

Mission Statement

Improving Fairborn's Roadways for Safety, Comfort and Transportation Efficiency.



STREET LEVY REPORT

Prepared for: Fairborn Citizens
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Fairborn City Council
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BRIEF HISTORY

A Street Levy was approved in 2004 by the Fairborn voters, showing their support for the effort to improve the condition of the City's roadway network. The levy was a 0.25% income tax for a ten year period, generating approximately \$1.5M annually beginning in 2005. The funds generated provide for a variety of street improvements including curb ramps meeting ADA standards. At that time there were approximately 129 miles of roadway in the City of Fairborn.

Prior to the levy passing, the City budgeted approximately \$400,000 per year for roadway repairs and resurfacing. Some streets at that time had not been rehabilitated or treated since their original construction. Street surfaces were deteriorating at a faster rate than the annual budget could afford. Pavement surfaces, bases, curbs and gutters were showing significant signs of cracking, spalling, disintegrating, and sinking. The annual \$400,000 budget could only rehabilitate approximately 10 to 15 streets per year. A levy was needed to properly address the safety, comfort and transportation efficiency for users travelling in and through the City.



CONCRETE STREET DETERIORATION PRIOR TO PASSAGE OF STREET LEVY

The following report, map and tables highlight the results of the Street Levy monies from its inception in 2005 to the 2014 Street Program. The report provides an overview of the Street Levy funds expended, the annual

Street Program, administration methodology, program impacts, benefits, and future needs.

The 2014 Street Program is the last year of the current ten year levy.

PAVEMENT RATING SYSTEM

A very involved process is used to rate Fairborn's streets to help determine what type of improvements or repairs are required. There are many factors which go into determining a roadway's serviceability to the community.

First, an inventory of streets is collected specifying the physical properties and history of each street. This tells us how many miles of streets we have, how wide they are, what materials they are made of, how old they are, and what the last treatment was.

Next, the condition of the streets are evaluated. Civil engineers have developed a method for rating pavements known as the Pavement Condition Index, or PCI. The PCI takes many factors into consideration, such as structural integrity, roadway functionality, overall rideability, construction details, traffic loads, distresses, symptoms, and other measureable indices. PCI ratings range from 0 to 100, with 100 being the best and 40 or below being undriveable. After the PCI process is completed, each street receives a PCI rating that helps determine its current condition and needs.

In 2007, a pavement management system was implemented to assist the City Engineer in developing an efficient use of the Street Levy funds. A consulting firm, Infrastructure Management Systems (IMS), was chosen to provide the Engineering Division with this system. IMS employs a specially equipped vehicle that performs comprehensive pavement measurements including spot load testing, videos, photos, and distress data collection using laser technology for accuracy.

Every street in the City is driven and data is collected to develop our street inventory database. The data is then transferred to a software program and analyzed based upon current civil engineering practices. The final

report includes an inventory of all streets; measurements, pictures, pavement condition, PCI rating, and suggested methods of repair.

With street conditions continually changing due to traffic loads, environmental factors, and utility cuts, the data collection process is performed every 3 years to provide up-to-date street inventory and condition data. This data was last collected in 2013. The consistent collection of data allows us to monitor pavement deterioration rates and better plan for future needs.

In addition, updated images of each street at 25 foot intervals are provided. These images have proven to be a valuable tool for many engineering applications, but most importantly they provide a visual history of pavement performance.



DAYTON DRIVE DURING CONSTRUCTION

Once data collection is completed, the Engineering Division reviews the reports and develops various treatment scenarios. Engineering then analyzes those scenarios and determines what treatments should be performed on which streets at what times.

Streets are selected for improvements based on many factors. Data from the PCI ratings, traffic counts, economic development opportunity, and partnering with utility projects are examples of these factors. Also, special roadway projects are selected where paving funds can be used as leverage in procuring grant funding.



DAYTON DRIVE AFTER IMPROVEMENTS

The improvements to be employed for each street are based on similar factors, as well. However, to maximize the benefits from the Street Levy, those streets having a PCI of approximately 75-85 are typically selected. This rating is the point in the life cycle of pavement where improvements are most beneficial at the lowest investment of funds. The life of the pavement is increased significantly, maintenance costs are reduced, safety and comfort are maintained, and traffic disruption due to roadway construction is minimized. Below this rating, more intensive work is required to improve the pavement, making it a more costly rehabilitation option, taking more time and creating more inconveniences to users, businesses and residents.

IMPROVEMENT STRATEGIES

Some common pavement treatment strategies consist of one or a combination of the following:

- a) milling and filling with asphalt pavement
- b) asphalt pavement overlay
- c) concrete panel replacement
- d) stress absorbing membrane interlayer
- e) base reclamation
- f) concrete joint repair
- g) microsurfacing
- h) concrete rubblization
- i) full-depth asphalt pavement repair
- j) partial-depth asphalt pavement repair

By no means is this list complete. New materials and methods are always being developed and the Engineering Division continuously monitors this industry to stay current on best practices.

OTHER BENEFITS

In addition to pavement improvements, the Street Levy funds have allowed the replacement or new construction of ADA curb ramps. In accordance with the Americans with Disabilities Act Accessibility Guide (ADAAG), any work performed to pavements in intersections having sidewalk require ADA curb ramps.

As a result, the City has installed over 1,100 ADA curb ramps since 2005 using Street Levy funds.

Street Levy funds have also been used as local match funds for major roadway improvement projects to procure grants from other governmental agencies, such as the Ohio Department of Transportation (ODOT) and the Ohio Public Works Commission (OPWC). Examples of major projects are shown in the table below:

	MAJOR ROADWAY PROJECT	LEVY \$	GRANT \$	OTHER \$	TOTAL \$	% GRANT TO TOTAL
1	Streetscape Phase I & II	\$ 983,076	\$ 600,000	\$ 372,800	\$ 1,955,876	31%
2	Col. Glenn Highway Improvements	\$ 967,000	\$ 400,000	\$ -	\$ 1,367,000	29%
3	DYS Ph II	\$ 385,970	\$ 400,000	\$ 360,000	\$ 1,145,970	35%
4	Dayton Drive Improvements	\$ -	\$ 504,572	\$ 301,693	\$ 806,265	63%
5	Streetscape Ph III	\$ 60,000	\$ 300,000	\$ 340,000	\$ 700,000	43%
6	Xenia Dr (Trebein to I-675)	\$ -	\$ 158,885	\$ 39,645	\$ 198,530	80%
7	Broad St (Koogler to Central)	\$ -	\$ 866,748	\$ 216,271	\$ 1,083,019	80%
8	Central Av (Broad to N. Corp)	\$ -	\$ 574,864	\$ 143,440	\$ 718,304	80%
9	Maple Av (Doris to Dayton-Yellow Springs)	\$ -	\$ 236,473	\$ -	\$ 236,473	100%
10	Dayton-Y.S. Rd (Ironwood to Kauffman)	\$ -	\$ 207,358	\$ -	\$ 207,358	100%
11	Broad St (S. Corp to Koogler)	\$ -	\$ 897,320	\$ 419,330	\$ 1,316,650	68%
	TOTALS	\$2,396,046	\$ 5,146,220	\$ 2,193,179	\$ 9,735,445	53%

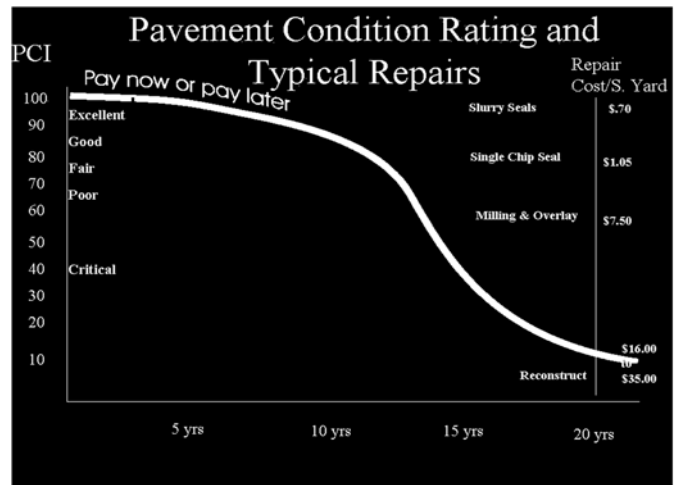
From the table, it can be seen that Street Levy funds used as local match dollars have helped bring in more than \$5,000,000 of

additional funding through grant dollars. If not for the levy, the projects that relied on those grant dollars would likely not have been built.

Using Street Levy funds for local match money provides valuable leverage to secure grants for larger projects in a highly competitive market.

PAVEMENT LIFE SPAN

If it seems like road construction is never ending, that's because it is. Roads don't last forever, especially in Ohio where there are frequent freeze/thaw cycles. Pavement deterioration rates increase exponentially after 12-15 years. That's why pavement rehabilitation before complete failure is so important. Many of the streets that were rehabilitated in the initial years of the street levy (2005 – 2007) will need to be re-paved again in 2016 or 2017. Some of these streets are already showing signs of pavement distress and cracking.



PAVEMENT CONDITION DETERIORATION CHART

The PAVEMENT CONDITION DETERIORATION CHART shown above illustrates the relationship between PCI ratings and time. The graphic is called a deterioration curve. Note that between PCI ratings of about 85-100, an excellent rating, the slope of deterioration is fairly flat. In the 5-10 year range is where noticeable pavement distress signs begin to appear. You can see the slope of curve beginning to descend. PCI ratings drop to 75-85, or fair to good condition. This is the stage when cost-effective improvements can be implemented to extend the serviceable life of the pavement.

The cost of improvements, at the right side of the chart, are moderate compared to major rehabilitation. As a result, many more streets can be improved.

At a PCI of about 70, the slope of the curve takes a very sharp descent, indicating rapid deterioration over a very short period of time. A PCI of 40 and below indicates the pavement is so poor that the road has become hazardous and must be closed.

Looking at the costs of repair on the right side of the chart, one can see that as the PCI decreases, the amount of money needed for restoration dramatically increases. All of this information shows the importance of preventative maintenance.

The maintenance cycle of a city's roadway pavements can be compared to the maintenance cycle of the Golden Gate Bridge. The steel that makes up the bridge is very prone to corrosion because of its



DETERIORATED ASPHALT PAVEMENT ON YELLOW SPRINGS-FAIRFIELD ROAD.

salt water environment. Regular painting is very important to prevent corrosion and extend the life of those steel members. It takes four years to paint the bridge! By the time it is finished, workers must go back and start painting the first section again. Paint is much cheaper than steel. Without the cost-effective painting, the steel would fail sooner and require replacement at an extremely high cost.

Fairborn's Street Resurfacing Program is similar to the Golden Gate Bridge painting plan. Asphalt roads in our Ohio climate must be resurfaced on a regular basis to protect the base structure from moisture and traffic loads. Concrete streets need joint and slab repairs for the same reasons. The Street Levy funds have provided the means for a substantial number of deteriorated streets to be resurfaced to extend their useful life, in turn saving taxpayers from a large financial responsibility down the road.



DETERIORATED CONCRETE WITH FAILING ASPHALT PATCHING

It is important to note that in order to continue to improve deficient streets and maintain streets that are in good condition, annual funding for street rehabilitation will need to be continued. A reduction in funds, or elimination of funds, would quickly result in more streets deteriorating below the failure threshold.

IN SUMMARY

Based on the previous nine years of street improvement data and projected improvements for this final levy year, approximately 51% of the total centerline miles in the City of Fairborn will have received some type of pavement rehabilitation using 100% Street Levy funds (see attached map and data table).

Additionally, another 11% of the City center-line miles have been rehabilitated utilizing a mixture of Street Levy funds and grant funds. However, many of the grant funding sources have not kept up with increasing construction costs. As inflation has risen and cars have become more fuel efficient, revenues from



STREETSCAPE ON MAIN AT CENTRAL AVE—NORTH

flat rate federal and state gas taxes have not kept revenues in line with costs. If these funding sources are not increased, Fairborn's Street Levy will become that much more important.

Even though more than half of the centerline miles in Fairborn will have been rehabilitated after ten years, the overall PCI number for Fairborn streets will only improve slightly. Much of the pavement base material in Fairborn is well over 40 years old with a life expectancy of only 20 to 30. In the next 10 years and beyond more streets are going to require full depth pavement replacement. Yet another reason that shows how vital the Street Levy is to preserving and enhancing our community's transportation network.

CONCLUSION

Funds generated from the Street Levy income tax have greatly enhanced the condition, comfort level, and aesthetics of the City's network of streets. Engineering pavement management principles strongly recommend a long-term and substantial funding commitment to maintain a satisfactory roadway network.

The 452 streets in Fairborn represent the largest and most costly infrastructure asset owned and maintained by the City. Continued support of Fairborn's Street Levy would help avoid losing the momentum gained by the initial ten year levy, and assure that our most valuable infrastructure asset is cared for responsibly and efficiently.

With a renewed Street Levy, we will be able to continue meeting our mission statement:

"Improving Fairborn's Roadways for Safety, Comfort and Transportation Efficiency."



SOUTHLAWN DRIVE LOOKING SOUTH



2012 USAF MARATHON

ADDITIONAL STREETScape PICTURES



MAIN AT GRAND LOOKING WEST — BEFORE



MAIN AT GRAND LOOKING WEST — AFTER



MAIN AT GRAND LOOKING EAST — BEFORE



MAIN AT GRAND LOOKING EAST — AFTER



MAIN AT SECOND LOOKING WEST — BEFORE



MAIN AT SECOND LOOKING WEST — AFTER

STREET LEGEND

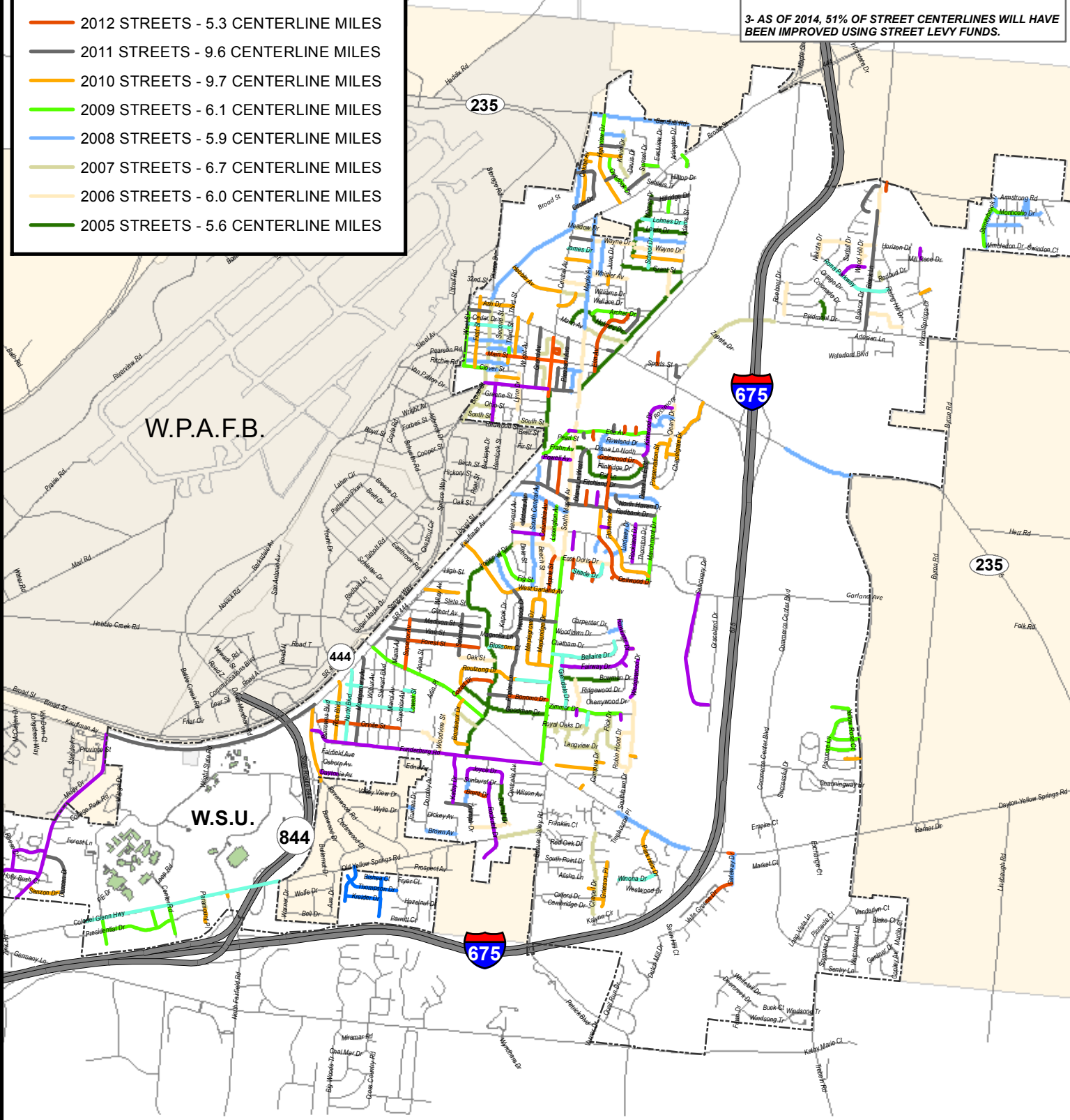
- 2014 STREETS - 7.8 CENTERLINE MILES
- 2013 STREETS - 6.7 CENTERLINE MILES
- 2012 STREETS - 5.3 CENTERLINE MILES
- 2011 STREETS - 9.6 CENTERLINE MILES
- 2010 STREETS - 9.7 CENTERLINE MILES
- 2009 STREETS - 6.1 CENTERLINE MILES
- 2008 STREETS - 5.9 CENTERLINE MILES
- 2007 STREETS - 6.7 CENTERLINE MILES
- 2006 STREETS - 6.0 CENTERLINE MILES
- 2005 STREETS - 5.6 CENTERLINE MILES

NOTE:

1- STREET LEVY BEGAN IN 2005 AND EXPIRES IN 2014. 67.2 CENTERLINE MILES OF LOCAL AND THOROUGHFARE STREETS HAVE BEEN IMPROVED.

2- THE TOTAL CENTERLINE MILES OF STREETS IN FAIRBORN IS 131.2.

3- AS OF 2014, 51% OF STREET CENTERLINES WILL HAVE BEEN IMPROVED USING STREET LEVY FUNDS.



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DRAWN BY: JN

REVISED BY: JN

SCALE: NONE

DATE: MAY 22, 2013

FAIRBORN STREETS PAVED 2005 THRU 2014

Location Map

This map was created by the City of Fairborn Engineering Division in cooperation with the Greene County G.I.S. Department. Errors may be reported to the City Engineer's office at 754-3055.

