National Home Inspection Ltd.
1055 Woodbine Avenue
Toronto, Ontario
M4C 4C2

January 18, 2008

INSPECTION REPORT

PROPERTY: 100 Commercial Street, Toronto, Ontario

Inspector : Mark Goddard Client : John Doe

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: thirty years
- BUILDING TYPE: single storey detached
- FRONT OF BUILDING FACES: west
- UTILITIES STATUS: all on
- SOIL CONDITIONS: frozen
- WEATHER: cold and windy
- BUILDING OCCUPIED: yes
- CLIENT PRESENT: no
- WATER SOURCE: public
- SEWAGE DISPOSAL: public

DESCRIPTION

The building can be described as a detached single storey Commercial dwelling. Currently, there are three tenants in the building and a vacant space at the northwest corner of the building (within one of the tenanted spaces). There is a largely finished basement under the front half of the building occupied by one of the tenants. The heating and electrical systems in the building have been installed in such a fashion as to allow for separate use and billing for four tenants as follows:

1) North side of the first floor (presently a Studio) and includes the vacant space at the northwest corner.

2) Southwest corner of the first floor (presently a Restaurant).

3) Southeast corner of the first floor (presently a Research facility).

4) Basement level (presently a Research facility and storage).

STRUCTURE

1.01 Foundation: The foundation walls are constructed of poured concrete. 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 basement.

The floor at the rear half of the building is composed of a concrete slab that has been constructed on grade level (known as a slab-on-grade). This type of building design has no accessible space below the floor slab. The perimeter walls are typically constructed on frost protected foundation walls that extend at least four feet below grade level.

M: diagonal cracks were noted in an interior concrete block wall at the rear half of the building (visible in the Studio). Although this concrete block wall does not appear to be load bearing (a steel I-beam transfers the roof loading to the footings) it may prove some lateral support for the steel frame structure. The cracks are an indication of some slight differential settling at this location, possibly caused with the fairly recent installation of two sewage pumps in the main floor rear hallway. The cracks should be monitored for signs of further movement to determine whether localized resupporting of the foundation wall will be necessary in the future.

1.02 Water penetration: No water seepage was detected on the floors in the accessible areas of the main level. Most water problems are a result of non functioning eavestroughs, downspouts, or poor surface drainage. Ensure that the above do not allow water to pond beside the foundation.

1.03 Exterior walls: The exterior walls are constructed of solid masonry. The masonry is a structural component and supports some of the load of the building.

1.04 Interior Framing: The building structure is composed of an interior steel I-beam and open web steel joist construction with supporting concrete block walls around the perimeter of the building. A large steel I-beam extends the depth of the building running in an east/west direction. Open web steel joists oriented in a north/south direction provide support for the corrugated metal roof deck. Access to the roof framing was limited due to the finished nature of the building. However, no signs of excessive stress or deformation were noted in the visible sections of the interior framing.

The main floor at the front half of the building is constructed of poured concrete. The concrete floor has been poured over a metal pan that is supported by steel I-beams and open web steel joists visible in some areas of the basement ceiling. There is no significant evidence of movement in the concrete floor.

GENERAL EXTERIOR

2.01 Surface Drainage: Correct surface water drainage adjacent to the building was difficult to determine due to snow coverage. In the spring months, grading should be checked to ensure that there is a positive slope away from the building on all sides. This will ensure good surface drainage and reduce the possibility of moisture problems in the basement.

M: the condition of the concrete and/or asphalt driveway and parking lot surfaces on the property could not be determined due to the present of snow and ice. The surfaces should be examined to determine their condition and resurfacing or replacement of some sections may be necessary, depending on the intended use of the building.
(Further investigation req'd to determine accurate cost)

G: in the interim, the seal between the driveways and the foundation walls on all sides should be improved to reduce moisture infiltration. A wedge of cold asphalt may be used for this purpose. This will help to redirect water away from the wall.

2.03 Roofs: The flat roof on the building was completely covered in snow and ice at the time of the inspection and its' full condition is not known. The roof should be reinspected in the spring months to determine its overall condition. All flashings around roof projections should be checked annually to ensure that there is a watertight seal.

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 between each layer. The top layer of gravel is very beneficial in extending the lifespan of the roof by deflecting damaging ultraviolet sunlight. Its lifespan on Commercial buildings is typically 20 to 30 years. The flat roofing membrane on the building appears to be original with the structure and is consequently about thirty years old. An expansion joint is located in the middle of the flat roof.

M: the flat roofing membrane is likely showing signs of wear and it should be monitored for blisters, seams that have opened up and leaks or stains on the ceilings below. Localized repairs can be expected on an annual basis, particularly at the HVAC unit flashings. Full replacement of the flat roofing membrane will likely be required within the next five years (or sooner if use of the building changes).
(Approximate Cost: $60,000 to $75,000)

P: all exhaust fan, chimney and HVAC flashings should be examined and they should be resealed or repaired as required.
(Approximate Cost: $2,000 to $5,000)

M: there is evidence of water ponding in several locations on the flat roof and this will increase the likelihood of water seepage. When the roofing membrane is next replaced, the low areas may be removed by building up the affected area with rigid board insulation or sheathing. Alternatively, additional roof drains may be installed at the lowest elevations in the roof and connected to the existing drain pipes in the main floor ceiling.

2.07B Metal chimneys: There are basically two types of flues that are available; an uninsulated Class 'B' vent (for heating systems), and a double walled, Class 'A' mass insulated chimney (for fireplaces). The latter are prone to corrosive problems on the interior. An annual inspection by an accredited chimney sweep is advised to assess the condition of all metal fireplace flues. The metal chimneys observed at three locations service the warehouse furnace, the gas-fired water heater and also an oven in the Studio. The visible sections of the metal flues are intact.

G: the metal chimney that services the oven in the Studio should be extended in height and it should be provided with a rain cap.

G: the metal chimney in the middle of the building (services the water heater) is loose and it should be secured.

2.08 Eavestroughs; and Roof drains: 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 two central roof drains are made of ABS plastic. The downspouts discharge into a buried pipe at the rear of the building. The water then exits onto the surrounding land at some distance from the building (southeast corner of the property ?). The condition of the buried pipe is unknown.

2.09A Masonry walls: The exterior walls on all sides are composed of brick masonry. Minor mortar deterioration is not uncommon and should gaps develop between bricks, they should be tuckpointed. The brickwork was found to be in generally good condition.

G: the holes near in the brick wall above the rear exterior doors should be filled to prevent water entry. It is suspected that these openings in the wall were originally designed for exterior lights. Some of the brickwork is spalling (flaking of the brick face) at the base of wall at the northeast corner and the damaged bricks should eventually be chipped out replaced.

G: the discolouration on the brickwork at the upper northwest and southeast corners should be cleaned.

2.09B Steel siding: This is a very durable siding and relatively maintenance free. It should however, be washed every five years to prevent pitting of the surface caused by air pollutants. Corrugated steel siding is present on the upper wall section on the three sides of the building and was found to be for the most part functional.

G: the loose and mechanically damaged lower sections of metal siding at the front of the building may have to be repaired.

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 metal trim in most locations to minimize deterioration and reduce maintenance.

G: the caulking around some of the exterior window frames is cracked or missing and should be replaced.

P: the poorly constructed wood privacy fencing or screening adjacent to the HVAC unit on the south side of the roof should be rebuilt or removed.
(Approximate Cost: $250 to $750)

M: the two large wood panel loading doors at the rear of the building are deteriorating and eventual replacement will be necessary. Replacement of the two passage doors may also be necessary.
(Approximate Cost: $3,000 to $5,000)

G: the doors at the rear of the building should be painted in the interim.

ELECTRICAL

3.01 Electrical service & panel: This building is provided with four overhead separately metered three-phase, four wire 120/208-volt Hydro services. The main services and disconnected switches are located at the northwest and southwest corners of the building. The primary distributions panels are located near the main disconnect boxes. Auxiliary panels are present at several locations in the building. Each of the main distribution panels is rated at either 120-amps or 200-amps. The four electrical services appear to be grounded to the supply plumbing near the main water shut-off valve.

The four main electrical systems service the building as follows:

SOUTHEAST CORNER OF BUILDING

1st Floor

200-amps 3-phase 120/208-volts
(panel located @ SE corner of dining room)

1st Floor

100-amps 3-phase 120/208-volts
(panel located near exterior door on south side of space)

SOUTHWEST CORNER OF BUILDING

Studio: 1st Floor

200-amps 3-phase 120/208-volts
(panel located on north side of the basement)
(auxiliary panel located in the 1st Floor Studio)
(sub-panel @ NW corner of 1st Floor for Vacant space)

Research Lab: Basement

100-amps 3-phase 120/208-volts

(panel located on north side of the basement)

P: all wiring connections in the electrical panels servicing the Studio and the Restaurant should be examined and repairs should be completed as required. All breakers should be examined to ensure that they are appropriately sized and any over-sized breakers should be replaced.
(Approximate Cost: $200 to $350)

3.02 Distribution wiring: The visible distribution wiring in the building is composed of copper wire. The wiring is modern grounded cable that is equipped with a grounding wire. This wiring allows for the use of three pronged outlets.

P: some dangling electrical wires were noted above the main floor ceilings and they should be properly secured to prevent mechanical damage. Some exposed wires were noted at should be properly terminated or disconnected as required.
(Approximate Cost: $200 to $500)

3.03 Supply of outlets: The location of outlets in some areas of the building was verified. Often, furnishings in the building impede the ability of the inspector to locate all outlets.

M: the installation of additional outlets and circuitry may be necessary depending on the intended use of the building.

3.04 Operation of outlets & fixtures: Most of the outlets in the building were NOT tested for continuity and grounding (due to lack of access).

G: 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. Replacement of some of the washroom outlets will be necessary.

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.

P: the exterior outlet at the rear should be replaced with a G.FI. (ground fault circuit interrupter) to minimize the electrical shock hazard in this area.
(Approximate Cost: $60 to $75)

P: the electrical wiring that provides power to the sign in the front yard is located below grade. It could not be confirmed whether the wiring is properly protected within a conduit or whether it is

operable. The electrical junction box in the signs is open and there are exposed wires visible. The circuitry should be examined and repaired and/or enclosed as required.
(Further investigation req'd to determine accurate cost)

P: all exterior wiring on the roof should be examined and correctly reinstalled, protected or disconnected as required.
(Approximate Cost: $250 to $750)

HEATING/COOLING

4.01A Type of system: The building is primarily serviced by six Heating, Ventilating & Air-Conditioning (HVAC) units located on the roof and at grade level on the north side. These units are electrically powered for cooling and gas powered for heating. The life expectancy of these systems is difficult to predict although approximately twenty years is a common standard in the industry. The heat exchanger 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. Should a crack or hole develop in the exchanger, the heating system would have to be replaced. Replacement costs typically vary between $7,500 and $10,000. Periodic repairs (in particular to the components of the cooling systems) can be expected.

The HVAC units on the roof service the building as follows:

Research Lab in the Basement

1) South Side; HVAC located on the roof
KEEPRITE
(template not visible; however from original
Tecumseh compressor; 1986, about 4 tonnes cooling)

2) North Side; HVAC located at grade level on north side
KEEPRITE
(Model #; RGA060H150; Serial # 9170968796)
(1989 or 1991; about 5 tonnes cooling)

Studio on the First Floor

3) Front Half; HVAC located at northwest corner of the roof
KEEPRITE
(Model #; 5021DB-7D-65A; Serial # 37801 00032)
(1978 or 1983; cooling load unknown)

4) Rear Half; HVAC located at northeast corner of the roof
UNITARY PRODUCTS GROUP
(Model #; D7CG060N09925A; Serial # NANM006911)
(2004; about 5 tonnes cooling)

Restaurant on the First Floor

5) Perimeter; HVAC located at southwest corner of the roof
KEEPRITE
(template not visible; however from original
Tecumseh compressor; 1986, about 4 tonnes cooling)

6 Inner; HVAC located at middle southwest of the roof
INTERNATIONAL COMFORT PRODUCTS
(Model #; PGF060H140D; Serial # l0227 57974)
(2002; about 5 tonnes cooling)

M: as three of the Keeprite HVAC units on the roof are more than twenty years of age, replacement should be budgeted for within the next two years. The systems should be inspected and cleaned on an annual basis to ensure safe operation until it is replaced.
(Approximate Cost: $20,000 to $30,000)

M: as one of the HVAC units (at grade level for the north side of the basement) is more than fifteen years old, replacement should be budgeted for within the next five years. The system should be inspected and cleaned on an annual basis to ensure safe operation until it is replaced.
(Approximate Cost: $6,000 to $7,500)

Most of the heating systems were in operation during the inspection. Having them inspected and cleaned annually is a wise practice and will help maintain an acceptable level of heating efficiency.

P: one of the HVAC units (older Keeprite system) for the restaurant did not appear to be in operation and it should be serviced and repaired as required.

P: a slight but distinct smell of gas was detected the gas meters on the south side of the building. The gas company should be contacted immediately to determine the exact source and make the necessary repairs.

The Research space at the rear of the building on the south side is heated by a ceiling mounted gas-fired furnace (REZNOR) and also by a high-efficiency gas-fired furnace (KEEPRITE). These two furnaces are less than five years old and are apparently owned by the tenant. The heat exchangers in these systems typically have lifespans of about fifteen to twenty years.

M: the original ceiling mounted furnace at the rear of the Research space appears to have been disconnected and is no longer in use. The installation of a new heating and cooling system may be necessary if tenant use changes. There is a roughed-in opening in the roof above the space at the southeast corner of the building for the installation of an HVAC unit.

4.02A Heat distribution: Supply and return-air ducts were examined for operation and location. 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. The distribution ductwork in the building could not be fully examined due to the finished nature of the basement and the main floor ceilings and their condition is unknown. However, supply-air registers are present and functional in most rooms of the building serviced by the HVAC units. Thermostats for the HVAC systems were observed at six locations in the building.

G: some loose sections of ductwork were noted above the dropped ceilings and localized repairs can be expected.

G: air flow to a register located in the kitchen at the rear of the Restaurant is sourced from an HVAC unit above the Studio.

G: the heating, cooling and electrical to the vacant space at the front of the building is sourced in the Studio.

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

4.03D Central air conditioning: The cooling cycles of the HVAC systems could not be operated due to the low outdoor temperature. They should be serviced prior to use to ensure proper working order. Compressors have an average lifespan of about fifteen years. Replacement of compressors are not uncommon and can cost $2,500 or more. The units have a combined cooling capacity of approximately 27 tonnes. This appears adequate for this size of building. The condensate drain pipes are designed to discharge onto the roof and onto the ground at grade level.

G: some the traps for the HVAC units should be should be repaired or replaced.

M: localized repairs to the cooling systems will likely be necessary prior to replacement of the older HVAC units.

PLUMBING

5.01 Supply plumbing: The visible water distribution pipes throughout the building are made of copper. The main water shutoff valve is located at the southeast corner of the basement (on the south side of the Research Lab).

5.02 Water pressure: The pressure (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.

5.03 Waste plumbing: The waste drainage plumbing is largely composed of cast iron, lead and copper fittings, though some sections have been upgraded with plastic. The drainage pipes beneath the basement floor and under the south driveway could not be examined and their condition is not known. Most of the waste drainage plumbing in the basement could not be viewed due to the finished nature of the building. Water flow through all drains and toilets tested was acceptable. Floor drains were noted in the basement and on the main floor of the building.

G: localized repairs to some of waste plumbing pipes beneath the fixtures on the main floor of the building will be required.

G: as access could not be gained to most of the floor drains, they it 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 odours from venting into the living area.

Two sump pump systems are present in the basement. The pits in the floor are designed to collect water from the foundation drain system and then pump that water into the sewer system. The pumps should be inspected to ensure proper working order.

P: proper covers should be constructed over the two sump pump pits to eliminate potential falling hazards.
(Approximate Cost: $250 to $750)

P: the discharge pipe connections from the two sump pumps should be examined and repaired or replaced as required.
(Approximate Cost: $200 to $500)

A sealed sewage pump systems is present beneath the stairwell at the front of the basement. The pit in the floor is designed to collect waste water from the basement waste plumbing system and then discharge the waste to the main waste pipe in the basement. Although the system could not be

fully accessed, at least one of the pumps was operable at the time of the inspection. A high water level alarm is connected to the system and should be examined to ensure proper working order.

Two more recently installed sewage pumps were noted in the middle hallway at the rear of the main floor. They appear to service floor drains retrofitted in to the Research facility at the southeast corner of the building. They may be the responsibility of the tenant and this should be verified.

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 appears to be a rental unit. The water heater appears to service all washrooms in the building and it has a capacity of 283 litres. This should be adequate for the number of bathrooms and kitchens in the building.

5.04 Plumbing fixtures: Most faucets and toilets were tested to ensure that they were in working condition. The plumbing fixtures throughout the building are functional.

M: some of the older plumbing fixtures in the washrooms on the main floor of the building are worn and should be monitored for eventual replacement.

INSULATION

6.01C Flat roof: There appears to be about two to three inches of pressed fibre-glass insulation present beneath the flat roofing membrane.

6.03 Exterior walls: Insulation may not 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.

The basement exterior wall cavities were not accessed and the presence of insulation is unknown.

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. Thermalpane windows are present throughout the building.

G: there is air leakage around the exterior doors in some locations. The weatherstripping is inadequate and should be repaired or replaced.

GENERAL INTERIOR

7.01 Walls & Ceilings: The walls are largely finished in drywall and they were found to be in acceptable condition. Most of the ceilings are finished with acoustic tiles.

M: water stains were noted on several of the ceiling tiles in the Studio. These are presumably related to past leaks from the roofing membrane and/or HVAC units and they should be monitored for active leaks to determine if further repairs to the roofing membrane or condensate drain systems will be required. Replacement of several of the ceiling tiles will likely be necessary with occupancy change.

7.02 Flooring: The floors were inspected for soundness where accessible. The floors throughout most of the building felt secure and are functional. The staircases in the building are sound.

The door jambs are square throughout the building, allowing good closure of 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.

P: the broken pane of glass at the rear of the building will require replacement.
(Approximate Cost: $400 to $500)

G: the thermalpane windows in some areas 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. This results in a white film between the panes of glass that cannot be removed.

7.04F Fireplaces: A prefabricated natural gas fireplace has been installed in the restaurant vestibule. The fireplace was in operation during the inspection. Annual servicing and cleaning is advisable to ensure safe operation.

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: it could not be determined whether the exhaust fans in all locations are properly vented to the exterior. This should be verified.

SUMMARY

The total cost for the repair estimates given varies between $100,000 and $125,000. A portion of these costs may represent future repairs to be expected over the next five years. Most of this cost estimate is designated for eventual replacement of the apparently original roofing membrane on the building and four of the older HVAC units. Additional costs will be incurred where a cost estimate was not provided (for example if resurfacing of some of the parking lot and driveway surfaces proves necessary).

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

Sincerely,

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Mark Goddard
National Home Inspection Ltd.