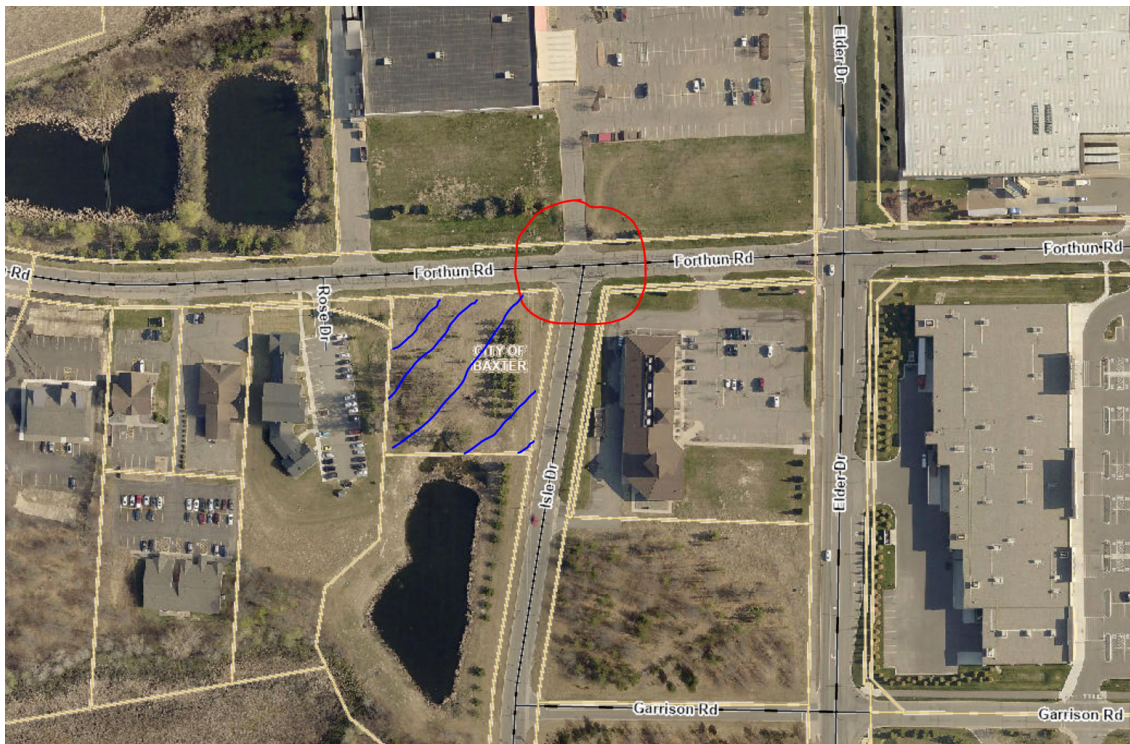


**MEMORANDUM**

**Date:** May 12, 2021  
**To:** City of Baxter Council/City of Baxter Utility Commission  
**From:** Derek Arens/Pete Lemke *pamL*  
**Subject:** 2022 Inglewood Drive Railway Crossing and Associated Roadway Improvements  
**Forthun Road/Isle Drive Intersection**  
City of Baxter  
Municipal Project No.: 4121  
BMI Project No. T42.120675

**Background**

On May 4, 2021, Bolton & Menk presented the proposed layout of the 2022 Inglewood Drive Railway Crossing and Associated Roadway Improvements (Inglewood Drive) project. The city council gave consensus to proceed with the project layout with the next steps of amending of the feasibility report and completing the public input process. During the discussion, questions were brought up about the Forthun Road/Isle Drive intersection and what would be the proper traffic control and costs of each. This memo's intent is to address these questions and concerns with a summary of the findings of both options.



**Figure 1: Plan View of Concerned Intersection (Forthun Road/Isle Drive)**

**Design Options**

### **Alternative 1 – Leave As-Is, COST: \$0**

This alternative consists of maintaining existing conditions. Today, the west to east section of Forthun Road is free-flowing while the southern leg of Isle Drive is a stop-controlled leg. The north leg is a commercial driveway from Home Depot that is stop-controlled as well.

Per planning and traffic study history of the area, the need of a west reliever roadway for the TH 371 corridor was identified. Following the studies, the southwest corner parcel of the intersection (*Identified in Figure 1 with the blue hatching*) became available and the City Council made a motion to purchase the property. The reason for the purchase is because today the intersection is reversed in which direction of which roadway needs to be free-flowing to establish a reliever roadway to TH 371. In order to allow the north-south directions to become free-flowing, the re-alignment of the intersection is required.

### **Alternative 2 – T-Intersection with the east Forthun Leg having a stop-controlled condition (Appendix A), COST \$505,205**

This alternative consists of re-aligning Isle Drive and the west leg of Forthun Road to further the completion of the west reliever route of TH 210. The east leg of Forthun Road would intersect with the reliever roadway and become a stop-controlled leg. The new continuous roadway of the west and southern legs would be free-flowing. An option of the intersection to become an all-way stop was considered but was eliminated because it negates the reasoning to have a continuous and free-flowing west reliever roadway.

### **Alternative 3 – Mini-Roundabout (Appendix C), COST \$681,500**

This alternative consists of re-aligning Isle Drive and the entire roadway of Forthun Road to create a 3-legged mini-roundabout. At a mini-roundabout, all of the legs are a yield condition and must yield to any traffic within the circulatory section. This option provides equal distribution of traffic entering the intersection from all three legs. Unlike alternative 2, this mini-roundabout allows for the pedestrians and bicyclists to have a controlled safer crossing of the west reliever roadway. In addition, this alternative will adapt to increased traffic in the coming future and any distribution of traffic in the area then any other solution.

### **Forthun Road and Isle Drive**

Our traffic operations analysis for the proposed Forthun Road and Isle Drive intersection shows that for both traffic levels **Forecasted 2040 Traffic** and **Forecasted 2040 + Summer Traffic**, the overall intersection and each individual movement operate at a LOS A for both proposed alternatives 2 and 3.

### **BOLTON & MENK RECOMMENDATIONS**

We recommend the City move forward with incorporating Alternative 3 within the 2022 Inglewood Drive Railway Crossing and Associated Roadway Improvements project. Alternative 3 – Mini-Roundabout will provide safe traffic operations, reduce overall intersection delay by reducing the delay on westbound Forthun Road, and improve pedestrian safety and circulation along and through the intersection.

### **COUNCIL ACTION REQUESTED**

Consensus on direction for which alternative to proceed with in the 2022 Inglewood Drive Railway Crossing and Associated Roadway Improvements project.

Name: Forthun/Isle Drive Intersection

Date: 5/12/2021

Page: 3

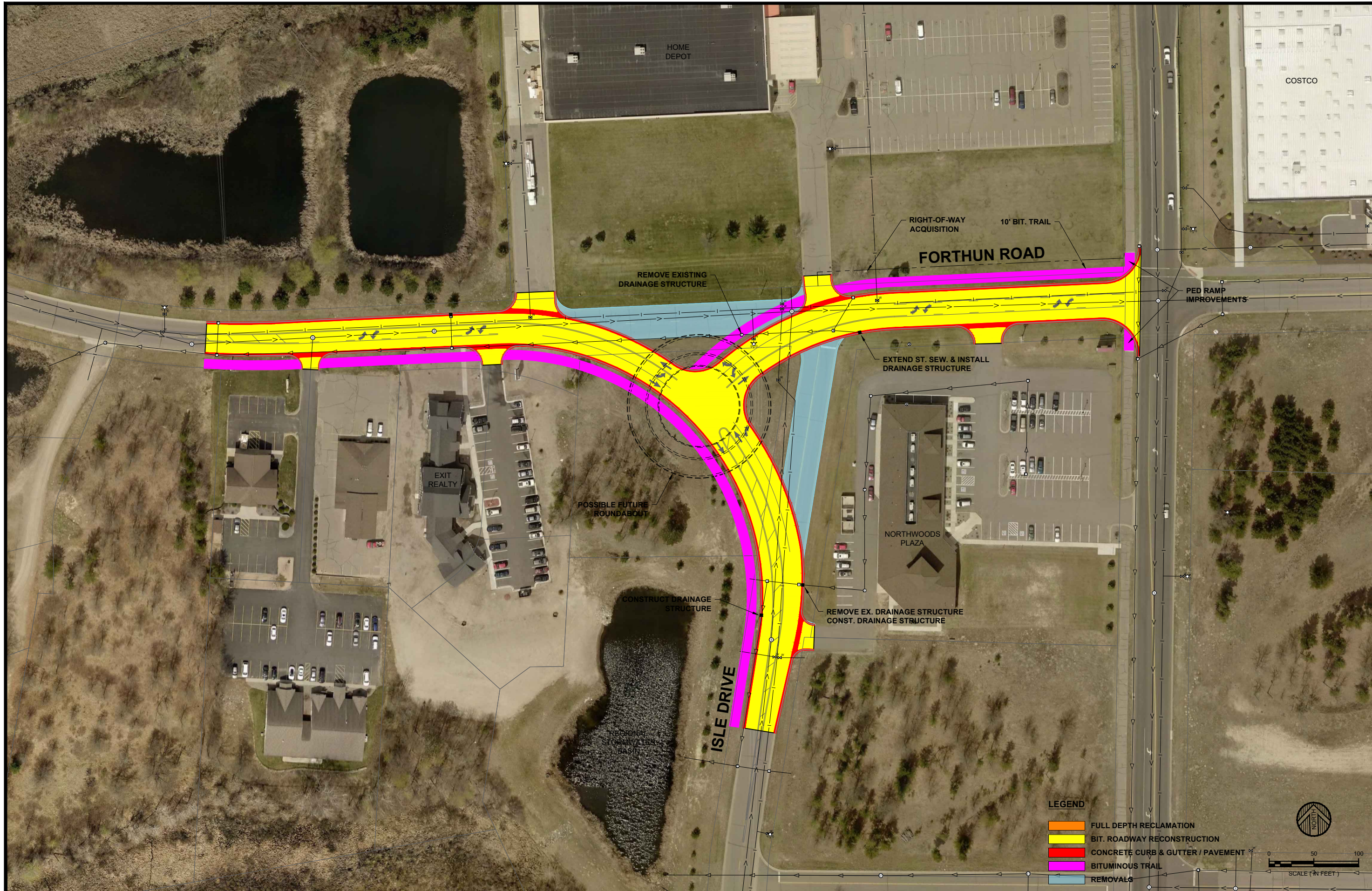
## **Appendices**

*Appendix A– Isle Dr/Forthun Rd T-Intersection Design from the WSN Feasibility Report Dated April 17, 2018*

*Appendix B – Isle Dr/Forthun Rd T-Intersection Cost Estimate, from WSN Feasibility Report Dated April 17, 2018*

*Appendix C – Isle Dr/Forthun Rd Mini-Roundabout Design*

*Appendix D - Isle Dr/Forthun Rd Mini-Roundabout Cost Estimate*



# FORTHUN ROAD AND ISLE DRIVE INTERSECTION IMPROVEMENTS

**WIDSETH SMITH NOLTING**  
 Engineering | Architecture | Surveying | Environmental



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE	REVISIONS DESCRIPTION	BY	VALUE

DATE: MARCH 2018  
 SCALE: AS SHOWN  
 DRAWN BY: INITIALS  
 CHECKED BY: INITIALS  
 JOB NUMBER: 0102B0384.000

INGLEWOOD DR RAILWAY CROSSING & FOLEY RD IMPROVEMENTS  
 CITY OF BAXTER  
 BAXTER, MINNESOTA  
**FIGURE 13 - PROPOSED IMPROVEMENTS - ISLE DRIVE**

SHEET NO. **13**

**2021 INGLEWOOD DRIVE RAILWAY CROSSING AND FOLEY ROAD IMPROVEMENTS**

**MUNICIPAL IMPROVEMENT NO. 4121**

**BAXTER, MN**

Wednesday, March 14, 2018

**ISLE DRIVE AND FORTHUN ROAD IMPROVEMENTS**

**ISLE DRIVE AND FORTHUN ROAD IMPROVEMENTS**

**ISLE DRIVE AND FORTHUN ROAD REALIGNMENT**

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	PROJECT TOTAL	
					ESTIMATED QUANTITY	TOTAL COST
1	2021.501	MOBILIZATION	LUMP SUM	\$13,000.00	1	\$13,000.00
2	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	\$13.00	200	\$2,600.00
3	2104.501	REMOVE CURB AND GUTTER	LIN FT	\$4.00	3000	\$12,000.00
4	1360.000	REMOVE BITUMINOUS PAVEMENT	SQ YD	\$2.00	7000	\$14,000.00
5	2104.505	REMOVE CONCRETE PAVEMENT	SQ YD	\$5.00	110	\$550.00
6	2104.509	REMOVE GRATE AND APRON	EACH	\$150.00	6	\$900.00
7	2104.509	REMOVE HYDRANT AND VALVE	EACH	\$750.00	1	\$750.00
8	2104.509	REMOVE SIGN TYPE C	EACH	\$50.00	10	\$500.00
9	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	\$2.50	340	\$850.00
10	2105.501	COMMON EXCAVATION (P)	CU YD	\$6.00	6000	\$36,000.00
11	2118.501	AGGREGATE SURFACING CLASS 5	TON	\$26.00	50	\$1,300.00
12	2123.501	COMMON LABORERS	HOUR	\$85.00	20	\$1,700.00
13	2123.503	MOTOR GRADER	HOUR	\$170.00	10	\$1,700.00
14	2123.610	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	\$110.00	10	\$1,100.00
15	2211.503	AGGREGATE BASE (CV) CLASS 6 (P)	CU YD	\$22.00	1150	\$25,300.00
16	2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (2.C)	TON	\$60.00	1550	\$93,000.00
17	2503.541	12" RC PIPE SEWER DES 3006 CL V	LIN FT	\$29.00	50	\$1,450.00
18	2503.541	24" RC PIPE SEWER DES 3006 CL III	LIN FT	\$45.00	200	\$9,000.00
19	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	\$1,000.00	3	\$3,000.00
20	2504.602	ADJUST VALVE BOX	EACH	\$200.00	6	\$1,200.00
21	2504.602	CONNECT TO EXISTING WATER MAIN	EACH	\$1,000.00	1	\$1,000.00
22	2506.501	CONST DRAINAGE STRUCTURE DESIGN SD-48	LIN FT	\$400.00	25	\$10,000.00
23	2506.602	RECONSTRUCT DRAINAGE STRUCTURE	EACH	\$1,000.00	4	\$4,000.00
24	2506.522	ADJUST FRAME AND RING CASTING	EACH	\$300.00	4	\$1,200.00
25	2521.511	2" BITUMINOUS WALK	SQ FT	\$4.00	14300	\$57,200.00
26	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	\$19.00	2950	\$56,050.00
27	2531.507	6" CONCRETE DRIVEWAY PAVEMENT	SQ YD	\$70.00	40	\$2,800.00
28	2531.604	8" CONCRETE VALLEY GUTTER	SQ YD	\$80.00	230	\$18,400.00
29	2531.618	TRUNCATED DOMES	SQ FT	\$42.00	150	\$6,300.00
30	2563.601	TRAFFIC CONTROL	LUMP SUM	\$5,000.00	1	\$5,000.00
31	2564.602	INSTALL SIGN	EACH	\$85.00	10	\$850.00
32	2564.531	SIGN PANELS - TYPE C	EACH	\$150.00	10	\$1,500.00
33	2573.535	STABILIZED CONSTRUCTION EXIT	EACH	\$800.00	2	\$1,600.00
34	2573.550	EROSION CONTROL SUPERVISOR	LUMP SUM	\$750.00	1	\$750.00
35	2574.508	FERTILIZER TYPE 3	POUND	\$1.50	700	\$1,050.00
36	2574.525	COMMON TOPSOIL BORROW	CU YD	\$20.00	900	\$18,000.00
37	2575.501	SEEDING	ACRE	\$450.00	2	\$900.00
38	2575.502	SEED MIXTURE 22-111	POUND	\$2.50	200	\$500.00
39	2575.502	SEED MIXTURE 25-131	POUND	\$5.00	400	\$2,000.00
40	2575.511	MULCH MATERIAL TYPE 3	TON	\$300.00	4	\$1,200.00
41	2575.519	DISK ANCHORING	ACRE	\$250.00	2	\$500.00
42	2575.523	EROSION CONTROL BLANKETS CATEGORY 3	SQ YD	\$2.00	4300	\$8,600.00
43	1560.000	HYDRAULIC MATRIX TYPE MULCH	POUND	\$2.00	3900	\$7,800.00
44	2582.501	PAVEMENT MESSAGE-PAINT	EACH	\$75.00	17	\$1,275.00
45	2582.502	4" SOLID LINE - PAINT	LIN FT	\$0.35	1220	\$427.00
46	2582.502	8" SOLID LINE - PAINT	LIN FT	\$0.40	140	\$56.00
47	2582.502	24" SOLID LINE - PAINT	LIN FT	\$4.00	250	\$1,000.00
48	2582.502	4" BROKEN LINE - PAINT	LIN FT	\$0.35	200	\$70.00
49	2582.502	4" DOUBLE SOLID LINE - PAINT	LIN FT	\$0.55	2230	\$1,226.50
50	2611.4A	6" PVC WATERMAIN PIPE	LIN FT	\$23.00	60	\$1,380.00
51	2611.4B	6" GATE VALVE & BOX w/ ADAPTOR	EACH	\$1,250.00	1	\$1,250.00
52	2611.4E	HYDRANT	EACH	\$4,150.00	1	\$4,150.00
53	2611.4I	DUCTILE IRON WATERMAIN FITTINGS	POUND	\$2.75	500	\$1,375.00

ESTIMATED CONSTRUCTION COST:

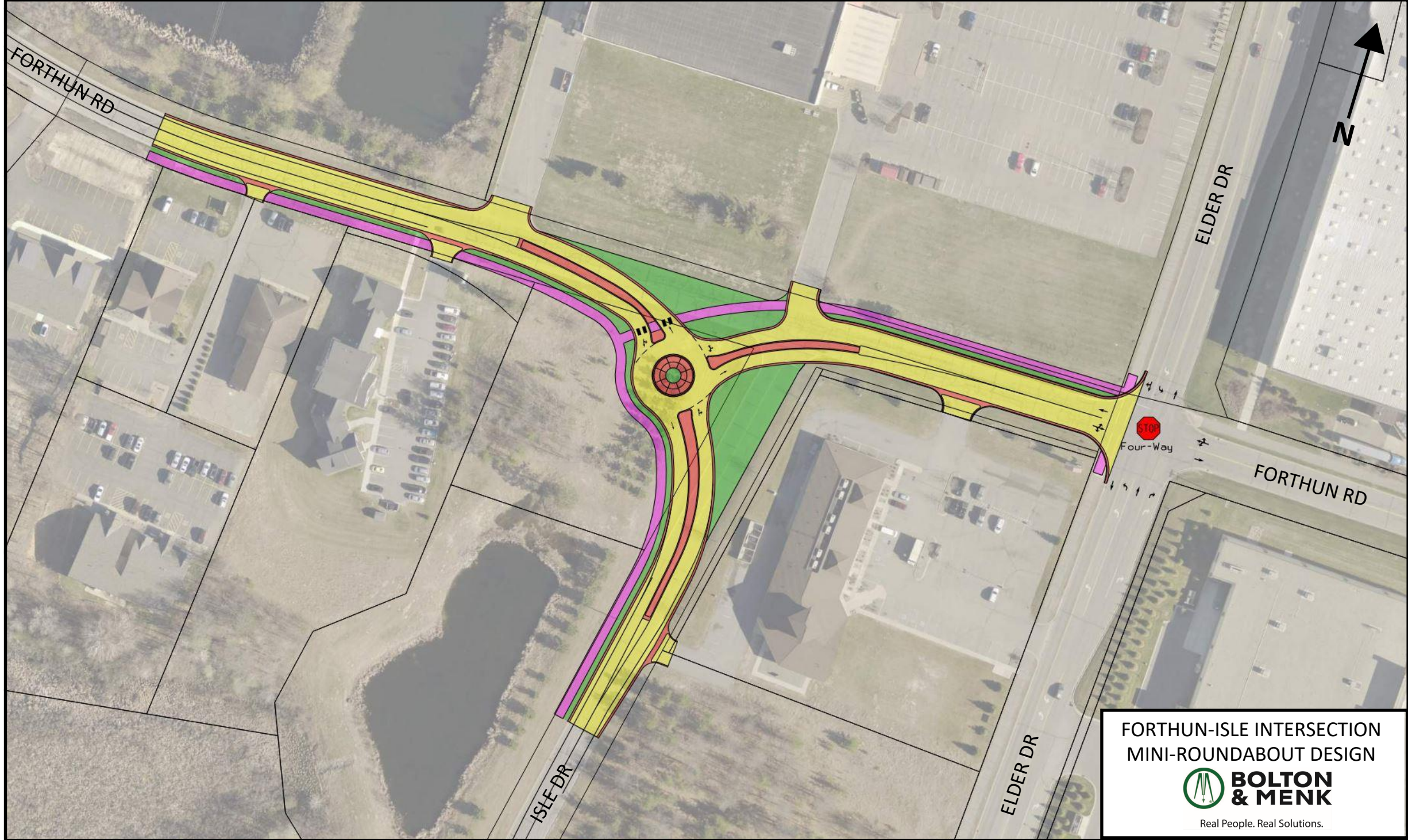
CONTINGENCIES (15%):

SUBTOTAL:

\$439,309.50

\$65,896.43

\$505,205.93



FORTHUN-ISLE INTERSECTION  
MINI-ROUNDOABOUT DESIGN



**BOLTON  
& MENK**

Real People. Real Solutions.

# Appendix D

**Preliminary Design Opinion of Probable Cost**  
**TH 210**  
**Preliminary Cost Estimate**  
**City of Baxter**  
 5/7/2021

**DRAFT**



Real People. Real Solutions.

No.	Item	Unit	Total Qty	Unit Price	Total Cost
1	2021.501 MOBILIZATION	LUMP SUM	1	\$ 13,000.00	\$ 13,000
2	2104.501 REMOVE SEWER PIPE (STORM)	LIN FT	200	\$ 13.00	\$ 2,600
3	2104.501 REMOVE CURB AND GUTTER	LIN FT	3,000	\$ 4.00	\$ 12,000
4	1360.000 REMOVE BITUMINOUS PAVEMENT	SQ YD	7,000	\$ 2.00	\$ 14,000
5	2104.505 REMOVE CONCRETE PAVEMENT	SQ YD	110	\$ 5.00	\$ 550
6	2104.509 REMOVE GRATE AND APRON	EACH	6	\$ 150.00	\$ 900
7	2104.509 REMOVE HYDRANT AND VALVE	EACH	1	\$ 750.00	\$ 750
8	2104.509 REMOVE SIGN TYPE C	EACH	10	\$ 50.00	\$ 500
9	2104.513 SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	340	\$ 2.50	\$ 850
10	2105.501 COMMON EXCAVATION (P)	CU YD	6,000	\$ 6.00	\$ 36,000
11	2118.501 AGGREGATE SURFACING CLASS 5	TON	50	\$ 26.00	\$ 1,300
12	2123.501 COMMON LABORERS	HOUR	20	\$ 85.00	\$ 1,700
13	2123.503 MOTOR GRADER	HOUR	10	\$ 170.00	\$ 1,700
14	2123.610 STREET SWEEPER (WITH PICKUP BROOM)	HOUR	10	\$ 110.00	\$ 1,100
15	2211.503 AGGREGATE BASE (CV) CLASS 6 (P)	CU YD	1,600	\$ 22.00	\$ 35,200
16	2360.501 TYPE SP 9.5 WEARING COURSE MIXTURE (2,C)	TON	1,500	\$ 60.00	\$ 90,000
17	2503.541 12" RC PIPE SEWER DES 3006 CL V	LIN FT	40	\$ 50.00	\$ 2,000
18	2503.541 24" RC PIPE SEWER DES 3006 CL III	LIN FT	180	\$ 45.00	\$ 8,100
19	2503.602 CONNECT TO EXISTING STORM SEWER	EACH	3	\$ 1,000.00	\$ 3,000
20	2504.602 ADJUST VALVE BOX	EACH	6	\$ 200.00	\$ 1,200
21	2504.602 CONNECT TO EXISTING WATER MAIN	EACH	1	\$ 1,000.00	\$ 1,000
22	2506.501 CONST DRAINAGE STRUCTURE DESIGN SD-48	LIN FT	22	\$ 400.00	\$ 8,800
23	2506.602 RECONSTRUCT DRAINAGE STRUCTURE	EACH	4	\$ 1,000.00	\$ 4,000
24	2506.522 ADJUST FRAME AND RING CASTING	EACH	4	\$ 300.00	\$ 1,200
25	2521.511 2" BITUMINOUS WALK	SQ FT	13000	\$ 4.00	\$ 52,000
26	2531.501 CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	2900	\$ 19.00	\$ 55,100
27	2531.501 CONCRETE CURB AND GUTTER DESIGN SPECIAL	LIN FT	930	\$ 28.00	\$ 26,040
28	2531.507 6" CONCRETE DRIVEWAY PAVEMENT	SQ YD	200	\$ 70.00	\$ 14,000
29	2531.604 8" CONCRETE VALLEY GUTTER	SQ YD	230	\$ 80.00	\$ 18,400
30	2531.618 6" CONCRETE MEDIAN	SQ FT	4350	\$ 10.00	\$ 43,500
31	2531.618 TRUNCATED DOMES	SQ FT	210	\$ 42.00	\$ 8,820
32	2545.501 LIGHTING SYSTEM	LUMP SUM	1	\$ 70,000.00	\$ 70,000
32	2563.601 TRAFFIC CONTROL	LUMP SUM	1	\$ 5,000.00	\$ 5,000
33	2564.602 INSTALL SIGN	EACH	10	\$ 85.00	\$ 850
34	2564.531 SIGN PANELS - TYPE C	EACH	25	\$ 150.00	\$ 3,750
35	2573.535 STABILIZED CONSTRUCTION EXIT	EACH	2	\$ 800.00	\$ 1,600
36	2573.550 EROSION CONTROL SUPERVISOR	LUMP SUM	1	\$ 750.00	\$ 750
37	2574.508 FERTILIZER TYPE 3	POUND	700	\$ 1.50	\$ 1,050
38	2574.525 COMMON TOPSOIL BORROW	CU YD	900	\$ 20.00	\$ 18,000
39	2575.501 SEEDING	ACRE	2	\$ 450.00	\$ 900
40	2575.502 SEED MIXTURE 22-111	POUND	200	\$ 2.50	\$ 500
41	2575.502 SEED MIXTURE 25-131	POUND	400	\$ 5.00	\$ 2,000
42	2575.511 MULCH MATERIAL TYPE 3	TON	4	\$ 300.00	\$ 1,200
43	2575.519 DISK ANCHORING	ACRE	2	\$ 250.00	\$ 500
44	2575.523 EROSION CONTROL BLANKETS CATEGORY 3	SQ YD	4300	\$ 2.00	\$ 8,600
45	1560.000 HYDRAULIC MATRIX TYPE MULCH	POUND	3900	\$ 2.00	\$ 7,800
46	2582.501 PAVEMENT MESSAGE-PAINT	EACH	6	\$ 75.00	\$ 450
47	2582.502 4" SOLID LINE - PAINT	LIN FT	1600	\$ 0.35	\$ 560
48	2582.502 8" SOLID LINE - PAINT	LIN FT	60	\$ 0.40	\$ 24
49	2582.502 24" SOLID LINE - PAINT	LIN FT	220	\$ 4.00	\$ 880
50	2582.502 4" BROKEN LINE - PAINT	LIN FT	100	\$ 0.35	\$ 35
51	2582.502 4" DOUBLE SOLID LINE - PAINT	LIN FT	1200	\$ 0.55	\$ 660
52	2611.4A 6" PVC WATERMAIN PIPE	LIN FT	60	\$ 23.00	\$ 1,380
53	2611.4B 6" GATE VALVE & BOX w/ ADAPTOR	EACH	1	\$ 1,250.00	\$ 1,250
54	2611.4E HYDRANT	EACH	1	\$ 4,150.00	\$ 4,150
55	2611.4I DUCTILE IRON WATERMAIN FITTINGS	POUND	500	\$ 2.75	\$ 1,375
<b>Construction Cost ( Dollars)</b>					<b>\$ 592,574</b>
<b>Construction Cost (w/ 15% Contingency)</b>					<b>\$ 681,500</b>