

APPENDIX I – ACTION PLAN

FINDING		PAGE	RECOMMENDATION		PAGE	ENTITY RESPONSIBLE FOR IMPLEMENTATION	PRIORITY
Section I: Effective Resource Management							
1	While Best Management Practices recommend that street system infrastructure be maintained at an average condition level of “B” or better, the City falls significantly below that, with an overall average of “C minus.”	21	1.1	City Policymakers should identify and prioritize significant new funding to improve the overall condition of the City’s street network, as well as require BSS to improve processes and management oversight.	23	City Council/Mayor /Board of Public Works	A
2	BSS management has no target for an expected direct labor utilization rate; and almost half of the resurfacing and reconstruction salary costs are for costs other than direct repair work.	23	2.1	Determine an appropriate direct labor utilization rate for each of the program activities related to street resurfacing and maintenance.	26	BSS	A
			2.2	Monitor the direct labor utilization rates for its street resurfacing and maintenance activities on a periodic basis; identify reasons for variances from goals and areas for improvement.	26	BSS	A
3	The City has not made the capital investment necessary to upgrade Asphalt Plant 1 (AP1) to achieve efficiencies from current production methods. However, even with a \$17.7 million investment, the City’s asphalt production costs would only be comparable to what BSS pays	27	3.1	The CAO and BSS Management should: Consider pursuing a strategic financial partnership for the replacement/upgrade of AP1, in order to achieve environmental and cost benefits over the long term.	33	CAO BSS	A

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	private vendors. A strategic financial partnership could help the City achieve long-term environmental and cost benefits.						
4	Budgeted funds have not been fully utilized by BSS and more than \$21 million was returned to various funding sources for reprogramming.	33	4.1	BSS management should: Work with the CAO to retain available funds to contract out pavement preservation activities that cannot be performed by City staff.	37	BSS	A
			4.2	Work with BCA to establish appropriate controls over contracted work and change orders if street repair work is contracted out.	37	BSS BCA	A
			4.3	Consider the necessity or added value of design plans to manage the costs of street repair work, whether it is performed by City forces or contractors.	37	BSS	B
5	Street Damage Restoration Fees, which were established to recover the annual resurfacing costs associated with the shortened lifespan of City streets due to the street cuts, were based on an inflated assumption of annual excavation work. As a result, total collections have been undercharged by as much as \$190 million since the fee was implemented.	38	5.1	BSS Management should: Present to policymakers the unit costs supporting the proposed Street Damage Restoration Fee based on a full cost recovery model that considers the average actual square feet cut annually, as reported by the Bureau of Engineering.	42	BSS	A
			5.2	Report periodically to policymakers on the damage to City streets that is caused by	42	BSS	B

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				construction activity and heavy load carriers, identifying amounts collected for damages and recommendations for additional cost recovery, if applicable.			
6	A subsequent adjustment to the SDRF fees did not reconsider the total costs to be recovered or the expected number of annual street cuts. Rather, an inflationary adjustment was applied in 2006; however, the rates used were understated, resulting in \$31 million in additional missed revenue opportunities.	43	6.1	BSS Management should: Review and consider updating the SDRF fee on an annual basis, based on an updated analysis and/or consistent use of an accepted inflationary index.	46	BSS	A
7	Street Damage Restoration Fees were based on estimated costs for specific activities by BSS in 1996, considering the additional resurfacing that would be required on an annual basis and an assumed number of street cuts; however, not all fee collections are dedicated to BSS for street repair work.	47	7.1	BSS Management should: Perform a new fee study that considers underlying assumptions and a total cost basis that includes the actual costs of all departments involved with street repairs (BSS, GSD, DOT and BOE).	48	BSS GSD BOE	A

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Section II: Systems, Tools and Technology							
8	BSS' cost accounting system does not track costs at a program activity level (i.e., resurfacing, slurry seal, crack seal, etc.) as defined in the City's Pavement Preservation Plan. As a result, management does not use actual cost data for managing its costs and analyzing resource utilization.	50	8.1	BSS Management should: Develop a process to code work orders by program activity. This could be accomplished by establishing a number schema that separately designates resurfacing, reconstruction, slurry seal, crack seal and pothole repair work, while also retaining the location-based work order coding.	52	BSS	A
			8.2	Utilize cost data by program activity to manage its resource utilization in delivering street resurfacing and maintenance efficiently and cost effectively to ensure desired outcomes are achieved.	53	BSS	A
9	BSS' current pavement management system is not integrated with other pavement management databases and City systems, requiring additional staff efforts. Further, while it is used to assess pavement conditions, it is not a comprehensive asset management system that provides an inventory or condition assessment of other street-related infrastructure, such as street lights, medians, signs, storm drains, sidewalks, etc.	53	9.1	BSS Management should: Explore the potential for other pavement management systems that exceed MicroPAVER's capacity and overall usefulness.	57	BSS	B
			9.2	The Board of Public Works should: Consider expanding the capabilities of BSS' pavement management system to include a comprehensive system for the City's infrastructure	57	BPW	B

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10	BSS uses a Pavement Management System (MicroPAVER) with limitations and does not fully utilize all of its features.	58	10.1	BSS management should: Work with the developer of MicroPAVER to address the issues noted with the beta edition, report customization and consider revising the current algorithm regarding cement streets paved over with asphalt.	59	BSS	A
11	BSS does not have a dedicated unit/staffing to proactively seek out new materials, equipment or technology. Specialized "Pothole Killer" technology was put into operation in 2000 but was discontinued after a few years, even though it is considered a highly efficient and effective solution to pothole repair by several cities.	60	11.1	The City should: Consider funding a research and development unit within BSS to (a) focus on developing new products to meet City specifications to improve pavement conditions and (b) identify new equipment and technologies to improve the efficiency and cost effectiveness of operations.	62	City Council Mayor CAO BSS	B

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Section III: Efficient Pavement Processes and Outcomes						
12	Within geographical regions, BSS does not prioritize street repair activities based on traffic volume, heavy vehicle loads, or mass transit passenger load.	63	<p>BSS Management should:</p> <p>12.1 Work with DOT on an ongoing basis to identify streets with higher traffic and loads and evaluate which streets can be maintained without incurring higher reconstruction costs.</p> <p>12.2 Consider allocating a percentage of funding towards streets with higher traffic flow and loads; or at a minimum, when annual resurfacing plans are developed, prioritize streets with higher traffic flow and loads, for those streets with the same PCI.</p>	64	<p>BSS DOT</p> <p>BSS</p>	<p>A</p> <p>B</p>
13	BSS lacks effective supervisory oversight of field crews attesting to quality paving work, per their policy requiring Job Completion Reports.	64	<p>BSS Management should:</p> <p>13.1 Ensure supervisors adequately monitor field crews to make certain that work performed meets established standards, and document that paving work quality is acceptable by confirming it in the Job Completion Reports.</p> <p>13.2 Periodically review closing packets and confirm Job Completion Reports have been prepared and accurately describe the quality of work performed.</p>	66	<p>BSS</p> <p>BSS</p>	<p>A</p> <p>A</p>

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14	The City has no moratorium for excavating streets that have recently received slurry seal treatment.	67	14.1	BSS Management should: Proactively work with policymakers to reconsider an excavation moratorium for recently slurry sealed streets.	68	BSS	A
15	BSS is facing challenges in meeting overall Pavement Preservation Plan goals for repairing streets, and the unit costs associated with the repairs are increasing	68	15.1	BSS management should: Periodically analyze actual miles completed compared to goals for each component of the Pavement Preservation Plan, along with the associated costs to identify trends in declining performance and/or increased costs that warrant management intervention.	71	BSS	A

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Section IV: Effective Monitoring of Pavement Preservation Activities							
16	The City's strategy for pavement preservation does not sufficiently address deferred maintenance by defining specific goals for resurfacing or reconstructing streets in poor or failed condition.	72	16.1	BSS Management should: Upon commitment of significant additional funding for reconstructing "D" and "F" streets, identify separate and distinct goals for resurfacing work and reconstruction work, in order to better track outcomes and costs.	73	BSS	A
17	The unit costs associated with resurfacing and reconstruction used by MicroPAVER and BSS are outdated, which result in an unrealistic estimate of total cost for deferred maintenance.	74	17.1	BSS Management should: Ensure deferred maintenance funding needs are based on accurate unit costs.	75	BSS	A
18	BSS' reported number of repaired potholes may not be accurate, as a reliable audit trail does not exist.	75	18.1	BSS Management should: Establish a process to confirm the accuracy of reported data related to small asphalt repairs, which will enable BSS to better manage performance results and effectiveness.	79	BSS	A
19	Utility holds can indefinitely delay planned street resurfacing.	79	19.1	BSS Management should: Consider conducting regular in-person coordination meeting(s) with various stakeholders to review and confirm planned construction work and timelines, in order to better align their resurfacing and maintenance priorities with actual work to be done by developers and utility companies.	80	BSS	B

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20	Multiple City entities are involved in regulating street cuts which increases the risk of poor quality or unpermitted excavations.	80	20.1	The Department of Public Works should: Continue to proactively identify opportunities and implement strategies to enhance systems technology to better coordinate activities among Bureaus/Divisions with responsibilities over Street Preservation. For example, the Department should consider using readily available online street view technology, as well as possible crowd sourcing applications, to populate a geo-coded citywide integrated system on a real-time basis that manages all activities, such as street cuts, resurfacing and maintenance work.	83	Department of Public Works	B

Description of Recommendation Ranking Codes:

A – High Priority: The recommendation pertains to a serious or materially significant audit finding or control weakness. Due to the seriousness or significance of the matter, immediate management attention and appropriate corrective action is warranted.

B – Medium Priority: The recommendation pertains to a moderately significant or potentially serious audit finding or control weakness. Reasonably prompt corrective action should be taken by management to address the matter. The recommendation should be implemented within six months.

C – Low Priority: The recommendation pertains to an audit finding or control weakness of relatively minor significance or concern. The timing of any corrective action is left to management’s discretion.