DYNAMIC ANALYSIS
ENGINEERING CONSULTING

213 N BROADWAY
SUITE 3
BILLINGS, MT 59101
(406) 201-3435
DYNAMIC-MT.COM

April 16, 2021

Client: Andrew Hedrick
Listing Agent

Re: Structural Health Check of Home
3150 E Copper Ridge Loop
Billings, MT

I. Overall Summary

The home currently in good structural condition.

II. Purpose

At the request of the Client, Dynamic Analysis investigated the home located at the above address. The onsite investigation was performed by Samuel Bower, P.E. on April 15, 2021. The purpose for the inspection was to ensure the overall structural health of the home given its construction in an area known to experience high incidents of unexpected settlements.

This assessment is limited by the visible and observable characteristics and behaviors of the structure. No destructive testing was performed. Many structural elements are obscured from view by finish materials, personal property, snow, etc. and cannot be directly evaluated. The behavior of these structural elements has been observed to the best of my ability. Thus, these observations are dependent on incomplete information, and a homeowner may discover issues not identified in this letter. Determinations can often depend on the accuracy of information provided by the current, previous, or neighboring homeowners. A detailed account of my observations is contained herein. This letter contains my professional opinion based on my education and professional experience evaluating similar structures.

III. Background

The home was built in 2013. No other background information was available during the inspection.

IV. General Observations

a. Subgrade & Drainage

While no geotechnical report specific to this lot was available for review, the home is constructed in a general area known to contain adverse soil layers such as hydro-collapsible soils, weak compressible soils, and expansive shales. These adverse soils have impacted the foundations of several homes in this area; sometimes resulting in excessive differential settlements that lead to structural damage. These settlements are different than the 'normal' settlement, or soil consolidation, experienced by any typical home. Determining whether this home has been so impacted is the main intent of this investigation.

A high-precision hydrostatic altimeter was used to measure the differential elevation of the main floor. These measurements reveal up to 3/4" of differential elevation throughout the home. A self-leveling three beam laser was used to measure the differential elevation in the garage; these measurements revealed up to 1/4" of differential elevation. The results of these measurements are provided in Appendix B. This quantity of differential movement is considered within the 'normal' range of settlement anticipated by the designer.

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To minimize the risk of potential future settlement, positive drainage around the perimeter of the home should be maintained, and all gutter extensions should extend at least 6 feet away from the foundation.

b. Foundation System

No indications of structural damage were observed in the foundation system during the investigation.

c. Floor System

No indications of structural damage were observed in the floor system during the investigation.

d. Wall System

No indications of structural damage were observed in the wall system during the investigation.

e. Roof System

No indications of structural damage were observed in the roof system during the investigation.

f. Other Structures

No other structures were evaluated as part of this investigation.

V. Recommended Structural Corrections

a. Drainage and Gutter Improvements

Some minor drainage improvements should be performed on the south side of the house to ensure adequate positive drainage away from the foundation. Additionally, it appears the gutter on the northeast corner of the garage may allow some water to saturate the subgrade adjacent to the foundation; this downspout should be monitored to ensure all released water drains away from the garage.

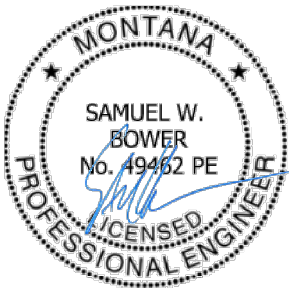
VI. Special Inspection & Follow-up

No special inspections or follow-ups necessary at this time.

If you have any questions regarding this letter, please do not hesitate to contact me directly via the information provided on this letterhead.

Sincerely,

Samuel Bower, P.E.



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Appendix A

Photographs

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Photo 1:

Exterior profile

Photo 2:

Exterior Profile

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Photo 3:

Minor drainage improvements needed adjacent to foundation

Photo 4:

Ensure water released from gutter does not saturate subgrade.

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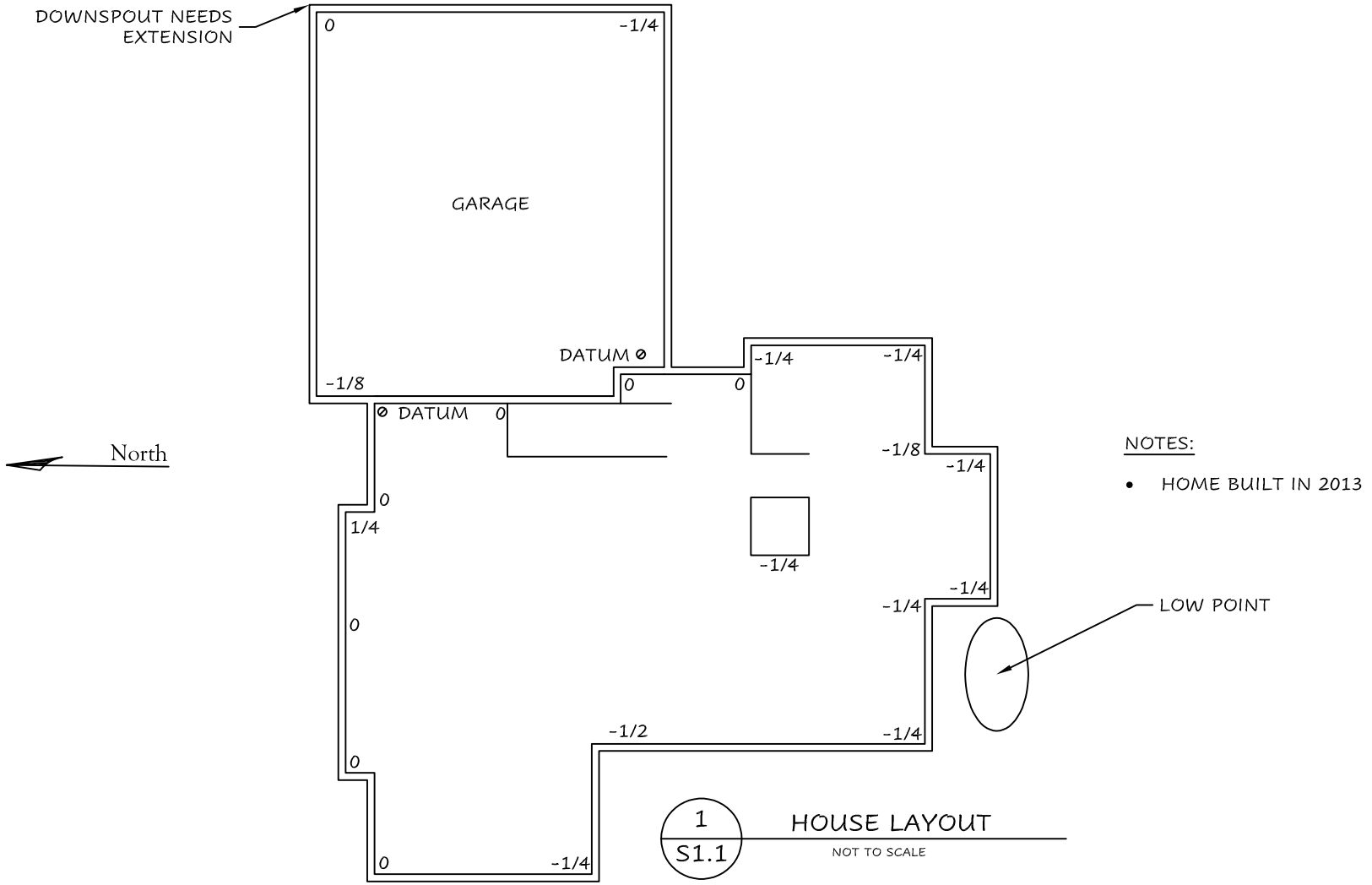
Appendix B

Drawings



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dynamic-mt.com

PROJECT NO.:	DRAWN BY:	REVIEWED BY:	SAVE DATE:	SHEET NO.
XXX-XXX-XXXX	KH	SWB		

FIELD NOTES
3150 E COPPER RIDGE LOOP
BILLINGS, MT

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