

PROPOSED FIVE YEAR ROAD PLAN SUMMARY

With the direction from the City Council, we have prepared the following five year plan for road work.

Following are the assumptions that we used in preparing this information.

FUNDING:

\$300,000 Eaton County Road Millage
40,000 Owens Illinois settlement interest
75,000 Road Bond retirement
10,000 Maintenance dollars currently being spent

\$ 425,000 Available for projects annually

Money needs to be built into the budget for design and construction engineering. The typical fees for that are fifteen percent of the project cost. Therefore, we reduced the available money by that amount to get to the dollar amount available for construction. That means that there is approximately \$360,000 annually for road construction which is the number used in the computer simulations as it does not take engineering into account.

TREATMENTS:

Four general categories and associated costs were utilized for the analysis. The generalization allows for us to assign a mix of fixes as needed in a particular year.

RC: Reconstruction- Total reconstruction of the road

RH: Rehabilitation- Could include a mill and resurface, pavement recycling, etc.

Heavy PM: Heavy Preventative Maintenance: Could include rut filling, cape seals, micro seals, etc.

Medium PM: Medium Preventative Maintenance- Could include crack sealing, fog seals, localized patching etc.

STRATEGY SIMULATIONS

To show how different treatments of the road system would affect the overall condition of the network, four strategies were developed for comparative purposes. They are presented below for your consideration.

DO NOTHING: It's just as it says. No treatments to the roads at all.

RECONSTRUCT ONLY: All available funds were allocated to reconstructing roads.

REHABILITATION ON LY: All available funds were allocated to rehabilitating roads.

STRATEGY 1:

We developed a strategy that we felt would be the best use of the available money while taking into consideration both the engineering facts and political realities. The funds allocated for reconstruction (RC) projects would be spent on designated major streets. The rehabilitation (RH) and preventative maintenance (PM) funds could be used on either major or local streets.

The first year of Strategy 1 includes funds for the North Sheldon Street reconstruction. There are also funds designated for RH and PM. There are no funds left at the end of Year 1. Year 2 has money allocated for PM only so that money can be added to Year 3 revenues to complete a reconstruction project. Year 3 is mostly a reconstruction project with minor PM. Year 4 has money allocated for a rehabilitation project and PM only so that the balance can be applied to a reconstruction project in Year 5. Year 5 includes a reconstruction project, and heavy PM project and routine PM. At the end of Year 5 there are no funds left.

RESULTS:

Attached are graphs that show how different strategies affect the overall system. The abbreviation RSL is the Remaining Service Life of a road. You want that number to be as high as possible. As you can see, the best strategy appears to be REHABILITATION ONLY. STRATEGY 1 appears to be the next best option and a compromise between the all or nothing scenarios.

OPTIMIZATION:

The Roadsoft software allows us to enter an annual budget number and it tells us how to best spend those dollars. The optimization results are also included. They show that if we allocate \$360,000/ year for five years, the best strategy for the system would be to split the money between maintenance and rehabilitation. It did not recommend any street reconstruction.

What the Optimization shows is in line with what we have been doing for the most part. The exception would be where we have received grant money specifically for street reconstruction.

WHAT ROADS TO FIX:

We have created a list of major streets that are candidates for reconstruction based on the PASER ratings. We have also created a list of both major and local streets that are good candidates for rehabilitation. As you can see, there is plenty to choose from for potential projects. For other purposes we have divided the city into quadrants with Lawrence Ave. as the E-W dividing line, and Cochran Ave. as the N-S dividing line. I am proposing the same divisions so that the road work can be rotated throughout the city.

RECONSTRUCTION CANDIDATES:

<u>Street</u>	<u>Quadrant</u>	<u>Street</u>	<u>Quadrant</u>
E. Harris St.	NE	Mikesell St.	SW
Island Hwy.	NE	W. Seminary St.	SW
N. Oliver St.	NE	S. Sheldon St.	SW
N. Washington St.	NE	Tirrell Hwy.	SW
Paine Dr.	SE	State St.	SW
S. Lincoln St.	SW	W. Harris St.	NW
W. Lovett St.	SW	Independence Blvd.	NW

REHABILITATION CANDIDATES:

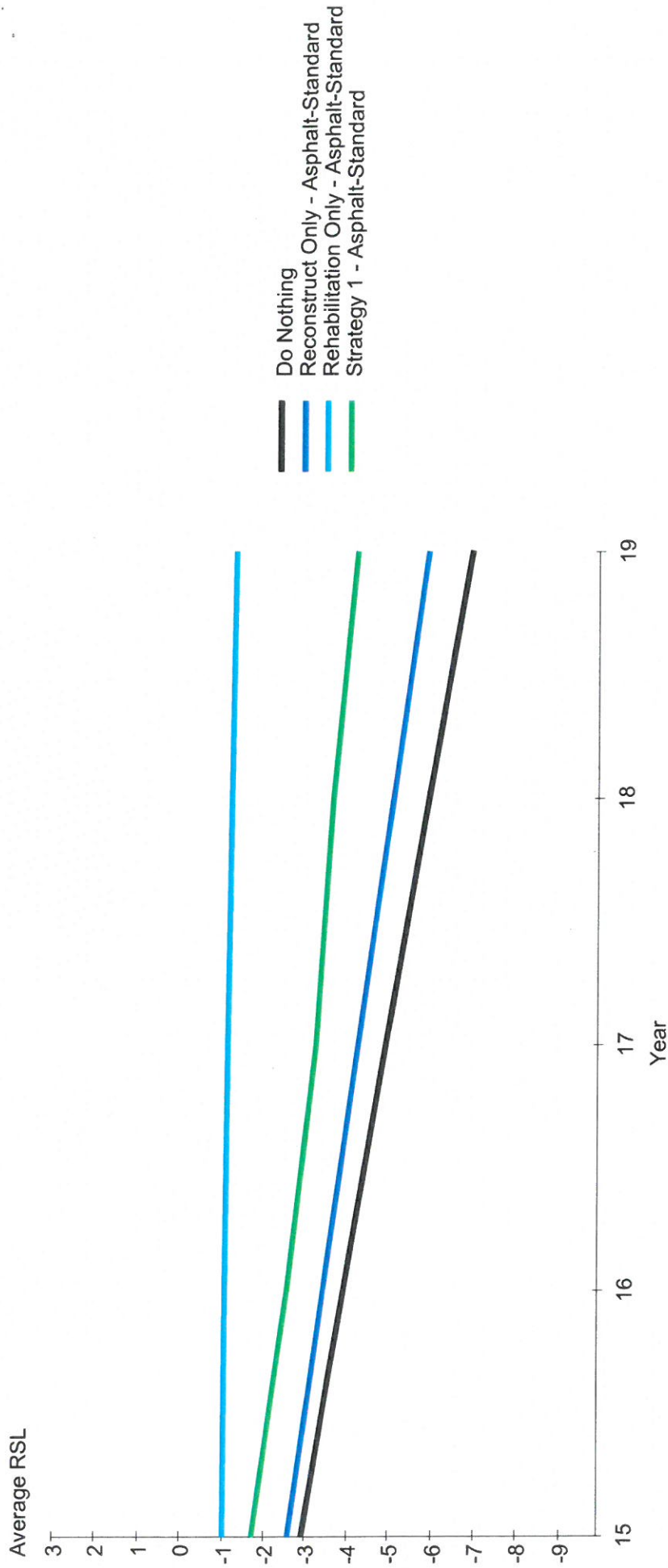
<u>Street</u>	<u>Quadrant</u>	<u>Street</u>	<u>Quadrant</u>
Chads Way	NE	E. Shaw St.	SE
N. Crandell Dr.	NE	S. Clinton St.	SW
Daryls Way	NE	Fenn Ct.	SW
Fieldberry Lane	NE	Kristina Dr.	SW
N. Lincoln St.	NE	Mikesell St.	SW
Lipsey Dr.	NE	Pearl St.	SW
E. McClure St.	NE	Porter Dr.	SW
Parkland Dr.	NE	Reynolds Rd.	SW
E. 3rd St.	SE	W. Seminary St.	SW
E. Henry St.	SE	Amity St.	NW
Johnson St.	SE	Beech Street	NW
E. Lovett St.	SE	High St.	NW
Maynard St.	SE	W. McClure St.	NW
Meijer Dr.	SE	Wedgewood Dr.	NW
S. Oliver St.	SE	N. Bostwick St.	NW
St. Mary's Blvd.	SE		

Please keep in mind that this is a dynamic list based on actual year to year conditions. Some of these sections may only be a block long, and others up to a half mile long. It may be beneficial to group certain projects together, and other projects may need to be split into phases based on the amount of money available in a given year.

This list is in no way meant to be the plan we are presenting, but a starting point for discussion.

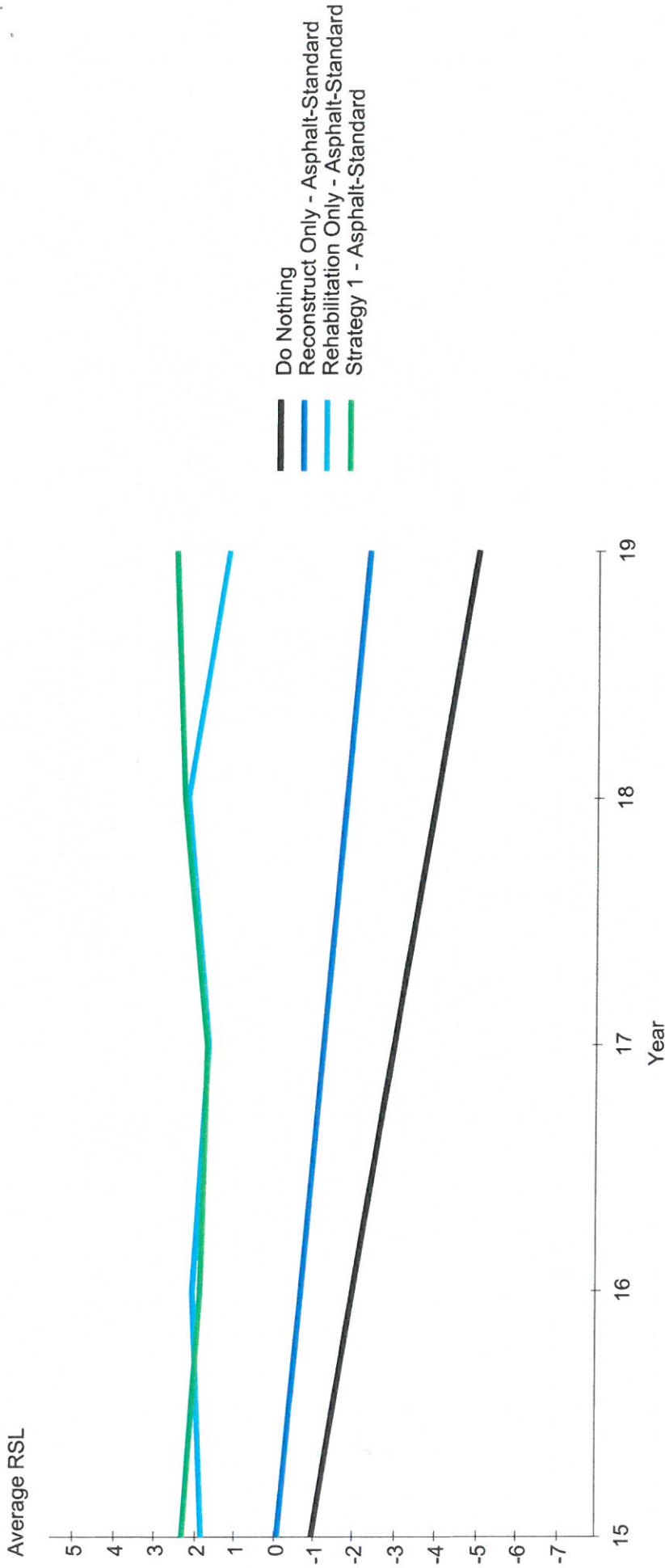
YEAR 1	Cash-on-hand @ 6/30/15	310,000
	+ Estimated 15/16 Revenues	360,000
	Estimated 15/16 Expenses:	
	Reconstruction	(310,000)
	Rehabilitation	(350,000)
	Heavy Preventative Maintenance	-
	Medium Preventative Maintenance	(10,000)
	- Total Estimated 15/16 Expenses	<u>(670,000)</u>
	+ Projected Cash-on-hand @ 6/30/16	-
YEAR 2	Cash-on-hand @ 6/30/16	-
	+ Estimated 16/17 Revenues	360,000
	Estimated 16/17 Expenses:	
	Reconstruction	-
	Rehabilitation	-
	Heavy Preventative Maintenance	(50,000)
	Medium Preventative Maintenance	(10,000)
	- Total Estimated 16/17 Expenses	<u>(60,000)</u>
	+ Projected Cash-on-hand @ 6/30/17	300,000
YEAR 3	Cash-on-hand @ 6/30/17	300,000
	+ Estimated 17/18 Revenues	360,000
	Estimated 17/18 Expenses:	
	Reconstruction	(600,000)
	Rehabilitation	-
	Heavy Preventative Maintenance	-
	Medium Preventative Maintenance	(10,000)
	- Total Estimated 17/18 Expenses	<u>(610,000)</u>
	+ Projected Cash-on-hand @ 6/30/18	50,000
YEAR 4	Cash-on-hand @ 6/30/18	50,000
	+ Estimated 18/19 Revenues	360,000
	Estimated 18/19 Expenses:	
	Reconstruction	-
	Rehabilitation	(200,000)
	Heavy Preventative Maintenance	-
	Medium Preventative Maintenance	(10,000)
	- Total Estimated 18/19 Expenses	<u>(210,000)</u>
	+ Projected Cash-on-hand @ 6/30/19	200,000
YEAR 5	Cash-on-hand @ 6/30/19	200,000
	+ Estimated 18/20 Revenues	360,000
	Estimated 19/20 Expenses:	
	Reconstruction	(500,000)
	Rehabilitation	-
	Heavy Preventative Maintenance	(50,000)
	Medium Preventative Maintenance	(10,000)
	- Total Estimated 19/20 Expenses	<u>(560,000)</u>
	+ Projected Cash-on-hand @ 6/30/20	-

Average RSL Comparison



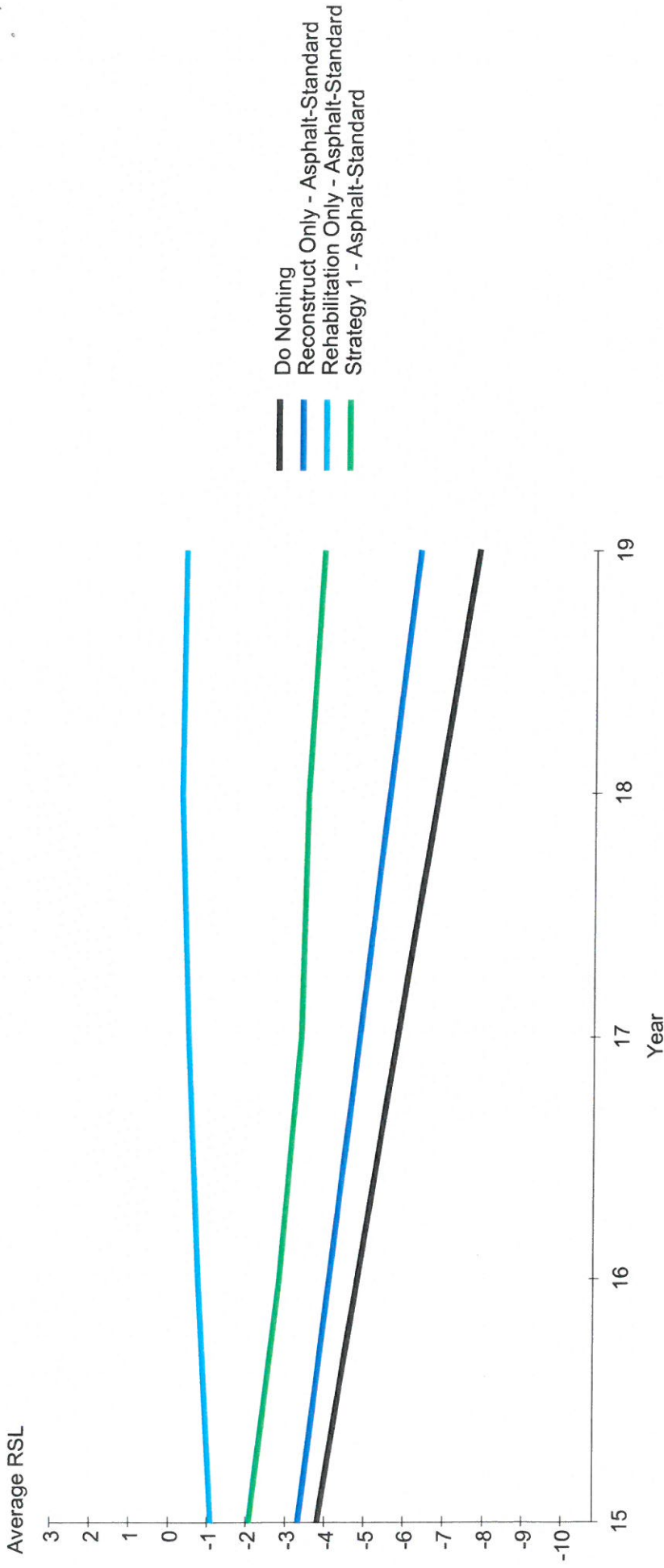
Major and Local Streets

Average RSL Comparison



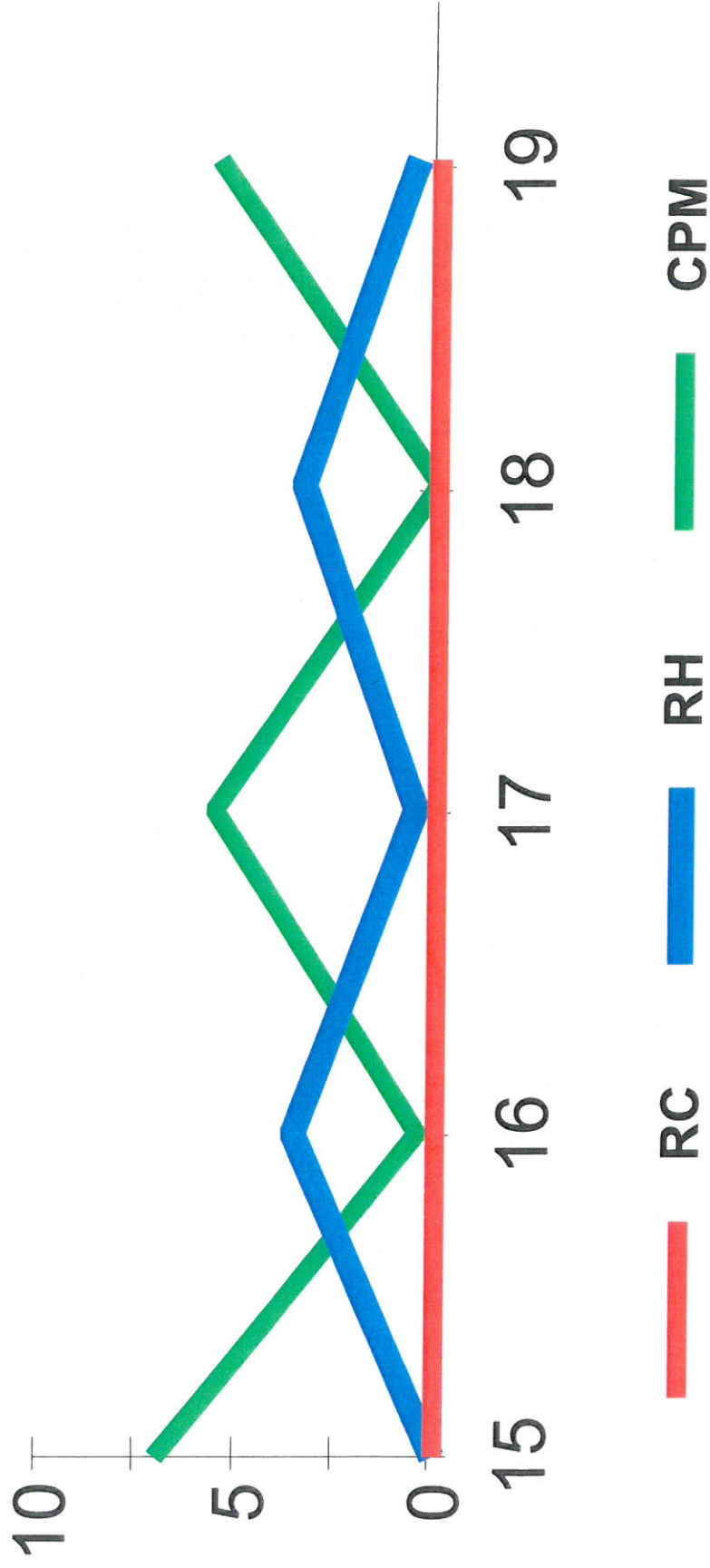
Major Streets Only

Average RSL Comparison



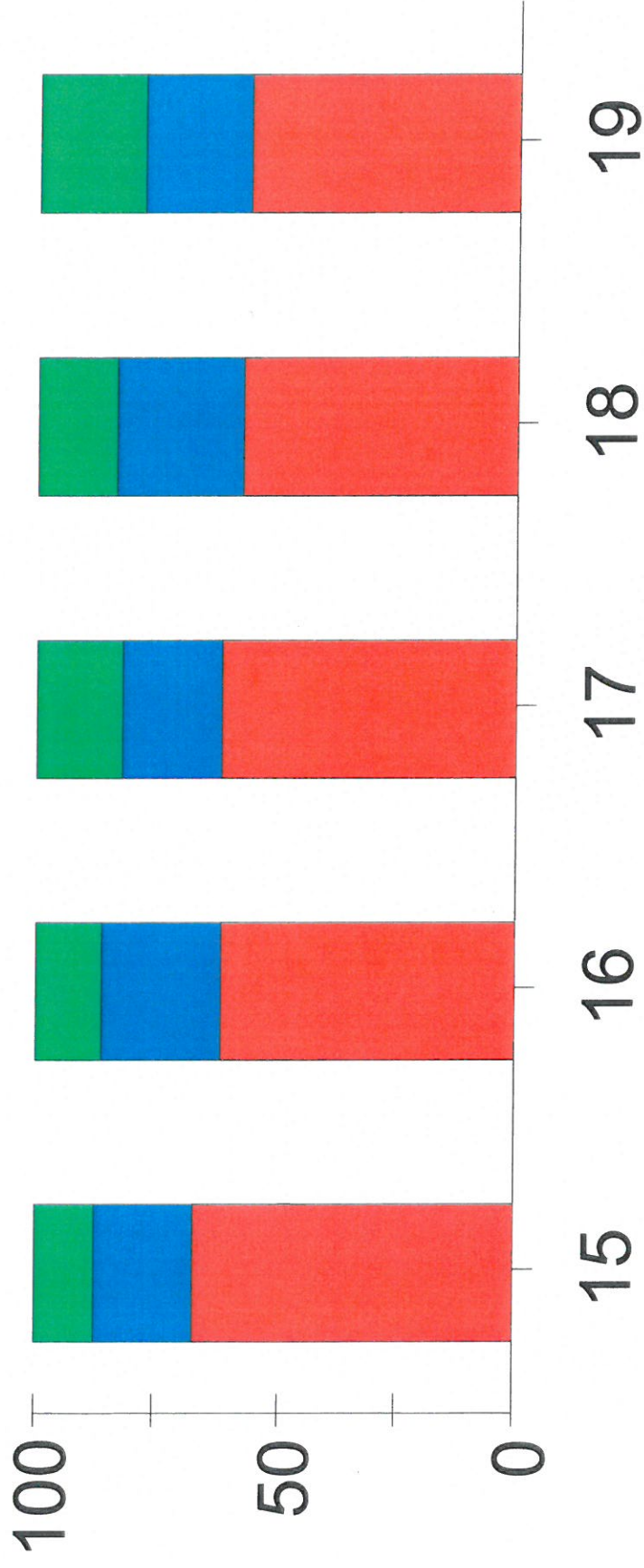
Local Streets Only

Lane Miles of Activity Performed by Year \$360,000 for 5 years - Entire Strategy



Optimization Run On All Streets

Percent of Good(grn) Fair(blue) Poor(red) by Year \$360,000 for 5 years - Entire Strategy

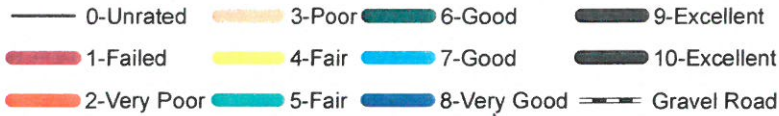


Optimization Run On All Streets

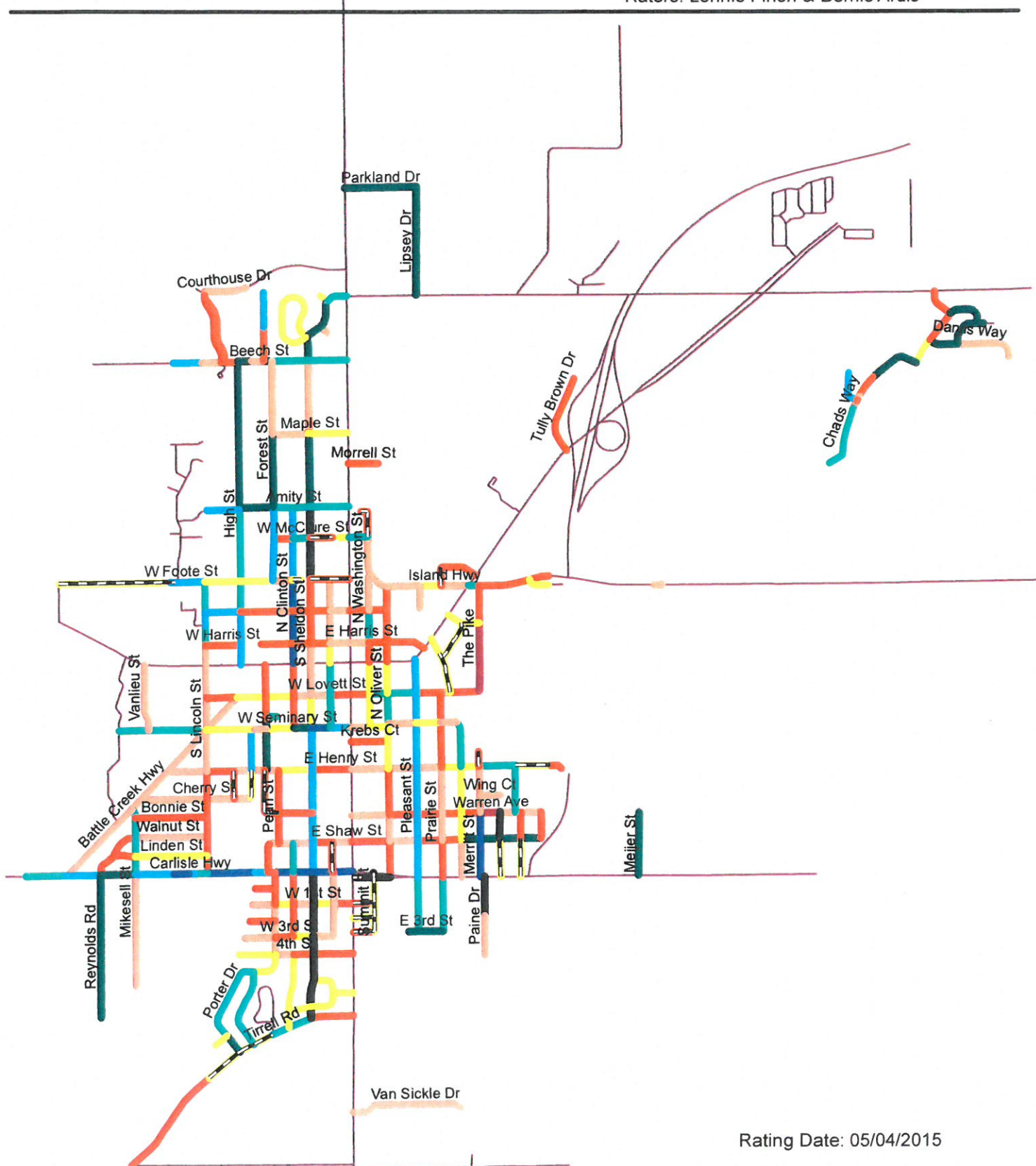
City of Charlotte Road Ratings 2015



PASER Ratings



Raters: Lonnie Finch & Bernie Ardis



Rating Date: 05/04/2015

Roadway Data Services, LLC

HOW DO WE PICK WHICH ROADS TO FIX?

Two words: ASSET MANAGEMENT

We have 37.82 miles of road in the City; 2.77 miles are gravel.

To manage our assets, we use the free Roadsoft software provided by MTU's LTAP.

The roads are rated using the PASER System which is based on a scale of 1-10.
(Pavement Surface Evaluation and Rating System)

8-10 GOOD: Requires routing maintenance like crack seal and patching.

5-7 FAIR: Preventative Maintenance like crack seal, patching, or surface treatment

1-4 POOR: Reconstruct

To rate the streets, we export our data to the consultant, they use the Roadsoft Laptop Data Collector (LDC) to collect current ratings, and export the info back to us. Capital Consultants performed the PASER ratings in 2005 as part of the Pavement Management Study. OHM performed the PASER ratings from 2009-2011. Due to inconsistencies in data, we switched to Roadway Data Services for the 2012 and subsequent annual surveys.

Now that we have more information in the database, we can utilize Roadsoft to determine surface condition trends, strategy evaluations and optimization, deterioration curves, and remaining service life.

There are three basic fixes:

Capital Preventative Maintenance (CPM) Crack seal; minor patching	short term fix	10 years or less
Rehabilitation (RH) Milling, ultra thin overlays, crack fill	medium term fix	10-20 year fix
Reconstruction (RC) Structural overlays, crush and shape, reconstruction	long term fix	20+ years

OUR OBJECTIVES:

Establish cost effective short and long range programs

Maximize pavement condition while minimizing costs

Manage the pavement, not the road condition.

PRESERVATION STRATEGY:

Use a mix of fixes

Use varying lives of fixes

Weigh the short term vs. long term fixes.

All that said:

We look at preserving the roads in the 4-7 and 8-10 range so that they don't fall into the total reconstruction scenario that is much more expensive.

We look at the roads in these ranges.

We remove those roads from the mix that have utilities under them that need to be replaced, unless there is money available for that.

Evaluate options and costs for the remaining streets.

Put together a project to meet the available dollars.

FUNDING:

TIP Projects receive a \$375,000 max State grant with an 80/20 match. We have used this money in 2006, 2012, and our next project in 2016. Theoretically we're supposed to get money every 3 years because EATRAN and Potterville are in our Small Urban Area and the funds are supposed to be rotated among the entities. However, the State has the final say on who is awarded funds each year which explains the gaps. Projects in the queue for the 2014-2017 TIP are:

North Sheldon Street- Lawrence to Foote- Funded 2016

West Harris Street from Cochran Avenue (M-50) to North Sheldon Street – Unfunded

West Lovett Street from Cochran Avenue (M-50) to South Clinton Street- Unfunded

To receive TIP money, roads must be on the Federal Aid Eligible list.

With TIP grants not being available, we successfully pursued Category A Economic Development grants (\$3M) for Reynolds Road and W. Shepherd Streets.

COSTS:

These costs are approximate and have several variables that could affect the overall cost.

Cost for Mill and Fill = \$240,000/ mile

Total Reconstruction= \$2.2 million/ mile

The roads currently in the 1-3 PASER rating (18.18 mi) would need reconstruction at an approximate cost of \$40 million.

Roads in the 4-7 range (17.52 mi) could be milled and resurfaced at \$240,000/mile, or approximately \$4.2 million.