

Arrowhead Stadium Assessment

JCSCA + Burns & McDonnell

This document contains information pertaining to the condition of Arrowhead 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 Chiefs organization has a lease with the Jackson County Sports Complex Authority (JCSCA) that requires the organization to maintain Arrowhead Stadium to a level consistent with a First Class NFL Football Stadium. The purpose of this study is to report the overall condition of Arrowhead 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 Arrowhead 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 condition, 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, life safety systems, including 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 Chiefs staff and reviewed 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.

EXECUTIVE SUMMARY

General Description

Arrowhead Stadium, located at One Arrowhead Drive in Kansas City, Missouri. Arrowhead Stadium was completed in 1972 with a major renovation completed in 2010 that enhanced the fan game day experience, increased revenue generation, and improved the day to day operations of the Kansas City Chiefs and its other users. The stadium holds approximately 80,000 fans and offers amenities such as club level suites, luxury suites, bars, restaurants, and other venues geared towards large scale entertainment.

General Condition

In general, Arrowhead Stadium and its immediate environs were observed to be in satisfactory condition. It is apparent that the Kansas City Chiefs have performed the ordinary cleaning and maintenance obligations consistent with a First Class NFL Football Stadium.

Minor physical deficiencies were observed throughout various locations within Arrowhead Stadium and its immediate environs. Such deficiencies are expected in such a large facility and typical of a high-use facility. These can be addressed by the Kansas City Chiefs 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.



EXISTING CONDITIONS

Site Flatwork

Arrowhead contains a vast amount of paved concrete walkways approaching various entrances from all directions. Once inside the stadium, additional paved concrete surface provides access to the stadium seating and various amenities. Arrowhead also contains numerous concrete retaining walls and stairs between the back of the curb and the stadium concourse. The site pavement infrastructure in general is in satisfactory condition. A number of elements were observed to have minor deterioration, along with a few more severe defects.

Outside of the concourse of the stadium, a number of transverse cracks were observed in the surrounding asphalt circulation road. These cracks can also be found at locations where retractable bollards are located, as shown in Figures C-1 and C-2.



Figure C-1: Transverse Crack



Figure C-2: Transverse Cracking at Bollards

The most common deficiency observed throughout the exterior pavement was corner spalling. At several locations, low to moderate severity spalling was observed at panel corners, and was intermittently paired with cracking at the corners, as shown in Figures C-3 and C-4 respectively.



Figure C-3: Corner Spall Observed near Tower Gate



Figure C-4: Corner Spall and Cracking

Many joints around the stadium are adequately sealed and in satisfactory condition, but some joints were missing sealant at the time of the assessment. In locations where sealant is missing or damaged, incompressible materials and organics could be found within the joint, as shown in Figure C-5.



Figure C-5: Missing Sealant at the Isolation Joint near the Hy-Vee Gate

Some of the trench drains observed were damaged, and not securely fastened to the ground. Specifically, trench drains on both sides of Founders Plaza were broken in several places and were free to move when stepped on, as shown in Figure C-6.



Figure C-6: Broken Trench Drain Grate Observed near Founders Plaza

In several locations near the Founder's Plaza, pavers were missing and the subgrade beneath was exposed, as shown in Figure C-7. These locations create an inconsistency in surface elevation and present a potential trip hazard.



Figure C-7: Missing Paver in Main Pedestrian thoroughfare at Founder's Plaza

Within the concourse of the stadium, joint spalling and panel corner spalling was observed in several locations. This spalling ranged from low to moderate severity and was found in pavements of varying age. Some of the spalling was observed in panels that appeared to have been patched recently, as shown in Figure C-8.

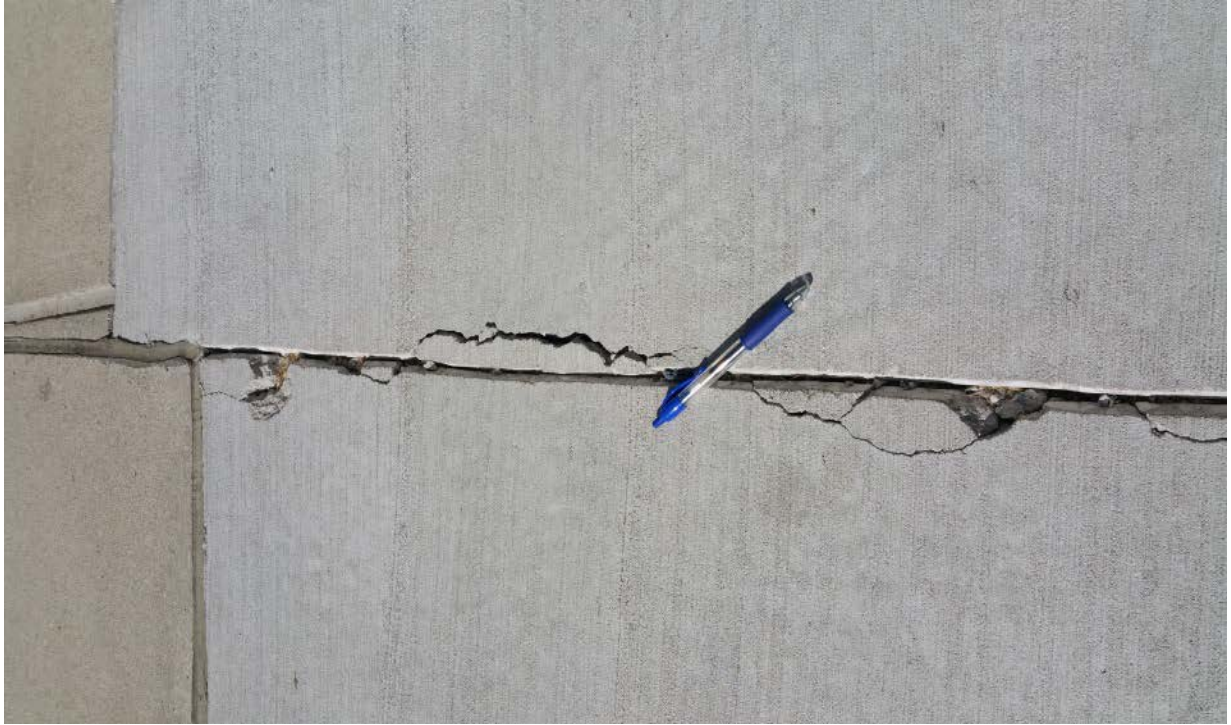


Figure C-8: Edge Spalling of Varying Severity was Observed

A more severe case of spalling was observed at the base of a column near the Sprint gate, as shown in Figure C-9. In this case, spalling has exposed rebar within the column. Exposed rebar is susceptible to rust and corrosion which may ultimately lead to weaker reinforcing thereby affecting the structural integrity of the column.



Figure C-9: Exposed Rebar within Column

Several columns just inside gate D have cracks in their structural bases that radiate out from the column, as shown in Figure C-10. It is estimated that these cracks are only in a concrete cap on top of the column foundation and do not have impact on the structure above. It is recommended to seal the cracks to prevent water from infiltrating and causing continued pavement damage through freeze-thaw iterations.



Figure C-10: Cracking at a Column Base near Gate D

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, as shown in Figure L-1 below.



Figure L-1: Typical Landscaping Surrounding the Stadium

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.

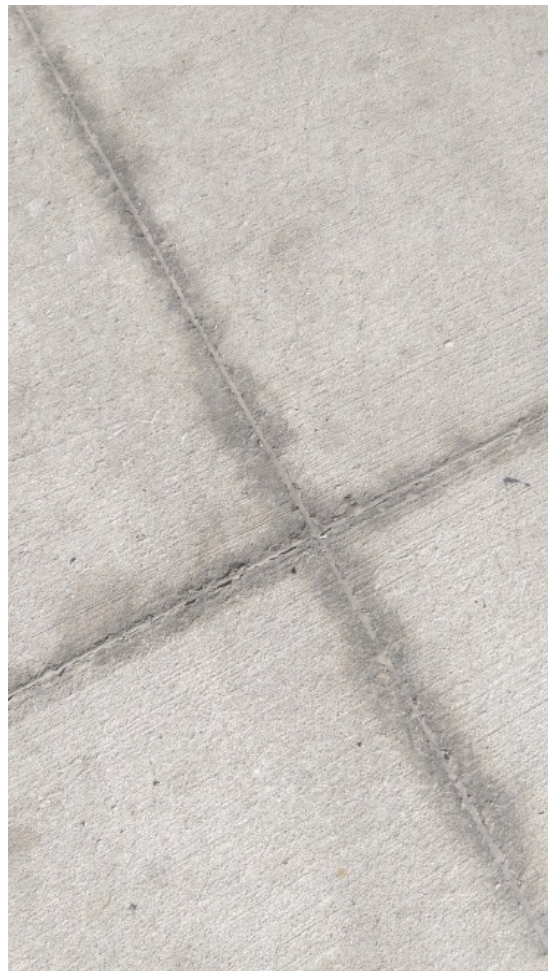


Figure S-1: Slab-On-Grade Control Joints

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, as shown in Figure S-2. During the renovations, additions were constructed which consisted primarily of CIP reinforced concrete columns. Other vertical support systems include Hollow Structural Section (HSS) columns, CIP reinforced concrete and concrete masonry (CMU) load bearing shear walls.



Figure S-2: CIP Reinforced Column with Pan Joist Slab System

The Plaza, Club, Lower-Upper Concourse and Upper Concourse levels consist primarily of reinforced concrete pan and joist slab system. The Horizon and Press level consists of light weight composite deck supported by steel wide flange beams. The roof levels primarily consist of steel roof deck supported by steel wide flange beams. Other roof systems consist of cold form metal joists with steel roof deck. The lateral resisting system consists of reinforced concrete load bearing shear walls. The scoreboard and advertising boards consist of built-up hollow steel shapes.

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. The patchwork is flat and smooth, as shown in Figure S-3.



Figure S-3: Concrete Patchwork

The original reinforced concrete pan joist slab systems are in satisfactory condition. No major cracks or spalling was observed. Minor cracking and spalling exist but are not detrimental to the structure, as shown in Figure S-4. The suspended slab surface is flat and smooth. The expansion joints between the original superstructure and the renovation superstructure are in satisfactory condition. No deterioration was observed.



Figure S-4: Pan Joist Slab System Showing Minor Cracking

The steel wide flange columns and beams are in satisfactory condition. No corrosion was observed. Scoreboard column base and mid-span connections are in satisfactory condition. Beam connections are in satisfactory condition. The steel decks are in satisfactory condition. No corrosion or significant deflection was observed.

Façades

Arrowhead 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, curtainwalls, and graphic mesh fabric on galvanized steel framing.

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



Figure AF-1: Arrowhead 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. Aluminum frame and mullions were observed to be free of staining, fading, or degradation of any kind. Seals and flashing around storefronts appear to be in satisfactory condition. Glazing was observed to be free of defects, including cracking or chipping.

Insulated metal panel systems appear to be in satisfactory condition, as shown in Figures AF-2. No oil canning, staining, or degradation of any kind was observed.



Figure AF-2: External Glass Curtainwalls and Storefronts

Stone cladding systems appear to be in satisfactory condition, as shown in Figure AF-3 (left image). No chipping or staining of the stone or grout was observed.

Graphic mesh fabric systems anchored to galvanized steel framing was observed to be in satisfactory condition, as shown in Figure AF-3 (right image). No signs of corrosion or rust on framing exist and fabric mesh panels appear to be free of rips, tears, or fading.



Figure AF-3: Stone Veneer Wall (left) and Graphic Fabric Mesh System (right)

Internal storefront and sliding glass wall systems appear to be in satisfactory condition, as shown in Figure AF-4. Aluminum frame and mullions were observed to be free of staining, fading, or degradation of any kind. Seals and flashing around storefronts appear to be in satisfactory condition. Glazing was observed to be free of defects, including cracking or chipping.

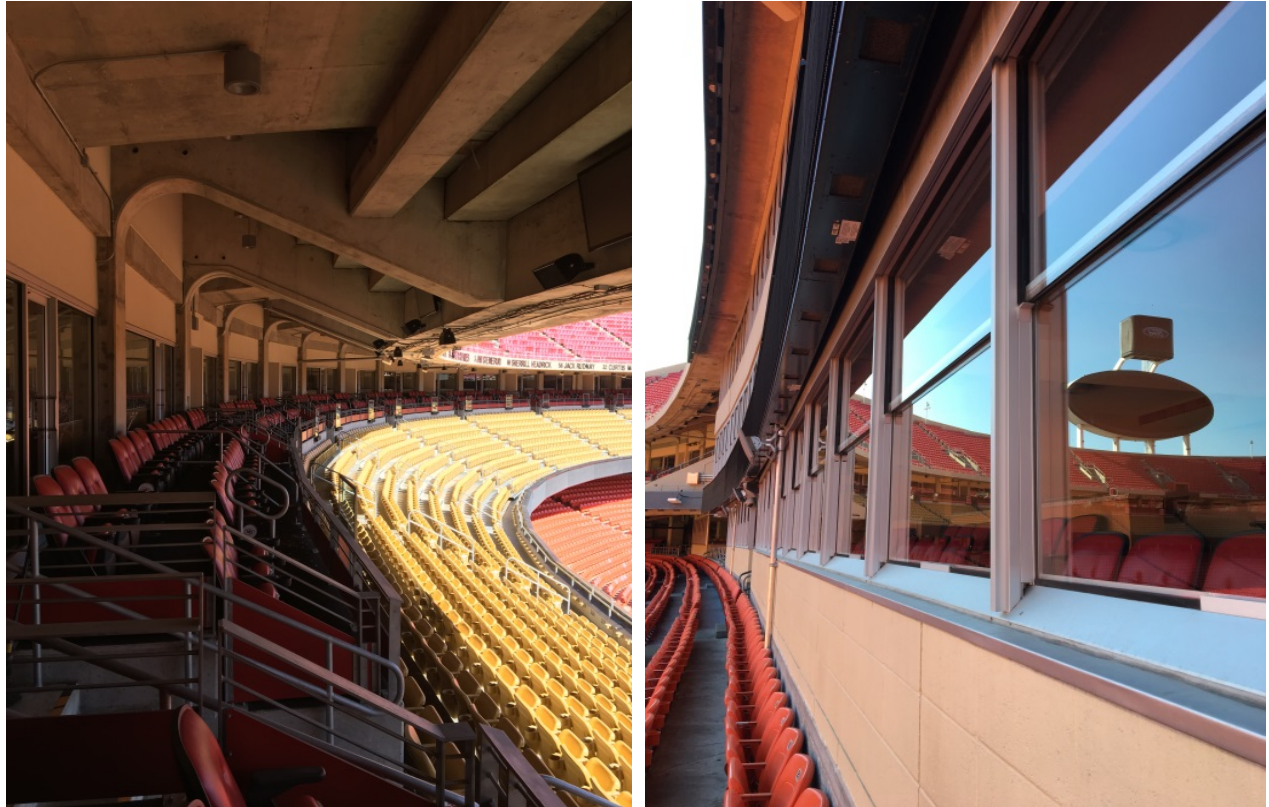


Figure AF-4: Internal Windows, Storefront, and Sliding Glass Wall System

Roofing

The roofing structures throughout Arrowhead Stadium vary greatly in composition. The primary roofing material utilized at the renovated office and event spaces is a Polyvinyl-Chloride (PVC) membrane on R-24 thermal insulation. Standing seam metal roof panels are also utilized at various locations around the facility.

Roofing membranes were observed to be in satisfactory condition. No rips, tears, or other failures were observed. All observed copings, flashings, etc. appear to be in satisfactory condition, as shown in Figure AR-1.



Figure AR-1: Typical Prefinished Metal Coping at Concourse

Standing seam metal roof panels appear to be in satisfactory condition, as shown in Figure AR-2. No signs of rust, staining, or other failures were observed.



Figure AR-2: Standing Seam Metal Roof Panels

Interior Elements

Interior finishes within Arrowhead 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 Figure 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 material and their exposure to outside air temperatures. No excessive cracking was observed during the walk-through.

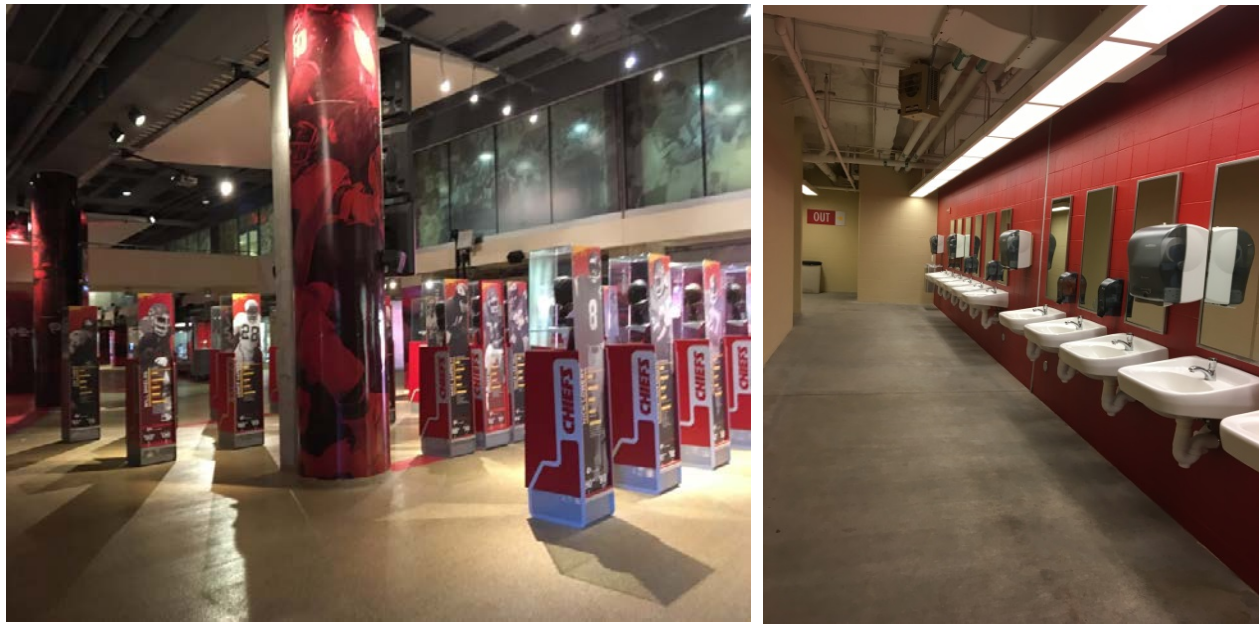


Figure AI-1: Epoxy Flooring (left) and Exposed Concrete (right) Throughout Facility

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, typically.



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

Less abundant areas of flooring materials include vinyl composition tile and athletic rubber flooring. These materials are generally found in service areas or back-of-house type areas which are less visible to the public.

Wall materials at Arrowhead Stadium vary throughout the facility, but are primarily painted or exposed Concrete Masonry Units (CMU) at outdoor areas and painted gypsum board on metal stud framing at interior areas. Alternative wall materials include ceramic tile and wood veneer, which are generally located in bathrooms and fan suite areas, respectively.

Generally, painted CMU walls were observed to be in satisfactory condition, as shown in Figure AI-3. No signs of chipping, flaking, or cracking of the applied paint system were observed.



Figure AI-3: Painted, Exposed CMU Block Wall

Painted Gypsum board walls appear to be in satisfactory condition, typically, as shown in Figure AI-4. No signs of punctures or holes in the gypsum board materials were observed.



Figure AI-4: Painted Gypsum Board Walls

Paint was observed flaking off of what appears to be a concrete wall at one of the coach's rooms in the Service Level, as shown in Figure AI-5 (left image). Wood veneer panel at interior walls appear to be in satisfactory condition, as shown in Figure AI-5(right image). No scratches, scuffs, or fading of any kind was observed.



Figure AI-5: Flaking Paint at Coaches Room (left) and Wood Veneer Panel Wall (right)

Ceilings in Arrowhead stadium are typically exposed concrete around the outdoor concourse areas. Refer to the “Structure” section for observations of concrete surfaces. Other ceiling types located within the interior spaces of the stadium include gypsum board, acoustic ceiling tile, and lay-in perforated metal ceiling tiles in some cases.

Acoustic ceiling tiles appear to be in satisfactory condition, generally. A typical condition at the Club Level lounge area is shown in Figure AI-6 (left image). Ceiling tile in these spaces do not show signs of stains or deterioration of any kind. However, at a few locations at the Service Level some ceiling tiles were observed to be damaged around the corners or were not properly set within the ceiling grid. One location where damaged ceilings tiles were observed was at the visiting coach room in the Service Level, as shown in Figure AI-6 (right image).



Figure AI-6: Acoustic Ceiling Tile at Event Space (left) and at Service Level Coach Room (right)

Gypsum board ceilings appear to be in satisfactory condition, typically. No punctures, stains, scrapes, or tears were observed. Refer to Figure AI-7 for typical condition.



Figure AI-7: Gypsum Board Ceiling, Painted

Lay-in perforated metal ceiling tiles were observed to be in satisfactory condition. No signs of rust or finish deterioration was observed. Refer to Figure AI-8 for typical condition at exterior concourse.

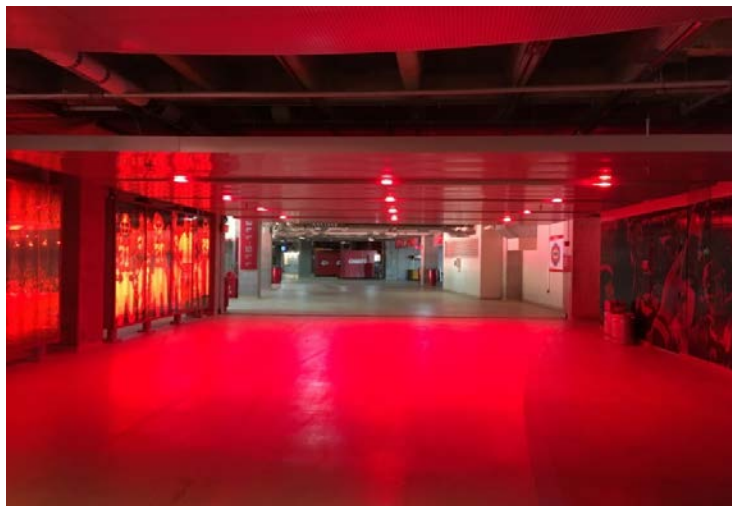


Figure AI-8: Lay-In Perforated Metal Ceiling Panels

Door types and styles throughout Arrowhead Stadium include painted hollow metal doors and frames, flush wood doors, aluminum glazed doors, overhead coiling doors, and access doors. Generally speaking, all doors were observed to be in satisfactory condition. No defects or deteriorations were observed at any of the aforementioned doors.

At the Service Level, two balcony areas were observed to have inadequate fall protection as shown in Figure AI-9. It is assumed that these areas are not accessible to the general public and that individuals accessing these spaces are aware of the hazard. It is also assumed that these areas are intended to allow forklift trucks to hoist and deliver items to the upper story of this space. However, failure to keep proper fall protection in place (guardrails) may present a major safety concern for individuals accessing these spaces. It is highly recommended that these balcony areas be adequately closed off with a guardrail when not required to be open for material delivery.



Figure AI-9: Balcony Areas without Proper Fall Protection

Mechanical

The general mechanical systems appear to be in satisfactory condition. The facility comprises mainly of air-conditioning units that utilize chilled water located on a mezzanine, some stand-alone direct expansion (DX) units, roof-mounted condensing units, ceiling-mounted fan coil units, pumps (fire, domestic water, and chilled water), exhaust fans, concession stand water heaters, and wall-mounted heaters.

There are four electrical rooms, each located along the exterior quadrant of the stadium. These spaces are temperature controlled by a vertical air-conditioning unit, as shown in Figure M-1. Typically, vertical air-conditioning units appear to be in satisfactory condition. The filters appeared to have little or no loading and most of them had been installed during April 2015.



Figure M-1: Electrical Room Vertical Air-Conditioning Unit

Adjacent to each of these electrical rooms is a mechanical room. Within these mechanical rooms are single zone air-handling units (AHU). The filters, fan motors, and belts were inspected within each unit. All of these components appeared to be in satisfactory condition. Figure M-2 shows the interior of the AHU located within Mechanical Room P250.



Figure M-2: AHU Fan and Motor

AHUs were also located on separate mezzanine levels within the stadium. The filters, fan motors, and belts were inspected within each unit. All of these components appeared to be in satisfactory condition. A “ships ladder” was required to gain access to one of these units. This restricted access would make it difficult to replace a large AHU item, consider investigating alternative access options.

The press/media areas and the individual suites were temperature controlled via ceiling mounted fan coil units. The fan coil units and their throwaway type filters appeared to be in satisfactory condition.

Electrical

The stadium main electrical service consist of (10) 4,000A 480Y/277V 3 phase, 4 wire main switchgear with integral 13.2kV to 480V transformers. The switchgear is located throughout the Plaza level. The stadium electrical distribution service also consist of (2) main 2,000A 480Y/277V, 3 phase, 4 wire switchgear for emergency power, connected to (2) 1250KW on-site generators. Lighting and appliance panelboards are located throughout the stadium in each electrical closet on each stadium level.

The main telecommunications service is fed from a vault on the Field level and is run to the Main Telecommunications Equipment room on the Plaza 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 satisfactory condition and kept clear of debris. Most panelboards, distribution boards, switchboards and switchgears are labeled with a few exceptions, as indicated below.

In electrical room P252 the following elements were found to be unsatisfactory:

- 1) Panelboard 3A3H3 directory does not indicate loads for 3-pole breaker circuits 13, 15, 17 and 19, 21, 23. Refer to Figure E-1 below.

CKT	LOAD DESCRIPTION	CKT	LOAD DESCRIPTION
1	EQUIP 3B-04	2	SPARE
3	---	4	SPARE
5	---	6	SPARE
7	EQUIP 3B-06	8	SPARE
9	---	10	SPARE
11	---	12	SPARE
13	SPARE	14	SPARE
15	SPARE	16	SPARE
17	SPARE	18	SPARE
19	SPARE	20	SPARE
21	SPARE	22	SPARE
23	SPARE	24	SPARE
25	SPARE	26	SPARE
27	SPARE	28	SPARE
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-1: Panelboard 3A3H3 Directory

- 2) Bug-eye emergency lights, as shown in Figure E-2, were observed to be emitting a buzzing noise, which may indicate that the back-up batteries may be weak.



Figure E-2: Emergency Bug-Eyed Light Fixture

In electrical room P253, the following elements were found to be unsatisfactory:

- 1) Panelboard 3B3H4 directory does not indicate load for 3-pole breaker circuit 38, 40, 42. Refer to Figures E-3 and E-4 below.

PANELBOARD: 3B3H4		LOCATION: ELEC. ROOM 03 50 02	
277/480 V. 3 PH. 4 W.		DATE: 09/01/10	
FED FROM: 3B3H1		SECTIONS: 1 OF 1	
CKT	LOAD DESCRIPTION	CKT	LOAD DESCRIPTION
1	ECUH 3C-06	2	ECUH 3C-03
3	---	4	---
5	---	6	WAV 3C-03, 04, 06
7	ECUH 3C-03	8	---
9	---	10	---
11	---	12	---
13	WAV 3C-01 & 02	14	EWHL-1
15	---	16	EWHL-1
17	---	18	EWHL-1
19	PCU 3C-10	20	EWHL-1
21	---	22	SPARE
23	---	24	SPARE
25	SPARE	26	SPARE
27	SPARE	28	SPARE
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-3: Panelboard 3B3H4 Directory

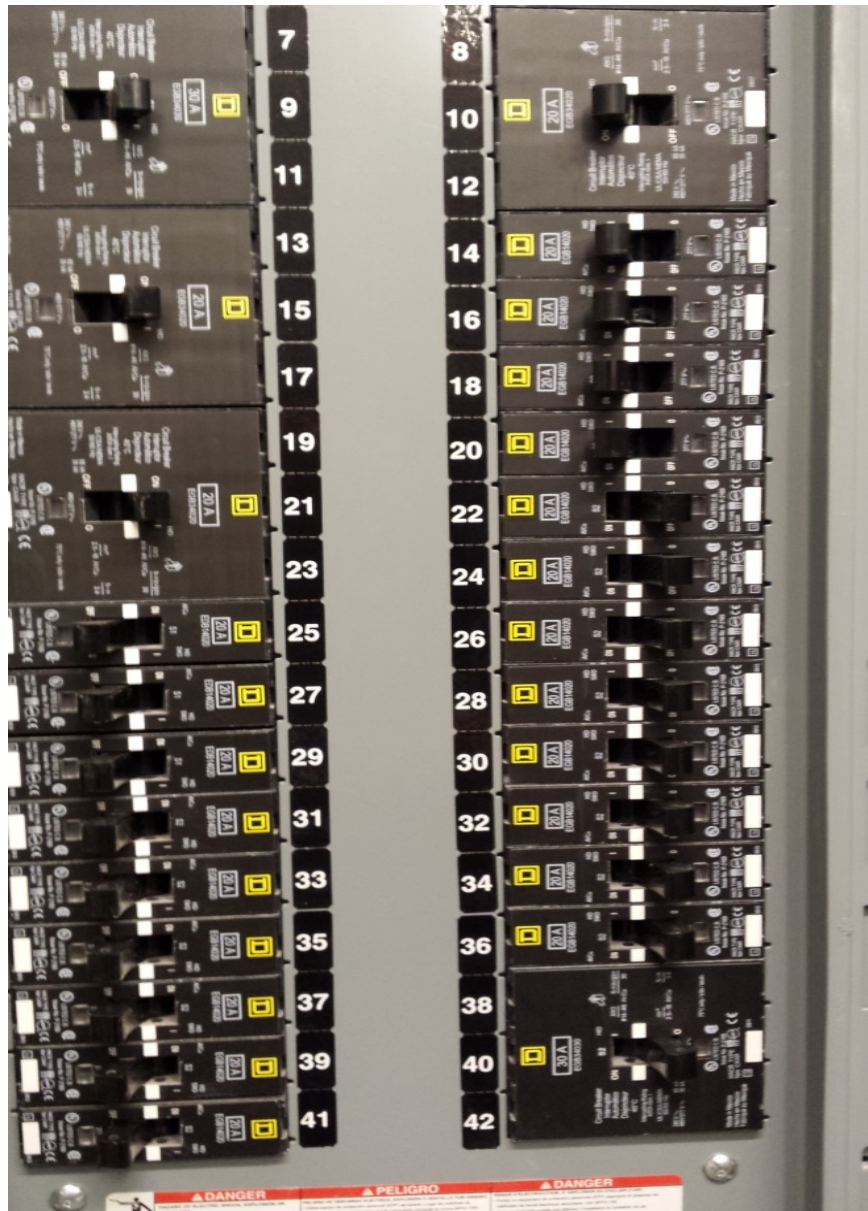


Figure E-4: Panelboard 3B3H4 Branch Circuit Breakers

- 2) Coverplate on open device box located on the interior of the main room entrance appears to be missing. Refer to Figure E-5 below.



Figure E-5: Open Junction Box

The following were found unsatisfactory in room P214:

- 1) Panelboard E4B3H1 3-pole circuit 8, 10, 12 is not labeled, as shown in Figure E-6.



Figure E-6: Panelboard E4B3H1

- 2) The press level installation of the electrical and data connections at each work station are typically in satisfactory condition. However, at one work station a twisted pair cable was observed to be unterminated above the countertop. Refer to Figure E-7 as shown.

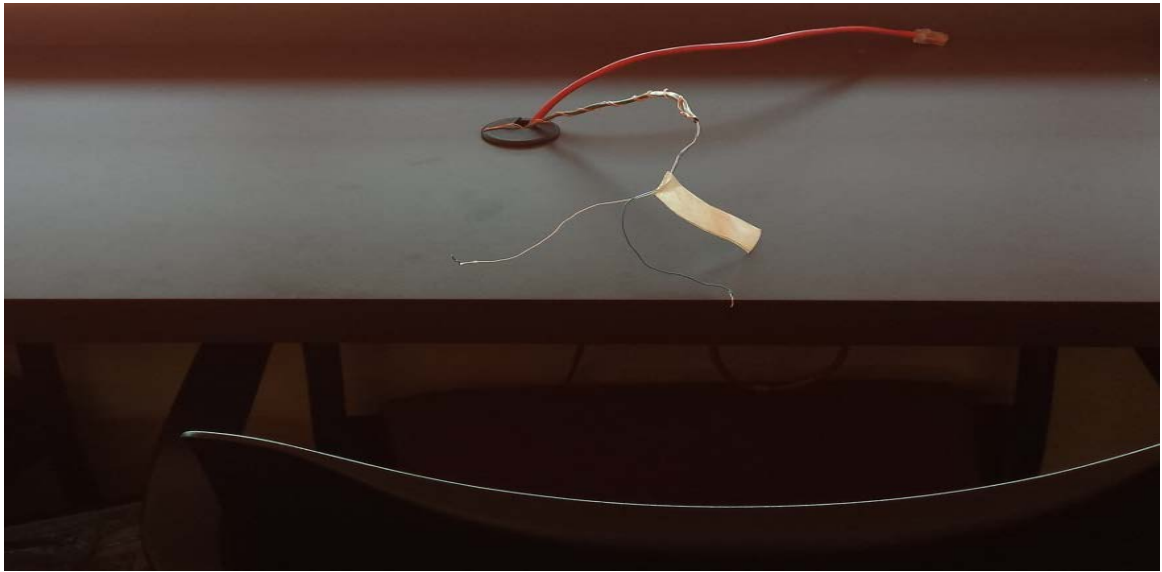


Figure E-7: Unterminated Twisted Pair Cable

SUMMARY OF RECOMMENDATIONS

Site Flatwork

The majority of flatwork at Arrowhead was observed to be in satisfactory condition. However, several deficiencies were found that may require attention.

- Monitor cracking in the surrounding asphalt roads and perform maintenance as necessary to prevent propagation of existing distresses.
- Perform routine maintenance to seal and repair minor cracking observed along walkways and concourses. Refer to Figure C-8.
- Remove incompressible material and organics from any joints missing sealant material, and replace the missing sealant and compressible material. Refer to Figure C-5.
- Monitor the various location of spalling for increased severity and repair more severe cases within panels and structural components. Refer to Figure C-9.

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

- Repair or replace panels or portions of panels showing more severe signs of deterioration. Damage severe enough in nature to present a trip hazard should be repaired to provide a consistent and even walking surface
- Replace any missing pavers to provide an even consistent walking surface for pedestrians. This would also be an improvement aesthetically. Refer to Figure C-7.

Landscaping and Appurtenances

All observed landscaping elements were in satisfactory condition at the time of inspection. Continue regular maintenance and monitor any recently improved or repaired items to confirm discontinuation of deterioration.

Structure

All observed structural elements are in satisfactory condition. Concrete patchwork may be required within the next few years for the original concrete superstructure. Continue routine maintenance as required.

Façades

All facades appear to be in satisfactory condition, no signs of deterioration were observed. Continue routine maintenance as required.

Roofing

All roofing materials appear to be in satisfactory condition, no signs of deterioration were observed. Continue routine maintenance as required.

Interior Elements

Paint was observed flaking off of what appears to be a concrete wall at one of the visiting coach rooms in the Service Level, as shown in Figure AI-5 (left image).

- Consider removing flakes of paint around damaged area, prepping surface to receive new paint, and repainting area with the appropriate material in order to ensure proper adhesion to substrate material. Continual paint adhesion problems may be linked to improper paint type or potential moisture issues behind the wall surface.

Acoustic ceiling tiles appear to be in satisfactory condition, generally. However, at a few locations at the Service Level some ceiling tiles were observed to be damaged around the corners or were not properly set within the ceiling grid. One location where damaged ceilings tiles were observed was at the visiting coach room in the Service Level, as shown in Figure AI-6 (right image).

- Consider replacing damaged ceiling tiles and properly cutting tiles around ceiling elements for a cleaner look. Also consider moving plenum cabling so that wiring may be routed along the surface of a wall in lieu of in the middle of a room.

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

At the Service Level, two balcony areas were observed to have inadequate fall protection as shown in Figure AI-9. It is assumed that these areas are not accessible to the general public and that individuals accessing these spaces are aware of the hazard. It is also assumed that these areas are intended to allow forklift trucks to hoist and deliver items to the upper story of this space. However, failure to keep proper fall protection in place (guardrails) may present a major safety concern for individuals accessing these spaces.

- It is highly recommended that these balcony areas be adequately closed off with a guardrail when not required to be open for material delivery. It is also recommended that doors accessing these spaces be locked at all times and only accessible to individuals who are completely familiar with the potential hazards of these spaces. Unintentional passage through adjacent doors and onto unprotected balcony areas may cause serious injury or death should someone fall due to inadequate fall protection.

Mechanical

All observed mechanical elements are in satisfactory condition. Continue routine maintenance as required.

Electrical

Several panelboards, distribution boards, switchboards, and switchgears are not labeled appropriately in electrical rooms P214, P252, and P253. Reference Figures E-6, E-1, and E-3 respectively.

- Consider labeling all electrical elements as required for code compliance and ease of reference. All branch circuit breaker labels should match the panelboard directory.

Bug-eyed emergency lights, as shown in Figure E-2, were observed to be emitting a buzzing noise, which may indicate that the back-up batteries may be weak.

- Consider replacing batteries in the lighting device to ensure complete operation.

Open junction boxes were observed in electrical room P253, which may pose a potential safety hazard.

- Consider covering open boxes with cover plates.

At the Press Level, one workstation was observed to have unterminated (exposed) low-voltage wiring sticking through the countertop, as shown in Figure E-7.

- Consider terminating low-voltage/data wiring on devices as required.