CAPITAL IMPROVEMENT AND PROTECTION PLAN REPORT UPDATE

WAYNE STATE UNIVERSITY – PARKING STRUCTURES #1 THRU #6 AND #8

DETROIT, MI

Prepared for:
WAYNE STATE UNIVERSITY

DECEMBER, 2015
WALKER PROJECT #20-1630.00

WALKER
RESTORATION CONSULTANTS

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INTRODUCTION

Walker Parking Consultants developed a Capital Improvement and Protection Plan (CIPP) in 2009 for Wayne State University which provided repair, maintenance, improvements, and phasing recommendations and associated cost opinions for Parking Structures #1 through #6. In 2011, Walker provided an update to that report for all six of the structures, and also added Parking Structure #8 in the repair and maintenance program. In 2012, 2013, and 2014 Walker provided update reports for Parking Structures #1 through #6 and #8. This report serves as an update to the 2014 report, based on visual review, limited chain drag survey, and information gained during recent repair projects.

Table 1-1 of this report provides a summary of total base repair costs and improvement costs for each of the parking structures through 2019. Table 1-2 provides a yearly breakdown of the recommended base repair costs for each of the structures, including a summary of the construction costs for work performed in 2015. Tables 2-1 through 2-7 provide a detailed breakdown of the recommended repair/maintenance program for each of the individual structures. Tables 2-1 through 2-7 also include proposed improvements related to aesthetics, ADA and code issues, lighting and energy savings, security, and other items. Although the University may not be required to bring the structures up to current ADA and code requirements, WSU may want to consider implementing upgrades for safety or liability reasons.

The recommended "Base Repairs" provide a phased approach to address current deterioration conditions observed in the structures. The "Structural Maintenance" recommendations include routine repairs and waterproofing repairs to protect the structures and mitigate further deterioration. (Note: Some similar "Structural Maintenance" type work is also included in the Base Repair recommendations.) This report utilizes the same repair program format used in the 2014 report, showing a large amount of the recommended waterproofing work in the "Structural Maintenance" category to better reflect WSU's current budgeting and increased emphasis on maintenance.

An annual 3% increase is included to account for inflation. Inflation costs are not included for 2016 recommended repairs, which are assumed to be bid shortly after issue of this report.

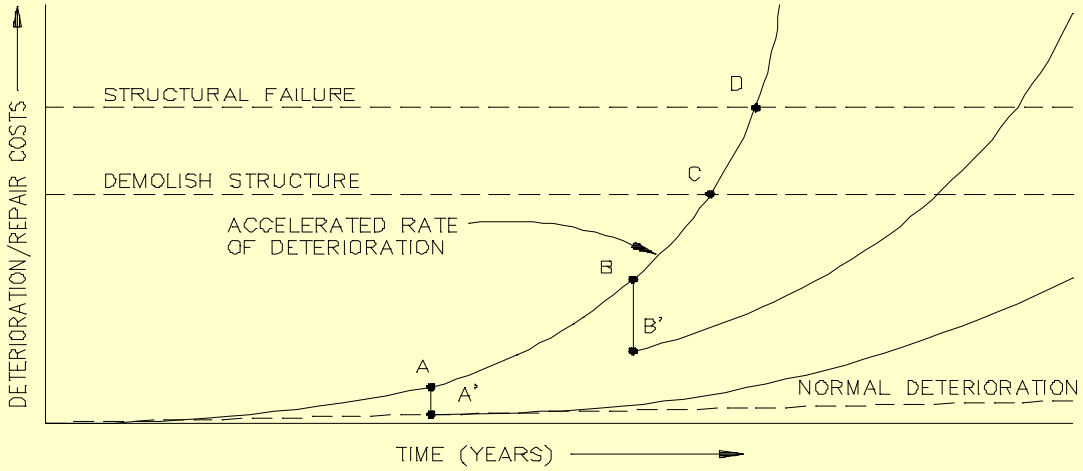
The overall program scope and cost is in line with the original 10-year program established in the 2009 report. Costs in the remaining years have been modified as follows:

- The repair budget for parking structures for 2012 was decreased by $1.1 million to allow for funding of other high priority surface lot projects.
- Parking Structure #1 future projections have increased to account for changing some of the floor repair areas from "strip-patching" to "deep overlay" due to deterioration growth.
- At the request of WSU, a line item was added in 2012 in Table 1-2 to account for project costs for WSU – FP&M project management, which was not included in the previous reports.
- Installation of replacement LED lights has been added to the Parking Structure #1 projects in 2014, 2015, and 2016.
- Modifications to the repair program were made in 2015 to accommodate WSU's anticipated project budget of $3 million per year through 2019.

BENEFITS OF REPAIR AND MAINTENANCE PROGRAM

This repair and maintenance program was originally developed in 2009 to provide a cost effective, long-term approach to address current structural deterioration and provide waterproofing protection to extend the service life of the parking structures. Updated reports have been provided to account for repairs that have been performed since 2009, and for changing conditions in the structures. In 2009, chloride levels at most of the structures were found to be above the threshold at which corrosion occurs. This means that corrosion and deterioration in the concrete floor slabs and structural elements would progress at an

DETERIORATION REPAIR COST CURVE



NOTE:

1. Points A – D represent stages of accelerated deterioration in parking structures.
2. Structures repaired at point A cost less overall and last longer than structures repaired at point B. [Compare curve A' to B']

accelerated rate unless major repairs and waterproofing are implemented. As you can see from the Deterioration Repair Curve above, this has an exponential effect. This curve represents repair and maintenance costs for a typical parking structure, with preventive repairs and maintenance done at different times in the life cycle. Repairs that are done at Point A on the curve (early in the life cycle) not only cost less, but have a greater benefit for the economic life of the structure. Repairs performed at Point B (later in the life) cost more, and have less benefit in extending the life of the facility. This can vary for each type of facility and each type of repair method.

Starting with the repairs performed in 2009, the focus has been on addressing current deterioration conditions to bring the structures to a manageable level of maintenance, as well as installing protective waterproofing measures to help slow the corrosion and deterioration process. This is being achieved by using durable and corrosion-resistant repair materials, and installing traffic coatings, sealants, sealers, expansion joint systems, façade sealants, flashings, etc. We strongly recommend that WSU continue with this approach to restore, protect, and

maintain these parking structures as it is a cost-effective and practical way to extend the service life.

As part of this update report we reviewed past repairs performed under the CIPP Program during 2009 ($120,000), 2010 ($5,500,000), 2011 ($2,629,000), 2012 ($3,866,000), 2013 ($2,991,000), 2014 ($4,182,000), and 2015 (2,503,000) and found that the repairs continue to perform well and are achieving your objectives for long-term durability. Based on the design solutions that were utilized and our review of the contractor's technical performance during the construction phase of these projects, we found that these repairs meet industry standards for quality and will extend the service life of these structures as intended. It is Walker's professional opinion that the repairs that have been completed along with the future recommended repairs shown in this report are necessary to prevent more serious and costly structural problems from developing, and to provide a longer service life and yield lower costs over the life of the structure as indicated in the graph above.

As a point of comparison, the table below shows the repair and maintenance costs of this CIPP repair program compared to replacement costs for structures #1-#6.

REPLACEMENT COSTS VS. REPAIR PROGRAM COSTS

		Est'd Cost - New Structure		**Est'd Cost - CIPP Program**		
Parking Structure	**# spaces**	Total Cost	Cost /space	Cost to Date (Since 2009)	Total Projected Cost (2009-2019)	Total Projected Cost /space
#1	1,978	$44,000,000	$22,000	$16,620,000	$20,785,000	$10,500
#2	2,045	$45,000,000	$22,000	$2,959,000	$5,458,000	$2,700
#3	320	$7,000,000	$22,000	$428,000	$1,010,000	$3,200
#4	1,200	$26,000,000	$22,000	$570,000	$1,585,000	$1,300
#5	1,076	$24,000,000	$22,000	$576,000	$1,410,000	$1,300
#6	705	$16,000,000	$22,000	$190,000	$1,058,000	$1,500

Note: Order of magnitude costs shown only for comparison purposes. Does not include engineering, testing, contingency, FP&M, inflation, or Improvement costs.

Parking structures have a limited service life due to water and salt exposure, freeze-thaw conditions, cyclical expansion and contraction movements due to seasonal and daily temperature changes, and wear and tear from vehicle traffic. Therefore, ongoing repairs and maintenance will always be necessary to extend the service life. This CIPP repair program provides a long-term approach to effectively manage and implement the repair and maintenance work to extend the service life of the structures in a cost-effective manner.

SPREADSHEET

PS #1 (Palmer)	PS #2 (Manoogian)	PS #3 (Rackham)	PS #4 (Medical School)	PS #5 (Anthony Wayne Dr.)	PS #6 (Welcome Center)
1965	1972	1977	1978	1987	2001
450 W. Palmer	5150 Lodge Service Dr.	45 E. Warren	555 E. Canfield	5501 Anthony Wayne Dr.	61 Putnam
5	5	2	7	3	5
74,300	100,000	36,800	40,600	80,000	38,000
577,500	479,000	78,600	313,600	232,000	199,000
1,978	2,045	320	1,200	1,076	705
CIP Cantilevered Flat Slab	Precast with field topped double tees	Precast with field topped double tees	CIP Post-tensioned slabs and beams	Precast with field topped double tees	Precast with pretopped double tees
2013	2012	2012	2013	2012	2011
6	3	4	3	2	2
6	2	0	2	2	3
Assigned/Student/Visitor	Assigned/Student/Visitor	Assigned/Student/Visitor	Assigned	Assigned/Student/Visitor	Assigned/Student/ Visitor/Validation
Emergency Phones and Cameras	Emergency Phones and Cameras	Emergency Phones and Cameras	Emergency Phones and Cameras	Emergency Phones and Cameras	Emergency Phones and Cameras
MH (with localized LEDs)	MH	HPS	MH	HPS	MH
Battery Pack Fixture	Battery Pack Fixture	None	Battery Pack Fixture	Battery Pack Fixture (in stairs only)	Battery Pack Fixture
PLD	PLD	DTE	PLD	PLD	DTE
Open Structure	Open Structure	Open Structure	Open Structure	Open Structure	Open Structure
Yes	Yes	Yes	Yes	Yes	Yes
None	None	None	None	None	Retail space

ROJECTED REPAIRS & IMPROVEMENTS COST SUMMARY (through 2019)

ucture ilt)	Base Costs	Improvement Costs				
	Structural & Waterproofing (See Tables 2-1 thru 2-7 for Phasing Plans)	ADA/Code	Other	Energy Savings (LED Lighting)	Security (Camera Systems)	Improvements Total
	$4,802,000	$2,114,000	$1,200,000	$822,000		**$4,136,000**
	$2,428	$1,069	$607	$416		$2,091
972)	**$2,592,000**	$492,000	$2,574,000	$925,000	$53,000	**$4,044,000**
	$1,267	$241	$1,259	$452	$26	$1,978
7)	**$757,000**	$611,000	$247,000	$170,000	$125,000	**$1,153,000**
	$2,366	$1,909	$772	$531	$391	$3,603
ol (1978)	**$1,252,000**	$827,000	$1,008,000	$547,000	$65,000	**$2,447,000**
	$1,043	$689	$840	$456	$54	$2,039
e Dr. (1987)	**$1,104,000**	$55,000	$1,029,000	$604,000	$334,000	**$2,022,000**
	$1,026	$51	$956	$561	$310	$1,879
er (2001)	**$1,066,000**	$191,000	$449,000	$239,000	$64,000	**$943,000**
	$1,512	$271	$637	$339	$91	$1,338
007)	**$928,000**		$776,000			**$776,000**
	$998		$834			$834
	$12,501,000	**$4,290,000**	**$7,283,000**	**$3,307,000**	**$641,000**	**$15,521,000**

ecommended Base Repairs, Structural Maintenance, and Projected Future Structural Repairs (including Engineering/Testing, Contingency, and Inflation costs). FP&M
n per structure, see Tables 2-1 through 2-7 in the individual reports.

TABLE 1-2: RECOMMENDED PHASING PLAN SUMMARY (Base Costs: Structural & Waterproofing Repairs; see Note 1)

Parking Structure (Year Built)	2015 * Work Performed (Includes Improvements)	2016	2017	2018	2019	SubTotal *** 2016-2019	Eng/Testing	WSU - FP&M (6%)	Contingency (10%)	Inflation (3%)	Individual Structure Total
PS #1 - Palmer (1965)	$2,170,006.58	$1,145,000		$1,762,000	$1,073,000	**$3,980,000**	**$337,000**	**$239,000**	**$398,000**	**$87,000**	**$5,041,000**
PS #2 - Manoogian (1972)	$258,620.90	$1,015,000	$665,000	$254,000	$205,000	**$2,139,000**	**$203,000**	**$128,000**	**$215,000**	**$35,000**	**$2,720,000**
PS #3 - Rackham (1977)		$20,000	$462,000		$120,000	**$602,000**	**$77,000**	**$36,000**	**$60,000**	**$18,000**	**$793,000**
PS #4 - Medical School (1978)		$40,000	$505,000		$470,000	**$1,015,000**	**$105,000**	**$61,000**	**$102,000**	**$30,000**	**$1,313,000**
PS #5 - Anthony Wayne Dr. (1987)	$73,936.00	$371,000		$313,000	$220,000	**$904,000**	**$93,000**	**$54,000**	**$90,000**	**$17,000**	**$1,158,000**
PS #6 - Welcome Center (2001)			$868,000			**$868,000**	**$85,000**	**$52,000**	**$87,000**	**$26,000**	**$1,118,000**
PS #8 - Forest Ave. (2007)				$275,000	$470,000	**$745,000**	**$85,000**	**$45,000**	**$75,000**	**$23,000**	**$973,000**
SubTotal	**$2,502,563.48**	**$2,591,000**	**$2,500,000**	**$2,604,000**	**$2,558,000**	**$10,253,000**	**$985,000**	**$615,000**	**$1,027,000**	**$236,000**	**$13,116,000**
Engineering / Testing	**$137,400.00**	**$225,000**	**$250,000**	**$230,000**	**$280,000**	**$985,000**					
WSU - FP&M (6%)		**$155,000**	**$150,000**	**$157,000**	**$153,000**	**$615,000**					
Contingency (10%)		**$260,000**	**$250,000**	**$260,000**	**$257,000**	**$1,027,000**					
Inflation (3% annual)			**$75,000**	**$79,000**	**$82,000**	**$236,000**					
Projects Total (per year)	**$2,639,963.48**	**$3,231,000**	**$3,225,000**	**$3,330,000**	**$3,330,000**	**$13,116,000**					

Notes:
1. This Table includes recommended Base Repairs, Structural Maintenance, and Projected Future Structural Repairs (Improvement items are not included in this table, except for 2015 work performed). For a detailed breakdown per structure, see Tables 2-1 through 2-7 in the individual reports.
2. Cost projections shown in 2015 dollars. See line item included to account for inflation.
   *Costs listed for year 2015 are a summary of work that was performed during the 2015 construction season.
   **Amount shown for Engineering / Testing in year 2015 includes Engineering only.
   *** "SubTotal" column does not include work performed in 2015.

PARKING STRUCTURE #1

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PARKING STRUCTURE #1

RECENT COMPLETED REPAIRS

2009/2010 Immediate Repair Project: Replaced damaged vehicle barrier post and installed chain-link pedestrian barrier on level 1. ($19,000)

2010 Major Repair Project: Major floor slab restoration on levels 3-5 in bays 7 and 8. This project also included numerous other concrete repairs, expansion joint repairs, traffic coating installation, sealant replacement, drain and piping replacement, ADA improvements at stair tower entrances, stair tower facade repairs, installation of permanent shoring and perimeter vehicle barriers, security system installation, and other miscellaneous work. ($5,320,000)

2011 Repair Project: Expansion joint removal/replacement on level 2 in bays 7 & 8, partial- and full-depth slab repairs along these joints, sealant repairs, traffic coating installation along these joints and in bay 8 on level 3, supplemental drain installation, and minor column repairs. ($122,000)

2012 Major Repair Project: Major floor slab restoration, including "deep overlay" repairs on levels 2-5 in bay 4, and "strip-patching" repairs on levels 4 and 5 in bay 3. This project also included expansion joint replacement, traffic coating installation, sealant replacement, drain and piping replacement, concrete ceiling and column repairs, exterior bumper wall repairs, installation of permanent shoring and footings, stair tower joint sealant, slab-on-grade repairs, and other miscellaneous work. ($2,892,000)

2013 Major Repair Project: Major floor slab restoration, including "deep overlay" repairs on levels 2 and 3 in bay 7, and "strip-patching" repairs on levels 2 and 3 in bays 5 and 6. Also included were expansion joint and sealant replacement, traffic coating installation, drain and piping replacement, concrete ceiling/column/slab-on-grade repairs, installation of permanent shoring and footings, concrete slab and equipment replacement at gates #2 and #4, and other miscellaneous work. ($2,714,000)

2014 Major Repair Project: Major floor slab restoration, including "deep overlay" repairs on level 6 in bays 1 and 2, and "strip-patching" repairs on levels 2, 3, and 6 in bays 3 and 4. Also included were expansion joint and sealant replacement, traffic coating installation, drain and piping replacement, concrete ceiling/column/slab-on-grade repairs, installation of permanent shoring, installation of sewer cleanout manholes and jetting of buried pipes, capstone and masonry repairs, and other miscellaneous work. ($3,349,000)

2015 Major Repair Project: Major floor slab restoration, including "strip-patching" repairs on level 6 in bays 7 and 8, and level 2 in bay 8. Also included were expansion joint and sealant replacement, traffic coating installation and recoating, drain and piping replacement, concrete ceiling/column/slab-on-grade repairs, installation of permanent shoring, stair tower landing repairs, and other miscellaneous work. ($2,170,000)

STRUCTURAL SYSTEM CONDITION

Major floor slab restoration has been completed to a large portion of the floor slabs throughout the structure over approximately the last 30 years. The repairs performed in 1999 and 2003 still show virtually no slab surface deterioration, and the major "deep overlay" and "strip-patching" slab repairs performed in 2010, 2012, 2013, 2014, and 2015 also appear to be performing well at this time.

With the completion of the 2015 repair project, major floor slab deterioration has been addressed on all of the supported levels on the west half of the structure and two-thirds of the east half. The remaining highest priority locations requiring major floor slab restoration are: bays 5 and 6 on levels 4, 5, and 6. These slab areas are near the end of their useful service life after 45-plus years in service and require major repairs to provide a long-term solution.

Loose sections of overhead concrete that are potential falling hazards need to be removed regularly. This condition has been addressed recently, but will remain an ongoing maintenance issue that needs to be continuously monitored and addressed.

A large amount of ceiling deterioration remains present throughout the structure, as well as concrete column deterioration at localized areas, particularly in the west half of the structure. Ceiling repairs were performed at the following areas in 2015: bays 7 & 8 all supported levels, and bays 1 & 2 levels 2 & 3. However, a significant amount of this type of deterioration has been deferred over the years due to budget constraints and remains a high priority throughout the structure.

REPAIR PROGRAM

Similar to recent years, the primary focus of the structural repair program for Parking Structure #1 at this time is to continue the restoration of floor slabs and concrete ceilings, and installing and maintaining sealants, expansion joint systems, and traffic coatings to extend the service life of the parking structure. If the concrete deterioration is repaired, and the protective waterproofing systems are properly installed and maintained, the floor slabs can provide a long service life that will provide protection for structural members below. Due to varying conditions of the slabs in different areas of the structure, recommended repair programs have included a combination of different repair methods to extend the service life of the structure in a cost-effective manner. For example, in areas where the extent of floor delamination is lower, "strip patching" and "spot repairs" were recommended to extend the service life by 10 to 20 years before major floor restoration is more cost-effective. At areas experiencing widespread deterioration, it is more cost-effective to perform a more comprehensive solution such as the "deep overlay" method similar to what was done in 1999, 2003, 2010, 2012, 2013, and 2014. This type of repair approach is expected to provide a service life of 30-plus years. The repair project in 2015 utilized the "strip-patching" method on level 6 in bays 7 and 8, and on level 2 in bay 8. One of the advantages of the "deep overlay" repair is that the surface profiles in the flat bays can be improved to help eliminate ponding. At "strip-patching" areas, supplemental drains may be added only at ponding areas around the perimeter of the bays where there is sufficient height clearance for the piping. Typically, there is not enough height clearance to install supplemental drains at the ponding areas in the driving lanes, and as a result, some ponding areas may remain. Installation of waterproofing membrane provides protection for these areas.

The recommended repair program for the coming years at Parking Structure #1 has been modified from the 2014 CIPP Update Report program as follows to accommodate WSU's anticipated annual repair budget:

- The major floor restoration project shown for 2016 has been split into two projects, with part of this work occurring in 2016, with the remaining portion deferred to 2018.
- The concrete ceilings and columns repair project previously shown in year 2017 has been divided into multiple years and deferred to year 2019 and beyond.
- The waterproofing maintenance work that was previously shown to occur in years 2018 and 2019 has been deferred beyond 2019.

The recommendations have also been updated to account for recently-completed repairs and quantities determined during recent field work.

STAIR / ELEVATOR TOWER ROOFS

As part of this year's field work, Walker observed the condition of the stair and elevator tower roofs. Each of the roofs at PS#1 has either 1 drain or 1 scupper for water to drain off of the roofs. We observed standing water on most of these roofs. We understand WSU is already in the process of replacing these roof systems at PS#1. We recommend re-profiling the roofs during replacement to provide better drainage to the drains/scuppers. We also recommend replacing failed sealants along the wall flashing and perimeter metal coping joints.

IMPROVEMENTS/UPGRADES

The following improvements have been completed since the 2009 CIPP report was issued:

- Security system installation (2010).
- Perimeter vehicle barrier and pedestrian guard upgrades (2010).
- Accessible ramps at stair/elevator towers (2010).
- PARCS equipment upgrade at gates #1 and #3 (2012).
- PARCS equipment upgrade at gates #2 and #4 (2013).
- Replacement LED lights installed at project work areas in 2012, 2013, 2014, and 2015.

TABLE 2-1: PARKING STRUCTURE #1 PHASING / COST SUMMARY

Item	Description	UPDATED CAPITAL EXPENDITURE PROJECTIONS THRU 2019					Line Subtotal **
		2015 (work performed)	2016	2017	2018	2019	
A. BASE REPAIRS							
1	**Concrete/Structural Repairs**						
1.1	Floor Repair - Deep Overlay						
1.2	Floor Repair - Patch/Strip Patch	$1,073,138.66	$838,000		$1,250,000		$2,088,000
1.3	Permanent Shores	$91,645.56					
1.4	General Concrete Repairs (Ceilings/Columns/ Etc.)	$442,115.56	$64,000		$85,000	$418,000	$567,000
2	**Waterproofing / Protection**						
2.1	Traffic Coating	$149,125.56	$81,000		$151,000		$232,000
2.2	Replace Expansion Joints	$43,325.56					
2.3	Seal/Reseal Floor Cracks and Joints	$42,645.56	$2,000		$4,000		$6,000
3	**Non Structural System Repairs**						
3.1	Drainage Repairs	$140,195.56	$9,000		$9,000		$18,000
3.2	Stair Tower Concrete/Nosing Repairs	$9,400.00	$30,000		$20,000	$10,000	$60,000
3.3	Stair Tower Masonry Repairs		$10,000		$10,000		$20,000
3.4	Install LED Lights	$55,645.56	$25,000		$40,000		$65,000
3.5	Other	$62,019.00	$58,000		$58,000	$45,000	$161,000
Base Repair Subtotal		**$2,109,256.58**	**$1,117,000**		**$1,627,000**	**$473,000**	**$3,217,000**
B. STRUCTURAL MAINTENANCE							
1	**Waterproofing / Protection**						
1.1	Recoat /Traffic Coating	$60,750.00			$79,000		$79,000
1.2	Replace Crack/Joint Sealant						
1.3	Replace Expansion Joints		$28,000		$56,000		$84,000
Structural Maintenance Subtotal		**$60,750.00**	**$28,000**		**$135,000**		**$163,000**
C. FUTURE STRUCTURAL REPAIRS							
1	**Concrete Repairs**						
1.1	Floor Repairs					$500,000	$500,000
1.2	General Concrete Repairs					$100,000	$100,000
Future Structural Repairs Subtotal						**$600,000**	**$600,000**
Structure Subtotal		$2,170,006.58	$1,145,000		$1,762,000	$1,073,000	$3,980,000
Engineering & Testing Allowance *		$93,000.00	$97,000		$130,000	$110,000	$337,000
Contingency (10%)			$115,000		$176,000	$107,000	$398,000
Inflation (3% per year)			Note 1		$53,000	$34,000	$87,000
STRUCTURE TOTAL		**$2,263,006.58**	**$1,357,000**		**$2,121,000**	**$1,324,000**	**$4,802,000**
IMPROVEMENTS / UPGRADES (15% contingency and 3% annual increase due to inflation included)							
1	**ADA/Code**						
1.1	ADA/CODE: ADA Braille Signs and Code-Required Stair Signs						$25,000
1.2	ADA: Accessible Ramps at Stair/Elevators	$82,000 (performed in 2010)					
1.3	CODE: Perimeter Vehicle Barriers and Pedestrian Guards	$720,000 (performed in 2010)					
1.4	CODE: Interior Vehicle Barriers and Pedestrian Guards						$1,910,000
1.5	CODE: Stair Rails and Guards						$179,000
2	**Other**						
2.1	Replace Clearance Bars	(Replaced Text Graphics in 2010)					$14,000
2.2	Paint Standpipes						$11,000
2.3	Replace Security Grill & Repair Capstones at Grade Level Walls	$12,000 (Localized Damaged Capstones Replaced in 2014)					$119,000
2.4	Paint Ceilings						$1,021,000
2.5	Signage Improvements (Parking Level Graphics and other minor improvements)						$35,000
3	**Energy Savings Upgrades**						
3.1	LED Lighting Option 1 (from 2009 Energy Savings Report)	(LED Lights Installed in Localized Areas in 2012, 2013, 2014, and 2015)					$822,000
4	**Security**						
4.1	WSU Selected upgrades based on 2009 Security Report	$765,000 (performed in 2010)					
IMPROVEMENTS/UPGRADES TOTAL		**$1,591,000 (performed since 2010)**					**$4,136,000**

Notes:

1. Cost projections shown in 2015 dollars. See line item included to account for inflation. (Inflation not included for year 2016 recommendations which will be bid shortly after issue of this report)
2. Costs shown for year 2015 reflect work performed during the 2015 construction season.
   *Engineering & Testing Allowance costs are for budgetary purposes and include $15,000 for years 2016 & 2018, and $5,000 for testing for remaining years with repair projects. Actual testing costs incurred during 2015 construction not included.
   ** "Line Subtotal" column does not include work performed in 2015.
3. We understand WSU is currently in the process of replacing stair/elevator tower roofs at PS#1; costs are therefore not included in this report.

WAYNE STATE UNIVERSITY – PARKING STRUCTURE #1

PHOTO LOG

DECEMBER, 2015 WALKER PROJECT #20-1630.00

Photo 1

Photo Comments:

- "Before" photo on roof level showing slab deterioration and cracking, and areas of ponding water.

Photo 2

- "After" photo of repairs completed in 2015.

Photo 3

- Floor slab deterioration.

Photo 4

- Concrete ceiling deterioration.