

Falcon Heights City Council Workshop

**City Hall
2077 W Larpenteur Ave.
6:30 p.m.**

AGENDA Wednesday, April 4, 2012

- 1) Capital Improvement Plan Discussion**
- 2) Brief Discussion on Possible Special Event Ordinance (No Staff Report Attached)**

If you have a disability and need accommodation in order to attend this meeting, please notify City Hall 48 hours in advance between the hours of 8:00 a.m. and 4:30 p.m. at 651-792-7600. We will be happy to help.



The City That Soars!

WORKSHOP ITEM

Meeting Date	April 4, 2012
Agenda Item	Workshop 1
Submitted By	Kristine Giga, Civil Engineer, and Deb Bloom, City Engineer

Item	Capital Improvement Plan (CIP) Discussion
Description	<p>City staff will provide information regarding infrastructure maintenance practices and strategies. Staff will also present upcoming infrastructure needs including the following:</p> <ul style="list-style-type: none"> • Street maintenance and rehabilitation • Sanitary Sewer Main maintenance • Storm Sewer improvements/Drainage issues <p>Estimated costs will be provided so that financing methods can be discussed.</p>
Budget Impact	Current funding sources for infrastructure projects include the Municipal State Aid Fund, Utility funds, General Funds, and Special Assessments.
Attachment(s)	Pavement Management Plan Summary Draft 2013-2017 CIP

PAVEMENT MANAGEMENT PLAN SUMMARY

I. INTRODUCTION

The City of Falcon Heights implemented a pavement management program in 2001 to assist in maintaining and monitoring the performance of the paved street network. This 13- mile long system is one of the City's largest investments that would have a significant dollar value if it were to be replaced today. The Governmental Accounting Standards Board (GASB) requires government agencies to report and account for their infrastructure assets.

In June 1999, GASB issued Statement 34 "Basic Financial Statements – and Management's Discussion and Analysis – for State and Local Governments." Statement 34 establishes new requirements for the annual financial reports of state and local governments. As part of this new Statement, Governments will report all capital assets, including infrastructure, in the government-wide statement of net assets and will report depreciation expense.

If an agency is managing its infrastructure assets in an asset management system that has certain characteristics and the government agency can document that the assets are being preserved at or above a condition level established and disclosed by the Modified Approach for Reporting Infrastructure Assets. The qualifying agency is allowed to make disclosures about the infrastructure assets in required supplementary information that includes the physical condition of the assets and amounts spent to maintain and preserve them over time. The City of Falcon Heights' asset management program for its street network is based on the Modified Approach for Reporting Infrastructure Assets.

The software program ICON, which is developed and supported by Goodpointe Technology as a tool for pavement management, was used to inventory and rate the quality of the pavement on all sections of streets and alleys within the City in 2010. This system uses field surveys to identify distresses and rate the current condition. Both systems use the segment and distress information to determine the current Pavement Condition Index (PCI) for each segment. The software provides the City with the ability to determine future needs based on current and past maintenance strategies, and prioritize the appropriate rehabilitation at optimum times. Also, ICON has a geographic information system interface to enable easy development of maps showing the results of the analysis.

II. FIELD SURVEY OF PAVEMENTS

The first step to set up a pavement management program is to assess the current condition of all pavements to be evaluated by the program. To accomplish this, each street and alley was broken out into segments, intersection to intersection, and a field survey and evaluation completed for each. There were a total of 134 street and alley segments

within the City that were evaluated and will be included in the pavement management plan's ICON software database.

The Army Corps of Engineers' "Pavement Distress Identification Guide for Asphalt Surfaced Roads and Parking Lots" was used as a basis for the field survey of the segments. This manual shows types of distress and how to evaluate them. The manual was used as a reference to evaluate the different pavement distresses along each surveyed segment.

Each field survey consisted of evaluating random sample units along each segment. The randomness of the samples helps to ensure a non-partial look at each of the segments and to better determine an overall PCI rating. Completing a rating over a small isolated distressed area rather than rating the general condition of the entire street will give the appearance of a street that may need to be reconstructed when in reality it only needs minor spot repairs.

III. ICON SOFTWARE

When all field surveys were completed, the segment distress information was entered into the ICON software. The information entered into the software included a general description of each segment with a to-and-from location, length, and width of segment, last known construction date (as available), and field survey information, including date of inspection and the type and amount of distresses found. A generic date of January 1, 1980, was used for segments where accurate dates were not available. As future reconstruction projects are completed, these dates will be updated.

The ICON software used the survey data and created a database for each segment. This database was then used by ICON to rate the condition of the pavement and predict future pavement deterioration. These results were used to determine a pavement management plan and schedule.

IV. ICON RESULTS

ICON used the information gathered in the field to calculate a Pavement Condition Index (PCI) rating for each pavement segment. A PCI rating of 100 would be indicative of a newly constructed street with no distresses, while a rating of 0 would show a completely failed street. Segments then can be grouped into like categories of PCI ratings to help determine a schedule of maintenance, rehabilitation and reconstruction. The PCI groups chosen for the City of Falcon heights are as follows: 100 to 66 → Adequate; 65 to 36 → Marginal; 35 to 0 → Poor.

This initial PCI rating was based off of a standard Asphalt Pavement Deterioration Curve within the model. (This deterioration curve was created using test data and does not take into account local deterioration factors. A deterioration model specific to the City's pavement can be developed as future field surveys are taken. The software then can take into account the amount of deterioration during a specific period between field surveys.

Field surveys should be taken once every three years for accurate modeling of the PCI projections. Deterioration models specific to Falcon Heights will be completed in future phases of this pavement management program.

The City's streets were last rated in 2010. A weighted average PCI rating for the City's overall system at that time was calculated to be 76, based on a section's area and PCI rating. This average accurately shows the City's aggressive pavement rehabilitation and reconstruction efforts in the recent past. Average projections were also calculated through 2015, assuming the City does not do any pavement maintenance work. The average ratings are as follows: 2011 → 72, 2012 → 68, 2013 → 63, 2014 → 59, 2015 → 53.

V. PAVEMENT MANAGEMENT STRATEGIES

The PCI rating information generated by the ICON software can be used to determine maintenance, rehabilitation and reconstruction action necessary for each street segment. There are several types of street rehabilitation measures that can be used to maintain or restore the condition of the pavement. Below is a brief description of each of these measures:

- Localized stopgap (safety), which might be applied to severe localized rutting, potholes, etc.;
- Localized preventive, which would be used to repair high severity fatigue cracking, cracking in small quantities, curb and gutter repairs and regular catch basin maintenance;
- Global preventative maintenance strategies that include crack seal and seal coats;
- Pavement rehabilitation is used when the street is at an established critical rating or above. This might include applying overlays, milling and overlaying, or other surface reconstruction;
- Major reconstruction (below the critical rating), which would include cold in place recycling and reconstruction.

The street segments in the Adequate PCI category would only require localized repairs and global preventative maintenance. Street segments in the Marginal category would possibly require repairs and pavement rehabilitation. The street segments in the Poor category would require reconstruction.

The overall goal of this program is to maintain the City's pavement infrastructure to a high level of service. To maintain this high level of service within the system, we recommend the following:

- Maintain a Citywide average PCI rating of 75 or above.
- Replace curb and gutter that becomes cracked, settled or holds water.
- Inspect and repair catch basins and manholes on an annual basis.
- Schedule mill and overlay for any street section that falls below a PCI rating of 65.
- Schedule major rehabilitation or reconstruction for any street section that falls below a PCI rating of 35.

This can be done through the efforts discussed above. The City currently follows a systematic seal coating and crack sealing and curb and gutter replacement program that is a global preventative strategy for the entire pavement system. Along with crack sealing, the City’s regular stopgap and localized preventative efforts should also be continued.

The goals for the City of Falcon Heights’ pavement management program are based on a review of local pavement management practices by surrounding cities. Below is a brief summary of pavement management programs being used by other local governments.

Table Pavement Management Programs In Local Cities					
City	Rating Cycle	Software	Rating for Maintenance	Rating for Rehabilitation	Rating for Reconstruction
Arden Hills	3 years	GoodPointe	100-60	59-35	34-0
Chanhassen	3 years	GoodPointe	Maintaining all streets, worst ratings are prioritized for projects.		
Eagan	3 years	GoodPointe	100-56	55-36	35-0
Eden Prairie	3 years	GoodPointe	100-70	69-30	29-0
Golden Valley	3 to 4 years	Outside Consultant	Projects are done on a case by case basis with the level of street repair depending on needs.		
Minneapolis	3 years	MicroPAVER	100-65	64-55	54-0
Rochester	5 years	GoodPointe	100-46	45-25	24-0
Roseville	3 to 4 years	GoodPointe	100-60	59-35	34-0
St Paul	N/A	None	Focus is on upgrading oiled streets to pavement. Prioritized by City officials, residents, and coordination with utilities.		
Woodbury	4 years	GoodPointe	100-60	59-35	34-0

VI. RECOMMENDATIONS

Field surveys of the pavement should be completed every three years in order to more accurately project the future PCI ratings and to help properly budget for future major reconstruction projects.

- **Preventative Maintenance:**
Concrete curb and gutter are an integral part of the City’s pavement system. Cracked and settled concrete curb and gutter can provide a pathway for water to enter the pavement base materials. The City repairs and replaces cracked and settled concrete curb and gutter on an annual basis. This program appears to have been working well and should be continued.

While the City’s storm sewer system is not technically a part of the pavement system, lack of catch basin maintenance can result in pavement base materials washing into the storm sewer system, leaving a void under the pavement, boulevard and sidewalk. These voids result in a sinkhole when the pavement collapses. An inspection and annual maintenance program has been implemented to prevent future sinkhole failures.

This should be performed as needed on all street segments within the Adequate category.

- Crack seal/ Seal Coat:
City staff reevaluated the City’s seal coating/crack sealing plan in 2002. Changes to the plan included specifying the use of granite or trap rock aggregate, and the Seal Coat/Crack Seal Schedule was changed from a four-year schedule to a six-year schedule. The City was divided into two areas, with Snelling Avenue being the dividing line between them.

Starting with the 2004 Crack Sealing Project, the seal coating/crack sealing six-year schedule is as follows:

2015	Crack seal east of Snelling Avenue
2016	Seal coat east of Snelling Avenue Crack seal west of Snelling Avenue
2017	Seal coat west of Snelling Avenue

The seal coating and crack sealing efforts recommended through 2017 are shown on the attached Draft 5-year Capital Improvement Map. Seal coating is recommended to continue on a six-year cycle, with crack sealing to be completed the year prior to seal coating. Below are the estimated costs for seal coating and crack sealing for the next cycle. This should be performed as needed on all street segments within the Adequate and Marginal categories.

- Mill and Overlay:
There are several maintenance practices that involve milling. An *edge mill* typically consists of grinding the old bituminous surface along the outer 8 feet of the street. This helps establish a uniform cross-section, especially in instances where the crown in the street is relatively flat. A *full width mill*, or resurfacing, is necessary when the upper surface layer of a pavement has deteriorated considerably. Significant surface pavement distresses and more extensive “thermal” cracking need to be removed and/or repaired with a full width and uniform depth milling process. Both edge mills and full-width mills are typically 1.5 to 2 inches thick, but can vary on a project by project basis.

Milling creates an even surface to ensure a uniform overall thickness for the new overlay. An asphalt overlay of 1.5 to 2 inches over the entire pavement width forms a smooth crown, renews the street surface, restores structural capacity and proper drainage, and extends the life cycle of the original pavement up to 15 years.

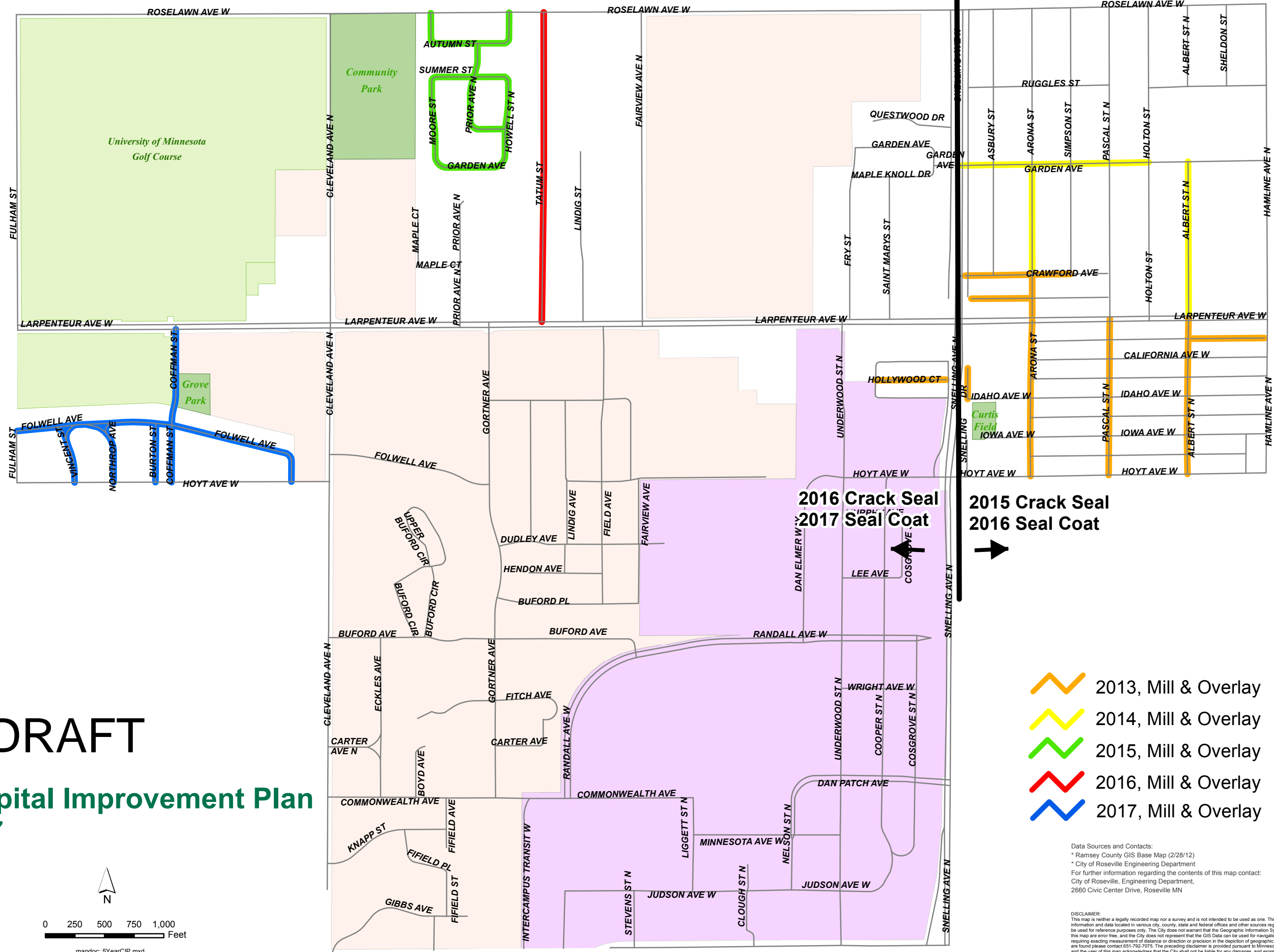
A *full depth mill* can be used on a street that has already been reconstructed with a good base section, but the pavement has deteriorated to a point where seal coating or a standard mill and overlay is not effective. A pavement section with significant cracking will end up reflecting through the new pavement. The full depth of the pavement is ground up and removed. This process may also involve some subgrade soil corrections and some removal of aggregate base, if it has been contaminated or is sub-standard. The street is paved with the same thickness of new asphalt. This can extend the life cycle of the original pavement between 15 and 20 years.

Pavement can also be *reclaimed*, where approximately 8 to 10 inches of the existing asphalt and base are ground up in place. This forms a new more stable base without adding new material. The road is then paved with new asphalt. This is only recommended where there is not sufficient existing road base to provide the needed pavement structure. When there is curb and gutter on the road, material would need to be removed to ensure that the road elevation is consistent with the gutter once the new pavement thickness is added. This can extend the life cycle of the original pavement up to 20 years.

Mill and overlay is recommended for street segments in the Marginal Category.

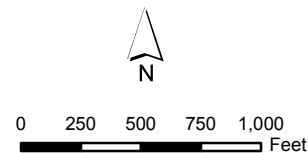
We have put together a Capital Improvement Program map showing the projects recommended in the next 5 years. This program consists of Crack Seal/ Seal Coat and mill and overlay projects. These costs include engineering at 15% of the estimated construction cost.

5 year Capital Improvement Program				
Estimated Costs				
Year	Crack Sealing Cost	Seal Coating Cost	Mill and Overlay Cost	Total Cost
2013			\$1,105,440	\$1,105,440
2014			\$620,650	\$620,650
2015	\$25,000		\$724,250	\$749,250
2016	\$25,000	\$150,000	\$422,940	\$597,940
2017		\$150,000	\$740,640	\$890,640








DRAFT

**5 Year Capital Improvement Plan
2013-2017**



mapdoc: 5YearCIP.mxd
map: 5YearCIP.pdf

Prepared by:
City of Roseville Engineering Department
March 28, 2012

-  2013, Mill & Overlay
-  2014, Mill & Overlay
-  2015, Mill & Overlay
-  2016, Mill & Overlay
-  2017, Mill & Overlay

Data Sources and Contacts:
 * Ramsey County GIS Base Map (2/28/12)
 * City of Roseville Engineering Department
 For further information regarding the contents of this map contact:
 City of Roseville, Engineering Department,
 2660 Civic Center Drive, Roseville MN

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