



TH 10,
(Red River to TH 336)

TH 75,
(20th Avenue South to Main Avenue)

& Center Avenue
(Red River to 8th Street)

Corridor Studies

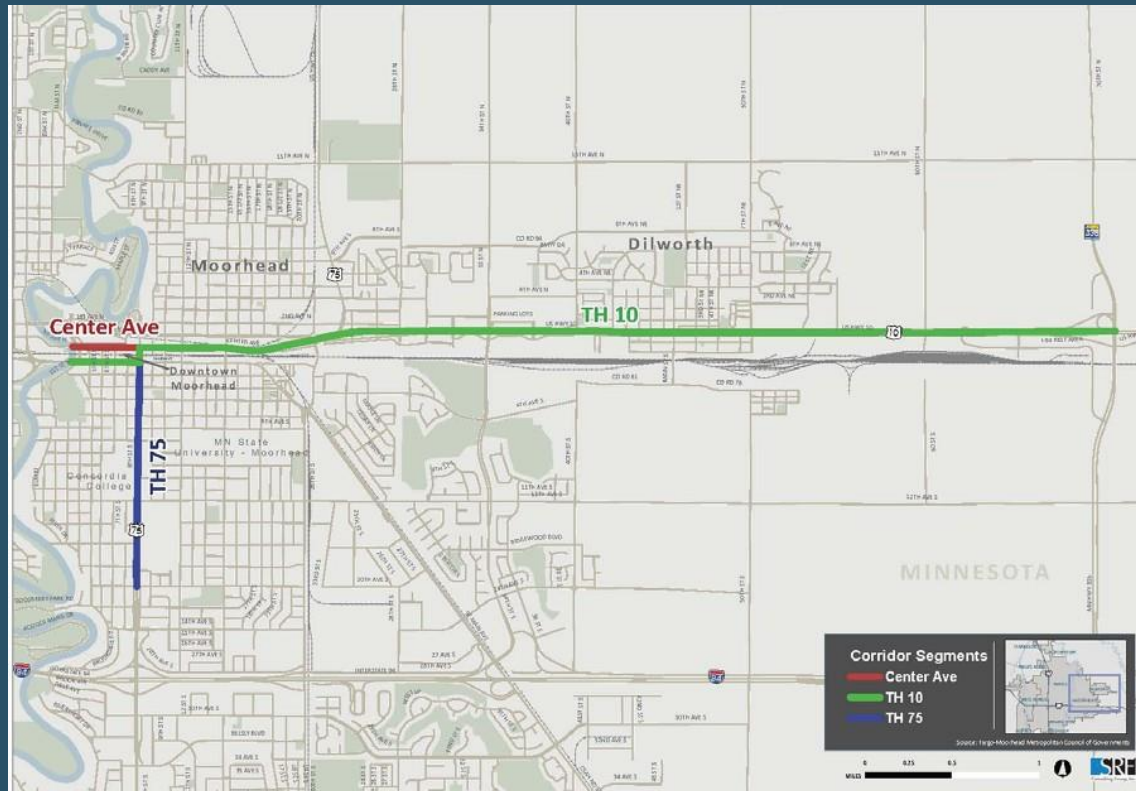
City of Moorhead Committee of the Whole Meeting

Metro COG



Corridor Study Limits

- Center Avenue (Red River to 8th Street)
- TH 10 (Red River to TH 336)
- TH 75 (20th Ave S to Main Avenue)



Project Overview

- Study Need:
 - Primarily due to congestion, safety, and access issues in and throughout the area
 - Pavement condition:
 - Will require rehabilitation within the next 10 to 15 years along TH 75 and TH 10
 - Will require reconstruction within the next 10 years along Center Ave
 - Utilities along portions of the corridors need replacement or upsizing

Project Overview

- Study Goal:
 - To identify and define future multimodal improvement needs
 - Coordinate with Main Ave Corridor Study in ND
- Today's Meeting Goal:
 - Inform City Council of study process and progress, including:
 - Review issues and needs of each corridor
 - Evaluation of previously reviewed alternatives
 - Next steps and Implementation Plan

Public Involvement Process

- 2 Public Input and 2 Focus Group Meetings
- 4 Study Review Committee Meetings
- Presentation to EDA
- Presentation to MnDOT Management
- Environmental Agency Coordination
- Project Website and Facebook Site
- Today's Presentation



Development & Evaluation of Alternatives

- Developed alternatives to mitigate issues; took into account vision and design parameters
- Used technical evaluation criteria tied to purpose and need principles, as well as other environmental factors (Applied a rating system of 1 to 5)
- Included other non-technical evaluation factors (i.e., cost, public input, and SRC ranking)
- Removed some alternatives from future consideration because they did not respond to the purpose/need for the project or were deemed technically not feasible

CENTER AVENUE

RED RIVER TO 8TH STREET

Center Avenue Corridor Issues

- Pavement Conditions
 - Overall Condition Index (OCI) is poor to fair
- Water mains need replacement
- Poor mobility with railroad operations
- High Number of Access Points
 - 37 access points per mile; 2 times higher than standards

Center Avenue Corridor Issues

- High Vehicle Crash Locations
 - Intersections exceed critical crash rate and crash severity rate for a 4-lane undivided urban roadway
- Bicycle and Pedestrian Safety and Mobility
 - System gaps identified at 4th Street
 - Obstructed sidewalks



Figure 15 Center Avenue Build Alternative A

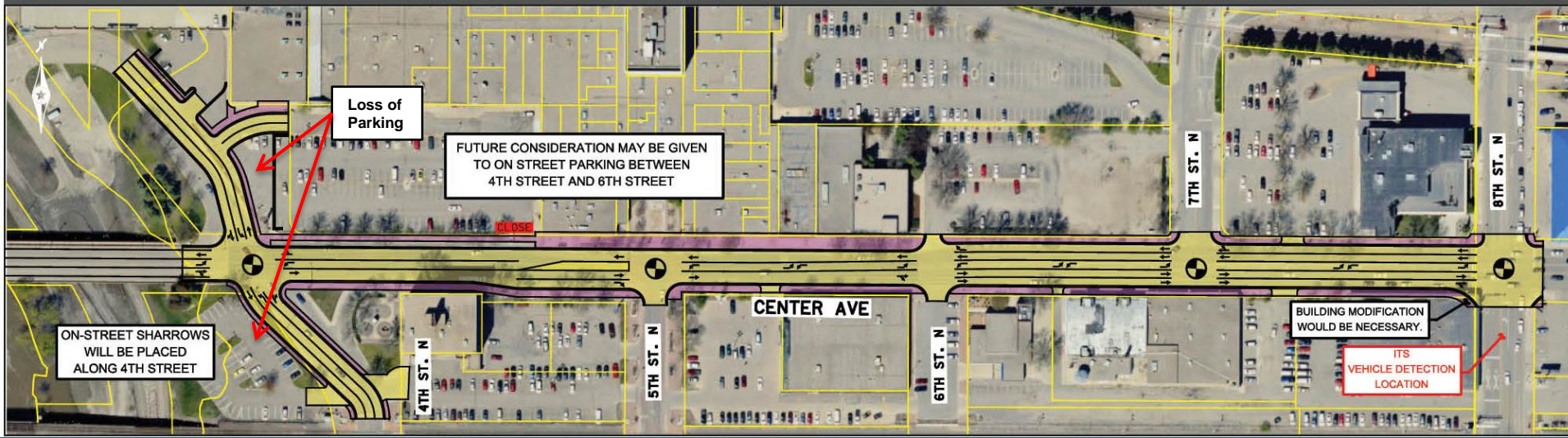
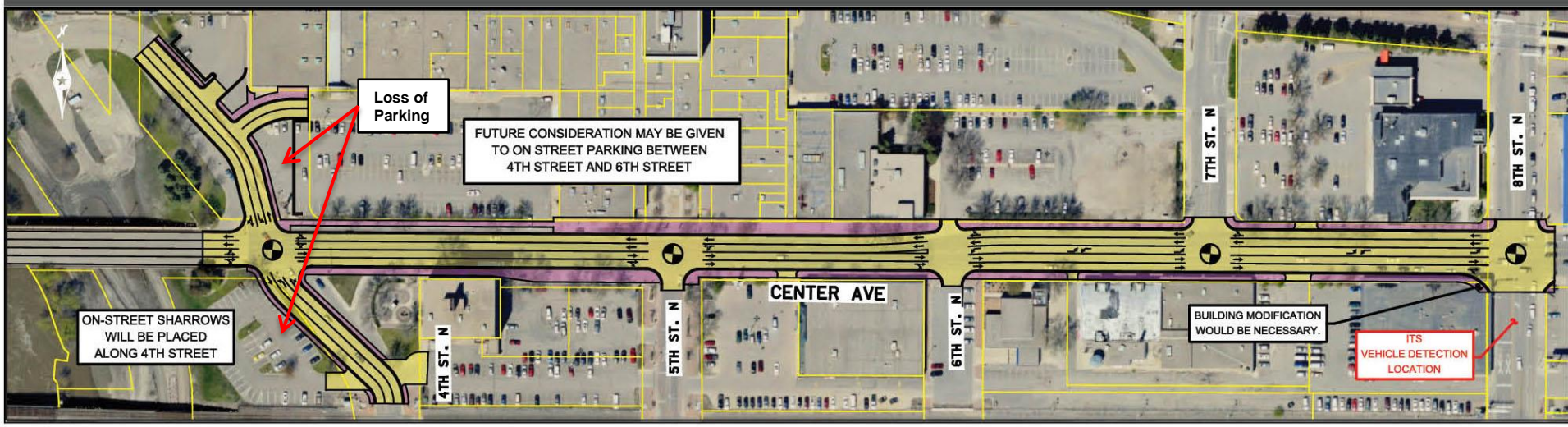


Figure 16 Center Avenue Build Alternative B



Center Avenue (Red River to 8th Street)

Alternative	Cost**	Public Comments	SRC Ranking	Does the Alternative Move Forward?
No Build	\$0 (construction)	None Received	3	Yes
Build Alternative A:*** <ul style="list-style-type: none"> Reduces queues, except at 4th Street; queues will increase eastbound. Enhances bicycle network through on-street bike lanes on the Center Avenue/NP Avenue Bridge. 	\$3.2M (construction)	Mostly Positive	Recommended	Yes
Build Alternative B:*** <ul style="list-style-type: none"> Reduces queues. 	\$3.2M (construction)	Mostly Positive	2	Yes

*** Each Build Alternative has the following impacts:

- Improves pavements (full reconstruction) and utilities.
- Improves safety.
- Closes 1 access point
- Removes 40 off-street parking spaces.
- Includes 5,500 s.f. of ROW acquisition.
- Upgrades sidewalks and streetscaping.

** Cost estimates do not include right of way or relocation costs, only estimates of construction costs.

Center Avenue Implementation

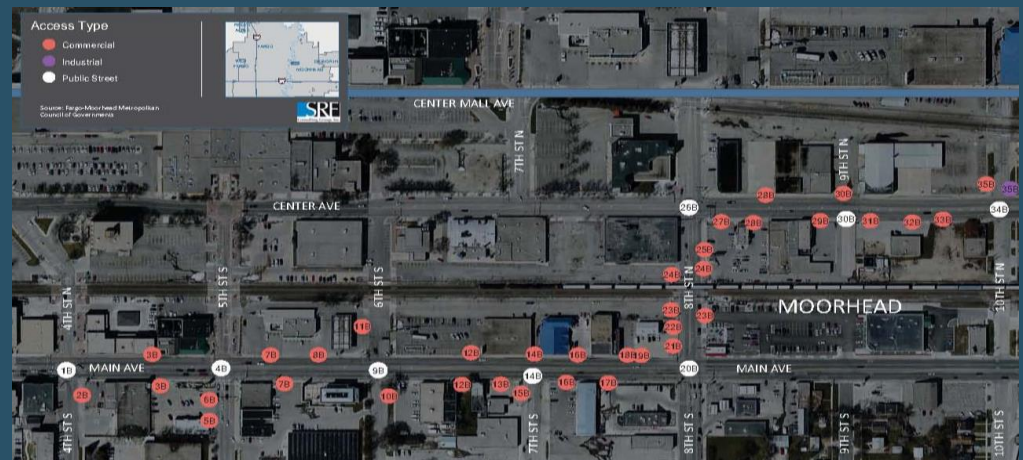
- Can be funded:
 - 100% Local Funds
 - 100% MSA Funds
 - Combination of Local & MSA Funds
 - Mix of Federal STP Funds, MSA Funds, & Local Funds (Environmental Document would be required)
- Project should be completed no later than 10 years (2023)

TH 10

RED RIVER TO TH 336

TH 10 Corridor Issues

- Pavement Conditions
 - MnDOT RQI poor from Red River to CR 9; fair to TH 336
- At-grade rail crossing of TH 10 between Center and Main Avenue has a high vehicle/rail exposure
- Limited Existing ROW
 - Private property may need to be purchased
- High Number of Access Points
 - Corridor ranges from 1.5 to 4 times higher than standard



TH 10 Corridor Issues

- High Vehicle Crash Locations
 - 8th St/Main Ave and 8th St/Center Ave intersections
 - 7 of 15 intersections exceed crash severity rate
- Congestion and Intersection Geometries
 - At-grade RR crossings and signal preemption
 - Significant delay at 8th St/Main Ave intersection (existing Level of Service D)
- Bicycle and Pedestrian Safety and Mobility
 - System gaps

TH 10 Alternative Development & Evaluation

- TH 10 developed and evaluated as five segments (Moorhead includes segments 1, 2 and 3)
- All Build alternatives and subalternatives include pavement rehabilitation costs



Figure 3 TH 10 Build Alternative A (Segment 1)



Figure 4 TH 10 Build Subalternative 5th Street Counter Flow (Segment 1)



TH 10 Segment 1 (Red River to 8th Street)

Alternative	Cost**	Public Comments	SRC Ranking	Does the Alternative Move Forward?
No Build	\$0 (construction)	None Received	Not Recommended	Yes
Build Alternative A:*** • Closes three access points.	\$2.2M (construction)	Mixed	Recommended	Yes
Subalternative 5th Street Counter Flow:*** • Closes one more access point than Build Alternative A. • Reduces circuitous travel with 5th Street one-way to two-way conversion. • Increases vehicle conflicts at TH 10/5th Street intersection with the two-way conversion.	\$0.1M (construction)	Mixed/ Mostly Negative	Not Recommended	No

** Cost estimates do not include right of way or relocation costs.

*** Each Build Alternative and Subalternative has the following impacts:

- Improves pavements.
- Reduces delay at 8th Street.
- Reduces queues on TH 10.
- Removes 20 on-street parking spaces.
- Improves safety.
- Includes 4,000 s.f. of ROW acquisition.
- Upgrades sidewalks and streetscaping.
- Provides opportunity for property redevelopment.

Figure 5 TH 10 Build Alternative A (Segment 2)



Figure 6 TH 10 Build Alternative B – 11th Street (Segment 2)

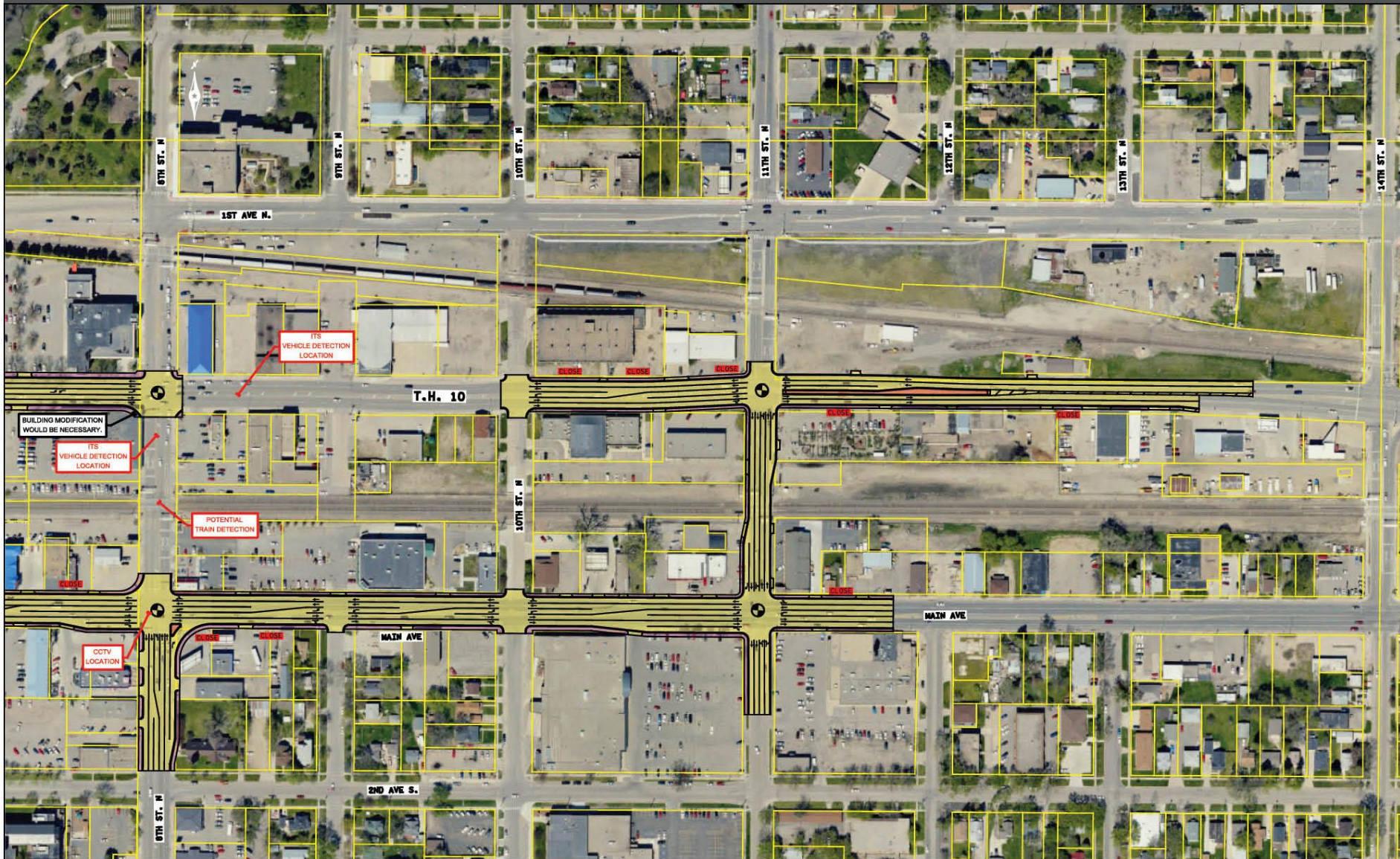
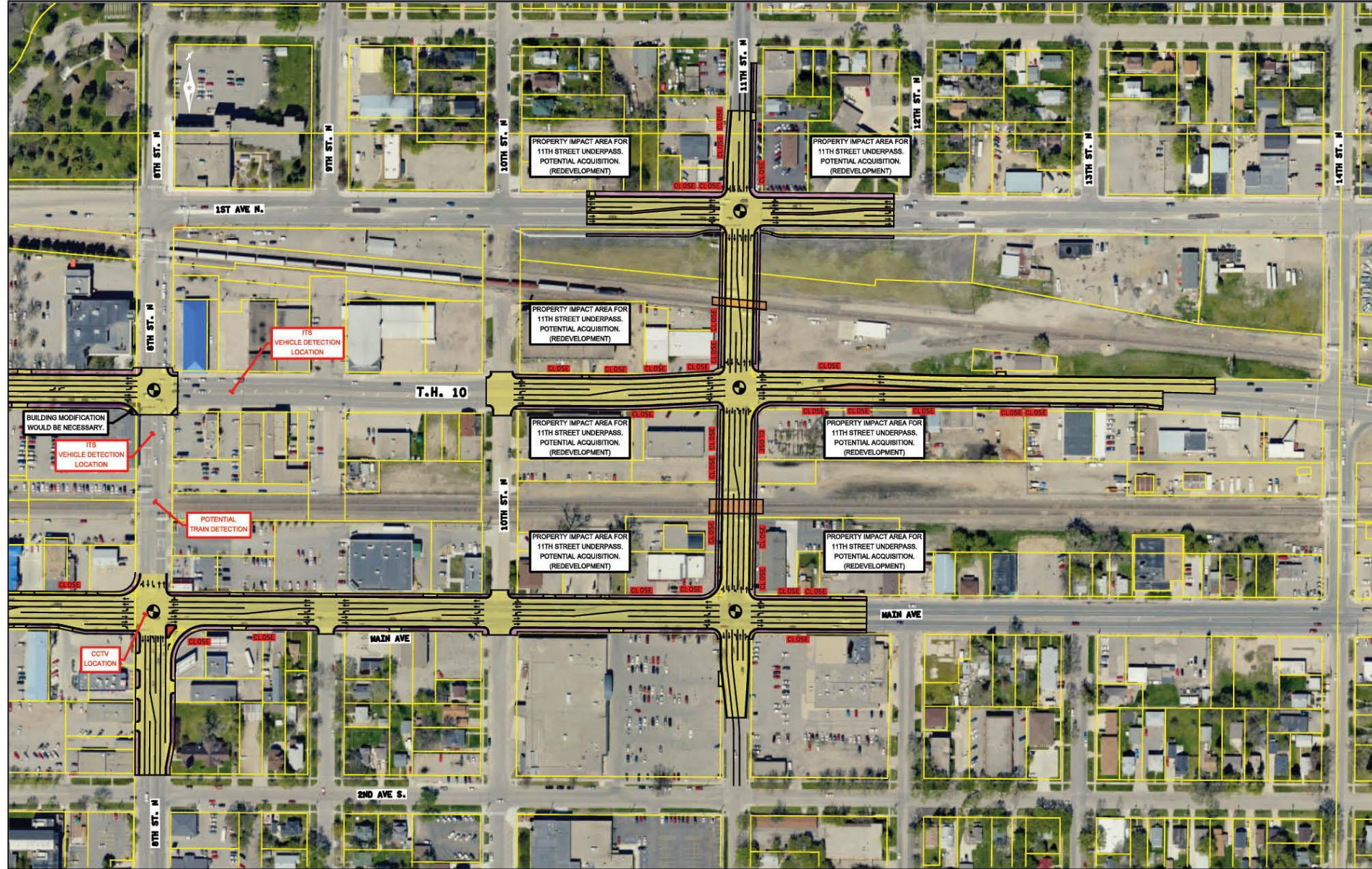


Figure 7 TH 10 Build Alternative C – Underpass (Segment 2)



TH 10 Segment 2 (8th Street to 14th Street)

Alternative	Cost**	Public Comments	SRC Ranking	Does the Alternative Move Forward?
No Build	\$0 (rehabilitation)	None Received	4	Yes
Build Alternative A:*** <ul style="list-style-type: none"> Closes 12 access points. Includes 8,500 s.f. of ROW acquisition. Removes six on-street parking spaces. 	\$1.7M (rehabilitation)	Mostly Positive	3	Yes
Build Alternative B 11th Street:*** <ul style="list-style-type: none"> Reduces queues on TH 10. Closes eight access points. Includes 14,000 s.f. of ROW acquisition. 	\$2.6M (rehabilitation)	Mostly Positive	Recommended	Yes
Build Alternative C Underpass:*** <ul style="list-style-type: none"> Reduces queues on TH 10. Closes 31 access points. Includes 306,000 s.f. of ROW acquisition (includes buildings). 	\$37.1M (rehabilitation)	Mostly Positive	2	This alternative will be re-evaluated as part of a future vehicle/rail operation study.

*** Each Build Alternative has the following impacts:

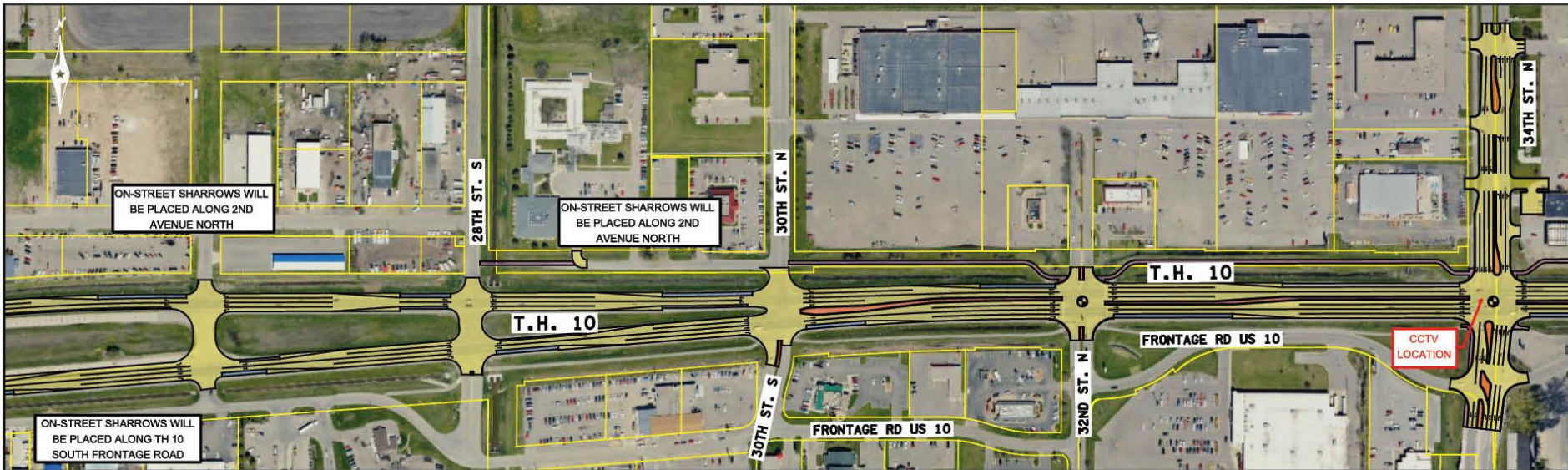
- Improves pavements.
- Improves safety.
- Upgrades sidewalks and streetscaping.
- Provides opportunity for property redevelopment.
- Enhances ITS on the corridor.

** Cost estimates do not include right of way or relocation costs.

Figure 8 TH 10 Build Alternative A (Segment 3)



West Segment



East Segment

Figure 9 TH 10 Build Alternative A – 34th Street Inset (Segment 3)

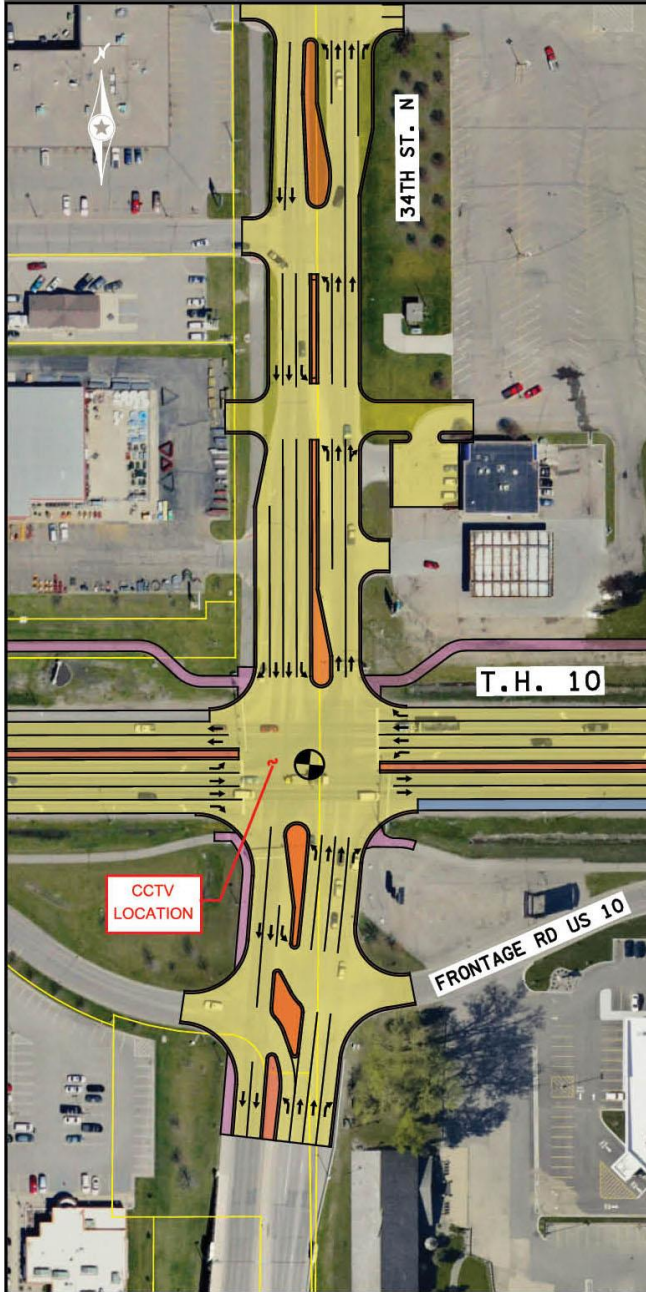
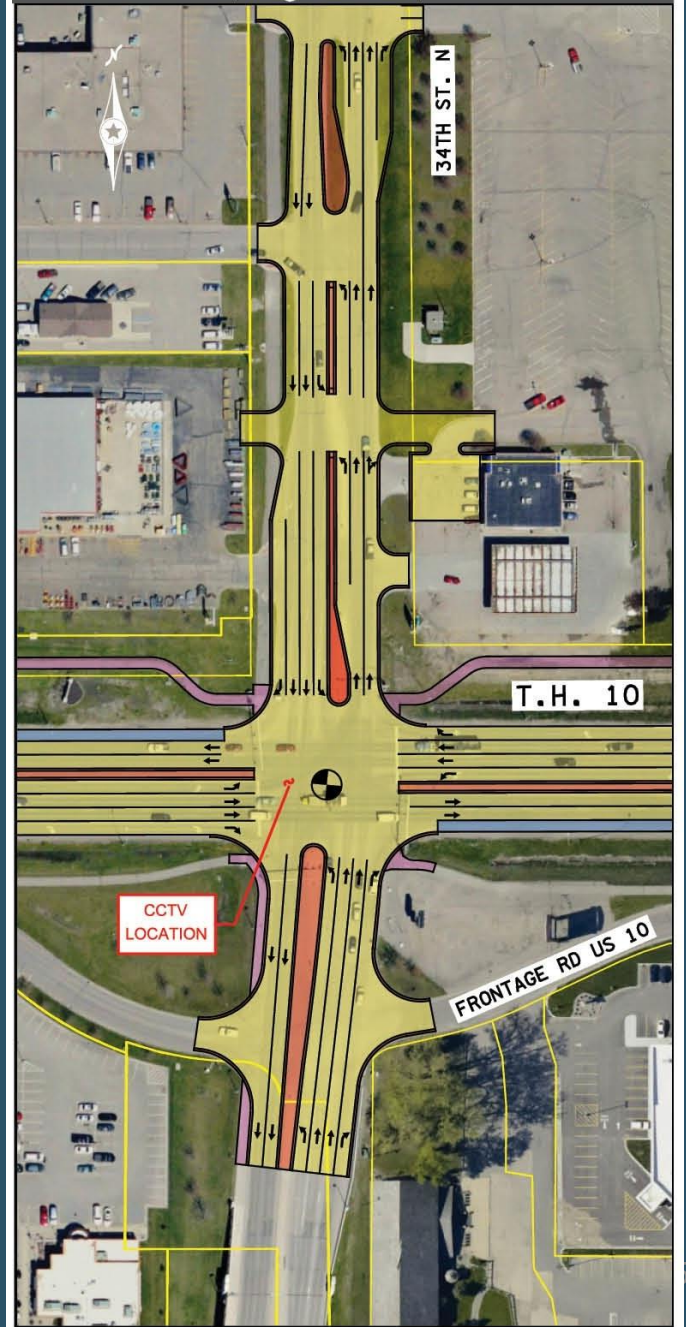


Figure 10 TH 10 Build Subalternative 34th Street (Segment 3)



TH 10 Segment 3 (14th Street to 34th Street)

Alternative	Cost**	Public Comments	SRC Ranking	Does the Alternative Move Forward?
No Build	\$0 (construction)	None Received	Not Recommended	Yes
Build Alternative A:*** • Closes one access point and modifies one access point to 3/4 access.	\$5.6M (construction)	Mixed	Recommended	Yes
Subalternative 34th Street:*** • Closes one access point and modifies one access point to right- in, right-out access.	\$0 (construction)	Mostly Negative	Not Recommended	No

** Cost estimates do not include right of way or relocation costs.

*** Each Build Alternative and Subalternative has the following impacts:

- Improves pavements.
- Enhances ITS on the corridor.
- Reduces queues at 21st Street and 34th Street.
- Extends northbound right-turn lane at 21st Street.
- Enhances streetscape.
- Includes 500 s.f. of ROW acquisition.
- Upgrades/add new sidewalks, on-street sharrows, and multiuse trails.
- Provides opportunity for property redevelopment.

Downtown Roadway / Rail System Analysis

- Conducted an analysis of varying roadway modifications to improve adjacent roadway network in relation to at-grade rail crossings at 8th, 11th and 14th Streets



Downtown Roadway / Rail System Analysis

- The alternatives evaluated included:
 - Base Condition ~ CTC preemption and signal timing improvements and flashing yellow arrow (implementation by City of Moorhead)
 - Alternative 1: Base + 11th and 14th Street converted to one-ways
 - Alternative 2: Base + 14th Street one-way NB
 - Alternative 3: Base + convert 8th Street NB curb lane to a right-turn lane
 - Alternative 4: Base + jurisdictional transfer to 11th Street and geometric improvements (closely related to Segment 2 – Build Alt. B)
 - Alternative 5: Alternative 4 + grade separation of RR tracks along 11th Street

Downtown Roadway / Rail System Analysis

Improvement Condition	Network Travel Time (Total Hours)				Network Average Delay (Sec/Veh)			
	A.M. Peak		P.M. Peak		A.M. Peak		P.M. Peak	
Existing Conditions	164	–	310	–	71	–	134	–
Base Conditions	160	-2.4%	292	-5.8%	67	-5.6%	121	-9.7%
Alternative 4	157	-4.3%	272	-12.3%	65	-8.5%	105	-21.6%
Alternative 5	133	-18.9%	212	-31.6%	43	-39.4%	65	-51.5%

Note: As each successive alternative builds on the previous one, the percentage reductions in total hours and seconds/vehicle represent cumulative reductions compared to existing conditions as opposed to the incremental reductions of moving from one alternative to the next.

TH 10 Implementation Plan

1. Implement the Campbell Technologies Corporation recommended railroad preemption operation improvements (2013)
2. Pilot year of collaborative, corridor-based competitive solicitation process for MnDOT TH projects called the Corridor Investment Management Strategy (CIMS). Moorhead and MnDOT are working together to develop a grant application that would cover Segments 1 and 2 of TH 10. Solicitation deadline for grants is April 30, 2013. Projects selected must be let by June 5, 2015 or earlier.
3. CIMS application includes the following for Segments 1 and 2 of TH 10
 - ADA improvements
 - Pavement Rehabilitation
 - Intersection geometric improvements
 - ITS
4. TH 10 CIMS project cost is estimated to be \$2.2 million. Local system costs = \$257,750; TH 10 system costs = \$1,937,750 of which 90% will be by CIMS grant and 10% will be local cost. Total City cost = \$450,000.

- LEGEND**
- CONSTRUCTION BY OTHERS
 - MILL AND OVERLAY
 - FULL DEPTH RECONSTRUCTION
 - SIDEWALK/MEDIAN REPLACEMENT
 - MILL AND OVERLAY BY OTHERS
 - TRAFFIC SIGNAL MODIFICATIONS



TH 10 Implementation Plan (continued)

4. MnDOT's long term desire to reduce the at-grade crossing of TH 10 and TH 75 by either grade separating the crossing, re-routing the alignment of the TH's, or a combination of both. Moorhead's long term desire to construct a grade separation in downtown Moorhead. This will result in a future study to determine the best option to reduce vehicle/rail exposures on the TH systems and to improve vehicle/train operations in downtown Moorhead.

TH 75

20TH AVENUE SOUTH TO MAIN AVENUE

TH 75 Corridor Issues

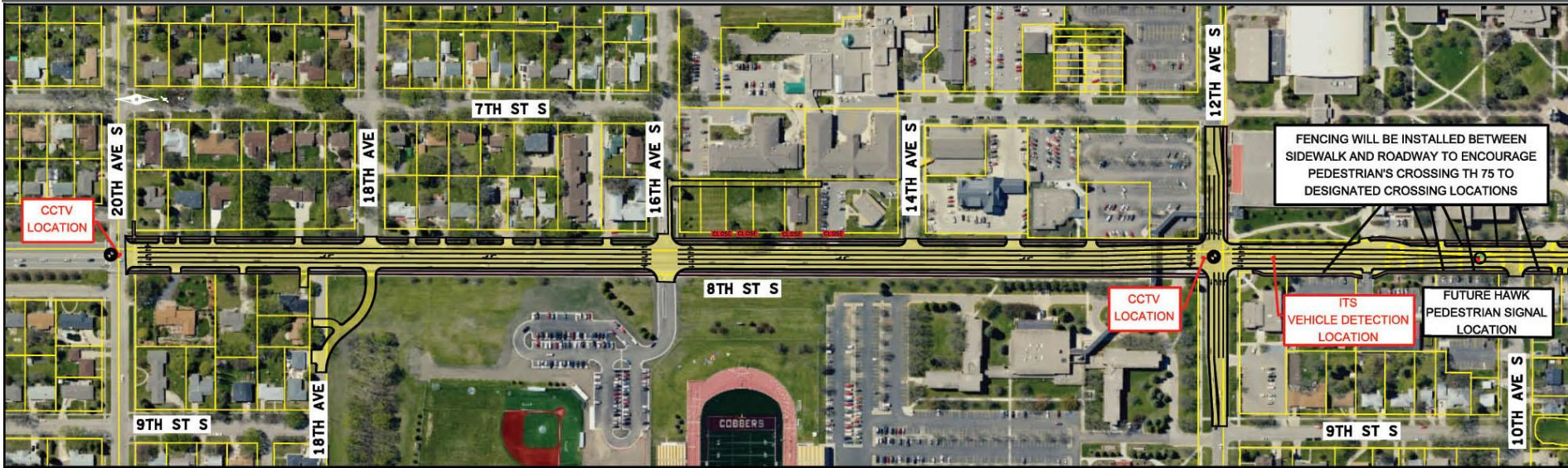
- Pavement Conditions
 - MnDOT RQI is poor
- High Number of Access Points
 - 58 access points per mile; exceeds standard in Moorhead City Code by 3 times
- Traffic Operations
 - Queues at 12th Ave S exceed 250 ft.



TH 75 Corridor Issues

- High Vehicle Crash Locations
 - Critical crash rates high at intersections of 20th Ave S, 12th Ave S, and 4th Ave S
- Bicycle and Pedestrian Safety and Mobility
 - ADA compliance along sidewalks
 - Bicycle and pedestrian gaps

Figure 14 TH 75 Build Subalternative A



South Segment



North Segment

TH 75

(20th Avenue S to TH 10)

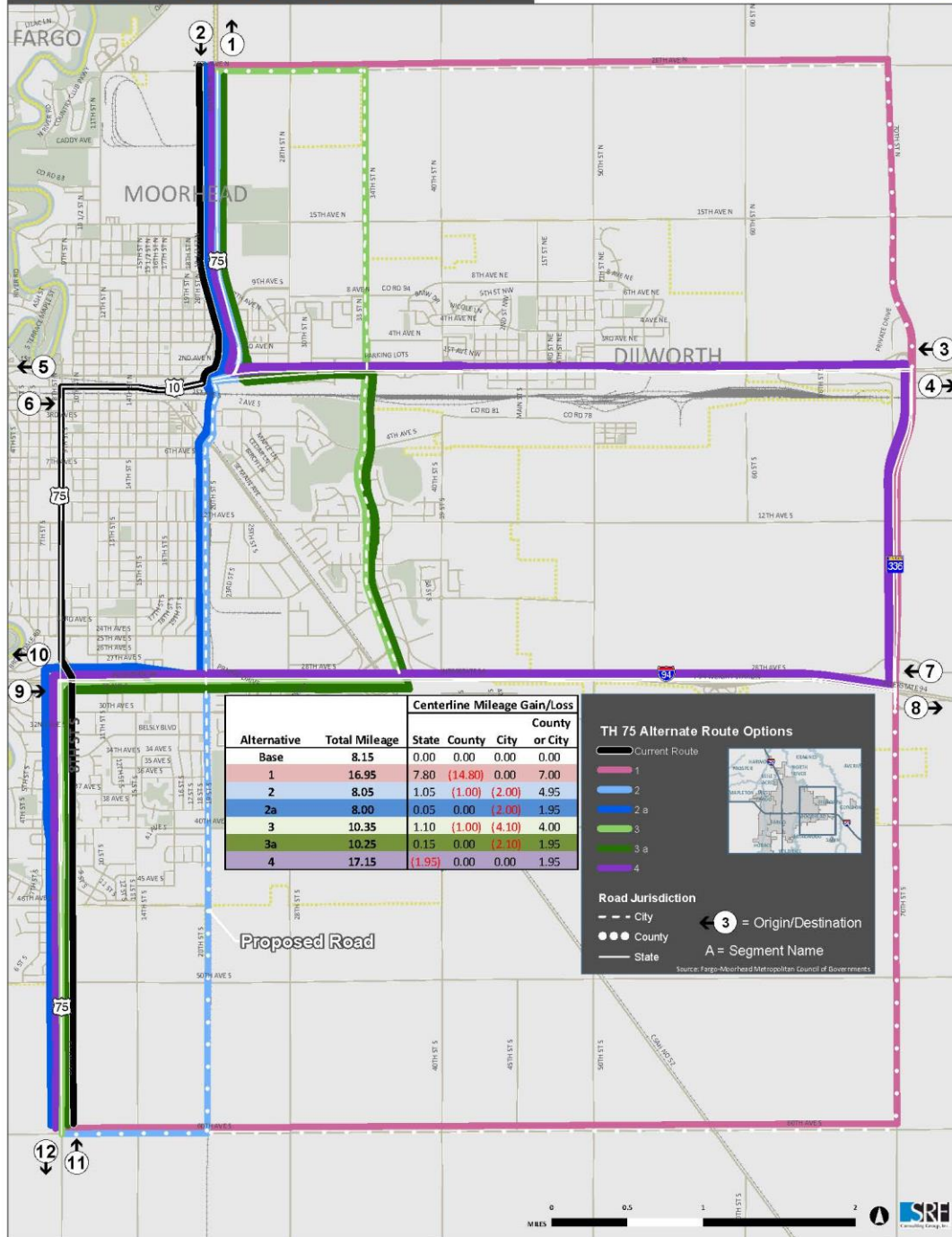
Alternative	Cost**	Public Comments	SRC Ranking	Does the Alternative Move Forward?
No Build	\$0 (construction)	None Received	Not Recommended	Yes
Build Alternative A <ul style="list-style-type: none"> Improves pavements and utilities. Reduces queues at 12th Avenue South. Improves safety. Closes four access points. Includes 14,700 s.f. of ROW acquisition. Upgrades sidewalks and streetscapes. 	\$3.5M (rehabilitation)	Mostly Positive	Recommended	Yes

** Cost estimates do not include right of way or relocation costs.

Potential TH 75 Reroute Options

- Six reroute options were evaluated to determine the quantitative and qualitative benefits or impacts of transferring TH 75
- Conducted a preliminary screening evaluation based on the following criteria:
 - Jurisdictional mileage changes
 - Origin-Destination patterns of traffic in the area between select locations
 - Travel times between defined termini
 - Potential traffic diversion that may occur
 - Land use compatibility between routes
 - Corridor access comparison
 - Corridor safety comparison
 - Potential operational benefits or concerns
 - Planning level cost estimates

Figure 18: TH 75 Reroute Alignment Options



TH 75 Implementation Plan

1. MnDOT determined that re-routing the alignment of TH 75 outside of downtown Moorhead is not beneficial to them if TH 10 stays as a corridor through the downtown with an at-grade rail crossing.
2. TH 75 would be eligible for future NHPP funding.
3. The TH 75 crossing of the railroad will also result in a future study to determine the best option to reduce vehicle/rail exposures on the TH systems and to improve vehicle/train operations in downtown Moorhead.

Next Steps

- Finalize ROW Costs with MnDOT Staff
- Get Feedback from the Public on Recommendations
- Finalize Report
- Move toward Environmental Documentation Phase
- Continue development of CIMS application

Project Implementation Timeline

2013

- MnDOT TH 10/TH 75 Project (Pavement/ADA)
- Moorhead Signal/Preemption Improvement Project

2014/
2015

- Additional Grade Separation Study for TH 10/75 in Downtown Moorhead
- Possible TH 10/TH 75 Project (resulting from CIMS)

2020+

- TH 75 (20th Ave S to Main Ave) – not part of CIMS
- Center Avenue Reconstruction

Who do I contact for more information?

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