

**STRUCTURAL CONDITION ASSESSMENT FOR
99 NASHVILLE ROAD, KLEINBERG, ONTARIO**



Prepared for
STATEVIEW HOMES

November, 2019
Project ID: AS19-146



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November 11, 2019

Stateview Homes
410 Chrislea Road, Unit 16
Woodbridge, Ontario
L4L 8B5

Email:

Attention: Mr. Daniel Ciccone, CFO

Re: 99 Nashville Road, Kleinberg, Ontario
Structural Assessment
Project ID: AS19-146

Wynspec Engineering (Wynspec) was authorized by Stateview Homes. to undertake a structural (visual) assessment of the dwelling unit located at 99 Nashville Road, Kleinberg, ON in accordance with our proposal.

The purpose of our review was to determine the present condition of the structural elements forming the dwelling unit for the above captioned site after reports of water damage from a flood incident and reported vandalism. In conjunction with the building structure, a review of the foundation walls, roof deck structure, roofing system, and exterior cladding elements was also undertaken as part of the investigation.

Our findings and methodology are summarized in detail in the attached report. The findings of the condition assessment were used to evaluate the capability of typical structural elements within the existing building structure, given their present condition, together with our conclusions regarding the factors contributing to the development of each type of deficiency noted to be present as it relates to the overall structural integrity of the dwelling unit. The primary purpose of our condition survey was to assess and document the existing condition and to give assurance that the unit can be temporarily relocated and returned to the existing site.

Regardless of your plans for this property, any activities in the building—whether construction, renovation or demolition— should be performed with extreme care as several areas of framing have a potential for collapse if subjected to potentially even minor dynamic forces.

We would be pleased to review the contents of this report with you should you so request.

Should you have any questions please contact our office.

Yours truly,
Wynspec Engineering

A handwritten signature in black ink, appearing to read 'I. Katzenberg', written in a cursive style.

Izzie Katzenberg, P.Eng., B.D.S.
Senior Structural Engineer



1.0 BACKGROUND

Wynspec Engineering was contacted by Mr. Daniel Ciccone of Stateview Homes regarding a flood and vandalism that occurred on July 26, 2019, at 99 Nashville Road, in Kleinberg, Ontario. A police report was filed (Occurrence Number 19-254750-99) by Constable Petrillo badge # 2359 and Constable Mohammed badge # 2372. This flood and vandalism reportedly caused localized damage to the floors, walls and roof structure. We were asked to assess the physical condition of the structure, identify apparent structural damages, deficiencies and severity, provide our opinions and recommendations based on our investigation results. We understand that Stateview Homes has proposed to lift and relocate the dwelling unit and at a later date reinstate the dwelling unit to its original address. In addition to providing our recommendations in response to the observed condition of specific structural components. Wynspec undertook a survey of the residential dwelling unit at 99 Nashville Road, Kleinberg ON. It is our understanding that the City of Vaughan's Cultural Heritage Resource Assessment Inventory List has identified the property at 99 Nashville Road as item 853. The original construction materials forming the dwelling unit at the above captioned site has been greatly reduced and modified over many years from its original structure. The original veneer on the dwelling unit have been removed long ago.

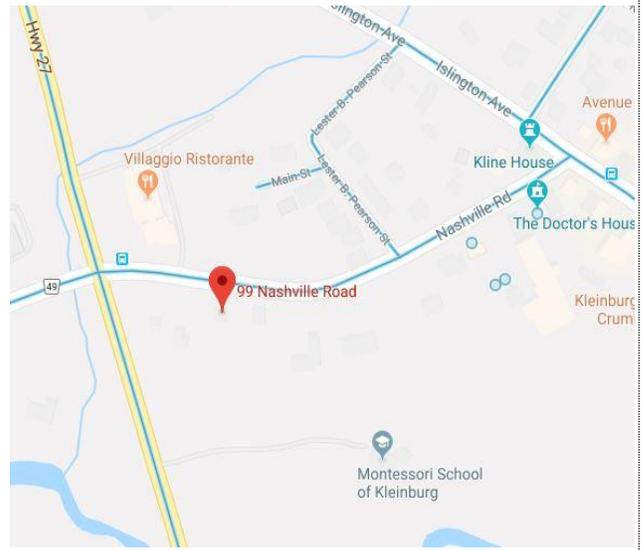
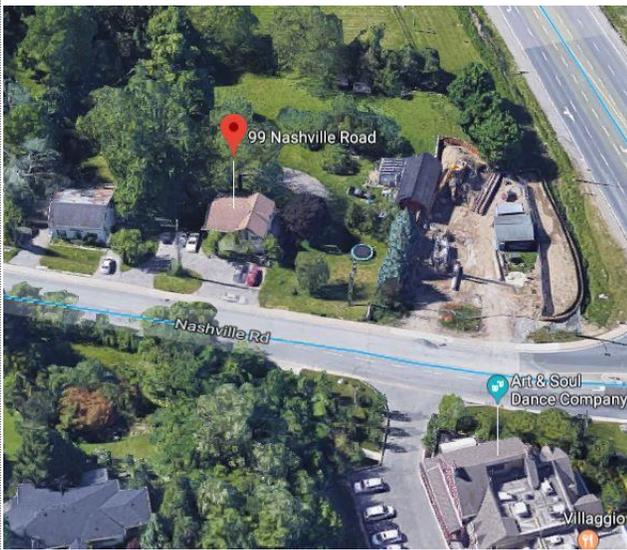
The property reviewed has been has been vacant for a number of years. The intent of the survey was to obtain selected information on the current physical condition of the structural members, identify deficiencies that would affect the structural integrity and durability of the structure. From the building condition assessment, the dwelling unit may contain asbestos and possibly other hazardous materials. While these materials have to be handled and removed under provincial regulations it should not be viewed as an overwhelming or deciding factor because the cost of hazardous materials remediation is a constant value whether the building is demolished or retained

2.0 DESCRIPTION

The 1½ storey, appears to be a timber frame and light wood framed house with several modifications and additions and is currently concealed with metal siding and insulbrick. Insulbrick was popular as an exterior siding between the 1940's and early 1950's. Windows and doors throughout have all been replaced long ago. This home is was built prior to any Building Codes in Canada. These types of homes were not designed or built to meet modern building practices. As such this building will not control the movement of air, heat, water vapour or sound. Installation of new materials and systems can hopefully improve the buildings performance however, it is unrealistic to expect these building to perform as well as newly designed homes.

The residential dwelling unit comprises of field stone, brick and block foundation walls, with timber framing and light wood framing. The date of construction is unknown; however, it is apparent that timber roof truss framing has been locally replaced and reconstructed in the recent past. The exterior wall assembly is believed to consist of metal siding and insulbrick and simple wide plank boards however, the wall cavity space was not directly observed. The interior walls and ceiling on the main and upper floor is of gypsum board and lathe and plaster construction with a painted finish. The test openings revealed vermiculite insulation or transit. The residential dwelling unit appears to have numerous modifications carried out over the years as well as evidence of fire and soot damage within the attic space. The main and upper levels of the home are finished. The main floor has three entranceways, hallways, kitchen, family room, living room, dinning room, laundry room and bathroom. The upper floor has a bathroom, three bedrooms and a bathroom. The basement area is not finished with an addition to the north and east section of the dwelling unit. The basement also has a cellar and a laundry room. It is apparent that the property has been abandoned for several years.

At the east and south sections as well as a false dormer on the west elevation are later additions. Deterioration was observed at the south-west corner of the basement foundation walls. The field stone repairs at the south-west corner of the foundation appears to be spalling, delaminated and scaling of stone and cementitious repair materials.



WEST FACE ELEVATION



SOUTH EAST ELEVATION



SOUTH FACE ELEVATION



NORTH FACE ELEVATION

3.0 PURPOSE AND METHODS OF THE INVESTIGATION

The objective of this investigation included the assessment of the existing structural members, such as the roof, bearing walls, floor framing, foundations for decisions on future action, specifically to enable a review to be made of appropriate remedial repair options or decommissioning of the existing dwelling units.

The field work consisted of the following:

3.1 METHODOLOGY

- .1 Visual review of the structural components;
- .2 Visual review the roof, exterior walls, interior walls floors and foundation walls to check for visible signs of structural defects;
- .3 Sounding Survey
- .4 Check floor slope, identifying areas with potential drainage or ponding concerns;
- .5 Test openings (walls and ceilings) to check the as constructed conditions
- .6 Measuring the cross-sectional areas of structural framing members to confirm if any significant deterioration has occurred;

Visual Survey

A visual review of the general condition of the structural framing, roofing assemblies and foundation walls;
Visual walk-through review and survey of the dwelling unit (surface, framing, and roofing assembly) to identify visually obvious signs of deterioration and to detect areas of possible leakage, and other possible forms of deterioration; and,

A visual survey was carried out to determine for the following conditions:

- Evidence of leakage.
- Locations of active water leakage;
- Cracking;
- Deterioration of the foundation wall assemblies
- Deterioration of timber framing;
- Peeling paint; and,
- A visual review of walls and floors on all levels.



Sounding and Probing Survey

One of the most commonly used techniques for detecting deterioration is to hit the surface of a member with a hammer or other objects. Based on the sound quality or surface condition, we can identify areas of concern for further investigation. Deteriorated areas typically have a hollow or dull sound that may indicate internal decay. A pick hammer is commonly used and recommended for use in timber structures because it allows us to combine the use of sound and the pick end to probe the element.

Probing with a moderately pointed tool, locates decay near the wood surface as indicated by excessive softness or a lack of resistance to probe penetration and the breakage pattern of the splinters. A brash, or brittle break indicates decayed wood, whereas a splintered break indicates sound wood. Although probing is a simple inspection method, experience is required to interpret results. Care must be taken to differentiate between decay and water-softened wood, which may be sound but somewhat softer than dry wood. Probes can also be used to assess the depth of splits and checks in timber members

Test Openings

Several test openings were carried out on the interior and exterior walls as well as the ceilings to expose the condition of the timber frame members for further review.

Conclusions regarding the factors contributing to the development of the deficiencies now present in this structure, together with recommendations are detailed at the end of this report. No calculations were performed to confirm the adequacy of the original design. We did not undertake any analysis of the structural framing assembly performance, energy efficiency, adequacy of the design.

Photographs were taken to illustrate the various deficiencies noted on the interior and exterior of the dwelling unit and are included in this report.

4.0 STRUCTURAL OBSERVATIONS AND RESULTS OF FIELDWORK

A visual examination of the home was performed on the months of October 2019 and November 2019. The dwelling unit was found to be in total disrepair with vast amount of debris on the floors mainly on the ground floor. The debris was mainly composed of damaged and loose ceilings, partitions, wall and floor coverings and broken fixtures. The windows were broken on all floors. The front, rear and side entrances were missing or damaged with debris lying on the main floor which was found to be unsafe for inspection. The exterior of the house has visible signs of structural damage and water damage. It appears roof leaks have occurred in the past or may continue to occur based on the existing condition of the asphalt shingles and sheathing concealing the roofing members and limited staining of the insulation and wood framing in the attic space. The cladding materials were all a minimum of 8" above the finished grade except the north and west walls of the house. There are large areas of missing or deteriorated shingles as well as damage to the plywood sheathing and simple wide plank boards concealing the roofing members. This condition has provided rainwater access to the interior of the attic space degrading and decaying the roof framing and upper and main floor levels. There also appears to be evidence of soot on the roof framing members and connections.

The basement area was inspected first located under the main floor of the Family Room and Hallway. Numerous floor joists have been notched or split. Several deteriorated floor joists had been replaced or doubled up for structural purposes. The field stone foundations were examined and found to be extensively deteriorated and bowing outwards at several locations. The concrete block foundations were examined where accessible and were found to be in fair condition. Some evidence of water staining was present along the perimeter foundation walls. The summer beams supporting the timber framing forming the main floor were found to be damp, split and degraded and irreparably damaged in some areas and were supported with temporary post shores and concrete block pilasters.

Field Stone and Concrete Block Foundations

The rubble field stone foundation is in poor condition. There is visible extensive deterioration. The exterior walls are constructed of rubble field stone. The varied coursing pattern, uneven in some areas, indicates a rapid construction. The mortar joints are heavily deteriorated. Most of the foundation walls will likely have to be replaced. The concrete block foundation walls forming the newer additions were not accessible for this review. Evidence of water penetration through the walls was present at several locations. There is evidence of structural distress observed on the field stone foundation walls. Several fieldstones were found to be loose along the exposed exterior below the porch and south west section.



There is extensive water damage and deterioration to the field stone forming the perimeter foundation walls at several locations.



Several areas of deteriorated field stone have been replaced with masonry brick and cementitious repair materials.



The field stone foundation walls concealed with cementitious repair materials is bowing outwards.



Numerous loose field stone have been concealed with cementitious materials.

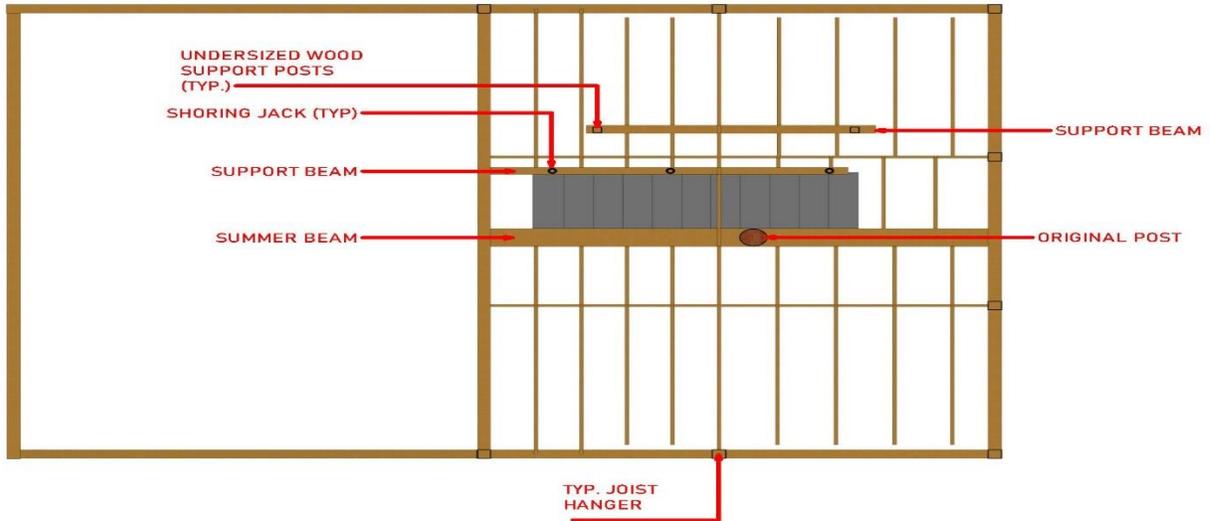
Floor Framing

Construction of the floor joist framing throughout the home is wood framing and appears to be in poor condition where accessible. Several floor joists in the basement were found to be split and notched at load bearing points. The floor joists that have been cut or notched at the ends may not be able to sustain normally accepted construction or residential level floor loads. The flooring throughout the home has been badly affected by falling damp and ingress of rainwater over a prolonged period of time. The extent of the degradation was hard to gauge because of several overlays concealing the original flooring. The overlays have also degraded at numerous locations in the presence of damp, mold and rot. The overlay was generally resistant to forceful probing in localized areas,



allowing access to minimal areas of the floor. In some sections of the floor, the original flooring had degraded and disintegrated. The underside of the second floor was examined through test openings and found to exhibit extensive mold spores. The spacing of the floor joist were taken and ranged between 400mm and 450mm OC which do not currently conform to the Ontario Building Code requirements. No load sharing system was observed on the underside of the floors between joists. No use of cross bridging, strapping or any combination of these as a means of supporting loaded floors were observed.

Several original post and beams have been replaced with undersized lumber. Temporary post shores and concrete block pilasters are in place supporting the main floor level. In general, there is evidence of extensive deterioration sagging floors, beams deflecting and structural elements that show signs of structural distress.



Typical Floor Framing



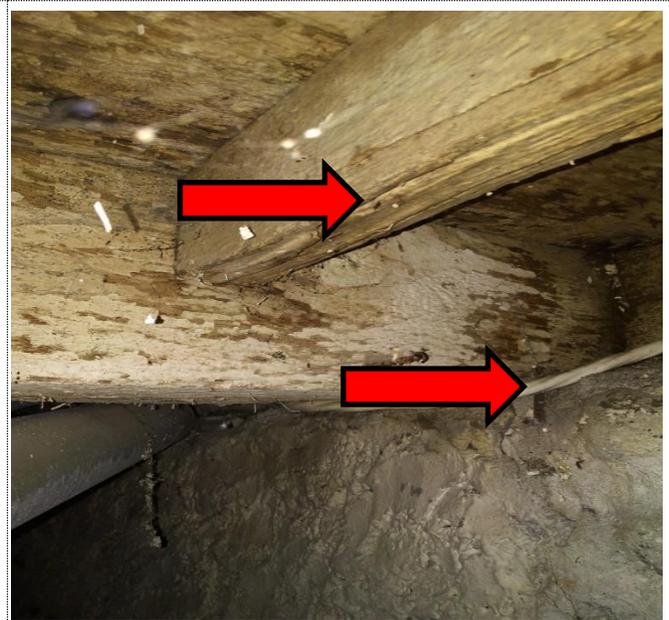
Temporary post shores and 6x6 timber have been placed to support the timber floor framing and summer beams.



Evidence of water staining and moisture damage to the original summer beam and timber column. There are wood shims in place below the beam and column, as shown in the photograph.



Staining or discoloration of wood indicates that it has been subjected to water and potentially has a high moisture content suitable to support decay.



Several framing members are deteriorated and have been notched out, split and have also warped. Alterations can weaken members. This type of modification can severely weaken the joists.



Undersized support framing that is deteriorated and deflecting at mid span. The built-up wood beams down the centre of the building show significant sag, likely due to long-term creep wood under the load of the multiple floor finishes. The beams also exhibit ineffective load-sharing between the inner plies and outer ledgers.



Heavy timber framing is split and rotting in several locations. The staining or discoloration of the wood members indicates that it has been subjected to water and potentially has a high moisture content suitable to support decay.



Extensive cross-sectional loss through several timber framing and mold spores were identified. There is also knob and tub wiring through the old timber members.

Several additional support joists and lightwood bracing have been placed in order to support some of the old deteriorated timber,

Exterior Walls

Exterior Wall Assembly – Metal siding, insulbrick and locally removed and replaced simple wide plank boards, and plaster lath. The metal siding and insulbrick were removed from the exterior face of the wall assembly and a visual inspection from grade was carried out and the wood framing was found to be locally replaced or in poor condition. Although some degree of deterioration is more pronounced in localized areas, in general, the following defects were observed:

- ! Wood rot
- ! Damaged wood
- ! Peeled paint
- ! Missing or loose boards
- ! Holes in cladding

While the structure does not appear to have settled for the exception of the localized section of the south east corner, it is probable that the siding was replaced due to deterioration. In several places, window sill's have deteriorated, which suggests that excessive moisture has been trapped inside and drying of the wood has been insignificant and deterioration has occurred at different levels.

The wood framing concealed with the metal siding and insulbrick appears to be unidentified hardwoods. The wood framing appears to be deteriorating on the upper floor walls and some pieces appear to be experiencing rot. The ground floor appears to be deflecting independently from the original structure. Our test openings revealed no bridging, cross bracing or end connections that have been notched or temporally supported on post shores and concrete block pilasters at several locations. At corner locations it was observed that the top plates did not overlap or tie into the additions or modifications to the home. Solid blocking was missing between several joists spans. No blocking was found at test opening between studs. The inconsistency of wood framing and connections from mid 1800's to post 1970's construction was found throughout all of our test openings and appears to be affecting the overall structural integrity and performance of the home. The deterioration is expected to increase at an accelerated rate if left unattended and action is not taken to reinstate the effectiveness and integrity of the structural framing forming the exterior walls and load bearing walls.



The transition between new addition and old structure. Original timber framing and simple plank boards have been locally replaced and have been concealed with insulbrick and metal siding.



Several simple plank boards and framing have been locally replaced, as shown in the above photograph.



The exterior framing was concealed with insulbrick, as shown in the above photograph.



The metal siding and insulbrick was removed locally and revealed that several timber framing and simple plank boards have been altered or locally removed and replaced.



Double wall system forming the newer addition forming the e east elevation. Note, the original timber framing that was found to be extensively charred.



Locally replaced simple plank board forming the exterior walls along the north and west elevations.



The original sills were removed and replaced. There is water damage and extensive mold growth to the newer lumber and batt insulation. The batt insulation was found to be wet.



Several alterations have been made to the interior corner connection.

Exterior Woodwork – Porch

The covered wood porch on the west façade appears to be in fair condition. There is evidence of rotting wood at the base of the columns. The roof, supported on these columns, have been concealed with metal siding and asphalt shingles. They appear to be in



fair condition with some water staining evident. A further and more invasive investigation would yield whether or not the lack of air flow in conjunction with moisture retention flow has led to unexposed rot.

Because of exposure to the elements, there is very noticeable damage to the asphalt shingles that have deteriorated to the underlay.



Exterior wood porch concealed with metal siding- North elevation



Exterior wood porch concealed with metal siding- South elevation



Porch decking supported on cast in place concrete knee wall. Portion of the field stone supporting the porch decking is loose and deteriorated.



Exterior wood porch supported by loose and deteriorated field stone foundations.



Roof Framing

Roof and Drainage System. The asphalt shingled roof was not accessible for close inspection. The roof shingles are not original and are in poor condition. Water stains were found in several locations on the second floor, which would suggest leaks in the roof. At these locations it is possible that the surrounding roof joists have deteriorated due to moisture.

The rainwater disposal system consists of aluminum gutters and rainwater leaders that are not original to the building. The existing drainage system is in poor condition. Based on the findings of this review, it is our opinion that the roof framing was found to be severely damaged with obvious signs of warping in plane along with some of the framing being split. At several critical elements of the roof framing a disturbing structural fault was observed between connections between pre-1900's construction and post-1970's construction. Some framing seemed to be experiencing rot from areas exposed from prolonged exposure to falling damp, and adverse affects of weather. Several sections of the roof framing have been altered and construction practices in these locations is poor and do not meet current Ontario Building Code requirements. Top edges of light wood framing have been adversely affected to a level that could not be determined from the type of inspection conducted. Several collar ties were missing as well as the ridge beam between the old and new structure. The roofing insulation appears to contain hazardous materials. A designated substance report should be addressed prior to decommissioning the structure from the existing site. The majority of the roofing in the residential dwelling unit is in general state of decay, with numerous holes and missing sections. This degradation has led to a significant number of the faults in the light wood framing and damage observed.

When viewed from the outside of the dwelling unit, obvious sag is evident in the roof framing on the east elevation. This may be an original condition, or it may be associated with the crushing and splitting of the roof framing. Extreme care should be exercised in entering this part of the dwelling unit until a more thorough examination of the condition of the roof framing can take place.

During our review, we noted that the roof has been re-roofed and the original wood structure supported by wood framing have been locally replaced. An asphalt shingle roof provides protection over the home. The roof lines had a good positive drainage to a perimeter eavestrough. The soffits were vented and the roof had a number of roof vents. The condition of the roof framing was found to be generally in a poor condition. The roof framing is concealed with typical plaster lath materials. Several test openings were carried out and access to the attic space was made available at the time of our inspections. The roof framing was found to be deteriorated and in a general state of decay with numerous holes and missing sections. The degradation and alterations has led to significant number of the faults in the light wood framing, particularly in the vicinity of their structural supports. Top edges of light wood framing have been adversely affected to a level that could not be determined from the type of inspection conducted.

Attic venting was found not in accordance with the Ontario Building Code requirements. Inadequate attic venting may translate to apparent water leaks by means of condensation and premature deterioration of the roof framing members. As such, some of the existing exhaust ducts do not vent directly to the exterior of the roof as required by the OBC. Considering the insulation (a common element) was found to be less than the specified R-value in the OBC and in some cases missing along the top plate of exterior walls.



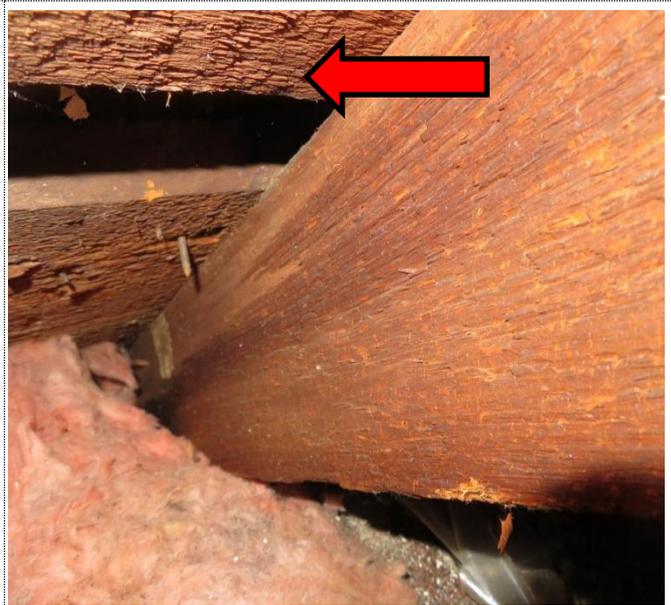
Original timber rafters appear to be stained with soot. Several structural wood trusses that had its webs removed by previous homeowners may have had the intent of creating living space in the attic.



Transition between new and original structure. There appears to be soot stains on the new addition and roofing shingles that appear to have fire damage.



Original timber rafters and simple plank board that have extensive water damage and mold. Several plank boards were covered in soot. As a consequence of the moisture exposure, wood members in the roof also contained areas of deterioration

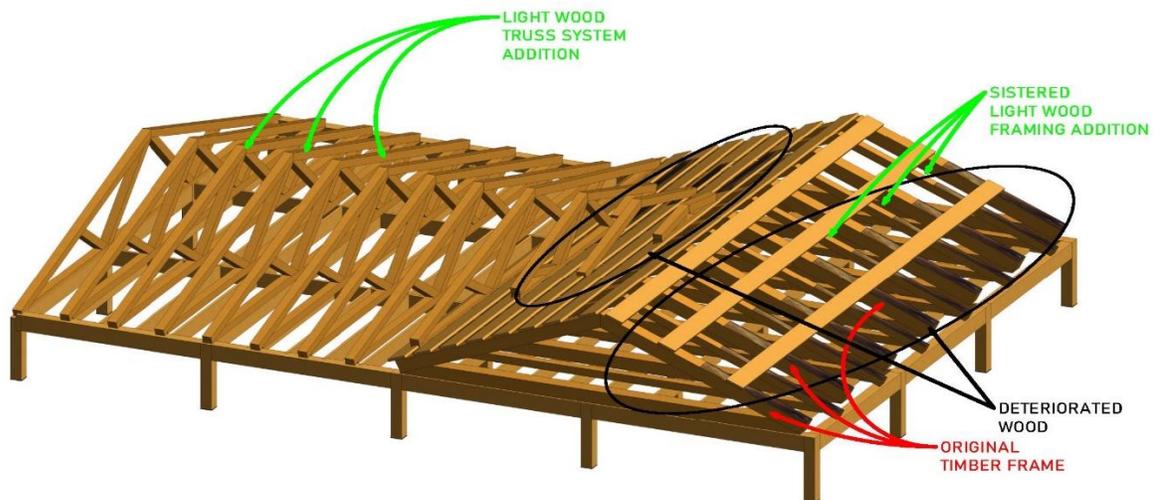


Several plank boards were found to exhibit extensive wood rot.



The roof has been re-covered relatively recently, and provided with new rafters and felt. The shingles and plywood sheathing concealing the roof appears to be in effective in several areas. The metal troughs and downspouts are disconnected and damaged in several areas.

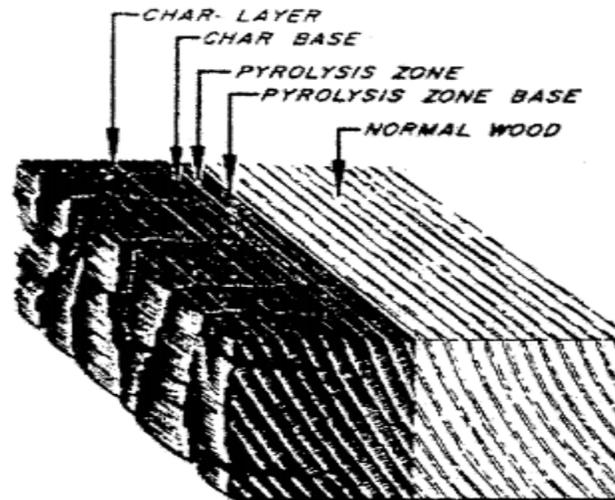
The original timber trusses have been locally removed and replaced. Signs of serious wet-rot decay were noted in the timber. There are numerous dips in the roof line. Several areas of shingles have curled and deteriorated.



Detail Identifying Deteriorated Roof Framing Assembly

Fire Damaged Wood

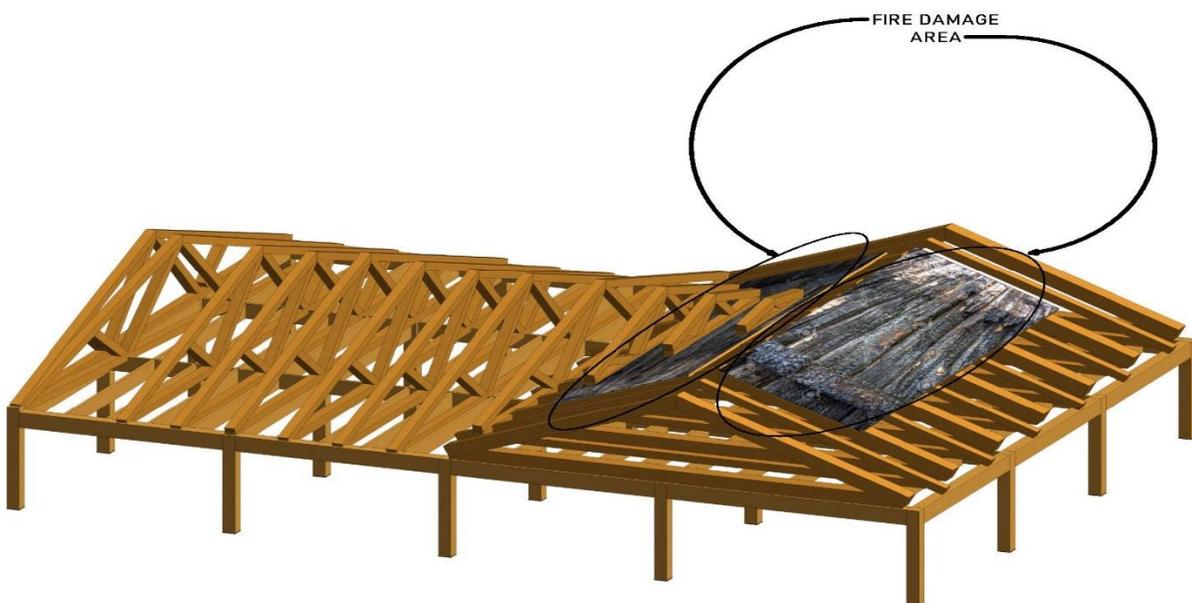
The wood members that have been damaged from fire appear to be significantly charred. The char layer could be scrapped off however, any charred portion of fire exposed wood member has no residual load capacity. The wood beneath the char layer may have some residual load capacity, but this residual capacity will be less than the load capacity prior to the fire.



Sudden surface heating of a wood member in a fire results in surface charring and a steep temperature gradient. Thus, the stages of thermal wood degradation previously discussed become zones of degradation in a structural wood member exposed to fire. In a broad sense, there is an outer char layer, a pyrolysis zone, a zone of elevated temperatures, and the cool interior **as shown above**. These zones of degradation reflect the temperature profile through the cross section.

For wood members that have charred, the char layer can be easily scrapped off. Obviously, any charred portion of a fire-exposed wood member has no residual load capacity. The wood beneath the char layer has residual load capacity, but, this residual capacity will be less than the load capacity prior to the fire. Members that have only visual smoke damage or slight browning of the surface also have significant residual load capacity.

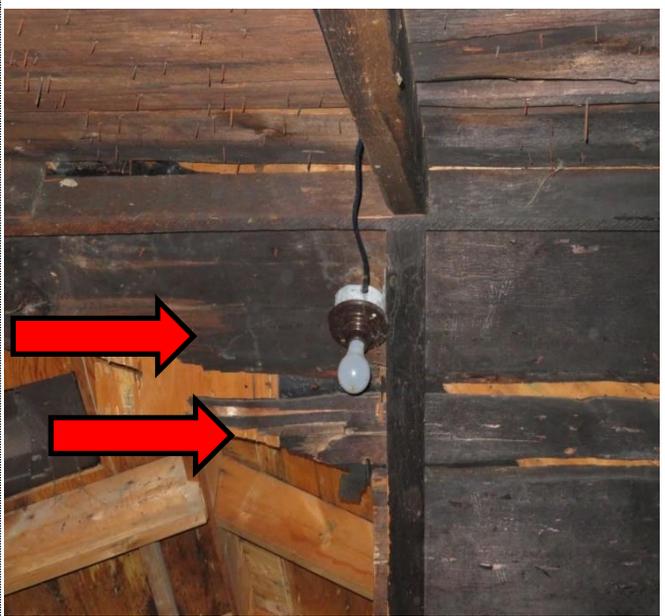
Dee



Detail Identifying Extent of Fire Damage to the Roof Assembly



Several wood timber framing and light wood framing have been damaged with fire.



There is extensive fire damage to the original timber rafters and simple plank boards. It appears that there is visible shrinkage to the timber framing.



There is extensive fire damage to the original timber rafters and simple plank boards.



Photograph 13 Pine Valley Drive (2018)



Several wood timber framing and light wood framing have been damaged with fire. It appears that there is visible shrinkage to the timber framing.



Several wood timber framing and light wood framing have been damaged with fire.



Extensive fire damage and wood rot to the original exterior wall framing that was partial removed.



Extensive fire damage to the original exterior wall framing that was partial removed.

5.0 LIMITATIONS

The structural members were visually reviewed for signs of deterioration and/or damage. No analysis of the structure was performed at this time. The information presented in this report is based on direct visual observation made by personnel with Wynspec and in



some instances as noted within the report on information provided by others. Recommendations contained within our report reflect our informed opinion based on the information gathered during our investigation. The findings cannot be extended to components of the building or portions of the site that were not reviewed or that were concealed or unavailable for direct observation at the time of our visit. There is a possibility for additional deficiencies being present in the building which have not been identified during our visit, given the limited nature of this review.

No legal survey, soil test, detailed structural engineering investigation, or quantity survey compilation have been made. No responsibility, therefore, is assumed concerning these matters, or for any failure to carry out those technical or engineering procedures required to discover any inherent or hidden condition of this property since such investigation work was not included in the terms of reference governing this study.

The conclusions and recommendations detailed in this report are based upon the information available at the time of preparation of the report. No investigative method eliminates the possibility of obtaining imprecise or incomplete information. Professional judgement was exercised in gathering and analyzing the information obtained and in the formulation of our conclusions and recommendations. The recommendations are not intended to be utilized as a detailed specification for any remedial work that may be required. WYNSPEC accepts no responsibility for interpretation of our recommendations, or actions taken based on them without our consultation and supervision.

Information provided by WYNSPEC is intended for the exclusive use of **the client**. WYNSPEC will not provide results or information to any party other than the client, unless the client, in writing, requests that information be provided to a third party or unless disclosure by WYNSPEC is required by law. Any use by a third party, of reports or documents authored by WYNSPEC, or any reliance by a third party, or decisions made by a third party, on the findings described in reports or documents authored by WYNSPEC, is the sole responsibility of such third parties. WYNSPEC accepts no responsibility for damages suffered by any third party as a result of decisions made or work carried out based on reports or documents authored by WYNSPEC.

WYNSPEC makes no representations concerning the legal and medical significance of our findings. With respect to regulatory compliance requirements, regulations change from time to time, and interpretation of their meaning and intent may also change. WYNSPEC accepts no responsibility for any legal interpretation of the Regulations, or the consequent financial effect on transactions, property values, or requirements for follow-up actions and costs.

The liability of WYNSPEC or its staff is limited to the fees paid or actual damages incurred by the client, whichever is less. WYNSPEC is not responsible for consequential or indirect damages. All claims by the client shall be deemed relinquished if not made within two years after last date of services provided.

The client expressly agrees that it has entered into this agreement with WYNSPEC, both on its own behalf and as agent on behalf of its employees and principals.

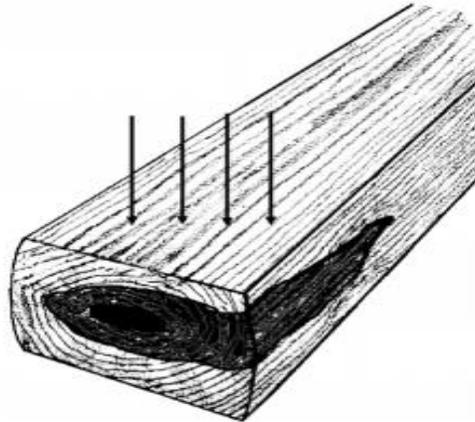
The client expressly agrees that WYNSPEC's employees and principals shall have no personal liability to the client in respect of a claim, whether in contract, or tort, or in any other cause of action in law. Accordingly, the client expressly agrees that it will bring no proceedings and will take no action in any court of law against any of WYNSPEC's employees or principals.

The following photographs detail the observations made during our investigation, documenting visual cues in the form of cracking, evidence of water penetration structural deficiencies, hazardous materials and degradation as shown below:



MECHANISMS OF DETERIORATION AND MOISTURE

In general, deterioration of timber and light wood framing structures is a result of exposure from the combined presence of water penetration and moisture. Degradation occurs as a result of moisture and leaks through cracks and defects in the walls and roofing assemblies. If this process is left unchecked, and allowed to continue, the structural capacity of the component can be significantly reduced as a result of the deteriorated timber framing and light wood framing.



Because of interior deterioration the outer shell can collapse when the timber is stressed in bearing.

6.0 DISCUSSION AND CONCLUSIONS

6.1 FILED STONE AND CONCRETE BLOCK FOUNDATIONS

The block foundation walls were constructed years ago and form part of the post 1970's addition. The block foundation walls are not accessible for this review. The original fieldstone foundation walls forming the basement of the mid to late 1800's dwelling unit appear to be structurally unsound and have been repaired over the years with cementitious repair materials and masonry brick. It was also observed that the basement flooded commonly during raining periods. The external walls are generally not straight or plumb, apart from several localised areas above the front door and below the porch area. The stonework is suffering from erosion of the mortar joints close to defective gutters or flashings. The stonework has been pointed with cement mortar, and this has resulted in water becoming entrapped in the stone and subsequent frost damage. There is evidence of laterally and differential movement in the foundation walls indicating that this is creating unsafe condition structurally.

6.2 FLOOR FRAMING

The findings of this review suggest the primary concern for the floor slabs is the effectiveness of the existing floor joists and support beams. The degradation and alterations on the underside of the floor slabs is visually alarming. The floor framing is an important element of the building structural stability to establish a stiff diaphragm in the absence of any diagonal bracing. The flooring and floor framing on the main floor and upper level is in a variable condition with some parts being in an extremely poor condition. Several temporary post shores and undersized makeshift beams have been placed to support the ground floor framing.

Cracking and staining of gypsum board was identified at several locations on the upper lower levels. There are no cracks visible externally. Elsewhere cracking of gypsum board is evident within the new addition and hallways most likely resulting from rainwater penetration via the failed flashing details. Floors appear to have an excessive bounce at several locations. The gaps between boards is, in some instances, excessive and reduces the capacity of the floors to function fully as plan diaphragms to restrain the external walls.

6.3 EXTERIOR WALLS

The exterior walls have been significantly modified. The original veneer has been removed and replaced with metal siding and at an earlier date replaced with insulbrick. The exterior framing has been modified with additions to the original structure that were found to



be constructed poorly and also found to be degraded, split and stained with evidence of water penetration. Our test openings revealed no cross-bracing, bridging or strapping placed. No lintels or proper headers above openings or window locations were present during our review. The east modification to the structure shows movement cracking and apparent deflection.

6.4 EXTERIOR WOODWORK-PORCH

The existing porch is a later addition and has been extensively altered. The floor framing and foundations supporting the porch frame is extensively deteriorated and appears to have shifted on the south west section. A cast in place concrete knee wall was placed to support the south west corner however, we believe this knee wall was installed above the frost line causing the decking to move upwards due to freeze thaw action. The existing field stone support wall on the north west section is loose and falling apart.

6.5 ROOF

During our review, we noted that the roof framing has been re-roofed and the original wood structure supported by wood timber framing has also been locally replaced. A new light wood framed roof was added to the east section including a false dormer located on the west elevation. An asphalt shingle roof provides protection over the home. The roof lines had a poor drainage slope to a perimeter eavestrough. The eavestroughs and downspouts were damaged, warped and disconnected at several locations. The soffits were vented and the roof had a number of roof vents. The condition of the roof framing was found to be generally in a poor condition. The underside of the roof framing is concealed with typical plaster lath materials. Several test openings were carried out and limited access to the attic space was made available at the time of our inspections. The roof framing was found to be deteriorated and in a general state of decay with numerous holes and missing sections. Several roof truss timber framing and simple plank boards were found to fire damage exhibiting signs of charring and cross-sectional loss to several members. Thermal degradation of wood results in the loss of structural properties. Thermal degradation of wood is a kinetic process. Due to the thermal properties of wood, a distinct temperature gradient develops in a wood member when it is exposed to fire. Thus, the loss of structural properties of fire-damaged wood members.

The degradation and alterations have led to significant number of the faults in the light wood framing, as well as to the original timber framing particularly in the vicinity of their structural supports. Signs of serious wet-rot decay were noted in the timber. Top edges of light wood framing have been adversely affected to a level that could not be determined from the type of inspection conducted. The roofing insulation also appears to contain hazardous materials. A designated substance report should be addressed prior to decommissioning the structure from the existing site.

Attic venting was found to not conform in accordance with the Ontario Building Code (OBC). The OBC requires a venting area 1/300 of the total heating ceiling area, of which 25% is required from the roof and soffit vents. Inadequate attic venting may translate to apparent water leaks by means of condensation and premature deterioration of the roof framing members. Several sections of the roof framing have been altered and construction practices in these locations is poor and do not meet current Ontario Building Code requirements. The east addition was observed and from the outside of the dwelling unit, obvious sag is evident in the roof framing. This may be an original condition, or it may be associated with the crushing and splitting of the roof framing.

6.6 HISTORICAL & PHYSICAL ANALYSIS OF THE BUILDING

The dwelling unit at 99 Nashville Road has changed significantly based on our site observations and test openings, the existing structure retains a high degree of inconsistencies from pre1900's to post 1970's. The photo to the left below shows the existing dwelling unit captioned in 1970 and the photo below to the right is the existing dwelling unit located at the above captioned site.

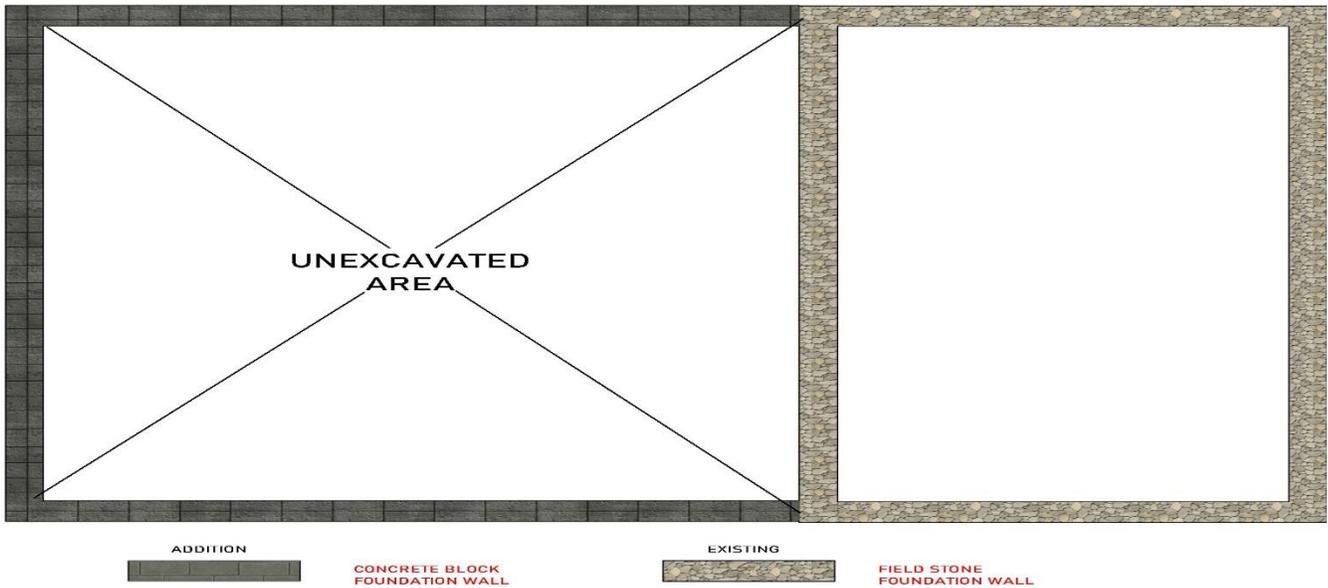


Photographic image of 99 Nashville road taken in (1970). .Detail from aerial photo from the Vaughan Archives. The original house is visibly shaded in dark grey. There appears to be a larger addition to the east section as well as on the south section.



Photographic image of 99 Nashville Road in (2016). Note, east addition as well as the south extension to the original structure has been extensively altered including roof lines and the addition of a false dormer.

Character and context of modifications carried out to 99 Nashville Road over the years as identified below



6.7 Key Findings

Our test openings at the time of our review revealed that several timber framing was found to exhibit extensive fire damage. Several sections of the roof framing have been altered and construction practices in these locations is poor and do not meet current Ontario Building Code requirements. The east addition was observed and from the outside of the dwelling unit, obvious sag is evident in the roof framing. This may be an original condition, or it may be associated with the crushing and splitting of the roof framing.



In analysing the dwelling unit, and forming an opinion if the building is structurally sound at this time and code compliance our comments are as follows:

- .1 The building in its present condition is in poor condition, abandoned partially fire damaged, degraded and neglected.
- .2 The one and half-storey east addition appears to be deflecting independently from the original structure.
- .3 The structural framing members in the roof, walls and floor joists are badly degraded that we would condemn the structure. The structural loads associated with its original use are far in excess of the loads that it will experience with any proposed relocation of the structure.
- .4 The original veneer has been completely replaced with metal siding as well as insulbrick
- .5 Several modifications that were poorly constructed.
- .6 The original framing members within the dwelling unit have been locally replaced.
- .7 Mould spores and hazardous materials were found throughout the dwelling unit. A designated substance report should be carried out.

The dwelling unit on the site has been identified as having heritage value, however based on our review and findings the original structure forming the original dwelling design has been considerably reduced. The building has suffered from fire damage, and cyclic maintenance and do present evidence of significant structural distress. The building has been modified and altered with several poorly constructed additions that are all concealed with plaster lath, drywall finishes and metal siding for the exterior walls.

At the time of our visit we also noted that there's no functioning electrical or mechanical components throughout the dwelling unit. With no heating or cooling sources in the dwelling space as well as areas exposed from prolonged exposure to falling damp, and adverse affects of weather will facilitate condensation into the dwelling space and create a dew point on the roof framing and structural support members and will promote further deterioration and decay.

6.8 SUMMARY

We understand that the City of Vaughan has deemed the dwelling unit a Property of Heritage Value. We also understand that if the structure would have to be demolished would require a consent from the Council and Heritage Committee. Our findings have revealed that several critical elements and disturbing structural faults were observed between connections pre1900's construction and post 1970's construction. Some framing seemed to be experiencing rot from areas exposed from prolonged exposure to falling damp, and adverse affects of weather. Several sections of the framing have been altered and construction practices in these locations are poor and do not meet current Ontario Building Code requirements. Fire damage and mold spores and hazardous materials were also found throughout the dwelling unit. The exiting building facade and structural members have been either modified or reduced from its original state, as observed during review.

The existing condition of the building is not characteristic of its type or technical feature that would make it potentially aesthetically significant. The original veneer has been removed long ago. We also understand that the dwelling unit has been extensively disturbed with the addition to the east section of the dwelling unit and placed above concrete block foundations along with several additions made to the structure. As the proposed development would involve relocation of the dwelling unit or total demolition, Councils Guidelines for demolition requires an applicant to reach a conclusion regarding the heritage significance of the property based on a Heritage Impact Assessment carried out by a Professional Heritage Consultant. This assessment was solely carried out to determine the structural condition of the dwelling unit located at 99 Nashville Road, Kleinberg ON. The first question from a structural point of view is whether there are any structural hazards or can the construction be refurbished or, in extreme cases, needs to be replaced. The choice of action must be based on an assessment of the status of the structure carried out by a Professional Engineer. The assessment is typically based on a mapping of damage to the bearing frame. The mapping of damage needs to be accurate to optimize both the safety level and the best solution for repair methods if possible. This should also include a visual mapping of damage, such as deflection, cracking, deformations and other physical influences to the foundations and framing structure. The initial review would also require that similar members that show obvious degrees of degradation be identified within the structure.

We are of the opinion that a complete demolition of the existing dwelling unit be carried out with new construction, there is little structural value in the existing dwelling structure, particularly the newer addition to the east and south elevations of the dwelling unit. Large areas of failed and deficient framing would have to be completely rebuilt as well as the remaining framing in some areas is unlikely to have sufficient strength for current code-specified occupancy loads. The structure including the foundations, would not likely be structurally adequate to support additional loads necessary to reach a reasonable level of serviceability.



Based on our visual assessment and test openings we strongly believe that the original structure located at 99 Nashville Road, Kleinberg ON has been structurally modified with poorly constructed alterations and have been structurally compromised by fire damage. The timber wood-framing or light wood framing, may possibly have extensive damage, permanent deformations, diminished loadbearing capacity caused by high temperatures from the fire incident. Therefore, we are of the opinion that retention of the property could not be made suitable for continued adapted use or worthy of retention for heritage reasons however, could be redeveloped for other purposes, subject to obtaining the necessary approval. We find no heritage reasons to prevent its removal.

At this time, given the structural deficiencies described throughout the report, we don't believe we can give assurance that moving the dwelling unit away and returning it will not result in any further damages or collapse. Furthermore, given the condition of the existing structure, and the potential cost involved for the construction process necessary to move the dwelling unit away and returning it as well as the rehabilitation or retrofit of the structure in such a scenario would result in substantial costs versus the cost to construct a completely new structure of similar magnitude.

We trust that this meets your current needs. If you have any questions or if we may be of further assistance please contact the undersigned.

Yours truly,
Wynspec Engineering.

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