

Facilities Condition Assessment Program



MacArthur Square Parking Garage

May 2011



Facilities Condition Assessment Program—MacArthur Square

Introduction

MacArthur Square parking structure is located at 841 North James Lovell Street. It is centrally located between the Milwaukee Public Museum, Milwaukee County Courthouse, Police Administration Building, and Safety Building. The parking structure is bounded by State Street to the north, 9th Street to the west and Wells Street to the south.

The parking structure contains three parking levels made accessible by entrances/exits at North James Lovell Street, 9th Street, and the 1-43 Kilbourn Tunnel exit ramp. MacArthur Square parking structure comprises approximately 644,000 square feet of floor area and 1,437 parking spaces. The Civic Center atop MacArthur Square is a landscaped area that includes green space, concrete sidewalks, a reflecting pool (abandoned), and masonry retaining walls.

The overall condition of the MacArthur Square parking structure is good, as indicated by the Facility Condition Index rating of 0.01. Fiscal Year 2015 pertains to the most significant near term year of repairs. These repairs pertain to membrane application with related concrete repairs, and primary/secondary electrical distribution upgrades.

Procedures

The Facilities Condition Assessment Program (FCAP) is a 20 year-forecast of the property and analysis of the capital improvement expenditures. It involves two aspects: the physical analysis and financial analysis. The physical analysis includes an onsite inventory and condition assessment of components that will require capital improvement expenditures within the scope of the 20 year study. The financial analysis includes project scheduling/coordination and cost estimation of these projects.

FCAP includes information about the property components and the project schedules. The report serves as a long-term strategic tool to position property fiduciaries to make decisions to best serve its owners.

Component Inventory

The information within the Facility Condition Assessment Program is derived from:

- On-site, visual, non-invasive inspections
- Review of consultant's reports
- Facilities Development and Management historic data

The components inventoried and scheduled for capital improvement within this report meet the following criteria:

- City of Milwaukee responsibility
- Limited Useful Life (UL) expectancy
- Predictable Remaining Useful Life (RUL) expectancy
- Greater than \$25,000 minimum threshold (some exceptions apply)
- Requirements by local codes



Categorization of Components

This report inventories the physical property components located at the facility. The inventoried property components are organized into one of the following categories:

- City of Milwaukee Responsibility
- O+M Responsibility
- Long Lived
- Others

City of Milwaukee Responsibility pertains to components that are funded by the City of Milwaukee capital expenditures. These components are the primary focus within this report and the coordinated capital budget.

O+M Responsibility pertains to those components that require maintenance or replacement less than the minimum capital threshold of \$25,000. These components are usually repaired or replaced from O+M funds.

Long Lived pertains to components that are funded through the City of Milwaukee capital program. However, these expenditures are projected beyond the 25 year scope of capital budget.

Others pertains to components that are repaired/replaced/maintained by an entity other than City of Milwaukee.

Component Inventory

The property components at MacArthur Square are categorized as follows:

City of Milwaukee Responsibility

Structural Components

- Concrete, On-Grade
- Concrete, Lovell Street Exterior, Panel Removal and Repairs
- Concrete, Elevated, Partial Replacements
- Concrete, Elevated, Membrane Application
- Expansion Joint
- Paint Finish Application

Services Components

- Carbon Monoxide Detection System, Replacement
- Carbon Monoxide Detection System, Upgrades
- Electrical, Primary Distribution
- Electrical, Secondary Distribution
- Electrical, Branch Circuits and Panels
- Elevators, Hydraulic, Pumps/Controls
- Exhaust Fans, Motors



Facilities Condition Assessment Program—MacArthur Square

- Fire Suppression System
- Light Fixtures, Bulb Replacements
- Operators and Pay Stations
- Pumps

Interior Finish Components

- Doors, Replacement
- Offices/Rest Rooms, Renovations
- Wall, Wood, Lovell Street

O+M Responsibility

- Elevator Pump Rooms, Exhaust Fans/Unit Heaters
- Paint Finishes, Touch-Up and Stairwells
- Routine Diagnostics/Maintenance
- Pumps, Building Heat and Water (Less than 7.5 HP)
- HVAC Units, Offices, Lovell Street
- AHUs, Interim Repairs and Maintenance
- Boilers, Interim Repairs and Maintenance

Long Lived

- Light Fixtures
- Elevator, Hydraulic, Cylinders

Others

- Civic Center (Facilities Development and Management)
- Windows and Doors, Lovell Street Level (Museum)

Report Information

The written report includes a combination of information about the City of Milwaukee Responsibility components, including:

- Component Inventory
- Condition Assessment
- Photo-documentation

This information is intended to serve as a summary from the aggregation of in-house inspections, consultants reports, historic data, and the capital budget. In addition, projects funded for ADA compliance are included within the anticipated costs of capital projects.

Capital Budget

The capital budget for the property is included on two spreadsheets. The first spreadsheet contains the anticipated capital projects for years 2011 through 2023. The second spreadsheet contains the anticipated capital projects for years 2024 through 2036. Information on the spreadsheets includes:



Facilities Condition Assessment Program—MacArthur Square

- Component Name
- Quantity
- Units
- 2011 Unit Cost
- 2011 Replacement Cost
- Useful Life (UL)
- Remaining Useful Life (RUL)
- First Year Funds Requested

Component Name pertains to the element which is projected for capital improvement.

Quantity includes the measured amount of each component at the property.

Units pertains to the measurement used to determine quantity. The units within the report are as follows:

- LF = Linear Feet
- SF = Square Feet
- EA = Each
- LS = Lump Sum

2011 Unit Cost pertains to the estimated cost per unit measurement for capital improvement. These costs are derived from RS Means Cost Works, Marshall & Swift/Boeckh, AME, Inc., historic data, and other resources.

2011 Replacement Cost pertains to the estimated cost of the capital improvement project. It is derived by multiplying the *Quantity* by *2011 Unit Cost*.

Useful Life (UL) pertains to the time frame in years wherein a component is anticipated to remain functional provided it receive proper maintenance. UL is also referred to as Service Life.

Remaining Useful Life (RUL) pertains to the estimated service life remaining for any given component. It coincides with the anticipated year of the capital expenditure.

First Year Funds Requested pertains to the year in which the capital expenditure is anticipated.

Deferred Capital pertains to projects that have been identified for capital repairs but have yet to be completed. The aggregated summation of deferred maintenance projects corresponds to the FCI.

CRV Current Replacement Value is the insurance estimate for reconstruction of the facility in today's dollars.



Facilities Condition Assessment Program—MacArthur Square

FCI Facilities Condition Index is the relationship between the aggregated summation of deferred capital projects divided by the Current Replacement Value of the facility. This proportion provides a measure to analyze the condition of the property, compare with other properties, and cross reference with City of Milwaukee guidelines. The City of Milwaukee guidelines are as follows:

Condition	FCI Rating
Good	0.0-0.099
Fair	0.10-0.20
Poor	>0.20

Limitations of Inspection

The inspection conducted by City of Milwaukee Facilities Development and Management Section and its representatives is limited to those components that are observed and identified by mere visual observation. Inspections conducted by the City of Milwaukee Facilities Development and Management Section does not include:

- (a) Any probing, boring, excavation, or other invasive means of property inspection
- (b) Testing for or identification of any hazardous materials in any form
- (c) Identification of construction, structural, design, or other defects that may violate local, state, international, or other building codes and/or regulations, or any kind
- (d) Identification of any defects that are not readily apparent by mere visual observation including, but not limited to structural defects, leaking pipes, foundational damage, and electrical wiring hazards or defects.



Concrete On-Grade

MacArthur Square comprises approximately 223,000 square feet of on-grade concrete at the lower level. The concrete is in fair condition with isolated areas of scaling. Minor cracks were observed.

The condition of the concrete is good with respect to its age of approximately 45 years. Parking should budget for partial replacement of on-grade concrete in conjunction with paint finish applications at Lower Level east by 2016 and 2031, and at Lower Level west by 2017 and 2032.

Concrete, Elevated

The Lovell Street Level and 9th Street Level at MacArthur Square comprise 286,000 square feet and 113,000 square feet of elevated floor slabs, respectively. The concrete is overlaid with a waterproof traffic bearing membrane.

The waterproof membrane protects solvents, liquids, etc. from penetrating into the concrete, thereby increasing the longevity of the elevated concrete structure.

The Lovell Street west membrane received spot repairs in 2006 and the Lovell Street east membrane received spot repairs in 2005.

The basement level ceiling exhibits locations of cracks with efflorescence. This indicates that the membrane is compromised at/near this areas. Similarly, the 9th Street Level membrane is also comprised at areas. The extent of this condition has increased over the last few years.

Based on condition, Parking should anticipate replacement of the Lovell Street Level east membrane by 2014, replacement of the Lovell Street Level west membrane by 2015, and replacement of the 9th Street Level membrane by 2015. Elevated concrete surface repairs should be conducted in coordination with membrane replacement.

Subsequent membrane replacements should be anticipated every 15 years.

Facilities Condition Assessment Program—MacArthur Square

Concrete, 7th Street Exterior

The facade at 7th Street (James Lovell) is currently under concrete surface repairs. The budgeted amount is \$160,000 and includes:

- Concrete repairs at the surface
- Mortar Patches

This work is expected to be completed in 2011.

Expansion Joint

The Lovell Street Level west side at MacArthur Square contains an expansion joint that measures approximately 300 linear feet. The useful life of the expansion joint is 15 years. Parking should replace this joint in conjunction with membrane application by 2015 and 2030.



Facilities Condition Assessment Program—MacArthur Square

Paint Finish Application

The useful life of paint finish applications is up to 15 years. The following summarizes the recommended future painting schedule:

Location	Years
Lower Level East/Ramps	2016/2031
Lower Level West	2017
Lovell Street Level West	2023
Lovell Street Level East	2024
9th Street Level	2025

Carbon Monoxide Detection System

The carbon monoxide detection system is in good condition at an age of one year. Parking should anticipate system upgrades due to routine maintenance and technological obsolescence by 2020. Replacement of the system is anticipated by 2030.



Facilities Condition Assessment Program—MacArthur Square

Electrical

MacArthur Square comprises three levels of electrical distribution: Primary, Secondary, Branch Circuits/Panels. The condition of these components is reported as fair/poor.

The useful lives for the electrical systems is as follows: Primary = 45 years, Secondary = 45 years, Branch Circuits/Panels = 25. The useful life is dependent upon function and environment.

Based on condition, parking should anticipate replacement of the Primary and Secondary distributions by 2015. Replacement of the Branch Circuits/Panels is anticipated by 2019.

Elevators, Pumps/Controls

Three elevators serve MacArthur Square. The useful life of hydraulic pumps/controls is up to 35 years. Parking should anticipate their upgrade by 2018.

The hydraulic cylinders were replaced in 2009. These components have a useful life of up to 45 years.



Exhaust Fans, Motors

Twenty-one exhaust fans ranging from 30,000cfm 82,000cfm serve the parking garage. The motors have a useful life of up to 30 years. Parking should anticipate motor replacement by 2021. The housing unit and interim repairs are considered O+M expenditures.

Photographs



Typical exhaust fans

Fire Suppression System

The fire suppression sprinkler system covers approximately 625,000 square feet of floor area. These systems require routine maintenance to achieve a long useful life of 65+ years. The paint finish applications increase the useful life of this component. Partial replacements are O+M.

Facilities Condition Assessment Program—MacArthur Square

Light Fixtures, Bulb Replacements

MacArthur Square light fixtures were upgraded in 2010 and have a useful life of 25 years. The light fixtures themselves are considered long lived. However, the bulbs require replacement every three years beginning by 2013.

Operators and Pay Stations

MacArthur Square contains:

Item	Quantity
Entrance Ticket Operator	5
Exit Ticket Operator	5
Gate Operators	10
Ticket Pay Station	1

The useful life of these components and operating systems is up to 12 years. Parking should anticipate its replacement by 2017 and 2029. Interim repairs/replacements and upgrade to individual components should be funded by O+M.



Facilities Condition Assessment Program—MacArthur Square

Pumps

MacArthur Square contains two sump pumps at the Lower Level southeast corner. The submersible pumps have a useful life of up to 15 years. The pumps are planned for replacement in 2011. Subsequent replacement should be anticipated by 2026.

Photographs



Pumps

Doors, Replacement

MacArthur Square comprises 79 steel doors, 8 glass doors, and two overhead garage doors. The useful life of metal exterior doors is up to 35 years. Based on the varied conditions, Parking should anticipated phased replacement of 12 doors every five years beginning by 2014.

Photographs



9th Street storage room door interior is rusted. Exterior is painted.

Facilities Condition Assessment Program—MacArthur Square

Offices/Rest Rooms, Renovations

MacArthur Square Lovell Street Level comprises parking administration offices and rest rooms. Interior renovations should be conducted every 30 years. Parking should budget for the next interior renovation by 2027.

Wall, Wood, 7th Street

MacArthur Square Lovell Street Level contains a 2,500 square foot wood block wall. This wall is in fair overall condition. It is likely original and at an age of 45 years. Parking should anticipate replacement of this wall by 2026.



**MacArthur Square
Parking Structure**

	Quantity	Units	2011 Unit Cost	2011 Capital Cost	UL	RUL	20 Year Total Cost	First Year Funds Requested	Deferred Capital	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Structural Components																			
Lower Level, East and Ramps																			
Concrete, On-Grade, Partial Replacements	1	LS	\$63,000	\$63,000	90+	5	\$179,000	2016	\$0						\$72,000				
Paint Finish Application (including concrete surface repairs)	1	LS	\$360,000	\$360,000	15	5	\$1,024,000	2016	\$0						\$411,000				
Lower Level, West																			
Concrete, On-Grade, Partial Replacements	1	LS	\$64,000	\$64,000	90+	6	\$75,000	2017	\$0							\$75,000			
Paint Finish Application (including concrete surface repairs)	1	LS	\$300,000	\$300,000	15	6	\$352,000	2017	\$0						\$352,000				
7th Street Level, West																			
Concrete, Elevated, Partial Replacements	1	LS	\$70,000	\$70,000	15	4	\$194,000	2015	\$0					\$78,000					
Concrete, Elevated, Membrane Application	1	LS	\$320,000	\$320,000	15	4	\$887,000	2015	\$0					\$356,000					
Expansion Joint, Replacement	1	LS	\$21,000	\$21,000	15	4	\$58,000	2015	\$0					\$23,000					
Paint Finish Application (including concrete surface repairs)	1	SF	\$135,000	\$135,000	15	12	\$186,000	2023	\$0										
7th Street Level, East																			
Concrete, 7th Street Exterior, Panel Removal and Repairs	1	LS	\$160,000	\$160,000	NA	0	\$160,000	2011	\$160,000	\$160,000									
Concrete, Elevated, Partial Replacements	1	LS	\$110,000	\$110,000	15	3	\$297,000	2014	\$0				\$119,000						
Concrete, Elevated, Membrane Application	1	LS	\$490,000	\$490,000	15	3	\$1,323,000	2014	\$0				\$531,000						
Paint Finish Application (including concrete surface repairs)	1	SF	\$450,000	\$450,000	15	13	\$636,000	2024	\$0										
9th Street Level																			
Concrete, Elevated, Partial Replacements	1	LS	\$70,000	\$70,000	15	4	\$194,000	2015	\$0					\$78,000					
Concrete, Elevated, Membrane Application	1	LS	\$320,000	\$320,000	15	4	\$887,000	2015	\$0					\$356,000					
Paint Finish Application (including concrete surface repairs)	1	SF	\$300,000	\$300,000	15	14	\$436,000	2025	\$0										
Services Components																			
Carbon Monoxide Detection System, Replacement	1	EA	\$500,000	\$500,000	20	19	\$829,000	2030	\$0										
Carbon Monoxide Detection System, Upgrades	1	EA	\$100,000	\$100,000	10	9	\$293,000	2020	\$0										\$127,000
Electrical, Primary Distribution	1	LS	\$700,000	\$700,000	45	4	\$779,000	2015	\$0					\$779,000					
Electrical, Secondary Distribution	1	LS	\$580,000	\$580,000	45	4	\$645,000	2015	\$0					\$645,000					
Electrical, Branch Circuits and Panels	1	LS	\$75,000	\$75,000	25	8	\$93,000	2019	\$0									\$93,000	
Elevators, Hydraulic, Pump/Controls	3	EA	\$115,000	\$345,000	35	7	\$878,000	2018	\$0							\$416,000			
Exhaust Fans, Motors	1	LS	\$215,000	\$215,000	30	10	\$281,000	2021	\$0										
Fire Suppression System	625,000	SF	\$2.25	\$1,406,250	65+	17	\$2,212,000	2028	\$0										
Light Fixtures, Bulb Replacements	1	LS	\$30,000	\$30,000	3	2	\$285,000	2013	\$0			\$32,000			\$34,000				\$37,000
Operators and Pay Stations	1	EA	\$290,000	\$290,000	12	6	\$808,000	2017	\$0							\$340,000			
Pumps (Minimum 7.5HP)	2	EA	\$13,000	\$26,000	15	0	\$65,000	2011	\$26,000	\$26,000									
Interior Finishes Components																			
Doors, Replacement, Phased	12	EA	\$2,500	\$30,000	35	3	\$159,000	2014	\$0				\$32,000						\$37,000
Offices/Restrooms, Renovations	1	LS	\$54,000	\$54,000	30	16	\$83,000	2027	\$0										
Wall, Wood, 7th Street	2,500	SF	\$40	\$100,000	60	15	\$149,000	2026	\$0										
Total 20 Year Cost							\$14,447,000	Total Annual Cost		\$186,000	\$0	\$32,000	\$682,000	\$2,315,000	\$517,000	\$767,000	\$416,000	\$167,000	\$127,000
Notes									CRV	\$28,947,420	\$29,729,000	\$30,531,683	\$31,356,039	\$32,202,652	\$33,072,123	\$33,965,071	\$34,882,128	\$35,823,945	\$36,791,192
1) FY is Fiscal Year. FY is the calendar year.									FCI	0.01									
2) UL is Useful Life and RUL is Remaining Useful Life																			
3) The annual building materials inflation rate estimate is estimated at																			
4) Current Replacement Value (CRV) growth rate is estimated at																			

**MacArthur Square
Parking Structure**

	Quantity	Units	2011 Unit Cost	2011 Capital Cost	UL	RUL	20 Year Total Cost	First Year Funds Requested	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Structural Components																			
Lower Level, East and Ramps																			
Concrete, On-Grade, Partial Replacements	1	LS	\$63,000	\$63,000	90+	5	\$179,000	2016											\$107,000
Paint Finish Application (including concrete surface repairs)	1	LS	\$360,000	\$360,000	15	5	\$1,024,000	2016											\$613,000
Lower Level, West																			
Concrete, On-Grade, Partial Replacements	1	LS	\$64,000	\$64,000	90+	6	\$75,000	2017											
Paint Finish Application (including concrete surface repairs)	1	LS	\$300,000	\$300,000	15	6	\$352,000	2017											
7th Street Level, West																			
Concrete, Elevated, Partial Replacements	1	LS	\$70,000	\$70,000	15	4	\$194,000	2015											\$116,000
Concrete, Elevated, Membrane Application	1	LS	\$320,000	\$320,000	15	4	\$887,000	2015											\$531,000
Expansion Joint, Replacement	1	LS	\$21,000	\$21,000	15	4	\$58,000	2015											\$35,000
Paint Finish Application (including concrete surface repairs)	1	SF	\$135,000	\$135,000	15	12	\$186,000	2023			\$186,000								
7th Street Level, East																			
Concrete, 7th Street Exterior, Panel Removal and Repairs	1	LS	\$160,000	\$160,000	NA	0	\$160,000	2011											
Concrete, Elevated, Partial Replacements	1	LS	\$110,000	\$110,000	15	3	\$297,000	2014											\$178,000
Concrete, Elevated, Membrane Application	1	LS	\$490,000	\$490,000	15	3	\$1,323,000	2014											\$792,000
Paint Finish Application (including concrete surface repairs)	1	SF	\$450,000	\$450,000	15	13	\$636,000	2024				\$636,000							
9th Street Level																			
Concrete, Elevated, Partial Replacements	1	LS	\$70,000	\$70,000	15	4	\$194,000	2015											\$116,000
Concrete, Elevated, Membrane Application	1	LS	\$320,000	\$320,000	15	4	\$887,000	2015											\$531,000
Paint Finish Application (including concrete surface repairs)	1	SF	\$300,000	\$300,000	15	14	\$436,000	2025					\$436,000						
Services Components																			
Carbon Monoxide Detection System, Replacement	1	EA	\$500,000	\$500,000	20	19	\$829,000	2030											\$829,000
Carbon Monoxide Detection System, Upgrades	1	EA	\$100,000	\$100,000	10	9	\$293,000	2020											\$166,000
Electrical, Primary Distribution	1	LS	\$700,000	\$700,000	45	4	\$779,000	2015											
Electrical, Secondary Distribution	1	LS	\$580,000	\$580,000	45	4	\$645,000	2015											
Electrical, Branch Circuits and Panels	1	LS	\$75,000	\$75,000	25	8	\$93,000	2019											
Elevators, Hydraulic, Pump/Controls	3	EA	\$115,000	\$345,000	35	7	\$878,000	2018			\$462,000								
Exhaust Fans, Motors	1	LS	\$215,000	\$215,000	30	10	\$281,000	2021	\$281,000										
Fire Suppression System	625,000	SF	\$2.25	\$1,406,250	65+	17	\$2,212,000	2028								\$2,212,000			
Light Fixtures, Bulb Replacements	1	LS	\$30,000	\$30,000	3	2	\$285,000	2013		\$40,000			\$44,000			\$47,000			\$51,000
Operators and Pay Stations	1	EA	\$290,000	\$290,000	12	6	\$808,000	2017										\$468,000	
Pumps (Minimum 7.5HP)	2	EA	\$13,000	\$26,000	15	0	\$65,000	2011						\$39,000					
Interior Finishes Components																			
Doors, Replacement, Phased	12	EA	\$2,500	\$30,000	35	3	\$159,000	2014				\$42,000						\$48,000	
Offices/Restrooms, Renovations	1	LS	\$54,000	\$54,000	30	16	\$83,000	2027							\$83,000				
Wall, Wood, 7th Street	2,500	SF	\$40	\$100,000	60	15	\$149,000	2026						\$149,000					
Total 20 Year Cost							\$14,447,000	Total	\$281,000	\$502,000	\$186,000	\$678,000	\$480,000	\$188,000	\$83,000	\$2,259,000	\$1,486,000	\$2,324,000	\$771,000
Notes								CRV	\$37,784,554	\$38,804,737	\$39,852,465	\$40,928,481	\$42,033,550	\$43,168,456	\$44,334,004	\$45,531,023	\$46,760,360	\$48,022,890	\$49,319,508
								FCI											
1) FY is Fiscal Year. FY is the calendar year.																			
2) UL is Useful Life and RUL is Remaining Useful Life																			
3) The annual building materials inflation rate estimate is estimated at			2.70%																
4) Current Replacement Value (CRV) growth rate is estimated at			2.70%																

MacArthur Square 20 Year Projected Capital Needs

