Infrastructure Management Plan

City of Plainview, MN

August 2019

Submitted by:
Bolton & Menk, Inc.
1960 Premier Drive
Mankato, MN 56001
P: 507-625-4171
F: 507-625-4177

Certification

2019 Infrastructure Management Plan

City of Plainview, Minnesota

August 2019

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

By: _____

Derek Olinger, P.E.
License No. 54287

Date: 8/5/19

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I. INTRODUCTION

A. Purpose

The purpose of this report is to summarize the overall conditions of pavements and utilities within the City of Plainview. Once the existing conditions are understood, the need for maintenance and replacement costs can be better understood. This report will provide the information needed for budgeting and planning future projects.

B. Method & Scope

Traditionally, many cities approach infrastructure management from a reactive approach. As needs arise, a City will respond to the most immediate needs first. From a logical standpoint, this type of infrastructure management may seem efficient since only the most critical elements are being replaced.

This report describes an infrastructure management strategy that is more proactive than traditional methods. This approach recognizes that the street and utility systems within Plainview are interwoven. Proper timing for maintenance and replacement for all elements will ensure that the useful life of all infrastructure within a given corridor is maximized prior to replacement.

This report will discuss the existing conditions, maintenance, and replacement procedures for public streets, water distribution system piping, and sanitary collection system piping within the Plainview city limits.

The following sections first include discussion on pavement management, followed by utility (watermain and sanitary sewer) management. The report is concluded with a summary of how to use this information for future infrastructure maintenance and replacement planning.

II. PAVEMENT MANAGEMENT

A. Introduction & Approach

The timing of maintenance and rehabilitation of bituminous pavements can greatly influence their effectiveness, costs, and overall pavement life. In general, once a pavement needs treatment, the sooner maintenance or rehabilitation activity is undertaken, the more cost-effective it will be. Plainview maintains over 16 ½ miles of bituminous paved streets which represent a significant capital investment that needs to be well managed.

During the summer of 2018, Bolton & Menk, Inc. staff conducted a visual condition survey of City streets. Alleys were not included in this survey. This process was undertaken to determine the current condition of these assets and rate their condition relative to each other. The City can use this baseline data for determining the appropriate timing of cost effective road treatments.

The visual conditions were evaluated using the general guidelines of the Pavement Surface Evaluation and Rating (PASER) system, quantifying several different types of pavement distress. This rating system assigns a numerical rating to each street within the community. The City can use this data to prioritize needs and assign the proper level of maintenance for each street.

Total reconstruction of a street is a very costly procedure. Research shows that periodic maintenance of streets in good condition can extend their service life at a reduced cost. Maintenance of streets after reconstruction is more cost effective than undergoing multiple reconstructions without maintenance.

B. Street Life Cycle

The condition of a street pavement is affected by a number of factors, including:

- Street section (bituminous and gravel base thickness)
- Traffic characteristics and loading
- Subgrade soil (sand, clay, silt)
- Drainage (street profile, cross section, storm sewer)
- Age
- Maintenance program (crack fill/seal coating, patching)

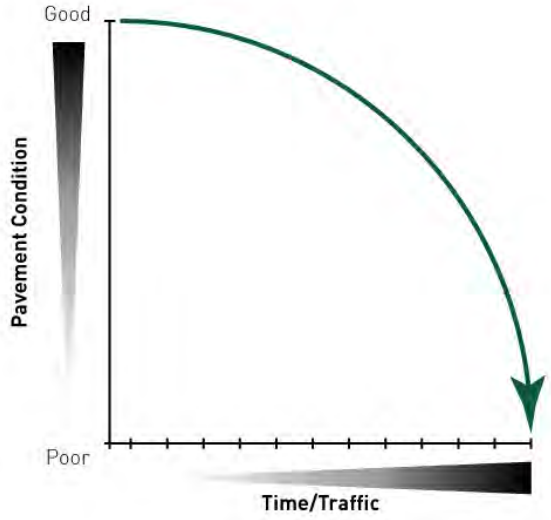
Each of the above listed items contributes to the overall condition and lifecycle of a public street. It is not uncommon for streets in the same area and constructed at the same time, to vary in condition.

In many cases, the approach utilized by cities includes rehabilitation and reconstruction to address the poorest condition road segments first with less attention paid to preventative maintenance. This approach is common when budgets do not allow funding for roadway maintenance. The approach advocated by pavement experts recommends that more attention be placed on preventative maintenance and preserving the pavement condition to extend the useful life of the road segment.

After the initial construction, bituminous pavements require periodic maintenance and rehabilitation to maximize the life of the pavement. In general, bituminous pavements perform well, deteriorating slowly during the first 15 to 20 years of the street lifecycle. Following this period, pavements tend to deteriorate more rapidly. Proactive maintenance such as repairing cracks and seal coating in the earlier stages of a street lifecycle is recommended as a cost-effective pavement maintenance practice. As the pavement condition deteriorates and the pavement surface becomes exceedingly deteriorated, seal coat and crack fill applications are no longer recommended as the most cost-effective maintenance. During this time, more extensive pavement rehabilitation such as a mill and overlay is required. Without these more extensive pavement rehabilitation measures, the pavement condition will continue to decline to the point where further maintenance and rehabilitation is not effective and complete reconstruction of the pavement is required.

Figure 1 illustrates how the typical street condition will deteriorate with little to no maintenance or rehabilitation.

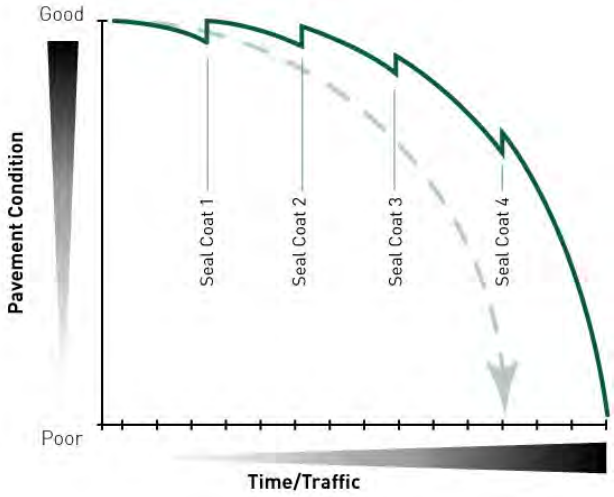
Figure 1: Typical Pavement Lifecycle <u>No Seal Coat, Crack Fill or Overlay</u>



The first and most cost-effective approach to extending the life of pavement is through seal

coating and crack filling. This type of maintenance slows the oxidation and associated weakening of bituminous surfaces and prevents the migration of surface water into the underlying soils. Collectively, seal coating a crack filling will increase the life of pavements moderately, if completed on a regular 6- to 8-year schedule. Figure 2 illustrates a comparative life cycle for pavements with regular seal coating and crack filling programs.

Figure 2: Typical Pavement Lifecycle w/ Seal Coating & Crack Filling



Eventually, pavements will deteriorate to a level where maintenance costs increase and the benefits of the sealing coating and crack filling decrease. In these cases, the next level of pavement management will include bituminous overlays and patching.

With the proper combination of crack filling, seal coating and periodic overlays, a pavement can be serviceable for 50 years or more. Figure 3 shows how the pavement lifecycle can be maximized using the proper combination of maintenance and rehabilitation.

Figure 3: Typical Pavement Lifecycle w/ Seal Coating, Crack Filling and Overlays

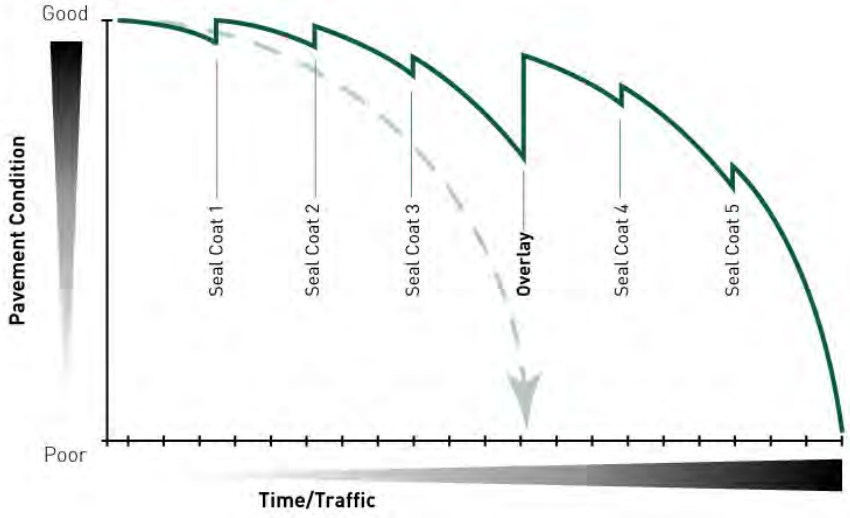


Table 1 provides an example cost analysis for comparing the costs of pavement management with and without an active maintenance program. Anticipated costs and general pavement conditions are provided over a 50-year period.

Table 1 – Pavement Life Cycle Cost Analysis			
Item	Year	Approx. Cost Per Foot of Street	
		With Maintenance	Without Maintenance
Initial Construction	0	$250.00	$250.00
Crack Fill & Chip Seal	7	$11.00	
Crack Fill & Chip Seal	14	$11.00	
Mill & Overlay	20	$92.00	
Crack Seal	22	$1.75	
Reconstruction	25		$220.00
Chip Seal	27	$9.25	
Crack Fill & Chip Seal	35	$11.00	
Mill & Overlay	40	$92.00	
Crack Fill	42	$1.75	
Chip Seal	47	$9.25	
Salvage Value Adjustment	50	$170.00	$250.00
Life Cycle Cost per Foot		**$659.00**	**$720.00**
Difference		**-$61.00**	-

Good Pavement Condition
Fair Pavement Condition
Poor Pavement Condition

*Costs indicated above are based on typical costs for the area in 2019 dollars. Unit pricing per foot is based on an average 36-foot wide residential street pavement.

As indicated above, the overall life cycle costs for managing pavements with an active maintenance program results in a net savings in comparison to management without maintenance. It should also be noted that over the life of both scenarios presented above, driving surface conditions are drastically improved when streets are regularly addressed with preventative maintenance. It should also be noted that the additional reconstruction project required on the street without maintenance will require a major disruption to adjacent landowners for one construction season. In comparison, the street with regular maintenance will not require major disruption until after 50 years of service life.

The actual serviceable life of any pavement is highly dependent on several factors and will vary from the scenarios presented in Table 1. Furthermore, the point at which a pavement has "failed" is subjective and will vary depending on the expectations of street users and City officials.

Over the past years, an active preventative maintenance program has been in place in Plainview; however, the timing and overall scale of the program does not meet the overall need. As a result, premature weathering of newer pavements is becoming evident. The following sections describe the findings of our field pavement survey.

C. Findings

The bituminous streets in Plainview were evaluated by visually observing the condition of the pavement surface. The pavement was rated using a numerical condition rating system for several types of pavement distress. The rating scale ranged from 10 for a newly surfaced street to 1 for a failed surface. Gravel streets and alleys were not included in this evaluation.

The pavement condition ratings are illustrated in ***Appendix B-1***.

Table 2, below, shows a summary of typical recommended maintenance and rehabilitation options based on the current pavement condition rating.

Table 2 – Pavement Conditional Ratings Description		
Conditional Rating	**Condition Description**	**Typical Recommended Maintenance Activity**
7 – 10	Excellent to Good	Crack Fill & Seal Coat Program (every 6-8 years)
5 – 6	Good to Fair	Mill & Overlay, Patching as needed
1 – 4	Fair to Very Poor	Full Depth Reconstruction

Table 3, below, provides a summary of the overall pavement condition throughout the city.

Table 3 – Pavement Conditional Ratings Summary		
Conditional Rating	**Total Street Length (Miles)**	**Percentage of Total Miles**
7 – 10	9.1	54%
5 – 6	7.1	43%
1 – 4	0.5	3%
Total	**16.7**	**100%**

As presented in Table 3, the City has a relatively high proportion (54%) of streets in excellent to good condition (Rating 7 – 10). As discussed previously, the condition of these streets into the future is highly dependent on the City's ability to provide timely maintenance.

A similar percentage (43%) of streets are designated as fair to good condition (Rating 5 – 6). These streets are beginning to deteriorate more rapidly. Preventative maintenance (such as seal coating and crack filling) within these streets will likely be costly and will not adequately address the needs of the street section. When considering options for pavement management alone, these streets are recommended for bituminous overlays with full depth patching, as needed.

The small remainder of streets with a fair to poor rating have reached a level of deterioration where neither seal coating nor overlays would be appropriate methods of rehabilitation. These streets are generally addressed through a full depth replacement of the pavement surface and aggregate base.

When prioritizing pavement management projects, it is important to first consider the streets in good conditions and continue with a regularly scheduled maintenance program. Once a seal coat and crack fill program is properly funded and in place, a regular overlay and patching program can be funded. For most cities using this approach, these programs exhaust the street maintenance cash budget. As a result, the costlier reconstructions of heavily deteriorated streets are given a minimal amount of attention until a project can financed for funded with other alternative sources.

Prior to executing an effective pavement management plan, understanding the needs of underground public utility mains is crucial. In many cases, the needs of utilities will drastically change future pavement maintenance activities. The following section contains discussion on utility management, followed by recommendations for combining pavement and utility management into an effective infrastructure management program.

III. UTILITY MANAGEMENT

A. Introduction & Approach

The following contains a brief review of the City of Plainview's current sanitary collection system and water distribution pipe networks. The report does not address the condition of water storage tanks, wells, or treatment systems.

Over the past year, Bolton & Menk has been reviewing record drawing information for the sanitary and watermain pipe networks throughout the community. Information collected from these documents is summarized in this report. The following sections discuss the condition and needs of the water distribution and sanitary sewer pipe networks.

B. Watermain

The water distribution system within the City of Plainview consists of pipe diameters between 4 inches and 12 inches in diameter. Pipe materials consist of mostly cast iron, ductile iron pipe. Generally, pipe installed prior to the 1970s is smaller diameter (4 inch to 6 inch). During the 1970s, most municipal water systems started using ductile iron pipe. To date, only ductile iron watermain has been permitted for use in new developments within Plainview.

Cast iron pipe within the City's water system is over 50 years old. Cast iron of this age tends to lose strength due to corrosion of pipe walls over time. Pipe which is severely corroded is susceptible to watermain breaks resulting in unplanned, costly repairs. In less severe cases, corrosion of the pipe can cause pin holes in pipe walls, leading to water loss within the system.

The City of Plainview should begin the process of replacing small diameter and/or cast iron pipe within the existing water distribution system. Over time, the replacement of this pipe with new 8 inch or larger PVC or ductile iron pipe will reduce the occurrence of watermain breaks, decrease water loss, and provide increased hydraulic conductivity.

In many cases the replacement of watermain is most cost effective if completed with regularly scheduled street reconstruction projects. During these projects, the overlying pavement surface is already being replaced, which provides the opportunity to excavate and replace with new piping. This is also a good opportunity to replace water service lines and curb stops within the public right-of-way. Replacement of service lines during reconstructions allows the City to ensure that piping is buried to adequate depth for frost protection and curb stops are functional.

The layout of the existing water distribution system is illustrated in ***Appendix B-2***.

In addition to small diameter pipe and cast-iron pipe replacement, the City should also consider implementing a regular hydrant flushing and valve exercising program. Annual hydrant flushing will improve water quality throughout the system by removing sediment from the system. Most cities, flush hydrants 1-2 times per year. Exercising (opening and closing) valves every 1-2 years also extends the useable life and allows the City to better understand which valves are operable and inoperable for emergency situations.

C. Sanitary Sewer

The existing sanitary sewer collection system within Plainview consists of 8-inch through 24-inch diameter mainline pipe. Pipe materials installed prior to the 1970s consist of vitrified clay pipe (VCP). VCP sanitary sewer typically consists of short (3- to 5-foot) segments of pipe with cement mortar joints. Typically, VCP sanitary sewer is susceptible to increased groundwater infiltration into system, resulting in increased wastewater treatment costs (for both plant oversizing and greater equipment run times during high flow events) and increased potential for wastewater backups and emergency overflows during heavy rainfall events. In areas with VCP sanitary main, it is common to find concrete block or brick manhole

structures in use. These structures are also susceptible to groundwater infiltration.

The City of Plainview will benefit from implementing a sanitary sewer rehabilitation and replacement plan. From a high-level planning standpoint, target areas of the system should generally include those with clay pipe sanitary main.

The layout of the existing sanitary collection system is illustrated in ***Appendix B-3***.

Over time, additional information on key problem areas can be added to the details of this report. In years past, Plainview had a regular sanitary sewer cleaning and televising program. Information gathered from televising of mains can be used to further prioritize future improvements to the sanitary sewer system.

Moving forward, the City should consider restarting the televising and cleaning program. This form of inspection allows the City to prioritize sanitary sewer replacements in the future. More importantly, critical failures within the collection system can often be identified and addressed prior to the occurrence of backups. In most cases, Cities with televising and cleaning programs use a 5- to 10-year cycle for all sanitary mains within the City. The City should also consider the implementing smoke testing and sump pump inspection programs. Both of these types of investigation were last completed in 2006; however regular inspection programs will better assure that few major clear water inflow contributors exist within the system over a long period of time.

Sanitary sewer can be replaced or rehabilitated using several different methods. In the most basic forms, these methods include either open excavation replacement or lining methods. If sanitary sewer replacement is planned with other street improvements, open excavation, removal of old piping and replacement with new pipe is the most cost-effective means of implementing improvements. In most cases, sanitary services are in similar or worse condition than the main located below the street. For this reason, replacement of sanitary service lines within the public right-of-way should also be planned with sanitary improvement projects.

IV. EXECUTION

As discussed in the pavement management and utility management sections of this report, the infrastructure needs can be broken down into a few separate categories, as summarized in the table below.

Table 4 – Infrastructure Management Programs

Improvement Type	Infrastructure Type	Goal
Seal Coat/Crack Fill	Pavement	Preserve condition of existing surface
Overlay & Patching	Pavement	Rehabilitate the existing surface
Full Reconstruction	Pavement	Replace the existing surface
	Watermain	Replace small diameter and/or cast-iron pipe
	Sanitary Sewer	Replace clay (VCP) pipe

As provided above, infrastructure management within Plainview can be divided into 3 separate programs including: Preventative Maintenance (Seal Coat & Crack Fill), Bituminous Overlay/Patching, and Full Reconstructions. Additional details for each program are included below.

A. Seal Coat & Crack Fill Program

Regular seal coating and crack filling should be completed for all streets in good or better condition (Rating ≥ 7). As previously discussed, these streets currently make up the majority of streets maintained by the City (54%). These streets will only remain in their current condition with regular maintenance.

Streets to be considered for future seal coating and crack filling are illustrated in ***Appendix B-4***. Planning level cost estimates for all streets in the seal coat and crack fill program are included in ***Appendix C-1***. It is recommended that the City budget approximately $70,000 annually for the seal coat and crack seal program. This budget is based on the current street conditions and an average useful life of 7 years between seal coat and crack fill applications.

Please note that many of the streets in the seal coat and crack fill program may require replacement of utilities in the future. Ideally, the City could address those utility needs as soon as possible. For the purposes of this report, it was assumed that utility replacement below good condition streets could be delayed until a future date when the pavement has deteriorated to a level that warrants reconstruction. This type of planning is intended to maximize the value of reconstruction projects.

In the interim, it is recommended that the City continue to maintain these streets as they would any other street in good condition.

B. Overlay & Patching Program

Approximately 43% of the existing streets have a current conditional rating which warrant bituminous overlays and partial pavement patching. These streets have the following in common:

- Pavement Conditional Rating of 5 or 6
- No public utilities below street or utilities below street in satisfactory condition

Please note that streets to be considered for a mill and overlay do not include those with known utility replacement needs below the pavement surface. Streets recommended for a bituminous overlay are illustrated in ***Appendix B-4***. Planning level cost estimates are included in ***Appendix C-2***. Currently, there is approximately $1.2 million worth of mill and overlay projects recommended. The City may implement these improvements in phases; however, failure to address these streets within the next 5 to 10 years will likely result in deterioration of the pavement, requiring more robust repairs (such as a full reconstruction).

Although completing a mill and overlay project over older utilities is not typically recommended, there may be cases in the future where a street is deteriorating rapidly while funds are insufficient for utility replacement. In these cases, the City will be taking a risk that the utility in question may fail shortly after the street improvements are completed. This is sometimes unavoidable; however, as a general rule, this type of planning should be avoided.

C. Reconstruction Program

Street and utility reconstruction projects are expensive and invasive. When planning for these projects, it is important that adequate funds are available. Proper timing of these projects will also ensure that a high degree of value with each project.

As the City has recently discussed with their financial advisor, a capital improvement plan can be prepared to understand the size of each project and the frequency at which reconstruction projects can be competed. Once this is understood, the City can move forward with selecting an actual project.

The Street Reconstruction Map is illustrated in ***Appendix B-5***. These areas are characterized based on the need for a reconstruction. These categories include the following:

- *Reconstruction based on street and utility condition*
  - Street requires overlay, patching or reconstruction
  - Sanitary and/or watermain requires replacement
- *Reconstruction based on unsatisfactory utility condition only*
  - Street in good condition, no current need for reconstruction/rehabilitation
  - Sanitary and/or watermain requires replacement
- *Reconstruction based on unsatisfactory street condition only*
  - Street requires reconstruction
  - Sanitary and/or watermain in satisfactory condition or does not exist

Complete excavation and replacement of a pavement surface provides an opportunity for more cost effective underground utility replacement. Streets requiring a reconstruction based the on poor conditions of both street and utility conditions will provide the most value to the City. In comparison, streets with unsatisfactory utility conditions only may be delayed, utilizing the remaining overlying pavement life while other improvements are completed.

A complete list of all streets currently recommended for reconstruction is provided in ***Appendix C-3***. Once reconstruction projects are added to the 5-year capital improvement plan, this list can be used to select individual projects, while understanding approximate total project costs.

Based on the reconstruction cost estimates provided, over $44 million of reconstruction projects have a pavement, sanitary sewer, and/or watermain need to address in the future. Of this, approximately $23 million are higher priority projects with both pavement and utility needs. Although these costs are high and will not be entirely addressed within a standard capital improvement planning period of 5 to 10 years, it is important to note that the City will benefit from beginning to address these needs. Over time, improving these streets will result in less costly maintenance requirements and an overall increase to the quality of the street and utility systems.

The timing and size of each improvement project can be determined by the City's financial advisor when preparing the Capital Improvement Plan. For the sake of discussion, most cities the size of Plainview implement street and utility improvement projects between $1 million and $4 million. Projects smaller than $1 million can sometimes result in increased cost per foot of street, due to some of the fixed costs (i.e. mobilization, portions of design costs, etc.) associated with any project.

Although street improvement projects are most typically financed through the sale of bonds, other outside funding sources do arise from time to time. In some cases, these funding opportunities offer grants. The information contained in this report will allow the City to respond to funding/grant opportunities quickly.

V. CONCLUSION & RECOMMENDATIONS

This report is intended to be used for high level pavement and utility management. The recommendations below summarize the key takeaways from this report.

- Implement an on-going **Seal Coat and Crack Fill Program** using cost estimates and street conditional ratings from this report.
  - Applies to street rating of 7 or more.
  - Preventative maintenance budgeting can be placed on a 7-year average rotation.
- Implement an on-going **Bituminous Overlay (and Patching) Program** using cost estimates and street conditional ratings from this report.
  - Applies to street rating of 5 or 6.

    - Complete recommended overlay projects within the next 5-10 years.
- Develop a **Street and Utility Capital Improvement Plan** for budgeting reconstruction projects.
    - Once Capital Improvement Plan is developed, prioritize streets with both pavement and utility needs for individual project selection.
- Budgeting for pavement management can be optimized by **aggressively targeting preservation improvements (Seal Coat and Crack Fill) first**.
- Implement Utility management programs such as hydrant flushing, valve exercising and sanitary sewer televising and cleaning.
- Information from **this report should be updated at least every five years**, or with every regularly scheduled reconstruction project, as part of the project selection process.

Appendix A: Pavement Management Terminology

Pavement Management Terminology

Crack Fill – A crack fill repair consists of routing cracks to create a reservoir that is filled with a hot sealant. This procedure reduces the amount of moisture and debris entering the pavement sub-grade through surface cracks. This protection provides for a more stable roadway base and can reduce pavement breakup and potholes due to the effects of freeze/thaw cycles. The City has used crack filling in the past to address pavement cracking. Crack filling is effective for a few years and then must be repeated. It is, however, a very effective way for lengthening the pavement life.

Seal Coat – A seal coat consists of an application of bituminous material on the roadway followed by a coating of fine aggregate. The aggregate (or "chip") is typically left on the roadway for a period of time to allow for traffic to drive on it, before a road sweeper is used to remove any excess and loose aggregate. This treatment method is used to minimize the infiltration of water through the surface, reduce surface oxidation, and potentially improve skid resistance/surface roughness of the pavement. This treatment provides for an extension of the pavement surface life by minimizing the effects of the sun and weather on the existing bituminous material and re-establishing a wearing surface with a desired level of friction. This approach will not prevent ultimate pavement failure due to age or poor sub-grade conditions. The life expectancy of a seal coat is approximately 6 to 8 years. It is also recommended to seal coat new pavements within 6 to 8 years of initial construction.

Patching – Provides for the correction of localized pavement deterioration and is generally done to "buy time" until a rehabilitation or reconstruction procedure can be done. Street patching is generally cost effective on small sections of roadway that have experienced pavement failure due to a soft base material or other contributing conditions. A roadway's need for patching generally increases each year and therefore the annual costs of street patching exceed the cost of major maintenance procedures at some point. Patching also provides for a smoother driving surface and extends the life of the pavement. From past practice, we understand the City has used patching most commonly to repair failed areas.

Edge Mill and Overlay, Mill and Overlay or Simple Overlay – A mill and overlay includes the milling (grinding and removal) of the upper 1.5 to 3 inches of pavement and placement of a new layer of asphalt pavement to maintain or increase from pre-existing thicknesses. In urban sections (streets with curb & gutter), edge milling is done adjacent to the curb and gutter to maintain the current surface elevations and then a pavement overlay is placed. In some situations, the City may want to consider a mill and inlay approach which would result in the removal, by milling, of a thin layer of pavement in the driving lanes and replacement of the bituminous layer.

Mill and overlay treatment can extend the life of the roadway by adding additional bituminous material to the surface, reestablishing the cross slope of the road to promote drainage and create a smooth driving surface. A mill and overlay does not address existing pavement cracking in the underlying pavement. Generally, these cracks will propagate through (reflective cracking) the new overlay pavement appearing in the new surface in as soon as 6 months but more typically within 1 to 3 years, at which point crack sealing would be necessary. The life expectancy of a mill and overlay can range from approximately 10 to 20 years, before the pavement has reached the original deficient condition. The life expectancy depends on existing pavement structure, traffic and other factors.

Full Reconstruction – A street reconstruction includes the complete removal of existing layers of asphalt and aggregate base and replacement with new base and pavement. In many cases, a portion of the existing subgrade soils are removed and replaced with a structural sand/rock layer (subgrade correction), and portions or all of the curb and gutter may be replaced in urban sections. This option requires the largest investment and is typically applied in areas where pavements are showing significant areas of major distress or the underlying municipal utility conditions warrant replacement. However, this option provides a period of 20-30 years before major rehabilitation is required.

Appendix B: Figures

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Infrastructure Management Plan

Plainview, Minnesota

2018 Pavement Conditional Rating Map

August 2019

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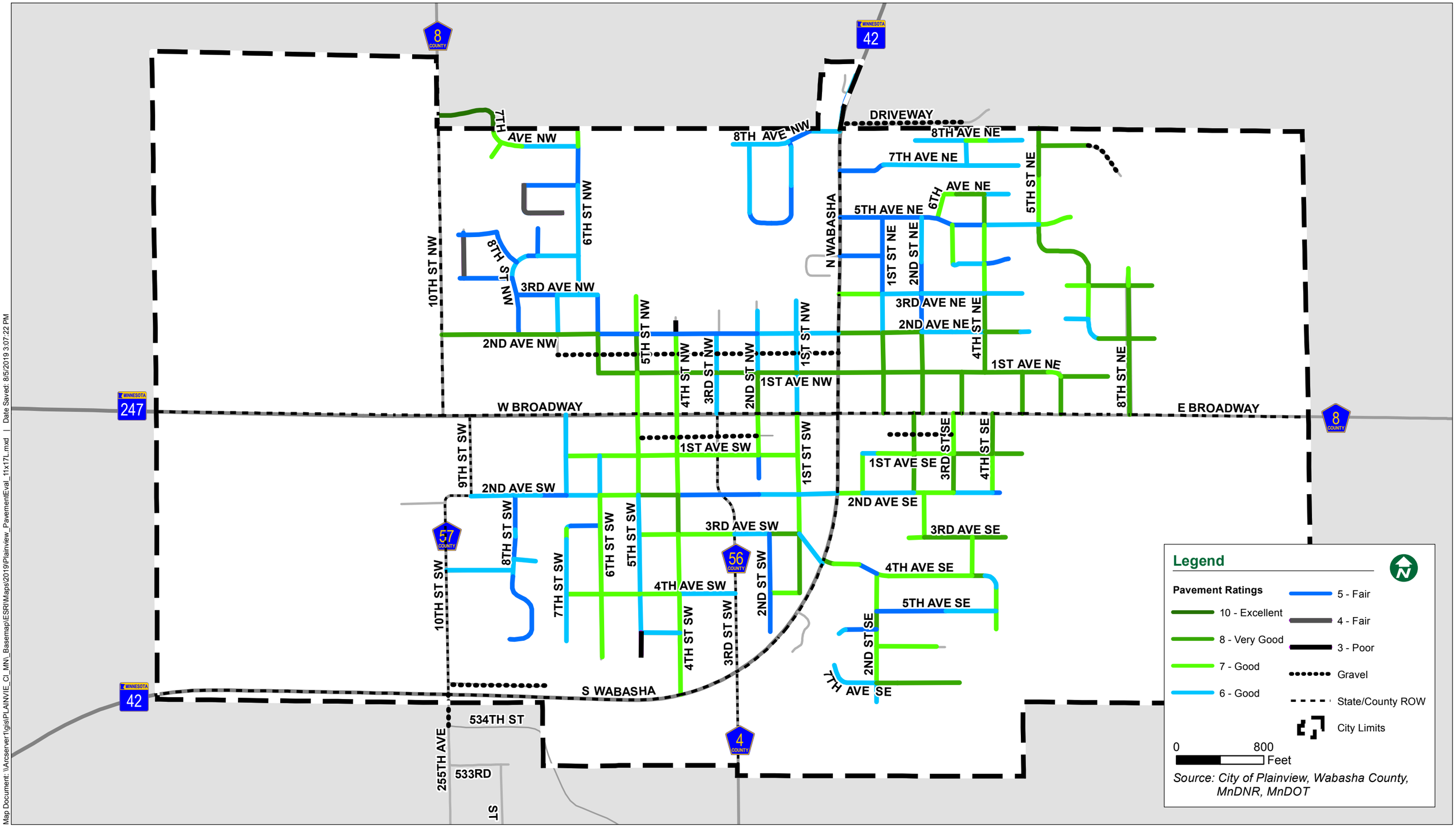

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PLAINVIEW
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Infrastructure Management Plan
City of Plainview, MN

Water Distribution System
August 2019

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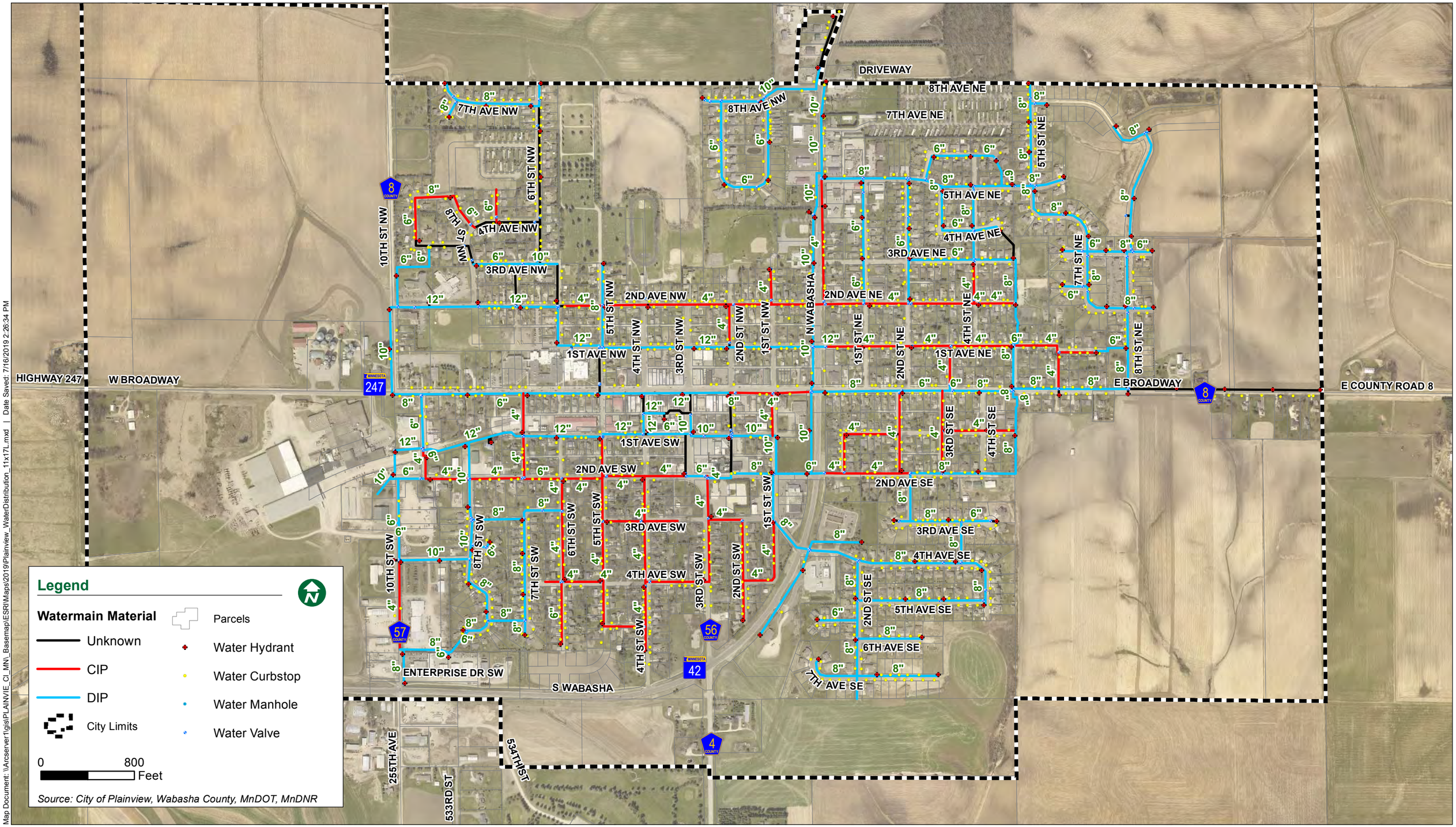

Legend

Watermain Material
- Unknown
- CIP
- DIP
- City Limits

- Parcels
- Water Hydrant
- Water Curbstop
- Water Manhole
- Water Valve

0 800 Feet

Source: City of Plainview, Wabasha County, MnDOT, MnDNR

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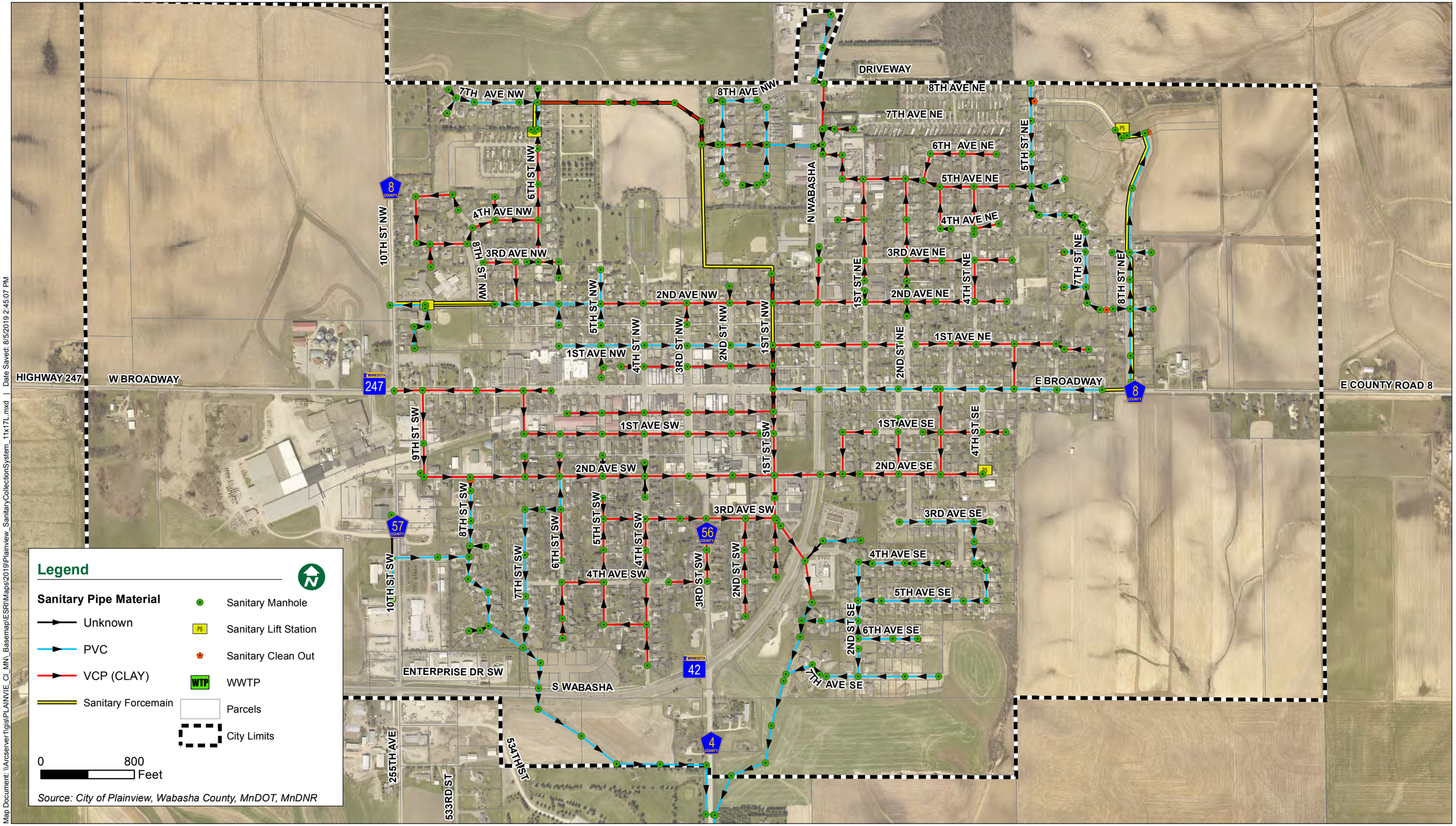

Legend

Sanitary Pipe Material

- Unknown
- PVC
- VCP (CLAY)
- Sanitary Forcemain

- Sanitary Manhole
- Sanitary Lift Station
- Sanitary Clean Out
- WWTP
- Parcels
- City Limits

0 800 Feet

Source: City of Plainview, Wabasha County, MnDOT, MnDNR

PLAINVIEW
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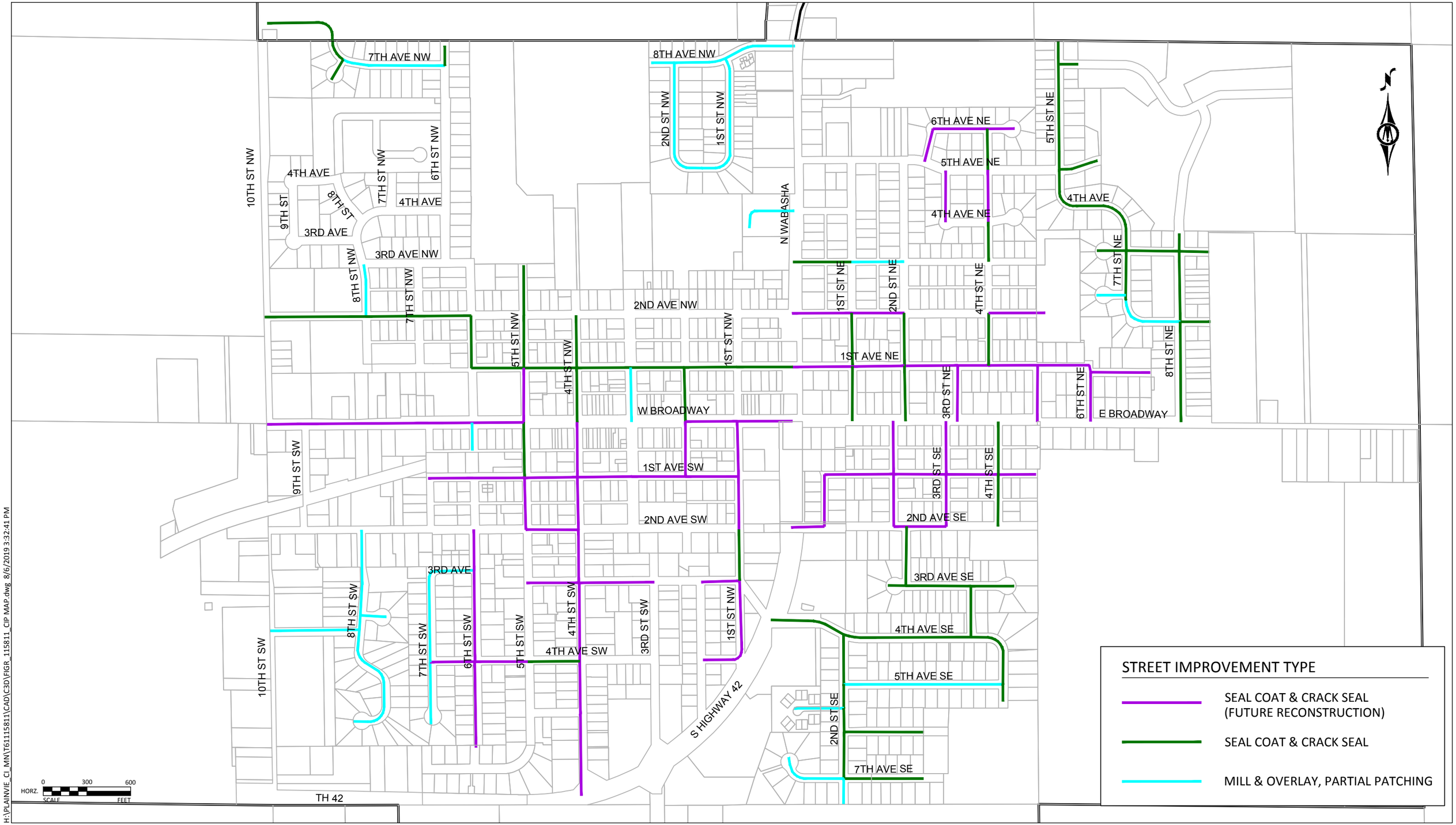
Infrastructure Management Plan
City of Plainview, Minnesota

Street Maintenance Map
August 2019

BOLTON & MENK



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PLAINVIEW
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Infrastructure Management Plan
City of Plainview, Minnesota

Reconstruction Project Map
August 2019

BOLTON & MENK

7TH AVE NW
8TH AVE NW
10TH ST NW
9TH ST
4TH AVE
8TH ST
3RD AVE
7TH ST NW
6TH ST NW
3RD AVE NW
8TH ST NW
2ND ST NW
1ST ST NW
N WABASHA
6TH AVE NE
5TH AVE NE
4TH AVE NE
5TH ST NE
4TH AVE
7TH ST NE
1ST ST NE
2ND ST NE
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1ST AVE NE
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E BROADWAY
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3RD AVE
8TH ST SW
10TH ST SW
7TH ST SW
6TH ST SW
5TH ST SW
4TH ST SW
3RD ST SW
1ST ST NW
3RD AVE SE
4TH AVE SE
4TH AVE SW
5TH AVE SE
S HIGHWAY 42
2ND ST SE
7TH AVE SE
TH 42

0 300 600
HORZ. SCALE FEET

RECONSTRUCTION BASED ON:

- STREET & UTILITY CONDITION
- STREET CONDITION ONLY
- UTILITY CONDITION ONLY
- UTILITY CONDITION ONLY (COUNTY/STATE RIGHT-OF-WAY)

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Appendix C: Cost Estimates

INFRASTRUCTURE MANAGEMENT PLAN

SEAL COAT/CRACK FILL PROJECTS (by street segment)

CITY OF PLAINVIEW, MN

Street	From	To	Street Length (Ft)	Street Width (Ft)	Pavement Area (Sq. Yd)	Seal Coat & Crack Fill Estimated Cost $2.95 Per Sq. Yd	Street Rating
East-West Streets							
7th Ave NW*	North terminus	Cul-de-sac	1000	40	4120	$12,154.00	7
7th Ave NE	5th St NE	East terminus	125	36	460	$1,357.00	9
6th Ave NE*	5th Ave NE	4th St NE	660	36	2420	$7,139.00	7
6th Ave NE*	4th St NE	East terminus	240	36	880	$2,596.00	7
5th Ave NE	5th St NE	East terminus	300	42	1300	$3,835.00	7
4th Ave NE	5th Ave NE	3rd Ave NE	880	36	3230	$9,528.50	7
3rd Ave NE	Wabasha St	1st St NE	385	36	1420	$4,189.00	7
3rd Ave NE	West terminus	7th St NE	200	36	740	$2,183.00	7
3rd Ave NE	7th St NE	8th St NE	360	36	1320	$3,894.00	7
3rd Ave NE	8th St NE	East terminus	200	36	740	$2,183.00	7
2nd Ave NW	10th St NW	8th St NW	690	36	2530	$7,463.50	10
2nd Ave NW	8th St NW	7th St NW	370	36	1360	$4,012.00	10
2nd Ave NW	7th St NW	6th St NW	375	36	1380	$4,071.00	10
2nd Ave NE	Wabasha St	1st St NE	400	36	1470	$4,336.50	7
2nd Ave NE	1st St NE	2nd St NE	350	36	1290	$3,805.50	8
2nd Ave NE	4th St NE	Northeast terminus	440	36	1620	$4,779.00	8
2nd Ave NE	8th St NE	East terminus	200	36	740	$2,183.00	8
1st Ave NW	6th St NW	5th St NW	360	42	1560	$4,602.00	7
1st Ave NW	5th St NW	4th St NW	355	42	1540	$4,543.00	7
1st Ave NW	4th St NW	3rd St NW	385	42	1670	$4,926.50	8
1st Ave NW	3rd St NW	2nd St NW	365	36	1340	$3,953.00	7
1st Ave NW	2nd St NW	1st St NW	350	36	1290	$3,805.50	7
1st Ave NW	1st St NW	Wabasha	385	36	1420	$4,189.00	7
1st Ave NE	Wabasha	1st St NE	400	36	1470	$4,336.50	8
1st Ave NE	1st St NE	2nd St NE	360	36	1320	$3,894.00	7
1st Ave NE	2nd St NE	3rd St NE	375	36	1380	$4,071.00	8
1st Ave NE	3rd St NE	4th St NE	215	36	790	$2,330.50	7
1st Ave NE	4th St NE	5th St NE	330	36	1210	$3,569.50	7
1st Ave NE	5th St NE	6th St NE	380	36	1400	$4,130.00	7
1st Ave NE	6th St NE	East Terminus	415	36	1530	$4,513.50	7
1st Ave SW	7th St SW	6th St SW	310	36	1140	$3,363.00	7
1st Ave SW	6th St SW	5th St SW	355	36	1310	$3,864.50	7
1st Ave SW	5th St SW	4th St SW	360	36	1320	$3,894.00	7
1st Ave SW	4th St SW	3rd St SW	375	36	1380	$4,071.00	7
1st Ave SW	3rd St SW	2nd St SW	375	36	1380	$4,071.00	7
1st Ave SW	2nd St SW	1st St SW	350	36	1290	$3,805.50	7
1st Ave SE	1st St SE	2nd St SE	500	36	1840	$5,428.00	7
1st Ave SE	2nd St SE	3rd St SE	400	36	1470	$4,336.50	7
1st Ave SE	3rd St SE	4th St SE	315	36	1160	$3,422.00	7
1st Ave SE	4th St SE	East terminus	260	36	960	$2,832.00	8
2nd Ave SW	5th St SW	4th St SW	365	36	1340	$3,953.00	8
2nd Ave SE	Wabahsa St	1st St SE	225	36	830	$2,448.50	7
2nd Ave SE	2nd St SE	3rd St SE	360	36	1320	$3,894.00	7
3rd Ave SW	5th St SW	4th St SW	350	36	1290	$3,805.50	7
3rd Ave SW	4th St SW	3rd St SW	520	36	1910	$5,634.50	7
3rd Ave SW	2nd St SW	1st St SW	600	36	2200	$6,490.00	7
3rd Ave SE*	2nd St SE	3rd St SE	590	36	2170	$6,401.50	8
3rd Ave SE*	3rd St SE	East terminus	340	36	1250	$3,687.50	8

BOLTON & MENK

INFRASTRUCTURE MANAGEMENT PLAN

SEAL COAT/CRACK FILL PROJECTS (by street segment)

CITY OF PLAINVIEW, MN

Street	From	To	Street Length (Ft)	Street Width (Ft)	Pavement Area (Sq. Yd)	Seal Coat & Crack Fill Estimated Cost $2.95 Per Sq. Yd	Street Rating
4th Ave SW	7th St SW	6th St SW	310	36	1140	$3,363.00	7
4th Ave SW	6th St SW	5th St SW	365	36	1340	$3,953.00	7
4th Ave SW	5th St SW	4th St SW	355	36	1310	$3,864.50	7
4th Ave SW	2nd St SW	1st St SW	250	36	920	$2,714.00	7
4th Ave SE	Wabasha St	2nd St SE	500	36	1840	$5,428.00	7
4th Ave SE	2nd St SE	3rd St SE	900	36	3300	$9,735.00	7
4th Ave SE	3rd St SE	4th St SE	300	36	1100	$3,245.00	7
6th Ave SE	2nd St SE	East terminus	550	35	1960	$5,782.00	7
7th Ave SE	2nd St SE	East terminus	190	36	700	$2,065.00	8
North-South Streets							
6th St SW	South terminus	4th Ave SW	565	36	2080	$6,136.00	7
6th St SW	4th Ave SW	3rd Ave SW	640	36	2350	$6,932.50	7
6th St SW	3rd Ave SW	2nd Ave SW	280	36	1030	$3,038.50	7
6th St NW	1st Ave NW	2nd Ave NW	360	20	680	$2,006.00	7
6th St NW	7th Ave NW	North terminus	135	36	500	$1,475.00	7
5th St SW	2nd Ave SW	1st Ave SW	370	36	1360	$4,012.00	7
5th St SW	1st Ave SW	W Broadway	370	36	1360	$4,012.00	7
5th St NW	W Broadway	1st Ave NW	380	36	1400	$4,130.00	7
5th St NW	1st Ave NW	2nd Ave NW	360	36	1320	$3,894.00	7
5th St NW	2nd Ave NW	Cemetary	360	36	1320	$3,894.00	7
4th St SW	Wabasha St	5th Ave SW	530	36	1950	$5,752.50	7
4th St SW	5th Ave SW	4th Ave SW	355	36	1310	$3,864.50	7
4th St SW	4th Ave SW	3rd Ave SW	550	36	2020	$5,959.00	7
4th St SW	3rd Ave SW	2nd Ave SW	365	36	1340	$3,953.00	8
4th St SW	2nd Ave SW	1st Ave SW	355	36	1310	$3,864.50	7
4th St SW	1st Ave SW	W Broadway	375	42	1630	$4,808.50	7
4th St NW	W Broadway	1st Ave NW	385	42	1670	$4,926.50	7
4th St NW	1st Ave NW	2nd Ave NW	360	42	1560	$4,602.00	7
2nd St NW	W Broadway	1st Ave NW	380	42	1650	$4,867.50	7
1st St SW	4th Ave SW	3rd Ave SW	530	36	1950	$5,752.50	8
1st St SW	3rd Ave SW	2nd Ave SW	355	42	1540	$4,543.00	7
1st St SW	2nd Ave SW	1st Ave SW	370	42	1610	$4,749.50	7
1st St SW	1st Ave SW	W Broadway	375	42	1630	$4,808.50	7
1st St SE	2nd Ave SE	1st Ave SE	360	36	1320	$3,894.00	7
1st St NE	E Broadway	1st Ave NE	365	36	1340	$3,953.00	7
1st St NE	1st Ave NE	2nd Ave NE	370	36	1360	$4,012.00	7
2nd St SE	7th Ave SE	6th Ave SE	320	36	1180	$3,481.00	7
2nd St SE	6th Ave SE	Orchard Manor Dr SE	160	36	590	$1,740.50	7
2nd St SE	Orchard Manor Dr SE	5th Ave SE	260	36	960	$2,832.00	7
2nd St SE	5th Ave SE	4th Ave SE	345	36	1270	$3,746.50	7
2nd St SE	3rd Ave SE	2nd Ave SE	400	36	1470	$4,336.50	8
2nd St SE	2nd Ave SE	1st Ave SE	355	36	1310	$3,864.50	8
2nd St SE	1st Ave SE	E Broadway	370	36	1360	$4,012.00	7
2nd St NE	E Broadway	1st Ave NE	375	36	1380	$4,071.00	8
2nd St NE	1st Ave NE	2nd Ave NE	365	36	1340	$3,953.00	8
3rd St SE	4th Ave SE	3rd Ave SE	350	36	1290	$3,805.50	7
3rd St SE	2nd Ave SE	1st Ave SE	360	36	1320	$3,894.00	8
3rd St SE	1st Ave SE	E Broadway	370	36	1360	$4,012.00	7
3rd St NE	E Broadway	1st Ave NE	380	36	1400	$4,130.00	7
3rd St NE*	4th Ave NE	5th Ave NE	395	36	1450	$4,277.50	7

INFRASTRUCTURE MANAGEMENT PLAN

SEAL COAT/CRACK FILL PROJECTS (by street segment)

CITY OF PLAINVIEW, MN

Street	From	To	Street Length (Ft)	Street Width (Ft)	Pavement Area (Sq. Yd)	Seal Coat & Crack Fill Estimated Cost $2.95 Per Sq. Yd	Street Rating
4th St SE	South Terminus	5th Ave SE	175	36	650	$1,917.50	7
4th St SE	5th Ave SE	4th Ave SE	480	36	1760	$5,192.00	7
4th St SE	2nd Ave SE	1st Ave SE	360	36	1320	$3,894.00	7
4th St SE	1st Ave SE	E Broadway	270	36	990	$2,920.50	7
4th St NE	1st Ave NE	2nd Ave NE	366	36	1350	$3,982.50	8
4th St NE	3rd Ave NE	4th Ave NE	275	36	1010	$2,979.50	7
4th St NE	4th Ave NE	5th Ave NE	355	36	1310	$3,864.50	7
4th St NE	5th Ave NE	6th Ave NE	280	36	1030	$3,038.50	7
5th St NE	E Broadway	1st Ave NE	380	36	1400	$4,130.00	7
5th St NE	5th Ave NE	North terminus	880	36	3230	$9,528.50	7
6th St NE	E Broadway	1st Ave NE	365	36	1340	$3,953.00	7
7th St NE*	2nd Ave NE	3rd Ave NE	510	36	1870	$5,516.50	7
8th St NE	E Broadway	2nd Ave NE	690	60	4370	$12,891.50	8
8th St NE	2nd Ave NE	3rd Ave NE	490	60	3110	$9,174.50	7
8th St NE	3rd Ave NE	North terminus	140	60	890	$2,625.50	7
					Total Estimated Cost Per 7-Year Life Cycle	**$489,729.50**	
					Annual Seal Coating Cost	**$70,000.00**	

INFRASTRUCTURE MANAGEMENT PLAN

MILL & OVERLAY PROJECTS (by street segment)

CITY OF PLAINVIEW, MN

Street	From	To	Street Length (Ft)	Street Width (Ft)	Pavement Area (Sq. Yd)	Mill & Overlay, Partial Patch Estimated Cost $29.00 Per Sq. Yd	Street Rating
East-West Streets							
8th Ave NW	West terminus	2nd St NW	160	36	590	$17,110.00	**6**
8th Ave NW	2nd St NW	1st St NW	350	36	1280	$37,120.00	**6**
8th Ave NW	1st St NW	Wabasha St	485	36	1780	$51,620.00	**5**
7th Ave NW	Cul-de-sac	6th St NW	1000	40	4110	$119,190.00	**6**
4th Ave NW	Pool Parking Lot	Wabasha St	400	24	930	$26,970.00	**5**
3rd Ave NE	1st St NE	2nd St NE	355	36	1300	$37,700.00	**6**
2nd Ave NE	7th St NE	8th St NE	330	36	1210	$35,090.00	**6**
3rd Ave SW	7th St SW	6th St SW	300	36	1100	$31,900.00	**5**
4th Ave SW	10th St SW	8th St SW	605	36	2220	$64,380.00	**6**
5th Ave SE	2nd St SE	4th St SE	1115	36	4090	$118,610.00	**5**
Orchard Manor Dr SE	West cul-de-sac	2nd St SE	370	22	780	$22,620.00	**6**
7th Ave SE	West cul-de-sac	2nd St SE	520	36	1910	$55,390.00	**6**
North-South Streets							
8th St SW	South cul-de-sac	4th Ave SW	905	36	3320	$96,280.00	**5**
8th St SW	4th Ave SW	2nd Ave SW	680	36	2490	$72,210.00	**5**
8th St NW	2nd Ave NW	3rd Ave NW	350	36	1280	$37,120.00	**5**
7th St SW	South cul-de-sac	4th Ave SW	455	36	1670	$48,430.00	**5**
7th St SW	4th Ave SW	3rd Ave SW	625	36	2290	$66,410.00	**6**
6th St SW	1st Ave SW	W Broadway	190	36	700	$20,300.00	**6**
3rd St NW	W Broadway	1st Ave NW	370	42	1600	$46,400.00	**5**
2nd St NW	1st St NW	8th Ave NW	875	36	3210	$93,090.00	**6**
1st St NW	2nd St NW	8th Ave NW	900	36	3300	$95,700.00	**6**
2nd St SE	South terminus	7th Ave SE	175	36	640	$18,560.00	**6**
					Total Estimated Mill & Overlay Costs	**$1,212,200.00**	

Notes: 1) Refer to attached Street Maintenance Map for illustrations of referenced projects.

2) Costs presented above are in 2019 dollars including estimated design and construction.

3) Costs based on 2" mill & overlay with 15% of surface area requiring a full depth pavement patch, contingency and engineering.

4) Pricing for mill & overlay projects is highly dependent on bituminous prices.

INFRASTRUCTURE MANAGEMENT PLAN

RECONSTRUCTION PROJECTS (by street segment)

CITY OF PLAINVIEW, MN

Street	From	To	Improvement Length (ft) & Cost										Estimated Total Project Cost	Reconstruction Based On:	
			Street & Site Improvements				Utility Improvements								
		Improvement	36' Street w/ Curb	40' Street w/Curb	18' Alley	Total Street Cost	Storm Sewer		Sanitary Sewer		Watermain Cost	Watermain Cost		Utility Condition	Street Condition
		Cost per Lineal Foot	$470.00	$490.00	$200.00		$130.00	Storm Sewer Cost	$150.00	Sanitary Sewer Cost	$150.00				
East-West Streets															
7th Ave NW	6th St NW	2nd St NW	0			$0.00	0	$0.00	1700	$255,000.00	0	$0.00	**$255,000.00**		
6th Ave NE	5th Ave NE	4th St NE	660			$310,200.00	660	$85,800.00	600	$90,000.00	520	$78,000.00	**$564,000.00**		
6th Ave NE	4th St NE	East terminus	240			$112,800.00	240	$31,200.00	200	$30,000.00	250	$37,500.00	**$211,500.00**		
5th Ave NE	Wabasha St	1st St NE		375		$183,750.00	375	$48,750.00	187.5	$28,125.00	375	$56,250.00	**$316,875.00**		
5th Ave NE	1st St NE	2nd St NE		350		$171,500.00	350	$45,500.00	350	$52,500.00	350	$52,500.00	**$322,000.00**		
5th Ave NE	2nd St NE	3rd St NE		300		$147,000.00	300	$39,000.00	300	$45,000.00	300	$45,000.00	**$276,000.00**		
5th Ave NE	3rd St NE	4th St NE		285		$139,650.00	285	$37,050.00	285	$42,750.00	285	$42,750.00	**$262,200.00**		
5th Ave NE	4th St NE	5th St NE		500		$245,000.00	500	$65,000.00	500	$75,000.00	600	$90,000.00	**$475,000.00**		
4th Ave NW	9th St NW	8th St NW	390			$183,300.00	390	$50,700.00	315	$47,250.00	315	$47,250.00	**$328,500.00**		
4th Ave NW	8th St NW	6th St NW	550			$258,500.00	550	$71,500.00	550	$82,500.00	550	$82,500.00	**$495,000.00**		
4th Ave NE	Wabasha	1st St NE	385			$180,950.00	385	$50,050.00	300	$45,000.00	0	$0.00	**$276,000.00**		
4th Ave NE	3rd St NE	4th St NE	275			$129,250.00	275	$35,750.00	275	$41,250.00	275	$41,250.00	**$247,500.00**		
4th Ave NE	4th St NE	East terminus	270			$126,900.00	270	$35,100.00	210	$31,500.00	155	$23,250.00	**$216,750.00**		
3rd Ave NW	9th St NW	8th St NW	505			$237,350.00	505	$65,650.00	505	$75,750.00	505	$75,750.00	**$454,500.00**		
3rd Ave NW	8th St NW	7th St NW	375			$176,250.00	375	$48,750.00	375	$56,250.00	375	$56,250.00	**$337,500.00**		
3rd Ave NW	7th St NW	6th St NW	365			$171,550.00	365	$47,450.00	365	$54,750.00	365	$54,750.00	**$328,500.00**		
3rd Ave NE	2nd St NE	4th St NE	575			$270,250.00	575	$74,750.00	575	$86,250.00	575	$86,250.00	**$517,500.00**		
3rd Ave NE	4th St NE	East Terminus	340			$159,800.00	340	$44,200.00	340	$51,000.00	340	$51,000.00	**$306,000.00**		
2nd Ave NW	6th St NW	5th St NW	360			$169,200.00	360	$46,800.00	360	$54,000.00	360	$54,000.00	**$324,000.00**		
2nd Ave NW	5th St NW	4th St NW	350			$164,500.00	350	$45,500.00	350	$52,500.00	350	$52,500.00	**$315,000.00**		
2nd Ave NW	4th St NW	3rd St NW	365			$171,550.00	365	$47,450.00	365	$54,750.00	365	$54,750.00	**$328,500.00**		
2nd Ave NW	3rd St NW	2nd St NW	375			$176,250.00	375	$48,750.00	375	$56,250.00	375	$56,250.00	**$337,500.00**		
2nd Ave NW	2nd St NW	1st St NW	360			$169,200.00	360	$46,800.00	360	$54,000.00	360	$54,000.00	**$324,000.00**		
2nd Ave NW	1st St NW	Wabasha St	380			$178,600.00	380	$49,400.00	380	$57,000.00	380	$57,000.00	**$342,000.00**		
2nd Ave NE	Wabasha St	1st St NE	400			$188,000.00	400	$52,000.00	400	$60,000.00	400	$60,000.00	**$360,000.00**		
2nd Ave NE	1st St NE	2nd St NE	350			$164,500.00	350	$45,500.00	350	$52,500.00	350	$52,500.00	**$315,000.00**		
2nd Ave NE	2nd St NE	4th St NE	580			$272,600.00	580	$75,400.00	580	$87,000.00	580	$87,000.00	**$522,000.00**		
2nd Ave NE	4th St NE	Northeast terminus	440			$206,800.00	440	$57,200.00	440	$66,000.00	440	$66,000.00	**$396,000.00**		
1st Ave NE	Wabasha St	1st St NE	400			$188,000.00	400	$52,000.00	400	$60,000.00	400	$60,000.00	**$360,000.00**		
1st Ave NE	1st St NE	2nd St NE	360			$169,200.00	360	$46,800.00	360	$54,000.00	360	$54,000.00	**$324,000.00**		
1st Ave NE	2nd St NE	3rd St NE	375			$176,250.00	375	$48,750.00	375	$56,250.00	375	$56,250.00	**$337,500.00**		
1st Ave NE	3rd St NE	4th St NE	215			$101,050.00	215	$27,950.00	215	$32,250.00	215	$32,250.00	**$193,500.00**		
1st Ave NE	4th St NE	5th St NE	330			$155,100.00	330	$42,900.00	330	$49,500.00	330	$49,500.00	**$297,000.00**		
1st Ave NE	5th St NE	6th St NE	380			$178,600.00	380	$49,400.00	380	$57,000.00	380	$57,000.00	**$342,000.00**		
1st Ave NE	6th St NE	East Terminus	415			$195,050.00	415	$53,950.00	415	$62,250.00	415	$62,250.00	**$373,500.00**		
Alley	5th St NW	4th St NW	200			$94,000.00	0	$0.00	200	$30,000.00	0	$0.00	**$124,000.00**		
Alley	4th St NW	3rd St NW	380			$178,600.00	0	$0.00	380	$57,000.00	0	$0.00	**$235,600.00**		
Alley	3rd St NW	2nd St NW	360			$169,200.00	0	$0.00	360	$54,000.00	0	$0.00	**$223,200.00**		
Alley	2nd St NW	1st St NW	360			$169,200.00	0	$0.00	360	$54,000.00	0	$0.00	**$223,200.00**		
W Broadway	10th St NW	9th St SW	MNDOT			$0.00	240	$31,200.00	240	$36,000.00	240	$36,000.00	**$103,200.00**		
W Broadway	9th St SW	7th St SW	MNDOT			$0.00	860	$111,800.00	860	$129,000.00	860	$129,000.00	**$369,800.00**		
W Broadway	7th St SW	6th St SW	MNDOT			$0.00	300	$39,000.00	300	$45,000.00	300	$45,000.00	**$129,000.00**		
W Broadway	6th St SW	5th St SW	MNDOT			$0.00	370	$48,100.00	0	$0.00	370	$55,500.00	**$103,600.00**		
W Broadway	2nd St SW	1st St SW	MNDOT			$0.00	360	$46,800.00	0	$0.00	360	$54,000.00	**$100,800.00**		
W Broadway	1st St SW	Wabasha St	MNDOT			$0.00	380	$49,400.00	380	$57,000.00	380	$57,000.00	**$163,400.00**		

BOLTON & MENK

INFRASTRUCTURE MANAGEMENT PLAN

RECONSTRUCTION PROJECTS (by street segment)

CITY OF PLAINVIEW, MN

Street	From	To	Improvement Length (ft) & Cost										Estimated Total Project Cost	Reconstruction Based On:	
			Street & Site Improvements				Utility Improvements								
		Improvement	36' Street w/ Curb	40' Street w/Curb	18' Alley	Total Street Cost	Storm Sewer		Sanitary Sewer		Watermain Cost	Watermain Cost		Utility Condition	Street Condition
		Cost per Lineal Foot	$470.00	$490.00	$200.00		$130.00	Storm Sewer Cost	$150.00	Sanitary Sewer Cost	$150.00				
Alley	6th St SW	5th St SW			355	$71,000.00	0	$0.00	355	$53,250.00	0	$0.00	**$124,250.00**		
Alley	5th St SW	4th St SW			360	$72,000.00	0	$0.00	360	$54,000.00	0	$0.00	**$126,000.00**		
Alley	4th St SW	3rd St SW			375	$75,000.00	0	$0.00	375	$56,250.00	0	$0.00	**$131,250.00**		
Alley	3rd St SW	2nd St SW			375	$75,000.00	0	$0.00	375	$56,250.00	0	$0.00	**$131,250.00**		
Alley	2nd St SW	1st St SW			350	$70,000.00	0	$0.00	350	$52,500.00	0	$0.00	**$122,500.00**		
1st Ave SW	7th St SW	6th St SW	310			$145,700.00	310	$40,300.00	310	$46,500.00	310	$46,500.00	**$279,000.00**		
1st Ave SW	6th St SW	5th St SW	355			$166,850.00	355	$46,150.00	355	$53,250.00	355	$53,250.00	**$319,500.00**		
1st Ave SW	5th St SW	4th St SW	360			$169,200.00	360	$46,800.00	360	$54,000.00	360	$54,000.00	**$324,000.00**		
1st Ave SW	4th St SW	3rd St SW	375			$176,250.00	375	$48,750.00	375	$56,250.00	375	$56,250.00	**$337,500.00**		
1st Ave SW	3rd St SW	2nd St SW	375			$176,250.00	375	$48,750.00	375	$56,250.00	375	$56,250.00	**$337,500.00**		
1st Ave SW	2nd St SW	1st St SW	350			$164,500.00	350	$45,500.00	350	$52,500.00	350	$52,500.00	**$315,000.00**		
1st Ave SE	1st St SE	2nd St SE	500			$235,000.00	500	$65,000.00	250	$37,500.00	500	$75,000.00	**$412,500.00**		
1st Ave SE	2nd St SE	3rd St SE	400			$188,000.00	400	$52,000.00	200	$30,000.00	200	$30,000.00	**$300,000.00**		
1st Ave SE	3rd St SE	4th St SE	315			$148,050.00	315	$40,950.00	315	$47,250.00	315	$47,250.00	**$283,500.00**		
1st Ave SE	4th St SE	East terminus	260			$122,200.00	260	$33,800.00	260	$39,000.00	260	$39,000.00	**$234,000.00**		
2nd Ave SW	10th St SW	9th St SW	230			$108,100.00	230	$29,900.00	0	$0.00	230	$34,500.00	**$172,500.00**		
2nd Ave SW	9th St SW	8th St SW	400			$188,000.00	400	$52,000.00	400	$60,000.00	400	$60,000.00	**$360,000.00**		
2nd Ave SW	8th St SW	7th St SW	450			$211,500.00	450	$58,500.00	450	$67,500.00	450	$67,500.00	**$405,000.00**		
2nd Ave SW	7th St SW	6th St SW	315			$148,050.00	315	$40,950.00	315	$47,250.00	315	$47,250.00	**$283,500.00**		
2nd Ave SW	6th St SW	5th St SW	365			$171,550.00	365	$47,450.00	365	$54,750.00	365	$54,750.00	**$328,500.00**		
2nd Ave SW	5th St SW	4th St SW	715			$336,050.00	715	$92,950.00	715	$107,250.00	715	$107,250.00	**$643,500.00**		
2nd Ave SW	4th St SW	3rd St SW	425			$199,750.00	425	$55,250.00	425	$63,750.00	425	$63,750.00	**$382,500.00**		
2nd Ave SW	3rd St SW	2nd St SW	325			$152,750.00	325	$42,250.00	325	$48,750.00	325	$48,750.00	**$292,500.00**		
2nd Ave SW	2nd St SW	1st St SW	345			$162,150.00	345	$44,850.00	345	$51,750.00	345	$51,750.00	**$310,500.00**		
2nd Ave SW	1st St SW	Wabasha St	365			$171,550.00	365	$47,450.00	365	$54,750.00	365	$54,750.00	**$328,500.00**		
2nd Ave SE	Wabasha St	1st St SE	225			$105,750.00	225	$29,250.00	225	$33,750.00	225	$33,750.00	**$202,500.00**		
2nd Ave SE	1st St SE	2nd St SE	475			$223,250.00	475	$61,750.00	475	$71,250.00	475	$71,250.00	**$427,500.00**		
2nd Ave SE	2nd St SE	3rd St SE	360			$169,200.00	360	$46,800.00	360	$54,000.00	360	$54,000.00	**$324,000.00**		
2nd Ave SE	3rd St SE	4th St SE	345			$162,150.00	345	$44,850.00	345	$51,750.00	345	$51,750.00	**$310,500.00**		
3rd Ave SW	5th St SW	4th St SW	350			$164,500.00	350	$45,500.00	350	$52,500.00	350	$52,500.00	**$315,000.00**		
3rd Ave SW	4th St SW	3rd St SW	520			$244,400.00	520	$67,600.00	520	$78,000.00	520	$78,000.00	**$468,000.00**		
3rd Ave SW	3rd St SW	2nd St SW	320			$150,400.00	320	$41,600.00	320	$48,000.00	320	$48,000.00	**$288,000.00**		
3rd Ave SW	2nd St SW	1st St SW	280			$131,600.00	280	$36,400.00	280	$42,000.00	0	$0.00	**$210,000.00**		
3rd Ave SW	1st St SW	Wabasha	330			$155,100.00	330	$42,900.00	330	$49,500.00	330	$49,500.00	**$297,000.00**		
4th Ave SW	7th St SW	6th St SW	310			$145,700.00	310	$40,300.00	0	$0.00	310	$46,500.00	**$232,500.00**		
4th Ave SW	6th St SW	5th St SW	365			$171,550.00	365	$47,450.00	365	$54,750.00	365	$54,750.00	**$328,500.00**		
4th Ave SW	4th St SW	3rd St SW	525			$246,750.00	525	$68,250.00	525	$78,750.00	525	$78,750.00	**$472,500.00**		
4th Ave SW	2nd St SW	1st St SW	250			$117,500.00	250	$32,500.00	0	$0.00	250	$37,500.00	**$187,500.00**		
5th Ave SW	5th St SW	4th St SW	350			$164,500.00	350	$45,500.00	350	$52,500.00	350	$52,500.00	**$315,000.00**		

BOLTON & MENK

INFRASTRUCTURE MANAGEMENT PLAN

RECONSTRUCTION PROJECTS (by street segment)

CITY OF PLAINVIEW, MN

Street	From	To	Improvement Length (ft) & Cost										Estimated Total Project Cost	Reconstruction Based On:	
			Street & Site Improvements				Utility Improvements								
		Improvement	36' Street w/ Curb	40' Street w/Curb	18' Alley	Total Street Cost	Storm Sewer		Sanitary Sewer		Watermain Cost	Watermain Cost		Utility Condition	Street Condition
		Cost per Lineal Foot	$470.00	$490.00	$200.00		$130.00	Storm Sewer Cost	$150.00	Sanitary Sewer Cost	$150.00				
North-South Streets															
10th St SW	TH 42	4th Ave SW				COUNTY	0	$0.00	200	$30,000.00	1120	$168,000.00	**$198,000.00**		
9th St SW	2nd Ave SW	W Broadway				COUNTY	0	$0.00	725	$108,750.00	725	$108,750.00	**$217,500.00**		
9th St NW	3rd Ave NW	4th Ave NW	400			$188,000.00	400	$52,000.00	400	$60,000.00	400	$60,000.00	**$360,000.00**		
8th St NW	3rd Ave NW	4th Ave NW	175			$82,250.00	175	$22,750.00	75	$11,250.00	175	$26,250.00	**$142,500.00**		
8th St NW	4th Ave NW	4th Ave NW	160			$75,200.00	160	$20,800.00	80	$12,000.00	160	$24,000.00	**$132,000.00**		
7th St SW	2nd Ave SW	1st Ave SW	360			$169,200.00	360	$46,800.00	180	$27,000.00	360	$54,000.00	**$297,000.00**		
7th St SW	1st Ave SW	W Broadway	385			$180,950.00	385	$50,050.00	385	$57,750.00	385	$57,750.00	**$346,500.00**		
7th St NW	2nd Ave SE	3rd Ave SE	350			$164,500.00	350	$45,500.00	350	$52,500.00	350	$52,500.00	**$315,000.00**		
7th St NW	4th Ave NW	North Terminus	140			$65,800.00	140	$18,200.00	140	$21,000.00	140	$21,000.00	**$126,000.00**		
6th St SW	South terminus	4th Ave SW	565			$265,550.00	565	$73,450.00	565	$84,750.00	565	$84,750.00	**$508,500.00**		
6th St SW	4th Ave SW	3rd Ave SW	640			$300,800.00	640	$83,200.00	500	$75,000.00	640	$96,000.00	**$555,000.00**		
6th St SW	3rd Ave SW	2nd Ave SW	280			$131,600.00	280	$36,400.00	280	$42,000.00	280	$42,000.00	**$252,000.00**		
6th St SW	2nd Ave SW	1st Ave SW	365			$171,550.00	365	$47,450.00	182.5	$27,375.00	0	$0.00	**$246,375.00**		
6th St SW	1st Ave SW	3rd Ave NW	350			$164,500.00	350	$45,500.00	350	$52,500.00	350	$52,500.00	**$315,000.00**		
6th St NW	3rd Ave NW	4th Ave NW	370			$173,900.00	370	$48,100.00	370	$55,500.00	370	$55,500.00	**$333,000.00**		
6th St NW	4th Ave NW	6th Ave NW	640			$300,800.00	640	$83,200.00	640	$96,000.00	640	$96,000.00	**$576,000.00**		
6th St NW	6th Ave NW	7th Ave NW	355			$166,850.00	355	$46,150.00	355	$53,250.00	355	$53,250.00	**$319,500.00**		
5th St SW	5th Ave SW	4th Ave SW	370			$173,900.00	370	$48,100.00	0	$0.00	370	$55,500.00	**$277,500.00**		
5th St SW	4th Ave SW	3rd Ave SW	550			$258,500.00	550	$71,500.00	550	$82,500.00	550	$82,500.00	**$495,000.00**		
5th St SW	3rd Ave SW	2nd Ave SW	360			$169,200.00	360	$46,800.00	180	$27,000.00	360	$54,000.00	**$297,000.00**		
5th St SW	2nd Ave SW	1st Ave SW	370			$173,900.00	370	$48,100.00	275	$41,250.00	550	$82,500.00	**$345,750.00**		
5th St NW	W Broadway	1st Ave NW	380			$178,600.00	380	$49,400.00	185	$27,750.00	380	$57,000.00	**$312,750.00**		
4th St SW	Wabasha St	5th Ave SW	530			$249,100.00	530	$68,900.00	400	$60,000.00	300	$45,000.00	**$423,000.00**		
4th St SW	5th Ave SW	4th Ave SW	355			$166,850.00	355	$46,150.00	355	$53,250.00	355	$53,250.00	**$319,500.00**		
4th St SW	4th Ave SW	3rd Ave SW	550			$258,500.00	550	$71,500.00	550	$82,500.00	550	$82,500.00	**$495,000.00**		
4th St SW	3rd Ave SW	2nd Ave SW	365			$171,550.00	365	$47,450.00	182.5	$27,375.00	365	$54,750.00	**$301,125.00**		
4th St SW	2nd Ave SW	1st Ave SW	355			$166,850.00	355	$46,150.00	100	$15,000.00	0	$0.00	**$228,000.00**		
4th St SW	1st Ave SW	W Broadway		375		$183,750.00	375	$48,750.00	0	$0.00	375	$56,250.00	**$288,750.00**		
4th St SW	2nd Ave NW	North Terminus		140		$68,600.00	140	$18,200.00	0	$0.00	0	$0.00	**$86,800.00**		
3rd St NW	4th Ave SW	3rd Ave SW				COUNTY	0	$0.00	540	$81,000.00	540	$81,000.00	**$162,000.00**		
3rd St NW	3rd Ave SW	2nd Ave SW				COUNTY	0	$0.00	0	$0.00	390	$58,500.00	**$58,500.00**		
3rd St NW	2nd Ave SW	1st Ave SW				COUNTY	0	$0.00	0	$0.00	385	$57,750.00	**$57,750.00**		
3rd St NW	1st Ave NW	2nd Ave NW				COUNTY	0	$0.00	185	$27,750.00	0	$0.00	**$27,750.00**		
2nd St SW	South terminus	4th Ave SW	355			$166,850.00	355	$46,150.00	355	$53,250.00	355	$53,250.00	**$319,500.00**		
2nd St SW	4th Ave SW	3rd Ave SW	535			$251,450.00	535	$69,550.00	535	$80,250.00	535	$80,250.00	**$481,500.00**		
2nd St SW	1st Ave SW	W Broadway		380		$186,200.00	380	$49,400.00	0	$0.00	380	$57,000.00	**$292,600.00**		
2nd St NW	1st Ave NW	2nd Ave NW		365		$178,850.00	365	$47,450.00	0	$0.00	365	$54,750.00	**$281,050.00**		
2nd St NW	2nd Ave NW	North terminu		285		$139,650.00	285	$37,050.00	100	$15,000.00	0	$0.00	**$191,700.00**		

BOLTON & MENK

INFRASTRUCTURE MANAGEMENT PLAN

RECONSTRUCTION PROJECTS (by street segment)

CITY OF PLAINVIEW, MN

Street	From	To	Improvement Length (ft) & Cost										Estimated Total Project Cost	Reconstruction Based On:	
			Street & Site Improvements				Utility Improvements								
		Improvement	36' Street w/ Curb	40' Street w/Curb	18' Alley	Total Street Cost	Storm Sewer		Sanitary Sewer		Watermain Cost	Watermain Cost		Utility Condition	Street Condition
		Cost per Lineal Foot	$470.00	$490.00	$200.00		$130.00	Storm Sewer Cost	$150.00	Sanitary Sewer Cost	$150.00				
1st St SW	4th Ave SW	3rd Ave SW		530		$259,700.00	530	$68,900.00	530	$79,500.00	0	$0.00	**$408,100.00**		
1st St SW	2nd Ave SW	1st Ave SW		370		$181,300.00	370	$48,100.00	355	$53,250.00	355	$53,250.00	**$335,900.00**		
1st St SW	1st Ave SW	W Broadway		375		$183,750.00	375	$48,750.00	375	$56,250.00	375	$56,250.00	**$345,000.00**		
1st St NW	W Broadway	1st Ave NW		385		$188,650.00	385	$50,050.00	385	$57,750.00	0	$0.00	**$296,450.00**		
1st St NW	1st Ave NW	2nd Ave NW		355		$173,950.00	355	$46,150.00	385	$57,750.00	0	$0.00	**$277,850.00**		
1st St NW	2nd Ave NW	North Terminus		300		$147,000.00	300	$39,000.00	355	$53,250.00	0	$0.00	**$239,250.00**		
N Wabasha St	E Broadway	1st Ave NW				MNDOT	375	$48,750.00	0	$0.00	375	$56,250.00	**$105,000.00**		
N Wabasha St	2nd Ave NW	3rd Ave NW				MNDOT	355	$46,150.00	355	$53,250.00	355	$53,250.00	**$152,650.00**		
N Wabasha St	3rd Ave NW	4th Ave NW				MNDOT	350	$45,500.00	0	$0.00	350	$52,500.00	**$98,000.00**		
N Wabasha St	4th Ave NW	5th Ave NW				MNDOT	350	$45,500.00	0	$0.00	350	$52,500.00	**$98,000.00**		
1st St SE	2nd Ave SE	1st Ave SE	360			$169,200.00	360	$46,800.00	360	$54,000.00	360	$54,000.00	**$324,000.00**		
1st St NE	2nd Ave NE	3rd Ave NE	350			$164,500.00	350	$45,500.00	350	$52,500.00	350	$52,500.00	**$315,000.00**		
1st St NE	3rd Ave NE	4th Ave NE	350			$164,500.00	350	$45,500.00	350	$52,500.00	350	$52,500.00	**$315,000.00**		
1st St NE	4th Ave NE	5th Ave NE	360			$169,200.00	360	$46,800.00	360	$54,000.00	360	$54,000.00	**$324,000.00**		
2nd St SE	2nd Ave SE	1st Ave SE	355			$166,850.00	355	$46,150.00	355	$53,250.00	355	$53,250.00	**$319,500.00**		
2nd St SE	1st Ave SE	E Broadway	370			$173,900.00	370	$48,100.00	150	$22,500.00	370	$55,500.00	**$300,000.00**		
2nd St NE	2nd Ave NE	3rd Ave NE	350			$164,500.00	350	$45,500.00	350	$52,500.00	350	$52,500.00	**$315,000.00**		
2nd St NE	3rd Ave NE	5th Ave NE	705			$331,350.00	705	$91,650.00	705	$105,750.00	705	$105,750.00	**$634,500.00**		
3rd St SE	2nd Ave SE	1st Ave SE	360			$169,200.00	360	$46,800.00	360	$54,000.00	360	$54,000.00	**$324,000.00**		
3rd St SE	1st Ave SE	E Broadway	370			$173,900.00	370	$48,100.00	370	$55,500.00	370	$55,500.00	**$333,000.00**		
3rd St NE	E Broadway	1st Ave NE	380			$178,600.00	380	$49,400.00	0	$0.00	380	$57,000.00	**$285,000.00**		
3rd St NE*	4th Ave NE	5th Ave NE	395			$185,650.00	395	$51,350.00	395	$59,250.00	395	$59,250.00	**$355,500.00**		
4th St NE	2nd Ave NE	3rd Ave NE	355			$166,850.00	355	$46,150.00	355	$53,250.00	355	$53,250.00	**$319,500.00**		
4th St NE	4th Ave NE	5th Ave NE	355			$166,850.00	355	$46,150.00	355	$53,250.00	355	$53,250.00	**$319,500.00**		
5th St NE	E Broadway	1st Ave NE	380			$178,600.00	380	$49,400.00	380	$57,000.00	380	$57,000.00	**$342,000.00**		
6th St NE	E Broadway	1st Ave NE	365			$171,550.00	365	$47,450.00	0	$0.00	365	$54,750.00	**$273,750.00**		
		Totals	41975	5670	1815	$22,869,550.00		$6,537,050.00		$7,315,125.00		$7,437,000.00	**$44,158,725.00**		
		High Priority Totals (5)	22180	3500	1815	$12,502,600.00		$3,169,400.00		$3,837,750.00		$3,332,250.00	**$22,842,000.00**		

Notes: 1) Refer to attached Project Area Maps for illustrations of referenced projects.
2) Street & Site costs include estimated pavement, aggregate base, curb & gutter, sidewalk (1 side), driveways, turf reestablishment, watermain, sanitary sewer and storm sewer
3) Utility costs include mainline pipe as well as service line replacement.
4) Costs presented above are in 2019 dollars, including estimated design and construction.
5) "High Priority" projects include those with both street and utility needs.