

Executive Summary

20th Street and TH 75 (8th Street)

June 2008



Prepared for:
**FARGO-MOORHEAD METROPOLITAN COUNCIL OF
GOVERNMENTS (METRO COG) AND THE CITY OF MOORHEAD**

Prepared by:
SRE CONSULTING GROUP, INC.



BACKGROUND AND STUDY PURPOSE

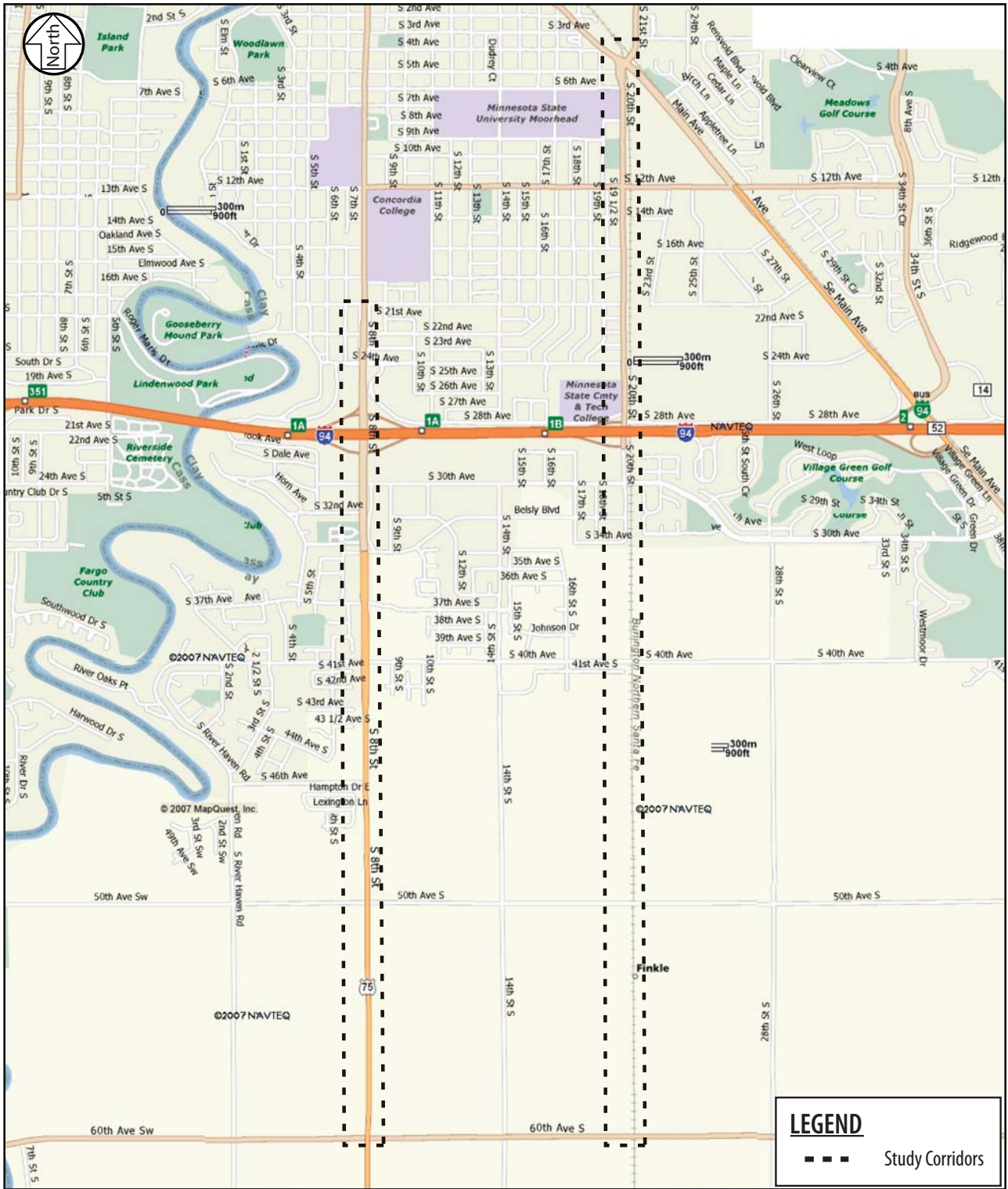
The City of Moorhead is experiencing unprecedented southerly growth, particularly in the area between the Red River and 20th Street South. TH 75 and 20th Street South have served a major role in north-south movement of traffic for many years. In recent years, residential and commercial growth south of I-94 has increased demands on these facilities. Growth of the metropolitan area in general has contributed to increased traffic volumes on TH 75 and 20th Street South, particularly en-route to and from the I-94 interchanges. As a result of this growth and the recent and projected travel demand on both TH 75 and 20th Street South, the Fargo-Moorhead Metropolitan Council of Governments (Metro COG) has created a study to better define the short-term and long-term transportation needs along both corridors.

Corridor Study Purpose and Study Area

The purpose of the TH 75 and 20th Street South Corridor Studies is to identify the future improvement needs along TH 75 from 20th Avenue South to 60th Avenue South and along 20th Street South from SE Main Avenue to 60th Avenue South. The primary study area is shown in Figure 1. TH 75 is an important US Highway that traverses western Minnesota from north to south, connecting many communities. The northerly terminus is the Canadian border and the southerly terminus is in Dallas, Texas. Within Moorhead, TH 75 is located along 8th Street South from Center Avenue to the southerly edge of the city. With respect to the portion of TH 75 that is within the limits of this study area, it is a 4-lane divided roadway with turn lanes from 20th Avenue South to approximately 40th Avenue South and is posted at 40 miles per hour. South of 40th Avenue, TH 75 is a rural highway where speeds increase to 55 mph.

The 20th Street South corridor is an urban roadway that begins at SE Main Avenue and currently ends at 34th Avenue South and is posted at 30 miles per hour. As development continues, the 20th Street corridor will eventually need to be extended to 60th Avenue South. Both the TH 75 and 20th Street corridors are classified as arterial roadways within the City of Moorhead and are approximately one mile apart. The key corridor study objectives include:

- Involving affected agencies, stakeholders and the public throughout the study process to build an understanding of the issues, project alternatives, impacts and potential solutions.
- Analyzing existing conditions through a comprehensive review of existing traffic and transportation information and a thorough examination and analysis of issues.
- Developing a range of alternatives that include a combination of safety, geometric, access management, capacity and aesthetic improvements. These alternatives will include roadway capacity improvements, future at-grade and grade separated rail crossing options, potential east-west reliever routes within the sub area and the impact that new development will have on the study corridors.
- Completing a detailed analysis of the TH 75/I-94 and 20th Street/I-94 interchanges.
- Analyzing traffic operations of I-94 from the future 34th Street interchange in Moorhead to the University Drive interchange in Fargo using Corsim.
- Creating a matrix for all of the proposed alternatives that evaluates the physical, social, environmental and technical aspects of the proposed alternatives.
- Identifying a preliminary financial plan and implementation strategies.



STUDY CORRIDORS
TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 1

PUBLIC INVOLVEMENT

Public involvement was an important part of the study process. This project used various methods to obtain public input, which included a Study Review Committee, focus group meetings, and open house meetings. The study team and Metro COG also presented the draft study findings to City of Moorhead Planning Commission, and the Moorhead City Council.

EXISTING CONDITIONS & NEEDS ASSESSMENT

The study team reviewed existing documents, collected new data and analyzed the existing conditions of the study area to determine current and future transportation needs for both TH 75 and 20th Street South within the project boundaries.

Existing Bridge Ratings

In order to determine the sufficiency ratings of the bridges involved in this project, we requested the structural inventory reports from MnDOT for the 20th Street Bridge over I-94 and the northbound and southbound TH 75 bridges over I-94. The structural inventory reports indicate the sufficiency rating of the three bridges as 92.7 for the 20th Street Bridge over I-94, 99.0 for the southbound TH 75 Bridge over I-94, and 98.0 for the northbound TH 75 Bridge over I-94. The reports also indicate that the last inspection date for each bridge was August of 2007. These high sufficiency ratings indicate that the three bridges are adequate and are not considered structurally deficient or functionally obsolete.

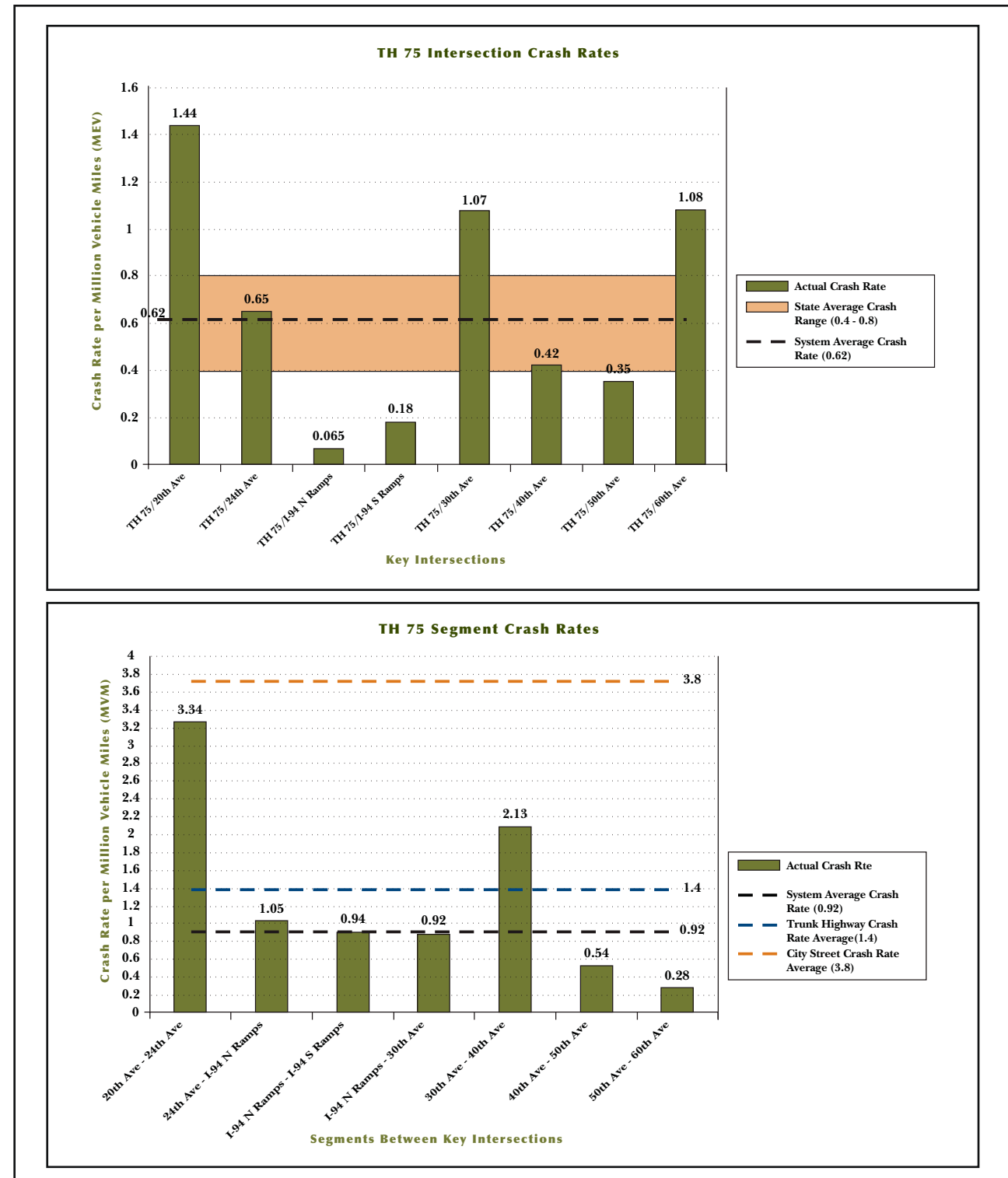
Crash Data Analysis

Several locations within the project area were identified by MNDOT and the City of Moorhead as having high crash rates. In particular, the intersection of TH 75 and 60th Avenue South is currently the highest crash rate intersection in MNDOT's District 4. A crash data analysis of the entire study area was completed to determine the current crash rates, how the crash rates compare with similar roadways, and the severity of crashes.

Five years of accident information within the project study area (January 1, 2001 to December 31, 2005) was obtained from the MNDOT Accident Database. The accident data was input into the SRF Consulting Group, Inc. accident analysis database and divided into accidents that occurred within the key intersections and along segments between the key intersections. The accidents that are shown to occur within an intersection include the intersection itself and the first 100-feet back along each leg of the intersection.

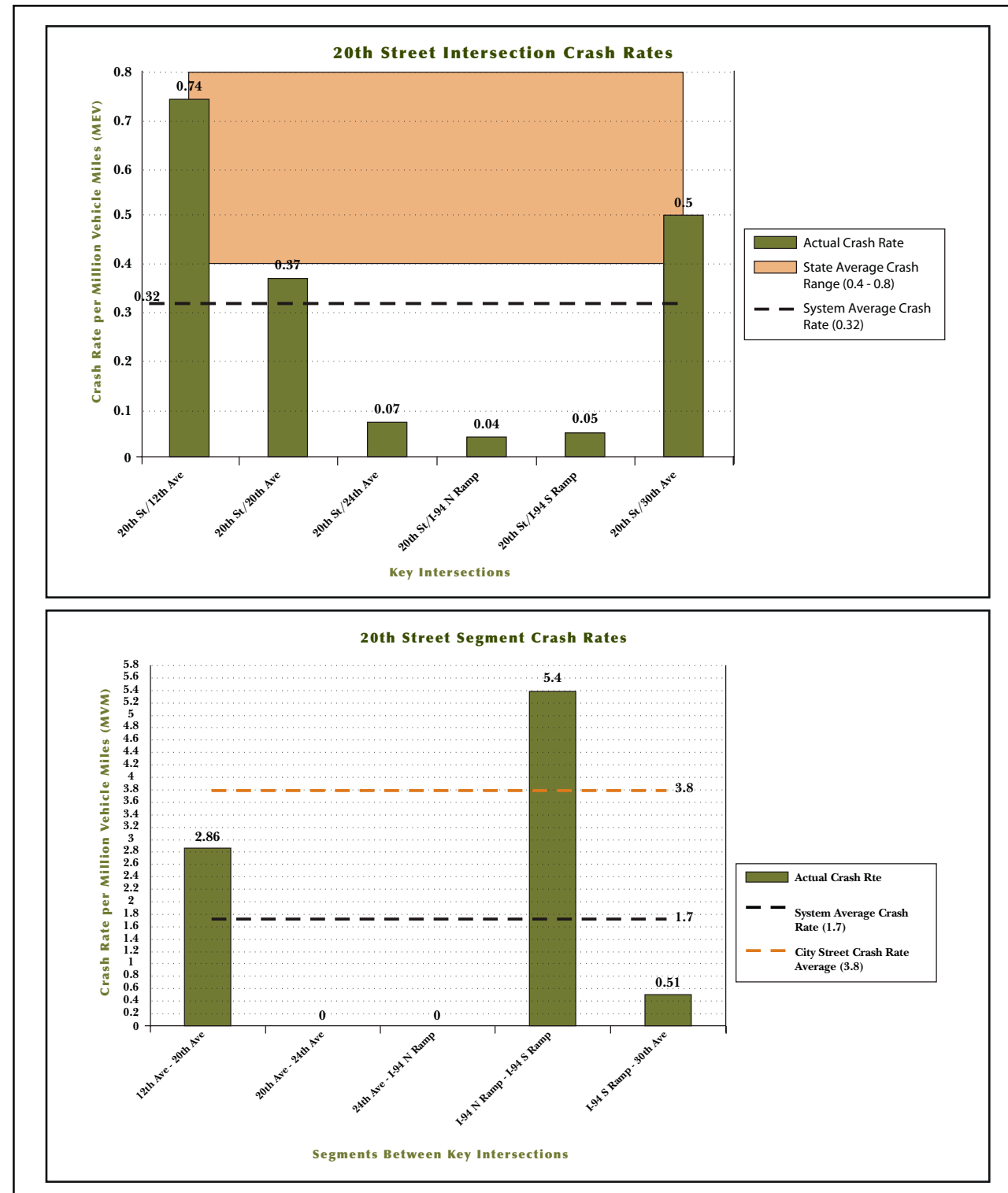
The intersections and segments with higher than average crash rates were further analyzed by reviewing collision diagrams and details of accident history for the same five year period.

The intersection and segment crash rates for both TH 75 and 20th Street are shown in Figures 2 and 3 respectively.



TH 75 CRASH ANALYSIS
TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 2



20TH STREET CRASH ANALYSIS
TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 3

Traffic Forecasts

In order to identify both the existing and future needs for the study corridors, it was necessary to develop future traffic volume forecasts. The first task for developing traffic volume forecasts was to determine the growth scenarios on which the volumes would be based. The study committee reviewed the year 2030 forecast based on the Long Range Element of the 2004 Metropolitan Transportation Plan (MTP) which included projected 2030 socio-economic growth and roadway improvements. The study committee determined that 2006 existing and planned residential lots combined with imminent plans for commercial development had already surpassed the jobs and households projected for this portion of Moorhead in the 2030 forecast. As a follow up to the 2030 Metropolitan Transportation Plan, the City of Moorhead completed a South Side Growth Area Plan (GAP) and Alternative Urban Area wide Review (AUAR). The GAP established a land use plan that included all undeveloped land as far as 60th Avenue South between the Red River and TH 75, and half of a mile south of 40th Avenue South between TH 75 and Southeast Main Avenue. The level of development in the GAP was used to modify the 2030 model to provide traffic projections that correlate with the development anticipated in the AUAR. The existing, interim and buildout year growth scenarios are shown graphically in Figure 4.

EXISTING (2006)

This scenario uses the 2006 turning movement counts that were completed at key intersections along the study corridors. A Synchro/Sim Traffic analysis has been prepared using the 2006 roadway capacity, traffic control, and volume information. This analysis is used to determine existing transportation needs within the study area.

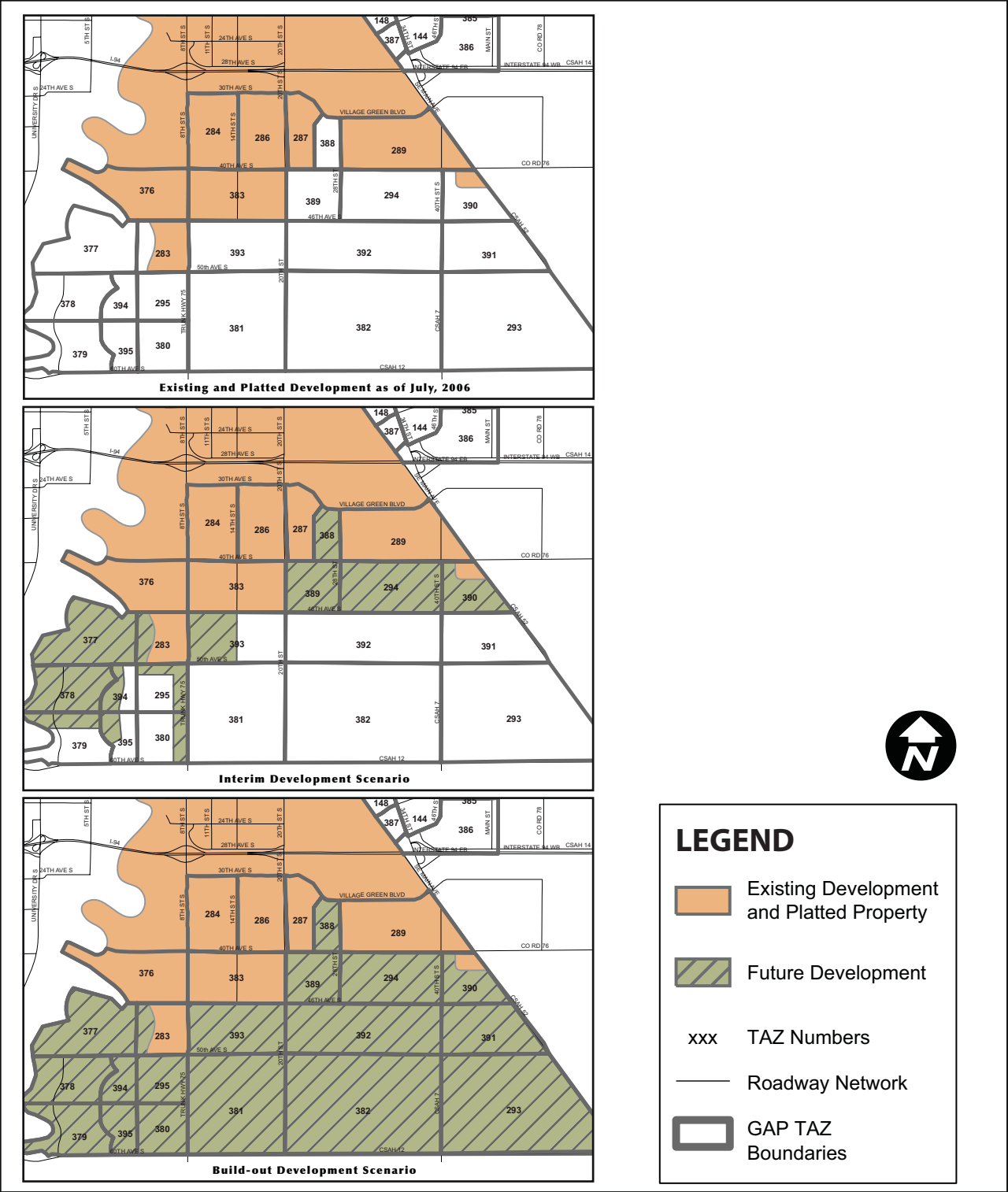
INTERIM (APPROXIMATELY YEAR 2035 PROJECTION)

The basis for this scenario is the job and household projections that were derived from the GAP/AUAR. Some TAZs were assumed to have 100 percent buildout in the interim time frame, while others are anticipated to be only partially developed. Although a time frame has not been assigned to this "interim" scenario, it could be used as a point of comparison with the 2035 growth projections when Metro COG carries out the next update of the MTP. This analysis will be used to determine future transportation needs within the study area.

BUILDOUT

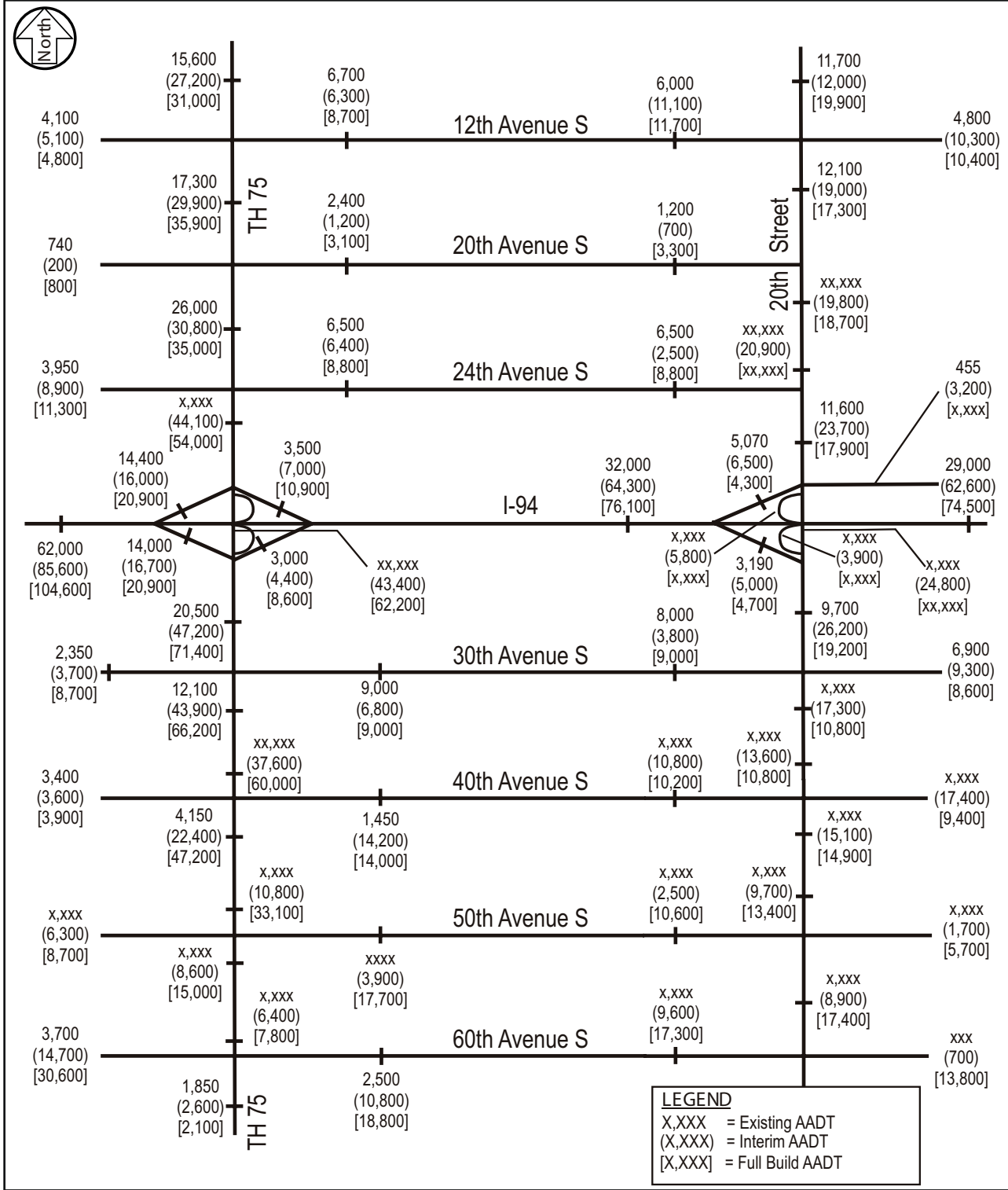
The buildout scenario assumes 100 percent development of all of the land included in the GAP/AUAR, as well as all other property lying north of 60th Avenue South and west of Southeast Main Avenue. A land use plan does not exist for property located in TAZs 381, 382, 293, 391, 392 and 393. Therefore, full buildout assumptions for jobs and households in these TAZs were prepared by Metro COG, using averaged numbers of households and jobs per acre in the portions of the study area that are covered by the GAP/AUAR. This analysis will be used only for the purpose of identifying future right of way needs.

The existing, interim and buildout annual average daily traffic (AADT) volumes are shown in Figure 5.



GROWTH SCENARIOS
TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 4



ANNUAL AVERAGE DAILY TRAFFIC VOLUMES (AADT)
TH 75 & 20TH STREET CORRIDOR STUDIES
Fargo-Moorhead Council of Governments

Figure 5

Traffic Operations Analysis

To determine how the existing roadway network will accommodate the interim year traffic forecasts, an operations analysis was conducted for the a.m. and p.m. peak hours. It should be noted that the I-94/20th Street interchange was modeled with the proposed access modification to include access to and from the east (i.e. a westbound exit and eastbound entrance). The geometry at the north and south ramps were updated to reflect the changes to the interchange, while maintaining the existing capacity of the roadway along the corridor. In addition, the intersections of 20th Street with 40th Avenue South, 50th Avenue South

and 60th Avenue South do not currently exist, and therefore were analyzed with the geometry and traffic controls necessary to operate at acceptable levels of service. Results of the analysis shown in Table 1 indicate that the majority of the key intersections will operate at an unacceptable LOS D or worse during the a.m. and p.m. peak hours under interim year no build conditions, with existing geometry and traffic controls and revised geometry at the 20th Street/I-94 interchange and 20th Street from 34th Avenue South to 60th Avenue South. Figure 6 shows the interim peak hour traffic volumes with the existing and revised geometry used for this analysis.

Table 1: Interim Year Condition Peak Hour Capacity Analysis – Existing Geometry Level of Service Results

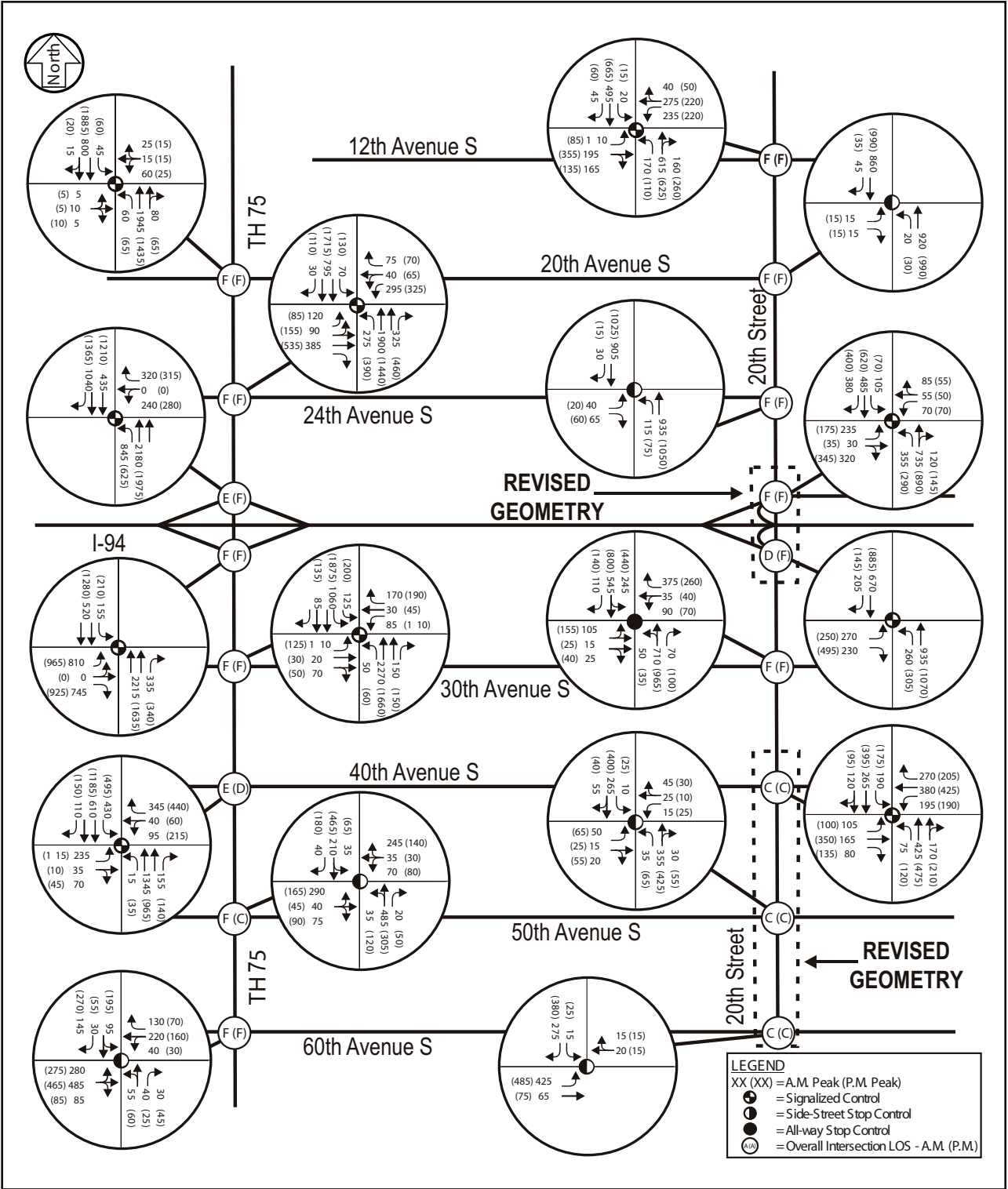
Intersection	Level of Service	
	A.M.	P.M.
TH 75/20th Avenue South	F	F
TH 75/24th Avenue South	F	F
TH 75/I-94 North Ramp	E	F
TH 75/I-94 South Ramp	F	F
TH 75/30th Avenue South	F	F
TH 75/40th Avenue South	E	D
TH 75/50th Avenue South ⁽¹⁾	F/F	C/F
TH 75/60th Avenue South ⁽¹⁾	F/F	F/F
20th Street/12th Avenue South	F	F
20th Street/20th Avenue South ⁽¹⁾	F/F	F/F
20th Street/24th Avenue South ⁽¹⁾	F/F	F/F
20th Street/I-94 North Ramp ⁽³⁾	F	F
20th Street/I-94 South Ramp ⁽³⁾	D	F
20th Street/30th Avenue South ⁽²⁾	F	F
20th Street/40th Avenue South	C	C
20th Street/50th Avenue South ^{(1) (4)}	C/C	C/C
20th Street/60th Avenue South ^{(1) (4)}	C/C	C/D

⁽¹⁾ Indicates an intersection with side-street stop control.

⁽²⁾ Indicates an intersection with all-way stop control.

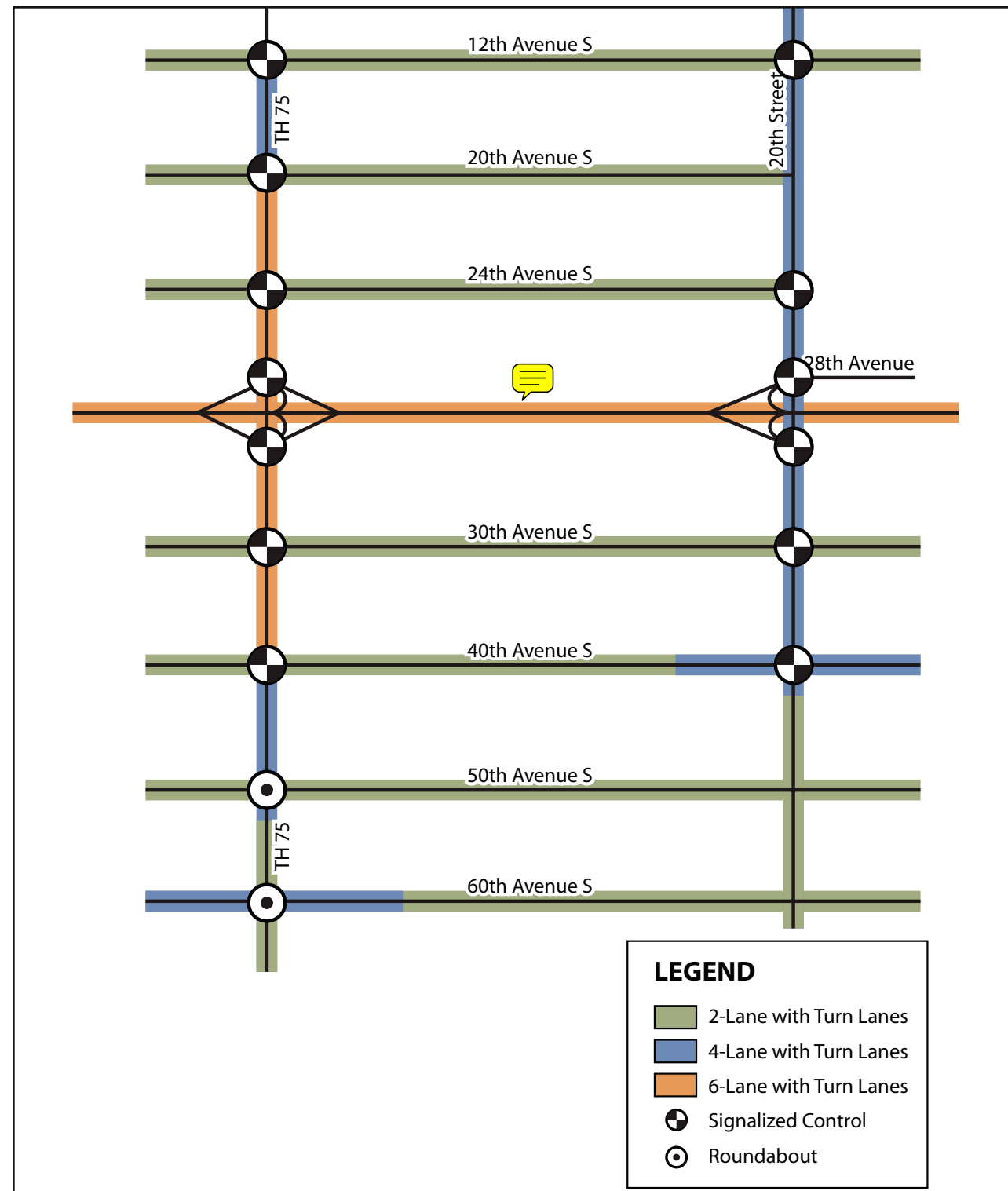
⁽³⁾ Indicates an intersection with revised geometry due to access modification.

⁽⁴⁾ New intersection under interim year conditions.



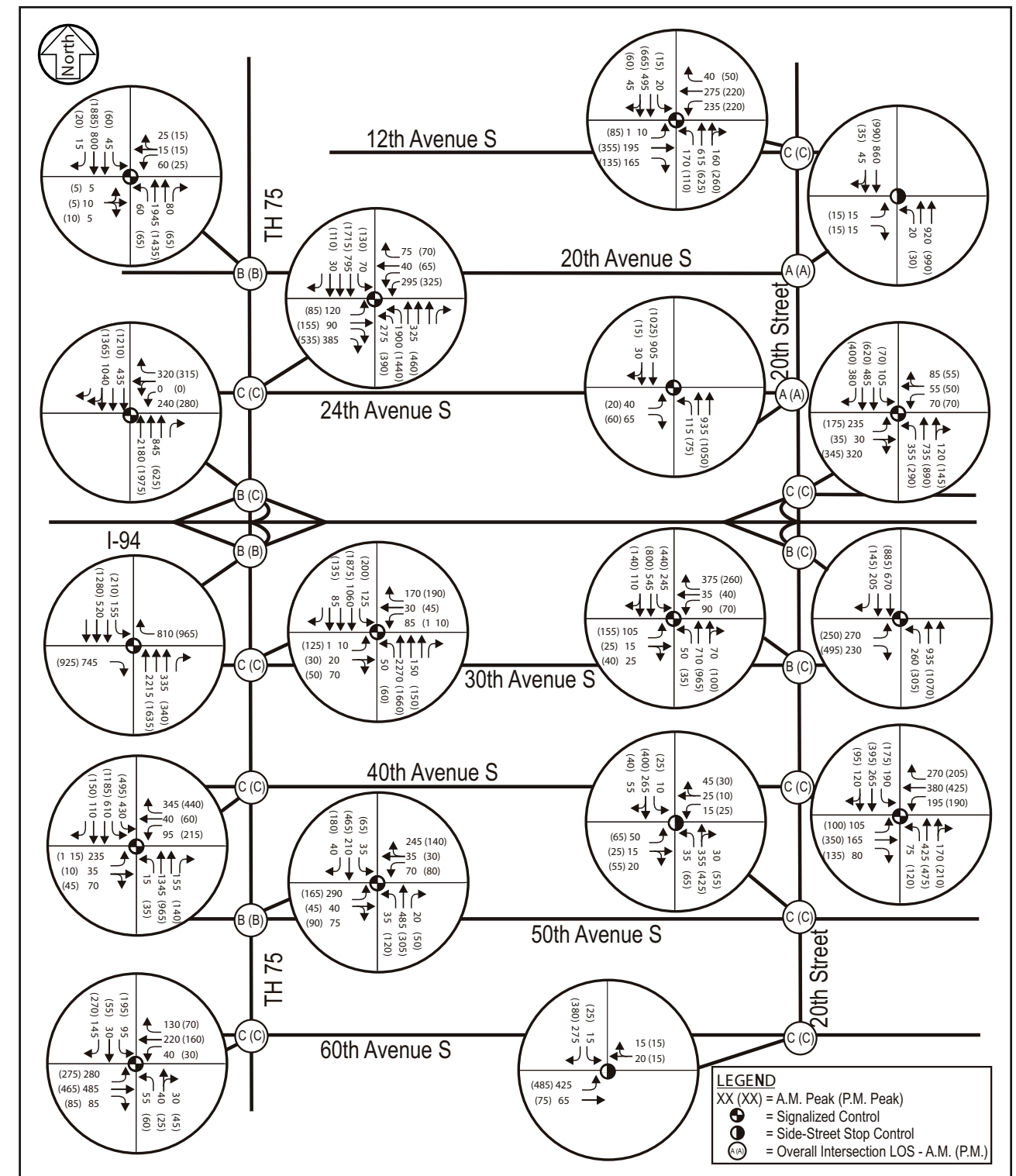
INTERIM PEAK HOUR TRAFFIC VOLUMES - EXISTING/REVISED GEOMETRY
TH 75 & 20TH STREET CORRIDOR STUDIES
Fargo-Moorhead Council of Governments

Figure 6



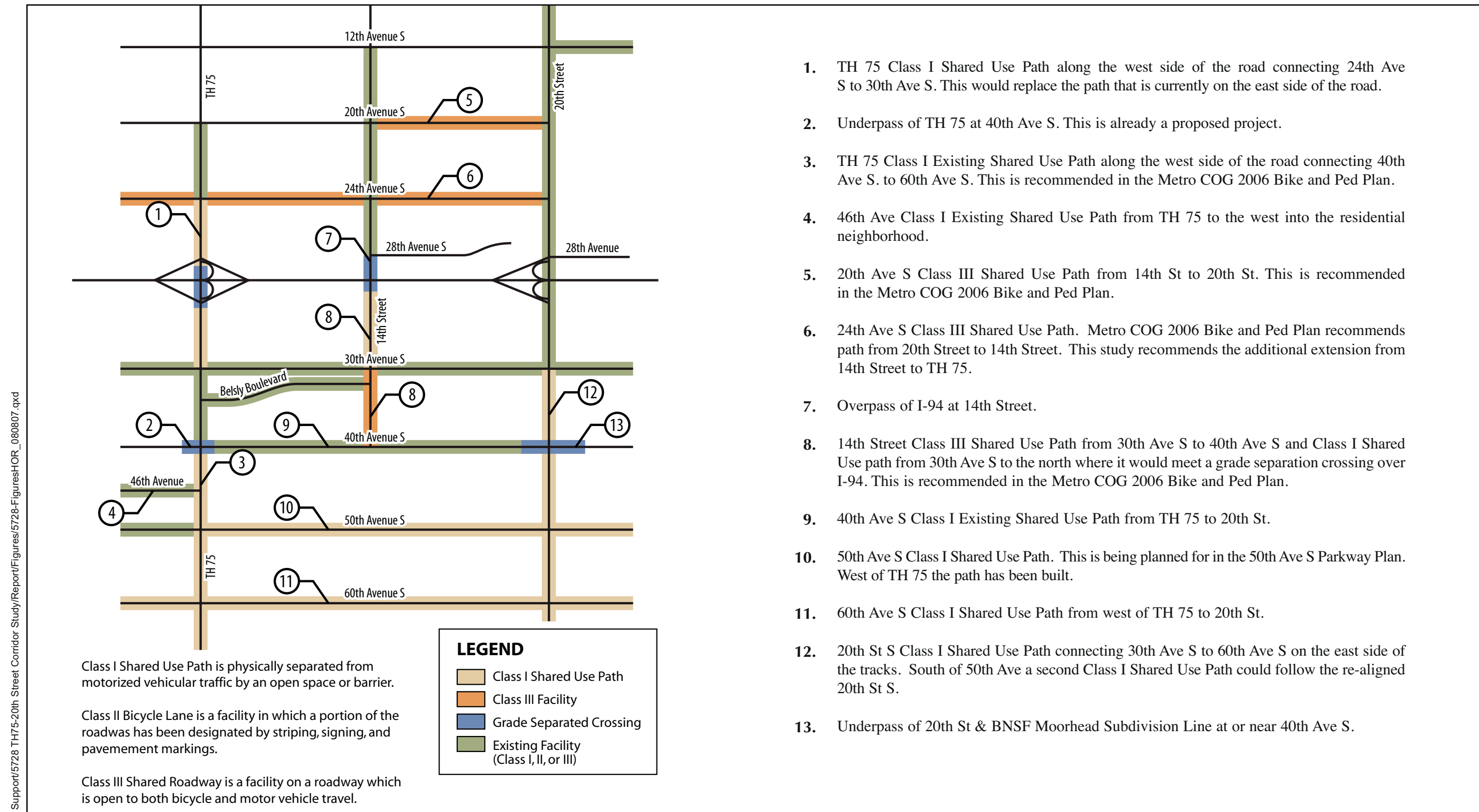
FUTURE CAPACITY RECOMMENDATIONS
TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 7



INTERIM PEAK HOUR TRAFFIC VOLUMES - RECOMMENDED GEOMETRY
TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 8



SUMMARY OF
RECOMMENDATIONS

All recommended corridor improvements include the construction of pedestrian facilities and access closures or modifications as shown in the following figures. Along with the recommended corridor and interchange improvements, the Study Review Committee is recommending that right of way be obtained as early as possible to accommodate full build roadway needs as previously mentioned in the body of this report. The recommended corridor improvements including the recommended interchange improvements are shown in Figures 11 through 29.

IMPLEMENTATION PLAN

Funding Priorities

The City of Moorhead, Metro COG, and MnDOT District 4 were asked to prioritize the order in which they would like to see improvements completed for the study corridors and interchanges with I-94. It was determined that each corridor should be prioritized separately since TH 75 is a state roadway and 20th Street is a city roadway. The results of this exercise indicate that for TH 75, the committee members would like to see interchange improvements completed first including roadway improvements between 24th Avenue South and 40th Avenue South; followed by roadway improvements being completed from north to south from 20th to 24th Avenue South, 40th Avenue South to 50th Avenue South and then 50th Avenue South to 60th Avenue South. One recommendation is that the segments of improvements may need to be broken out into smaller segments depending on available funding.

The order of recommended improvements for 20th Street is very similar to that of TH 75. The committee is recommending improvements begin with the 20th Street and I-94 interchange including the roadway between 24th Avenue south and Belsley Boulevard; followed by corridor improvements from Belsley Boulevard to 40th Avenue South, followed by 40th Avenue South to 43rd Avenue South, 43rd Avenue South to 60th Avenue South and finally 6th Avenue South to 24th Avenue South. It may be possible to phase some of the improvements between 6th Avenue and 40th Avenue South sooner. Once again shorter segments of roadway may need to be considered dependent upon available funding.

Preliminary planning-level cost estimates for the proposed improvements have been developed in the same segments for each corridor as discussed in the funding priorities. The costs for each segment are shown in Figure 10.

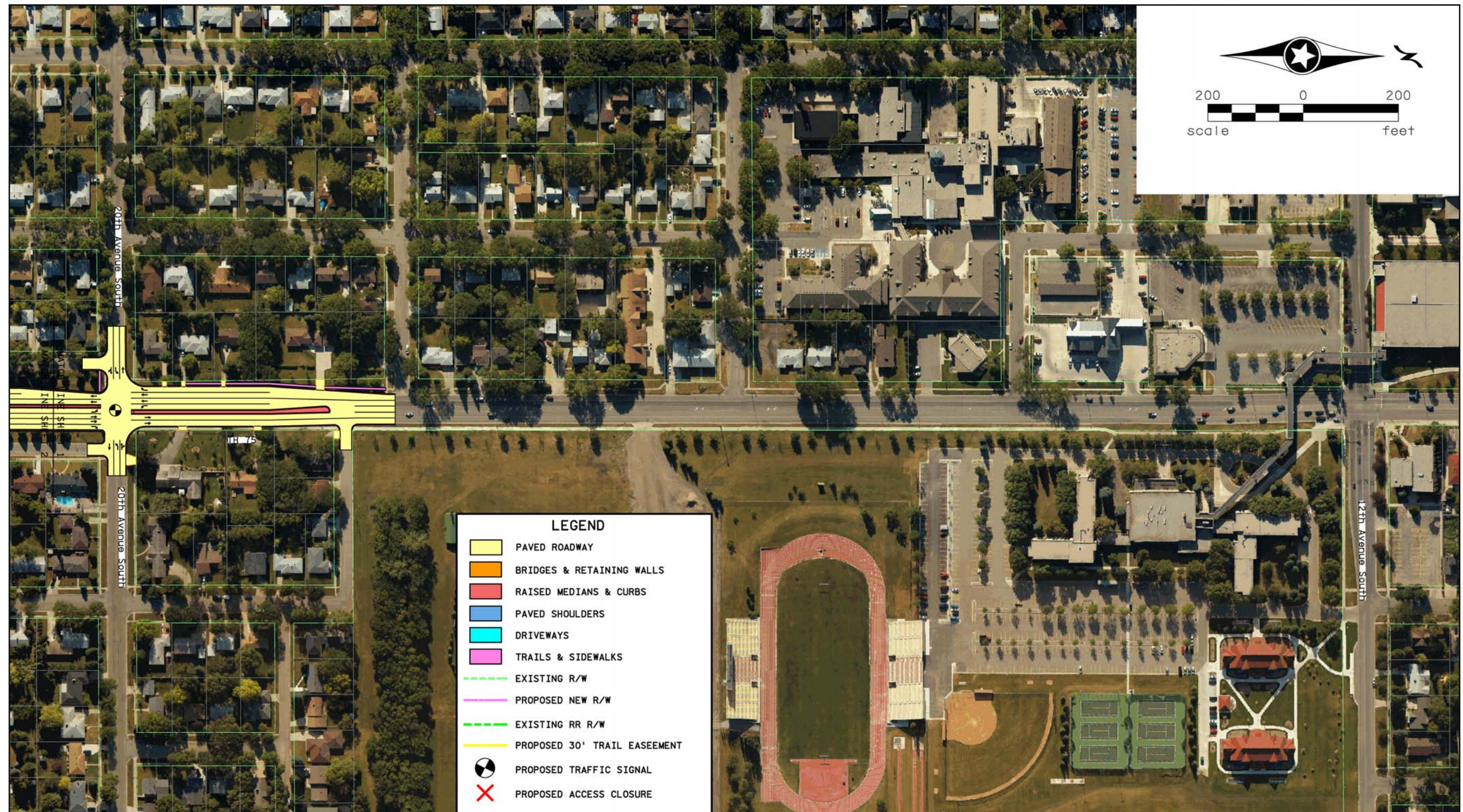
TH 75 Preferred Alternatives Preliminary Cost Estimates	
Roadway Section	Cost Per Section
20th to 24th Avenue South	\$3,699,000
24th to 40th Avenue South	\$7,246,000
40th to 50th Avenue South	\$11,146,000
50th to 60th Avenue South	\$5,623,000
Subtotal of Roadway Costs	\$27,714,000
TH 75 & I-94 Interchange	\$10,271,000
Total Estimated Corridor Cost	\$37,985,000

20th Preferred Alternatives Preliminary Cost Estimates	
Roadway Section	Cost Per Section
6th Avenue South to Belsly Boulevard	\$6,700,000
Belsly Boulevard to 40th Avenue South	\$2,572, 000
40th to 43rd Avenue South	\$951,000
43rd to 60th Avenue South	\$6,144,000
Subtotal of Roadway Costs	\$16,367,000
20th Street & I-94 Interchange	\$14,423,000
Total Estimated Corridor Cost	\$30,790,000



PREFERRED ALTERNATIVES PRELIMINARY COST ESTIMATES
TH 75 & 20TH STREET CORRIDOR STUDIES
 Fargo-Moorhead Council of Governments

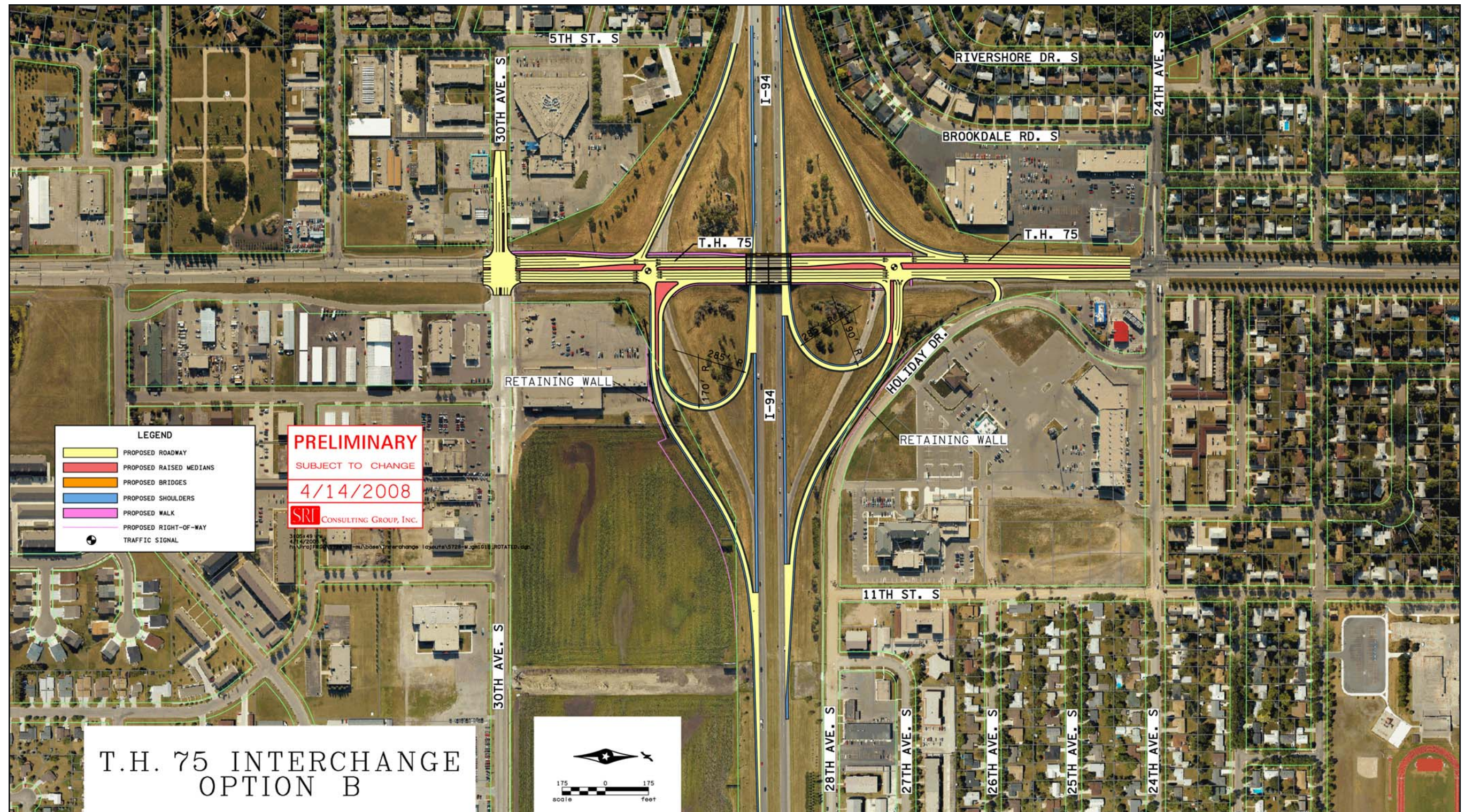
Figure 10





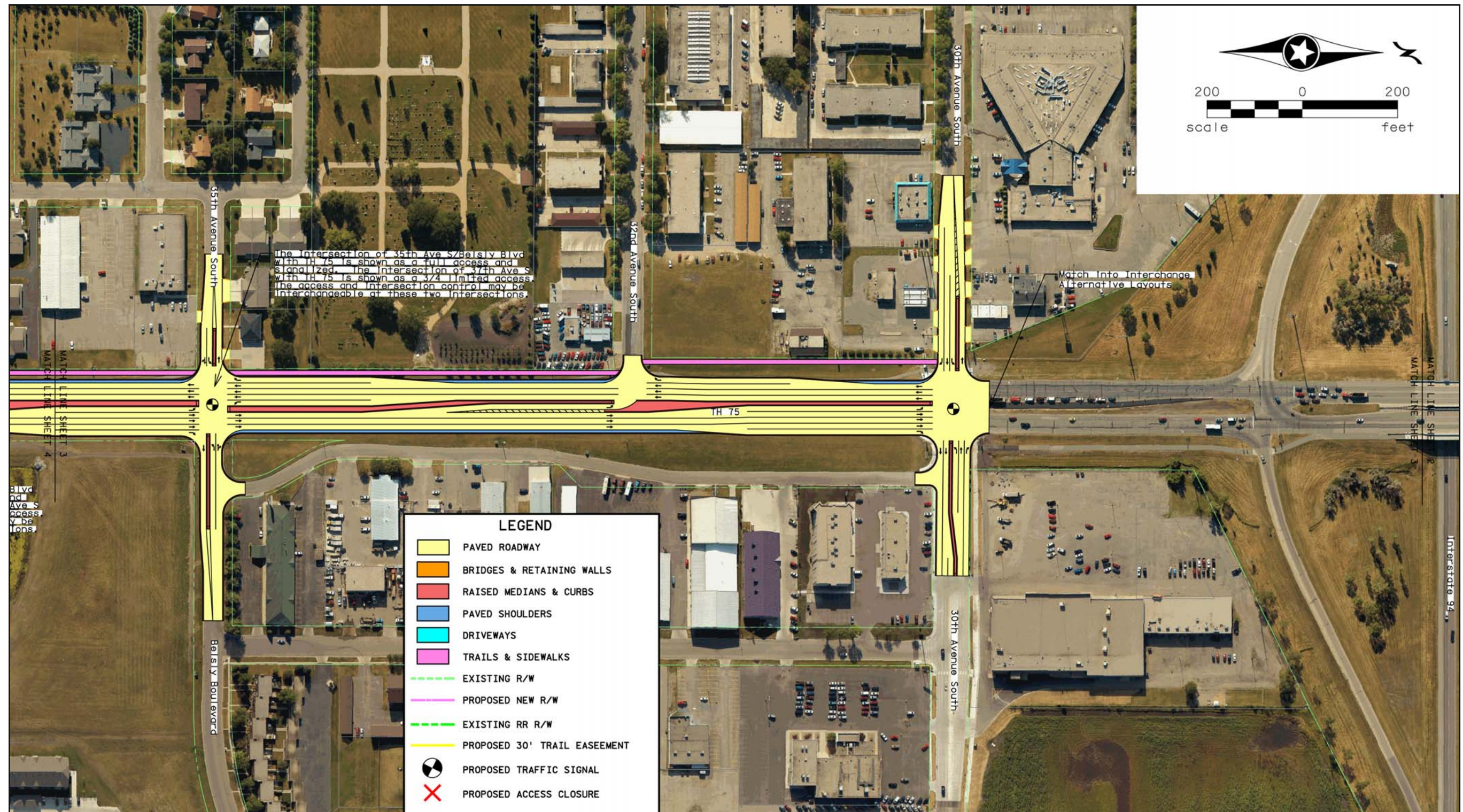
TH 75 CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
 TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 12



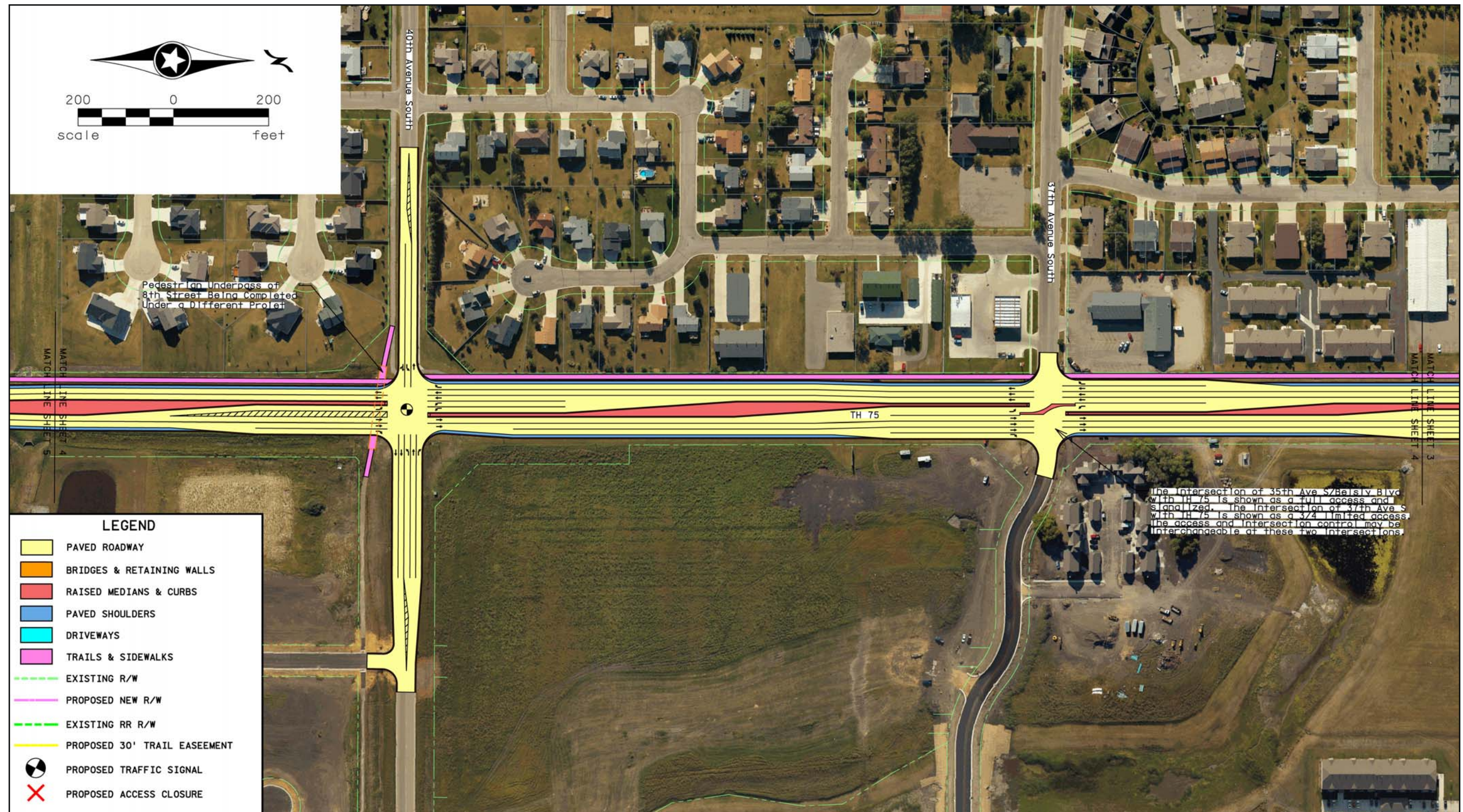
TH 75 CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 13



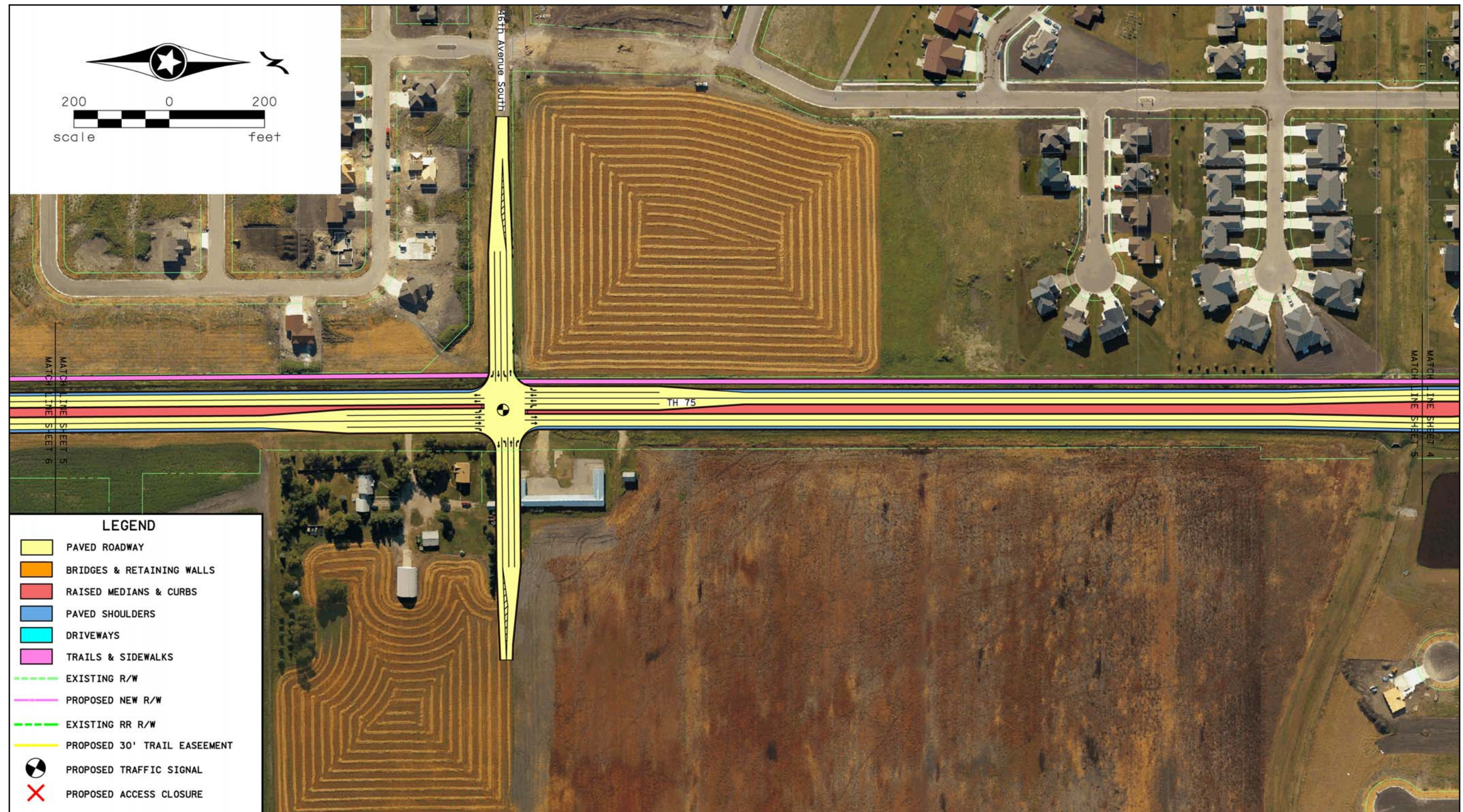
TH 75 CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
 TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 14



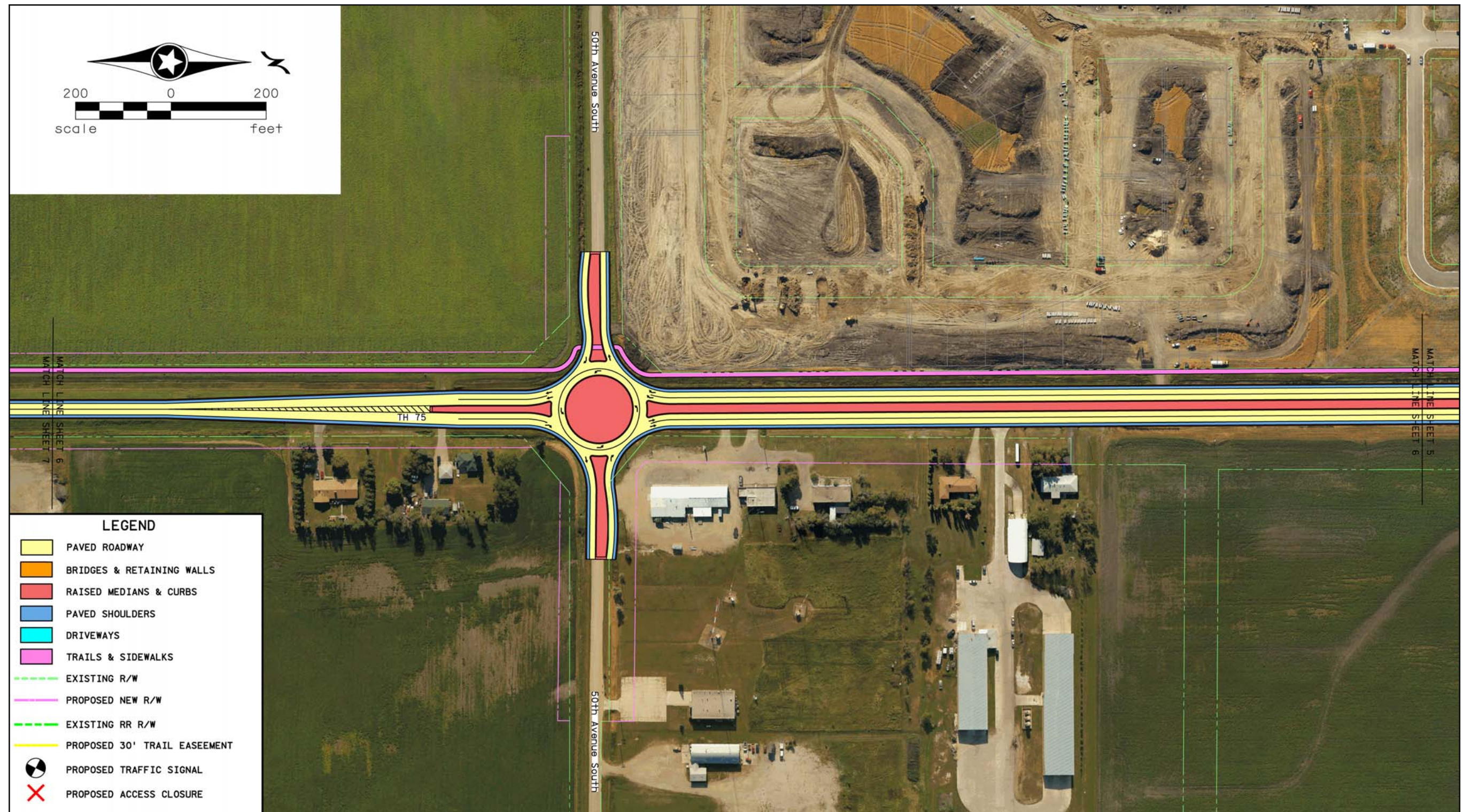
TH 75 CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
 TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 15



TH 75 CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
 TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 16



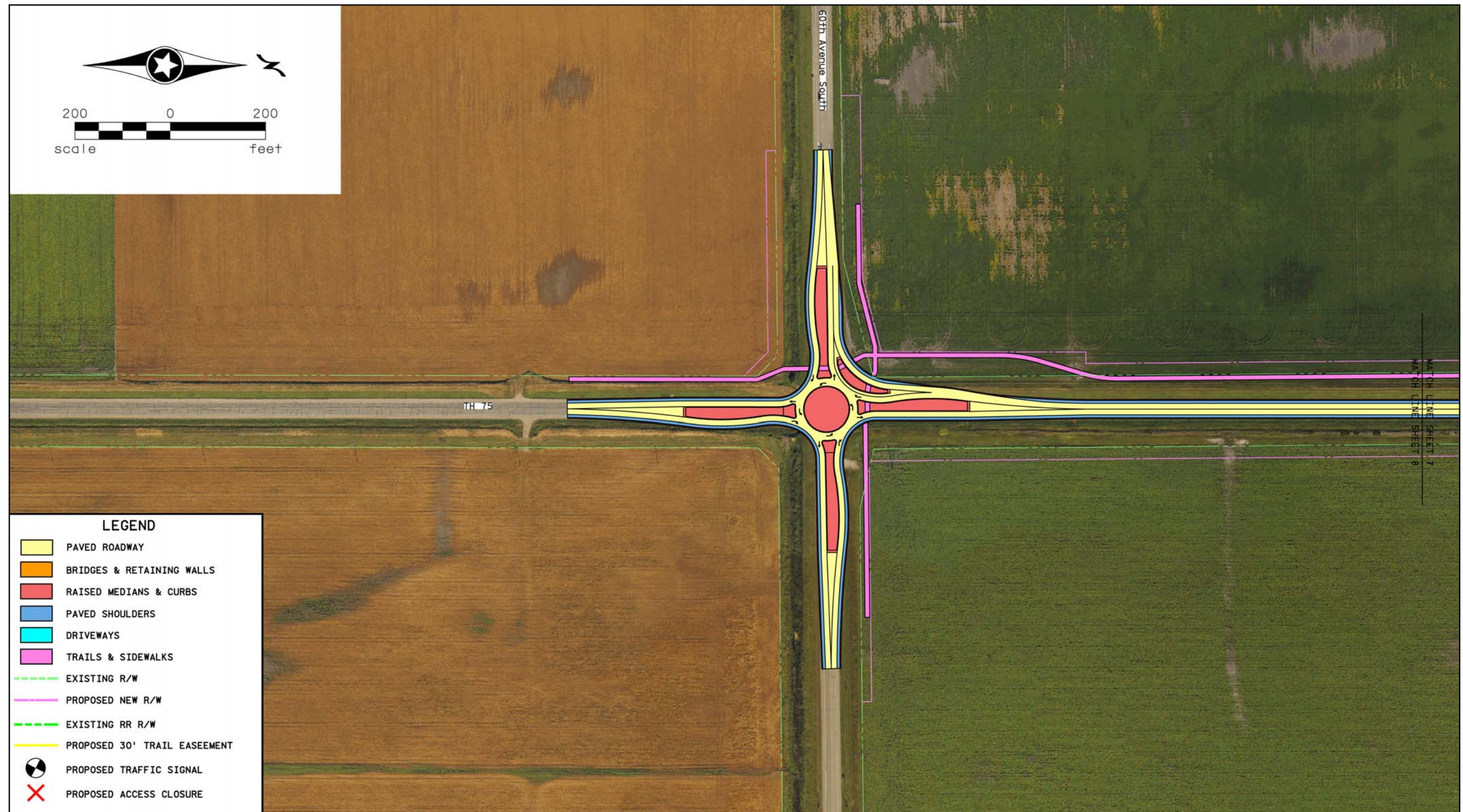
TH 75 CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
 TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 17



TH 75 CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
 TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 18



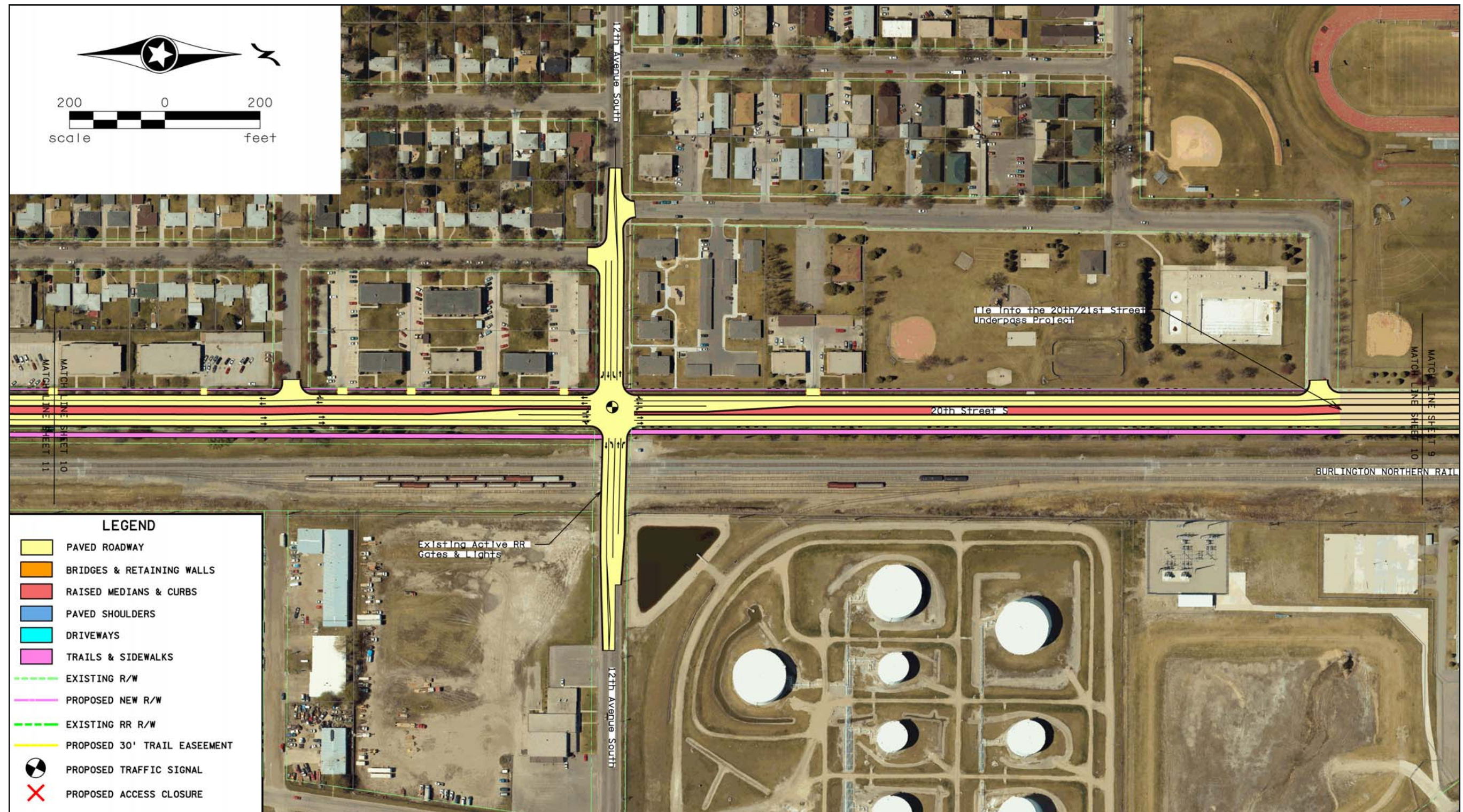
TH 75 CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
 TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 19



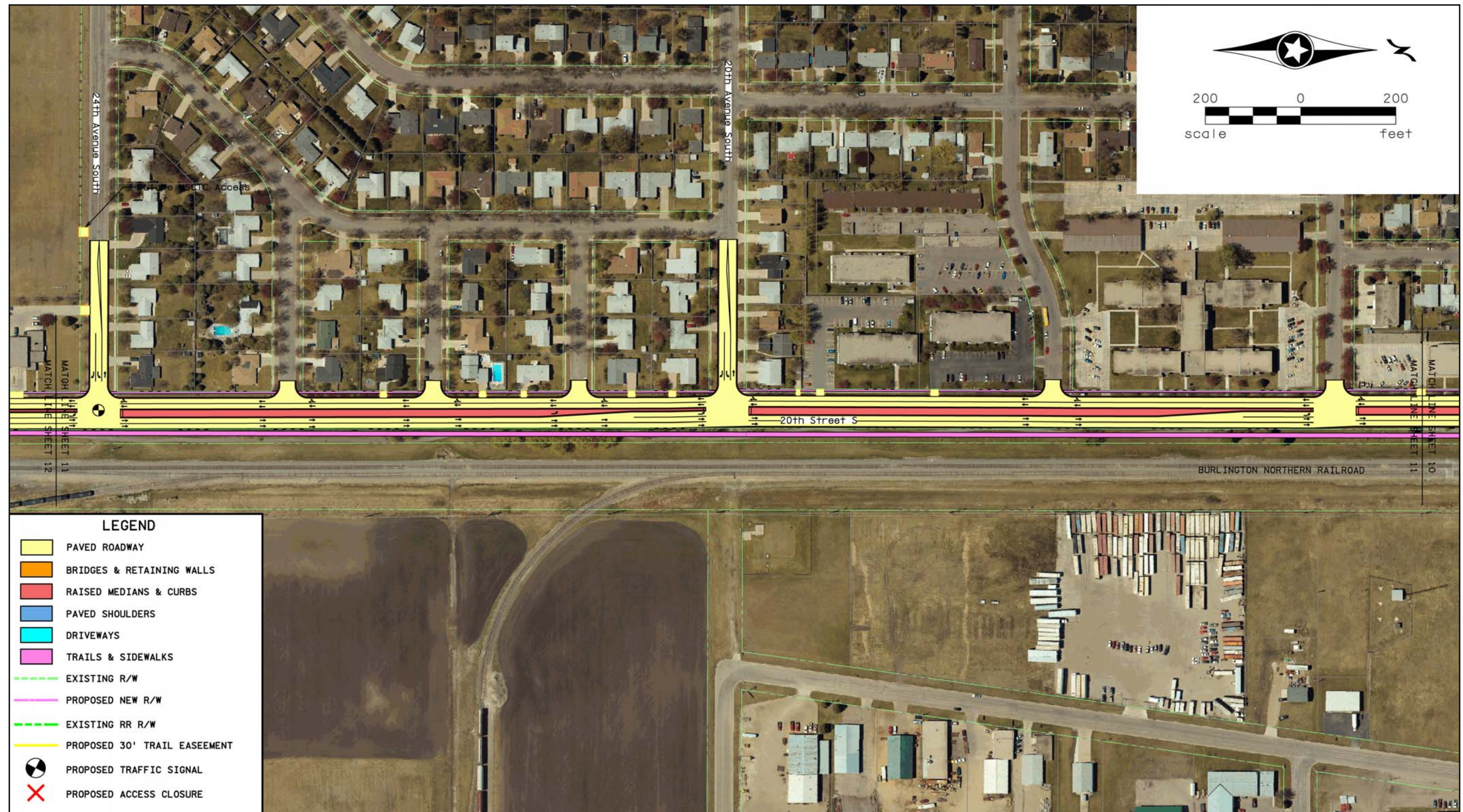
20TH STREET SOUTH CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
 TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 20



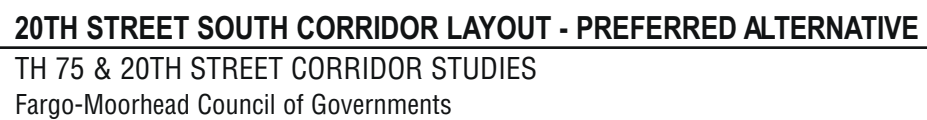
20TH STREET SOUTH CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
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Figure 21

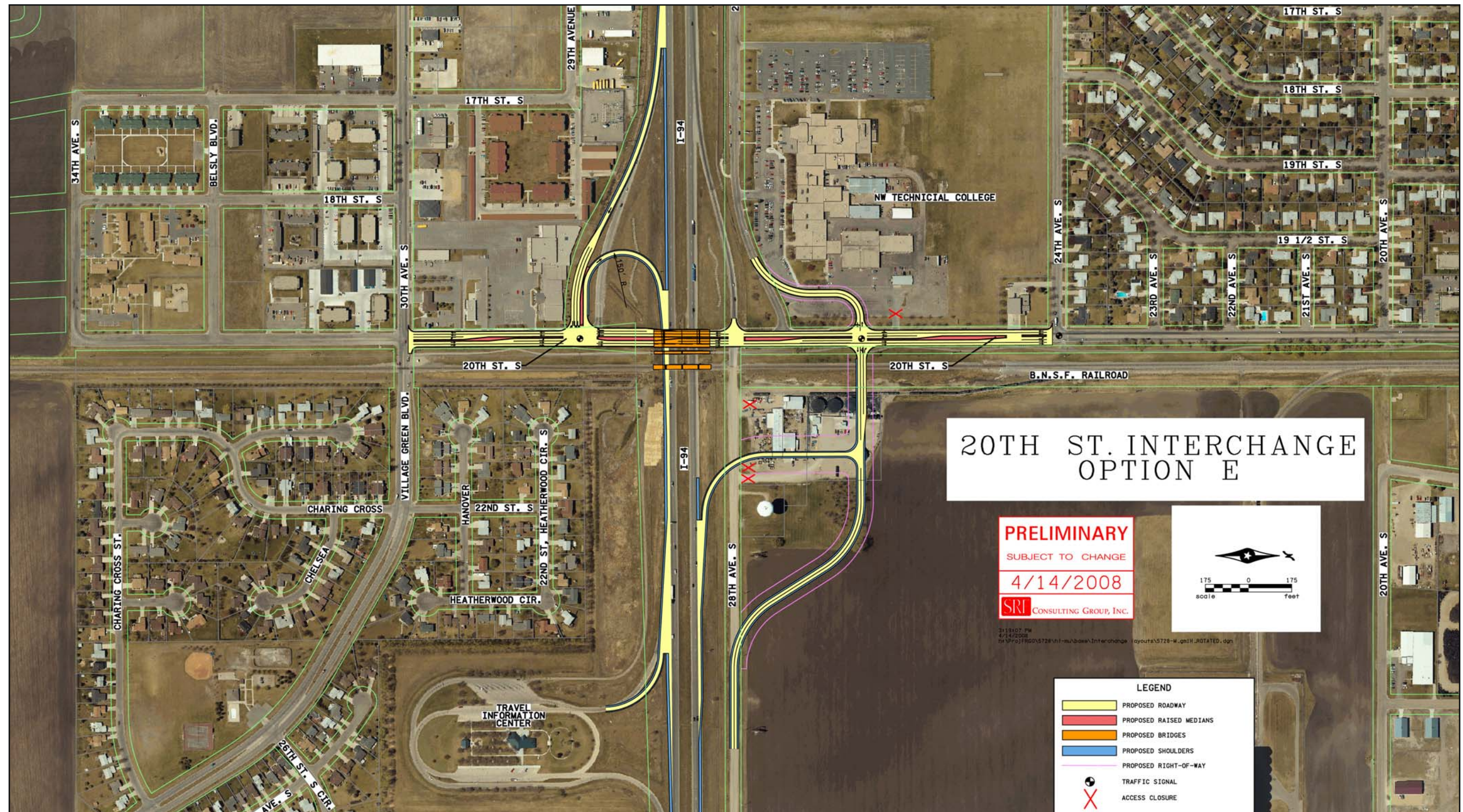


20TH STREET SOUTH CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
 TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 22

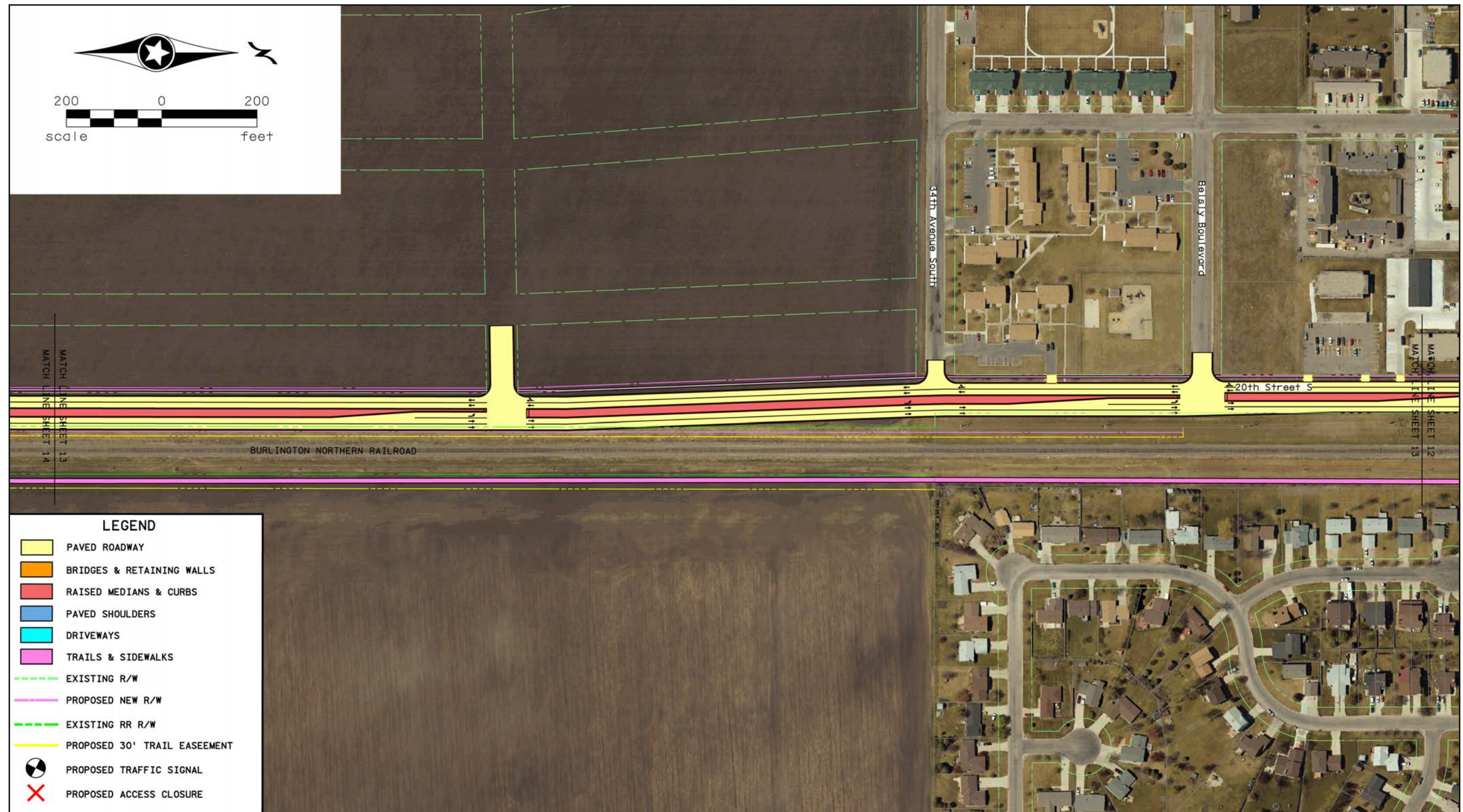


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20TH STREET SOUTH CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 24



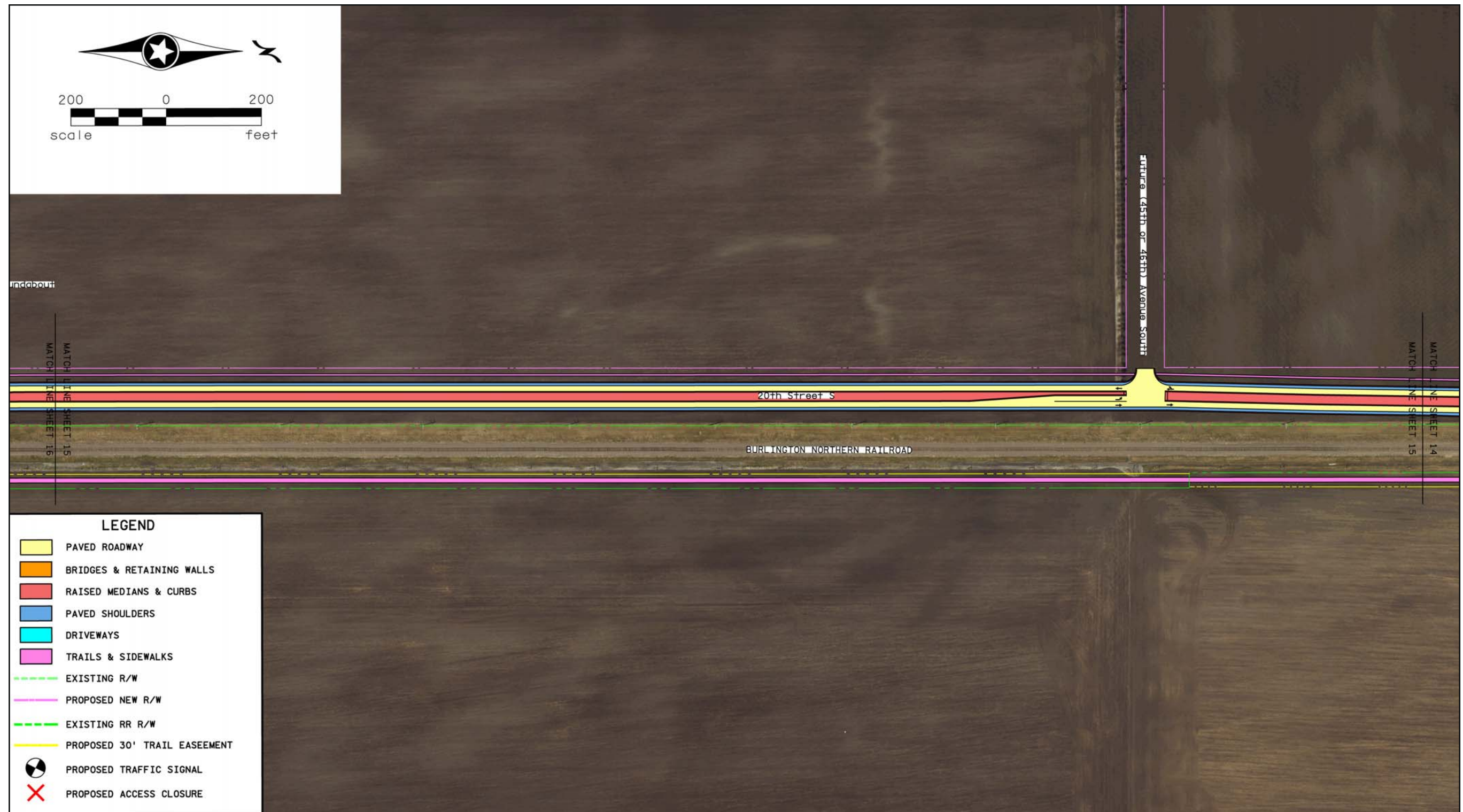
20TH STREET SOUTH CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
 TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 25



20TH STREET SOUTH CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
 TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 26



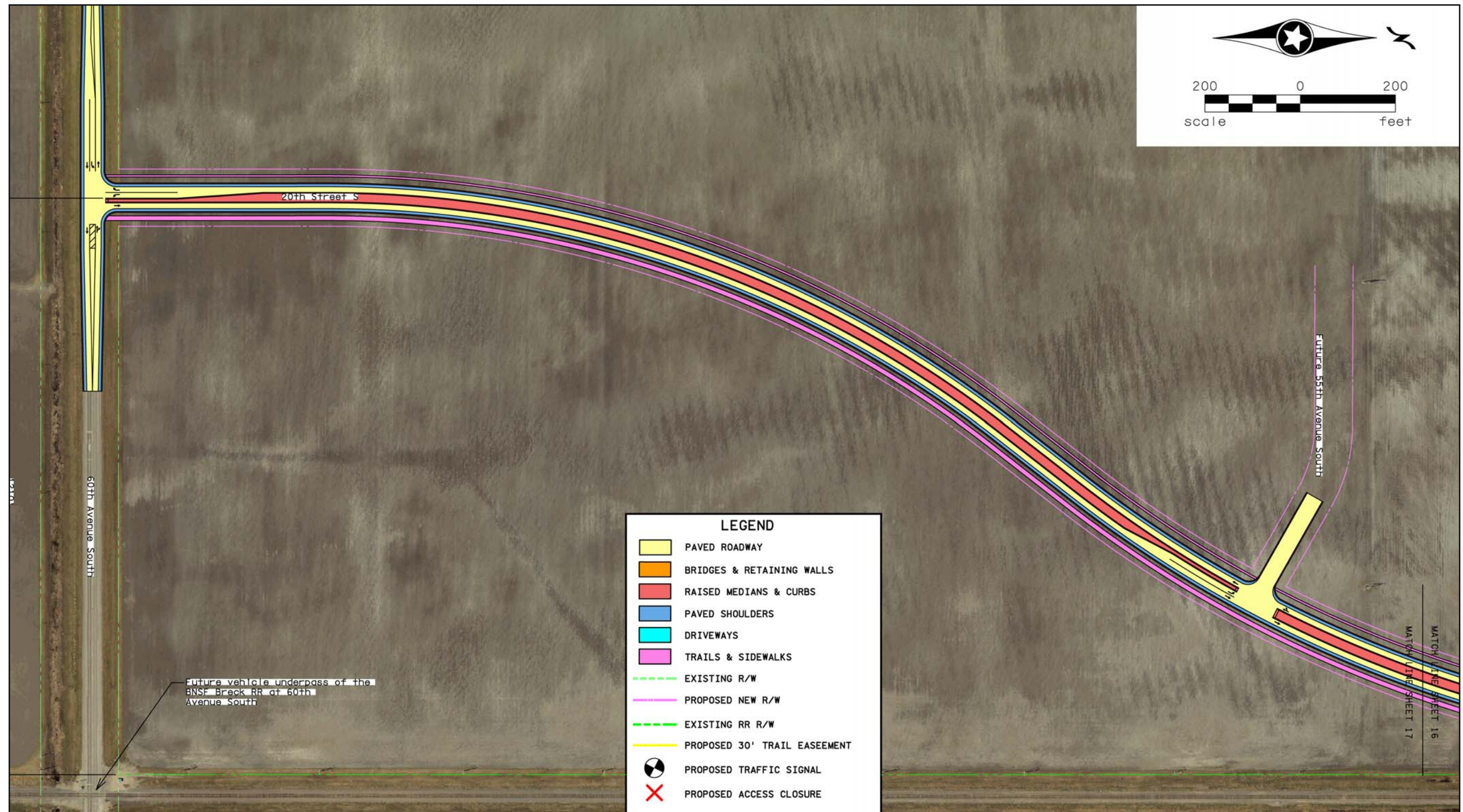
20TH STREET SOUTH CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
 TH 75 & 20TH STREET CORRIDOR STUDIES
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Figure 27



20TH STREET SOUTH CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
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Figure 28



20TH STREET SOUTH CORRIDOR LAYOUT - PREFERRED ALTERNATIVE
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Figure 29