ABHT
STRUCTURAL ENGINEERS

# PPS - Jefferson High School - Grandstand Assessment


South View of Grandstand

ABHT Project #11516

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Submitted to:

Portland Public Schools
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## EXECUTIVE SUMMARY

Portland Public Schools was concerned that the Jefferson High School football field grandstands at the Bleacher Rows/Terrace Levels was being compromised structurally due to water damage. The goal of ABHT's work was to review existing drawings and perform site observations in order to assess areas of the grandstand which had potentially been damaged due to water. Our assessment was based on the following:

1. Review of existing as-built drawings (drawing #3) dated June 28, 1941, that ABHT was provided from Portland Public Schools (PPS).
2. Multiple site observations were performed by representatives of ABHT Structural Engineers between the months of April and June 2016.
3. Limited calculations/analysis were performed.

## BUILDING SUMMARY

The Jefferson High School football field grandstands were constructed circa 1941. While PPS had contracted us to mainly review the Bleacher Rows/Terrace levels, we did also perform a cursory review of other areas of the Grandstand as well. Attached drawings have been provided within this assessment to provide a better understanding of the existing structure, observations, and recommendations. The grandstand existing structure has been shown on the attached drawings. The attached drawings to this assessment are as follows:

DRAWING S1 - OVERALL FOUNDATION PLAN
DRAWING S2 - OVERALL FRAMING PLAN
DRAWING S3 - OVERALL BLEACHER PLAN
DRAWING S4 - ENLARGED BLEACHER PLAN
DRAWING S5 - ENLARGED BLEACHER PLAN
DRAWING S6 - BLEACHER SECTIONS
DRAWING S7 - OBSERVATIONS/RECOMMENDATIONS TABLES

Please note that the all recommendations and details noted within this report and within the attached drawings are preliminary and are not meant to be used for construction.

## BLEACHER ROWS/TERRACE LEVELS SUMMARY

During our review of the bleacher rows, we noticed many varying conditions of weathering/damage. We grouped our areas of concern into different categories as indicated on the Overall and Enlarged Bleacher Plans (Drawings S1 through S5) and the Bleacher Observations/Recommendations Table shown on Drawing S7. All observations and recommendations have been indicated within the attached drawings.

Each bleacher row is composed of 6" thick cast-in-place concrete risers and 3" thick cast-in-place concrete treads/rows. The risers and treads/rows have been cast integrally. The risers and treads span approximately to 17'-0" to cast-in-place board formed reinforced concrete beams. The beams span approximately 14 to 15-ft from a front concrete plinth with continuous concrete stem wall to an interior concrete column with isolated concrete footing. The beam then spans another 14 to 15-ft from the interior concrete column to a rear concrete wall with integral concrete pilasters. The aluminum seat are supported on the cast-in-place concrete treads/rows with steel or aluminum Z-clips which bear on the treads/rows and are attached with anchors. Please reference the attached drawings for more information.

## STRUCTURAL OBSERVATIONS/RECOMMENDATIONS

All of our structural observations and recommendations have been noted within the attached drawings.

## REPORT INFORMATION PROVIDED

This assessment contains the following information:

- **Figures/Photos**

  **Bleacher Figures**
  Observation photos of the bleacher structure.

  **Concrete Structure Figures**
  Observation photos at the concrete level of the structure.

  **Wood Figures**
  Observation photos of the wood structure.

- **Drawings S1 through S7**
  Indicated within the building summary section.

## DISCLAIMER

*No liability of the existing structure is assumed based on the issuance of this assessment. Due to the limitations of this assessment and the fact that not every area of the grandstand was reviewed, it is possible that other issues exist. Limitations of this needs assessment include: observations only readily available to view and limited calculations/analysis performed. Guarantees cannot be made that construction or engineering problems, concealed or otherwise, could exist.*

# BLEACHER FIGURES

**FIGURE B1A: MAJOR SPALLING IN CONCRETE**

**FIGURE B1B: MINOR SPALLING IN CONCRETE**

**FIGURE B2A: MAJOR CRACKING IN CONCRETE**

**FIGURE B2B: MINOR CRACKING/SURFACE DETERIORATION IN CONCRETE**

**FIGURE B3: RUSTED ANCHOR BOLTS**

**FIGURE B4: MISSING BOLT AT SEAT BRACKET**

**FIGURE B5: RUST AT PRESS BOX**

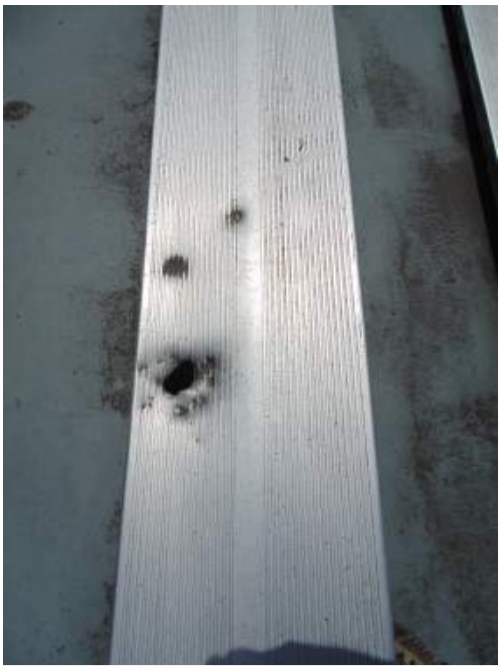

**FIGURE B6: DAMAGED METAL BENCH**

**FIGURE B7: RUSTED STEEL CONNECTIONS**

**FIGURE B8: DAMAGED/MISSING FINISH**

**FIGURE B9: DAMAGED SEAT BRACKETS**

# CONCRETE STRUCTURE FIGURES

**FIGURE C1A-1: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1A-2: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1A-3: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1A-4: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1A-5: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1A-6: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1A-7: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1B-1: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1B-2: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1B-3: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1C: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1D-1: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1D-2: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1D-3: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1D-4: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1D-6: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C1E: CRACKING/SPALLING IN CONC. GIRDER**

**FIGURE C2A: CRACKING/SPALLING IN CONC. COLUMN**

**FIGURE C2B-1: CRACKING/SPALLING IN CONC. COLUMN**

**FIGURE C2B-2: CRACKING/SPALLING IN CONC. COLUMN**

**FIGURE C2B-3: CRACKING/SPALLING IN CONC. COLUMN**

**FIGURE C2C: CRACKING/SPALLING IN CONC. COLUMN**

**FIGURE C2D: CRACKING/SPALLING IN CONC. COLUMN**

**FIGURE C2E: CRACKING/SPALLING IN CONC. COLUMN**

**FIGURE C2F-1: CRACKING/SPALLING IN CONC. COLUMN**

**FIGURE C2F-2: CRACKING/SPALLING IN CONC. COLUMN**

**FIGURE C3A: CRACK IN CONC. WALL**

**FIGURE C3B: CRACK IN CONC. WALL**

**FIGURE C3C: CRACK IN CONC. WALL**

**FIGURE C3D-1: CRACK IN CONC. WALL**

**FIGURE C3D-2: CRACK IN CONC. WALL**

**FIGURE C4A: SPALL IN CONC. WALL**

**FIGURE C4B: SPALL IN CONC. WALL**

**FIGURE C5: SPALLING/CRACKING IN STEM WALL**

**FIGURE C6A: SPALLING/CRACKING/EXPOSED STEEL ON UNDERSIDE OF BEAMS**

**FIGURE C6B: SPALLING/CRACKING/EXPOSED STEEL ON UNDERSIDE OF BEAMS**

# WOOD FIGURES

**FIGURE W1: WOOD DETERIORATING AT PRESS BOX**

**FIGURE W2: WOOD CANOPY ISSUES**