Kauffman Stadium Assessment

JCSCA + Burns & McDonnell

This document contains information pertaining to the condition of Kauffman Stadium as documented by the Jackson County Sports Complex Authority (JCSCA), including descriptions, conditions, and exhibits which have been reviewed by Burns & McDonnell and documented in this report.
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PURPOSE AND SCOPE

Purpose
The Kansas City Royals organization has a lease with the Jackson County Sports Complex Authority (JCSCA) that requires the organization to maintain Kauffman Stadium to a level consistent with a First-Class MLB Baseball Stadium. The purpose of this study is to report the overall condition of Kauffman Stadium and the immediate environs to determine if the team is upholding their lease agreement.

Scope
Burns & McDonnell, in conjunction with the JCSCA, has developed a Facility Assessment Report that reviews and documents the stadium condition. During 2022, the Jackson County Sports Complex Authority conducted an inspection of every space in Kauffman Stadium. Each room was carefully examined and documented using iPad technology (Fuze Inspections mobile application by Evoco Inc.) for the walkthrough. This application allowed the Jackson County Sports Complex Authority to build a database containing photos, condition ratings, and an inventory of building elements in each room. These elements included: a rating of overall room, electrical components, mechanical components, and various pieces of equipment, including, a listing of the type of floors, walls, and ceilings in each room. Checks of mechanical and plumbing equipment, including, life safety systems, such as 24 hour monitored control rooms and fire suppression systems were also completed. Burns & McDonnell reviewed the database, interviewed Kansas City Royals staff and received maintenance records. This report is based on the above review in conjunction with on-site evaluations by Burns & McDonnell engineers and architects.

Burns & McDonnell’s scope is limited in nature and did not include an entire facility room-by-room inspection or evaluation. An on-site walk through of the stadium and the immediate environs was performed by Burns & McDonnell’s engineers and architects to spot-check rooms and areas, comparing the overall conditions reported in the Jackson County Sports Complex Authority’s condition reports to the actual conditions observed. Additionally, Burns & McDonnell has provided recommendations for observed maintenance issues that may need to be rectified in a timely manner.
EXECUTIVE SUMMARY

General Description

Kauffman Stadium is located at One Royal Way in Kansas City, Missouri. The renovation, completed in 2010, was intended to enhance the fan’s game day experience, increase revenue generation, and improve the day-to-day operations of the Kansas City Royals and other users of the facility. The stadium holds approximately 38,000 fans and offers amenities such as an outfield concourse, kids’ area, bars, restaurants, hall of fame/conference center, and various other spaces geared towards large scale entertainment.

General Condition

In general, Kauffman Stadium and the immediate environs were observed to be in satisfactory condition. It is apparent the Kansas City Royals have performed the ordinary cleaning and maintenance obligations consistent with a First-Class MLB Baseball Stadium.

Minor physical deficiencies were observed throughout various locations within Kauffman Stadium and the immediate environs. Such deficiencies are expected in such a large facility and typical of a high-use facility. Most deficiencies can be easily addressed by the Kansas City Royals through standard maintenance procedures.

Recommendations

The final section of this document, labeled “Summary of Recommendations” includes recommendations for the deficiencies observed for each building or site category. Most observed deficiencies are generally minor and may require attention in a timely manner. Critical, more hazardous issues are less frequent, and the level of importance has been noted in the document to reflect the need for a resolution.

KC Royals Response Plan

The Kansas City Royals have developed a response plan to rectify the deficiencies observed by Burns & McDonnell this year. This plan includes the location of each deficiency, an action to correct or maintain the item of concern, and a date for which each item is to be addressed. This report can be found as "Exhibit A" attached to the end of this document.
Site Flatwork

Kauffman Stadium is comprised of a significant amount of paved area within the concourse. These paved areas serve mostly as access walkways for pedestrians to traverse the stadium grounds, both inside and outside the security fencing. In addition to the walkways, stairs, curbing, and retaining walls make up the site flatwork. Overall, the site flatwork at Kauffman Stadium was observed to be in satisfactory condition, apart from a few mild site defects. Figure C-1.1 and Figure C-1.2 shows an example of site pavement cracking.

![Figure C-1.1](image1.jpg) **Figure C-1.1**: Star Cracking at Column Foundation  
**Location**: Outfield Plaza

![Figure C-1.2](image2.jpg) **Figure C-1.2**: Concrete Cracking  
**Location**: Unknown

Standing water (in relative low points) was a common site defect observed. Figure C-2 displays an area of concrete adjacent to a grassed area that is not draining effectively.

**Figure C-4.1, Figure C-4.2, and Figure C-5** portray other examples of walking surfaces that are trapping water. A puddle in a doorway can be a slipping risk. Additionally, sitting water at the base of a wall can infiltrate the material and over time, wear on the wall, especially as freeze/thaw conditions arise. This concern is valid also in **Figure C-3.1, Figure C-3.2, and Figure C-3.3**. Ponding inside of the Janitor’s Closet has led to a seepage from the interior of the room to the exterior façade. This door was open at the time of the assessment.
Figure C-2: Water Ponding
Location: Near Gate A

Figure C-3.1: Water Seepage
Location: Janitor’s Closet (J251)

Figure C-3.2: Water Ponding in Janitor’s Closet
Location: Janitor’s Closet (J251)

Figure C-3.3: Room Name Plate
Location: Janitor’s Closet (J251)
Figure C-4.1: Concession Stand, Holding Water  
**Location:** Upper Concourse Concessions Stand

Figure C-4.2: Concession Stand, Holding Water  
**Location:** Upper Concourse Concessions Stand

Figure C-5: Water Ponding  
**Location:** Women’s Restroom, Around Section 216
Other items of aesthetic concerns are shown in Figure C-6, as rusted metal discoloration has traveled down the face of the concrete wall.

![Figure C-6: Concrete Discoloration Due to Eroded Metal](image)

**Location:** Outfield, Upper Concourse

Other site appurtenances on site were evaluated, this included fencing, decorative walls, hand railings, light poles, and drainage structures. Minor site defects were observed, most of which was deemed to be in acceptable condition.
A minor item that was raised as a concern during the assessment walk was the existence of tripping hazards. Figure C-7 shows a particular intersection of concrete that could be a tripping hazard. Additionally, Figure C-8 shows an eroded step edge in the H&R Block Private Suite which could also pose a tripping hazard.

Figure C-7: Tripping Hazard, Uneven Pavement Intersection
Location: Adjacent to Miller Lite Fountain Bar
Figure C-8: Eroded Step Edge
Location: H&R Block Private Suite Stairs
Site features that allow access to areas of the stadium were in mostly acceptable condition. A few site defects include the rust on the elevator from the underground to the ground level/field level, as shown in Figure C-9.1 and Figure C-9.2.

![Figure C-9.1: ADA Elevator](image1)

**Location:** Adjacent to Dugout

![Figure C-9.2: ADA Elevator](image2)

**Location:** Adjacent to Dugout
In the upper concourse, on the first base-side, there was an ADA watching platform that was surrounded by metal gates. These gates and the protruding column provide a tight window for a wheelchair, as seen in Figure C-10. This access point to the ADA watching platform should be reviewed for wheelchair accessibility.

Figure C-10: ADA Seating Area Fence
Location: Upper Concourse
In the underground passageway near the dugout, some cable management is needed. No items should be hanging off the cable tray, as shown in Figure C-11.

![Figure C-11: Cable Management Needed](image)

**Location:** Tunnel by Dugout

**Landscaping and Appurtenances**

Various species of native planting and grass can be found between walkways and within planting beds surrounding the stadium. Landscaping around the stadium improves aesthetic appeal of the facility and provides visual breaks within the otherwise largely paved surface. Overall, the landscaping features were observed to be in acceptable condition. General landscaping maintenance operations should be continued.
Structure

The substructure is primarily concrete drilled piles with pile caps. Cast-in-place (CIP) grade beams are located around the perimeter and throughout the foundation system. CIP mat foundations support the stair and elevator core walls and CIP single spread footings also exist for lighter loaded structures. Floating slabs-on-grade exist throughout the facility.

No significant settlement of the structure was observed. The slab-on-grade is primarily in satisfactory condition. No major cracks or spalling of the concrete slab-on-grade was observed. There was some water damage observed in the underground tunnel which connects Kauffman to Arrowhead Stadium, as shown in Figure S-1.

![Figure S-1: Water Damage](image)

**Location:** Underground tunnel connecting Kauffman & Arrowhead
The original superstructure is primarily cast-in-place (CIP) reinforced concrete columns and walls for the vertical support system with reinforced concrete pan joist slab system. During major renovation stages, additions were constructed which consisted primarily of CIP reinforced concrete walls and steel wide flange columns. Other vertical support systems include Hollow Structural Section (HSS) columns and concrete masonry (CMU) load bearing shear walls.

The Plaza level consists of a suspended reinforced concrete slab/beam system. Other framing systems include a light-weight slab-on-foam fill bearing on suspended concrete slab and composite deck supported by steel wide flange beams. The Broadcast, Writing Press and Loge level primarily consists of light weight concrete composite deck supported by steel wide flange beams. Main Roof and Outfield Roof levels primarily consist of steel wide flange and Hollow Structural Section (HSS) beams supporting standing seam metal roof deck. This level also consists of metal roof deck supported by steel wide flange beams. The scoreboard consists of a mixture of steel wide flange beams, Hollow Structural Sections (HSS) tubes and steel angles. The floor system is steel grating.

While some cracking and spalling was observed, the original reinforced concrete columns and walls are in satisfactory condition. However, there were multiple cases where the steel reinforcing was exposed, as show in Figure S-2, Figure S-3.1, and Figure S-3.2. In Figure S-2 the vertical column and wall surfaces are flat and smooth. Concrete patchwork of the original structure was observed to be flat and smooth and is in satisfactory condition as well. The expansion joints at the original superstructure to the renovation superstructure are in satisfactory condition. No deterioration was observed. Conversely, further review of structures in Figure S-3.1 and Figure S-3.2 is needed.

The original reinforced concrete pan joist slab systems are currently in satisfactory condition. No major cracks or widespread spalling was observed.
Figure S-2: Exposed Reinforcement
Location: Typical Outdoor Seating

Figure S-3.1: Support Frame Deterioration
Location: Looking Out From H&R Block Private Suite

Figure S-3.2: Support Frame Deterioration
Location: Middle Concourse
Figure S-4: Rusted Metal in Support Frame  
**Location:** Middle Concourse

Figure S-5 shows a horizontal crack along a support beam, above where it appears two towels are placed into holes in the concrete. Further south, an equipment box is hanging from its supports on the horizontal beam.

Figure S-5: Support Frame Deterioration  
**Location:** Looking Out From H&R Block Private Suite
More exterior structural members showed different signs of weathering. Helix Ramp columns at Gate D were missing caulk, as shown in Figure S-6. Horizontal cracking was seen on the upper concourse wall near a helix ramp, as shown in Figure S-7.

Figure S-6: Support Column Caulk Deterioration  
**Location:** Gate D

Figure S-7: Wall with Horizontal Cracks  
**Location:** Upper Concourse Near Helix Ramp
The reinforced concrete walls of the renovation stage are in satisfactory condition. No major cracks or spalling was observed, and the vertical wall surface is flat and smooth. The steel beams and connections of the renovation stage are generally in satisfactory condition. No corrosion or deflection was observed.

Handrails and handrail anchorage was inspected in various locations throughout the stadium. It was observed that handrails were completely missing from the stairs shown in Figure S-8. It is unknown if they were missing or just in the process of being replaced prior to the start of the season.

![Figure S-8: Missing Handrail](image)

**Location:** Miller Lite Fountain Bar Deck
Façades

Kauffman stadium incorporates a variety of finish materials that are used in the composition of the exterior façade. The primary surface materials include structural concrete, insulated metal panel, curtainwall, and patterned perforated metal panels on galvanized steel structure.

Stone veneer and glass storefront systems are utilized extensively along the base of the stadium, in addition to miscellaneous structures such as a metal entry canopy, gates, and fencing.

All facades, in general, appear to be in satisfactory condition. Glass storefronts and curtainwall systems appear to be in satisfactory condition. Aluminum frame and mullions were observed to be free of staining, fading, or degradation of any kind. Seals and flashing around storefront appear to be in satisfactory condition.

Masonry cladding systems appear to be in satisfactory condition. No chipping or staining of the stone or grout was observed.

Glass storefront systems appear to be in satisfactory conditions. Aluminum frame and mullions were observed to be free of staining, fading, or degradation of any kind. Seals and flashing around storefront appear to be in satisfactory condition.

Additionally, internal storefront systems appear to be in satisfactory conditions. Aluminum frame and mullions were observed to be free of staining, fading, or degradation of any kind. Seals and flashing around storefront appear to be in satisfactory condition.

Insulated metal panels systems were observed to be in satisfactory condition. In general, no oil canning, staining, or degradation of any kind was observed.

Perforated metal panels and graphic mesh systems appear to be in satisfactory condition. No oil canning, staining, or degradation of any kind was observed, and galvanized sub-structure appears to be free of corrosion or rust.
Miscellaneous Exterior Observations

The steel support bracket, which supports large speakers, appears to be rusting, as show in Figure AME-1.

Figure AME-1: Surface Rust on Platform Support Brackets
Location: Section 201 Looking Up
At the guardrail outside section 417 appears to be damaged / bent, as shown in Figure AME-2. This damage could prove to be hazardous to fans who may put too much pressure on the guardrail. It is recommended that this be addressed quickly.

Figure AME-2: Damaged / Bent Guardrail
Location: Section 417
In most locations joint sealant and caulking appears to be in satisfactory condition. However, at various locations throughout the stadium, sealant was observed to be cracked or separating, as shown in Figure AME-3, at Janitor closet J251.
Interior Elements

Interior finishes within Kauffman stadium encompass a broad range of materials for floors, walls, and ceilings. The primary flooring systems are composed of epoxy and sealed concrete. These surfaces were observed to be in satisfactory condition, typically. Minor cracking was observed at various locations throughout the facility, which is considered normal given the expansion and contraction properties of the materials. No excessive cracking was observed during the walk-through.

Carpet flooring was generally observed to be in satisfactory condition. No signs of rips, tears, or discoloration were observed aside from what is considered normal wear and tear.

Porcelain/Ceramic tile flooring areas appear to be in satisfactory condition. No signs of grout discoloration or cracking were observed.

It was observed that the non-slip texture & warning strips are beginning to wear away from typical use in various locations, as shown in Figure AI-1 and Figure AI-2. This could become a slip and fall hazard to patrons, especially during the earlier and later portions of the MLB season.

![Figure AI-1: Caution Strip](image1.png)  
**Location:** Back of House Food Storage

![Figure AI-2: Transition Strip](image2.png)  
**Location:** Back of House Food Storage
Wall materials at Kauffman stadium typically include painted or exposed Concrete Masonry Units (CMU) or painted gypsum board on metal stud framing. Alternative wall materials include porcelain or ceramic tile, glass tile, wood veneer, and glass storefront systems.

In general, interior wall surfaces were observed to be in satisfactory condition. Painted gypsum board walls appear to be in satisfactory condition. In general, no punctures, holes, or scratches were observed.

Ceramic tile walls generally appear to be in satisfactory condition. No visible chipping, flaking, or cracking of the tile or grout was observed.

Wood paneling, typically, is in satisfactory condition. No signs of scratching, fading, or deterioration of any kind were observed.

Figure AI-3: Water Damage
Location: Diamond Club
Ceilings in Kauffman stadium are generally concrete which has been left exposed or painted. Refer to the “Structure” section for observations of concrete surfaces. Other ceiling types located within the interior spaces of the stadium include gypsum board, acoustical ceiling tile, and wood paneling in some cases.

Gypsum board ceilings appear to be in satisfactory condition, typically. There were 3 missing light fixtures in the Diamond Club, as shown in Figure AI-4. There was water damage observed at the ceiling access panel in the Diamond club, as shown in Figure AI-3.
The General conditions of the concession stands were acceptable, however there were several locations where the ACT was falling or in need of repair, as shown in Figure AI-5. The ACT panels and structure was observed to be falling in the Liquor storage closet as show in Figure AI-6.

Figure AI-5: Water Damage
Location: Various Concession Stands

Figure AI-6: Damage to Acoustic Ceiling Tile
Location: Liquor Storage Closet – Signature Suite Level
Electrical

The electrical service at Kauffman stadium consists of (7) 3,000A, (2) 1600A and (2) 4000A, 480Y/277V 3 phase, 4 wire main switchgears along with transformers ranging in size from 45 KVA to 225 KVA. The switchgear is spread throughout the service and plaza levels of the stadium. Emergency power is provided to the stadium through a 1600A switchgear at 480Y/277V, 3-phase, 4-wire and is connected to a 1000KW on-site generator. Lighting and appliance panelboards are in each electrical room on every stadium level.

Telecommunications are fed from an underground vault and routed to the main telecommunications equipment room on the service level. The backbone cabling is routed via cable tray to each of the telecommunication rooms on each level.

The overall electrical system present installation was observed to be in satisfactory condition. However, the following conditions have been observed:

In the underground tunnel connecting Kauffman and Arrowhead it was observed that a fire alarm strobe near the exit on the Kauffman side, as shown in Figure E-1, has been hit by a vehicle in the tunnel. This device needs to be replaced with a new UL listed strobe device.

![Figure E-1: Fire Alarm Strobe](Location: Kauffman-Arrowhead UG Tunnel)
On the plaza level near the diamond club, it was observed that the housing on some lighting has come loose. One example shown in Figure E-2.

Figure E-2: Ceiling Mounted Fixture
Location: Kauffman-Arrowhead UG Tunnel
There are weatherproof devices that have lost their integrity in various locations throughout the ballpark. In one example, as shown in Figure E-3, the speaker supports were rusting and device supporting the speakers had come apart exposing the internals to the elements. Another view shown in Figure E-4 is on the Loge level looking up that the grandstands above. The area beneath the grandstands had various devices that needed maintenance.

Figure E-3: Speaker System
Location: Near 03.50.02 Concessions

Figure E-4: Beneath Grandstands
Location: Loge Level Suite
SUMMARY OF RECOMMENDATIONS

Site Flatwork

The majority of flatwork at Kauffman was observed to be in acceptable condition. Regular site maintenance to the should be continued throughout the year to sustain the quality of the concourse. Some of the following specific observations should be addressed:

- Pavement cracking throughout the stadium concourse should be monitored closely or repaired. Cracks exceeding ¼” in width should be replaced or sealed to avoid pavement damage during freeze-thaw conditions. Significant displaced of pavement can create a tripping hazard for pedestrians and are aesthetically unpleasant. Refer to Figure C-1.1, Figure C-1.2, C-7, and Figure C-8 for examples.
- Broken or damaged site appurtenant and rust discoloration. An example shown in Figure C-6 don’t pose as a hazard for stadium visitors but will improve the stadium’s overall aesthetic quality.
- Keep open areas near dugouts clear and tidy. See Figure C-11 for an example of an area that could be tidied.

The following comments pertain to elements that may pose potential safety concerns and should be addressed as soon as possible.

- Any major pavement faulting (1” or greater) observed or warned of in this report will need to be addressed. Displaced pavement from freeze-thaw conditions can be a tripping hazard and is a threat to pedestrian safety.

Landscaping and Appurtenances

The landscaping and appurtenances within the stadium concourse were found to be mostly in acceptable condition. Routine maintenance should be performed to sustain the concourse landscaping, so it is to remain in acceptable condition.

Structure

The majority of all substructure elements were observed to be in satisfactory condition. Continue routine maintenance as required.

The majority of all superstructure elements were observed to be in satisfactory condition.

- Concrete cracking and spalling should be routinely monitored and patched to ensure rebar corrosion does not worsen.
- Continued, routine monitoring of these areas is recommended. Concrete patchwork is recommended within the next 1 to 2 years.
- Locations where handrails were missing, it is recommended to replace immediately.
Miscellaneous Exterior Observations

- It is recommended that the damaged guardrail outside Section 417 be repaired immediately to ensure safety for all patrons.
- It is recommended that the rusting bracket holding a large speaker be replaced immediately.
- Consider reapplying all warning strips where deterioration is observed. All transition strips need to be repaired to comply with ADA code.

Interior Elements

Interior floor, wall, and ceiling finishes were observed to be in satisfactory condition, generally. Acoustical ceiling tiles appear to be in satisfactory condition.

- Consider replacing ceiling tiles and/or grids which have water damage or are falling to maintain a clean appearance and prevent further deterioration which may result in pieces of material falling from the ceiling.

Electrical

In the underground tunnel connecting Kauffman and Arrowhead it was observed that a fire alarm strobe near the exit on the Kauffman side, as shown in Figure E-1, has been hit by a vehicle in the tunnel. This device needs to be replaced with a new UL listed strobe device.

- It is recommended that this device is replaced with a new UL listed strobe to ensure proper fire alarm coverage is compliant with NFPA 72.

On the plaza level near the diamond club, it was observed that the housing on some lighting has come loose. One example shown in Figure E-2.

- It is recommended that the housing is repaired so the light is properly protected from the elements, and pedestrians below do not get injured by falling fixtures.

There are weatherproof devices that have lost their integrity in various locations throughout the ballpark. In one example, as shown in Figure E-3, the speaker supports were rusting and device supporting the speakers had come apart exposing the internals to the elements. Another view shown in Figure E-4 is on the Loge level looking up that the grandstands above. The area beneath the grandstands had various devices that needed maintenance.

- It is recommended that weatherproof devices and bracing are properly maintained to protect the device as well as pedestrians below to ensure injuries don’t occur.
# 2022 KAUFFMAN STADIUM ASSESSMENT - RESPONSE PLAN

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<th>CATEGORY</th>
<th>RESPONSE PLAN</th>
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<td>Concrete Repairs</td>
<td>Site Flatwork</td>
<td>Monitor and/or repair cracking and displacement as needed</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Ponding Water</td>
<td>Site Flatwork</td>
<td>Areas noted in the report will be observed and repaired as needed</td>
<td>6/30/2022</td>
</tr>
<tr>
<td>ADA Elevators</td>
<td>Site Flatwork</td>
<td>To be repainted</td>
<td>10/31/2022</td>
</tr>
<tr>
<td>Exposed Reinforcing Steel</td>
<td>Structure</td>
<td>Will be monitored/repairs as needed</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Helix Ramp Columns Need Caulked</td>
<td>Structure</td>
<td>To be caulked</td>
<td>11/30/2022</td>
</tr>
<tr>
<td>Loge Level Wall Cracking</td>
<td>Structure</td>
<td>To be repaired</td>
<td>11/30/2022</td>
</tr>
<tr>
<td>Outfield TV Set Steps Need Handrails</td>
<td>Railing</td>
<td>Handrails to be added</td>
<td>7/31/2022</td>
</tr>
<tr>
<td>417 Damaged Handrail</td>
<td>Railing</td>
<td>Railing to be repaired</td>
<td>7/31/2022</td>
</tr>
<tr>
<td>Rusting Speaker Bracket</td>
<td>Miscellaneous Exterior</td>
<td>Inspect/replace as needed</td>
<td>7/31/2022</td>
</tr>
<tr>
<td>Caution Strip</td>
<td>Interior Elements</td>
<td>Replace caution strip as needed in hallways</td>
<td>11/30/2022</td>
</tr>
<tr>
<td>Transition Strip</td>
<td>Interior Elements</td>
<td>Repair transition strip as needed</td>
<td>11/30/2022</td>
</tr>
<tr>
<td>Water Damaged Ceiling</td>
<td>Interior Elements</td>
<td>Repair damaged ceiling as needed</td>
<td>11/30/2022</td>
</tr>
<tr>
<td>Missing Light Fixtures</td>
<td>Interior Elements</td>
<td>Replace lights as needed</td>
<td>6/30/2022</td>
</tr>
<tr>
<td>Fix Alarm Strobe</td>
<td>Electrical</td>
<td>Replace alarm strobe</td>
<td>7/31/2022</td>
</tr>
<tr>
<td>Fix Light Fixture</td>
<td>Electrical</td>
<td>Fix loose fixture</td>
<td>7/31/2022</td>
</tr>
</tbody>
</table>