LIMITED STRUCTURAL BUILDING EVALUATION REPORT
66 & 68 ALDER DRIVE
INUVIK, NORTHWEST TERRITORIES

Prepared for:

Public Works and Government Services Canada
Environmental Services
Attention: Mr. Mike Molinski
100-167 Lombard Avenue
Winnipeg, Manitoba
R3B 0T6

Prepared by:

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Amec Foster Wheeler's Reference Number: TV147020

Public Works and Government Services Canada
100-167 Lombard Avenue
Winnipeg, Manitoba R3B 0T6

Attention: Mr. Michael Molinski
Senior Environmental Specialist

Dear Mr. Molinski:

Re: Limited Structural Building Evaluation Report
66 & 68 Alder Drive, Inuvik, Northwest Territories

1.0 INTRODUCTION

Amec Foster Wheeler Environment & Infrastructure, a Division of Amec Foster Wheeler Americas Limited ("Amec Foster Wheeler"), is pleased to provide Public Works and Government Services Canada ("PWGSC") with the following limited structural building evaluation report pertaining to the demolition or repair of the above referenced property. The report summarizes the results of the field observations and evaluation and provide a cost estimate for recommended remedial structural work and/or replacement and estimated cost for any required detailed geotechnical and additional engineering investigations and evaluations. The cost estimate also includes major repairs for non-structural items, where applicable.

The field evaluation was completed in accordance with the PWGSC Terns of References dated December 2015 and Amec Foster Wheeler's Proposal dated 21 December 2015.

2.0 BACKGROUND

The property is located at 66 & 68 Alder Drive, in Inuvik, Northwest Territories. The land area of the property is not provided. The property contains a 2-storey, duplex residential house. The building has a footprint and total floor area of approximately 124 m^2 and 248 m^2, respectively.

The building was reportedly constructed in 1974. The house has been constructed on wood piles extending above the ground. Multi-ply built-up wood beams extended over the piles support the floor joists and load bearing wood stud frames. Ceiling joists and roof trusses are wood.

The exterior porches and stairs are wood planks, supported by wood beams, joists, and columns.

The duplex house was vacant at the time of the site evaluation. Heat and lighting was present in the house at the time of the inspection.

3.0 OBJECTIVES

The objective of the program described herein includes a limited structural building evaluation to assess and provide an overview of the present structural integrity of the existing structural elements (i.e., piles, wall framing, wall sheathing, and floor, roof and ceiling joists and trusses), as it relates to the feasibility of any remedial work. Based on the observed condition, a cost estimate for recommended remedial structural work and/or replacement and estimated cost for any required detailed geotechnical and additional engineering investigations and evaluations is provided. The cost estimate also includes major repairs for non-structural items, where applicable.

4.0 SCOPE OF WORK AND METHODOLOGY

The scope of work for the limited structural assessment included a visual and limited intrusive assessment of the structural elements.

The visual and limited intrusive assessment on the interior side was limited to those elements, exposed to view from the interior (i.e., rooms, plumbing hatch within the ceiling, attic, etc.). In addition, a limited quantity of the interior finishes were removed by cutting small openings through the existing interior finishes of the ceilings and interior face of the exterior walls.

The assessment on the exterior side was conducted from underside of the building, where the height of piles were sufficient to allow safe access. The raised enclosed crawl space under the building was visually assessed from the access door without entering the confined space. The components behind the exterior cladding were inspected, where there was an open area within the exterior cladding to view.

A project summary report herein includes observations made on site, assessment of findings, and recommendations for implementation of remedial work and/or further investigation, if applicable.

In addition, the report presents an estimated order of magnitude cost for remedial work on noted deficiencies within the structural elements and non-structural elements, where major repairs are deemed necessary.

5.0 IMPLEMENTATION

5.1 Review of Background Information (Historical Reports)

No previous structural assessment reports were available at the time of this report.

5.2 Site Investigation

The site investigation was performed on 18 January 2016, by a professional engineer from Amec Foster Wheeler. Amec Foster Wheeler's professional structural assessor was accompanied by Amec Foster Wheeler's environmental scientists, present for implementing environmental site work. Mr. Wally Ballas from PWGSC was present on site and was interviewed briefly prior to the commencement of the assessment.

The weather condition was clear with some flurries with temperature of approximately minus 24 degrees Celsius.

6.0 BUILDING SYSTEMS, PROCEDURES, AND OBSERVATIONS

6.1 Description of Structure

The duplex house at # 66 & 68 Adler Drive is located on the south side of Adler Drive, in Inuvik, NT. For the purpose of this report the elevation of the house along the Alder Drive is considered to be the north elevation of the house (Photographs 1 to 3).

The house is a wood-framed structure (i.e., stud walls, floor and ceiling beams and joists, and engineered roof trusses). The duplex house consists of two individual attached 2-storey residential units with separate entrances. The house has exterior wood stairs and raised porches along the east (front) and west (rear) elevations.

The house is supported by driven wood piles, spaced at approximately 12 feet in the south-north direction and approximately 9 feet in the east-west direction.

The main beams are installed in the east-west direction, span over the 9 foot spaced piles and at the east and west ends span over the 10 foot spaced piles. The piles are approximately 4 feet above the ground along the south end (under House #68) and approximately 1 foot along the north end (under House #66) (Photograph 4).

The main built-up beams consist of 7x2”x6” interior beams, plus 1x2”x4” perimeter beams on each side (Photograph 5). The underside of the building is covered with plywood sheathing. Therefore, no joist in the south-north direction were visible within the open crawl space under the building; it appeared that the crawl space floor joists were concealed between the enclosed crawl space floor sheathing and the plywood sheathing above the open crawl space (Photograph 4).

An enclosed crawl space, approximately 3 feet high is located below the building and above the open bottom crawl space (Photograph 6). The enclosed crawl space contains the plumbing pipes, electrical wiring and heating ducts. The insulated load bearing stud walls noted within the perimeter of the enclosed crawl space and through the cut-outs made within the walls of the ground and second floors, consist of 2”x6” studs spaced at 16” c/c and bearing upon the perimeter beams and piles (Photograph 7). The stud framing at the middle span consists of 2”x8” lumber, reinforced with intermittent built-up columns made from 2”x8” lumber, supporting the floor above (Photograph 8). Main beams consisting of built-up 3x2”x10” lumber and 2”x10” joists spaced @16” c/c with 2”x2” cross bracings spaced at every 6 feet were noted within the enclosed crawl space. The beams and joists span over the load bearing studs and support the ground level floor above the enclosed crawl space (Photographs 9 and 10).

A built-up 4x2”x8” wood beam was noted within the ceiling of the second floor utility room in each house (Photograph 11). A built-up 3X2”x4” beam, supported by two built-up 3X2”x8” columns and loadbearing studs were noted along the staircase, extending onto the kitchen wall within the ground floor of each house (Photograph 12).

The ceilings of the ground and second floors are supported by 2”x8” wood joists, spaced at every 16” c/c (Photograph 13). There are no attics in this duplex house and the second floor ceiling beam and joists, support the roof system.

The decks of the front and rear porches consist of 2”x6” wood planks. The main beams supporting the exterior stairs and porches consist of built-up 4x2”x10” beams, supported by 4”x4” posts or built-up wood columns or wood piles/columns. The joists under the porches are 2”x8”, placed at every 12” or 16” c/c. The exterior stairs and porches have wood railing (Photographs 14 to16). The majority of the exterior stairs and decks were snow covered at the time of the site assessment.

The exterior raised sanitary line emerges at the southwest corner of the building and extends towards the south. The raised sanitary line is supported by wood beams bearing on to the driven wood piles.

The visual assessment of the condition of the exposed parts of driven wood piles above the ground level and main beams, and plywood sheathing below the building (below the raised enclosed crawl space) was carried out by entering the open crawl space under the building. Only the higher south half of the underside of the building could be accessed. The north half was too close to the ground. The exposed parts of driven wood piles and beams were examined by probing with a screw driver. The assessment revealed the following:

- All piles in the south half (under house # 68) have failed. A number of piles were missing in these areas. Temporary supports consisting of wood crib blocking, placed on wood pallets, bearing upon a prepared granular pad was noted at several locations. The depth and the degree of the compactness of the placed granular pad is unknown (Photographs 17 to 21).
- Wide gaps were noted between some of the existing piles and the beam (Photograph 22).
- The short wood piles under the north half of the building (House #66), and a number of the piles along the perimeter of building, appeared to be intact. However, all piles have apparent exposure to severe elements and moisture. Different stages of decay and discoloration were noted (Photographs 23 to 25).
- Water/moisture stains were noted on plywood sheathing under the raised crawl space.

The assessment of the ground floor beams, joists, and load bearing studs and columns visible within the enclosed raised crawl space was carried out from one of the access doors located at the southeast corner of the building by a flashlight, without entering the enclosed crawl space.

To assess the load bearing studs in the upper floors, an opening was cut in the north exterior wall of the furnace room in the ground floor of House #66. The second opening was cut within the north exterior wall in the closet of the bedroom located at the northwest corner of second floor of House #66. The first floor ceiling joists were assessed through the plumbing maintenance hatches located in the ceiling of the kitchens in both houses.

- The structural components; beams, joists, studs, and columns, visible within the raised enclosed crawl space appeared to be sound with no noticeable deficiencies.
- The wood studs within the exterior walls and ceiling joists, where accessed in ground and second floors of House #66, appeared to be in fair condition with no signs of significant anomalies, distress, or dry rot (Photographs 26 to 30).
- The second level floor joists and load bearing studs were accessed in House #68 from plumbing maintenance hatch within the kitchen ceiling. The floor joist and studs were noted to be in fair condition, where accessed (Photographs 31 to 33).

- Minor cracking, separation and splitting was noted at one of the floor joists in House # 68 (Photograph 34).
- Floor sagging was noted within the furnace room in House #68.
- Minor water staining was noted on the studs of the exterior wall at the intersection with exterior plywood sheathing, where the cut-out was made within the exterior north wall in House #66 (Photograph 35).
- Minor water staining was noted within the exterior plywood sheathing of the north wall of the second floor bedroom, where the cut-out was made in House #66 (Photograph 36).
- Minor water staining was noted within the ceiling joist along the west exterior wall of utility room, where the cut-out was made in the ceiling (Photograph 37).
- The accessible inspected structural components appeared to be in fair condition. However, it appeared that House # 68 on the southerly side of the property has sunken due to the pile failures and a wide gap has been created between the north and south half of the building (Photographs 38 to 40). In addition, severely distressed interior finishes within the wall and ceiling finishes (i.e., severe cracks), especially in House #68, is an indication that excessive shifting and movement within the building frames and load bearing structural elements has occurred. The noted deficiencies within the interior finishes will be discussed in following sections.
- The main beams supporting the exterior porches in front of the main entrances to both houses were in poor condition (Photographs 41 to 43).
- The joists supporting the exterior porches in front of the main entrances to both houses were in fair condition. However, some were showing signs of early decay due to exposure to snow and moisture (Photographs 44 and 45).
- The built-up columns and wood pile/columns supporting the exterior porches and stairs were in fair condition.
- An abandoned pile was noted below the rear stairs to House # 68 (Photograph 46).

6.2 Exterior Walls and Windows

The exterior walls of the building consist of insulated load bearing frames consisting of 2”x6” wood studs, spaced at 16” c/c. The studs are filled with 3” of pink fiberglass insulation. The exterior side of the exterior walls is covered with plywood sheathing, Tyvek vapour barrier, and vinyl siding. The interior face of the exterior walls is covered by a layer of 6 mil polyethylene vapour barrier and one layer of drywall (Photographs 47 and 48).

The windows are operable Insulated Glass Units (“IGU”) units, in vinyl frames (Photograph 49).

The exterior vinyl siding and the windows were noted to be in good condition. The cladding and windows appeared to have been replaced within the past 10 years. One of the windows in House #68 had broken glass (Photograph 50). It could not be confirmed whether or not the glass was broken due to frame movement.

6.3 Interior Finishes

House # 66:

The interior floor finishes within House #66 consist of linoleum in front and back foyers, kitchen, washroom, furnace room, and second floor bathroom and utility room, laminated hardwood in living/sitting room, dining room, and second floor bedrooms, and carpet on the stairs to the second floor (Photographs 51 to 56).

The interior wall finishes consist of painted drywall. Ceramic tiles and vinyl inserts were noted within the second floor bathroom walls around bathtub (Photograph 57). The interior ceiling finishes consist of stucco on gypsum board.

House # 68:

The interior floor finishes within House #68 consist of linoleum in front and back foyers, kitchen, washroom, furnace room, and second floor bathroom and utility room, laminated hardwood in living/sitting room and dining room, and carpet on the stairs to the second floor and within second floor bedrooms (Photographs 58 to 62).

The interior wall finishes consist of painted drywall. Vinyl inserts were noted within the second floor bathroom walls around bath-tub (Photograph 63). The interior ceiling finishes consist of stucco on gypsum board.

The kitchen and bathroom cabinets were reportedly replaced in 1993 and the interior wall, ceiling, and floor finishes have been retrofitted in 2000 and 2011. The interior floor and ceiling finishes appeared to be in good condition. Moderate to severe radial and vertical cracks were noted within the wall finishes. The cracks were more severe in House #68.

Deficiencies noted within the interior finishes consist of the following:

House # 66:

- Moderate diagonal, vertical and horizontal cracks at the corner of the window and door openings and under the second floor beam (Photographs 64 to 70).
- Opening joints within window and door wood frame moldings (Photographs 71 to 74).
- Separation/cracking of baseboards (Photographs 75 and 76).
- Bulging of loadbearing interior wall on the second floor north bedroom (Photograph 77).
- Heavy stain within the floors of furnace room (Photograph 78).

The cracks in House # 66 were of a light to medium severity. Considering the instability of the piles, the noted cracks can be related to the movement within the structural framing, as well as differential thermal effects.

House # 68:

- Diagonal, vertical and horizontal cracks at the corners of the window and door openings, under the second floor and roof beams, and within the walls at several locations and bulging of walls, in a few locations (Photographs 79 to 102).

The cracks in House # 68 were generally severe to very severe. Considering the instability of the piles under House # 68, the noted cracks can be related to the excessive shifting and movement within structural framing and components.

6.4 Roofs

The main roofs consist of asphalt shingled sloped gable roof system. The canopies above the exterior stairs and porch consist of shingled sloped shed roofs. The roofs were snow covered at the time of the assessment.

The roof joists and deck plywood sheathing were assessed through the cut-out made within the ceiling of the second floor utility room in House #66 (Photograph 103).

Air circulation vents were noted along the interior side of the perimeter walls on the second floor (Photographs 104). It appeared that the roof deck consists of a two layer deck system. Based on observations made on one core sample advanced by Amec Foster Wheeler's Environmental group, residues of rigid insulation and tar were recovered on the drill bit. It can be assumed that the lower layer of deck sheathing above the ceiling is covered with rigid polystyrene insulation, placed between parallel furring, with an air circulation gap between the lower and upper deck sheathing. The asphalt shingles were apparently placed on a layer of asphalt coated vapour barrier and attached into the upper layer deck.

Roof joist and lower sheathing, where observed within the cut-out in the ceiling of House #66, appeared to be in fair condition with no sign of significant anomalies.

The roof was snow covered at the time of the assessment.

7.0 CONCLUSION AND RECOMMENDATIONS

The property located at 66 and 68 Alder Drive, in Inuvik, Northwest Territories, was reportedly constructed in 1974 and is presently 42 years of age. The normal useful life of a wood structure is approximately 80 to 100 years depending on quality of materials used, construction methods, maintenance, and exposure to the elements. However, it should be noted that the subject structure is supported by wood piles driven into permafrost. This type of structure requires continuous annual inspection, evaluation, and maintenance of the piles to assess and maintain the integrity of the structure. Any significant change in the thawing pattern of the active layer above the permafrost can adversely affect the stability of the structure, due to settlement and uplift of the piles. As such, the useful life of the structure may shorten, if the effect of the climate change and the magnitude of the settlement/uplift within the piles are beyond repair.

Based on observations made during the assessment, it is Amec Foster Wheeler's opinion that the piles of House # 68 have gone through excessive cycles of freeze and thaw. Almost all the piles under House # 68 are either missing, been severely shifted, or adversely affected by exposure to severe elements. It was reported that the building was jacked-up, prior to the placement of noted temporary supports under the building. The pile failures reportedly commenced approximately 7 years ago (i.e., 2009). Based on the observed separation within the walls of the House # 66 and 68, it is unlikely that the jacking and provision of new supports corrected the occurred settlements. Numerous moderate to very severe radial, diagonal, horizontal, and vertical cracks within the walls is an indication that the building has gone through major differential settlements and shifting in different directions.

The condition of House # 66 is less severe and can possibly be repaired. However, a full assessment of the existing piles and beams under the building and other framing components should be carried out to evaluate the extent of required repairs and associated cost. In addition, the feasibility of reconstructing the south half while only repairing the north half and the possibility of adverse effects on the north side by the south half reconstruction should be evaluated, before finalizing the repair/reconstruction approach.

It should be noted that existing piles under House #66 could not be accessed from underside of the building due to low headroom. The observations on these piles were made from within the south end and from exterior, where accessible.

Noted cracks within the interior walls of House #66 were less severe and can be related to the aging and movement of the piles. The piles under House #66 appeared to be intact, however severe exposure to elements were apparent. Further assessment of these piles is required, if total reconstruction of House #66 is not selected.

The noted cracks within the interior finishes of House #66 are mainly at the corner of the windows and door openings. These cracks are considered to be of a minor to moderate nature and can be related to the slight movements within the wall studs. The cracks can also be due to insufficient insulation within the exterior walls, lack of proper air barrier and thermal movement due to excessive interior and exterior temperature differences, especially during the winter season.

Noted cracks within the interior finishes of House # 66 should be repaired after the building structure is re-evaluated and necessary remedial work on piles is completed.

The condition of the roof shingles could not be assessed due to snow cover. Parts of the eaves, fascia boards and flashing and gutters were also snow covered and no significant deficiencies were identified within the exposed visible parts of these components.

House #66

The life expectancy of House # 66, by repairing/replacing the piles and completing other necessary repairs to structural elements can be extended for approximately 10 years. The order of magnitude of cost for a detailed assessment of the existing piles and main beams, repairs of aged piles, and other required repairs as noted herein is anticipated to be about $ 55,000 for the first year.

The estimated cost for annual inspection of the existing piles and required repairs within the next ten (10) years is anticipated to be $52,000 (over the span of 10 years). As such, the total cost to maintain the House #66 for another 10 years is about $107,000.

If the intended repairs/replacement of the piles necessitates lifting the structure off the piles and temporarily moving it to an adjacent location, plus providing a permeant structural separation between the duplex houses, an additional cost of $ 20,000 is anticipated. As such, the total estimated cost to maintain the House #66 for another 10 years is about $127,000.

The cost of reconstruction of House #66 with standard procedures is estimated to be about $350,000. This does not include demolition costs.

The cost of reconstruction of House #66 as a sustainable house is estimated to be about $470,000. This does not include demolition costs.

House #68

The estimated cost for repairing/replacing all piles and completing other necessary repairs to structural elements and extending the useful life of the structure for another 10 years is estimated to be approximately $120,000.

The estimated cost for annual inspection of the piles and required repairs within the next ten (10) years is anticipated to be $52,000 (over the span of 10 years). As such, the total cost to maintain the House #68 for another 10 years is about $172,000.

If the intended repairs/replacement of the piles necessitates lifting the structure off the piles and temporarily moving it to an adjacent location, plus providing a permeant structural separation between the duplex houses, an additional cost of $ 20,000 is anticipated. As such, the total estimated cost to maintain the House #68 for another 10 years is about $192,000.

The order of magnitude of cost for total reconstruction of the building with similar size, configuration, components, and standards, including installation of new wood piles is anticipated to be about $ 350.000. The cost estimate does not include implementation of other types of foundations and supports (i.e., poured concrete foundation walls, pad foundations, wood crib and drum footing, grade beams, spaceframe, etc.) and any upgrade design options (i.e., sustainable housing).

The cost for construction of a sustainable house with the same size and improved options is estimated to be approximately $470,000.

Excluded from this estimation is the cost for demolition, reinstatement of the site after demolition, and costs associated with environmental remediation and disposal. The costs for demolition and environmental remediation and disposals are presented separately in their respective sections.

It is recommended that confirmation of costs be obtained through a more detailed and current cost analysis at the time of implementation of the work.

8.0 LIMITATIONS

This report presents an overview on issues of the building's structural condition, reflecting Amec Foster Wheeler's best judgment using information reasonably available at the Site at the time of Amec Foster Wheeler's Site assessment. Amec Foster Wheeler has prepared this report using information understood to be factual and correct and shall not be responsible for conditions arising from information or facts that were concealed or not fully disclosed to Amec Foster Wheeler at the time of the Site assessment.

In accordance with the scope of work, with the exception of the small cuts made within the wall and ceiling finishes, no other physical or destructive testing or design calculations were conducted. Accordingly, the findings are limited to the extent that the assessment could be made visually to visibly accessible elements. Amec Foster Wheeler does not accept any liability for deficiencies that were not identified within the scope of the investigation.

The assessment is based, in part, on information provided by others. Unless specifically noted, Amec Foster Wheeler has assumed that this information was correct and has relied on it in developing the conclusions.

It is possible that unexpected conditions may be encountered at the site which has not been explored within the scope of this report. Should such an event occur, Amec Foster Wheeler

should be notified in order to determine if modifications to the conclusions are necessary.

9.0 CLOSURE

A selection of the photographs taken at the time of the Site assessment are enclosed.

We trust that this report meets your expectations. Should you have any questions or require any additional information, please do not hesitate to conduct the undersigned.

Respectfully submitted,

Amec Foster Wheeler Environment & Infrastructure,
a Division of Amec Foster Wheeler Americas Limited

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Reviewed by:

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Senior Associate Engineer
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Appendix A – Site Photographs

Photograph 1-East (front entrances) and south elevations. 66 Alder is located on the north and 68 is located on the south

Photograph 2-West (rear entrances) and north elevations. 66 Alder is located on the north and 68 Alder is located on the south

Photograph 3-North elevation (facing Alder Drive).- 66 Alder Drive

Photograph 4-General view of shorter piles and ply wood cover under House #66, located on the north side

Photograph 5-Typical main built-up beam placed on the top of driven pile

Photograph 6-General view of raised, enclosed crawl space under the building

Photograph 7- Insulated perimeter studs within the raised enclosed crawl space under the building

Photograph 8-Load bearing stud frame with built-up columns located at the mid span within the raised enclosed crawl space under the building

Photograph 9-Built-up beam noted within crawl space supporting the ground floor

Photograph 10- Joists and cross bracing noted within the crawl space supporting the ground floor

Photograph 11-Beam within the ceiling of the second floor in House #66

Photograph 12-Built-up beam and columns along the staircase in House #66

Photograph 13- Joists within the second floor ceiling of House #66

Photograph 14- Deck wood planks, joists, and beams of front porch of house #66, viewed from underside

Photograph 15- Wood pile/column supporting the rear stair case and porch of House #66

Photograph 16- Built-up wood column, supporting the rear (west) stairs and porch of House #68

Photograph 17- Failed piles and temporary supports along the south end of House #68

Photograph 18- Failed pile along the east edge of House #68 and constructed temporary support

Photograph 19- Failed pile at the southwest corner of House #68, with temporary placed crib blocking support

Photograph 20- Failed piles replaced with temporary blocking, placed on wood pallets, bearing onto prepared granular pad-Typical

Photograph 21- Temporary supports provided at the north end of building

Photograph 22- Wide gap between top of the existing pile and the unsupported beam

Photograph 23- Severe exposure to elements and heavy staining of the perimeter piles

Photograph 24- Decayed pile at the southwest corner of House #66

Photograph 25- Decaying pile along the west perimeter

Photograph 26- Condition of studs and sheathing observed within the intrusive cut-out at ground floor level on north wall of House #66

Photograph 27- Condition of studs and sheathing observed within the intrusive cut-out at the second floor level north wall of House #66

Photograph 28-Condition of ceiling joists and roof sheathing within the plenum of second floor utility room in House #66

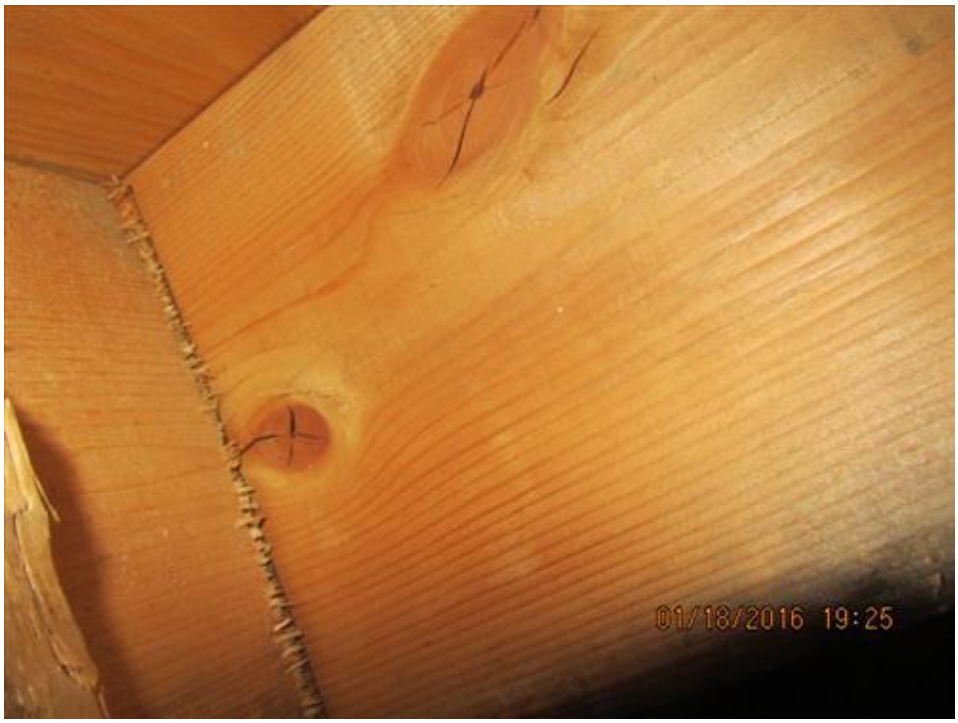
Photograph 29- Condition of second level floor joists and load bearing studs, viewed through the plumbing maintenance hatch within the ceiling of kitchen in House #66

Photograph 30- Condition of second level floor joists, viewed through the plumbing maintenance hatch within the ceiling of kitchen in House #66

Photograph 31- Condition of second level floor joists and load bearing studs, viewed through the plumbing maintenance hatch within the ceiling of kitchen in House #68

Photograph 32- Condition of second level floor joists and loadbearing studs, viewed through the plumbing maintenance hatch within the ceiling of kitchen in House #68

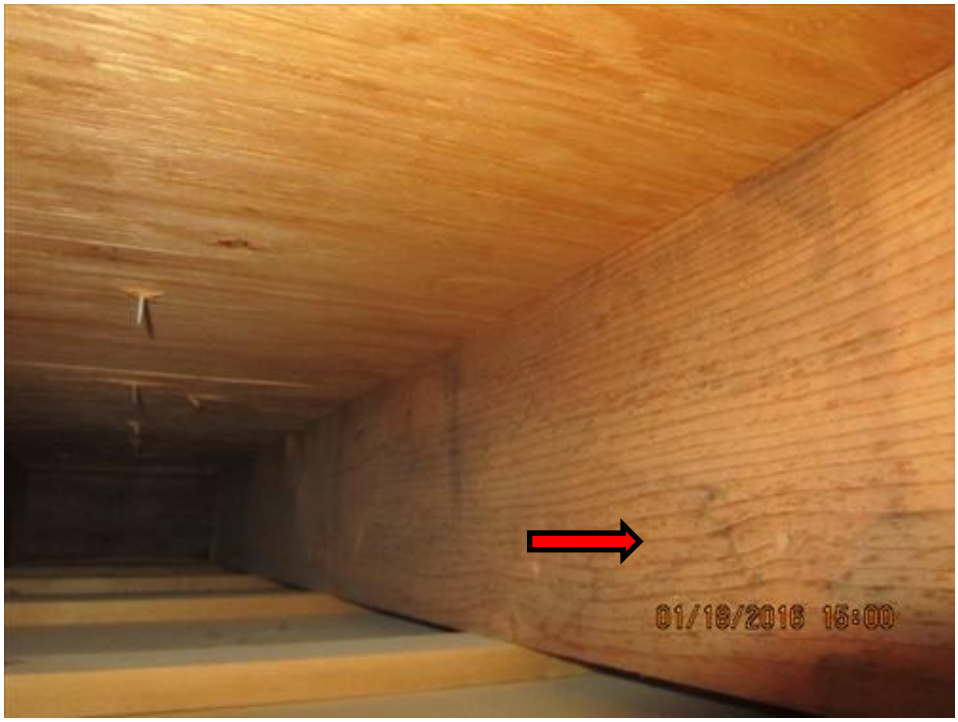
Photograph 33- Condition of second level floor joists, viewed through the plumbing maintenance hatch within the kitchen ceiling of House #68



Photograph 34- Cracks and splitting in the second floor joist of House # 68

Photograph 35- Water stain at the intersection of the stud and exterior plywood sheathing, noted within the cut-out in the laundry room of house #66

Photograph 36- Minor water stain and aging exterior plywood sheathing, noted within the cut-out in the second floor bedroom of house #66



Photograph 37- Minor Water stain noted within the ceiling joist along the west wall of utility room on the second floor of House # 66

Photograph 38- Separation between Houses #66 and 68 at the top on west elevation

Photograph 39- Separation between Houses #66 and 68 at the mid height on west elevation

Photograph 40- Separation between Houses #66 and 68 at the mid height on east elevation

Photograph 41- Twisted main beam under the front porch of House #68

Photograph 42- Decayed and severely damaged beam under the front porch of House #66

Photograph 43- Condition of joist supporting the front porch of House #68. Note the wedge placed due to the twist of the beam

Photograph 44- Condition of beams and joist under the rear porch

Photograph 45- Condition of beams and joist under the rear porch

Photograph 46- Abandoned pile under the rear stairs

Photograph 47- Exterior wall components noted within the cut-out in ground floor laundry room

Photograph 48- Exterior wall components noted within the cut-out in second floor bedroom

Photograph 49- Typical windows

Photograph 50- Broken glass of the window located in sitting/living room of House #68

Photograph 51- Ground floor sitting/living room-House # 66

Photograph 52- Kitchen-House #66

Photograph 53- Ground floor washroom

Photograph 54- Stairs from ground floor

Photograph 55-Bedroom on second floor

Photograph 56-Second floor bathroom

Photograph 57- Vinyl inserts around bathtub

Photograph 58-Dining room-House #68

Photograph 59- Kitchen-House #68

Photograph 60-Back foyer and furnace room-House #68

Photograph 61- Stairs to second floor-House #68

Photograph 62-Second floor bedroom-House #68

Photograph 63- Bathroom shower – House #68

Photograph 64-Diagonal crack above the opening between the kitchen and dining room, on dining room side-House #66

Photograph 65- Diagonal crack above the opening between the kitchen and dining room, on Kitchen side-House #66

Photograph 66- Diagonal crack above the door of second floor north bedroom-House #66

Photograph 67- Horizontal crack above the closet in second floor south bedroom-House #66

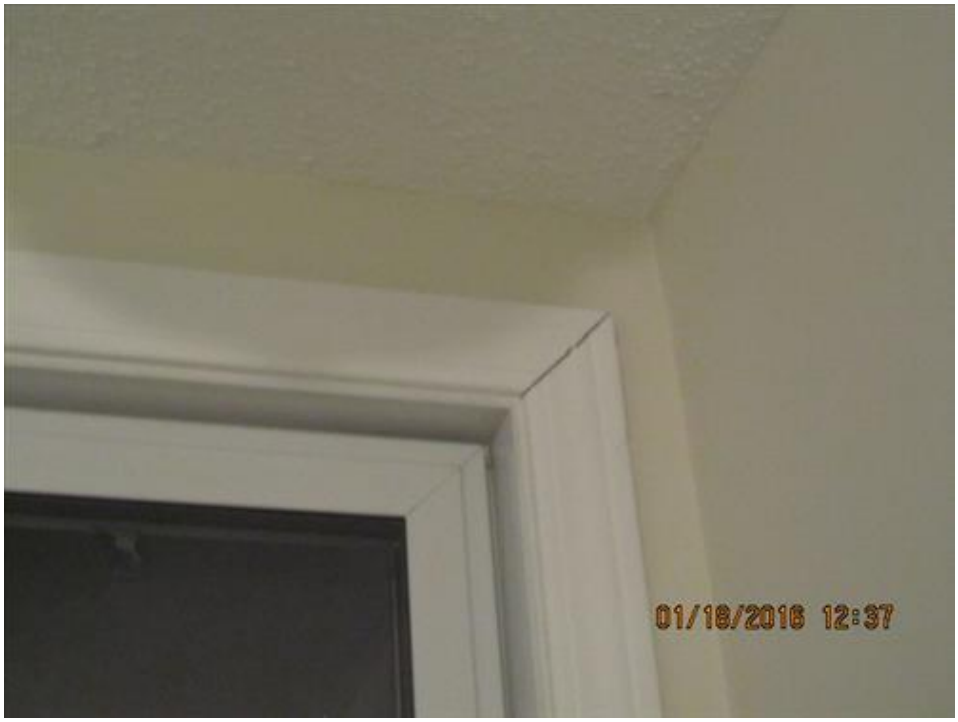
Photograph 68- Vertical crack within the east wall above the main entrance door and below the beam supporting the second floor-House #66

Photograph 69- Vertical crack within the interior loadbearing wall above the opening between the living/sitting room and back foyer and below the beam supporting the second floor-House #66

Photograph 70- Diagonal crack above the secondary door to outside within the west exterior wall

Photograph 71- Open window frame mold joint at the top right corner of window in sitting/living room- House #66

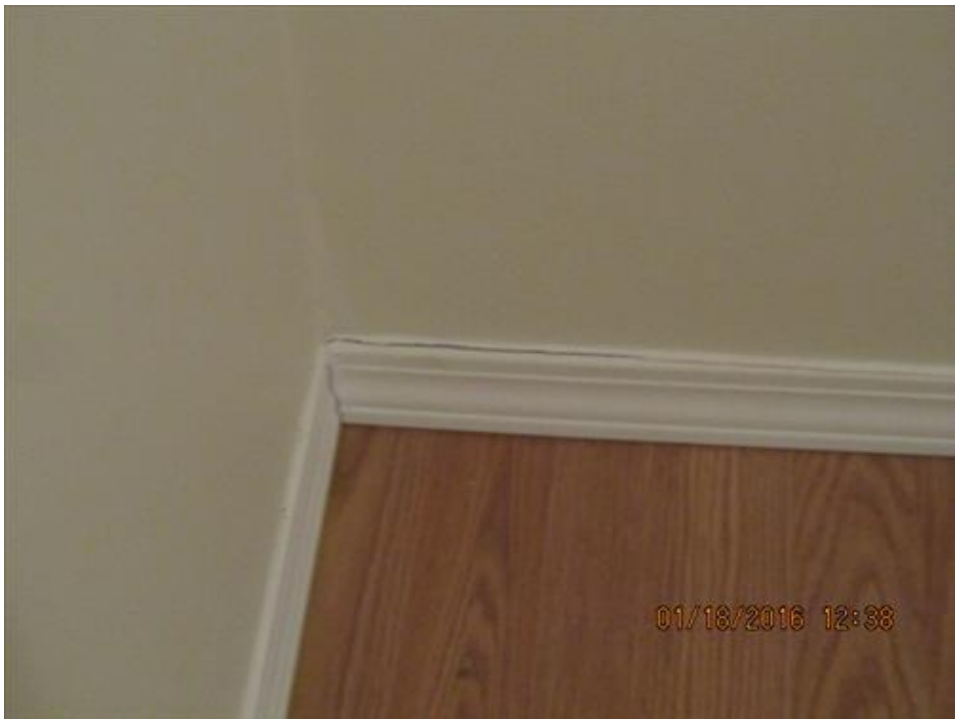
Photograph 72- Open window frame joint at the top left corner of window frame mold in sitting/living room- House #66



Photograph 73- Open joint within the wood mold around opening between the kitchen and dining room-House #66

Photograph 74- Open joint within the window frame mold in furnace room-House #66

Photograph 75- Separation within the baseboard at the corner of the back foyer-House #66



Photograph 76- Separation within the baseboard at the northwest corner of the second floor north bedroom-House #66

Photograph 77- Bulging of the loadbearing west interior wall, below the ceiling and above the door of the second floor north bedroom-House #66

Photograph 78- Heavy stain within the furnace room floor, adjacent to the furnace-House #66

Photograph 79- Diagonal crack under the second floor beam and door opening from foyer to living/sitting room-House 68

Photograph 80- Horizontal crack at the corner of the main entrance door to front foyer – House 68

Photograph 81- Vertical crack above the door from front foyer and within the ceiling-House 68

Photograph 82- Severe radial crack and bulging of wall at the lower right corner of north window within the east exterior wall, in sitting/living room-House #68

Photograph 83- Cracks at the lower left corner of north window within the east exterior wall, in sitting/living room-House #68

Photograph 84- Severe diagonal crack above the opening between the kitchen and dining room on dining room side-House #68

Photograph 85- Severe diagonal crack above the opening between the kitchen and dining room on kitchen side-House #68

Photograph 86- Crack above the top right corner of the window in the kitchen and within the ceiling

Photograph 87- Vertical and diagonal cracks above and at the corner of the door between the middle hall and back foyer-House #68

Photograph 88- Severe diagonal crack at the lower left corner of the window of the furnace room within the west exterior wall-House#68

Photograph 89- Vertical crack below the beam and above the back door within the west exterior wall- House #68

Photograph 90- Radial crack above the ground floor washroom door –House #68

Photograph 91- Horizontal crack at the lower right corner of the window in south bedroom on second floor-House #68

Photograph 92- Severe diagonal crack at the top corner of the south bedroom door on second floor-House #68

Photograph 93- Severe vertical crack at the lower left corner of the north bedroom window on second floor-House #68

Photograph 94- Horizontal crack at the top left corner of the closet within the north bedroom on second floor-House #68

Photograph 95- Diagonal crack above the door to utility room on second floor, on hall side-House #68

Photograph 96- Diagonal crack under the ceiling beam and above the door of utility room on second floor, on utility room side-House #68

Photograph 97- Severe vertical crack at the northwest corner of utility room on second floor-House #68 (location of separation in party wall with House #66)

Photograph 98- Close-up of severe vertical crack at the northwest corner of utility room on second floor-House #68 (location of separation in party wall with House #66)

Photograph 99- Severe horizontal crack at the corner of the door of the bedroom, located at the southwest corner of second floor-House # 68

Photograph 100- Severe horizontal crack at the corner of closet door of the bedroom, located at the southwest corner of second floor-House # 68

Photograph 101- Severe diagonal cracks at the lower left corner of the window, located at the southwest corner bedroom on second floor-House # 68

Photograph 102- Severe vertical crack at the south west corner of the located at the southwest corner of second floor-House # 68

Photograph 103- Roof Joist and lower layer deck sheathing observed through cut-out – House #66

Photograph 104- Perimeter ventilation gap at the intersection of the wall and ceiling on second floor of House #66 (typical)

Photograph 105- Close-up of perimeter ventilation gap at the intersection of the wall and ceiling on second floor of House #66 (typical)