

**Harrison-Hamnett, P.C.**  
Consulting Structural Engineers

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**CONDITION SURVEY**

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From: Forrest W. Harrison, P.E.  
Harrison-Hamnett, P.C.

Date: August 31, 2023

Re: Structural Condition Survey  
Monroe Middle and High School  
Stadium Bleachers and Interior Pull-Out Bleachers

As per your request, personnel from our office visited the referenced site to perform a walk through structural condition survey of the home and away stadium bleachers at the football field, the gymnasium pull-out bleachers in the middle school, the pull-out bleachers in the high school main and auxiliary gymnasium and the pull out stands in the classrooms adjacent to the auditorium. The purpose of the visit was to identify structural defects and obtain information to assess the overall condition of the bleachers. Photographs were taken and are enclosed.

Description of the Structural System of the Bleachers

The football home side bleacher's construction consists of a steel frame of A588 steel, which is a corrosion resistant, high strength, low-alloy steel. The steel forms a protective layer of corrosion on its surface when exposed to the weather. The steel frame consists mostly of channel shapes and angles. The seating consists of aluminum benches and aluminum floor boards. At the time of our last survey, there were wood seating and floor boards for portions of the bleachers. All of these wood boards have been replaced with new aluminum planks. The bleacher support columns bear on individual concrete pier foundations.

The football away side bleacher's construction consists of steel angle framing. The seating and the flooring consist of all aluminum benches. The frames supporting the seating bear on a concrete pad.

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The soccer bleacher's construction consists of angle framing. The seating and the flooring consist of all aluminum benches. The frames supporting the seating bear on asphalt paving.

The middle school gymnasium pull-out bleachers consist of steel angle framing on slides and moveable wheels to allow them to be extended for usage. The back of the structure is attached to the wall and the floor. The seating consists of wood boards and the flooring consists of plywood.

The high school gymnasium pull-out bleachers consist of steel angle framing on slides and moveable wheels to allow them to be extended for usage. They are powered in and out by a motorized set of wheels. The back of the structure is attached to the wall and the floor. The seating consists of individual plastic seats mounted to benches and the flooring consists of plywood. The auxiliary gym bleachers are similar to the main gym but are manually operated.

The classroom stands adjacent to the auditorium are similar to the bleachers in the gymnasium with the exception of having student seating and folding desks.

Discussion of Structural Defects Identified and Remedial Solutions

Football Home Side Bleachers

The main structure is in good condition. All of the aluminum seating and floor boards are in good condition. There is no remedial work required at this time.

Football Away Side Bleachers

The main structures and the aluminum seating and floor planks are in good condition. There is no remedial work required at this time.

Soccer Bleachers

The structures for all of the bleachers are in good condition. There is no remedial work required at this time.

Middle School Gymnasium Pull-Out Bleachers

The structure is in good condition. School personnel mentioned that they are having difficulty storing the bleachers on one side of the gymnasium. This is due to a missing steel lever that unlocks the sliding mechanism as the bleachers are pushed into the storage position. See attached photographs 1 and 2. Photograph 1 shows the undamaged locking mechanism lever and photograph 2 shows the bracket with the missing steel lever piece that is activated as the bleachers are pushed into the storage position. This likely occurred due to fatigue over time. This condition is not a structural concern but makes the bleacher storage more difficult. A new piece of steel will need to be bolted to the bracket shown in photograph 2 to match the undamaged brackets or the bracket may be replaced by a bleacher manufacturer/installer if the



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parts are still available. This locking mechanism can be activated manually until the bracket can be repaired or replaced.

There are deteriorating railing base supports on one end of a bleacher (Photograph 3 and 4). It is recommended that the bolts supporting the railing bracket be removed, a new piece of 3/4" plywood x 24" long be glued with construction adhesive and bolted to the top of the existing floor plywood with 1/4" diameter carriage bolts and washers underneath +- 2" from the end of the plywood opposite of the railing. The original railing bracket bolts are to then be reinstalled through the new and existing plywood. Verify no bolt projections below the flooring will interfere with the operation of the bleacher.

**High School Gymnasium Pull-Out Bleachers**

1. The steel frames are in excellent condition. No remedial work is required at this time.
2. The floor plywood is in excellent condition. No remedial work is required at this time.

**High School Auxiliary Gymnasium Pull-Out Bleachers**

The plastic seating and plywood floor are in excellent condition. No remedial work is required at this time.

**High School Retractable Desks (Adjacent to auditorium)**

The seating and plywood floors are in excellent condition. No remedial work is required at this time.

**Summary and Conclusion**

It is our opinion that the home side stadium bleacher structure is in good condition. With regular maintenance and structural condition surveys, the remaining life expectancy may exceed 10 years. The seating and flooring aluminum planks are in good condition. No remedial work is required at this time.

The football away side bleachers and the soccer bleachers are in good condition. No remedial work is required at this time.

The middle school gymnasium bleachers require remedial work as described above. The bleachers may continue to be used but the plywood railing support indicated above is to be fixed as soon as possible. The mechanical moving parts of these bleachers were not inspected by our office for adequacy nor was it in our scope of work. This work should be completed by a manufacturer or installer contractor for this type of moveable bleacher.

The interior bleachers and retractable desks are all in excellent condition and do not require any remedial repairs at this time.

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It must be noted that our report is for structural concerns and effects only. This report was limited to evaluating the structural condition. It was not requested to perform calculations to determine code compliance with respect to loading conditions. It is not within our expertise or knowledge to address architectural issues, i.e., seating requirements, guard rails, walls, surface abrasion conditions, handicap access, stair characteristics, etc. Our responsibility is for the safety of the structure to support the anticipated loads and insure that the structure has not been compromised over time by damage or deterioration.

If you have any questions, please do not hesitate to contact our office.



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Forrest W. Harrison, P.E.  
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**Photographs**



Photograph 1 – Undamaged locking mechanism with lever – Middle School



Photograph 2 – Damaged locking mechanism lever – Middle School

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Photograph 3 – Deteriorating railing support – Middle School



Photograph 4 – Deteriorating railing support – Middle School

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