

# EXISTING HIGH SCHOOL: GYM UPPER BLEACHER MEZZANINE STRUCTURAL REPAIR

- 7/12/21: RTA received a call from district facilities staff alerting us to some cracking the gymnasium upper bleacher mezzanine slabs. Brian Buckner with RTA made a visit to WCHS that morning to observe and document the conditions. Photos were sent to structural engineer Charles Haynes with Structural Design Group as well as verbal communication describing the conditions over the phone. It was determined that Mr. Haynes needed to make a site visit to investigate. That afternoon, Mr. Haynes sent an email to RTA making the recommendation to keep the above-slab bleacher area and under-slab areas closed off until further notice. This was immediately communicated to district staff.
- 7/14/21: Mr. Haynes made a site visit to investigate the conditions in person. Mr. Haynes sent an email reiterating that these areas need to be off-limits until some calculations and further review are conducted.
- 7/16/21: After running calculations and further analysis, Mr. Haynes recommended that the upper levels continue to be blocked off with zero occupancy and bleachers remain fully retracted, but that the district could begin using the weight room and storage spaces (spaces below the slab) again provided they adhere to the precautions above slab. The existing slab and joists were determined to be overloaded primarily due to the point loads from the wheels of the retractable bleacher system.

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## REPAIR OPTIONS BEING REVIEWED:

- 1. Repair existing cracks using epoxied FRP (fiber reinforced polymer) AND provide a bleacher system that allows for uniform distribution of loads as opposed to the current point loads of the bleacher wheels.**

RTA contacted the bleacher manufacturer to determine the feasibility of modifying the existing bleacher system to create uniform loading. The bleacher manufacturer contacted their engineers and determined that it was not feasible. New fixed bleachers were also not feasible as they also bear on the same wheels as the retractable versions. This has led the design team to investigate options for creating fixed stepped platforms created with metal stud framing that creates the necessary uniform loading. These platforms would have bleacher seats attached to them.

- 2. Repair and reinforce the existing structure such that it can support the current point loads of the retractable bleachers.**

Repair damaged joists and slab with fiber-reinforced polymer (FRP) system. Install new continuous steel beam perpendicular to joist framing along the underside of the joists, extending the full-length of the space. New steel columns and footings are required to support the new beam. Footings are installed beneath the existing slab-on-grade and the slab is replaced at footing locations.

At the new steel beam location, install partial-length concrete beams in the void space between existing pan joists to increase the structural capacity of the joists. Concrete beams with reinforcing are formed to underside of slab, and the concrete is placed from the existing floor above by drilling holes through the slab.