

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.



JACKSON COUNTY
 Sports Complex
Authority

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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 its 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 2015, the JCSCA conducted an inspection of every space within Kauffman Stadium. Each room was carefully examined and documented using iPad technology (Fuze Inspections mobile application by Evoco Inc.) during the walkthrough. This application allowed the JCSCA 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 received the database from the JCSCA, spot-checked 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 its immediate environs was performed by Burns & McDonnell's engineers and architects to spot-check rooms and areas to compare that the overall conditions reported in the Jackson County Sports Complex Authority's condition reports align with the actual conditions as observed. Additionally, Burns & McDonnell has provided recommendations for observed maintenance issues that may need to be rectified in the near future.

General Description

Kauffman Stadium is located at One Royal Way in Kansas City, Missouri. The renovation completed in 2010 enhanced the fan game day experience, increased revenue generation, and improved the day to day operations of the Kansas City Royals and its other users. 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 its immediate environs were observed to be in satisfactory condition. It is apparent that 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 its 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 the near future.



Site Flatwork

The site infrastructure in general is in satisfactory condition with minor defects observed. Kauffman contains a large amount of paved area that includes walkways and numerous retaining walls and stairs between the curb and the stadium concourse. Within the concourse of the stadium, an abundance of paved concrete area provides pedestrian access to the large variety of amenities within the stadium and the stadium seating.



Figure C-1: Minor Cracking at Concrete Walkways

A portion of distresses observed consisted of cracking, and most cracking observed was low severity. Minor, vertical hairline cracking along with minor web cracking was observed in some retaining walls. Minor cracking was also observed at several locations in concrete walkways around the stadium, as shown in Figure C-1. Several slightly more severe distresses in the concrete were also observed. Faulting was observed at a joint within the range of pedestrian traffic, as shown in Figures C-2 and C-3. This faulting is considered moderate severity and any joints faulting within the natural flow of foot traffic pose a tripping hazard.



Figure C-2: Joint Fault at Pedestrian Traffic Way



Figure C-3: Uneven Paver Settlement at Pedestrian Traffic Way

Joint distress is another common deficiency in concrete pavement that was observed in the pavement at Kauffman. At several locations, joint failure was observed both at the face of structures and within walkway pavement. At some of these joints missing sealant or differential settlement was observed, as shown in Figures 4 and 5. In locations where the paved surface or stairs settle at a different rate the adjacent structure, sealant has pulled away from the joint rendering it ineffective.



Figure C-4: Interface of Stairs and Retaining Wall at Stairs Outside Gate E

At several locations, both at the face of structures and within walkway pavement, some higher severity spalling was observed. In many cases, this spalling was coupled with missing or damaged sealant. These two deficiencies combined can amplify the negative effects of one another and increase the rate of degradation of the pavement, as shown in Figure C-5.



Figure C-5: Joint Spalling Along North Building Facade

Spalling was observed in a few other locations as well. In some locations spalling could be found in what appeared to be recently patched concrete, as shown in Figure C-6.



Figure C-6: Damaged Pavement Patch Outside of Gate D

Within the stadium concourse, similar distresses were observed. Many of these distresses were of low severity, but in a few locations, higher severity distresses were found, as shown in Figures C-7 through C-9.



Figure C-7: Crack Near Spiral Ramp Behind Gate 3



Figure C-8: Cracking Radiating Out From Column Foundation



Figure C-9: Edge Spalling Immediately Inside Gate D

Landscaping and Appurtenances

Various species of native plants and grasses 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 between the largely paved surfaces. Several minor deficiencies related to landscaping were observed.

Landscaping was observed in satisfactory condition at the time of the assessment. Grasses, trees, and other vegetation appear to be healthy.

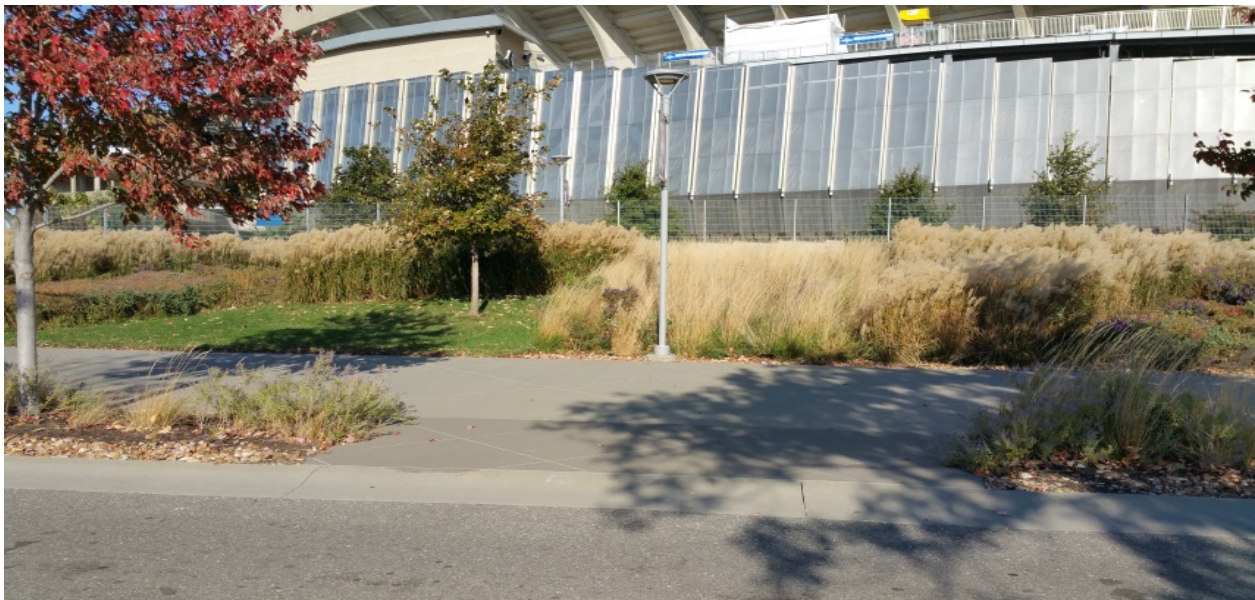


Figure L-1: Variety of Landscaping as seen from Outside the Stadium

Domestic grasses were observed in satisfactory condition and irrigation systems were observed as operational. In several locations, the irrigation system was distributing water beyond the grass and into concrete walkway areas, as shown in Figure L-2.



Figure L-2: Irrigation System in Operation

A weak guardrail was observed at a location north of the Budweiser deck. This railing was loose at the connection to the retaining wall and presents a potential safety and accessibility concern, as shown in Figure L-3.



Figure L-3: Unsecure Hand Rail at Stairs

A storm water inlet structure to the east of the stadium is damaged and dislodged from its intended position. This structure may not be providing sufficient flow, as shown in Figure L-4.



Figure L-4: Dislodged Storm Structure

A somewhat isolated area just northeast of the stadium appears to be lacking maintenance. Based on observations, this area could also be ponding water during rainfall events, as shown in Figure L-5.



Figure L-5: Vegetation and Sedimentation indicate potential Water Ponding in this Area

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 were observed. Control joints and expansion joints are in satisfactory condition, as shown in Figure S-1.

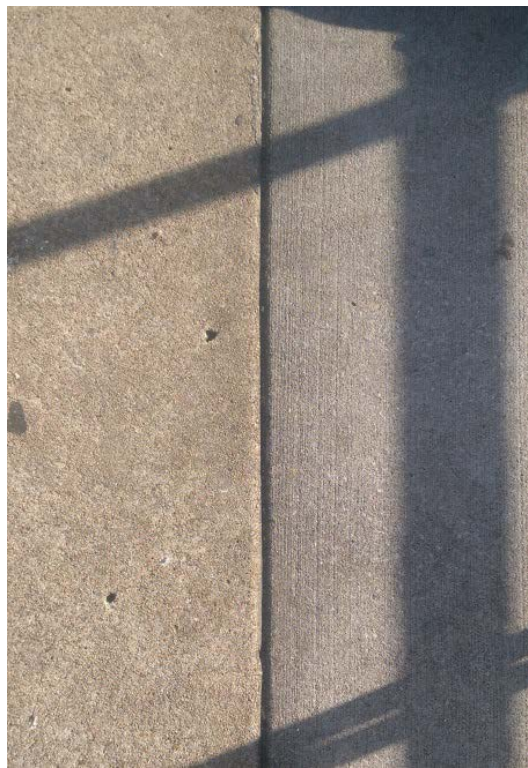


Figure S-1: Slab-On-Grade Control Joint

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 the renovations, 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.

The original reinforced concrete columns and walls are in satisfactory condition. No major cracks or spalling was observed. The vertical column and wall surfaces are flat and smooth. Concrete patchwork of the original structure is in satisfactory condition as well. The patchwork is flat and smooth. The expansion joints at the original superstructure to the renovation superstructure are in satisfactory condition. No deterioration was observed.

The original reinforced concrete pan joist slab systems are currently in satisfactory condition. No major cracks or spalling was observed. However, minor cracking and spalling exist exposing the reinforcement as shown in Figure S-2 (left image). This image was taken standing in the concourse at the top of section 220. Minor cracking and spalling was also observed while standing in the concourse at the top of section 312, as shown in Figure S-2 (right image). These areas should be closely monitored and patched within the next 1 to 2 years.



Figure S-2: Concrete Spalling, Exposing Reinforcement

The reinforced concrete walls of the renovation stage are in satisfactory condition. No major cracks or spalling was observed. The vertical wall surface is flat and smooth. The steel wide flange and HSS beams and columns as well as the connections of the renovation stage are in satisfactory condition. No corrosion or significant deflection was observed as shown in Figure S-3. Pulling out of concrete anchors of steel beam connections were observed at a few locations, as shown in Figure S-4. This image was captured outside of the broadcast booths at the Press Level.



Figure S-3: HSS Beams, Column and Connections



Figure S-4: Concrete Anchor Pulling Out of Concrete Beam

The steel floor decks and roof decks are in satisfactory condition. No corrosion or significant deflection was observed.

Guard rails are primarily in satisfactory condition. However, corrosion and concrete spalling were observed in some locations, as shown in Figure S-5. This image was captured in Dugout Suite B.



Figure S-5: Corrosion and Concrete Spalling of Guardrail

Façades

Kauffman Stadium incorporates a variety of finish materials that are used in the composition of the exterior façade, as shown in Figure AF-1. The primary surface materials include structural concrete, insulated metal panel, curtainwall, and patterned perforated metal panels on cold formed steel structure.

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



Figure AF-1: Kauffman Stadium Overall Exterior

All facades, in general, appear to be in satisfactory condition. Glass storefronts and curtainwall systems appear to be in satisfactory condition, as shown in Figures AF-2 and AF-3. 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.

Stone cladding systems appear to be in satisfactory condition, as shown in Figure AF-2. No chipping or staining of the stone or grout was observed.



Figure AF-2: External (left) and Internal (right) Storefront, Curtainwall, and Stone Veneer

Perforated metal panels and graphic mesh systems appear to be in satisfactory condition, as shown in Figures AF-3 and AF-4. No oil canning, staining, or degradation of any kind was observed. The galvanized sub-structure for the perforated metal panel system appears to be free of corrosion or rust, as shown in Figure AF-5.



Figure AF-3: External Perforated Metal Panel System

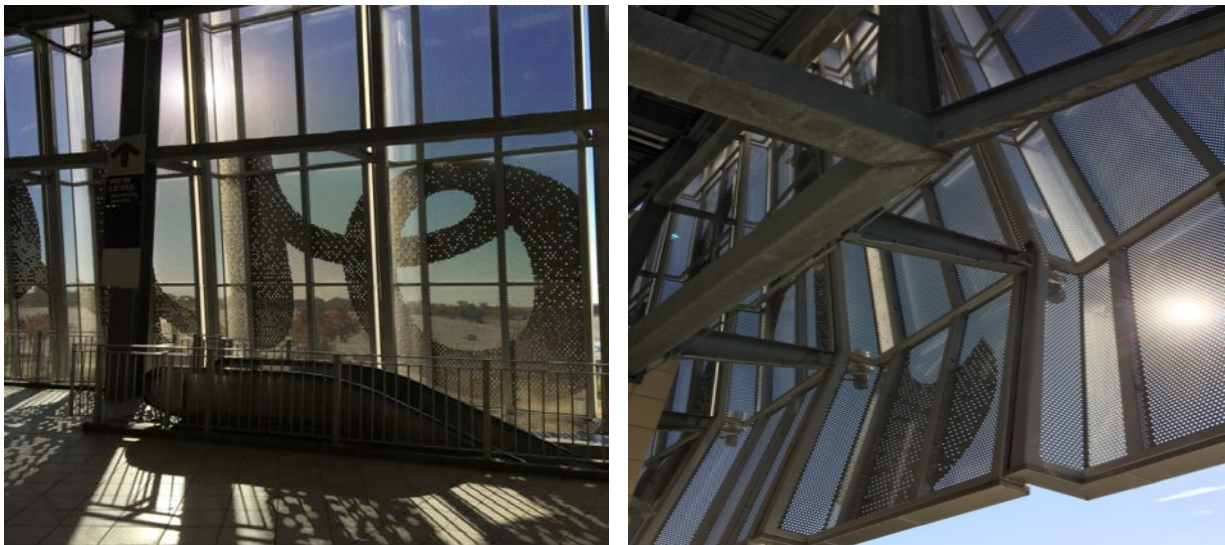


Figure AF-4: External Perforated Metal Panel System Details

Insulated metal panels at the Hall of Fame structure, in general, are in satisfactory condition. However, baseball depressions in the metal panel were observed, as shown in Figure AF-5 (left image). This image was taken from the South side of the Hall of Fame structure, looking North.



Figure AF-5: Metal Panel and Storefront System at Hall of Fame Structure

Insulated metal panels and glass storefront systems at the ticketing structure, in general, are in satisfactory condition. However, glass at a few of the ticketing windows was observed to be cracking, as shown in Figure AF-6 (right image). This image was taken at the ticketing structure on the Southwest side of the stadium.



Figure AF-6: Storefront System at Southwest Ticketing Counter

Roofing

The roofing structures throughout Kauffman Stadium vary greatly in composition. The primary roofing material utilized at the interior structures is a Polyvinyl-Chloride (PVC) membrane on R-24 thermal insulation.

Alternative roofing materials are also utilized at various external structures and over the stadium concourses, including standing seam metal roof panels and in some cases perforated metal panels. Coping and fascia panels, finished to match adjacent metal panels, provide moisture protection at roof eaves and parapet conditions.

Roofing membranes appear to be in satisfactory condition. Roofing membranes observed were free of rips, tears, or defects. However, construction debris was observed at the catwalk area between roofs at the Writing Press level, as shown in Figure AR-1 (left image).



Figure AR-1: Roofing Membrane (left) and Standing Seam/Perforated Metal Panel (right)

Coping and fascia panels at roof eaves and parapets were observed to be in satisfactory condition, typically. However, rust is beginning to stain the underside of the fascia panel at the View Level bar areas, as shown in Figure AR-2 (left image).



Figure AR-2: Roof Coping and Fascia Panels at Roof Eaves and Parapets

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, as shown in Figures AI-1. 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.

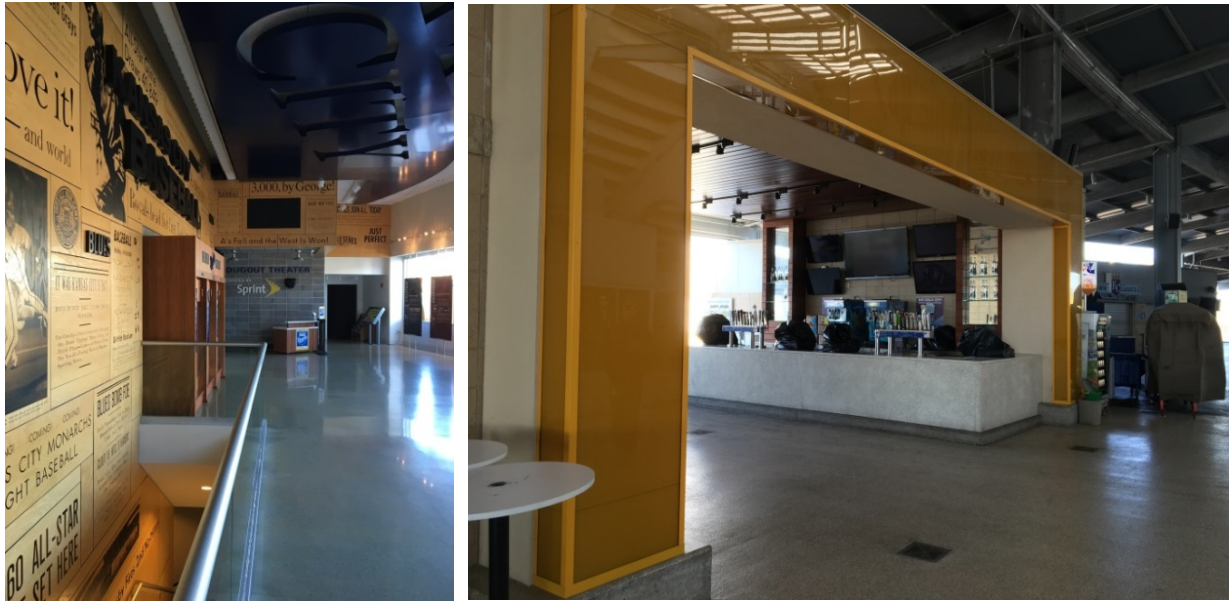


Figure AI-1: Sealed Concrete Flooring (left) and Epoxy Topping (right)

Carpet flooring was generally observed to be in satisfactory condition. No signs of rips, tears, stains, or discoloration were observed, as shown in Figure AI-2 (left image). Porcelain/Ceramic tile flooring areas appear to be in satisfactory condition, as shown in Figure AI-2 (right image). No signs of grout discoloration or cracking were observed.



Figure AI-2: Carpet Flooring (left) and Ceramic Tile Flooring (right)

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, as shown in Figure AI-3. No punctures, holes, or scratches were observed.

Ceramic tile walls appear to be in satisfactory condition, as shown in Figure AI-3. No visible chipping, flaking, or cracking of the tile or grout was observed.



Figure AI-3: Ceramic Tile and Gypsum Board Walls

Wood paneling, typically, is in satisfactory condition. As shown in Figure AI-4, no signs of scratching, fading, or deterioration of any kind were observed.



Figure AI-4: Wood Veneer Panel Wall

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.

Exposed ceilings appear to be in satisfactory condition, typically. However, at various locations on the Press Level sprayed on fire proofing was observed to be peeling and chipping away from the structure, as shown in Figure AI-5.



Figure AI-5: Sprayed on Fire Proofing at Exposed Concrete Structure

Gypsum board ceilings appear to be in satisfactory condition, typically. No punctures, stains, scrapes, or tears were observed. Refer to Figure AI-6 for typical conditions.



Figure AI-6: Gypsum Board Ceilings at Diamond Club and Writing Press Areas

Acoustical ceiling tiles appear to be in satisfactory condition, generally. Several back of house areas, including kitchens and pantry areas, contained warped, drooping, or stained ceiling tiles as shown in Figure AI-7 (left image). Exterior ceiling tiles leading out of the central elevator lobby area at the Service Level were observed to be stained, as shown in Figure AI-7 (right image).



Figure AI-7: Interior and Exterior Acoustical Ceiling Tiles

Wood ceiling panels, where present, were observed to be in satisfactory condition. Surface conditions appear to be new and are free of scuffs, scratches, or deterioration as shown in Figure AI-8 and AI-9.



Figure AI-8: Wood Plank Ceiling at Craft & Draft Area



Figure AI-9: Wood Panel Ceiling Panels at the Barrel Bar Area

Door types and styles throughout Kauffman Stadium include painted hollow metal doors and frames, flush wood doors, aluminum glazed doors, overhead coiling doors, and an occasional access door.

Generally, painted hollow metal doors were observed to be in satisfactory condition, as shown in Figure AI-10. Doors observed were free of scratches and rust, paint appeared to be in satisfactory condition.



Figure AI-10: Typical Hollow Metal Door Conditions

Sliding glass wall systems at the Triple Crown Suites were observed to be in satisfactory condition, as shown in Figure AI-11 (left image). No signs of scratches were noticeable on the frames, glass appeared to be free of cracks or chips, and operable tracks were free of dirt and grime that would prevent the door from sliding.

Wood framed glass doors were typically observed to be in satisfactory condition, as shown in Figure AI-11 (right image). These doors were generally found to be free of scratches to the surface and no defects were observed.



Figure AI-11: Typical Sliding Glass Wall System (left) and Wood Framed Glass Door (right)

Mechanical

The general mechanical systems appear to be in satisfactory condition. The facility comprises mainly of air-conditioning units that utilize chilled water, some stand-alone direct expansion (DX) units, roof-mounted condensing units, hot water boilers, pumps (fire, domestic water, and chilled water), exhaust fans, concession stand water heaters, and air-cooled chillers.

The majority of the domestic water distribution is located within Boiler Room M127. The equipment housed in this room appeared to be in satisfactory condition. However, a few minor maintenance items were observed inside this room.

As seen in Figure M-1, several piping insulation shields were not present. Overtime, the weight of the piping will “crush” the piping insulation – thus degrading the effectiveness of the insulation. Evidence of this “crushing effect” has already begun to occur. To prevent this, piping shields should be placed between the pipe hanger and the insulation.



Figure M-1: Piping Hangers Missing Insulation Shields

Chilled water pump, CHWP-5 as shown in Figure M-2, had a noticeable vibration sound while running. This excessive vibration could be a result of a misaligned shaft or worn bearing. Attention should be given to this particular pump to investigate the origin of the vibration sound.



Figure M-2: Chilled Water Pump, CHWP-5

The domestic water booster pump package is also located within this boiler room. The control panel for the pumps had some indication lights that were burned out, specifically for pump #1 as shown in Figure M-3. Control panel lights should be checked to verify if they are working properly.



Figure M-3: Domestic Water Control Panel

It was observed that the domestic hot water boilers were set to deliver 160°F water throughout the facility, shown in Figure M-4. This temperature has a higher potential of general population scalding. Standard hot water temperatures are typically limited to 140°F within public facilities. Readjusting the hot water temperature output to 140°F is recommended. This would not only decrease the potential scalding issue, but it would also provide utility energy savings.



Figure M-4: Hot Water Boiler Temperature Gauge

The main kitchen mechanical systems appeared to be in satisfactory condition. The wall-mounted eyewash station, shown in Figure M-5 (left image), currently has a low water level within the body of the eyewash. It also does not have an up-to-date verification tag, as shown in Figure M-5 (right image). This eyewash will need to be completely emptied and refilled to the recommended water level. After this has been completed, an updated tag date can be added.



Figure M-5: Wall-Mounted Eyewash Station and Verification Tag

The main kitchen also houses a dry-pipe sprinkler valve, shown in Figure M-7 (left image). The valve itself appears to be in satisfactory condition. The steel piping associated with this dry-pipe system has severe corrosion/deterioration. Figure M-7 (right image) shows the level of severity of this pipe. This side of the sprinkler valve is under high pressure – thus, if a rupture were to happen through the side of this pipe, the extent of the property damage could be a large value number. It is HIGHLY recommended that this particular section of piping is repaired or replaced.



Figure M-6: Dry-Pipe Sprinkler Valve System and Corrosion of Steel Piping

Direct expansion wall units are used to maintain temperature within the various electrical rooms throughout the facility. The majority of these units were observed to be in satisfactory condition. Figure M-9 shows the wall unit located inside Electrical Room E234. This unit, labeled AC 3E02, had excessive fan noise. This is typically a result of low fan oil or foreign debris within the unit. It is recommended that this particular unit is maintained properly.



Figure M-7: Wall Unit AC 3E02

Electrical

The stadium main electrical service consist of (7) 3,000A, (2) 1600A and (2) 4000A, 480Y/277V 3 phase, 4 wire main switchgears with integral 13.2kV to 480V transformers. The switchgears area located throughout the Service level and the Plaza level. The stadium's emergency power distribution service consists of a1600A switchgear at 480Y/277V, 3- phase, 4- wire and is connected to a 1000KW on-site generator. Lighting and appliance panelboards are located throughout the stadium in each electrical closet on each stadium level.

The main telecommunications service is fed from an underground vault and is routed to the Main Telecommunications Equipment room on the Service level. Backbone cabling is run throughout the stadium to various telecommunications rooms on each stadium level. Horizontal cabling is routed from each telecommunication closet to workstations on respective floor levels.

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

The operation of the emergency bug-eyed battery units were in unsatisfactory condition as the emergency bug-eye battery units were not operational throughout the field and dugout levels. See Figure E-1, as shown below.



Figure E-1: Emergency Bug-Eyed Light Fixture

Panel schedules for numerous panelboards (B3AH2B, B1C1A1, B3L2 section 2) did not have matching corresponding directories, for example panelboard B3AH2B section 1. See Figure E-2, as shown below.

B3AH2B Sect. #2		MARK ONE ELECTRIC CO	
Kauffman Royals Stad.		www.markone.com	
24 Hour Emergency Service:		Joe Privitera-V.P. Service	
(816) 842-7023 ext. 201		(816) 918-1429	
MOE JOB # 2298177		4/27/2009	
CKT	LOAD	CKT	LOAD
43	FCU-6C14	44	ECUH-7C05
45		46	
47		48	
49	FCU-6C15	50	ECUH-7C06
51		52	
53		54	
55	FCU-6C16	56	ECUH-7C07
57		58	
59		60	
61	GEF-7C02	62	Cond/1 Cond. 7 30 01
63		64	
65		66	
67	Spare	68	Spare
69		70	Spare
71		72	Spare
73	Spare	74	Spare
75		76	Spare
77		78	Spare
79	Spare	80	Spare
81		82	Spare
83		84	Spare

Figure E-2: Panelboard B3AH2B Schedule

All breakers in distribution board EB3H2B are not labeled. See Figure E-3, as shown below.



Figure E-3: Distribution Board EB3H2B

Directory for EB3H2B shall match and be labeled to match installation in board. See Figure E-4, as shown below.

CKT	LOAD	CKT	LOAD
1	EB3H2B	2	
3		4	Spare
5		6	
7	EB3H2C	8	CRAC 2C01
9		10	
11		12	
13	Jockey Pump	14	CRAC 2C02
15		16	
17		18	
19	Spare	20	EF 2D12
21	Spare	22	
23	Spare	24	
25	Spare	26	Spare
27	Spare	28	EB3H5A
29	Spare	30	Spare
31	Spare	32	Spare
33	Spare	34	Spare
35	Spare	36	Spare
37	Spare	38	Spare
39	Spare	40	Spare
41	Spare	42	Spare

Figure E-4: Distribution Board EB3H2B with Wrong Panelboard Directory

See Figure E-5 for unlabeled breakers in panelboard B2H2E section 2.



Figure E-5: Distribution Board B2H2E Section 2 with Unlabeled Breakers

It has been observed that space, spares and panelboard labeling was satisfactory with the exception of switchboard B3M in which does not have all spares and spaces labeled, an existing panelboard not labeled, and branch circuit breakers in distribution board B1C3A are not labeled. . See Figures E-7, E-8 and E-9, as shown below.



Figure E-7: Switchboard B3M with Blank Covers Not Identified as Specs



Figure E-8: Existing Unlabeled Panelboard



Figure E-9: Unlabeled Breakers in Distribution Board B1C3A

SUMMARY OF RECOMMENDATIONS

Site Flatwork

The majority of the concrete flatwork elements were observed to be in satisfactory condition. Continue to perform routine maintenance to seal and repair minor cracking observed along walkways and concourses. Replace any missing, damaged, or otherwise unsatisfactory joint sealant and/or backer rod required for concrete joints.

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

- Monitor any minor faulting slabs in walkways for progression of the faulting. If faulting becomes more severe, repair or replacement of concrete may be necessary. To protect pedestrian safety and provide a full ADA compliant route, repair and/or replace any faulting panels or pavers to maintain a consistent surface where faulting has resulted in a drastic elevation change.
- Replace or secure any trench drain or drainage structure as necessary to prevent it from being accidentally or intentionally dislodged and maintain design inflow capacities. Loose trench drain covers could be a tripping hazard for pedestrians.

Landscaping and Appurtenances

The majority of the landscaping surrounding Kauffman Stadium appeared to be in satisfactory condition. The native grasses and plants appeared to be in good health. Continue to maintain the plants and grass on a regular basis to sustain plant health. The following comments pertain to recommended general site maintenance:

- To optimize the efficiency of the irrigation system, adjust the operating range to prevent excess water from spraying the concrete sidewalks. Refer to Figure L-2.
- Consider maintaining weeds and re-grading the narrow grass area next to the electrical equipment pad northeast of the stadium to provide positive drainage away from both the adjacent structure and the concrete equipment pad.
- Repair and reset the damaged storm water inlet structure. This would not only improve the aesthetic appeal of the area, but would also help prevent ponding that may be occurring from a currently restricted inlet. Refer to Figure L-4.

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

- Secure loose hand rail and fence to avoid safety and accessibility concerns. This may simply require tightening a few connections, or could involve installing a new hand rail. Refer to Figure L-3.

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. Minor cracking and spalling were observed for the original concrete pan joist system. This has led to the exposure of reinforcement. Closely monitoring these areas is recommended. Concrete patchwork is recommended within the next 1 to 2 years.

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

- Concrete anchors at the ceiling of the Broadcast Press Level corridor were observed to be pulling out of the concrete. Analysis by a qualified structural engineer is recommended prior to the 2016 season to verify that no structural failures have occurred and to ensure that the structural system is performing as designed. Refer to Figure S-5.
- Guard rails are generally in satisfactory condition. However, corrosion and concrete spalling were observed just outside of the Dugout Suite B. Consider reinforcing guard rail and patching concrete surrounding railing base to avoid additional damage and/or guard rail failure. Refer to Figure S-6.

Façades

Insulated metal panels around the facility appear to be in satisfactory condition, generally. However, depressions in the insulated metal panels, most likely caused by home run baseballs, were observed at South side of the Hall of Fame structure. Refer to Figure AF-5 (left image) for specific locations.

- Consider replacing metal panels or sealing the depressions to avoid potential moisture problems that may be caused by a breach in the envelope. Over time, it is possible that the finish of the metal panels may be affected resulting in surface rust and streaking near the damaged area.

Glass storefronts, in general, appear to be in satisfactory condition. However, glass panels at a few of the ticketing windows on the Southwest Ticketing structure were observed to be cracking as shown in Figure AF-6 (right image).

- Consider repairing or replacing the damaged glass to maintain a quality appearance at the entry to the facility and to prevent further damage to the glass or aluminum frames.

Roofing

Roofing membranes appear to be in satisfactory condition, however, construction debris was observed at the catwalk area between the roofs at the Writing Press level as shown in Figure AR-1 (left image).

- Consider relocating debris to avoid potential rips or tears that would be caused by the wind catching the material moving it across the surface of the membrane, thereby creating moisture issues within the space below the roof surface.

Coping and fascia panels at roof eaves and parapets were observed to be in satisfactory condition, typically. However, rust is beginning to stain the underside of the fascia panel at the View Level bar areas, as shown in Figure AR-2 (left image).

- Consider applying a protective barrier (paint) over the surface of the fascia in order to prevent further rust and corrosion from spreading across the surface. Failure to maintain surface rust may eventually require full replacement of sheet metal edges and may create staining from rust dripping onto the concrete surface below.
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Interior Elements

Interior floor, wall, and ceiling finishes were observed to be in satisfactory condition, generally. However, at various locations on the Press Level exposed concrete ceilings, sprayed on fire proofing was observed to be peeling and chipping away from the structure, as shown in Figure AI-5.

- Consider patching the fire proofing material where left exposed to the concrete structure. Failure to patch areas of fire protection may result in structural failure should the steel reinforcing bars just below the cover coat in the concrete be exposed to excessive heat.

Acoustical ceiling tiles appear to be in satisfactory condition, typically. However, several interior and exterior tiles were observed to be drooping or stained by moisture. Refer to Figure AI-7 images.

- Consider replacing ceiling tiles to maintain a clean appearance and prevent further deterioration which may result in pieces of material falling from the ceiling.

Mechanical

The majority of all the mechanical systems were observed to be in satisfactory condition. Continue routine maintenance as required.

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

- Domestic hot water set-point appears to be set too high for public use (160°F). This temperature could cause scalding within a matter of minutes. Consider reducing this temperature set-point to a maximum of 140°F. Refer to Figure M-4.
- The dry-pipe sprinkler valve located inside the main kitchen area is in satisfactory condition. However, the steel piping associated with that system is showing severe corrosion. The potential water damage associated with this pipe rupturing could be extensive in nature. Refer to Figure M-8.

Electrical

It is recommended to ensure that all panelboards, distribution boards, switchboards and switchgears are labeled as well as all branch circuit breakers. All branch circuit breaker labels should match the panelboard directory. All batteries for emergency bug eyed units shall be replaced and tested for functionality and operation.