STRUCTURAL integrity INC.
7702 Terrace Ave. Suite 1
Middleton, WI 53562
phone 608.833.8830

June 3, 2022

Louis Palmatier
820 E B St.
Moscow, Idaho 83843

Regarding: 629 Spruce Street

Dear Louis:

We appreciate the opportunity to provide structural engineering services to you on this project. We understand the scope of services to be a structural review of the home noted above. The home is a two-story wood framed building. The foundations consist of concrete block masonry walls on concrete footings. Age of the existing home appeared to be approximately circa 1920's with a more recently placed addition at the front. We saw signs of other alterations (additional bedrooms and bathrooms placed on second floor, beams and columns added in the basement). The interior of the home appears to have been freshly painted.

The floors had considerable amounts of deformation and sags. The most pronounced deformations were near interior walls. Deformations were present on both supported floors.

We noted from the access to the attic space that the roof framing was fractured and propped to the walls below with vertical 2x struts. The roof appears to once have been differently configured. We believe that the roof planes had originally extended from the location of the current ridgeline down to the level of the second floor. Some time in its history, the roof planes were changed, swinging the roof surfaces upward and propping the exterior ends with new second story bearing walls, making the roof less steep but attic space converted to space for the bedrooms, hallways and a bathroom. The evidence for this is located at the ridge where rafters meeting only bear against each other with their tips with a pie shaped gap now appearing keeping them from bearing against each other properly. Collar ties have been added to some help, but for the most part, these roof elements likely bear partially on second floor hall walls and load the framing of what was originally attic floor framing. The attic floor framing was not likely substantial; using the framing formally for residential loads may be beyond their safe capacity, not to mention that the framing is also supporting roof loads.

Likewise, interior walls on the first floor support the second-floor framing (originally attic floor). This generally lack of capacity and stiffness, and load-sharing between each level has led to the significant floor deformations. It appears that this has been noticed by past owner(s) since framing in the basement has been heavily supplemented by additional beams and posts.

The supplemental framing in the basement is lacking some connections. It is important that posts be anchored to the foundations and to the wood framing. Wood columns did not appear to have foundations or base connections. Several notches were noted in original wood framing that should

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be reinforced. Several supports needed to be addressed because hangers were not properly installed or their supporting members appeared to be insufficient in strength.

Some past moisture leakage was noted in the CMU walls. Floors were carpeted. We suspect that future leakage could damage recently installed finishes.

Discussion and Conclusions:

- We believe that the roof system is not capable of supporting itself. It should be replaced.
- We believe that the floor of the attic (current second floor) needs to be further evaluated in order to determine if it is strong and stiff enough to support residential loads. It is possible that the floor may need to be reinforced.
- At the very least, the first-floor needs attention to repair joist supports and notches. At the most, the floor system needs further reinforcement to correct possible damage apparent where significant deformations are present. It is likely that some middle ground can be achieved with some additional reinforcement and some understanding that some of the more minor floor sagging can be considered "normal" to older homes.

The significance of this work would require that many of the newly freshened finishes would need to be removed and replaced. This work would involve nearly all of the existing structural systems of the home. We urge you to discuss this further with qualified contractors to discuss cost and schedule in order to make the most informed decision about the purchase of this home.

We have appreciated the opportunity to provide services on this project. We are available to answer any questions.

Sincerely;

Kurtis J. Straus, P.E.
Structural *Integrity*, Inc.

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Image showing significant cut out notch at floor header/joist.

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Inappropriate connection at hanger to supporting member.

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Image showing lack of attachment and lack of foundation at the base of wood columns.

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Image showing lack of appropriate structural attachment from the beam to the column. In addition, fastening should also be present at the joist framing to the wood beam.

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Image showing water staining on the base of the exterior foundation wall

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Image showing cracked rafters and cobbled roof framing