October 25, 2011

2011 Pavement Management Program

Prepared for:

City of Circle Pines

City of Circle Pines
200 Civic Heights Circle
Circle Pines, MN 55014
763-784-5898

WSB Project No. 1507-47

701 Xenia Avenue South, Suite 300 Minneapolis, MN 55416 763.541.4800

WSB & Associates, Inc.

2011 PAVEMENT MANAGEMENT PROGRAM

CITY OF CIRCLE PINES, MN

October 25, 2011

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October 25, 2011

Mr. Jim Keinath
City Administrator
City of Circle Pines
200 Civic Heights Circle
Circle Pines, MN 55014-1788

Re: 2011 Pavement Management Program
City of Circle Pines, MN
WSB Project No. 1507-47

Dear Mr. Keinath:

Transmitted herewith is a Pavement Management Program for the City's street system that was updated to reflect the street conditions in 2011 and associated construction costs.

We would be happy to discuss this report with you at your convenience. Please do not hesitate to contact me at 763-287-7162 if you have any questions regarding this report.

Sincerely,

WSB & Associates, Inc.

Shibani K. Bisson, PE
Senior Project Manager

Michael J. Rief, PE
Construction Services Manager

Attachment

sb/srb

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1. INTRODUCTION / SCOPE OF WORK

A Pavement Management Program report was completed for the City in 2003. This report included a visual evaluation of the condition of the City's street system. Streets were rated and categorized as being in Good, Average, Fair, or Poor Condition. A recommended repair method, cost analysis, and 5-year Capital Improvement Plan was developed as part of the report. Since that time, the City became a Municipal State Aid City and was eligible to receive State Aid funding for streets designated as State Aid routes. The City implemented a street reconstruction program and began the program with the reconstruction of West Golden Lake Road in 2008, the rehabilitation of 87th Avenue in 2009, and the reconstruction of streets in the northeast corner of the City in 2010.

The 2003 Pavement Management Program was recently reviewed along with the streets next in line to receive a mill and overlay (Golden Lakes Estates). Based on a brief visual inspection of these roadways, it appears that a mill and overlay is not a cost-effective method to repair all these roadways based on their current condition, typical public perception, desired performance, and original construction. It appears that many of the roadways that were rated as being in Good to Average condition are currently beyond just a mill and overlay rehabilitation method, and other methods should be explored to repair the roadway and extend its useful life until reconstruction of the street is necessary.

The City Council authorized WSB & Associates, Inc. to re-evaluate the City's street system and update the City's Pavement Management Program. This report will provide the results of a visual field surface evaluation of the roadways, recommendations for repair or maintenance methods for all street segments, general estimated costs for each repair method, and development of a Capital Improvement Plan.

2. STREET ANALYSIS PROCEDURES

The roadways were visually reviewed and evaluated as part of the pavement analysis. The review consisted of a field review of the entire network noting the condition of each roadway based on the following items:

- Transverse cracking
- Longitudinal cracking
- Alligator/block cracking
- Swell/frost heave
- Evaluation for adequacy of drainage for surface runoff
- Existing patched areas
- Crack sealing
- Settlements

For each type of cracking observed, the severity of each type was noted. The Flexible Pavement Distress Manual (FPDM) sponsored by the Local Road Research Board (LRRB) was utilized to identify and rate the condition of the roadways.

Transverse cracking consists of cracks that form across the road from edge to edge. Longitudinal cracks run parallel with the centerline of the street. The presence of these cracks can be common in pavement surfaces as they age. Typically, routine maintenance of streets, consisting of crack sealing and seal coating, works well to protect the pavement from aging, but it would not ultimately prevent the transverse and longitudinal cracking.

Alligator and block cracking consists of many cracks that form a checkerboard pattern on the pavement surface. Depending on the severity of the cracking, it is typically an indication of a lack of structural support in the pavement due to repeated traffic loading or may result from a weakened subgrade due to drainage problems. Corrective measures can range from the patching of isolated areas, to overlaying of the pavement surface, to reconstruction of the street section. The type of action selected is dependent on the severity of the subgrade damage and cracking.

The formation of low spots, potholes, and pavement degradation is generally an indication that the pavement surface lacks the subgrade support required for the traffic loadings that are placed on the pavement surface. Correcting the base is critical before new pavement is constructed.

The evaluation for adequacy of drainage was noted because drainage of surface and sub-surface water away from the pavement surface is important in order to maintain the structural capacity of the roadway. When water is present within the subgrade, freeze/thaw cycles can heave the pavement, dramatically reducing its life expectancy.

The bituminous mix design and type or grade of asphalt used in the bituminous mixture to build the roadways are also factors in how the roadway has performed over time. In the late 1970s and 1980s during the energy crisis, bituminous mixes were designed with less asphalt binder in the mixture to allow it to bond with the aggregate. This resulted in these pavements' poor performance and susceptibility to moisture damage which is often aggravated and accelerated with the placement of a chip seal. This appears to be the case on Indian Hills Drive and Indian Hills Lane along with the roadways in the Woods of Golden Lake developments. We have found this issue in several other cities as well.

Roadway Ratings

Each of the roadways was rated as Excellent, Good, Average, Fair, or Poor in terms of their condition due to the above distress types. These ratings are described as follows:

- Excellent: A road which is given a rating of "excellent" can be characterized as showing no significant distresses. This type of road may be recently constructed, meaning 0 to 5 years old, or having had a recent overlay or reconstruction. A road which is deemed "excellent" would require only preventive maintenance.

Image of an “excellent” road. Picture taken on Golden Lake Road.

- <u>Good:</u> A road which is given a rating of “good” can be characterized as showing some distresses and surface aging/wear. This type of road may have been constructed in the last 5-10 years, or undergone a recent seal coat and little to no signs of significant distress would be present. A “good” road would typically have minimal longitudinal cracks except for paving joints. There may be occasional transverse cracks but these would typically be widely spaced (40 feet or greater). Cracks would be sealed or tight, meaning there was not an opening of the crack larger then roughly ¼ inch. A road given this rating would require little to no maintenance. An example of a “good” road is shown below.

Image of a “good” road. Picture taken on Pine Drive south of South Drive.

- Average: A road which is given a rating of "average" can be characterized as starting to show some signs of significant distresses. This type of road may have been constructed in the last 10-20 years and is beginning to show signs of environmental damage and aging. Raveling, or loss of fine materials, may be present as well as some traffic wear. Longitudinal cracks and block cracking may start to appear. Transverse cracks are more frequent and of greater severity with a closer spacing. While there may be signs of surface aging, the road is still structurally sound.

  Occasional patching may also be present giving the roadway an average rating if the other non-patched areas still have several distresses. This is the case for Pleasant View Lane, Hillcrest Lane, and Ridge Road, where certain areas were patched in 2003. This method of patching is a short term-fix and does not address all of the distresses in the roadway. In general, a road which is rated as "average" may be maintained with a routine crack filling or a seal coat, but may also require more routine maintenance or be a candidate for a mill and overlay. An example of an "average" road is shown below.

Image of an "average" road. Picture taken on Pleasant View Lane.

Image of an "average" road. Picture taken on Woodcrest Drive.

- Fair: A road which is given a rating of "fair" can be characterized as showing signs of surface raveling and aging. Longitudinal and transverse cracks are more frequent and of a higher severity with the development of secondary cracks. There may be more severe

block cracking present and patching which is in good to fair condition. The road may show signs of slight rutting, distortions, and some localized alligator cracking. A road with this rating may start to show signs of need for strengthening and would benefit from a structural overlay or bituminous patching. Examples of "fair" roadways are shown below.

Image of a "fair" road. Picture taken on Oak Ridge Trail.

Image of a "fair" road. Picture taken on Woodland Road.

- Poor: A road which is given a rating of "poor" can be characterized as having closely spaced longitudinal and transverse cracks which are often showing raveling and erosion. Severe block cracking and alligator cracking may be present. Extensive patching may exist but is most likely in poor condition. There may also be occasional potholes and overall severe deterioration which leads to loss of structural stability. A road in this condition would require some reconstruction ranging from milling and removal of the deterioration to complete and total reconstruction. A road classified as poor is often 25 years or older and showing significant aging due to environmental impacts. Most of the roadways rated as poor were constructed in 1968 and 1971 and have just deteriorated over time due to traffic loading over time and age and the sub soils may be in adequate condition. One exception is the roads within the Golden Lakes Estates development, which were constructed in 1980. These roadways are in relatively poor condition than the roads that were constructed in 1968 and 1971, which are primarily located north of Lake Drive. An example of a "poor" road is shown below.

Image of a “poor” road. Picture taken on Nottingham Drive.

Image of a “poor” road. Picture taken on Civic Heights Drive.

Image of a “poor” road. Picture taken on Flowerfield Road.

Image of a "poor" road. Picture taken on Fire Barn Road.

A map illustrating these conditions is shown in ***Appendix A***.

3. REHABILITATION TECHNIQUES

A. Preventative Maintenance

Preventative maintenance can be defined as a treatment to an existing road that will help preserve and protect the road, while also slowing down future deterioration. This type of maintenance will improve the condition of the system without increasing structural capacity. Preventative maintenance is best performed on newer pavements prior to the appearance of significant and/or severe distresses. Types of preventative maintenance include crack sealing and seal coating.

Crack Sealing

Crack sealing is a type of preventative maintenance done to prevent the intrusion of water and incompressible materials into cracks. When water enters cracks, it can soften the sub-base and base layers and lead to further cracking and the development of more severe alligator cracking and the formation of potholes. In climates where freeze/thaw cycles exist, the water that enters the system through cracks can lead to issues with frost heaving. Crack sealing should be completed as preventative maintenance early on in the life of a new pavement or overlay (year 2-4) and roughly every seven years or as determined to be necessary. This technique will not improve the structural capacity of the pavement but will benefit future structural deterioration that could be caused when water enters the system. The cost of crack sealing ranges significantly based on the number and severity of the cracks, but typically costs $4,000 per mile.

Seal Coating

Seal coating is a type of preventative maintenance in which an asphalt emulsion and rock chips are applied to the roadway to protect the roadway surface from environmental aging, moisture damage, and oxidation. This places a protective coating over the pavement which can slow the destructive effects of the environment. Seal coating can fill in minor voids on the surface, including fine cracks, and can improve traction. This preventative maintenance technique will not add any strength to the pavement. Seal coating is typically completed 1 year after crack sealing and is estimated to cost $18,000 per mile.

B. Preservation Techniques

Preservation techniques include placing an overlay on the pavement at the optimum time to maximize the useful life and enhance the longevity of the pavement. Preservation would be done before serious distresses develop.

Bituminous Overlay/Mill and Overlay

A bituminous overlay is done by paving a second layer of bituminous pavement over the existing asphalt. A mill and overlay involves removing a portion of the existing pavement by milling and then providing one or more new lifts of pavement. Depending on the degree of cracking, or sunken areas of the existing pavement, those areas can be cut out and patched before the new layer is paved. Overlaying may also include an edge mill of the roadway along the gutter line to provide a more pronounced crown and match the existing curb. Overlays are usually completed at year 15-20 of the pavement life, provided the existing base is in good condition. In cases where the pavement strength is not adequate for the traffic load, overlays can be completed earlier to help improve the structure and extend the life of the road. Existing roadways with a base in poor condition should be reconstructed to correct the base and address underlying soils issues. The project cost of an edge mill and overlay, including engineering, legal, and administrative costs, has been estimated at $264,000 per mile based on a 31-foot-wide paved roadway with 1 ½ inches of pavement placed. This estimated cost also includes removing and replacing 10% of the existing concrete curb and gutter, as a majority of the curb is in good condition. After an overlay project, the crack sealing and/or seal coating is done.

Bituminous Patching

Bituminous patching may be needed where a more significant correction is required, specifically in areas with a poor bituminous mixture or where subgrade soils are an issue. The cost for the technique varies depending on the scale of the project and placement method used.

C. Rehabilitation Techniques

Rehabilitation techniques include reclamation and reconstruction. Rehabilitation techniques typically involve reclaiming or removing the existing asphalt pavement to remove the problem areas and eliminate the distresses. Rehabilitation then, is the act of repairing portions of an existing pavement to reset the deterioration process.

Reclamation

Reclamation is a process through which the existing roadway is recycled in place. The existing asphalt and base materials are pulverized then mixed and compacted to produce a more uniform and durable base. Once this process is done, a new layer of bituminous pavement is placed on top and compacted. Several cities are utilizing this method as an alternative to reconstruction if there are no subgrade or drainage problems, if the curb and gutter is in good condition, and/or if utilities are not being replaced. The project cost for reclamation is estimated at $910,000 per mile, including contingencies, engineering, legal, and administrative costs. This estimated cost also includes removing and replacing 10% of the existing concrete curb and gutter.

Reconstruction

Eventually roads may deteriorate to a point in which conventional maintenance techniques and/or repair and overlay practices become expensive and do not perform well due to the condition of the underlying pavement structure. There may also be a subgrade or drainage problem that needs to be addressed and/or utilities have reached their useful life and need to be replaced. In this case, reconstruction is the best option. This technique consists of removing the existing bituminous pavement and concrete curb and gutter, adding aggregate base, correcting the subgrade as needed, and placing bituminous pavement. Reconstruction is typically also done when streets have exceeded their life based on age and the life cycle of a typical street.

Existing drainage should be evaluated and corrected as part of a reconstruction project. The project cost for reconstruction is estimated at $1,110,000 per mile, including contingencies, engineering, legal, and administrative costs. This estimated cost is based on a 31-foot-wide paved roadway with 1.5 inches of wear course, 2 inches of base course, and 6 inches of Class 5 aggregate base. This estimated cost also includes removing and replacing all concrete curb and gutter.

Utilizing the reclamation or reconstruction techniques will depend on the condition of the subgrade soils and the need to complete utility replacement. Soil borings will provide information on whether or not the base soils are suitable. If there is a subgrade or drainage problem, unsuitable soils may need to be excavated and the soils corrected before any pavement is placed. Depending on the condition and thickness of the aggregate base, new aggregate base material may need to be placed under the roadway to provide a suitable street section.

D. Utility Replacement

The City's practice has been to replace the utility systems in the roadway; therefore, the street reconstruction option has been used. The City has experienced increases in inflow and infiltration in its sanitary sewer system resulting in increased MCES sewer rates. By replacing the sanitary sewer and services, within the right-of-way with a plastic pipe material, the inflow and infiltration rates should reduce. As the sewer is replaced, the watermain system is replaced at the same time. Typically, watermain systems have a 50-75 year life. In addition to the sanitary sewer replacement, age and history of watermain breaks are primary factors when determining if watermain pipes should be replaced. Depending on the present soil conditions in the City, typically, corrosive soils can cause joints in the pipes to corrode, resulting in a need to replace the line. There are other methods to rehabilitate sanitary sewer and watermain systems, primarily trenchless technologies that they City could consider in the future.

4. LIFE-CYCLE PAVEMENT COST

Using the techniques suggested in this report, one can determine a life cycle pavement cost for the roadways in the City of Circle Pines. This will allow the City to budget for these items annually.

Since the City's oldest roadways are over 40 years old, a typical pavement life cycle cost using today's costs for a 40- and 50-year life span is shown below for the reconstruction technique.

40-Year Life Span

Reconstruction

Year	Rehabilitation Technique	Cost/Mile
0	New Street	N/A
3	Crack Seal	$4,000
4	Seal Coat	$18,000
10	Crack Seal	$4,000
11	Seal Coat	$18,000
20	Mill and Overlay	$264,000
21	Crack Seal	$4,000
22	Seal Coat	$18,000
28	Crack Seal	$4,000
29	Seal Coat	$18,000
40	Reconstruct	1,110,000
	TOTAL	**$1,470,000 per mile**
		$36,750 per mile/year

50-Year Life Span

Reconstruction

Year	Rehabilitation Technique	Cost/Mile
0	New Street	N/A
3	Crack Seal	$4,000
4	Seal Coat	$18,000
10	Crack Seal	$4,000
11	Seal Coat	$18,000
17	Mill and Overlay	$264,000
18	Crack Seal	$4,000
19	Seal Coat	$18,000
25	Crack Seal	$4,000
26	Seal Coat	$18,000
33	Mill & Overlay	$264,000
34	Crack Seal	$4,000
35	Seal Coat	$18,000
41	Crack Seal	$4,000
42	Seal Coat	$18,000
50	Reconstruct	$1,110,000
	TOTAL	**$1,770,000 per mile**
		$35,400 per mile/year

The above schedule for each rehabilitation technique is typical for most City streets based on research from MnDOT and other studies. Studies have suggested that pavements typically have an average 30- to 40-year life span. A 40 to 50-year life cycle is where the City's current streets are being reconstructed at and have been able to sustain their life without major safety issues. Hence, these roadways could be classified as being above-average in terms of a typical life span. Using a typical 40-year to 50-year pavement life span can be an effective method to sustain a pavement's life if the streets are designed appropriately and preventative maintenance and preservation methods are completed. Of course factors such as traffic loading and soil subgrade conditions can increase or decrease the life span of a pavement.

5. RECOMMENDED STREET MAINTENANCE

The recommended maintenance and rehabilitation for the streets that were reviewed are shown in ***Appendix A*** and are divided by each subdivision. These recommendations are based on the visual surface evaluation with consideration also given to the age of the roadways.

By way of background, of the approximately 18.5 miles of City streets, 10 miles, or 54%, of the roadways were originally constructed in 1968 and 1971. Approximately 5.0 miles, or 27%, of the roadways were constructed between 1980 and 1983. The remaining 3.5 miles, or 19%, were constructed in 1988 and after. Seal coating of the roadways was completed in 1980, 1985, 1992, and 2011. Crack filling of all of the City's roadways was completed over a 5-year period from 1985 to 1990. Various segments of roadways, primarily in the south side of the City, were patched in 2003. The City spends approximately $20,000 to $25,000 annually or bi-annually on filling potholes, and recently completed this primarily in the Golden Lakes Estates development. Reconstruction of approximately 2.5 miles was completed from 2008 to 2010.

Generally, all of the City's roadways that were constructed in 1968 and 1971 are in poor condition. In addition, roadways constructed in 1980 in the Golden Lakes Estates development and segments of Pine Drive S, Civic Heights Dr, Shady Way and Oakleaf Lane are also in poor condition. These roadways have medium severity transverse, longitudinal, alligator, and block cracking that are related to the age of the roadways, continuous traffic loadings, and potentially unsuitable soils. Major settlements or frost heaves were noticeably observed on some of the roadways. These roadways have basically exceeded a typical service life of 40 years. It appears that there are two options to rehabilitate these roadways depending on the direction the City wants to take for pavement management and the funds available:

1. Reconstruct or reclaim the roadways to a suitable standard resulting in a better pavement with better subgrade support and a service life of 40 years or more.

2. Overlay the roadways with a 1½-inch bituminous lift and/or complete full depth bituminous patching with or without subgrade corrections to extend the service life of the roadways for approximately another 10 years.

Once soil boring information is obtained, it can then be determined what method is more cost-effective in providing a long lasting pavement.

For the roadways that are in fair and average condition, it is recommended that crack filling be continued with a bituminous seal coating application, bituminous overlay, and/or patching to follow until the roadways need to be reconstructed. These roadways have low to medium severity transverse and longitudinal cracks with minor alligator/block cracking. Major settlements or frost heaves were not noticeably observed.

For the roadways that remain in good condition, it is recommended that preventative maintenance, such as crack filling and seal coating, be continued until the roadways need to be overlayed or reconstructed.

6. CAPITAL IMPROVEMENTS PROGRAM

Based on the information discussed above, we have developed an example Capital Improvements Program (CIP) for the majority of the streets that are in need of a street reconstruction. The City's practice has been to reconstruct roadways approximately 1 mile of roadway every 2 years and perform a preventative maintenance or preservation technique in the off year. Utilizing an estimated present-day reconstruction cost of $1,100,000 per mile, the table and map in ***Appendix B*** and summary below outlines an example of the Capital Improvement Program. Given this program, it would take the City approximately 10 years to reconstruct a majority of the older streets that are currently rated in poor condition.

Reconstruction Year	Streets	Mileage	Cost (present day)
2012	Circle Drive, Inner Drive, Duen Way, Pine Drive	1.47	$1,617,000
2014	Fire Barn Road, West Road	1.03	$1,133,000
2016	East Golden Lake Road	1.14	$1,254,000
2018	Park Drive, Crossway Drive, East Road	1.43	$1,573,000
2020	Center Road, North Star Lane, Moonlite Drive, Aurora Lane, Stardust Boulevard, East Road	0.89	$979,000
2022	Stardust Boulevard, Twilite Terrace, Twinkle Terrace, Galaxy Drive	1.16	$1,276,000

The total estimated cost over 10 years to reconstruct the above 7.1 miles of street is $7,788,000. This equates to an average amount of approximately $788,000 that the City could budget each year over a 10-year period (minus State Aid eligible funds and special assessments). The 10-year CIP provided outlines improving select roadways every two years and is grouped by neighborhood. These costs are estimated average costs for typical streets and took into account the 2010 street reconstruction costs. The proposed CIP does not include utility replacement costs. For each year's projects, the City should authorize a detailed feasibility report to determine project costs with more accuracy.

The key issue to complete this program is the available City funding. Other factors such as stormwater treatment requirements from the Rice Creek Watershed should be considered. Projects in the CIP can be spread out over a longer time frame than 10 years to equalize annual spending, if the City desires. The City should determine the amount of annual spending they can sustain for this program.

7. SUMMARY AND CONCLUSIONS

In summary, we offer the following points:

1. The City of Circle Pines has jurisdiction over approximately 18.5 miles of streets.

2. Approximately 2.5 miles, or 14%, of the streets are in excellent condition.

3. Approximately 2.0 miles, or 11%, of the streets are in good condition.

4. Approximately 2.0 miles, or 11%, of the streets are in average condition.

5. Approximately 1.5 mile, or 8%, of the streets is in fair condition.

6. Approximately 10.5 miles, or 56%, of the streets are in poor condition.

7. Approximately 7.1, miles or 38%, of the City's streets should be considered to be reconstructed at least bi-annually following the City's current program if funding is available. Preventative maintenance, such as crack filling and seal coating, should continue on the remaining streets.

8. Approximately 2.1 miles of streets in the Golden Lakes Estates development that are rated as poor could use an alternative technique for repair as these streets are relatively newer in age and the curb and gutter is in good condition; however, the City is filling potholes primarily in this area annually. It is recommended that the roadway be patched and or/milled and overlayed within the next 5 years in order to extend the life of the pavement for another 10 years prior to reconstructing the roadway. A soils investigation of the roadways is needed to assist in determining the repair method.

In addition, the City should address the following policies for street improvement projects:

1. Adopt a funding strategy for financing street improvements. Financing for street improvements could come from the general budget, assessments to benefiting property owners, and other funds.

2. Review the current assessment policy which currently includes benefitting properties assessed at 25% of the street reconstruction costs. This resulted in a $2,913 assessment per parcel for the 2010 Street Reconstruction Project. Benefit appraisals can be conducted to determine an equitable assessment amount. The City's assessment policy for a mill and overlay project includes assessing benefitting properties at 100%. The assessments for a mill and overlay, given the City's current policy, would be approximately the same as a reconstruction project; however, a mill and overlay has a shorter life span than a reconstruct. This can raise questions as to the benefit received from a mill and overlay. This part of the policy should also be reviewed to determine an equitable assessment amount.

3. Evaluate the streets every 2 years, prior to the next street reconstruction project, to determine the most feasible project. This evaluation could simply be a visual inspection of the roadways and an update of the CIP.

4. Set an annual CIP budget for street improvement projects over a 10-year period. It is recommended that the roadways identified should be reconstructed. An average of $778,000 per year is needed over the 10-year program.

5. Set a preventative maintenance and preservation budget for streets the remaining streets.

6. Discuss the City's eligibility for State Aid funding and current bond payments/advances since the City's population will be estimated below 5,000 in 2012. This will result in the City being ineligible for future State Aid funding until the population increases to at least 5,000.

APPENDIX A

Pavement Conditions Map
Street Condition Table

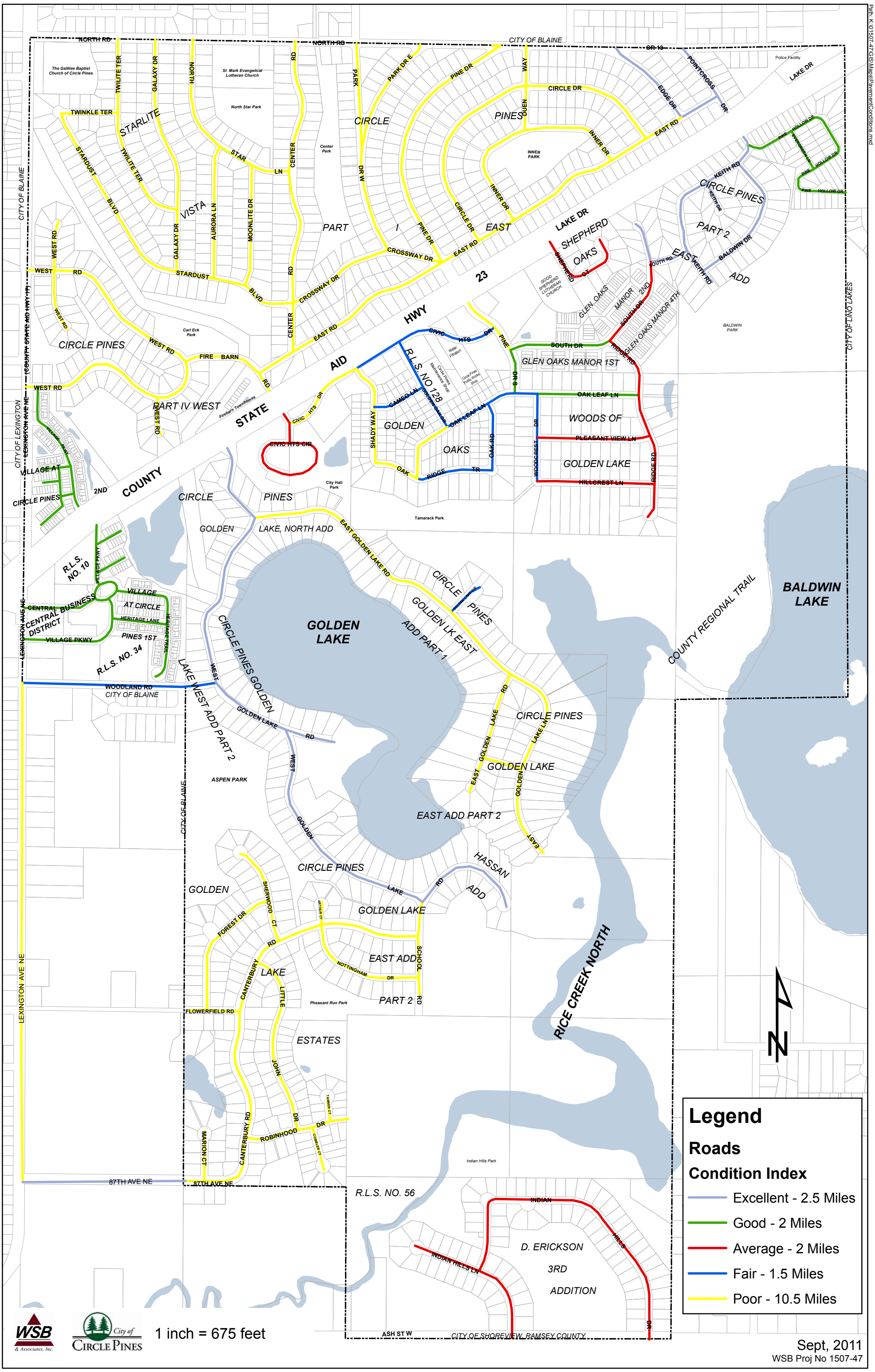

Path: K:\01507-47\GIS\Maps\PavementConditions.mxd
CITY OF BLAINE
CITY OF LINO LAKES
CITY OF LEXINGTON
NORTH RD
CR 10
The Gallilee Baptist Church of Circle Pines
St Mark Evangelical Lutheran Church
North Star Park
Center Park
Police Facility
LAKE DR
TWINKLE TER
TWILITE TER
GALAXY DR
NORTH
STARLITE
STAR
LN
CENTER
RD
PARK
PARK DR E
PINE DR
WAY
CIRCLE DR
DUEN
PINES
EDGE DR
POINTCROSS
DR
EAST RD
INNER PARK
INNER DR
STARDUST
BLVD
VISTA
AURORA LN
MOONLITE DR
PART
I
CIRCLE
EAST
KEITH RD
CIRCLE PINES
KEITH DR
PART 2
BALDWIN DR
EAST
ADD
LAKE DR
SHEPHERD
OAKS
CT
SHEPHERD
GOOD SHEPHERD LUTHERAN CHURCH
CROSSWAY DR
23
WEST RD
WEST
Carl Eck Park
FIRE BARN
HWY
AID
STATE
COUNTY
(COUNTY STATE AID HWY 1)
CIVIC HTS DR
CIVIC HTS CIR
Firehouse Townhouses
PART IV WEST
R.L.S. NO 128
Water Filtration
Circle Pines Maintenance Shop
Circle Pines Public Works Shop
GAMEO LN
GOLDEN OAKS
OAK LEAF LN
SHADY WAY
GOLDEN
OAKS
OAK RD
OAK
RIDGE
TR
SOUTH DR
GLEN OAKS MANOR 1ST
GLEN OAKS MANOR 2ND
GLEN OAKS MANOR 4TH
SOUTH RD
RIDGE RD
WOODS OF
PLEASANT VIEW LN
GOLDEN LAKE
HILLCREST LN
WOODCREST
BALDWIN PARK
VILLAGE AT
CIRCLE PINES
City Hall Park
Tamarack Park
GOLDEN
LAKE, NORTH ADD
EAST GOLDEN LAKE RD
R.L.S. NO. 10
VILLAGE PKWY
CENTRAL BUSINESS DISTRICT
VILLAGE AT CIRCLE
HERITAGE LANE
PINES 1ST
R.L.S. NO. 34
LEXINGTON AVE NE
WOODLAND RD
CITY OF BLAINE
GOLDEN LAKE
CIRCLE PINES GOLDEN
LAKE WEST ADD PART 2
GOLDEN LAKE RD
ASPEN PARK
CIRCLE PINES
GOLDEN LK EAST
ADD PART 1
COUNTY REGIONAL TRAIL
BALDWIN LAKE
GOLDEN LAKE
EAST ADD PART 2
HASSAN
ADD
CIRCLE PINES
GOLDEN
GOLDEN LAKE
SHERWOOD CT
FOREST DR
EAST ADD
PART 2
NOTTINGHAM DR
SCHOOL RD
LAKE
CANTERBURY RD
LITTLE
Pheasant Run Park
FLOWERFIELD RD
ESTATES
JOHN
DR
ROBINHOOD DR
MARION CT
CANTERBURY RD
RICE CREEK NORTH
Indian Hills Park
87TH AVE NE
R.L.S. NO. 56
INDIAN
D. ERICKSON
3RD
ADDITION
INDIAN HILLS LN
ASH ST W
CITY OF SHOREVIEW RAMSEY COUNTY
N
Legend
Roads
Condition Index
Excellent - 2.5 Miles
Good - 2 Miles
Average - 2 Miles
Fair - 1.5 Miles
Poor - 10.5 Miles
WSB & Associates, Inc.
City of Circle Pines
1 inch = 675 feet
Sept, 2011
WSB Proj No 1507-47

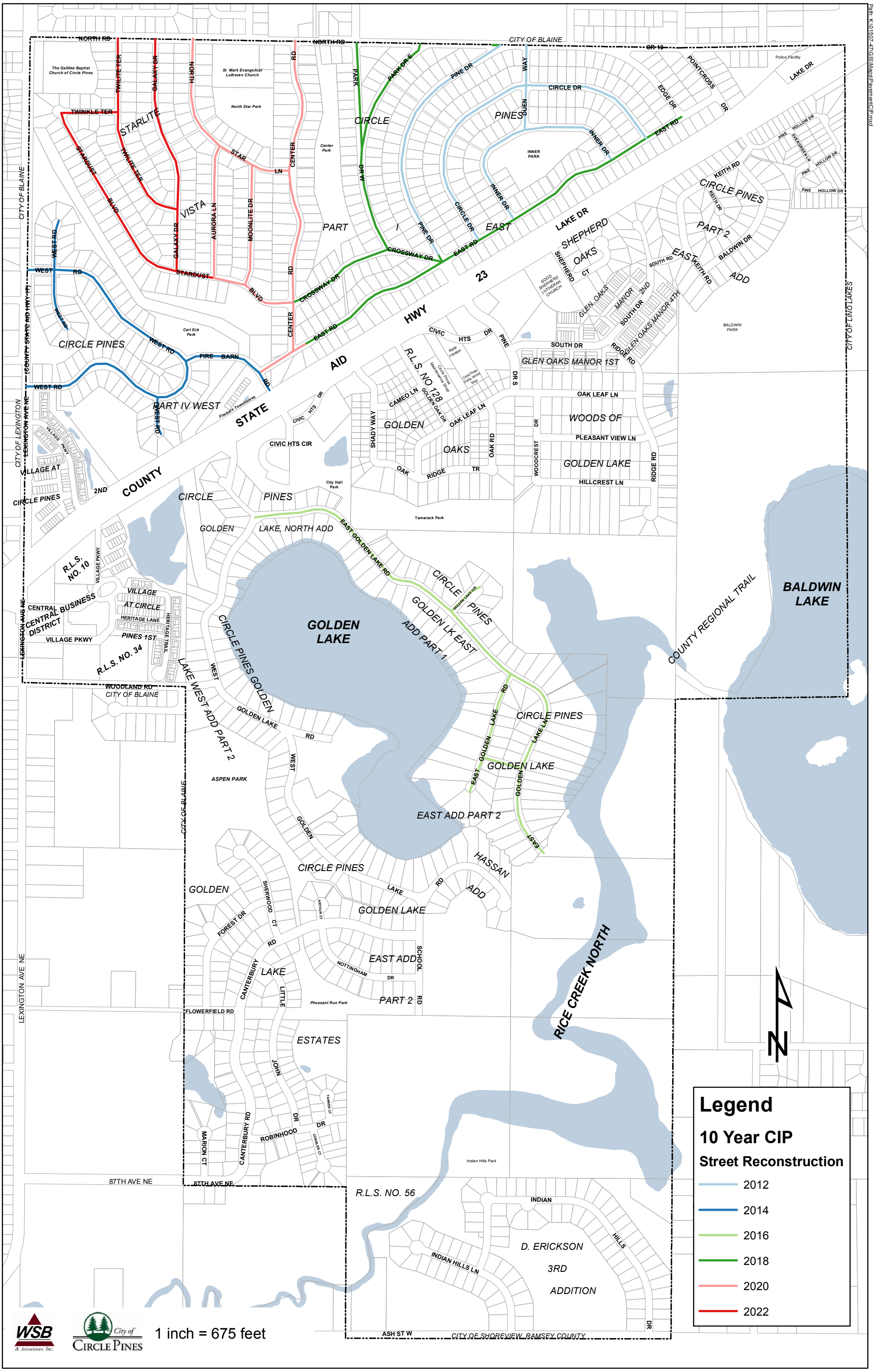
TABLE 1 - STREET CONDITION TABLE							
Subdivision	Street Name	Length	Length (mile)	Year Paved	Width	Condition	Repair Method
Circle Pines Part 1 East - Lots	CENTER RD	2,567	0.49	1968	31	POOR	Reconstruct
	CIRCLE DR	2,838	0.54	1968	30	POOR	Reconstruct
	CROSSWAY DR	1,380	0.26	1968		POOR	Reconstruct
	DUEN WAY	671	0.13	1968		POOR	Reconstruct
	EAST RD	3,953	0.75	1968	30	POOR	Reconstruct
	EAST RD	400	0.08	2010	30	EXCELLENT	Preventative Mtce
	EDGE DR	765	0.14	2010	31	EXCELLENT	Preventative Mtce
	INNER DR	1,799	0.34	1968	30	POOR	Reconstruct
	PARK DR E	794	0.15	1968		POOR	Reconstruct
	PARK DR W	1,742	0.33	1968		POOR	Reconstruct
	PINE DR	2,468	0.47	1968		POOR	Reconstruct
	POINTCROSS DR	763	0.14	2010	29	EXCELLENT	Preventative Mtce
	TOTAL	**20,140**	3.81				Preventative Mtce
Circle Pines Part 2 East	BALDWIN DR	1,141	0.22	2010	30	EXCELLENT	Preventative Mtce
	KEITH DR	294	0.06	2010		EXCELLENT	Preventative Mtce
	KEITH RD	1,769	0.34	2010	30	EXCELLENT	Preventative Mtce
	SOUTH RD	359	0.07	2010	30	EXCELLENT	Preventative Mtce
	TOTAL	**3,563**	0.67				
Starlite Vista	AURORA LN	1,082	0.20	1968	31	POOR	Reconstruct
	GALAXY DR	1,918	0.36	1968	31	POOR	Reconstruct
	MOONLITE DR	1,000	0.19	1968	31	POOR	Reconstruct
	NORTH STAR LN	1,580	0.30	1968	31	POOR	Reconstruct
	STARDUST BLVD	2,634	0.50	1968	31	POOR	Reconstruct
	TWILITE TER	1,881	0.36	1968	31	POOR	Reconstruct
	TWINKLE TER	441	0.08	1968	31	POOR	Reconstruct
	TOTAL	**10,536**	2.00				
Circle Pines Part IV West	FIRE BARN RD	893	0.17	1968		POOR	Reconstruct
	WEST RD	4,571	0.87	1968	31	POOR	Reconstruct
	TOTAL	**5,464**	1.03				
Shepherd Oaks	SHEPHERD CT	912	0.17	1980	27	AVERAGE	Preservation
	TOTAL	**912**	0.17				
Glen Oaks	SOUTH DR- btwn South Rd and Ridge Rd	957	0.18	1971	27	AVERAGE	Preservation
Glen Oaks	SOUTH DR - btwn Ridge Rd and Pine Dr	957	0.18	1971	27	GOOD	Preventative Mtce/Preservation
	TOTAL	**1,914**	0.36				
Glen Oaks Commercial	PINE DR S	600	0.11	1971	41	POOR	Reconstruct
	TOTAL	**600**	0.11				
Woods of Golden Lake	HILLCREST LN	927	0.18	1983	27	AVERAGE	Preservation
	OAK LEAF LN	1,048	0.20	1983	27	GOOD	Preventative Mtce/Preservation
	PLEASANT VIEW LN	911	0.17	1983	27	AVERAGE	Preservation
	RIDGE RD	1,528	0.29	1983	27	AVERAGE	Preservation
	WOODCREST DR	711	0.13	1983	27	FAIR	Preservation
	TOTAL	**5,125**	0.97				Preservation
Golden Oaks	CAMEO LN	448	0.08	1982	27	FAIR	Preservation
	GOLDEN OAK DR	808	0.15	1982	27	FAIR	Preservation
	OAK LEAF LN	1,150	0.22	1983	27	FAIR	Preservation
	OAK LEAF LN	1,150	0.22	1983	27	POOR	Preservation
	OAK RIDGE TRL - btwn Oak Leaf Ln and Shady Way	487	0.09	1982	27	POOR	Preservation
	OAK RIDGE TRL - btwn Oak Rd and Oak Leaf Ln	487	0.09	1982	27	FAIR	Preservation
	OAK RD	567	0.11		27	FAIR	Preservation
	PINE DR S	366	0.07	1971	41	GOOD	Preventative Mtce
	SHADY WAY	800	0.15	1982	27	POOR	Reconstruct
	TOTAL	**6,263**	1.19				Preservation
Circle Pines Golden Lake Part 1	GOLDEN LAKE RD E	3,652	0.69	1968	30	POOR	Reconstruct
	E.GOLDEN LAKE CIR	309	0.06	1968	23	POOR	Reconstruct
	GOLDEN LAKE LN E	2,051	0.39	1968	30	POOR	Reconstruct
	TOTAL	**6,012**	1.14				

Subdivision	Street Name	Length	Length (mile)	Year Paved	Width	Condition	Repair Method
	GOLDEN LAKE RD W	6,220	1.18	2008	30	EXCELLENT	Preventative Mtce
	TOTAL	**6,220**	1.18				
Central Business District	CENTRAL ST	628	0.12	1971		GOOD	Preventative Mtce
	COMMERCIAL ST	1,670	0.32	1971		GOOD	Preventative Mtce
	WOODLAND RD	1,575	0.30	1971		FAIR	Preservation
	TOTAL	**3,873**	0.73				
Golden Lake Estates - 2.14 mi	ARTHUR CT	197	0.04	1980		POOR	Preservation
	CANTERBURY RD	3,264	0.62	1980	40	POOR	Preservation
	COBBLER CT	383	0.07	1980	31	POOR	Preservation
	FLOWERFIELD RD	429	0.08	1980	31	POOR	Preservation
	FOREST DR	1,130	0.21	1980		POOR	Preservation
	LITTLE JOHN DR	1,540	0.29	1980		POOR	Preservation
	MARION CT	441	0.08	1980	31	POOR	Preservation
	NOTTINGHAM DR	1,022	0.19	1980	31	POOR	Preservation
	ROBINHOOD LN	853	0.16	1980	31	POOR	Preservation
	SCHOOL RD	963	0.18	1980	30	POOR	Preservation
	SHERWOOD CT	836	0.16	1980	31	POOR	Preservation
	TANNER CT	244	0.05	1980	31	POOR	Preservation
	TOTAL	**11,302**	2.14				
D. Erickson	INDIAN HILLS DR	2,601	0.49	1988	27	AVERAGE	Preventative Mtce
	INDIAN HILLS LN	1,157	0.22	1988	27	AVERAGE	Preventative Mtce
	TOTAL	**3,758**	0.71				
	CIVIC HEIGHTS CIR	1,471	0.28	2001		AVERAGE	Preventative Mtce
	CIVIC HEIGHTS DR - btwn Pine Dr and Shady Way	1,232	0.23	1993		FAIR	Preservation
	CIVIC HEIGHTS DR - btwn Shady Way and Civic Hts Cir	664	0.13	1993		POOR	Preservation/Reconstruct
	TOTAL	**3,366**	0.64				
PINE HOLLOW	EVERGREEN LANE	350	0.07	2002		GOOD	Preventative Mtce
	Pine Hollow Dr	1,961	0.37	2002		GOOD	Preventative Mtce
VILLAGE AT	Village Pkwy	2,949	0.56	2002		GOOD	Preventative Mtce
Circle Pines	Heritage Ln	444	0.08	2002		GOOD	Preventative Mtce
	Heritage Terrace	1,211	0.23	2002		GOOD	Preventative Mtce

APPENDIX B

10-Year CIP
CIP Map

10 YEAR CAPITAL IMPROVEMENT PROGRAM													
			Reconstruction Cost										
Subdivision	Street Name	Length (mile)	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Circle Pines Part 1 East - Lots	CENTER RD	0.49											
	CIRCLE DR	0.54	$591,250										
	CROSSWAY DR	0.26							$287,500				
	DUEN WAY	0.13	$139,792										
	EAST RD	0.75							$757,658		$65,883		
	EAST RD	0.08											
	EDGE DR	0.14											
	INNER DR	0.34	$374,792										
	PARK DR E	0.15							$165,417				
	PARK DR W	0.33							$362,917				
	PINE DR	0.47	$514,167										
	POINTCROSS DR	0.14											
Starlite Vista	AURORA LN	0.20									$225,417		
	GALAXY DR	0.36											$399,583
	MOONLITE DR	0.19									$208,333		
	NORTH STAR LN	0.30									$329,167		
	STARDUST BLVD	0.50									$159,138		$389,613
	TWILITE TER	0.36											$391,875
	TWINKLE TER	0.08											$91,875
	TOTAL	2.00											
Circle Pines Part IV West	FIRE BARN RD	0.17			$186,042								
	WEST RD	0.87			$952,188								
	TOTAL	1.03											
Circle Pines Golden Lake Part 1	E.GOLDEN LAKE CIR	0.06					$64,375						
	GOLDEN LAKE LN E	0.39					$427,292						
		Cost	$1,620,000		$1,138,229		$1,252,474		$1,573,492		$987,938		$1,272,946
		Mileage	1.47		1.03		1.14		1.43		0.89		1.16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CITY OF BLAINE
CITY OF LEXINGTON
CITY OF LINO LAKES
CITY OF SHOREVIEW, RAMSEY COUNTY
The Gallilee Baptist Church of Circle Pines
St. Mark Evangelical Lutheran Church
North Star Park
Center Park
Carl Eck Park
Firehouse Townhomes
City Hall Park
Tamarack Park
Police Facility
Good Shepherd Lutheran Church
Water Filtration
Circle Pines Maintenance Shop
Circle Pines Public Works Shop
Inner Park
Baldwin Park
Aspen Park
Pheasant Run Park
Indian Hills Park
Golden Lake
Baldwin Lake
County Regional Trail
Rice Creek North
NORTH RD
TWINKLE TER
STARLITE
STARDUST BLVD
TWILITE TER
GALAXY DR
VISTA
NORTH
AURORA LN
MOONLITE DR
STAR LN
CENTER RD
PARK
PARK DR E
DR W
CIRCLE
PINES
PART I
PINE DR
CIRCLE DR
WAY
DUEN
INNER DR
EAST RD
POINTCROSS DR
EDGE DR
LAKE DR
HOLLOW DR
EVERGREEN LN
KEITH RD
CIRCLE PINES
PART 2
BALDWIN DR
EAST KEITH RD
ADD
SOUTH RD
SHEPHERD OAKS
SHEPHERD CT
CROSSWAY DR
HWY 23
AID
STATE
COUNTY
WEST RD
FIRE BARN RD
PART IV WEST
CIVIC HTS DR
CIVIC HTS CIR
R.L.S. NO 128
CAMEO LN
GOLDEN OAK DR
OAK LEAF LN
GOLDEN OAKS
SHADY WAY
OAK RIDGE TR
OAK RD
PINE DR S
SOUTH DR
GLEN OAKS MANOR 1ST
GLEN OAKS MANOR 2ND
GLEN OAKS MANOR 4TH
RIDGE RD
WOODS OF
PLEASANT VIEW LN
GOLDEN LAKE
HILLCREST LN
WOODCREST DR
VILLAGE AT CIRCLE 2ND
VILLAGE PKWY
LEXINGTON AVE NE
(COUNTY STATE AID HWY 17)
CIRCLE PINES GOLDEN LAKE, NORTH ADD
EAST GOLDEN LAKE RD
GOLDEN LK EAST ADD PART 1
GOLDEN LAKE CIR
CIRCLE PINES GOLDEN LAKE WEST ADD PART 2
WEST GOLDEN LAKE RD
EAST GOLDEN LAKE RD
EAST ADD PART 2
HASSAN ADD
ARTHUR CT
SHERWOOD CT
FOREST DR
CANTERBURY RD
LITTLE LAKE
NOTTINGHAM DR
SCHOOL RD
EAST ADD PART 2
ESTATES
JOHN DR
ROBINHOOD DR
MARION CT
TANNER CT
COBBLER CT
R.L.S. NO. 10
CENTRAL BUSINESS DISTRICT
VILLAGE AT CIRCLE
HERITAGE LANE
HERITAGE TRAIL
PINES 1ST
R.L.S. NO. 34
WOODLAND RD
FLOWERFIELD RD
87TH AVE NE
R.L.S. NO. 56
INDIAN HILLS LN
D. ERICKSON 3RD ADDITION
ASH ST W
1 inch = 675 feet
WSB & Associates, Inc.
City of Circle Pines
Legend
10 Year CIP
Street Reconstruction
2012
2014
2016
2018
2020
2022