STRUCTURAL SURVEY

1620 15th Street, NW
Washington, D.C.
SK&A #208-068

December 12, 2008

SK&A Structural Engineers, PLLC
1709 N Street, NW, Washington, D.C. 20036
Telephone: (202) 659-2520
Fax: (202) 659-1097
Website: www.skaengineers.com

December 12, 2008

Mr. Patrice Madesclaire
c/o Ms. Heather Roth
1418 William Street
Fredericksburg, VA 22401

RE: Structural Survey
1620 15th Street, NW
Washington, D.C.

Introduction

At your request, we visited the above property on December 10, 2008 to perform a structural survey based on our visual observations. In attendance were Ms. Heather Ross, the listing real estate agent and a home inspector also contracted by you. We were provided full access to the property, including all occupied units, basement and roof. The building encompassed the south end of a townhouse row constructed circa 1885. The structure consisted of four stories above grade, wood-framed with brick façade on three sides and masonry demising wall on north side. Floor framing was solid-sawn 2"x10"joists at 16" on center, spanning about 17'-6" from demising wall to southern exterior wall. Joists were pocketed into masonry. The basement floor was concrete slab-on-grade and the roof was over-frame, flat-pitched toward rear with masonry parapet on south side. By our approximate measurements, the total interior floor area was 3,325 square feet.

Observations

In general, the building appeared structurally sound. Signs were not evident of exterior wall foundation settlement. Basement floor slab appeared relatively level. Wood floors on each story did not show differential settlement from side wall to side wall; however there was noticeable deflection in the center of each floor toward the rear bathroom. The brick façade was weathered with partially deteriorated mortar joints. There were some step cracks over windows, particularly on the south bay, not unusual for a building of this age. Signs of previous patchwork in mortar joints over some windows were visible. Original masonry detailing around window and door arches, bays, chimneys, corbels and pilasters was in tact. Roof structure appeared in good condition. New roofing membrane had recently been applied. Ornamental metal scallops along parapet were partially deteriorated, allowing water infiltration under parapet sheathing. In one area of the basement ceiling, underside of first floor joists were visible. One joist at this location had been notched to accommodate bathroom plumbing. Approximately 8" had been notched out of the 10" deep joist. It is probable that similar conditions of notched joists occur elsewhere in the building. At a few locations, interior stair treads and risers appeared weakened. Handrail also was weak in several locations with some missing pickets. Exterior stair leading to main entrance is cast-in-place concrete. Condition of concrete appeared sound.

SK&A Structural Engineers, PLLC
1709 N Street, NW, Washington, D.C. 20036
Telephone: (202) 659-2520 Fax: (202) 659-1097 Website: www.skaengineers.com

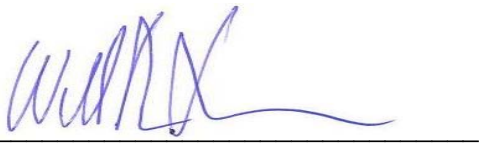
Recommendations

The following are recommendations based upon our understanding of the proposed scope of renovations necessary to create four premiere residential units.

1. Wood-framed floors: soffit of all stories shall be removed to expose underside of floor joists. Inspect for broken, cracked, notched, cut or severely buckled joists. Repair as necessary. Some attention should be paid to floor levelness and deflection. Depending on desired new floor finish, self-leveling grout may be applied over existing flooring. Or if new hardwood floors are to be installed, shims may be installed on existing joists to level new floor planks.
2. Brick façade: masonry shall be high-pressure surfaced to remove loose mortar, then re-pointed and sealed or painted to protect against future deterioration. While floor framing is exposed, supporting members and lateral connections at bay windows shall be inspected. Possible thru-bolting with exterior star anchors may be necessary to restrain buckling of masonry wall. Joists supporting bay floors may need additional anchoring back into main floor joists. Where new window openings are desired on south wall, proper lintels shall be installed to support brick and transfer bearing load around opening.
3. Basement clear height: current floor-to-underside of joist height is 7'-5". To increase clearance in basement, there are two options. Option A is to raise the first floor by removing the existing framing and constructing a new floor at higher elevation. Option B is to lower the basement slab by demolishing the existing slab, excavating, and then casting a new slab on grade. Option B will likely be more economical and cause less coordination conflicts with existing framing. To determine the feasibility of Option B, a few test pits must be dug at locations on the perimeter walls to expose the wall footing construction depth and width. If the footing extends 2 to 3 feet below exterior grade, then the basement slab can be lowered 12" to 16" without needing to underpin the existing wall footing.
4. Stairs: interior stairs and handrail shall be repaired or rebuilt to be structurally sound and support code design live loads. Stair width and handrail height may also need alteration to meet current architectural life safety code requirements. Exterior concrete stair shall be high-pressure surfaced. If cracks are visible, they shall be injected with pressure epoxy-grout. Concrete should then be sealed or painted to protect against future deterioration. Upper floors have only one means of egress (main front entrance). Options should be explored for providing second egress, as per architectural life safety code requirements.

Sincerely,

SK&A Structural Engineers, PLLC



William McLain, P.E.
Project Engineer

SK&A Structural Engineers, PLLC
1709 N Street, NW, Washington, D.C. 20036
Telephone: (202) 659-2520 Fax: (202) 659-1097 Website: www.skaengineers.com

Photo 1: South wall west end bay window

Photo 2: Step cracking, previous patchwork and deteriorated mortar at southwest bay window

SK&A Structural Engineers, PLLC
1709 N Street, NW, Washington, D.C. 20036
Telephone: (202) 659-2520 Fax: (202) 659-1097 Website: www.skaengineers.com

Photo 3: Masonry parapet at southwest corner

Photo 4: Concrete stair at front entrance

SK&A Structural Engineers, PLLC
1709 N Street, NW, Washington, D.C. 20036
Telephone: (202) 659-2520 Fax: (202) 659-1097 Website: www.skaengineers.com

Photo 5: Interior staircase at first floor

Photo 6: Handrail at third floor with previous repairs

Photo 7: Roof, chimneys, parapet with partially deteriorated metal scallops

SK&A Structural Engineers, PLLC
1709 N Street, NW, Washington, D.C. 20036
Telephone: (202) 659-2520 Fax: (202) 659-1097 Website: www.skaengineers.com

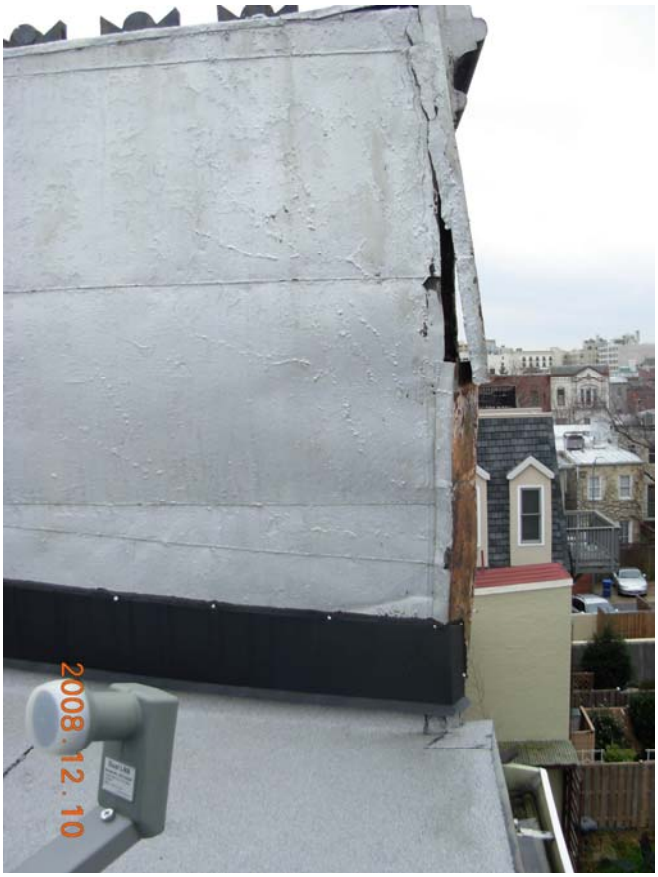


Photo 8: Roof parapet with deteriorated metal sheathing

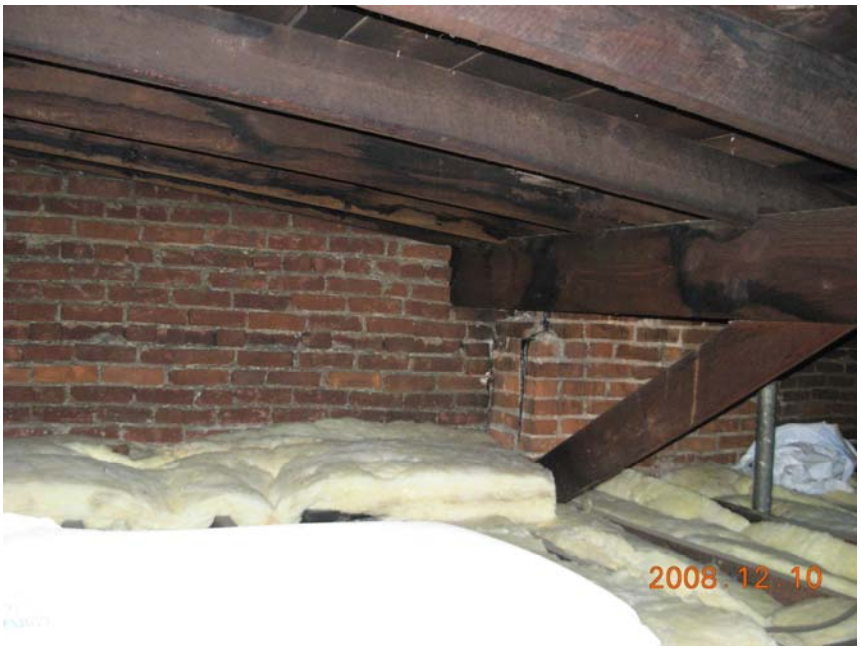


Photo 9: Attic and roof framing

SK&A Structural Engineers, PLLC
1709 N Street, NW, Washington, D.C. 20036
Telephone: (202) 659-2520 Fax: (202) 659-1097 Website: www.skaengineers.com