

**01.10.20\_revised**

Mr. Gaurav Agarwal  
Senior Project Manager, Design & Construction  
FBISD  
2323 Texas Parkway  
Missouri City, Texas 77489

**Re:** FBISD Package 035 – Structural Repairs\_ Clements Field House Recommendations  
JQ Project No.: 4190062

Dear Mr. Agarwal:

The purpose of this letter is to document the basis for JQ Infrastructure LLC's (JQ's) suggested remedial actions for the scope of structural repairs at Clements Field House located at 4200 Elkins Road, Sugar Land, Texas. JQ was provided the following documents to review prior to performing our initial site observation on April 3, 2019:

- "High School Three Field House" structural drawings prepared by Walter P. Moore and Associates, hereafter note as WPMA, dated November 1982 (sheets S1.1, S2.1, S2.2, S3.1 and S3.2).
- Assessment Letter Re: "Clements Field House at Clements High School" prepared by AG&E Structural Enginuity (John Kubala, P.E.), hereafter noted as AG&E-SE, dated March 5, 2018.
- "Geotechnical Engineering Study Slab Movement Investigation" report prepared by Paradigm Consultants, Inc. (Ray Meyer, P.E.), hereafter noted as PCI dated August 6, 2019.

Based on our review of the structural drawings prepared by WPMA, the building superstructure foundations are composed of drilled under-reamed concrete piers ("belled piers") founded approximately six (6) feet below grade (at the time of construction). The concrete masonry unit (CMU) partition walls are primarily supported by stiffened shallow slab "ribs," or deepened monolithic beams approximately 8-inch in width and 14-inch in depth (measured from top of concrete slab). The interior beams span to belled piers at beam intersections and intermediate spacings approximately 15-feet on-center. The interior beams are not isolated from the subgrade; however, the exterior grade beams were detailed to provide a 4-inch deep void space.

According to the geotechnical study performed by PCI, the soils for approximately ten (10) feet below the finished floor consist of highly expansive clay soils (plasticity index greater than 35). Furthermore, based on JQ's observations, it appears that there are variations in the magnitude of the observed distress to the building finishes when comparing to the photographs provided in the assessment letter prepared by AG&E-SE, which document observations approximately 14 months prior. This illustrates that the foundations are still susceptible to differential movement caused by influences of the subgrade adjusting

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to moisture variations in its constitution.

Although JQ could not verify signs of distress in the superstructure because the structure is concealed in a majority of the building, the concern of such movement was reported by AG&E-SE in their report. Based on the information available, and the findings of the geotechnical study it is evident that the building foundations (ground floor, superstructure foundations, and exterior-clad wall supports) are bearing on foundations that are still in the active zone of influence for differential movement related to shrinking and swelling of the highly plastic clays. Therefore, **JQ recommends to replace the building in its entirety and install new foundations designed in accordance with recommendations from a site-specific geotechnical study to perform within industry standards of tolerable movement.**

If you have any questions, please contact me.

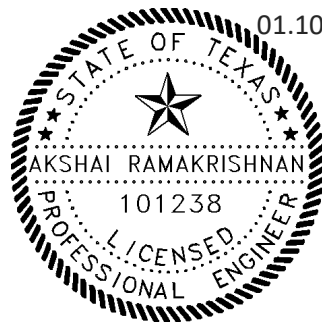
Sincerely yours,

JQ Infrastructure, LLC

Texas Registered Engineering Firm: 7986



Akshai Ramakrishnan, PE  
Principal



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