

**Mattson
Macdonald
Young**
structural
engineers

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February 10, 2016

Mr. John Ellering
Select Associates Realty
2233 Hamline Avenue N
Roseville, MN 55113

RE: Foundation Assessment
956 Geranium Ave E
St. Paul, Minnesota

Dear Mr. Ellering:

As requested, I visited the above referenced site to assess the condition of the residential foundation. The home is currently vacant and on the market for sale. The 1 1/2 story, single family residence (see Photo 1) sits atop a foundation system of exterior stone walls and interior heavy timber support beams. My review was limited to the main level structure and the foundation area below. No lighting was available in the lower level, so my review was limited to those areas I could illuminate with a flash light.

Along the perimeter of the house, a poured concrete ledge was visible, projecting out from the face of the exterior wall (see Photo 2). This ledge is a source of standing water which has been allowed to enter the rim joist and main floor framing members. The water intrusion appears to have resulted in damage/rot throughout the perimeter of the house (see Photo 3).

Other areas were noted as locations where water has been allowed to penetrate the foundation system. Poorly constructed window wells (see Photo 4), window sills located near exterior grade level (see Photo 5), and an exterior stair providing access to the lower level (see Photos 6 & 7) have all contributed to the moisture problem. In addition, the lower level stair structure did not appear to have adequate frost coverage at the foundation, so heave/settlement due to frost effects have also been an issue.

The majority of the existing stone foundation walls had been covered in a concrete/stucco parge coat, so identifying particular areas of deterioration was difficult. However, in locations where applying a finish was difficult, there are numerous signs of deterioration and settlement (see Photos 8 & 9).

The main floor framing consisted of 2 x 8 floor joists, spaced at 16" o.c. In most areas, the joists were inadequately supported (no joist hangers, insufficient bearing length). Many of the headers over openings were undersized and in many cases, the joists were heavily notched or drilled (see Photos 10, 11 & 12), decreasing their load carrying capacity.

I walked the through the lower level, testing the concrete slab. There is evidence of large pockets of voids below the slab. The slab suffers throughout from general cracking, but given more soil settlement, it is likely that areas of the concrete will fail. When conducting a "heel drop" test, the sound is quite hollow and there are areas where the slab has settled quite differently from the surrounding concrete. This is fairly typical with poor quality soils that are prone to differential settlement and compaction rates.

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Based on the data above, I do not believe that foundation repair is a feasible option. For this, the foundation walls and floor system should be capable of accommodating some movement without distress. I do not believe this is the case. It may be possible to simply stabilize the foundation against further movement and/or settlement, but even if this is accomplished, the remaining structure should be evaluated and reinforced appropriately to allow it to perform adequately in the future. In either case, repair or stabilization, it would also be necessary to design a supported floor structure to replace the damaged slab. This could be accomplished through the addition of a structural concrete slab or a wood floor framing system, supported off of the exterior perimeter walls and the addition of a center support beam other foundation pier system.

Please contact me if you have questions or require additional information.

Sincerely,

Mattson Macdonald Young, Inc.

A handwritten signature in black ink that reads "Stephanie J. Young". The signature is written in a cursive style and is positioned above a horizontal line.

Stephanie J. Young, P.E.
MN License – 21520



Photo 1 – North Elevation of 956 Geranium Ave



Photo 2 – Poured Concrete Ledge at Perimeter

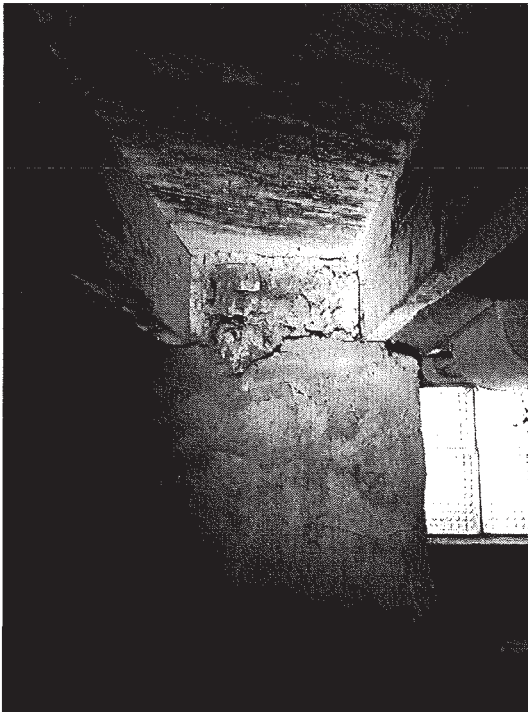


Photo 3 – Damaged/Rotted Wood Floor Joists



Photo 4 – Window Well with High Interior Grade Level



Photo 5 – Low Window Sill Allowing Moisture Infiltration



Photo 6 – Uninsulated, Unprotected Exterior Stair Access



Photo 7 – Stair Access Allowing Moisture Infiltration

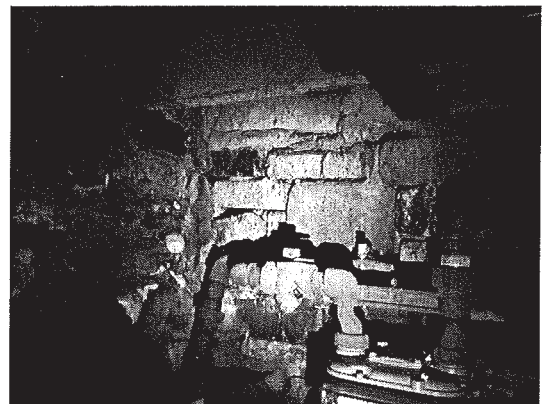


Photo 8 – Cracked, Settling Stone/Brick Foundation Wall



Photo 9 – Damaged Parge Coat and Crumbling Foundation Wall

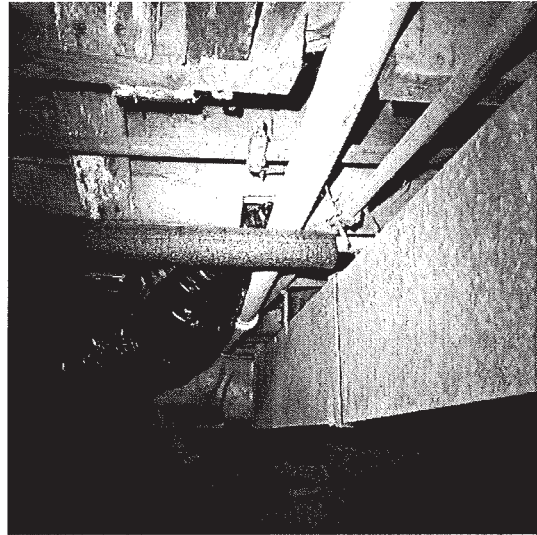


Photo 10 – Notched Floor Joists



Photo 11 – Notched Floor Joist without Joist Hanger

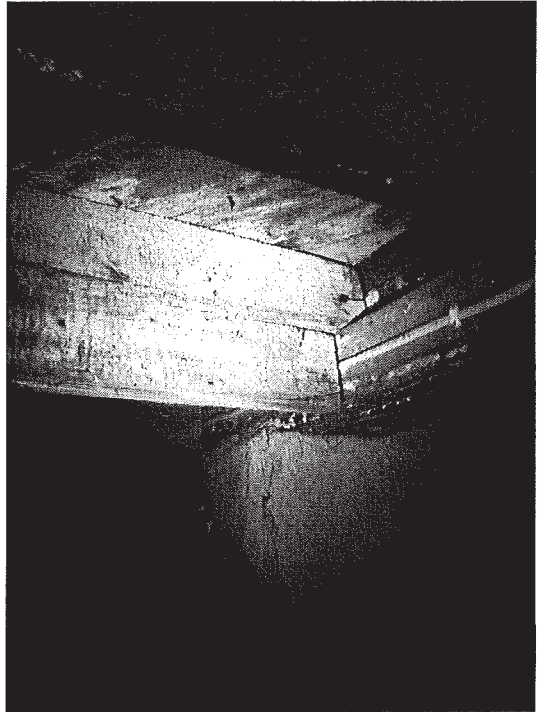


Photo 12 – Notch and Cracked Floor Joist