Farnsworth GROUP

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May 3, 2019

Fieldcrest Community Unit School District 6

Attn: Dr. Daniel Oakley, Superintendent

Re: Fieldcrest Middle School Wall

Dear Dr. Oakley:

This is a supplemental report to the one Farnsworth Group provided dated January 14, 2019, which is attached for reference. In that report we recommended additional field investigation which required better access to the exterior walls and the roof framing from the interior. This report provides our conclusions and recommendations following that investigation which occurred on April 5, 2019. Paige Dodson and Michael Bryant were on site for this.

Description:
Refer to the original report for a description of the building and the observed deterioration and conditions. The purpose of this effort is to get a closer look at the condition of the walls using lifts and improved access to areas to better understand the structural system and the causes of the deterioration.

At the east end of the building, the wood roof joists span in the North – South direction and bear on top of the exterior walls and interior CMU walls. In the interior of the building, there are steel beams, estimated as W16's, right above the ceiling level spanning North – South between pilasters. There is wood framing on top of the steel beams that support the wood roof joists. The roof joists span East-West between the beams.

The front masonry wall was measured for plumbness at several points along the building. This was done with a plumb bob dropped the height of the building and measuring from that line to the building face at various points along the height from a manlift. In general, the front of the building was plumb and straight with some variation of up to 1¾".

The rear or north wall was checked for plumbness above the lower gymnasium roof and was similarly found to be straight and plumb except for the upper few feet. The building has a nominal 42" parapet and it was measured that the top of this parapet has moved in toward the center of the building by up to 3" in the top 5 feet of the wall. It was also observed that the top of the parapet has an inward sweep which is consistent with the results of the plumbness check.

Conclusions and Recommendations:

After the initial inspection in January, it was thought based on observations from what could be seen inside the attic and from the gymnasium roof, that the brick on the parapet was pulling away from the building and the upper few feet were bowing outward. During this follow up visit, making use of more comprehensive observations, we no longer judge the brick to be bowing outward, but that the parapet is tilting inward. Therefore, it is our opinion that the parapet brick is not at risk of falling onto the gymnasium roof.

We believe this movement is due to long-term effects of moisture penetrating the cracks in the brick mortar and freeze-thaw cycles over many years expanding the exterior brick while the interior masonry face was protected. The expansion due to freezing water is judged to have resulted in the apparent rotation of the parapets.

We no longer believe the parapet is in danger of falling outwards, but it may continue to lean in towards the roof. We recommend the parapet be monitored, with measurements made twice a year from the roof at the pilasters along the north side of the building and the east end of the south side. Using a 4' level, set the level vertically aligned with the plumb wall 5 feet below the top of the parapet and measure the distance from the wall to the top of the level. If movement continues, reconstructing the parapet is recommended. If it is stable, continue to monitor annually to be aware of any future progression. We believe the building is safe for occupancy.

If there is anything else we can help you with, please don't hesitate to contact us.

Sincerely,

FARNSWORTH GROUP, INC.

Paige Dodson

Michael J. Bryant, P.E., S.E.
Engineering Manager
Licensed Structural Engineer
Illinois License No 081-005324
Expires November 11, 2020

Paige Dodson, P.E.
Project Engineer

View of south parapet wall from 2016 showing the parapet construction

View from inside attic space of northeast corner showing joist bearing on clay tile wall

Overall view of roof

View of roof structure and wood construction on top of steel beam