

2021 ISSA Preservation Performance Award



2014 SURFACE TREATMENT (MICRO-SURFACING) PROJECT
CITY OF SIOUX FALLS, SOUTH DAKOTA



2014 Surface Treatment (Micro-Surfacing) Project



Project Contact Information

AGENCY: City of Sioux Falls, SD

Nick Traupel

Engineering Technician
231 North Dakota Avenue
Sioux Falls, SD 57104
ntraupel@siouxfalls.org
(605) 367-8661

Charlie Putzier

Engineer Inspector
cputzier@siouxfalls.org
(605) 367-8255

MEMBER: Missouri Products Co., LLC

Steve Jeffs

Project Manager
1620 Woodson Road
St. Louis, MO 63114
stevej@missouripetroleum.com
(314) 219-7325

Santo Greco

Project Superintendent
sgreco@missouripetroleum.com
(314) 219-7347



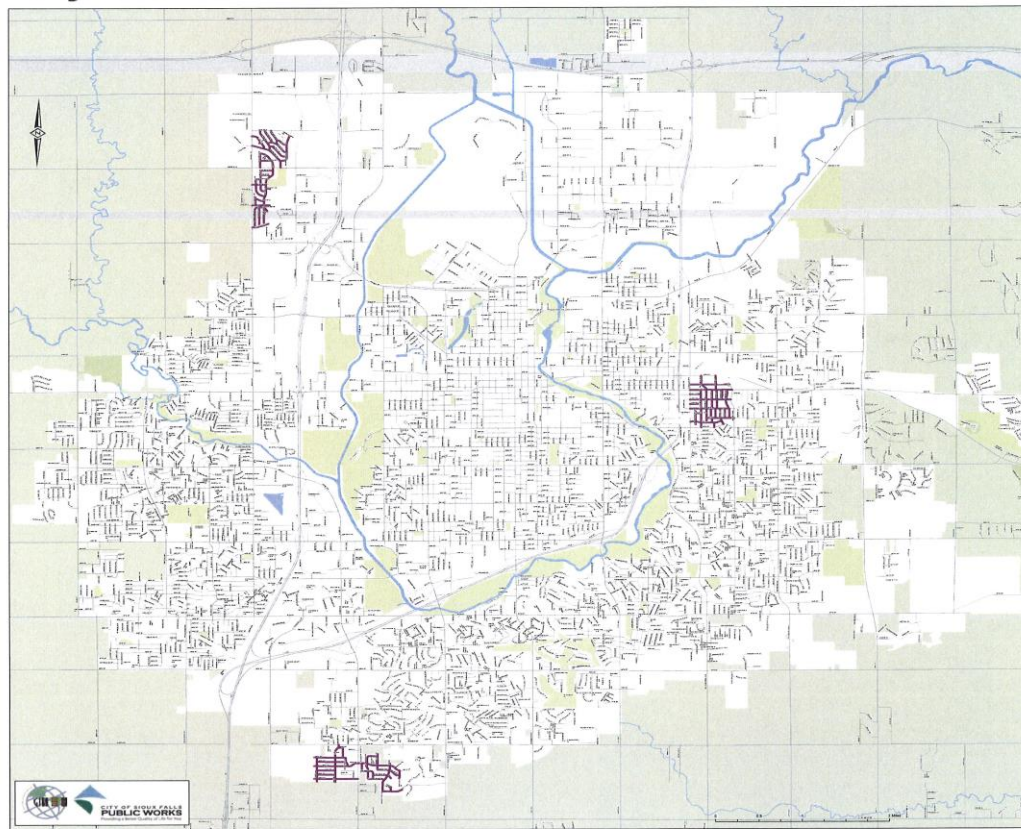
Project Details

- Approximately 355,000 SY of Type III Micro-Surfacing
- Application Rate: 27-30lbs/SY
- RFB Issuance: 2/7/2014
- Bid Opening: 2/27/2014
- Notice to Proceed: 6/9/2014
- Working Days Allowed: 25.0
- Completion Date: 8/8/2014
- Project Completion (Actual): 7/18/2014 (On-time)
- Missouri Petroleum was responsive bidder at \$954,350.95
- Zero Recordable Injuries, Zero lost time due to injuries



City of Sioux Falls

Overall Surface Treatment Map 2014



Specific Location of Project



Tactics & Work Processes

- Micro-Surfacing placement in accordance with ISSA Specifications
- Approved Mix Design 30 days prior to construction
- Contractor submits organizational chart of all personnel 15 days prior to start of work
- Full-time superintendent on site at all times
- Approved Phasing Plan 2 weeks prior to construction
- Phasing Plan to identify lane closures & sequencing of streets
- 500 foot test strip prior to starting project
- Traffic on Arterial streets shall be maintained with at least 1 lane of traffic and traffic control to conform to MUTCD requirements
- City staff to mark out start/stop points on each street prior to work
- Contractor to notify residents & place no parking signs 24 hours in advance of work
- City staff employs full-time towing company for movement of vehicles
- City provides stockpiling of material and storage of equipment at Public Works Facility

Tactics & Work Processes

- City manages initial sweeping of streets. Contractor provides final cleaning by means of sweepers, blowers, small hand tools, etc.
- Manholes, inlets, and traffic control covers within roadway to be covered and uncovered daily
- Contractor to have adequate personnel to clean up excess material immediately as work progresses
- No more than 4 drag marks greater than 1 inch wide and/or 4 inches long in any 20 SY
- Longitudinal joint overlap less than 3 inches and no more than ¼ inch difference in elevation
- Pavement markings to be removed within 24 hours of specific location of micro-surfacing work.
- Temporary pavement markings placed daily
- Permanent pavement markings placed within 3 days of completion of surface treatment at each specific location
- Type III Micro-surfacing applied at 27-30 lbs/SY (weight of dry aggregate in mixture)
- Aggregate was manufactured crushed Quartzite
- Micro-Surfacing extractions per 100,000 SY. Testing reports to be submitted to City within 7 days
- Daily logs per ISSA technical bulletin 107 submitted at the end of each shift

Tactics & Work Processes

TYPE (II) & TYPE (III) – Residential, Access Routes, Collectors, & Arterials

SIEVE SIZE	TYPE II PERCENT PASSING	TYPE III PERCENT PASSING	Stockpile Tolerance
3/8 (9.5 mm)	100	100	±5%
#4 (4.75 mm)	90 - 100	70 - 90	±5%
#8 (2.36 mm)	65 - 90	45 - 70	±5%
#16 (1.18 mm)	45 - 70	28 - 50	±5%
#30 (600 um)	30 - 50	19 - 34	±5%
#50 (300 um)	18 - 30	12 - 25	±4%
#100 (150 um)	10 - 21	7 - 18	±3%
#200 (75 um)	5 - 15	5 - 15	±2%

Emulsified Asphalt

The Micro Surfacing Emulsion shall conform to the requirements of as specified under Section 890 of the South Dakota Department of Transportation, Standard Specifications, Section 890, "Emulsified Asphalt", the latest special provisions issued by SDDOT and the following special provisions. A copy of the test report on the emulsified asphalt from the oil refinery shall be submitted to the Project Engineer a minimum of 15 days prior to any micro-surfacing operations and thereafter a new series of tests shall be provided for every 5,000 gallons of emulsion used. The test report shall conform to the criteria outlined in SDDOT, Section 890, the latest special provisions issued by SDDOT and the special provisions listed below. The emulsion, upon standing undisturbed for a period of twenty-four (24) hours, shall show no significant white or milky colored substance on its surface, and shall be a homogeneous brown color throughout.

The modified asphalt emulsion shall conform to the following requirements when tested in accordance with the specified test method.

Tests on Emulsion		
Test	Test Method	Requirement
Viscosity SSF @ 25° C	AASHTO T 59	15 - 90 sec
Sieve	AASHTO T 59	0.30 % max
Settlement , 5 days	ASTM D244	5 % max
Storage Stability, 1 day	AASHTO T 59	1 % max
Residue by distillation	AASHTO T 59	62 % min
Tests on Residue		
Test	Test Method	Requirement
Penetration @ 25°C 100 gm, 5 sec.	AASHTO T 51	40-90 mm
Softening Point	AASHTO T 53	57°C min

AGENCIES AND TEST METHODS

AGENCIES

AASHTO: American Association of State Highway and Transportation Officials
ASTM American Society for Testing and Materials
ISSA International Slurry Surfacing Association

AGGREGATE AND MATERIAL FILLER

AASHTO TEST NO.	ASTM TEST NO.	TEST
AASHTO T2	ASTM 075	Sampling Mineral Aggregates
AASHTO T27	ASTM C136	Sieve Analysis of Aggregates
AASHTO T11	ASTM C117	Materials Finer than No. 200 in Mineral Aggregates
AASHTO 176	ASTM 02419	Sand Equivalent Value of Soils and Fine Aggregate
AASHTO T96	ASTM C131	Resistance to Abrasion of Small-Size Coarse Aggregate by Use of the Los Angeles Machine (This test should be performed on the parent rock that is used for crushing the finer gradation Micro-Surfacing material.)
AASHTO T104	ASTM C88	Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

EMULSIFIED ASPHALT

AASHTO TEST NO.	ASTM TEST NO.	TEST
AASHTO T40	ASTM 0140	Sampling Bituminous Materials
AASHTO T59	ASTM 244	Testing Emulsified Asphalt
AASHTO M208	ASTM 02397	Specifications for Cationic Emulsion

RESIDUE FROM EMULSION

AASHTO TEST NO.	ASTM TEST NO.	TEST
AASHTO T59	ASTM D244	Residue by Evaporation (This test method may have to be modified by using lower temperatures.)
AASHTO T53	ASTM D36	Softening Point by the Use of Ring and Ball
AASHTO T49	ASTM C2397	Penetration 3.5 oz (100 gm) at 5 Seconds 77°F (25°C)

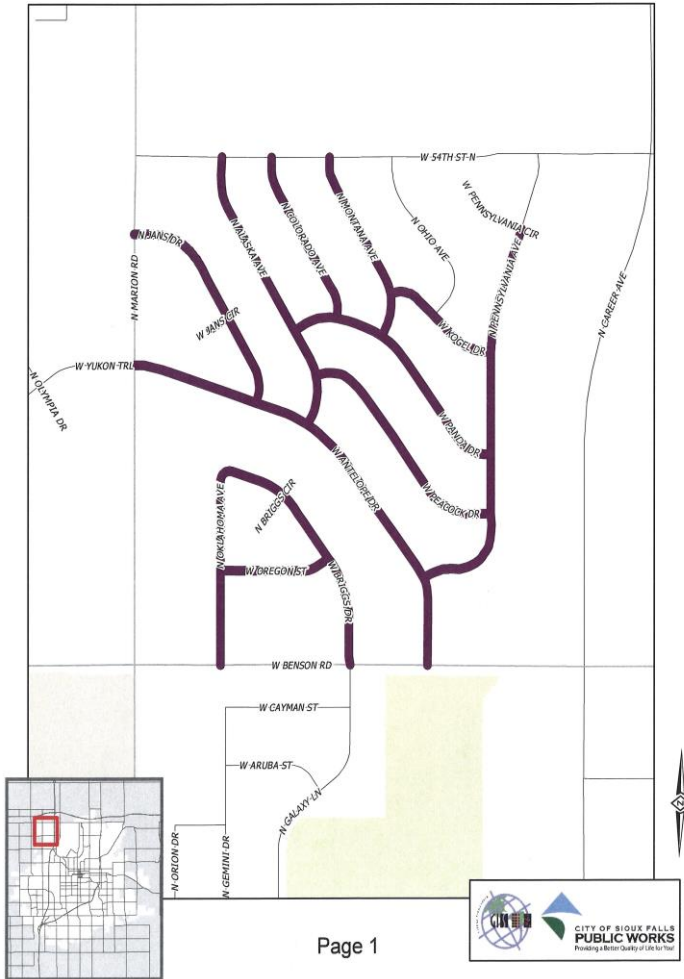
Life Extension Data

- **Micro-Surfacing Work completed in the Summer of 2014**
- **City of Sioux Falls obtained PCI ratings in Summer of 2015**
- **City of Sioux Falls obtained updated PCI ratings in the Summer of 2019**

Life Extension Data: Results

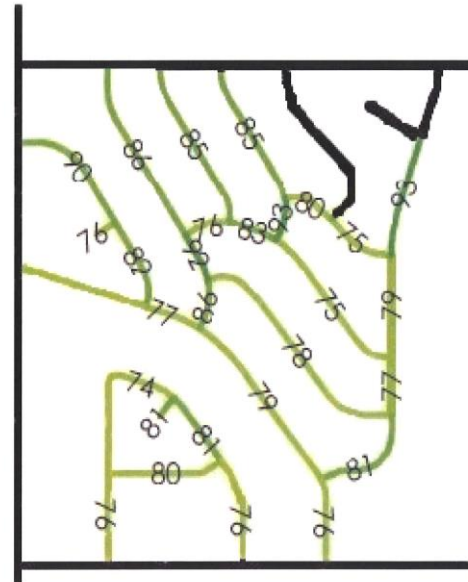
City of Sioux Falls

Microsurfacing



2015 - PCI

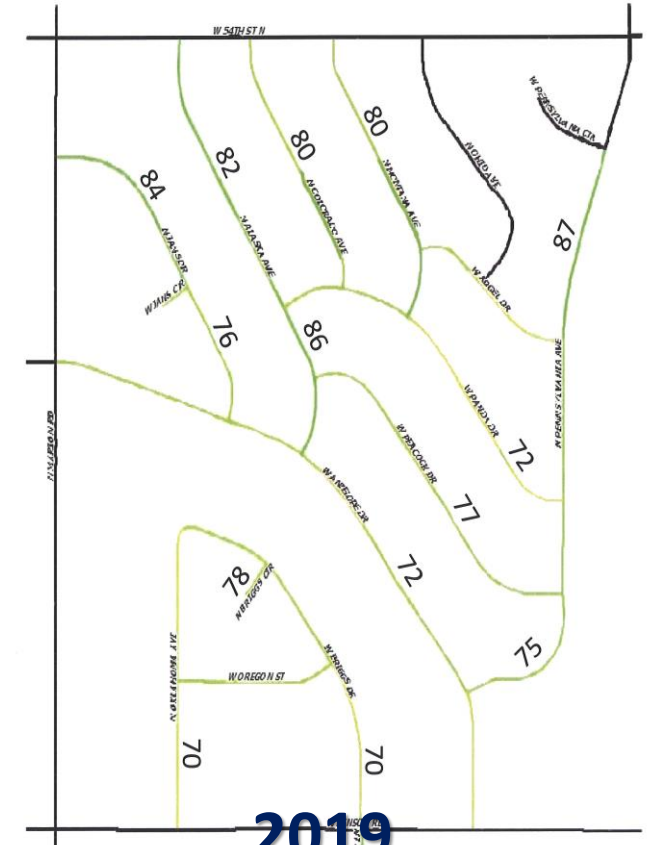
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2015

2019 - PCI

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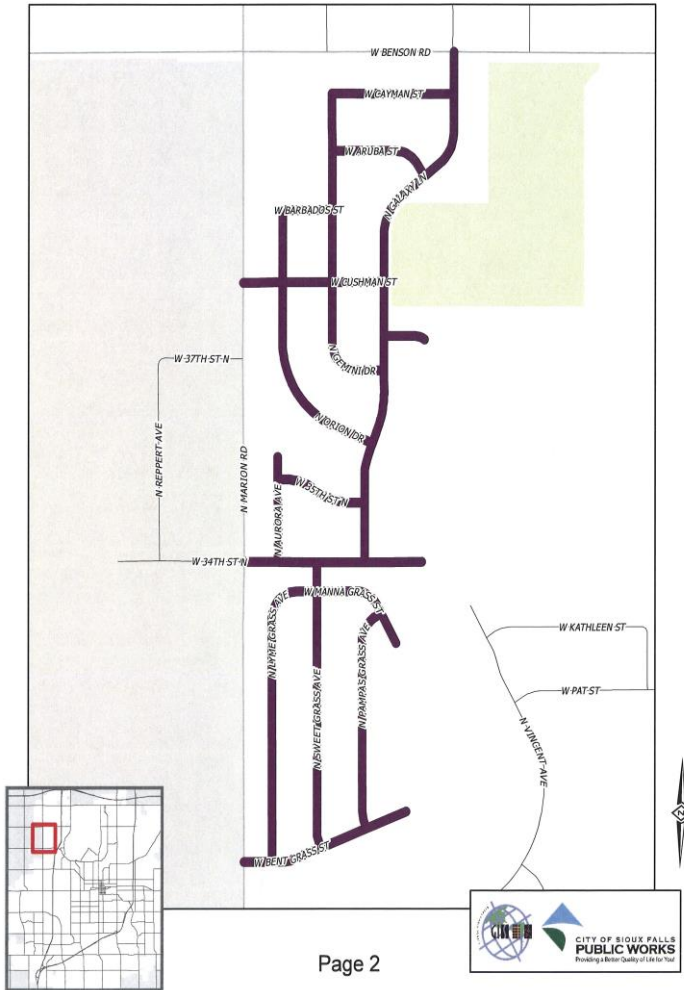


2019

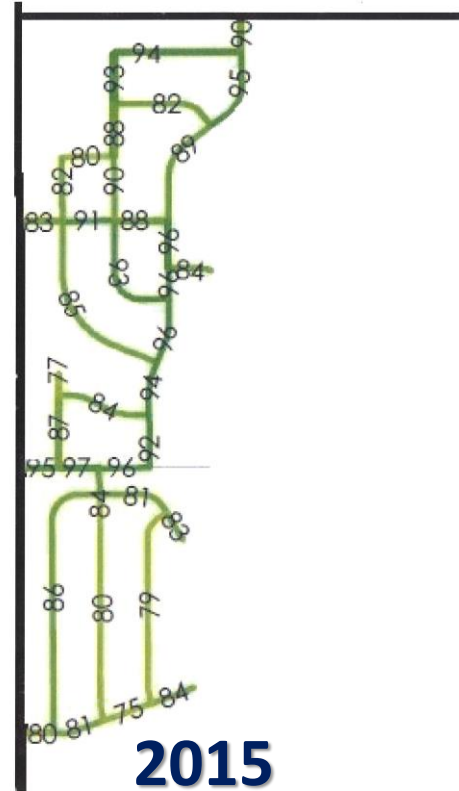
Life Extension Data: Results

City of Sioux Falls

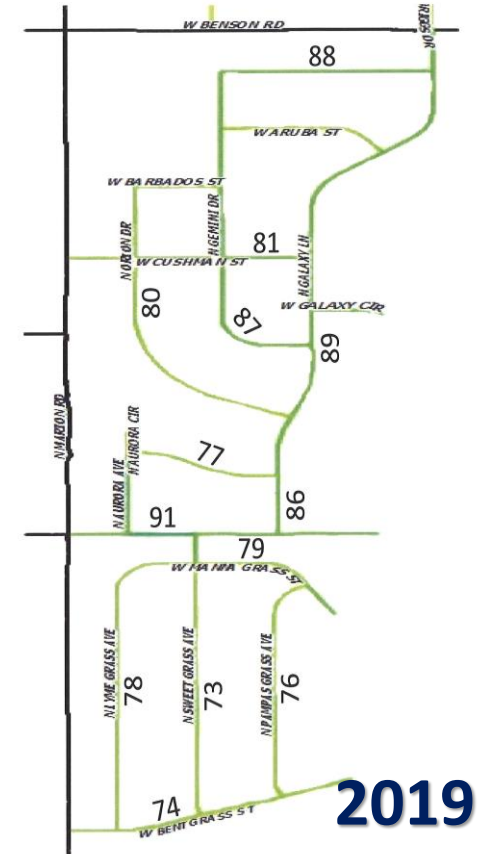
Microsurfacing



2015 PCI-
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2019 PCI -
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Microsurfacing



2015

82

72

71

76

73

88

72

70

79

72

86

2019

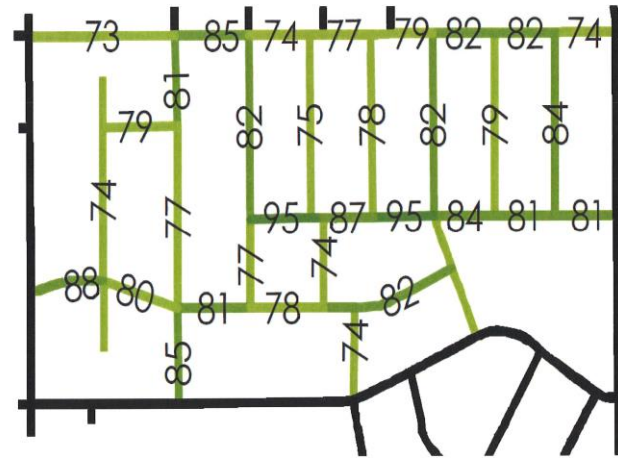
Microsurfacing



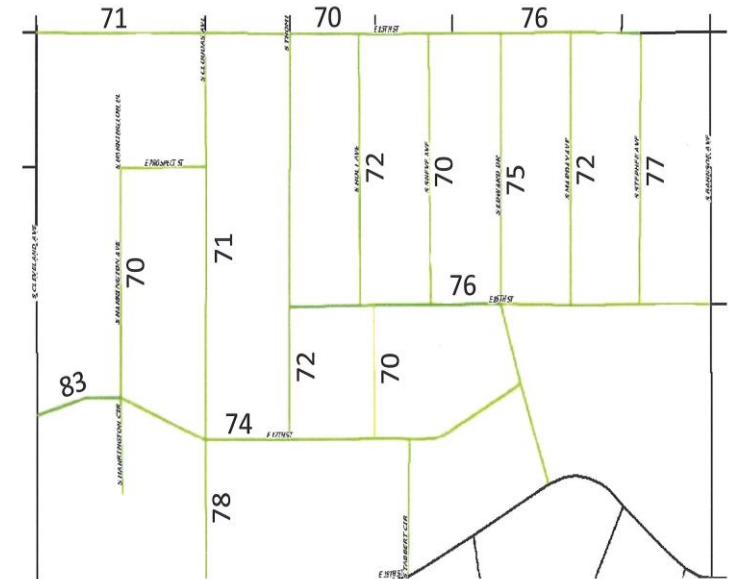
Life Extension Data: Results

City of Sioux Falls

Microsurfacing

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2015

2019 PCI -
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2019

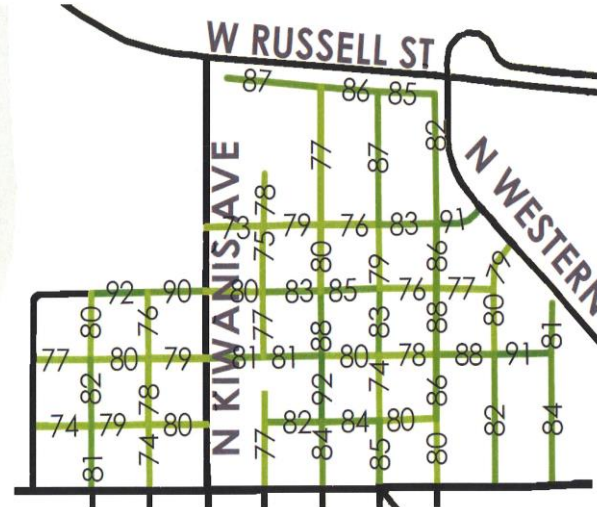
Life Extension Data: Results

City of Sioux Falls



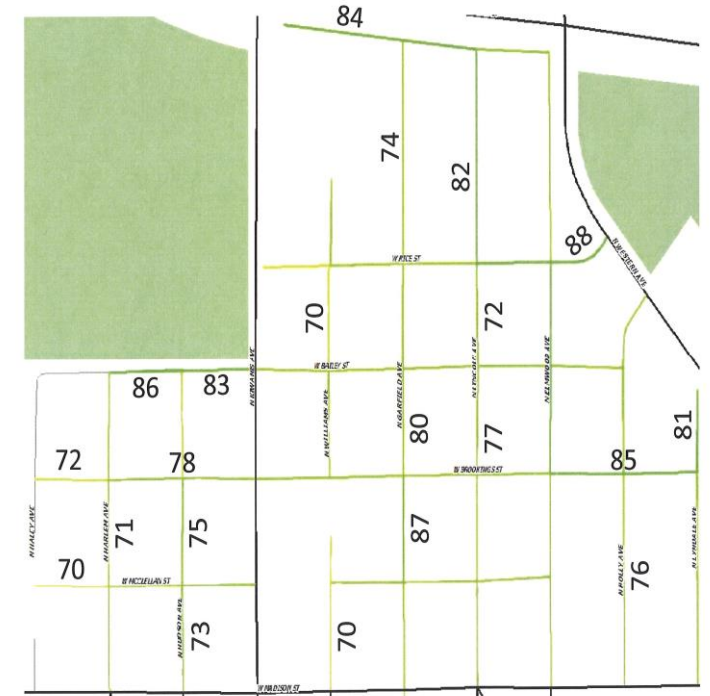
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2015 PCI –
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2015

2019 PCI –
Page 6



2019

Nomination

- City of Sioux Falls utilizes Strategic Planning of their entire roadway network, keeping the “Good” roads in the “Good” category through pavement preservation.
- City of Sioux Falls conducts PCI studies every 4 years which assists in their annual preservation decision making
- Continual dedication to utilizing Micro-Surfacing as a pavement preservation method
- Promoting pavement preservation within the Greater Sioux Falls, SD region. The City of Sioux Falls coordinate with other local government agencies in order to let 1 uniform project.
- The 2015 PCI data indicates that immediately after applying a Micro-Surfacing treatment (2014) the roadway network was in the “Good” category.
- The 2019 PCI data indicates that the roadway network was maintained for 5+ years in the “Good” category.

Project Photos - 2014



Project Photos - 2014



Project Photos - 2020



Project Photos - 2020

