

April 21, 2025

Mr. Matt Johnson
402 Court Street
Savannah, MO 64485

**RE: STRUCTURAL REVIEW
1215 W CHESTNUT ST
SAVANNAH, MO 64485**

JOB #2025-0858

Dear Mr. Johnson:

This letter is in regard to my visual observations of the property at 1215 W Chestnut Street, Savannah, MO. A site visit was made Wednesday, April 16, 2025, at your request and this report is for your use only. The scope of this review is to visually examine the existing facility, which includes the pump house, pool structure, concrete pool deck, waterslide and mushroom frame, to determine the cause and extent of structural damage found, and to make repair recommendations where required. Please refer to the attached plan to identify the areas of concern highlighted in this report.



No attempt was made to check components that were not readily viewable or accessible. Predicting future changes in the conditions of the structure or its components is impossible. This report is intended to provide an overview of the existing condition only and should not be used as an indicator of future performance. No expressed or implied warranties or guarantees of any kind are supplied. I would like to present my findings and these opinions regarding the facility for your information.

These visual observations were of current condition of the pool facility. No attempt was made to review components that were not readily viewable or accessible or for environmental hazards. When making visual observations of the facility 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, except for negligence on the part of the engineer, 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. Use of this report constitutes acceptance of the terms and the scope.

GENERAL

The pool facility is located on the south side of West Chestnut Street between N 14th Street and N 12th Street. The basin of the pool consists of concrete walls and concrete slab with plaster finish on the walls and floors. The pump house is constructed of concrete walls with concrete slab floor and ceiling. The waterslide supports consist of steel columns, steel baseplates and steel anchor bolts that are supported on concrete pilasters. It was reported during this visit that

the construction of the pool and pump house dates back to the early 1960s, while the waterslide and its accompanying steel mushroom feature were added around 1995.

OBSERVATIONS

PUMP HOUSE

The pump house is located on the southwest side of the facility. The main construction of the pump house consists of poured concrete walls, concrete floor slab and concrete slab ceiling. An examination of the exposed portions of the foundation walls revealed minor cracks. It is my opinion that the majority of the vertical cracks are due to the heaving and differential shifting of the subsoil beneath the concrete and to the normal shrinkage of the building material.

Horizontal cracks were noted on the west side of the center concrete wall. It appears that this section has been previously repaired, as indicated by noticeable patchwork. In my opinion, the cracks may be due to rust in the reinforced steel, which has caused the steel to expand and crack the face of the concrete. Therefore, it is recommended to remove the loose material, clean the exposed portion of the steel from the rust, then apply grout (such as hydraulic grout or similar methods) and seal the area. If it is found that the reinforcement is not rusted, please feel free to reach out to our office for further consultation.

During the pump house inspection, water leaks were noted near the bottom of the east concrete wall. At this point, it remains uncertain whether the leaks originate from underground water or from a failure in the water lines serving the pool. At this time, it is recommended to remove a portion of the exterior concrete slab that is located between the pump house and the pool, and excavate the soil located under the slab to determine the source of water behind the wall.

Further investigation of the pump house also revealed that some of the anchor bolts supporting the steel angles at the top of the wall are rusted and should be replaced with new bolts of the same size. As an alternative, new bolts of similar dimensions and diameter can be installed 3 inches away from each of the rusted bolts.



Horizontal cracks in pump house concrete wall



Water leak near west side of east pump house wall



Water leak near west side of
east pump house wall



Rusted bolts at angle on the
Wall inside the pump house

POOL DECK

During the site visit, several area of the pool floor and pool deck appeared to have shifted. Differential movement of the various portions of the slab caused by swelling and shrinkage of the clay subsoil occurs with changes in the soil's moisture content. When the subsoil absorbs water, it expands and heaves the basement floor slab and foundation walls upward distorting the framing above. As it dries, the soil shrinks resulting in some rebound or settlement. This uneven movement and distortion can appear as cracks in the concrete floor slabs. Additionally, using a steel chain to assess certain areas beneath the concrete slab reveals that some spots may be hollow. The sound produced by the chain as it traverses the surface provides a clear indication of whether the underlying area is solid or hollow.

In some areas, the vertical shifting of the slab may have affected some of the steel plates near the waterslide. It was reported that the openings around these steel plates fluctuate in size due to the slab's movement. In my opinion, it is essential to conduct a more thorough investigation regarding the hollow area and voids beneath the concrete slab pool deck. This process should involve removing the slabs to assess the underlying issues and identify the necessary repairs based on the findings. Additionally, as mentioned previously, portions of the concrete slab located on the east side of the pump house need to be removed, and the area should be examined to uncover the cause of the water leaks occurring within the pump house.



Shifting of the concrete pool deck



Shifting and cracks of the
concrete pool deck



Shifting of the concrete pool deck



Concrete deterioration at the
northeast corner of the pool deck

POOL FLOOR AND WALLS

An examination of the pool floor revealed that the concrete slab is topped with a layer of plaster. Previous repair work was observed near the deep end; however, it remains uncertain whether these patches are holding up well or if they are contributing to water leaks. Consequently, it is advisable to assess this area thoroughly to ensure that the seams between the old and new plaster are watertight.

Additionally, signs of heaving were detected on the south side of the pool floor. Unfortunately, due to the plaster finish, a direct examination of the concrete slab beneath could not be conducted at this time.



Patches of past plaster repairs near
The deep end of the pool

WATER SLIDE AND MUSHROOM

Upon inspecting the steel supports of the water slide, it became evident that several of them exhibit rusted baseplates and anchor bolts. Additionally, there are multiple cracks present in the concrete pilasters. In my assessment, the level of rust on the baseplates and steel anchor bolts of most supports exceeds acceptable limits. Merely removing the rust and applying a primer will not adequately address the issues with the majority of the supports. Some cracks in the concrete are attributable to the expansion caused by rust, while others have resulted from the shifting and movement of the pilasters. Moreover, some of the cracks can be attributed to the natural aging and deterioration of the materials used.

Water leak appears to be occurring at the mushroom column. It was reported that there are water leaks even after the water supply line to the mushroom has been shut off. Due to finish material, the source of the water leak could not be confirmed. This areas should be further reviewed and the water leaks repaired.



Water leak around
the mushroom column.



Cracks in concrete pilaster.



Rusted steel and anchor bolts
at the waterslide supports.



Rusted steel and anchor bolts
at the waterslide supports.



Rusted steel and anchor bolts
at the waterslide supports.



Rusted steel and anchor bolts
at the waterslide supports.
Cracks in concrete pilaster.

COVERED PATIO FRAME

An examination of the steel frame at the patio located on the west side of the existing building revealed several columns showing signs of rust at the bottom. Therefore, the rust should be wire brushed and removed down to bare steel and the area primed and painted. For removal of rust, follow SSPC-SP11 recommendations. Please note that this inspection did not attempt to determine the extent of the rust nor the steel capacity of the members.



Signs of rust at bottom
of steel column



Signs of rust at bottom
of steel column

CONCRETE SIDEWALK

An examination of exterior concrete sidewalk revealed several area of soil erosion below the slab. All void should be filled with compacted soil, compacted gravel or concrete.



Voids below concrete sidewalk

OPINIONS AND RECOMMENDATIONS

Based on the observations of the pool facility, it has become evident that further investigation is necessary to determine the origins of the water leaks at the pump house, understand the cause of the voids beneath the concrete slabs, and evaluate the cracks in the pump house walls. Certain areas will need to be excavated for a thorough examination to ultimately provide an engineering solution to these areas.

In my opinion, the level of rust present on the waterslide support exceeds acceptable limits and warrants immediate replacement.

In conclusion, it is my opinion that the pool, pool deck, waterslide, and mushroom feature are approaching the end of their useful lifespan. Many of these areas can be temporarily repaired to extend the lifespan of the facility by few years. However, some or all of these issues may experience similar problems in the future.

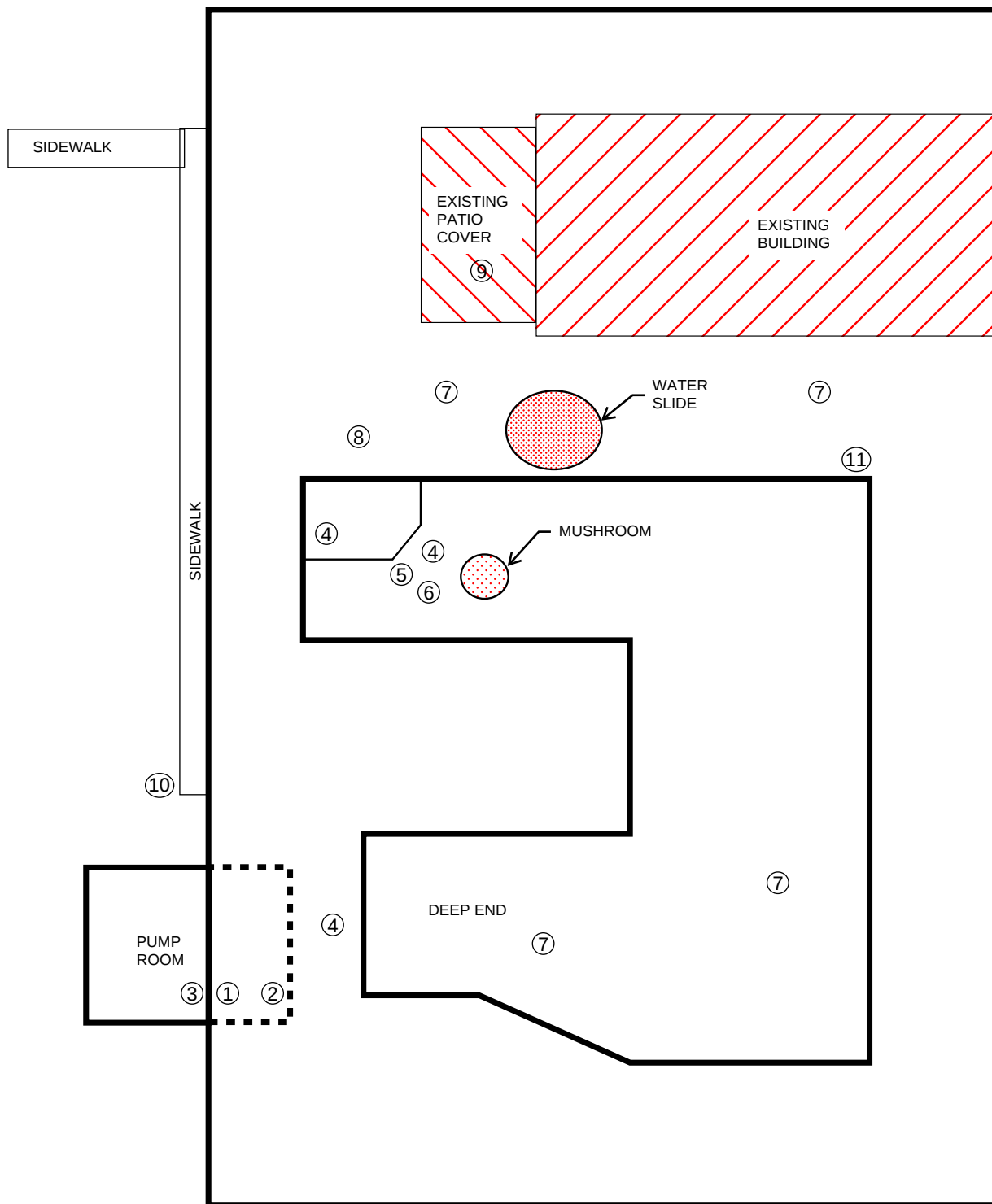
Please feel free to call if you have any questions.



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ENCLOSURES: billing invoice
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- ① Past patch in concrete. Remove and expose rebar for further review
- ② Water leaks
- ③ Rusty bolts at steel angle
- ④ Hollow sound. Voids appear below slab.
- ⑤ Cracks in concrete slab for further review
- ⑥ Water leaks at mushroom post.
- ⑦ Heaving of concrete slab.
- ⑧ Settlement of concrete slab
- ⑨ Minor rust at steel columns
- ⑩ Voids below concrete slab
- ⑪ Concrete deterioration at the pool deck