



# Arrowhead Stadium Assessment | 2015

## 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 written and verified by Burns & McDonnell.

**Jackson County Sports  
Complex Authority**



2 / 1 / 2015



## Report Outline

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## I. Purpose and Scope

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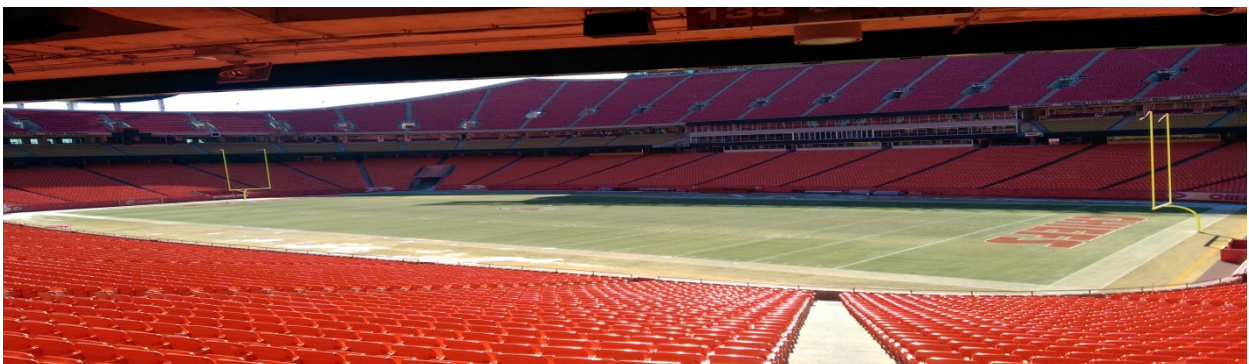
### A. Purpose

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.

### B. Scope

Burns & McDonnell, in conjunction with the JCSCA, has developed a Facility Assessment Report that reviews and documents the stadium condition. During 2014, the Jackson County Sports Complex Authority conducted an inspection of every space in Arrowhead 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 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 completed. Burns & McDonnell received 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.





## II. Executive Summary

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### A. General Description

Arrowhead Stadium, located at One Arrowhead Drive in Kansas City, Missouri. The renovation completed in 2010 was intended to enhance the fan game day experience, increase revenue generation, and improve 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.

### B. 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 The New 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.

### C. Recommendations

There are no major items that require a recommendation to resolve. Section III – Description and Condition includes recommendations for the deficiencies observed for each building or site category. These deficiencies are generally minor and may require attention in the near future. A summary of recommendations may be found in Section IV (pages 20-21).



### III. Description and Condition

#### A. Site

##### 1. Flatwork

###### Description:

- General
  - The site infrastructure in general is in satisfactory condition. Numerous signs of minor deterioration were observed, along with and a handful of more severe defects.
- Arrowhead contains numerous concrete retaining walls and stairs between the curb cut and the stadium concourse.
- Concrete Walkways are abundant surrounding the stadium.

###### Observation/Comments:

- Concourse Concrete Walkways
  - Mild cracking and more severe edge/corner spalling was found in a few locations outside of the entrances to the stadium. Refer to Flatwork Image: [Exhibit A1.1](#) (right).
  - Several joints within the perimeter fence have separated due to moderate spalling and some of the joints are missing sealant.
- Exterior Concrete Walkways.
  - Concrete pavement between Red Coat Drive and the stadium shows moderate signs of deterioration. Refer to Flatwork Image: [Exhibit A1.2](#) and [A1.3](#) (right).
  - Occasional, mild cracking is present in concrete panels near Red Coat Drive.
  - Concrete on the northwest side of the stadium shows mild, but more continuous signs of wear and cracking.
  - Settling of foundation for a signpost was observed near the west corner of the complex. Refer to Flatwork Image: [Exhibit A1.4](#) (right).

#### Flatwork Images:

[Exhibit A1.1](#)



[Exhibit A1.2](#)



[Exhibit A1.3](#)



[Exhibit A1.4](#)



## 2. Landscaping and Appurtenances

### Description:

- Various species of native planting and grass can be found between walkways and within planting beds surrounding the stadium.

### Observation/Comments:

- All landscaping observed was in a dormant stage at the time of observation, but is well maintained and in satisfactory condition. Refer to Landscaping Images: [Exhibit A2.1](#) (right).
- Significant cracking and deterioration of planter curbs outside of the stadium has occurred, particularly at corners as shown under Landscaping Images: [Exhibit A2.2](#) and [A2.3](#) (right).

## B. Frame and Envelope

### 1. Substructure

#### Description:

- Primarily reinforced concrete drilled piers with pier caps.
- Grade beams around perimeter and throughout foundation system.
- Single spread footings partially throughout foundation system.
- Mat foundations support stair and elevator core walls.
- Floating slab-on-grade.

#### Observation/Comments:

- No significant settlement of the structure was observed.
- The slab-on-grade is in satisfactory condition. No major cracks or spalling was observed. The slab surface is flat and smooth.
- Control joints and expansion joints are in satisfactory condition.

#### Landscaping Images:

[Exhibit A2.1](#)



[Exhibit A2.2](#)



[Exhibit A2.3](#)



#### Superstructure Images:

[Exhibit B2.1](#)





## 2. Superstructure

### Description:

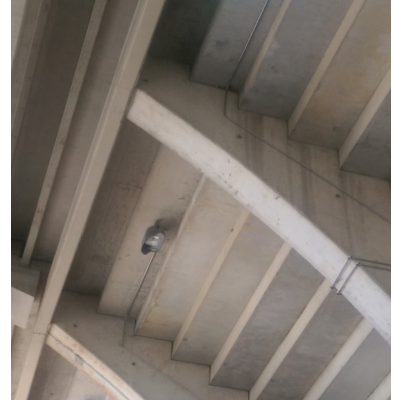
- The original superstructure is primarily reinforced concrete columns and walls with reinforced concrete pan joist slab system. See the following bullet points for a description of the additions constructed during the major renovations stage. Refer to Superstructure Images: [Exhibit B2.1](#) (page 5) and [B2.2](#) (right).
- Primarily reinforced concrete columns throughout the superstructure. Other vertical support systems include Hollow Structural Section (HSS) columns, reinforced concrete and Concrete Masonry Unit (CMU) load bearing walls.
- Plaza, Club and Lower-Upper Concourse levels consist primarily of reinforced concrete pan joist slab system.
- Upper Concourse level primarily consists of non-composite steel roof deck supported by steel wide flange beams. Other floor systems consist of cold form metal joists with steel deck.
- Horizon and Press level consists of light weight composite deck supported by steel wide flange beams.
- Roof level consists of steel roof deck supported by steel wide flange beams.
- Lateral system consists of reinforced concrete load bearing walls.
- The scoreboard structure consists of built-up hollow steel shapes.

### Observation/Comments:

- 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.

### Superstructure Images:

[Exhibit B2.2](#)



[Exhibit B2.3](#)



[Exhibit B2.4](#)



[Exhibit B2.5](#)



- Concrete patchwork of the original structure is in excellent condition. The patchwork is flat and smooth. Refer to Superstructure Images: [Exhibit B2.3](#) (page 6).
- The expansion joints between the original superstructure and the renovation superstructure are in satisfactory condition. No deterioration was observed.
- The original reinforced concrete pan joist slab systems are in satisfactory condition. No major cracks or spalling was observed. Small cracking and spalling exist but are not detrimental to the structure. The suspended slab surface is flat and smooth.
- The steel wide flange columns are in excellent condition. No corrosion was observed. Scoreboard column base and mid-span connections are in satisfactory condition. Refer to Superstructure Images: [Exhibit B2.4](#) (page 6).
- The steel wide flange beams are in satisfactory condition. No corrosion or significant deflection was observed. Beam connections are in satisfactory condition. Refer to Superstructure Images: [Exhibit B2.5](#) (page 6).
- The steel decks are in satisfactory condition. No corrosion or significant deflection was observed.

### 3. Façades

#### Description:

- Primary
  - Insulated Metal Wall Panel on Cold Formed Steel Substructure
  - Curtain Wall Glazing
- Secondary
  - Stone Cladding and Glass Storefront (Base)
  - Graphic Mesh Panel on Steel Frame

#### Facade Images:

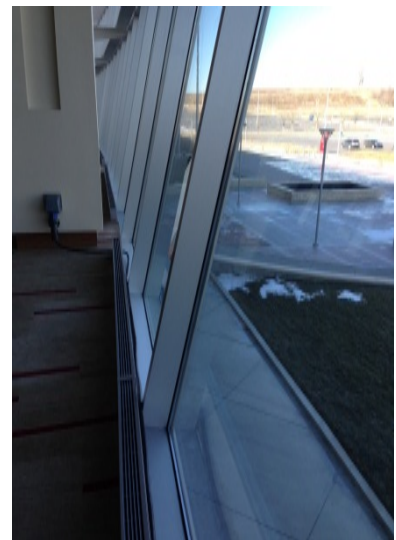
[Exhibit B3.1](#)



[Exhibit B3.2](#)



[Exhibit B3.3](#)





- Tertiary
  - Fencing
  - Metal Entry Canopy

**Observation/Comments:**

- All observed façades, in general, are in satisfactory condition.
- Metal panel and graphic mesh systems were observed to be in satisfactory condition. No signs of oil canning, staining, or degradation were observed.
- Stone cladding systems were observed to be in satisfactory condition. No signs of chipping or staining of the stone or grout was observed.
- All observed glass storefronts are in satisfactory condition. Aluminum frame and mullions were observed to be free of staining, fading, or degradation of any kind. Seals and flashing around observed storefronts are in satisfactory condition.
- Refer to Façade Images: Exhibits B3.1 through Exhibit B3.3 (page 7) for typical façade conditions.

**4. Roofing (Main and Canopy)****Description:**

- Primary
  - Polyvinyl-Chloride Membrane Roofing on R-24 Insulation (typical)
  - Coping and Fascia painted to Match Metal Panel (typical)
- Secondary
  - Standing Seam Metal Roof

**Observation/Comments:**

- Roofing membranes were observed to be in satisfactory condition. No rips, tears, or other failures were visible.
- All observed copings, flashings, and sealants are in satisfactory condition.

**Roofing Images:****Exhibit B4.1****Exhibit B4.2****Flooring Images:****Exhibit C1.1**

- Observed metal roofing is in satisfactory condition. No signs of rust, staining, or other failures were observed.
- Refer to Roofing Images: [Exhibit B4.1](#) and [B4.2](#) (page 8) for typical roofing condition.

## C. Interior Elements

### 1. Floors

#### Description:

- Primary
  - Epoxy Floor Topping System
  - Sealed Concrete
- Secondary
  - Ceramic Tile
  - Carpet
- Tertiary
  - Vinyl Composition Tile
  - Athletic Rubber Flooring

#### Observation/Comments:

- Flooring surfaces are generally in satisfactory condition.
- Carpet, in general, is in satisfactory condition. Carpet deficiencies found in the 2014 stadium assessments were repaired as recommended. Refer to Flooring Images: [Exhibit C1.1](#) (page 8).
- Epoxy floors were observed to be satisfactory. No visible signs of wear and tear were observed. Refer to Flooring Images: [Exhibit C1.2](#) (right) for typical conditions at epoxy flooring.
- Observed sealed or painted flooring is in satisfactory condition. No visible signs of chipping or flaking were observed.
- Porcelain tile floors were observed to be in satisfactory condition. Refer to Flooring Images: [Exhibit C1.3](#) (right) for typical conditions.

#### Flooring Images:

[Exhibit C1.2](#)



[Exhibit C1.3](#)



#### Interior Wall Images:

[Exhibit C2.1](#)



## 2. Interior Walls

### Description:

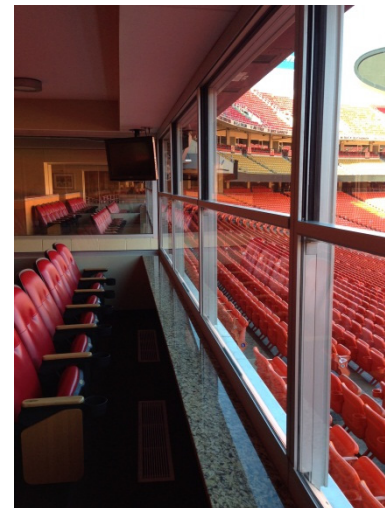
- Primary
  - Painted or Exposed Concrete Masonry Unit (CMU)
  - Painted Gypsum Board on Metal Stud
- Secondary
  - Glazed Storefront System
  - Ceramic Tile (bathrooms)
  - Wood Veneer

### Observation/Comments:

- Observed painted and exposed block walls are in satisfactory condition with no visible chipping, flaking, or cracking of the applied paint system.
- Applied graphic walls, in general, were observed to be in satisfactory condition. However, at the upper concourse a graphic panel was observed to be damaged. Refer to Interior Wall Images: [Exhibit C2.1](#) (page 9) for typical condition.
- Observed painted gypsum board walls are in satisfactory condition, typically. No signs of punctures or holes in the gypsum board material were observed.
- Glazed storefront systems were observed to be in satisfactory condition. No signs of staining, fading, or degradation were observed. Seals and flashing around storefronts are in satisfactory condition. Refer to Interior Wall Images: [Exhibit C2.2](#) (right) for typical condition.
- Porcelain tile, typically, was observed to be in satisfactory condition. No signs of chipping or cracking were observed and mortar joints do not show signs of dirt or grime. Refer to Interior Wall Images: [Exhibit C2.3](#) (right) for typical condition.

### Interior Wall Images:

[Exhibit C2.2](#)

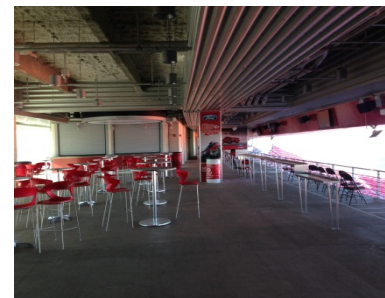


[Exhibit C2.3](#)



### Ceiling Images:

[Exhibit C3.1](#)





### 3. Ceilings

#### Description:

- Primary
  - Exposed or Painted (typical)
- Secondary
  - Gypsum Board on Metal Framing
- Tertiary
  - Acoustic Ceiling Tile

#### Observation/Comments:

- Exposed and painted ceilings were observed to be in satisfactory condition. Refer to Ceiling Images: [Exhibit C3.1](#) (page 10) for typical condition.
- Observed gypsum board ceilings are in satisfactory condition, in general. No punctures, holes, or scratches were observed.
- Acoustic ceiling tile was observed to be in satisfactory condition, in general. Refer to Ceiling Images: [Exhibit C3.2](#) (right) for typical condition.

### 4. Doors

#### Description:

- Painted Hollow Metal Door and Frames
- Flush Wood Doors
- Aluminum Glazed Doors
- Overhead Coiling Doors
- Access Doors

#### Observation/Comments:

- Doors observed, in general, are in satisfactory condition. Refer to Door Images: [Exhibit C4.1](#) (right) for typical condition.
- Flush wood doors are generally in satisfactory condition. However, the paint was observed chipping and flaking around the hollow metal frame of the pantry door in the club lounge/banquet space. Refer to Door Images: [Exhibit C4.2](#) (right).

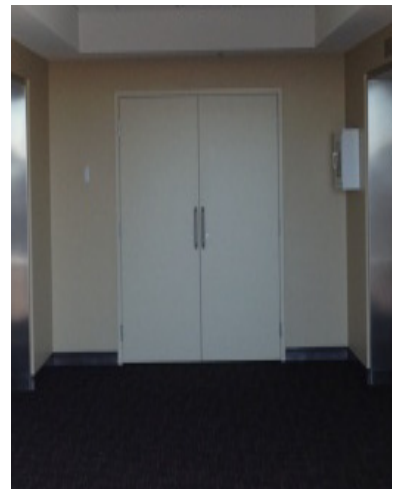
#### Ceiling Images:

[Exhibit C3.2](#)



#### Door Images:

[Exhibit C4.1](#)



[Exhibit C4.2](#)



## D. Plumbing, HVAC and Electrical

### 1. Plumbing

#### Description:

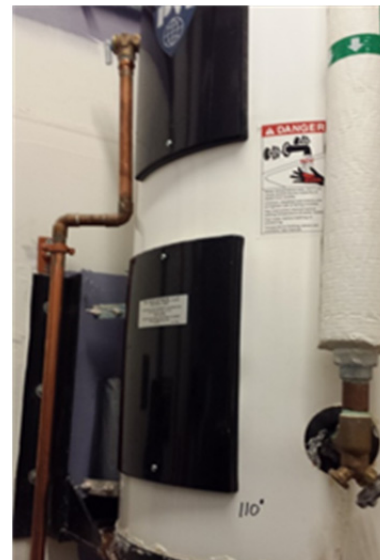
- Water heaters.
- Distribution equipment.
- Water/Fire Protection entrance.
- Water/Fire Protection piping.
- Plumbing Fixtures.
- Roof drains.

#### Observation/Comments:

- Various water heaters throughout the facility were observed to have corrosion at the base of the exterior shell. This is possibly due to the storage of chemicals in the same room with a lack of ventilation. Reference Plumbing Images: [Exhibit D1.1](#) (right). This comment was previously reported during the 2014 Arrowhead assessment report.
- Plumbing piping is properly labeled with direction of flow and valves are clearly tagged. Labels were shown to be tight and secure. Reference Plumbing Images: [Exhibit D1.2](#) (right).
- Fire protection drain lines should also be labeled and tagged for maintenance and service. There were observed in most electrical room locations. Reference Plumbing Images: [Exhibit D1.3](#) (right).
- Exposed piping is equipped with electric heat trace tape. It was noted that some areas of this exposed piping had section that lacked adequate insulation. These areas should be addressed. Reference Plumbing Images: [Exhibit D1.4](#) (page 13).

#### Plumbing Images:

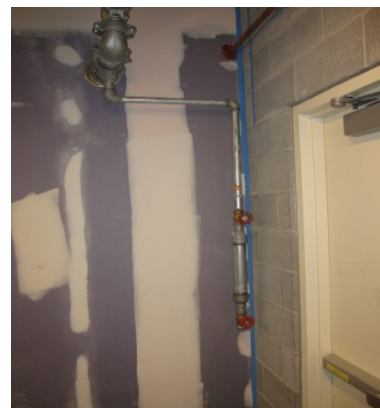
[Exhibit D1.1](#)



[Exhibit D1.2](#)



[Exhibit D1.3](#)



- Access doors to shutoff valves in public restrooms should remain locked during operating hours in an effort to avoid vandalism to concealed piping, valves, etc.
- Natural gas piping serving kitchens has the required emergency shut off valve which is accessible and clearly labeled.
- Water pressure, temperatures and drainage to plumbing fixtures exposed to the outside elements could not be observed due to ambient temperature (20° F) at time of site visit. All exposed restrooms were winterized at the time of site observation.
- Domestic water booster pump skid was observed to be in good condition. Piping is insulated and tagged with direction of flow properly indicated. Reference Plumbing Images: [Exhibit D1.5](#) (right -rotated 90° for size and clarity).

## 2. Heating and Air Conditioning

### Description:

- Air-handling equipment.
- Distribution ductwork and VAV boxes.
- Heating water piping and equipment.
- Exhaust / Transfer fans.
- Chiller and condensing unit.
- These include the electrical room units and the suite area units - Refer to HVAC Images: [Exhibit D2.1](#) and [D2.2](#) (page 14).
- **Observation/Comments:**
  - The primary purpose of the site observations is to provide JCSCA with an overall sampling of mechanical systems such that the overall condition of equipment and maintenance procedures can be reviewed.
  - VAV Terminal Units
    - Deficiencies
      - None observed

### Plumbing Images:

[Exhibit D1.4](#)



[Exhibit D1.5](#)





- System Maintenance Checks Observed by Engineer
  - Equipment tagged
  - Accessible for maintenance
  - Ductwork complete
  - Insulation complete
  - Electrical components in place
  - Controls components in place
- Fan Powered Terminal Units
  - Deficiencies
    - None observed
  - System Maintenance Checks Observed by Engineer
    - Equipment tagged
    - Accessible for maintenance
    - Filters clean
    - Ductwork complete
    - Insulation complete
    - Electrical components in place
    - Controls components in place
- Air Handling Units
  - Deficiencies
    - Condensate leaking onto floor. Reference HVAC Images: [Exhibit D2.2](#) (right). This was observed on the mezzanine level. Equipment filters were dated with black Sharpie on filter casing at the time of replacement making it easy for maintenance staff to see when filters are out of date when periodic checks are performed. Reference HVAC Images: [Exhibit D2.3](#) (page 15).
  - System Maintenance Checks Observed by Engineer
    - Equipment tagged.
    - Maintenance access acceptable for unit and components.
    - Piping complete, properly supported,

**HVAC Images:**[Exhibit D2.1](#)[Exhibit D2.2](#)

insulated and labeled.

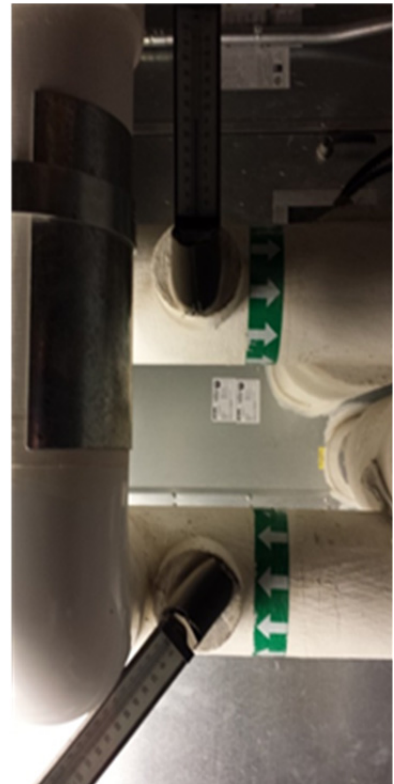
- Piping system pressure and temperature clearly identified  
Reference HVAC Images: [Exhibit D2.4](#) (right – rotated 90° for size and clarity).
- Isolation, balancing and control valves installed and are operable.
- Fans and motors were observed to be properly aligned and lubricated.
- Belt tension and condition were visually inspected for cracks or breaks. Reference HVAC Images: [Exhibit D2.5](#) (page 16).
- Controls components in place.
- Power disconnects installed and labeled.
- VFD operational.
- Computer Room Air Conditioning Unit (CRAC)
  - Deficiencies
    - None observed.
  - System Maintenance Checks  
Observed by Engineer
    - Equipment tagged.
    - Accessible for maintenance.
    - Ductwork complete.
    - Fans and motors were observed to be properly aligned and lubricated.
    - Belt tension and condition were visually inspected for cracks or breaks.
    - Piping and insulation complete.
    - Electrical components in place.
    - Controls components in place.
- Condensing Units
  - Deficiencies

#### HVAC Images:

[Exhibit D2.3](#)



[Exhibit D2.4](#)



- None observed.
  - System Maintenance Checks Observed by Engineer
    - Equipment tagged.
    - Clean outdoor condenser coils.
- Electric Unit Heaters
  - Deficiencies
    - None observed.
  - System Maintenance Checks Observed by Engineer
    - Equipment tagged.
    - Listened for excessive noise or vibrations from fan.
    - Refer to HVAC Images: [Exhibit D2.6](#) (right).
- Exhaust Fans
  - Deficiencies
    - None observed.
  - System Maintenance Checks Observed by Engineer
    - Equipment tagged.
    - Motors were observed to be properly aligned and lubricated.
    - Belt tension and condition were visually inspected for cracks or breaks
    - Listened for excessive noise or vibrations from fan.
- Transfer Fans
  - Deficiencies
    - None observed.
  - System Maintenance Checks Observed by Engineer
    - Equipment tagged.
    - Observed motors are properly aligned and lubricated.
    - Belt tension and condition were visually inspected for cracks or breaks.
    - Listened for excessive noise or vibrations from fan.

**HVAC Images:**[Exhibit D2.5](#)[Exhibit D2.6](#)



- Motorized Dampers
  - Deficiencies
    - None observed.
  - System Maintenance Checks Observed by Engineer
    - Check damper action is smooth over full travel.
    - Check position of damper blades at full open and close positions.
    - Check linkage and bearings for slack or wear.
    - Refer to HVAC Images: Exhibit D2.7 (right).
- Due to the ambient conditions present at the time of the site visit, (20 deg. F) various equipment was not operational and unable to be observed.
  - a) Chillers
    - Equipment tagged.
    - Listened for excessive noise and vibration.
    - Check for excessive temperatures and pressures.
  - b) Roof Top Units – Direct Exchange (DX)
    - Equipment tagged.
    - Maintenance access acceptable for unit and components.
    - Observed motors are properly aligned and lubricated.
    - Belt tension and condition were visually inspected for cracks or breaks.
    - Filters clean.
    - Power disconnects installed and labeled. All safeties operable.

**HVAC Images:****Exhibit D2.7**

### 3. Electrical

#### Description:

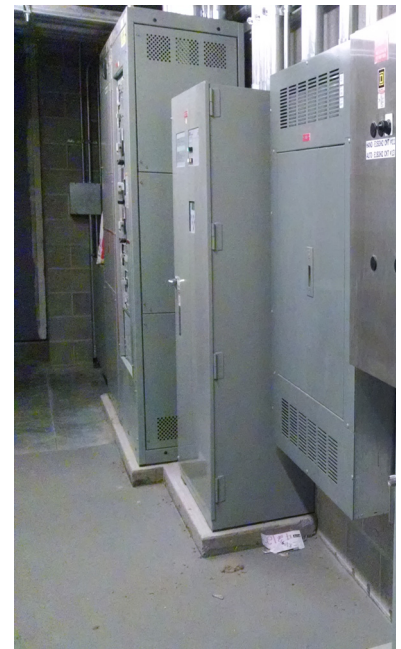
- The stadium main electrical service consist of (10) 4,000A 480Y/277V 3 phase, 4 wire main switchgears with integral 13.2kV to 480V transformers. The switchgears area located throughout the Plaza level.
- The stadium electrical distribution service also consist of (2) main 2,000A 480Y/277V, 3 phase, 4 wire switchgears are used for emergency power and are connected to (2) 1250KW on-site generators.
- Branch circuit panel boards are located throughout the stadium in each electrical closet.
- 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.
- Fiber is run throughout the stadium to various telecommunications rooms, and copper cabling is run to data outlets via cable tray.

#### Observation/Comments:

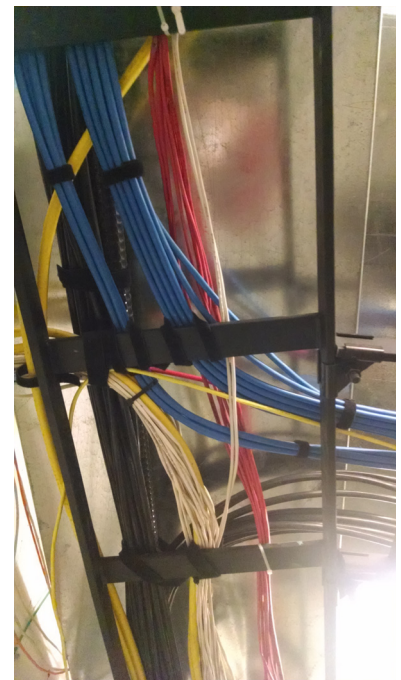
- The overall electrical system was observed to be in satisfactory condition.
- Most electrical rooms have been kept clear of debris. Panelboard clearances have been maintained as required by the 2014 National Electrical Codes, article 110.26
- All panel boards observed were labeled and included type-written, laminated panel board schedule or labeled branch circuit breakers. All emergency panels were labeled with red placards, identifying it as emergency panelboard, as shown under Electrical Images: [Exhibit D3.1](#) (right).
- The installation of telecommunications

#### Electrical Images:

[Exhibit D3.1](#)



[Exhibit D3.2](#)



equipment and cabling are in a neat and workman like manner, as shown in Electrical Images: [Exhibit D3.2](#) (page 18).

- The conduit installation outside of telecomm room 215D was observed to not be installed with a bushing on the end, as shown in Electrical Images: [Exhibit D3.3](#) (right).
- Black ground conductor was terminate on ground bus bar in Electrical closet 04-31.05.

#### Electrical Images:

[Exhibit D3.3](#)





## IV. BMcD Recommendations - Summary

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### A. Site:

#### 1. Flatwork

- Perform routine maintenance to seal and repair minor cracking observed along walkways and concourses. Refer to Exhibits A1.1, A1.2 and A1.3 (page 4).
- Monitor more severe signs of pavement deterioration after maintenance is performed to confirm deterioration does not continue to advance. Refer to Exhibits A1.2 and A1.3 (page 4).

#### 2. Landscaping and Appurtenances

- Significant cracking and deterioration of planter curbs on the east and west side of the stadium. Repair this curbing in the near future to prevent additional damage and maintain positive aesthetic condition. Refer to Exhibits A2.2 and A2.3 (page 5).

### B. Frame & Envelope:

#### 1. Substructure

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

#### 2. Superstructure

- 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.

### C. Interior Elements:

#### 1. Interior Walls

- Applied graphic walls, in general, were observed to be in satisfactory condition. However, at the upper concourse a graphic panel was observed to be damaged. Consider repairing or replacing panel in the near future to maintain the appearance of a First Class NFL Football stadium. Refer to Exhibit C2.1 (page 9).

#### 2. Doors

- Hollow metal frames around doors are generally in satisfactory condition. However, the paint was observed to be chipping and flaking around the frame of the pantry door in the club/banquet space. Consider repairing/repainting the wall and frame in the near future. Refer to Exhibit C4.2 (page 11).

### D. Plumbing, HVAC and Electrical:

#### 1. Plumbing

- In general, all mechanical and plumbing systems have been well maintained and were observed to be in satisfactory condition.
- It was noted that some areas of this exposed piping had section that lacked adequate/missing insulation. These areas should be addressed. Refer to

Exhibit D1.4 (page 13).

## 2. HVAC

- It is suggested to replace filters at air handling units every three to six months depending on equipment use. Refer to Exhibit D2.3 (page 15).
- Maintenance must be performed to avoid significant water collection and electrical malfunction. Refer to Exhibit D2.2 (page 14).
- It is recommended to label fire protection piping drains within electrical rooms for maintenance and service. Refer to Exhibit D1.3 (page 12).

## 3. Electrical

- In general, all electrical elements were observed to be in satisfactory condition.
  - Ensure that all conduits used for routing of low-voltages are provided bushings on the end of conduits to protect from damage to cabling. Refer to Exhibit D3.3 (page 19).
  - Ensure that all grounding conductors are green jacketed or wrapped in green tape to readily identify as grounding conductors.
-