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Structural, Mechanical and Electrical Inspection Report

This **Structural Inspection Report** is made by **AlbCad Design** Inspector -----
for -----resident at -----.
Address of property inspected -----.

Part of this report is an opinions and an observations/recommendation section. The opinions section is intended to provide an opinion of the Structural, Mechanical and Electrical performance for entire building (year of construction 1900, being there before new addition was made). The observations/recommendation intended to provide a list of or considerations and Structural, Mechanical and Electrical improvements and repairs which provide a basis for the opinions stated.

A. Structural Inspection

Property Description

The property inspected is indentified as a two floor building (duplex), with crawlspace basement, concrete foundation wall and footing, having wood wall and floors framing, brick veneer, flat roof with gravel or elastic membrane sandwich on top. It is understood that the age of the existing structure is 110 years old.

Purpose

The main purpose of the inspection was to evaluate the structural condition of the entire building, particularly the foundation, frame wall, floors and roof of existing building in order to provide information related to their condition and an opinion for actual performance at the time the inspection was done. The data obtained and included in this report will provide insight into the overall condition of the property and information that will assist in maintaining the entire structure in the best possible condition during future years. Some of the comments contained in the observations attachment to this report are related to need for preventative maintenance and may not indicate need for immediate repair.

Scope

The scope of Structural inspection included visual observations of those portions of the foundation, frame wall, floors, roof, and structural components on existing part of the building readily visible, exterior deck and deck cover without moving or removing items causing visual obstruction. Observations were made at the exterior and interior of the structure, with some limitation readily accessible interior and the roof from the surface at some locations and from the ground. The items listed in the observations/recommendation are not claimed to be a total list of problems or defects, but rather a representative list of items on which the stated opinions are based. Estimates of repairs should be obtained from a building contractor who can determine the extent of repairs necessary.

There is no warranty implied nor stated as a part of AlbCad Design Inspection, performing this inspection work. This information is provided for the use of the person to whom this report is addressed and is in no way intended to be used by a third party, who may have different requirements. If a third person chooses to use this information, caution is advised because there may be addendums that affect the information contained herein or the stated opinion. No special testing was performed to determine

if leaks existed in the plumbing system below this building's foundation. In some cases, the effects of plumbing leaks below a foundation can result in a need for repair of the foundation. If it is determined by the client that they wish to have the plumbing systems tested, then testing should be performed by a qualified plumber who can provide cost estimates for repair if it is found to be necessary. Inspection for hazardous gases or materials, such as radon or asbestos, or for latent defects in the roof, foundation, or structure is considered beyond the scope of this inspection. This inspector has not been trained to detect such materials, and no tests were performed to discover any latent defects in the foundation, structure, roof, or maintenance of the building that may become evident after taking possession of the building.

Foundation opinion and observations/recommendation.

The evidences and consequences of differential settlement observed and detected indicate that the foundation of this building has experienced minimal differential settlement for interior part of the building. No observations were made that would indicate that the interior part foundation is in need of repair. Differential settlement of building foundations is a common problem in this area because of the expansive soil and changing weather conditions. As a building resting on the expansive soil ages, it is probable the foundation will continue to experience differential movement, regardless of how well it was constructed or its present condition.

One of the most significant consequences of differential settlement observed was the no tolerable displacement of the exterior part of the foundation (spot marked with square round corners at the map) and this part falls under the extension at the rear part of existing of the building being constructing like closed balconies with exterior wall timber wood construction and exterior brick.



The displacement of entire structure going down at one of the corners as more than couple of inches and the foundations right under this part of the structure is moving down with a very obvious crack, showing clear a cut at the foundation. As the building ages, it is probable the foundation will continue to experience differential movement, regardless of how well it was constructed or its present condition. This differential movement does not stop as buildings become older; older structures with a history of minimal differential movement have been known to develop foundation problems in a very short time due to changing conditions at the perimeter of the building foundation.

To stop the displacement of the broken foundation and further sink of entire structure on top of it the need for repair is immediate. Concrete resistance piercing or underpinning method can be used to

stabilize the foundation from sinking further into the ground. Push piers and helical underpinning methods offer the ability to not only stabilize, but also to lift the structure. The foundation underpinning systems guarantee to prevent the building from further movement. Concrete underpinning is used in heavier structure for stabilization. A hollow caisson is driven into the ground and filled with concrete to support the structure. This method offers more strength than helical underpinning. Concrete underpinning, however, does not offer the ability to lift the structure in anyway. The cost of the stabilization for the given could be according to our opinion around 16 000Can but for more accurate estimation contact e specialize contractor in foundation stabilization.



Structural walls and floor opinions and observations/recommendation.

The most significant major irregularities of the structure observed was the displacement of the foundation at the location round corner square spot at the map and the entire structure displacement on top of this part of the foundation. The floors on this part are obviously down at least more than couple of inches. This sinking down structure have caused other problems in the masonry envelope and some cracks on the exterior brick veneer as well.



The most significant masonry irregularities observed was at the corner with location with square spot at the map. The corner was chipped off the concrete grade beam of the foundation which is usually caused by differential settlement that has caused shearing between the brick veneer. Chipped corners indicate structural frame differential settlement down, but there is no need for foundation repair

because of the chipped corner but the structure of the frame at the corner has to be rebuild. Most of the masonry of entire corner on this location has to be redone after the structure stabilization.



The walls over the ceiling of the second floor looks not to strait and this is a sign of the frame deformation on top of the building.



Wood-destroying insect vulnerability and humidity was observed at all the columns holding the main beams under the first floor and this should be cause for further destabilization in the future years of the

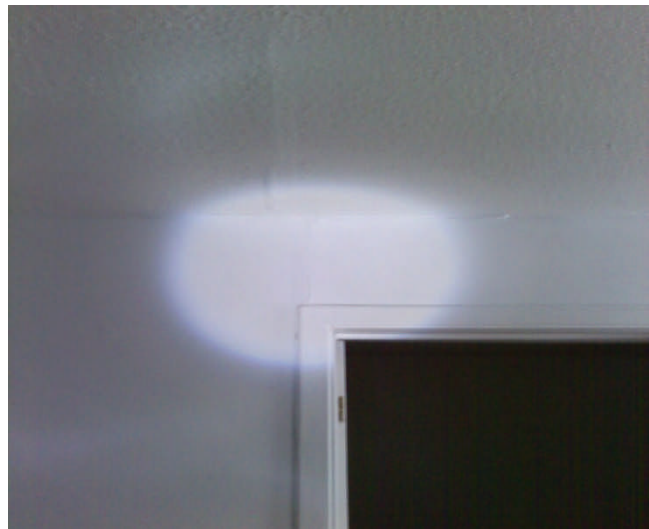
structure over it. Some minor framing irregularities were observed that should have no significant effect on the performance of the building.



There were no observations made that would indicate that the basic structure of the building, including load-bearing walls and other framing members, was in need of immediate repair or was not performing adequately at the time of inspection but improvement and replacement of the columns has to be done in the near future.

The sheetrock floating material had popped off in some places and this sometimes happens when there is foundation movement causing the sheetrock to shear against the wood framing of the building.

Sheetrock cracks above doors, windows, and in the ceiling, usually associated with differential settlement, were observed in the several locations and most significant several outside masonry cracks close to the windows



Out-of-levelness of door tops, window sills, built-in furniture, and other horizontal surfaces was normal and acceptable in degree. Cracks in the exterior brick veneer were minimal in number and degree in some other places.

No significant cracks were observed in the wood floor joist, but small cracks exist and extensive wood deterioration was present in the entire structure specially floors joist and subflooring under the sink of the kitchen and under the roof itself.

Doors which dragged or stuck at the bottom or top, usually an indication of differential settlement in the building foundation, were observed, including at the entry door.

Doors with tapered gaps between the door and door casing at the top, indicating differential settlement in the foundation of the building, were observed, including at the entry door.

The cost of the improvement and necessary reparation in the structure including masonry could be according to our opinion around 12 000Can but for more accurate estimation contact e specialize contractor in structure stabilization.

Roof opinion and observations/recommendation.

The roof was not inspected to provide information as to its general condition but an opinion as to whether or not it is serviceable. There is not any leaking test made over the existing but the composition of the roof appeared to be in good/serviceable condition and should have normal years of useful life remaining for a roof of its type. There was not possibility to check the existing frame structure of the roof because it was cover by dry wall and there is not attic neither access door to check under or over the roof. Evidences of current or previous roof leaks were not observed from the interior; however, this does not rule out the possibility of current or previous roof leaks.

B. Mechanical Inspection

Description of Property Inspected

The following summary lists the specific equipment inspected and indicates an opinion of the status of the equipment at the time of the inspection.

Plumbing system, furnace of the hot water heating system of the building, heating system itself and heating units in every room, garage door opener, smoke detector, ceiling fans.

Purpose

The purpose of this inspection was to visually inspect and if it is possibly operate the equipment listed above to observe and provide an opinion of any deficiencies apparent at the time of the inspection.

Scope

The scope of this inspection included visual observations of the above listed mechanical equipment and appliances without disassembly of any unit inspected and without removing items causing visual obstruction. The functional equipment when it was possibly was operated in at least one mode, but not necessarily every mode, suited to demonstrate its condition. All the comments and information provided in this report are strictly opinions and may not necessarily agree with other professionals. Items which are not listed in this report were not inspected and should not be assumed to be functional or nonfunctional .The photographs included in the photo attachment to this report and referenced by

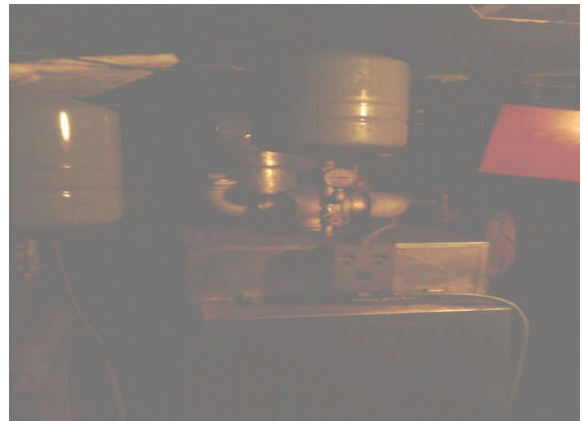
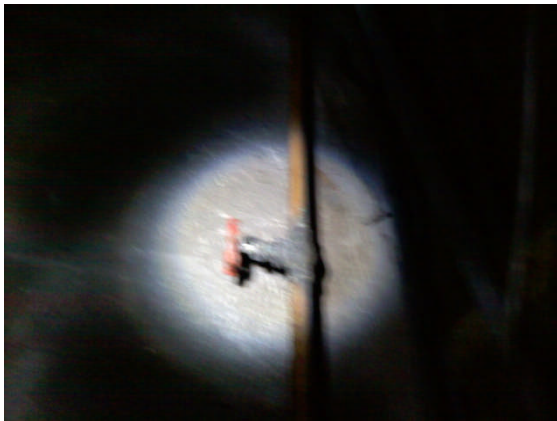
some items in the report are only intended to provide a general representation of the condition discussed in the referencing paragraph. The referenced photographs do not necessarily represent all locations where described conditions exist and such should not be assumed. Photographs are taken at the discretion of the inspector and are not provided for all irregularities observed during the inspection or included in this report.

Mechanical opinions and observations/recommendation.

All the comments and information provided in this report are strictly opinions and may not necessarily agree with other professionals. Items which are not listed in this report were not inspected and should not be assumed to be functional or nonfunctional.

Where visible water distribution plumbing was observed to be fabricated from copper. The plumbing connected with hot water tank and to the hot water heating system was fabricated from galvanize pipes with clear spots of rusts .

The main water service shutoff valve was located at the crawlspace. It was operated by inspector and results that it was in working condition.



Water inlet lines to the building should be insulated to prevent them from freezing during the winter.

The sprinkler anti-siphon device should be tested by a qualified plumber to ensure that it operates properly.

Hot water for the building is provided by a oil-fired water heater and distributed by means of heating system and heating units (water radiator).

Visual inspection was done around the area bottom of the boiler inside and out for visible leaks or previous stains. If the heater has been off for a long period of time, you may see considerable water develop when you turn the unit on. This may be condensation, and not a defect.

Metal heater cabinet was observed too. Rusting and failure of the metal may indicate a failure of the sealing material between the boiler tubes. When the heat escapes from the boiler area and comes in contact with the cooler metal cabinet around the heater, condensation forms and eventually rusts out the cabinet. Repairs/sealing are possible, however, they tend to be temporary.

The heat exchanger of the type furnace inspected could not be checked by visual examination. For a definitive condition of the heat exchanger, the furnace would have to be disassembled. If further investigation is desired, it is recommended that a qualified service company be employed to inspect the heat exchanger. Opinions and comments stated in this report are based solely on observations of

apparent performance. Opinions related to compliance with specifications, legal and/or code requirements of any kind are specifically excluded as being covered in our agreement to perform this inspection. No guarantee or warranty as to future life, performance and/or need for repair of any item inspected is intended nor should same be assumed.

C. Electrical Inspection

Description of Property

The property inspected consisted of the visible electrical wiring, circuit breakers, light fixtures, electrical outlets, light switches, and visible wiring connections to the appliances. Only those specific components of the electrical system listed above in the equipment status summary were inspected.

Purpose

The purpose of the inspection was to observe and point out visually apparent deficiencies in the electrical wiring and equipment at the time of the inspection and to determine if it is performing the function for which it was intended. A cursory evaluation was made to determine the adequacy of the capacity. There was no intent to closely examine and evaluate each of the primary or branch circuits. As a courtesy, for the purpose of planning only, a range of repair cost will be provided.

Scope

The scope of the inspection included visual observations of the electrical wiring, the main circuit breaker box, the visible wiring at the attic, and connections to the electrical appliances. Observations were made at the readily accessible light switches and electrical outlets. The switches were operated to determine whether or not they were mechanically functional. The readily accessible outlets were checked with a plug-in circuit analyzer to determine if they were properly wired. Only those items accessible without moving furniture, access covers, or other items were observed. It is specifically pointed out that routing of circuitry, adequacy of wiring, and/or compliance with electrical codes are not included as a part of this cursory inspection.

Estimated cost of repair is provided for planning purposes only and may vary significantly, depending on the extent of the problem and the method by which repairs are made. If in-depth information is desired on the electrical system or any part thereof, it is recommended that you consult with a licensed electrician. The photographs included in the photo attachment to this report and referenced by some items in the report are only intended to provide a general representation of the condition discussed in the referencing paragraph. The referenced photographs do not necessarily represent all locations where described conditions exist and such should not be assumed. Photographs are taken at the discretion of the inspector and are not provided for all irregularities observed during the inspection or included in this report. The following summary lists the equipment inspected (and the only equipment inspected) and indicates the status of the equipment at the time of the inspection.

Ground check, light switches, wall outlets, light fixtures, visible wiring, service panel.

Electrical opinions and observations/recommendation.

The following observations are indicative of the type irregularities observed during the course of the cursory electrical inspection. There may be other irregularities that exist but were not apparent and were not pointed out because they could not be seen.

Improper grounding

Those items which are indicated as needing repair under this portion of the inspection should be provided with a positive earth ground or otherwise repaired to prevent the possibility of electrical shock to anyone who may use the equipment.

Systems and circuit conductors are grounded to limit voltages due to lightning, line surges, or unintentional contact with higher voltage lines, and to stabilize the voltage to ground during normal operation. The earth ground was not properly connected or was loose from the ground rod that provides a ground for the breaker panel box.

Equipment grounding conductors are bonded to the system grounded conductor to provide a low impedance path for fault current that will facilitate the operation of over-current devices under ground fault conditions .

Light fixtures

Some light fixtures may not have been observed because of location or obstructions, such as stored items or furniture. Recessed light fixtures were observed to be covered or partially covered with insulation at the attic space. The space around the light fixtures should be cleared to comply with the manufacturer's recommended clearance to allow for proper cooling to reduce the risk of a fire hazard.

Breakers panel box

No bonding strap was observed at the breaker panel box between the main ground buss and the panel box to provide a ground for the panel box. Bonding straps are currently required, but there is no requirement for the equipment to be upgraded unless there is a major renovation of the electrical system. Some of the knockouts at the bottom of the panel box were pushed out, partially, leaving gaps. It is normally desirable for the knockouts to be in good conditions to help retain a fire that might start in the panel box from spreading to the wall cavity.



Electric wiring

The main service to the house was observed to be 120/240 volts with a main disconnect. There was no GFCI located for the bathtub at the time of this inspection. Lack of GFCI control devices. Current code

requires that all exterior circuits, bathrooms, kitchens within 6' of sink, garages and basements must be protected by Ground Fault Circuit Interrupters. Further evaluation by a qualified electrician as to the presence and location of the GFCI breaker for the whirlpool bathtub is recommended. If no GFCI is found, one should be installed at this location.

Some outlets may not have been observed because of location or obstructions, such as stored items or furniture. Outlet cover plate retaining screws were observed to be missing in the following locations: at the kitchen and corridors.

An previous fire was detected at the same place of existing Breaker Panel Box. The new circuit Breaker Panel Box was placed but still is obvious some wiring and over the capacity of the panel. Aluminum wiring as detected to be the main electric distribution system interior. Proper electrical repair by an expert is very important to reduce the hazards of aluminum wiring in homes. Aluminum wire connections can overheat enough to start a fire without ever drawing enough current to trip a circuit breaker. The cost of the updated the electric system and reparation of the deficiencies mentioned above according to our opinion around 10000Can but for more accurate estimation contact e specialize electric contractor.

E. Special notice

Opinions and comments contained in this report are based on observations made at the time of inspection. The observations/recommendation contained in the inspection report are to be considered a part of this inspection in order that the reader be aware of the items observed or considered that provided a basis for the opinions expressed above. Opinions related to compliance with specifications, legal, and/or code requirements are specifically excluded as being a part of our agreement to perform this inspection. There is no guarantee or warranty as to future performance, life, and/or need for repair of any item inspected, nor should same be assumed.

PREPARED BY: -----, P. Eng
Registered Professional Engineers Ontario

Attachment:

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