkbox"/> No	N/A

SPECIAL SYSTEMS		NOTES
Fire Shutters:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Location: _____	
Window Sprinklers:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Location: _____ Age: _____	
Dust Collection:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Location: _____	
Halon / FM 200 System:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Location: _____ Age: _____	
Flamm / Comb Liquids Room:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Location: _____	

FIRE SAFETY PLAN		NOTES
Provided:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Location:	_____	
Date:	_____	
Prepared By:	_____	

Approved:	<input type="checkbox"/> Yes <input type="checkbox"/> No Date: _____	
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INSPECTION / TEST / MAINTENANCE RECORDS	NOTES
Available:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Types:	<input type="checkbox"/> Sprinkler Records <input type="checkbox"/> Standpipe Records <input type="checkbox"/> Fire Pump Records <input type="checkbox"/> Emergency Generator <input checked="" type="checkbox"/> Emergency Lighting Inspections <input checked="" type="checkbox"/> Fire Extinguisher Records <input type="checkbox"/> Kitchen Extinguishing System Records <input type="checkbox"/> Inspections of Doors in Fire Separations
Up to Date:	<input type="checkbox"/> Yes <input type="checkbox"/> No

ATTACHMENT B

OFC Deficiencies Summary Table & Recommended Budget Allowances

ITEM	APPLICABLE OFC REQUIREMENT ^{1,2,3}	LOCATIONS/NOTES/DETAILS	RECOMMENDED BUDGET ALLOWANCE ^{4,5}
1.	<p><i>OFC Reference:</i> 1.1.2.1 Written records are required to be kept of tests and corrective measures or operational procedures so that at least the current and the immediately preceding reports are available upon request of the Chief Fire Official.</p> <p>ACTION: RECORDS REQUIRED</p>	<p>Records were not available for reference at the time of our inspection.</p>	<p>Record keeping</p>
2.	<p><i>OFC Reference:</i> 2.2.3.2.(1)(c) Closures in fire separations are required to be maintained to ensure that they are operable at all times by making necessary adjustments and repairs to door hardware and accessories to ensure proper closing and latching.</p> <p>ACTION: REPAIR / REPLACE CLOSURE</p>	<p>The two communication doors between the two tenant units are required to be provided with self-closing devices.</p>	<p>\$500.00</p>
3.	<p><i>OFC Reference:</i> 2.2.3.4 Doors in fire separations are required to be inspected monthly.</p> <p>ACTION: RECORDS REQUIRED</p>	<p>Records were not available for reference at the time of our inspection.</p>	<p>Record keeping</p>
4.	<p><i>OFC Reference:</i> 2.4.1.1.(2) No combustible materials, other than those for which the room or space is designed, are permitted in any part of any elevator shaft, ventilation shaft, means of egress, service room, or service space.</p> <p>ACTION: REMOVE COMBUSTIBLE MATERIALS</p>	<p>The exit stair located in tenant unit occupied by BBB Company Inc. contains a propane barbeque and is being used to store other items. These items are to be removed from the exit.</p> <p>This comment is typical for the main entrance vestibule for tenant unit occupied by AAA Company Inc.</p>	<p>House keeping</p>
5.	<p><i>OFC Reference:</i> 2.5.1.2.(2) Fire department sprinkler and standpipe connections are required to be clearly identified and maintained free of obstructions for use at all times.</p> <p>ACTION: REMOVE OBSTRUCTIONS</p>	<p>The fire department connection is currently obstructed by construction debris and parked vehicles. These items are required to be removed from the immediately vicinity so that the fire department connect is clearly visible and accessible at all times.</p>	<p>House keeping</p>

ITEM	APPLICABLE OFC REQUIREMENT ^{1,2,3}	LOCATIONS / NOTES / DETAILS	RECOMMENDED BUDGET ALLOWANCE ^{4,5}
6.	<p><i>OFC Reference:</i> 2.5.1.4 Approved signs are required to be displayed to indicate fire access routes.</p> <p>ACTION: PROVIDE SIGNS (IN ACCORDANCE WITH TORONTO MUNICIPAL CODE, CHAPTER 880)</p>	<p>Provide fire access route signage on the private driveway.</p>	\$2,500.00
7.	<p><i>OFC Reference:</i> 2.7.3.2 Exit signs are required to be illuminated, externally or internally, as appropriate for each sign's design, while the building is occupied.</p> <p>ACTION: REPLACE BULBS / REPAIR SIGN</p>	<p>Replace bulbs for the following:</p> <ul style="list-style-type: none"> • Exit sign below mezzanine (AAA Company Inc.). • Exit sign above exit stair door (BBB Company Inc.). • Exit sign in office space (BBB Company Inc.). • Exit sign at main entrance to BBB Company Inc. 	\$250.00
8.	<p><i>OFC Reference:</i> 2.7.3.3.(3)(a) Emergency lighting unit equipment is required to be inspected monthly to ensure that the emergency lights will function upon failure of the primary power supply.</p> <p>ACTION: INSPECT / REPAIR UNIT</p>	<p>Records were not available at the time of our inspection to indicate that the emergency lighting units have been inspected.</p>	Record keeping and on-going maintenance
9.	<p><i>OFC Reference:</i> 2.8.1.1 A Fire Safety Plan (approved by the local authorities) is required to be provided for this building.</p> <p>ACTION: FIRE SAFETY PLAN REQUIRED</p>	<p>Per OFC 2.8.1.1.(1)(f), a Fire Safety Plan is required to be provided if the occupant load exceeds 100 persons. Based on an approximate building area of 63,000 ft², the calculated occupant load would be 1,272 persons (63,000 ft² ÷ 49.5 ft² / persons for manufacturing and process areas - OBC 3.1.17.1). Confirmation is required if the actual occupant load will exceed 100 persons.</p>	Further review is required
10.	<p><i>OFC Reference:</i> 6.2.1.3.(1) Portable extinguishers are required to be located so that they are easily seen and accessible at all times.</p> <p>ACTION: RELOCATE FIRE EXTINGUISHER</p>	<p>Several fire extinguishers in the production warehouse of the AAA Company Inc. tenant unit were located on the floor and are required to be installed on racks such that they are not more than 1.5 m above the floor.</p>	\$200.00 (brackets)\

ITEM	APPLICABLE OFC REQUIREMENT ^{1,2,3}	LOCATIONS / NOTES / DETAILS	RECOMMENDED BUDGET ALLOWANCE ^{4,5}
11.	<p>OFC Reference: 6.2.7.2 Portable extinguishers are required to be inspected monthly.</p> <p>ACTION: INSPECT FIRE EXTINGUISHER</p>	<p>Inspect fire extinguishers as required and update the inspection tags monthly.</p>	<p>\$200.00</p>
12.	<p>OFC Reference: 6.2.7.5 A permanent record containing the maintenance date, the examiner's name and the description of maintenance work or hydrostatic testing carried out is required to be prepared and maintained for each portable fire extinguisher.</p> <p>ACTION: PROVIDE MAINTENANCE RECORDS</p>	<p>No maintenance records provided.</p>	<p>Record keeping</p>
13.	<p>OFC Reference: 6.4.2.1 Hose stations are required to be inspected monthly to ensure that the hose is in proper position and that all of the equipment is in place and in operable condition.</p> <p>ACTION: REPLACE / REPOSITION STANDPIPE HOSE AND EQUIPMENT</p>	<p>The door to one of the fire hose cabinets in the production warehouse (AAA Company Inc.) does not close properly. Replace the door of the fire hose cabinet.</p>	<p>\$200.00</p>
14.	<p>OFC Reference: 6.4.2.3 Standpipe hose stations are required to be conspicuously identified and unobstructed.</p> <p>ACTION: REMOVE OBSTRUCTION</p>	<p>Several fire hose cabinets in the production warehouse (AAA Company Inc.) are obstructed. Remove obstructions that restrict access to the fire hose cabinets.</p>	<p>House keeping</p>
15.	<p>OFC Reference: 6.4.2.7.(1) Approved lockable, scored glass break-front cabinets are permitted to be used for fire hose stations.</p> <p>ACTION: PROVIDE BREAK-FRONT GLAZING FOR CABINET</p>	<p>One fire hose cabinet in the production warehouse (AAA Company Inc.) is currently provided with a mesh grill. A scored glass break-front cover is required to be provided for the fire hose cabinet.</p>	<p>\$200.00</p>

ITEM	APPLICABLE OFC REQUIREMENT ^{1,2,3}	LOCATIONS / NOTES / DETAILS	RECOMMENDED BUDGET ALLOWANCE ^{4,5}
16.	<p>OFC Reference: 6.5.1.5.(1) No obstruction is permitted to be placed so as to interfere with the effectiveness of water discharge from sprinklers (6.5.1.5.(1)). As such, this sprinkler obstruction.</p> <p>ACTION: REMOVE SPRINKLER OBSTRUCTION</p>	<p>The sprinkler heads in the washrooms in the office mezzanine at the AAA Company Inc. tenant unit are obstructed by light fixtures. Either the lights or sprinkler heads are required to be relocated to offset the obstructed condition.</p>	\$1,000.00
17.	<p>OFC Reference: 6.5.1.8.(1) An approved record is required to be kept of the inspection of the sprinkler system.</p> <p>ACTION: PROVIDE RECORD OF SPRINKLER INSPECTIONS</p>	<p>No maintenance records provided.</p>	Record keeping
18.	<p>OFC Reference: 6.3.1.4; 6.5.1.2 The t-bar ceiling tiles are required to be reinstated such that proper operation of the sprinkler / fire alarm system is maintained.</p> <p>ACTION: REINSTATE T-BAR CEILINGS TILES</p>	<p>The ceiling tiles in the storage rooms at BBB Company Inc. are required to be re-instated in the t-bar grid.</p>	House keeping
19.	<p>OFC Reference: N/A The building's Fire Safety Plan is required to be located in a FSP Box in accordance with local by-law.</p> <p>ACTION: PROVIDE FSP BOX</p>	<p>The approved copy of the Fire Safety Plan is required to be placed in a FSP box.</p>	\$500.00
20.	<p>OFC Reference: N/A The incoming fire water main is required to be equipped with a backflow prevention device in accordance with Toronto By-Law.</p> <p>ACTION: INSTALL BACKFLOW PREVENTION DEVICE</p>	<ul style="list-style-type: none"> A backflow preventer is not provided for the sprinkler systems. Provide a backflow prevention device in accordance with the applicable Toronto By-Law. 	\$12,000.00

NOTES:

¹ This is not an all-inclusive list of building deficiencies, but rather a summary of the items noted during our visual, nondestructive inspection of the building.

- 2 RBA Engineering has not reviewed activities within the building that may be construed as hazardous activities (OFC, 2.1.2.2).
- 3 RBA Engineering has not reviewed sprinkler design requirements (as applicable) with respect to the specific storage methods / commodities / processes within the building.
- 4 Ballpark figures only. Required to be verified by qualified contractors and may vary depending on the degree of outsourced work.
- 5 Prior to any modifications or demolition, appropriate building permits are required to be obtained from local authorities.

ATTACHMENT C

Capital Replacement Study Summary Table

Report Reference	Item	Approximate Age (Years)	Recommend Reserve Funds	Replacement Timeline
FP1	Fire Safety Plan	N/A	\$3,000.00	As required
FP2	Portable Fire Extinguishers	Unknown	\$500.00	On-going maintenance
FP3	Wet-Pipe Sprinkler Head Replacement ⁽¹⁾	Approx. 45 years	\$7,000.00	Initial testing required every 50 years ⁽¹⁾
FP4	Exit Signs and Emergency Lighting Units and Batteries	Unknown	\$3,000.00	As needed

Notes:

- (1) test procedure for sprinkler heads required to re-occur every 10 years after initial testing

STATEMENT OF QUALIFICATION

RICHARD WELDON, P.Eng., LEED AP

Carson Dunlop Weldon and Associates Ltd.

- Graduated in 1987 from the University of Toronto with a B.A.Sc in Mechanical Engineering
- Designated by the Association of Professional Engineers of Ontario as a Professional Engineer in 1989
- Designated as a Consulting Engineer in 1995
- Designated LEED AP by Canada Green Building Council in 2009
- Previous West Central Region Councillor and Councillor-at-Large, Professional Engineers Ontario
- An employee of Carson Dunlop & Associates Limited from 1987 to 1997. Duties include inspecting over 4,000 residential and commercial buildings of various descriptions and reporting on conditions of major components such as structure, building envelope and mechanical systems.
- An employee of Carson Dunlop Rohmann & Associates Ltd. in 1991. Duties include detailed progress inspections of roofing membrane installations, consulting with architects on roofing details and procedures and specification writing for roofing applications.
- Formed Carson Dunlop Weldon & Associates Ltd. with Alan Carson and Robert Dunlop in 1997

MEMBERSHIPS

- Ontario Building Envelope Council
- Ontario Plumbing Inspectors Association
- CoreNet Global – Corporate Real Estate Network
- Served as an expert witness to the Ontario Courts—General Division and Superior Court of Ontario
- Presenter at various functions, including, the Toronto Real Estate Board, the American Society of Home Inspectors National Conferences, the Society of Industrial and Office Realtors and the Ontario Association of the Appraisal Institute of Canada

CONTINUING EDUCATION COURSES INCLUDE

- Deterioration and Failure of Concrete Structures, University of Toronto
- Ontario Building Code, Part 9: Technical Requirements, Ontario Ministry of Housing
- Electrical Safety Code, University of Toronto
- Structural Design, University of Toronto
- Advanced Plumbing Design, Seneca College
- Fall Arrest Training – Ontario Power Generation – Darlington
- LEED New Construction and Major Renovations – Canada Green Building Council
- Business Management – University of Toronto School of Continuing Studies
- Co-authored and currently teaches Commercial Property Condition Assessment courses for various public and private groups across North America

PUBLICATIONS INCLUDE

- “Top 10 Building Deficiencies” – Society of Industrial and Office Realtors Professional Report Magazine - Fall 2006
- “Dealing with Shortfalls Uncovered by a Reserve Fund Study” – Condo News of the Golden Horseshoe - Volume 2 2012



STATEMENT OF QUALIFICATION

JOHN LYONS, EIT, BScE

Carson Dunlop Weldon & Associates Ltd.

- Graduated in 2010 from Queen's University with a BScE in Mechanical Engineering.
- Enrolled in the Engineering Intern Training program with Professional Engineers Ontario.
- Joined Carson Dunlop Weldon & Associates Ltd. in 2010 as a Building Consultant. Primary duties include inspecting residential and commercial buildings of various descriptions and reporting on conditions of major components such as structure, building envelope, asphalt, electrical and mechanical systems. Performing energy audits of commercial properties.

CONTINUING EDUCATION COURSES INCLUDE

- Commercial Building Inspection Course – Carson Dunlop Weldon & Associates Ltd.
- How a Plumber Inspects the Plumbing – Carson Dunlop
- Understanding HVAC Systems – Carson Dunlop



STATEMENT OF QUALIFICATION

IVO MARKIEL, H.B.A., M.B.Sc.

Carson Dunlop Weldon & Associates Ltd.

- Graduated in 2008 from University of Toronto with an Honours Bachelor of Arts, specializing in art and architecture history.
- Graduated in 2012 from Ryerson University with a Master of Building Science. Elective courses included building envelope condition assessment, lighting design and building energy simulation.
- Completed the Commercial Building Inspection Course by Carson Dunlop Weldon & Associates Ltd. in 2012.
- Secured a position as a Restoration Technician in 2006 with Fine Restoration and Painting, a company which is focused on the restoration of masonry and carpentry of heritage buildings in downtown Toronto. Primary duties included restoration of exterior woodwork of residential and institutional buildings.
- Worked independently as a Restoration Contractor in 2010 on residences located in Toronto's Cabbagetown district. Foremost responsibilities included restoration of exterior carpentry, as well as cost estimation and project management.
- Joined Engineering Link Inc. in 2011 as a Junior Designer. Working under the company's Building Envelope Division, the position included project management and contract administration, preparation of bid and contract documents, building envelope physical condition assessments, and designing repair details for commercial and institutional building restoration projects.
- Joined Carson Dunlop Weldon & Associates Ltd. in 2012 as a Building Consultant. Primary responsibilities comprise physical condition assessments for commercial, industrial and residential properties and preparation of inspection reports describing conditions of major building components, including structure, building envelope, plumbing, electrical and mechanical systems, as well as hard and soft landscaping.



STATEMENT OF QUALIFICATION

HARSH DESAI, C.E.T., CFPS, BCIN Assistant Project Manager Randal Brown & Associates Engineering Ltd.

Harsh Desai is an Assistant Project Manager at RBA, having started with the firm in 2005. Harsh has 10 years of experience in the fire protection and life safety industry. He is a fire protection system designer with RBA Engineering, and has designed numerous fire sprinkler and standpipe systems in high-rise buildings and industrial facilities. Harsh also worked on a variety of projects involving building and fire codes, consulting on architectural designs and concepts, and planning the partial occupancy of buildings under construction.

Mr. Desai is a Certified Engineering Technologist and a Registered Designer with the Ontario Ministry of Municipal Affairs and Housing, and a graduate of the Fire Protection and Engineering Technology program at Seneca College.

Harsh is currently a member of the following organizations:

- Canadian Fire Safety Association (CFSA)
- Society of Fire Protection Engineers (Southern Ontario Chapter) (SFPE)
- International Code Council (ICC)
- Canadian Automatic Sprinkler Association (CASA)



GLOSSARY

ABS — A type of black plastic pipe commonly used for waste water lines.

Aggregate — Crushed rock or stone.

Air chamber — A vertical, air filled pipe that prevents water hammer by absorbing pressure when water is shut off at a faucet or valve.

Air-conditioner condenser — The outside fan unit of the air conditioning system. The condenser discharges heat to the building exterior.

Alligatoring — Coarse checking pattern on the surface of a material. Typically caused by ageing, exposure to sun and/or loss of volatiles.

Ampacity — Refers to the how much current a wire can safely carry. For example, a 12-gauge electrical copper wire can safely carry up to 20 amps.

Asphalt — A bituminous material employed in roofing and road paving materials because of its waterproofing ability.

Backfill — The replacement of excavated earth into a trench or pit.

Backflow — A reverse flow of water or other liquids into the water supply pipes, caused by negative pressure in the pipes

Ballast — A transformer that steps up the voltage in a fluorescent lamp.

Balusters — Vertical members in a railing used between a top rail and bottom rail or the stair treads. Sometimes referred to as pickets or spindles.

Base sheet — Bottom layer of built-up roofing.

Batt — A section of fiberglass or rock-wool insulation.

Bay window — Any window space projecting outward from the walls of a building, either square or polygonal in plan.

Beam — A structural member transversely supporting a load. A structural member carrying building loads (weight) from one support to another. Sometimes called a girder.

Bearing wall — A wall that supports any vertical load in addition to its own weight.

Bird's-mouth cut — A cutout in a rafter where it crosses the top plate of the wall providing a bearing surface for nailing. Also called a heel cut.

Bitumen — Term commonly applied to various mixtures of naturally occurring solid or liquid hydrocarbons, excluding coal. These substances are described as bituminous. Asphalt is a bitumen. *See Asphalt.*

Blocking — Small wood pieces to brace framing members or to provide a nailing base for gypsum board or paneling.

Board and batten — A method of siding in which the joints between vertically placed boards or plywood are covered by narrow strips of wood.

Bottom chord — The lower or bottom horizontal member of a truss.

Brick tie — Metal strips or wires that are inserted into the mortar joints of the brick veneer. Ties hold the veneer wall to the backer wall behind it.

Brick veneer — A vertical facing of brick used to clad a building. Brick veneer is not a load-bearing component.

Building paper — A general term for papers, felts and similar sheet materials used in buildings without reference to their properties or uses. Generally comes in long rolls.

Built-up roof — A roofing composed of three to five layers of asphalt felt laminated with coal tar, pitch or asphalt. The top is finished with crushed slag or gravel. Generally used on flat or low-pitched roofs.

Butt joint — The junction where the ends of building materials meet. To place materials end-to-end or end-to-edge without overlapping.

Cant strip — A triangular shaped piece of lumber used at the junction of a flat deck and a wall to prevent cracking of the roofing which is applied over it.

Cantilever — Any part of a structure that projects beyond its main support and is balanced on it.

Cap flashing — The flashing covering over a horizontal surface to prevent water from migrating behind the base flashing.

Cap sheet — The top layer in modified bitumen roofing.

Casement window — A window with hinges on one of the vertical sides and swings open like a door.

Ceiling joist — One of a series of parallel framing members used to support ceiling loads and supported in turn by larger beams, girders or bearing walls. Can also be roof joists.

Cement — The grey powder that is the "glue" in concrete. Portland cement. Also, any adhesive.

Certificate of Occupancy — Certificate is issued by the local municipality and is required before anyone can occupy and live within the building. It is issued only after the local municipality has made all inspections and all monies and fees have been paid.

CFM (cubic feet per minute) — A rating that expresses the amount of air a blower or fan can move. The volume of air (measured in cubic feet) that can pass through an opening in one minute.

Chase — A framed enclosed space around a flue pipe or a channel in a wall, or through a ceiling for something to lie in or pass through.

Checking — Cracks that appear with age in many large timber members. The cracks run parallel to the grain of the wood. At first superficial, but in time may penetrate entirely through the member and compromise its integrity.

Cleanout — An opening providing access to a drain line. Closed with a threaded plug.

Closed-cut valley — A method of valley treatment in which shingles from one side of the valley extend across the valley, while shingles from the other side are trimmed 2 inches from the valley centerline. The valley flashing is not exposed.



Collar tie — Nominal one- or two-inch-thick members connecting opposite roof rafters. They serve to stiffen the roof structure.

Column — A vertical structural compression member that supports loads acting in the direction of its longitudinal axis.

Combustion air and ventilation air — The ductwork installed to bring fresh, outside air to the furnace or boiler room. Normally two separate supplies of air are brought in: one high for ventilation and one low for combustion.

Compressor — A mechanical device that pressurizes a gas in order to turn it into a liquid, thereby allowing heat to be removed or added. A compressor is the main component of conventional heat pumps and air conditioners. In an air conditioning system, the compressor normally sits outside and has a large fan (to remove heat).

Concrete board or cement board — A panel made out of concrete and fiberglass, usually used as a tile backing material.

Condensate drain line — The pipe that runs from the air conditioning cooling coil to the exterior or internal building drain, to drain away condensation.

Condensation — The change of water from vapor to liquid when warm, moisture-laden air comes in contact with a cold surface.

Condensing unit — The outdoor component of a cooling system. It includes a compressor and condensing coil designed to give off heat.

Conduit, electrical — A pipe, usually metal, in which wire is installed. The pipe serves to protect the wire.

Control joint — Tooled, straight grooves made on concrete floors or structures to "control" where the concrete should crack (as a result of shrinkage).

Cooling load — The amount of cooling required to keep a building at a specified temperature during the summer, usually 25° C, based on a design outside temperature.

Corbel — To build out one or more courses of brick or stone from the face of a wall. This may be decorative, or serve to support a structural component.

Counterflashing — A metal flashing usually used to cover another flashing and prevent moisture entry.

Course — A row of shingles or roll roofing running the length of the roof. Parallel layers of building materials such as bricks, or siding laid up horizontally.

CPVC — See *PVC*.

Crawlspace — A shallow space below a building, normally enclosed by the foundation walls.

Cricket — A saddle-shaped, peaked construction connecting a sloping roof plane with a wall or chimney. Designed to encourage water drainage away from the chimney or wall joint.

Culvert — Round, corrugated drain pipe (normally 15 or 18 inches in diameter) installed beneath a driveway and parallel to and near the street.

Cupping — A type of warping that causes boards or shingles to curl up at their edges. Typically caused by uneven drying or loss of volatiles.

Curb — The short elevation of a supporting element above the deck of a roof. Normally a box (on the roof) on which a skylight or piece of mechanical equipment is attached.

Curtain wall — An exterior building wall that is supported entirely by the building structure, rather than being self-supporting or load-bearing.

Damper — A metal "door" placed within the ductwork, typically. Used to control flow of air, etc., in the ductwork.

Damp-proofing — The black, tar-like material applied to the exterior of a foundation wall. Used to minimize moisture penetration into the wall.

Deck — The surface, installed over the supporting framing members, to which the roofing is applied.

Dedicated circuit — An electrical circuit that serves only one appliance or a series of electric heaters or smoke detectors.

Dew point — Temperature at which a vapor begins to deposit as a liquid. Applies especially to water in the atmosphere.

Disconnect — A large electrical ON-OFF switch.

Diverter valve — A device that changes the direction of water flow from one faucet to another.

Dormer — A box-like projection from the sloping plane of a roof that frames a window.

Double-hung window — A window with two vertically sliding sashes, both of which can move up and down.

Downspout — A pipe for draining water from roof gutters. Also called a leader.

Drain tile — A perforated, corrugated plastic pipe laid at the bottom of the foundation wall and used to drain excess water away from the foundation. It prevents ground water from seeping through the foundation wall. Sometimes called perimeter drain.

Drip — A groove in the underside of a sill or drip cap to cause water to drop off on the outer edge instead of drawing back and running down the face of the building.

Ducts — Usually round or rectangular metal pipes installed for distributing warm or cold air from the heating and air-conditioning equipment.

Eaves protection — Additional layer of roofing material applied at the eaves to help prevent damage from water backup (typically caused by ice damming).

EIFS — Exterior Insulation Finish System. An exterior cladding system that employs a relatively thin acrylic stucco coating over insulation panels. (Pronounced "ee-fus")

Elbow — A plumbing or electrical fitting that lets you change directions in runs of pipe or conduit.

Evaporator coil — The part of a cooling system that absorbs heat from air passing through it. The evaporator coil is found within the ductwork.

Expansion joint — A joint that allows for building material expansion and contraction caused by temperature changes.

Exposed aggregate finish — A method of finishing concrete which washes the cement/sand mixture off the top layer of the aggregate — usually gravel. Often used with precast concrete exterior wall finishes.

Exposure — The portion of the roofing or wall cladding material exposed to the weather after installation.

Fascia — a vertical member attached to the ends of the roof structure and often the backing of the gutter.

Felt — Fibrous material saturated with asphalt and used as an underlayment or part of a built-up roofing system.

Finger joint — A manufacturing process of interlocking two shorter pieces of wood end to end to create a longer piece of dimensional lumber or molding. Often used in jambs and casings and are normally painted (instead of stained).

Fire stop — A solid, tight closure of a concealed space, placed to prevent the spread of fire and smoke through such a space. Includes stuffing wire and pipe holes in the fire separations.

Flashing — (1) Sheet metal or flexible membrane pieces fitted to the joint of any roof intersection, penetration or projection (chimneys, copings, dormers, valleys, vent pipes, etc.) to prevent water leakage. (2) The building component used to connect portions of a roof, deck, or siding material to another surface such as a chimney, wall, or vent pipe. Often made out of various metals, rubber or tar and is mostly intended to prevent water entry.

Flatwork — Common word for concrete floors, driveways, patios and sidewalks.

Flue — The space or passage in a chimney through which smoke, gas, or fumes ascend.

Fluorescent lighting — A fluorescent lamp is a gas-filled glass tube with a phosphor coating on the inside. Gas inside the tube is ionized by electricity which causes the phosphor coating to glow. Normally with two pins that extend from each end.

Footing — A widened, below-ground base of a foundation wall or a poured concrete, below-ground, base used to support foundations or piers.

Forced air heating — a common form of heating with natural gas, propane, oil or electricity as a fuel. Air is heated through a heat exchanger and distributed through a set of metal ducts.

Form — Temporary structure erected to contain concrete during placing and initial hardening.

Foundation — The supporting portion of a structure below the first floor construction, or below grade, including the footings.

Framing — The structural wood, steel or concrete elements of the building.

Framing, balloon — A system of framing a building in which all vertical structural elements of the bearing walls consist of single pieces extending from the top of the foundation sill plate to the roof plate and to which all floor joists are fastened.

Frost line — The depth of frost penetration in soil and/or the depth at which the earth will freeze and swell. This depth varies in different parts of the country.

Furring — Strips of wood or metal applied to a wall or other surface to even it and normally to serve as a fastening base for finish material.

Gable — A sidewall, typically triangular, that is formed by two sloping roof planes.

Gable roof — A type of roof with sloping planes of the same pitch on each side of the ridge. Has a gable at each end.

Gasket — A device used to seal joints against leaks.

GFI or GFCI or Ground Fault Current Interrupter — A electrical device used to prevent injury in locations where one might be in contact with a grounded surface and an electrical appliance. Most GFIs are located in a receptacle or circuit breaker and can be identified by the presence of a "test" and a "reset" button.

Glued laminated beam (glulam) — A structural beam composed of wood laminations. The laminations are pressure-bonded with adhesives.

Granules — Crushed rock coated with ceramic material, applied to the exposed surface of asphalt roofing products to add color and reduce ultraviolet degradation. Copper compounds added to these help make them algae resistant.

Groundwater — Water from a subsurface water source.

Grout — Mortar made of such consistency (by adding water) that it will flow into the joints and cavities of the masonry work and fill them solid.

Gusset — A flat metal, wood, plywood or similar type member used to provide a connection at the intersection of wood members. Most commonly used at joints of wood trusses. They are fastened by nails, screws, bolts, or adhesives.

Gutter — The trough that channels water from the eaves to the downspouts.

H-beam — A steel beam with a cross section resembling the letter H.

H-clip — Small metal clips formed like an H that fits at the joints of two plywood (or wafer board) sheets to stiffen the joint. Normally used on the roof sheeting.

Header — A beam placed perpendicular to joists and to which joists are attached in framing for around an opening.

Hearth — The fireproof area directly in front of a fireplace. The inner or outer floor of a fireplace, usually made of brick, tile, or stone.

Heat pump — A device that uses compression and decompression of gas to heat and/or cool a building.

Heating load — The amount of heating required to keep a building at a specified temperature during the winter, based on an outside design temperature.

Hip — The external angle formed by the meeting of two sloping sides of a roof.

Honeycombs — The appearance concrete makes when aggregate in the concrete is visible and where there are void areas in the concrete.

Hose bib — An exterior water faucet.

Hot wire — The wire that carries electrical energy to a receptacle or other device-in contrast to a neutral, which carries electricity away again. Normally the black wire.

Hvac — An abbreviation for Heat, Ventilation, and Air Conditioning.

I-beam — A steel beam with a cross section resembling the letter I.

Ice damming — The buildup of ice and water at the eaves of a sloped roof. Melting snow on the roof refreezes at the roof overhang, causing the damming. Buildings with inadequate attic insulation or ventilation or with large roof projections beyond the exterior walls are more prone to ice damming.

Irrigation — Lawn sprinkler system.

Jack post — A type of structural support made of metal, which can be raised or lowered through a series of pins and a screw to meet the height required. Typically used as a replacement for an old supporting member in a building.

Joist — One of a series of parallel beams, usually two inches in thickness, used to support floor and ceiling loads, and supported in turn by larger beams, girders, or bearing walls.

Joist hanger — A metal U-shaped item used to support the end of a floor joist and attached with hardened nails to another bearing joist or beam.

Knob-and-tube wiring — A common form of electrical wiring used before the Second World War. When in good condition it may still be functional for low amperage use such as smaller light fixtures.

Lath — A building material of narrow wood, metal, gypsum, or insulating board that is fastened to the frame of a building to act as a base for plaster, shingles, or tiles.

Lattice — An open framework of crisscrossed wood or metal strips that form regular, patterned spaces.

Leader — See *Downspout*.

Ledger — The wood or metal members attached to a beam, studding, or wall used to support joist or rafter ends.

Lintel — A horizontal structural member that supports the load over an opening such as a door or window.

Load-bearing wall — A wall supporting its own weight and some other structural elements of the building such as the roof and floor structures.

Louvre — A vented opening into a room that has a series of horizontal slats and arranged to permit ventilation but to exclude rain, snow, light, insects, or other living creatures.

Mansard roof — A roof with two sloping planes of different pitch on each of its four sides. The lower plane is steeper than the upper, and may be almost vertical.

Masonry — Stone, brick, concrete, hollow-tile, concrete block, or other similar building units or materials. Normally bonded together with mortar to form a wall.

Modified bitumen roof — A roof covering that is typically composed of a factory-fabricated composite sheet consisting of a copolymer-modified bitumen, often reinforced with polyester and/or fiberglass, and installed in one or more plies. The membrane is commonly surfaced with field-applied coatings, factory-applied granules or metal foil. The roofing system may incorporate rigid insulation.

Mortise — A slot cut into a board, plank, or timber, usually edgewise, to receive the tenon (or tongue) of another board, plank, or timber to form a joint.

Mullion — A vertical divider in the frame between windows, doors, or other openings.

Neutral wire — Usually color-coded white, this wire carries electricity from a load back to the service panel.

Newel post — The large starting post to which the end of a stair guard railing or balustrade is fastened.

Nosing — The projecting edge of a molding or drip or the front edge of a stair tread.

On center — The measurement of spacing for studs, rafters, and joists in a building from the center of one member to the center of the next.

Open valley — Method of valley construction in which shingles on both sides of the valley are trimmed along a chalk line snapped on each side of the valley. Shingles do not extend across the valley. Valley flashing is exposed.

Open web steel joist — One of a series of parallel beams, used to support floor and roof loads, and supported in turn by larger beams, girders or bearing walls. Consists of horizontal top and bottom chords, with diagonal and/or vertical web members connecting the chords together.

Oriented Strand Board or OSB — A manufactured 4-foot-by-8-foot wood panel made out of one- to two-inch wood chips and glue. Often used as a substitute for plywood.

P-trap — Curved, U-section of drain pipe that holds a water seal to prevent sewer gasses from entering a building through a fixtures' drain pipe.

Parapet — The portion of an exterior wall that extends above the edge of a roof.

Parging — A thin layer of cement placed over masonry units.

Partition — A wall that subdivides spaces within any story of a building or room.

Paver — Materials (commonly masonry) laid down to make a firm, even surface on the exterior.

Performance bond — An amount of money (usually 10 percent of the total price of a job) that a contractor must put on deposit with a governmental agency as an insurance policy that guarantees the contractors' proper and timely completion of a project or job.

Perimeter drain — Typically 4-inch perforated plastic pipe around the perimeter (either inside or outside) of a foundation wall (before backfill) that collects and diverts ground water away from the foundation.

Pilot light — A small, continuous flame (in a boiler, or furnace) that ignites gas or oil burners when needed.

Pitch — (1) The degree of roof incline expressed as the ratio of the rise, in feet, to the span, in feet. (2) A thick, oily substance commonly obtained from tar, used to seal out water at joints and seams. Pitch is produced from distilling coal tar, wood tar, or petroleum.

Pitch pocket — A container, usually formed of sheet metal, around supporting connections with roof-mounted equipment. Filling the container with pitch, or better yet, plastic roof cement, helps seal out water even when vibration is present. A pitch pocket is *not* the preferred method of flashing a roof penetration.

Plan view — Drawing of a structure with the view from overhead, looking down.

Plate — Normally a horizontal member within a framed structure, such as: (1) sill plate — a horizontal member anchored to a concrete or masonry wall; (2) Sole plate — bottom horizontal member of a frame wall; or (3) top plate — top horizontal member of a frame wall supporting ceiling joists, rafters, or other members.

Plenum — The main supply air or return air duct leading from a heating or cooling unit.

Plumbing stack — A plumbing vent pipe that penetrates the roof.

Ply — A term to denote the number of layers of roofing felt, veneer in plywood, or layers in built-up materials, in any finished piece of such material.

Point load — A point where a bearing/structural weight is concentrated and transferred to another structural member or component.

Portland cement — Cement made by heating clay and crushed limestone into a brick and then grinding to a pulverized powder state.

Post — a vertical framing member usually designed to carry a beam.

Post-and-beam — A basic building method that uses just a few hefty posts and beams to support an entire structure. Contrasts with stud framing.

Power vent — A vent that includes a fan to speed up air flow.

Pressure relief valve — A safety device mounted on a water heater or boiler. The relief valve is designed to release any high pressure in the vessel and thus prevent tank explosions.

Pressure-treated wood — Lumber that has been saturated with a preservative to resist rot.

Pvc or cpvc — (Polyvinyl chloride) A type of white or light gray plastic pipe sometimes used for water supply lines and waste pipe.

Quarry tile — A man-made or machine-made clay tile used to finish a floor or wall. Generally 6 inches by 6 inches by ¼-inch thick .

R value — A measure of insulation's resistance to heat flow. The higher the R value the more effective the insulation.

Rafter — (1) The framing member that directly supports the roof sheathing. A rafter usually follows the angle of the roof, and may be a part of a roof truss. (2) The supporting framing member immediately beneath the deck, sloping from the ridge to the wall plate.

Rafter, hip — A rafter that forms the intersection of an external roof angle.

Rafter, valley — A rafter that forms the intersection of an internal roof angle.

Rake edge — The overhang of an inclined roof plane beyond the vertical wall below it.

Rebar — Reinforcing bar. Ribbed steel bars installed in concrete structures designed to strengthen concrete. Comes in various thicknesses and strength grades. May be epoxy coated to enhance rust resistance.

Refrigerant — A substance that remains a gas at low temperatures and pressure and can be used to transfer heat. Freon is an example.

Register — A grille placed over a supply air or return air duct.

Reglaze — To replace a broken window.

Reinforcing — Steel rods or metal fabric placed in concrete slabs, beams, or columns to increase their strength.

Relief valve — A device designed to open if it detects excess temperature or pressure. Commonly found on water heating or steam producing systems.

Resilient flooring — A durable floor cover that has the ability to resume its original shape.

Retaining wall — A structure that holds back a slope or elevation of land and prevents erosion.

Ridge — The horizontal line at the junction of the top edges of two sloping roof surfaces.

Riser — A vertical member between two stair treads.

Roll roofing — Asphalt roofing products manufactured in roll form.

Romex — A name brand of nonmetallic sheathed electrical cable that is used for indoor wiring.

Roof deck — The surface, installed over the supporting framing members, to which the roofing is applied.

Roof sheathing — The wood panels or sheet material fastened to the roof rafters or trusses on which the shingle or other roof covering is laid.

Roof valley — The "V" created where two sloping roofs meet.

Roofing membrane — The layer or layers of waterproofing products that cover the roof deck.

Run, stair — The horizontal distance of a stair tread from the nosing to the riser.

Saddle — Two sloping surfaces meeting in a horizontal ridge, used between the back side of a chimney, or other vertical surface, and a sloping roof. Used to divert water around the chimney or vertical surface.

Sanitary sewer — A sewer system designed for the collection of waste water from the bathroom, kitchen and laundry drains, and is usually not designed to handle storm water.

Sash — The frame that holds the glass in a window, often the movable part of the window.

Saturated felt — A felt that is impregnated with tar or asphalt.

Scratch coat — The first coat of plaster, which is scratched to form a bond for a second coat.

Scupper — (1) An opening for drainage in a wall, curb or parapet. (2) The drain above a downspout or in a flat roof, usually connected to the downspout.

Sealer — A finishing material, either clear or pigmented, that is usually applied directly over raw wood or concrete for the purpose of sealing the wood or concrete surface.

Seasoning — Drying and removing moisture from green wood in order to improve its usability.

Service equipment — Main control gear at the electrical service entrance, such as circuit breakers, switches, and fuses.

Service lateral — Underground power supply line.

Shake — A wood roofing material, normally cedar or redwood. Produced by splitting a block of the wood along the grain line. Modern shakes are sometimes machine sawn on one side.

Sheathing — (1) Sheets or panels used as roof deck material. (2) Panels that lie between the studs and the siding of a structure.

Short circuit — A situation that occurs when hot and neutral wires come in contact with each other. Fuses and circuit breakers protect against fire that could result from a short.

Sill — (1) The two-by-four or two-by-six wood plate framing member that lays flat against and bolted to the foundation wall (with anchor bolts) and upon which the floor joists are installed. (2) The member forming the lower side of an opening, as a door sill or window sill.

Skylight — A more or less horizontal window located on the roof of a building.

Slab-on-grade — A type of foundation with a concrete floor which is placed directly on the soil. In warm climates, the edge of the slab is usually thicker and acts as the footing for the walls. In cold climates, the slab is independent of the perimeter foundation walls.

Sleeper — Usually, a wood member that serves to support equipment.

Soffit — (1) The finished underside of the eaves. (2) A small ceiling-like space, often out of doors, such as the underside of a roof overhang.

Solid waste pump — A pump used to 'lift' waste water to a gravity sanitary sewer line. Usually used in basements and other locations which are situated below the level of the city sewer.

Spalling — The cracking and breaking away of the surface of a material.

Span — The clear distance that a framing member carries a load without support (between structural supports).

Splash block — A pad placed under the lower end of a downspout to divert the water from the downspout away from the building. Usually made out of concrete or fiberglass.

Stair stringer — Supporting member for stair treads. Can be a notched plank or a steel member.

Starter strip — Asphalt roofing applied at the eaves that provides protection by filling in the spaces under the cutouts and joints of the first course of shingles.

Step flashing — Flashing application method used where a vertical surface meets a sloping roof plane.

Storey — That part of a building between any floor or between the floor and roof.

Storm collar — A metal flashing used to seal around a penetration in a roof.

Storm sewer — A sewer system designed to collect storm water, separate from the waste water system.

Storm window — An extra window usually placed outside of an existing one, as additional protection against cold weather, or damage.

Stucco — An outside plaster finish made with Portland cement as its base.

Stud — One of a series of slender wood or metal vertical structural members placed as supporting elements in walls and partitions.

Stud framing — A building method that distributes structural loads to each of a series of relatively lightweight studs. Contrasts with post-and-beam.

Sump — Pit or large plastic bucket/barrel inside a basement, designed to collect ground water (storm water) from a perimeter drain system.

Sump pump — A submersible pump in a sump pit that pumps any excess ground water to the storm sewer.

Suspended ceiling — A ceiling system supported by hanging it from the overhead structural framing.

Tempered — Strengthened. Tempered glass will not shatter nor create shards, but will "pelletize" like an automobile window. Required in tub and shower enclosures, for example.



Termites — Insects that superficially resemble ants in size, general appearance, and habit of living in colonies; hence, they are frequently called “white ants.” Subterranean termites establish themselves in buildings not by being carried in with lumber, but by entering from ground nests after the building has been constructed. If unmolested, they eat out the woodwork, leaving a shell of sound wood to conceal their activities, and damage may proceed so far as to cause collapse of parts of a structure before discovery.

Terra cotta — A ceramic material molded into masonry units.

Threshold — The bottom metal, concrete, or wood plate of an exterior door frame. They may be adjustable to keep a tight fit with the door slab.

Toenailing — To drive a nail in at a slant. Method used to secure floor joists to the plate. Not acceptable for securing joists flush to a header or beam.

Tongue-and-groove — A joint made by a tongue (a rib on one edge of a board) that fits into a corresponding groove in the edge of another board to make a tight flush joint. Typically, the subfloor plywood is tongue-and-groove.

Top chord — The upper or top member of a truss.

Trap — A plumbing fitting that holds water to prevent air, gas, and vermin from entering into a building.

Tread — The walking surface board in a stairway on which the foot is placed.

Treated lumber — A wood product which has been impregnated with chemicals to reduce damage from wood rot or insects. Often used for the portions of a structure which is likely to be in ongoing contact with soil and water. Wood may also be treated with a fire retardant.

Truss — An engineered and manufactured roof support member with “zig-zag” framing members. Does the same job as a rafter but is designed to have a longer span than a rafter.

Tube-and-knob wiring — See *knob-and-tube wiring*.

UFFI — Urea Formaldehyde Foam Insulation, a foam insulation blown into existing walls. (Pronounced “you-fee”)

Ultraviolet degradation — A reduction in certain performance limits caused by exposure to ultraviolet light.

Underlayment — (1) A one-quarter-inch material placed over the subfloor plywood sheathing and under finish coverings, such as vinyl flooring, to provide a smooth, even surface. (2) A secondary roofing layer that is waterproof or water-resistant, installed on the roof deck and beneath shingles or other roof-finishing layer.

Uv rays — Ultraviolet rays from the sun.

Valley — The inward angle formed by two intersecting, sloping roof planes. Since it naturally becomes a water channel, additional attention to waterproofing it is desirable.

Vapour barrier — A building product installed on exterior walls and ceilings under the drywall and on the warm side of the insulation. It is used to retard the movement of water vapour into walls and prevent condensation within them. Normally, polyethylene plastic sheeting is used.

Vent — A pipe or duct allowing the flow of air and gases to the outside. In a plumbing system, the vent is necessary to allow sewer gases to escape to the exterior.

Vermiculite — A mineral closely related to mica, with the faculty of expanding on heating to form lightweight material with insulation quality. Used as bulk insulation and also as aggregate in insulating and acoustical plaster and in insulating concrete floors.

Water closet — A toilet.

Weather stripping — Narrow sections of thin metal or other material installed to prevent the infiltration of air and moisture around windows and doors.

Weep holes — Small holes in exterior wall cladding systems that allow moisture to escape and air pressure equalization in the cavity space drained by the weep hole.

Wythe — (rhymes with “tithe” or “scythe”) A vertical layer of masonry that is one masonry unit thick.

Zone — The section of a building that is served by one heating or cooling loop because it has noticeably distinct heating or cooling needs. Also, the section of property that will be watered from a lawn sprinkler system.

Zone valve — A device, usually placed near the heater or cooler, which controls the flow of water or steam to parts of the building; it is controlled by a zone thermostat.