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November 29, 2013

INSPECTION REPORT

PROPERTY: Toronto, Ontario

Inspector : Mark Goddard

INTRODUCTION

The following report is for use by the above client only. Recommendations by the inspector are located below each paragraph heading and have been identified as one of the following:

P: priority repair/safety concern within the next 1 year. M: monitor. G: general recommendation/maintenance.

- ESTIMATED AGE OF BUILDING: over one hundred years
- BUILDING TYPE: two storey detached and attached (abutting ?)
- FRONT OF BUILDING FACES: west
- UTILITIES STATUS: all on
- SOIL CONDITIONS: damp
- WEATHER: clear
- BUILDING OCCUPIED: no
- CLIENT PRESENT: yes
- WATER SOURCE: public
- SEWAGE DISPOSAL: public

STRUCTURE

1.01 Foundation: The original foundation walls at the front of the building are constructed of stone and mortar. From a structural standpoint, the foundation appears to be in generally good condition. However, the structural components in the basement (ie. foundation and flooring system) could not be fully examined due to the finished nature of the walls and ceilings and the significant amount of stored material.

A small old addition is located at the middle rear of the building and it has foundation walls that are constructed of poured concrete. A larger addition is located at the rear of the original building and "wraps" around to the north side of the property on an adjacent side street. It has been constructed on a concrete slab at grade level.

The original basement floor level at the front of the building has been lowered in the past and the foundation walls have been resupported with a large bench footing method. The integrity of this type of structural work could not be confirmed, though there does not appear to be any signs of abnormal settlement to the foundation. The floor level was likely lowered more than seventy years ago.

G: there is a significant amount of stored material, debris and water damaged wall finishes throughout the basement that has accumulated over a long period of time. Ideally, the basement should be "gutted" to expose all foundation walls and floor joists framing to allow for a proper inspection and completion of repairs as required.

M: there is loose and missing mortar between the stones of the original foundation walls in some locations on the north side of the basement (in particular near the electrical panels at the northwest corner). The joints should be cleaned and filled with mortar. This type of problem is invariably a result of long term moisture seepage through the foundation walls. Exterior grading and eavestrough repairs must be completed on the north side of the building.
(Approximate Cost: $1,000 to $1,500)

1.02 Water penetration: The basement walls and floors were examined for evidence of water seepage. It is usually not possible to determine the severity and regularity of such problems without monitoring the walls over several months. Most water problems are a result of non functioning eavestroughs, downspouts, or poor surface drainage.

M: evidence of past and active water seepage problems were noted through the foundation walls on the north and south sides of the basement. The seepage signs noted will be due in part to improper surface drainage on the north and south sides. Grading improvements are recommended on the exterior. The poorly functioning eavestroughs and downspouts in all locations will allow excessive water accumulation near the foundation and the system should be replaced.

M: due to the long term nature of the seepage problem near the electrical panels on the north side of the basement, it may be necessary to excavate below grade level in the narrow walkway on the exterior (approximately three feet) and waterproof the original stone foundation wall at some time in the future to completely eliminate the water seepage problem in this area of the basement.

G: a dehumidifier should be operated in the basement during the summer months to minimize humidity and condensation problems on the basement walls and floor.

1.03 Exterior walls: The exterior walls are constructed of solid brick masonry and concrete block masonry. The brickwork and concrete blocks are a structural component and supports some of the load of the building.

1.04 Interior framing: Most of the floor joists supporting the main floor could not be inspected due to the finished nature of the basement. These joists are composed of 2" by 10" lumber. The built-up wood beams in the basement ceiling and the retrofitted steel beams in the main floor ceiling at the front of the building provide intermediate support for the floors and walls above these locations.

M: it was observed that most of the floors joists at the front half of the basement are located below grade level and they will be prone to potential water seepage, wood boring insect entry and subsequent deterioration. Ideally, all floor joist framing on the main floor of the building (in the basement ceiling) should be positioned above grade level on the exterior. However, this is not practical in this particular building due to the elevation of the grade around the perimeter of the property. The exterior wall masonry just below grade level on the north and south sides may have to be parged and sealed with water-proofing materials to prevent potential deterioration to the wood framing that is in contact with the foundation walls.

M: severe dryrot damage was noted to some of the few visible floor joists in the ceiling at the front of the basement. It is suspected that this deterioration occurred many years ago, possibly when the front of the building was simply a crawl space and prior to the installation of the large curb footing. Many of the floor joists have been doubled-up to replace the support. However, some sections of the sill plates and floor joist ends on the north and south sides of the basement may have been damaged due to long term moisture seepage through the foundation walls. The wood should be examined with any future planned renovations to the basement and resupported as required. The end bearing support for the two built-up wood beams at the front of the basement should also be examined and improved if necessary.

M: some of the floor joist framing in a middle area on north side of the basement is unconventional and support is provided by 4" by 4" "joists". Additional support may be necessary for the flooring system in the future.

1.06 Termites: Due to the finished nature of the basement, few of the structural and non structural wood members were visible. Consequently, the presence or absence of termite activity or damage could not be determined.

1.07 Roof framing: The sheathing and framing below many sections of the flat roof structure could not be examined due to a lack of proper access. There is no indication from the exterior that any major structural deficiencies exist with the roof structure. There are two retrofitted steel I-beams above the roof of the rear addition that were installed to "hang" the roof framing and allow for the removal of four original supporting columns at the rear of the second floor. The visible framing in the original attic space at the front was found to be intact.

GENERAL EXTERIOR

2.01 Surface drainage: The land should show a positive slope away from the building on all sides. This ensures good surface drainage and reduces the possibility of moisture problems in the basement.

P: the cracked and poorly sloped narrow concrete walkway on the north side should be replaced to properly control all surface water in this area. The old basement window well opening in this area (covered with wood planks) should be filled in with masonry at this time. Consideration should be given to water-proofing the upper section of the stone foundation wall at this time (at an additional expense).
(Approximate Cost: $2,000 to $2,500)

P: in the interim, all debris/rubbish between the neighbouring buildings on the north and south sides should be removed. The seal between the exterior walls and the walkway surfaces should be improved to prevent further water seepage into the basement. All gaps must be sealed.

2.03B Metal shingles: Metal shingles as a roofing material are very durable and most installations will last in excess of fifty or more years. Depending on the quality and gauge of the metal, its life expectancy will vary. One of the main reasons for failure originates not with the metal shingles but rather with the roofing nails used to secure the shingles in place. These have a tendency to corrode, causing the shingles to become dislodged. Periodic flashings repairs may also be necessary. The steel shingles on the upper front pitched roof surface appears to have been installed many years ago (likely more than sixty years) and the installation is for the most part intact. Although periodic flashings repairs can be expected, the old steel roofing should still have several years life remaining.

M: it will eventually be necessary to replace the steel shingle roofing at the front of the building at which time asphalt shingles may be considered (1,500 square feet).

M: the parapet wall flashings at the front should be monitored and periodic resealing repairs may be necessary. Further flashing repairs may be necessary near the addition at the southeast corner and near the kitchen exhaust fan ductwork at the northeast corner.

M: some sections of the front pitched roof will likely be prone to ice-damming problems and this is the likely cause of the damaged eavestrough system. Ice-damming typically occurs when heat escaping from the house melts snow on the roof. The resulting water flows down the roof to the colder eaves where it begins to re-freeze. As ice forms a dam develops and this can result in water backing up under the shingles and into the house. Most ice-damming problems can be eliminated by providing a well insulated and ventilated attic space to ensure a cold roof surface. Additional eave protection with a waterproof membrane below the shingles or the installation of heating cables on the roof eaves and in the eavestroughs and downspouts may also be considered if ice damming proves to be a problem in the winter months.

2.03E Built-up tar and gravel roofs: This type of roofing system is comprised of layers of roofing felts with a coat of tar or Bitumen between each layer. The upper layer of gravel is beneficial in maintained the lifespan of the roof by deflecting damaging ultraviolet sunlight. This type of roofing system on Commercial building typically lasts between twenty and thirty years, if properly installed. The built-up roofing membrane above the addition at the rear of the building is an older installation and is likely more than thirty years old.

M: the flat roofing membrane at the rear of the building is showing signs of wear and it should be monitored for blisters, seams that have opened up and leaks or stains on the second floor ceilings. Localized flashing repairs can be expected on an annual basis. Replacement of the built-up flat roofing membrane above the rear addition will likely be required within the next three years and this should be coordinated with replacement of the older HVAC unit. The presence of the retrofitted steel I-beams above the roof surface and limited street access will make replacement of the roofing membrane more difficult. All layers of existing roofing material should be removed at this time.
(Approximate Cost: $20,000 to $25,000)

P: in the interim, all roof projection flashings in the flat roof should be examined and repairs should be completed as required. All excess debris and unused duct material observed in many locations must be removed. The large satellite dish on the north side of the addition roof should be removed if its use is no longer required. The overlapping seam between the more recently installed Modified Bitumen roofing and the older built-up roofing must be resealed.
(Approximate Cost: $1,500 to $2,000)

M: the installation of an additional drain in the upper rear flat roof should be considered when next replacing the roofing membrane.

2.03F Single or two-ply membrane roof: There are a number of different products on the market for this relatively new roofing system. As the name suggests, they are either a single or double layer of roofing material that is either burned or glued onto the wood sheathing. They are usually a reliable roof cover and typically last from 15 to 20 years depending on the product. The Modified Bitumen roofing above a middle addition (between the front original building and the large rear addition) appears to have been installed about five years ago.

M: there appears to be a blocked drain in the Modified Bitumen roofing membrane (south side). This drain may have acted as back-up in the event that the primary drain becomes clogged and it should be cleared or reinstalled if practically possible. This may be coordinated with reconnecting the eavestrough on the south side of the front pitched roof to the sewer system.

2.04 Parapet walls: This is a brick wall extension located above the roof surface and it should be covered with a metal or concrete cap to minimize water seepage and deterioration of the masonry. The parapet walls on the rear addition have been covered in metal and most of the seams in the older metal are intact.

M: there is significant mortar loss in the east facing side of the parapet wall at the upper front of the building and extensive tuckpointing repairs should be completed to prevent further deterioration. (Approximate Cost: $1,500 to $2,500)

M: ideally, the parapet masonry wall at the upper front of the building should be clad with metal cap flashings to prevent water seepage and deterioration of the masonry.
(Approximate Cost: $1,500 to $2,000)

2.05 Skylights: As these are often a source of leaks, they should be checked on an annual basis for deteriorated flashings and caulking. There are four skylights in the flat roof above the rear addition.

P: there are signs of caulking and sealing repairs to the skylights at all four locations above the rear addition, in particular to the skylight that is intended to open (and allow for ready access to the roof). All perimeter seams in the skylights should be examined and resealed as required. Further investigation may reveal a more extensive repair with additional costs.

M: as the aging skylights are not properly elevated from the roof surface, consideration should be given to replacing the skylights when replacing the roofing membrane.
(Approximate Cost: $5,000 to $7,000)

2.07A Brick Chimneys: They provide protection and a chase for exhaust flues from fireplaces and heating systems. The chimney is plumb and square. A cap normally protects the top of the chimney and sheds water away to minimize deterioration of the masonry. The flashings between

the chimney and the roof should be checked on an annual basis for a watertight seal. The large brick chimney in the middle on the north side contains one flue and it services the water heater. The brickwork in the chimney is for the most part intact. The water heater flue is fitted with a continuous metal liner, which is beneficial in preventing deterioration to the chimney and ensuring safe operation of the water heater.

2.08 Eavestroughs: They provide roof drainage and help prevent water collection around the foundation. The system must be kept free of debris and checked regularly for loose sections and leaky seams. The eavestroughs on the north and south sides at front are made primarily of aluminum with some galvanized steel. The central roof drains servicing the flat roofs in the middle and at the rear of the building are likely made of copper and ABS plastic. The downspouts and drains discharge into the sewer system and onto the surrounding land. The underground downspout pipes were not visible and as a result their condition is unknown. In older buildings, the water from downspouts often connect to floor drain in the basement. The trap in the floor drain should be kept clear of leaf debris to prevent water from backing up through the floor drain.

P: due to the overall poor condition of the eavestroughs and downspouts servicing the front pitched roof on the north and south sides, immediate replacement is recommended.
(Approximate Cost: $1,000 to $1,500)

M: the condition of the underground downspout drain pipe at the rear on the north side should be verified at this time. It likely connects into the sewer system near the water heater in the basement.

M: a proper extension is required on the downspout at the southwest corner of the building to prevent the discharging water from ponding near the foundation. However, this is likely to result in an ice slip hazard on the Municipal sidewalk at the front of the property. Consequently, this downspout should be reconnected to the sewer system either through the original drain at the southeast corner of the pitched roof (if reusable) or with the installation of a new drain connection at the front of the basement.
(Further investigation req'd to determine accurate cost)

2.09A Brick Masonry walls: The exterior walls on original walls at front of building are composed of brick masonry. Minor mortar deterioration is not uncommon and should gaps develop between bricks, they should be tuckpointed. The brickwork on the original exterior wall on the north side appears to be in generally good condition. Access could not be gained to the narrow space between the neighbouring buildings on the south side to allow for proper inspection of the exterior wall brickwork.

G: it is suspected that there has been mortar loss between the bricks in some locations and tuckpointing repairs should be completed as required.

P: there are diagonal cracks in the exterior wall brickwork on the east side of the attic gable end that are generally older. However, several loose bricks were noted at the base of this exterior wall in the attic space and this damage likely occurred when a section of the lower original wall and

brick chimney were removed. The base of the brick wall at the east of the attic space should be accessed and repairs should be completed as required to ensure that the remaining section of the wall is intact.
(Approximate Cost: $750 to $1,500)

2.09B Concrete Block Masonry walls: The exterior walls on the south and east sides of the rear addition are primarily constructed of concrete block masonry and sections are visible above the neighbouring building roof surface. The accessible sections of these concrete block walls are intact. There is also a small south facing brick clad exterior wall for the older middle addition and it is largely intact.

2.09H Cement stucco finish: This siding material is normally applied over a wood or wire mesh base and when installed properly can last in excess of thirty years. It is important that all vertical and horizontal joints be kept watertight. A small section of prefabricated synthetic stucco siding is present on the second floor at the north end of the rear addition and is in intact.

2.09L Tudor style board-and-stucco siding: This finish is present at the middle front and was found to be in acceptable condition. The stucco should be monitored for cracks and deterioration and the wood trim maintained with paint. Caulking above horizontal boards should be maintained to prevent water seepage behind the finish.

2.10A Exterior trim: All major openings in the exterior walls include trim to cover frames and provide a place to seal and flash sidings. The trim should be kept well painted and caulked. The exterior window frames have been covered in aluminum trim in most locations to minimize deterioration and reduce maintenance.

2.10B Soffits & fascia: The soffit and fascia protect as well as seal the attic and roof framing. The soffit is the horizontal overhang on the roof and the fascia is the vertical board to which eavestroughs are secured. Both should be kept well painted and checked for holes created by squirrels or birds. The soffits and fascia on original building at the front are largely covered in steel metal.

M: painting of some of the soffits and fascia in the eaves of the original building may be necessary. There may be rot to sections of the fascia due to long term leaking problems and repairs should be completed as required when replacing the eavestrough system.

2.11B Concrete decks: The concrete surface located at the north entrance to the building is in acceptable condition. The concrete has been covered in ceramic tile that is for the most part intact.

ELECTRICAL

3.01A Electrical service & panel: This building is equipped with an overhead 120/240-volt, 400-amp service. The size of the service is considered adequate for most of the electrical requirements of the building. The main service entry, disconnect switch box, Hydro meter cabinet, splitter box and main distribution panels are located at the northwest corner of the basement. There are also auxiliary distribution panels located in the main floor kitchen at the rear of the building and in a closet on the second floor at the front of the building. The distribution panels are rated at 125-amps and 200-amps. The panel rating is adequate for the existing sub-service size.

The 120/240-volt 400-amp service is divided through a splitter box to service the building as follows:

200-amps	Panel in rear kitchen
100-amps	Panels "A" & "B" in basement
100-amps	Panel front of second floor
30-amps	Electric Heater in basement
30-amps	Refrigeration equipment #1
30-amps	Refrigeration equipment #2
30-amps	Unknown (likely originally a water heater)

P: water staining was noted at the base of the main disconnect switch box and also in the splitter box and there have been past problems with water seepage from the exterior. The main disconnect switch box could not be opened due to the corrosion and it will likely have to be replaced. All wiring connections in the main disconnect switch box and in the splitter box should be examined and repairs must be completed as required.
(Approximate Cost: $1,000 to $1,500)

M: the two distribution panels above the splitter box in the basement ("A" & "B") are somewhat undersized and they should be replaced with a single larger circuit breaker panel.
(Approximate Cost: $1,500 to $2,000)

M: the older distribution panels at the front of the second floor and in the kitchen and the rear of the main floor should be monitored for eventual replacement.
(Approximate Cost: $2,500 to $3,000)

P: in the interim, the wiring connections in all distribution panels should be examined and repairs should be completed as required. All wiring in and around the panels should be properly reinstalled.
(Approximate Cost: $600 to $750)

P: the grounding wire from the main disconnect switch box is attached to an old abandoned galvanized steel pipe on the north side of the basement. The grounding cable must be relocated and attached to the copper water supply at the front of the basement.

3.01B Electrical service & panel: This building is also provided with a 3-phase, 4-wire 600-volt, 100-amp service. This electrical system primarily services some of the heating and air-conditioning equipment in the building. The main service entry, disconnect switch, Hydro meter cabinet, small splitter box and branch disconnect switches are located in the middle on the north side of the basement.

The 3-phase, 600-volt 100-amp service is divided through a small splitter box to service the building as follows:

60-amps HVAC unit on roof (+ double up for kitchen exhaust fan system)

30-amps A/C main floor (+ double up for 10-kVA transformer to kitchen make-up air system)

15-amps A/C main floor evaporator fan (via 15-kVA transformer)

There are two small transformers near the electrical panels (10-kVA & 15-kVA) and they step down the high voltage to 3-phase 120/208-volts for the kitchen air make-up system and the air-conditioner evaporator fan unit in the ceiling at the front of the main floor.

P: all 600-volt electrical boxes must be clearly labeled (including those in a closet at the southwest corner of the main floor). The corroding steel conduits that support the high-voltage wires to the disconnect switch box and meter cabinet should be examined and replaced if necessary. It should be verified that the 600-volt service and the two transformers are properly grounded to the copper water supply pipe at the front of the basement.

M: separate disconnect switches and fuses should be installed to service the more recently installed circuitry to the main floor kitchen exhaust fan and make-up air systems. This equipment is currently doubled-up on the roof mounted HVAC circuit as well as the older main floor water-cooled air-conditioning system and some of the wires may not be properly protected with appropriately sized fuses. The installation of a larger 600-volt splitter box may be necessary at this time.
(Approximate Cost: $2,000 to $3,000)

3.02 Distribution wiring: The distribution wiring appears to be largely composed of copper. However, some aluminum wire circuits were observed in at junction boxes in the rear addition and also in the basement. The wiring appears to be largely modern grounded cable that is equipped with a grounding wire (some dating to the 1960's). This wire enables three pronged outlets to be used safely. However, some circuits may still be serviced by older ungrounded wiring. This wiring lacks a ground and should only be connected to lighting circuits

P: there has been some concern over the use of aluminum wire. Proper installation of this type of wiring is important and the use of special connectors, designated by the term CUAL for the distribution panel and CO/ALR for the receptacles should be present. Moreover, all connections, particularly those between copper and aluminum wires should be coated with an anti-oxidation compound to ensure proper conductivity through the connection. Most of the aluminum circuits in the building could not be traced. All aluminum wire connections should be examined and repairs should be completed as required. Consideration should be given to abandoning the aluminum wire with any future renovations or leasehold improvements to the building (at an additional expense). (Approximate Cost: $750 to $1,000)

P: amateurish wiring was noted throughout the building. It is recommended that an electrician review the wiring and make the necessary repairs. Dangling electrical wires and junction boxes were noted in the basement and above many of the ceilings and they should be properly secured to prevent mechanical damage. Some corroding armoured BX cable was noted on the north side of the basement (near the panels). It should be replaced and the source of water seepage must be corrected. Replacement of some of the wiring in the attic is recommended and extensive rewiring of the building may be necessary in the future (budget $20,000+).
(Further investigation req'd to determine accurate cost)

There are numerous 120-volt and 240-volt circuits extending from the various distribution panels and most wires are protected by circuit breakers.

P: all wiring circuits in the distribution panels should be examined to ensure that they are properly protected. All oversized breakers should be replaced.

3.03 Supply of outlets: The location of outlets in each room was verified. Often, furnishings in the building impede the ability of the inspector to locate all outlets. Overall, the supply of outlets was found to be adequate in many areas of the building.

M: the installation of additional outlets should be considered with future renovations and/or leasehold improvements to the building.

3.04 Operation of outlets & fixtures: Only a few of the outlets and light fixtures in the building were tested for continuity and grounding.

M: outlets in some locations were not functional. The circuits should be examined and repaired as required. Replacement of some of the light fixtures in the building may be necessary.
(Further investigation req'd to determine accurate cost)

M: all washroom outlets should be provided with a ground fault circuit interrupter (G.FI.) device to provide the required level of safety from electrical shock in this area of the building.

3.05 Exterior wiring: Grounded wire and exterior rated components are important safety features of the wiring system. All exterior outlets should be equipped with a ground fault circuit interrupter.

G: some of the exterior wiring on the north side of the building and on the roof is not properly supported. This should be secured to prevent damage to the wire and possible bodily injury.

HEATING/COOLING

4.01A Type of system: The building is currently primarily heated by two high-efficiency, gas-fired forced air furnaces. The furnaces have been rather crudely installed at the rear half on the second floor of the building. This type of furnace utilizes the exhaust gases to a greater extent and improves the heating efficiency of the system. The exhaust is vented through plastic pipes observed at two locations extending through the roof of the building. Based on the size of the building, the furnace input heating capacities 66,000 and 132,000 BTU'S per hour may be sufficient. The heating systems were installed within the last one or two years (2012 models). The heat exchanger typically lasts 15 to 20 years. The heat exchangers could not be accessed and their condition is not known. This is the critical component in the heating plant and with time becomes susceptible to failure.

One of the high-efficiency furnaces was found to be operable during the inspection. Having it inspected and cleaned annually is a wise practice and will help maintain an acceptable level of heating efficiency.

P: the second high-efficiency furnace located at the southeast of the second floor was not operable during the inspection. The thermostat wire extends over the roof on the exterior of the building and it may be damaged. It should be relocated inside the building. Furthermore, the plug-in extension cord wiring to activate the furnace must be replaced with a dedicated wiring circuit from one of the distribution panels.
(Approximate Cost: $600 to $750)

M: it is suspected that the two high-efficiency furnaces were installed to replace the inoperable furnace in the HVAC package unit on the roof. Supply-air ducts were extended through the ceiling to amateurishly connect to the original HVAC ductwork and this will unlikely properly service the building. This appears to be a temporary measure to maintain heating in the building. The furnaces were unlikely to have been installed by a TSSA technician and alternations to the systems to complete the installations may be necessary.

4.01B Type of system: It is apparent that the building was up until fairly recently primarily serviced by a single Heating, Ventilating & Air-Conditioning (HVAC) unit located on the upper rear flat roof. This unit is electrically powered for cooling and gas powered for heating. The York system at the east end of the building is a 1993 model (Model # D3CG150N20058JSB, Serial #

NLBM070678). The life expectancy of these systems is difficult to predict although approximately twenty years is a common standard in the industry. Periodic repairs (in particular to the components of the cooling systems) can be expected.

Based on the size of the building, the HVAC input heating capacity of ranging between 171,500 and 245,000 BTU'S per hour should be sufficient. Heat exchangers typically last between 15 and 20 years. The heat exchanger could not be accessed and its condition is not known. This is the critical component in the heating plant and with time becomes susceptible to failure. Should a crack or hole develop in the heat exchanger, it would have to be replaced.

M: it is apparent that the heating system in the HVAC unit on the roof is no longer operable. It is possible that the cooling system in the HVAC unit is functional although this could not be verified during the inspection. Replacement of the HVAC system should be budgeted for within the next year and may be necessary prior to leasing the space. Ideally, this should also be coordinated with replacement of the aging roofing membrane on the rear addition. Consideration may be given to installing two HVAC units at this time, one to service each of the floors in the building. The system must be inspected and cleaned on an annual basis to ensure safe operation until it is replaced.
(Approximate Cost: $15,000 to $25,000)

P: a distinct smell of gas was detected in the basement. The distribution piping and gas meter at the front of the basement should be examined to determine the exact source of the leak and make the necessary repairs.

P: all amateurishly installed and poorly supported has pipes on the roof of the building should be repaired or replaced as required. The flexible gas pipes that extend to the two second floor furnaces may be removed when the aging HVAC system is replaced.
(Approximate Cost: $500 to $1,000)

4.02A Heat distribution: Supply and return-air ducts were inspected for operation and location where accessible. It is common for the supply-air flow to be unbalanced and this will result in uneven heating and cooling. Dirt and dust build-up in the ducts will also adversely affect air flow. They should be cleaned every five to ten years.

M: poor air movement was detected through the supply-air registers and diffusers in some locations. Furthermore, there is not any return-air ductwork connected to the two high-efficiency furnaces on the second floor. All ductwork should be examined with future renovations and/or leasehold improvements to the building and repairs should be completed as required. All ductwork in the upper front attic space should be properly insulated.
(Further investigation req'd to determine accurate cost)

The thermostats for the heating and cooling systems are provided at four locations on the main floor. One thermostat is located in the kitchen (for the smaller high-efficiency furnace) and two thermostats are centrally located in the middle of the building (for the larger high-efficiency furnace and for the HVAC unit on the roof). The fourth thermostat is dangling above the ceiling at

the front of the main floor and it services the water-cooled air conditioning system near the front door.

Supplemental electric heaters are provided near the exterior doors and in some of the washrooms.

M: at least one of the electric heaters near the exterior doors was not operable. All electric heaters should be serviced and repairs should be completed as required.

4.03B Air filter: A passive air filter should be kept in place beside the blower/motor assembly in each furnace and the HVAC unit on the roof. They should be inspected at least every two months and replaced if dirty.

4.03D Central air conditioning: There are primarily two air-conditioning systems in the building. A central cooling system is incorporated with the package HVAC unit on the roof and services the primary rooms on the first and second floors. There is also an older secondary water-cooled air-conditioning system at the front of the main floor. The cooling systems could not be operated due to the low outdoor temperature. They should be serviced prior to use to ensure proper working order. The electrical power to the air conditioner, located at the main panel, must be turned on at least twelve hours before use.

The evaporator coils in the HVAC unit and in the ceiling mounted air-handler at the front of the main floor could not be examined. The water-cooled air-conditioning system was likely installed in the late 1960's and it supported by a reciprocating compressor that are often repairable. It appears to have a cooling capacity of approximately eight tonnes. The three hermetically sealed compressors in the HVAC unit are original and they are twenty years old. The HVAC system has a cooling capacity of twelve and one-half tonnes. Hermetically sealed compressors have an average lifespan of about fifteen years. All cooling systems should be serviced annually to maximize their life.

M: replacement of the aging water-cooled air-conditioning system at the front of the main floor will likely be necessary if this system is maintained. It could not be determined if the old system is still functional. The installation of a split ductless system may be possible and more practical. The condensing unit may mounted on the brick exterior wall on the north side of the building.
(Approximate Cost: $5,000 to $10,000)
(Further investigation req'd to determine accurate cost)

M: as discussed previously in this report, replacement of the twenty year old HVAC unit on the roof will likely be necessary in the near future.

PLUMBING

5.01 Supply plumbing: The visible water distribution pipes throughout the building are made of copper. However, little of the basement piping could be viewed due to the finished nature of the basement. The main water shutoff valve is located at the front of the basement.

G: some of the pipes located in the basement should be better secured to prevent mechanical damage.

G: the cold water pipes in the basement should be insulated to prevent condensation from forming in the summer months.

5.02 Water pressure: The pressure (and flow rate) was observed on the top floor when both the toilet was flushed and the shower or tub faucet was open. The pressure was found to be adequate and there appears to be an incoming one inch diameter copper supply pipe at the front of the basement.

5.03 Waste plumbing: The waste drainage plumbing has likely been largely upgraded, though there are some sections of the original waste piping still present. The drainage pipes beneath the basement floor, under the addition at the rear of the building and possibly beneath the narrow walkway on the north side could not be examined and their condition is not known. Most of the basement waste drainage plumbing could not be viewed due to the finished nature of the walls and ceilings. Floor drains were noted in the basement.

M: it is apparent that most of the drain pipes in the building terminate at the northeast corner of the basement (near the water heater). There are two sanitary drain pipes and they extend into the floor and possible to the street beneath the narrow walkway on the north side of the building. This should be verified. There are also two apparent storm water drains in this area of the basement and they may extend beneath the concrete floor to the adjacent street on the north side of the building (also to be verified). All underground drain pipes should be examined to ensure proper working order. (Further investigation req'd to determine accurate cost)

M: most of the plumbing fixtures in the washrooms and kitchens were not tested during the inspection. It should be verified that all branch drain pipes are clear and functioning properly. There should be grease traps to control all waste water from the kitchens.

G: as proper access could not be gained to all floor drains, they should in future be checked to ensure that there are no obstructions and that there is water present in the trap (bottom of floor drain). The presence of water in the trap prevents sewer gases from venting into the living area.

A sump pump system is present at the front of the basement. The pit in the floor is designed to collect water primarily from a floor drain and then pump that water into a waste drain pipe near the base of the foundation wall at the front of the basement. The pump was found to be operable.

P: given the overall poor condition of the sump pump, replacement with a higher quality pump is recommended. The drain pipe connection at the floor level leaks and it must be repaired. There should be a proper cover over the sump pump reservoir.
(Approximate Cost: $750 to $1,000)

M: it may be necessary to connect the sump pump discharge pipe to the main drain pipes at the northeast corner of the basement.

The main waste plumbing stacks are properly vented through the roof to the exterior. However, it could not be determined whether the branch waste plumbing in all locations is connected and functional.

The gas-fired hot water heater may be a rental unit (to be verified). It was installed about seven years ago and has a capacity of 227 litres. This should be adequate for the number of bathrooms and kitchens in the building.

G: the oversized combustion-air intake duct for the water heater should be reduced in size to reduce heat loss.

5.04 Plumbing fixtures: Some faucets and toilets were tested during the inspection. Localized repairs to leaky faucets and faulty fixtures can be expected.

M: the plumbing fixtures in all washrooms should serviced and cleaned or replaced as required. Some toilet flush mechanisms are not working properly and they should be repaired or replaced. Full renovations to some of the washrooms may be necessary with leasehold improvements.

INSULATION

6.01A Attic: There are about four to six inches of fiberglass and mineral fibre insulation present in the upper front attic space.

M: another six to eight inches of insulation should be added to the front attic space to minimize heat loss through the ceiling. The hatchway to the attic should also be insulated and fitted with weatherstripping to prevent heat loss.
(Approximate Cost: $1,000 to $1,500)

6.01C Flat roof: The space between the top floor ceiling and flat roof above the rear addition could not be properly accessed during the inspection and as a result, it could not be determined whether the space is adequately insulated. Older flat roofs are often poorly insulated and lack a proper vapour barrier. If this space is to be reinsulated in future, be sure to allow for adequate ventilation so as to minimize condensation problems.

M: there does not appear to be any insulation in the flat roof joist cavity at the rear of the building. This results in excessive heat loss and it should be insulated with any future renovations. Alternatively, insulation may be applied to the roof deck when replacing the roofing membrane.

6.02 Venting: Attic ventilation is provided in the original attic space at the front of the building, and this should help keep the building cooler in the summer and alleviate condensation problems in the winter.

6.03 Exterior walls: Insulation is unlikely to be present in the exterior walls. The small gap within the wall cavities of solid masonry buildings normally prohibits the placement of insulation there. This type of wall construction usually has a thermal rating of R-4 to R-6.

6.06 Weatherstripping: Besides insulation, an effective means of controlling heat loss is by ensuring that the interior of the building is well sealed. There is considerable air movement between the interior and exterior walls in most buildings. Interior losses occur beneath baseboards, around electrical outlets, above the foundation sill plate in the basement, around window frames and panes, and around doors. Significant savings can be gained by checking the above areas and making corrections where necessary. Double pane and thermalpane windows are present in some areas of the building.

GENERAL INTERIOR

7.01 Walls & Ceilings: The walls and ceilings are finished in a combination of plaster and drywall. The wall and ceiling finishes were found to be in generally fair condition. Several of the ceilings have been refinished with acoustic/suspended tiles. These are often installed to cover cracked or sagging plaster. As well, exposed wiring and plumbing may be visible above the finish.

G: the deteriorated wall and ceiling finishes throughout the building should be repaired as required with future renovations.

M: water stains were noted on the ceiling tiles in many locations. The stains should be monitored for further leakage since there is concern that the source of the water may still be active (roofing membranes and flashings and plumbing fixtures in several locations).

P: asbestos insulating material appears to be present around abandoned some of the abandoned heating pipes in the basement ceiling. The edges of the insulation are in a deteriorated state and they should must be removed or encapsulated to ensure that the fibres do not become airborne. All deteriorated sections of asbestos bearing insulation should be appropriately removed with any renovations or "gutting" of the basement.

7.02 Flooring: The floors were inspected for soundness where accessible. Squeaks are a common defect in floors and in most cases do not indicate a structural concern. As well, sags in the floors are most often the result of normal settlement. The floors throughout most of the building felt secure and are functional.

M: a section of the floor in the middle on the second floor is not level. This appears to be due to past deterioration and deflection and/or undersized framing. Some resupporting repairs may be necessary with future renovations.

G: the wood flooring throughout the building is worn and refinishing/replacement may be desired in future.

P: the damaged handrail in the southwest corner stairwell should be resecured or replaced.

The door jambs are square throughout the building, allowing closure of most interior doors.

G: localized repairs are required to some of the doors and related hardware.

7.03 Windows: The following is a list of window types and any noted deficiencies. It is normal for the operation of wood windows to vary due to swelling and shrinking of the frames between the summer and winter months.

+ fixed metal framed windows.
+ double horizontal windows mounted in an aluminum frame.

Overall, the windows and exterior doors were found to be intact and functional.

G: the thermalpane windows in a couple of areas at the front of second floor have lost their seal and the glass will require eventual replacement. This type of window system is still functional when the thermal seal is lost; however, condensation now forms between the two pieces of glass.

7.05 Ventilation: Moisture produced from cooking, showering and normal body perspiration, often result in unhealthy humidity levels in the building. Externally vented exhaust fans are recommended in each bathroom and kitchen.

M: the exhaust fans servicing all washrooms and those servicing the kitchens in the building should be examined and serviced to ensure proper working order. Repairs to several of the washroom fans will likely be necessary.

7.06 Make-up Air Supply: Most buildings require make-up air supply to ensure good indoor air quality and to replace significant amounts of air that are vented to the exterior by exhaust fans. Presently, there is a make-up air supply system for the kitchen at the lower front of the building. The gas-fired furnace in the make-up air supply system is located on the upper middle flat roof and it was installed within the last six years (2007 model). The ductwork for the air make-up system and for the exhaust fan is located on the north side of the building and it appears to be in fairly good condition.

Ideally, an "economizer" should be installed when replacing the HVAC unit on the roof. This equipment is designed to allow for an influx of fresh make-up air for the building and also to provide "Free" cooling when the interior of the building becomes significantly warmer than the outside air temperature.

7.07 Fire Detection & Spread Prevention: Fire code requirements were not examined as they are beyond the scope of this inspection. The building should be inspected and repairs should be completed to comply with local codes. However, the following observations were made:

P: fire separation improvements will likely be required between the first and second floor rooms and possibly in the stairwells. EXIT signs, emergency lighting, pull stations and alarm bells were observed. Most of this systems do not appear to be in current working order and they must be serviced and repaired. The installation of a sprinkler system may be necessary depending on the intended use of the building. A full fire code inspection of the building must be completed prior to occupation.
(Further investigation req'd to determine accurate cost)

SUMMARY

The total cost for the repair estimates given in this report varies between approximately $70,000 and $100,000. A portion of these costs may represent future repairs to be expected over the next five years. Most of this expense is designated for grading, eavestrough and drain repairs to ensure that all roof run-off is properly controlled, planning for replacement of the aging flat roofing membrane above the rear addition, upgrading some of the wiring in the building and replacing several of the electrical panels as discussed, and planning for replacement of the aging HVAC unit on the roof and the old air-conditioning system at the front of the main floor. Additional costs will be incurred where an estimate was not provided (for example all expenses associated with any finishing repairs, planned renovations or leasehold improvements to the building and possible replacement of much of the electrical distribution wiring). A fire code inspection must also be completed and repairs should be completed to satisfy the fire marshal.

If there are any further questions with regards to the report or inspection, please call.

Sincerely,

Mark Goddard
B.A. Sc. Geotechnical Engineering
Registered Home Inspector (R.H.I.)