

# MUNICIPALITY OF ARRAN-ELDERSLIE

## Bridge Infrastructure Master Plan



Council Meeting  
January 29, 2024



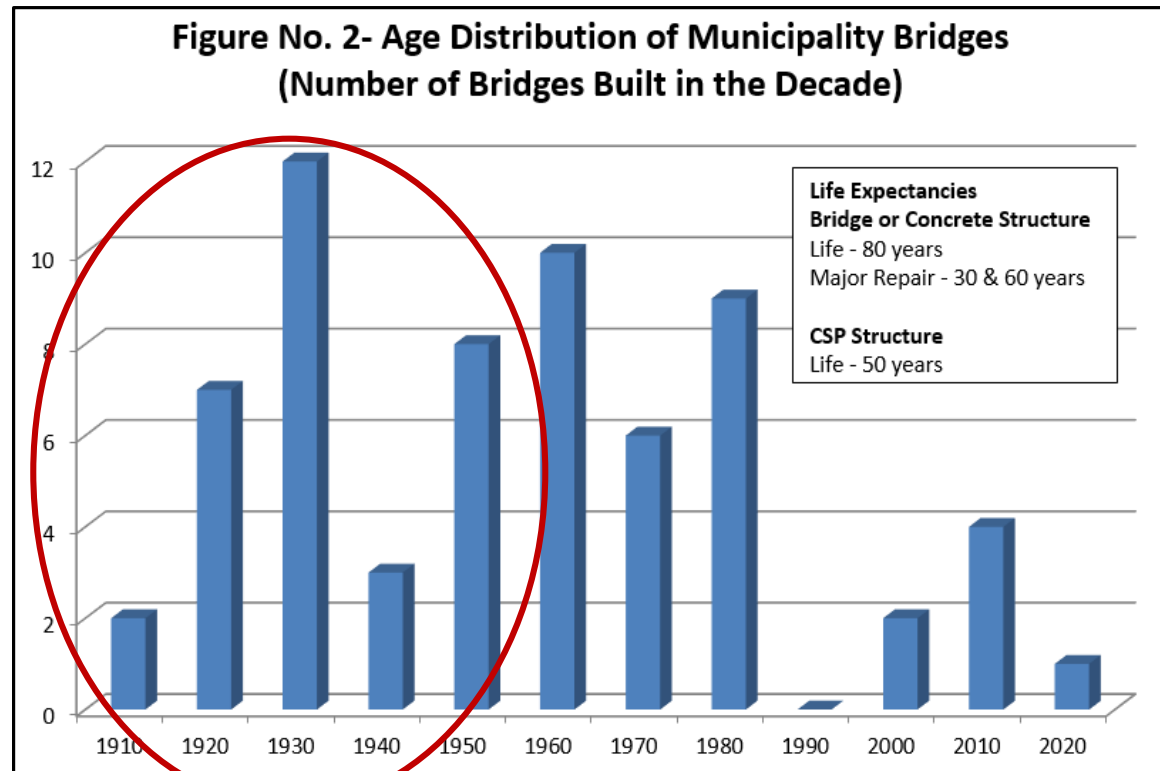
# Agenda

- Background
- Public Meeting Summary
- Summary of Public Input
- Revised Evaluation Approach
- Recommended Approach
- Timeline
- Next Steps



# Project Background

- Arran-Elderslie maintains 64 Bridges (>3m in length)
- The Infrastructure Master Plan is considering outcomes for only 17 of the oldest crossings in the Municipality
- Master Plan process was initiated in 2019



# Bridge Economics

- Arran-Elderslie maintains 64 Bridges (>3m span)
- Bridges are inspected every 2 years as per OSIM
- Bridge Needs Report prepared in 2020 listed repair or replacement needs to 30 structures over next 1-5 years
  - Sopers replaced in 2022
  - Young Bridges By-Passed with new road
- Priority Repairs – 1 to 5 years - \$3,065,600  
(Includes some of the study bridges)
- Priority Repairs – Average amount/year \$600,000
- Draft 2024 budget identifies \$240,000 in reserves.
- Due for inspection and updated Needs Report in 2024

# Study Bridges

A11-Wilson

A24-Ruff

A14-Arranvale

A5-Hunts

A29, A30

E22, E24

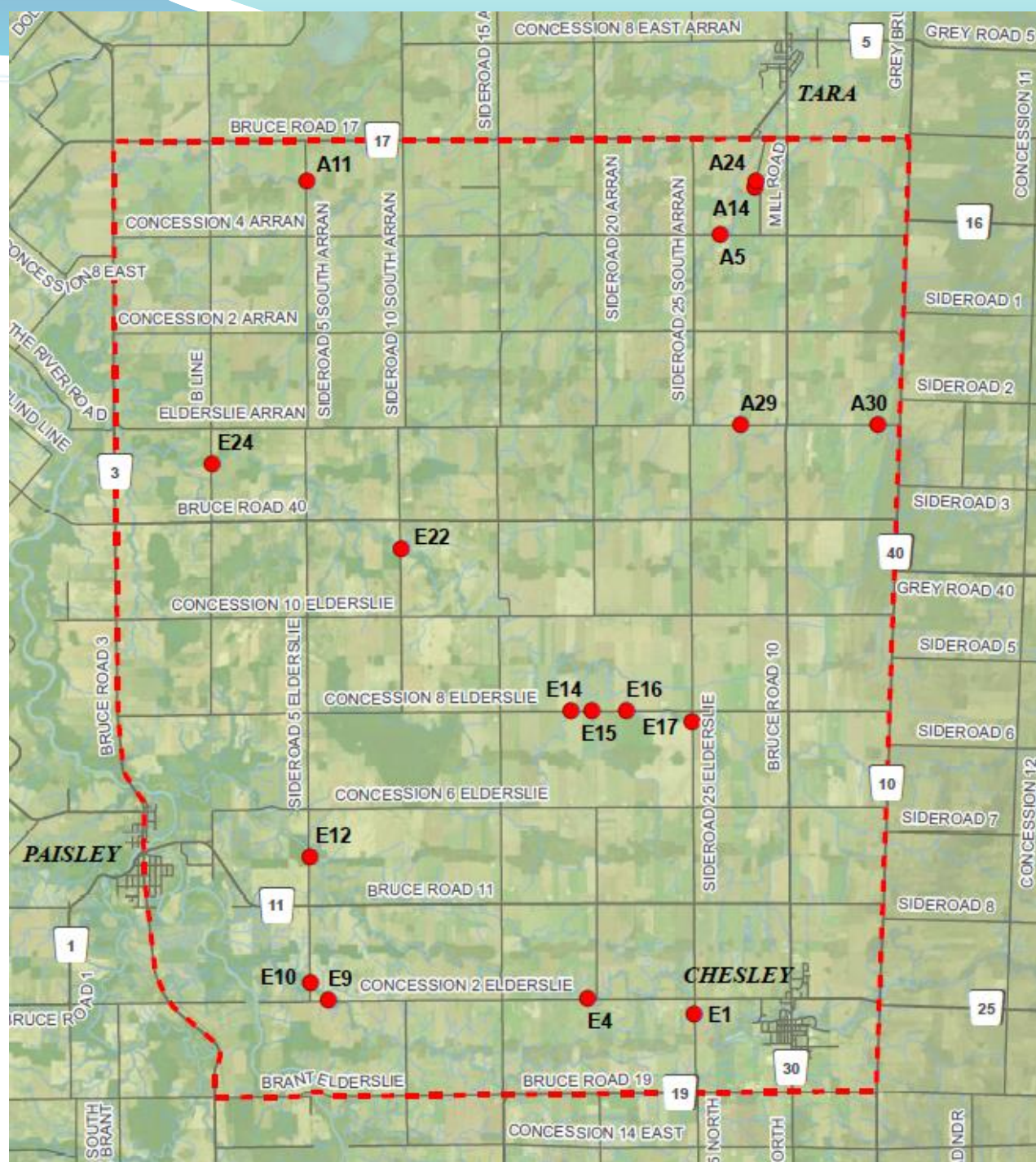
E14, E15, E16, E17

E12-Pearces

E9, E10

E4-Allens

E1-Priebe



## Recommended Approach

# Master Plan Alternatives

- **Alternative 1** – Replace or repair all of the crossings, as required. This option means that each crossing would be either repaired or replaced, and none would be retired (closed).
- **Alternative 2** – Close some crossings and either replace or repair the remaining crossings. This option means that several bridges will be repaired as long as feasible and then eventually closed to traffic and removed, while the remaining crossings will be either repaired as required or replaced.
- **Alternative 3** – Do Nothing. The do nothing option, is a consideration during any Master Plan Class EA process. This option would propose that no commitment is made either way and improvements or changes to address problems will continue to be made on a case by case basis.

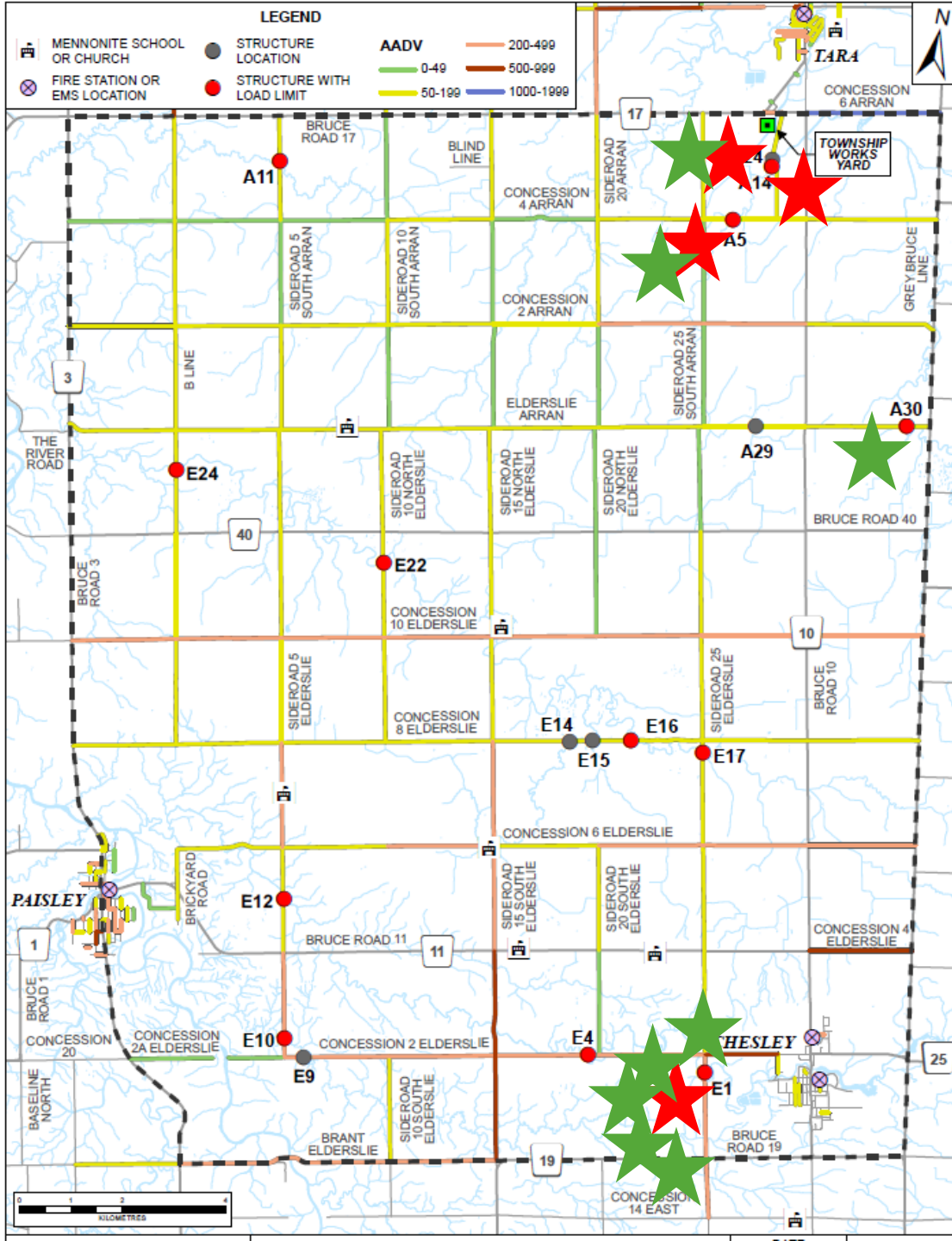
# September 19<sup>th</sup> Public Meeting

- Held at the Chesley Community Centre
- From 6:00 p.m. to 8:30 p.m.
- Approximately 50 residents in attendance
- Display boards placed around perimeter of room
- Formal presentation by B.M. Ross & Associates
- Question and Answer session following the presentation
- 5 members of Council & 2 Arran-Elderslie staff in attendance
- Public comments submitted to BMROSS following the meeting

# Feedback from Residents

- 8 written comments received following the meeting
- Majority of comments were specific to an individual bridge
- A number of comments were received from the horse & buggy community identifying a bridge that is used often by their community to access a school and church
- Some concerns expressed about how the Public Meeting Notice was provided to residents
- Residents were concerned with timelines for when bridges would eventually be closed





# Public Meeting Comments

-  Comments made at the Public Meeting
-  Comments received following the Public Meeting

# Evaluation of Alternatives

- Both Approaches modified following input from residents at the Public Meeting
- A 'Community Features' component added to the matrix to capture schools/churches/Fire/EMS/Works Yard
- Approach #1
  - Approach #1 utilizes BCI, Load Limit, Traffic Counts, Road Types, Detour Lengths (if closed), Road Connectivity, Replacement Costs, and **Community Features** to identify bridges for Closure.
- Approach #2
  - Approach #2 removes the BCI and Load Limit Scores and just focuses on Traffic Counts, Road Types, Detour Lengths (if closed), Road Connectivity, Replacement Costs and **Community Features** to identify bridges for Closure. With this approach you are focusing more on the location and function of the bridges, rather than their current condition.

# Approach 1 – Updated Matrix

Table 1.1: Potential Bridge Closure Assessment Matrix – Recommended Closures Option A -

Option B -

Structure ID	Type & Age	BCI	Score	Load Limit	Score	Avg. Traffic Counts	Score X 2	Road Type <sup>1</sup>	Score	Detour	Score	Replace\$	Score x 2	Road Conne ctivity	Score	Community Feature	Score	Revised Total
E4 - Allens	Truss-1920	50	10	18/29/36	10	459	10	HCB	5	8.2km	10	\$2,018,040	30	Yes	5	EMS Route	5	85
E9	Beam-1930	26	20	25	5	280	10	LCB	10	12.2km	5	\$875,850	10	Yes	5	EMS Route	5	70
E1 – Priebe	Truss-1938	40	15	10	15	216	10	Gravel	15	8.1km	10	\$2,194,590	30	Yes	5	School (near)	5	105
E10	T-Beam-1930	48	10	11	10	162	20	LCB	10	12.2km	5	\$1,015,710	10	Yes	5	EMS Route	5	75
E12– Pearces	Truss-1930	46	10	8	15	162	20	Gravel	15	7.6km	10	\$2,544,240	30	Some	10	School (far)	10	120
A11 – Wilson	C. Arch-1910	45	10	12	10	112	20	Gravel	15	8.1km	10	\$689,370	10	None	15	None	15	105
A29	C. slab-1930	56	5	25	5	100	20	Gravel	15	7.9km	10	\$829,230	10	Some	10	None	15	90
A14– Arranvale	Truss-1920	45	10	14	10	99	20	Gravel	15	5.2km	15	\$2,529,780	30	Yes	5	Work Shed	5	110
A24 – Ruff	C. slab-1920	29	20	25	5	99	20	Gravel	15	5.2km	15	\$673,830	10	Yes	5	Work Shed	5	95
E24	Truss-1920	53	5	10	15	98	20	Gravel	15	8.2km	10	\$1,614,000	20	Some	10	School (far)	10	105
A5 – Hunts	C. Arch-1910	63	5	9	15	84	20	Gravel	15	7.1km	15	\$1,155,570	10	Yes	5	Work Shed (far)	10	95
A30	C. slab-1930	38	10	12	10	77	30	Gravel	15	8.8km	10	\$1,598,460	20	Some	10	None	15	120
E22	Truss 1920	46	10	3	15	68	30	Gravel	15	8.1 km	10	\$1,691,700	20	None	15	School (far)	10	115
E16	T-Beam-1930	31	15	15	10	67	30	Gravel	15	12.2km	5	\$875,850	10	Some	10	None	15	110
E17	Truss-1930	38	15	11	10	53	30	Gravel	15	8.2km	10	\$1,963,650	20	None	15	None	15	130
E14	T-Beam-1930	34	15	25	5	50	30	Gravel	15	12.2km	5	\$899,160	10	Some	10	None	15	105
E15	T-Beam-1920	41	10	25	5	50	30	Gravel	15	12.2km	5	\$875,850	10	Some	10	None	15	100

**Scoring System:** <sup>1</sup>LCB – Low Class Bituminous, HCB – High Class Bituminous

**BCI:** <30 = 20  
30-40 = 15  
41-50 = 10  
>50 = 5

**Load Limit:** <10 = 15  
11-20 = 10  
> 20 = 5

**Traffic:** <80 = 15  
81- 200 = 10  
> 200 = 5

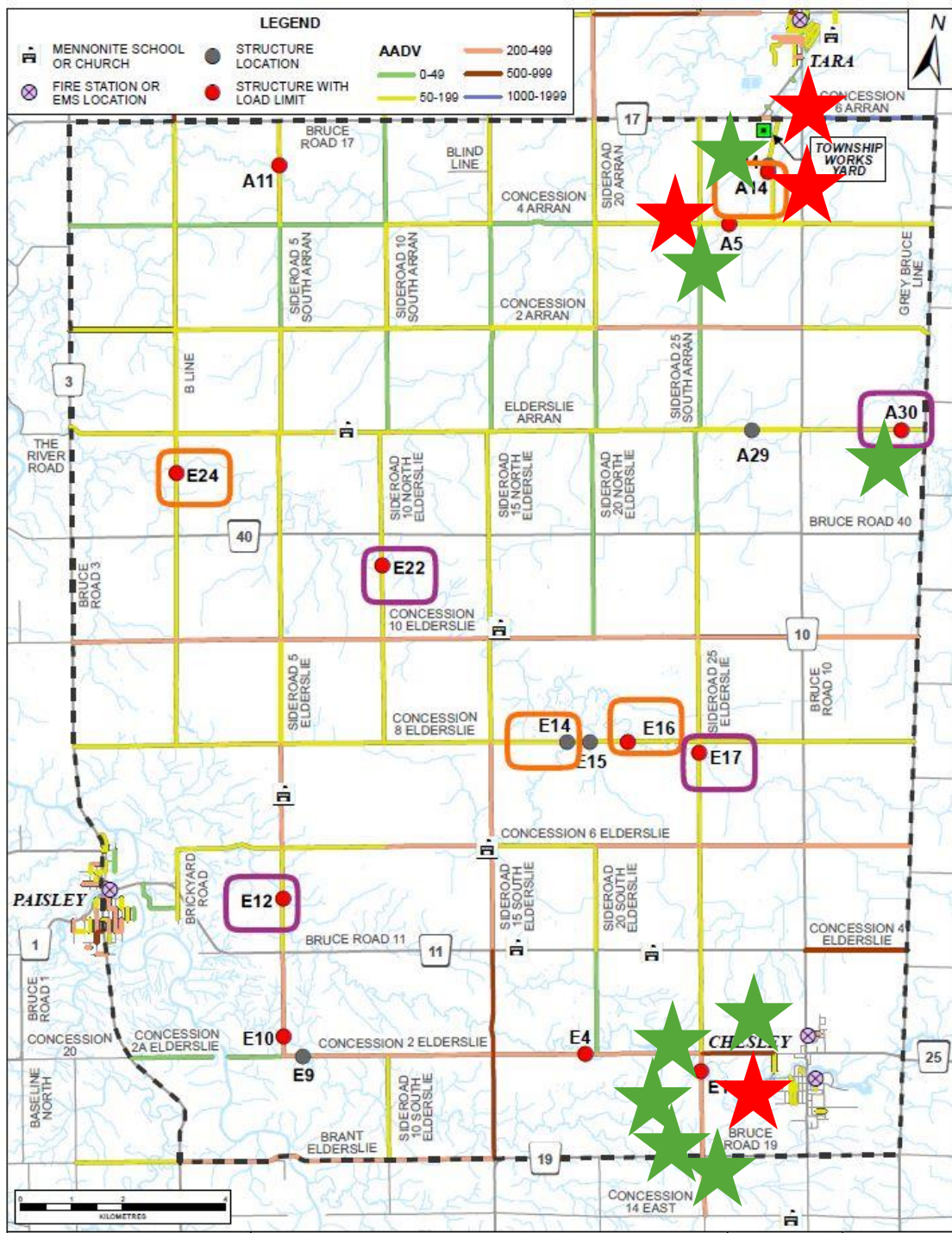
**Road Type:** Gravel = 15  
LCB = 10  
HCB = 5

**Detour:** < 7.5 = 15  
7.6-10 = 10  
>10.1 = 5

**Replace \$:** < 1.5 mil = 5  
1.5–2 mil = 10  
> 2 mil = 15

**Rd Connection:** none = 15  
some = 10  
Yes = 5

**Community Feature:** None = 15  
Some = 10  
Yes = 5



# Approach 1 - Revised

- ★ Comments made at the Public Meeting
- ★ Comments received following the Public Meeting

# Approach #1

Replace All Crossings  
> \$24 Million

## Option A Closures

- E17, E22, A30, E12

\$16.2 Million

Saves \$7.8 Million

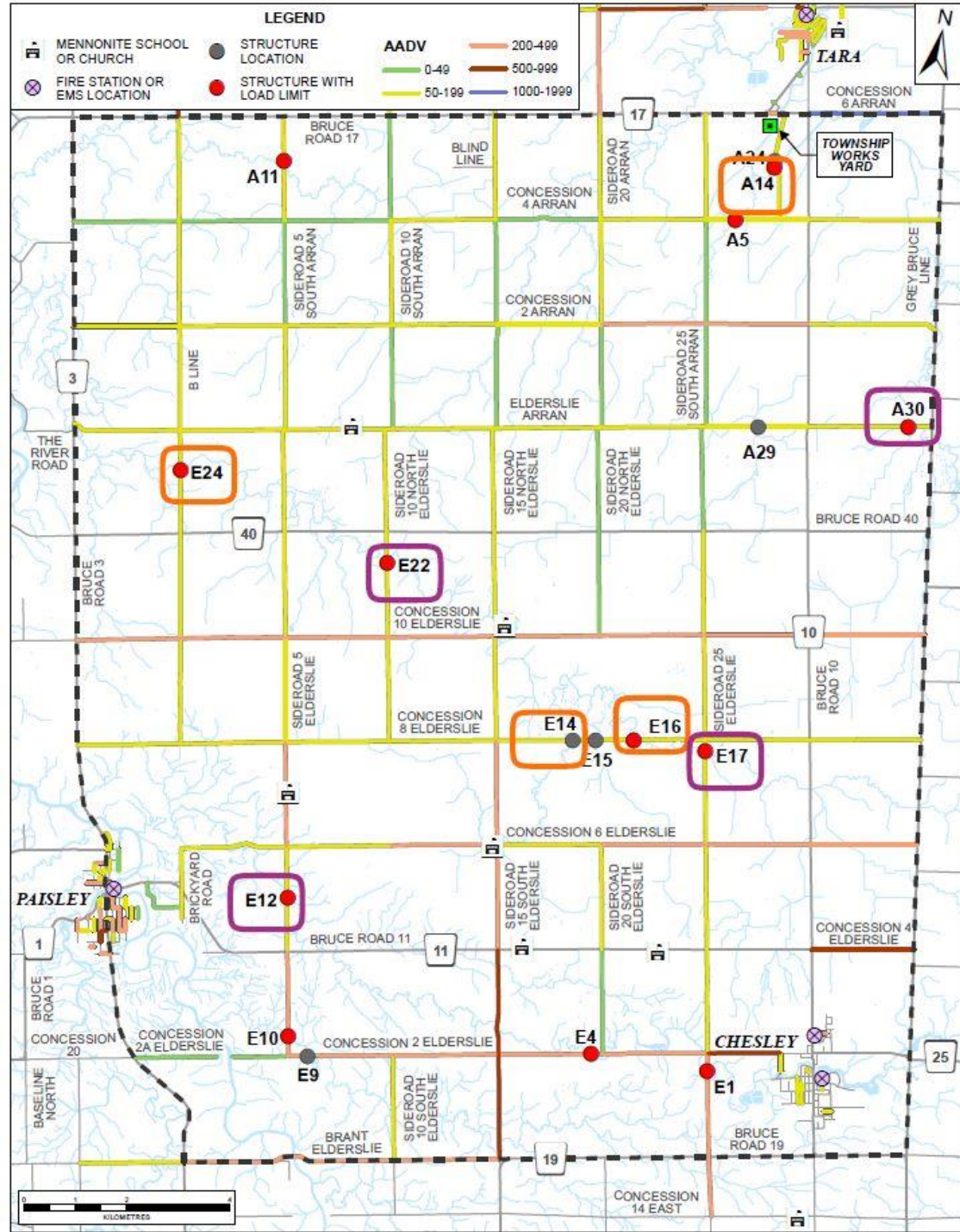
## Option A&B Closures

- E14, E24, A14, E16

- E17, E22, A30, E12

\$10.3 Million

Saves \$13.7 Million



# Approach 2 – Matrix Results

\*Evaluate based only on location; remove bridge condition components

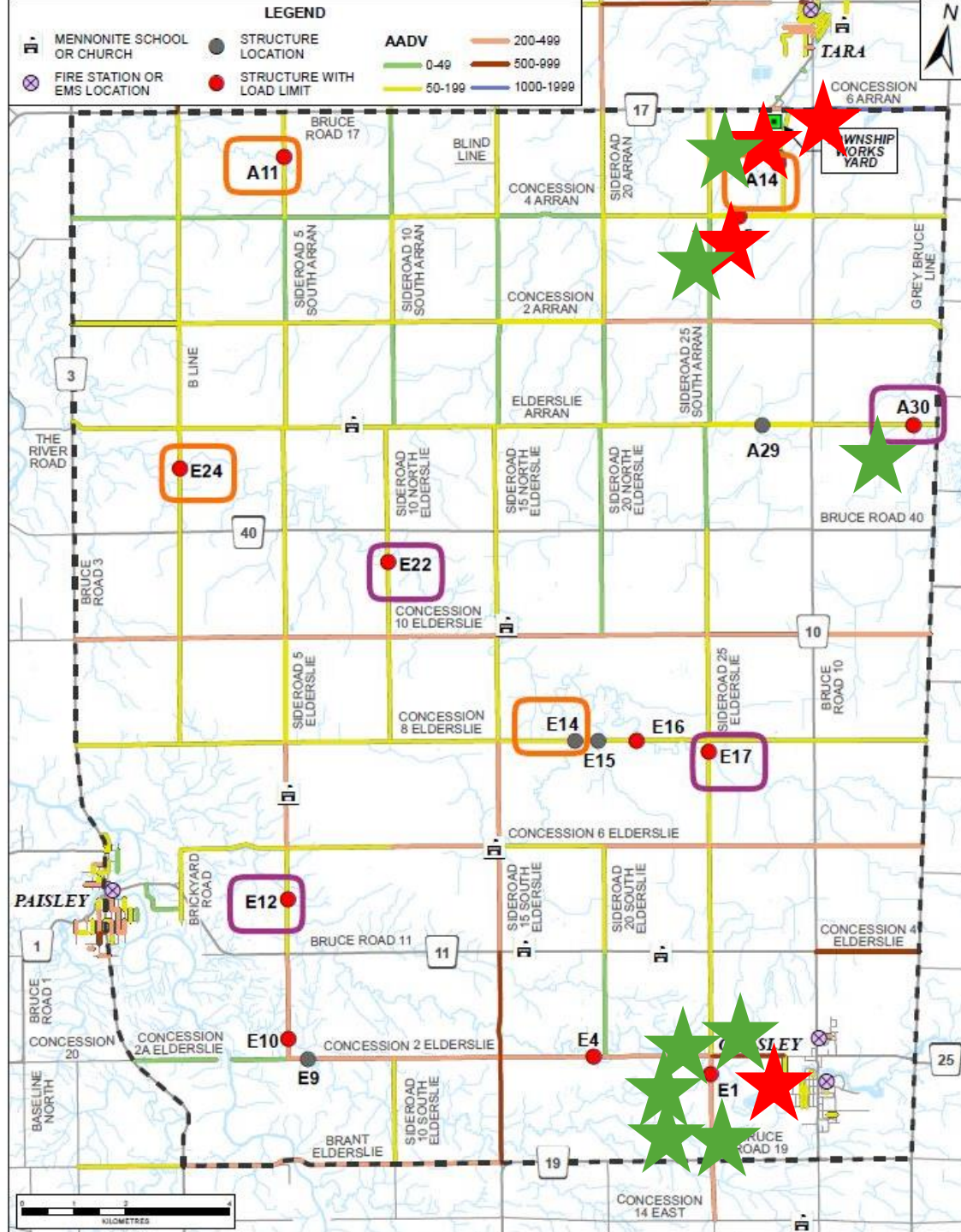
Table 2.1: Potential Bridge Closure Assessment Matrix – Recommended Closures Option A -   Option B -   +  

Structure ID	Type & Age	Avg. Traffic Counts	Score X 2	Road Type <sup>1</sup>	Score	Detour	Score	Replace\$	Score x 2	Community Feature	Score	Road Connectivity	Score	Revised Total
E4 - Allens	Truss-1920	459	10	HCB	5	8.2km	10	\$2,018,040	30	EMS Route	5	Yes	5	65
E9	Beam-1930	280	10	LCB	10	12.2km	5	\$875,850	10	EMS Route	5	Yes	5	45
E1 – Priebe	Truss-1938	216	10	Gravel	15	8.1km	10	\$2,194,590	30	School (near)	5	Yes	5	75
E10	T-Beam-1930	162	20	LCB	10	12.2km	5	\$1,015,710	10	EMS Route	5	Yes	5	55
E12– Pearces	Truss-1930	162	20	Gravel	15	7.6km	10	\$2,544,240	30	School (far)	10	Some	10	95
A11 – Wilson	Conc. Arch-1910	112	20	Gravel	15	8.1km	10	\$689,370	10	None	15	None	15	85
A29	Conc. slab-1930	100	20	Gravel	15	7.9km	10	\$829,230	10	None	15	Some	10	80
A14–Arranvale	Truss-1920	99	20	Gravel	15	5.2km	15	\$2,529,780	30	Work Shed	5	Yes	5	90
A24 – Ruff	Conc. slab-1920	99	20	Gravel	15	5.2km	15	\$673,830	10	Work Shed	5	Yes	5	70
E24	Truss-1920	98	20	Gravel	15	8.2km	10	\$1,614,000	20	School (far)	10	None	15	90
A5 – Hunts	Conc. Arc-1910	84	20	Gravel	15	7.1km	15	\$1,155,570	10	Work Shed (far)	10	Yes	5	75
A30	Conc. slab-1930	77	30	Gravel	15	8.8km	10	\$1,598,460	20	None	15	Some	10	100
E22	Truss 1920	68	30	Gravel	15	8.1 km	10	\$1,691,700	20	School (far)	10	None	15	100
E16	T-Beam-1930	67	30	Gravel	15	12.2km	5	\$875,850	10	None	15	Yes	5	80
E17	Truss-1930	53	30	Gravel	15	8.2km	10	\$1,963,650	20	None	15	None	15	105
E14	T-Beam-1930	50	30	Gravel	15	12.2km	5	\$899,160	10	None	15	Yes	5	80
E15	T-Beam-1920	50	30	Gravel	15	12.2km	5	\$875,850	10	None	15	Yes	5	80

\* If scores are tied for one or more structures, the structure with the highest traffic count is moved to the lower category

## Scoring System: <sup>1</sup>LCB – Low Class Bituminous, HCB – High Class Bituminous

<b>Traffic:</b>	<80 = 15 81-200 = 10 > 200 = 5	<b>Road Type:</b>	Gravel = 15 LCB = 10 HCB = 5	<b>Detour Length:</b>	< 7.5 = 15 7.6-10 = 10 >10.1 = 5	<b>Replace Cost:</b>	< 1.5 mil = 5 1.5 – 2 mil = 10 > 2 mil = 15	<b>Road Connectivity:</b>	none = 15 some = 10 yes = 5	<b>Community Feature:</b>	None = 15 Some = 10 Yes = 5
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# Approach 2 - Revised

- Comments made at the Public Meeting
- Comments received following the Public Meeting

# Approach #2

Replace All Crossings  
> \$24 Million

## Option A Closures

- E17, A30, E22, E12

\$16.2 Million

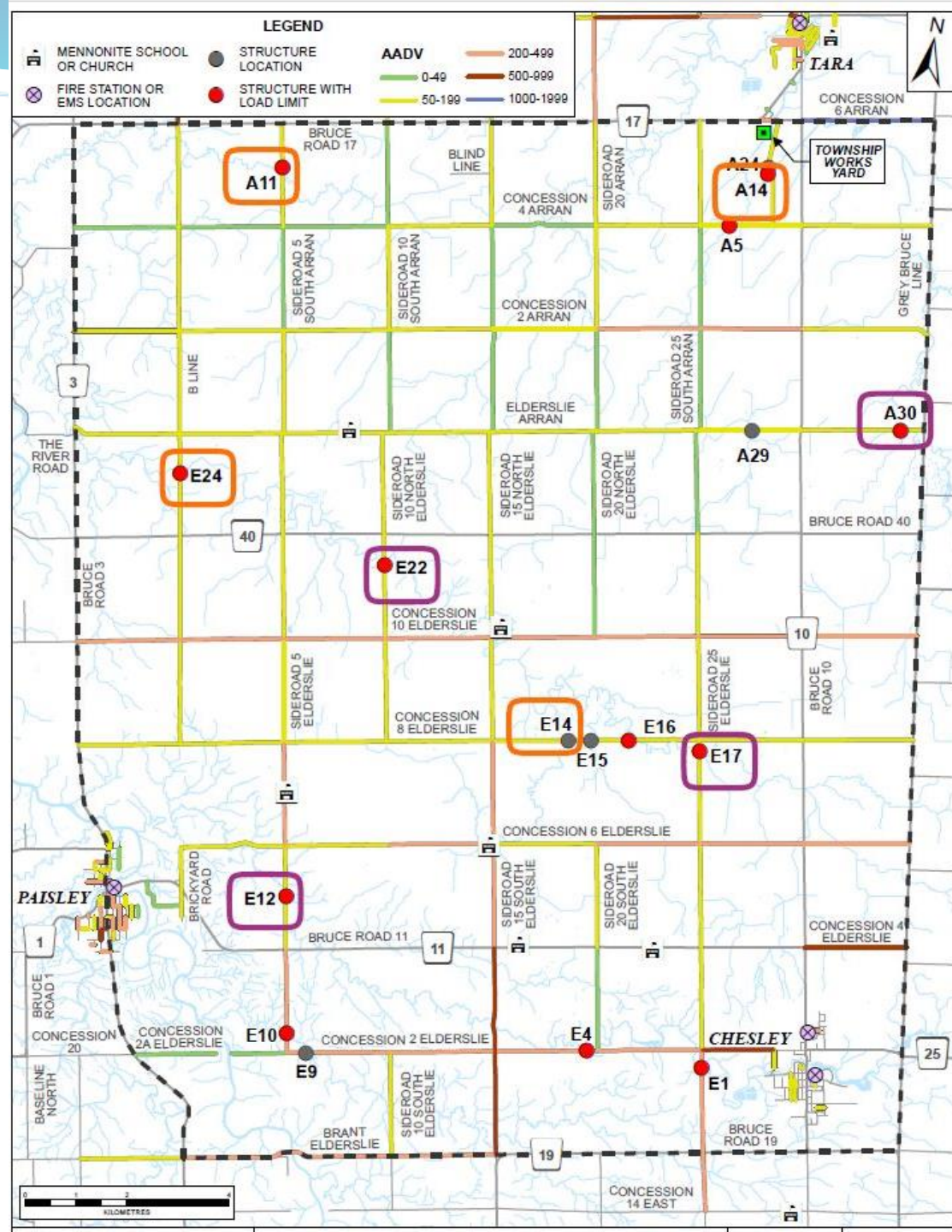
Saves \$7.8 Million

## Option A&B Closures

- E24, A14, A11, E14
- E17, A30, E22, E12

\$10.5 Million

Saves \$13.5 Million





# Recommended Approach

- Based on revised Matrix Results and input from residents recommend proceeding with Approach #2 but identify only 6 crossings for eventual closure.
- Majority of bridges identified for closure received no comments from the public related to potential closure
- A11 was identified for closure ahead of A14 – no public comments and cost for replacement scored lower than more expensive bridges
- E17 should be closed rather than repaired
- Suggested threshold of \$50,000 in repairs for Initial Closures and \$100,000 for subsequent closures
- Increase Bridge Reserves

# Recommended Approach

The suggested bridges identified for closure are:

- E17–Truss (1930) – (BCI-38) – Close 2024/25
- E22–Truss (1920) – (BCI-46) – Repair 24/25 - close 2040
- A11–Conc. Arch (1910) – (BCI-45)– Repair 2030/close 2045
  
- E12–Truss (1930) – (BCI-46)- Repair 28/29 – close 2040
- A30–Conc. Slab (1930) - (BCI-38) – Repair 27/28 – close 2045
- E24–Truss (1920) - (BCI-53) – Repair 28/29 – close 2050

Initial  
Closures

Next  
Closures

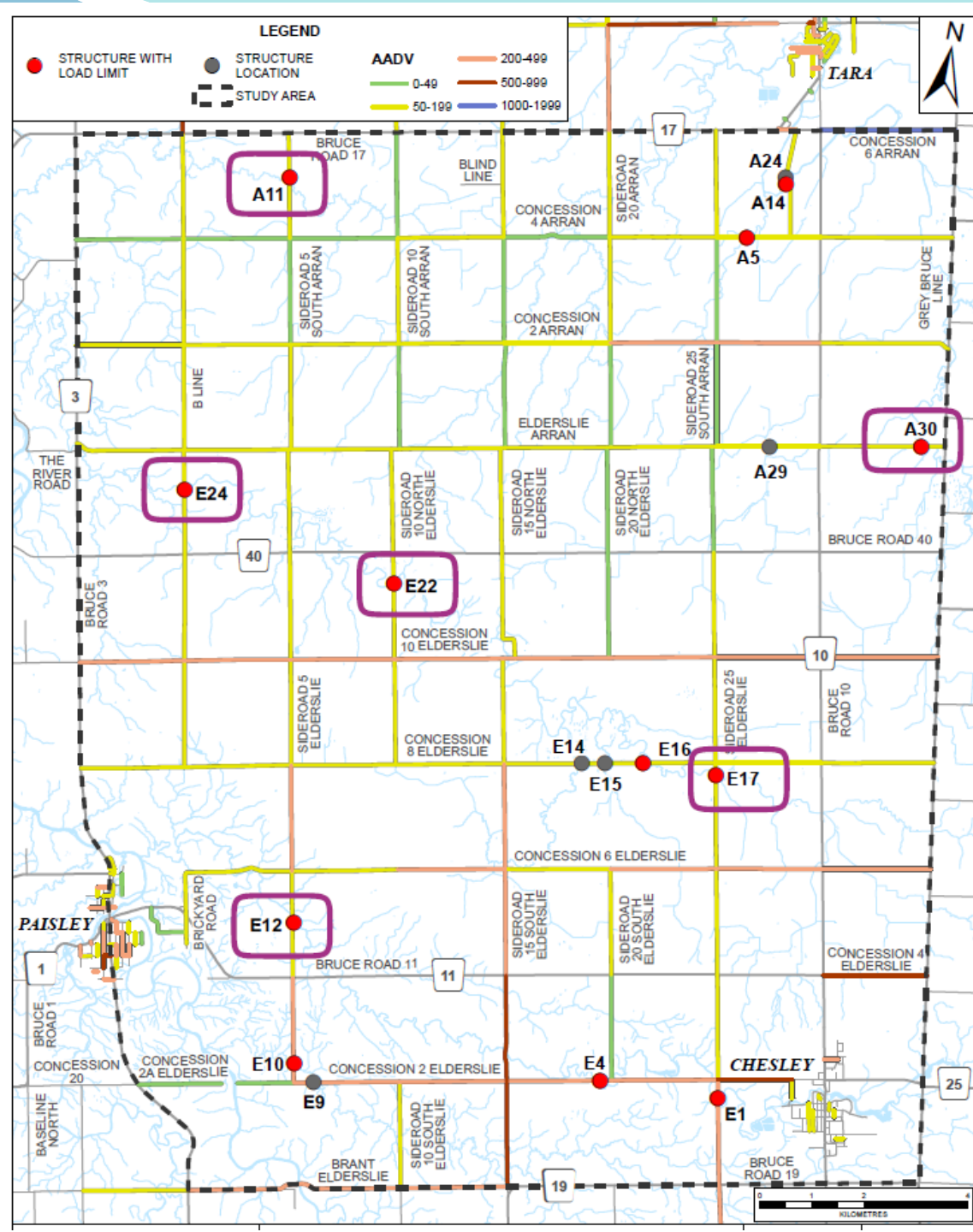
\*Savings of \$10 Million

# Suggested Outcomes and Timelines

Structure ID	Type & Age	Avg. Traffic Counts	BCI	Recommended Outcome	Repair Costs	Repair or Replace Timeline	Replacement Costs	Replacement Timeline
E4 - <u>Allens</u>	Truss-1920	459	50	Repair then Replace	\$63,000	2024 or 2025	\$2,018,040	20 -25 Years
E9	Beam-1930	280	26	Replace	\$170,000 (N/A)	5-10 years	\$875,850	5-10 Years
E1 – Priebe	Truss-1938	216	40	Repair then Replace	No Immediate Repairs	N/A	\$2,194,590	20-25 Years
E10	T-Beam-1930	162	48	Replace	No Immediate Repairs	N/A	\$1,015,710	20-25 Years
E12– <u>Pearces</u>	Truss-1930	162	46	Repair then Closure	No Immediate Repairs	N/A	N/A	15-20 Years
A11 – Wilson	Conc. Arch-1910	112	45	Repair then Closure	No Immediate Repairs	N/A	N/A	20-25 Years
A29	Conc. slab-1930	100	56	Repair then Replace	\$65,000	1-5 Years	\$829,230	20-25 Years
A14– <u>Arranvale</u>	Truss-1920	99	45	Repair then Replace	No Immediate Repairs	N/A	\$2,529,780	15-20 Years
A24 – Ruff	Conc. slab-1920	99	29	Replace	N/A	N/A	\$673,830	5-10 Years
E24	Truss-1920	98	53	Repair then Closure	\$12,000	1-5 Years	N/A	20-25 Years
A5 – Hunts	Conc. Arc-1910	84	63	Repair then Replace	\$65,000	1-5 Years	\$1,155,570	20-25 years
A30	Conc. slab-1930	77	38	Repair then Close	\$136,000	1-5 Years	\$1,598,460	20-25 Years
E22	Truss 1920	68	46	Repair then Closure	\$41,000	2024 or 2025	N/A	15-20 Years
E16	T-Beam-1930	67	31	Repair then Replace	\$130,000	1-5 Years	\$875,850	10-15 Years
E17	Truss-1930	53	38	Close	\$90,000 (N/A)	N/A	N/A	1-5 Years
E14	T-Beam-1930	50	34	Repair then Replace	\$65,000	1-5 Years	\$899,160	10-15 Years
E15	T-Beam-1920	50	41	Repair then Replace	No Immediate Repairs	N/A	\$875,850	10-15 Years

- Timeline will need to be revised following 2024 Bridge inspections to reflect current bridge conditions
- Given these bridges are all close to 100 years old, we don't want to suggest any of them will still be in service beyond 2050 (25 years)

# Recommended Closures



# Next Steps

- Council to Select a Preliminary Preferred Approach
- Obtain Additional Input from residents
- Council to Confirm Preferred Approach
- Confirm the Proposed Phasing Timeline (2024 Inspections)
  - Will be Modified as Bridge Conditions Change over Time
- Finalize Master Plan Report
- Publish Notice of Master Plan Completion



# Questions?