FEASIBILITY REPORT

FORD BROOK ESTATES
STREET RECONSTRUCTIONS

CITY IMPROVEMENT PROJECT NO. 19-01

October 18, 2018

Prepared By:

City of Ramsey
Engineering Department
7550 Sunwood Drive NW
Ramsey, MN 55303
763-433-9839
763-433-9848 (Fax)

October 18, 2018

Honorable Mayor and City Council
City of Ramsey
7550 Sunwood Drive NW
Ramsey, MN 55303

Re: Feasibility Report - City of Ramsey Improvement Project #19-01
Ford Brook Estates Street Reconstructions

Dear Mayor and City Council Members:

Transmitted herewith is a Feasibility Report for the proposed Ford Brook Estates Street Reconstructions project including; 180th Lane from Trunk Highway 47 to Krypton Street, and Krypton Street from 180th Lane to its termini cul-de-sac. The report examines the feasibility of reconstructing the bituminous street section and completing other appurtenant improvements.

This Feasibility Report examines the scope of the proposed improvements, explores estimated costs and available funding sources, defines a preliminary project schedule, and determines the necessity, feasibility and general cost-effectiveness of the proposed improvements, including any alternate designs, as well as whether the improvements would best be completed separately or in conjunction with another project.

I would be happy to discuss this report with you at your convenience. Please feel free to contact me at 763-433-9825 or bwestby@cityoframsey.com with any questions.

Sincerely,
City of Ramsey

Bruce Westby, PE
City Engineer

Enclosure

C: Kurt Ulrich, City Administrator
Leonard Linton, Civil Engineer IV

CERTIFICATION

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.

Bruce Westby, PE

Date: October 18, 2018 License No. 40116

I hereby certify that this plan, specification or report was reviewed for Quality Control and Quality Assurance purposes and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Leonard Linton, PE

Date: October 18, 2018 License No. 21112

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1. EXECUTIVE SUMMARY

City Improvement Project No. 19-01 proposes to reconstruct streets within the Ford Brook Estates neighborhood including 180th Lane and Krypton Street. The streets total approximately 860 linear feet (0.16 miles) in length. A map showing the location and scope of the proposed improvements is included as ***Figure 1*** in ***Appendix A.***

The streets were constructed in 1981 as rural sections with bituminous pavement to a width of 24 feet, and are generally centered within a 66-foot wide right-of-way.

The storm sewer system consists of ditches along both sides of the road within the right-of-way and drainage and utility easements. Storm runoff collects in the ditch along TH 47 and is carried north to Ford Brook.

The existing bituminous pavement section ranges from 1.2 to 6.4 inches thick, with a median thickness of 4.3 inches, and the aggregate base ranges from 2.4 to 6.8 inches thick, with a median thickness of 4.1 inches. This was determined from Ground Penetrating Radar (GPR) analysis performed by Braun Intertec in 2017, as well as from field observations and record plan documents. Copies of Braun Intertec's GPR results are attached in ***Appendix C***. The pavement section was built on silty sand and lean clay subgrade materials generally not considered ideal for pavement support.

City Staff evaluates and rates the condition of pavement sections on all City streets on an annual basis using the Pavement Surface Evaluation and Rating (PASER) system. In the summer of 2018, the pavement section of the above referenced street segments were rated with a PASER rating of 2 which indicates these streets require complete reconstruction. City staff patch the streets at least once per year, particularly before winter so the streets can be plowed without further damaging the pavement in the process. Pictures of the streets are located in ***Appendix A***.

Proposed improvements include removing the existing bituminous pavement and aggregate base along with 2 feet of the unsuitable subgrade material. Two (2) feet of select granular sand will then be placed over geotextile fabric, with drain tile added at the low points, followed by 4 inches of aggregate base, and 3.5 inches of bituminous pavement, generally meeting the City of Ramsey's standard pavement design.

Existing ditches will require re-grading due to the soil corrections for residential streets, however, driveway culverts are not anticipated to be affected by this project. Drain tile will be added to properly drain the soil corrections. No other storm sewer improvements are proposed with this project.

The engineer's opinion of probable costs for completing the proposed improvements outlined in this report is $239,464.57. Estimated costs include 5-percent contingency costs plus 23-percent indirect costs for administrative, engineering, finance and legal costs. A summary of the engineer's opinion of probably costs is included in ***Appendix B***.

A total of 8 assessable parcels have been identified. Staff recommends applying 25-percent of the eligible project costs equally across the 8 assessable properties using the "per lot" assessment method. Eligible project costs include everything except subgrade correction costs. This results in a proposed preliminary assessment rate of $3,919.90 per assessable parcel.

Staff recommends ordering a special benefit consultation report for this project to verify the proposed assessment amount will not exceed the benefit to the properties. If the report concludes the benefit to the properties is less than the proposed preliminary assessment rate, Staff will then propose to lower the assessment rate accordingly during the Assessment Hearing, which is scheduled for October 8, 2019. If the report verifies the assessment rate as proposed is justified, Staff will propose to adopt the final assessment roll using the rate as preliminarily proposed.

Two (2) soil borings were completed by Braun Intertec to assist with the preparation of this report. Pavement design recommendations were offered by Braun Intertec, and Staff considered and incorporated Braun's recommendations to varying degrees while preparing this report. Ground Penetrating Radar (GPR) was conducted on all street segments within the project. The GPR identifies existing bituminous pavement and aggregate base thicknesses, and is used to help Staff determine the appropriate treatment. Copies of Braun Intertec's GPR results and Geotechnical Exploration are attached in ***Appendix C***.

This improvement project, which is listed in the City's current 10-year Capital Improvement Plan, is proposed to be funded using a combination of special assessments to benefiting properties, street reconstruction bond proceeds, and storm sewer funds.

Staff has not yet discussed the proposed improvements with local property owners. However, Staff has scheduled a neighborhood information meeting for November 8, 2018 for the purpose of explaining the proposed improvements and assessments in more detail, and to gather public input on the project, including any information which should be explored in more detail during development of plans and specifications. Staff will incorporate comments and present this information to Council during the Public Hearing on November 13, 2018.

This project would best be constructed as a stand-alone project and is necessary, feasible, and cost-effective from an engineering standpoint, and can be constructed as proposed herein.

2. INTRODUCTION

2.1 Authorization

The preparation of this report was authorized by the Ramsey City Council on August 28, 2018. This project has been designated as City Improvement Project No. 19-01.

2.2 Program Overview

In support of the City's long-term Street Maintenance Program, the existing bituminous pavement section will be reconstructed, and existing ditches will be re-graded to enhance drainage. Other appurtenant work will be completed as outlined in this report.

The City's pavement evaluation process involves a visual evaluation of each street's pavement surface based on the type, extent and severity of each pavement distress observed. Numerous types of pavement distresses may exist within a pavement section including, but not limited to, alligator cracking, block cracking, longitudinal cracking, transverse cracking, rutting, raveling, shoving, potholes and patches. This field data is then used to rate the pavement condition.

The City uses the Pavement Surface Evaluation and Rating (PASER) system to rate pavement condition. A PASER rating is a numerical index between 1 and 10 indicating the condition of a pavement based on the various pavement distresses recorded during visual observations. A PASER rating of 10 represents brand new pavement, while a PASER rating of 1 represents a pavement section that has fallen into complete disrepair requiring full reconstruction.

In the summer of 2018, City Staff evaluated and rated the condition of the pavement along the Ford Brook Estates street segments. A PASER rating of 2 was assigned to 180th Lane and Krypton Street.

2.3 Scope

City of Ramsey Improvement project 19-01 proposes to perform subgrade soil corrections, reconstruct the existing bituminous pavement, re-shape the ditches to enhance drainage, and to complete other appurtenant work on 180th Lane from Trunk Highway 47 to Krypton Street, and on Krypton Street from 180th Lane to its termini cul-de-sac which totals approximately 860 linear feet (0.16 miles) in length.

The existing bituminous pavement section is proposed to be reconstructed by replacing the existing bituminous pavement, aggregate base, and 2 feet of unsuitable subgrade material with 2 feet of select granular borrow placed on geotextile fabric, 4 inches of imported or reclaimed aggregate base, and 3.5 inches of bituminous pavement. The resulting pavement design will generally meet current City design standards for residential pavement sections.

A map showing the location and scope of the proposed improvements is included as ***Figure 1*** in ***Appendix A***.

3. EXISTING CONDITIONS

3.1 Existing Pavement, Soil, and Traffic Conditions.

All streets proposed to be improved were constructed in 1981 with bituminous pavement, class 5 aggregate base, and ditches. The streets are generally centered within a 66-foot wide right-of-way.

Pavement maintenance treatments applied to the street segments included crack seal and seal coat improvements in 1987, an overlay in 1997, and crack seal and seal coat improvements in 2002 and 2012. Spot patching has been performed on an as-needed basis, and has been a yearly treatment recently. In 2018, Staff assigned a PASER rating of 2 on both street segments.

In September of 2018, City Staff recorded a traffic volume of 54 average annual daily traffic (AADT) on 180th Lane west of TH 47. Since Krypton Street is only accessed by 180th Lane, it can be reasonably stated that Krypton Street would have even less traffic. The speed limit is 30 mph for these street segments.

Braun Intertec was employed to complete a Geotechnical Exploration and Engineering Review for this project, which included two (2) soil borings spaced at approximately 600-feet along 180th Lane/Krypton Street, including 1 boring in the cul-de-sac on Krypton Street. The locations of the borings are shown in the Soil Boring Location Map in the Appendix of Braun's report, attached in ***Appendix C***.

The soil borings provide information on existing bituminous pavement and aggregate base course thicknesses, subgrade soil conditions, existing ground water elevations, and potential issues, which may be encountered during construction. All borings terminated at a nominal depth of 11 feet below the existing ground surface. There was no groundwater observed during the soil borings. Based on the work proposed and the lack of groundwater at a depth of 11 feet below the existing ground surface, groundwater is not anticipated to be encountered during work completed with this proposed project.

The soil borings generally indicate the existing bituminous pavement thickness ranges between 4 to 5 inches, and aggregate base thickness is 5 inches. The subgrade generally consists of silty sand, lean clay with sand, and lean clay. This lean clay layer varies from 2 to 9 feet below existing ground. Poorly graded sand was found below the lean clay layer at 4 to 9 feet below existing ground and generally extends to the bottom of the borings (11 feet).

Braun Intertec was employed to complete a ground penetrating radar (GPR) analysis for the project area, which included driving the GPR equipped vehicle throughout all street segments within the project area. A summary table and charts of the GPR Analysis are attached in ***Appendix C***. The GPR data determined a median bituminous pavement thickness of 4.3 inches, and a median aggregate base thickness of 4.1 inches. The median street pavement and base section thickness was 8.2 inches, with a minimum section of 6.1 inches located on 180th Lane, 111 feet west of the intersection with Trunk Highway 47.

3.2 Watermain

Watermain does not exist on site.

3.3 Sanitary Sewer

Sanitary sewer does not exist on site.

3.4 Storm Sewer / Drainage

The storm sewer system consists of ditches along both sides of the road within the right-of-way and drainage and utility easement, which direct stormwater runoff to the ditch along TH47 and north to Ford Brook.

3.5 Streets

3.5.1 Existing Typical Sections

The pavement width of 180th Lane and Krypton Street is 24 feet. The cul-de-sac on Krypton Street is 85 feet in diameter. The streets are centered within a 66-foot wide City-owned right-of-way, with a 120-foot wide right-of-way around the cul-de-sac on Krypton Street.

3.5.2 Maintenance History

Ford Brook Estates was originally constructed in 1981. 180th Lane and Krypton Street received crack seal and seal coat improvements in 1987, an overlay in 1997, crack seal and seal coat improvements in 2002 and 2012.

3.6 Land Use

The parcels within the construction area are zoned rural developing.

4. PROPOSED IMPROVEMENTS

4.1 Street and Stormwater Improvements

4.1.1 Street Improvements

The streets in Ford Brook Estates are proposed to be reconstructed by matching existing widths and elevations with bituminous pavement and ditch sections to carry storm water runoff to Ford Brook, due to the observed presence of clay at the pavement surface, full-depth reclamation is not proposed.

The proposed surface improvements are shown on ***Figure 1*** in ***Appendix A***.

Street Design:
180th Lane and Krypton Street are currently rural residential streets with ditch sections, 24-feet wide to the edge of pavement. The cul-de-sac on Krypton Street is 85-feet in diameter. Existing and proposed traffic counts are consistent with typical residential streets.

180th Lane and Krypton Street mainline street segments are proposed to be reconstructed at their current width. The Krypton Street cul-de-sac is proposed to be reconstructed to a diameter of 100-feet. This will bring the cul-de-sac up to current City standards and allow school buses to use the cul-de-sac. Anoka-Hennepin School District can no longer stop on Highway 47 to pick up or drop off students. A typical section for the proposed pavement reconstruction improvements is shown in ***Figure 2*** in ***Appendix A***.

City Staff is proposing a pavement section design of 1.5 inches bituminous wear course, 2 inches bituminous base course, and 4 inches of aggregate base course. This pavement section would be constructed over 2 feet of imported select granular subgrade after it is shaped and compacted. The select granular is placed on top of geotextile fabric which will help keep the select granular from being contaminated by clay subgrade materials.

4.1.2 Storm Sewer Improvements

The existing ditch sections are in good condition. Re-shaping the ditches will be required due to the subgrade soil corrections, but ditches will be restored to existing grades. The existing driveway culverts are not planned to be replaced. No stormwater treatment improvements are required for this project since the streets are proposed to be reconstructed at their current width.

4.1.3 Geotechnical Considerations

Braun Intertec, Inc. (Braun) completed a Geotechnical Exploration and Engineering Review including two (2) soil borings, located mid-block 180th Lane and the Krypton Street cul-de-sac. The locations of the borings are shown in the Boring Location Map in the Appendix of Braun's report, attached in ***Appendix C***. Braun recommends completing a 6-

8 inch deep reclamation of the existing bituminous pavement and placing 4-inches of aggregate base class 5 or reclaim material, and 3.5-inches of new bituminous pavement. The subgrade discovered was lean clay and it is noted additional work may be required, especially if this material gets wet when exposed. City Staff is in close agreement and propose allowing full-depth reclamation material as an option for the contractor, placing 4-inches of aggregate base class 5 or reclaim material, and 3.5-inches of new bituminous pavement. 2-feet of lean clay subgrade will be removed and replaced with 2-feet of select granular borrow material.

The proposed improvements should have a service life of approximately 60-years, assuming maintenance such as overlays, crack sealing and seal coating is routinely performed.

4.1.4 Other Considerations

Driveways:
Existing driveway aprons may need to be reconstructed to varying degrees. The limits of construction will vary with each driveway apron based on the elevation of the street abutting the driveway and the driveway pavement type. During design, Staff will evaluate the construction limits for each driveway and will incorporate this into the plans, but as with all street reconstruction projects, the exact limits of construction will be determined in the field during construction. Right-of-entry forms will be obtained from private property owners where work is required outside City right-of-ways and easements.

Irrigation Systems:
Developed properties along the project corridor may have private irrigation systems. Staff will notify property owners of pending construction as far in advance as practical to allow them time to move their irrigation systems out of harm's way before work begins.

Parking Restrictions:
Parking is currently provided along both sides of the streets and is not currently restricted except for overnight parking per City code. During this project, parking will be restricted during allowable working hours.

Pavement Corings:
Existing pavement thicknesses have been found to be inconsistent throughout the City. It is now standard practice to have City Staff on-site during pavement installation to insure the proper quantities are being placed. As further conformation, Staff is proposing to collect GPR data or to have pavement corings taken at the conclusion of all reconstruction projects. This is already a requirement on all State Aid projects, and will leave more data on the pavement section for future street maintenance projects.

4.2 Stormwater Treatment

No stormwater retention and/or treatment improvements will be required as a result of this project.

4.3 Water Main Improvements

No watermain improvements are proposed with this project.

4.4 Sanitary Sewer Improvements

No sanitary sewer improvements are proposed with this project.

4.5 Construction Method

The existing pavement will be reconstructed by first removing the existing bituminous pavement, and class 5 aggregate base. Then, the existing subgrade will be corrected by excavating 2-feet of subgrade soils and replacing them with 2-feet of select granular borrow which will be placed on geotextile fabric. However, if during construction it is determined the subgrade soils are suitable enough to allow one or both street segments to be constructed by scarifying 1 or more feet of subgrade soils, this method will then be utilized with concurrence from a soils engineer.

After acceptance of the subgrade material, 4-inches of aggregate base will be installed, followed by 3.5-inches of bituminous pavement in two separate lifts.

4.6 Private Utilities

Staff has not yet met with the telephone, gas, power and cable utilities regarding this project. During preparation of plans and specifications, Staff will meet with the private utility companies to discuss the proposed improvements as noted in the project schedule within this report. The alignment and footprint of the streets will be considered to minimize impacts to private utilities. No impacts to power poles or street lights are anticipated with this project.

Should any utility company indicate they wish to upgrade, replace and/or otherwise modify their services during this project, any such upgrades, replacements and/or modifications will be at the sole discretion and cost of the utility company.

4.7 Permits

Permits that are anticipated to be required as part of the proposed improvements include:

- MPCA General Stormwater Permit (NPDES)…..Grading and Storm Water

A stormwater permit from the Lower Rum River Watershed Management Organization will not be required with this project as street reconstruction projects are exempt.

4.8 Right-of-Ways / Easements

City Staff will obtain required right of entries on a case by case basis.

5. FINANCING

5.1 Opinion of Cost

A detailed opinion of probable costs for the proposed improvements can be found in ***Appendix B*** of this report. The opinion of probable costs incorporates anticipated 2019 construction costs for the proposed improvements with 5-percent contingency costs, plus 23-percent indirect costs for administrative, engineering, financing and legal costs.

City Staff prepared the Feasibility Report in-house as part of Staff's normal duties.

Braun Intertec prepared the Geotechnical Exploration and Engineering Review, included in ***Appendix C***, at a cost of $3,974.78.

5.2 Funding

5.2.1 Assessments

A portion of the project costs is proposed to be recovered through special assessments levied against the 8 identified benefitting properties; 4 along 180th Lane, and 4 along Krypton Street. Assessments are proposed to be collected for eligible improvements benefiting residential properties with direct access to the improved segments of Ford Brook Estates as described below. A preliminary assessment summary is included below in ***Table 1***.

Residential Assessments:
Special assessments are proposed to be levied against residential properties having direct access to improved streets. To be consistent with previous applications of the Special Assessments Policy, each residential property is proposed to be assessed using the "per lot" method.

Each residential property is preliminarily proposed to be assessed at the rate of $3,919.90 per lot. Since State Statute and the City Charter do not allow for assessments to exceed the benefit to the property, Staff requests Council authorization to order a benefit appraisal consultation for this project in accordance with the City's Special Assessment Policy.

The Preliminary Assessment Map and Roll are included in ***Appendix B***.

TABLE 1
Proposed Preliminary Assessments – 180th Lane, and Krypton Street

STREET SEGMENT	ASSESSMENT PER LOT	No. OF LOTS	TOTAL ASSESSMENTS
180th Lane Residential Assessment	$3,919.90	4	$15,679.60
Krypton Street Residential Assessment	$3,919.90	4	$15,679.60
TOTAL PROJECT ASSESSMENTS			**$31,359.20**

5.2.2 City Contribution

The City contribution to the project would include all funding in excess of the amount collected through special assessments to benefiting properties. No funds have been budgeted for this project. The City's share of eligible project costs related to surface (street) improvements is proposed to come from the previously encumbered 5-year Street Reconstruction and Overlay Program bonds. Stormwater Utility Funds are proposed to pay for all storm sewer improvements.

Table 2 illustrates the proposed project funding based on the design proposed within this report. This funding program assumes construction will occur in 2019.

TABLE 2
Proposed Project Funding

	ASSESSMENTS	CITY FUNDS	TOTAL
Surface	$ 31,359.20	$ 194,880.41	$ 226,239.61
Storm Sewer	-	$ 13,224.96	$ 13,224.96
TOTAL	$ 31,359.20	$ 208,105.37	$ 239,464.57

Total Project Cost		**$ 239,464.57**
Less Special Assessments	-	$ 31,359.20
Subtotal	=	**$ 208,105.37**
Less City Bonding Funds	-	$ 194,880.41
Subtotal	=	**$ 13,224.96**
Less Stormwater Utility Funds	-	$ 13,224.96
TOTAL Remaining Cost	=	**$ 0**

6. PROJECT SCHEDULE

The proposed project schedule is as follows:

Council Orders Feasibility Report ..... August 28, 2018

Council Accepts Feasibility Report / Orders Public Hearing ..... October 23, 2018

Staff Conducts Neighborhood Information Meeting ..... November 8, 2018

Staff Publishes Notices of Public Hearing ..... October 26 & November 2, 2018

Council Conducts Public Hearing / Authorizes Plans and Specifications ..... November 13, 2018

Staff Conducts Private Utility Coordination Meeting ..... November, 2018

Council Approves Plans and Specifications / Authorizes Ad for Bids ..... January 22, 2019

Staff Receives Bids ..... February 20, 2019

Council Awards Contract ..... February 26, 2019

Contractor Begins Construction ..... May, 2019

Contractor Completes Construction ..... August 16, 2019

Council Orders Assessment Hearing ..... September 10, 2019

Council Conducts Assessment Hearing ..... October 8, 2019

7. CONCLUSIONS AND RECOMMENDATIONS

City of Ramsey Improvement Project No. 19-01 proposes to construct subgrade corrections, reconstruct the bituminous pavement section, and complete miscellaneous appurtenant work on the following street segments within the Ford Brook Estates residential subdivision:

1. 180th Lane (approx. 560 linear feet) – Trunk Highway 47 to Krypton Street.
2. Krypton Street (approx. 310 linear feet) – 180th Lane to south cul-de-sac.

It is the recommendation of City Staff that City Project No. 19-01 is feasible, necessary, and cost-effective from an engineering standpoint, and this project would best be constructed as a stand-alone project as proposed herein.

The following Staff recommendations related to the proposed project are presented for Council consideration and concurrence:

1. Staff recommends correcting the subgrade soils by excavating 2-feet of existing subgrade and replacing it with clean imported select granular material on top of geotextile fabric, all at 100% City cost (non-assessable).

2. Staff recommends constructing new bituminous pavement per the City's standard residential pavement section of 4-inches aggregate base class 5 (or reclaim), 2-inches new bituminous base course, and 1 ½"-inches new bituminous wear course.

3. Staff recommends expanding the Krypton Street cul-de-sac to a diameter of 100-feet.

4. Staff recommends excluding private irrigation system work from this project. Instead, Staff will notify property owners of pending construction as far in advance as possible, and instruct them to relocate their irrigation system(s) away from the construction area during construction, then allow replacement in or near the original location after construction is complete.

5. Staff recommends holding a neighborhood information meeting on November 8, 2018 to inform property owners of the proposed improvements and to gather their input prior to competing plans and specifications and requesting Council approval to advertise for bids as outlined in the project schedule.

6. Order an assessment appraisal consultation to ensure special assessments do not exceed the benefit received as a result of the improvements.

The City Council is asked to act on the following items related to the proposed project:

1. Accept the preliminary residential special assessment rate of $3,919.90 per lot.

2. Authorize an assessment appraisal consultation to ensure all special assessments are commensurate with benefit received from the proposed improvements.

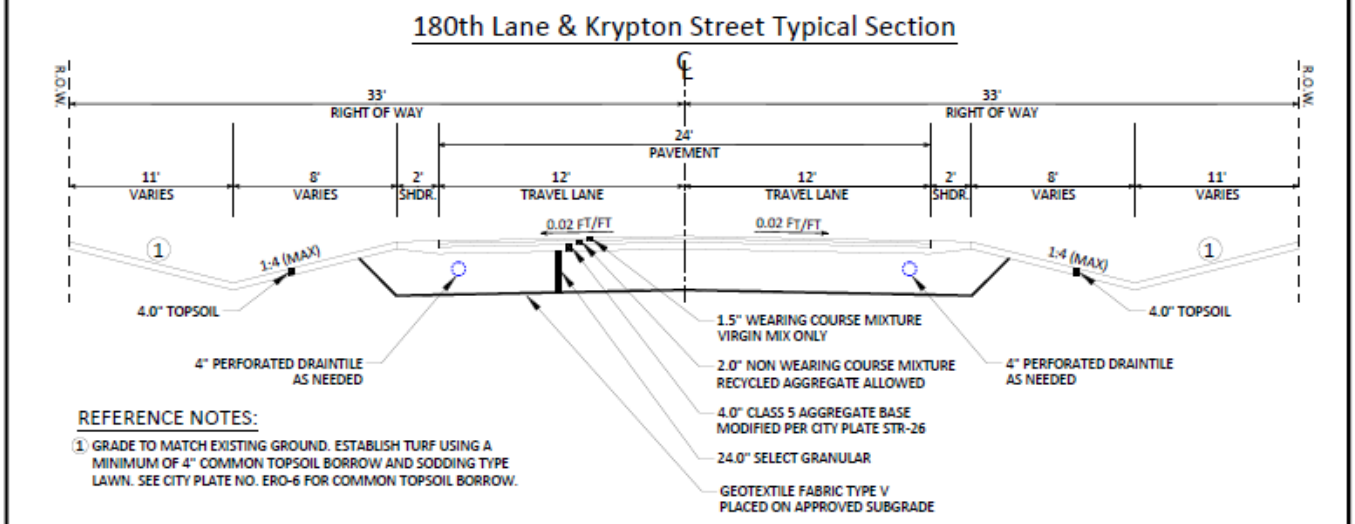
3. Adopt Resolution #18-219 accepting this Feasibility Report and ordering the Public Hearing for November 13, 2018.

APPENDIX A

Figure 1 – Project Scope
Figure 2 – Typical Section
Project Site Pictures


5745
5725
5665
180TH LANE
KRYPTON STREET
18030
18029
5706
18012
18013
SAINT FRANCIS BOULEVARD (TH 47)
IODINE STREET
FORD BROOK ESTATES
PROJECT SCOPE
0
150
300
450
SCALE (FEET)
N
City of
RAMSEY

FIGURE 1



FORD BROOK ESTATES TYPICAL SECTION	NOT TO SCALE	City of RAMSEY

FIGURE 2

PROJECT SITE PICTURES

Picture 1: 180th Lane from TH 47

Picture 2: 180th Lane from Krypton Street

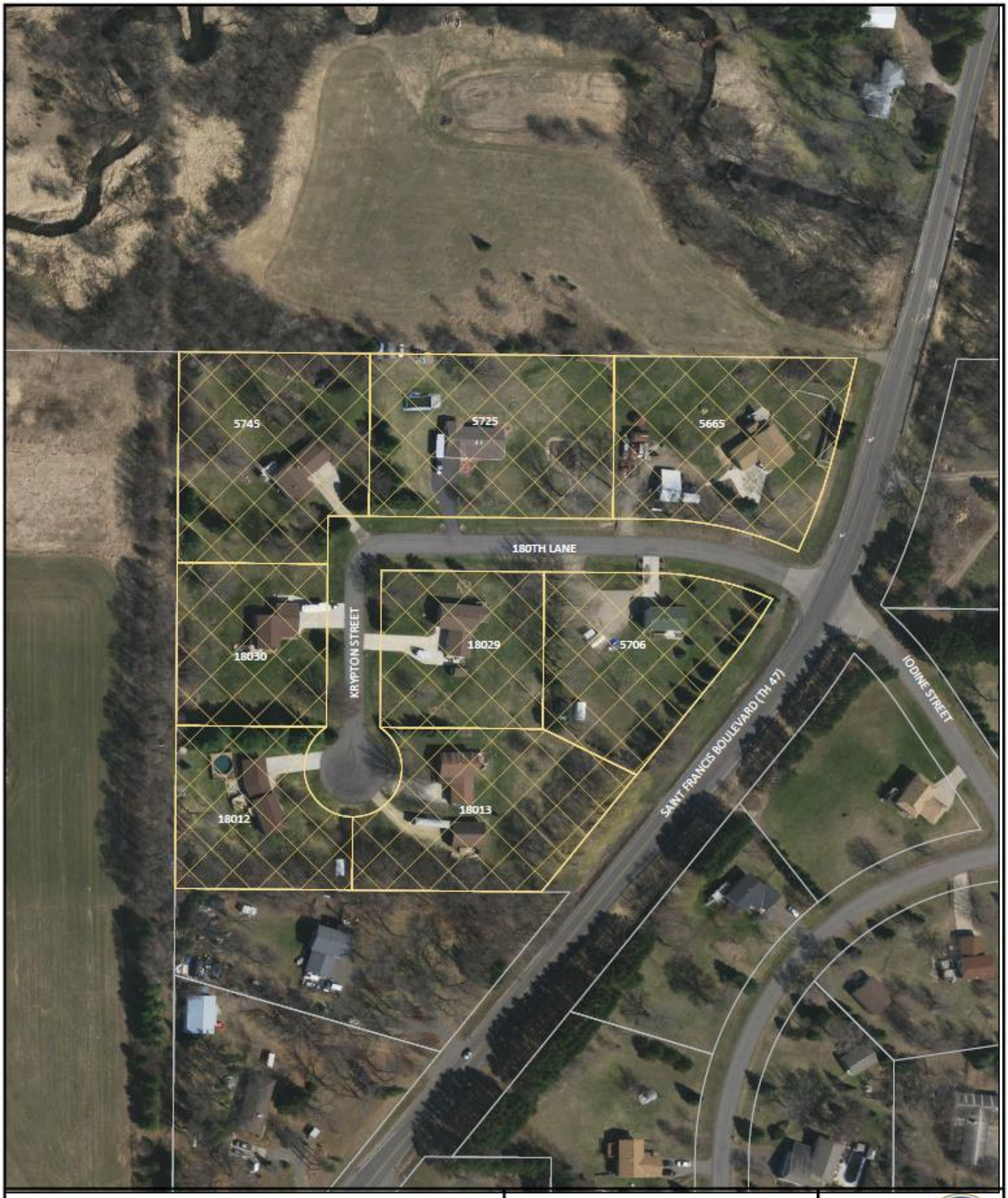
Picture 3: Krypton Street from 180th Lane

Picture 4: Krypton Street cul-de-sac

APPENDIX B

Opinion of Probable Costs (Preliminary Engineer's Estimate)
Preliminary Assessment Map
Preliminary Assessment Roll

19-01 FORD BROOK ESTATES STREET RECONSTRUCTIONS					
Preliminary Engineer's Estimate					
Street Construction					
Item No.	**Description**	**Unit**	**Estimated Quantity**	**Unit Cost**	**Cost Extension**
1	Mobilization	LS	1	$ 7,000.00	$ 7,000.00
2	Remove Concrete Pavement – Driveways	SF	1,001	$ 2.50	$ 2,502.50
3	Remove Bituminous Pavement – Driveways	SY	67	$ 7.00	$ 469.00
4	Remove Bituminous Pavement	SY	2,761	$ 3.50	$ 9,663.50
5	Sawing Concrete Pavement – Full Depth	LF	126	$ 4.00	$ 504.00
6	Sawing Bituminous Pavement – Full Depth	LF	102	$ 2.50	$ 255.00
7	Salvage and Install Mail Box Support	EA	8	$ 200.00	$ 1,600.00
8	Temporary Mail Box Cluster	EA	1	$ 400.00	$ 400.00
9	Common Excavation (EV)	CY	180	$ 21.00	$ 3,780.00
10	Subgrade Excavation, Remove Unsuitable Material (EV)	CY	2,540	$ 10.00	$ 25,400.00
11	Select Granular Borrow (CV)	CY	3,050	$ 15.00	$ 45,750.00
12	Common Topsoil Borrow (CV)	CY	185	$ 31.00	$ 5,735.00
13	Geotextile Fabric Type V	SY	4,600	$ 1.50	$ 6,900.00
13	Aggregate Base Class 5	CY	451	$ 15.00	$ 6,765.00
14	Mill Bituminous Pavement (2' wide x 1.5" deep)	SY	15	$ 20.00	$ 300.00
15	Bituminous Material for Tack Coat	GAL	209	$ 2.40	$ 501.60
16	Type SP 9.5 Wearing Course Mixture	TON	247	$ 71.00	$ 17,537.00
17	Type SP 12.5 Non Wearing Course Mixture	TON	329	$ 64.00	$ 21,056.00
18	Type SP 9.5 Wearing Course Mixture – Driveways	TON	8	$ 71.00	$ 568.00
19	6" Concrete Driveway Pavement	SF	733	$ 7.25	$ 5,314.25
20	Traffic Control	LS	1	$ 2,500.00	$ 2,500.00
21	Silt Fence, Type MS	LF	350	$ 2.50	$ 875.00
22	Sodding Type Lawn	SY	1,400	$ 7.00	$ 9,800.00
				Total Street Construction Cost	*$ 175,175.85*
				5% Contingency Cost	*$ 8,758.79*
				23% Indirect Cost	*$ 42,304.97*
				Total Street Project Cost	*$ 226,239.62*
Storm Sewer Construction					
Item No.	**Description**	**Unit**	**Estimated Quantity**	**Unit Cost**	**Cost Extension**
1	4" Perforated Pipe Drain	LF	502	$ 20.00	$ 10,040.00
2	4" PVC Pipe Drain Cleanout	EA	1	$ 200.00	$ 200.00
				Total Storm Sewer Construction Cost	*$ 10,240.00*
				5% Contingency Cost	*$ 512.00*
				23% Indirect Cost	*$ 2,472.96*
				Total Storm Sewer Project Cost	*$ 13,224.96*
				Total Estimated Project Cost	**$ 239,464.57**



FORD BROOK ESTATES
ASSESSABLE PROPERTIES

0 150 300 450
SCALE (FEET)

City of RAMSEY

PRELIMINARY ASSESSMENT ROLL – 19-01 FORD BROOK ESTATES STREET RECONSTRUCTIONS							
PID	**NAME / OWNER**	**ADDRESS**	**CITY**	**STATE**	**ZIP**	**ASSESSABLE UNITS**	**PROPOSED ASSESSMENT**
23225110004	ROLEY JEFFREY B	5665 180TH LN NW	RAMSEY	MN	55303	1	$ 3,919.90
23225110005	MONSERUD LISA	5725 180TH LN NW	RAMSEY	MN	55303	1	$ 3,919.90
23225110006	LINDBERG RANDY L & CYNTHIA A	5745 180TH LN NW	RAMSEY	MN	55303	1	$ 3,919.90
23225110007	WALZ GERALD E & DARLENE M	18030 KRYPTON ST NW	RAMSEY	MN	55303	1	$ 3,919.90
23225110008	KRUGER TODD B & KATHY A	18012 KRYPTON ST NW	RAMSEY	MN	55303	1	$ 3,919.90
23225110009	KLUCKING JOHN & LAVONNE	18013 KRYPTON ST NW	RAMSEY	MN	55303	1	$ 3,919.90
23225110010	BOEHLKE JAMIE	18029 KRYPTON ST NW	RAMSEY	MN	55303	1	$ 3,919.90
23225110011	DEBROBANDER SANDRA	5706 180TH LN NW	RAMSEY	MN	55303	1	$ 3,919.90
TOTALS						**8**	**$ 31,359.20**

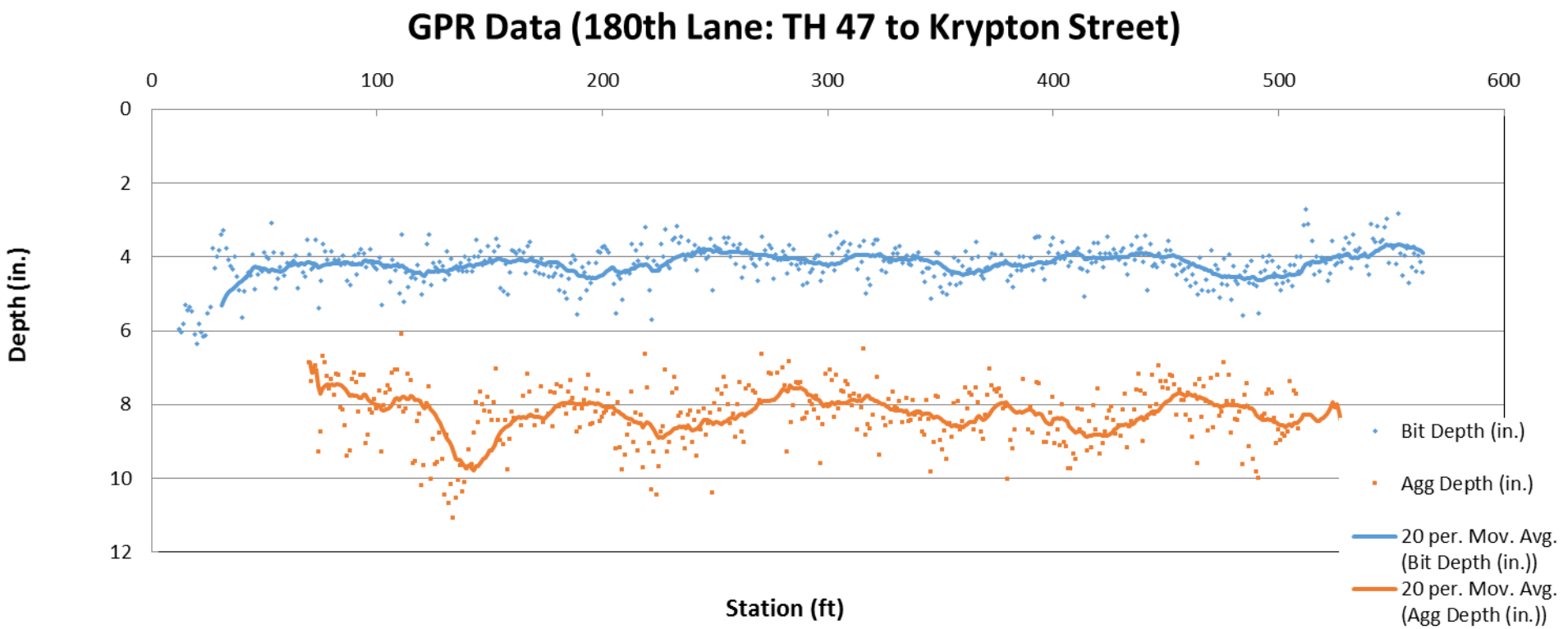
APPENDIX C

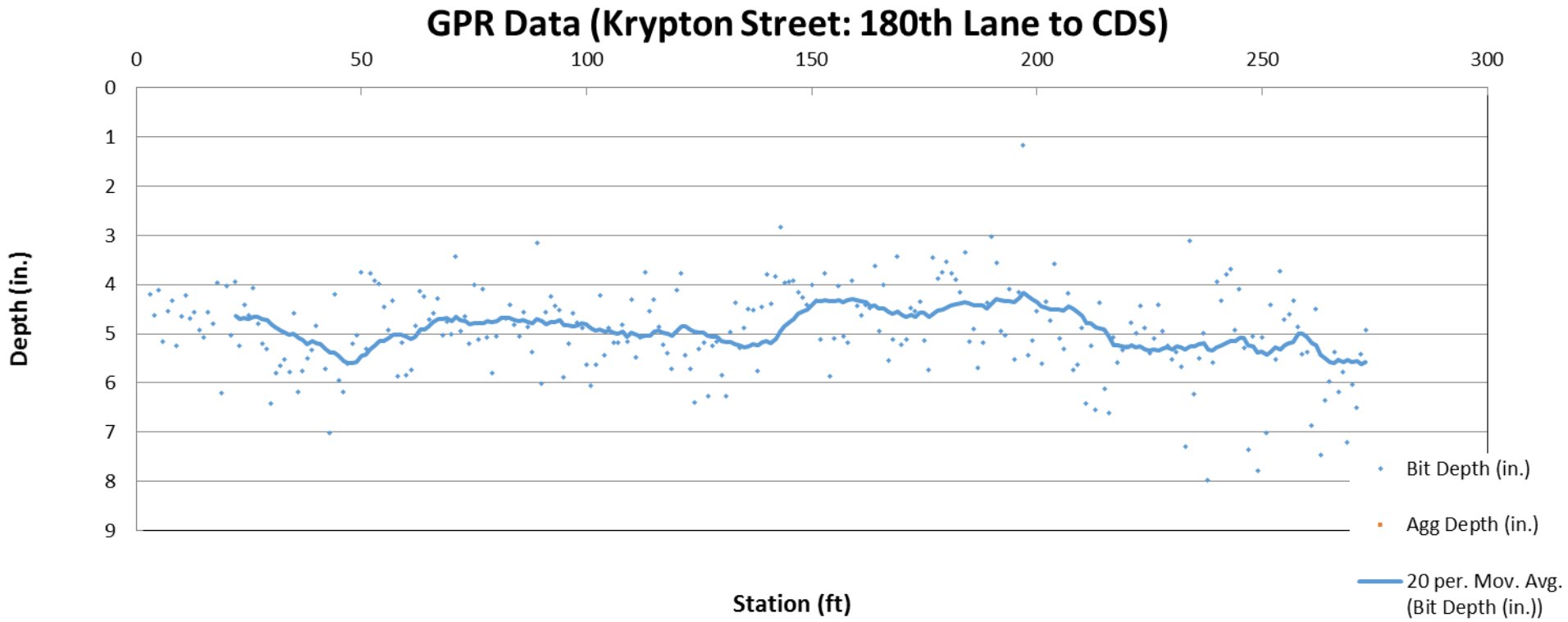
Street Segment Summary
Ground Penetrating Radar (GPR) Results
Geotechnical Exploration and Engineering Review

STREET SEGMENT SUMMARY

Street	Segment Description	Length	Width	Curb	2018 Rating	Year Built	Maint. 1	Maint. 2	Maint. 3	Maint. 4
180th Lane	TH 47 / Krypton Street	556	24	n/a	2	1981	SC 1 1987	OL 1997	SC 2 2002	SC 3 2012
Krypton Street	180th Lane / CDS	308	24	n/a	2	1981	SC 1 1987	OL 1997	SC 2 2002	SC 3 2012

Ford Brook Estates GPR Summary										
Project Segment		Pavement			Aggregate			Section		
Street	Segment Description	Min	Max	Med	Min	Max	Med	Med	Min	Location
180th Lane	TH 47 / Krypton Street	2.7	6.4	4.2	2.4	6.8	4.1	8.2	6.1	111' west of TH 47.
Krypton Street	180th Lane / CDS	1.2	8.0	4.9	n/a	n/a	n/a	n/a	n/a	Base not picked up due to ambient noise.
Project Summary		*1.2*	*8.0*	*4.3*	*2.4*	*6.8*	*4.1*	*8.2*	*6.1*	*180th Lane 111' west of TH 47.*


GPR Data (180th Lane: TH 47 to Krypton Street)
0
100
200
300
400
500
600
0
2
4
6
8
10
12
Depth (in.)
Station (ft)
Bit Depth (in.)
Agg Depth (in.)
20 per. Mov. Avg. (Bit Depth (in.))
20 per. Mov. Avg. (Agg Depth (in.))


GPR Data (Krypton Street: 180th Lane to CDS)
0
50
100
150
200
250
300
0
1
2
3
4
5
6
7
8
9
Depth (in.)
Station (ft)
Bit Depth (in.)
Agg Depth (in.)
20 per. Mov. Avg. (Bit Depth (in.))