


**Road Advisory Meeting  
July 19, 2021**

**Cass County Highway Department**

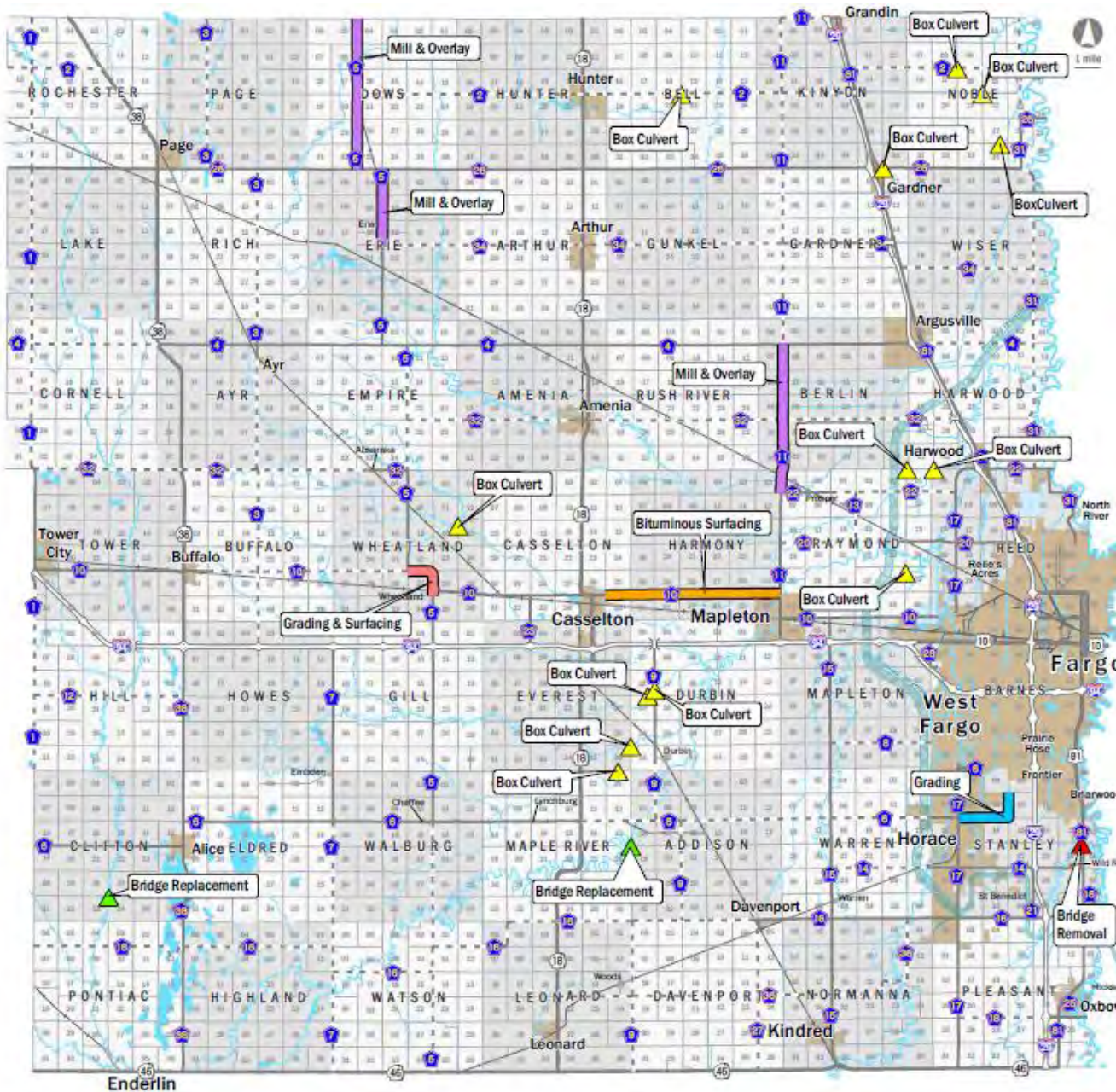


**Road Advisory Meeting  
July 19, 2021**


**Update on 2021 Construction  
Projects**

**Cass County Highway Department**

# 2021 Construction Projects Update



- ▲ Box Culvert
- ▲ Bridge Removal
- ▲ Bridge Replacement
- ▲ Low Water Crossing
- ▬ Bituminous Surfacing
- ▬ Grading
- ▬ Grading & Surfacing
- ▬ Mill & Overlay

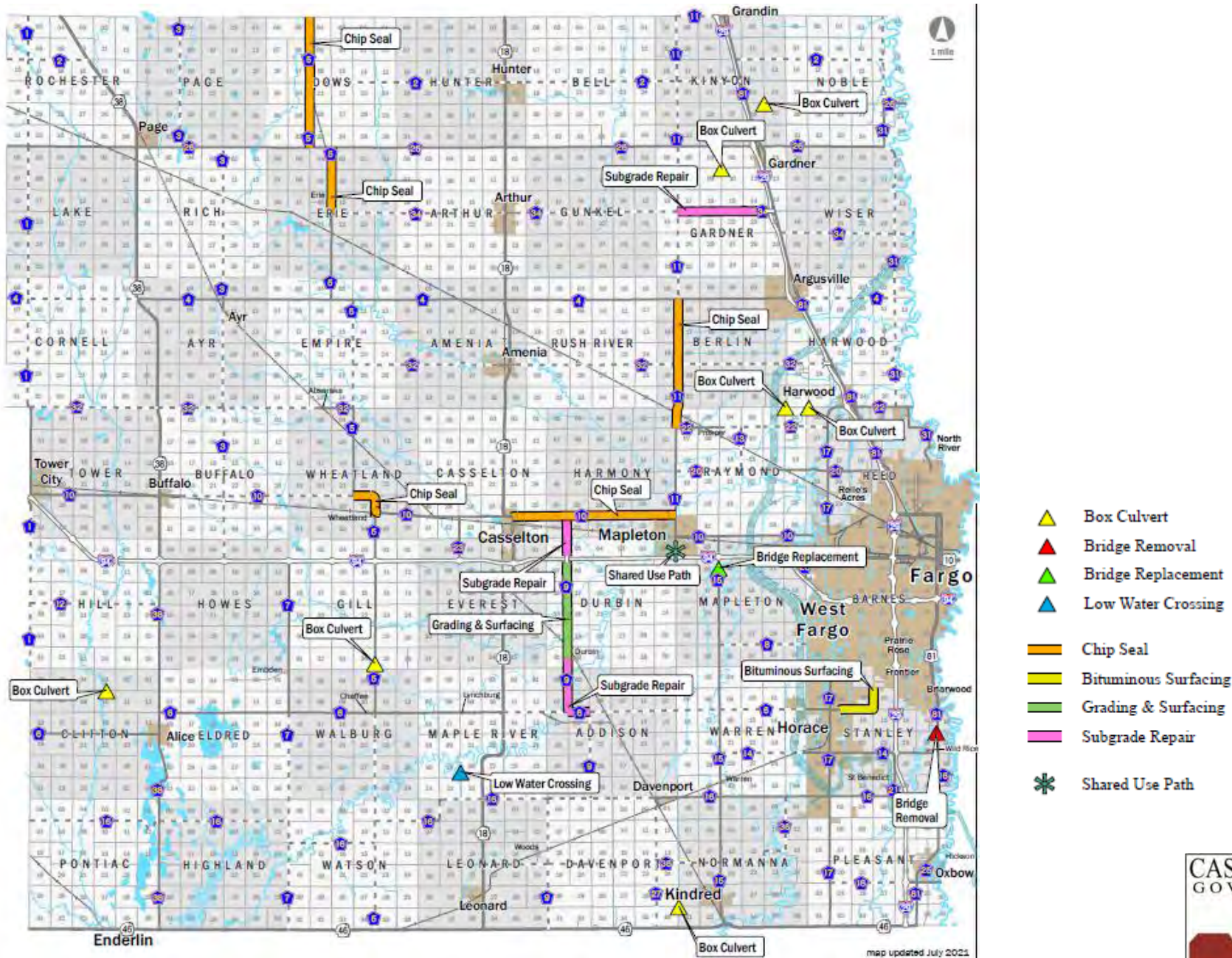


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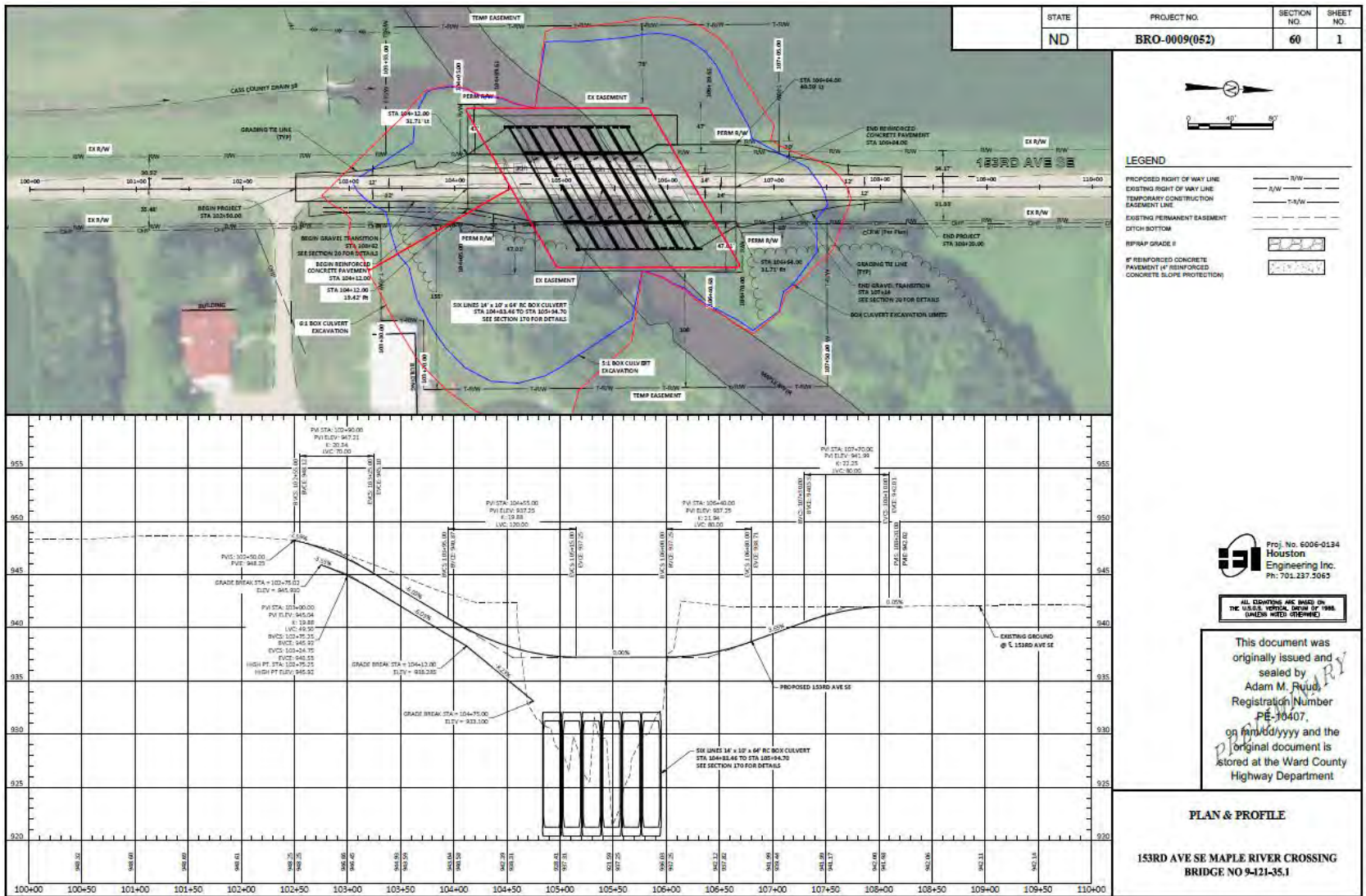
**Proposed 2022 Construction**

**Cass County Highway Department**

# 2022 Proposed Construction Projects



# 2022 Proposed Construction Projects – 28/29 Maple River



- Installation Issues - 6:1 slopes – Red Line 5:1 Blue Line, - Trees & Bldg. Impacts, River Diversion, Sheet Piling, More ROW & Easements Needed.
- \$1.7 M - \$1.4 Federal & \$0.3 Local



# 2022 Proposed Construction Projects – 28/29 Maple River

BRO-0009(052) PCN 22783  
 Alternative Opinion of Probable Cost  
 13-Jul-21

## Box Culvert Option

SPEC	CODE	ITEM DESCRIPTION	Unit Cost	UNIT	Quantity	Cost
103	100	CONTRACT BOND	\$ 10,000.00	L SUM	1	\$ 10,000.00
201	330	CLEARING & GRUBBING	\$ 20,000.00	L SUM	1	\$ 20,000.00
202	21	REMOVE AGGREGATE BASE & SURFACING	\$ 15.00	TON	285	\$ 4,275.00
202	105	REMOVAL OF STRUCTURE	\$ 30,000.00	L SUM	1	\$ 30,000.00
203	101	COMMON EXCAVATION-TYPE A	\$ 6.00	CY	2206	\$ 13,236.00
203	109	TOPSOIL	\$ 5.00	CY	323	\$ 1,615.00
210	50	BOX CULVERT EXCAVATION	\$ 8,000.00	EA	1	\$ 8,000.00
210	210	FOUNDATION FILL	\$ 60.00	CY	400	\$ 24,000.00
210	405	FOUNDATION PREPARATION-BOX CULVERT	\$ 15,000.00	EA	1	\$ 15,000.00
203	113	COMMON EXCAVATION-WASTE	\$ 10.00	CY	389	\$ 3,890.00
216	100	WATER	\$ 32.00	M GAL	23	\$ 736.00
251	300	SEEDING CLASS III	\$ 5,500.00	ACRE	0.6	\$ 3,300.00
251	2000	TEMPORARY COVER CROP	\$ 1,000.00	ACRE	0.6	\$ 600.00
253	101	STRAW MULCH	\$ 250.00	ACRE	1.2	\$ 300.00
256	200	RIPRAP GRADE II	\$ 75.00	CY	650	\$ 48,750.00
258	100	CONCRETE SLOPE PROTECTION	\$ 90.00	SY	888	\$ 79,920.00
261	112	FIBER ROLLS 12IN	\$ 3.00	LF	2196	\$ 6,588.00
261	113	REMOVE FIBER ROLLS 12IN	\$ 1.00	LF	1,098	\$ 1,098.00
262	100	FLOTATION SILT CURTAIN	\$ 15.00	LF	102	\$ 1,530.00
262	101	REMOVE FLOTATION SILT CURTAIN	\$ 2.50	LF	102	\$ 255.00
302	0320	AGGREGATE SURFACE COURSE CL 5	\$ 60.00	TON	345	\$ 20,700.00
302	320	AGGREGATE SURFACE COURSE CL 5	\$ 35.00	TON	121	\$ 4,235.00
550	107	6IN REINF CONCRETE PAVEMENT CL YE	\$ 100.00	SY	757	\$ 75,700.00
606	1410	14FT X 10FT PRECAST RCB CULVERT	\$ 1,500.00	LF	384	\$ 576,000.00
606	5410	14FT X 10FT PRECAST RCB END SECTION	\$ 27,000.00	EA	12	\$ 324,000.00
702	100	MOBILIZATION	\$ 65,000.00	L SUM	1	\$ 65,000.00
704	9999	TRAFFIC CONTROL	\$ 2,000.00	L SUM	1	\$ 2,000.00
709	100	GEOSYNTHETIC MATERIAL TYPE G	\$ 3.25	SY	1490	\$ 4,842.50
709	155	GEOSYNTHETIC MATERIAL TYPE RR	\$ 3.00	SY	974	\$ 2,922.00
714	4099	PIPE CONDUIT 18IN-APPROACH	\$ 65.00	LF	48	\$ 3,120.00
754	9999	SIGNING	\$ 5,000.00	L SUM	1	\$ 5,000.00
764	151	REMOVE W-BEAM GUARDRAIL & POSTS	\$ 5.00	LF	218.1	\$ 1,090.50
900	1000	TEMPORARY STREAM DIVERSION	\$ 50,000.00	EA	1	\$ 50,000.00
		PERMANENT RW		ACRE	0.10	\$ -
		TEMPORARY CONSTRUCTION EASEMENT		ACRE	1.93	\$ -

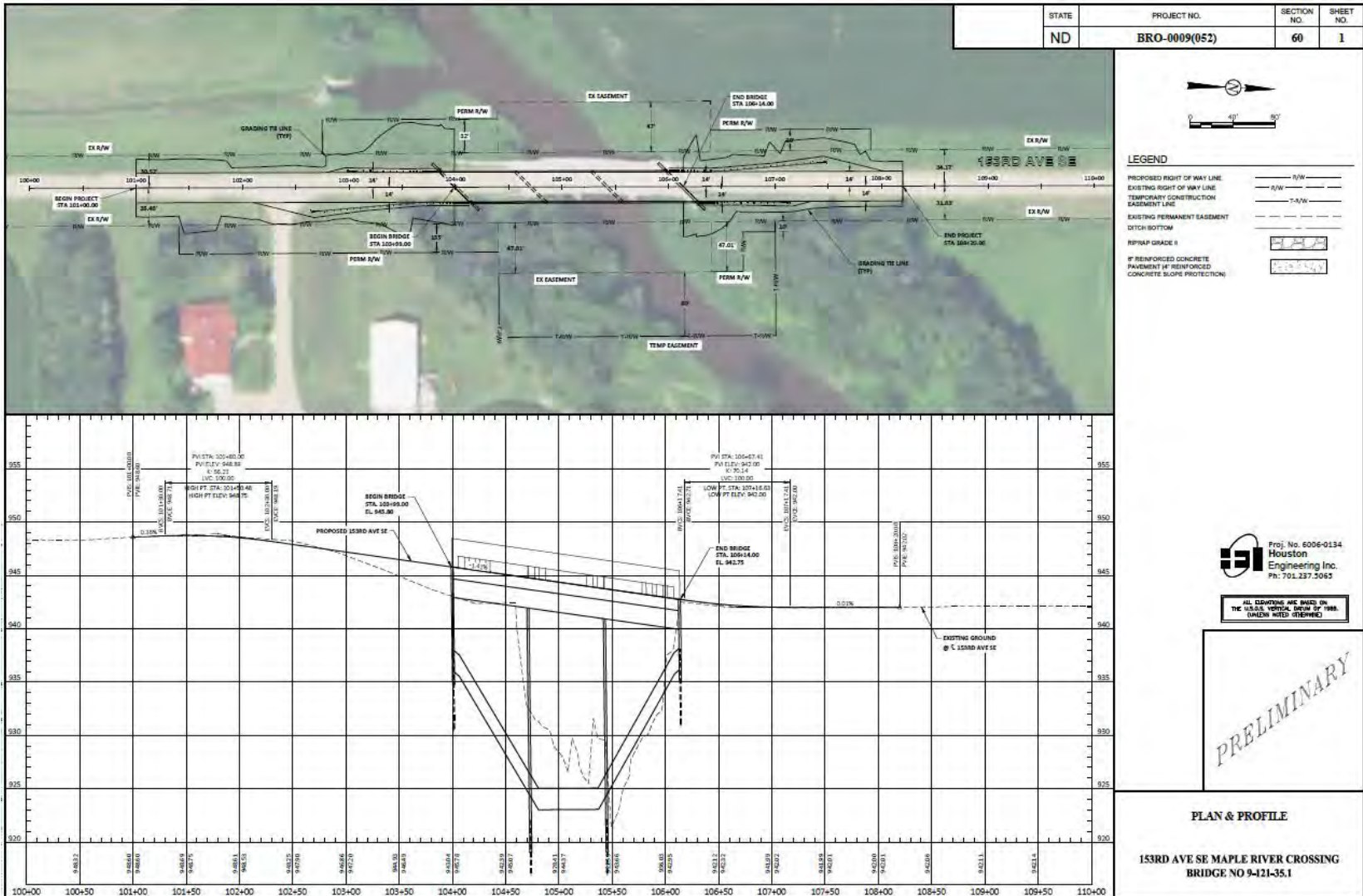
Subtotal \$ 1,407,703.00

Contingency (25%) \$ 351,925.75

Total \$ 1,759,628.75



# 2022 Proposed Construction Projects – 28/29 Maple River



- Less Installation Issues – Minimal Tree Impacts, No River Diversion, Sheet Piling Required, Reinforced Bridge Abutments
- \$3.1 M - \$2.5 Federal & \$0.6 Local





# 2022 Proposed Construction Projects – 28/29 Maple River

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 Alternative Opinion of Probable Cost  
 13-Jul-21

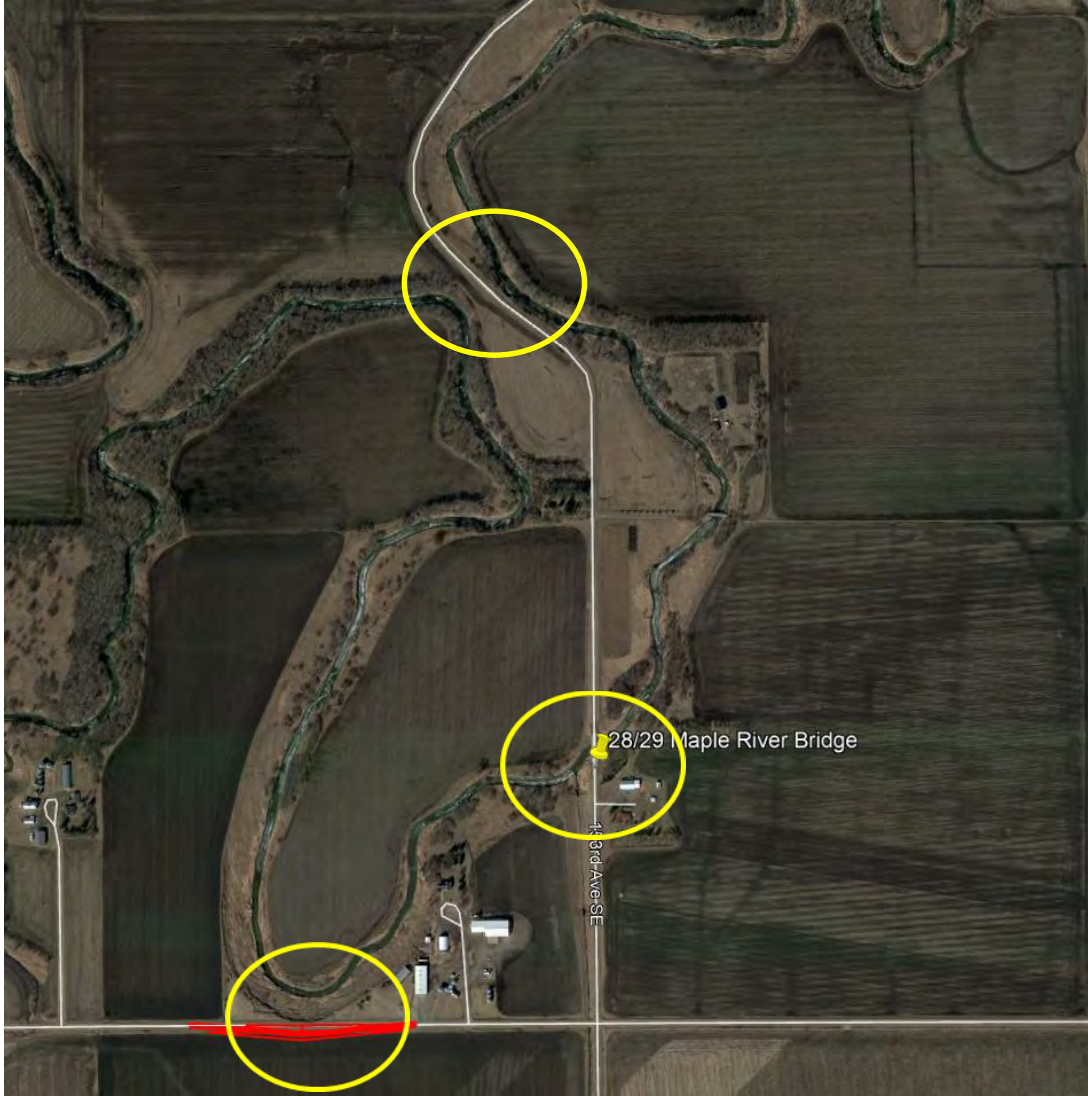
## Bridge Option

SPEC	CODE	DESCRIPTION	UNIT COST	UNIT	QUANTITY	TOTAL
103	0100	CONTRACT BOND	\$ 10,000.00	L SUM	1	\$ 10,000.00
201	0330	CLEARING & GRUBBING	\$ 3,000.00	L SUM	1	\$ 3,000.00
202	0021	REMOVE AGGREGATE BASE & SURFACING	\$ 15.00	TON	285	\$ 4,275.00
202	0104	REMOVAL OF STRUCTURE	\$ 30,000.00	EA	1	\$ 30,000.00
203	0101	COMMON EXCAVATION-TYPE A	\$ 6.00	CY	200	\$ 1,200.00
203	0109	TOPSOIL	\$ 5.00	CY	350	\$ 1,750.00
203	0140	BORROW-EXCAVATION	\$ 10.00	CY	600	\$ 6,000.00
216	0100	WATER	\$ 32.00	M GAL	20	\$ 640.00
251	0300	SEEDING CLASS III	\$ 5,500.00	ACRE	0.64	\$ 3,525.50
251	2000	TEMPORARY COVER CROP	\$ 1,000.00	ACRE	0.64	\$ 641.00
253	0101	STRAW MULCH	\$ 250.00	ACRE	1.28	\$ 320.50
256	0200	RIPRAP GRADE II	\$ 75.00	CY	950	\$ 71,250.00
261	0112	FIBER ROLLS 12IN	\$ 3.00	LF	2,200	\$ 6,600.00
261	0113	REMOVAL FIBER ROLLS 12IN	\$ 1.00	LF	1,100	\$ 1,100.00
262	0100	FLOTATION SILT CURTAIN	\$ 15.00	LF	80	\$ 1,200.00
262	0101	REMOVE FLOTATION SILT CURTAIN	\$ 2.50	LF	80	\$ 200.00
302	0320	AGGREGATE SURFACE COURSE CL 5	\$ 60.00	TON	650	\$ 39,000.00
602	9999	BRIDGE	\$ 300.00	SF	6,575	\$ 1,972,500.00
702	0100	MOBILIZATION	\$ 75,000.00	L SUM	1	\$ 75,000.00
704	9999	TRAFFIC CONTROL	\$ 2,000.00	L SUM	1	\$ 2,000.00
754	9999	SIGNING	\$ 5,000.00	L SUM	1	\$ 5,000.00
764	0131	W-BEAM GUARDRAIL	\$ 50.00	LF	472	\$ 23,600.00
764	0145	W-BEAM GUARDRAIL END TERMINAL	\$ 2,750.00	EA	4	\$ 11,000.00
764	0151	REMOVE W-BEAM GUARDRAIL & POSTS	\$ 5.50	LF	530	\$ 2,915.00
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	\$ 3.00	SY	1,400	\$ 4,200.00
920	1000	GEOFOAM	\$ 150.00	CY	1,300	\$ 195,000.00
		MICROPILES		L SUM	1	\$ -
		PERMANENT RW		ACRE	0.41	\$ -
		TEMPORARY CONSTRUCTION EASEMENT		ACRE	0.38	\$ -

Subtotal \$ 2,471,917.00  
 Contingency (25%) \$ 617,979.25  
 Total \$ 3,089,896.25




2022 Proposed Construction Projects – 28/29 Maple River - Other Slide Issues Nearby



**2022 Proposed Construction Projects – 28/29 Maple River  
March 17<sup>th</sup>, 2021 Photo**

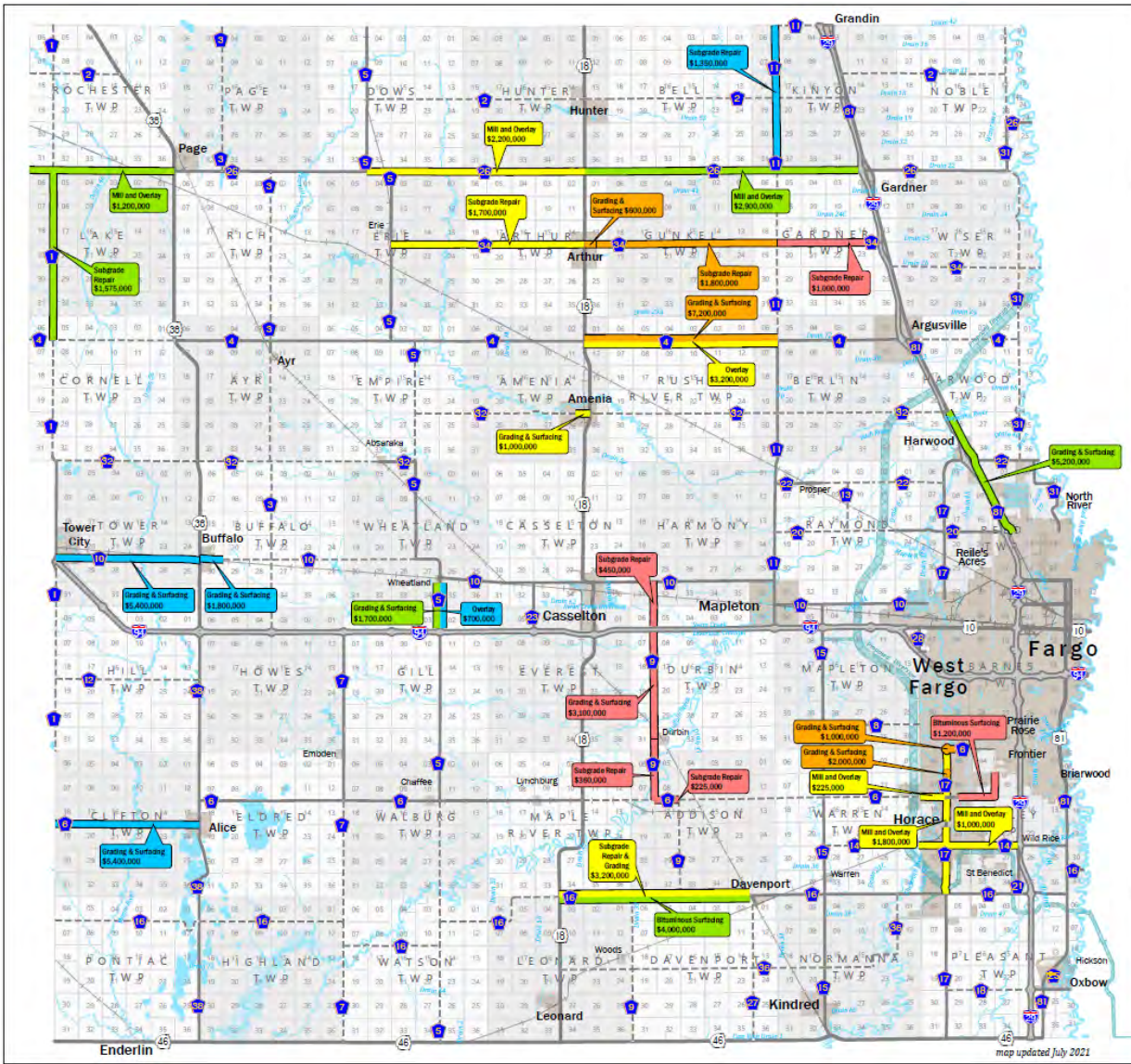




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**2022-2026 Hwy & Bridge Plan**

**Cass County Highway Department**



## Appendix 1

### 2022 - 2026

# 5 Year Capital Improvement Plan

## Proposed Highway Projects



**TABLE 5 - PROPOSED HIGHWAY IMPROVEMENTS**

HWY	LOCATION	PROJECT TYPE	FUNDING	YEAR	COST
New 6	Hwy 17 to 45th St & 45th St to 64th Ave S	Bituminous Surfacing	Local	2022	\$1,200,000
9	Hwy 9 N to Hwy 9 S	Subgrade Repair	Local	2022	\$225,000
9	Hwy 10 to Hwy 9	Subgrade Repair	Local	2022	\$50,000
9	194 to Durbin	Grading & Surfacing	Local	2022	\$31,000,000
9	Durbin to Hwy 6	Subgrade Repair	Local	2022	\$340,000
34	Hwy 11 to 129	Subgrade Repair	Local	2022	\$1,000,000
4	State Hwy 18 to Hwy 11	Grading & Surfacing	Local	2023	\$720,000
6	Hwy 6 & 17 Roundabout & E L800' on Hwy 6	Grading & Surfacing	Local	2023	\$1,000,000
17	Hwy 17 & 64th Ave S - Roundabout	Grading & Surfacing	Local	2023	\$2,000,000
34	State Hwy 18 East through Arthur	Grading & Surfacing	Local	2023	\$600,000
34	Half a Mile East of State 19 to Hwy 11	Subgrade Repair	Local	2023	\$1,800,000
4	State Hwy 18 to Hwy 11	Overlay	Local	2024	\$3,200,000
6	Shaylene Diversion to Hwy 17	Mill and Overlay	Local	2024	\$225,000
14	Shaylene River to 129	Mill and Overlay	Local	2024	\$1,900,000
16	State Hwy 18 to Davenport	Subgrade Repair & Grading	Local	2024	\$3,200,000
17	52nd Ave S Roundabout to Horace & Horace to Hwy 16	Mill and Overlay	Local	2024	\$1,800,000
26	Hwy 5 North to State Hwy 16	Mill and Overlay	Federal	2024	\$2,200,000
32	State Hwy 18 West through Amenia	Grading & Surfacing	Local	2024	\$1,900,000
34	Hwy 7 to State Hwy 18	Subgrade Repair	Local	2024	\$1,700,000
1	Hwy 4 to Hwy 26	Subgrade Repair	Local	2025	\$1,575,000
5	Wheatland to 194	Grading & Surfacing	Local	2025	\$1,700,000
16	State Hwy 18 to Davenport	Bituminous Surfacing	Local	2025	\$4,900,000
26	Barnes Co. Line to ST Hwy 38	Mill and Overlay	Local	2025	\$1,200,000
26	State Hwy 18 to 129	Mill and Overlay	Federal	2025	\$2,900,000
81	Hwy 20 to Hwy 32	Grading & Surfacing	Local	2025	\$5,200,000
5	Wheatland to 194	Overlay	Local	2026	\$700,000
6	Barnes Co Line to Hwy 38	Grading & Surfacing	Local	2026	\$5,400,000
10	Hwy 1 to State Hwy 38	Grading & Surfacing	Local	2026	\$5,400,000
10	State Hwy 38 through Buffalo 1 Mile East	Grading & Surfacing	Local	2026	\$1,800,000
11	Hwy 26 North 6 Miles	Subgrade Repair	Local	2026	\$1,350,000

Note: Years to be completed are illustrative and subject to change and approved annually and/or as necessary by the Road Advisory Committee.

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Blaine Laaveg  
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# Appendix 2

## 2022 - 2026

### 5 Year Capital Improvement Plan

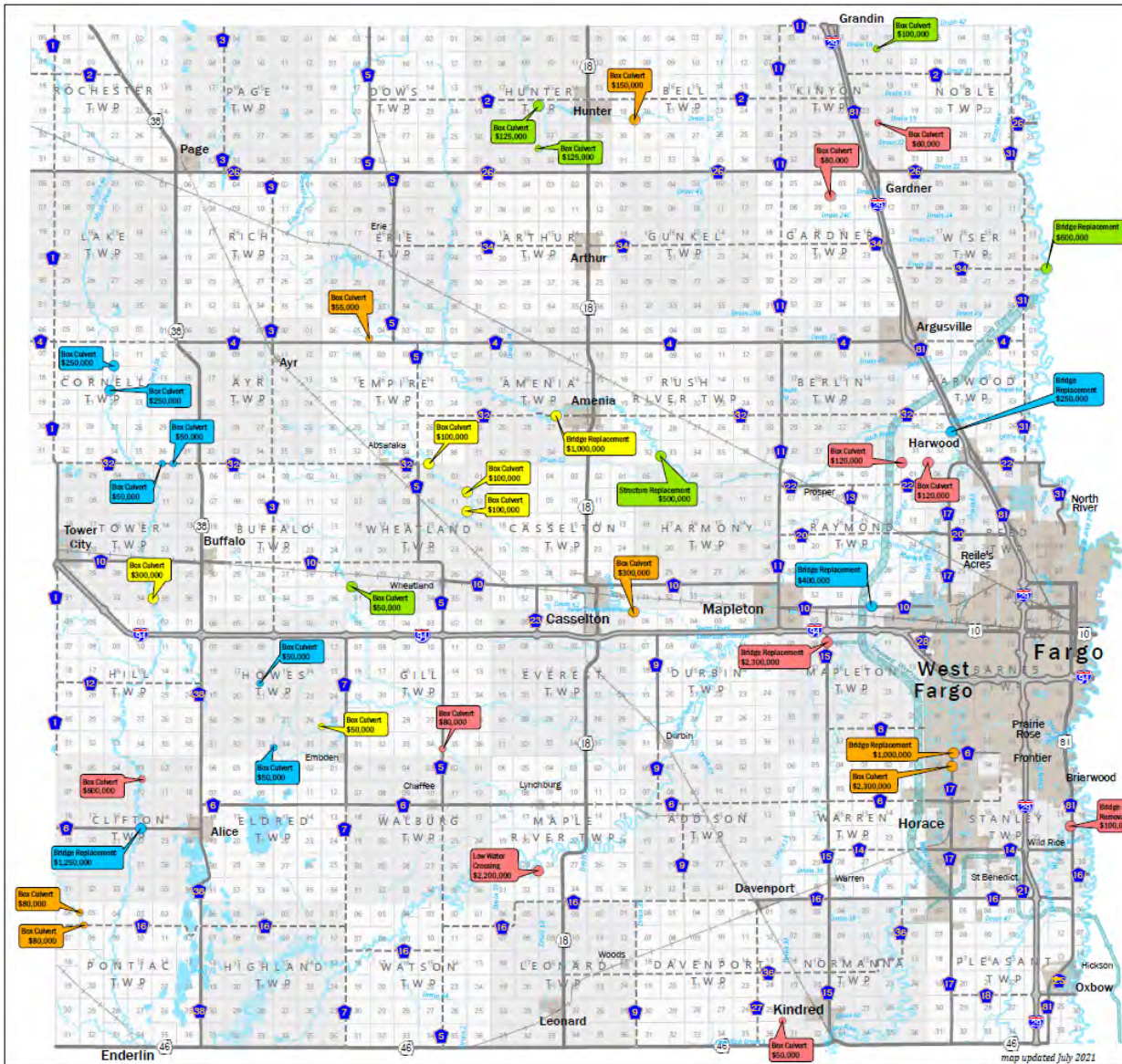
#### Proposed Structure Projects



**TABLE 7 - PROPOSED BRIDGE IMPROVEMENTS**

HWY	LOCATION	PROJECT TYPE	FUNDING	STRUCTURE TYPE	YEAR	COST
	30/31 Normanna Twp - Drain 34	Box Culvert	Local	Minor	2022	\$50,000
	9/10 Gardner - North Cass WLD - Drain 19	Box Culvert	Local	Major	2022	\$80,000
5	CS - 34/35 Gill Twp	Culvert Replacement	Local	Minor	2022	\$80,000
	25/24 Rivern Township - Drain 23	Box Culvert	Local	Minor	2022	\$40,000
	3/20 Clifton Township on Maple River	Box Culvert	Local	Minor	2022	\$600,000
	31-32 Harwood Twp - Lower Branch of the Bush River	Box Culvert	Local	Major	2022	\$120,000
	2 Raymond - 36 Belton Twp - Lower Branch of the Bush River	Box Culvert	Local	Major	2022	\$100,000
	13/24 Stanley Township - Wild Rice River	Bridge Removal	Local	Major	2022	\$100,000
	28/29 Maple River Twp - Maple River	Low Water Crossing	Federal	Major	2022	\$2,200,000
15	CL - 8/9 Mapleton Township on Drain 14	Bridge Replacement	Local	Major	2022	\$2,300,000
	4/5 Eagon/Township on Tributary of the Bush River	Box Culvert	Local	Minor	2023	\$55,000
16	5/8 Postaw Twp - Tributary of the Maple River	Box Culvert	Local	Minor	2023	\$80,000
	5/8 Postaw Twp - Tributary of the Maple River	Box Culvert	Local	Minor	2023	\$80,000
	19/20 Bell - S. Branch of Elm River	Box Culvert	Local	Major	2023	\$150,000
6	06 - 6 Stanley/22 Barnes Twp - Shayenne River	Bridge Replacement	Local	Major	2023	\$1,000,000
17	C17 - 5/6 Savelly Twp - Shayenne River	Box Culvert	Local	Major	2023	\$2,300,000
	1 Ewens/8 Durbin Township - Swan Creek	Box Culvert	Local	Major	2023	\$300,000
	25-26 Howes Twp	Box Culvert	Local	Minor	2024	\$50,000
	11-12 N Wheeland Twp	Box Culvert	Local	Major	2024	\$100,000
	11-12 S Wheeland Twp	Box Culvert	Local	Major	2024	\$100,000
	3 Wheeland/25 Ewings	Box Culvert	Local	Major	2024	\$100,000
32	C3 - 21/27 Amelia Twp - Bush River	Bridge Replacement	Local	Major	2024	\$1,000,000
	34/35 Twp Township on Maple River	Box Culvert	Local	Major	2024	\$300,000
	33/34 Hunter Twp - Elm River Trib.	Box Culvert	Local	Minor	2025	\$125,000
	1/2 Hunter Drain 16	Box Culvert	Local	Minor	2025	\$100,000
	21/22 Husler	Box Culvert	Local	Major	2025	\$125,000
	30-31 Wheeland Twp - Buffalo Creek Trib.	Box Culvert	Local	Major	2025	\$75,000
34	C34 - Georgetown Bull River Bridge	Bridge Replacement	Local	Major	2025	\$600,000
	32/33 Bush River - Bush River	Structure Replacement	Local	Major	2025	\$500,000
	34 Cornell/2 Tower - East Structure - Maple B Branch	Box Culvert	Local	Minor	2026	\$50,000
32	34 Cornell/2 Tower - West Structure - Maple B Branch	Box Culvert	Local	Minor	2026	\$50,000
	16/21 Howes - Maple B Branch	Box Culvert	Local	Minor	2026	\$50,000
	33/34 Howes - Maple B Branch	Box Culvert	Local	Minor	2026	\$50,000
	10/15 Cornell - Dr 46	Box Culvert	Local	Major	2026	\$250,000
	15/22 Cornell - Dr 46	Box Culvert	Local	Major	2026	\$250,000
10	C10 - 34 Raymond/3 Mapleton - Dr 14	Bridge Replacement	Local	Major	2026	\$400,000
6	29 Harwood Twp - Bush River	Bridge Replacement	Local	Major	2026	\$250,000
6	CA - 15/22 Clifton Township - Maple River	Bridge Replacement	Local	Major	2026	\$1,250,000

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### Appendix 3

## Pavement Condition Index (PCI) 2017 Testing Results

- Poor
- Fair
- Good
- Very Good

PCI	Paved Miles	% of Paved Miles
not measured/unknown	1.81	0.58%
Poor PCI 0 - 65	0	0%
Fair PCI 66 - 80	6.94	2.23%
Good PCI 81 - 90	149.85	48.19%
Very Good PCI 91 - 100	152.33	48.99%

Total Paved Miles: 310.93

Average PCI\*: 90.95  
\*prorated per length

Pavement Evaluation completed by American Engineering Testing in 2017. The evaluation consisted of deflection testing with a Model 8002E Dynatest Falling Weight Deflectometer. Pavement surface condition assessment based on the Pavement Condition Index (PCI) method developed by the Army Corps of Engineers. The resulting data is analyzed to evaluate the structural and surface condition of the existing pavements on the tested road segments.

Roads reconstructed after 2017 have an assumed PCI value of 100.

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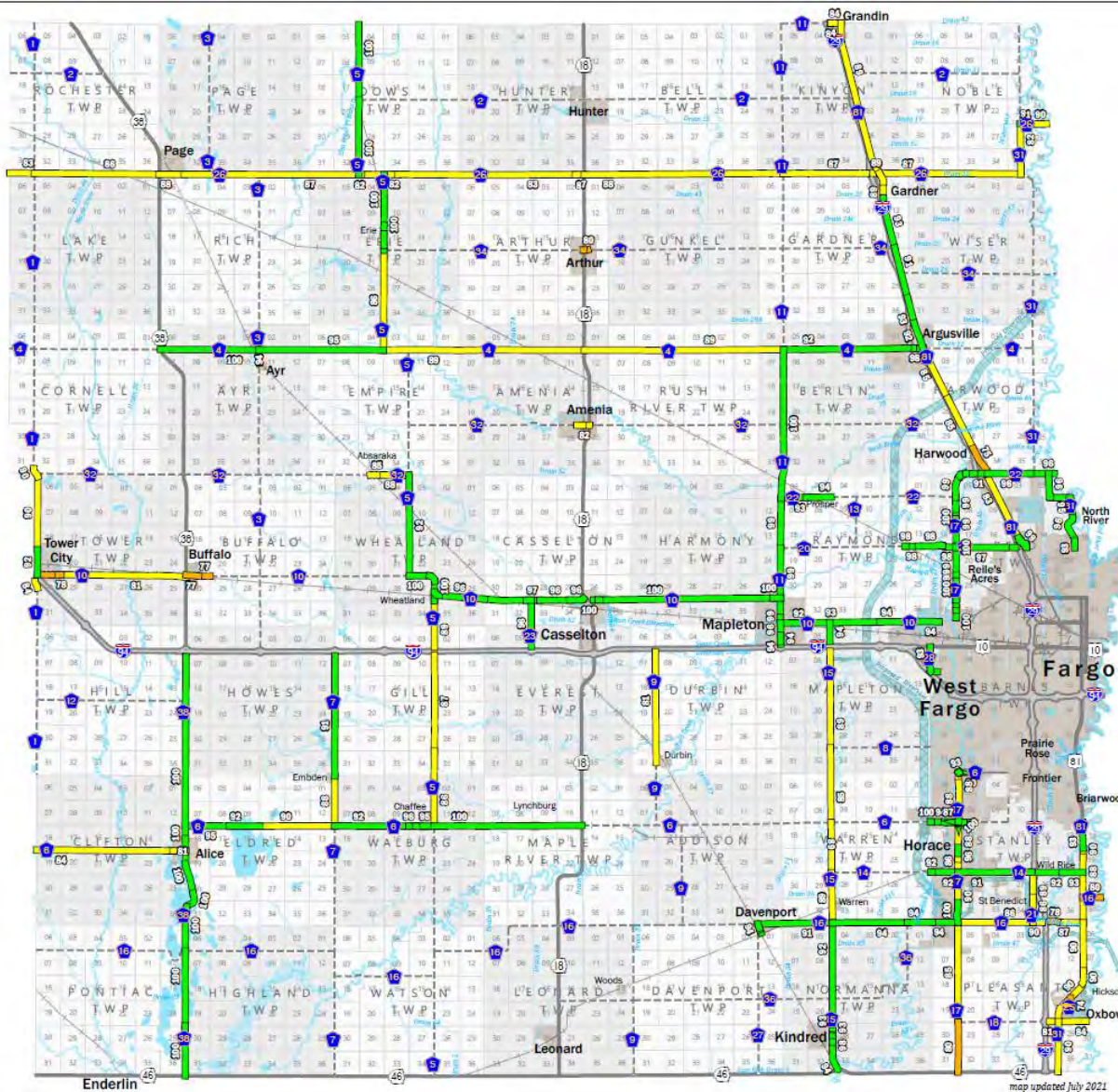
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CASS COUNTY  
GOVERNMENT



## Appendix 4

# Highway Load Capacity 2017 Testing Results

Tons/Axle

- 3 (worst)
- 4
- 5
- 6
- 7
- 8
- 9
- 10 (best)

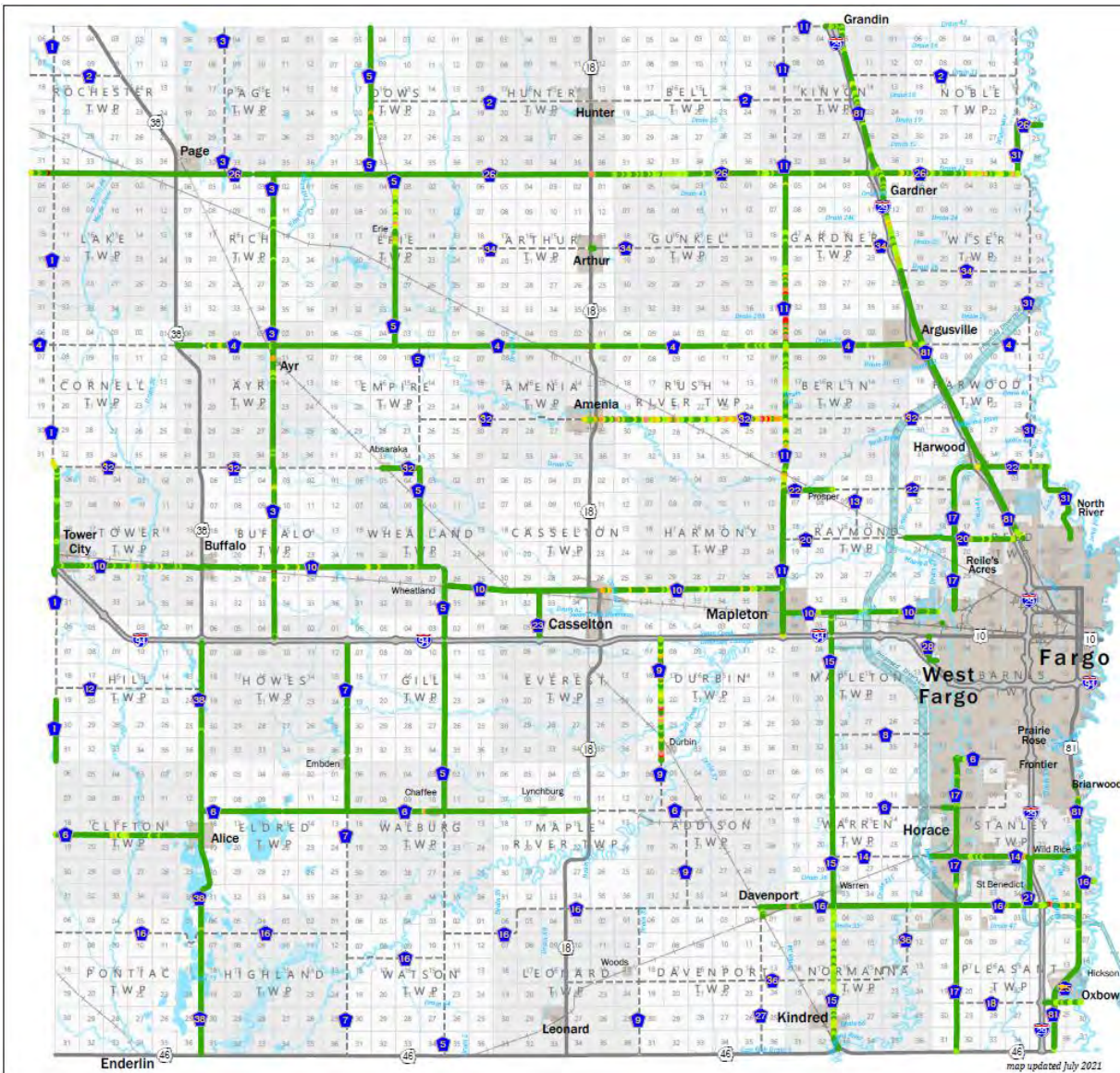
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## Appendix 5

### Paving Projects

#### Year of Last Project

- 1949
- 1993 - 1999
- 2000 - 2006
- 2007 - 2010
- 2011 - 2014
- 2015 - 2018
- 2019 - 2021

Year	Miles	Average PCI per segment
1949	10.64	85.5
1993 - 1999	6.46	85.33
2000 - 2006	41.68	84.86
2007 - 2010	68.61	90.13
2011 - 2014	76.02	92.35
2015 - 2018	55.25	95.35
2019 - 2021	52.26	100

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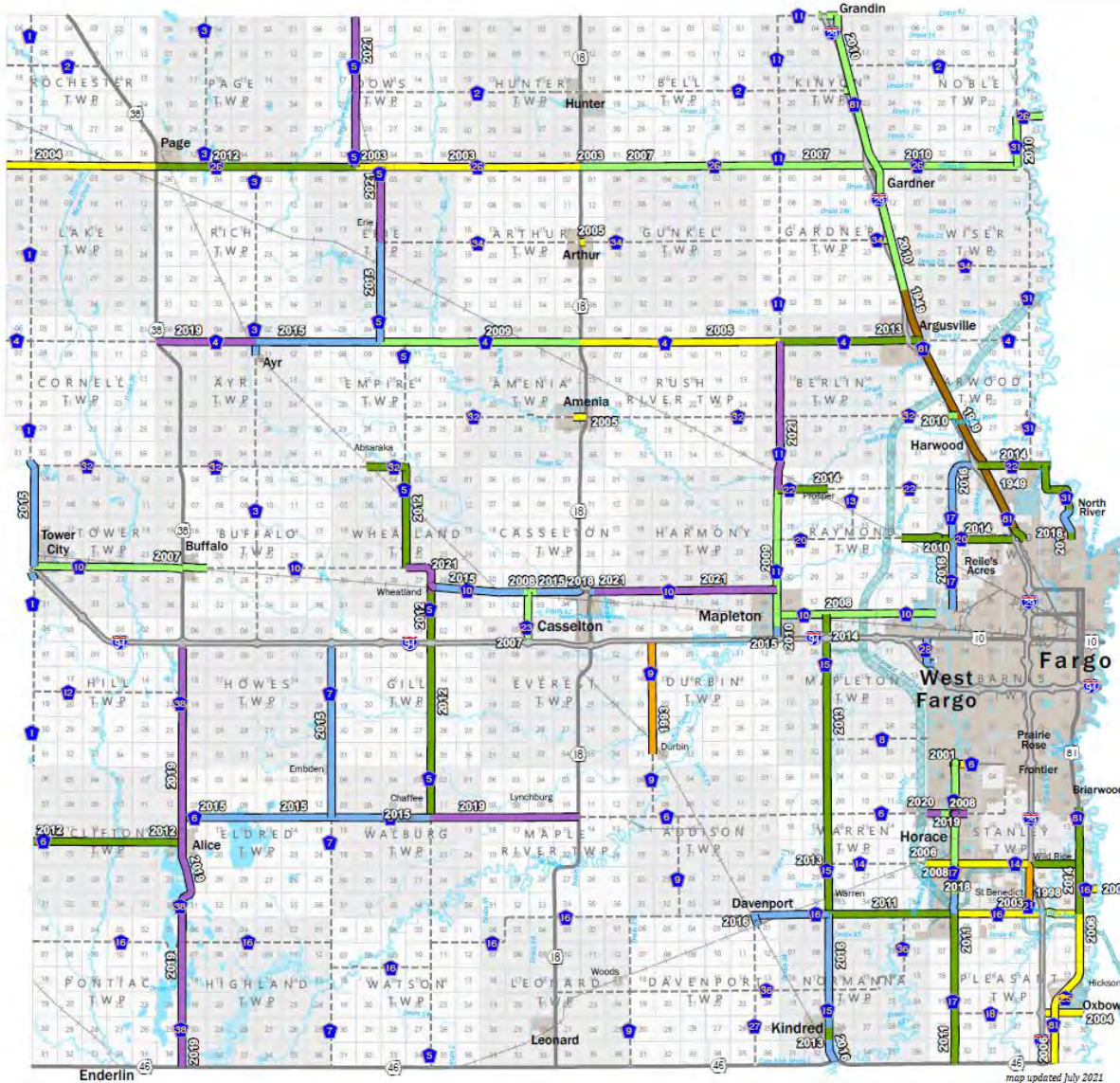
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## Appendix 6

### Chip Seal Projects

#### Year of Last Project

- 2005 - 2006
- 2007 - 2010
- 2011 - 2014
- 2015 - 2018
- 2019 - 2020
- Asphalt - No Chip Seal
- Concrete - No Chip Seal

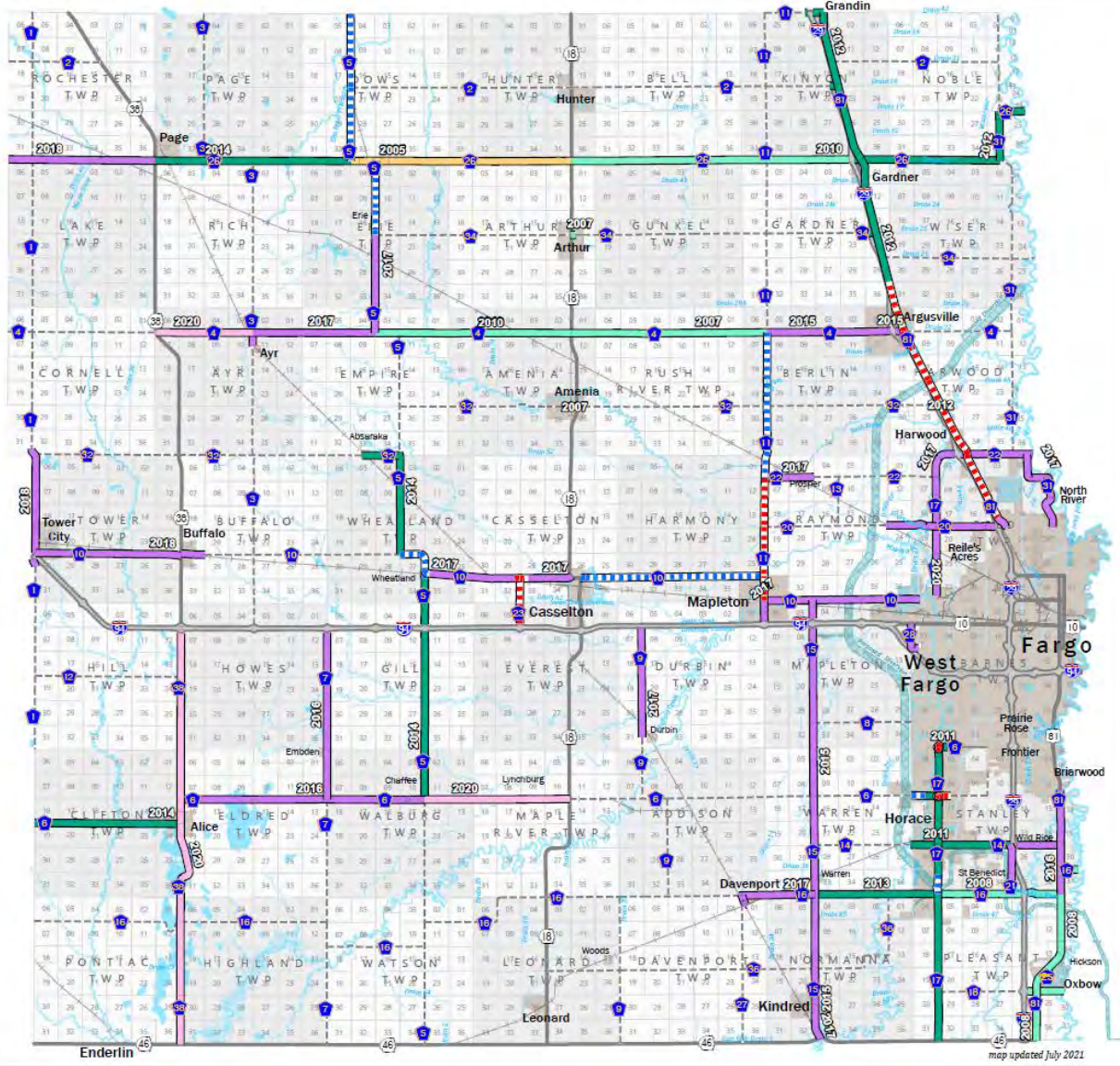
Year	Miles	Average PCI per segment
2005 - 2006	9.03	83.8
2007 - 2010	41.62	84.85
2011 - 2014	71.22	88.25
2015 - 2018	116.538	93.397
2019 - 2020	26.93	100
Asphalt - No Chip Seal	26.015	100
Concrete - No Chip Seal	19.57	95.14

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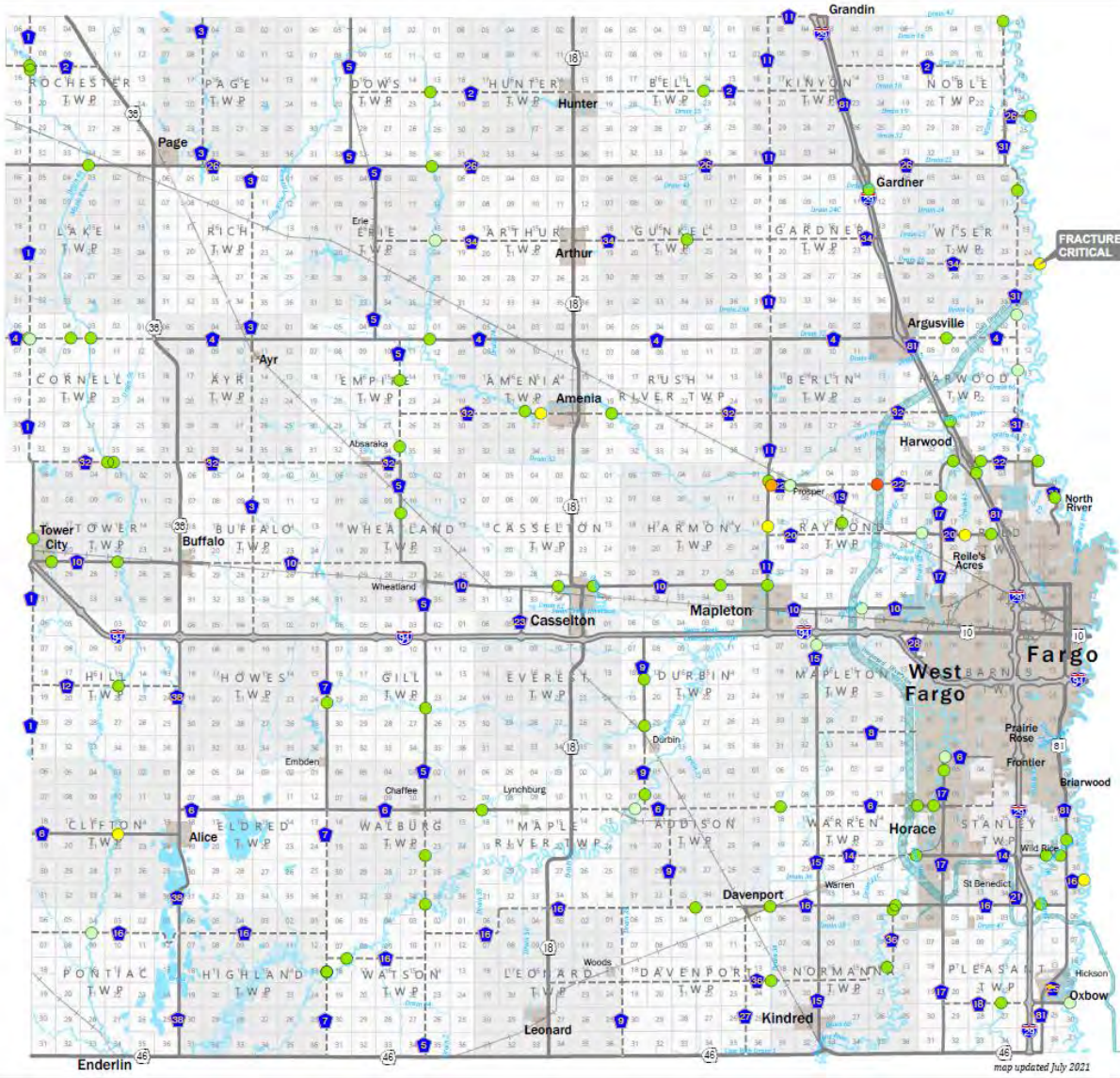


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**Appendix 7**

**Bridges on County Roads:  
ND DOT 2019/2020  
Bridge Inspection and Appraisal**



**Bridge Sufficiency Rating**

- 50 - 59.9
- 60 - 69.9
- 70 - 79.9
- 80 - 89.9
- 90 - 100

Sufficiency Rating	Bridge Count
50 - 59.9	1
60 - 69.9	1
70 - 79.9	6
80 - 89.9	12
90 - 100	68

Average Rating: 94.17

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## Appendix 8

# Bridges on Township Roads: ND DOT 2019/2020 Bridge Inspection and Appraisal

### Bridge Sufficiency Rating

- 37 - 49.9
- 50 - 59.9
- 60 - 69.9
- 70 - 79.9
- 80 - 89.9
- 90 - 100

Sufficiency Rating	Bridge Count
37 - 49.9	5
50 - 59.9	0
60 - 69.9	8
70 - 79.9	10
80 - 89.9	27
90 - 100	93

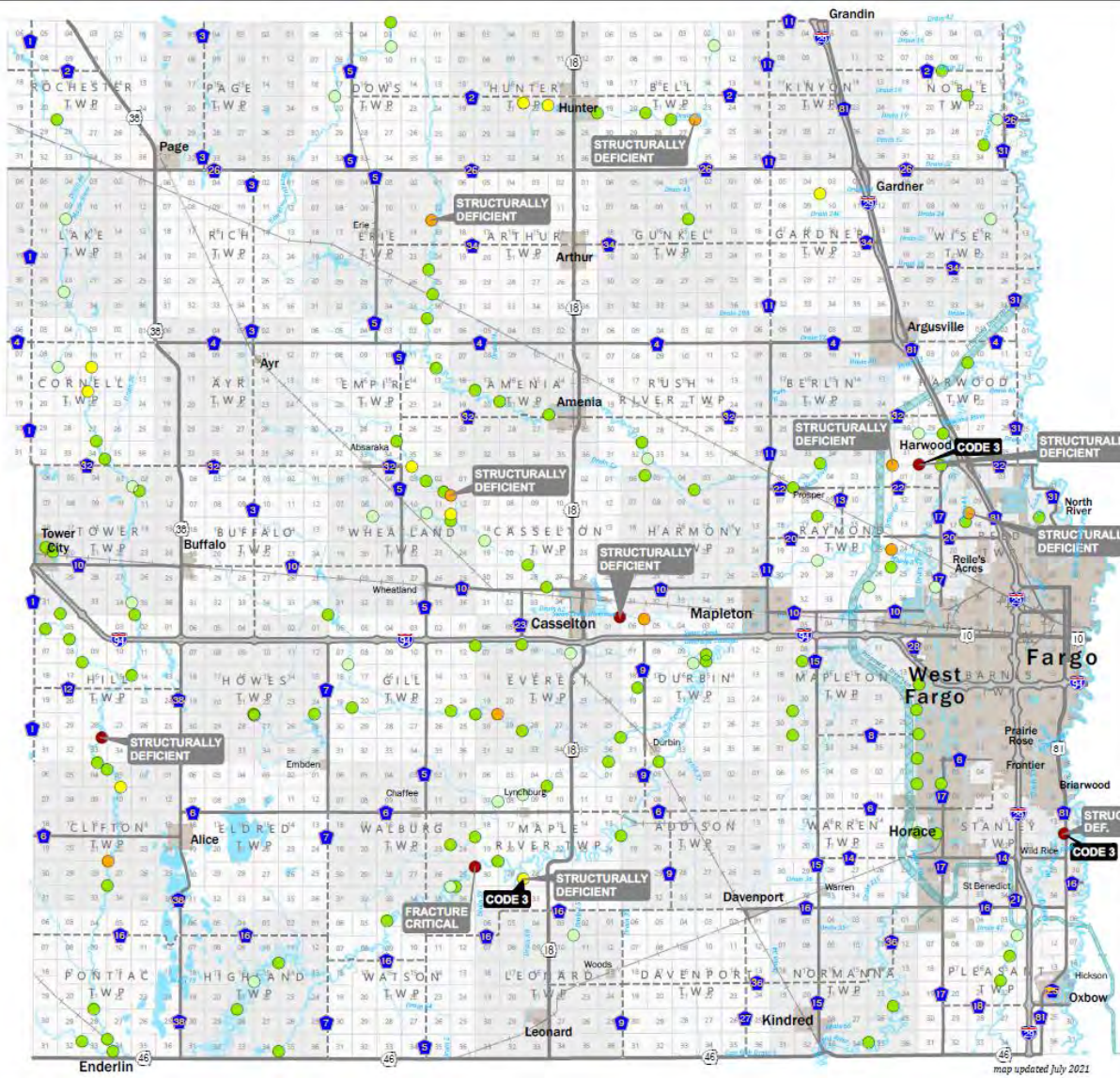
Average Rating: 90.18

## Cass County Highway Department

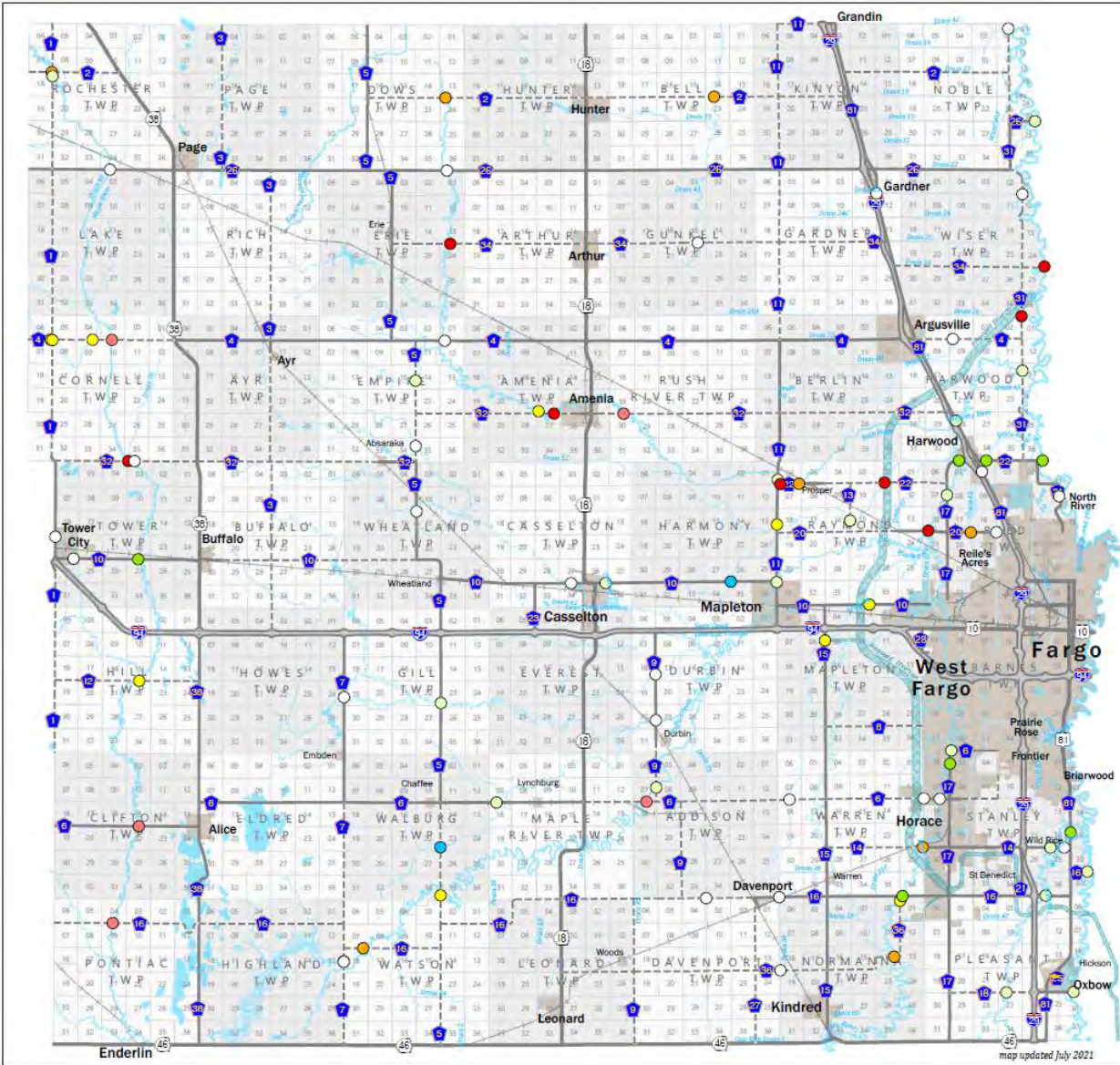
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map updated July 2021



## Appendix 9 Bridges on County Roads: ND DOT 2019/2020 Structure Width

### Structure Width

- culvert
- under 24'
- 24' - 25.9'
- 26' - 27.9'
- 28' - 29.9'
- 30' - 39.9'
- 40' - 49.9'
- 50' or more

Structure Width	Bridge Count
under 24'	8
24' - 25.9'	5
26' - 27.9'	8
28' - 29.9'	10
30' - 39.9'	19
40' - 49.9'	7
50' +	2
culvert	29

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**Appendix 10**  
**Bridges on Township Roads:**  
**ND DOT 2019/2020**  
**Structure Width**

**Structure Width**

- culvert
- under 24'
- 24' - 25.9'
- 26' - 27.9'
- 28' - 29.9'
- 30' - 39.9'
- 40' - 49.9'
- 50' or more

Structure Width	Bridge Count
under 24'	42
24' - 25.9'	18
26' - 27.9'	9
28' - 29.9'	12
30' - 39.9'	2
40' - 49.9'	0
50' +	1
culvert	59

**Cass County Highway Department**

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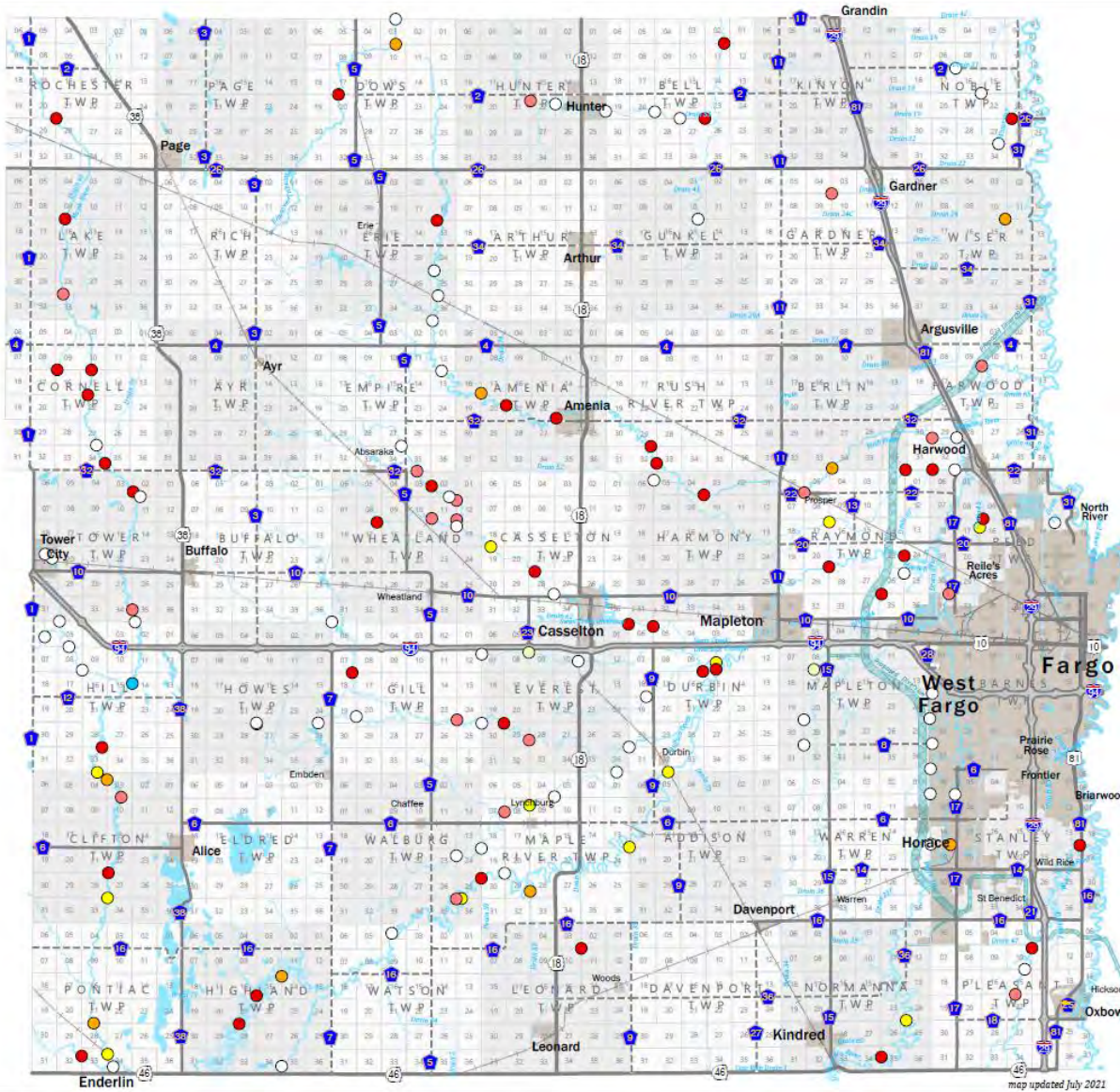
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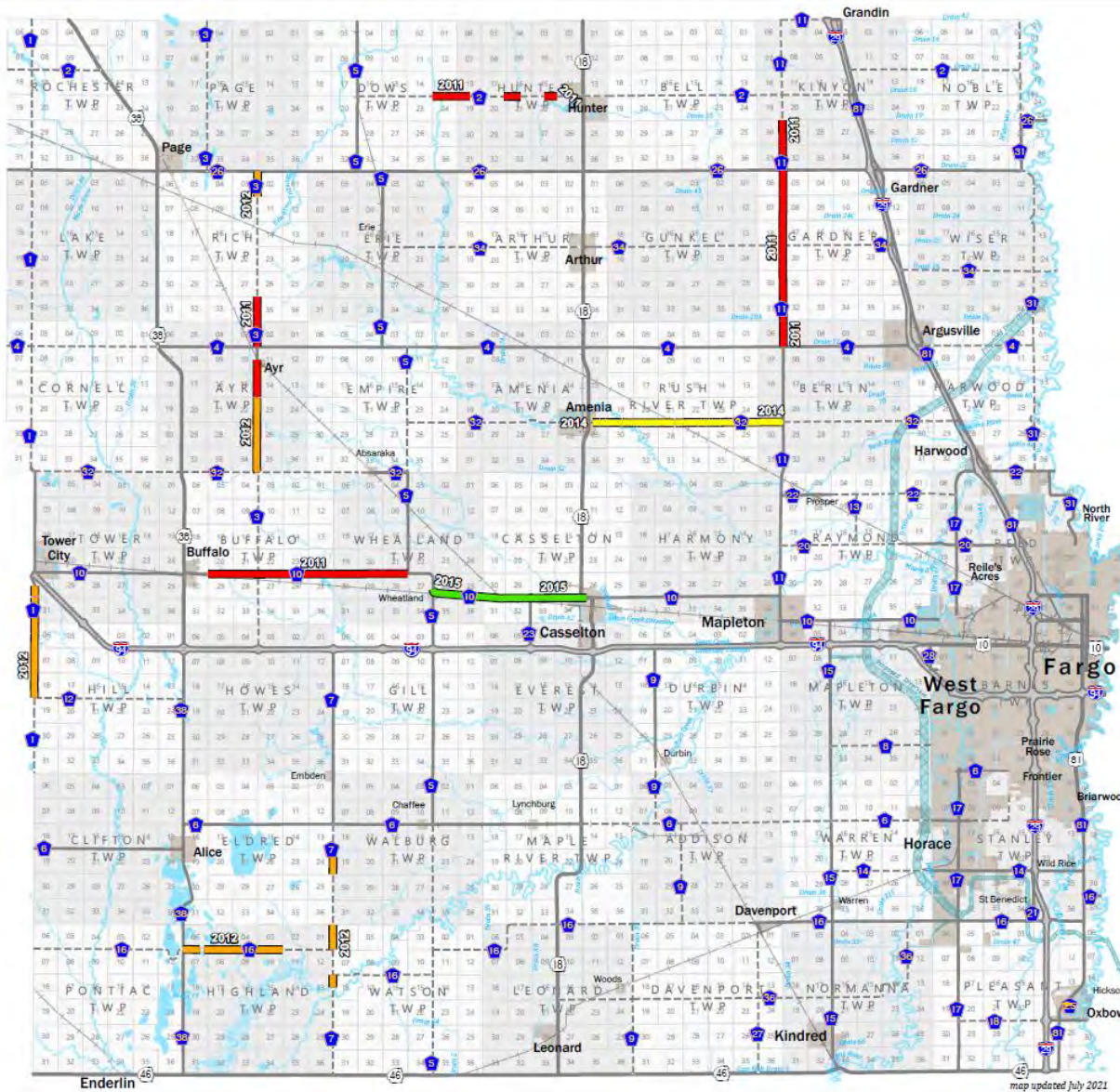
## Appendix 11

### Drain Tile Projects

#### Year of Last Project

- 2011
- 2012
- 2014
- 2015

Year	Miles
2011	23.07
2012	14.25
2014	7.45
2015	6.2
<b>Total</b>	<b>50.97</b>



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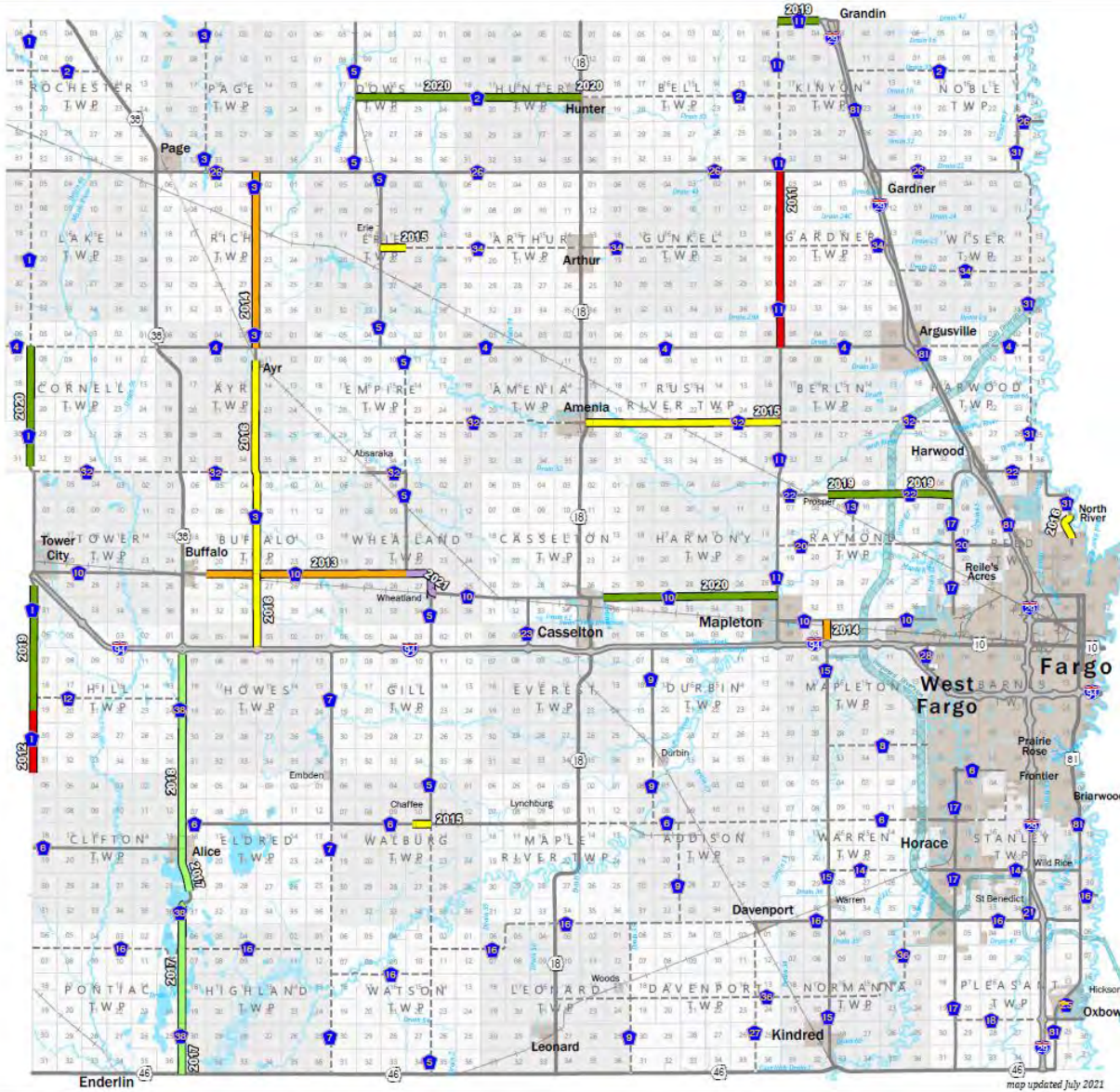
**Appendix 12**

**Subgrade Repair Projects**

**Year of Last Project**

- █ 2011 - 2012
- █ 2013 - 2014
- █ 2015 - 2016
- █ 2017 - 2018
- █ 2019 - 2020
- █ 2021

Year	Gravel Miles	Paved Miles	Total Miles
2011 - 2012	9.56	0	9.56
2013 - 2014	15.01	0.75	15.76
2015 - 2016	20.19	1.8	21.99
2017 - 2018	0	16.28	16.28
2019 - 2020	25.43	6.97	32.4
2021	0	2.17	2.17
<b>Total</b>	<b>70.19</b>	<b>27.97</b>	<b>98.16</b>



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**Appendix 13**

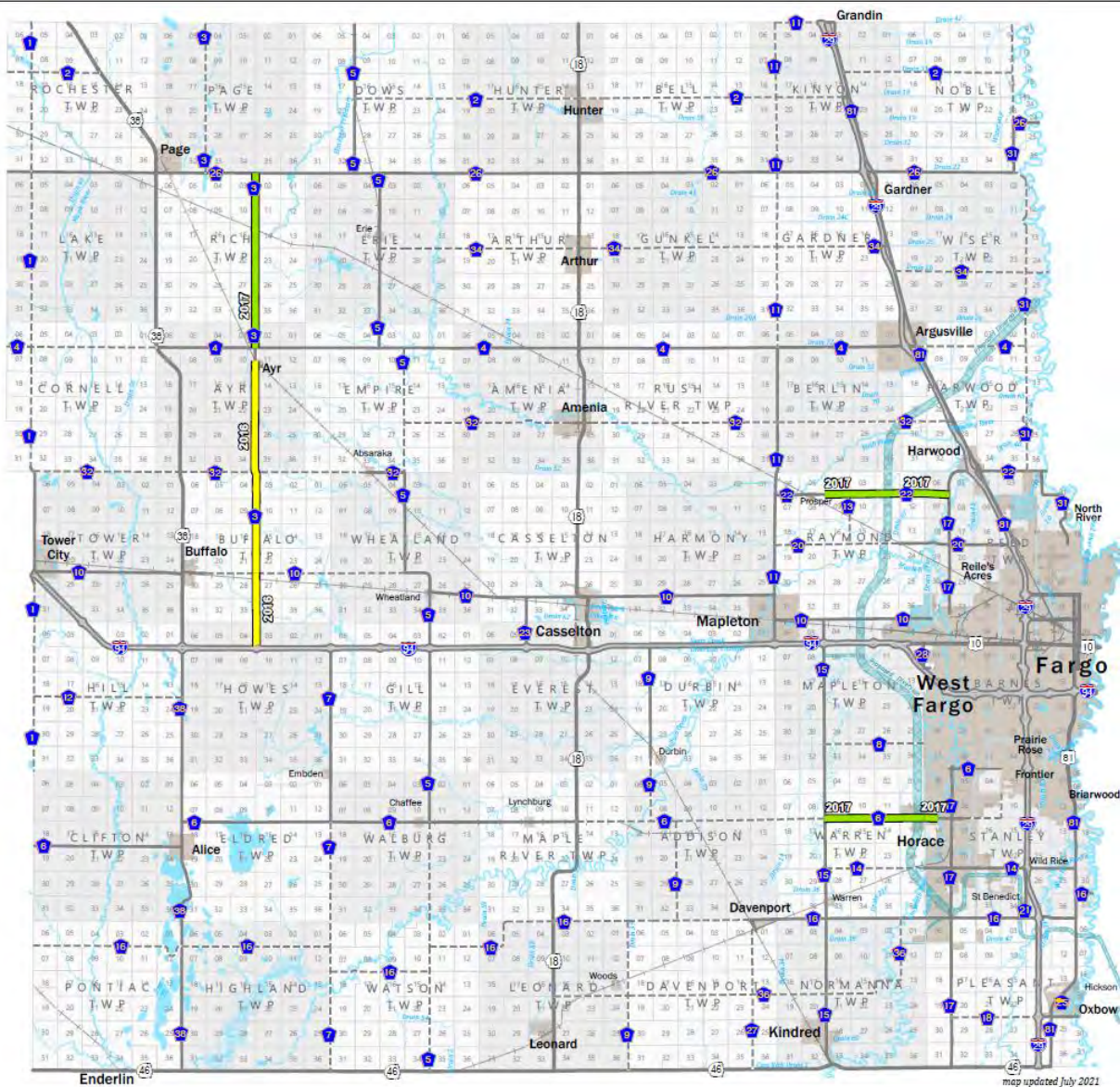
**Gravel Stabilization Projects**

**Year of Last Project**

 2016

 2017

Year	Miles
2016	11.42
2017	16.55
Total	27.97



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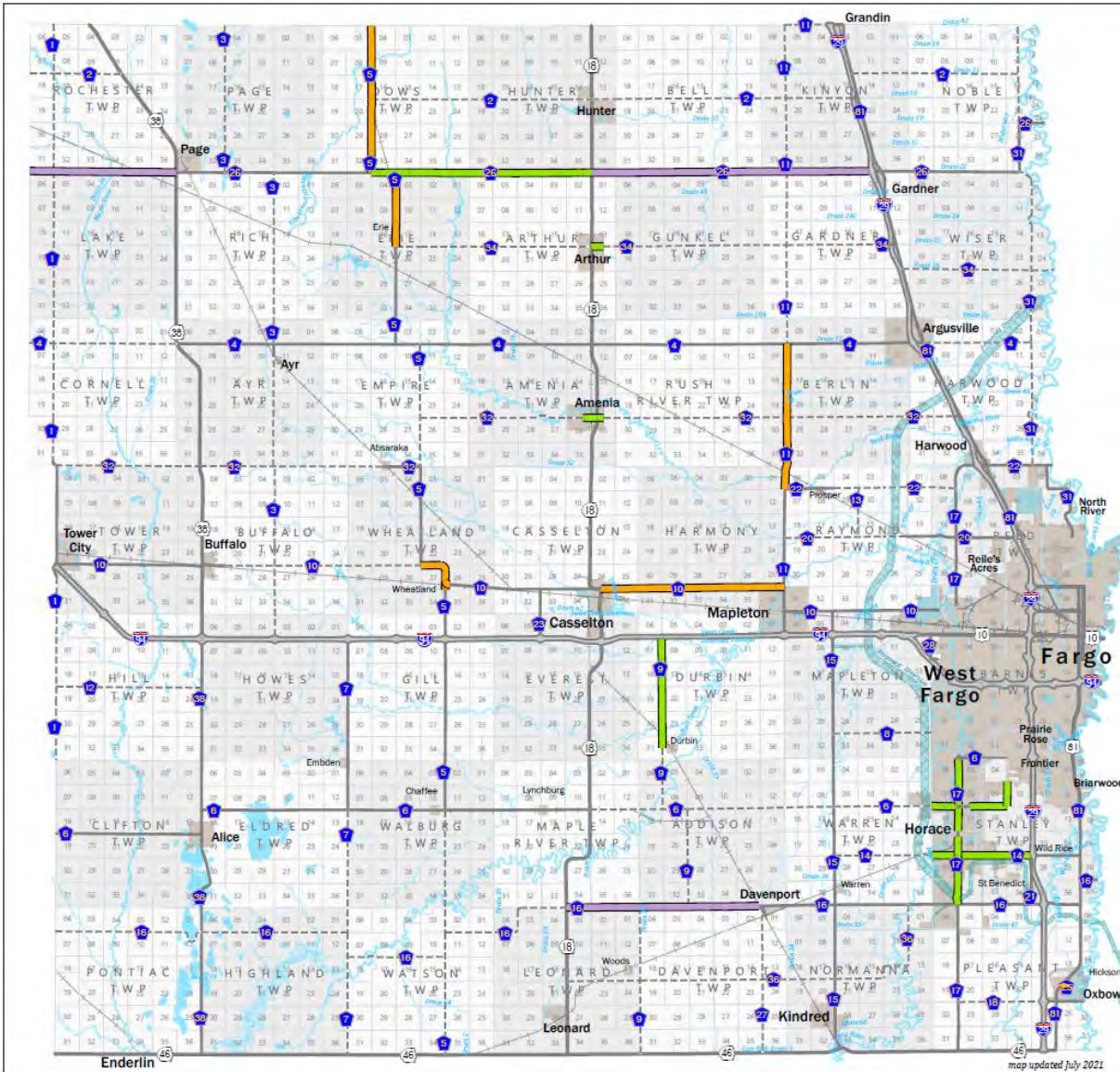


**Appendix 14**

**Proposed Chip Seal Projects**



Year	Miles
2022	24.65
2025	27.82
2026	25.18
Total	77.65



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**Appendix 15**

**Projected 30 Year Improvements**

- █ Gravel - Needs Paving/Grading
- █ Gravel - Needs Reshaping
- █ Paved - Needs Widening
- █ Future County Highway
- █ Replace Culverts

Type of Improvement	Miles	Cost/Mile*	Estimated Total
Gravel - Needs Paving/Grading	43.66	\$1.5 Million	\$65.5 Million
Gravel - Needs Reshaping	216.15	\$225,000	\$48.6 Million
Paved - Needs Widening	100.58	\$1.5 Million	\$150.9 Million
Future County Highway	10.66	\$1.5 Million	\$16 Million
Replace Culverts	25.3	\$100,000	\$2.53 Million
<b>Total:</b>			<b>\$283.53 Million</b>

*\*Cost per mile figures represent today's costs and do not take into account inflation.*

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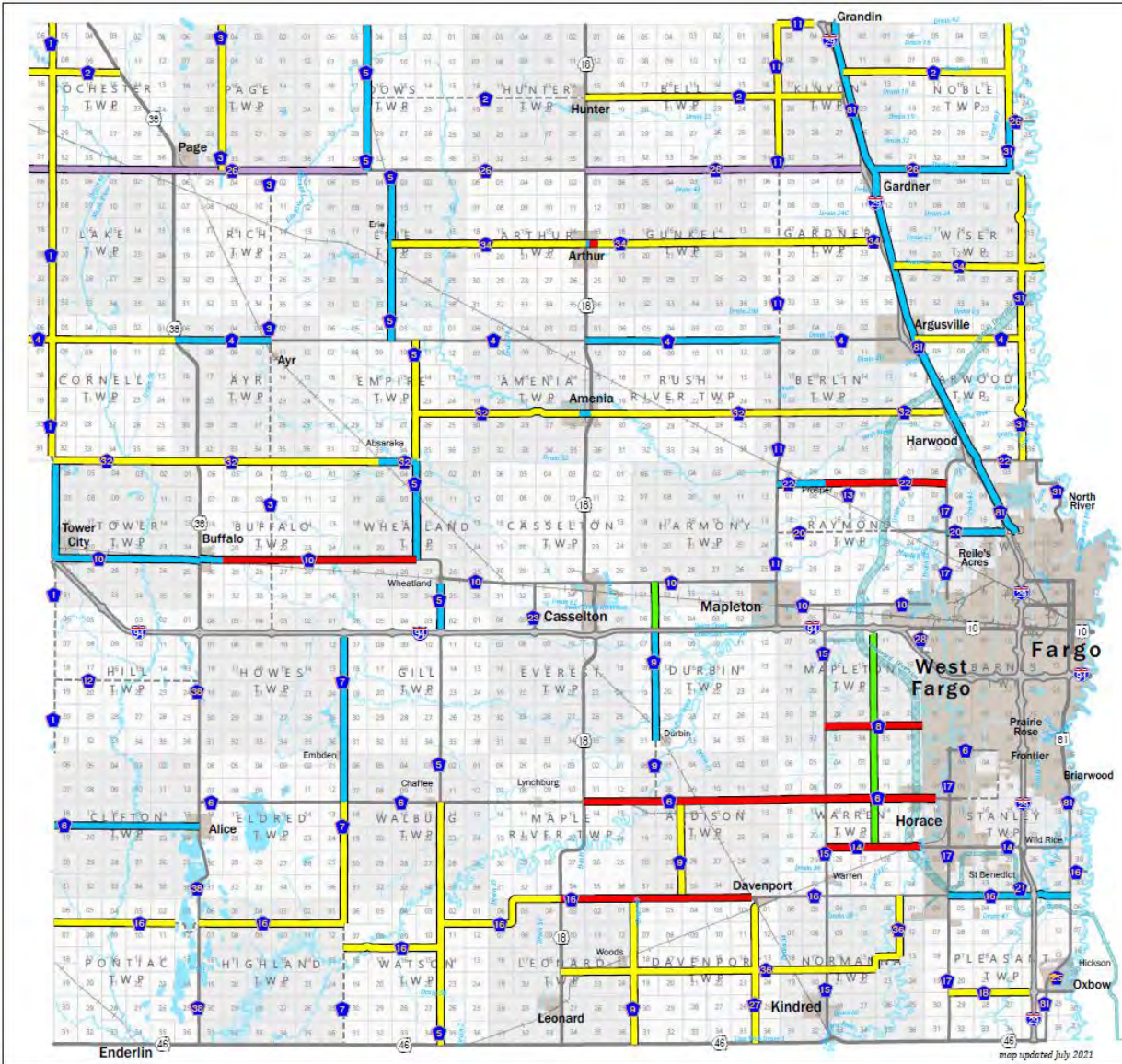
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**Appendix 16**

**Recommended Pavement Overlay**

-  1.5 - 1.75 inch Mill and Overlay
-  1.5 - 1.75 inch Overlay
-  2 inch Mill and Overlay
-  2 inch Overlay
-  2.5 - 2.75 inch Mill and Overlay
-  2.5 - 2.75 inch Overlay
-  3 inch Overlay

Recommended Pavement Overlay*	Miles
1.5 - 1.75 inch Mill and Overlay	4.64
1.5 - 1.75 inch Overlay	50.64
2 inch Mill and Overlay	2.57
2 inch Overlay	1.8
2.5 - 2.75 inch Mill and Overlay	0.98
2.5 - 2.75 inch Overlay	17.58
3 inch Overlay	1.03
<b>Total</b>	<b>79.24</b>

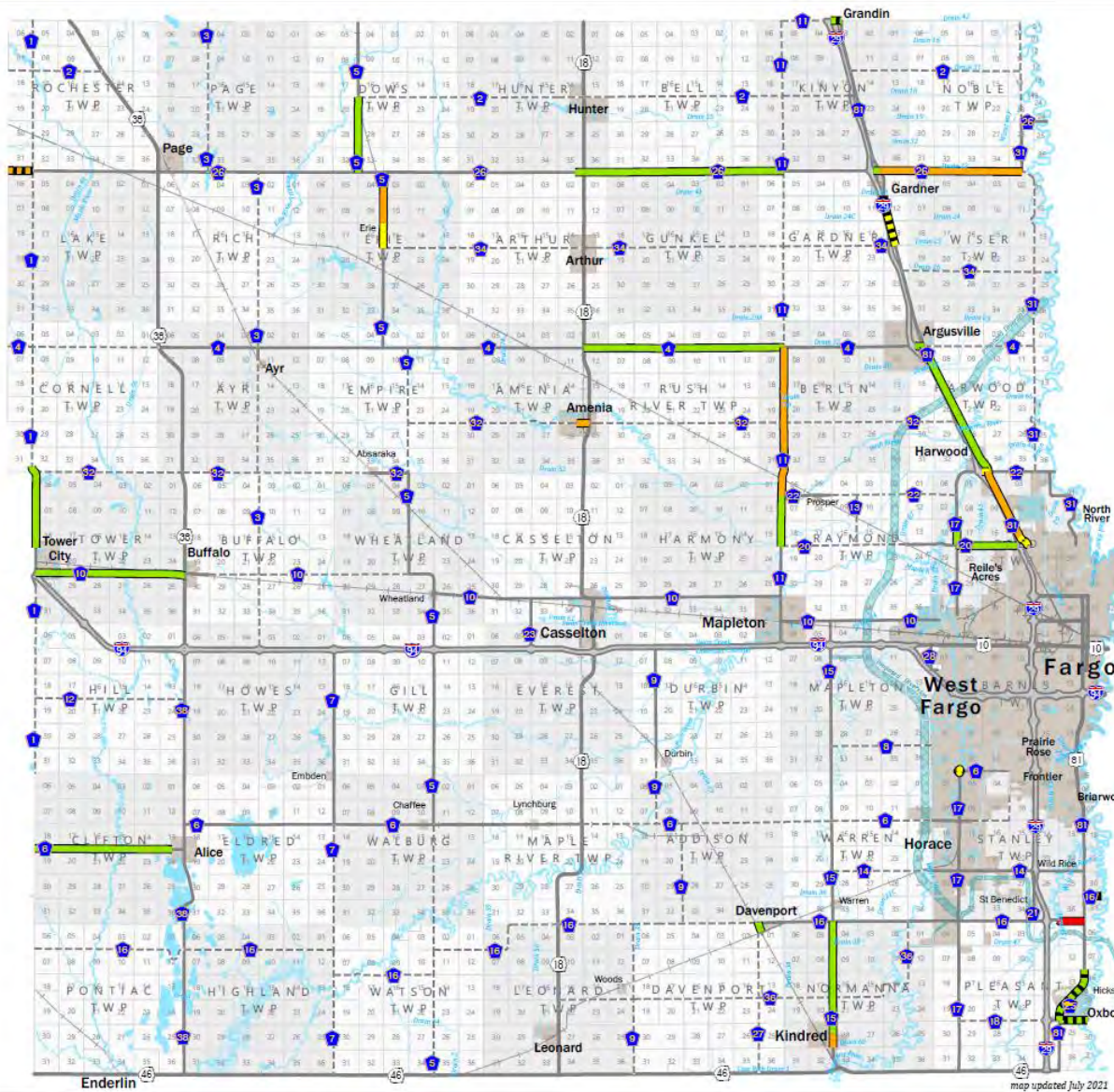
\* Recommended pavement overlay thickness needed to achieve a 10 tons/axle road (from American Engineering 2017 testing results)

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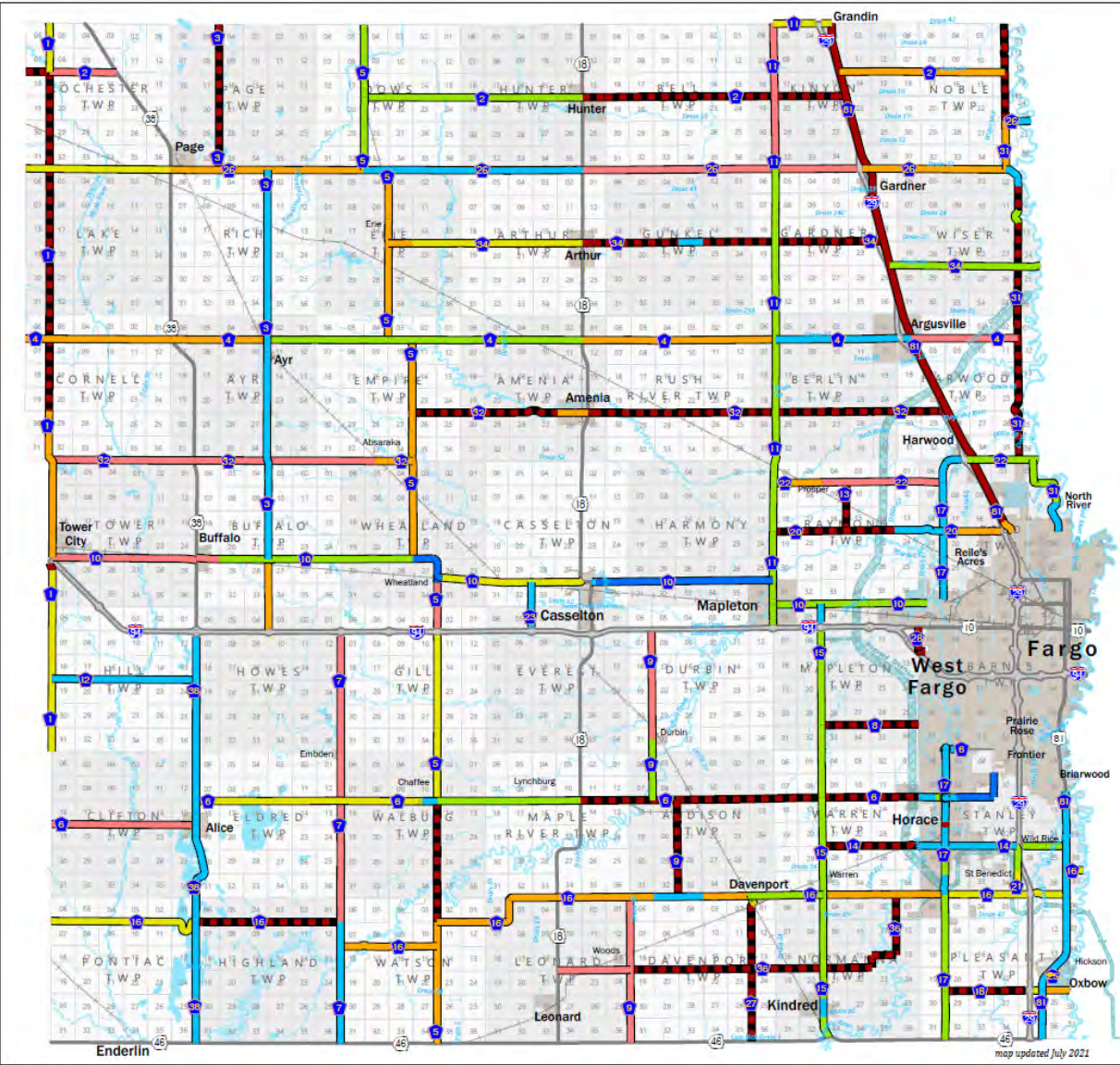


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**Appendix 17**

**Age of Highways and Estimated Age of Culvert Infrastructure**



**Year of Road Grading - Est. Age of Culverts**

- █ unknown/TBD 65+ years old
- █ 1937 - 1949 72 - 84 years old
- █ 1950 - 1959 62 - 71 years old
- █ 1960 - 1969 52 - 61 years old
- █ 1970 - 1979 42 - 51 years old
- █ 1980 - 1999 22 - 41 years old
- █ 2000 - 2019 2 - 21 years old
- █ 2020 - 2021 0 - 1 year old

Year of Road Grading	Miles	% of Mileage
unknown/TBD (65+ years old)	148.1	23.23%
1937 - 1949	22.036	3.46%
1950 - 1959	82.883	13.00%
1960 - 1969	102.253	16.04%
1970 - 1979	60.368	9.47%
1980 - 1999	111.465	17.49%
2000 - 2019	98.347	15.43%
2020 - 2021	11.97	1.88%

The age of highways is based upon the year of road grading. In most cases, the age of culverts is equivalent to the age of highways.

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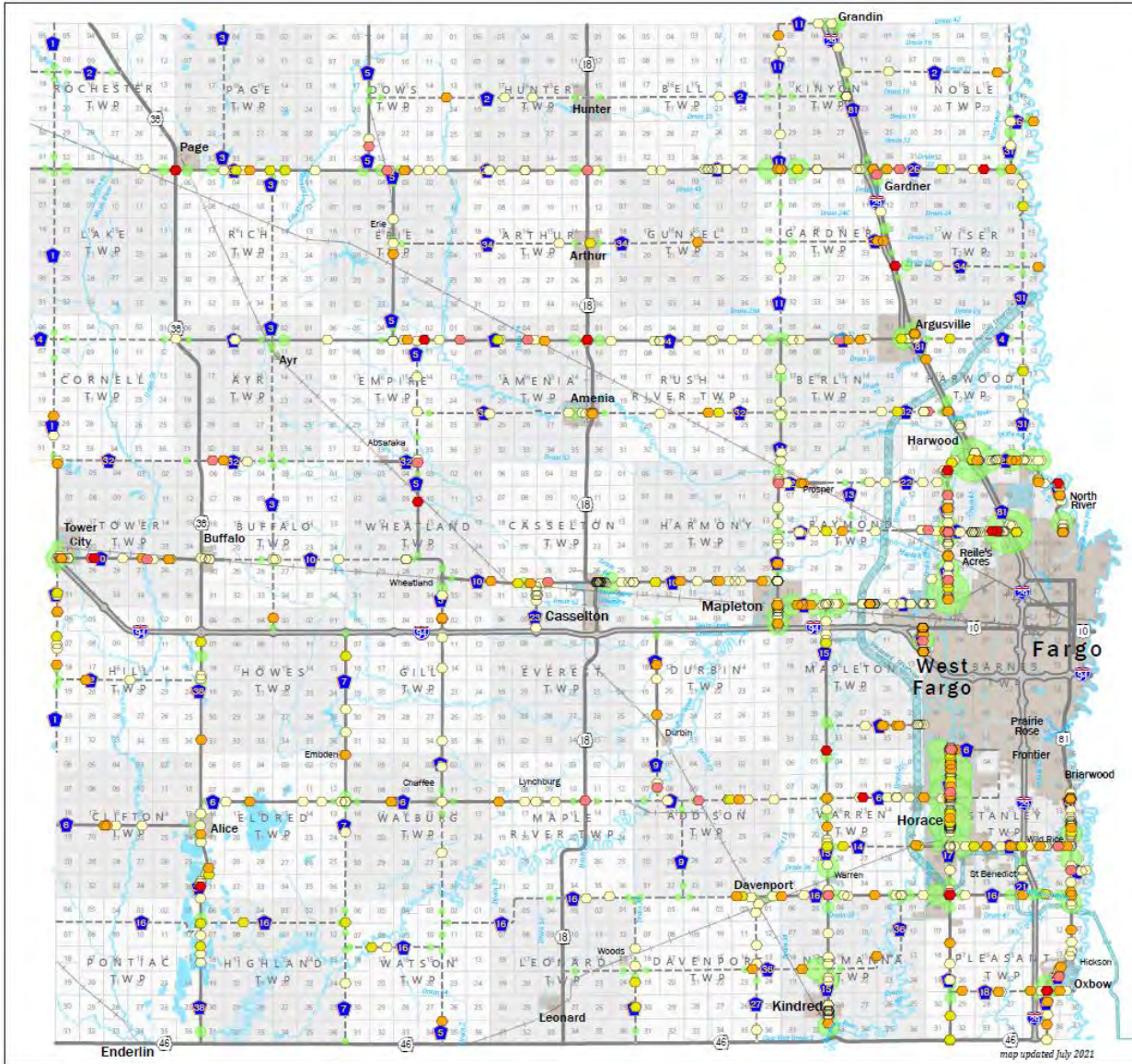


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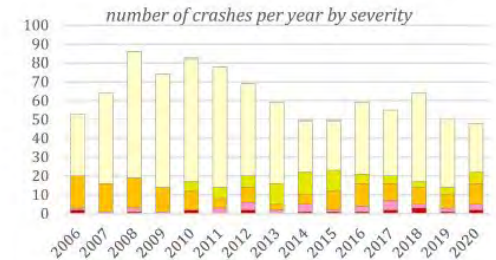
**Appendix 18**

**Crashes on County Highways:  
2006 - 2020**



**Crash Severity**

- Fatal
- Incapacitating Injury
- Non-incapacitating Injury
- Possible Injury
- Property Damage Only (PDO)



**Average Daily Traffic Count (2018)**



**County Highway Type**

- Paved
- Gravel

Crash Data Source: North Dakota Department of Transportation  
Traffic Count Source: KJJ Engineering

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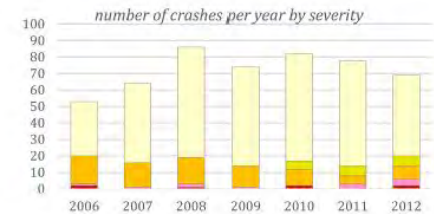


**Appendix 18a**

**Crashes on County Highways:  
2006 - 2012**

**Crash Severity**

- Fatal
- Incapacitating Injury
- Non-incapacitating Injury
- Possible Injury
- Property Damage Only (PDO)



**County Highway Type**

- Paved
- Gravel

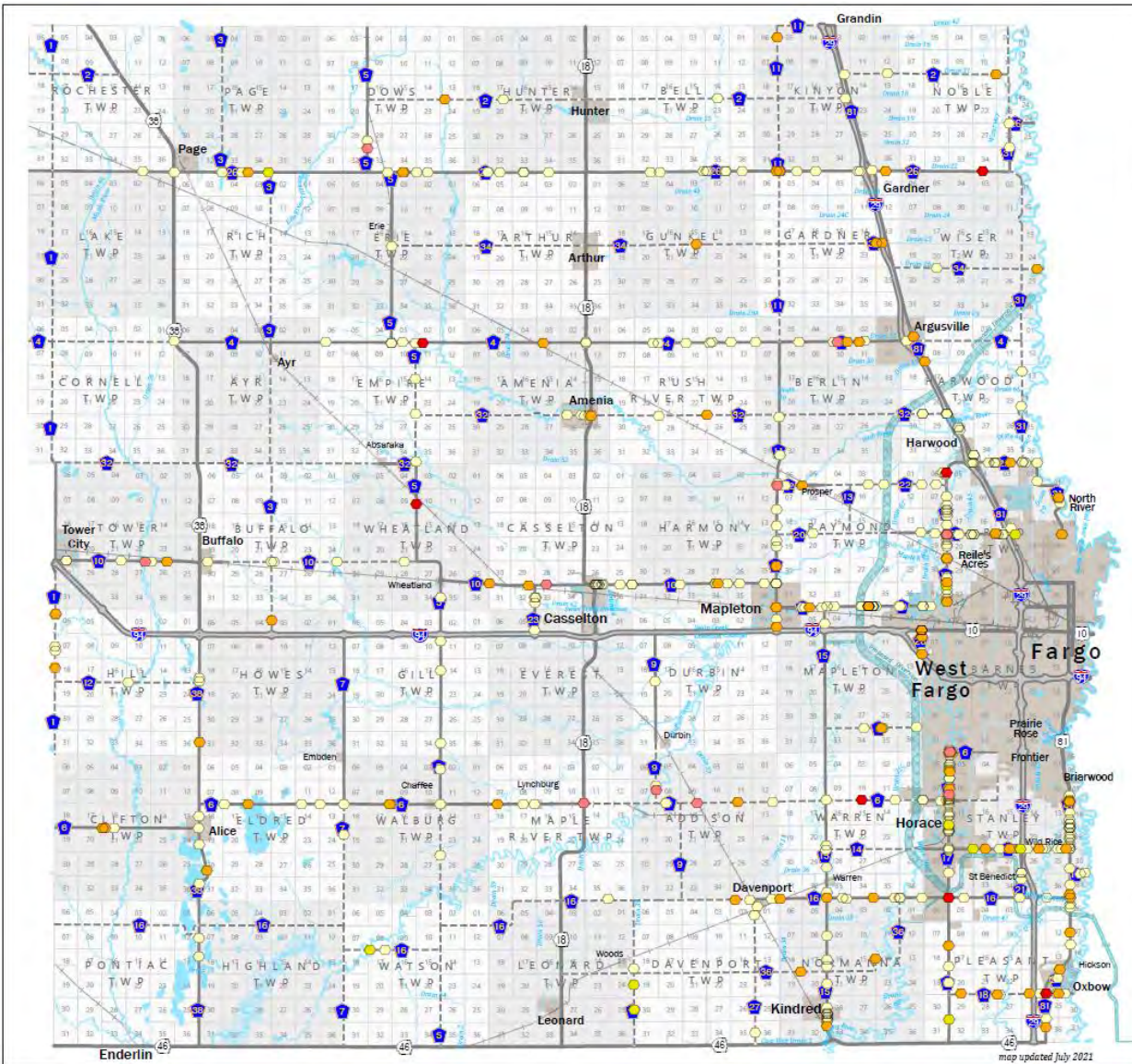
Crash Data Source: North Dakota Department of Transportation  
Traffic Count Source: KJI Engineering

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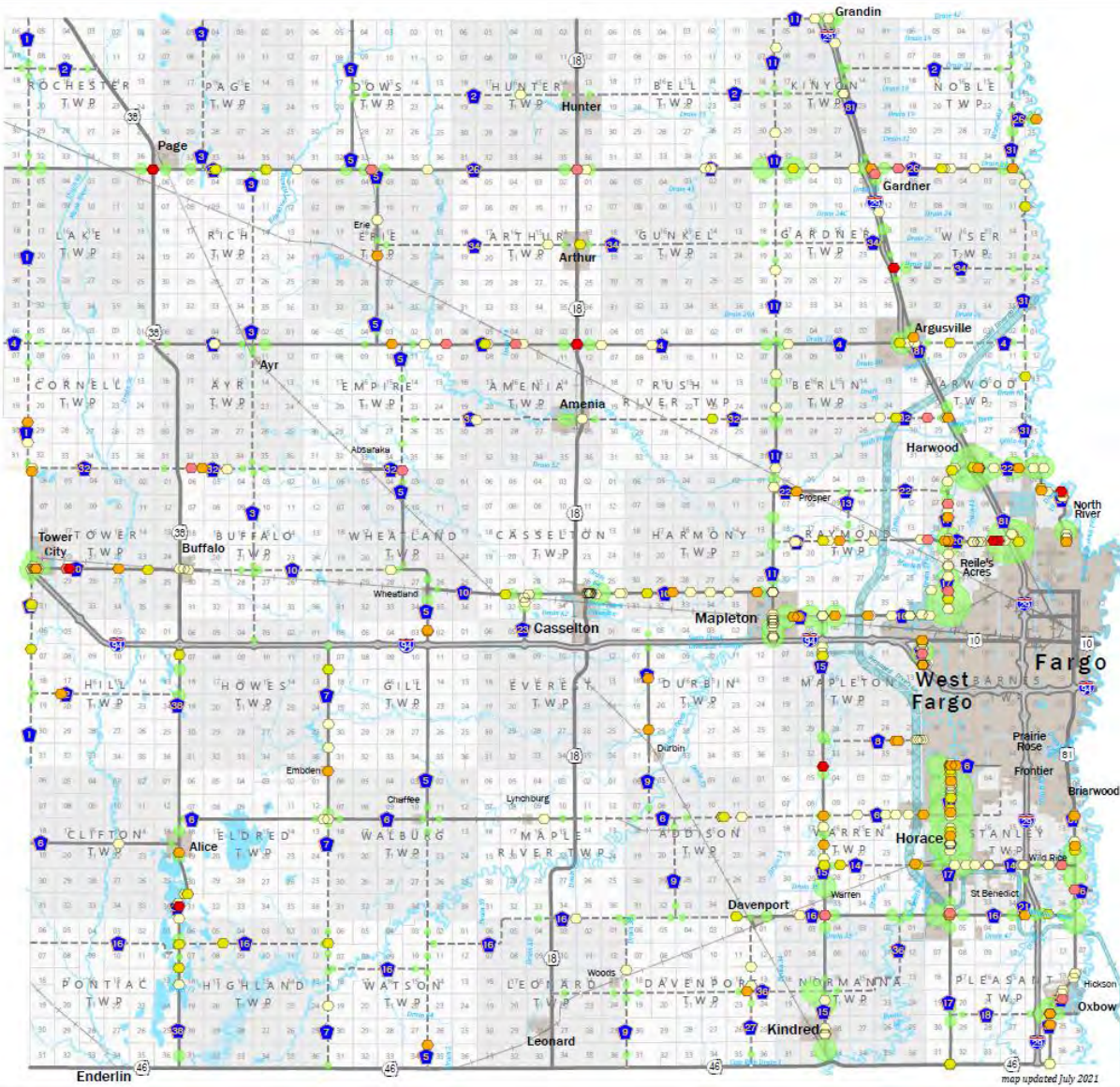


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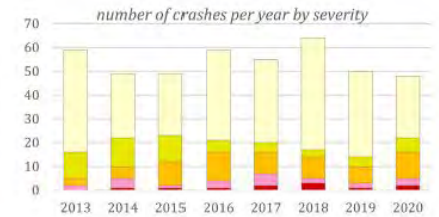
**Appendix 18b**

**Crashes on County Highways:  
2013 - 2020**



**Crash Severity**

- Fatal
- Incapacitating Injury
- Non-incapacitating Injury
- Possible Injury
- Property Damage Only (PDO)



**Average Daily Traffic Count (2018)**



**County Highway Type**

- 1 Paved
- 2 Gravel

Crash Data Source: North Dakota Department of Transportation  
Traffic Count Source: KJ Engineering

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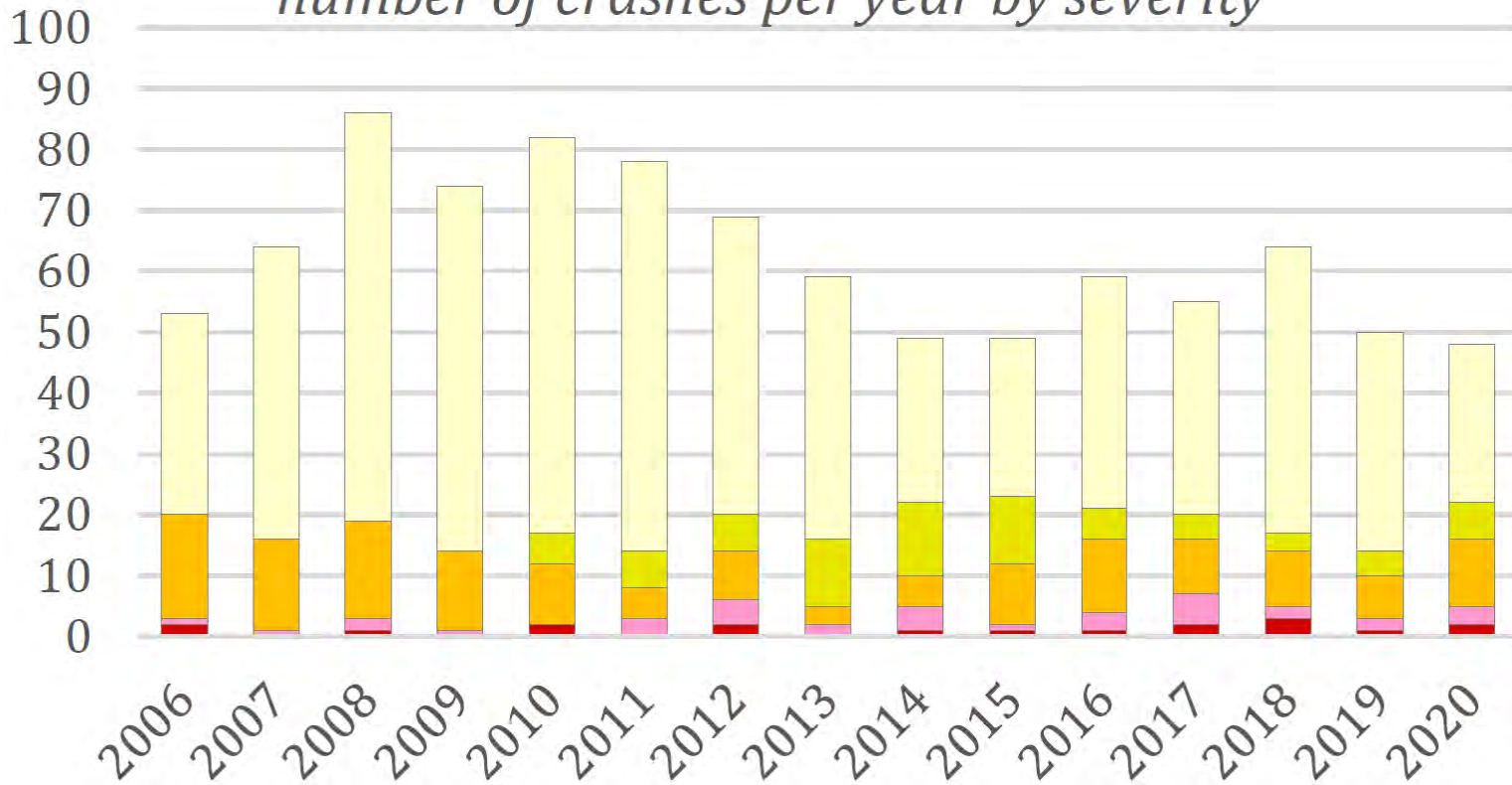
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**CASS COUNTY  
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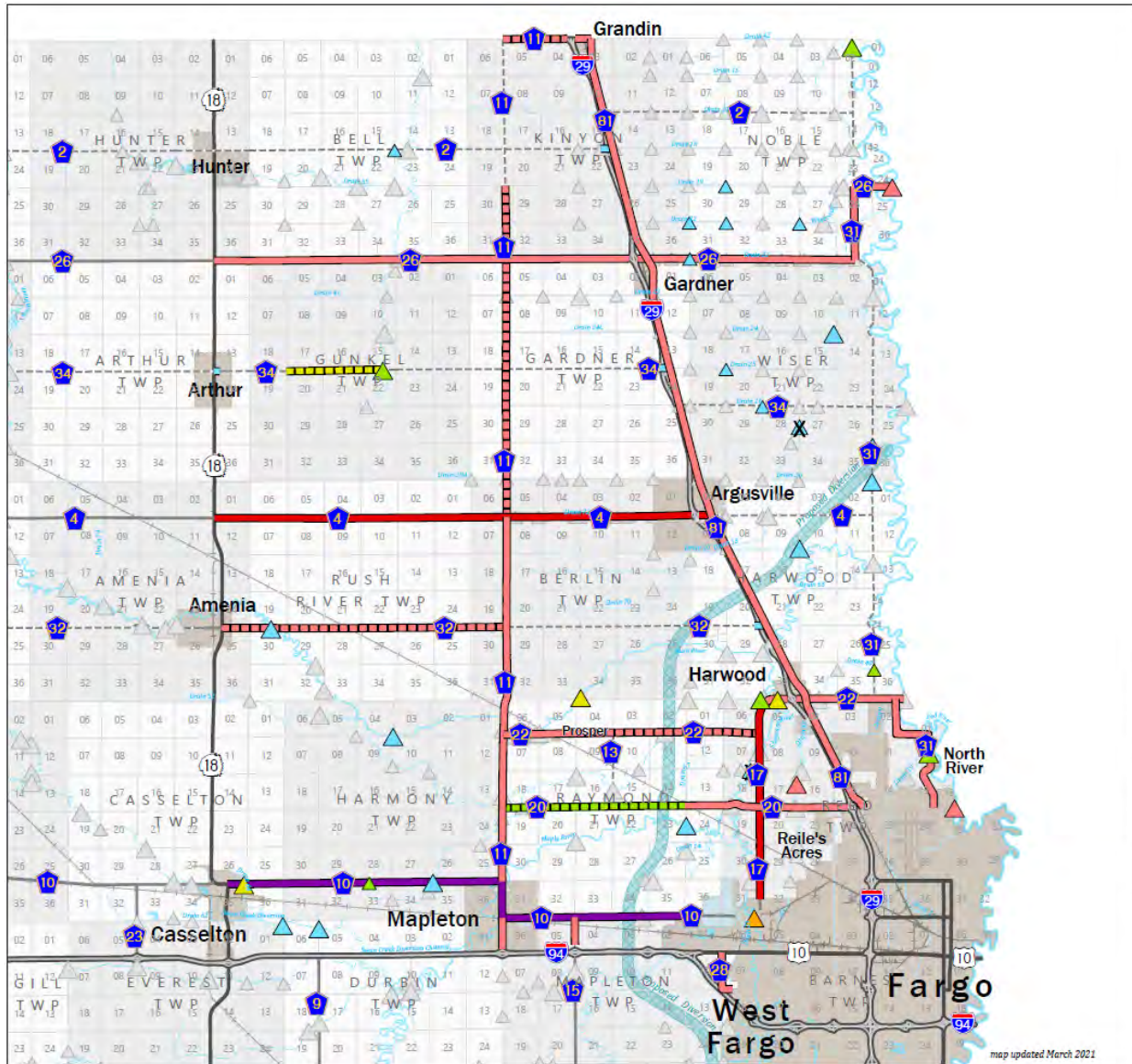




*number of crashes per year by severity*



- PDO
- Possible Injury
- Non-incapacitating injury
- Incapacitating Injury
- Fatal



map updated March 2021

## Appendix 19a

# 2000 - Present Construction Project History northeast quadrant

### County Structures

cost per structure in this quadrant

Minor	Major	Removed	
▲ (10)	▲ (9)	✘ (2)	under \$100K
▲ (2)	▲ (4)	✘ (0)	\$100K - \$250K
▲ (0)	▲ (3)	✘ (0)	\$250K - \$500K
▲ (0)	▲ (0)	✘ (0)	\$500K - \$1M
▲ (0)	▲ (2)	✘ (0)	over \$1M

Projects also occurred on structures currently in Fargo (1) and West Fargo (2) that are displayed in the map but are not included in the counts above. Since being constructed by Cass County, these 3 structures have been turned over to those cities.

### County Highways

cost per highway in this quadrant

Gravel	Paved	
▬	▬	under \$100K
▬	▬	\$100K - \$250K
▬	▬	\$250K - \$500K
▬	▬	\$500K - \$1M
▬	▬	\$1M - \$5M
▬	▬	\$5M - \$10M
▬	▬	over \$10M

Structure Proj. Type	Proj. Completed	# of Structures	%	Cost
Bridge Removals	2	205 (139 minor/66 major)	N/A	\$50,286
Bridge Repairs	10	205 (139 minor/66 major)	4.88%	\$432,476
New Bridges	27	205 (139 minor/66 major)	13.17%	\$18,571,810
				Total Bridge: \$19,054,572

Road Project Type	Miles Worked On*	Total Miles	%	Cost**
Paved Road Projects	103.56	103.56	100%	\$49,895,356
Gravel Road Projects	31.1	97.68	31.84%	\$4,972,531
				Total Road: \$54,867,887
				Total Bridge & Road: \$73,914,949

\*Some roads had 2 or more projects on the same segment in the past 20 years. This number only counts those mileages once.  
\*\*Projects for school bus stops and snow gates on County Highways are not displayed in the map but are included in highway costs. The Hwy Dept parking lot project is included in the costs for the northeast quadrant.

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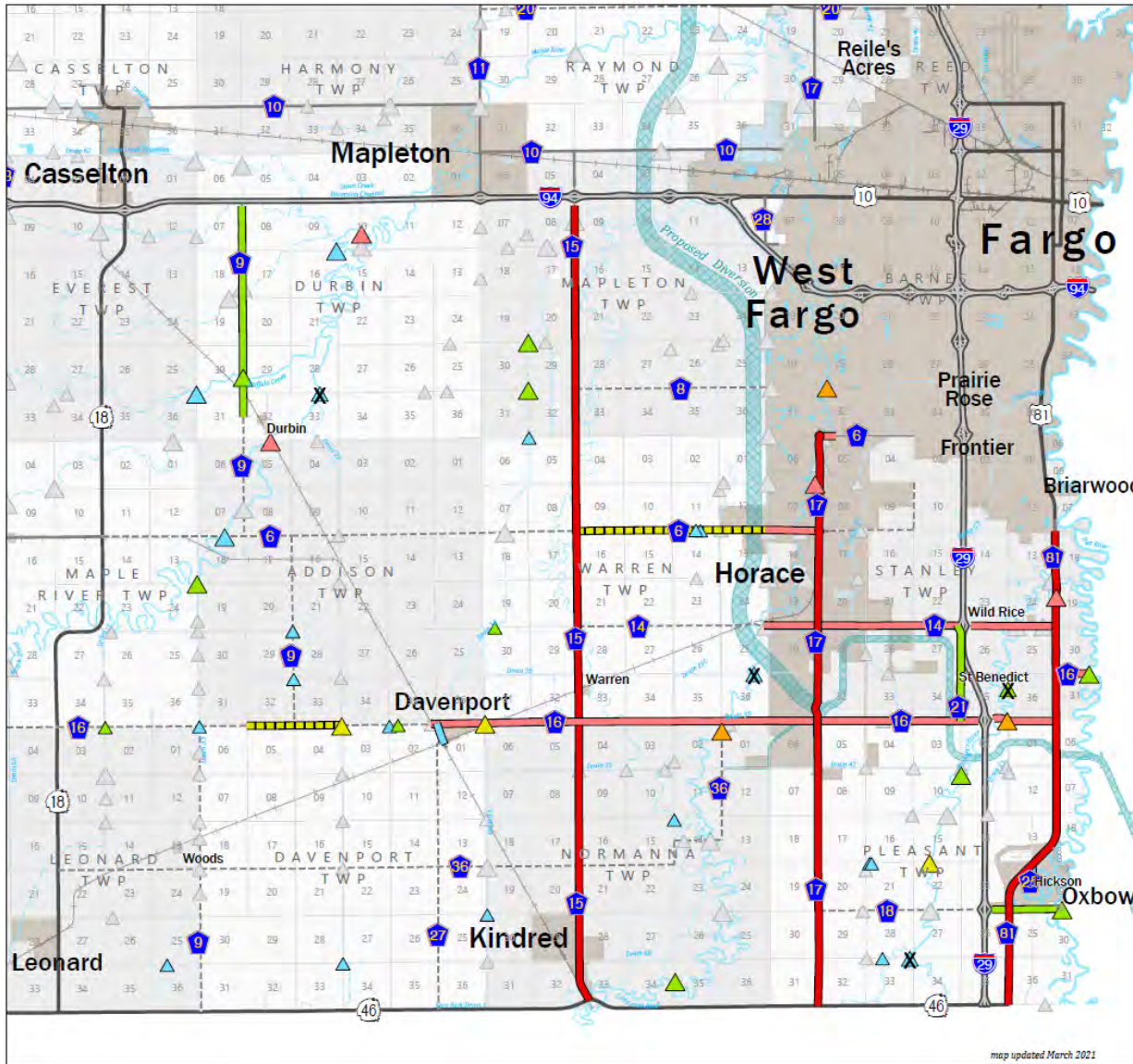
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**Appendix 19b**

**2000 - Present  
Construction Project History**  
*southeast quadrant*



**County Structures**

cost per structure in this quadrant

Minor	Major	Removed	Cost Range
▲ (15)	▲ (3)	✕ (3)	under \$100K
▲ (3)	▲ (8)	✕ (1)	\$100K - \$250K
▲ (0)	▲ (3)	✕ (0)	\$250K - \$500K
▲ (0)	▲ (2)	✕ (0)	\$500K - \$1M
▲ (0)	▲ (4)	✕ (0)	over \$1M

Projects also occurred on structures currently in Fargo (1) and West Fargo (2) that are displayed in the map but are not included in the counts above. Since being constructed by Cass County, these 3 structures have been turned over to those cities.

**County Highways**

cost per highway in this quadrant

Gravel	Paved	Cost Range
▬	▬	under \$100K
▬	▬	\$100K - \$250K
▬	▬	\$250K - \$500K
▬	▬	\$500K - \$1M
▬	▬	\$1M - \$5M
▬	▬	\$5M - \$10M
▬	▬	over \$10M

Structure Proj. Type	Proj. Completed	# of Structures	%	Cost
Bridge Removals	4	135 (85 minor/50 major)	N/A	\$248,392
Bridge Repairs	11	135 (85 minor/50 major)	8.15%	\$982,987
New Bridges	31	135 (85 minor/50 major)	22.96%	\$11,351,541
				<b>Total Bridge: \$12,582,920</b>

Road Project Type	Miles Worked On*	Total Miles	%	Cost**
Paved Road Projects	69.1	69.1	100%	\$34,158,585
Gravel Road Projects	5.98	68.29	8.76%	\$746,100
				<b>Total Road: \$34,904,685</b>
				<b>Total Bridge &amp; Road: \$47,495,116</b>

\*Some roads had 2 or more projects on the same segment in the past 20 years. This number only counts those mileages once.  
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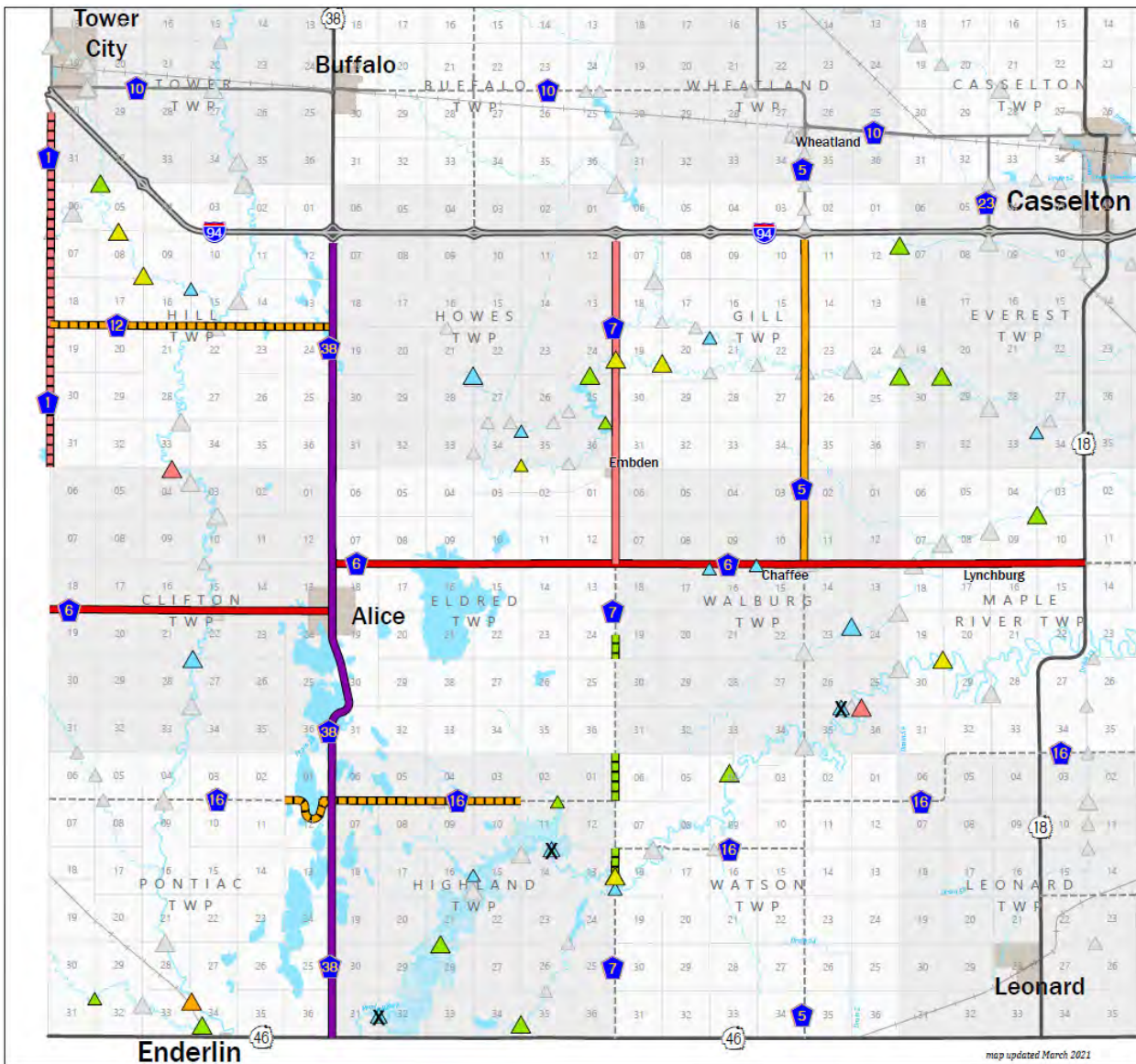
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map updated March 2021



**Appendix 19c**

**2000 - Present  
Construction Project History**  
*southwest quadrant*



**County Structures**

cost per structure in this quadrant

- |       |        |         |                 |
|-------|--------|---------|-----------------|
| Minor | Major  | Removed |                 |
| ▲ (8) | ▲ (3)  | ✘ (3)   | under \$100K    |
| ▲ (3) | ▲ (10) | ✘ (0)   | \$100K - \$250K |
| ▲ (1) | ▲ (7)  | ✘ (0)   | \$250K - \$500K |
| ▲ (0) | ▲ (1)  | ✘ (0)   | \$500K - \$1M   |
| ▲ (0) | ▲ (2)  | ✘ (0)   | over \$1M       |

Projects also occurred on structures currently in Fargo (1) and West Fargo (2) that are displayed in the map but are not included in the counts above. Since being constructed by Cass County, these 3 structures have been turned over to those cities.

**County Highways**

cost per highway in this quadrant

- |        |       |                 |
|--------|-------|-----------------|
| Gravel | Paved |                 |
| ▬      | ▬     | under \$100K    |
| ▬      | ▬     | \$100K - \$250K |
| ▬      | ▬     | \$250K - \$500K |
| ▬      | ▬     | \$500K - \$1M   |
| ▬      | ▬     | \$1M - \$5M     |
| ▬      | ▬     | \$5M - \$10M    |
| ▬      | ▬     | over \$10M      |

Structure Proj. Type	Proj. Completed	# of Structures	%	Cost
Bridge Removals	3	89 (36 minor/53 major)	N/A	\$81,204
Bridge Repairs	5	89 (36 minor/53 major)	5.62%	\$313,211
New Bridges	35	89 (36 minor/53 major)	39.3%	\$8,994,052
				<b>Total Bridge: \$9,388,468</b>

Road Project Type	Miles Worked On*	Total Miles	%	Cost**
Paved Road Projects	52.5	52.5	100%	\$27,942,008
Gravel Road Projects	20.98	55.81	37.6%	\$2,879,370
				<b>Total Road: \$30,821,378</b>
				<b>Total Bridge &amp; Road: \$40,209,846</b>

\*Some roads had 2 or more projects on the same segment in the past 20 years. This number only counts those mileages once.  
\*\*Projects for school basements and snow gates on County Highways are not displayed in the map but are included in highway costs. The Hwy Dept parking lot project is included in the costs for the northeast quadrant.

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**Appendix 19d**

**2000 - Present  
Construction Project History  
northwest quadrant**

**County Structures**

cost per structure in this quadrant

- |       |        |         |                 |
|-------|--------|---------|-----------------|
| Minor | Major  | Removed |                 |
| ▲ (5) | ▲ (3)  | ✘ (1)   | under \$100K    |
| ▲ (4) | ▲ (10) | ✘ (0)   | \$100K - \$250K |
| ▲ (1) | ▲ (5)  | ✘ (0)   | \$250K - \$500K |
| ▲ (0) | ▲ (0)  | ✘ (0)   | \$500K - \$1M   |
| ▲ (0) | ▲ (1)  | ✘ (0)   | over \$1M       |

Projects also occurred on structures currently in Fargo (1) and West Fargo (2) that are displayed in the map but are not included in the counts above. Since being constructed by Cass County, these 3 structures have been turned over to those cities.

**County Highways**

cost per highway in this quadrant

- |        |       |                  |
|--------|-------|------------------|
| Gravel | Paved |                  |
| ▬▬▬    | ▬▬▬   | under \$100K     |
| ▬▬▬    | ▬▬▬   | \$100K - \$250K  |
| ▬▬▬    | ▬▬▬   | \$250K - \$5000K |
| ▬▬▬    | ▬▬▬   | \$500K - \$1M    |
| ▬▬▬    | ▬▬▬   | \$1M - \$5M      |
| ▬▬▬    | ▬▬▬   | \$5M - \$10M     |
| ▬▬▬    | ▬▬▬   | over \$10M       |

Structure Proj. Type	Proj. Completed	# of Structures	%	Cost
Bridge Removals	1	136 (74 minor/62 major)	N/A	\$9010
Bridge Repairs	5	136 (74 minor/62 major)	3.68%	\$153,019
New Bridges	28	136 (74 minor/62 major)	20.59%	\$5,912,158
				<b>Total Bridge: \$6,074,217</b>

Road Project Type	Miles Worked On*	Total Miles	%	Cost**
Paved Road Projects	83	83	100%	\$23,744,884
Gravel Road Projects	41.23	102.23	40.33%	\$7,792,878
				<b>Total Road: \$31,537,762</b>
				<b>Total Bridge &amp; Road: \$37,611,979</b>

\*Some roads had 2 or more projects on the same segment in the past 20 years. This number only counts those mileages once.

\*\*Projects for school bus stops and snow gates on County Highways are not displayed in the map but are included in highway costs. The Hwy Dept parking lot project is included in the costs for the northeast quadrant.

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Tom Soucy  
Deputy County Engineer, P.E.

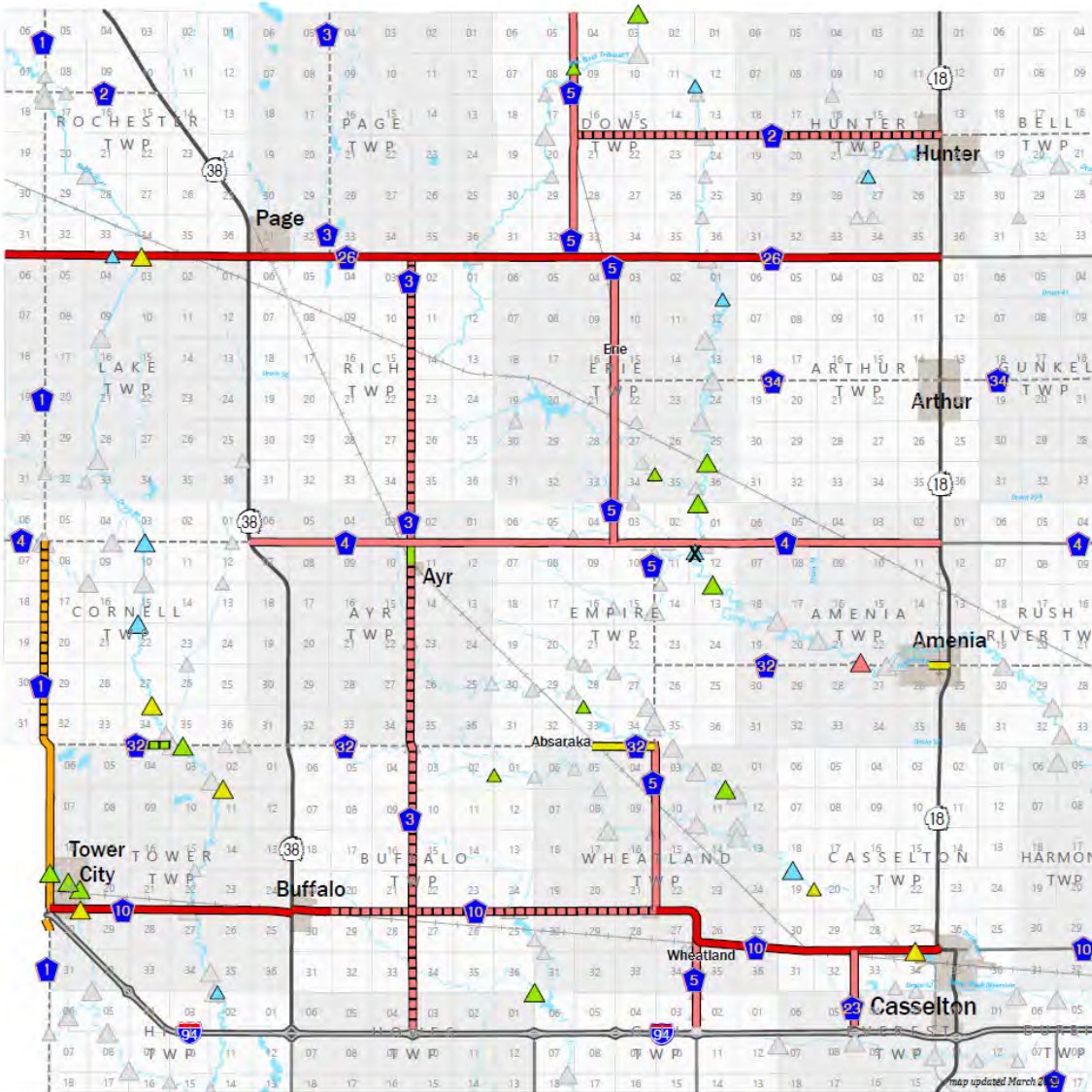
Blaine Laaveg  
Highway Superintendent



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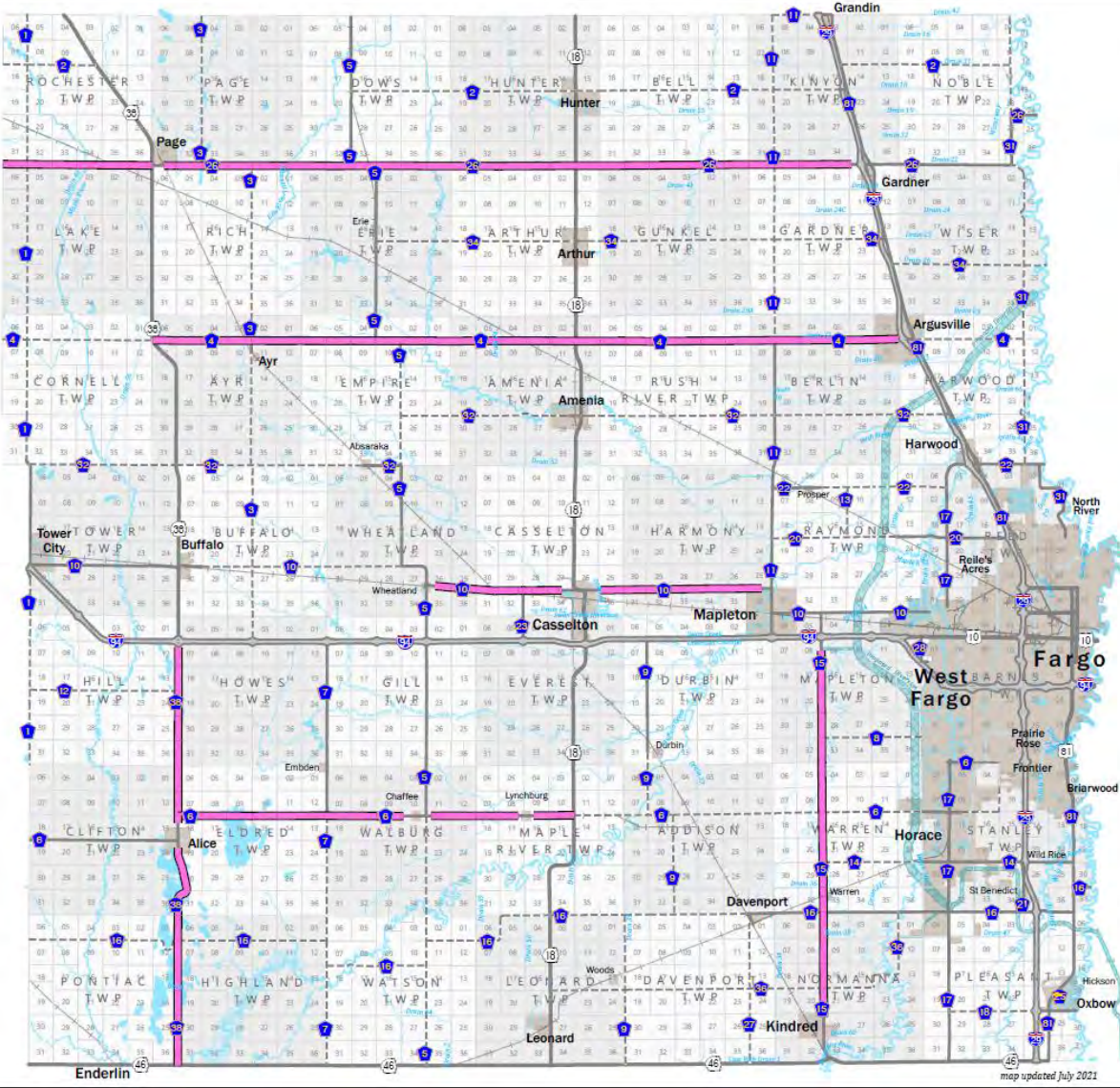
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highway@casscountynd.gov



Appendix 20

65 MPH County Highways

 65 MPH



The speed limit increase on designated county highways from 55 MPH to 65 MPH was passed by the Cass County Commission on October 19, 2020. Approximately 119.86 miles of County Highway now have a speed limit of 65 MPH.

Cass County Highway Department

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**Road Advisory Meeting  
July 19, 2021**

**Davenport Shop Options**

**Cass County Highway Department**

## Davenport Shop



- **New 50'x50' shop substantially complete. Concrete apron will be poured late July. Fuel tank will be fabricated late August.**
- **Options for existing 40'x50' shop. Have had private parties interested in buying. KNDPA is also interested in purchasing the building for their respective township maintenance equipment.**





# Davenport Shop

- Existing 40'x50' Shop with 0.11 acres
- Built in 1983




# Davenport Shop

- New 50'x50' Shop
- Cold storage 45'x48'



# Davenport Shop

- New 50'x50' Shop
- Cold storage 45'x48'

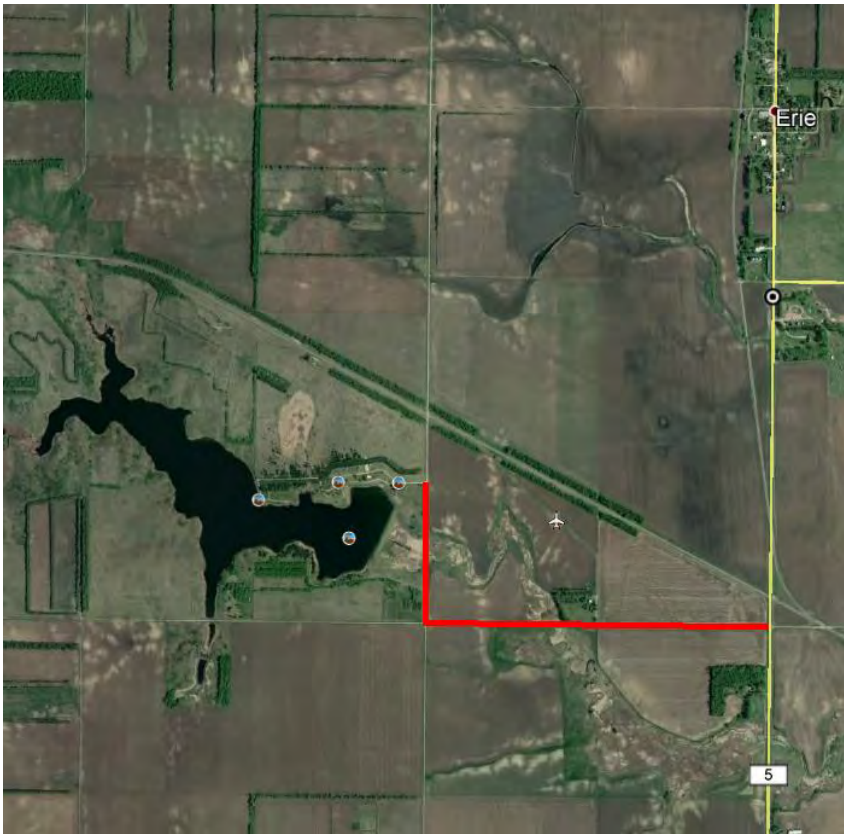


**Road Advisory Meeting  
July 19, 2021**

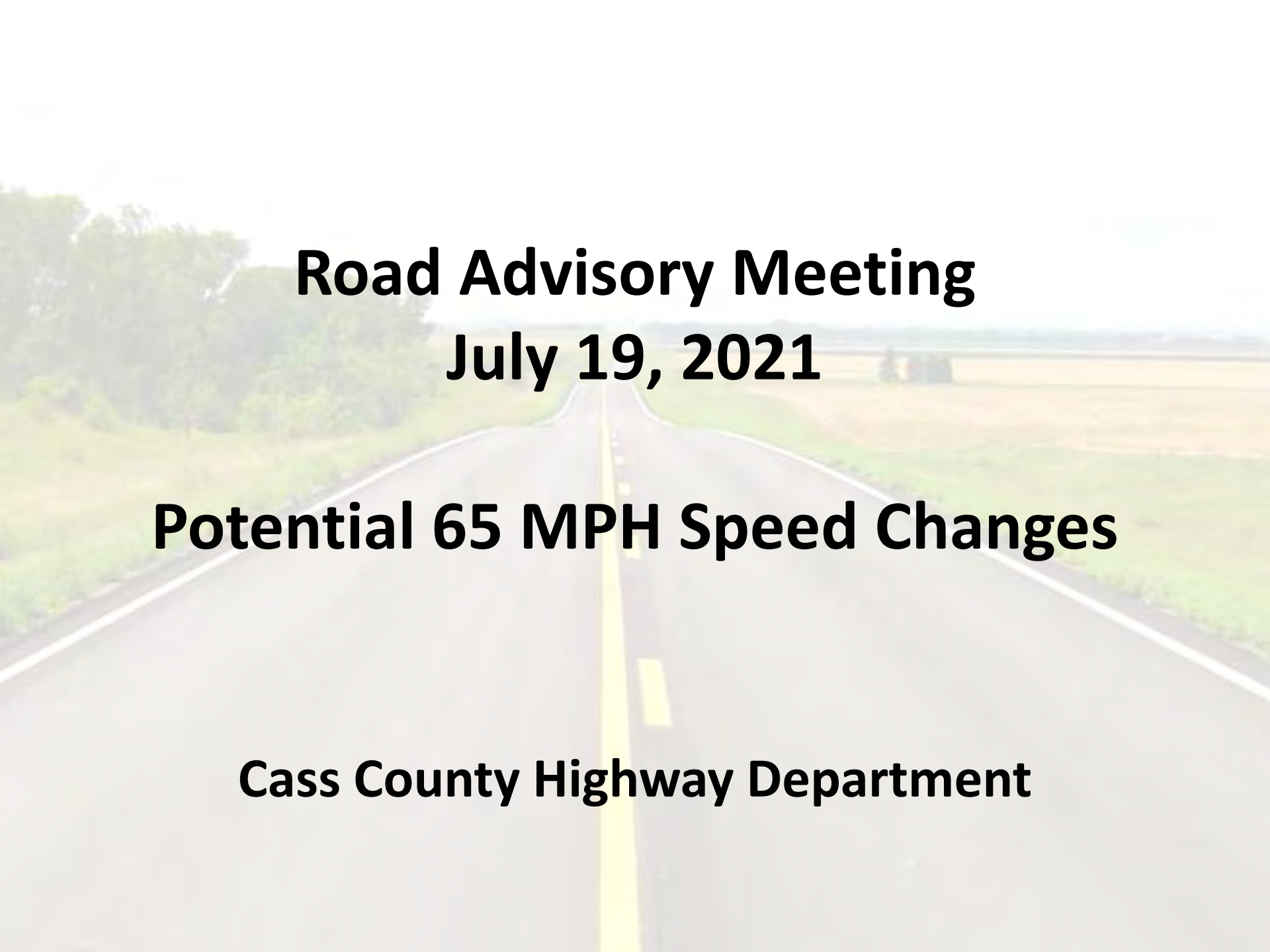
**Brewer Lake – Erie Twp. Road**

**Cass County Highway Department**

# Brewer Lake – Erie Twp Road



- Road Issues
  - Total Length 1.5 Miles
  - Soft Spots
    - Subgrade Repair Project Needed to correct these issues.
  - Costly for the Township to maintain gravel road section.
    - Blade 1 per moth
  - Winter snowplowing issues
  - Connects to a County Owned park therefore should this be a County Road?
- Options
  - Do Nothing
  - Repair Soft Spots – Assist Township with Blading
  - Take it over as a county road and potentially pave the access road and campground.

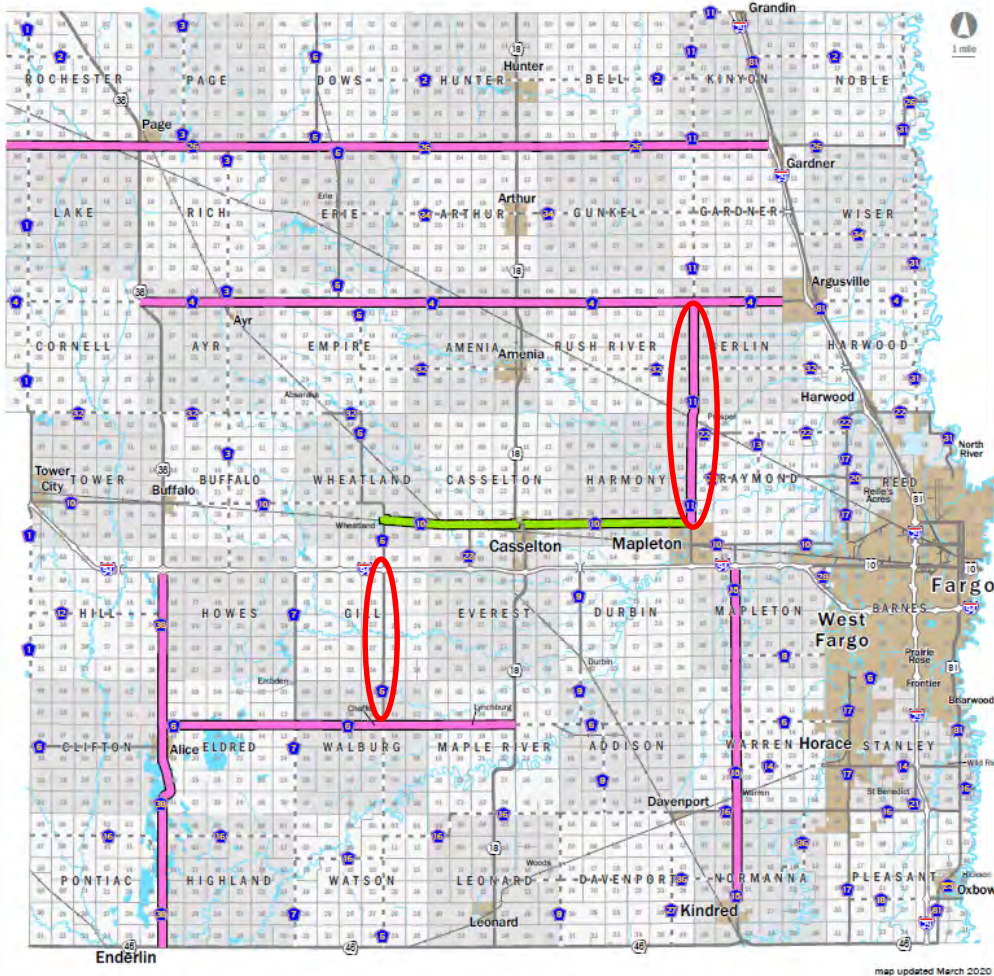


**Road Advisory Meeting  
July 19, 2021**

**Potential 65 MPH Speed Changes**

**Cass County Highway Department**

## Cass County Highways 65 MPH Capability





## 65 MPH Routes

Recommend the following routes be increased to 65 mph except in areas already posted speeds less than 55 mph. (i.e. through towns, schools, or curves)

Met with the Sheriff's department and discussed which roads had the potential to be raised to 65 mph.

- C5 – C6 to I94
  - Guardrail Required on Buffalo Creek Bridge
- C11 – C10 to C4
  - Overlay & Guardrail updates in 2021
- Pros
  - Connects Higher Volume County Roads to NDDOT 65 MPH Routes
  - Closes Gap of the 85% Speed
- Cons
  - Increases Stopping Distance
  - Potential confusion to overall county speed limit.

-  Potential 65 MPH Highway (121.04 miles)
-  Future 65 MPH Highway (13.56 miles)

### Cass County Highway Department

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Disclaimer: As with all public information derived from variable sources, this data may contain errors or faults. Therefore, Cass County does not provide any warranty express or implied, as to the accuracy of this data. The recipient is encouraged to make an independent investigation or verification of the data. If an error is found, it is requested the County Engineer be advised of the inaccuracy so the data can be corrected and corrected. THIS MAP IS NOT A SUBSTITUTE FOR AN ACCURATE FIELD SURVEY.





**Road Advisory Meeting  
July 19, 2021**

**Other Business**

**Cass County Highway Department**