

October 8, 2021

Paul Aschenbeck
Brenham Independent School District
P.O. Box 1147
Brenham, Texas 77834

Re: Structural Engineering - Structural Observation
Brenham Junior High
1200 Carlee Street
Brenham, Texas 77833
Gessner Engineering Job Number: 21-1197

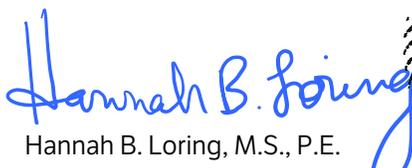
Dear Mr. Aschenbeck :

A visual observation of the Brenham Junior High structure of the above referenced building was performed by Hannah Loring, P.E. of Gessner Engineering as per your request on August 31, 2021. This observation was requested to generally review the areas of concern at the auditorium, gymnasium, and a main floor corridor. The auditory and gymnasium areas are known to have issues with the building envelope. The main floor corridor has a horizontal crack at approximately mid-height along the block wall. This report contains the observations from the observation and general recommendations for remediation, as required. A full engineering analysis of the structure was beyond the scope of this observation. The items listed are not meant to represent a total or exhaustive list of defects which may be present. Gessner Engineering neither extends nor implies any warranty as a result of this observation or any repair performed upon this building. The results of this observation are provided in the following report and are provided for the exclusive use of Paul Aschenbeck and Brenham Independent School District.

We trust that this report is responsive to your project needs. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,

GESSNER ENGINEERING, LLC F-7451


Hannah B. Loring, M.S., P.E.




Thomas Gessner, P.E.



BACKGROUND

The Brenham Junior High building was constructed in 1963. Record documents for the 1963 portion of the building were not available to Gessner Engineering at the time of the observation; however, it is anticipated that the structure is generally constructed of reinforced cast-in-place and pre-cast concrete construction with load bearing and in-fill concrete masonry unit walls. The foundation is assumed to be elevated structural slab supported on deep founded piers, similar to the record documents for the 1983 building annex that were available for review. The two (2) story structure is constructed such that the finish floor elevation of the auditorium (two-story volume), gymnasium (two-story volume), cafeteria (single-story volume), and several classrooms (single-story volume) are below grade.

It is understood that the auditorium and gymnasium are known to have envelope issues. Each area occupies a two-story volume of the building with the finish floor elevation below finished grade.

It was reported that the main floor corridor with a horizontal crack in the unit-block wall has been present for over a decade, as presented by Mr. Paul Aschenbeck.

OBSERVATIONS

Gessner Engineering reviewed the auditorium, gymnasium, and main floor corridor adjacent to the boy's restroom at the direction of Brenham Independent School District (ISD) to establish if any of the observed areas pose an immediate safety concern or otherwise provide a general review of the defects noted and recommendations for repairs to address the known issues.

Auditorium

Gessner Engineering made the following observations with regard to the auditorium:

- Water infiltration through the building envelope is likely occurring at both the ground and ceiling level. Water staining was noted on the walls and the ceiling tiles along the west exterior wall. Oxidation of exposed steel elements was noted at the deck edge angle of the balcony adjacent to the exterior wall. In general, the finishes along the base of the wall at the exterior wall are damaged and deteriorated from long term moisture infiltration.
- General drainage along the west side of the auditorium is poor and likely contributing to the envelope issues. Voids were noted under the mow strip along the west wall and the site slopes towards the building; likely exacerbating the soil loss issue. The dowels between the flatwork and building have sheared as a result of the movement of the mow strip and loss of supporting soils.
- The downspouts at the exterior are piped underground, but are generally in need of testing and maintenance to establish if they are secure or contributing to the site drainage issues. Multiple downspouts in this location are noted to be disconnected above grade from the piped underground portions.

Gymnasium

Gessner Engineering made the following observations with regard to the gymnasium

- Signs of water infiltration were present through the north exterior wall and degraded interior floor finishes. A portion of the gym floor was removed due to the amount of water damaged below the north basketball hoop.
- Cracked and spalling concrete were noted at the north-west exterior corner column and north exterior column supporting the roof of the covered entrance.

- Diagonal cracking has formed along the mortar joints of the north exterior masonry wall (noted from the building interior)
- Poor joint maintenance was evident at the flatwork at the north exterior
- The grade along the sloped edge of the north flatwork does not appear to be well maintained. Water that drains into this unvegetated, open grade area appears to drain back towards the building and into the corner of the covered entry and flatwork.
- The capped gutter end at the covered entry near the north exterior column is in need of maintenance and repair. Water escaping from this gutter has caused staining of the adjacent concrete. Cracked and spalling concrete is noted immediately adjacent to this staining and it is possible that water infiltration is causing oxidation of the reinforcing steel in this area.
- The mow strip along the west wall has settled several inches, likely a result of soil loss. The dowels between the flatwork and building have sheared as a result of the settlement of the mow strip.

Corridor Wall

Gessner Engineering made the following observations with regard to the horizontal crack in the corridor wall adjacent to the boys' main floor restroom:

- Slight bowing was observed, along with the horizontal crack at approximately mid-height of the corridor wall. The crack was reported to be static and unchanging over the past ten-years.
- No other immediate signs of damage or distress were noted in this area

RECOMMENDATIONS & CONCLUSIONS

Gessner Engineering was unable to identify an immediate cause of the corridor wall cracking based on visual evidence at the time of this observation. However, due to the static (unchanging) state of the crack over an extended period of time, it is the opinion of Gessner Engineering that this defect does not pose an immediate safety risk. The condition could be remediated through reconstruction by a mason; however, this repair is considered strictly for aesthetic purposes.

The site drainage and security of below grade stormwater systems needs to be further investigated to establish if the system is secure. It is the opinion of Gessner Engineering that a leak in this system is likely and is resulting in the soil loss and subsequent settlement of the mow strip along the west wall. It is also likely that this system is contributing to the envelope issues occurring at the auditorium and gymnasium.

The envelope issues at the auditorium appear to occur at both the roof and floor levels based on staining patterns at the building interior. Envelope issues at the gymnasium are most notable at the floor level; however, infiltration of water from the roof should not be ruled out as a potential contributor to the observed issues at this time. A full review and testing of envelope systems at the roof to identify potential areas of water infiltration is recommended. For the below grade portions of the structure, repair of the envelope would require the excavation of site soils down to the foundation and application of exterior barrier systems to mitigate the infiltration of groundwater through the below grade wall. Similar efforts would be required along the length of the west wall and the portion of the north wall, known to have water infiltration issues. Additionally, subsurface drains should be installed around all below grade sections. General

improvement to site grading and drainage to promote positive drainage away from the structure and reconstruction of the mow strip would complete this effort.

To effectively identify and remediate the various potential building envelope issues and discuss the cost and reliability of the various available envelope repair methods available, Gessner Engineering recommends consulting with an envelope specialist. Recommendations for specialists are available upon request.

While no immediate structural life safety concerns were identified during this observation, remediation to the site drainage and envelope issues are recommended to secure the building envelope and conserve the lifespan of the structure. If left unresolved, continued deterioration of the structure, the site, and building finishes will occur and could result in portions of the building falling into disrepair.

It has been a pleasure to provide you with this information. If you have any questions with this report or any of the recommendations provided here, please contact us.

