RENAISSANCE DESIGN BUILD, INC.
INDIANA OFFICES
117 S Indiana Avenue
Sellersburg, IN 47172
Tel: 812-246-5897
Fax: 812-248-4320
rdbi@rdbi-inc.com
KENTUCKY OFFICES
1012 S. Fourth Street
Louisville, KY 40203
Tel:502-424-8373
Fax:502-587-0931
web: rdbi-inc.com

PROVIDING PROFESSIONAL SERVICES SINCE 1999

Structural Engineering Investigation
For
Joe Gribbins
Estate of Dr. Robert Sexton, Jr.
10410 Forest Garden Lane
Louisville, KY 40223
Job No. 2022-534

By
Nathan Grimes, P.E., P.L.S., C.F.E.I., C.F.I.I., R.H.I.

On Monday, December 5, 2022, at 2:00 PM, Nathan Grimes, P.E., P.L.S., C.F.E.I., C.F.I.I., R.H.I., conducted a non-destructive visual structural investigation on the structural integrity of a single-family residence as requested by Joe Gribbins, Auctioneer. Mr. Gribbins was present at the site during the engineering investigation. No warranty or guarantee is made or implied by this report. It should be noted that physical conditions reported, as satisfactory when examined does not imply continued satisfactory conditions in the future.

The 1½ story wood framed brick veneer and Hardie Board sided house is constructed over a full concrete walled basement. The weather was cloudy and 45°F in temperature.

The purpose of this structural engineering investigation was to determine the structural integrity of various cracks at the single-family residence. Our structural investigation is limited to these issues.

Note: All directional references to left, right, front, or rear assume the reader is standing in the street, facing the front doors of the building being referenced. The front facade of house faces North.

The following documentation was reviewed as part of this investigation:

1. Property information from Jefferson County, KY PVA (This information is included in Appendix "A" of this report).
2. Foundation repair proposal from TFS dated 06/07/2019.
3. Foundation repair proposal from TFS dated 11/15/2022.
4. No original house plans were available for us to review as part of this investigation.

The following items were observed during our investigation:

5. The house was originally constructed in 1999 and has been owned by the original owners since that time. The house has been well maintained.
6. There are no large trees or bushes planted next to foundation walls around the house.
7. All finished grades are sloping away from foundation on all sides of the house.
8. All gutters and downspouts have pipe extensions or splash blocks to direct storm water from roof away from foundation and footings.
9. There are brick veneer masonry joint cracks on front facade, right side facade, and rear facade in several locations. These cracks vary in width from hairline to 2.5mm and none were offset. There is evidence that brick veneer masonry joints have been repaired in other locations previously.
10. On the right side there is an opening between concrete foundation wall and brick veneer of 5.5mm in one location at base of exterior wall.
11. There are drywall cracks in garage front wall, kitchen right side wall, and front office right side wall. These cracks vary in width from hairline to 1.00mm and none of them are offset.
12. The rear walkout basement is completely finished except for a mechanical room area that is a rear of garage. There are 2 vertical cracks in reinforced concrete basement walls in the mechanical room. One is 2.5mm in width and is not offset. The other is in corner where rear of garage and basement wall meet common wall with adjoining property. This crack varies in width up to 5/8" in width and is entire height of basement wall. There is no visible reinforcing steel in the crack. The reinforced concrete basement wall is 7'-8 ½ tall. There is no evidence of ground water or storm water entering these basement wall cracks.
13. There are repaired cracks in concrete driveway slab that were up to ¾" in width.
14. The interior garage window trims have separated on front wall of house.
15. All windows and doors were operable.
16. There is a crack in joint connection of rear concrete patio to the brick veneer and also a crack in the patio slab itself in one location. Neither of these are offset.
17. The caulking seam has failed at rear wood deck where the Hardi-Board wall connects the brick veneer wall.
18. There are several loose nails on wood deck that connect deck boards to framing on the rear deck.

19. There is an offset in joint in garage floor slab near rear wall of garage. This offset is ½" height at the joint in the concrete floor slab.
20. Most of the reinforced basement and foundation walls are not visible on exterior of the house due to the finished grade of the soil.
21. The visible garage and basement concrete slab floors were not cracked except as listed above.

Conclusions regarding this engineering investigation are as follows:

Reasons Concrete Basement Walls:

1. It is common for concrete cracks to develop in poured concrete foundation and basement walls. Some of the reasons this happen are as follows:
    a. Settlement of footings due to:
        i. Improperly compacted sub grades.
        ii. Improperly sized or reinforced support building loads.
        iii. Plumbing leaks or downspouts not diverting water away from building.
    b. Shrinkage cracks due to:
        i. Improper concrete mix (high water content).
        ii. Rapid curing of concrete during construction process.
        iii. Omission of control joints.
        iv. Omission or patterns placement of steel reinforcement.
    c. Expansive clay soils
    d. Frost heave due to inadequate covering of footings or unheated structures.
    e. Damage from trees or shrubs located next to building foundation.
    f. Vehicle loading
    g. Surface or subsurface water freezing.
    h. Absent footings
    i. Catastrophic weather events such as earthquakes, floods, tornadoes, hurricanes, etc.
    j. Deferential settlement of structure where a section or side of building is moving up or down at a different rate or amount than the other.

Reasons Brick Veneer Masonry Joints Crack

1. The brick veneer facade of a building is not structural. There are many possible reasons for brick veneer masonry joints to crack. Some of the reasons this happens is as follows:

    a. Settlement of existing footings and foundation wall
    b. Inadequate brick ledge support on foundation
    c. Poor construction techniques during installation
    d. Faulty construction materials
    e. Insufficient amount of brick ties connecting brick veneer to structure of house
    f. Catastrophic or severe weather events such as earthquakes, tornados, hurricanes, etc.
    g. Lack of shrinkage control joints in the brick veneer
    h. Storm water infiltration of brick veneer wall
    i. Expansion and contraction forces stressing brick veneer wall

Reasons Drywall Cracks

1. There are many reasons gypsum wall board (drywall) cracks:
    a. Improper installation of drywall, including errors in taping, insufficient number of fasteners, incorrect fasteners, application of joist compound, or incorrect type of drywall compound.
    b. Moisture behind wall.
    c. Heavy objects on the wall causing the wall to stress.
    d. Foundation settlement or differential frost heaving of foundation

e. High stress areas in wall such as door headers, window headers and over beams with long spans.
f. Framing shrinkage caused by using wet lumber or, poor quality framing connections that permit movement and settlement in wall assembly.
g. Overloaded or over spanned structural members or framing assemblies causing deflections in drywall assemblies.
h. Installing gypsum board across uneven surfaces (framing bowed, bent or uneven) due to inconsistent or sloppy framing adding to material stress.
i. Arching roof or floor trusses caused by moisture/temperature differences between trusses upper and lower members.
j. Significant change in the building moisture level or moisture content casing expansion or shrinkage of drywall assembly.
k. Significant changes in building interior temperature causing expansion or shrinkage of drywall assembly.
l. Lack of control joints in drywall at problem or stress points and in areas of drywall extending beyond 30 length of a broken or unrelieved panel.

22. The house is structurally sound for manual residential dead and live loading conditions, but some repairs are required to maintain the existing structural integrity to the house. These repairs recommendations are listed in the following section of this report.

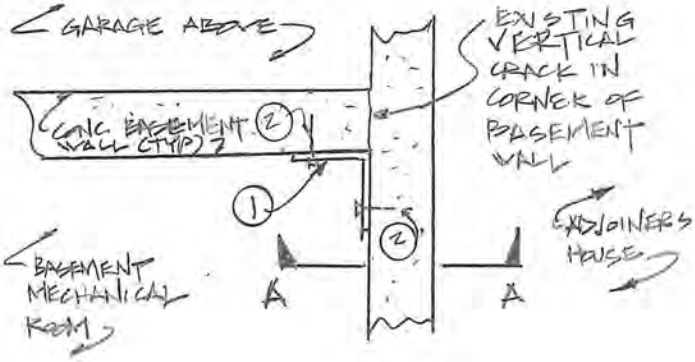
Recommendations regarding this investigation are as follows:

23. All interior drywall cracks should be repaired with fiberglass mesh tape.
24. All brick veneer masonry joint cracks should be tuckpointed with mortar that matches the existing to keep stormwater infiltration from entering wall assembly and causing further damage.
25. Garage floor slab joint crack and rear patio slab crack should be sealed with concrete crack sealer.
26. Basement wall cracks should be sealed with injected concrete crack sealer.
27. The failed caulking joint between Hardi-Board siding and brick veneer walls at rear deck should be recalked to keep storm water infiltration from entering walls and causing further damage. Repair using exterior polyurethane caulking.
28. All loose nails and missing nails on rear deck boards should be removed and replaced with exterior deck screws to securely fasten deck boards to deck framing structure.
29. Separated garage windowsill and trim should be re-caulked and painted to match existing. Repair using exterior polyurethane caulking.
30. The large crack in corner of basement mechanical room needs to be repaired with injected concrete crack sealer as stated in item # 26 above but it also needs to be reinforced since there is no visible steel tying the 2 walls together. Reinforce as shown on attached detail.

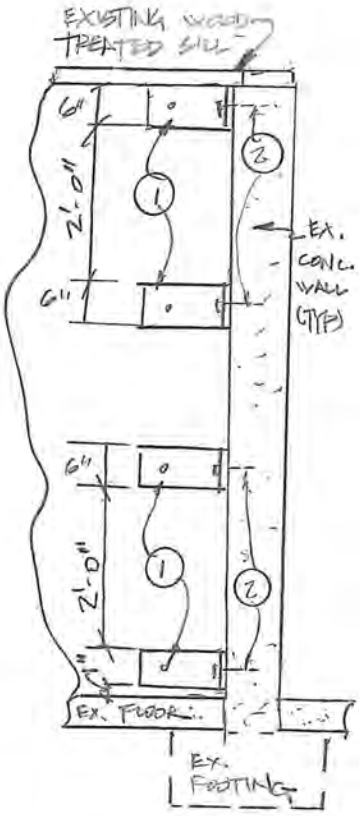
We retain the right to revise or amend this report if additional information is discovered or if further investigation is required or requested. See attached photographs for additional information.

Sincerely,
Renaissance Design Build, Inc.

Nathan Grimes, P.E., P.L.S., C.F.E.I., C.F.I.I., R.H.I.



PLAN
SCALE: 1/2" = 1'-0"



SECTION A-A
SCALE: 1/2" = 1'-0"

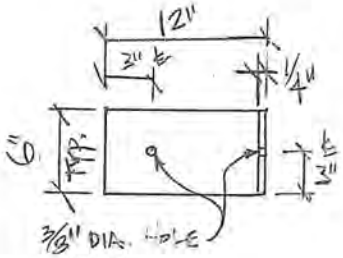
REPAIR SCHEDULE

(1) INSTALL 1/4" x 6" x 12" STEEL ANGLE TO EX. WALLS, TO TIE WALLS TOGETHER IN CORNER OF BASEMENT MECH. ROOM.

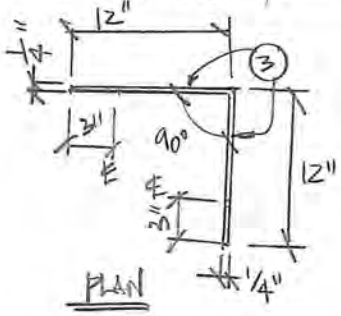
(2) DOWEL & EPOXY 6" x 1/2" DIA. THREADED METAL ANCHOR, NUT & WASHER (2 PER ANGLE)

(3) COAT BACK OF STEEL ANGLE WITH BLACK JACK BEFORE INSTALLING ANGLE TO WALL.

NOTE: CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS & MEASUREMENTS.



ELEVATION



PLAN

STEEL ANGLE DETAILS
SCALE: 1" = 1'-0"

STATE OF KENTUCKY
NATHAN R. GRIMES
16097
LICENSED PROFESSIONAL ENGINEER

Nathan R Grimes
1/31/2023

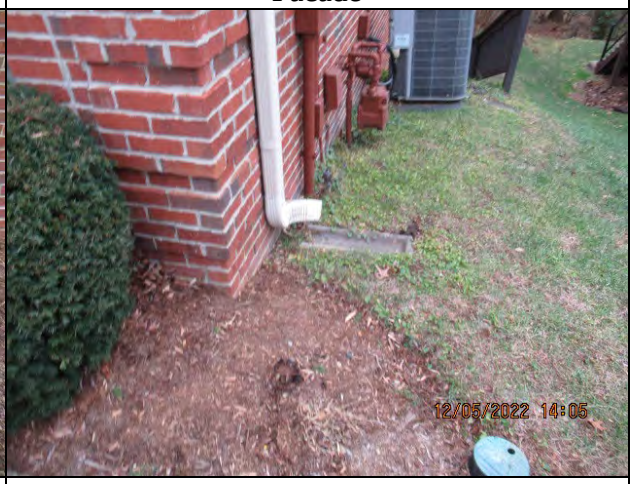
Sheet	Dwn by: WJ Chk by: NG Scale: As NOTED	RENAISSANCE DESIGN BUILD, INC.
	Date: 1/31/2023 Project No: 2022-524	1012 South Fourth Street
Of	BASEMENT WALL REPAIR DETAIL	Louisville, Kentucky 40203
	10410 FOREST GRADE LANE LOUISVILLE, KY 40223	Tel: 502-424-8373 Fax: 502-587-0931
	Revisions:	www.renaissancedesignbuild.com

PHOTO SHEETS

Front Facade

Brick Veneer Masonry Joint Cracks Front Facade

Brick Veneer Masonry Joing Cracks Front Facade



Downspout Detail Front Right Corner

Brick Veneer Masonry Joint Crack Right Side Facade

Brick Veneer Masonry Joint Crack Right Side Facade

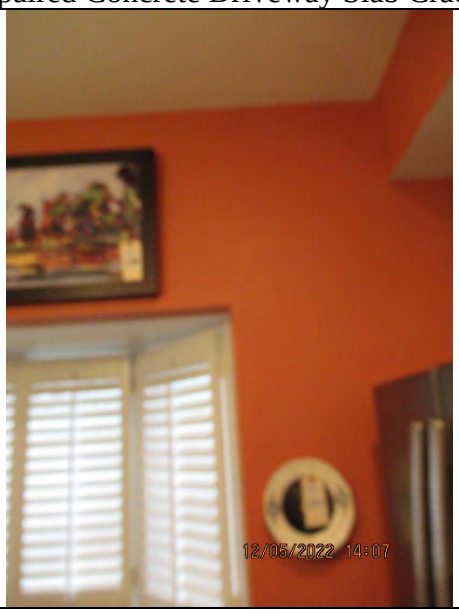
Brick Veneer Masonry Joint Crack Right Side Facade

Foundation Front Right Corner Detail

Eave Front Right Corner Detail

Repaired Concrete Driveway Slab Cracks

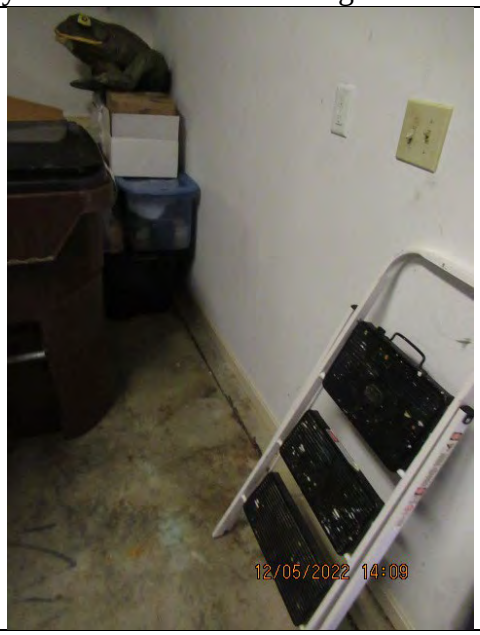
Repaired Concrete Driveway Slab Cracks



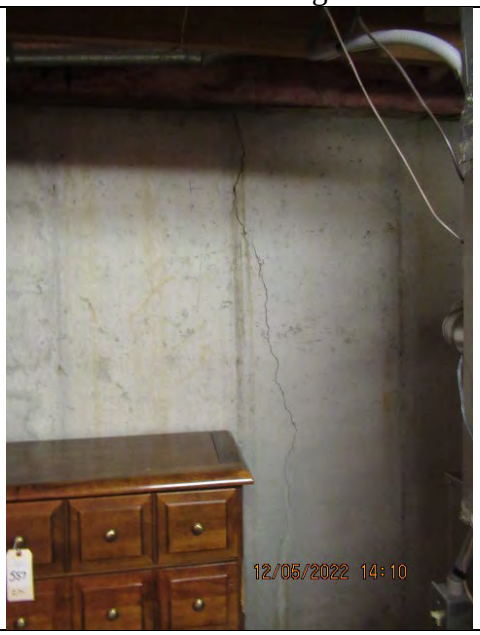
Drywall Crack in Kitchen Right Wall

Drywall Crack in Kitchen Right Side Wall

Offset Joint in Garage Floor



Offset Joint in Garage Floor



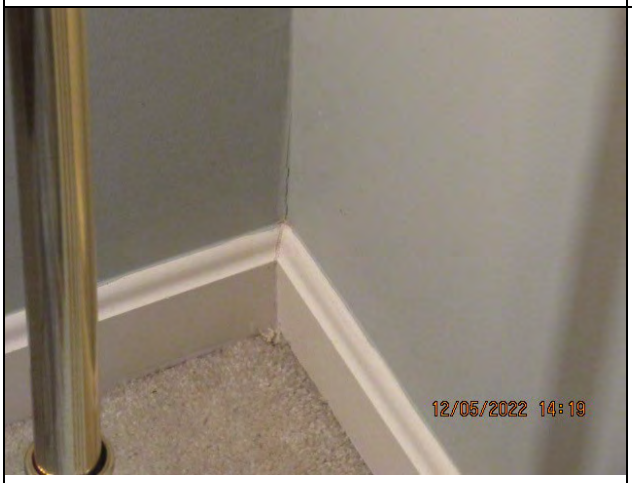
Foundation Crack in Basement Mechanical Room Wall

Foundation Crack in Basement Mechanical Room Wall

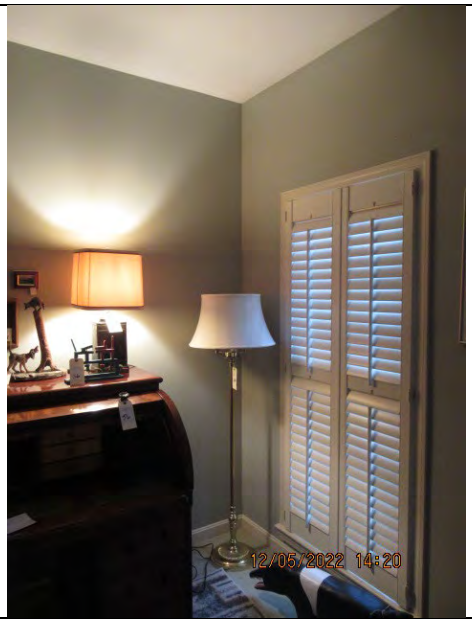
Foundation Crack in Basement Mechanical Room Wall

Foundation Crack in Basement Mechanical Room Wall

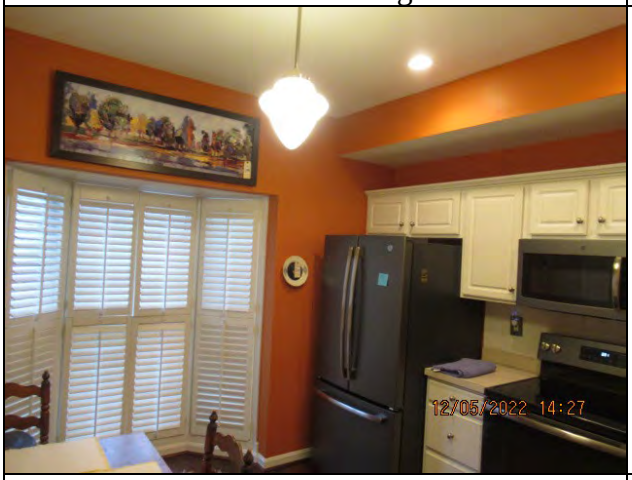
Downspout Drain Rear Facade Detail



Interior Office Front Right Corner



Interior Office Front Right Corner



Interior Kitchen

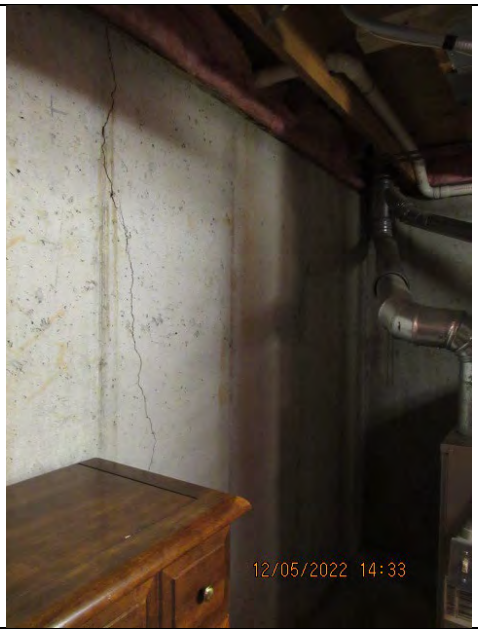
Blank

Separated Wood Window Sill and Garage Front Wall

Drywall Crack in Garage Front Wall

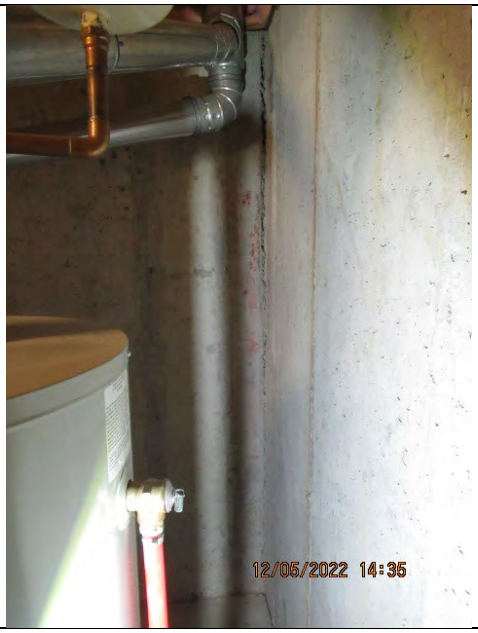
Interior Garage Front Wall

Separated Wood Window Sill and Garage Front Wall

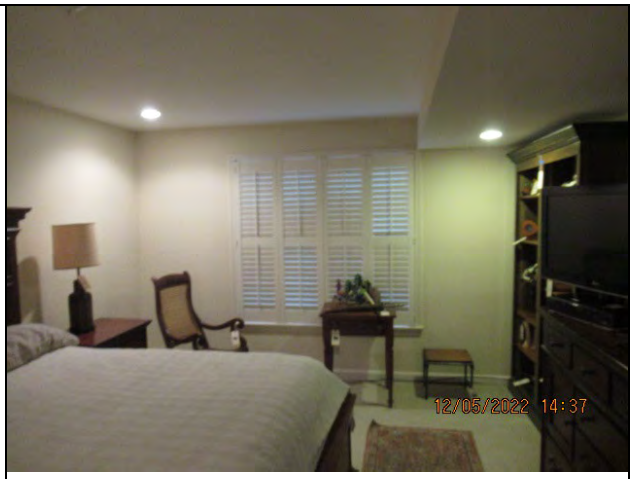


Foundation Crack in Basement Mechanical Room Wall

Foundation Crack in Basement Mechanical Room Wall



Foundation Crack in Basement Mechanical Room Wall



Rear Wall Basement Bedroom

Rear Wall Basement Family Room

Rear Wall Basement Library

Rear Wall 2nd Floor Bedroom

Rear Wall Main Floor Bedroom

Repaired Concrete Driveway Slab Cracks

Downspout Detail Front Facade

Front Facade

Brick Veneer Masonry Joint Cracks Front Facade

Brick Veneer Masonry Joint Cracks Front Facade

Brick Veneer Masonry Joint Cracks Front Facade

Brick Veneer Masonry Joint Cracks Front Facade

Brick Veneer Masonry Joint Cracks Front Facade

Brick Veneer Masonry Joint Cracks Front Facade

Brick Veneer Masonry Joint Cracks Front Facade

Previous Repaired Brick Veneer Masonry Joint Crack Front Facade

Previous Repaired Brick Veneer Masonry Joint Crack Right Side Facade

Previous Repaired Brick Veneer Masonry Joint Crack Right Side Facade

Previous Repaired Brick Veneer Masonry Joint Crack Right Side Facade

Right Side Facade

Downspout Drain Detail Front/Right Corner of House

Brick Veneer Masonry Joint Crack Right Side Facade

Brick Veneer Masonry Joint Crack Right Side Facade

	
Downspout Drain Detail Rear Right Corner	Brick Veneer Masonry Joint Crack Right Side Facade
	
Brick Veneer Masonry Joint Cracks Rear Facade	Brick Veneer Masonry Joint Cracks Rear Facade
	
Brick Veneer Masonry Joint Cracks Rear Facade	Brick Veneer Masonry Joint Cracks Rear Facade

Brick Veneer Masonry Joint Cracks Rear Facade

Brick Veneer Masonry Joint Cracks Rear Facade

Brick Veneer Masonry Joint Cracks Rear Facade

Brick Veneer Masonry Joint Cracks Rear Facade

Basement Walkout Patio Detail

Rear Facade

Brick Veneer Masonry Joint Cracks Rear Facade

Brick Veneer Masonry Joint Cracks Rear Facade

Rear Patio Slab Cracks Detail

Rear Patio Slab Cracks Detail

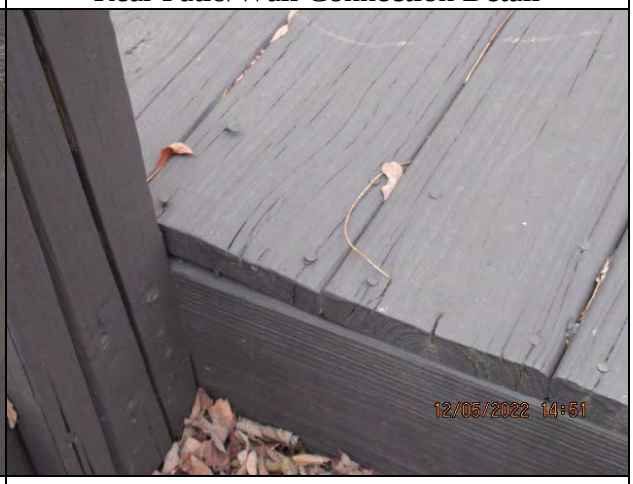
Rear Patio/Wall Connection Detail

Rear Patio/Wall Connection Detail

Rear Patio/Wall Connection Detail

Rear Patio/Wall Connection Detail

Loose Nails Rear Patio Detail



Loose Nails Rear Patio Detail

Partial Rear Facade Detail

Caulking Seam Cram at 2nd Floor Deck

Caulking Seam Crack at 2nd Floor Deck

Brick Veneer Masonry Joint Cracks Rear Facade

Loose Nails Rear Patio Detail

Right Side Facade

Rear Patio and Stair Detail

Driveway Concrete Slab Repaired Crack Detail

APPENDIX ‘A’
Jefferson County, KY PVA

JEFFERSON COUNTY PVA

10410 FOREST GARDEN LN

Mailing Address	10811 PINEVIEW CT, LOUISVILLE, KY 40299-3977
Owner	SEXTON ROBERT F JR ESTATE OF
Parcel ID	306500150000
Land Value	$50,000
Improvements Value	$312,960
Assessed Value	$362,960
Approximate Acreage	0.1265
Property Class	510 RES 1 FAMILY DWELLING
Deed Book/Page	**778 557 (N/A Online)**
District Number	148020
Old District	21
Fire District	ANCHORAGE MIDDLETOWN FIRE & EMS
School District	JEFFERSON COUNTY
Neighborhood	806109 / FOREST GREEN
Home Rule City	**Lyndon**
Sheriff's Tax Info	**View Tax Information**
County Clerk	**Delinquent Taxes**

Area Type	Gross Area	Finished Area
Main Unit	-	2,170
Basement	1,488	1339
Attic	NONE	0
Attached Garage	452	n/a
Detached Garage	-	n/a

All measurements in square feet.

Property Details

Type	1 : SINGLE FAMILY
Year Built	1999
Exterior Wall	BV BRICK VENEER
Roof	HIP
Basement Foundation	FULL BSMT
Condition	NORMAL FOR AGE
Heating Type	1 CENTRAL WARM AIR
Central Air	Yes
Fireplace	Yes
Construction Frame	Wood frame
Stories	1.50
Full Bathrooms	3
Half Bathrooms	0

Property Sketch

Sales History

Deed Book/Page	Price	Date	Previous Owner
778 557 (N/A Online)	$0	05/25/2022	SEXTON ROBERT F
10180 0904	$327,590	12/17/2013	SEXTON ROBERT F Jr
10180 0903	$0	12/17/2013	SEXTON NANCY N

Assessment History

Record Year	Land	Improvements	Total	Reason
2022	$50,000	$312,960	$362,960	CR - Computer Reassessment
2016	$45,000	$291,830	$336,830	RC - Residential computer reass
2011	$40,000	$287,590	$327,590	DC - Decrease by comp-reass
2009	$40,000	$302,730	$342,730	NC - Residential no change
2005	$40,000	$302,730	$342,730	RC - Residential computer reass

Legal Lines

LN	Legal Description
1	LOT 15 FOREST GREEN PATIO HOMES SEC 1 PB.44 PG.16 0.1265 AC+-

Property is assessed per KRS 132.20 on January 1st of each year. The current year assessments are updated and posted on the website in mid April. Information deemed reliable but not guaranteed. Data last updated: 01/29/2023.