Ulteig

Energy | Water | Built-Environment

April 12, 2010 *Revised 4-23-10*

Lou Sudheimer
Historic Hill Homes, Inc.
686 East 6th St.
St. Paul, MN 55106

Subject: Foundation Requirements
688 East 6th Street, St. Paul MN 55106
Ulteig Project No. 10.00796

To Whom It May Concern:

The purpose of this letter is to report the findings of a structural engineering assessment of the existing foundations located at the residence at the above address.

ASSIGNMENT

Ulteig Engineers has been retained to provide a structural engineering assessment of the existing foundations at the residence located at 688 6th Street East in St. Paul, MN, as directed by Lou Sudheimer of Historic Hill Homes.

BACKGROUND

The above mentioned home is currently a Category II foreclosure property acquired by Historic Hill Homes. The City noted that the existing foundation is to be evaluated in order to reoccupy the building. Lou Sudheimer wishes to have an independent structural engineering review of the existing foundation to determine the structurally adequacy and any required corrective measures.

OBSERVATIONS AND COMMENTS

1. The following information was obtained through a site visit on April 5th, 2010 by Nick Hanson, PE of Ulteig. The following was noted:

    a. The structure is a two-story wood framed super structure with a basement below the house. The house was reported to have been originally built over 100 years ago.

b. The basement was approximately 7'-0" tall and had a concrete slab-on-grade floor. The foundation consisted mostly of stone and mortar. A previous addition in the rear of the home appeared to be 8" concrete masonry units.
c. Floor joists, visible from the basement, spanned from the side foundation walls to a middle structural beam at the front portion of the house. The remainder of the house had full span sawn joists spanning across exterior foundation walls.
d. The existing middle beam was a sawn 8"deep x 6" wide beam. This beam was interrupted at the chimney 11'-0" in each direction and supported on each side of the chimney with a 3" temporary steel column. The steel columns were supported on a flat sawn section of lumber laid on the concrete slab-on-grade. Though the second floor framing was not visible, it is assumed that the framing is similar and this beam is supporting both floors.
e. An additional 6"x6" sawn beam spanning approximately 6'-0" was installed in the front right side of the basement and supported by temporary steel columns. The steel columns bear on sawn 6"x6" wood blocks on the slab-on-grade. The supports were most likely installed to remove sag of the floor above.
f. The perimeter stone foundation had been covered with stucco or concrete coating. Some minor cracking was noted at various locations throughout the inside of the basement. Daylight could be seen through the plywood of one of the boarded windows along the right side of the house.
g. The exterior stone foundation had some larger ¾" vertical cracks visible in the stucco/concrete finish.
h. No gutters or positive drainage was noted around the perimeter of the house.
i. A majority of the house was several inches out of level throughout the first floor.

STRUCTURAL ANALYSIS

2. A structural review of the conditions noted above was completed and the following items are noted: *(See attached Sketch Sheet 1 and 2 for more information)*

a. The existing perimeter foundation appears to currently be in structurally sound. The soil/concrete has eroded away in various locations. Water could be entering the basement in several locations, deteriorating the foundation integrity. Corrective measures are required to prevent future deterioration.
b. The existing temporary columns and bearing points are structurally inadequate and should be replaced with permanent columns and positive connections at the top and base of the columns. New footings should be installed below these new columns to adequately support the existing loads. Corrective measures are required.
c. The sag in the floor of the first level could be the result of creep in the existing wood joists over time in combination with potential settlement of the existing

foundations. The floor system may be jacked into level condition above to make the space more livable and safe.

CORRECTIVE MEASURES

3. The following corrective measures are recommended at the existing foundation and should be performed and consulted with a licensed contractor:

    a. Existing cracks in the exterior of the foundation should be tuckpointed and waterproofed to regain structural continuity and prevent further freeze-thaw action in these locations.
    b. The existing temporary steel columns should be replaced with 3" diameter permanent columns that have adequate top and bottom plates and positive mechanical fastening.
    c. The new permanent steel columns should be supported on a new 30"x30"x8" deep concrete foundation beneath the slab with (3)#4 reinforcing bars placed in each direction.
    d. During the installation of the new columns, the floor can be slowly jacked into a level condition above. Care should be taken during this process and cracking/damage to above framing should be expected. Ulteig is not responsible for any shoring/jacking/framing or damage caused during the operations.
    e. Rain gutters and positive drainage should be installed around the perimeter of the house to assure that water runoff and hydrostatic pressures are diverted from the foundation.

PROFESSIONAL OPINION

4. It is our professional engineering opinion that the existing foundation as described above is structurally sound as noted in this report and will require corrective measures in select areas to meet the current Code and industry standards. Contact Ulteig for further construction details and/or observation of repairs prior to start of construction if requested by the owner or contractor.

GENERAL

5. The information, observations, and opinions stated in this report are based on visual observations made by Nick Hanson, PE. The site visit consisted of a visual walk-through observing exposed elements and those accessible without the removal of finished materials.

6. The observations and opinions expressed in this report are based on our professional engineering judgment and professional practice, as well as the visual observations. All shoring/jacking/framing are outside the scope of this project.

7. No other engineering was performed or requested for this project. This document pertains to the structural adequacy of the existing foundation only. Only our opinion as to the current condition and recommended means of corrective measures are outlined in the scope of this work. No framing observations or additional engineering was conducted or requested for this project. All water intrusion issues are to be the responsibility of the owner. Contact Ulteig if you wish additional assistance with construction details of the above corrective measures.

8. All work shall be done in accordance with this document, standard industry practice, and the requirements of the Code.

If you have any questions, please contact us.

Attachments: Sketch 1 & Sketch 2

Sincerely,
Ulteig Engineers

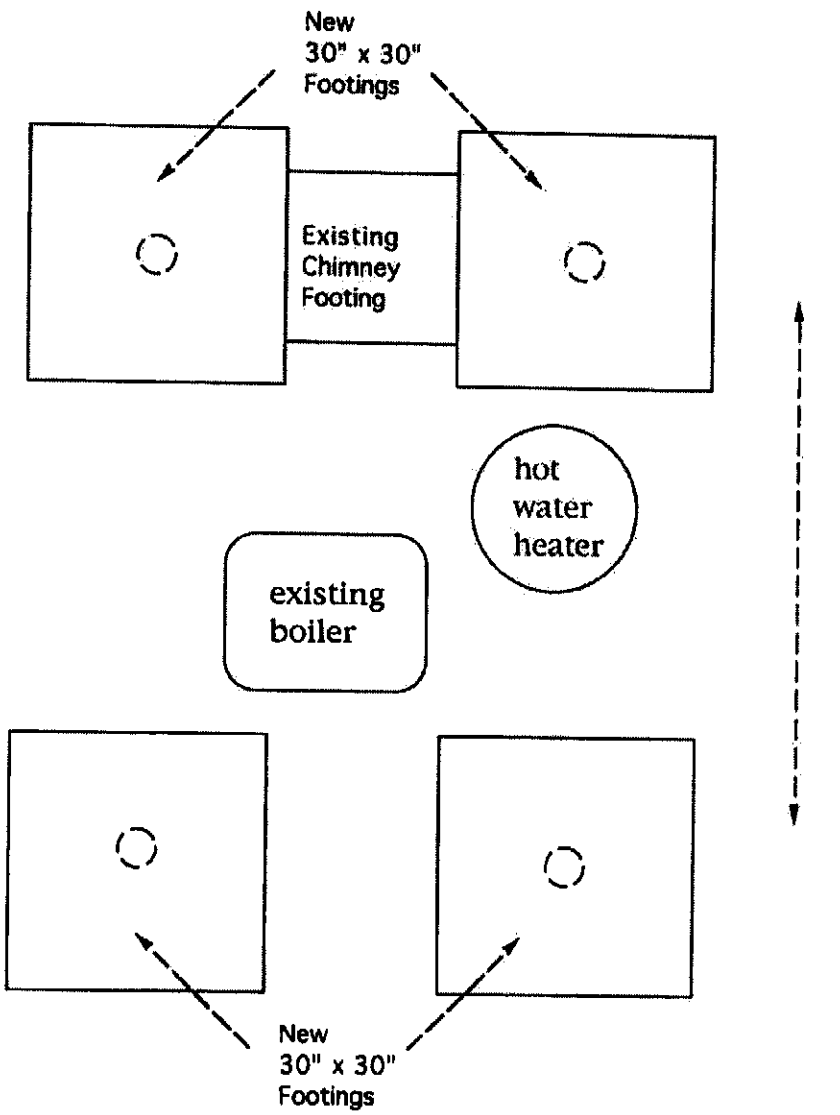
Nick Hanson, PE

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota.

Nick Hanson, PE
Minnesota Registration No. 46665
Date: 4-23-10

688 East 6th Street
New Footings Plan

N



PLAN

* REFER TO ULTEIG'S REPORT FOR MORE INFORMATION.

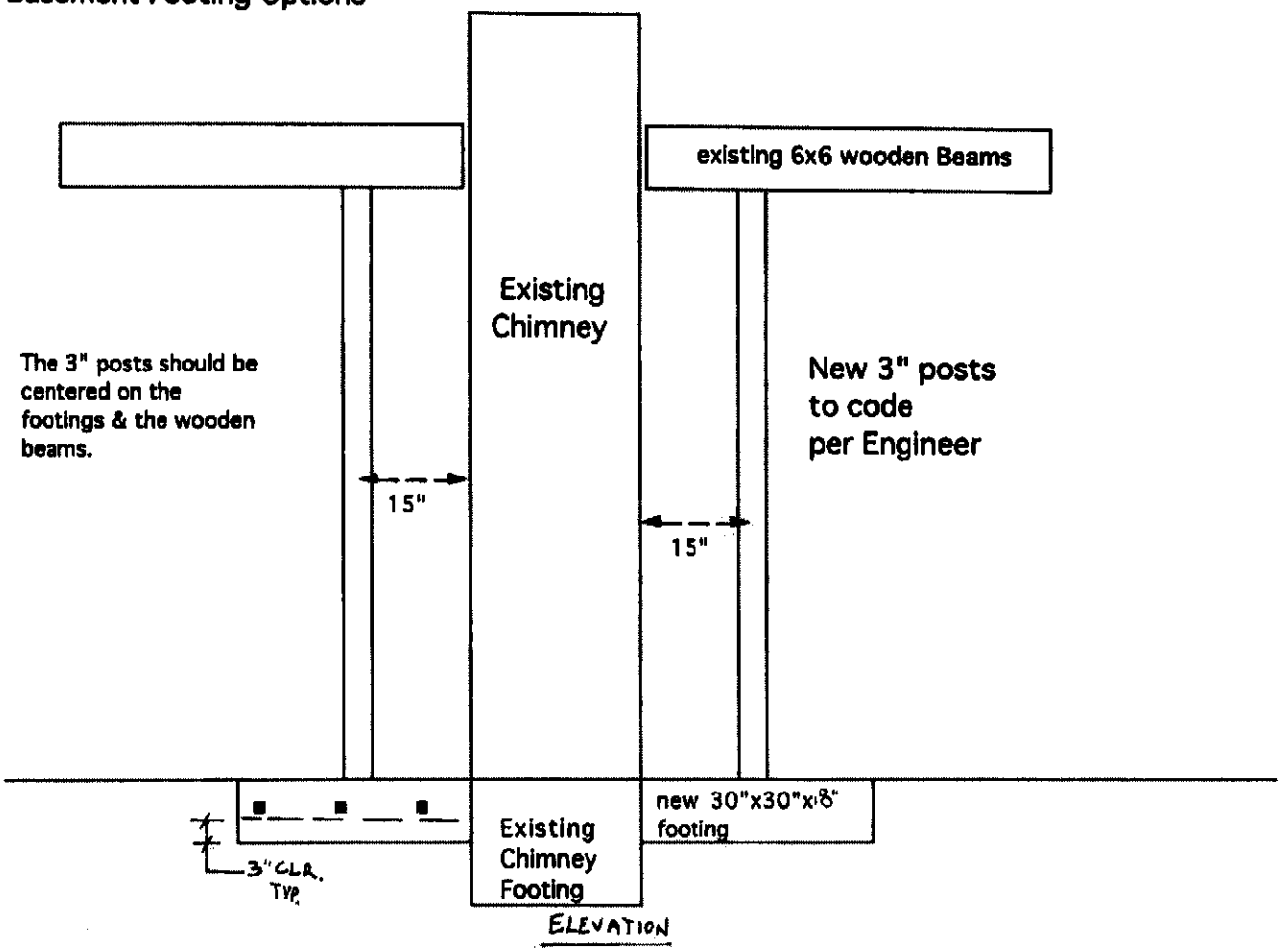
NOTES: Each footing to be 30"x30"x.8' deep, with three #4 rebars evenly spaced in the N/S and E/S directions, for a total of six rebar per footing. Existing posts are to be replaced with permanent structurally code approved steel posts. A new plinth block is needed under the next post south of the existing chimney.

SKETCH 2 OF 2

688 East 6th -- Duplex

Drawings are not to scale

Basement Footing Options



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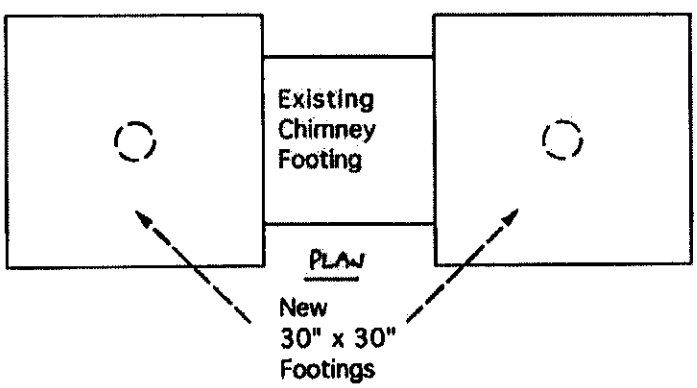

SKETCH 1 OF 2