STAFF REPORT

DATE: May 21, 2013

TO: City Council

FROM: Robert A. Clarke, Public Works Director
Michael Mitchell, Principal Civil Engineer

SUBJECT: Pavement Management Report, Program 7252

Recommendation
Staff recommends Council approve the following strategies for implementation:

1. Approve the funding and budgeting strategy for pavement maintenance, in concept, for the multi-year effort, as outlined in this staff report.

2. Direct staff to proceed on the first year of the multi-year effort, planning the project, obtaining a design consultant and a public outreach consultant.

3. Direct staff to return in the fall of 2013 with an update on the long-term pavement maintenance budgeting plan with contracts for Design and Public Outreach Consultants for next fiscal year's Pavement Maintenance project.

4. Approve the pavement management scenario B-Mod, PCI Goals with Front End Loading ($15 million in year 1 and $10 million in year 2).

Fiscal Impact
The fiscal impact of transportation infrastructure operations and maintenance activities is significant and is a major component to be considered in the City's overall budget. The long-term sustainability of a safe and effective transportation system involves the coordination of many different City services.

The funding and budgeting strategy will be discussed at the Council meeting. It will entail front loading the pavement maintenance budget roughly as follows: $15 million in Fiscal Year 13/14, $10 million in Fiscal Year 14/15 and $3 million/year thereafter. The current pavement management strategy encompasses a 20 year period so the $3 million per year is tracked to the year 2032. These numbers could change depending on what Scenario is finally chosen but the front loading profile is still recommended. As has been shown at the previous Council Meetings, the City's streets and bikepaths are in such a condition that they require remediation as soon as possible, and front loading the budget is the best way to address that issue.

Council Goal(s)
Preparation of this Report addresses the following City Council goals:

- (FS-3) Review pavement management index criteria for selection of projects.
- (I-3) Prioritize maintenance of sidewalks, bike paths and streets.

- (I-2) Examine projects and services in order to update and prioritize unmet needs. Identify funding mechanisms.

Background

At the February 5th meeting, City staff presented the Pavement Management Report prepared by Nichols Consulting Engineers (NCE). This report provided the basis for discussion of possible policy issues that will help refine the City's pavement maintenance strategy and identified a funding gap for the maintenance of streets and bike paths. The discussion involved issues falling into two broad categories; fiscal issues, and maintenance strategy issues.

At the April 9th meeting, City staff returned to ask City Council to review recommended Guiding Principles and obtain their input. City Council approved the recommendations for the Guiding Principles but asked staff to return with detailed recommendations to be included with some of the Principles. This Staff Report presents additional details regarding the guiding principles.

Guiding Principles – Additional Details:

Staff have provided additional details requested by City Council at the April 9th meeting for the Guiding Principles of Pavement Management adopted at the April 9th meeting. Each Guiding Principle is listed in bold with the additional details provided below.

1. **Set a general goal for the average PCI for pavement from 70 to the low 60's. This recognizes that an average PCI value does not fully address the best interests of the community and should not be the overriding factor driving maintenance decisions.**

    a. Staff recommends setting separate average PCI goals for street classifications as follows:

        1. Arterials: 68

        2. Collectors: 65

        3. Priority Local Streets (see Guiding Principle #2 below): tied to Collectors

        4. Remainder of Local Streets: 60

2. **Use a goal of prioritizing key streets of community value at a higher level than local streets. These streets should generally be the higher volume streets and/or streets serving key areas such as: commercial zones, parks, schools and public facilities. These streets should also include all roads that serve bus routes, have bike lanes, or serve as key bicycle corridors.**

    a. Staff recommends that the local streets shown in Attachment 1 and listed in Attachment 2 be treated similar to the way collectors are treated for maintenance purposes. Treating these streets the same as collector streets means that the PCI for these streets would be held to a higher average than that for other residential streets and that the maintenance strategies for these streets would be similar to those for collector streets. These streets will be referred to as "Priority Local Streets" throughout the rest of this Staff Report.

3. **Use a lower PCI goal for all local residential streets and focus the maintenance strategy on safety and low cost treatments rather than overlays and reconstruction.**

a. See the PCI goals presented in Guiding Principle #1 above.

4. **Employ a maintenance strategy that prioritizes keeping as many of the streets currently in good condition from deteriorating to a poor condition and only invest significant funds to address existing streets in poor shape when overall public safety cannot longer be addressed with minor patch paving and other low cost treatments.**

    a. The Decision Tree and the Streetsaver program use this principle in defining street projects. Street projects defined by the Streetsaver program will be further refined by staff.

5. **Do not allow new roads, or enhanced corridors to implement improvements that create future higher pavement costs for the City unless specific funds are identified for this purpose.**

    a. New streets are required to be built to a higher traffic index than they had in the past. Likewise, bike path segments are now required to be constructed of concrete (versus asphalt) and placement and species of trees placed adjacent to new paths are taken into greater consideration.

6. **Maintain the condition of bike paths to a comparable, or higher, standard than that of streets.**

    a. See the PCI goals presented in Guiding Principle #1 above.

7. **Defer major investments in the maintenance of bike path pavement impacted by trees until long-term decisions are made about removing and replanting with alternative species those trees impacting the path, or use alternative surfaces that will result in lower future maintenance costs.**

    a. Once Streetsaver creates a project for any given year, each street and bike path segment is evaluated by staff. Location of bike paths adjacent to trees or bike paths with defects that are evident to have resulted from trees will be taken into account when evaluating bike path segments for inclusion on repair projects.

8. **Where an investment in bike path pavement will not result in a basic service life of 20 years with normal maintenance, consider limiting maintenance to safety improvements only, rather than overlays and reconstruction. This goal acknowledges the value the City places on its urban forest and landscaped spaces and the realization that in some areas it is not possible to have a paved path that will last for 20 years under typical maintenance. Where these corridors exist, it would not be a fiscally prudent investment to perform the more expensive treatments if the pavement is not expected to have an industry normal service life.**

    a. As noted above, each bike path segment will be evaluated for its proximity to damaging tree roots prior to inclusion on a maintenance project. The level of maintenance will depend on the severity of a tree root issue (i.e. existing path with severe tree root damage may only be patched until a solution for dealing with the tree roots can be agreed upon.)

9. **Employ similar strategies on the bike path network as with the streets to maintain the higher use/value path segments to a higher level than lesser used segments. The selection of these key community path segments would be determined as part of the**

> **work underway with the Bicycle Advisory Commission to classify the City's bike path network.**
>> a. The City's Bicycle/Pedestrian Coordinator provided a prioritization of the City's bike path segments.

Funding Breakdown

Funding allocated to street maintenance covers a number of items in addition to paving including the following: bike path maintenance, curb, gutter, and sidewalk repair, ADA and compliant curb ramps. In addition, there are several "soft" costs that must be accounted for including: engineering (selection of the type of maintenance specific to each street and production of plans and specifications to construct the work), contingency (unforeseen items that come up during construction), and construction administration and inspection (overseeing the construction work). Attachment 3 provides examples of the breakdown of street maintenance costs and what is left to contribute towards pavement maintenance.

Maintenance Scenarios - Streets:

Several street maintenance scenarios were modeled to see how funding and maintenance options affected the future street condition. Each scenario is briefly described below:

Scenario A (Maintain Backlog): After adding the Priority Local Streets to the Streetsaver database, the "Maintain Backlog" scenario from the previous two staff reports was run to see what the budget implications of maintaining these streets at a higher level would be. Treating the priority local streets as collectors resulted in an increase of approximately 7% in paving costs.

Scenario B (PCI Goals): Under this scenario, the City would heavily fund pavement in the second and third years (14/15 and 15/16) but future year funding would be based on meeting average PCI goals for streets based on the following: arterials to be brought to an average PCI of 68, Collectors (and priority locals) to an average of 65, and local streets to an average of 60. This scenario was re-run with front-end loading of the first two years with $15 million in the first year and $10 million in the second year. This scenario is called B-Mod.

Scenario C (Set Funding): Similar to scenario B, under this scenario, the City would heavily fund pavement in the second and third years (14/15 and 15/16) but future year funding would be set at $3 million in FY16/17 ($2.1 million net for street paving) and escalated at 3% through FY31/32.

Scenario D ($2M Funding): This scenario assumed that $2 million is available for maintenance in FY 13/14 ($1.44 million net for street paving) and that this is increased by 3% each year through FY31/32. This data is presented for information only.

Scenario E ($1M Funding): This scenario assumes that City continues to fund street maintenance as it has in the past with $1 million allocated to street maintenance ($717,000 net for street paving) and that this is increased by 3% each year through FY31/32. This data is presented for information only.

Scenario F ($25M Up-Front): This scenario assumes that street maintenance will be funded with $15 million in the first year, $10 million in the second year, and no funding thereafter.

Summary of the Scenarios
Attachment 4 provides a summary of the different pavement scenarios. Please note that the numbers in the table are for paving only (they do not include the additional hard and soft costs described in the Funding Breakdown section above). Staff recommends Scenario B-Mod for street maintenance.

Scenario A is heavily front-loaded with $55 million in funding over the first 6 years; the annual average cost is relatively low and the resultant backlog in 2032 is low. The City would have difficulty meeting the $55 million over 6 years.

Scenario B without the front-end loading of $25 million over 2 years doesn't provide enough up-front improvement to the streets. Scenario B-Mod provide the front-end loading and results in a higher PCI than A or C and a lower backlog than Scenario B.

Scenario C includes front-end loading of $25 million over 2 years but the $3 million in subsequent years (escalated at 3%) is not enough to maintain a good average PCI.

Scenarios D, E, and F illustrate inadequate funding and are for information only.

Attachment 4 provides the average PCI for streets in 2032, funding in each of the first 3 years, average funding, total funding, and resultant backlog for all scenarios.

Maintenance Strategies – Bike Paths
In the NCE "2012 Pavement Management Update," presented to Council at the February 5th meeting, the scenario to maintain the currently unfunded backlog was run in StreetSaver for the bike path network. This scenario (Scenario A for this staff report), requires a total budget of $13 million over 20 years to maintain the backlog at approximately $1.5 million and an average of $708,000 per year in years 3 through 20. The percentage of bicycle paths in "good" condition will increase from 59.2% to 79.2% by 2032. The PCI of the overall bicycle network will improve from 59 to 67 in twenty years.

More recently, Staff ran StreetSaver with the funding resulting from the Street funding strategy ($15 million in fiscal year 13/14, $10 million in fiscal year 14/15 and $3 million thereafter to the year 2032 – See Attachment 3). The actual funding going to bike paths was 15% of the net funds used for paving with the previously mentioned funding strategy. This resulted in funds for bike path maintenance of approximately $1.5 million in fiscal year 13/14, $990,000 in fiscal year 14/15, $315,000 in fiscal year 15/16 and escalated by 3% in subsequent years to year 2032. Using this funding strategy as Scenario B, the PCI fell from the initial 59 to 55 in 2032. This scenario requires a total budget of $9.8 million over 20 years and an average of $410,000 per year in years 3 through 20. (See Attachment 5.)

Staff recommends Scenario A, Maintain Unfunded Backlog, as the preferred scenario for bike path maintenance. In order to maintain the backlog, some years will require a larger amount of funding.

Technical Consultants
Staff will continue to retain the services of Nichols Consulting Engineers to provide technical assistance for the Streetsaver program. Additionally, Staff may retain the services of Dr. John Harvey from UC Davis and of Scott Gibson from Washoe County. Staff feels that we could benefit from the technical knowledge of Dr. Harvey, however his availability is limited.

Conclusion

The purpose of this staff report was to outline Staff's further refinements to the Pavement Maintenance Strategy for the next 20 years and, specifically, for the next three years. Funding and budgeting strategies and pavement scenarios were presented with scenarios recommended for streets and bike paths.

Staff recommends maintaining the streets identified in Attachments 1 and 2 as priority local streets in a better condition than local streets (maintaining them as collector streets) and setting PCI goals based on the street classification.

Staff recommends the scenario for streets to be the one that targets a PCI for the different classifications, Scenario B-Mod (PCI Goals with front-end loading). For bike paths, Staff recommends Scenario A, maintaining the unfunded backlog. This results in the average PCI of the paths increasing to 67 at the end of 20 years. However, at this point in time, Staff feels it is more important to approve the funding and budgeting strategy for the next few years. This will make great headway towards improving the condition of the streets and bike paths of Davis.

Should Council approve the recommendations of the funding and budgeting strategy, Staff will return in the fall with a specific project based on this strategy. Staff will also obtain, through a competitive RFP process, consultants for public outreach and pavement design.

Attachments
1. Priority Local Streets - map
2. Priority Local Streets - table
3. Example Funding Breakdown Estimate
4. Street Maintenance Scenario Comparison Table
5. Bike Path Maintenance Scenario Comparison Table

ATTACHMENT 1

PRIORITY LOCAL STREETS

Core Area

Priority Maintenance Streets   Parks

Schools

Commercial

N
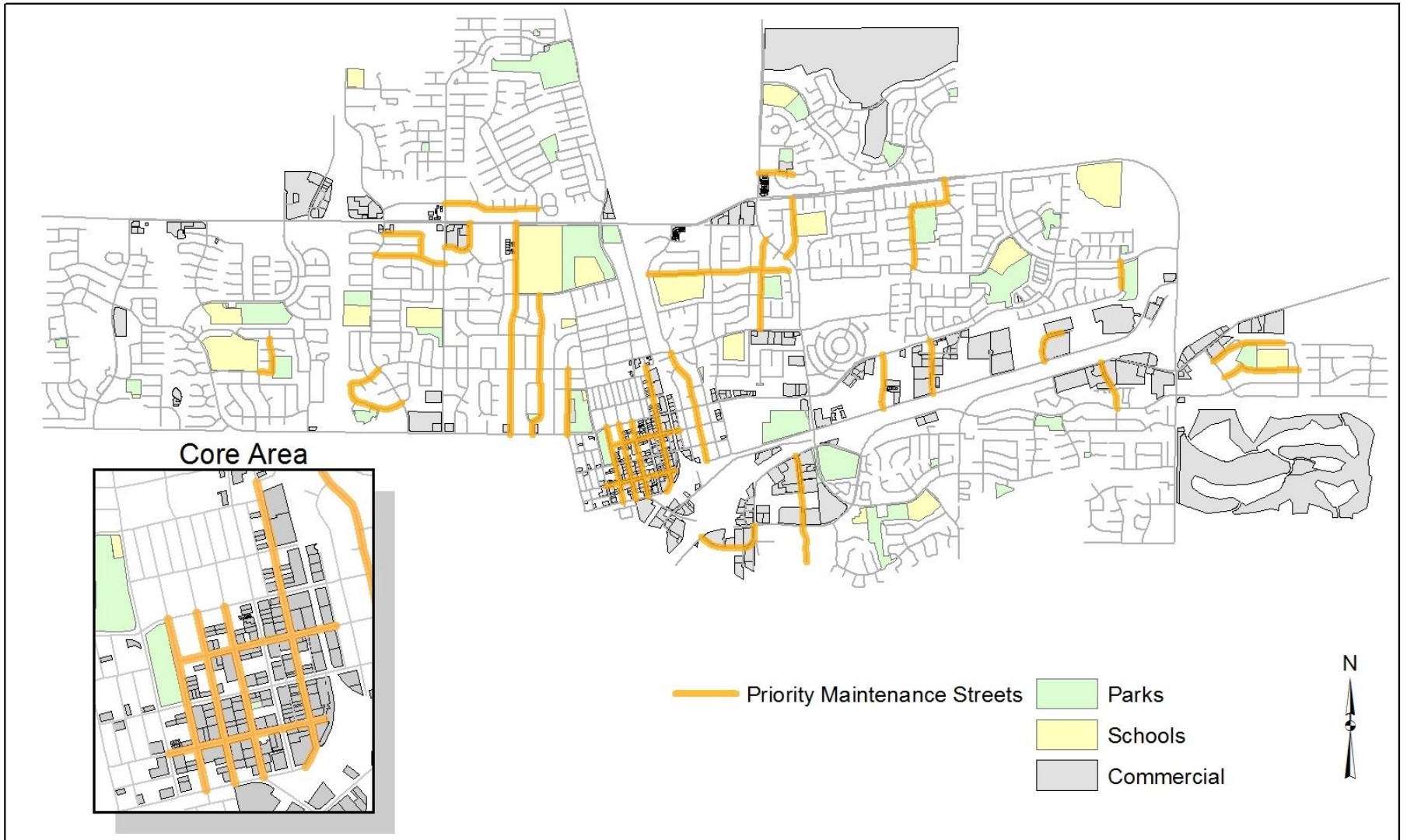
PRIORITY LOCAL STREETS

Street Name	From	To	Length	Width	Area	Bike Lanes	Bike Route	Bus Route	Provides Connection To		
									School	Park	Commercial
Second Street	"B" Street	"E" Street	915	46	42,100		X	X			X
Second Street	"E" Street	R.R. Depot	781	47	38,085		X	X			X
Fourth Street	"C" Street	"F" Street	925	46	42,725					X	X
Fourth Street	"F" Street	"I" Street Alley	744	46	34,058						X
A Street	Russell Blvd.	7th Street	1,087	38	41,650					X	X
A Street	7th Street	8th Street	453	52	24,000				X		
Alvarado Avenue	Anderson Road	Catalina Avenue	2,300	47	106,205	X		X			
Apple Lane	Radcliffe Drive	Drake Drive	548	32	18,685			X			
Arroyo Avenue	Edge Of Park	Alhambra Drive	704	24	19,890					X	
Barkley Street	Calaveras Avenue	Imperial Avenue	1,018	30	32,025					X	
Birch Lane	Pole Line Road	Denison	1,487	34	51,400				X		
C Street	First Street	Third Street	864	49	42,380					X	X
C Street	Third Street	Fifth Street	918	43	47,175					X	X
Calaveras Avenue	Coolidge Street	Barkley Street	348	30	11,535				X	X	
Cantrill Drive	Second Street	Fifth Street	1,289	35	46,361	X					X
Chestnut Lane	Eighth Street	Pole Line Road	2,214	34	76,420					X	X
College Park	Russell Blvd	Island	200	72	15,900		X			X	
College Park	Entrance Island	Eureka Avenue	1,071	32	34,272		X			X	
D Street	First Street	Fifth Street	1,720	46	78,000						X
Drake Drive	Sycamore Lane	Apple Lane	885	36	31,860			X			X
Drew Avenue	Research Park Drive	Cowell Boulevard	1,740	50	90,360	X					X
Drew Avenue	Cowell Boulevard	Greek Court	610	50	28,600	X					
Drew Circle	Greek Court	South End	610	33	13,325		X				
Drexel Drive	"J" Street	"L" Street	1,535	33	50,950		X		X		

Street Name	From	To	Length	Width	Area	Bike Lanes	Bike Route	Bus Route	Provides Connection To		
									School	Park	Commercial
Drexel Drive	L Street	Chestnut	1,072	34	36,448		X				
Drexel Drive	Chestnut	Snyder	813	34	32,447		X				
E Street	First Street	Second Street	432	44	19,025						X
E Street	Second Street	Third Street	432	43	18,600					X	X
E Street	Third Street	Fourth Street	432	43	18,600						X
E Street	Fourth Street	Fifth Street	432	43	18,600						X
Ensenada Drive	Chiles Road	Ashland Terrace	768	36	28,150						X
Ensenada Drive	Ashland Terrace	Cowell Boulevard	433	36	15,588						X
Eureka Avenue	College Park	8th Street	313	30	10,080		X				
Eureka Avenue	8th Street	Antioch Drive	840	34	29,000		X				
Eureka Avenue	Antioch Drive	14th Street	981	34	33,800		X		X		
Faraday Avnue	Second Street	End	1,318	52	68,536	X					X
G Street	First Street	Third Street	990	50	46,500						X
G Street	Third Street	Fifth Street	920	46	44,650						X
G Street	Fifth Street	Sweet Briar Drive	1,237	46	55,000						X
Glide Drive	El Cemonte Avenue	5230 Glide Drive	1,865	47	87,945	X				X	X
Glide Drive	5230 Glide Drive	Schmeiser Avenue	274	46	12,450				X	X	
Hamel Street/Swingle Dr	El Cemonte Avenue	Schmeiser Avenue	2,000	37	73,000				X	X	
Hanover Drive	Anderson Road	Covell Boulevard	1,193	47	57,590			X			X
J Street	Third Street	Fifth Street	865	46	39,850	X					
J Street	Fifth Street	Eighth Street	1,395	44	62,400	X					
Monarch Lane	Covell Boulevard	Temple Drive	529	41	22,470			X			
Oak Avenue	Russell Boulevard	8th Street	1,580	46	73,180	X		X			

Street Name	From	To	Length	Width	Area	Bike Lanes	Bike Route	Bus Route	Provides Connection To		
									School	Park	Commercial
Oak Avenue	8th Street	14th Street	1,820	44	80,500	X		X			
Oak Avenue	14th Street	Covell Boulevard	1,793	45	84,550	X		X	X		
Pena Drive	Second Street	Fifth Street	1,333	47	65,225	X					X
Picasso Avenue	Pole Line Road	Renoir Avenue	424	49	20,200			X			X
Picasso Avenue	Crosswalk E. Of Cezanne	Renoir Avenue (East)	867	30	28,420			X			X
Radcliffe Drive	Sycamore Lane	1013 Radcliffe Drive	774	46	36,100	X		X			
Radcliffe Drive	1013 Radcliffe Drive	Anderson Road	933	46	43,230	X					
Research Park Drive	West Chiles Road	Cowell Boulevard	1,785	32	70,580	X					X
Temple Drive	Tulip Lane	Monarch Lane	888	36	32,600			X		X	
Tulip Lane	Temple Drive	Loyola Drive	1,508	32	48,675			X		X	
Wake Forest Drive	Eighth Street	Sycamore Lane	1,650	44	73,000	X		X		X	

Funding Breakdown Estimate[1]

Street Paving	$9,800,000	$6,600,000	$2,100,000	$1,441,000	$717,000
Bike Path Paving	$1,470,000	$990,000	$315,000	$216,000	$107,500
Curb, Gutter, SW (5% of street paving)	$362,000	$205,000	$13,000	$0	$0
Ramps* (10% of street paving)	$850,000	$530,000	$60,000	$0	$0
Contingency (10% of construction cost)	$1,250,000	$830,000	$250,000	$165,000	$82,400
Planning / Study	$10,000	$10,000	$10,000	$10,000	$10,000
Engineering & Design[2] (5% of construction cost)	$625,000	$414,000	$125,000	$83,250	$41,200
Municipal Arts[3]	$8,000	$7,000	$2,000	$1,500	$700
Construction Admin & Inspection (5% of construction cost)	$625,000	$414,000	$125,000	$83,250	$41,200
TOTAL FUNDING	**$15,000,000**	**$10,000,000**	**$3,000,000**	**$2,000,000**	**$1,000,000**

1. Numbers are estimates only and have been rounded for example purposes
2. Assumes City would require outside consultant to perform
3. Municipal Arts component not required for maintenance portion of projects

SUMMARY OF STREET PAVEMENT MAINTENANCE SCENARIOS
(numbers are for street maintenance ONLY)^

SCENARIO	PCI in 2032	2014 Funding	2015 Funding	Years 3 – 20 Average Funding	Total Funding (20 years)	BACKLOG in 2032
A. Maintain Current Backlog	59	$18M	$8.5	$4M	$99M	$21M
B. PCI Goals	63	$6.2M	$3.4M	$8.5M	$162M	$120M
B-Mod. PCI Goals with front-end loading	63	$9.7M	$6.5M	$7.6M	$153M	$110M
C. Set Funding	45	$9.8M	$6.6M	$2.7M	$62M	$172M
D. $2M Funding	33	$1.4M	$1.5M	$2M	$39M	$370M
E. $1M Funding	26	$0.72M	$0.74M	$0.99M	$19M	$464M
F. $25M up front	29	$9.8M	$6.6M	$0	$16.4M	$325M

^ Numbers do not include additional hard and soft costs and do not include bike path maintenance costs

SUMMARY OF BIKE PATH MAINTENANCE SCENARIOS
(numbers are for bike path maintenance ONLY)^

SCENARIO	PCI in 2032	2014 Funding	2015 Funding	Years 3 – 20 Average Funding	Total Funding (20 years)	BACKLOG in 2032
A. Maintain Current Backlog	69	$140,000	$230,000	$708,000	$13M	$1.6M
B. Set Funding	55	$1,470,000	$990,000	$410,000	$9.8M	$21.4

^ Numbers do not include additional hard and soft costs and do not include street maintenance costs