

Functional Design Study of PTH 1 and PTH 5 Intersection Improvements

**ROUND 2A
RIGHTS HOLDER & STAKEHOLDER MEETINGS**

FALL 2024



Welcome

- Welcome to the second round of engagement for the functional design study of PTH 1 and PTH 5 intersection improvements.
- The project team previously engaged with the community in July 2024.
- The image at the right illustrates the general study area.
- The following slides provide an overview of the study process and objectives.
- The intent of this engagement is to:
 - Provide project updates;
 - Offer an opportunity for participants to better understand project alternatives;
 - Share preliminary evaluation of intersection options; and
 - Share important details regarding the next steps for this project.



Project Team



Manitoba Transportation and Infrastructure (MTI)

Project Owner



WSP

Engineering Consultant

Larry Halayko, WSP Project Manager



Landmark Planning & Design

Public and Stakeholder Engagement Consultant

Donovan Toews, Engagement Lead

Project Intent

- The goal of this functional design study is to identify a design that will improve intersection safety at PTH 1 and PTH 5.
- In June of 2023 this intersection was the site of a significant collision that resulted in the loss of 17 lives and impacts to many others. There have been subsequent collisions since this time.
- The Manitoba government is focused on supporting those affected by the collision and identifying preventative measures to avoid reoccurrences.



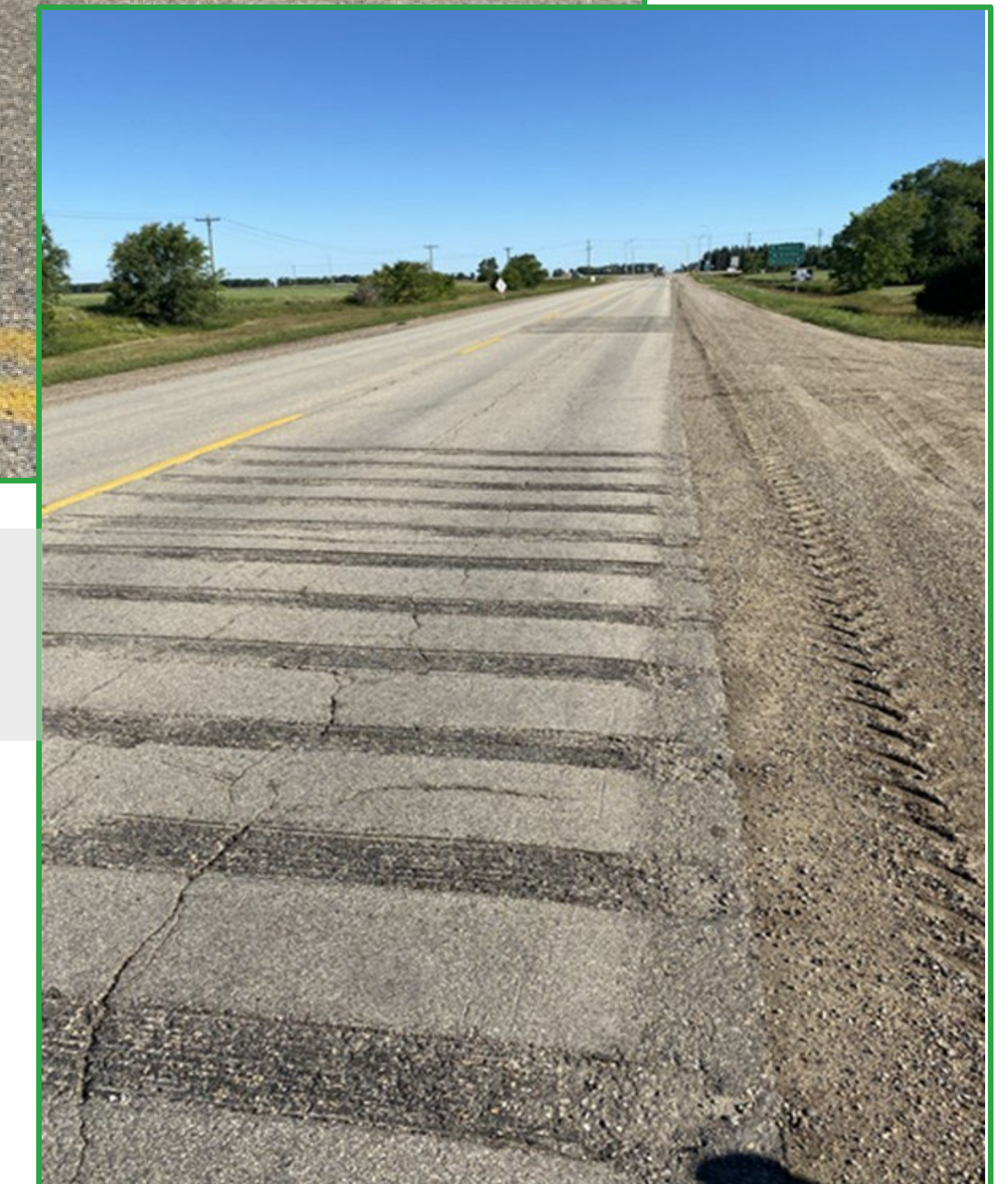
PTH 1 and PTH 5 intersection looking north.

Road Safety Strategy

- In June 2023, Manitoba Transportation and Infrastructure (MTI) started work on a road safety strategy to identify potential improvements and to focus on engineering and road safety characteristics of the PTH 1 and PTH 5 intersection.
- As part of the strategy, the Manitoba government undertook a safety standards review, which resulted in the completion of refurbishments or enhancements of existing safety features, where required.
- Safety upgrades completed at the intersection include:
 - ✓ Installation of “Important Intersection” signs with flashing amber lights;
 - ✓ Installation of additional speed limit signs;
 - ✓ Refurbishment of existing transverse rumble strips on PTH 5;
 - ✓ Refurbishment of pavement markings at the intersection; and
 - ✓ Replacement of traffic control signage.



Refurbished pavement markings at the intersection.



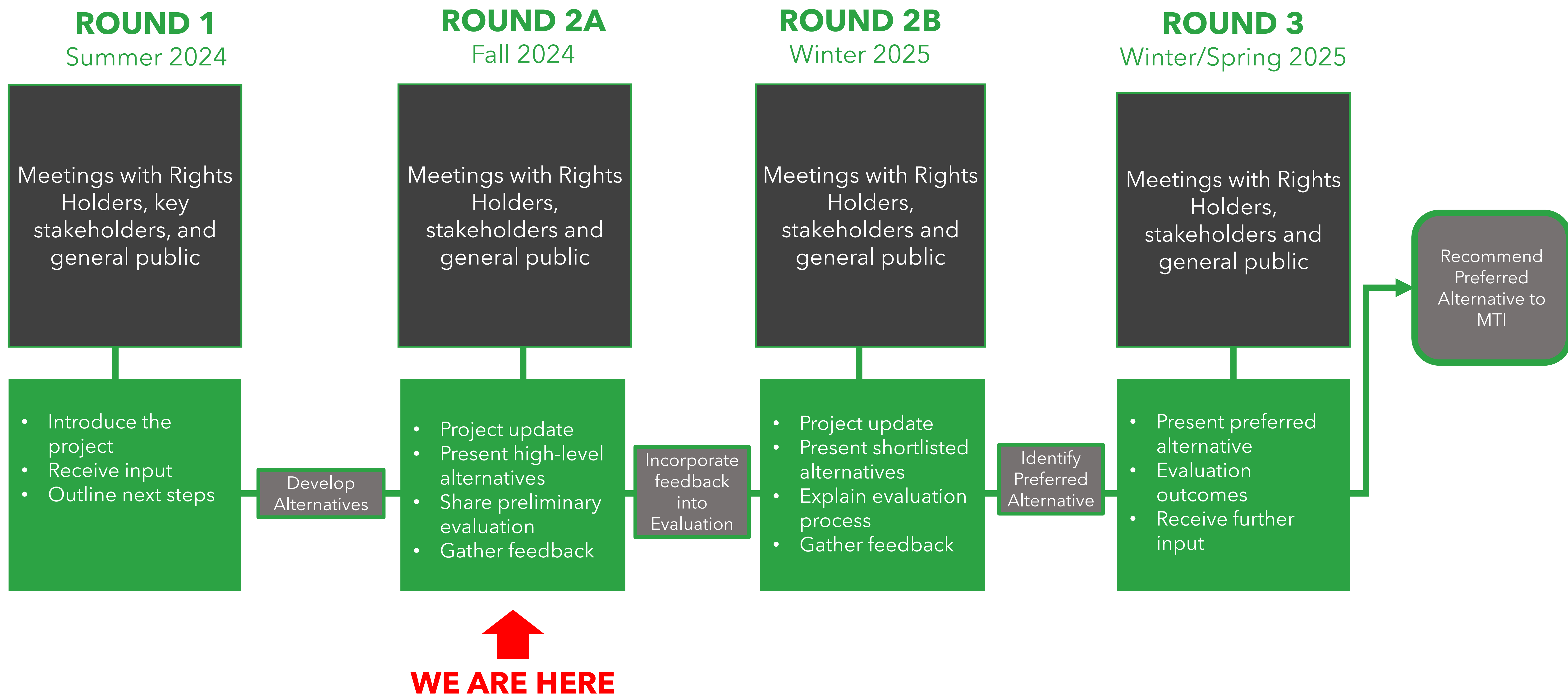
Refurbished rumble strips north and south.

In Service Road Safety Review

- MTI's safety standards review was followed by an In Service Road Safety Review (ISRSR) with the purpose to identify safety issues associated with the intersection and to suggest potential safety enhancements for consideration.
- This review had multiple components including a preliminary field investigation, an operational and safety analysis, and recommendations for improvement options or countermeasures.
- The ISRSR recommendations include an implementation strategy identifying short-term, medium-term and long-term options for safety improvements.
- MTI is actively implementing all these recommendations, including the development of this functional design study.

Engagement Process

The following diagram illustrates the engagement process:



Identified Rights Holders & Stakeholders

There are many people and groups who may be interested in or affected by this project:

- Impacted families and communities;
- Local residents and landowners;
- Adjacent agricultural operations;
- Emergency service providers;
- Manitoba Trucking Association;
- Rights Holders including Swan Lake First Nation and Manitoba Métis Federation;
- Local municipalities including the RM of North Cypress-Langford and Town of Carberry;
- Business owners;
- Local school divisions;
- Utilities in the vicinity;
- Local Trail or Recreation Groups; and
- Others as identified throughout the engagement process.

Rights Holder & Stakeholder Interests

The study team needs to consider a number of factors in the design process, including;

- Safety and collision history;
- Traffic operations, including traffic flow;
- Local land use and access patterns;
- Impact to surrounding lands and residences;
- Existing infrastructure;
- Utilities;
- Environmental impacts;
- Cultural or heritage considerations;
- Emergency access and services;
- Capital and maintenance costs; and
- Other factors that may be identified through the engagement process, including Rights Holder and stakeholder perspectives on these and other topics.



PTH 1 and PTH 5 intersection looking east.

What We Heard

At the first round of Stakeholder Engagement meetings in July 2024, comments were offered by participants. The following comment themes are considered important perspectives for the study team to carefully consider:

- Concerns about safety for all types of road users
- Suggestions to reduce speed limit at the intersection
- Concerns about road visibility and driving conditions in all seasons
- Concerns about slowing down traffic on major highways
- Suggestions that median and turning lanes should accommodate semis
- Suggestions to accommodate rest stops and truck parking
- Concerns that drivers would need education to use some intersection types
- Suggestions that the intersection should be easy for drivers to understand
- Suggestions to create consistent intersection approaches across Manitoba
- Desire to maintain access to residences and agricultural land during and after construction
- Concerns on land infringement and impacts to irrigation systems
- Concerns about the difficulty of clearing and maintenance for some intersection types

Safe System Approach

- The Safe System Approach is a framework adopted by the Transportation Association of Canada (TAC) to help improve road safety.
- Design alternatives for this intersection will follow the Safe System Approach to ensure best practice.
- The Safe System Approach recognizes people make mistakes and the roadway should be designed to help reduce the impact of those mistakes.



Safe System Approach

This slide provides information on key Safe System Approach elements related to highway design that will guide this functional study:

SAFE SYSTEM APPROACH



Safe Road Design

Designs should provide road users with a chance to:

- Make decisions
- React and recover from mistakes
- Survive collisions in the event of mistake

GOAL: Designs that protect for mistakes



Safe Speeds

Speed is selected by drivers based on visual cues:

- Roadway cross section
- Presence of driveways and intersections
- Surrounding land use
- Speed limit signage

GOAL: Not too fast and not too variable



Safe Land Use Planning

Support development adjacent to highways while promoting safety through:

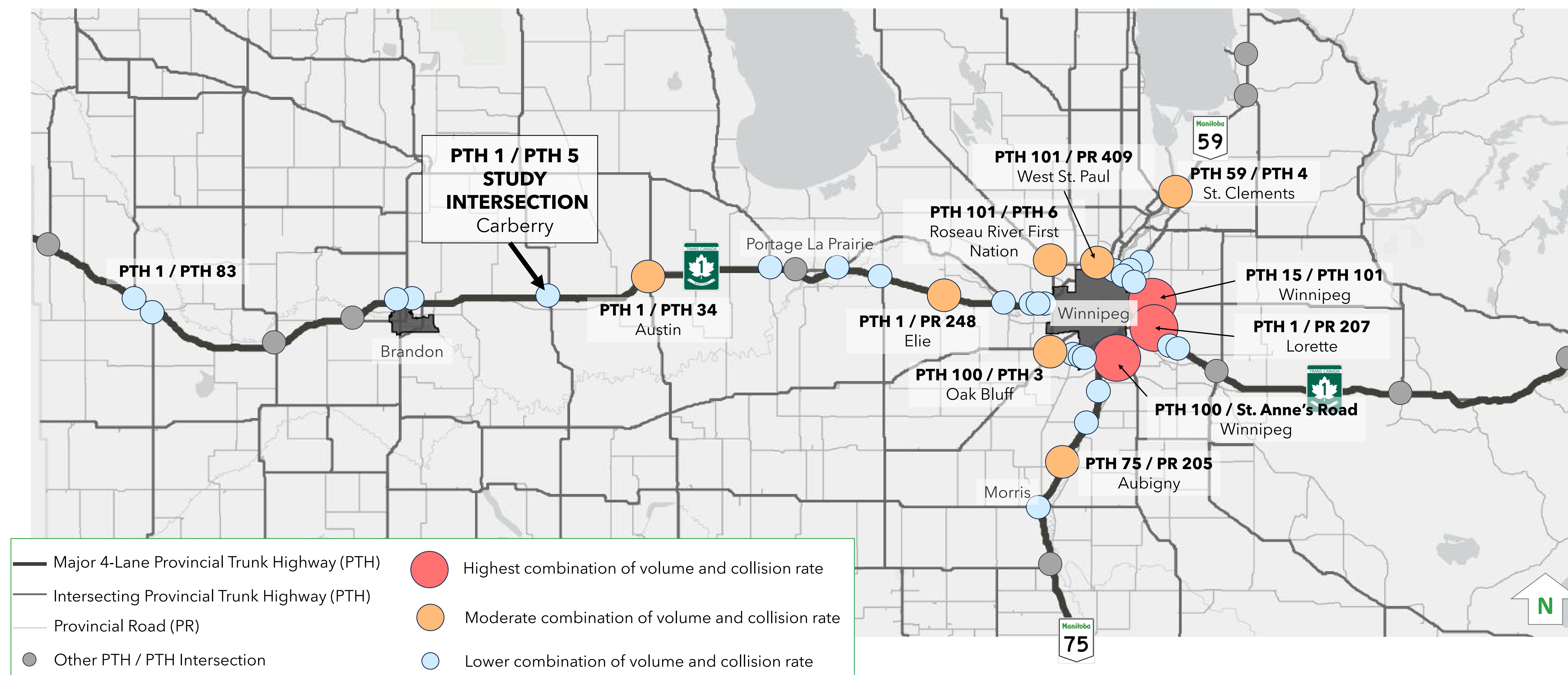
- Provincial land use planning
- Driveway and intersection management standards
- Traffic impact studies

GOAL: Reduce conflicts and control movements

Regional Highway Context

The map below illustrates the regional highway context surrounding the PTH 1 and PTH 5 study intersection.

- This map illustrates intersections along PTH 1, PTH 75 and PTH 59
- Intersections are categorized based on collision rate relative to the traffic volumes
- Intersections that have the highest combination of volume and collision rate are shown in red
- MTI uses this information to help inform decisions about intersection improvements in each location



Intersection Alternatives

The In Service Road Safety Review ('the Safety Review') recommended the development of a functional design study to review intersection alternatives.

- There are a number of different types of intersection alternatives that could be developed to improve safety at the PTH 1 and PTH 5 intersection.
- Each intersection alternative has advantages and disadvantages that the study team is evaluating. Rights Holder and Stakeholder input supplements technical considerations in the evaluation.
- The next slides illustrate the following intersection alternatives and other intersection types:

Intersection Alternatives

1. Grade Separated Interchange
2. Widened Intersection + Auxiliary Lanes
3. RCUT - Reduced Conflict U-Turn
4. Split Intersection
5. Signalized Intersection

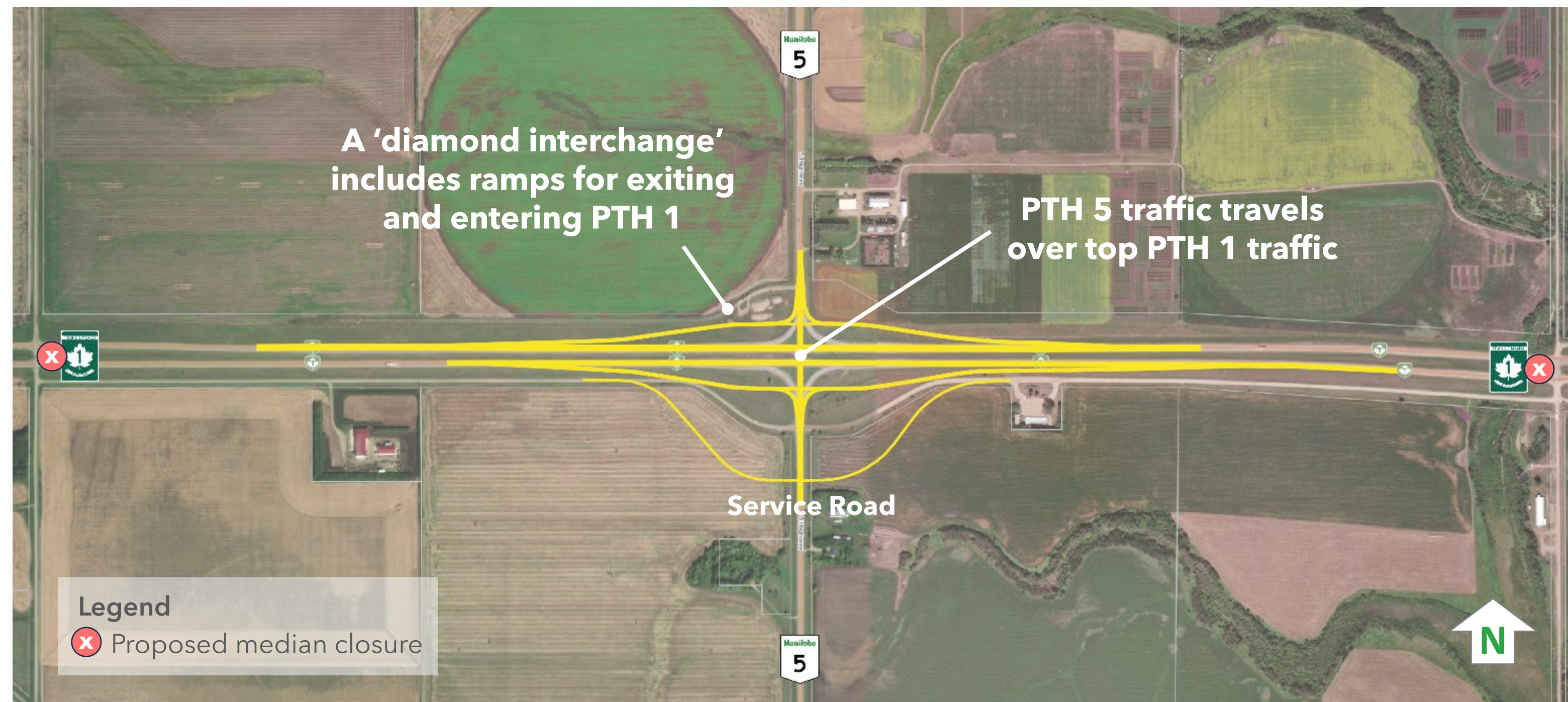
Other Intersection Types:

- Roundabout
- Restricted Left/Jug Handle
- Median U-Turn (MUT)
- Offset-T Intersection

Intersection Alternatives

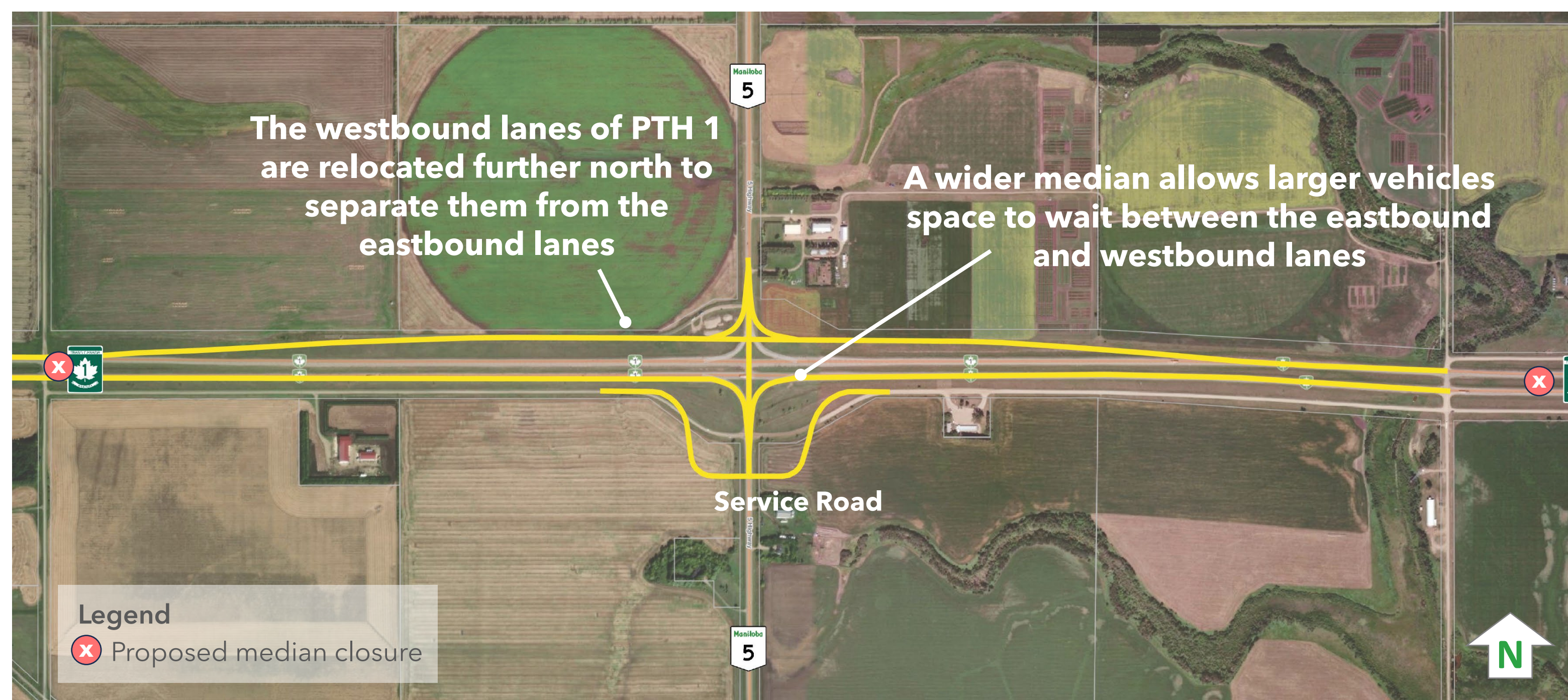
This slide illustrates intersection alternatives for further evaluation. The advantages and disadvantages of each alternative are noted in later slides

1. Grade Separated Interchange



- An interchange completely separates the main traffic movements, reducing risks of serious collisions.

2. Widened Intersection + Auxiliary Lanes

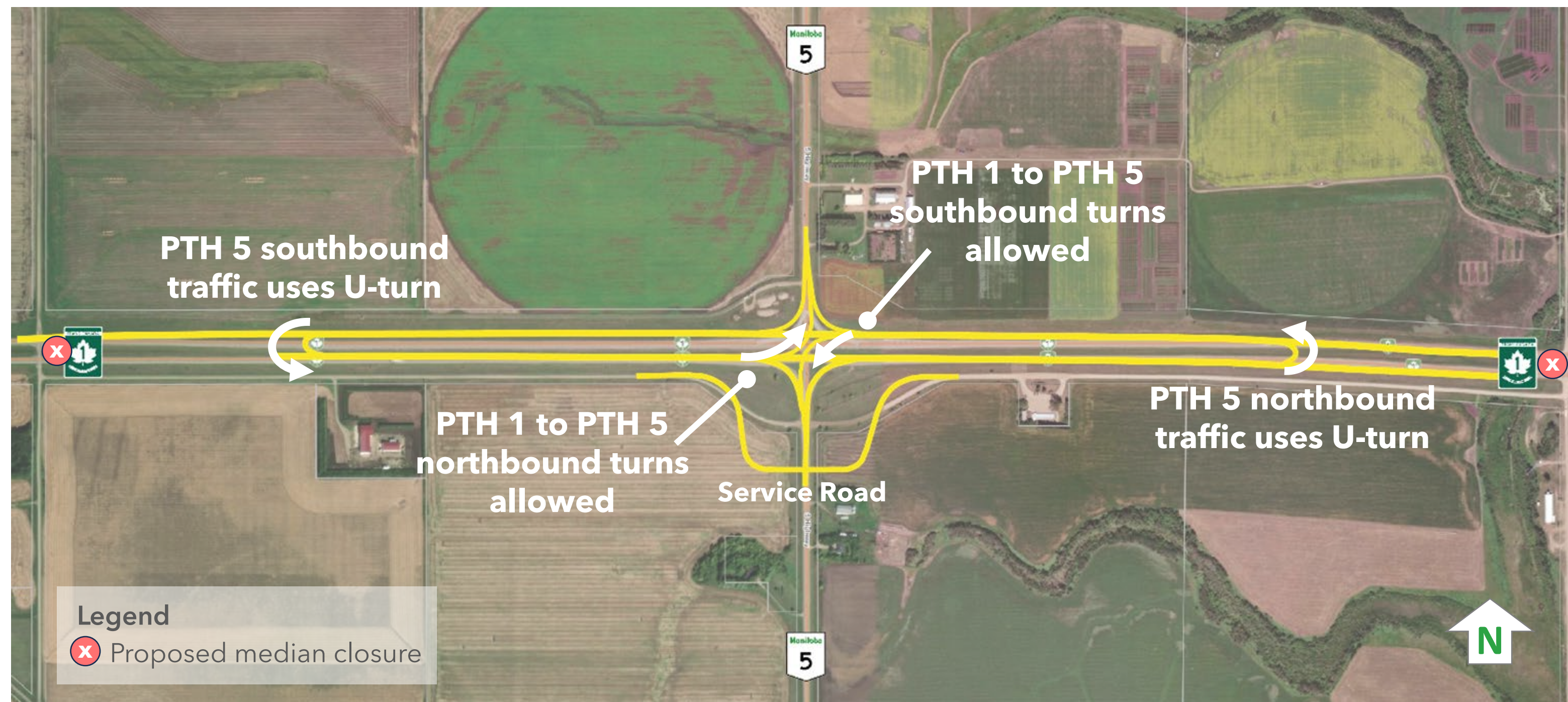


- In this alternative, the westbound lanes of travel are relocated further north, which creates a wider median between the eastbound and westbound lanes.
- Wider medians allow drivers (including drivers of larger vehicles) to stop safely in the middle to decide on turns, reducing risks of collisions.

Intersection Alternatives

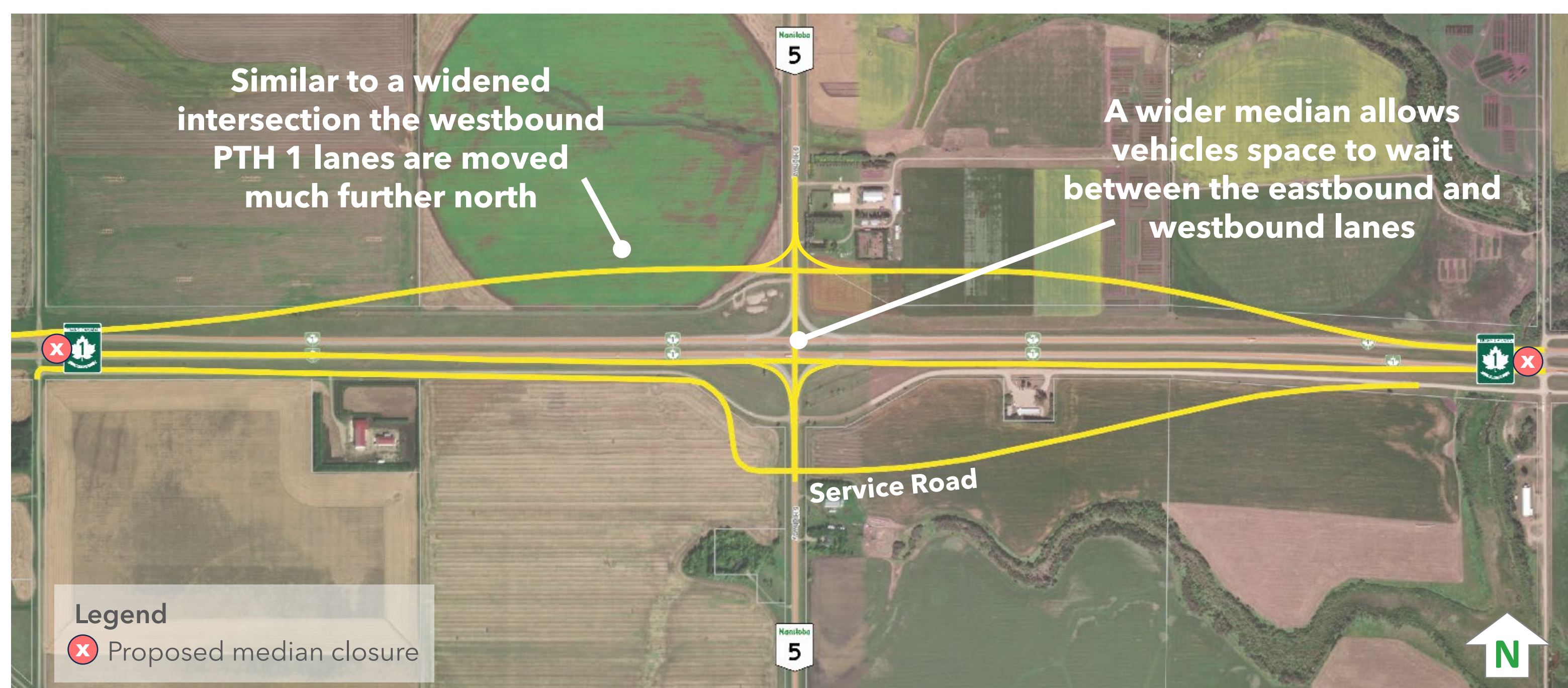
This slide illustrates intersection alternatives for further evaluation.

3. RCUT - Reduced Conflict U-Turn



- This alternative eliminates left-turn and through movements from the minor road (PTH 5), requiring drivers to U-turn at a safer location instead.
- Long acceleration and deceleration lanes are provided to accommodate safer movements.
- PTH 5 traffic cannot travel straight across PTH 1.

4. Split Intersection



- This intersection replaces a typical four-leg intersection with two separate at grade intersections along the minor road.
- This intersection is similar to the widened intersection + auxiliary lanes alternative but has a wider median.

Intersection Alternatives

This slide illustrates intersection alternatives for further evaluation.

5. Signalized Intersection



- Traffic signals assign right-of-way for traffic approaching the intersection.
- The only change in this alternative is the addition of signals.

Other Intersection Types

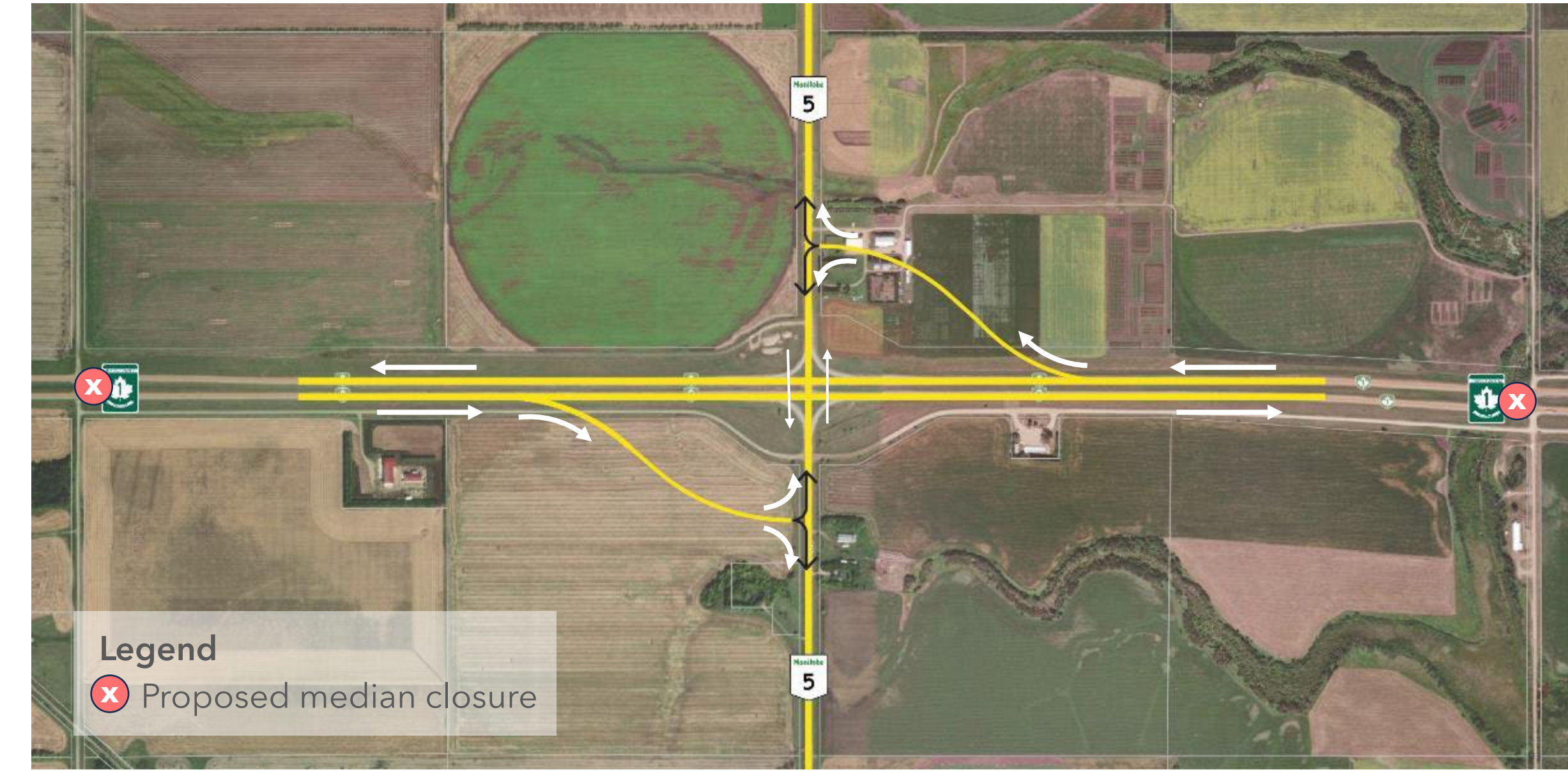
This slide illustrates other intersection types that have been evaluated.

Roundabout



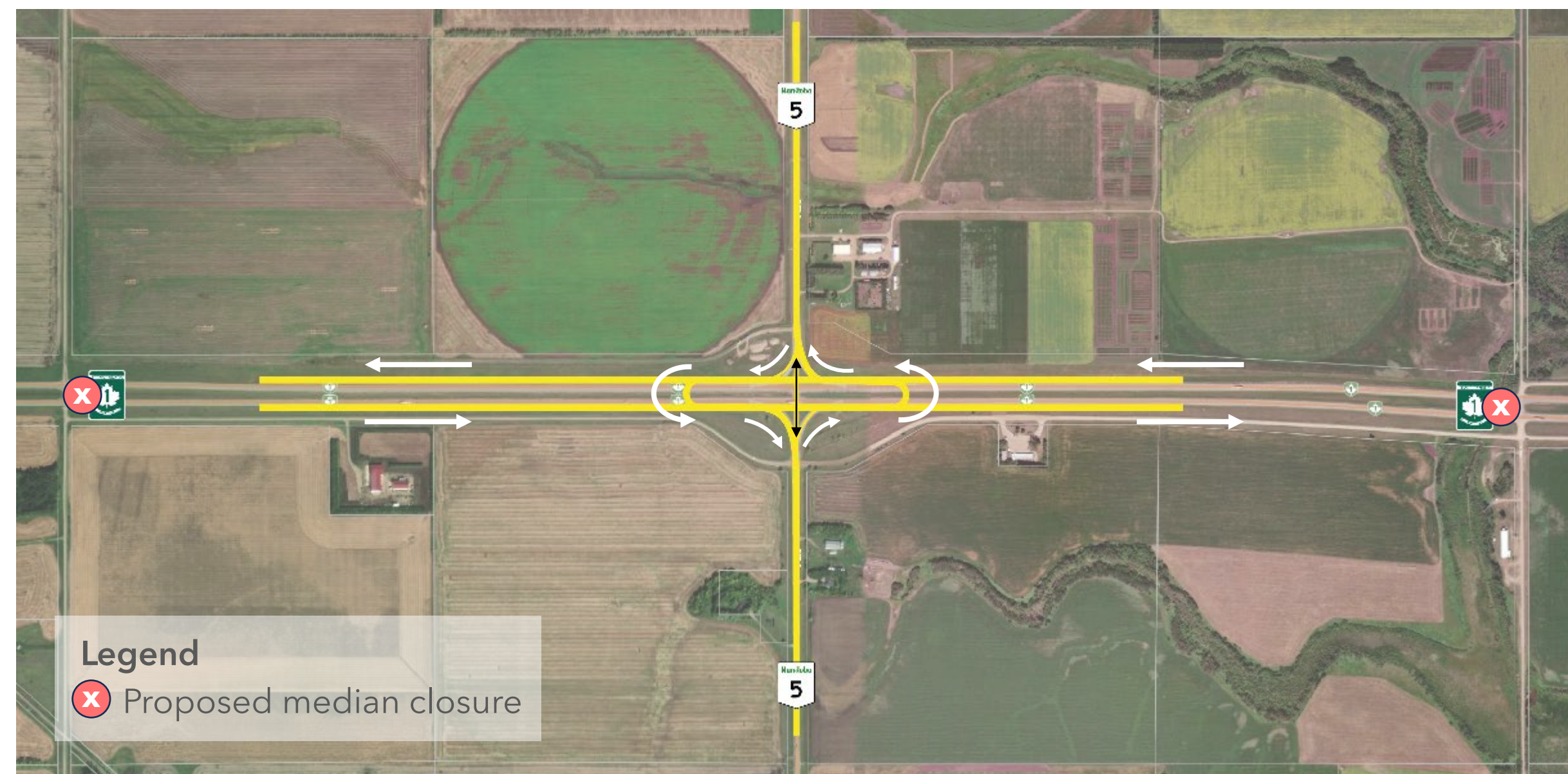
Roundabouts reduce the number of conflict points including severe right-angle conflicts.

Restricted Left/Jug Handle



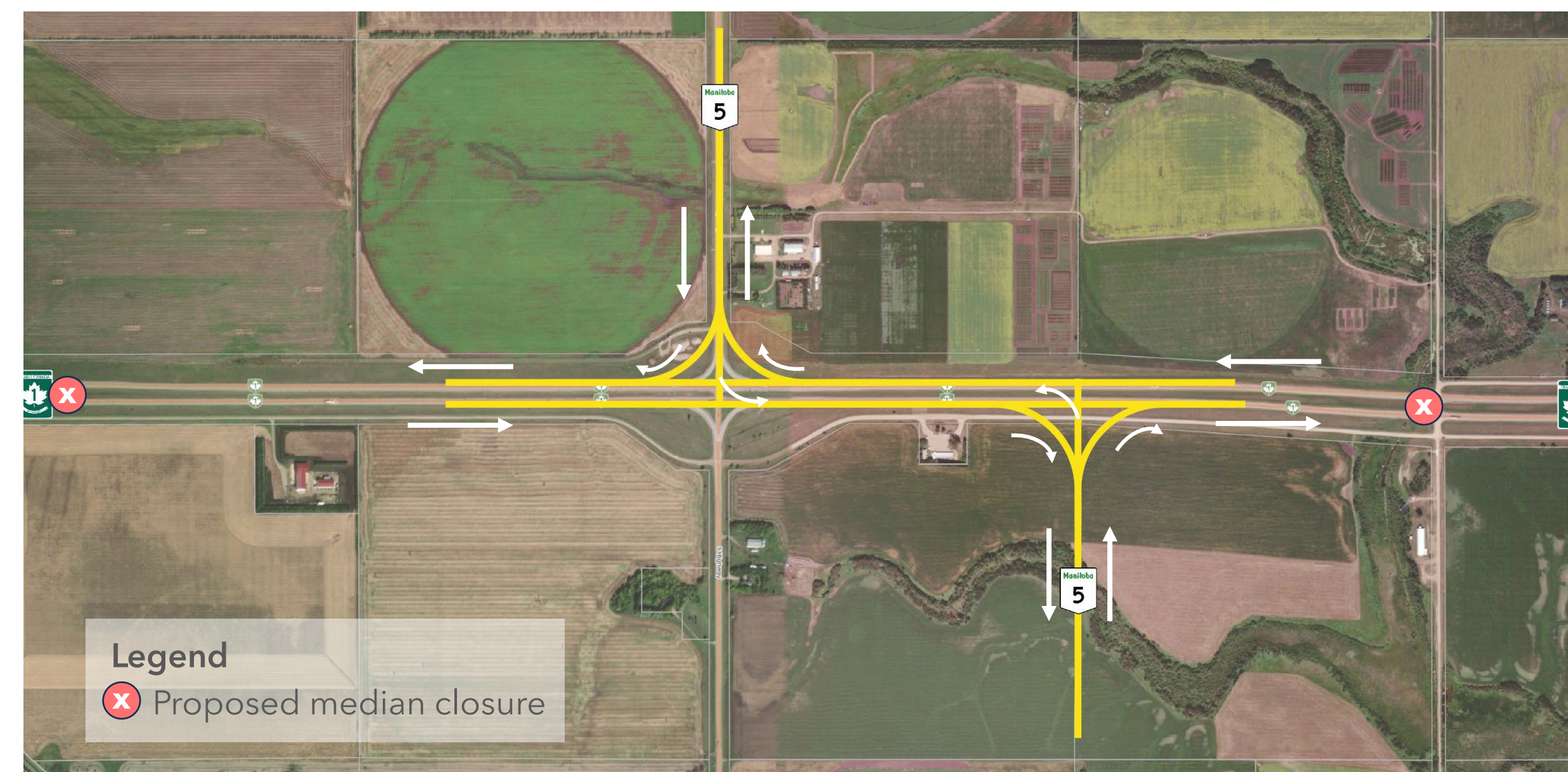
Jug handle intersections feature at-grade ramps for turns and/or U-turns.

Median U-Turn (MUT)



This intersection eliminates direct left-turns from the major road and/or minor road approaches.

Offset-T Intersection



Minor road approaches are offset by a minimum distance, reducing right-angle conflicts.

Evaluation Criteria

- This slide illustrates the many considerations for evaluating options at a high level; all considerations are important
- Other considerations can be added

Social

- Impacts to residences and agricultural land
- Property acquisition likelihood
- Community access
- Driver education and expectation
- Driver workload
- Enforcement
- Heritage resources
- Snowmobile trail
- Emergency services
- Implementation timeline

Cost

- Capital Cost
- Maintenance Cost

Engineering

- Safety
- Addresses severe conflicts
- Visibility
- Turning movement mobility
- Traffic flow
- Local access disruption
- Operating speed
- Large vehicle navigation
- Geotechnical
- Drainage
- Maintenance
- Construction staging
- Use of existing road infrastructure
- Greenhouse gas
- Environmentally sensitive site risks

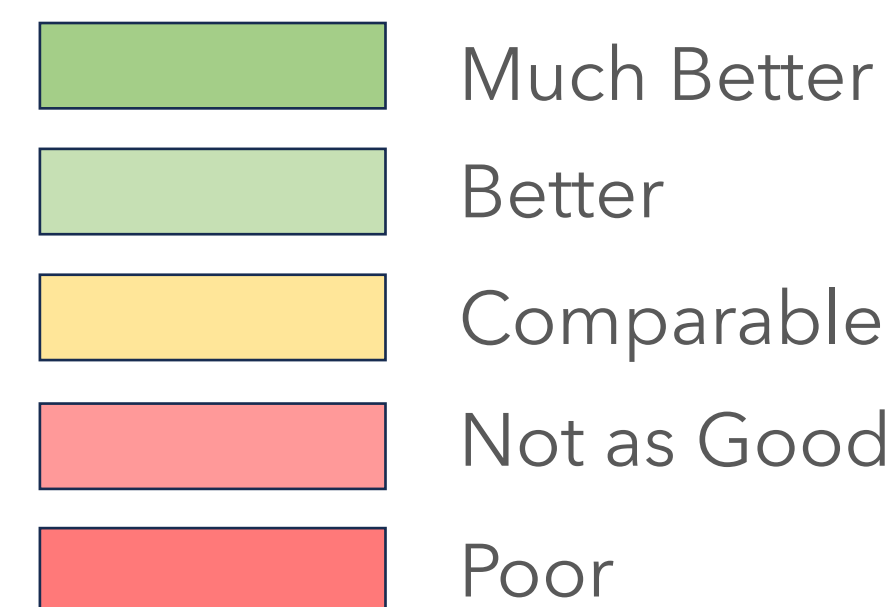
Evaluation Criteria

The chart on the next slide shows all the intersection alternatives and relative advantages and disadvantages:

- Key topics raised as important by Rights Holders, stakeholders, the general public, and project team members are included
- If a topic is missing, it can still be added to make sure it is properly considered
- The alternatives that have the most green ratings are more preferred, while the alternatives that have more yellow and red ratings are less preferred
- The selected alternative should be most effective for highway safety and efficiency, but also give consideration to the other topics
- Once all perspectives are properly understood, and sufficient due diligence is undertaken, a preferred alternative can be selected and advanced to a detailed design stage

Evaluation Criteria

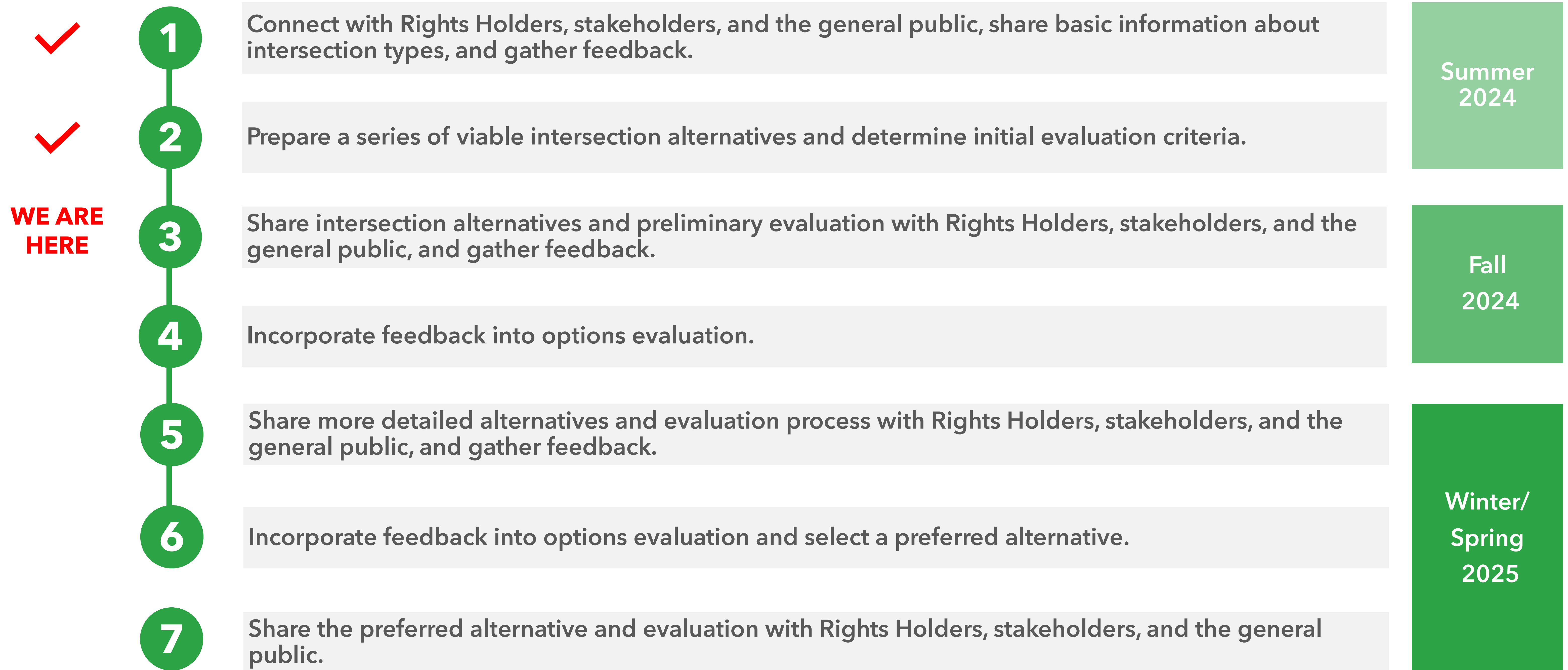
- This chart illustrates the relative strengths and weaknesses of each intersection alternative
- The chart is a work in progress and further considerations can be added
- Alternatives that have fewer red ratings and more green ratings are more attractive than options that have more red ratings and fewer green ratings
- Alternatives 1 through 4 are currently more attractive than the others, without consideration to cost
- Throughout the evaluation process, the project team will consider participant comments alongside further data in order to identify a preferred option



PTH 1 / PTH 5 INTERSECTION IMPROVEMENTS [Preliminary]		Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Other Intersection Types			
		Grade Separated Interchange	Widened Intersection + Auxiliary Lanes	RCUT - Reduced Conflict U-Turn	Split Intersection (No Traffic Lights)	Signalized Intersection	Roundabout	Restricted Left / Jug Handle J-Turn	Median U-Turn MUT	Offset-T
SUMMARY EVALUATION										
Engineering	Safety									
	Addresses Severe Conflicts									
	Accommodates future interchange									
	Visibility (sightlines)									
	Visibility (environmental conditions)									
	Avoids shifting Problem to new location									
	Turning Movement Mobility									
	Traffic Flow / Through Movement (PTH1)									
	Traffic Flow / Through Movement (PTH5)									
	Local Access Disruption									
	Prioritizes PTH 1 (Accommodates offset volumes)									
	Operating Speed									
	Large Vehicle Navigation (trucks, semis, school bus, low bed trailers, etc.)									
	Large Vehicle Navigation (agricultural)									
	Geotechnical									
	Drainage									
	Maintenance									
	Construction Staging/Detours									
	Using Existing Road Infrastructure									
	Greenhouse Gas									
Environmentally Sensitive Site Risks										
Other ?										
Social	Impacts to Residences and Yards (views and noises)									
	Impacts to Agricultural Land and Irrigation systems									
	Property Acquisition Likelihood									
	Community Access (Carberry/Neepawa)									
	Need for Driver Education									
	Compliance / Enforcement									
	Driver Expectation									
	Driver Workload									
	Potential Risks to Heritage Resources									
	Snowmobile Trail									
	Emergency Services									
	Time to Implement									
Other ?										
Cost	Capital Cost (Conceptual Comparison)									
	Capital Cost (Class D)									
	Maintenance Cost									
	Life Cycle Cost									
	TOTAL COST									

Decision Making Process

This slide outlines the decision-making process involved in the design study, illustrating the steps to select the preferred alternative for recommendation to MTI:



Key Questions

- Does the early review of the evaluation process make sense to you? Would you add any considerations for the evaluation?
- What impacts or benefits do you see from your own perspective with these alternatives?

Your feedback will help the team identify topics of importance and specific information that can be incorporated into the evaluation of intersection alternatives.



PTH 1 and PTH 5 intersection looking southwest.

Next Steps

- Thank you for participating in this process.
- We will review the feedback from today's meeting and work to incorporate it into the study where possible.
- We will conduct a series of follow-up engagement meetings in Winter 2025.
- In these meetings we will present more detailed design and information on a shortlist of alternatives before selecting a preferred alternative.

Thank You. Questions?

Thank you for attending today's meeting. Your feedback is important to us, so please fill out an online comment sheet at the following link:

<https://www.surveymonkey.com/r/PTH1ANDPTH5ImprovementsR2A>



If you have any further questions, please contact:

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