



HIGHLANDS
ENGINEERING

ENGINEERING ASSESSMENT REPORT

**NORTH INDUSTRIES
STREETS AND STORMWATER
CITY OF DICKINSON**

CITY PROJECT NUMBER: 202316-1

HIGHLANDS PROJECT NUMBER: 210223

DATE: FEBRUARY 27, 2024





ENGINEER'S CERTIFICATION

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the State of North Dakota. This document was originally issued and sealed by Andrew Schrank, Registration number PE-9814 on 2/27/24 and the original document is stored at the office of Highlands Engineering.



CITY OF DICKINSON CERTIFICATION

The City of Dickinson hereby concurs with the content and findings of this report in accordance with ND Century Code §40-22-10.

Joshua Skluzacek, Community Development Director
City of Dickinson, ND

Date

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EXECUTIVE SUMMARY

Project Description

The City of Dickinson is planning for a street and stormwater improvement of existing public roadways within an area of land that includes: *Lane's Subdivision* on the north side of Dickinson that was annexed by Resolution Number 63-2011 as approved by the City of Dickinson Commission on November 7, 2011 and recorded as Stark County Document Number 3093391; Lots 1 and 6-8 of Block 1 and Lots 1-5 of Block 2 in the *Replat of Burwick First Subdivision* as recorded by Stark County Document Number 215023; and Lot 1, Block 1 of *Burwick Second Subdivision* as recorded by Stark County Document Number 3078628. This area is shown in the Special Improvement District map in Appendix A of this report and includes the property with frontage along the public rights-of-way that the City plans to improve. The area is zoned for Limited Industrial development and roughly 85% of the area is currently developed. The general nature of the planned infrastructure improvements includes improving the roadway condition and the conveyance of stormwater. Since special assessment is being considered as a potential funding source for this project, the City of Dickinson has contracted Highlands Engineering to provide this Engineering Report in accordance with North Dakota Century Code §40-22-10. This report is intended to assist the City in:

- determining the need and feasibility of this special improvement district;
- planning and preparing the special assessment district for this area;
- budgeting City funds to complete these improvements;
- determining the appropriate scope of improvements; and
- determining the approximate assessment amounts for parcels within the district boundary.

If the City determines that this special assessment district is feasible and appropriate, they will continue working to establish this district as required by North Dakota Century Code.

The City is currently planning to begin constructing these improvements during the 2025 construction season as long as the project funding, plans, and project bidding can be established within this timeframe.

Purpose, Need, and Feasibility

The proposed special improvement district area is within the City limits, but the roadways do not meet the City of Dickinson standard sections. With the current nature of the roadways, access is a potential issue for public safety vehicles. Concerns have been raised by City staff that these roadways are not adequate to support the loads of emergency vehicles especially during adverse conditions. This has created a public safety concern for this area that the City is attempting to address as part of this project.

The roadways are currently rural sections with ditches having depths of around 1-to-2-feet below the roadway top. Roadway top widths are generally 24-feet and consist of gravel surfacing that is roughly 4-

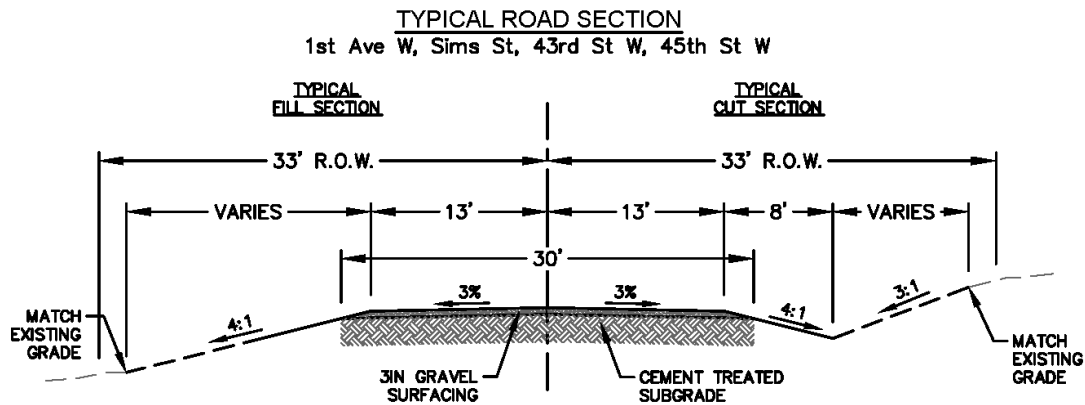
to-8-inches in depth. Roadway ditches and pipes have sediment accumulation in many locations that limit stormwater conveyance. Right-of-way widths are 66-feet within the project area, except for 3rd Ave W which has a right-of-way width of 40-feet. In some locations, roadway ditches are insufficient or not present which causes stormwater to drain over the roadway surface. This surface runoff has created additional maintenance and transportation issues along these routes. These drainage issues are most notable at the intersection of 43rd Street W with 1st Ave W and 3rd Ave W where water routinely drains over the road surface.

Over the last several years, the City has considered options to install curb and gutter and pavement along these roadways to reduce maintenance requirements, improve the surfacing and accessibility, and to provide better stormwater conveyance through the right-of-way. This option was previously assessed as the best way to improve these roadways and drainage issues while bringing these roadways closer to a City Standard section within the limited right-of-way available. Through discussions and meetings with property owners in the area, this option was not desirable due to the high cost of construction. Therefore, lower cost options to improve these roadways are currently being explored as part of this assessment.

Since the cost of pavement and curb and gutter was too high to be a viable option for these roadways, alternatives to stabilize the subgrade with a gravel surface were explored. The recommended subgrade stabilization option for this area is cement stabilization with a new layer of gravel surfacing for the driving surface. The cost estimates included in this assessment provide for cement stabilization and new gravel surfacing for the roadway surface and the existing driveways within the public right-of-way. This will provide a more affordable means of reinforcing the subgrade of these roadways so they can support the anticipated traffic and emergency vehicles without incurring the high cost of pavement. It should be noted that although the initial cost of this option will be less, gravel surfacing will require periodic maintenance which can add cost over time, and it can create dust issues in dry conditions that may need to be periodically addressed.

Along with the subgrade improvements, options to correct the conveyance of stormwater through these rights-of-way where feasible are also recommended. This will help to prolong the life of these roadways and to further reduce maintenance issues. To gain sufficient ditch depth for the installation of approach pipes under the driveways to lots adjoining these roadways, we would recommend site grading as necessary to establish 2-foot-deep minimum roadway ditches. This would allow for the installation of new 15-inch culverts under driveways where necessary to route stormwater runoff. With the limited right-of-way available, and due to the challenges of acquiring new right-of-way with this area being largely developed, we would recommend V-ditches rather than flat bottom ditches to fit within the existing roadway area. 3rd Avenue West would be an exception to this ditch section as this roadway has only 40-feet of right-of-way. We would recommend sloping this road to the west to the ND Highway 22 right-of-way with no ditches and keeping the existing approach pipes along the east side of this roadway as they

are largely located within the adjacent private property. The following images illustrate the proposed general typical sections recommended for the roadways within this area.



We would also recommend adding storm sewer pipes under 43rd Street W where it intersects 1st Ave W and 3rd Ave W to convey runoff under this roadway so it no longer spills over the top of the roadway surface. This will help reduce the maintenance and rutting issues at these intersections. It is likely that catch basins may need to be added on the upstream side of these pipes to allow for adequate cover over these pipes due to the limited roadway ditch depths that can fit within the right-of-way available.

Additional right-of-way is likely going to be required at the corners of intersections to for the proposed ditches previously mentioned to allow for adequate stormwater conveyance. It is assumed that, in general, a 25-foot radius will be required at each intersection corner to provide sufficient area for the proposed site grading and drainage improvements. Right-of-way will also be required along the east side of 1st Ave W south of 43rd Street W to shift the road east slightly so 1st Ave W can be aligned on each side of 43rd Street W. Minor jogs in intersections, such as the one the currently exists here, create confusion and conflict points for traffic. To eliminate the safety concerns associated with the current jog in this intersection, we would recommend correcting this issue as part of this project.

A map depicting the general site improvements discussed by this section has been included in Appendix B.

Estimate of Cost

Appendix C of this report includes an engineer's estimate of cost for the improvements previously discussed. The cost estimate and quantities provided are based on a preliminary site analysis only. These costs are subject to change as design progresses and site conditions and design parameters are better understood. These estimated costs do not include design or construction engineering fees.

To provide an estimate of assessment costs for each parcel within the Special Assessment District area, a table of estimated parcel assessment costs has been provided in Appendix D. The assessments have been tabulated based on the parcel frontage bordering the site improvements since the proposed improvements provide access and drainage improvements along the parcel frontages. Since design work has not been completed for these improvements, a 10% contingency has been added to the construction cost estimates to account for discrepancies in the assumptions used in determining quantities, and to account for fluctuations unit prices.

Summary

Based on the analysis completed as part of this engineering assessment, it is our opinion that the recommended improvements for this area are needed for the safety of the public and to reduce the maintenance issues that exist on the roadways in this area. We feel that these improvements are feasible with the assumptions noted in this report.

A handwritten signature in blue ink that reads "Andrew Schrank". The signature is fluid and cursive, with the first name "Andrew" and the last name "Schrank" clearly legible.

Andrew Schrank, PE, CFM

Highlands Engineering

APPENDIX A

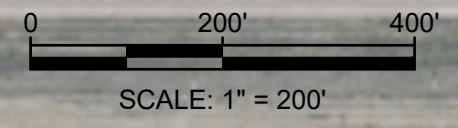
SPECIAL IMPROVEMENT DISTRICT MAP

GENERAL SCOPE OF SITE IMPROVEMENTS

LEGEND	
CEMENT STABILIZATION	
GRAVEL	
CULVERT	
DITCH DRAINAGE	
RIGHT-OF-WAY	



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SHEET NAME:	SITE IMPROVEMENT MAP	
PROJECT NUMBER:	231233	SCALE: 1"=200'
DRAWN BY:	AJA/AWS	DATE: 01/15/24
SHEET NUMBER:	B1	

APPENDIX B

GENERAL SCOPE OF IMPROVEMENTS

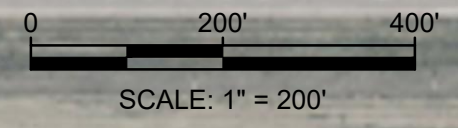
GENERAL SCOPE OF SITE IMPROVEMENTS

LEGEND

- CEMENT STABILIZED SUBGRADE WITH 3IN AGGREGATE SURFACING FOR ROADWAY 
- CEMENT STABILIZED SUBGRADE WITH 3IN AGGREGATE SURFACING FOR DRIVEWAY 
- CULVERT REPLACEMENT OR ADDITION 
- DITCH DRAINAGE IMPROVEMENTS 
- RIGHT-OF-WAY ACQUISITION 



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SHEET NAME:	SITE IMPROVEMENT MAP	
PROJECT NUMBER:	231233	SCALE: 1"=200'
DRAWN BY:	AJA/AWS	DATE: 02/27/24
SHEET NUMBER:	B1	

APPENDIX C

ESTIMATE OF COST



NORTH INDUSTRIES STREETS AND STORMWATER

Engineer's Estimate of Construction Costs

Description	Quantity	Unit	Unit Price	Amount
MOBILIZATION AND CONTRACT BOND	1	L SUM	\$ 150,000.00	\$ 150,000.00
EROSION CONTROL	1	L SUM	\$ 12,500.00	\$ 12,500.00
TRAFFIC CONTROL	1	L SUM	\$ 25,000.00	\$ 25,000.00
REMOVAL OF CULVERTS-ALL TYPES & SIZES	1,340	LF	\$ 22.00	\$ 29,480.00
COMMON EXCAVATION	4,650	CY	\$ 10.00	\$ 46,500.00
TOPSOIL	4,250	CY	\$ 14.00	\$ 59,500.00
AGGREGATE SURFACING (3IN)	4,563	TON	\$ 70.00	\$ 319,410.00
CEMENT TREATED BASE	268,000	SF	\$ 1.25	\$ 335,000.00
ADJUST GATE VALVE & CONCRETE COLLAR	21	EA	\$ 1,500.00	\$ 31,500.00
ADJUST MANHOLE & CONCRETE COLLAR	18	EA	\$ 2,000.00	\$ 36,000.00
PIPE CONDUIT 15IN	1,680	LF	\$ 90.00	\$ 151,200.00
PIPE CONDUIT 18IN	384	LF	\$ 110.00	\$ 42,240.00
STORM CATCH BASIN	2	EA	\$ 6,000.00	\$ 12,000.00
SEEDING AND MULCHING	10	ACRE	\$ 2,000.00	\$ 20,000.00
PERMANENT SIGNS	1	L SUM	\$ 7,500.00	\$ 7,500.00
RIGHT-OF-WAY ACQUISITION	3,715	SF	\$ 6.00	\$ 22,290.00
TOTAL ESTIMATED CONSTRUCTION COST				\$ 1,300,120.00

APPENDIX D

ESTIMATED PARCEL ASSESSMENT TABLE



NORTH INDUSTRIES STREETS AND STORMWATER

Construction Cost Estimate:	\$	1,300,120.00
Contingency (10% assumed)	\$	65,006.00
Total Project Cost Estimate:	\$	1,365,126.00
City Contribution to Project	\$	609,997.77
Total Estimated Special Assessment Amount:	\$	755,128.23

Table of Estimated Parcel Assessment Amounts

PID	Lot(s)	Block	Subdivision	Owner	Property Area (Acre)	Percent of Total Area (%)	Participating Frontage (LF)	Participation Amount
8030-0100-0100	1	1	Replat of Burwick First Subdivision	David D. Peterson	3.630	6.55%	437.60	\$ 28,944.33
8030-0100-0600	6	1	Replat of Burwick First Subdivision	Fred & Kathleen Tooz	1.098	1.98%	318.58	\$ 21,071.95
8030-0100-0700	7	1	Replat of Burwick First Subdivision	Fred & Kathleen Tooz	1.132	2.04%	318.00	\$ 21,033.59
8030-0100-0800	8	1	Replat of Burwick First Subdivision	Tool Contracting, LLC	1.132	2.04%	473.00	\$ 31,285.81
8030-0200-0100	1	2	Replat of Burwick First Subdivision	Griffith Development, LLC	0.987	1.78%	415.50	\$ 27,482.56
8030-0200-0200	2	2	Replat of Burwick First Subdivision	Robert E. & Lori A. Simons	0.984	1.78%	190.80	\$ 12,620.15
8030-0200-0300	3	2	Replat of Burwick First Subdivision	SJ Peterson Properties, LLC	0.987	1.78%	190.80	\$ 12,620.15
8030-0200-0400	4, 5	2	Replat of Burwick First Subdivision	SJ Peterson Properties, LLC	2.004	3.62%	382.18	\$ 25,278.67
8040-0100-0100	1	1	Burwick Second Subdivision	Champion Technologies, Inc.	4.680	8.45%	329.99	\$ 21,826.64
8050-0100-0100	1, 2	1	Lane's Subdivision	Green River Services, LLC	1.839	3.32%	300.00	\$ 19,843.01
8050-0100-0300	3	1	Lane's Subdivision	Frances Rose Hart	0.919	1.66%	150.00	\$ 9,921.50
8050-0100-0400	4	1	Lane's Subdivision	Steven Halvorson	0.919	1.66%	150.00	\$ 9,921.50
8050-0100-0600	5, 6	1	Lane's Subdivision	Credence Properties II, LLC	1.839	3.32%	300.00	\$ 19,843.01
8050-0100-0700	7	1	Lane's Subdivision	FL1, LLC	0.919	1.66%	150.00	\$ 9,921.50
8050-0100-0800	8	1	Lane's Subdivision	FL1, LLC	1.091	1.97%	178.23	\$ 11,788.73
8050-0200-0100	1	2	Lane's Subdivision	Frances Hart	0.919	1.66%	417.00	\$ 27,581.78
8050-0200-0200	2	2	Lane's Subdivision	Frances Hart	0.919	1.66%	150.00	\$ 9,921.50
8050-0200-0300	3	2	Lane's Subdivision	Earl Enis III Hart	0.919	1.66%	150.00	\$ 9,921.50
8050-0200-0400	4, 5	2	Lane's Subdivision	SBG Dickinson Shop, LLC	1.839	3.32%	300.00	\$ 19,843.01
8050-0200-0600	6	2	Lane's Subdivision	Dale Pottorff	0.919	1.66%	150.00	\$ 9,921.50
8050-0200-0700	7	2	Lane's Subdivision	Dale & Renee Pottorff	0.919	1.66%	150.00	\$ 9,921.50
8050-0200-0800	8	2	Lane's Subdivision	Dale & Renee Pottorff	1.095	1.98%	445.35	\$ 29,456.94
8050-0200-0900	9	2	Lane's Subdivision	Frances Rose Hart	1.098	1.98%	446.30	\$ 29,519.78
8050-0200-1100	10, 11	2	Lane's Subdivision	Paramount Land Group	1.839	3.32%	300.00	\$ 19,843.01
8050-0200-1200	12	2	Lane's Subdivision	Hauck Family Trust	0.919	1.66%	150.00	\$ 9,921.50
8050-0200-1300	13, 14	2	Lane's Subdivision	Hauck Family Trust	1.839	3.32%	300.00	\$ 19,843.01
8050-0200-1500	15	2	Lane's Subdivision	Hauck Family Trust	0.919	1.66%	150.00	\$ 9,921.50
8050-0200-1600	16	2	Lane's Subdivision	Hauck Family Trust	0.919	1.66%	417.00	\$ 27,581.78
8050-0300-0100	1	3	Lane's Subdivision	Griffith Development, LLC	0.919	1.66%	417.00	\$ 27,581.78
8050-0300-0200	2	3	Lane's Subdivision	Griffith Development, LLC	0.919	1.66%	150.00	\$ 9,921.50
8050-0300-0300	3	3	Lane's Subdivision	North D's Storage, LLC	0.919	1.66%	150.00	\$ 9,921.50
8050-0300-0400	4	3	Lane's Subdivision	Paramount Land Group	0.919	1.66%	150.00	\$ 9,921.50
8050-0300-0500	5	3	Lane's Subdivision	Northern Improvement Co.	0.919	1.66%	150.00	\$ 9,921.50
8050-0300-0600	6	3	Lane's Subdivision	Northern Improvement Co.	0.919	1.66%	150.00	\$ 9,921.50
8050-0300-0700	7-10, N 45' of 11	3	Lane's Subdivision	Northern Improvement Co.	4.350	7.85%	1,234.04	\$ 81,623.54
8050-0300-1100	S 90' of 11, 12	3	Lane's Subdivision	Gregory & Susan Knutson	1.580	2.85%	225.00	\$ 14,882.25
8050-0300-1300	13	3	Lane's Subdivision	Paramount Land Group	0.948	1.71%	135.00	\$ 8,929.35
8050-0300-1400	14	3	Lane's Subdivision	J.B. Properties, LLC	0.948	1.71%	135.00	\$ 8,929.35
8050-0300-1500	15, N1/2 of 16	3	Lane's Subdivision	Stoner Management, LLLP	1.420	2.56%	202.50	\$ 13,394.03
8050-0300-1600	S1/2 of 16, 17	3	Lane's Subdivision	3rd Avenue W, LLC ET-AL	1.420	2.56%	507.67	\$ 33,579.00
TOTALS					55.402	100.00%	11,416.54	\$ 755,128.23