

April 11, 2023

Mr. Brian Faust
Director of Public Works/City Engineer
City of Leavenworth
100 N. 5th Street
Leavenworth, KS 66048
brian.faust@firstcity.org



**RE: YOUTH ACHIEVEMENT CENTER
312 DELAWARE STREET
LEAVENWORTH, KANSAS 66048**

JOB #2023-0168

Dear Mr. Faust:

This letter is in regard to my visual observations of problems with the floor system in the above-referenced building. A site visit was made Tuesday, March 28, 2023, at your request and in your company. Mr. Earl Williams, the Deputy Director of Public Works, and Mr. Hal Burdette, the Chief Building Inspector, were also present. I would like to present my findings and these opinions for your information.

General

The one-story building faces south for the purpose of this report and is bearing on stone masonry foundation walls, which enclose a basement. Exterior walls of the building are multiwythe brick masonry. There are two buildings on this address, both with individual basements and a masonry common wall between the two. At the back of the east side there is a small area with shallow foundations walls and a concrete slab-on-grade. The remaining floors and roof are conventionally framed with wood. A somewhat newer concrete cap/slab has been installed on the wood floor framing. The roof areas are low sloped and drain to the north. The building is estimated to be over 100 years old.

We met at the site, and you explained that a portion of the main level floor framing in the western half of the building had collapsed. You questioned the extent of damage and possible repairs.

Visual Observations

Foundation:

Access was gained into the basement by means of a newer stairway located at the back of the eastern half of the building. The stone masonry walls were found to be generally plumb in all locations that I could review. Of note is the amount of deterioration and erosion in mortar joints found periodically in various locations. The interior of the walls should be cleaned of loose material, and tuckpointing needs to be accomplished to create solid masonry in all locations.



Floor Framing:

Observations of the collapsed area of floor framing beneath the middle of the western building area revealed that there is significant deterioration and rot in various framing members. It appears that support posts and beams in the middle part of the western section of the building failed, allowing the floor joists to collapse downward and break. The floor joists themselves were also found to be in poor condition due to significant deterioration and rot problems.

Continued review of the floor framing that was still in place revealed significant deterioration and rot problems as well as extensive termite damages in some areas. Columns, support beams, and joists, were all found to be affected to varying degrees. There are locations where joist ends are partially crushed due to the extensive termite damage or rot conditions that are present. Support beams are twisted/rolled and/or sagging due to deterioration in the columns, or the support beams themselves. Generally, all of the floor framing for both building sections was found to be in very poor condition.

At the southeast end of the east building, the floor framing had been modified to close off the old basement stairway access location. Some of the framing in this area has failed and partially collapsed.

The extent of deterioration, rot, termite damage, etc. has created an unsafe condition for the floors of the building. I recommend that all of the floor framing be removed and replaced.

The interior of the building will need to have all stored materials and some of the finishes removed so that the floor system can be safely removed. Once this is done, new wood framing including footings, columns, support beams, joists, and subfloor can be installed. Alternately, the basement could be backfilled, and a concrete slab-on-grade installed. In either situation, the electrical services, water, and sewer services will need to be redone to accommodate whichever new floor system is chosen.

Walls:

A brief review in the building of the multi-wythe brick masonry walls revealed that they are generally plumb and straight at this time. The exterior face of the walls has been protected with finishes in most locations concealing them. Inside, the brick is only partially concealed. There are a number of locations where brick masonry has shifted or is loose. This is due to washed out mortar joint conditions at old chimney locations for the most part. When repairs are made to the building, I recommend that the brick masonry walls be closely reviewed and that any areas of brick masonry that is loose, shifted, cracked, or moved be rebuilt and that where mortar joints are partially or fully washed that they be appropriately repaired and tuckpointed.

Roof Framing:

The roof is framed with conventional joists in the eastern portion and with field constructed trusses in the western portion. There is notable sag in the truss framing on the west side. When repairs are made to the building, I recommend that the joists on the east side of the building be reviewed and that any individual joists that are cracked, split, or otherwise damaged be repaired/sistered on an as-needed basis. Truss framing on the west side of the building should also be reviewed due to the sagging that is present. It is likely that some repair in the form of additional truss framing members and connection improvements will be needed for each of the individual trusses to ensure structural soundness.



Roofing:

Access was gained up onto the roof and I found that both the eastern and western halves of the building are covered with granular surface modified bitumen roofing (SBS). This roofing shows signs of significant aging, and the granule surfacing is worn off significantly in many areas. These conditions indicate that this roofing is many years old and nearing the end of its useful life. I would estimate that there is less than five years of useful life left in the roofing membranes on the buildings.

Cost Estimate

You requested cost information to replace the main floor in this building. These cost estimates were prepared with regards to removing the existing floor framing and replacing floor systems either with conventional wood framing or backfill and a poured concrete slab-on-grade. They are based on Xactimate cost estimating. Only the cost to disconnect the electrical, supply plumbing and sewer systems and terminate them below the main floor level are included. Costs to remove interior finishes are limited to only that needed to allow for the work on the floor to proceed.

Excluded items include:

- Electrical
- Plumbing
- Repairs to basement walls
- Repairs to brick walls
- Repairs to roof joists and trusses
- Repairs to the interior finishes
- Tenant finishes

Option 1:

The cost to remove the existing floor system and the cost to install a new floor system with wood joists and OSB subfloor.

Option 1 Estimated Total \$47,584.02

Option 2:

Cost to remove the existing floor system and the cost to backfill the basement area and install concrete supports and a concrete slab-on-grade.

Option 2 Estimated Total \$101,371.81

Conclusion

Based on these observations, it is my opinion that the floor systems in both halves of this building are in poor condition and are unsafe due to extensive deterioration and rot problems, and past termite damage. The floor systems in the building need to be replaced and additional repairs and modifications are needed to the walls and roof.

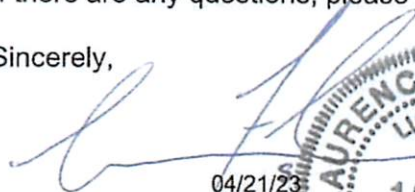


Scope & Terms

These visual observations were of the damaged floor systems in the building and no attempt was made to review components that were not readily viewable or accessible. No attempt was made to review for environmental hazards. When making visual observations of a building or its components, it is required that certain assumptions be made regarding the existing conditions. Because these assumptions may not be verifiable without expending added sums of money, or destroying adequate or serviceable portions, the owner or recipient of this report agrees that we will be held harmless, and indemnified and defended, by you from and against all claims, loss, liability, or expense, including legal fees arising out of the services provided by this report. Norton & Schmidt makes no guaranty or warranty expressed or implied concerning water that may seep into the basement. Proper maintenance of the home and the surrounding property are major factors in creating and sustaining a dry basement. Use of this report constitutes acceptance of these terms and the scope.

If there are any questions, please call.

Sincerely,


04/21/23
Laurence C. Fehner, P.E.
Principal
KS COA #E-1771
MO COA #2008019746
NE COA #CA-2167



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Enclosure: Photographs and Captions
Floor Repair Estimates
Billing Invoice



1. Front/south side of building.



2. East/right side of building.



3. Building as seen from the northeast.



4. Building as seen from the northwest. The brick is the western half, and the blue finish is the eastern half.



5. Collapsed floor in the western half of the building as seen from the southeast.



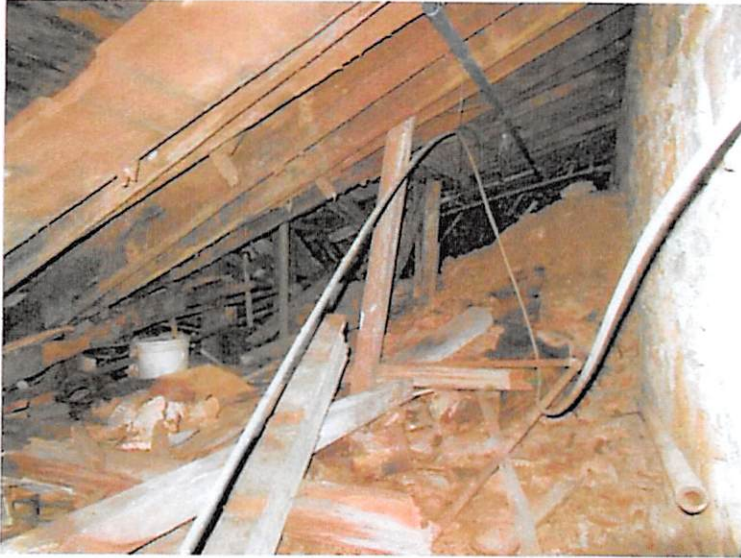
6. Looking south at the collapsed floor in the western half of the building.



7. Collapsed wood framing as seen in the basement.



8. Close-up of deterioration and rot in the center support beam.



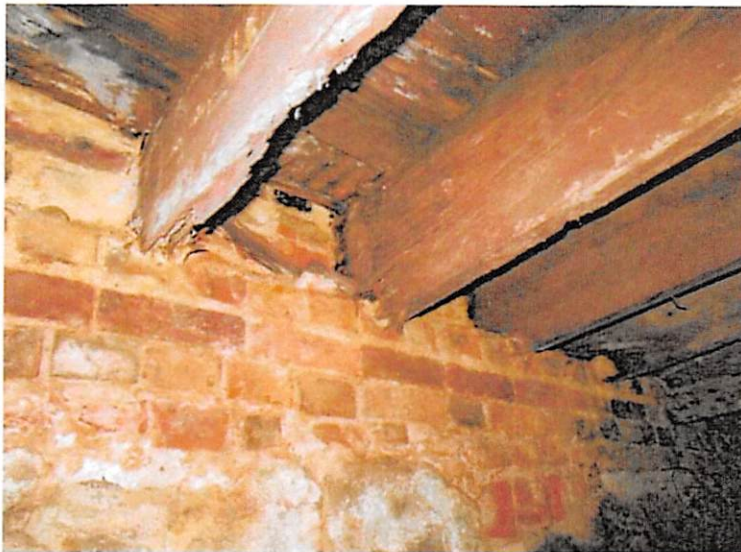
9. Looking north in the basement area at the collapsed framing.



10. Looking south in the eastern half of the basement.



11. Extensive deterioration, rot, and termite damage in the floor joist framing along the east wall.



12. Extensive deterioration, rot, and termite damage in the floor joists along the east wall. Note the ends of the joists are crushing.



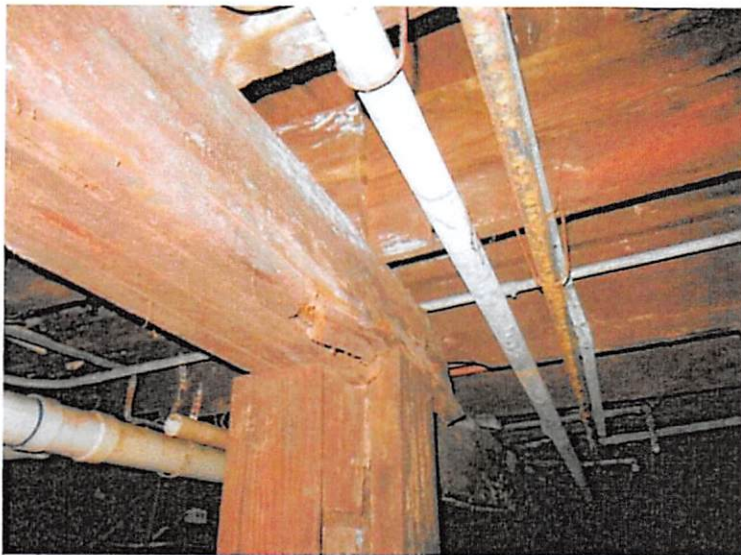
13. Close-up of Photo #12.



14. Extensive deterioration, rot, and termite damage in the joists closer to the south end of the east side.



15. Partially collapsed floor framing at the old stairway location located at the southeast corner.



16. Extensive deterioration, rot, and termite damage in a support beam at a support post location.



17. Close-up of Photo #16.



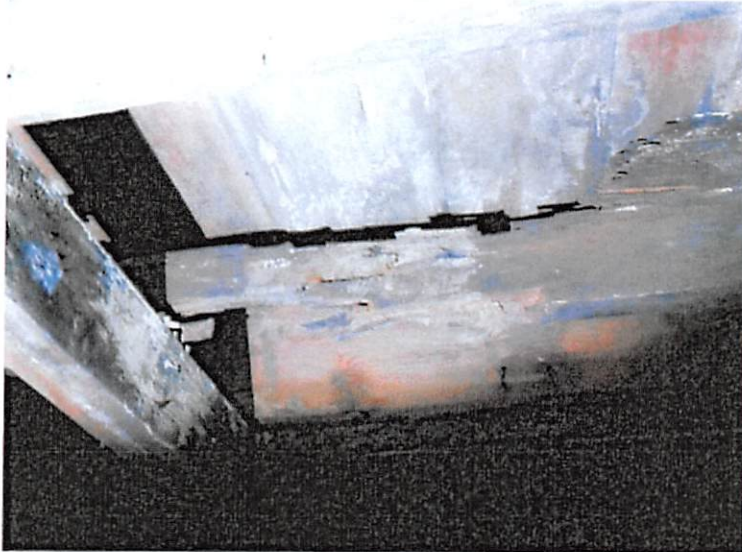
18. Another support post and column location that are rolling and tipping due to the extensive deterioration and rot problems.



19. Floor joists that are partially missing due to extensive deterioration, rot, and termite damage. Note there is also damage in the support beam.



20. Another view of damages and missing portions of the floor joists.



21. Close-up of a floor joist where the upper portions are missing due to extensive deterioration and rot problems.



22. Looking north on the roof of the east half of the building.



23. Looking south at the roofing on the east half of the building.



24. Northern portion of the east roof with the western half of the building in the background.



25. Looking south over the entire east half of the roof.



26. Looking north over the western half of the roof.



27. Low angle view of the roof showing the sag present in the roofing.



28. Looking south over the west half of the roof.

Client: Youth Achievement Center
Property: 12 Delaware
Leavenworth, KS 66048

Operator: OFFICE

Type of Estimate:

Date Entered: 4/14/2023

Date Assigned:

Price List: KSKC8X_APR23

Labor Efficiency: Restoration/Service/Remodel

Estimate: YAC-DJ

YAC-DJ

Removal

DESCRIPTION	QTY	REMOVE	REPLACE	TAX	TOTAL
1. Remove Switchboard (main disconnect) Terminate existing electrical service. Includes: Labor cost to remove a main disconnect and can and to discard in a job-site waste receptacle.	1.00 EA	337.44	0.00	25.31	362.75
2. Plumbing - Labor Minimum Includes: Labor to disconnect plumbing service.	1.00 EA	0.00	320.11	24.01	344.12
3. General Laborer - per hour 4 general laborers for 5 days to clear existing concrete slab, framing, and debris from the basement and dispose in a job site waste receptacle. Includes: removal of plumbing and electrical lines that have been disconnected from service, existing building contents, interior wall finishes, and a bar, and cleaning and prepping the area for reconstruction.	160.00 HR	0.00	53.95	647.40	9,279.40
4. Dumpster load - Approx. 40 yards, 7-8 tons of debris 2 dumpsters for construction debris. Includes: Dumpster delivery, rental, transportation to disposal site, and dumping fees. Excludes: Demolition. Note: Price charged by a waste management company to pickup and dump an extra large dumpster (approximately 40 yards). Usually holds about 7-8 tons.	2.00 EA	720.00	0.00	108.00	1,548.00
Totals: Removal				804.72	11,534.27

Replace

DESCRIPTION	QTY	REMOVE	REPLACE	TAX	TOTAL
5. Footings - labor & materials - Reinforced Includes: Concrete, forms, stakes, #4 (1/2") deformed steel rebar, and installation labor.	1.25 CY	0.00	577.25	54.12	775.68
6. Column - 3" pipe w/base pl./top bkt. Includes: Steel pipe, base plate, top bracket, non-shrink grout, the use of a crane, and installation labor.	84.00 LF	0.00	36.97	232.91	3,338.39
7. Wide Flange Beam - 10 1/8"d. x 5 3/4"w. x 1/4"thick Includes: Steel wide flange beam, the use of a crane, and installation labor.	166.00 LF	0.00	48.94	609.30	8,733.34
8. 2" x 10" x 10' #2 treated pine (material only) New treated 2x10 rim joists bolted into existing foundation walls. Includes: Lumber, nails, and installation labor. Quality: Treated S-P-F #3 and better lumber.	42.00 EA	0.00	19.98	62.94	902.10
9. Install Rim joist - installation labor Labor to install new rim joist.	420.00 LF	0.00	0.88	27.72	397.32

CONTINUED - Replace

DESCRIPTION	QTY	REMOVE	REPLACE	TAX	TOTAL
10. Framing hanger - 2" x 10" or 2" x 12"	126.00 EA	0.00	14.92	140.99	2,020.91
Attach framing hangers for new floor joists to rim joist @ 16" on center around the perimeter of the floor.					
Includes: Framing hanger, nails and installation labor. Quality: 2" x 10" or 2" x 12" joist hanger.					
11. 2" x 10" lumber (1.67 BF per LF)	2,772.00 LF	0.00	3.74	777.55	11,144.83
Includes: Lumber, nails, and installation labor. Quality: S-P-F #2 lumber.					
12. Sheathing - OSB - 3/4" - tongue and groove	3,644.67 SF	0.00	2.23	609.57	8,737.18
Includes: Sheathing, nails or staples, construction adhesive, and installation labor. Quality: 3/4" tongue and groove OSB (waferboard).					
Totals: Replace				2,515.10	36,049.75

Replace Alt 1

DESCRIPTION	QTY	REMOVE	REPLACE	TAX	TOTAL
13. Footings - labor & materials - Reinforced	7.25 CY	0.00	577.25	313.88	4,498.94
Includes: Concrete, forms, stakes, #4 (1/2") deformed steel rebar, and installation labor.					
14. Reinforced concrete column	1.98 CY	0.00	295.12	43.83	628.17
Includes: Concrete, forms, ties, #4 (1/2") steel rebar tied in place at corners and 6" OC, #3 rectangular or circular formed hoops at 6" OC, and installation labor.					
15. Engineered fill (per CY)	1,080.00 CY	0.00	29.42	2,383.02	34,156.62
Includes: Engineered compactable earth, equipment, and labor to deliver, place, and compact.					
16. Concrete grade beam	13.00 CY	0.00	790.01	770.26	11,040.39
Includes: Concrete and forms					
17. Concrete slab on grade - 4" - finished in place	3,644.67 SF	0.00	5.86	1,601.83	22,959.60
Includes: Concrete, forms, and installation labor. Excludes: Slab reinforcement.					
18. Concrete slab reinforcement - #4 (1/2") - grid, 12" ea way	3,644.67 SF	0.00	3.80	1,038.73	14,888.48
Includes: Deformed steel rebar and installation labor. Quality: #4 (1/2") bar, tied in place at 12" OC each way, perimeter rebar placed 6" from each edge.					
19. General Laborer - per hour	1.00 HR	0.00	53.95	4.05	58.00
Includes time and equipment to drill dowel holes in existing stone foundation and epoxy dowel bars in place.					
20. Steel rebar - #4 (1/2")	840.00 LF	0.00	1.78	112.14	1,607.34
Includes: #4 (1/2") diameter deformed steel rebar, epoxied in place and installation labor.					
Totals: Replace Alt 1				6,267.74	89,837.54

Line Item Totals: YAC-DJ

9,587.56

137,421.56