Denver Coliseum (BLDG-014)

2020 Facility Condition Assessment Program

City & County of Denver

Prepared for:
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Department of Transportation & Infrastructure
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EXECUTIVE SUMMARY

The City and County of Denver (CCD) has initiated an assessment of various City and County owned buildings and facilities under the 2020 Facility Condition Assessment Program (FCAP). FCAP is a standardized approach for assessing the state, health, and efficiency of assets and systems of a City building or facility. The results enhance the budgeting, reporting, forecasting, and benchmarking of City maintenance and CIP expenditures by documenting and tracking the changing conditions. FCAP findings, recommendations (aka "Facility Improvements Measures" or FIMs), and other associated building data are placed and recorded into Infor EAM software for operating, planning, and reporting by multiple CCD agencies. The City provided Infor EAM training, documentation and access at no cost to the assessment team.

Facility Description

The Coliseum is a two story concrete arena structure with a one story attached barn located at 4600 Humboldt Street in Denver, Colorado. The facility is approximately 136,000 square feet and was built in 1952.

Overall Building Rating

3 – Fair

Findings and Recommendations

The following table is a Master List of Findings resulting from the work, detailing finding descriptions and recommendations for Facility Improvement Measures (FIMs) to address the findings.

Master List of Findings/FIMS

Finding #	Name	Description	Recommendation	Location	FCAP Priority	Estimated Cost
1	Arena Ceiling	As stated in the 2014 FCAP Assessment, the majority of the ceilings throughout the building are exposed structure and in good to fair condition. The ceiling of the main arena is covered in cork tile that is moisture stained but in fair condition. There are gaps between the wall and roof in the main arena that allow moisture penetration and air flow into the main space.	Seal gaps open to the exterior. The cost is based on a discussion of an allotment to provide sealant in openings.	Throughout Building	3	$50,000
2	Bird Netting Inspection and Filter Install	Staff reported that there are birds nesting in the mechanical rooms in all 4 quads of the building. The birds have been said to be clogging up filters and affecting the quality of air through the units.	Inspect bird deterrent netting in all 4 quads. Additionally, it is recommended to add filter banks to filter the outside are for each of the quads.	All 4 Quads	2	$9,500
3	Replace Stained Ceiling Tile in Office and Dressing Rooms	As stated in the 2014 FCAP Assessment, the ticket office has suspended acoustical tile ceiling and there is evidence of roof leaks in this area. The main office and dressing rooms have suspended acoustical tile ceilings and appear to be in good condition. The staff locker areas also have suspended tile ceilings but there is evidence of moisture damage.	Replace stained ceiling tiles	Main Office & Dressing Rooms	2	$1,500
4	Seal Concrete Cracks	As stated in the 2014 FCAP Assessment, the floors in the Coliseum are typically sealed concrete with some cracking in the arena and concourse areas. The concrete floors in the staging and maintenance areas have more extensive cracking.	Seal cracks in concrete floors	Arena & Concourse	2	$9,500
5	Repair Wall Moisture Damage – @ Concession Stand	The interior walls were observed to have moisture damage at the concession wall at Gate 123/125.	Clean and repair moisture damage. The cost is based on an allotment for repair work.	Concession at Gate 123/125	2	$5,000
6	Repair Wall Moisture Damage - @ Offices and Changing Rooms	As stated in the 2014 FCAP Assessment, interior partitions in the offices and changing rooms are typically painted, metal stud and gypsum board construction that are in good condition but there is some moisture damage on the wall in the ticket office.	Clean and repair moisture damage. The cost is based on an allotment for repair work.	Office & Changing Rooms	2	$5,000
7	Tunnel Wall Cracks	As stated in the 2014 FCAP Assessment, the tunnel walls	Seal cracks in concrete masonry to weatherize tunnel.	Masonry Tunnel	3	$6,000

		are masonry and have cracks open to the exterior.	The cost is based on an allotment for repair work.			
8	Concrete Structure Deterioration at Exterior Walls	As stated in the 2014 FCAP Assessment, the majority of the exterior wall construction is concrete structure that is generally in fair to poor condition. There is a great deal of cracking, spalling exposing reinforcing, broken edges, deteriorating surfaces and joints. Some windowsills are almost completely deteriorated.	It is recommended to inquire for a structural study to provide an additional structural study to assess the integrity of the structure. During the 2020 closeout meeting, it was said that a study had been done in 2014. However, it is recommended to provide an additional study for ongoing cracks and damage to assess the need for ongoing annual maintenance.	All Exterior Concrete Walls	1	$15,000
9	Concrete Masonry Cracking at Tunnel	As stated in the 2014 FCAP Assessment, the walls of the National Western tunnels are concrete masonry and are in fair to poor condition with a number of cracks extending through to the interior.	It is recommended to inquire for a structural study to provide an additional structural study to assess the integrity of the structure. Verify structural integrity and repair cracks in concrete masonry.	National Western Tunnel	3	$15,000
10	Cracked Concrete Walls at Barn	As stated in the 2014 FCAP Assessment, the exterior walls of the barn are concrete panels and in fair to poor condition with extensive cracking, spalling and various stages of deterioration.	Repair exterior concrete structure and seal cracks. The cost is for ongoing maintenance and based on the estimate from the 2014 assessment and accounts for inflation.	Exterior Walls at Barn	2	$19,000
11	Window Replacement at Break Room	As stated in the 2014 FCAP Assessment, some of the windows throughout the Coliseum have been replaced but there are still some windows in areas of the Coliseum that are original metal windows. The windows that are original are only the ones in the break room and they are in poor condition.	Replace the windows in the break room with double pane efficient windows. The cost is based on discussed (adjacent) projects that have been done at the facility.	Metal Windows in Break Room	4	$75,000
12	Damaged Doors Throughout Building	As stated in the 2014 FCAP Assessment, a number of doors around the building have damaged weather stripping that should be repaired or replaced. Additionally, the doors around the facility have been observed to require various repair work and replacement to hardware and the door panels.	It is recommended to provide an allotment for door repair work and replacement throughout the facility. The cost is based on an agreed amount discussed during the closeout meeting.	Doors Throughout the Building	1	$25,000
13	Ceiling Mounted Anchor Structural Integrity	The ceiling mounted anchors were said to be heavily used but, in the integrity, looked to be questionable.	It is recommended to provide an annual allotment for a testing program to assess the structural integrity of the anchors.	Ceiling of Arena	1	$25,000
14	Install Outside Air Inlet Filter	There is currently no filtration on the louvers for the outside air inlets to the building,	Furnish and install filter banks for all outside air inlets for the building.	Quad Mech Rooms Outside Air	2	$15,000

	Banks	which is leading to inefficiencies in the HVAC systems.	Installation should occur during the replacement of the quad cooling coils mentioning in Finding 24 of this report. Cost was determined by Arts and Venues staff during the close-out meeting.	Inlets		
15	Damaged Asphalt & Concrete Flatwork	As stated in the 2014 FCAP Assessment, there are areas of sidewalk and pavement around the facility that have extensive cracking.	It is recommended to provide an annual allotment for various concrete and asphalt repair work throughout the facility. The cost is based on a discussed allotment from the closeout meeting.	Exterior Sidewalk Concrete	1	$50,000
16	Seat Risers Leaking	The stands were observed to have leaking from the seating risers. Cola stains showed stains on areas below.	Reseal seams and clean cola stains at each stand.	Stands	3	$12,000
17	Replace Main (General) Parking Lot	As stated in the 2014 FCAP Assessment, the Main (General) parking area on the west side of the barn, area 4, is in poor condition. The pavement has large areas of swell and settlement as well as ponding and extensive plant growth. Staff reported that the lot was built over a contaminated site and removing the existing pavement may require remediation.	Regrade and repave the Main parking lot. The cost is based on the 2014 FCAP Assessment and accounts for inflation and remediation for the area of approximately 18 acres. Additionally, the actual funding and project details are dependent upon a future EPA and State agreement.	Parking Lots	4	$21,250,000
18	Area B Roof Repair	As stated in the 2014 FCAP Assessment, the main roof of the Coliseum, area B, is a liquid applied membrane system that is in good condition with some deterioration at the edges and some flashing that has gaps at the intersection of the built-up roof sections.	Repair coating at structure edges and flashings adjoining low slope built-up asphalt roof system. Some of the areas of the roof have undergone routine maintenance and repair work. However, it is recommended to continue roof repair work and replacement as a part of routine maintenance on an annual basis.	Area B Roof	2	$7,625
19	Replace Older Roof Areas	As stated in the 2014 FCAP Assessment, areas A and C are adjacent to the main roof on the north and south and are a built-up asphalt roof system. A few sections of these roofs have been replaced but most of the roof sections have extensive ponding, flashing issues and damaged drains.	Replace older roof built-up asphalt roof sections. Some of the areas of the roof have undergone routine maintenance and repair work. However, it is recommended to continue roof repair work and replacement as a part of routine maintenance on an annual basis.	Area A & C Roof	3	$312,500
20	Area D Roof Repair	As stated in the 2014 FCAP Assessment, the upper roof area on the east side of the Coliseum, area D, has recently been replaced but many of the	Clean out clogged drains and assure all drains are clear. Some of the areas of the roof have undergone routine maintenance and repair work.	Area D Roof	1	$2,000

		drains are clogged and may be the source of leaks in the HVACanical rooms below.	However, it is recommended to continue roof repair work and replacement as a part of routine maintenance on an annual basis.			
21	Replace Roof at Area E	As stated in the 2014 FCAP Assessment, the lower roof, area E, is in poor condition with ponding, clogged drains, cracked flashing and deteriorating coating on the structure.	Replace built-up asphalt roof. Clean and recoat exposed concrete structure. Some of the areas of the roof have undergone routine maintenance and repair work. However, it is recommended to continue roof repair work and replacement as a part of routine maintenance on an annual basis.	Area E Roof	1	$125,000
22	Repair Roof at Main Roof	The Main roof at the barn was observed to be in very poor condition. It appeared to be beyond useful life.	It is recommended to patch and repair as necessary. Additionally, the roof should be replaced within the next 5-10 years.	Roof	4	$1,026,250
23	Replace Tunnel Roof	As stated in the 2014 FCAP Assessment, the tunnel roof, area H, is a modified bitumen system that is in fair to poor condition. The roof has deteriorating soffits and gutters which drain on to the Barn roof. The joint between the Coliseum and the tunnel is also in poor condition.	Replace roof, soffits and improve drainage configuration.	Area H Roof	3	$93,750
24	Replace Cooling Coils	As identified in the 2014 assessment, the four well water cooling coils located in the Quad mechanical rooms are original to the 1950 construction and are considered well beyond their useful lives. The cooling coils were designed to utilize 61ºF well water pumped from beneath the west parking lot. Several studies have been performed since the 2014 assessment in an attempt to re-use the cooling coils, however, the results of the studies found that the well water must be regularly tested, which was deemed too expensive to be a viable solution. The coils are currently capped and abandoned in place. Arts and Venues staff mentioned the lack of cooling has affected the time of year that events are able to be held at the building. Because of this, a majority of events are scheduled during colder months of the year. An alternative HVAC cooling solution is necessary to provide comfort cooling for the	An HVAC engineering study should be conducted to determine the building's cooling loads while at full capacity. Demo the existing four (4) quad cooling coils and associated piping and appurtenances. Furnish and install a new HVAC mechanical cooling system. Cost was determined by Arts and Venues staff during the close-out meeting.	Quad Mech Rooms	3	$2,000,000

		building at full capacity on a design cooling day.				
25	RTU'S use R-22 Refrigerant	It was observed that three (3) Roof Top Units (RTU-1, RTU-2, and RTU-3) use R-22 refrigerant. As of 2020, R-22 refrigerant has been discontinued and condenser can be considered obsolete. Continued operation of this unit will result in increased maintenance costs as R-22refrigerant prices will increase. It was also noted that there was not a GFI receptacle located on the roof near the HVAC equipment.	Remove and replace RTU-1, RTU-2, and RTU-3 with new units of the same capacity that use approved R-410a refrigerant. Install a weatherproof GFI receptacle within 25 ft of the HVAC equipment located on the roof to bring the building up to current code in this area.	Quad 2 Lower Roof & Barn Roof	3	$44,000
26	Ice Machines Use R-22 Refrigerant	Staff mentioned the two (2) ice machines located at the south exterior of the building use R-22 refrigerant. As of 2020, R-22 refrigerant has been discontinued and units can be considered obsolete. Continued operation of these units will result in increased maintenance costs as R-22 refrigerant prices will increase. The ice machine supports were also observed to be corroded and will also need to be replaced.	Remove and replace two (2) ice machines with new units of the same capacity that use approved refrigerant. Provide new supports for the ice machines.	South Exterior	3	$120,000
27	Repair Old Switchgear Q1DC, Q2DC, Q3DC, & Q4DC	As identified in the 2014 FCAP assessment, the Switchgear, one located in each quad, are beyond useful life. Obsolete gear is no longer manufactured, parts may be difficult to source.	Retain qualified factory level trained technician to disassemble and assess switchgear condition. Replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Each Quad	1	$80,000
28	Repair Distribution Panel DSP4	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #4	1	$3,150
29	Repair Power Distribution Panel PPH4	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #4	1	$4,200

30	Repair Lighting Distribution Panel PPL4	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #4	1	$3,150
31	Repair Power Distribution Panel EPM4	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #4	1	$2,100
32	Repair Lighting Distribution Panel LPM4	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #4	1	$3,150
33	Repair Distribution Panel DSP3	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #3	1	$3,150
34	Repair Power Distribution Panel PPH3	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #3	1	$4,200
35	Repair Lighting Distribution Panel PPL3	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #3	1	$3,150
36	Repair Power Distribution Panel EPM3	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #3	1	$2,100
37	Repair Lighting Distribution Panel LPM3	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #3	1	$3,150

38	Repair Distribution Panel DSP2	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #2	1	$3,150
39	Repair Power Distribution Panel PPH2	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #2	1	$4,200
40	Repair Lighting Distribution Panel PPL2	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #2	1	$3,150
41	Repair Power Distribution Panel EPM2	As identified in the 2014 FCAP assessment, the panel in acceptable condition, however, breakers beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #2	1	$2,100
42	Repair Lighting Distribution Panel LPM2	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #2	1	$3,150
43	Repair Distribution Panel DSP1	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #1	1	$3,150
44	Repair Power Distribution Panel PPH1	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #1	1	$4,200
45	Repair Lighting Distribution Panel PPL1	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #1	1	$3,150

46	Repair Power Distribution Panel EPM1	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #1	1	$2,100
47	Repair Lighting Distribution Panel LPM1	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through GE.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Quad #1	1	$3,150
48	Repair Concession Panel 1	As identified in the 2014 FCAP assessment, the panel is in fair condition in need of cosmetic refurbishment. The breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Clean cover and dead front or replace with new to give as new appearance.	Concession Booth 1	2	$3,150
49	Repair Concession Panel 2	As identified in the 2014 FCAP assessment, the panel is in poor condition in need of cosmetic refurbishment. The breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Clean cover and dead front or replace with new to give as new appearance.	Concession Booth 2	2	$3,150
50	Repair Concession Panel 3	As identified in the 2014 FCAP assessment, the panel is in poor condition in need of cosmetic refurbishment. The breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Clean cover and dead front or replace with new to give as new appearance.	Concession Booth 3	2	$3,150
51	Repair Concession Panel 4	As identified in the 2014 FCAP assessment, the panel is in poor condition in need of cosmetic refurbishment. The breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Clean cover and dead front or replace with new to give as new appearance. Replace missing latch on cover door.	Concession Booth 4	2	$3,675
52	Repair Concession Panel 5	As identified in the 2014 FCAP assessment, the panel is in poor condition in need of cosmetic refurbishment. The breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Clean cover and dead front or replace with new to give as new appearance. Replace missing latch on cover door.	Concession Booth 5	2	$3,675

53	Repair Sound and Light Booth Panel	As identified in the 2014 FCAP assessment, the panel is in fair condition in need of cosmetic refurbishment. The breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Sound & Light Booth	2	$3,150
54	Relabel Panel PPH2	As identified in the 2014 FCAP assessment, this panel shares a name with another panel that was already existing at the time of installation.	Rename and label panel to: PPH1A	Quad #1	1	$420
55	Repair Pink House Lights NE Panel	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Catwalk	2	$3,150
56	Rewire Catwalk Lighting Relay NE Panel	As identified in the 2014 FCAP assessment, this relay panel is older but still functional. The wiring is in fair to poor condition and needs to be replaced. The relays are obsolete and probably no longer available.	Clean and rewire inside of cabinet with new wire. Torque all connections to recommended values. Train all wiring to appear workmanlike and allow replacement of parts for maintenance. Secure all loose relays, wiring or other equipment. Clean, repair and repaint covers and doors to like- new condition.	Catwalk	2	$6,300
57	Repair Panel CP1	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Catwalk	2	$3,150
58	Repair Pink House Lights SE Panel	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Catwalk	2	$3,150
59	Rewire Catwalk Lighting Relay SE Panel	As identified in the 2014 FCAP assessment, this relay panel is older but still functional. The wiring is in fair to poor condition and needs to be replaced. The relays are obsolete and probably no longer available.	Clean and rewire inside of cabinet with new wire. Torque all connections to recommended values. Train all wiring to appear workmanlike and allow replacement of parts for maintenance. Secure all loose relays, wiring or other equipment. Clean, repair and repaint covers and doors to like- new condition.	Catwalk	2	$6,300
60	Repair Panel CP2	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However,	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer	Catwalk	2	$3,150

		the breakers are beyond useful life. Breakers are still available through Siemens.	recommended values, perform NETA testing and reassemble.			
61	Repair Pink House Lights SW Panel	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Catwalk	2	$3,150
62	Rewire Catwalk Lighting Relay SW Panel	As identified in the 2014 FCAP assessment, this relay panel is older but still functional. The wiring is in fair to poor condition and needs to be replaced. The relays are obsolete and probably no longer available.	Clean and rewire inside of cabinet with new wire. Torque all connections to recommended values. Train all wiring to appear workmanlike and allow replacement of parts for maintenance. Secure all loose relays, wiring or other equipment. Clean, repair and repaint covers and doors to like- new condition.	Catwalk	2	$6,300
63	Repair Panel CP3	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Catwalk	2	$3,150
64	Repair Pink House Lights NW Panel	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Catwalk	2	$3,150
65	Rewire Catwalk Lighting Relay NW Panel	As identified in the 2014 FCAP assessment, this relay panel is older but still functional. The wiring is in fair to poor condition and needs to be replaced. The relays are obsolete and probably no longer available.	Clean and rewire inside of cabinet with new wire. Torque all connections to recommended values. Train all wiring to appear workmanlike and allow replacement of parts for maintenance. Secure all loose relays, wiring or other equipment. Clean, repair and repaint covers and doors to like- new condition.	Catwalk	2	$6,300
66	Repair Panel CP4	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Catwalk	2	$3,150
67	Repair Light Stand Panel	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer	East Catwalk	2	$3,150

		Breakers are still available through Siemens.	recommended values, perform NETA testing and reassemble.			
68	Repair Panel Outside Concession 6	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Outside Concession Booth 6	2	$3,675
69	Repair Concession Panel 6	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Clean cover and dead front or replace with new to give as new appearance. Replace missing latch on cover door.	Concession Booth 6	2	$3,675
70	Repair Panel EPA3	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Backstage Breakroom	2	$3,150
71	Repair Panel LPA3	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through Siemens.	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.	Backstage Breakroom	2	$3,150
72	Replace Old Arcade Panel	As identified in the 2014 FCAP assessment, this panel is obsolete and in poor condition	Replace panel with new containing a complement of breakers matching in number and rating. Provide new nameplate with unique identifier.	Arcade	1	$4,200
73	Repair Panel No Name	As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life. Breakers are still available through Square D	Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Provide new nameplate with unique identifier.	Unknown	2	$3,150
74	Replace Barn Panels	As identified in the 2014 FCAP assessment, most panels in Barn require replacement.	Replace with new.	Barn	1	$21,000
75	Deteriorating Concrete Roof Members	The concrete structural members at the roof show signs of deterioration on the coating at the top of the members. The deterioration looks to be from normal wear and tear at the top.	It is recommended to repair the areas of coating and provide approximately 4,000 L.F. of metal coping and flashing at the tops of the members to protect from further damage.	Roof	2	$35,000

76	Floor Damage at the Main Entrance	The floor at the entrance was observed to be damaged. There is a diamond plate metal place over a failing seam. The damage is said to be from normal wear and tear due to heavy foot traffic during the stock shows.	It is recommended to repair the seam by cutting/removal and repatching the concrete.	Main Entrance	3	$3,600
77	Wooden Chairs Refinishing at Arena Seating	The arena seating was observed to need refinishing due to normal wear and tear.	It is recommended to re-stain and re-seal the wood chairs. The cost is based on an agreed allotment to cover maintenance to the chairs.	Arena Seating	3	$100,000
78	Carpet & Furniture Replacement at the Box Office	The carpet and furniture within the box office was observed to be beyond its useful life. The carpet showed damage from normal wear and tear. Additionally, the box office was said to lack window shading.	It is recommended to inquire a design from an interior designer to replace the carpet, window shading, and furniture. The cost is based on a schematic design.	Box Office	2	$30,000
79	Expansion Joint Repair at Arena	The expansion joints located at all stairways and the ice floor were observed to have cracks and chipping. If not addressed the damage will continue to worsen.	It is recommended to reseal the cracks at the damage expansion joints to prevent further damage. The cost is based on an allotment for resealing the areas.	Stairways and Ice Floor	1	$15,000
80	Arena Floor Concrete Repair	The ground floor of the arena was observed to have minor cracking throughout. If not addressed, the cracking will continue to worsen.	It is recommended to reseal the cracks at the damage expansion joints to prevent further damage. The cost is based on an allotment for resealing the areas.	Arena Floor	1	$10,000
81	Re-Grade Accessible Parking Lot	The south accessible parking lot (from the stadium to the parking lot) was observed to not be up to code. The slopes appeared to be beyond the allowable tolerances for the ADA path of travel. Additionally, there were numerous tripping hazards along the path of travel.	It is recommended to inquire for a schematic design from a civil engineer to bring the accessible parking lot up to code. The cost is based on the design and construction cost.	ADA Parking Lot	1	$75,000
82	Replace Interior Lighting Around the Concourse	The lighting fixtures around the concourse are inefficient fluorescent tube fixtures.	Convert the fluorescent tube fixtures to LED fixtures to save maintenance costs and improve energy efficiency.	Concourse	2	$50,000
83	North and South Side Exterior Lighting Upgrade	There are approximately twenty-six (26) inefficient light fixtures on the exterior of the building. The fixtures are located on both the North side and South side of the building.	Convert the inefficient light fixtures to LED fixtures to save maintenance cost and improve energy efficiency.	North and South Exterior	2	$26,000
84	Upgrade Barn Exterior Lighting	There are approximately fifteen (15) inefficient light fixtures located around the exterior of the Barn.	Convert the inefficient light fixtures to LED fixtures to save maintenance cost and improve energy efficiency.	Barn Exterior	2	$11,250

85	General Parking Lot Lighting Upgrade	The general parking lot is illuminated with inefficient light fixtures that do not utilize photocell sensors.	Convert the parking lot inefficient light fixtures to LED fixtures that incorporate photocell sensors. This conversion will save maintenance costs and improve energy efficiency.	General Parking Lot	2	$120,000
86	Damaged Pipe Insulation	Steam pipe insulation was observed to be damaged at various locations throughout the building.	Remove and replace approximately 150 l.f of damaged steam piping insulation.	Mechanical Rooms throughout building	2	$1,500
87	Boiler Beyond Useful Life	The boiler was installed in the 1990's and is nearing the end of its useful life. However, the boiler is currently oversized for the building's needs, and it should continue to operate with regular maintenance until the building is decommissioned.	Continue to maintain the existing boiler annually. The cost is for maintenance of the boiler until the building is decommissioned.	Boiler Room	1	$2,500
88	Energy Efficiency Opportunities	FIM numbers 1, 11, 14, 25, 26, 82, 83, 84, and 85 listed above are findings that would have a potential energy savings for the building.	Performing the recommendations listed in these FIMs will provide an overall energy savings for the building.		#	$511,250

PROJECT SCOPE AND DELIVERABLES

The services performed include assessing the condition of building equipment and systems, entering findings and data into the City's facility management software ("Infor EAM"), and producing individual building reports.

1.1 Review Background Data

The 2014 FCAP reports by Engineering Economics, Inc. were provided by the City and County of Denver as a starting place for the 2020 FCAP reports. Historical information was carried forward and updated as necessary to reflect the current findings.

1.2 Kick-Off Meetings

The assessment team participated in an on-site kickoff meeting with building managers and technical staff generally covering the following agenda items:

a. Personnel introductions;
b. Background and scope clarification;
c. Facility access requirements;
d. Staff and field work schedules;
e. Coordination with construction or other activities and events;
f. Communication protocols and expectations;
g. Orientation on available data, downloads, and templates;
h. Future meeting schedules;
i. Review of past Facility Improvement Measures (FIMs)
j. Identify and current system and equipment concerns from facility management perspective;
k. Interviews with staff to understand building issues and concerns.

1.3 Assessment of Systems and Equipment

The process began with an on-site assessment walk-around with guidance from a building technician or other staff generally familiar with system and equipment and their current operating condition. The assessment team then completed the assessment generally including the following activities:

a. Log into the cloud-based Infor EAM software via a laptop or tablet;
b. View a predetermined list of known major/priority equipment within Infor EAM to be visited and assessed;
c. Locate and assess condition of the equipment, noting deficiencies and overall condition in the software;
d. Cycle or functionally-test equipment as appropriate;
e. Add new major equipment into Infor EAM with basic nameplate data;
f. Note any major/priority equipment as "out of service" as appropriate;
g. Describe FIMs (i.e., finding plus recommendation, typically a paragraph in total) as corrective actions within Infor EAM and define a correction cost.

h. For correction costs expected to be $10,000 or more, complete a one-page, planning level, cost worksheet provided by the City. FCAP correction costs are revisited during subsequent annual operating/CIP funding processes;

i. Obtain and include representative pictures in the final report;

j. Provided an overall building rating per City definitions.

1.4 Hold Closeout Meetings

a. Present draft report and discuss FIMs via net meeting approximately 2-4 weeks after the site visit.

b. Closeout meetings for buildings identified as "high" level of effort will take several hours each and typically done in-person.

1.5 Submit Final Building Report

a. This report summarizes the efforts undertaken and findings resulting from a review of the facility.

1.6 Energy Efficiency Opportunities

a. For 2019, we are asking for FIMs, as appropriate, on how for an individual building might advance the energy efficiency and strategic electrification/heating emission reduction goals in the City's "80x50 Climate Action Plan." Goals include:

1. Buildings use 10% less energy in 2020.
2. Buildings use 30% less energy in 2030.
3. Heating emissions reduced 50% by 2040.
4. Buildings use 50% less energy in 2050.
5. Net Zero Energy New Buildings by 2035.

2. FACILITY DESCRIPTION

2.1 General Information

The Coliseum is a two story concrete arena structure with a one story attached barn located at 4600 Humboldt Street in Denver, Colorado. The facility is approximately 136,000 square feet and was built in 1952.

3. GENERAL SYSTEMS DESCRIPTION

This section summarizes the building systems at the facility and general condition observed based on the assessment. Specific findings and recommendations are presented in Section 5 of this report.

3.1 Electrical

The Coliseum is served, electrically, by a utility feed at 13,800 volts, three phase. The medium voltage feeder is run to four, 750kVA sub-station transformers, one in each quadrant of the facility. At these locations it is transformed down to the utilization voltage for the building. The facility is fed at 120/208 three phase. These substations are located in the HVACanical rooms at the top corner of each quadrant and power distribution is downward from these locations. All of this equipment is older and in need of repairs due to age. Branch circuit panels are located throughout the facility on almost every level and is fairly consistent through each quadrant. Power for the concessions is from a panel in each concession stand. Theatrical power and lighting are served by panels located on the catwalk and positioned at each quadrant. One panel feeding HVACanical loads is served by a transformer in the main electrical room that steps the voltage up to 277/480. The remainder of the panels are in the kitchen and other electrical rooms.

Portions of the Coliseum electrical distribution were updated as recently as 2012 and are in good condition with no issues detected. The remainder, majority, of the electrical service is older and in need of repairs or replacement. The electrical service was originally updated around 1990 from earlier equipment. This equipment is obsolete and beyond its useful life.

3.2 Fire

The Fire Alarm system is manufactured by Simplex and is an addressable system. The main panel is located on the first floor in the main office and is easily accessible by the fire department in the event of a fire. This system provides full coverage of the building through smoke detectors, water flow detection and manual pull stations. Notification devices are located throughout the facility to alert occupants of a fire emergency.

The fire alarm system is a modern type system that appears well maintained and operational. The facility does not have a fire sprinkler system.

3.3 Security

This facility is protected by Security cameras monitored in the main office.

The system appears well maintained and operational.

3.4 BMS & Controls

The Denver Coliseum is provided an Allerton BMS.

The BMS was installed between 1990 and 1995 per C&CD Staff. As such, it is considered to be dated but in good condition.

3.5 Interior Finish

Most of the ceilings within the building are exposed structure and in good to fair condition. The ceiling of the main arena is covered in cork tile. The cork tile was observed to have staining from moisture damage. There are gaps between the wall and roof in the main arena that allow moisture

penetration and air flow into the main space. Additionally, the back offices was observed to have ceiling tile stains throughout the building.

The mechanical room ceilings are exposed concrete structure and have several areas of damage from moisture which indicates roof leaks. At the time of the assessment, there were no active leaks. The concourse ceilings are concrete and appear to be in good condition. The ceilings in the tunnel and the barn are exposed wood framing and have several leaks. During the time of the assessment, there was no active leaks. However, staff indicated that ongoing maintenance was required for monitoring and sealing leaks.

Acoustical ceiling tile is suspended within the ticket office and there is indication of roof leaks in this area. The dressing rooms and main office have suspended acoustical tile ceilings and appear to be in good condition. Additionally, the staff locker areas have suspended tile ceilings. However, there is evidence of moisture damage.

The floors within the Coliseum are normally sealed concrete with numerous areas of cracking in the arena and concourse areas. Within the staging and maintenance areas, the concrete floors have more widespread cracking. Most of the floor within the barn is dirt.

The flooring within the changing rooms and offices is carpet. The carpet was observed to be in good condition. There is mosaic tile floors within the restrooms. The mosaic tile is in good condition.

The walls within the offices and changing rooms are usually painted, metal stud and gypsum board construction that are in good condition. However, there is numerous areas of moisture damage on the walls within the ticket office. The walls within the tunnel are masonry and have cracks open to the exterior.

3.6 Envelope

Most of the exterior wall construction is concrete structure that is generally in fair to poor condition. There is a large amount of cracking, spalling exposing reinforcing, broken edges, deteriorating surfaces and joints. Additionally, there are some of the window sills that are almost completely deteriorated.

The walls of the tunnels are concrete masonry. The masonry is in fair to poor condition with a number of cracks extending through to the interior.

The barn's exterior walls are concrete panels. The panels are in fair to poor condition with extensive cracking, spalling and various stages of deterioration.

The concourse windows were replaced within the last 6 years. However, within the Coliseum, there are still some windows that are original (non-efficient) metal windows. Additionally, the metal windows in the barn are in poor condition.

There are a large amount of doors around the facility that have broken weather stripping that should be replaced.

3.7 Landscape/Grounds

There are planters on the east side of the facility that are in good condition. However, the landscape area adjacent to the street on the south side is in poor condition.

On the north side of the facility, the metal stairs and railings are rusting and staining the adjacent concrete. Additionally, the concrete stairs on the south side are declining.

There are also sections of sidewalk around the facility that have a large amount of cracking and damage.

The dock areas were observed to be deteriorated and have drainage issues.

3.8 Parking Lots

The parking (Area 1) on the north side under the highway is in good condition. The parking (Area 2) adjacent to the maintenance entrance is in fair to poor condition.

The parking (Area 3) on the south side of the barn and the large parking lot (Area 4) to the west of the barn are in poor condition. The pavement in at the larger lot (Area 4) has significant areas of swell and settlement as well as ponding and extensive plant growth. It was reported that the lot was built over a contaminated site and removing the existing pavement may require remediation. Additionally, accessible parking was observed to not be up to accessibility code and standards.

3.9 Accessibility

Normal access is at grade through the main entrance of the facility. There appears to be no major accessibility issues with this facility.

While there appears to be no major accessibility issues with this facility, accessible parking was observed to not be up to accessibility code and standards. During the site visit, accessibility standards were reviewed. However, it is recommended to inquire for a more in depth review of the facility

3.10 Pool

Not applicable

3.11 HVAC

HVAC equipment includes four AHUs in the four Quads, four boilers, one chiller with three associated compressors, three RTUs, four MAUs, four condensing units, four duct cooling units, four duct heating units, forty-four exhaust fans, eight electric baseboard heaters, one heating ventilator unit, one heat exchanger, one supply fan, five gas-fired unit heaters, two HW unit heaters, and two wall-mounted AC units.

The four MAUs, all forty-four exhaust fans, and most of the unit heaters in the Barn are considered to be in fair condition and nearing the end of their expected useful lives. The four well water cooling coils located in the Quads are original to the 1950 construction and are currently cappend and abandoned in place. The remainder of HVAC equipment was deemed to be in good condition and within its expected useful life.

3.12 Plumbing

Plumbing equipment includes one glycol system pump, two heating water circulation pumps, three chilled water circulation pumps, two sewage ejector pumps, two sump pumps, four well pumps, two cooling towers, five gas-fired water heaters, and two mixing valves.

All plumbing equipment is considered to be in good condition and within its expected useful life.

Drain piping in the backstage area was recplaced in 2019.

3.13 Conveyance

Not applicable

3.14 Roof

The main roof of the Coliseum (Area B) is a liquid applied membrane system that is in good condition with some deterioration at the edges and some flashing that has gaps at the intersection of the built-up roof sections. Areas A and C are adjacent to the main roof on the north and south and are a built-up asphalt roof systems. A few sections of these roofs have been replaced. However, most of the roof sections have extensive ponding, flashing issues and damaged drains.

The upper roof area on the east side of the Coliseum (Area D) was replaced within the last 6 years. However, many of the drains were observed to be clogged. The lower roof (Area E) is in poor condition and has evidence of ponding, clogged drains, cracked flashing and failing coating on the structure.

There is a roof over the area between the Coliseum and the barn (Area F) that is a built-up asphalt roof. The roof is in fair condition. The roof over the barn (Area G) is in poor condition and was said to have a large amount of ponding and flashing issues. The roof has extensive bubbling of the asphalt. The roof's asphalt is also brittle.

There is an section between the Coliseum and the tunnel that has a translucent plastic roof that looks to be in good condition.

The tunnel roof (Area H) is a modified bitumen system that is in fair to poor condition. The roof has declining soffits and gutters which drain on to the Barn. The joint between the Coliseum and the tunnel is also in poor condition.

3.15 General

The building is in fair to good condition with some areas in poor condition that require extensive maintenance to prevent further deterioration.

4. ASSET ASSESSMENT

4.1 Asset Scope

Focus of the FCAP is on major, critical assets and excludes minor systems. The Table below lists Building System Categories included in the Template and sample inclusions and exclusions by system.

Table 4-1: FCAP Asset Data Building System Categories Sample Inclusions/Exclusions

Data Asset Tab	Building System	Inclusions	Exclusions
ELEC	Electrical	Electric panels, lighting fixtures, generators, conduit, sensors, central system controls.	Switches, bulbs.
FIRE	Fire	Fire panels, pumps, valves, compressors, drip drums.	Fire extinguishers, DFD interface
SS	Security	Card readers, cameras, controls.	Computers, servers.
BMSC	BMS & Controls	Software and hardware configuration.	Software programming.
INTF	Interior/Finish	Flooring, ceiling tiles, casework, drywall.	Furniture, computers, wall finishes.
ENV	Envelope	Brickwork, windows, doors, door seals.	Structural.
LAND	Landscape/Grounds	Site concrete, sidewalks, court yards, water quality features, and irrigation.	Plantings, benches, public art, fountains.
PRKLOT	Parking Lots	Parking surfaces.	Inlets, curbs, gutters.
POOL	Pool	Pumps, filters, controls.	Water quality
HVAC	HVAC	Air handling units, major VAVs, swamp coolers, boilers, heat exchangers, valves, pumps.	Minor VAVs, stratification fans
PLUM	Plumbing	Pumps, valves, check valves, piping material, back-flow devices.	Drinking fountains, sinks, faucets
CONV	Conveyance	Visual inspection of elevator HVACanical room, cab interior and gather nameplate data. Visual inspection of escalators.	Lifts, elevator HVACanicals and shafts, escalator HVACanicals. These are typically covered via inspection protocols.
ROOF	Roof	Membranes, shingles, insulation, parapets.	Structural.
GBLD	General Building	Restrooms, kitchens, gates, docks	

Non-nameplate categories, such as Interior Finish, Envelope, and Landscape/Grounds were only populated in the Asset Data if a deficiency was identified.

4.2 General Condition Assignments

In Infor EAM, the equipment is assigned an overall condition of New, Like New, Good, Fair or Poor. Also assigned is a service life (years) and a functional age category of 1 through 4, with 1 being first quarter and 4 being last quarter of service life. An Asset Criticality was then assigned as Low, Medium, or High, characterizing the impact if the asset is down or out of service.

4.3 Deficiency Codes

Additionally, findings were assigned deficiency Codes and Priority Criteria. Seven main Deficiency Codes were used to generally classify issues found during the assessment process, described as follows:

- D1: Excess Energy Use
- D2: Unsafe
- D3: Broken
- D4: Obsolete
- D5: Beyond Useful Life
- D6: Code Concern
- D7: ADA Concern

4.4 Priority Criteria

Priority Criteria was assigned to assist in ranking which deficiencies should be reviewed and addressed first. They were described as follows:

□ Priority 1: Necessary and Currently Critical (0-1 yr)

- Work that requires near-term action to address critical or impending equipment failure, reduce extremely excessive and unnecessary energy use, and/or has an extremely quick payback (less than 6 months).
- Also applies to an operational or O&M recommendation that results in significant improvement to facility operations or occupant comfort.

□ Priority 2: Necessary and Highly Recommended (1-3 yrs.)

- Work that requires near-term action to prevent equipment failure, reduce excessive and unnecessary energy use, or has a quick payback (1 to 3 years).
- Also applies to an operational or O&M recommendation that results in significant improvement to facility operations or occupant comfort.

□ Priority 3: Necessary, but not Yet Critical or High Priority (3-5 yrs.)

- Needed work that could become a Priority #1 of #2 within the next 5 years, or has longer than 7 year payback.
- Also applies to an operational or O&M recommendation that minimally improves facility operations or occupant comfort.

□ Priority 4: Deferrable until Building or Equipment/System Renewal (5-10yrs)

- Implementation likely to improve efficiency.
- But, has an extensive payback (longer than 10 years) and can be put off until a later date.

4.5 Correction Costs

After discussion of findings at the building closeout meeting, FIMs were selected for costing by CCD.

Correction costs based on the following guidelines:

- For FCAP Priority #1, #2, and #3 Recommendations:
  - If an expected cost was less than $10,000, a correction cost was stated based on professional judgment.
  - If cost was expected to be greater than $10,000, the FCAP Cost Worksheet was populated for each estimate.
- For FCAP Priority #4 Recommendations:
  - A correction cost was stated based on professional judgment regardless of whether it was greater than or less than $10,000.

4.6 Correction Costs

1 – Excellent/Very Good

New building that looks to have been installed within the last few years and has no visible imperfections. No action is suggested at this time. Building is well maintained with no visible defects or reported issues. Building systems are operating at optimal conditions. No action is suggested at this time.

2 - Good

Building is not new but all systems are performing well. No building systems are rated below "Fair" and there are no structural building issues present. Building systems have some very minor deficiencies but are performing as expected. Routine preventative maintenance is suggested.

3 - Fair

Building systems show minor deficiencies but are functioning properly. Minor systems suffer from moderate deterioration, but all critical systems are above "Fair" condition. Small percentages of building support systems are obsolete, or do not meet design needs or standards. These systems should not be repaired due to the manufacturing no longer existing or no longer making that unit, old technology, etc. and the unit should be replaced upon deficiencies. A small percentage of building support systems are approaching, or have exceeded their design lives. Roof structure is intact, but is beyond service life or is damaged. Envelope is aging but secure.

4 - Poor

Building support systems are functional but deficiencies have affected the integrity. A large percentage of building support systems are in need of major repairs or components needing replaced. These repairs/replacements should be made as soon as possible. Imminent failureand potential life safety hazards are likely if deferred further. Roof is in danger of failing. Envelope has moderate to heavy damage

5 - Very Poor

The building support systems are no longer functioning at all. Building is in need of a large overhaul or entire replacements of major systems are in order for functionality to operate at ideal, safe conditions. Roof and/or envelope have failed. Life safety items are known to be present in the building, and/or building certificate of occupancy has or will be rescinded.

Additional Comments for Estimated Correction Cost:

The estimated cost located within this report is for the purposes of planning use only and is considered Rough Order of Magnitude Estimates.

All estimated correction costs are created based on a combination of recent projects by the client agency, in-house comparable projects, and/or industry standards.

Generally, the costs reflect the necessary labor, materials, and equipment for construction with 10% contingency and 15% Profit and Overhead for a general contractor working through sub-contractors.

In some cases, costs are simply a like-for-like swap of equipment using single trades without general contractor mark-ups.

Design-only costs are typically 10-20% of an envisioned construction cost. Study costs are typically based on recent CCD projects.

Occasionally annual or multi-year allocations are provided to begin addressing the overall project, perhaps in a phased approach.

5. FINDINGS AND RECOMMENDATIONS

The following section documents all findings from the Facility Condition Assessment. Included are finding descriptions, recommendations for correction (FIMs), correction costs, and whether energy savings potential exists.

5.1 Finding 1: Arena Ceiling

5.1.1 Description

As stated in the 2014 FCAP Assessment, the majority of the ceilings throughout the building are exposed structure and in good to fair condition. The ceiling of the main arena is covered in cork tile that is moisture stained but in fair condition. There are gaps between the wall and roof in the main arena that allow moisture penetration and air flow into the main space.

Figure 5-1a: Gap to exterior (2014)

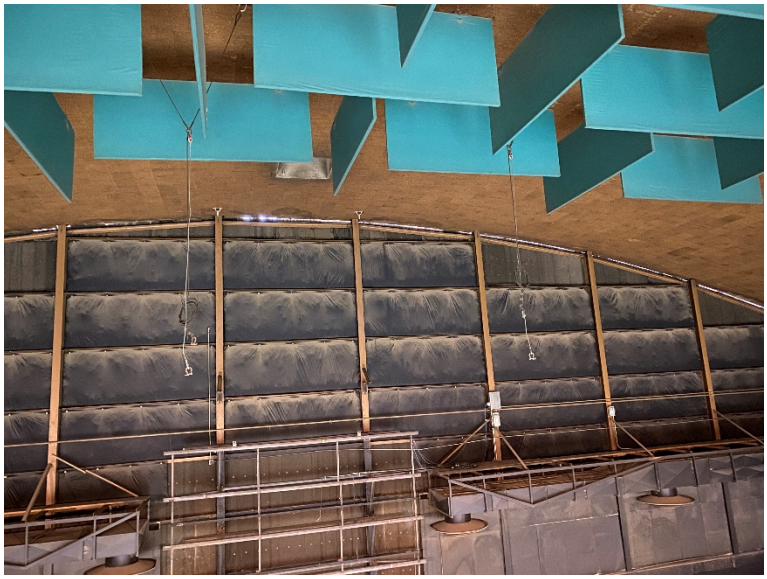

Figure 5-1b: Arena Wall (2020)

5.1.2 Recommendation/FIM

Seal gaps open to the exterior. The cost is based on a discussion of an allotment to provide sealant in openings.

Table 5-1: Finding 1 Summary

Building System	INTF
Deficiency Code	D1: Excess Energy Use D4: Obsolete
Recommended FCAP Priority	3
Energy Savings Potential	Yes
Correction Costs	$50,000

5.2 Finding 2: Bird Netting Inspection and Filter Install

5.2.1 Description

Staff reported that there are birds nesting in the mechanical rooms in all 4 quads of the building. The birds have been said to be clogging up filters and affecting the quality of air through the units.

5.2.2 Recommendation/FIM

Inspect bird deterrent netting in all 4 quads. Additionally, it is recommended to add filter banks to filter the outside are for each of the quads.

Table 5-2: Finding 2 Summary

Building System	GBLD
Deficiency Code	D4: Obsolete
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$9,500

5.3 Finding 3: Replace Stained Ceiling Tile in Office and Dressing Rooms

5.3.1 Description

As stated in the 2014 FCAP Assessment, the ticket office has suspended acoustical tile ceiling and there is evidence of roof leaks in this area. The main office and dressing rooms have suspended acoustical tile ceilings and appear to be in good condition. The staff locker areas also have suspended tile ceilings but there is evidence of moisture damage.

Figure 5-3a: Moisture damaged ceiling tile in office (2014)

Figure 5-3b: Moisture damaged ceiling tile (2014)

5.3.2 Recommendation/FIM

Replace stained ceiling tiles

Table 5-3: Finding 3 Summary

Building System	INTF
Deficiency Code	D3: Broken
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$1,500

5.4 Finding 4: Seal Concrete Cracks

5.4.1 Description

As stated in the 2014 FCAP Assessment, the floors in the Coliseum are typically sealed concrete with some cracking in the arena and concourse areas. The concrete floors in the staging and maintenance areas have more extensive cracking.

Figure 5-4a: Interior Concrete Cracking at Concourse (2020)

Figure 5-4b: Interior concrete cracking (2020)

Figure 5-4d: Interior concrete cracking (2020)

Figure 5-4e: Interior concrete cracking (2014)

5.4.2 Recommendation/FIM

Seal cracks in concrete floors.

Table 5-4: Finding 4 Summary

Building System	INTF
Deficiency Code	D3: Broken
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$9,500

5.5 Finding 5: Repair Wall Moisture Damage - @ Concession Stand

5.5.1 Description

The interior walls were observed to have moisture damage at the concession wall at Gate 123/125.

Figure 5-5: Moisture damage (2020)

5.5.2 Recommendation/FIM

Clean and repair moisture damage. The cost is based on an allotment for repair work.

Table 5-5: Finding 5 Summary

Building System	INTF
Deficiency Code	D3: Broken
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$5,000

5.6 Finding 6: Repair Wall Moisture Damage - @ Offices and Changing Rooms

5.6.1 Description

As stated in the 2014 FCAP Assessment, interior partitions in the offices and changing rooms are typically painted, metal stud and gypsum board construction that are in good condition but there is some moisture damage on the wall in the ticket office.

Figure 5-6: Moisture damage in office (2014)

5.6.2 Recommendation/FIM

Clean and repair moisture damage. The cost is based on an allotment for repair work.

Table 5-6: Finding 6 Summary

Building System	INTF
Deficiency Code	D3: Broken
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$5,000

5.7 Finding 7: Tunnel Wall Cracks

5.7.1 Description

As stated in the 2014 FCAP Assessment, the tunnel walls are masonry and have cracks open to the exterior.

Figure 5-7a: Tunnel Wall (2014)

Figure 5-7b: Tunnel Wall (2014)

5.7.2 Recommendation/FIM

Seal cracks in concrete masonry to weatherize tunnel. The cost is based on an allotment for repair work.

Table 5-7: Finding 7 Summary

Building System	INTF
Deficiency Code	D3: Broken
Recommended FCAP Priority	3
Energy Savings Potential	No
Correction Costs	$6,000

5.8 Finding 8: Concrete Structure Deterioration at Exterior Walls

5.8.1 Description

As stated in the 2014 FCAP Assessment, the majority of the exterior wall construction is concrete structure that is generally in fair to poor condition. There is a great deal of cracking, spalling exposing reinforcing, broken edges, deteriorating surfaces and joints. Some window sills are almost completely deteriorated.

Figure 5-8a: Concrete failure – south wall Coliseum (2014)

Figure 5-8b: Concrete failure – south wall coliseum (2014)

Figure 5-8c: South wall - Coliseum (2014)

Figure 5-8d: Soffit condition east wall (2014)

Figure 5-8e: Soffit condition east wall (2014)

Figure 5-8f: Joint condition – South Wall (2014)

Figure 5-8g: Structure condition (2014)

Figure 5-8h: Structure condition – East wall (2014)

Figure 5-8i: East Wall – Coliseum (2014)

Figure 5-8j: West Wall Window Sill - Coliseum (2014)

Figure 5-8k: West wall window sill - Coliseum (2014)

5.8.2 Recommendation/FIM

It is recommended to inquire for a structural study to provide an additional structural study to assess the integrity of the structure. During the 2020 closeout meeting, it was said that a study had been done in 2014. However, it is recommended to provide an additional study for ongoing cracks and damage to assess the need for ongoing annual maintenance.

Table 5-8: Finding 8 Summary

Building System	ENV
Deficiency Code	D3: Broken
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$15,000

5.9 Finding 9: Concrete Masonry Cracking at Tunnel

5.9.1 Description

As stated in the 2014 FCAP Assessment, The walls of the tunnels are concrete masonry and are in fair to poor condition with a number of cracks extending through to the interior.

Figure 5-9a: Tunnel wall (2014)

Figure 5-9b: Tunnel Wall Joint (2014)

Figure 5-9c: Tunnel Wall joint (2014)

5.9.2 Recommendation/FIM

It is recommended to inquire for a structural study to provide an additional structural study to assess the integrity of the structure. Verify structural integrity and repair cracks in concrete masonry.

Table 5-9: Finding 9 Summary

Building System	ENV
Deficiency Code	D3: Broken
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$15,000

5.10 Finding 10: Cracked Concrete Walls at Barn

5.10.1 Description

As stated in the 2014 FCAP Assessment, the exterior walls of the barn are concrete panels and in fair to poor condition with extensive cracking, spalling and various stages of deterioration.

Figure 5-10a: Barn Wall Condition (2014)

Figure 5-10b: Barn wall condition (2014)

Figure 5-10c: Barn wall Condition (2014)

Figure 5-10d: Barn wall condition (2014)

Figure 5-10e: Barn wall condition (2014)

Figure 5-10f: Concrete steps condition in Barn (2014)

Figure 5-10g: Barn wall condition (2014)

Figure 5-10h: Interior Wall cracking - Barn (2014)

5.10.2 Recommendation/FIM

Repair exterior concrete structure and seal cracks. The cost is for ongoing maintenance and based on the estimate from the 2014 assessment and accounts for inflation.

Table 5-10: Finding 10 Summary

Building System	ENV
Deficiency Code	D3: Broken
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$19,000

5.11 Finding 11: Window Replacement at Break Room

5.11.1 Description

As stated in the 2014 FCAP Assessment, some of the windows throughout the Coliseum have been replaced but there are still some windows in areas of the Coliseum that are original metal windows. The windows that are original are only the ones in the break room and they are in poor condition.

5.11.2 Recommendation/FIM

Replace the windows in the break room with double pane efficient windows. The cost is based on discussed (adjacent) projects that have been done at the facility.

Table 5-11: Finding 11 Summary

Building System	ENV
Deficiency Code	D1: Excess Energy Use D5: Beyond Useful Life
Recommended FCAP Priority	4
Energy Savings Potential	Yes
Correction Costs	$75,000

5.12 Finding 12: Damaged Doors Throughout Building

5.12.1 Description

As stated in the 2014 FCAP Assessment, a number of doors around the building have damaged weather stripping that should be repaired or replaced. Additionally, the doors around the facility have been observed to require various repair work and replacement to hardware and the door panels.

Figure 5-12: Missing door seals and Damage to Base of Doors (2014)

5.12.2 Recommendation/FIM

It is recommended to provide an allotment for door repair work and replacement throughout the facility. The cost is based on an agreed amount discussed during the closeout meeting.

Table 5-12: Finding 12 Summary

Building System	ENV
Deficiency Code	D3: Broken
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$25,000

5.13 Finding 13: Ceiling Mounted Anchor Structural Integrity

5.13.1 Description

The ceiling mounted anchors were said to be heavily used but, in the integrity, looked to be questionable.

Figure 5-13a: Ceiling Mounted Anchor (2020)

Figure 5-13b: Ceiling Mounted Anchor (2020)

5.13.2 Recommendation/FIM

It is recommended to provide an annual allotment for a testing program to assess the structural integrity of the anchors.

Table 5-13: Finding 13 Summary

Building System	GBLD
Deficiency Code	D3: Broken
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$25,000

5.14 Finding 14: Install Outside Air Inlet Filter Banks

5.14.1 Description

There is currently no filtration on the louvers for the outside air inlets to the building, which is leading to inefficiencies in the HVAC systems.

5.14.2 Recommendation/FIM

Furnish and install filter banks for all outside air inlets for the building. Installation should occur during the replacement of the quad cooling coils mentioning in Finding 24 of this report.

Cost was determined by Arts and Venues staff during the close-out meeting.

Table 5-14: Finding 14 Summary

Building System	HVAC
Deficiency Code	D1: Excess Energy Use D3: Broken
Recommended FCAP Priority	2
Energy Savings Potential	Yes
Correction Costs	$15,000

5.15 Finding 15: Damaged Asphalt & Concrete Flatwork

5.15.1 Description

As stated in the 2014 FCAP Assessment, there are areas of sidewalk and pavement around the facility that have extensive cracking.

Figure 5-15a: Cracking sidewalk (2014)

Figure 5-15b: Cracking sidewalk (2014)

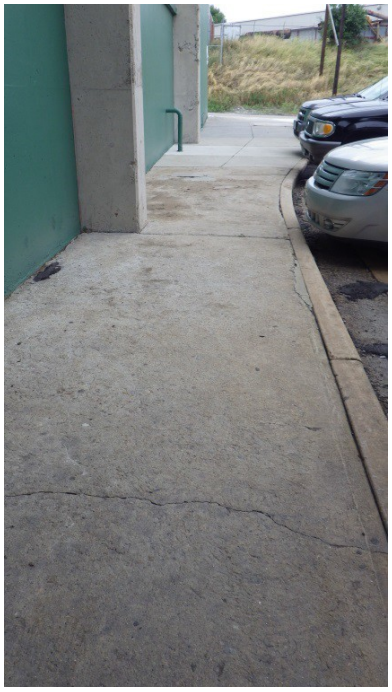

Figure 5-15c: Cracking sidewalk (2014)

Figure 5-15d: Cracking sidewalk (2014)

5.15.2 Recommendation/FIM

It is recommended to provide an annual allotment for various concrete and asphalt repair work throughout the facility. The cost is based on a discussed allotment from the closeout meeting.

Table 5-15: Finding 15 Summary

Building System	LAND
Deficiency Code	D3: Broken
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$50,000

5.16 Finding 16: Seat Risers Leaking

5.16.1 Description

The stands were observed to have leaking from the seating risers. Cola stains showed stains on areas below.

5.16.2 Recommendation/FIM

Reseal seams and clean cola stains at each stand.

Table 5-16: Finding 16 Summary

Building System	INTF
Deficiency Code	D3: Broken
Recommended FCAP Priority	3
Energy Savings Potential	No
Correction Costs	$12,000

5.17 Finding 17: Replace Main (General) Parking Lot

5.17.1 Description

As stated in the 2014 FCAP Assessment, the Main (General) parking area on the west side of the barn, area 4, is in poor condition. The pavement has large areas of swell and settlement as well as ponding and extensive plant growth. Staff reported that the lot was built over a contaminated site and removing the existing pavement may require remediation.

Figure 5-17a: Parking area 4 adjacent to Barn (2014)

Figure 5-17b: Parking area 4 adjacent to Barn (2014)

Figure 5-17c: Parking area 4 - ponding (2014)

Figure 5-17d: Parking area 4 – plant growth (2014)

Figure 5-17e: Parking area 4 – ponding/plant growth (2014)

Figure 5-17f: Parking area 4 – plant growth (2014)

Figure 5-17g: Parking area 4 – ponding/uneven pavement (2014)

5.17.2 Recommendation/FIM

Regrade and repave the Main parking lot. The cost is based on the 2014 FCAP Assessment and accounts for inflation and remediation for the area of approximately 18 acres. Additionally, the actual funding and project details are dependent upon a future EPA and State agreement.

Table 5-17: Finding 17 Summary

Building System	PKLOT
Deficiency Code	D3: Broken
Recommended FCAP Priority	4
Energy Savings Potential	No
Correction Costs	$21,250,000

5.18 Finding 18: Area B Roof Repair

5.18.1 Description

As stated in the 2014 FCAP Assessment, the main roof of the Coliseum, area B, is a liquid applied membrane system that is in good condition with some deterioration at the edges and some flashing that has gaps at the intersection of the built-up roof sections.

Figure 5-18a: Edge condition – Roof area B (2014)

Figure 5-18b: Flashing condition (2014)

Figure 5-18c: Roof system transition – area B to A & C (2014)

5.18.2 Recommendation/FIM

Repair coating at structure edges and flashings adjoining low slope built-up asphalt roof system. Some of the areas of the roof have undergone routine maintenance and repair work. However, it is recommended to continue roof repair work and replacement as a part of routine maintenance on an annual basis.

Table 5-18: Finding 18 Summary

Building System	ROOF
Deficiency Code	D3: Broken
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$7,625

5.19 Finding 19: Replace Older Roof Areas

5.19.1 Description

As stated in the 2014 FCAP Assessment, areas A and C are adjacent to the main roof on the north and south and are a built-up asphalt roof system. A few sections of these roofs have been replaced but most of the roof sections have extensive ponding, flashing issues and damaged drains.

Figure 5-19a: Roof conditions areas A & C (2014)

Figure 5-19b: Roof condition areas A & C (2014)

Figure 5-19c: Roof condition areas A & C (2014)

Figure 5-19d: Roof condition areas A & C (2014)

Figure 5-19e: Flashing condition (2014)

Figure 5-19f: Damaged Drain (2014)

5.19.2 Recommendation/FIM

Replace older roof built-up asphalt roof sections. Some of the areas of the roof have undergone routine maintenance and repair work. However, it is recommended to continue roof repair work and replacement as a part of routine maintenance on an annual basis.

Table 5-19: Finding 19 Summary

Building System	ROOF
Deficiency Code	D3: Broken
Recommended FCAP Priority	3
Energy Savings Potential	No
Correction Costs	$312,500

5.20 Finding 20: Area D Roof Repair

5.20.1 Description

As stated in the 2014 FCAP Assessment, the upper roof area on the east side of the Coliseum, area D, has recently been replaced but many of the drains are clogged and may be the source of leaks in the HVACanical rooms below.

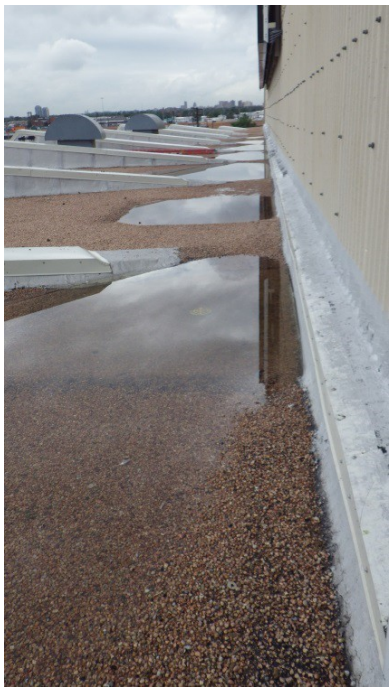

Figure 5-20: Ponding roof area D (2014)

5.20.2 Recommendation/FIM

Clean out clogged drains and assure all drains are clear. Some of the areas of the roof have undergone routine maintenance and repair work. However, it is recommended to continue roof repair work and replacement as a part of routine maintenance on an annual basis.

Table 5-20: Finding 20 Summary

Building System	ROOF
Deficiency Code	D3: Broken
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$2,000

5.21 Finding 21: Replace Roof at Area E

5.21.1 Description

As stated in the 2014 FCAP Assessment, the lower roof, area E, is in poor condition with ponding, clogged drains, cracked flashing and deteriorating coating on the structure.

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Figure 5-21a: Clogged Drain (2014)

Figure 5-21b: Roof Edge – Area E (2014)

Figure 5-21c: Cracked structure (2014)

Figure 5-21d: Failing Flashing (2014)

Figure 5-21e: Roof transition – area E (2014)

Figure 5-21f: Structure moisture protection condition – Area E (2014)

5.21.2 Recommendation/FIM

Replace built-up asphalt roof. Clean and recoat exposed concrete structure. Some of the areas of the roof have undergone routine maintenance and repair work. However, it is recommended to continue roof repair work and replacement as a part of routine maintenance on an annual basis.

Table 5-21: Finding 21 Summary

Building System	ROOF
Deficiency Code	D3: Broken
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$125,000

5.22 Finding 22: Repair Roof at Main Roof

5.22.1 Description

The Main roof at the barn was observed to be in very poor condition. It appeared to be beyond useful life.

Figure 5-22: Roof Membrane (2020)

5.22.2 Recommendation/FIM

It is recommended to patch and repair as necessary. Additionally, the roof should be replaced within the next 5-10 years.

Table 5-22: Finding 22 Summary

Building System	ROOF
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	4
Energy Savings Potential	No
Correction Costs	$1,026,250

5.23 Finding 23: Replace Tunnel Roof

5.23.1 Description

As stated in the 2014 FCAP Assessment, the tunnel roof, area H, is a modified bitumen system that is in fair to poor condition. The roof has deteriorating soffits and gutters which drain on to the Barn roof.

The joint between the Coliseum and the tunnel is also in poor condition.

Figure 5-23a: Tunnel roof drain area G (2014)

Figure 5-23b: Tunnel roof – area H (2014)

Figure 5-23c: Roof soffit – area H (2014)

Figure 5-23d: Tunnel roof drain – area G (2014)

Figure 5-23e: Joint at tunnel (2014)

Figure 5-23f: Joint at tunnel (2014)

5.23.2 Recommendation/FIM

Replace roof, soffits and improve drainage configuration.

Table 5-23: Finding 23 Summary

Building System	ROOF
Deficiency Code	D3: Broken
Recommended FCAP Priority	3
Energy Savings Potential	No
Correction Costs	$93,750

5.24 Finding 24: Replace Cooling Coils

5.24.1 Description

As identified in the 2014 assessment, the four well water cooling coils located in the Quad mechanical rooms are original to the 1950 construction and are considered well beyond their useful lives. The cooling coils were designed to utilize 61ºF well water pumped from beneath the west parking lot. Several studies have been performed since the 2014 assessment in an attempt to re-use the cooling coils, however, the results of the studies found that the well water must be regularly tested, which was deemed too expensive to be a viable solution. The coils are currently capped and abandoned in place.

Arts and Venues staff mentioned the lack of cooling has affected the time of year that events are able to be held at the building. Because of this, a majority of events are scheduled during colder months of the year. An alternative HVAC cooling solution is necessary to provide comfort cooling for the building at full capacity on a design cooling day.

Figure 5-24: Abandoned Quad Cooling Coils (2020)

5.24.2 Recommendation/FIM

An HVAC engineering study should be conducted to determine the building's cooling loads while at full capacity.

Demo the existing four (4) quad cooling coils and associated piping and appurtenances. Furnish and install a new HVAC mechanical cooling system.

Cost was determined by Arts and Venues staff during the close-out meeting.

Table 5-24: Finding 24 Summary

Building System	HVAC
Deficiency Code	D3: Broken D4: Obsolete
Recommended FCAP Priority	3
Energy Savings Potential	No
Correction Costs	$2,000,000

5.25 Finding 25: RTU's use R-22 Refrigerant

5.25.1 Description

It was observed that three (3) Roof Top Units (RTU-1, RTU-2, and RTU-3) use R-22 refrigerant. As of 2020, R-22 refrigeranthas been discontinued and condenser can be considered obsolete. Continuedoperation of this unit will result in increased maintenance costs as R-22refrigerant prices will increase.

It was also noted that there was not a GFI receptacle located on the roof near the HVAC equipment.

Figure 5-25: RTU-1 & RTU 2 (2020)

5.25.2 Recommendation/FIM

Remove and replace RTU-1, RTU-2, and RTU-3 with new units of the same capacity that use approved R-410a refrigerant.

Install a weatherproof GFI receptacle within 25 ft of the HVAC equipment located on the roof to bring the building up to current code in this area.

Table 5-25: Finding 25 Summary

Building System	HVAC
Deficiency Code	D1: Excess Energy Use D3: Broken D4: Obsolete D5: Beyond Useful Life
Recommended FCAP Priority	3
Energy Savings Potential	Yes
Correction Costs	$44,000

5.26 Finding 26: Ice Machines Use R-22 Refrigerant

5.26.1 Description

Staff mentioned the two (2) ice machines located at the south exterior of the building use R-22 refrigerant. As of 2020, R-22 refrigerant has been discontinued and units can be considered obsolete. Continued operation of these units will result in increased maintenance costs as R-22 refrigerant prices will increase.

The ice machine supports were also observed to be corroded and will also need to be replaced.

Figure 5-26: Existing R-22 Ice Machines (2020)

5.26.2 Recommendation/FIM

Remove and replace two (2) ice machines with new units of the same capacity that use approved refrigerant. Provide new supports for the ice machines.

Table 5-26: Finding 26 Summary

Building System	HVAC
Deficiency Code	D1: Excess Energy Use D4: Obsolete D5: Beyond Useful Life
Recommended FCAP Priority	3
Energy Savings Potential	Yes
Correction Costs	$120,000

5.27 Finding 27: Repair Old Switchgear Q1DC, Q2DC, Q3DC, & Q4DC

5.27.1 Description

As identified in the 2014 FCAP assessment, the Switchgear, one located in each quad, are beyond useful life. Obsolete gear is no longer manufactured, parts may be difficult to source.

Figure 5-27: Q1DC (2020) Typical*

5.27.2 Recommendation/FIM

Retain qualified factory level trained technician to disassemble and assess the switchgear condition.

Replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-27: Finding 27 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$80,000

5.28 Finding 28: Repair Distribution Panel DSP4

5.28.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition, however, breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-28: DSP4 (2014)

5.28.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-28: Finding 28 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$3,150

5.29 Finding 29: Repair Power Distribution Panel PPH4

5.29.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition, however, breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-29: PPH4 (2020)

5.29.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-29: Finding 29 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$4,200

5.30 Finding 30: Repair Lighting Distribution Panel PPL4

5.30.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition, however, breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-30: PPL4 (2014)

5.30.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-30: Finding 30 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$3,150

5.31 Finding 31: Repair Power Distribution Panel EPM4

5.31.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition, however, breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-31: EPM4 (2014)

5.31.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-31: Finding 31 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$2,100

5.32 Finding 32: Repair Lighting Distribution Panel LPM4

5.32.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition, however, breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-32: LPM4 (2014)

5.32.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-32: Finding 32 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$3,150

5.33 Finding 33: Repair Distribution Panel DSP3

5.33.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition, however, breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-33: DSP3 (2014)

5.33.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-33: Finding 33 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$3,150

5.34 Finding 34: Repair Power Distribution Panel PPH3

5.34.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition, however, breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-34: PPH3 (2020)

5.34.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-34: Finding 34 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$4,200

5.35 Finding 35: Repair Lighting Distribution Panel PPL3

5.35.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition, however, breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-35: PPL3 (2020)

5.35.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-35: Finding 35 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$3,150

5.36 Finding 36: Repair Power Distribution Panel EPM3

5.36.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition, however, breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-36: EPM3 (2020)

5.36.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-36: Finding 36 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$2,100

5.37 Finding 37: Repair Lighting Distribution Panel LPM3

5.37.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. .However, the breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-37: LPM3 (2020)

5.37.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-37: Finding 37 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$3,150

5.38 Finding 38: Repair Distribution Panel DSP2

5.38.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-38: DSP2 (2014)

5.38.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-38: Finding 38 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$3,150

5.39 Finding 39: Repair Power Distribution Panel PPH2

5.39.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-39: PPH2 (2020)

5.39.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-39: Finding 39 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$4,200

5.40 Finding 40: Repair Lighting Distribution Panel PPL2

5.40.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-40: PPL2 (2020)

5.40.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-40: Finding 40 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$3,150

5.41 Finding 41: Repair Power Distribution Panel EPM2

5.41.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through GE.

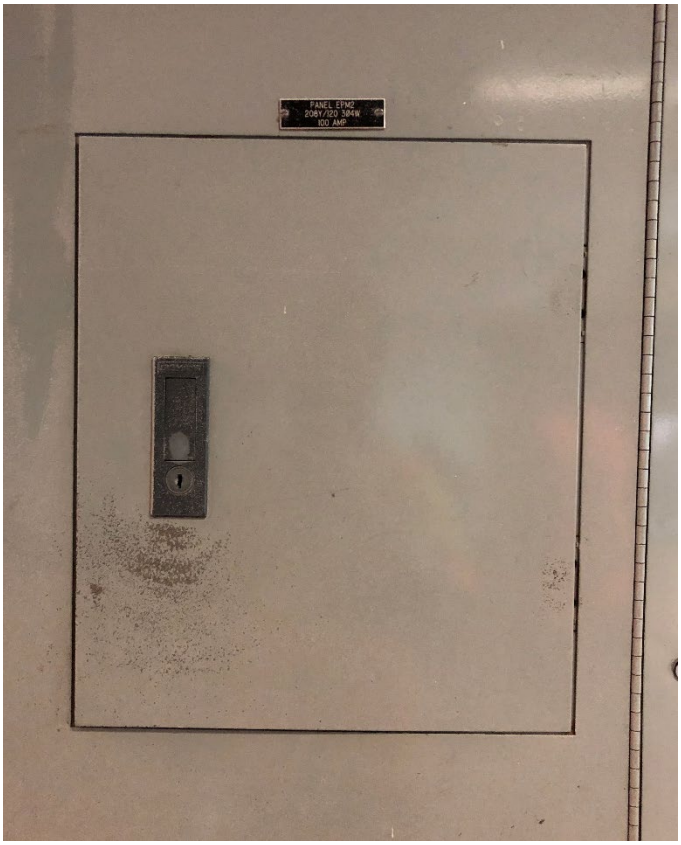

Figure 5-41: EPM2 (2020)

5.41.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-41: Finding 41 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$2,100

5.42 Finding 42: Repair Lighting Distribution Panel LPM2

5.42.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through GE.

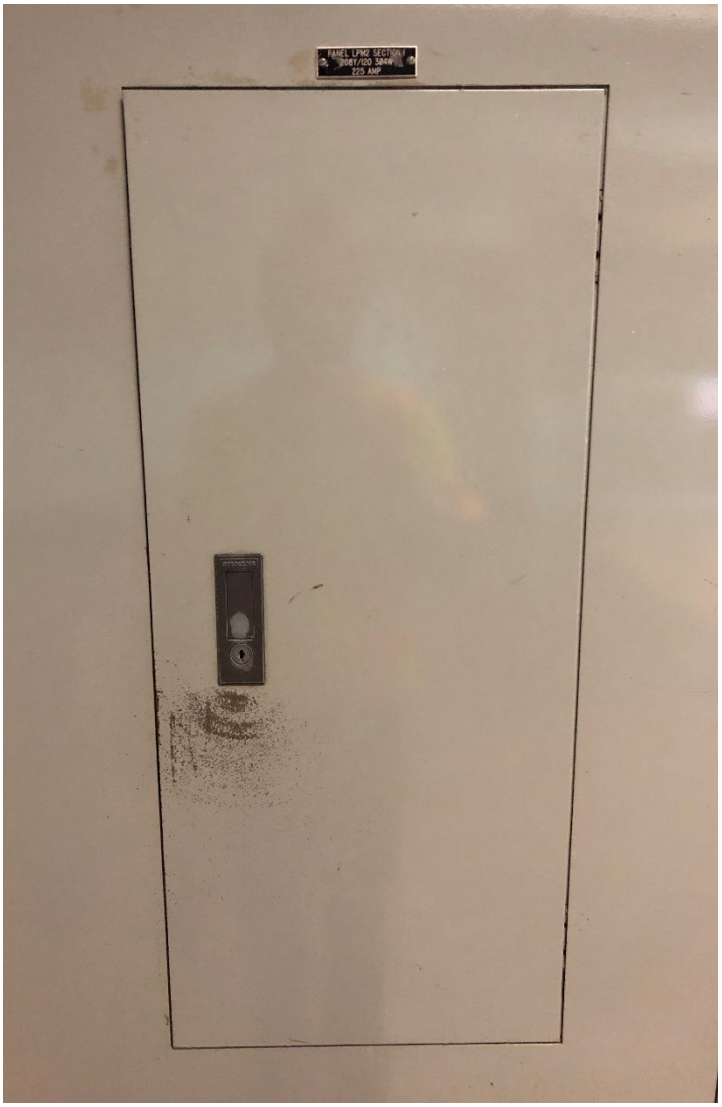

Figure 5-42: LPM2 (2020)

5.42.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-42: Finding 42 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$3,150

5.43 Finding 43: Repair Distribution Panel DSP1

5.43.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-43: DSP1 (2014)

5.43.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-43: Finding 43 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$3,150

5.44 Finding 44: Repair Power Distribution Panel PPH1

5.44.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through GE.

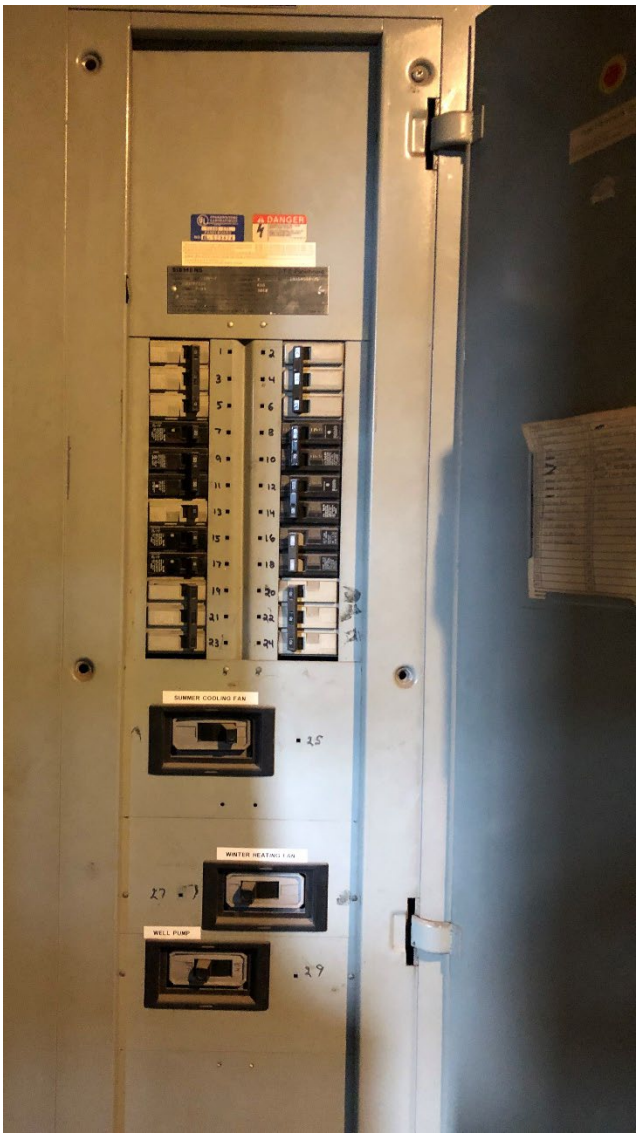

Figure 5-44: PPH1 (2020)

5.44.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-44: Finding 44 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$4,200

5.45 Finding 45: Repair Lighting Distribution Panel PPL1

5.45.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through GE.

Figure 5-45: PPL1 (2020)

5.45.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-45: Finding 45 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$3,150

5.46 Finding 46: Repair Power Distribution Panel EPM1

5.46.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through GE.

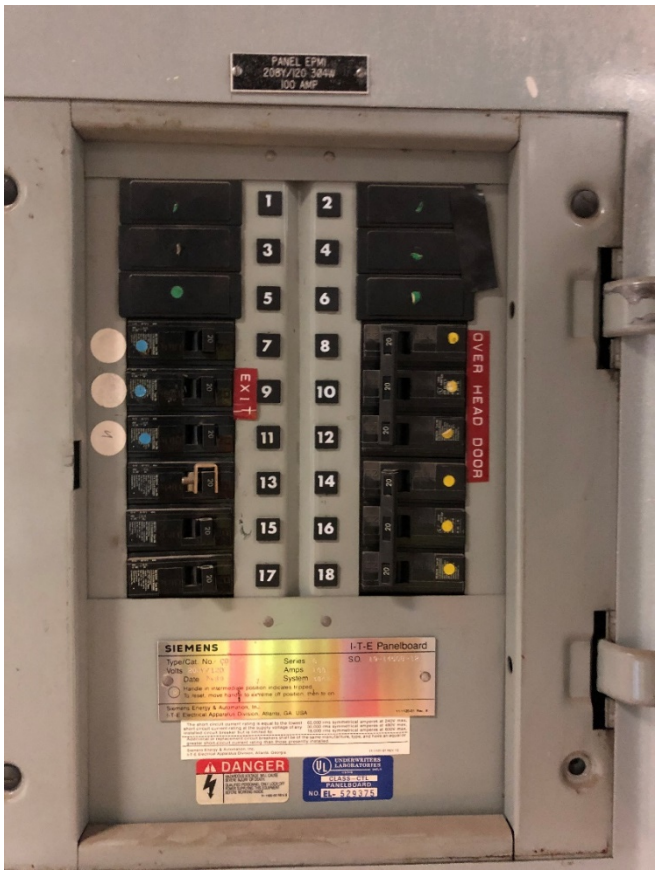

Figure 5-46: EPM1 (2020)

5.46.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-46: Finding 46 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$2,100

5.47 Finding 47: Repair Lighting Distribution Panel LPM1

5.47.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through GE.

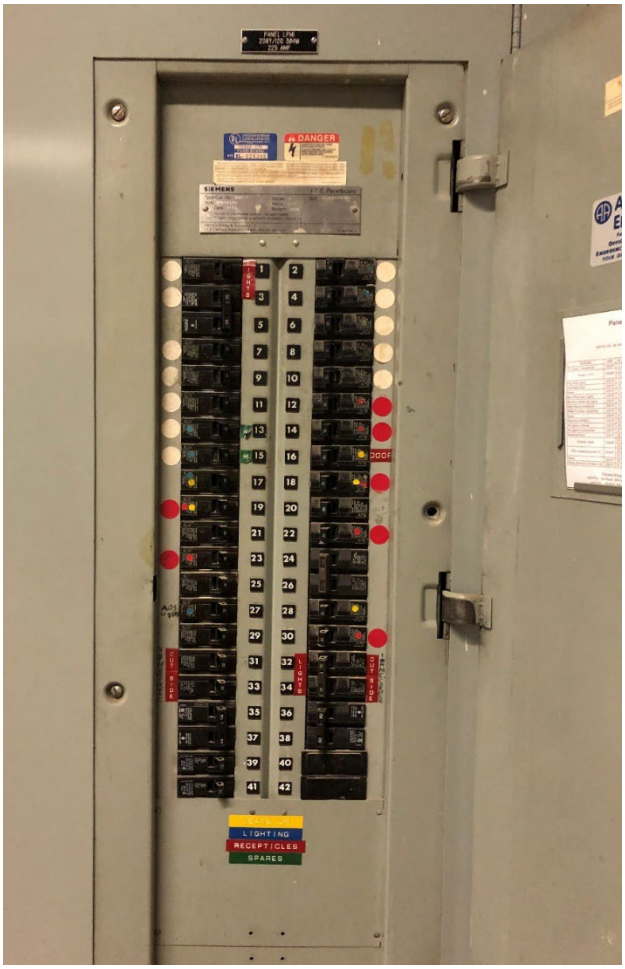

Figure 5-47: LPM1 (2020)

5.47.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-47: Finding 47 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$3,150

5.48 Finding 48: Repair Concession Panel 1

5.48.1 Description

As identified in the 2014 FCAP assessment, the panel is in fair condition in need of cosmetic refurbishment. The breakers are beyond useful life.

Breakers are still available through Siemens.

Figure 5-48: Concession 1 (2020)

5.48.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Clean cover and dead front or replace with new to give as new appearance.

Table 5-48: Finding 48 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.49 Finding 49: Repair Concession Panel 2

5.49.1 Description

As identified in the 2014 FCAP assessment, the panel is in poor condition in need of cosmetic refurbishment. The breakers are beyond useful life.

Breakers are still available through Siemens.

Figure 5-49: Concession 2 (2020)

5.49.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Clean cover and dead front or replace with new to give as new appearance.

Table 5-49: Finding 49 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$3,150

5.50 Finding 50: Repair Concession Panel 3

5.50.1 Description

As identified in the 2014 FCAP assessment, the panel is in poor condition in need of cosmetic refurbishment. The breakers are beyond useful life.

Breakers are still available through Siemens.

Figure 5-50: Concession 3 (2020)

5.50.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Clean cover and dead front or replace with new to give as new appearance.

Table 5-50: Finding 50 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.51 Finding 51: Repair Concession Panel 4

5.51.1 Description

As identified in the 2014 FCAP assessment, the panel is in poor condition in need of cosmetic refurbishment. The breakers are beyond useful life.

Breakers are still available through Siemens.

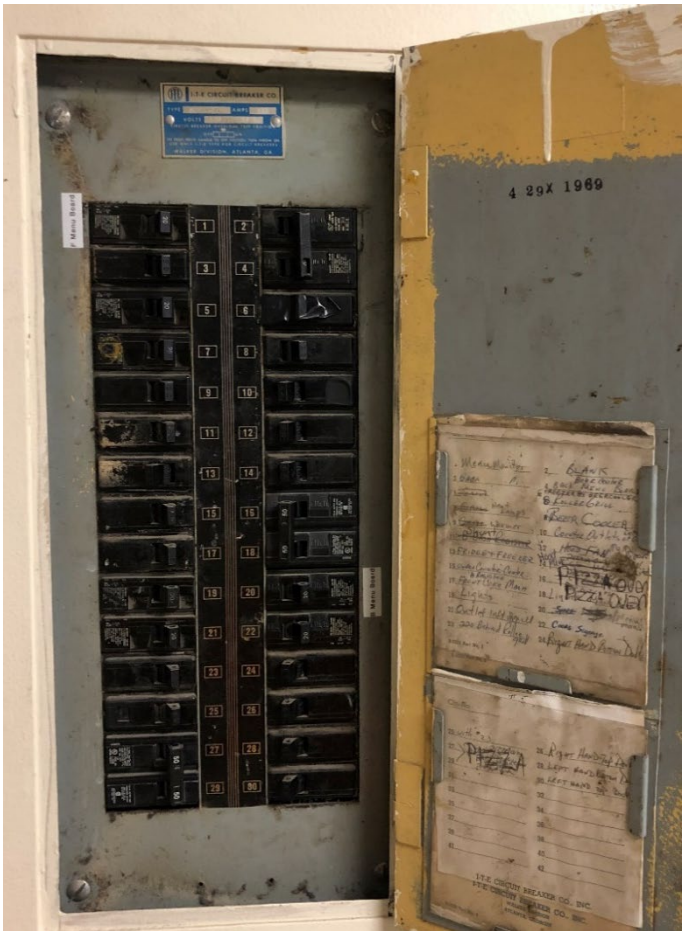

Figure 5-51: Concession 4 (2020)

5.51.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Clean cover and dead front or replace with new to give as new appearance. Replace missing latch on cover door.

Table 5-51: Finding 51 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,675

5.52 Finding 52: Repair Concession Panel 5

5.52.1 Description

As identified in the 2014 FCAP assessment, the panel is in poor condition in need of cosmetic refurbishment. The breakers are beyond useful life.

Breakers are still available through Siemens.

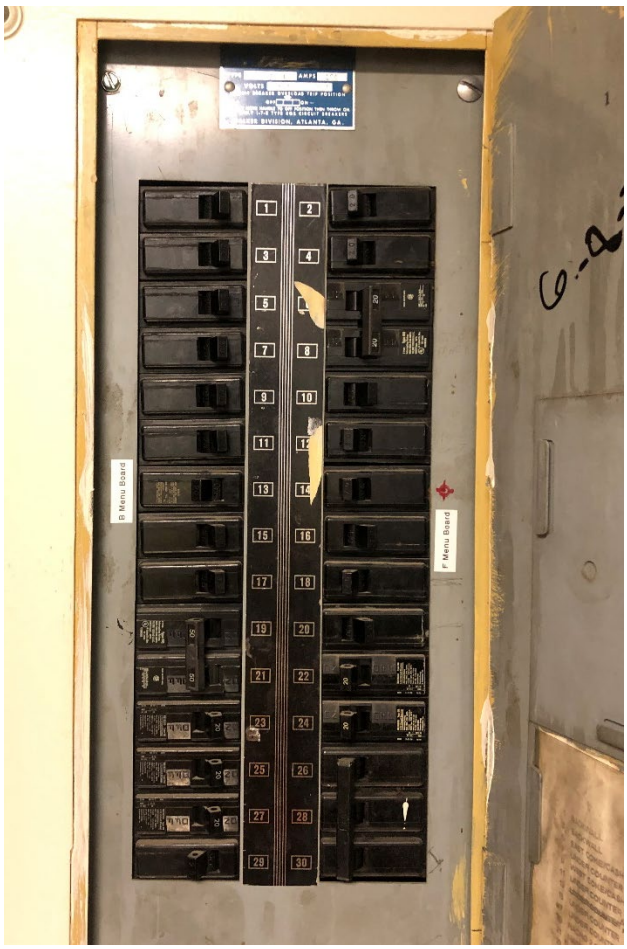

Figure 5-52: Concession 5 (2020)

5.52.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Clean cover and dead front or replace with new to give as new appearance. Replace missing latch on cover door.

Table 5-52: Finding 52 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,675

5.53 Finding 53: Repair Sound and Light Booth Panel

5.53.1 Description

As identified in the 2014 FCAP assessment, the panel in fair condition in need of cosmetic refurbishment. The breakers are beyond useful life. Breakers are still available through Siemens.

Figure 5-53: Sound & Light Booth Panel (2020)

5.53.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-53: Finding 53 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.54 Finding 54: Relabel Panel PPH2

5.54.1 Description

As identified in the 2014 FCAP assessment, this panel shares a name with another panel that was existing at the time of installation.

Figure 5-54: PPH2 (duplicate name) (2020)

5.54.2 Recommendation/FIM

Rename and label panel to: PPH1A.

Table 5-54: Finding 54 Summary

Building System	ELEC
Deficiency Code	D6: Code Concern
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$420

5.55 Finding 55: Repair Pink House Lights NE Panel

5.55.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through Siemens.

Figure 5-55: Pink House Lights NE Panel- Catwalk (2020)

5.55.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-55: Finding 55 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.56 Finding 56: Rewire Catwalk Lighting Relay NE Panel

5.56.1 Description

As identified in the 2014 FCAP assessment, this relay panel is older but still functional. The wiring is in fair to poor condition and needs to be replaced. The relays are obsolete and probably no longer available.

Figure 5-56: Lighting Relay NE Panel- Catwalk (2020)

5.56.2 Recommendation/FIM

Clean and rewire inside of cabinet with new wire. Torque all connections to recommended values. Train all wiring to appear workmanlike and allow replacement of parts for maintenance. Secure all loose relays, wiring or other equipment. Clean, repair and repaint covers and doors to like- new condition.

Table 5-56: Finding 56 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$6,300

5.57 Finding 57: Repair Panel CP1

5.57.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through Siemens.

Figure 5-57: CP1 (2020)

5.57.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-57: Finding 57 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.58 Finding 58: Repair Pink House Lights SE Panel

5.58.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through Siemens.

Figure 5-58: Pink House Lights SE Panel- Catwalk (2020)

5.58.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-58: Finding 58 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.59 Finding 59: Rewire Catwalk Lighting Relay SE Panel

5.59.1 Description

As identified in the 2014 FCAP assessment, this relay panel is older but still functional. The wiring is in fair to poor condition and needs to be replaced. The relays are obsolete and probably no longer available.

Figure 5-59: Lighting Relay SE Panel- Catwalk (2020)

5.59.2 Recommendation/FIM

Clean and rewire inside of cabinet with new wire. Torque all connections to recommended values. Train all wiring to appear workmanlike and allow replacement of parts for maintenance. Secure all loose relays, wiring or other equipment. Clean, repair and repaint covers and doors to like- new condition.

Table 5-59: Finding 59 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$6,300

5.60 Finding 60: Repair Panel CP2

5.60.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through Siemens.

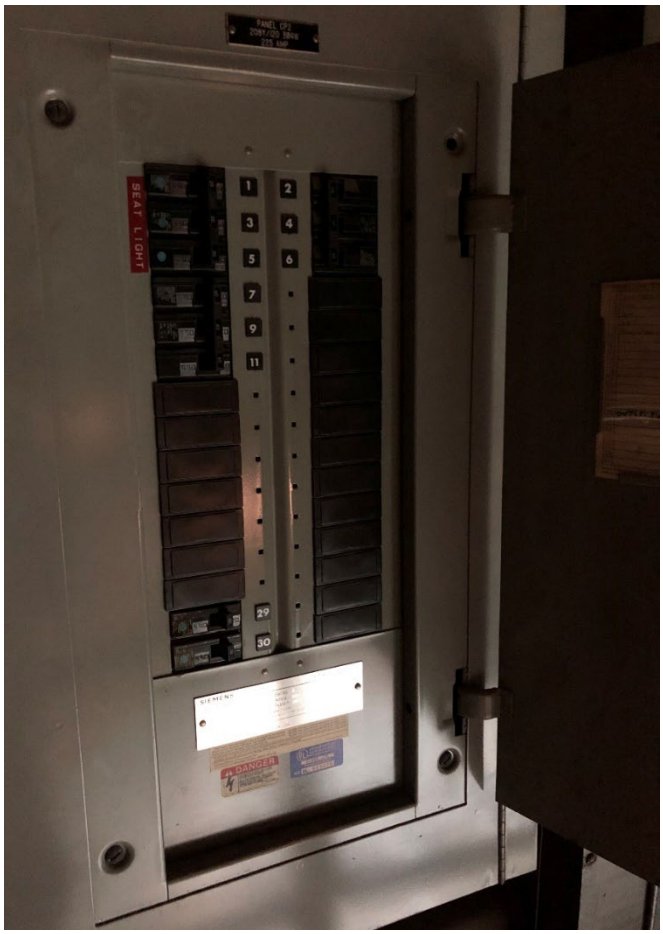

Figure 5-60: CP2 (2020)

5.60.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-60: Finding 60 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.61 Finding 61: Repair Pink House Lights SW Panel

5.61.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through Siemens.

Figure 5-61: Pink House Lights SW Panel- Catwalk (2020)

5.61.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-61: Finding 61 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.62 Finding 62: Rewire Catwalk Lighting Relay SW Panel

5.62.1 Description

As identified in the 2014 FCAP assessment, this relay panel is older but still functional. The wiring is in fair to poor condition and needs to be replaced. The relays are obsolete and probably no longer available.

Figure 5-62: Lighting Relay SW Panel- Catwalk (2020)

5.62.2 Recommendation/FIM

Clean and rewire inside of cabinet with new wire. Torque all connections to recommended values. Train all wiring to appear workmanlike and allow replacement of parts for maintenance. Secure all loose relays, wiring or other equipment. Clean, repair and repaint covers and doors to like- new condition.

Table 5-62: Finding 62 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$6,300

5.63 Finding 63: Repair Panel CP3

5.63.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through Siemens.

Figure 5-63: CP3 (2020)

5.63.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-63: Finding 63 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.64 Finding 64: Repair Pink House Lights NW Panel

5.64.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through Siemens.

Figure 5-64: Pink House Lights NW Panel- Catwalk (2020)

5.64.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-64: Finding 64 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.65 Finding 65: Rewire Catwalk Lighting Relay Panel NW

5.65.1 Description

As identified in the 2014 FCAP assessment, this relay panel is older but still functional. The wiring is in fair to poor condition and needs to be replaced. The relays are obsolete and probably no longer available.

Figure 5-65: Lighting Relay NW Panel- Catwalk (2020)

5.65.2 Recommendation/FIM

Clean and rewire inside of cabinet with new wire. Torque all connections to recommended values. Train all wiring to appear workmanlike and allow replacement of parts for maintenance. Secure all loose relays, wiring or other equipment. Clean, repair and repaint covers and doors to like- new condition.

Table 5-65: Finding 65 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$6,300

5.66 Finding 66: Repair Panel CP4

5.66.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through Siemens.

Figure 5-66: CP4 (2020)

5.66.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-66: Finding 66 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.67 Finding 67: Repair Light Stand Panel

5.67.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through Siemens.

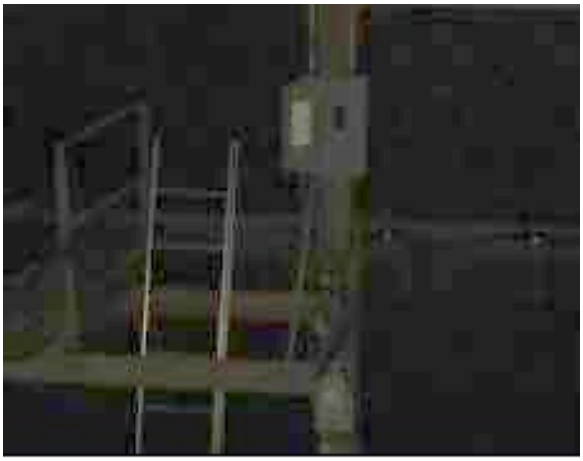

Figure 5-67: East Catwalk (2014)

5.67.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-67: Finding 67 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.68 Finding 68: Repair Panel Outside Concession 6

5.68.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition, however, breakers are beyond useful life.

Breakers are still available through Siemens.

5.68.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-68: Finding 68 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,675

5.69 Finding 69: Repair Concession Panel 6

5.69.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition, however, breakers are beyond useful life.

Breakers are still available through Siemens.

Figure 5-69: Concession 6 (2014)

5.69.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Clean cover and dead front or replace with new to give as new appearance. Replace missing latch on cover door.

Table 5-69: Finding 69 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,675

5.70 Finding 70: Repair Panel EPA3

5.70.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through Siemens.

Figure 5-70: EPA3 (2020)

5.70.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-70: Finding 70 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.71 Finding 71: Repair Panel LPA3

5.71.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through Siemens.

Figure 5-71: LPA3 (2020)

5.71.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble.

Table 5-71: Finding 71 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.72 Finding 72: Replace Old Arcade Panel

5.72.1 Description

As identified in the 2014 FCAP assessment, this panel is obsolete and in poor condition.

Figure 5-72: Arcade Square D Unnamed (2014)

5.72.2 Recommendation/FIM

Replace panel with new containing a complement of breakers matching in number and rating. Provide new nameplate with unique identifier.

Table 5-72: Finding 72 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$4,200

5.73 Finding 73: Repair Panel No Name

5.73.1 Description

As identified in the 2014 FCAP assessment, the panel is in acceptable condition. However, the breakers are beyond useful life.

Breakers are still available through Square D.

Figure 5-73: QLP Unnamed (2014)

5.73.2 Recommendation/FIM

Replace breakers, replace worn parts, clean and lubricate moving parts, torque all connections to manufacturer recommended values, perform NETA testing and reassemble. Provide new nameplate with unique identifier.

Table 5-73: Finding 73 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$3,150

5.74 Finding 74: Replace Barn Panels

5.74.1 Description

As identified in the 2014 FCAP assessment, most panels in the Barn require replacement.

Figure 5-74: Barn (Typical) (2014)

5.74.2 Recommendation/FIM

Replace with new.

Table 5-74: Finding 74 Summary

Building System	ELEC
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$21,000

5.75 Finding 75: Deteriorating Concrete Roof Members

5.75.1 Description

The concrete structural members at the roof show signs of deterioration on the coating at the top of the members. The deterioration looks to be from normal wear and tear at the top.

Figure 5-75: Concrete Members at Roof (2020)

5.75.2 Recommendation/FIM

It is recommended to repair the areas of coating and provide approximately 4,000 L.F. of metal coping and flashing at the tops of the members to protect from further damage.

Table 5-75: Finding 75 Summary

Building System	GBLD
Deficiency Code	D3: Broken
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$35,000

5.76 Finding 76: Floor Damage at the Main Entrance

5.76.1 Description

The floor at the entrance was observed to be damaged. There is a diamond plate metal place over a failing seam. The damage is said to be from normal wear and tear due to heavy foot traffic during the stock shows.

Figure 5-76: Floor Damage (2020)

5.76.2 Recommendation/FIM

It is recommended to repair the seam by cutting/removal and repatching the concrete.

Table 5-76: Finding 76 Summary

Building System	GBLD
Deficiency Code	D3: Broken
Recommended FCAP Priority	3
Energy Savings Potential	No
Correction Costs	$3,600

5.77 Finding 77: Wooden Chairs Refinishing at Arena Seating

5.77.1 Description

The arena seating was observed to need refinishing due to normal wear and tear.

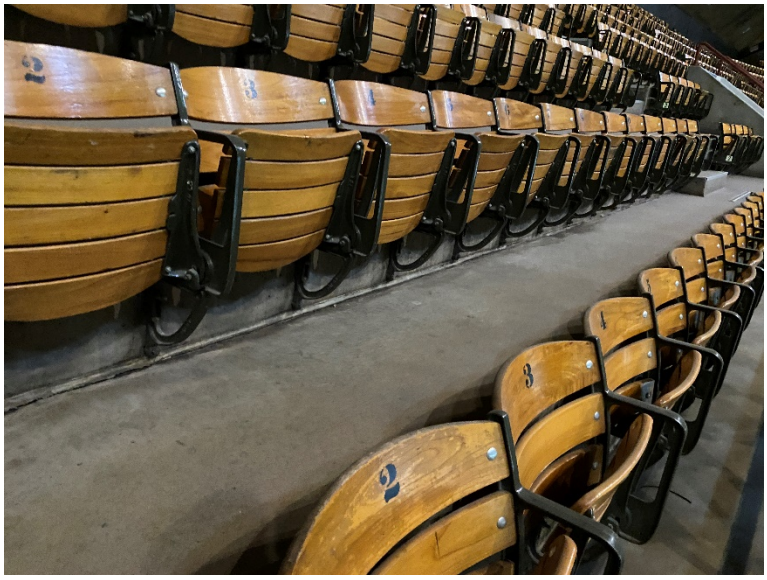

Figure 5-77: Arena Seating (2020)

5.77.2 Recommendation/FIM

It is recommended to re-stain and re-seal the wood chairs. The cost is based on an agreed allotment to cover maintenance to the chairs.

Table 5-77: Finding 77 Summary

Building System	GBLD
Deficiency Code	D3: Broken
Recommended FCAP Priority	3
Energy Savings Potential	No
Correction Costs	$100,000

5.78 Finding 78: Carpet & Furniture Replacement at the Box Office

5.78.1 Description

The carpet and furniture within the box office was observed to be beyond its useful life. The carpet showed damage from normal wear and tear.

Additionally, the box office was said to lack window shading.

Figure 5-78: Box Office Carpet (2020)

5.78.2 Recommendation/FIM

It is recommended to inquire a design from an interior designer to replace the carpet, window shading, and furniture. The cost is based on a schematic design.

Table 5-78: Finding 78 Summary

Building System	INTF
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$30,000

5.79 Finding 79: Expansion Joint Repair at Arena

5.79.1 Description

The expansion joints located at all stairways and the ice floor were observed to have cracks and chipping. If not addressed the damage will continue to worsen.

Figure 5-79: Expansion Cracking (2020)

5.79.2 Recommendation/FIM

It is recommended to reseal the cracks at the damage expansion joints to prevent further damage. The cost is based on an allotment for resealing the areas.

Table 5-79: Finding 79 Summary

Building System	GBLD
Deficiency Code	D3: Broken
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$15,000

5.80 Finding 80: Arena Floor Concrete Repair

5.80.1 Description

The ground floor of the arena was observed to have minor cracking throughout. If not addressed, the cracking will continue to worsen.

Figure 5-80: Arena Floor Cracking (2020)

5.80.2 Recommendation/FIM

It is recommended to reseal the cracks at the damage expansion joints to prevent further damage. The cost is based on an allotment for resealing the areas.

Table 5-80: Finding 80 Summary

Building System	GBLD
Deficiency Code	D3: Broken
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$10,000

5.81 Finding 81: Re-grade Accessible Parking Lot

5.81.1 Description

The south accessible parking lot (from the stadium to the parking lot) was observed to not be up to code. The slopes appeared to be beyond the allowable tolerances for the ADA path of travel. Additionally, there were numerous tripping hazards along the path of travel.

Figure 5-81: Accessible Parking Lot (in Red) (2020)

5.81.2 Recommendation/FIM

It is recommended to inquire for a schematic design from a civil engineer to bring the accessible parking lot up to code. The cost is based on the design and construction cost.

Table 5-81: Finding 81 Summary

Building System	GBLD
Deficiency Code	D3: Broken
Recommended FCAP Priority	1
Energy Savings Potential	No
Correction Costs	$75,000

5.82 Finding 82: Replace Interior Lighting Throughout Concourse

5.82.1 Description

The lighting fixtures around the concourse are inefficient fluorescent tube fixtures.

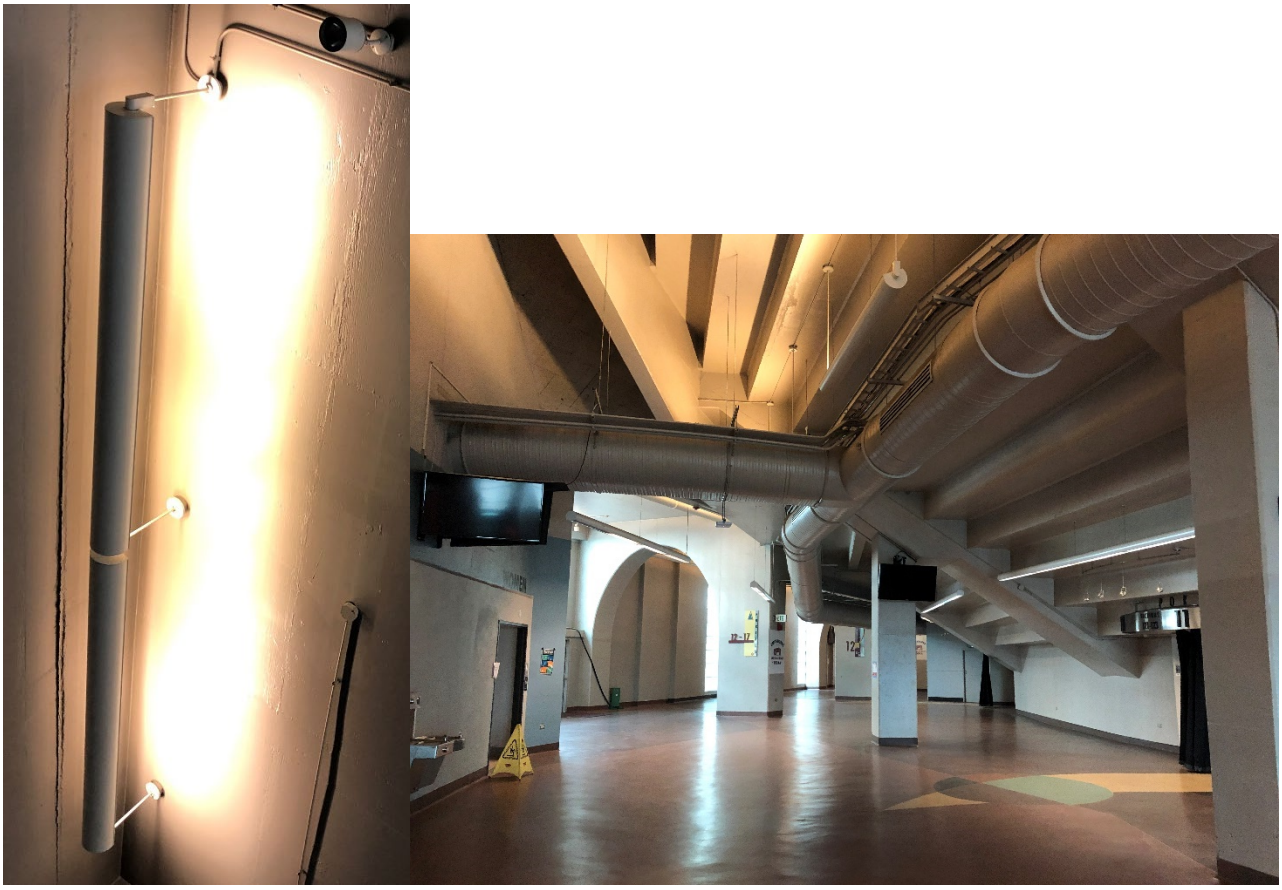

Figure 5-82: Concourse Lighting (2020)

5.82.2 Recommendation/FIM

Convert the fluorescent tube fixtures to LED fixtures to save maintenance costs and improve energy efficiency.

Table 5-82: Finding 82 Summary

Building System	LIGHT INT.
Deficiency Code	D1: Excess Energy Use
Recommended FCAP Priority	2
Energy Savings Potential	Yes
Correction Costs	$50,000

5.83 Finding 83: North and South Side Exterior Lighting Upgrade

5.83.1 Description

There are approximately twenty-six (26) inefficient light fixtures on the exterior of the building. The fixtures are located on both the North side and South side of the building.

Figure 5-83: North & South Exterior Lighting (2020)

5.83.2 Recommendation/FIM

Convert the inefficient light fixtures to LED fixtures to save maintenance cost and improve energy efficiency.

Table 5-83: Finding 83 Summary

Building System	LIGHT EXT.
Deficiency Code	D1: Excess Energy Use
Recommended FCAP Priority	2
Energy Savings Potential	Yes
Correction Costs	$26,000

5.84 Finding 84: Upgrade Barn Exterior Lighting

5.84.1 Description

There are approximately fifteen (15) inefficient light fixtures located around the exterior of the Barn.

Figure 5-84: Barn Exterior Lighting (2020)

5.84.2 Recommendation/FIM

Convert the inefficient light fixtures to LED fixtures to save maintenance cost and improve energy efficiency.

Table 5-84: Finding 84 Summary

Building System	LIGHT EXT.
Deficiency Code	D1: Excess Energy Use
Recommended FCAP Priority	2
Energy Savings Potential	Yes
Correction Costs	$11,250

5.85 Finding 85: General Parking Lot Lighting Upgrade

5.85.1 Description

The general parking lot is illuminated with inefficient light fixtures that do not utilize photocell sensors.

Figure 5-85: General Parking lot Lighting (2020)

5.85.2 Recommendation/FIM

Convert the parking lot inefficient light fixtures to LED fixtures that incorporate photocell sensors. This conversion will save maintenance costs and improve energy efficiency.

Table 5-85: Finding 85 Summary

Building System	LIGHT PAR.
Deficiency Code	D1: Excess Energy Use
Recommended FCAP Priority	2
Energy Savings Potential	Yes
Correction Costs	$120,000

5.86 Finding 86: Damaged Pipe Insulation

5.86.1 Description

Steam pipe insulation was observed to be damaged at various locations throughout the building.

Figure 5-86: Damaged Pipe Insulation (2020)

5.86.2 Recommendation/FIM

Remove and replace approximately 150 l.f of damaged steam piping insulation.

Table 5-86: Finding 86 Summary

Building System	PLUMB
Deficiency Code	D3: Broken
Recommended FCAP Priority	2
Energy Savings Potential	No
Correction Costs	$1,500

5.87 Finding 87: Boiler Beyond Useful Life

5.87.1 Description

The boiler was installed in the 1990's and is nearing the end of its useful life. However, the boiler is currently oversized for the building's needs, and it should continue to operate with regular maintenance until the building is decommissioned.

Figure 5-87: Existing Boiler (2020)

5.87.2 Recommendation/FIM

Continue to maintain the existing boiler annually. The cost is for maintenance of the boiler until the building is decommissioned.

Table 5-87: Finding 87 Summary

Building System	PLUMB
Deficiency Code	D5: Beyond Useful Life
Recommended FCAP Priority	1
Energy Savings Potential	Yes
Correction Costs	$2,500

5.88 Finding 88: Energy Efficiency Opportunities

5.88.1 Description

FIM numbers 1, 11, 14, 25, 26, 82, 83, 84, and 85 listed above are findings that would have a potential energy savings for the building.

5.88.2 Recommendation/FIM

Performing the recommendations listed in these FIMs will provide an overall energy savings for the building.

Table 5-88: Finding 88 Summary

Building System	HVAC
Deficiency Code	D1: Excess Energy Use
Recommended FCAP Priority	#
Energy Savings Potential	Yes

Correction Costs	$511,250

6. CLOSING ITEMS

All files generated and data gathered as a result of this Facility Condition Assessment Program have been input into the Infor EAM Application Software for review by the appropriate CCD personnel. These items include electronic inputs for facility related equipment assets, FIM findings and recommendations, and FIM repair costs. Additional information is attached in Appendices as supporting documentation, if necessary. A Close-out meeting will be conducted with the CCD Project Manager, necessary Building Staff, and the assessment team to review the project efforts. At that point additional items of interest to building staff will be discussed along with any final reporting procedures.

7. APPENDIX: COST ESTIMATE WORKSHEETS

Facility Condition Assessment Program

Correction Cost Estimate Worksheet - Finding 25

Ver 5.0 August 26, 2019

Building:	DENVER COLISEUM
Project Name:	2020 FACILITY CONDITION ASSESSMENT PROGRAM
Location within Building:	Lower roof over box office, barn roof
Date of Estimate:	Friday, December 04, 2020
Cost Estimate Data Source:	RS MEANS - 2020
Name/Company of Estimator:	SEH
Scope of Work:	Remove and replace RTU-1, RTU-2, and RTU-3 with new units of the same capacity that use approved R-410a refrigerant. Install a weatherproof GFI receptacle within 25 ft of the HVAC equipment located on the roof to bring the building up to current code in this area.

	ITEM	LABOR	MATERIAL	EQUIPMENT	CONTINGENCY (10%)	OVERHEAD & PROFIT(15%)	TOTALS
1	Demo (3) existing Roof Top Units	2,500.00	-	-	250.00	375.00	3,125.00
2	Install (3) new Roof Top Units	7,500.00	24,000.00	-	3,150.00	4,725.00	39,375.00
3	Install (2) new GFI weatherproof receptacles	500.00	500.00	-	100.00	150.00	1,250.00
4							-
5							-
6							-
7							-
8							-
9							-
10							-
11							-
12							-
13							-
14							-
15							-
16							-
17							-
18							-
19							-
20							-

TOTAL COST CORRECTION $ 43,750.00

Facility Condition Assessment Program

Correction Cost Estimate Worksheet - Finding 26

Ver 5.0 August 26, 2019

Building: DENVER COLISEUM

Project Name: 2020 FACILITY CONDITION ASSESSMENT PROGRAM

Location within Building: South exterior of building

Date of Estimate: Friday, December 04, 2020

Cost Estimate Data Source: RS MEANS - 2020

Name/Company of Estimator: SEH

Scope of Work: Remove and replace two (2) ice machinces with new units of the same capacity that use approved refrigerant. Provide new supports for the ice machines.

	ITEM	LABOR	MATERIAL	EQUIPMENT	CONTINGENCY (10%)	OVERHEAD & PROFIT(15%)	TOTALS
1	Demo (2) existing ice machines	2,000.00	-	-	200.00	300.00	2,500.00
2	Construct new ice machine supports	1,500.00	24,000.00	-	2,550.00	3,825.00	31,875.00
3	Install (2) new ice machines	9,000.00	60,000.00	-	6,900.00	10,350.00	86,250.00
4							-
5							-
6							-
7							-
8							-
9							-
10							-
11							-
12							-
13							-
14							-
15							-
16							-
17							-
18							-
19							-
20							-

TOTAL COST CORRECTION $ 120,625.00

Facility Condition Assessment Program

Correction Cost Estimate Worksheet - Finding 75

Ver 5.0 August 26, 2019

Building: Denver Coliseum

Project Name: 2020 FACILITY CONDITION ASSESSMENT PROGRAM

Location within Building: Roof

Date of Estimate: Friday, February 21, 2020

Cost Estimate Data Source: RS MEANS - 2020

Name/Company of Estimator: SEH

Scope of Work: It is recommended to repair the areas of coating and provide approximately 4,000 L.F. of metal coping and flashing at the tops of the members to protect from further damage.

	ITEM	LABOR	MATERIAL	EQUIPMENT	CONTINGENCY (10%)	OVERHEAD & PROFIT(15%)	TOTALS
1	4,000 LF - Install - Mtl. Coping - Approx. 12"	10,470.00	8,430.00	-	1,890.00	2,835.00	23,625.00
2	4,000 LF - Clean/Patch/Repair Conc. Top	6,600.00	2,500.00	-	910.00	1,365.00	11,375.00
3							-
4							-
5							-
6							-
7							-
8							-
9							-
10							-
11							-
12							-
13							-
14							-
15							-
16							-
17							-
18							-
19							-
20							-

TOTAL COST CORRECTION $ 35,000.00

Facility Condition Assessment Program

Correction Cost Estimate Worksheet - Finding 82

Ver 5.0 August 26, 2019

Building: DENVER COLISEUM

Project Name: 2020 FACILITY CONDITION ASSESSMENT PROGRAM

Location within Building: Throughout the concourse

Date of Estimate: Monday, January 25, 2021

Cost Estimate Data Source: RS MEANS - 2020

Name/Company of Estimator: SEH

Scope of Work: Convert the fluorescent tube fixtures throughout the concourse to LED fixtures to save maintenance costs and improve energy efficiency.

	ITEM	LABOR	MATERIAL	EQUIPMENT	CONTINGENCY (10%)	OVERHEAD & PROFIT(15%)	TOTALS
1	Install LED retrofit kits on existing fixtures	3,500.00	36,500.00	-	4,000.00	6,000.00	50,000.00
2							-
3							-
4							-
5							-
6							-
7							-
8							-
9							-
10							-
11							-
12							-
13							-
14							-
15							-
16							-
17							-
18							-
19							-
20							-

TOTAL COST CORRECTION $ 50,000.00

Facility Condition Assessment Program

Correction Cost Estimate Worksheet - Finding 83

Ver 5.0 August 26, 2019

Building: DENVER COLISEUM

Project Name: 2020 FACILITY CONDITION ASSESSMENT PROGRAM

Location within Building: Exterior of Coliseum

Date of Estimate: Monday, January 25, 2021

Cost Estimate Data Source: RS MEANS - 2020

Name/Company of Estimator: SEH

Scope of Work: Convert the inefficient light fixtures on the North and South sides of the Coliseum to LED fixtures to save maintenance cost and improve energy efficiency.

	ITEM	LABOR	MATERIAL	EQUIPMENT	CONTINGENCY (10%)	OVERHEAD & PROFIT(15%)	TOTALS
1	Install LED retrofit kits on existing fixtures	2,250.00	18,750.00	-	2,100.00	3,150.00	26,250.00
2							-
3							-
4							-
5							-
6							-
7							-
8							-
9							-
10							-
11							-
12							-
13							-
14							-
15							-
16							-
17							-
18							-
19							-
20							-

TOTAL COST CORRECTION $ 26,250.00

Facility Condition Assessment Program

Correction Cost Estimate Worksheet - Finding 84

Ver 5.0 August 26, 2019

Building: DENVER COLISEUM

Project Name: 2020 FACILITY CONDITION ASSESSMENT PROGRAM

Location within Building: Barn Exterior

Date of Estimate: Monday, January 25, 2021

Cost Estimate Data Source: RS MEANS - 2020

Name/Company of Estimator: SEH

Scope of Work: Convert the inefficient light fixtures on the exterior of the Barn to LED fixtures to save maintenance cost and improve energy efficiency.

	ITEM	LABOR	MATERIAL	EQUIPMENT	CONTINGENCY (10%)	OVERHEAD & PROFIT(15%)	TOTALS
1	Install (15) LED retrofits kits on existing fixture	1,000.00	8,000.00	-	900.00	1,350.00	11,250.00
2							-
3							-
4							-
5							-
6							-
7							-
8							-
9							-
10							-
11							-
12							-
13							-
14							-
15							-
16							-
17							-
18							-
19							-
20							-

TOTAL COST CORRECTION $ 11,250.00

Facility Condition Assessment Program

Correction Cost Estimate Worksheet - Finding 85

Ver 5.0 August 26, 2019

Building: DENVER COLISEUM

Project Name: 2020 FACILITY CONDITION ASSESSMENT PROGRAM

Location within Building: General Parking Lot

Date of Estimate: Monday, January 25, 2021

Cost Estimate Data Source: RS MEANS - 2020

Name/Company of Estimator: SEH

Scope of Work: Convert the parking lot inefficient light fixtures to LED fixtures that incorporate photocell sensors. This conversion will save maintenance costs and improve energy efficiency.

	ITEM	LABOR	MATERIAL	EQUIPMENT	CONTINGENCY (10%)	OVERHEAD & PROFIT(15%)	TOTALS
1	Install LED retrofit kits on existing fixtures	7,500.00	88,500.00	-	9,600.00	14,400.00	120,000.00
2							-
3							-
4							-
5							-
6							-
7							-
8							-
9							-
10							-
11							-
12							-
13							-
14							-
15							-
16							-
17							-
18							-
19							-
20							-

TOTAL COST CORRECTION $ 120,000.00