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**PROFESSIONAL ENGINEERING CONSULTANTS**  
INCORPORATED

January 8, 2013

Dino Marino  
326 Glenmar Avenue  
Mahtomedi, MN 55115

Subj: Review of Foundation System  
69 Douglas Street  
St. Paul, Minnesota  
PEC #9561

Dear Mr. Marino:

At your request, we met with you at the property of 69 Douglas Street in St. Paul, Minnesota, yesterday January 7, 2013. At that time, you explained that you are considering purchasing the property. You requested that we review the basement foundation system for the house, which was a single family dwelling. You had concerns because there appeared to be significant differential movement in the foundation wall construction. At that time, we observed the basement wall system and took some photographs of the walls. A set of photographs is attached to this letter.

We noted that the perimeter basement foundation walls consisted of 24" long concrete block units laid up in a running bond pattern. These masonry blocks were 6" tall and typically had very small interior cells which did not lend themselves to reinforcing end core filling restoration work. The north basement wall had considerable distress and distortion. The northwest basement corner had an attached smaller room for support of additional living space at first floor level.

We returned the following morning with hand auger equipment to further investigate the soils beneath the basement floor slab level. The basement floor consisted of individual 2' square concrete pavers laid throughout the floor area. One could see that there was considerable up and down differential elevation between these pavers as a result of long term consolidation of the supporting soils. We did not run an elevation survey throughout the basement area. However, from observations, the northwest corner of the basement appeared to have settled at least 6" with respect to other areas of the foundation wall system. The southeast building corner likewise had at least 4" of relative movement. From the construction, it appeared that the house had been built in the early 1920s or prior. The basement floor was located approximately

60" below the exterior perimeter grade. The inside basement footprint measured approximately 24' in the east-west direction by 22' in the north-south direction and had a 5' by 9' extension immediately west of the northwest building corner.

We put down a hand auger boring in the northeast area of the basement to evaluate the bearing soils at depth below floor slab. Directly beneath the 2" concrete paver, we found at least 5 1/2' of old fill material consisting of dark grayish brown silty sand topsoil in a desiccated condition with some pieces of concrete and broken rock. At this depth, the number of rock obstructions was such that we could not advance the sampler any farther.

The basement walls had extensive vertical and step-cracking throughout the building area, together with the observed differential vertical movement which was noted. In addition, the north basement wall had vertical bowing from excessive exterior earth pressure. We did note some surface depression immediately north of the structure which likely would account for additional wet soil loading of the foundation in this area.

Based on our observations and soil sampling, it is our opinion the structure rests on a system of old fill material and debris from prior construction on this site. In itself, this could explain the amount of differential settlement which has occurred in this building over the last nearly 100 years. However, since organic soil deposits have been known to exist in this region of the city, we have concern that the old fill materials found at this property could possibly overlie soft swamp deposits at depth. The amount of differential movement in the basement wall system is suggestive of this condition. Repositioning a basement wall system on old fill and stabilizing that fill material is one considerable undertaking. Having to deal with a compressible swamp deposit beneath that old fill is yet again even more complicated. Depending on the extent of any swamp deposits beneath this house, the situation approaches a tear-down condition.

We advise that if you are still interested in investigating potentially more serious problems with the building, we could put down at least one or two soil test borings as near as possible to the exterior footprint as possible, using conventional drilling equipment to examine bearing soils at depth. This takes your preliminary investigative work to another financial level.

Respectfully,  
Professional Engineering Consultants, Inc.



Brian R. Dobie, P.E.  
President

