November 2008

1ST AVENUE NORTH

Moorhead, Minnesota

A Review of the Corridor
from the Red River to 21st Street

Prepared by

SRF Consulting Group, Inc.
Engineers | Planners | Designers

1ST AVENUE NORTH

MOORHEAD, MINNESOTA

A REVIEW OF THE CORRIDOR FROM THE RED RIVER TO 21ST STREET

PREPARED BY
SRF CONSULTING GROUP, INC.
MOORHEAD ENGINEERING AND COMMUNITY SERVICES DEPARTMENTS
NOVEMBER 2008

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

EXECUTIVE SUMMARY

OVERVIEW

First Avenue North is a major east-west roadway, traveled by 20,000 vehicles daily. The corridor is bounded on the south by Burlington Northern Santa Fe Railroad tracks, and to the north is a residential neighborhood. The City of Moorhead has grown up around the corridor, which is now a mix of commercial, industrial, and residential uses. Land use/business changes and deferred building and property maintenance over many years have lead to an underutilization of the corridor and a level of property value less than in other business corridors in the City. Given the corridor's visibility, proximity to downtown, and heavy traffic utilization, the area has tremendous potential; however, an incompatible mix of uses, aging and unkempt structures, and a number of transportation concerns pose challenges to achieving this potential.

Impactful change is possible through the efforts of public and private partners following a thoughtful renewal and investment plan. SRF Consulting Group, Inc. and City of Moorhead staff present the First Avenue North Corridor Study to assist in these efforts. The study includes a preliminary design plan for 1st Avenue N roadway reconstruction and rehabilitation, including roadway, traffic control, access management, streetscape improvements, and pedestrian/bicycle facilities.

PUBLIC REALM

The City of Moorhead has the greatest role in improvement to the public infrastructure within its public right-of-way. A number of interim and long range traffic improvements, associated costs, and financing options have been detailed in Tables 6 and 7. The goals of the transportation improvements include:

- Improve pavement conditions
- Improve traffic safety and operations
- Improve bicycle and pedestrian facilities
- Improve transit facilities
- Add aesthetic improvements (decorative medians/landscaping/lighting/fencing)

To effectively develop and implement strategies for corridor renewal and infrastructure investment, the support of the public and private sectors, including their financial commitment, is essential. Based on preliminary design, the cost estimate of the interim infrastructure project with all enhancements is $4.7 million. The estimate includes the $1.6 million base street project and a "menu" of aesthetic enhancements which cost up to $3.1 million depending upon options selected.

Improvements to the 1st Avenue N infrastructure are regional in nature, and therefore, some or all of the costs associated with the improvements should be carried on a city-wide basis. Infrastructure investments are generally a combination of various sources of public financing (Federal aid, State aid, G.O. bonds, etc.) and special assessments to

private property. Appropriate financing options for 1st Avenue N infrastructure improvements (streets/enhancements), include either of the following:

- General Obligation (G.O.) bond and special assessments as presented in Table 7. This scenario assumes that the base street project would be special assessed according to City policy and that 20% of the cost of the enhancements would be assessed. The City would fund the balance of the project through a property tax levy.
- G.O. Street Reconstruction Bonds would be a potential financing scenario that would allow the improvements to be constructed with less than 20% of the cost being assessed. Although G.O. Street Reconstruction Bonds cannot be used for the City's routine street rehabilitation/reconstruction program, the City's five-year Transportation Capital Improvement Plan recognizes and has reserved the opportunity to use this type of funding on certain corridors (e.g. in the downtown area with a high density of arterials/collectors and relatively small special assessment districts). Using a G.O. Street Reconstruction Bond, up to the entire cost of the project could be funded through a property tax levy.

PRIVATE REALM

Changes to private properties along the corridor will require partnership with the private sector and a combination of policy initiatives, resources, and time to realize measurable revitalization. The present function of many properties in the corridor, in many cases, does not conform to today's zoning standards. Many properties categorized as "legal, nonconforming uses," were in compliance with zoning and land use regulations at their inception, but the land use and/or characteristics, e.g., parking, paving, industrial intensity, does not fit present day standards. In many cases, these nonconformities are "grandfathered," and cannot be required to conform to present code standards unless the use of the property changes or expands.

In conjunction with this infrastructure design plan, the study identifies rehabilitation and redevelopment needs for properties abutting 1st Avenue N. The plan proposes strategies to accomplish the following goals:

- Improve property maintenance and zoning compliance
- Eliminate nuisance conditions (tall weeds, dust, mud, outdoor storage)
- Remove or renovate structures and facilities in poor condition
- Remediate negative environmental impacts
- Create improved transition between corridor and residential neighborhood to north
- Improve image for the traveling public
- Improve traffic control, access management, and reduce truck traffic
- Improve property value and utility

Many of the land uses along the 1st Avenue N corridor are niche businesses that offer unique goods and services to the metro area. However, each is relatively isolated from other businesses, limiting consumer traffic volume that would support a prosperous retail

district. An important goal of revitalization will be to preserve positive and unique aspects of the corridor character.

Five primary strategies identified for revitalization of the private realm include:

Creating a Custom-Tailored Zoning District: MU-3, Mixed Use. The MU-3 District will be similar to the MU-2 District, but will focus on supporting commercial services and retail that serves the walking public from the adjacent neighborhood and capitalizes on the high level of daily traffic in the corridor. A gateway overly standard will stress construction and site layout that promotes a positive image of the corridor, encouraging plazas, appropriate setbacks, landscaping, and connectivity, and dealing with outdoor storage, vehicle parking, refuse/recycling, signs, and building designs.

Addressing Code Compliance: Property owners will require advance notice and a transition period to address long neglected property conditions. The legal, nonconforming land uses in the corridor present challenges, making a cooperative approach rather than a pure enforcement strategy necessary. In some cases, compliance will be costly, and methods to ease that cost burden should be explored.

Continuing Environmental Testing: The City has conducted several environmental investigations and has documented some degree of environmental contamination. The likely causes of contamination include the prior industrial use of the study area and the proximity of the railroad tracks. This work should continue. Providing thorough and consistent environmental analysis provides important background information to prospective developers and lenders that may otherwise be hesitant to consider corridor sites.

Initiating Strategic Property Assembly: In anticipation of a comprehensive redevelopment plan for the study area, the City has acquired some underutilized and blighted parcels of property along the corridor as they have been marketed for sale. Before considering additional property assembly or clearance, efforts should be made to renovate and enhance current facilities. Additional land assembly should be strategic, concentrating on properties that have the greatest potential to accommodate significant redevelopment projects.

Establishing Tax Increment Finance District: Tax Increment Financing captures taxes generated by significant new improvements/redevelopment activity within a specific area. The difference in tax revenue from the unimproved property and the improved property may be invested in site restoration and infrastructure improvements. TIF is a likely tool to clear structurally substandard facilities in the area and to ready the area for new private investment.

Cost estimates are not part of the private property improvement analysis; several strategies involve directing existing staff and planning resources toward these priorities. Environmental testing conducted to date has been funded through U.S. Environmental

Protection Agency grants, and the City will continue to pursue similar resources. Most hard costs will not be quantifiable until redevelopment projects are identified.

CONCLUSION

Revitalization is underway in Moorhead's downtown, and it can be continued along the 1st Avenue N corridor. Roadway and streetscape improvements will foster a positive tone for the corridor, conveying the message of possibility. The possibilities will be realized through partnership between the City of Moorhead and existing and prospective businesses along the corridor.

I. INTRODUCTION

The First Avenue North corridor is a major gateway to the City of Moorhead, serving businesses and neighborhoods and connecting the communities of Moorhead and Fargo. This corridor is one of the most significant east-west roadways in the City of Moorhead with 23,400 average daily trips (ADTs) per day. Average daily trips are comparable to 8th Street in Moorhead (30,800), and 13th Avenue S in Fargo (21,800 ADT at 45th Street S and 29,500 ADT at 25th Street S). The roadway is 20 blocks (1.6 miles) in length, and provides frontage to over 100 parcels. The four-lane street covers nearly 11 acres of land.

The corridor is a mix of commercial, industrial, and residential uses. Over time, land use changes and deferred property maintenance have lead to several vacant or underutilized properties along the corridor. Given the corridor's proximity to downtown and its heavy traffic utilization, the area has tremendous potential. The mix of uses, aging structures, and a number of transportation concerns, however, pose challenges to achieving the maximum development potential of this area of the city. In this regard, the City of Moorhead considers the revitalizations of 1st Avenue N corridor a work in progress.

A conceptual design plan, prepared by SRF Consulting Group, Inc. proposes short and long term transportation improvements including the reconstruction and rehabilitation of 1st Avenue N and construction of sidewalks and bikepaths. Specific roadway improvements will improve the existing pavement condition, curbs, and gutters. In addition, the preliminary design for 1st Avenue N includes access management and traffic control improvements.

Planning for improved roadway conditions within the public realm (right-of-way) raises questions about future redevelopment, zoning compliance, building condition, property condition, and property value within the private realm. Improvements to the public realm often affect adjacent properties, especially when the public right-of-way is being used for the private display of merchandise or for "on-site" parking. In some cases, investing in and improving public facilities encourages private investment in adjacent property. Local examples of this can be seen throughout downtown Moorhead and Fargo. The opportunity for improvement along 1st Avenue N has prompted the City of Moorhead to take a closer look at both the public realm and private realm that constitutes the 1st Avenue N corridor.

A. BACKGROUND

The presence of the railroad tracks along the south side of 1st Avenue N has significantly impacted development in this portion of the community. As with many downtowns, traditional downtown retail and office land uses were intermingled with or quickly transitioned into industrial uses, such as the former grain elevator, an aggregate company, warehouses, and manufacturing. As Moorhead grew outward, these industrial facilities became part of the city's core. Over the years, many of the industries along the corridor became obsolete. In some cases, the buildings themselves were outmoded and no longer met the needs of more up-to-date business practices. In other cases, it was no longer

convenient to operate large scale industrial or agricultural businesses in the core of a growing metropolitan area. The former grain elevator, for example, required farm trucks to traverse an urban area with high traffic volumes. The City of Moorhead has systematically undertaken efforts to acquire, remediate, and remove blighted/dilapidated buildings along 1st Avenue N.

At the west end of the corridor, the American Crystal Sugar Corporate Offices, the redevelopment of the Fairmont Creamery into Eventide Assisted Living Apartments, Davy Park and Riverfront Park, make this area a beautiful gateway to Moorhead. Recent improvements made to the site of a vacant furniture store now operated by Churches United as an emergency homeless shelter has improved the corridor in the vicinity of the 1st Avenue N/US Highway 10 intersection at the east end, and in October 2008, Clay County Housing and Redevelopment Authority received financing approval on a 24-unit residential building west of Churches United and will begin construction in 2009. Much work remains to be done along the corridor between the east and west ends.

B. STUDY AREA

This analysis focuses on the 1st Avenue N corridor from the Red River near American Crystal Sugar Headquarters and the Hjemkomst Center east to the intersection of 1st Avenue N at US Highway 10 and 21st Street. This analysis consists of two parts: 1) concepts to make various improvements to the public right-of-way and 2) the status of private property and opportunities for revitalizations for properties along 1st Avenue N. The study area is shown in Figure 1, along with current land use data.

C. CITY'S STRATEGY FOR THE 1ST AVENUE N CORRIDOR

The City of Moorhead is contemplating a two pronged strategy to improve the corridor. First, an implementation plan for improving the public right-of-way, including traffic control, access management, streetscape elements, transit services, and pedestrian/bicycle facilities. The second aspect of the city's strategy includes collaboration with private property owners to achieve maximum utility and value of the businesses and other properties by addressing the following:

1) Improved property maintenance and zoning compliance
2) Elimination of nuisance conditions, such as tall weeds, dust, mud, and outdoor storage,
3) Removal or renovation of structures and facilities in poor condition,
4) Appropriate remediation of negative environmental impacts,
5) A compatible land use transition to the residential properties to the north,
6) A positive image of Moorhead for the traveling public,

H:\Projects\6303\Corridor Planning Study\Final Final Report\Figure1_LandUse.pdf

SRF Consulting Group, Inc

Job #
Date

CURRENT LAND USE

1st Avenue North
City of Moorhead, Minnesota

Figure 1

7) Reduce truck traffic generated by sites along the corridor by phasing out industrial land uses,
8) Improved traffic control and access management, and
9) Improvement in overall property values.

The Hjemkomst Center and American Crystal Sugar at the west end of 1st Avenue N

II. PROPERTIES ADJOINING 1ST AVENUE N

A. EXISTING CONDITIONS

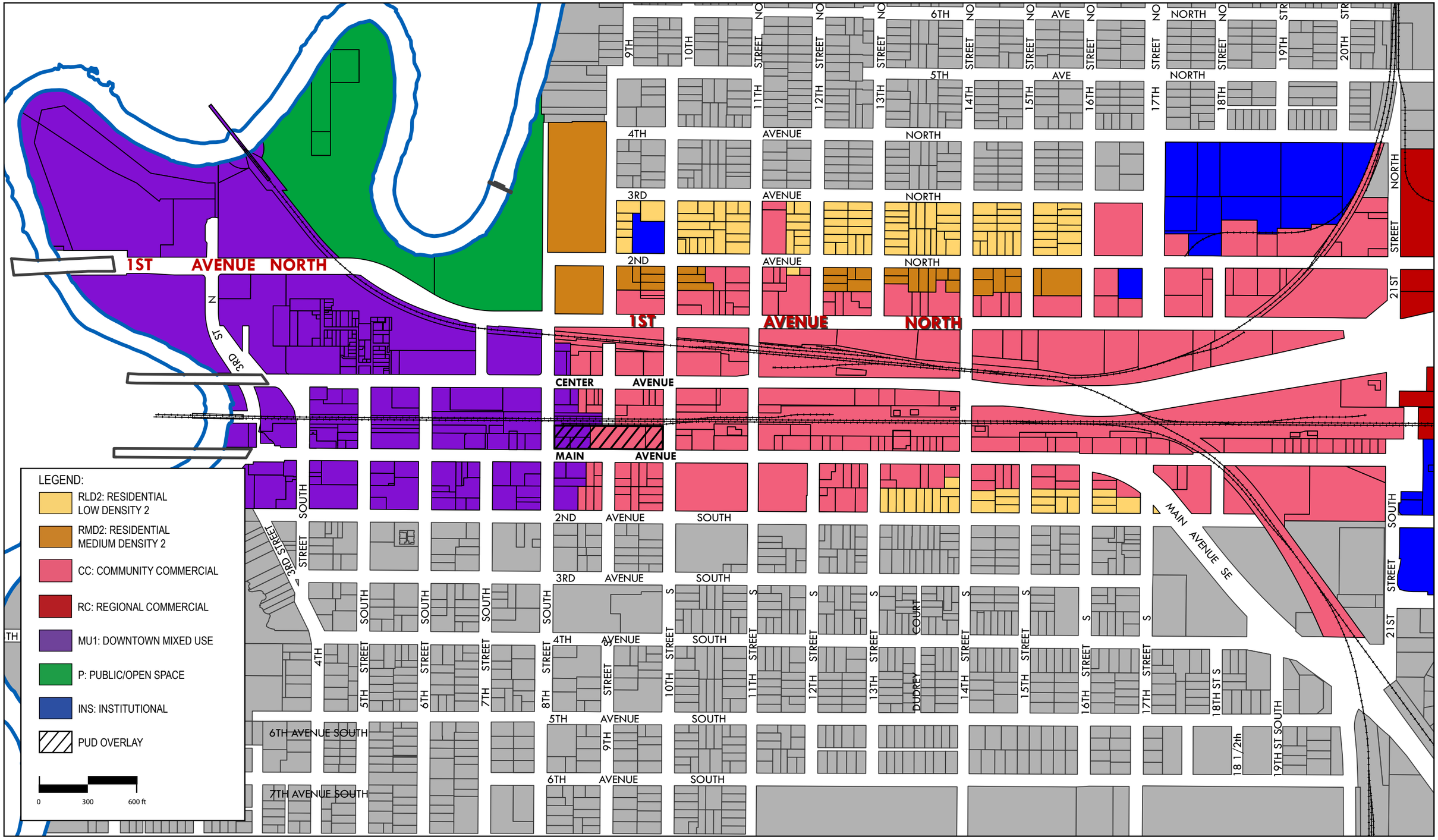
LAND USES

Generally, land uses along the corridor are residential and commercial from the western edge of the study area to about 15th Street North. Lots on the south side of the corridor are shallow, and current development as well as future redevelopment is impacted by the BNSF railroad tracks and associated right-of-way. Construction-related businesses, manufacturing and wholesale trade dominate the eastern portion of the study area (see Figure 1 for parcel by parcel land uses).

Although the zoning map shown in Figure 2 for the study area shows a transition from single family residential to multifamily residential to commercial districts, the land use map reveals that, in practice, a smooth transition does not exist. The following factors contribute to a piecemeal land use pattern:

- There are several nonconforming uses, such as residences within the Community Commercial District and several businesses in the Residential Medium Density District.

- Vacant lots and buildings further disrupt the continuity of the commercial corridor. Some of these parcels were purchased by the city in recent years in anticipation of a cohesive redevelopment plan for the area. The most significant and visible was the city's acquisition and removal of two grain elevators on the south side of 1st Avenue N in 2002.



H:\Projects\6303\Corridor Planning Study\Final Final Report\Figure2_ZonDist.pdf

SRF Consulting Group, Inc

Job #6303
10/31/2008

CURRENT ZONING DISTRICTS

1st Avenue North
City of Moorhead, Minnesota

Figure 2

Looking southeast at the vacant property between 15th and 16th Avenues

The current piecemeal pattern of land use makes shopping along the corridor less convenient, as it is nearly impossible for a customer to visit more than one business per stop. Many land uses along the corridor are niche businesses and offer unique goods and services not prevalent throughout the metro area. Each business is relatively isolated from other businesses which serves to limit consumer traffic that is necessary to support a vital and prosperous retail district.

OCCUPANCY AND OWNERSHIP

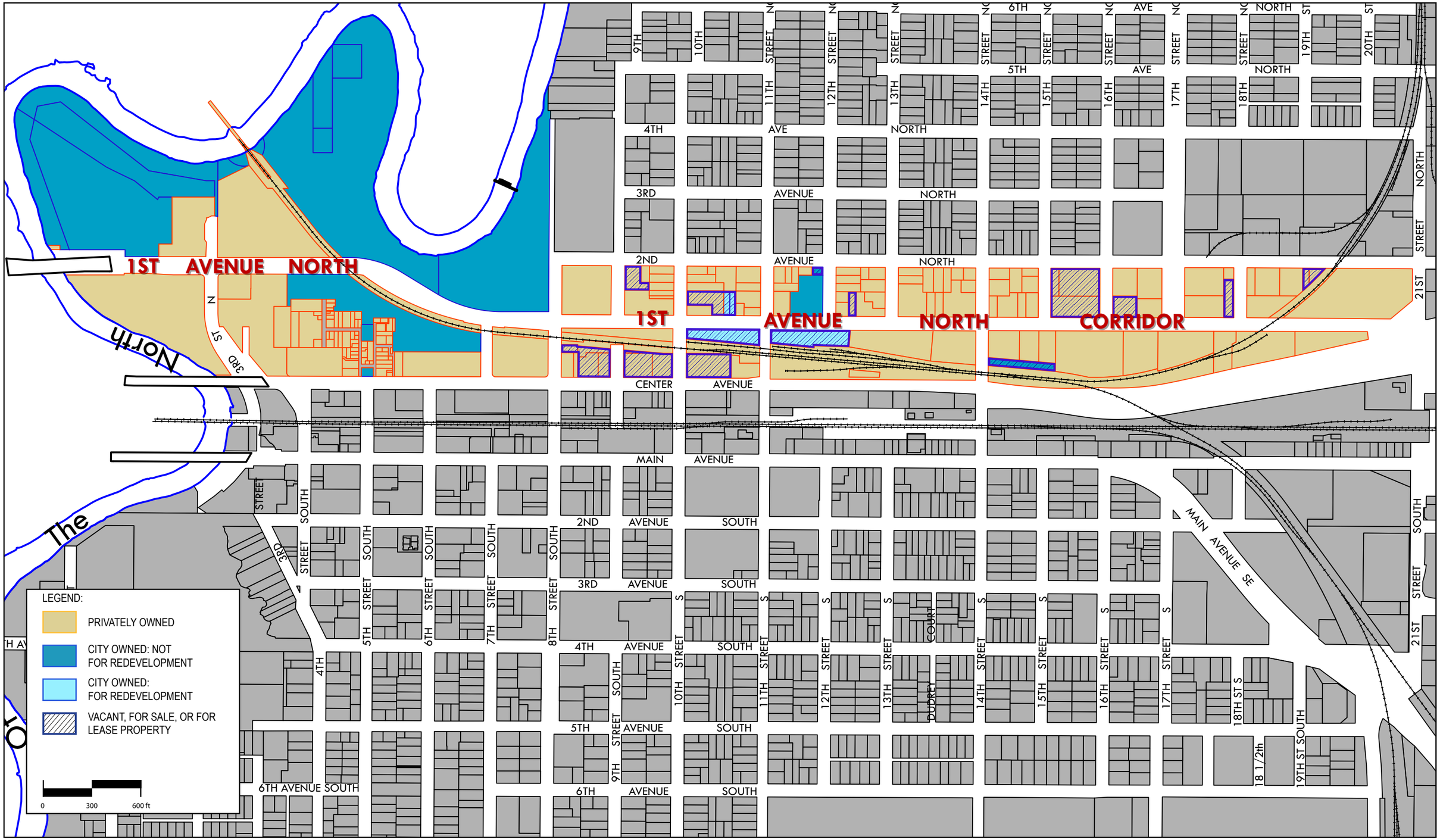
Figure 3 differentiates between privately and publicly owned properties along 1st Avenue N. Most of the publicly owned property is owned by the City of Moorhead. The large tracts of publicly owned property on the west end of the corridor consist of city parks (Vikingship, Davy, and Memorial), the Hjemkomst Center, and public parking areas. The Morohead fire station is located in the northwest corner of the 1st Avenue N and 12th St N intersection. Other city-owned parcels along 1st Avenue N consist of properties the city acquired in order to remove buildings that were not code-compliant in preparation for future redevelopment opportunities.

PROPERTY VALUES

SRF analyzed the City of Moorhead Geographic Information System and Assessor's property value information along the 1st Avenue N corridor compared with other similar corridors in the downtown area. Several general observations about property values along the corridor are as follows:

- *Values (land, buildings, total property value) gradually decline from west to east. This observation is also true along Center Avenue and Main Avenue.*

  As shown in Figure 4, sites near the west end of the 1st Avenue N corridor have higher per square foot property values (land and building) than those farther east. This is largely due to more recent development or redevelopment efforts that have



H:\Projects\6303\Corridor Planning Study\Final Final Report\Figure3_PubPriv.pdf

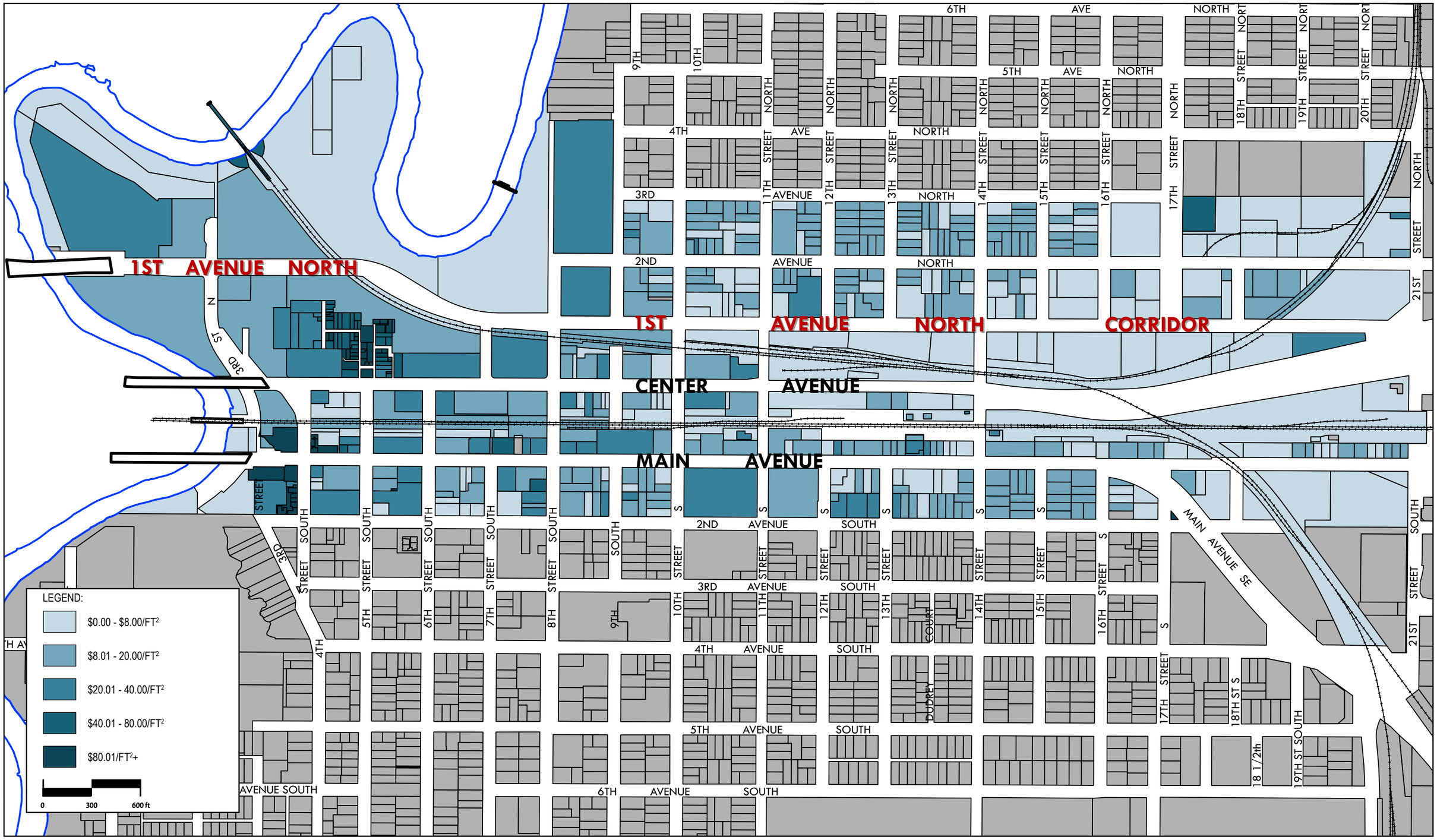
SRF Consulting Group, Inc

Job #6303
6/27/2008

PUBLIC, PRIVATE, AND FOR LEASE PROPERTIES

1st Avenue North
City of Moorhead, Minnesota

Figure 3



H:\Projects\6303\Corridor Planning Study\Final Final Report\Figure4_ParVal.pdf

SRF Consulting Group, Inc

Job #6303
6/26/2008

TOTAL PARCEL VALUE (BUILDING + LAND) PER FT²

1st Avenue North
City of Moorhead, Minnesota

Figure 4

taken place in the vicinity of downtown. Furthermore, it is clear that sites along the north side of the corridor have, to a large degree, higher per square foot values than those along the south side of the 1st Avenue N corridor; the BNSF railroad tracks have limited site utility and, until recently, the train whistles discouraged redevelopment of these properties. In 2007 a "whistle-free zone" was implemented downtown and in the adjacent area. Industrial land uses and automotive-related uses were, and still are typical on the sites between 1st Avenue N and the railroad tracks.

- *Property values gradually increase moving north and south from 1st Avenue N.*

  As seen in Figure 4, north of 1st Avenue N, the property value per square foot increases from that along 1st Avenue N. To the south, the per square foot property values on properties fronting Main Avenue are noticeably greater when compared with 1st Avenue N.

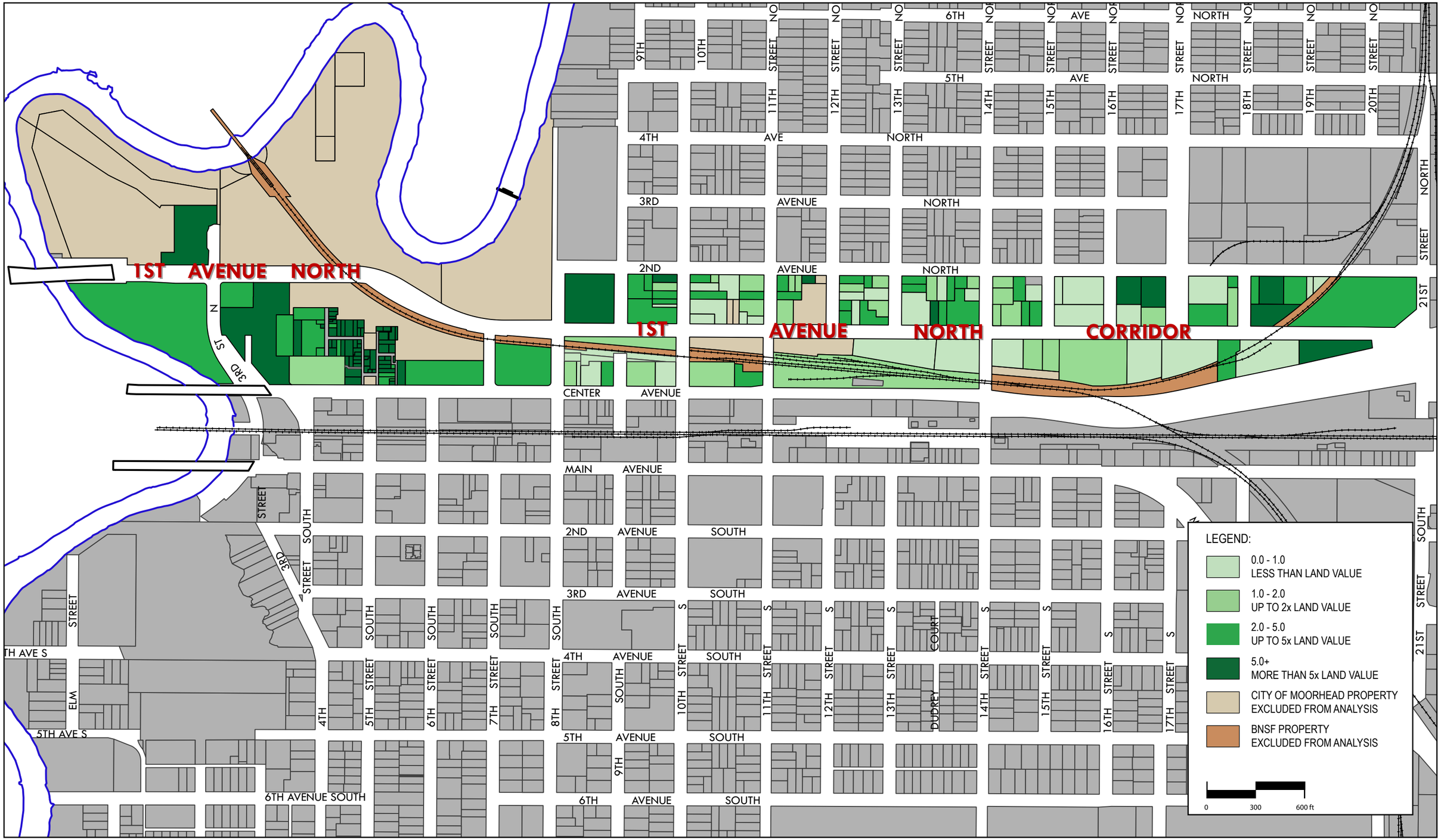
Figure 5 shows building value as a ratio of land value. Sites that are currently developed, in good condition, and fully utilized to their potential, typically have building values that are at least twice as much as the land value, and in some cases up to five times the land value. Examples include the Fairmont Eventide assisted living facility, Stenerson Lumber, and the Churches United facility. A redevelopment goal for this corridor could be aimed at increasing the value of the buildings on 1st Avenue N properties into the range of four to five times greater than the land value.

ZONING

The majority of the Study Area is zoned CC: Community Commercial. Exceptions are all the properties on the south side of 1st Avenue N west of 8th St, which are in the Downtown Mixed Use District (see Figure 2, Current Zoning Districts). Additionally, several properties that front on 2nd Avenue N are in the Residential Medium Density 2 District, one property is in the Institutional District, and two properties are in the Residential Low Density 2 District, as shown in Figure 2.

The following descriptions are from the Moorhead Zoning Code:

> **Community Commercial District**
> The purpose of the CC community commercial district is to provide for the establishment of a greater concentration of commercial services offering a variety of goods and services. CC uses are intended primarily for businesses with a primary market focus on the entire city of Moorhead and adjacent communities. Uses within the CC district tend to be located adjacent to other like uses, whereby a critical mass causes greater overall traffic volumes.
>
> **Downtown Mixed Use**
> The purpose of the MU-1 downtown mixed use district is to promote a variety of uses aimed at building and maintaining a pedestrian friendly, sustainable downtown environment. Uses that



H:\Projects\6303\Corridor Planning Study\Final Final Report\Figure5_BldgLnd.pdf

SRF Consulting Group, Inc

Job #6303
6/26/2008

BUILDING VALUE TO LAND VALUE RATIO

1st Avenue North
City of Moorhead, Minnesota

Figure 5

provide a diversity of jobs, residential opportunities, entertainment venues, civic functions, commercial services and shopping are encouraged in the downtown mixed use district. The district will encourage a scale of development, mixture of uses and other such urban design attributes that promote the safe and efficient pedestrian and vehicular movements throughout the district.

Residential Medium Density 2
The RMD-2 district is intended to provide opportunities for attached townhomes, condominium and small apartments.

Residential Low Density 2
The RLD-2 district is intended to provide for a predominantly single-family detached housing pattern with a limited mixture of single-family attached units.

Institutional
The INS institutional district is intended to accommodate facilities capable of providing services to large groups in a campus like setting as the district should encourage institutions to plan long range for geographical expansion, providing surrounding property owners with information as to those plans.

NONCONFORMING LAND USE

From north to south, the land use transitions from primarily single family residential to the concentration of commercial activity along 1st Avenue N, Center Avenue, and Main Avenue. From west to east, the land use transition is exemplified by the recent development at 4th Street North and Main Avenue, to the industrial types of uses in the easterly portion of the study area and the primarily retail and commercial atmosphere of Highway 10.

Much of the 1st Avenue North corridor was zoned for light industry prior to 2002 when it was rezoned for commercial use. Although current commercial zoning would not allow new warehousing, wholesale, distribution and light manufacturing businesses in the corridor, many in existence prior to 2002 remain. Most uses included in Table 1 that would not be permitted under current zoning (e.g., sale of bulk oil, industries and construction-related uses) are legal non-conforming, also known as "grandfathered uses," meaning they were in existence and in conformance with zoning regulations prior to the creation or revision of the present zoning district. The exact status of some of the properties cannot be determined, however, without a detailed search of historic records.

Minnesota State Statute ensures that a municipality cannot eliminate or terminate a use that was lawful at the time of its inception. It does allow a municipality, by ordinance, to permit an expansion or impose upon nonconformities reasonable regulations to prevent and abate nuisances and to protect the public health, welfare, or safety.

Moorhead City Code Section 10-18-4 stipulates generally that legal non-conforming uses may not expand. Special accommodation added to Sections 10-18-1 and 2 at the time the 1st Avenue North corridor was rezoned to commercial allows warehousing, wholesale, distribution and light manufacturing uses in the commercial district to continue and expand as conditional uses with Council approval. The Code also provides that a non-conforming use may be changed to another non-conforming use, if Council

deems it is at least as appropriate within the current zoning (Section 10-18-4-D-10). To facilitate the transition of land use, Council must be judicious in deciding whether similar prohibited uses should be allowed to occupy the site. City Code Section 10-18-4-D-11 states that once a non-conforming use ceases to exist for more than a year, it may not be resumed and any future use must conform to the current zoning.

The City Code specifically permits certain uses in its zoning districts and allows other uses if they meet conditions or provisions. "Provisional Uses" are those allowed if certain provisions stated in the code are met to mitigate potential minor negative impacts. "Conditional Uses" are those allowed only through city council approval. The council may require conditions in addition to those stated in the code to address specific concerns regarding the use or the location. Table 1 identifies permitted uses, provisional uses, and conditional uses in the 1st Avenue N corridor.

The Board of Adjustment is authorized to grant variances in cases where strict application of zoning regulations would cause undue hardship; however, variances cannot be granted for land use. Reuse of existing buildings must be monitored to ensure compliance with the existing zoning districts, and property owners need to be informed about permitted, conditional, and provisional uses, so they avoid leasing for prohibited uses.

TABLE 1: LAND USE CONFORMANCE MATRIX FOR PROPERTIES FRONTING ON 1ST AVENUE N

Block	Zoning	Parcels Fronting on 1st Avenue N	Permitted Uses (# of Parcels)	Provisional Uses (# of Parcels)	Conditional Uses (# of Parcels)	Nonconforming Uses (# of Parcels)	Code Conformance Issues
North of 1st Avenue							
Park to 8th Street N	P	1	2 (Ushers & Park)	0	0	0	None
8th Street to 9th Street	RMD2	1	0	1 (Fairmont)	0	0	None
9th Street to 10th Street	CC	1	1 (Thai Orchid)	0	0	0	East parking lot on Thai Orchid property is not used.
10th Street to 11th Street	CC	6	2 (Auto service & gas station)	1 auto rental at gas station)	0	1 (single family dwelling)	This block includes two vacant lots and one vacant building.
11th Street to 12th Street	CC	2	1 (city offices & fire station	1 (Moorhead Auto Center)	0	0	
12th Street to 13th Street	CC	3	2 (Shoe and Tarp Repair)		0	1 (single family dwelling)	Vehicles parked on gravel, weeds. One vacant lot.
13th Street to 14th Street	CC	4	4 (Bottle Barn, Creative Wood Designs, Lindsay Ecowater, Country Cannery)	0	0	1 (apartments)	
14th Street to 15th Street	CC	4	2 (Jigsaw Upholstery, Valley Window)	0	2 (two storage buildings)	0	Upholstery shop and Valley Window considered similar to cabinetry (permitted)
15th Street to 16th Street	CC	1	0	0	0	0	Site is vacant
16th Street to 17th Street	CC	2	2 (Burger Time, Corky's Refrig, except for used cars)	1 (Larry's Auto Body and car sales and Corky's car sales)	0	0	
17th Street to 18th Street	CC	2	0	1 (Stenerson's Lumber)	0	0	Former Helgeson's Meat building not categorized (vacant).
18th Street to 21st Street	CC	3	0	0	1 (Salad Makers)	1 (Coca-Cola Bottling Co.)	Food processing and bottling are prohibited, but existing are allowed to expand with CUP.

TABLE 1 CONTINUED: LAND USE COMPLIANCE MATRIX FOR PROPERTIES FRONTING ON 1ST AVENUE N

Block	Zoning	Parcels Fronting on 1st Avenue N	Permitted Uses (# of Parcels)	Provisional Uses (# of Parcels)	Conditional Uses (# of Parcels)	Nonconforming Uses (# of Parcels)	Code Violation/Issues
South of 1st Avenue N							
Bridge to 7th Street N	MU1	Many	Crystal Sugar Corporate Offices, stores in strip mall and Moorhead Center Mall				
7th Street to 8th Street N	MU1	1	1 (Wells Fargo Bank)	0	0	0	
8th Street to 10th Street	CC	1	0	1 (The Car Port)	0	0	Various violations exist at The Car Port
10th Street to 11th Street	CC	1	0	0	0	0	Vacant site.
11th Street to 14th Street	CC	3	1 (Critters Feed and Seed)	0	0	3 (Minnkota Recycling, Matson Oil bulk storage and wholesale)	
14th Street to Center Avenue	CC	9	1 (Salvation Army Thrift Store)	1 (Kovash Marine, Hedgemasters building)	1 Churches United Shelter for the Homeless	2 (Aggregate Construction, auto storage, salvage at Hedgemasters)	Various violations exist at Hedgemasters (salvage, gravel, weeds)
TOTAL (North and South)	-	45	16	9	3	8	-

CODE COMPLIANCE

Several aesthetic issues are common throughout the corridor, including buildings in need of repair/renovation, lack of paving or deteriorated paving, weeds and lack of landscaping. Often a building in poor condition is older and likely to require more time and money to maintain and renovate than a newer structure. A cooperative public/private strategy is needed to address the high rate of non-compliance issues in the corridor.

Code compliance refers to both zoning issues and property maintenance issues. The Zoning Code, Title 10, includes many requirements that govern attributes of the properties in addition to type of land use. Some echo the requirements of Title 9, Property Maintenance. According to the City Attorney, non-conforming attributes of non-conforming uses, such as unpaved parking lots, limits on impervious surface coverage and setbacks, may be legal and grandfathered, if they were in existence and in conformance with zoning regulations when established. Property maintenance issues, especially nuisances, are less likely to be grandfathered. Regardless, the city has the responsibility to impose reasonable regulations to abate nuisances and to protect the public health, welfare, or safety.

In some sections, the code explicitly states that certain actions trigger regulations for non-conformities. Section 10-20-4-G7 requires that any time an improvement is made which increases the number of off street parking spaces, all nonconforming surfacing of parking areas or driveways must be paved. In other sections, the Code makes allowances for existing situations. Section 10-19-12, for example, provides exception to setback rules for additions to existing buildings that do not meet current requirements.

BUILDING CONDITION AND MAINTENANCE VIOLATIONS

The City of Moorhead adopted the International Property Maintenance Code in 2004, detailing the minimum conditions and responsibilities of the property owner for maintenance of structures and exterior property, contained within Moorhead City Code Title 9 - Chapter 8, Building Standards. Unlike zoning, “grandfathered” status is generally not available for property maintenance code compliance regardless of when the structures were built or whether the use of the property has changed over time.

Problematic and visible code compliance issues within the corridor include the following:

9-8-3: Motor Vehicles and Recreational Vehicles requires that off-street parking in commercial areas be paved with asphalt or concrete, and that it be on private property, not within the public right-of-way (i.e., boulevard). Several of the properties along the corridor have unpaved, gravel parking lots. Some were permissible at the inception of the business uses and are considered to be grandfathered. On certain sites, boulevards are being used for parking, which is not permissible without consent of the City Council and not grandfathered.

9-8-4: Outside Storage; Commercial or Industrial includes regulations that 1) storage of equipment and supplies (other than part of a sales display) may not be located within the required front yard; 2) outdoor storage must be screened; and 3) Outdoor storage areas must be paved. A number of businesses along the 1st Avenue N corridor do not comply with current standards relating to outdoor storage; several that predate the current requirements may be considered grandfathered uses.

Unpaved lots and unscreened outdoor storage proliferates along 1st Avenue N

9-8-8: Unlawful to Allow Disrepair of Sidewalks, Driveways and Parking Areas. Much of the sidewalk along the corridor is deteriorated. Some paved as well as unpaved parking surfaces are disintegrating and are overgrown with weeds.

9-8-10: Maintenance of Exterior Structures. A number of buildings along the corridor have exterior surfaces that are in various stages of disrepair – peeling paint, windows in disrepair, and deteriorating finishes. These buildings contribute to an appearance of dilapidation along portions of the 1st Avenue N corridor and become a disincentive to adjacent property owners to invest and maintain nearby properties.

Deteriorating condition of vacant building along 1st Avenue N

Deteriorating condition of residential property along 1st Avenue N, combined with prohibited outdoor storage in front yard

9-8-11: Securing Vacant Buildings. The city requires that vacant buildings are properly secured to prevent trespass. Vacant buildings meeting certain criteria are required to be registered with the city and pay an annual fee as a deterrent mechanism to leaving the property vacant and to ensure awareness of the building's status by public safety personnel.

SITE DEVELOPMENT STANDARDS AND MAINTENANCE

Several sites along the 1st Avenue N corridor are not in conformance with current landscape/buffering requirements (Title 10-19-17) or with required provisions (Title 10-18-2). Except for those that are legal, non-conformities (i.e., grandfathered uses), these situations need to be addressed through enforcement to improve the aesthetic quality of the corridor. Three categories of common issues are:

Construction Related Business Uses:

- Unscreened equipment and materials storage.
- Utility vehicles not located behind the principal building and not within required building setbacks.
- Surface parking lots not surfaced with asphalt or concrete, or in a serious state of disrepair.
- Unpaved portions of sites used for outdoor storage, sales, repair work, or servicing.
- Parking lot setback less than four feet from the street property line.
- Parking lot setback not landscaped as defined in zoning code.
- Landscaping and buffer yards nonexistent or inconsistent with zoning code.


Industrial equipment parked on unpaved lots and within front yard setbacks along 1st Avenue N and 2nd Avenue N

Manufacturing and Wholesale Trade Uses:

- Failure to completely enclose all equipment in a permanent structure. It should be noted that these uses are land use non-conformities with violations related to landscaping, buffering, and screening.

Landscaping and Tree Standards:

- As a general rule, there is a lack of adequate buffering and landscaping along the corridor, both on public as well as private property.


Lack of landscaping and boulevard trees.

Unsightly building finishes, site, and complete lack of landscaping or boulevard trees.


Deteriorating building conditions, lack of paving, and questionable conformity of land uses.

The lack of paving and deteriorated paving are significant problems along the corridor. Many parking lots are unpaved, resulting in the growth of weeds, standing water, dragging of gravel and mud onto 1st Avenue N.

Poor curb and gutter condition, gravel from site affecting function of gutter, and gravel parking area in poor condition.

Weeds and tall grass as shown below are common problems. Unpaved driveways and yards are overgrown or not maintained. Illegal parking of vehicles, boats, and recreational vehicles on unpaved surfaces contributes to the lack of mowing and weed control.

Vehicles parked on gravel area, resulting in lack of weed control (left). Outdoor storage in front yard also results in tall grass and weeds (right).

The City of Moorhead Neighborhood Services Division reviewed properties along the 1st Avenue N corridor in the summer of 2008. Several property maintenance features were inventoried on a site by site basis. The overall results of that inventory are shown below in Table 2.

TABLE 2: NON-COMPLIANCE WITH PROPERTY MAINTENANCE CODES

Type of Code Violation	Number of Properties	Percent of Properties
Unpaved parking	10	24
Use of boulevard for parking	3	7
Storage of junk and/or unlicensed vehicles	6	14
Storage of RV or utility trailer	5	12
Unscreened refuse	6	14
Deteriorating sidewalk	4	10
No sidewalk	11	26
Deteriorating parking (paved)	9	21
Deteriorating exterior façade	6	14
Deteriorating roof and/or porch	2	5
Broken windows and/or doors	3	7
Bare patches of lawn and/or boulevard	21	50
Presence of weeds or tall grass	22	52
Other code violations	29	69

B. RECOMMENDATIONS FOR PROPERTIES ADJOINING 1ST AVENUE N

A multi-faceted approach to improving the roadway and streetscape will compliment earlier efforts to remove the grain elevators and other run-down or vacant buildings along the corridor. The city's investment in environmental investigation/remediation clearance and site clean up is intended to spur private investment by taking on some of the more difficult parcels and showcasing the possibilities for redevelopment.

ENFORCEMENT OF CITY CODE

Good property maintenance and consistent code compliance are extremely important to improving the image of the corridor. Poor conditions on just a few sites can lead to a tipping point, prompting several sites in the vicinity to deteriorate. Implementation of existing or new codes with respect to new uses in existing buildings and redevelopment efforts is vital to the on-going improvement of the corridor. Offering matching funds, low interest loans, or other forms of incentives to partner with corridor businesses would help to overcome financial obstacles to property improvement that will benefit the private and public sector in the long term.

Previous sections of this document describe a number of nonconforming sites and buildings along 1st Avenue N. Table 3 shows whether legal non-conforming characteristics of 1st Avenue N uses can be addressed through enforcement. The table applies to legal non-conforming characteristics of both legal, non-conforming uses (e.g., manufacturing uses in the CC district that were established under LI zoning) AND conforming uses (e.g., commercial in CC district).

TABLE 3: NONCONFORMING SITES AND BUILDINGS

Current Code may not be enforced	Current code may be enforced
Unpaved parking lot in existence prior to code requirement	Potholes creating standing water in grandfathered unpaved parking lot
Unscreened outdoor storage, if in existence prior to code requirement	Building conditions, peeling paint, broken windows, roof, etc.
Non-conforming building coverage, height, setbacks, number of parking spaces	Unapproved use of boulevard
Lack of landscaping, unless triggered by improvements/changes	Weeds, uncut grass
	Other Nuisances

Change in ownership does not affect code enforcement as long as the use remains unchanged. With the exception of existing building coverage, height, and setbacks, non-conforming characteristics must be brought into compliance with the current code when use changes from: 1) one non-conforming use (e.g. manufacturing) to another non-conforming use (e.g. warehousing). This type of change requires City Council approval and is subject to conditions; 2) a non-conforming use to a conforming use; or 3) one conforming use category to another conforming use category (e.g. shoe sales to coffee shop).

Additions to non-conforming buildings, if allowed, must meet current code. See Section 10-18-4 for rights and limitations of non-conforming uses.

Since most of the nonconforming sites and buildings along 1st Avenue N are grandfathered uses, code enforcement efforts should focus on building and site conditions that that are not grandfathered, but have been allowed to gradually deteriorate over time. All of these enforcement efforts must be consistent and noticeable to demonstrate the city's commitment to improving the 1st Avenue N corridor. The recommended approach to code compliance is to target the following problems:

- Outdoor storage that is not properly screened from 1st Avenue N
- Parking on right-of-way and/or removal of paving that extends into right-of-way (to be done as part of the 1st Avenue N short term improvements)
- Parking of vehicles on unpaved surfaces: Motorized vehicles, boats, and recreational vehicles should be removed from the property if parking surfaces are unpaved.
- Weed and tall grass control
- Removal or rehabilitation of dilapidated and deteriorating buildings

Legal non-conforming uses may not expand or substantially modify their sites. Prohibiting the expansion or improvement of non-conforming uses is a double-edged sword for most communities. While improvements to parking lots and buildings benefit the neighborhood, the investments likely would prolong the existence of the non-conforming use on the property. In some limited instances, it may better serve the community and the property owner to find more appropriate locations rather than seek improvements at existing locations.

Stenerson Lumber and the Fairmont Eventide anchor the east and west ends of the 1st Avenue N corridor.

Recent improvements to the Churches United building on the east end of the corridor have improved its appearance.

ZONING AMENDMENT RECOMMENDATIONS

The Moorhead Comprehensive Plan offers several strategies to improve the 1st Avenue N corridor, which is part of the Midtown Focus Area. Strategies include: 1) to improve the transition from the single family residential neighborhood in the north to the commercial corridor. "This transition would help define an edge, establish a limit for commercial expansion, and preserve the adjacent neighborhood's residential character;" 2) to redevelop vacant, underutilized, or blighted properties to create a more inviting corridor between Downtown and EasTen; and 3) to provide a corridor that is inviting to multiple forms of transportation.

The 1st Avenue North study offers two recommendations for implementing the Comprehensive Plan strategies for the area:

Zoning for Mixed Use Development Rezone the corridor to a new mixed use district, MU-3, based on the MU-2 District, but tailored to 1st Avenue N, Center Avenue and Main Avenue. The new MU-3 zone would allow a compatible mix of uses by ensuring that appearance of buildings and effects of uses are harmonious. Such a district could support *commercial services and retail* that serve the walking public from adjacent neighborhoods and also capitalize on the high level of daily traffic in the busy corridor. Employment centers in new corporate and rental office buildings could make 1st Avenue N a destination and add vitality to the corridor throughout the day. The district could provide for higher density housing opportunities to extend activity throughout the evening hours and maximize utilization of infrastructure.

Similar to the MU-2 district, MU-3 could offer standards for pedestrian-appropriate design, such as street frontage transparency and pedestrian connectivity. The district could limit auto-related uses (e.g., car dealerships) more than the current community commercial district, which would help to improve walkability and compatibility between the residential neighborhood to the north and the 1st Avenue corridor.

Gateway Standards Provide a higher standard of appearance for 1st Avenue N corridor by incorporating design standards akin to those in the Gateway Overlay District. From Fargo and places further west, 1st Avenue N is an important gateway to Moorhead (and Minnesota). For many commuters and visitors coming from the east, 1st Avenue N is their perceived entry point into the city, even if they have traversed portions of Highway 10 to get there. As one of the "entrances" to the city, it should have high standards for appearance. Standards must be compatible with the traditional grid pattern and provide the desired transition from the adjoining residential neighborhood.

The new MU-3 should include the following characteristics:

- **Floor Area Ratio (FAR)** Set the minimum and maximum FAR of 0.3 and 3.0 respectively, are recommended to ensure that the corridor redevelops at a density

befitting an area along a major transportation corridor that adjoins an established residential neighborhood and a downtown. FAR is the ratio of total square footage (all floors) of a building divided by the square footage of the lot. Examples in Moorhead include the McDonalds on 8th Street which is approximately 0.15 FAR and the neighboring Townsite Center, which is approximately 1.0. A fairly high intensity of land use is important for making the transformation of the corridor economically viable and capitalizing on the opportunity the busy corridor offers for development. It would increase the tax base, helping to pay for and maintain area improvements. High intensity use would facilitate walking and biking, and support frequent transit service.

a. Establish the minimum floor area ratio (FAR) as 0.3. On-street parking is not available on 1st Avenue N; therefore, it is important that development plans along this corridor have the ability to incorporate the necessary parking on-site. A minimum FAR of 0.3 recognizes that on-site parking is needed and that surface parking is sometimes the only economically feasible alternative.
b. Establish the maximum floor area ratio as 3.0, provided the minimum landscaping, buffering, and on-site parking requirements can be met. A higher FAR may be appropriate on the south side where new development would adjoin the railroad tracks and other commercial. On the north side, adjacent to the single-family neighborhood, FAR of 3.0 may be unachievable in a compatible manner.

- **Court yards and plazas** Encourage use of court yards and plazas for employees, shoppers and tenants, but do not require them where not particularly useable or appealing due to the impacts of traffic.

- **Setbacks** Because of the shallowness of properties in the 1st Avenue N corridor, the setbacks must be minimized, yet need to accommodate proposed expansion of right-of-way. Require a minimum setback of 15 feet from the front property line, as shown in the long range improvement plan for the corridor, which is adequate to offset the impacts of 1st Avenue N traffic on the adjacent properties and provide space for a softer landscaping buffer along the front of the building. The 15-foot setback, however, is not so deep as to discourage location of buildings on the front of the site with parking along the side or in the rear.

- **Dwellings** Allow dwellings as conditional uses on upper stories where they would not be impacted as much by more intense neighboring land uses, traffic or trains; prohibit dwellings on the ground floor.

- **Landscaping** Group plantings for visual impact in required setbacks.

- **Outdoor Storage** Allow outdoor storage: a) behind the principal structure which fronts on 1st Avenue N, b) completely fenced by an opaque fence of six feet in

height, and c) on asphalt or concrete. Limit storage area to no more than 20% of the overall site and prohibit in required setbacks.

- **Vehicle Parking and Storage** Prohibit automotive service stations (gasoline, repair, and service facility) from parking vehicles that are waiting for service or pick-up in area visible from 1st Avenue N. Any such parking shall be separated from 1st Avenue N by the principal structure, and shall have asphalt or concrete surface. Encourage the location of parking lots to the side and rear of principal buildings.

- **Refuse and Recycling** Separate storage of refuse and recycling from 1st Avenue N by the principal structure or an enclosed structure designed for refuse and recycling containers.

- **Signs**
  - On-Premise Signs – limit to monument signs and signs placed on the building (similar to Fairmont Eventide and the Hjemkomst Center).
  - Prohibit the use of portable signs along the corridor for any purpose.
  - Prohibit off-premise advertising.

- **Building Design** Incorporate building design and construction elements of the existing Gateway Overlay District into the 1st Avenue N Mixed Use District.

- **Connectivity** Require walkways connecting all main entrances to the bike and/or pedestrian path within the right-of-way. Improved sidewalk facilities will encourage use by pedestrians, bicyclists, and transit users.

CONTINUED ENVIRONMENTAL TESTING

Due to the historically industrial nature of the 1st Avenue N corridor and its proximity to the railroad tracks, the city should continue its proactive approach to work with private property owners to conduct environmental testing. The City of Moorhead received a grant from the Environmental Protection Agency (EPA) to conduct environmental investigations at nine sites located along 1st Avenue N. With the cooperation of property owners along the corridor, the City of Moorhead contracted with an environmental consulting service, Peer Engineering, to conduct environmental testing on several properties along 1st Avenue N. The results of environmental testing completed to date have shown a number of environmentally contaminated sites along the corridor. It is important to note that a proactive approach is being taken by the city to conduct testing on as many sites as possible, especially if demolition and redevelopment is likely. A memorandum summarizing the status of the environmental work along 1st Avenue N was prepared by Peer Engineering, Inc. (see Appendix 1). The results of these analyses will allow the property owners to proceed with corrective actions to clean up the contamination where necessary.

In addition to sites already being studied, nine sites are classified as "release sites", which have the potential for contamination but have not been studied. In some cases, gas stations are known to have occupied these sites at some time in the past. Other sites have existing land uses that have a high probability of being release sites. It will be important to follow up with additional studies on these sites, focusing on those that are key to redevelopment of the corridor.

From a property redevelopment standpoint, there are some sites that require further study, others that will require corrective action, and still others where neither further study nor corrective action is anticipated.

TAX INCREMENT FINANCING (TIF)

TIF is a possible tool to facilitate redevelopment through the clearance of structurally substandard facilities. TIF districts generally result in an overall increase of tax revenues once the district expires and the affected governmental agencies begin to receive the increment of new taxes from properties with significantly higher values. Adjacent properties located outside of the district often see ancillary benefit by being in the general vicinity of TIF projects.

Moorhead has successfully established numerous TIF districts and used the new property tax revenues generated from redevelopment to help pay for 1) restoring sites to "greenfield" condition (existing building demolition, environmental remediation, removal of debris, grading, etc.), and 2) infrastructure improvements such as the undergrounding or relocation of utilities, replacement of aging water and sewer pipes, roadway improvements, traffic signals, and street lighting. TIF districts are sometimes misunderstood as a "loss in revenue" to existing governmental entities. However, all entities collecting taxes from a TIF district continue to receive property taxes generated by the pre-development value of the property's tax base. Only the taxes generated by the new improvements– referred to as the "increment" – are set aside to address issues of blight and aging infrastructure that would otherwise prevent the property from being redeveloped.

PROPERTY ACQUISITION AND ASSEMBLY

As demonstrated by recent redevelopment projects in downtown, Moorhead can successfully facilitate redevelopment through property acquisition. Often times, the city can acquire one or two small parcels that are not large enough for a redevelopment project or are not appealing due to problems on adjacent parcels. By actively seeking opportunities to purchase other properties in the vicinity of sites the city already owns, the city can successfully remove problems and create sites large enough to accommodate a significant project. These efforts enhance private redevelopment endeavors.

Before considering property assembly or clearance, efforts should be made to explore opportunities to renovate and enhance current facilities. Possible redevelopment priorities shown in Table 4 are based on several factors related to existing conditions, including:

- Locations where the city owns adjacent property
- Poor condition/appearance of privately owned property
- Underutilized property (vacant, under-utilized)
- Negative environmental Conditions

In seeking opportunities to acquire property, the city could wait passively for market listings, or take a more assertive approach of offering to purchase certain properties as it has done previously along the corridor or in downtown. In addition to the properties that are close to the downtown area and close to sites owned by the city, the strategy outlined above identifies the industrial construction site located on the south side of 1st Avenue N between 15th and 18th Streets which has become incompatible with its location as the city has developed. This non-conformity seriously detracts from the attractiveness of the corridor to potential investors.

TABLE 4: POSSIBLE REDEVELOPMENT PRIORITIES (ACQUISITION OR RENOVATION)

Location	Suggested Action	Other Information
North Side		
9th Street to 10th Street (Restaurant/parking)	Work with property owner to enhance property along 1st Avenue N. Site has no landscaping and large parking lot is underutilized.	East side of block is an unused parking lot. Restaurant is a popular destination and renovation may enhance business and spur adjacent development.
10th Street to 11th Street (Auto maintenance shop, vacant lots, unoccupied commercial building, blighted house, gas station)	Consider renovation/redevelopment of entire of block. Gas station may have interest in expansion. Redevelopment would compliment development of city-owned property across 1st Avenue N.	Unsightly buildings and sites; unpaved, poorly maintained vehicle storage at gas station. City already owns vacant lots. Negative impacts from excavating company along 2nd Avenue N
11th Street to 12th Street (Auto sales lot, Fire Station)	Remove paving in boulevard and establish appropriate parking/display setbacks.	Fire Station occupies easterly portion of block
South Side		
8th Street to 10th Street (Auto sales lot)	Consider acquisition to create linear park along 1st Avenue N.	Cars parked on right-of-way city purchase would allow for construction of linear park between RR track and 1st Avenue N.
12th Street to 14th Street	Encourage renovation or redevelopment; may be combined with city-owned property for larger project	Enhances redevelopment opportunities for city-owned property to the west Non-conforming uses requiring significant renovation
15th Street to 18th Street (aggregate sales/storage)	Consider redevelopment; possible city acquisition. Non-conforming use, heavy industrial, significant truck generator	Stock-piling of aggregate results in blowing of dust and particles. Site is underutilized and no longer appropriate in the corridor Acquisition would enhance redevelopment opportunities for city-owned property to the west

III. INFRASTRUCTURE AND RIGHT-OF-WAY

A. EXISTING ROADWAY CONDITION

PAVEMENT, CURB AND GUTTER, AND PAVEMENT MARKINGS

First Avenue N is a four-lane divided roadway with left-turn lanes provided at key intersections. The ten-foot lane widths are less than current state aid design standards and would require a variance to maintain the ten-foot lane widths if state aid funds are used. The roadway has fair to poor pavement and surface conditions from the Red River to 17th Street; however, other characteristics of this segment are considered poor. East of 17th Street, the roadway condition is considered good to fair due to a recent overlay.

In some places along 1st Avenue N, the existing curb and gutter is settling or cracking, resulting in poor drainage conditions.

A curb and gutter in poor condition approaching 1st Avenue N and along1st Avenue N.

The longitudinal pavement markings along the corridor are visible and have been repainted when necessary. Other pavement markings, including turn arrows and crosswalks, are either nonexistent or are heavily worn, making them difficult to see.

EXISTING TRAFFIC OPERATIONS AND ACCESS MANAGEMENT

A traffic analysis was conducted for all street intersections along 1st Avenue N from 3rd Street to 17th Street. All intersections currently operate at an acceptable Level of Service (LOS) of "C" or better during a.m. and p.m. peak hours, with existing traffic controls, signal timing, and geometric layout (see Traffic Analysis, Appendix 2).

First Avenue N is classified as a minor arterial roadway. The City of Moorhead's City Code, Section 11-5-7, discusses street design, including recommended spacing between access points. The spacing guidelines for a minor arterial state:

> "Full access to such minor arterials should normally be at intervals of not less than one-fourth (1/4) mile and through existing and established crossroads where possible. Conditional access may be allowed at intervals of not less than one-eighth (1/8) mile."

City Code also states:

> "Access to principal arterials, minor arterials, and collectors that are located in the urban core may be granted at the discretion of the city engineer at intervals of not less than three hundred (300) to six hundred sixty (660) feet."

The 300 to 660 foot spacing equates to a maximum of 16 access points per mile. The 1st Avenue N corridor is approximately 1.5 miles long from the east end of the Red River bridge to its intersection with Center Avenue. It has 57 access points and intersections (23 with full access and 34 with limited access), which equates to approximately 38 access points and/or intersections per mile, more than twice the recommended level.

The existing traffic control along the 1st Avenue N corridor with the following intersecting streets is shown below:

- 3rd Street - Signalized
- 7th Street - Signalized
- 8th Street - Signalized
- 9th Street - Side Street Stop Control
- 10th Street - Side Street Stop Control
- 11th Street - Signalized
- 12th Street - Side Street Stop Control
- 13th Street - Side Street Stop Control
- 14th Street - Signalized
- 15th Street - Side Street Stop Control
- 16th Street - Side Street Stop Control
- 17th Street - Side Street Stop Control
- 18th Street - Side Street Stop Control

The Study Area is used by multiple forms of transportation despite inadequate pedestrian or bicycle facilities, as shown in the photos below. The existing four-foot wide sidewalk along the north side of the roadway is cracked, uneven, and not continuous along the entire corridor. Several blocks are without sidewalks or have incomplete sidewalks, which, in addition to the obvious challenge this presents to travelers along 1st Avenue N, disrupts connectivity within the city as a whole. Along the south side of the corridor, dirt footpaths have been worn in the boulevard of some blocks where a sidewalk does not exist, showing the heavy pedestrian and bicycle traffic along the corridor.


Dirt paths worn in boulevard along the south side of 1st Avenue N where no sidewalk exists

Bicyclists currently have no designated on-street or off-street bike path to ride along the corridor. Many bicyclists currently use 2nd Avenue N to move along the corridor, but this means they must share the road with heavy trucks entering and exiting adjacent businesses.


Group of bicycle riders along 2nd Avenue N (left).
Transit shelter along 1st Avenue N (right).

The 2006 Metropolitan Bicycle and Pedestrian Plan does not designate 1st Avenue N as a future classified bikeway, nor does it identify any short or long range improvements. Recent land use changes along the corridor, such as the Churches United residential facility, have generated a greater need for pedestrian amenities. The city's desire to focus on this corridor should be reflected in future updates of the Bicycle and Pedestrian Plan.

Accommodations for bus users are minimal along 1st Avenue N. One bus shelter at the eastern end of the corridor on the south side of 1st Avenue N is isolated with limited sidewalks and no marked crosswalk across 1st Avenue North, both of which are barriers to transit users.

A sidewalk exists along the north side of 1st Avenue N under the Moorhead Center Mall Parking Structure.

LIMITED RIGHT-OF-WAY

As in many other areas of the community, businesses along the 1st Avenue N corridor encroach on the public right-of-way often for parking and merchandise display. The 1st Avenue N right-of-way is of a sufficient width to construct traffic improvements and enhancements, but little unimproved right-of-way will remain vacant. Furthermore, the extent to which these public road and pedestrian improvements are made may result in having an adverse impact on corridor businesses, especially to provide parking.

B. EXISTING TRANSIT SERVICES

Metro Area Transit, the public bus system that serves Moorhead, provides transit service along the First Avenue North corridor with two daytime bus routes and one evening bus route. Currently, these routes do not have designated bus stops. This means that any corner or t-intersection is a potential bus stop. However, MAT Bus Stop signs are located periodically along 1st Avenue to "steer" passengers to more commonly used stops. MAT Bus Stop signs are located eastbound on First Avenue at 7th Street, 10th Street, 14th Street, the Salvation Army driveway, 17th Street and the passenger shelter at Churches United for the Homeless (just prior to 21st street). Westbound on First Avenue, MAT Bus Stop signs are located on 13th Street, 11th Street, 10th Street and 7th Street. Currently, buses provide service to Park View Terrace and the Heritage-Hjemkomst Interpretive Center, which contains senior center, by pulling into the parking lots to the entrance.

Facilities for bus users are minimal along 1st Avenue N. One passenger shelter at the eastern end of the corridor on the south side of 1st Avenue N is isolated with limited sidewalks and no marked crosswalk across 1st Avenue North, both of which are barriers to transit users. However, this shelter is located near the homeless shelter, which generates a large number of transit riders. In October 2008, nearly 500 rides were provided from this location. With the proposed location of a public housing apartment building to the west of the homeless shelter, relocation of the shelter to better serve both buildings and provide a crosswalk for riders north of 1st Avenue to access service should be considered. If the shelter remains at the current location, and the adjacent driveway is narrowed and moved further west, a wheelchair accessible pathway between the shelter and curb will need to be added.

Buses traveling from north Moorhead also access First Avenue at 17th Street and 14th Street, with the northwest corners serving as bus stops. The stop at 17th Street serves as the evening stop for the residents of the homeless shelter. The existing cross walk near that intersection provides a safe crossing to the northside of First Avenue. Any changes made to the northwest corners of this intersection should provide sufficient turning radius for 35' transit buses.

C. RECOMMENDED CORRIDOR IMPROVEMENTS

SHORT TERM IMPROVEMENTS

In the short term, the 1st Avenue N corridor is proposed to remain a four-lane divided roadway with left turn lanes at key intersections. Widening of the roadway to bring lane widths up to state aid standards will require additional right-of-way that may be acquired as redevelopment occurs.

The recommended short term roadway improvements and associated cost estimate are shown in Appendix 3, Figures 1-11. They include:

- A 2-inch mill and overlay between 8th Street and 17th Street;
- Raised Medians – Decorative concrete surfaces are proposed in locations where the median is 6 feet or less in width. In locations where the medians can be wider, vegetative groundcover and median tree plantings are proposed to enhance the aesthetics of the corridor;
- Concrete curb and gutter is proposed for the perimeter of the medians and in a few other locations where access closures are proposed;
- Pavement marking improvements are recommended along the entire corridor including the addition of appropriate turn lane and pedestrian crossing markings;
- The lane widths and turn-lane lengths for the short term improvements are proposed to remain unchanged;
- The at-grade railroad crossing just east of 18th Street is in poor condition and should be replaced with pre-cast concrete crossing material;
- Access management – a number of driveway closures and access modifications have been included in the short term improvement plans;
- Sidewalk/Trail improvements, to fill gaps in the existing sidewalk system;
- Streetscape elements – landscaping and lighting;
- Placing Moorhead Public Service (MPS) electric lines underground.

Each of the last four items (access management, sidewalk/trail, streetscape, and MPS power lines) are discussed further below.

ACCESS MANAGEMENT AND TRAFFIC CONTROL

Driveway closures and modifications that control access are proposed as an important part of the short term improvements. Recommended access closures are shown in Table 5. The number of driveway closures and modifications is shown for each block of 1st Avenue N and on cross streets where existing driveways are extremely close to 1st Avenue N. In areas where medians are recommended for separation of travel movements, they will have the effect of limiting driveways to right-in and right-out movements. At locations where driveways will be closed, an alternative point of access is already in place or a new driveway will be provided in a location that is safer for the traveling public.

TABLE 5: PROPOSED ACCESS MODIFICATION FOR SHORT TERM IMPROVEMENTS

Location	Number of Driveway Closures	Number of Driveways Changed to Limited Access
9th Street	1	1
1st Avenue N: 9th to 10th St	4	1
10th Street	2	0
1st Avenue N: 10th to 11th St	7	1
12th Street	0	0
1st Avenue N: 12th to 13th St	2	0
13th Street	2	0
1st Avenue N: 13th to 14th St	2	0
14th Street	2	0
1st Avenue N: 14th to 15th St	1	1
15th Street	3	1
1st Avenue N: 15th to 16th St	1	2
16th Street	1	0
1st Avenue N: 16th to 17th St	4	0
17th Street	1	1
1st Avenue N: 17th to 18th St	1	0
1st Avenue N: 18th to 21st St	2	0

The driveway modifications noted above will improve traffic flow and safety along the corridor. Further improvements are recommended as each site redevelops.

Traffic signals are proposed to remain at the intersections of 1st Avenue N and 3rd Street, 7th Street, 8th Street, 11th Street, and 14th Street. Signal revisions are proposed at 3rd St to include a separate northbound/southbound left turn phase and at 11th St to include a southbound protected left turn phase. The traffic signal at 8th Street will need to be adjusted to accommodate the proposed lane shifts at the 1st Avenue N intersection. The purpose of the lane shift is to construct a wider median along 1st Avenue N to provide adequate space for a pedestrian refuge in the median.

A future signal is proposed for installation at the intersection of 1st Avenue N and 17th Street. The Traffic Analysis Memorandum for 1st Avenue N dated October 17, 2008 (see

Appendix 2) states that installation of a traffic signal at 17th Street would alleviate the significant side-street delays; however, the traffic volumes at this location are not expected to meet traffic signal warrants within a 5-year period. The intersection should be monitored and signals considered when warrants are met. Stop signs will remain on all other side street approaches to 1st Avenue N.

According to the Traffic Analysis Memorandum for 1st Avenue N, all of the key intersections along the corridor are expected to operate at an acceptable LOS of C or better under year 2012 conditions during the a.m. and p.m. peak hours, with existing signal timing and proposed future 1st Avenue N access modifications. Side street stop delays are expected to be approximately one and one-half minutes at the intersections of 1st Avenue N with 13th Street, 16th Street and 17th Street. Vehicles using 13th Street south of 1st Avenue N, may divert to 14th Street if the delays are excessive. When signal warrants are met at 1st Avenue N and 17th Street, traffic operation will improve at 17th Street and allow vehicles using 16th Street to divert to 17th Street, effectively reducing side street delays on 16th Street.

SIDEWALK AND TRAIL FACILITIES

Recommended pedestrian and bicycle improvements for short term construction include the following:

- Construct an 8-foot trail along the north side of 1st Avenue N from the Red River bridge to 8th Street.

- Widen the trail under the existing railroad underpass and Moorhead Center Mall parking structure to seven feet. Connect the trail to the existing pedestrian ramp which leads to the upper deck of the Moorhead Center Mall parking structure. A stairway connection is also proposed from 1st Avenue N to the upper deck of the parking structure. Dedicated right of way or an easement will be needed to construct these connections.

- Pedestrian crossing of the east leg of the 8th Street/1st Avenue N intersection – This crossing will be the point at which the trail switches from the north side of the corridor to the south side, where it will continue east as an eight-foot trail to 15th St. This portion of the trail will be constructed far enough from the existing curb to allow for future expansion of the roadway to meet minimum state aid design standards for the lane widths without reconstruction of the trail. At 15th St, the trail width will reduce from eight feet to six feet due to right-of-way constraints, and continue to 18th Street N, where it will connect into an existing trail. The existing trail continues along 1st Avenue North to the point where it curves and connects to US Hwy 10 (Center Avenue). Right of way or an easement will be needed in the southeast corner of 8th Street and 1st Avenue N to accommodate the sidewalk.

- At 8th Street, a 4.5 foot walk will continue along the north side of the roadway to 17th Street, where it will widen to eight feet and continue along the north side of

the corridor where 1st Avenue N curves and connects to Center Avenue. A marked pedestrian crossing is proposed along the east leg of the 1st Avenue N and 17th Street intersection and along the north leg of the 21st Street intersection.

- All marked pedestrian crossings will be provided with appropriate signs and a protective pedestrian walk phase at signalized locations.

TRANSIT FACILITIES

The Hjemkomst Center, located at the west end of the 1st Avenue N corridor was identified as a particular area of concern for transit users. Currently there are no identified stopping locations in the vicinity of 3rd Street, despite the presence of senior citizen programs and other public uses at the Center.

Two possible locations were identified for a **westbound** transit stop and shelter. One location is east of the Hjemkomst driveway, and another location is just west of the Hjemkomst driveway. The location on the west side of the driveway is recommended. This location lines up with the entrance to the Hjemkomst Center. It is preferred over the other option due to the double left turn lanes on northbound 3rd Street and the fact that a bus stop located east of the driveway could have traffic flow implications for the vehicles in the outside left turn lane.

Recommended location of westbound bus stop and shelter at the Hjemkomst Center

Recommended location of eastbound bus stop and shelter, just east of 3rd St, beyond the bus bench and traffic signal shown above

On eastbound 1st Avenue N, the only recommended bus stop and shelter location in the vicinity is just east of 3rd St. This location is not as close to the Hjemkomst Center as the recommended westbound location, but it is adjacent to the traffic signal at 3rd St,

providing a logical location to cross the street. Providing an eastbound bus stop and shelter farther west, such as directly across from the recommended westbound shelter, is not advised, since this would result in midblock crossings at a location where drivers are not expecting pedestrians. Both of the recommended bus stop and shelter locations are shown in Appendix 4.

STREETSCAPE IMPROVEMENTS

Proposed streetscape improvement will be an important aspect of improving the corridor for multiple modes of transportation. The streetscape improvements will extend 1.5 miles from the decorative monuments at the Red River bridge abutment to a signature entry on the east end at Center Avenue/TH 10 (See Appendices 5 and 6). Proposed improvements along 1st Avenue N include improving pedestrian access, adding vegetation, roadway and pedestrian lighting, decorative fencing, signs, and intersection enhancements. Initially, a linear park was envisioned between 1st Avenue N and the railroad track between 8th Street and at 10th Street. However, the city does not own this property.

Pedestrian access along 1st Avenue N will be greatly improved with the addition of an eight-foot trail and new sidewalks. Decorative fencing that flanks the new sidewalks at parking lots and industrial sites is recommended. Coordinated pedestrian scale lights and street lights are recommended, as shown on the short term improvement plans in Appendix 3, the streetscape images in Appendix 5, and the section illustrations in Appendix 6.

The addition of street trees in the boulevard along the south side of the entire length of the project will soften the industrial streetscape and shade the street and sidewalks. Ornamental trees surrounded by perennial plants in the new medians will provide additional visual enhancements along 1st Avenue N. The medians will include a custom concrete scoring pattern, decorative bollards and banner poles.

Intersection improvements at 3rd Street, 7th Street, 8th Street and 11th Street will provide safer pedestrian crossing zones and will create continuity with the streetscape along nearby Center Avenue.

Decorative monuments, a welcome sign and additional plantings at the Red River bridge abutment and the welcome plaza on the east end will create a visual link that will help establish a unique identity for 1st Avenue N. Eventually, a linear park between 8th Street and 10th Street will have matching monuments that will carry the “look” of the corridor from west to east.

A large scale piece of public art in the garden of the welcome plaza at the east end of the corridor would make it “stand out” at the busy intersection. The design of the sculpture would convey a message, and could provide a visual connection to the downtown area and the Hjemkomst Center. Project cost estimates do not include this concept due to potentially wide variation of cost.

MOORHEAD PUBLIC SERVICE UTILITY LINES

Electric utility lines located along 1st Avenue N east of 9th Street are above-ground. These power lines cross from the north side of the street to the south side at some locations. According to MPS officials, the power lines could be placed underground in conjunction with the street improvement project for a cost of approximately $75,000. This cost has been included as an enhancement in the interim cost estimate.

In several locations, easements may be needed on private property for the placement of transformers for the underground lines. Transformers use a space of approximately three feet by three feet. To the extent possible, the transformers could be placed on city-owned property to reduce the need to acquire easements. Based on the locations of existing lines and the points where they currently cross 1st Avenue N to serve properties on the other side, it is anticipated that transformers would be needed at the following locations:

- North side, on city owned property east of 10th Street,
- South side, either east or west of 11th Street, on boulevard between sidewalk and street,
- South side, approximately 150 feet west of 13th Street, on boulevard if possible,
- North side, in NW corner of 1st Avenue N and 13th Street, where existing driveway closure is proposed,
- North side, approximately 300 feet east of 13th Street, most likely on private property in front of existing apartment building,
- Along 14th Street south of 1st Avenue N, in existing right-of-way, and
- East side of 18th Street approximately 60 feet north of 1st Avenue N.

Due to the limited right-of-way in some locations, the utility lines may need to be placed under the sidewalks rather than under grass in the boulevards.

RIGHT OF WAY OR EASEMENT NEEDS OF SHORT TERM IMPROVEMENTS

The following ROW or easements will be needed to implement the following aspects of the interim improvements:

- ROW or an easement for the path and stairway connection between the 1st Avenue N sidewalk and the Moorhead Center Mall parking structure
- ROW in the southeast corner of the 8th Street/1st Avenue N intersection for long term sidewalk placement
- ROW on the city-owned parcels along the south side of 1st Avenue N between 10th Street and 12th Street (dedicate at this time prior to redevelopment)
- Easement for boulevard plantings and for removal of the retaining wall along the north side of 1st Avenue N between 15th Street and 16th Street.
- Easement for boulevard plantings along the north side of 1st Avenue N east of the RR tracks (along the Coca Cola site)

ESTIMATED PROJECT COSTS

As previously stated in this report, to effectively develop and implement strategies for corridor renewal and infrastructure investment, the support of the public and private sectors, including their financial commitment, is essential. Community development initiatives directed towards site assemblage, property rehabilitation and environmental remediation may be financed through private funding, public loans/grants, Tax Increment Financing, agency funds and or other mechanisms.

The interim cost estimate of the infrastructure project, based on preliminary design, is included in Appendix 3. The estimated total cost for the interim project is $4.7 million. The interim project includes a $1.6 million base street project and a "menu" of aesthetic enhancements (see Table 6) ranging in cost from no enhancements ($0) to a total of $3.1 million for all of the proposed enhancements.

Improvements to the 1st Avenue N infrastructure are regional in nature, and therefore, some or all of the costs associated with the improvements should be carried on a city-wide basis. Infrastructure investments are generally a combination of various sources of public financing (Federal aid, State aid, G.O. bonds, etc.) and special assessments to private property. Although the base street project would be eligible for Federal surface transportation funds, these funds are programmed four to five years in advance, which would delay improvements to 2013 or beyond. The enhancements may be eligible for Federal transportation enhancement funds. These funds, however, are limited to approximately $600,000 annually (for all of Mn/DOT District 4), are highly competitive, and also are programmed four to five years in advance delaying improvements to 2013 or beyond. The base street project and some of the enhancements would be eligible for Municipal State Aid funding, but these funds have been allocated beyond 2013 for other projects.

Financing options that would work better for 1st Avenue infrastructure improvements, include either of the following:

1) A general obligation (G.O.) bond and special assessments as presented in Table 7. This scenario assumes that the base street project would be special assessed according to City policy and that 20% of the cost of the enhancements would be assessed. The City would fund the balance of the project through a property tax levy.

2) Alternatively, G.O. Street Reconstruction Bonds would be a potential financing scenario that would allow the improvements to be constructed with less than 20% of the cost being assessed. Although G.O. Street Reconstruction Bonds cannot be used for the City's routine street rehabilitation/reconstruction program, the City's five-year Transportation Capital Improvement Plan recognizes and has reserved the opportunity to use this type of funding on certain corridors (e.g. in the downtown area with a high density of arterials/collectors and relatively small special assessment districts). Using a G.O. Street Reconstruction Bond, up to the entire cost of the project could be funded through a property tax levy.

TABLE 6: SUMMARY OF COSTS FOR SHORT TERM (INTERIM) IMPROVEMENTS

Goals	Interim Plan		Ultimate Plan
Improve Pavement Conditions	Mill & overlay between 8th & 17th St	$315,000	Widen lanes to 12 ft (MSA standards)
	Select curb & gutter replacement/repairs[1]	$40,000	
	Replace railroad crossing surface	$201,600	
Improve Traffic Safety & Operations	No change to lane widths & turn-lane lengths	$0	Adjust turn lane lengths/medians
	Turn lane, pedestrian crossing, & other pavement markings	$40,000	Traffic signal at 17th St (5-10 years)
	Traffic signal revisions 3rd, 8th & 11th Streets[2]	$45,000	Access control: ¾ access at 9th St
	Access control: 36 closures & 8 converted to limited access[3]	$135,150	Access control: right-in/out at 12th & 15th Streets
Improve Bicycle & Pedestrian Facilities	4.5 ft walk along north side of 1st Ave N (8th to 17th St)	$102,200	Any improvements not constructed under the interim plan
	8 ft trail along north side of 1st Ave N (17th to 21st St)	$50,800	
	Pedestrian crossings at 17th St (east leg) and 21st St (north leg)	Note (4)	
	8 ft trail along north side of 1st Ave N (river to 8th St)	$91,100	
	Widen trail (to 7 ft) & stairway at MCM parking deck	$75,000	
	8 ft trail along south side of 1st Ave N (8th to 15th St)	$117,800	
	6 ft trail along south side of 1st Ave N (15th to 18th St)	$48,100	
Improve Transit Facilities	Westbound; shelter just west of HHIC access	$5,000	Any improvements not constructed under the interim plan
	Eastbound; shelter just east of 3rd St	$5,000	
Add Aesthetic Improvements	Decorative concrete medians (6 ft wide or less)	$180,000	Linear park between 8th & 9th Streets
	Median tree planting/vegetation (medians more than 6 ft wide)	$16,400	Any improvements not constructed under the interim plan
	Streetscaping-intersection enhancements at 3rd, 7th, & 8th St	$150,000	
	Streetscaping-bollards	$125,400	
	Streetscaping-banner poles & flags	$60,900	
	Streetscaping-decorative fencing	$309,300	
	Streetscaping-1st Ave N bridgehead enhancements	$30,000	
	Streetscaping-1st Ave N & TH 10 welcome/entry plaza	$50,000	
	Landscaping[5]	$50,000	
	Street lighting	$416,500	
	Pedestrian lighting	$507,500	
	Bury MPS electric lines	$75,000	
Standard Project Costs	Drainage Adjustments, Turf Establishment/Erosion Control, Mobilization, Traffic Control, Engineering and Contingencies	$1,471,500	

[1]Based on removal and replacement of 10% of the existing curb and gutter.
[2]Separate NB/SB left turn phase at 3rd St, accommodate wider pedestrian refuge median at 8th St, SB protected left turn phase at 11th St
[3]Per City Code, access to minor arterials in the urban core may be granted at intervals of not less than 300 to 660 ft.
[4]Cost included in pavement markings
[5]Street trees along south boulevard, ornamental trees/perennial plants, various vegetated areas

TABLE 7: EXAMPLE FINANCING SCENARIO

NOTE: This table is provided as an example of one financing package available to the City and adjacent property owners. Other funding sources may be pursued/utilized. This example assumes the City would fund the project using a G.O. Bond. Street improvements would be assessed according to current City policy. Twenty percent (20%) of the cost of amenities would be assessed to abutting properties. City costs would be financed through a property tax levy. The amenity package provides examples of potential project magnitude but does not specifically identify which amenities would be constructed. The specific amenities, if any, would be selected from the "menu" of alternatives.

Amenity Package		**Street Only**	**$0.45M**	**$0.90M**	**$1.35M**	**$1.80M**	**$2.25M**	**$2.70M**	**$2.93M**	**$3.04M**
Street Project	Assessed	$336,000	$336,000	$336,000	$336,000	$336,000	$336,000	$336,000	$336,000	$336,000
	City	$1,344,000	$1,344,000	$1,344,000	$1,344,000	$1,344,000	$1,344,000	$1,344,000	$1,344,000	$1,344,000
	Total	*$1,680,000*	*$1,680,000*	*$1,680,000*	*$1,680,000*	*$1,680,000*	*$1,680,000*	*$1,680,000*	*$1,680,000*	*$1,680,000*
Amenity Project	Assessed	$0	$90,000	$180,000	$270,000	$360,000	$450,000	$540,000	$585,000	$607,500
	City	$0	$360,000	$720,000	$1,080,000	$1,440,000	$1,800,000	$2,160,000	$2,340,000	$2,430,000
	Total	*$0*	*$450,000*	*$900,000*	*$1,350,000*	*$1,800,000*	*$2,250,000*	*$2,700,000*	*$2,925,000*	*$3,037,500*
Total Project	Assessed	$336,000	$426,000	$516,000	$606,000	$696,000	$786,000	$876,000	$921,000	$943,500
	City	$1,344,000	$1,704,000	$2,064,000	$2,424,000	$2,784,000	$3,144,000	$3,504,000	$3,684,000	$3,774,000
	Total	*$1,680,000*	*$2,130,000*	*$2,580,000*	*$3,030,000*	*$3,480,000*	*$3,930,000*	*$4,380,000*	*$4,605,000*	*$4,717,500*
Assessment Rate, $/adj FF		**$20**	**$40**	**$60**	**$80**	**$100**	**$120**	**$140**	**$150**	**$155**
Example Front Footage. Estimate includes front foot (primary) & area-wide (secondary) benefit	100	$2,375	$4,375	$6,375	$8,375	$10,375	$12,375	$14,375	$15,375	$15,875
	200	$4,750	$8,750	$12,750	$16,750	$20,750	$24,750	$28,750	$30,750	$31,750
	300	$7,125	$13,125	$19,125	$25,125	$31,125	$37,125	$43,125	$46,125	$47,625
	400	$9,500	$17,500	$25,500	$33,500	$41,500	$49,500	$57,500	$61,500	$63,500
	500	$11,875	$21,875	$31,875	$41,875	$51,875	$61,875	$71,875	$76,875	$79,375
	600	$14,250	$26,250	$38,250	$50,250	$62,250	$74,250	$86,250	$92,250	$95,250
	700	$16,625	$30,625	$44,625	$58,625	$72,625	$86,625	$100,625	$107,625	$111,125
	800	$19,000	$35,000	$51,000	$67,000	$83,000	$99,000	$115,000	$123,000	$127,000
	900	$21,375	$39,375	$57,375	$75,375	$93,375	$111,375	$129,375	$138,375	$142,875
	1,000	$23,750	$43,750	$63,750	$83,750	$103,750	$123,750	$143,750	$153,750	$158,750

LONG TERM IMPROVEMENTS

The recommendations for long range improvements to 1st Avenue N require additional right-of-way to allow widening of travel lanes to meet state aid standards (see Insets 1-11, Appendix 7). As with other corridors in the core area of the city, the overall roadway capacity may not need to increase significantly. Nevertheless, future redevelopment is likely to affect the need for improved traffic flow, additional traffic control and access management. First Avenue N clearly has a high potential for redevelopment. A possible scenario for complete redevelopment of under-developed and vacant properties is provided along with the corresponding trip generation, block by block, in Table 7, 1st Avenue N Trip Generation.

As part of the long range improvements to the corridor, traffic modifications are proposed at three intersections to take access management to the next level, improving overall traffic flow along the corridor without significant widening. The modifications include:

- 1st Avenue N and 9th Street – Eliminate full access and replace with a three-quarter access that allows left turn movements off of the more heavily traveled corridor, but does not allow left turn movements from the minor street onto the major corridor. In this case, the movement that would be eliminated is the southbound left turn movement from 9th Street to eastbound 1st Avenue N.

- 1st Avenue N and 12th Street – A median would be constructed to prevent all left turn movements. Westbound traffic could turn right onto northbound 12th Street, and southbound traffic could turn right onto westbound 1st Avenue N.

- 1st Avenue N and 15th Street – A median would be constructed to prevent all left turn movements. Westbound traffic on 1st Avenue N could turn right onto northbound 15th St, and southbound traffic on 15th Street could turn right onto westbound 1st Avenue N.

As previously discussed, the city should seek opportunities to purchase the narrow parcels along the south side of 1st Avenue N between 7th Street and 9th Street that are flanked by 1st Avenue N and the railroad track. Removing the pavement and constructing a linear park along the corridor would enhance appearance and improve pedestrian movements in conjunction with future roadway improvements. In particular, the westerly parcel between 8th Street and 9th Street is too narrow to develop, so a linear park is a very logical use of the property. The existing use of the property as a car sales lot does not enhance the appearance of the corridor, especially since cars tend to be parked in the right-of-way, and is not complimentary to other land uses in the immediate area. The property east of 8th Street has more potential due to the fact that the width of the site increases near 9th Street. It is possible that the linear park could be carried onto the westerly portion of the site, transitioning into landscaping for a private redevelopment on the easterly portion of the site.

TABLE 8: CORRIDOR TRIP GENERATION

SRF Project No. 6303

Moorhead, MN

1st Avenue N Full Development Scenario

Trip Generation of Redevelopment Sites

Block/Location	Side of 1st Ave	Land Use	Size of Site (sq. ft.)	Likely FAR	Anticipated Full Development	Unit (sq ft, DU)	ADT Rate	ADT Vol	AM Peak Rate	AM Peak Vol In	AM Peak Vol Out	PM Peak Rate	PM Peak Vol In	PM Peak Vol Out	Notes
8th St N to 10th St N	South	Linear Park	35650	N/A	35650 (.81)	sq ft (acre)	2.28	2	0.01	0	0	0.06	0	0	Vehicular access from 10th St, but only for maintenance
9th St N to 10th St N, access from 10th St N	North	Mixed:	16000	1											Access to 1st Ave will be closed and only access will be from 10th St N.
		Residential			0	DU	-	-	-	-	-	-	-	-	
		Commercial			8000	sq ft	42.94	344	1.03	5	3	3.75	14	16	
		Office			8000	sq ft	3.32	27	0.48	3	0	0.46	1	3	
10th St N to 11th St N	North	Mixed:	100545	1.5											Reduced site size by 8,000 sq ft for alley (20x400).
		Residential			20	DU	5.86	117	0.44	1	7	0.52	7	3	Assume midblock alley connecting 10th and 11th St.
		Commercial			33515	sq ft	42.94	1439	1.03	21	13	3.75	60	65	Assume no future access to 1st Ave N. Access will be from
		Office			33515	sq ft	3.32	111	0.48	14	2	0.46	3	13	alley.
10th St N to 11th St N	South	Mixed Use	48900	1											Assume all access from 10th St N. Driveways on 1st Ave
		Residential			0	DU	-	-	-	-	-	-	-	-	will be removed, and future RR underpass on 11th St N will
		Commercial			12225	sq ft	42.94	525	1.03	8	5	3.75	22	24	make property access infeasible.
		Office			36675	sq ft	3.32	122	0.48	15	2	0.46	3	14	
11th St N to 14th St N	South	Commercial	90455	1	90455	sq ft	42.94	3884	1.03	57	36	3.75	163	176	Access to park via rt in/rt out along 1st Ave.
		Office	90455	1	90455	sq ft	3.32	300	0.48	38	5	0.46	7	35	Comm and office will have full access to 1st Ave at 13th St N and rt in/rt out access east of 13th, and full access off of 14th St N.
15th St N to 18th St N	South	Commercial	213444	0.5	106722	sq ft	42.94	4583	1.03	67	43	3.75	192	208	Full access to 1st Ave at 16th St N and 17th St N, with signal at 17th. Other existing accesses will be closed.
15th St N to 16th St N	North	Mixed Use	90470	1.5											
		Residential			25	DU	5.86	147	0.44	2	9	0.52	9	4	No direct access to 1st Ave. The block will take access
		Commercial			45235	sq ft	42.94	1942	1.03	28	18	3.75	81	88	from a future alley through the middle of the block, so
		Office			45235	sq ft	3.32	150	0.48	19	3	0.46	4	17	access will be from 15th and 16th Streets.

IV. CONCLUSION

The success of downtown redevelopment has created an increased public and private confidence that positive change on 1st Avenue N is not only possible, but achievable. It is hoped that the city's pattern of concentrated focus on important commercial districts will continue the revitalization occurring in Moorhead. A focused concentration by the City of Moorhead and the private sector along 1st Avenue N will dramatically enhance the city's core. The environmental issues and property deterioration affecting the study area will not likely improve unless the city in partnership with private property owners and businesses advances steps to continue environmental analysis, transportation improvements, property acquisition, and some level of redevelopment incentives along the corridor.

Roadway and streetscape improvements will foster a positive tone for the corridor, conveying a message of the value and potential of this corridor. A similar approach in Moorhead's downtown has spurred redevelopment that sets a new and exciting course for the central portion of the city.

The proposed 1st Avenue N interim improvements are consistent with the city's Comprehensive Plan, and support directions in which the city is moving, such as Active Living by Design, which is a focus of the upcoming Comprehensive Plan Update. The information in this study will provide a good base of information for the plan update, since land use alternatives will explore varying degrees of infill development combined with outward growth.

Improvements to both the public realm and private properties along the 1st Avenue N corridor are necessary to bring this area in alignment with present day business and residential patterns and will maximize the value of this area of the community, and to prevent further disinvestment along the corridor. The city's accomplishments thus far with the removal of the grain elevator and acquisition of other small sites along the corridor are steps in the right direction. Continued efforts will make 1st Avenue North a prosperous, vital community corridor.

APPENDIX 1

MEMORANDUM FROM PEER ENGINEERING, INC.

STATUS OF ENVIRONMENTAL WORK ALONG 1ST AVENUE N

Peer Engineering, Inc.
7615 Golden Triangle Dr., Suite N
Eden Prairie, MN 55344
(952) 831-3341 Fax (952) 831-4552

Peer Engineering
Integrated Environmental Solutions

MEMORANDUM

To: Ms. Cindy Gray, AICP – SRF Consulting Group

From: Mark Johnson – Peer Engineering, Inc.

Date: September 23, 2008

RE: Status of Environmental Work along 1st Avenue North, Moorhead, MN

At your request, this memorandum provides a brief summary of identified properties along the "1st Avenue North Corridor" that have soil or ground water contamination-related issues. A brief history of the area is also provided to help put the contamination issues into perspective. It is our understanding the City of Moorhead is considering milling down and overlaying new pavement on 1st Avenue, and in select areas new amenities may be constructed. Our environmental review on this as it relates to identified properties that have contamination related-issues, and site history, is discussed at the end of the memorandum. Generally speaking, the area is not considered to be an environmental sensitive area in regards to surface-derived contamination due to the thickness and type of near surface soil (i.e., up to 100' or more of lower permeable clay) that is present in the area that tends to limit the vertical and horizontal migration of contamination.

Staff at Peer Engineering has been working on contamination-related issues along 1st Avenue North since the late 1990s/early 2000s. Peer is one of the City of Moorhead's environmental consultants.

Brief History

Data gathered indicates the corridor has an extended history dating back to the pre-1870s when the City was first platted. Land-use along the corridor has changed over the years and has included manufacturing, railroad, petroleum, dry cleaning, agrichemical (pesticides and fertilizer), metal-working, and auto-repair operations, among others. Many of the activities occurred prior to today's environmental regulations. Based on this, the potential for reported and unreported spills to have occurred within the corridor over the years is considered to be moderate to high. This is not atypical for an older commercial/industrial-use corridor such as this.

Preliminary Environmental Corridor Assessment

The City has become increasingly aware with blight and environmental encumbrances associated with the corridor. In December of 2002 the City conducted a Preliminary Environmental Corridor Assessment of the City's "Central City Corridor". The assessment consisted of a drive-by survey of the properties, a review of state and federal environmental databases, and review of historical records including Sanborn Insurance Maps and aerial photographs. Approximately 150 sites were identified in the area with recognized environmental conditions. The 1st Avenue Corridor was part of the evaluation.

Sites City of Moorhead is Working On

Through a USEPA Contamination Assessment Grant the City procured, the City has followed up with environmental investigations at several sites located along 1st Avenue North. Environmental findings for each of the sites are discussed below along with their current status. Locations of the sites are shown on Figure 1, in "green", attached to this memorandum.

1. *Muscatell Auto:* A Phase I and Phase II ESA have been completed at the property. Findings of the investigation work indicate measurable concentrations of petroleum-related contamination were detected at many of the sampling locations at the property including beneath the buildings. The highest contamination was detected at sampling locations located on the east end of the property (north and south side of the tracks). A heavy sheen was observed on the water sample collected from the sampling location on the north side of the tracks indicating the possible presence of free-phase petroleum product at this location. Near surface fill soils across the property also evidenced some nuisance contamination at select locations. Additional investigation is currently underway at the east end of the property (north side of tracks) to determine the extent and magnitude of contamination at this location, and identify a source. The site is a previous known release site.

2. *1st Avenue North Elevators*: This property is vacant. Investigation work completed at this property revealed it is contaminated, to a varying degree, with nitrogen fertilizer, the grain fumigant "tetrachloroethylene", and petroleum fuel. The MPCA Voluntary Investigation Cleanup (VIC) and MDA VIC Programs have reviewed the file and have issued a joint No Further Action (NFA) Letter to the City of Moorhead for the property. The MPCA Petroleum Brownfields (PB) Program is currently reviewing the file to see if their program can issue an Off-Site Source Determination Letter to the City for the identified petroleum fuel contamination.

3. *MinnKota:* The Phase I ESA completed for this property identified historic bulk petroleum storage and gasoline station/automobile repair involving the use or storage of significant quantities of petroleum compounds and/or hazardous substances; nearby properties (railroad, LUST sites, LAST sites, and commercial/ industrial sites)

involving the use or storage of significant quantities of petroleum compounds and/or hazardous substances; and demolition of historical structures on the property which is an indicator that demolition debris could potentially be buried on-site. Releases of petroleum products to the soil and ground water have been detected in several environmental investigations conducted at the property to date, and over 2,000 cubic yards of contaminated soil has reportedly been excavated from the property. A Phase II ESA is currently underway to further characterize subsurface conditions at the property.

4. *Aggregate Industries:* A comprehensive soil and ground water investigation has been completed at the property, including the installation and sampling of 12 monitoring wells. Findings of the investigation work indicate significant soil, ground water, and soil-gas solvent and petroleum contamination at the property. The highest contamination was detected to the north and west of the maintenance building located in the center of the property. An additional plume exists south of the asphalt plant that is a previous known petroleum release site. The contamination on the north side of the maintenance building extends to a depth of approximately 30 'feet below ground surface. Near surface fill soils across the property evidenced some PAH and nuisance contamination at select locations. Several concrete waste pits also exist in the back of the property along the railroad tracks. The MPCA has indicated that corrective action will likely be required at this site. Additional investigation is currently underway to further define the extent and magnitude of contamination at the property and determine if contamination has migrated off-site.

5. *Corsair Property:* This property is vacant. A Phase I and Phase II ESA have been completed at the property. Findings of the investigation work indicate the property is underlain by approximately 8 to 12 feet of disturbed fill that contains pieces of concrete, metal, and clinkers at many locations. Petroleum-related contamination was also detected at many of the sampling locations at the property, the highest contamination of which was detected at the sampling locations within a known previous petroleum release area near the southeast corner of the property. Near surface and deeper soils across the property evidenced some nuisance contamination at select locations. No further work is contemplated for the property at this time.

6. *HedgeMasters:* A Phase I ESA has been completed for the Property. The Phase I identified snowmobile repair activities for the property and nearby properties (i.e., railroad and petroleum bulk storage and distribution facility) involving the use or storage of significant quantities of petroleum compounds and/or hazardous substances. In addition, the presence of surface or potentially buried debris miscellaneous solid waste, including railroad ties associated with the rail line and spur, and building materials located along the back of the building. A Phase II ESA is currently underway to characterize subsurface conditions at the property.

7. *Churches United for the Homeless:* A Phase I and Phase II ESA have been completed at the property. Findings of the investigation work indicate the property is the former Johnson Oil Bulk Petroleum Storage and Distribution Center and previous known release site. Petroleum-related contamination exists at three locations at the property including the former depot building/bulk above ground tank farm located in the southwest part of the property; UST basin located in the gravel driveway between the former depot building and warehouse; and UST basin located west and adjacent to the warehouse. At the UST basin located adjacent to the warehouse, the contamination impacted buried utilities and followed the utilities located beneath 1st Avenue. No further work is contemplated for the property at this time.

8. *VFW:* A Phase I ESA has been completed for the property. The Phase I identified soil and fill of unknown origins or possibly waste material which were likely brought to the property during or prior to construction of the building. A Phase II ESA is currently underway to further characterize subsurface conditions at the property.

Other Known Leak Sites

Peer is aware of the following other known release sites located along the 1st Avenue North. Locations of these sites are shown on Figure 1, in "blue", attached to this memorandum.

1. Former Aurora Customs/Olsons Tarps
2. Thai Orchid Restaurant (suspect historic gas station)
3. Quick Lube and Tune
4. Moorhead Exhaust (existing gas station)
5. Used Car Lot (suspect historic gas station)
6. Critter Feed/Mattson Oil/Key Contracting (former/existing gas stations, bulk petroleum storage)
7. Kovash Marine (MDA site)
8. Former Johnson Oil/Churches United
9. Coca-Cola

Discussion and Recommendation

Peer understands this summary is being used by decision-makers for road construction planning along 1st Avenue North. Based on the information above, numerous sites exist along 1st Avenue N. with known or suspect contamination that could represent a source of soil, ground water, or vapor migration for the road area. If future development of these properties or the surrounding area (i.e., road) is planned, it should be assumed that contamination may still be present.

Milling down and overlaying new pavement on 1st Avenue is not anticipated to be impacted by these sites as this work is relatively shallow work. If contamination is encountered, the MPCA needs to be notified. A good environmental planning tool is to

have a construction contingency plan in place in the event contamination is found so it can be expeditiously managed.

Depending on amenities constructed, there may be more extensive work in some locations that trigger remediation. It is Peer's recommendation that the City of Moorhead consider some level of investigation profiling in these areas upfront, the level of which could be based on level of work to be actually completed.

Please feel free to contact us should you have any questions or require additional information or clarification in regards to this matter. Thank you.

Cc: Peter Doll
Bob Zimmerman
Scott Hutchins

w/ attachment


LEGEND
CORRIDOR BOUNDARY
CITY INVESTIGATION SITE
OTHER KNOWN LEAKSITE / SUSPECT GAS STATION
RIVERFRONT PARK RD
CENTER AVE
MAIN AVE
HWY 10 E
FRONTAGE RD S
HWY 75 N
1 AVE N
2 AVE N
3 AVE N
4 AVE N
5 AVE N
6 AVE N
7 AVE N
8 AVE N
9 AVE N
9 1/2 AVE N
10 AVE N
1 AVE S
2 AVE S
3 AVE S
4 AVE S
1 ST N
2 ST N
3 ST N
4 ST N
1 ST S
2 ST S
3 ST S
4 ST S
24 ST S
N
Peer Engineering
KNOWN CONTAMINATION SITES
1ST AVENUE NORTH CORRIDOR
MOORHEAD, MINNESOTA
SEPT. 2008
FIGURE 1

APPENDIX 2

TRAFFIC ANALYSIS

SRF CONSULTING GROUP, INC.
ENGINEERS | PLANNERS | DESIGNERS

MINNEAPOLIS
FARGO
MADISON

SRF No. 0076303

FINAL MEMORANDUM

TO: Rick Lane, P.E. Principal

FROM: Craig Vaughn, P.E., PTOE, Associate
Matthew Pacyna, Engineer

DATE: November 10, 2008

SUBJECT: 1ST AVENUE NORTH TRAFFIC ANALYSIS UPDATE – MOORHEAD, MN

INTRODUCTION

As requested, we have completed a traffic operations analysis for 1st Avenue North between 3rd Street North and 17th Street North in Moorhead, MN. The purpose of the analysis is to determine how the 1st Avenue North corridor operates today and determine how existing and alternative access modifications will impact future (year 2012) traffic forecasts. This study includes a traffic operations analysis during the a.m. and p.m. peak hours for existing and year 2012 conditions with existing and alternative access modifications.

EXISTING CONDITIONS

Traffic operations were analyzed at the following key intersections:

- 1st Avenue North and 3rd Street North
- 1st Avenue North and 7th Street North
- 1st Avenue North and 8th Street North
- 1st Avenue North and 9th Street North
- 1st Avenue North and 10th Street North
- 1st Avenue North and 11th Street North
- 1st Avenue North and 12th Street North
- 1st Avenue North and 13th Street North
- 1st Avenue North and 14th Street North
- 1st Avenue North and 15th Street North
- 1st Avenue North and 16th Street North
- 1st Avenue North and 17th Street North

1st Avenue North is a four-lane roadway with left-turn lanes provided at each key intersection. Turning movement counts were collected along 1st Avenue North at 9th Street North, 12th Street North, 15th Street North, and 17th Street North by SRF Consulting Group in December 2007. Turning movement counts were collected at the other key intersections in August 2006, as part of a signal timing study currently underway by SRF Consulting Group.

The intersections at 10th Street North, 13th Street North, and 16th Street North were not originally included in the previous analysis. However, based on discussions with City Staff, these intersections were recently added to the operations analysis. Updated turning movement counts were recently collected at these intersections in May 2008. Since the turning movement counts were collected on different days and times of the year, all count data was normalized to smoothly transition from one to the other. Existing turning movement counts for all key intersections are shown on Figure 1.

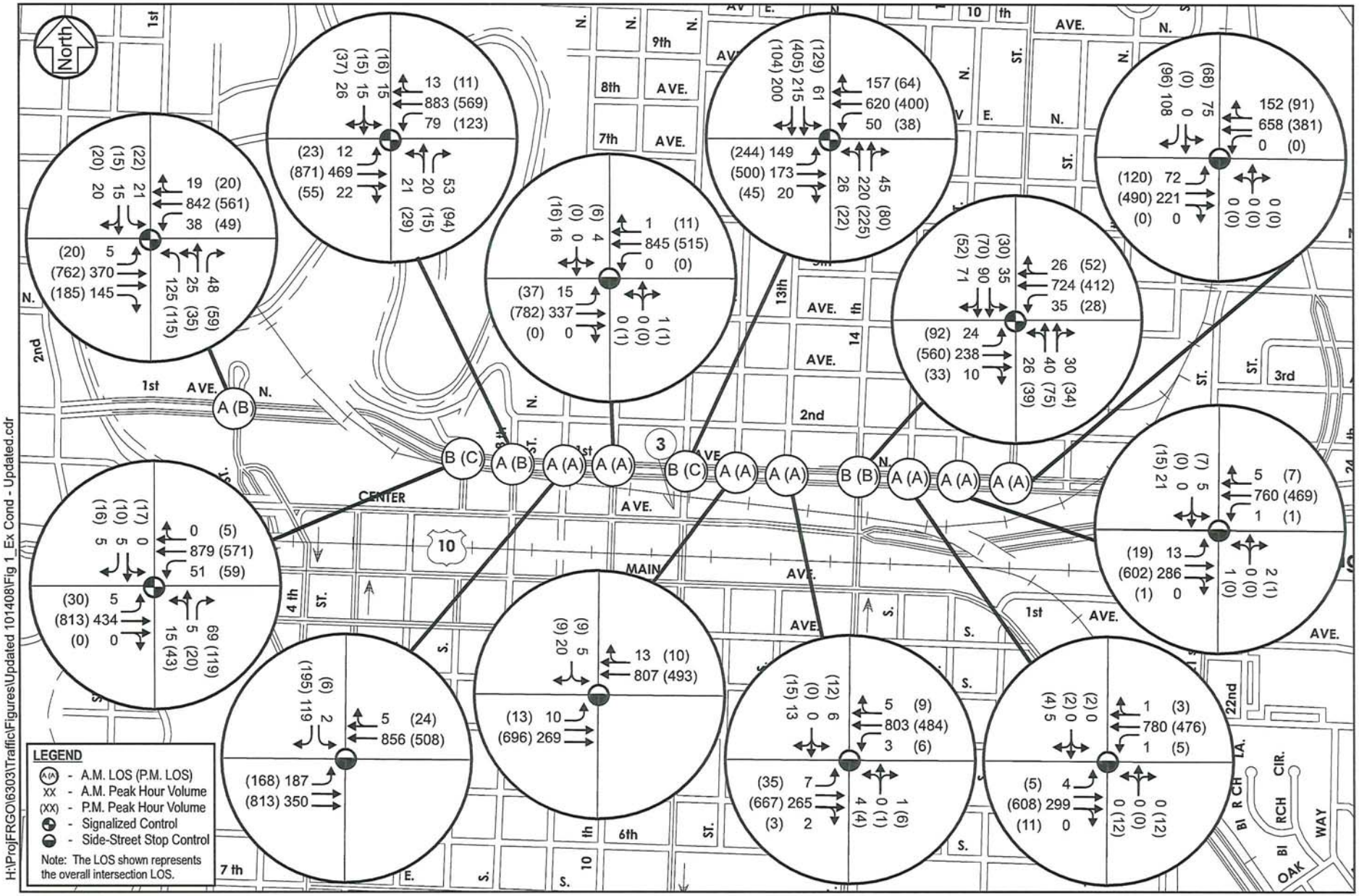
To determine how the existing roadway network currently operates, an operations analysis was conducted for the a.m. and p.m. peak hours. The analysis was completed using a combination of Synchro/SimTraffic and the Highway Capacity Manual software. Results of the analysis shown in Table 1 indicate that all key intersections currently operate at an acceptable LOS C or better during the a.m. and p.m. peak hours, with existing traffic controls, signal timing, and geometric layout. Existing signal timing, obtained from SRF Consulting Group as part of a traffic signal update project, was used in this analysis. It should be noted that the lanes along 1st Avenue North are 10 feet wide. This has a minor effect on the overall operations of the corridor. No significant queuing was observed and side-street delays were found to be minimal.

Table 1
Existing Peak Hour Capacity Analysis
Level of Service Results

Intersection	Level of Service	
	A.M. Peak	P.M. Peak
1st Avenue North and 3rd Street North	A	B
1st Avenue North and 7th Street North	B	C
1st Avenue North and 8th Street North	A	B
1st Avenue North and 9th Street North *	A/B	A/B
1st Avenue North and 10th Street North *	A/B	A/C
1st Avenue North and 11th Street North	B	C
1st Avenue North and 12th Street North *	A/B	A/B
1st Avenue North and 13th Street North *	A/B	A/C
1st Avenue North and 14th Street North	B	B
1st Avenue North and 15th Street North *	A/B	A/B
1st Avenue North and 16th Street North *	A/B	A/B
1st Avenue North and 17th Street North *	A/C	A/C

* Indicates an unsignalized intersection. The overall LOS is followed by the worst approach LOS.

Existing a.m. peak hour corridor travel times for eastbound and westbound are 3 minutes 35 seconds and 3 minutes 40 seconds, respectively. Existing p.m. peak hour corridor travel times for eastbound and westbound are 4 minutes 5 seconds and 3 minutes 35 seconds, respectively. These travel times include delays associated with each intersection.



SRF Consulting Group, Inc.

0076303
November 2008

Existing Conditions

1st Avenue North Traffic Analysis
City of Moorhead

Figure 1

YEAR 2012 TRAFFIC FORECASTS

Year 2012 traffic forecasts were developed using historical growth trends and projected future land-use data provided by City Staff. Based on historical growth trends, a one-percent annual growth rate was applied to the existing turning movements. In addition to the one-percent annual growth rate, land-use data provided by City Staff was used to determine additional traffic within the study area. As shown in Table 2, trip generation estimates for the potential adjacent developments were generated based on information in the 2003 ITE Trip Generation Reports. The additional trips generated by adjacent land-uses were distributed to the roadway network based on existing average daily traffic (ADT) volumes and existing travel patterns. The combination of background traffic and adjacent development trips for year 2012 with existing access are shown in Figure 2.

The year 2012 analysis considered alternative access modifications proposed for the ultimate layout. Year 2012 traffic volumes were modified to reflect the alternative access modifications listed below:

- 1st Avenue North and 9th Street North – Three-quarter access (right-in/right-out/left-in)
- 1st Avenue North and 12th Street North – Right-in/right-out
- 1st Avenue North and 15th Street North – Right-in/right-out

The combination of background traffic and adjacent development trips for year 2012 are shown in Figure 3 (taking into account all access modifications stated above).

YEAR 2012 CONDITIONS – EXISTING ACCESS

In order to determine how the adjacent roadway network will operate under year 2012 conditions with existing access, an operations analysis was conducted during the a.m. and p.m. peak hours. As shown in Table 3, all key intersections are expected to operate at an acceptable overall LOS C or better under year 2012 conditions during the a.m. and p.m. peak hours, with existing signal timing and geometric layout. It should be noted that side-street delays at 13th Street North, 16th Street North, and 17th Street North are expected to be approximately one and one-half minutes. Minor queuing is also expected on the eastbound approach at the intersection of 1st Avenue North and 7th Street North as well as the southbound approach at the intersection of 1st Avenue North and 11th Street North.

Year 2012 a.m. peak hour corridor travel times with existing access for eastbound and westbound are 3 minutes 35 seconds and 3 minutes 40 seconds, respectively. Year 2012 p.m. peak hour corridor travel times with existing access for eastbound and westbound are 4 minutes 40 seconds and 3 minutes 45 seconds, respectively. These travel times include delays associated with each intersection. The a.m. peak hour corridor travel times are not affected by the proposed adjacent developments. However, the p.m. peak hour corridor travel times are expected to increase by approximately 10 percent due to the proposed adjacent development.

Table 2

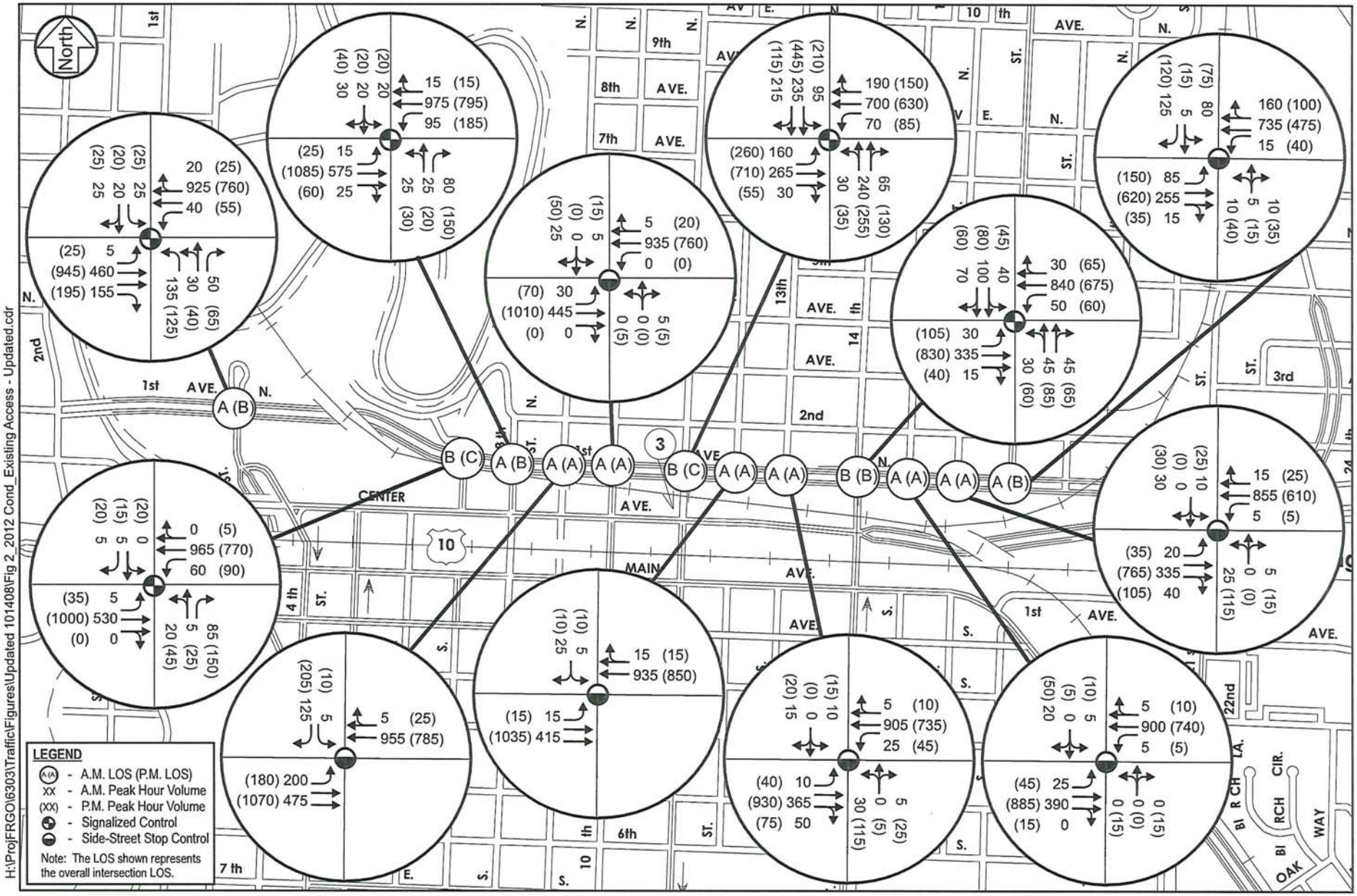
SRF Project No. 6303

Moorhead, MN

1st Avenue N Full Development Scenario

Trip Generation of Redevelopment Sites

Block/Location	Side of 1st Ave	Land Use	Size of Site (sq. ft.)	Likely FAR	Anticipated Full Development	Unit (sq ft, DU)	ADT Rate	ADT Vol	AM Peak Rate	AM Peak Vol In	AM Peak Vol Out	PM Peak Rate	PM Peak Vol In	PM Peak Vol Out	Notes
8th St N to 10th St N	South	Linear Park	35650	N/A	35650 (.81)	sq ft (acre)	2.28	2	0.01	0	0	0.06	0	0	Vehicular access from 10th St, but only for maintenance
9th St N to 10th St N,	North	Mixed:	16000	1											Access to 1st Ave will be closed and only access will be
access from 10th St N		Residential			0	DU	-	-	-	-	-	-	-	-	from 10th St N.
		Commercial			8000	sq ft	42.94	344	1.03	5	3	3.75	14	16	
		Office			8000	sq ft	3.32	27	0.48	3	0	0.46	1	3	
10th St N to 11th St N	North	Mixed:	100545	1.5											Reduced site size by 8,000 sq ft for alley (20x400).
		Residential			20	DU	5.86	117	0.44	1	7	0.52	7	3	Assume midblock alley connecting 10th and 11th St.
		Commercial			33515	sq ft	42.94	1439	1.03	21	13	3.75	60	65	Assume no future access to 1st Ave N. Access will be from
		Office			33515	sq ft	3.32	111	0.48	14	2	0.46	3	13	alley.
10th St N to 11th St N	South	Mixed Use	48900	1											Assume all access from 10th St N. Driveways on 1st Ave
		Residential			0	DU	-	-	-	-	-	-	-	-	will be removed, and future RR underpass on 11th St N will
		Commercial			12225	sq ft	42.94	525	1.03	8	5	3.75	22	24	make property access infeasible.
		Office			36675	sq ft	3.32	122	0.48	15	2	0.46	3	14	
11th St N to 14th St N	South	Commercial	90455	1	90455	sq ft	42.94	3884	1.03	57	36	3.75	163	176	Access to park via rt in/rt out along 1st Ave.
		Office	90455	1	90455	sq ft	3.32	300	0.48	38	5	0.46	7	35	Comm and office will have full access to 1st Ave at 13th St N
															and rt in/rt out access east of 13th, and full access off of
															14th St N.
15th St N to 18th St N	South	Commercial	213444	0.5	106722	sq ft	42.94	4583	1.03	67	43	3.75	192	208	Full access to 1st Ave at 16th St N and 17th St N, with
															signal at 17th. Other existing accesses will be closed.
15th St N to 16th St N	North	Mixed Use	90470	1.5											
		Residential			25	DU	5.86	147	0.44	2	9	0.52	9	4	No direct access to 1st Ave. The block will take access
		Commercial			45235	sq ft	42.94	1942	1.03	28	18	3.75	81	88	from a future alley through the middle of the block, so
		Office			45235	sq ft	3.32	150	0.48	19	3	0.46	4	17	access will be from 15th and 16th Streets.



H:\Proj\FRGO\6303\Traffic\Figures\Updated 101408\Fig 2_2012 Cond_Existing Access - Updated.cdr

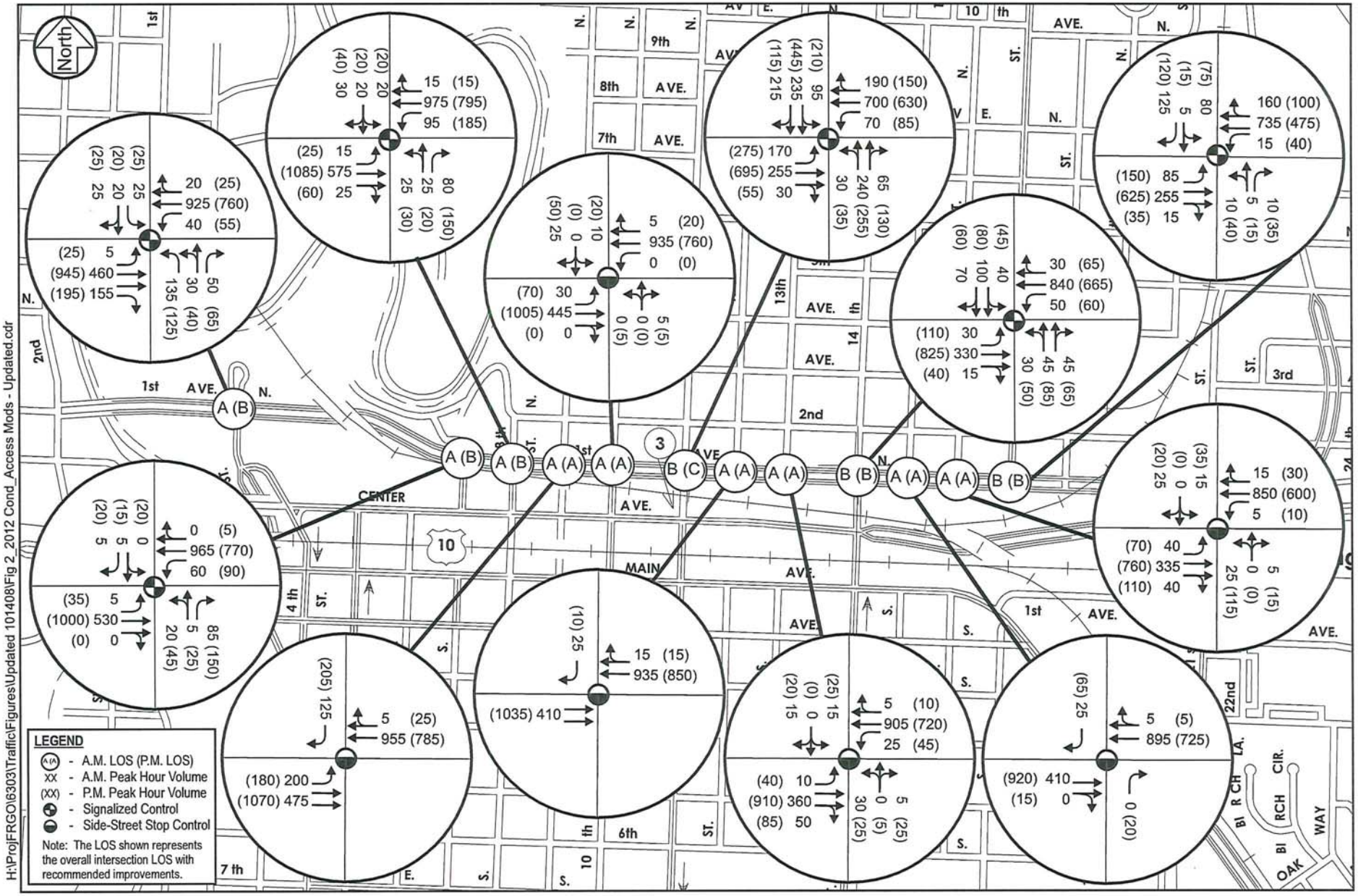
SRF Consulting Group, Inc.

0076303
November 2008

Year 2012 Conditions - Existing Access

1st Avenue North Traffic Analysis
City of Moorhead

Figure 2



H:\Proj\FRGO\6303\Traffic\Figures\Updated 101408\Fig 2_2012 Cond_Access Mods - Updated.cdr

SRF Consulting Group, Inc.

0076303
November 2008

Year 2012 Conditions - Alternative Access Modifications with Improvements

1st Avenue North Traffic Analysis
City of Moorhead

Figure 3

Table 3
Year 2012 Peak Hour Capacity Analysis – Existing Access
Level of Service Results

Intersection	Level of Service	
	A.M. Peak	P.M. Peak
1st Avenue North and 3rd Street North	A	B
1st Avenue North and 7th Street North	B	C**
1st Avenue North and 8th Street North	A	B
1st Avenue North and 9th Street North *	A/B	A/B
1st Avenue North and 10th Street North *	A/B	A/C
1st Avenue North and 11th Street North	B	C**
1st Avenue North and 12th Street North *	A/B	A/C
1st Avenue North and 13th Street North *	A/C	A/**F**
1st Avenue North and 14th Street North	B	B
1st Avenue North and 15th Street North *	A/B	A/D
1st Avenue North and 16th Street North *	A/C	A/**F**
1st Avenue North and 17th Street North *	A/D	B/**F**

* Indicates an unsignalized intersection. The overall LOS is followed by the worst approach LOS.
** Indicates an intersection with minor queuing issues.

The excessive side-street delays and queuing issues should be mitigated. However, before developing mitigation measures, the access changes proposed in the ultimate layout along 1st Avenue North were analyzed to determine the impacts these roadway changes would have on the side-street delays, minor queuing issues, and the 1st Avenue North corridor.

YEAR 2012 CONDITIONS – ALTERNATIVE ACCESS

In order to determine how the adjacent roadway network will operate under year 2012 conditions (with the proposed ultimate layout alternative access modifications along 1st Avenue North), an operations analysis was conducted during the a.m. and p.m. peak hours. As shown in Table 4, all key intersections are expected to operate at an acceptable overall LOS C or better under year 2012 conditions during the a.m. and p.m. peak hours, with existing signal timing and access modifications. It should be noted that the excessive side-street delays at 13th Street North, 16th Street North, and 17th Street North and the minor queuing issues at 7th Street North and 11th Street South continue to exist and are not impacted by the proposed access changes. The side-street delays at these intersections are expected to be approximately one and one-half minutes and thus should be mitigated. However, based on the proposed access along 1st Avenue North and the existing traffic signal spacing, installing traffic signals to mitigate the side-street delays at all of these locations would not follow signal spacing guidelines.

Table 4
Year 2012 Peak Hour Capacity Analysis – Alternative Access
Level of Service Results

Intersection	Level of Service	
	A.M. Peak	P.M. Peak
1st Avenue North and 3rd Street North	A	B
1st Avenue North and 7th Street North	B	C**
1st Avenue North and 8th Street North	A	B
1st Avenue North and 9th Street North *	A/B	A/B
1st Avenue North and 10th Street North *	A/B	A/C
1st Avenue North and 11th Street North	B	C**
1st Avenue North and 12th Street North *	A/B	A/B
1st Avenue North and 13th Street North *	A/C	A/F
1st Avenue North and 14th Street North	B	B
1st Avenue North and 15th Street North *	A/B	A/B
1st Avenue North and 16th Street North *	A/C	A/F
1st Avenue North and 17th Street North *	A/D	B/F

* Indicates an unsignalized intersection. The overall LOS is followed by the worst approach LOS.
** Indicates an intersection with minor queuing issues.

YEAR 2012 CONDITIONS – ALTERNATIVE ACCESS WITH IMPROVEMENTS

To improve operations along 1st Avenue North, specifically the excessive side-street delays while maintaining signal spacing guidelines, the following recommendations should be considered. Since the traffic signal at 14th Street North is approximately 500 feet from 13th Street North, the installation of a traffic signal at 13th Street North is not recommended. If vehicles from the site south of 1st Avenue North are experiencing significant side-street delays at 13th Street North as expected, a portion of these vehicles will divert to the full-access point located along 14th Street North. This will allow vehicles to more safely access 1st Avenue North via the traffic signal at 14th Street North, while also reducing the side-street delays for vehicles on 13th Street North accessing 1st Avenue North. Modification of the access at 13th Street North to a right-in/right-out was considered, however this would eliminate the only full-access to 1st Avenue North for the development to the south.

The side-street delays at 16th Street North and 17th Street North can partly be associated with the development located immediately south of 1st Avenue North. Since this development has full-access to both intersections, only one traffic signal is necessary. Due to the traffic signal at 14th Street North, it is important to maintain as much space as possible between traffic signals. Therefore, the best location for installing a traffic signal is at 17th Street North. By installing a traffic signal at 17th Street North, a portion of the vehicles at 16th Street North will divert to 17th Street North, which will increase safety, while also reducing the side-street delays for vehicles on 16th Street North. Modification of the access at 16th Street North to a right-in/right-out was considered, however by installing the traffic signal at 17th Street North, it will provide additional gaps at 16th Street North, which in turn will reduce side-street delays. Therefore, modifying the access at 16th Street North is not recommended.

While installation of a traffic signal at 17th Street North is the recommended mitigation measure necessary to alleviate the significant side-street delay, it should be noted that the traffic volumes at this location are not expected to meet traffic signal warrants within the 5-year study period. This intersection should be monitored into the future to determine when traffic signal warrants are met. To improve the queuing observed on the eastbound approach of 1st Avenue North at 7th Street North and the southbound approach of 1st Avenue North and 11th Street North to existing levels or better, the traffic signal timing should be optimized for year 2012 conditions. In addition, implementation of a southbound protected left-turn phase at the intersection of 1st Avenue North and 11th Street North should be considered. This will improve the overall operations at this intersection and the safety for vehicles turning left from 11th Street North to 1st Avenue North.

Table 5 shows that all key intersections are expected to operate at an acceptable overall LOS C or better under year 2012 conditions during the a.m. and p.m. peak hours, with the recommended improvements and the proposed ultimate layout alternative 1st Avenue North access modifications. It should be noted that no queuing issues are expected with the recommended improvements.

Table 5
Year 2012 Peak Hour Capacity Analysis – Alternative Access with Improvements
Level of Service Results

Intersection	Level of Service	
	A.M. Peak	P.M. Peak
1st Avenue North and 3rd Street North	A	B
1st Avenue North and 7th Street North	A	B
1st Avenue North and 8th Street North	A	B
1st Avenue North and 9th Street North *	A/B	A/B
1st Avenue North and 10th Street North *	A/B	A/B
1st Avenue North and 11th Street North	B	C
1st Avenue North and 12th Street North *	A/B	A/B
1st Avenue North and 13th Street North *	A/C	A/F
1st Avenue North and 14th Street North	B	B
1st Avenue North and 15th Street North *	A/B	A/B
1st Avenue North and 16th Street North *	A/C	A/F
1st Avenue North and 17th Street North	B	B

* Indicates an unsignalized intersection. The overall LOS is followed by the worst approach LOS.

Year 2012 a.m. peak hour corridor travel times with alternative access modifications for eastbound and westbound are 3 minutes 35 seconds and 3 minutes 40 seconds, respectively. Year 2012 p.m. peak hour corridor travel times with alternative access modifications for eastbound and westbound are 4 minutes 10 seconds and 3 minutes 40 seconds, respectively. These travel times include delays associated with each intersection. The a.m. peak hour corridor travel times are not affected by the proposed adjacent developments. However, the p.m. peak hour corridor travel times are expected to decrease by approximately 3 percent due to the alternative access modifications.

Based on the operations analysis and travel time comparisons, the alternative access modifications do not have a significant impact on intersection or corridor operations. However, the access modifications do improve the overall mobility of the roadway while reducing the amount of conflict points. By reducing the amount of conflict points, the likelihood of a crash is lower, thus increasing the safety of the roadway. It is also important to note the future function of 1st Avenue North. If the primary function of the roadway is mobility, the alternative access modifications should be implemented.

CRASH ANALYSIS

Five years of accident information within the project study area (January 1, 2002 to December 31, 2006) were obtained from the MnDOT Accident Database. Accident data was collected for key intersections and segments along 1st Avenue North between 3rd Street North and 17th Street North. Results of the crash analysis are shown in Table 5. Accidents that are shown to occur within an intersection include all crashes within 100 feet of the intersection. The severity of the accidents was divided into three categories: fatal, injury and property damage only. Actual crash rates for intersections and segments were calculated using the crash rate method formulas found in the 2006 American Traffic Safety Service Association (ATSSA) publication *Low Cost Local Road Safety Solutions.* Crash rates for intersections are reported by the number of crashes per million entering vehicles (MEV) at an intersection. Segment crash rates are reported by the number of crashes per million vehicle miles (MVM) traveled in both directions on the roadway segment. The crash rates were compared to average crash rates for similar types of intersections and segments as reported in the Minnesota 2006 state wide crash data.

Results of the crash analysis found higher than average crash rates at the intersections of 1st Avenue North with 10th Street North, 14th Street North & 17th Street North when compared with statewide average crash rates for similar intersections. A closer review of the 1st Avenue North and 10th Street North intersection crashes indicate that two of the eight accidents included a bicyclist and one of the eight accidents resulted in a fatality. Several of the accidents at this location consisted of right angle type crashes in which the side-street vehicle failed to stop and wait for a clear gap in traffic to cross or turn onto 1st Avenue North. Review of the 1st Avenue North and 14th Street North intersection crashes indicate that the majority of the nineteen accidents that occurred at this location were the result of a vehicle failing to follow the traffic laws. Review of the 1st Avenue North and 17th Street North intersection crashes indicate that a majority of the accidents were right angle accidents in which the side street traffic failed to yield to vehicles on 1st Avenue North. This may indicate that there are a limited amount of acceptable gaps for vehicles to cross or turn onto 1st Avenue North, which is causing vehicles to be more aggressive and accept smaller gaps to gain access to 1st Avenue North, creating an unsafe condition. It should be noted that the number of accidents reported at 17th Street North and 1st Avenue North does not meet the accident experience warrant.

The statewide average crash rate for similar intersections and segments does not account for variation in traffic volume among facilities or the random nature of crashes. Therefore, the critical crash rate was calculated to determine the statistical significance of the crash rate comparison. The critical crash rate is often referred to as the quality control technique for identifying hazardous locations. This method only identifies those locations that have a crash rate statistically significantly higher than similar locations. It is thought to be the best, most accurate, and statistically reliable method available for determining hazardous locations. The critical crash rate also takes into account the traffic volumes of each intersection or segment and accounts for the random nature of crashes. For purposes of this calculation a 95th-percentile confidence interval was selected as the threshold. Meaning one can be 95 percent confident that the intersections with crash rates below the critical crash rate, but above the average crash rate for similar intersections or segments, are safe and that the higher than average crash rate is due to the random nature of crashes. All key intersections and segments had a crash rate lower than the critical crash rate. Table 6 displays the resultant critical crash rates.

Table 6
Crash Analysis Results

Intersections	Number of Accidents			Calculated Crash Rate Per MEV	Average Crash Rate Per MEV	Critical Crash Rate
	Fatal	Injury	Property Damage			
1st Ave N & 3rd Street N	0	6	17	0.68	0.7	1.3
1st Ave N & 7th Street N	0	1	10	0.35	0.7	1.3
1st Ave N & 8th Street N	0	6	11	0.50	0.7	1.3
1st Ave N & 9th Street N	0	2	2	0.13	0.3	0.7
1st Ave N & 10th Street N	1	2	5	0.32	0.3	0.8
1st Ave N & 11th Street N	0	6	20	0.63	0.7	1.2
1st Ave N & 12th Street N	0	0	0	0	0.3	0.8
1st Ave N & 13th Street N	0	0	1	0.04	0.3	0.8
1st Ave N & 14th Street N	0	13	6	0.7	0.6	1.2
1st Ave N & 15th Street N	0	2	3	0.24	0.3	0.9
1st Ave N & 16th Street N	0	0	0	0	0.3	0.9
1st Ave N & 17th Street N	0	4	13	0.75	0.3	0.8
Segments	**Number of Accidents**			**Calculated Crash Rate Per MVM**	**Average Crash Rate Per MVM**	**Critical Crash Rate**
	Fatal	**Injury**	**Property Damage**			
1st Ave N between 3rd Street N & 7th Street N	0	1	2	0.34	3.7	5.7

MEV represents million entering vehicles at an intersection
MVM represents million vehicle miles traveled along a segment (both directions)

APPENDIX 3

SHORT TERM IMPROVEMENT LAYOUTS AND COST ESTIMATE

INSETS 1-11

1st Avenue North Corridor Study in Moorhead, Minnesota
Interim Cost Estimate (2009 Construction)
Prepared By: SRF Consulting Group, Inc., November 13, 2008

	ITEM DESCRIPTION	UNIT	UNIT PRICE	BASE PROJECT EST. QUANTITY	BASE PROJECT EST. AMOUNT	ENHANCEMENT ITEMS EST. QUANTITY	ENHANCEMENT ITEMS EST. AMOUNT
PAVING AND GRADING COSTS							
1	Removal Curb & Gutter	lin. ft.	$ 10.00	2,340	$ 23,400.00		$ -
2	Removal Retaining Wall	sq. ft.	$ 5.00	1,500	$ 7,500.00		$ -
3	Removal Pavement (includes driveway, street & walk)	sq. yd.	$ 10.00	11,500	$ 115,000.00		$ -
4	2" Mill and Overlay (8th St to 17th St)	sq. yd.	$ 15.00	21,000	$ 315,000.00		$ -
5	4" Concrete Walk (4.5' north and south sides)	sq. yd.	$ 40.00	7,000	$ 280,000.00		$ -
6	4" Concrete Shared Use Path Over-Width Southside	sq. yd.	$ 40.00		$ -	1,500	$ 60,000.00
7	Concrete Driveway	sq. yd.	$ 50.00	440	$ 22,000.00		$ -
8	Concrete Curb and Gutter	lin. ft.	$ 15.00	2,650	$ 39,750.00		$ -
9	4" Concrete Median Decorative	sq. yd.	$ 45.00		$ -	4,000	$ 180,000.00
10	Parking Ramp Modifications and Stairs	lump sum	$ 75,000.00		$ -	1	$ 75,000.00
	SUBTOTAL PAVING AND GRADING COSTS:				**$ 802,650.00**		**$ 315,000.00**
MISC. PERCENTAGE OF PAVING AND GRADING COSTS							
1	Drainage Adjustments	5%			$ 40,000.00		$ -
2	Signing & Striping	5%			$ 40,000.00		$ -
3	Turf Establishment & Erosion Control	5%			$ 40,000.00		$ -
	SUBTOTAL MISC. PERCENTAGE OF PAVING AND GRADING COSTS:				**$ 120,000.00**		**$ -**
LANDSCAPING COSTS							
1	Shrub	each	$ 50.00		$ -	59	$ 2,950.00
2	Small Tree	each	$ 250.00		$ -	65	$ 16,250.00
3	Large Tree	each	$ 400.00		$ -	118	$ 47,200.00
4	Intersection Enhancements (3rd St, 7th St, 8th St)	each	$ 40,000.00		$ -	3	$ 120,000.00
5	Bollard	each	$ 600.00		$ -	209	$ 125,400.00
6	Banner Pole	each	$ 2,500.00		$ -	21	$ 52,500.00
7	Banner Flag	each	$ 200.00		$ -	42	$ 8,400.00
8	Precast Railing Post	each	$ 800.00		$ -	111	$ 88,800.00
9	Ornamental Fence Panel	lin. ft.	$ 150.00		$ -	1,470	$ 220,500.00
10	Bridgehead Improvements	lump sum	$ 30,000.00		$ -	1	$ 30,000.00
12	East End Improvements	lump sum	$ 50,000.00		$ -	1	$ 50,000.00
	SUBTOTAL LANDSCAPING COSTS:				**$ -**		**$ 762,000.00**
LIGHTING COSTS							
1	Ornamental Roadway Light	each	$ 3,500.00		$ -	119	$ 416,500.00
2	Ornamental Sidewalk Light	each	$ 2,500.00		$ -	203	$ 507,500.00
	SUBTOTAL LIGHTING COSTS:				**$ -**		**$ 924,000.00**
SIGNAL COSTS							
1	Revise Signal System (3rd St)	system	$ 15,000.00	1	$ 15,000.00		$ -
2	Revise Signal System (8th St)	system	$ 15,000.00	1	$ 15,000.00		$ -
3	Revise Signal System (11th St)	system	$ 15,000.00	1	$ 15,000.00		$ -
	SUBTOTAL SIGNAL COSTS:				**$ 45,000.00**		**$ -**
	SUBTOTAL:				**$ 967,650.00**		**$ 2,001,000.00**
MISCELLANEOUS COSTS							
1	Mobilization	5%			$ 48,400.00		$ 100,100.00
2	Contingencies & Minor Items	15%			$ 145,100.00		$ 300,200.00
3	Railroad Crossing Material	lin. ft.	$ 1,200.00	168	$ 201,600.00		$ -
4	Moorhead Public Service OH Power Relocation to Underground	lump sum	$ 75,000.00		$ -	1	$ 75,000.00
5	Traffic Control	3%			$ 29,000.00		$ 60,000.00
	SUBTOTAL MISCELLANEOUS COSTS:				**$ 424,100.00**		**$ 535,300.00**
	TOTAL CONSTRUCTION COSTS:				**$ 1,391,750.00**		**$ 2,536,300.00**
	ENGINEERING FEES (20%):				**$ 278,400.00**		**$ 507,300.00**
	SUBTOTAL:				**$ 1,670,150.00**		**$ 3,043,600.00**
	TOTAL PROJECT COSTS:				**$ 4,713,750.00**		

Notes Estimate is in 2008 Dollars.
Does not include Local Utility Adjustments.

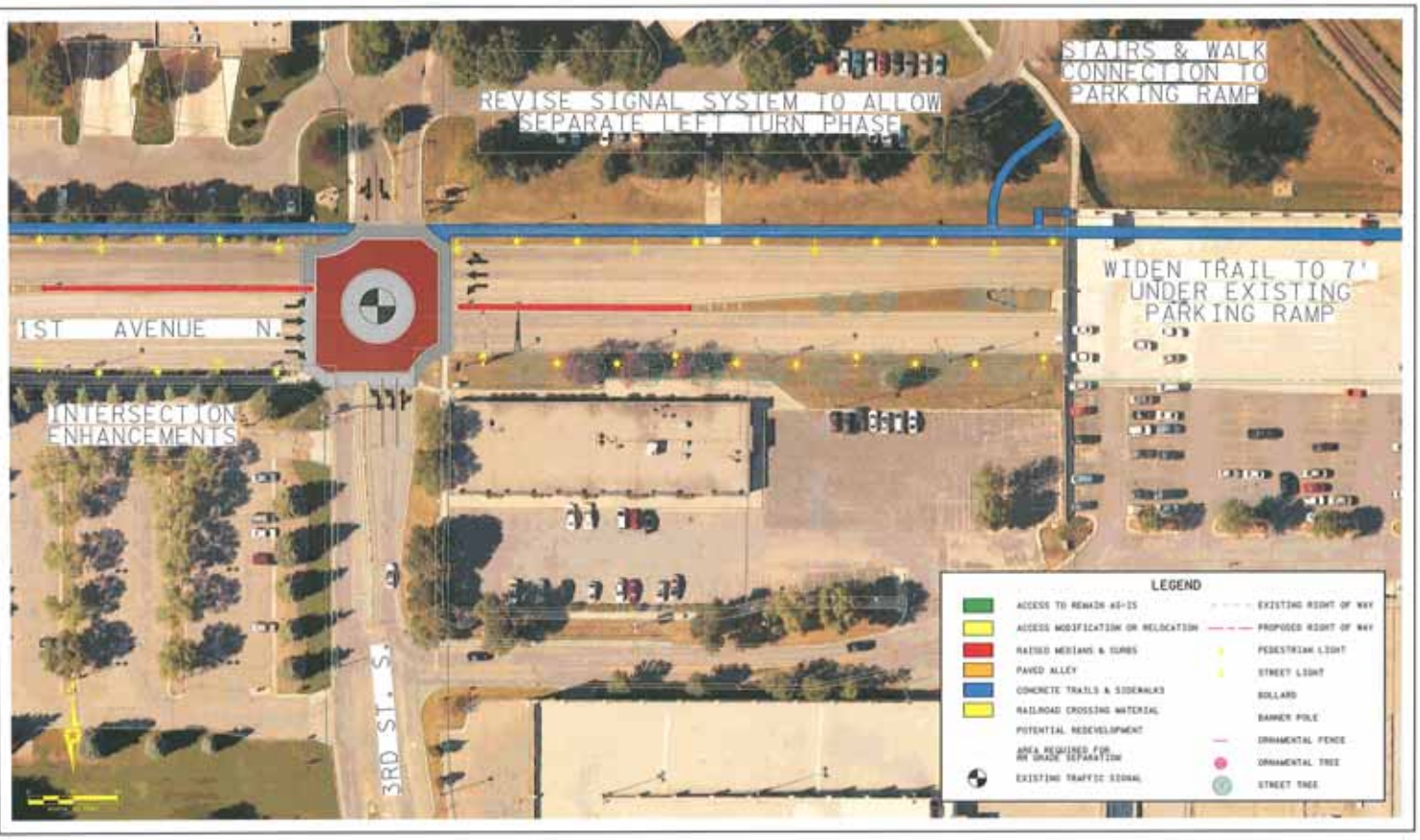
SRF

INTERIM LAYOUT

1st Avenue North
City of Moorhead

Job #8303
10/30/2008

Inset 1



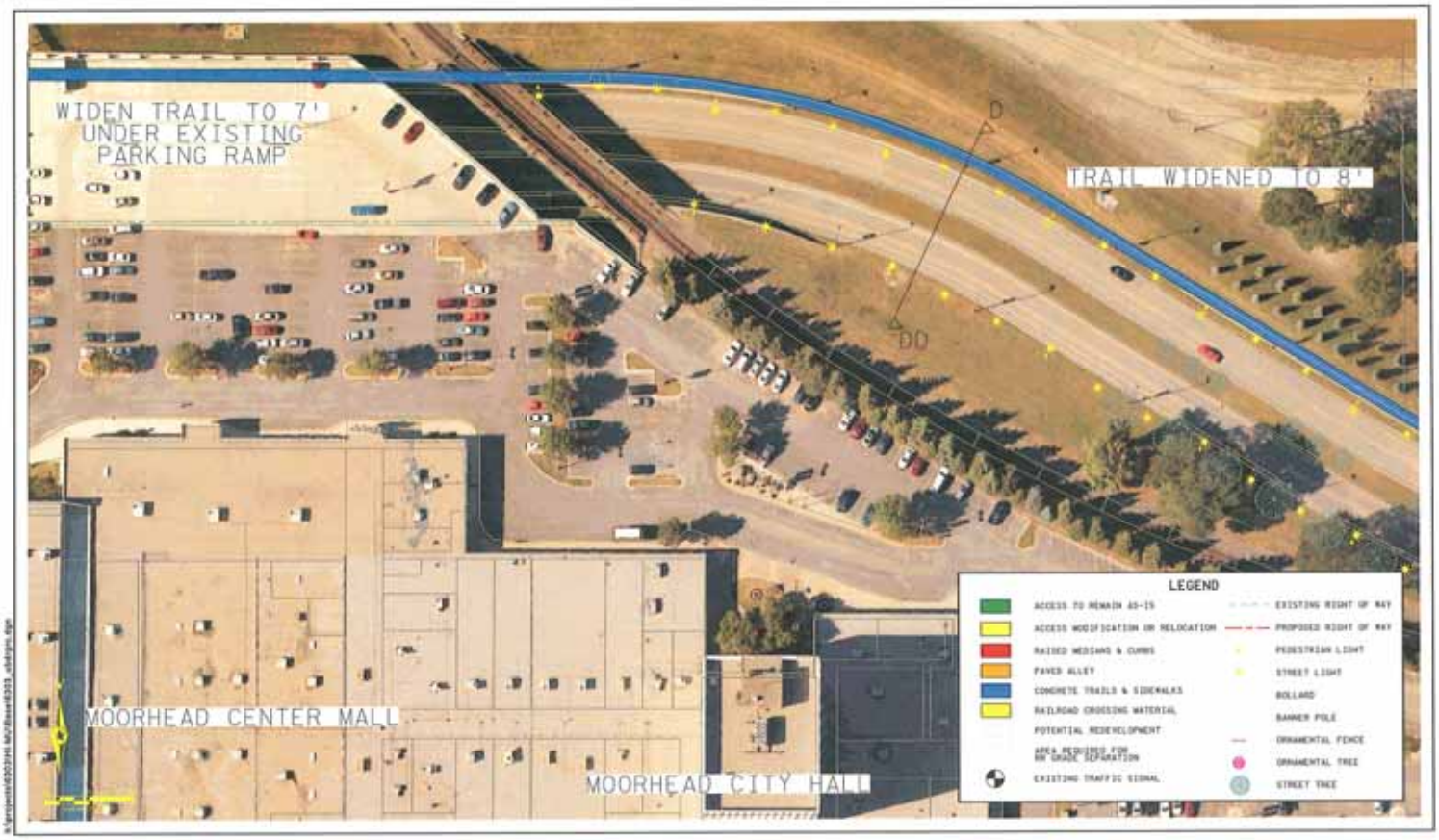
SRF Consulting Group, Inc.

INTERIM LAYOUT

1st Avenue North
City of Moorhead

Job #6393
10/30/2008

Inset 2



SRF Consulting Group, Inc.

INTERIM LAYOUT

1st Avenue North
City of Moorhead

Job #8303
10/20/2008

Inset 3

SRF Consulting Group, Inc.

INTERIM LAYOUT

1st Avenue North
City of Moorhead

Job #8333
11/18/2009

Inset 4

SRF

INTERIM LAYOUT

1st Avenue North
City of Moorhead

Inset 5

SRF

INTERIM LAYOUT

1st Avenue North
City of Moorhead

Job #6203
10/30/2008

Inset 6

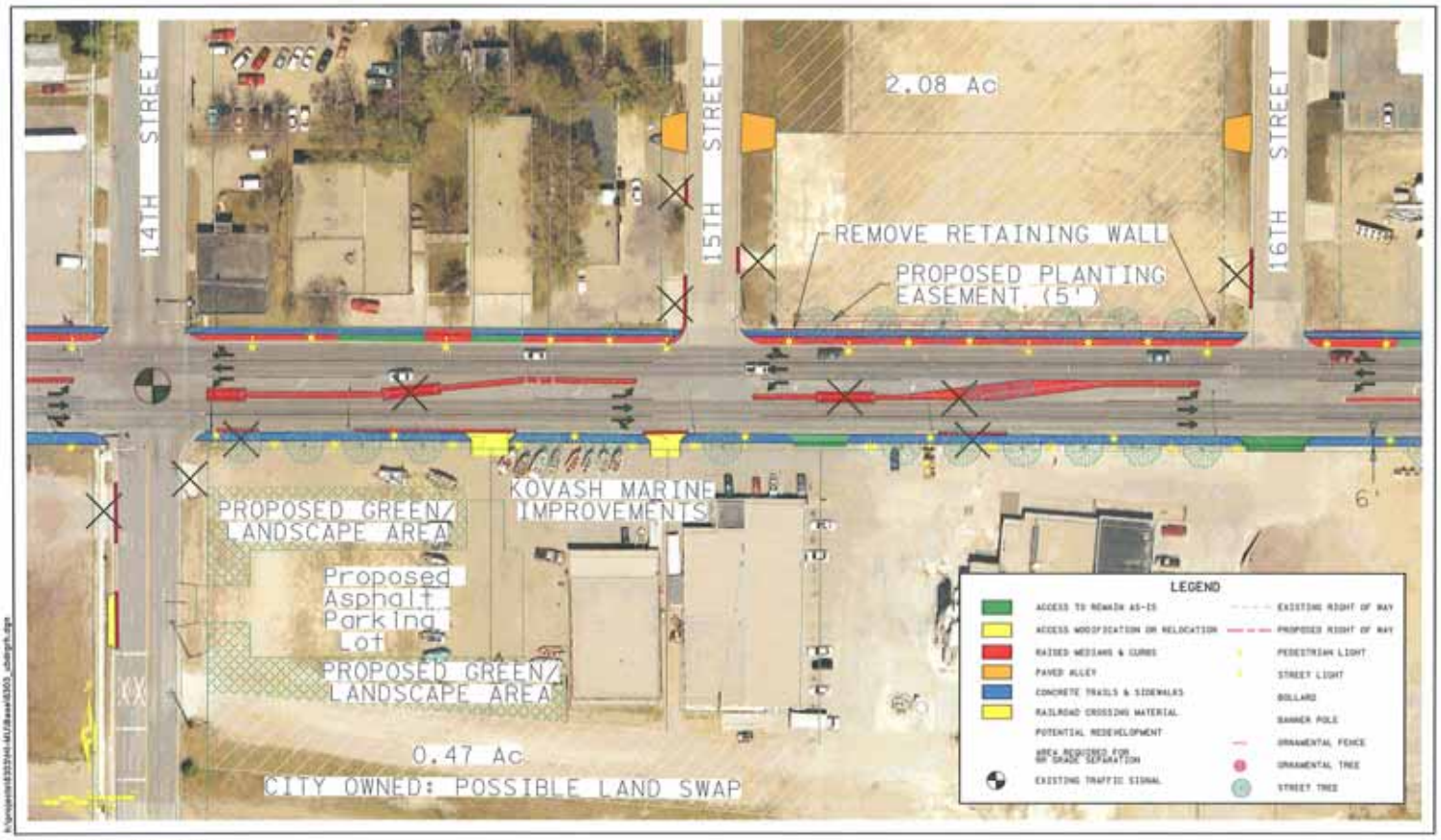
SRF

INTERIM LAYOUT

1st Avenue North
City of Moorhead

Job #8353
10/30/2008

Inset 7



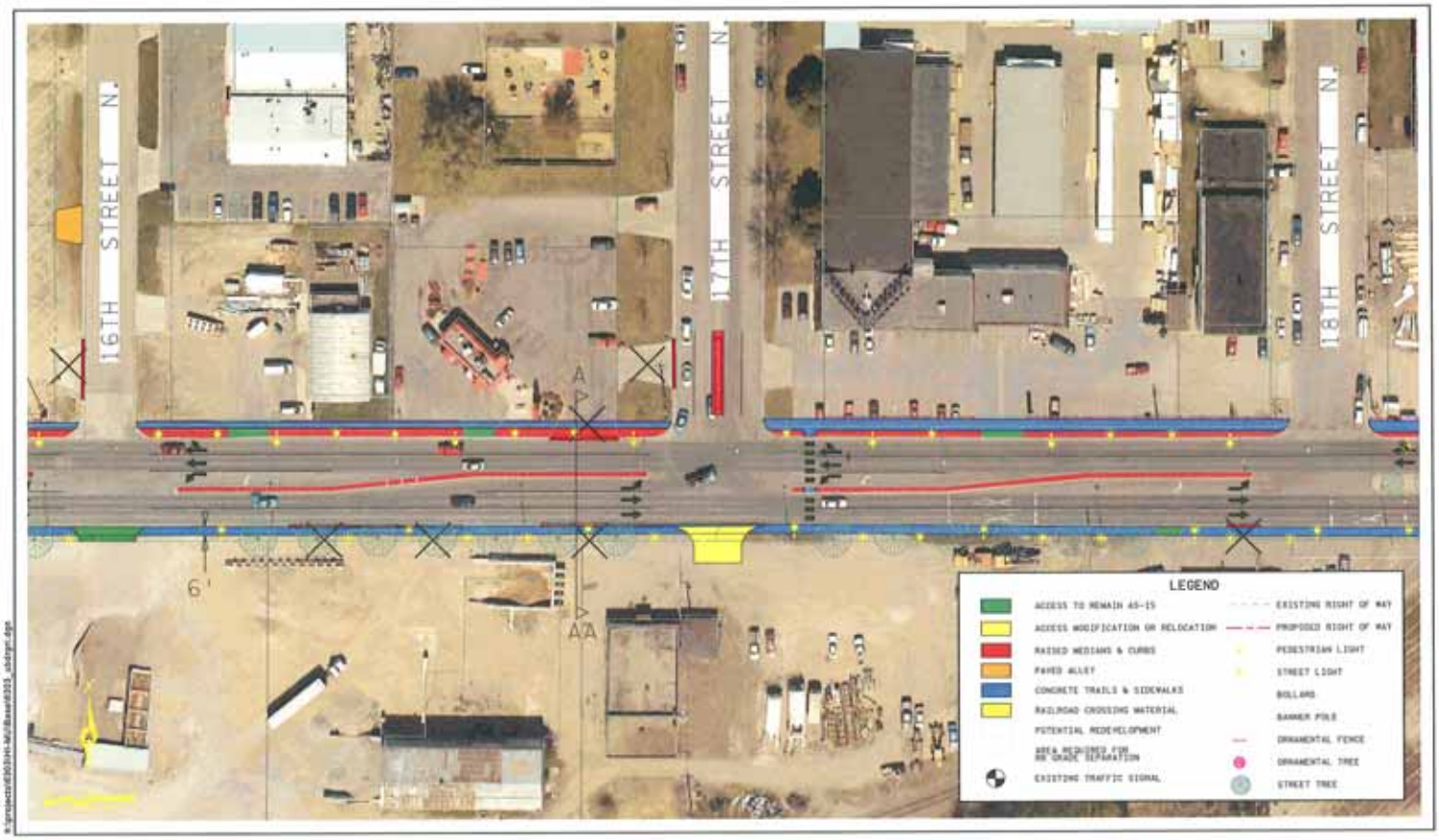
SRF Consulting Group, Inc.

INTERIM LAYOUT

1st Avenue North
City of Moorhead

Job #6203
10/20/2009

Inset 8



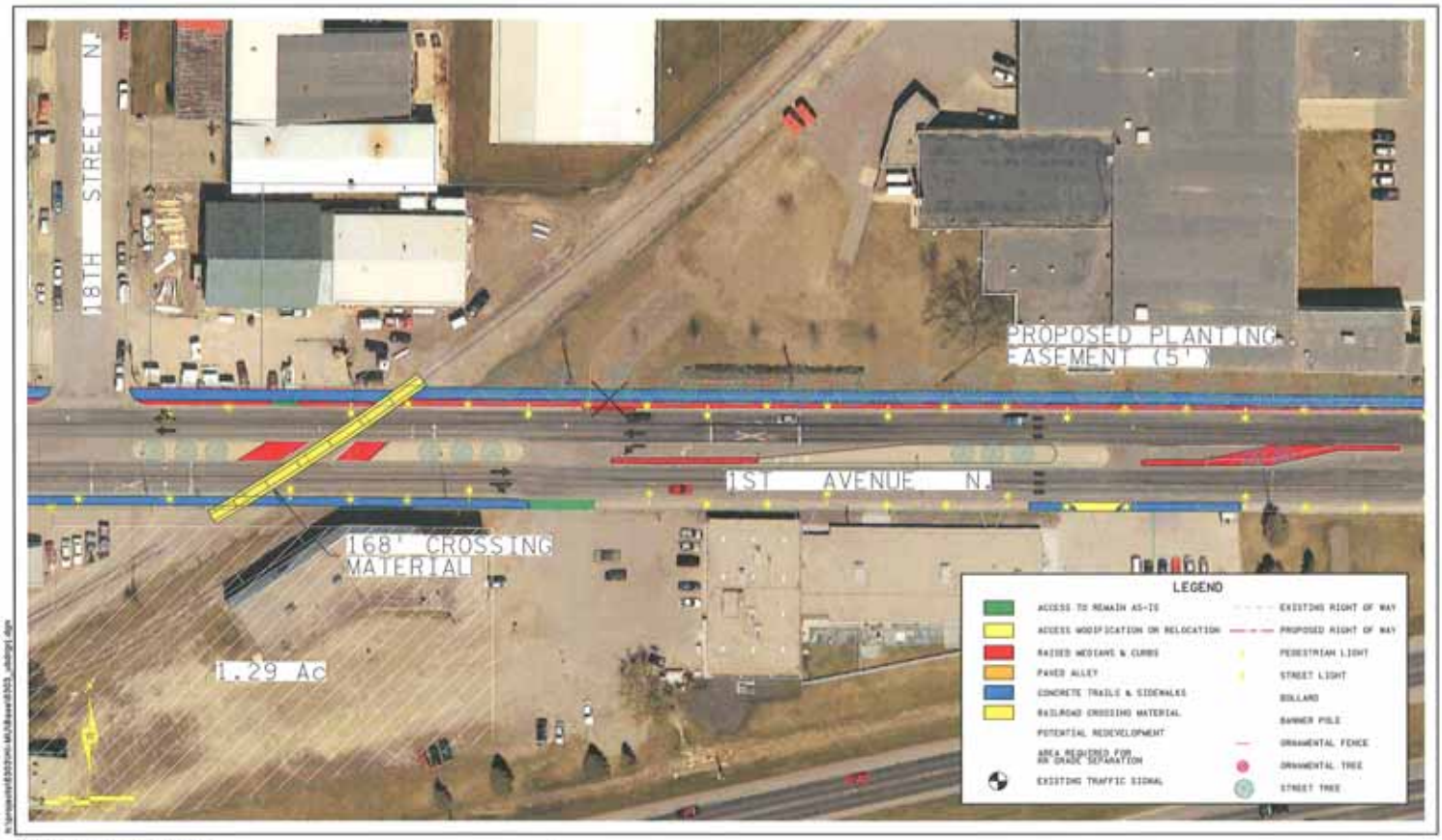
SRF Consulting Group, Inc.

INTERIM LAYOUT

1st Avenue North
City of Moorhead

Job #8333
10/30/2008

Inset 9



SRF Consulting Group, Inc.

INTERIM LAYOUT

1st Avenue North
City of Moorhead

Job #6203
11/10/2008

Inset 10

SRF

INTERIM LAYOUT

1st Avenue North
City of Moorhead

Inset 11

APPENDIX 4

RECOMMENDED TRANSIT STOP AND SHELTER LOCATIONS NEAR HJEMKOMST CENTER

SRF

Hjemkomst Center Transit Stop Alternatives

1st Avenue North

City of Moorhead

Job #8303
8/11/2009

APPENDIX 5

STREETSCAPE GRAPHICS

SRF Consulting Group, Inc.

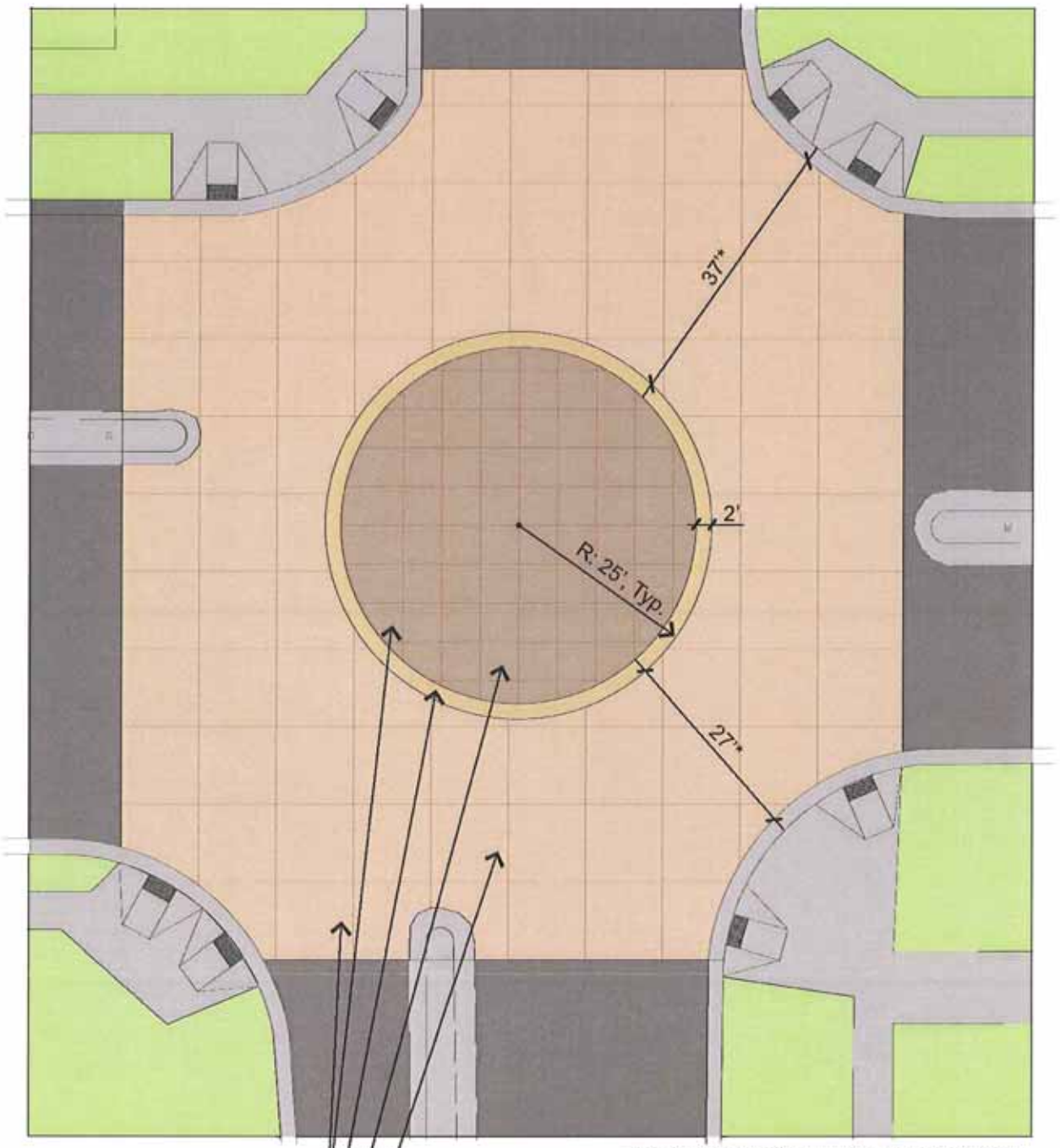
1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

BRIDGEHEAD CONCEPT

Graphic 1

City of MOORHEAD



SRF Consulting Group, Inc.

1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

REPRESENTATIVE INTERSECTION DETAIL
3rd STREET SHOWN

Graphic 2

City of Moorhead

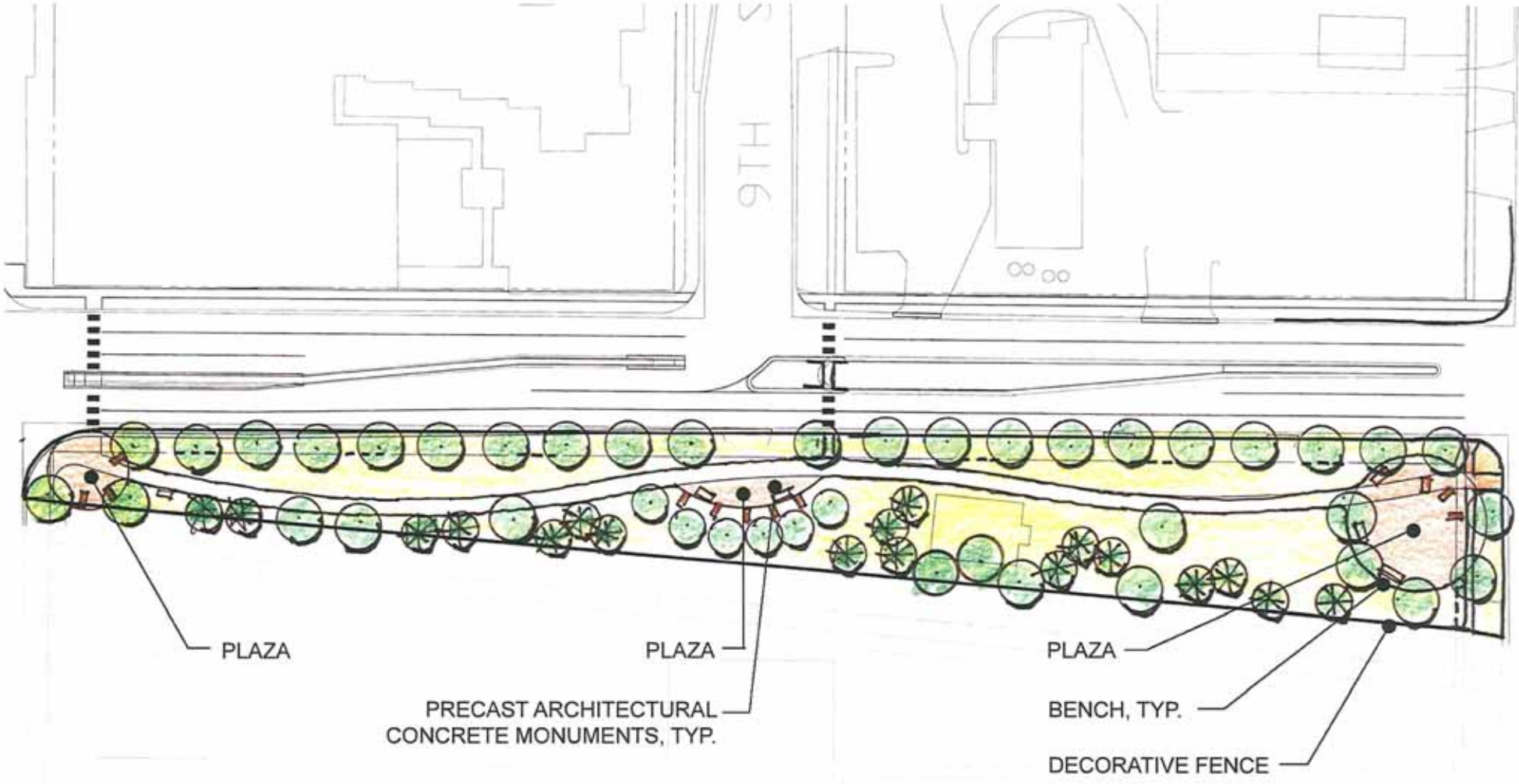
SRF Consulting Group, Inc.

1st AVENUE CONCEPT DESIGN — **MOORHEAD PEDESTRIAN LIGHT**

CITY OF MOORHEAD, MINNESOTA

Graphic 3

City of Moorhead



0 25 50

SRF Consulting Group, Inc.

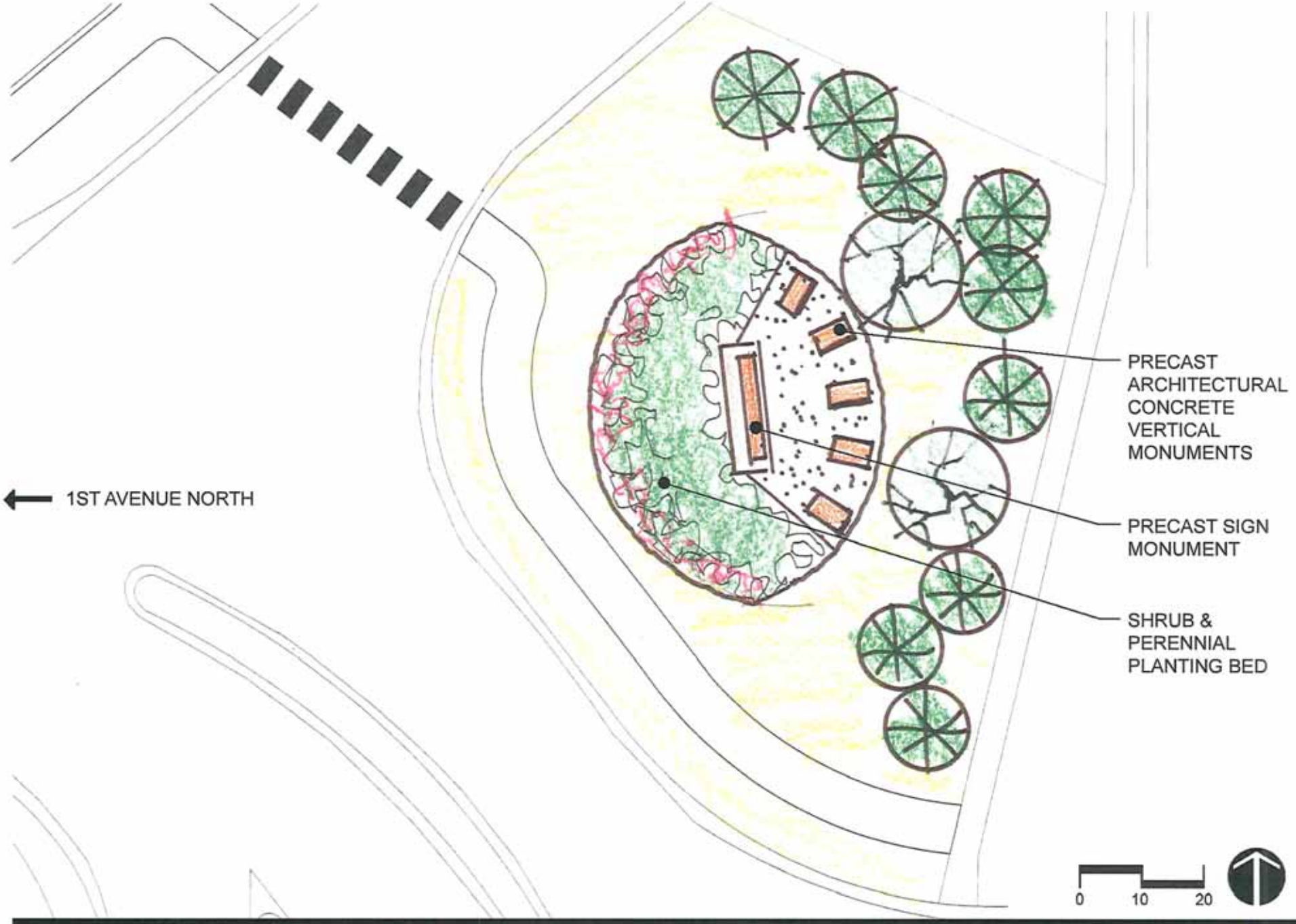
1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

LINEAR PARK CONCEPT

Graphic 4

City of MOORHEAD



SRF Consulting Group, Inc.

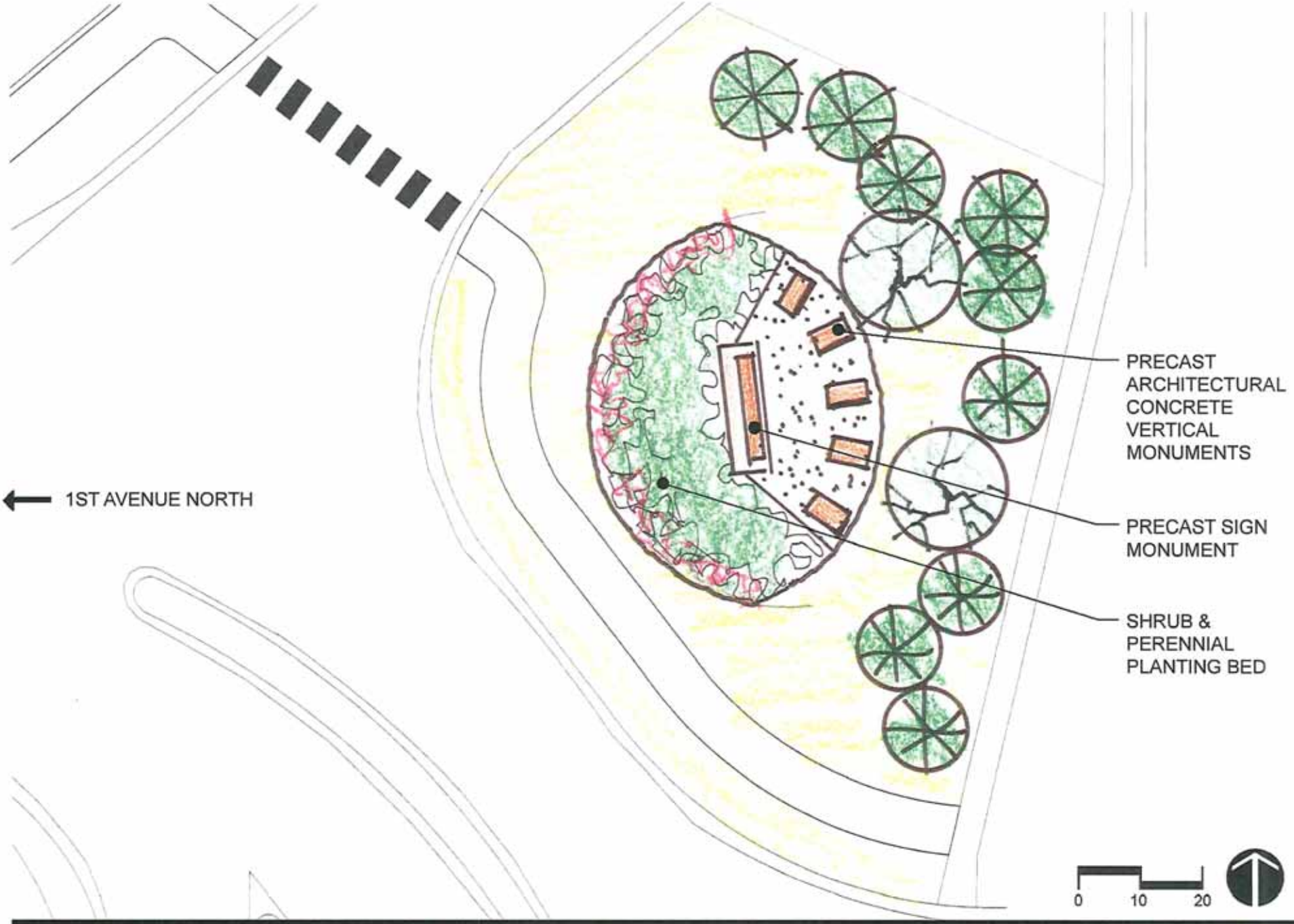
1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

EAST END LANDSCAPING CONCEPT

Graphic 5

City of Moorhead



SRF Consulting Group, Inc.

1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

EAST END LANDSCAPING CONCEPT

Graphic 5

City of Moorhead

SRF Consulting Group, Inc.

1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

EAST END LANDSCAPING CONCEPT

Graphic 6

City of MOORHEAD

APPENDIX 5

STREETSCAPE GRAPHICS

SRF Consulting Group, Inc.

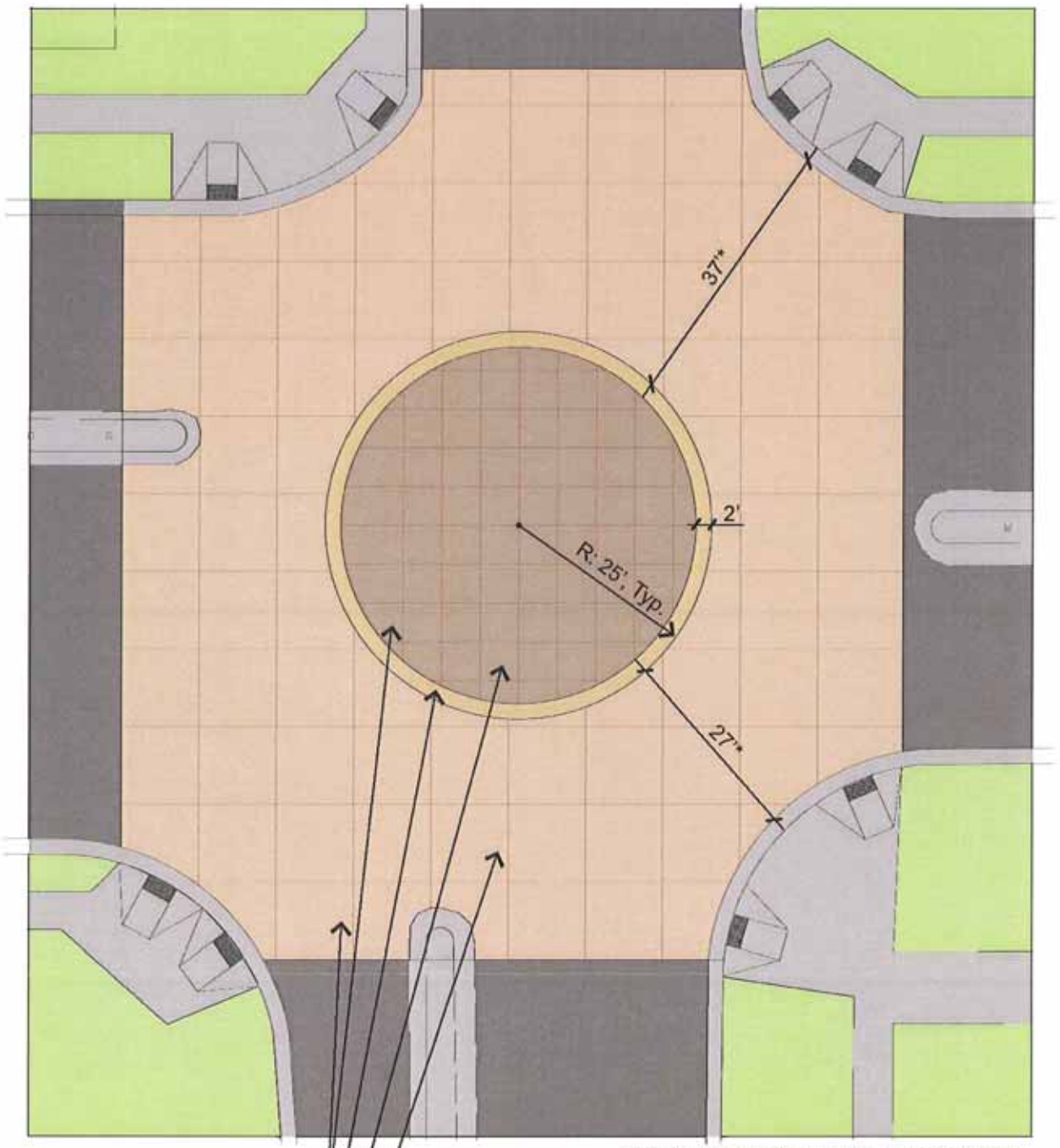
1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

BRIDGEHEAD CONCEPT

Graphic 1

City of MOORHEAD



SRF Consulting Group, Inc.

1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

REPRESENTATIVE INTERSECTION DETAIL
3rd STREET SHOWN

Graphic 2

City of Moorhead

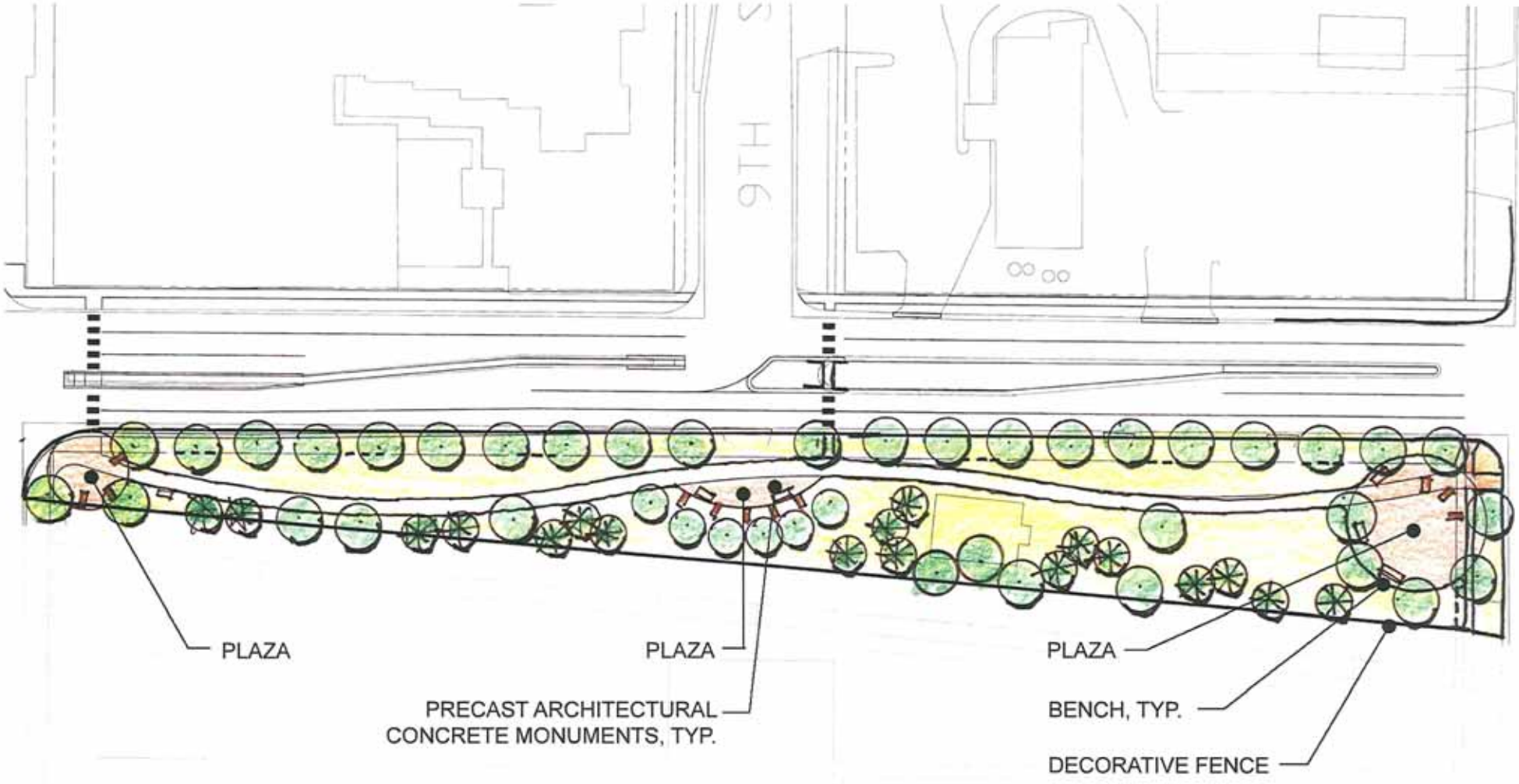
SRF Consulting Group, Inc.

1st AVENUE CONCEPT DESIGN — **MOORHEAD PEDESTRIAN LIGHT**

CITY OF MOORHEAD, MINNESOTA

Graphic 3

City of Moorhead



0 25 50

SRF Consulting Group, Inc.

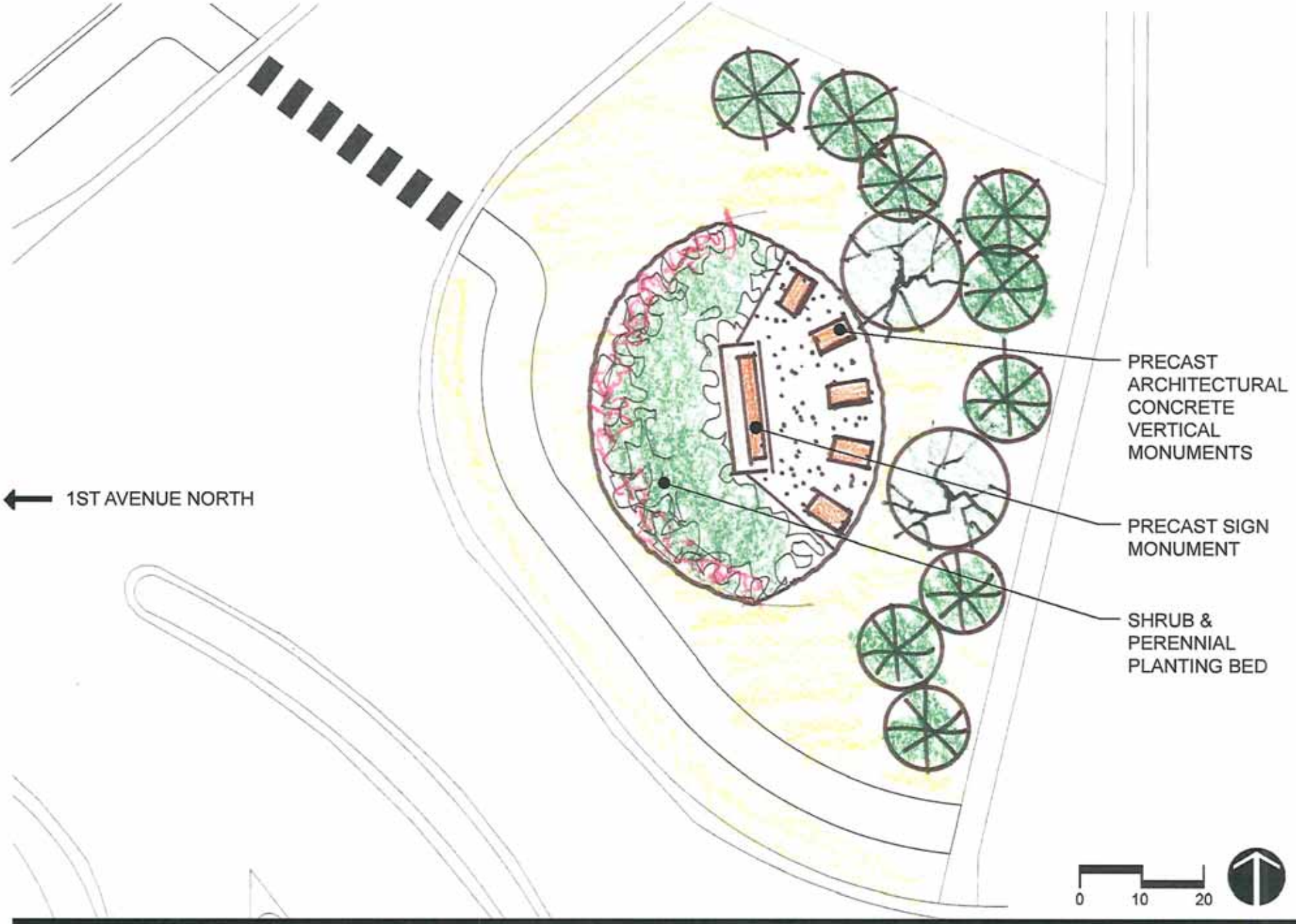
1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

LINEAR PARK CONCEPT

Graphic 4

City of MOORHEAD



SRF Consulting Group, Inc.

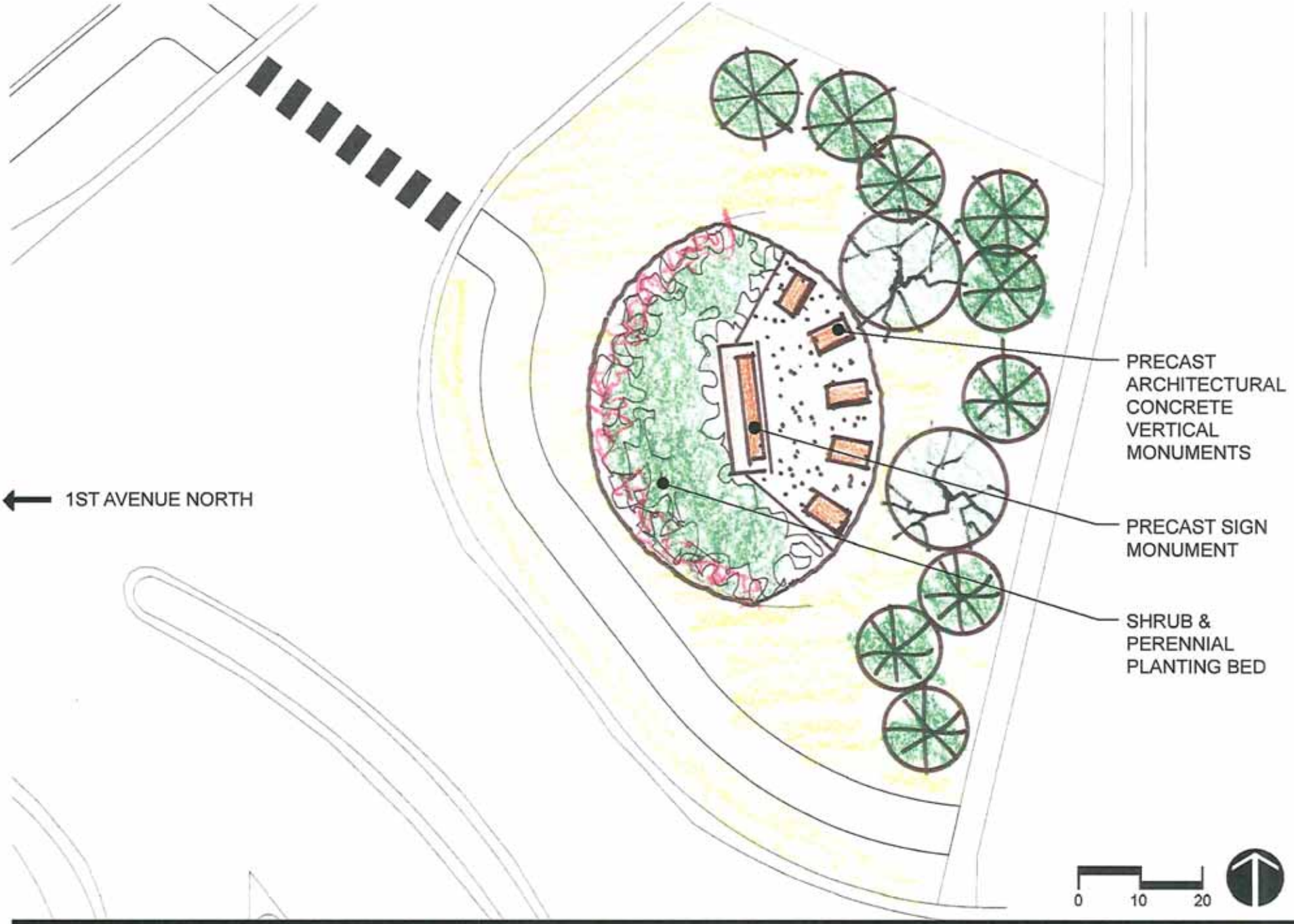
1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

EAST END LANDSCAPING CONCEPT

Graphic 5

City of Moorhead



SRF Consulting Group, Inc.

1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

EAST END LANDSCAPING CONCEPT

Graphic 5

City of Moorhead

SRF Consulting Group, Inc.

1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

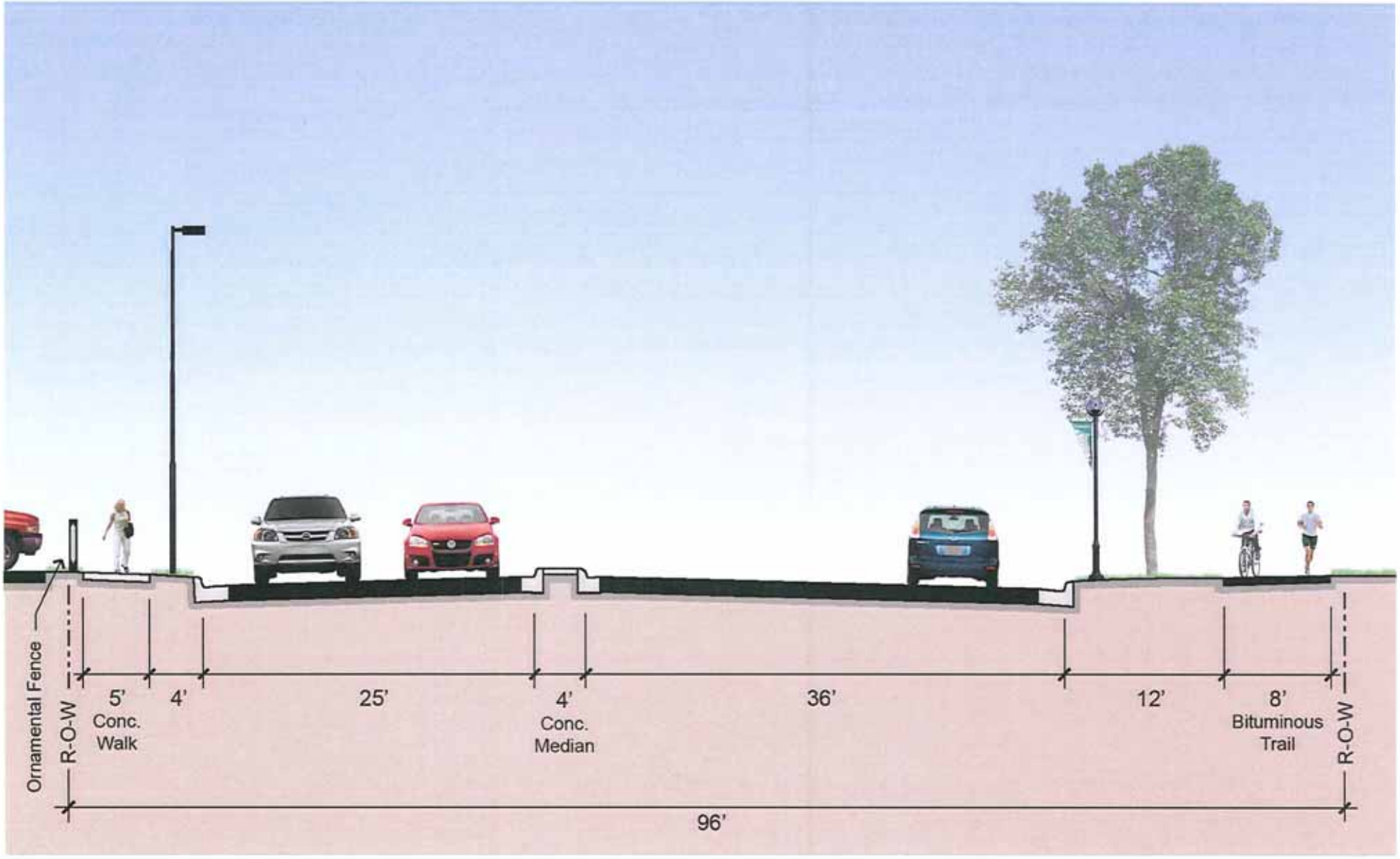
EAST END LANDSCAPING CONCEPT

Graphic 6

City of MOORHEAD

APPENDIX 6

SECTION DRAWINGS



SRF Consulting Group, Inc.

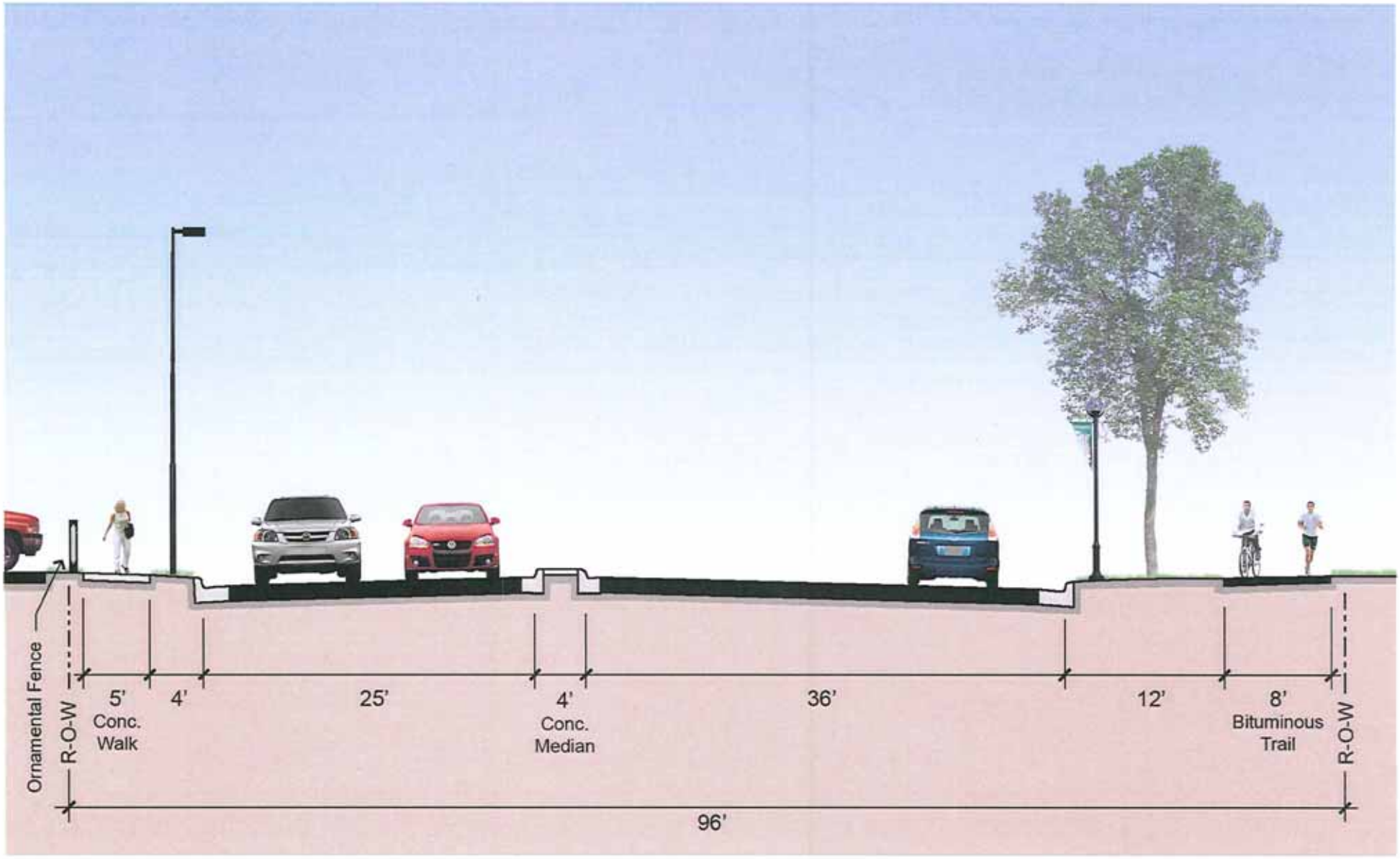
1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

SECTION A: 4' MEDIAN (LOOKING EAST)

Section A

City of Moorhead



SRF Consulting Group, Inc.

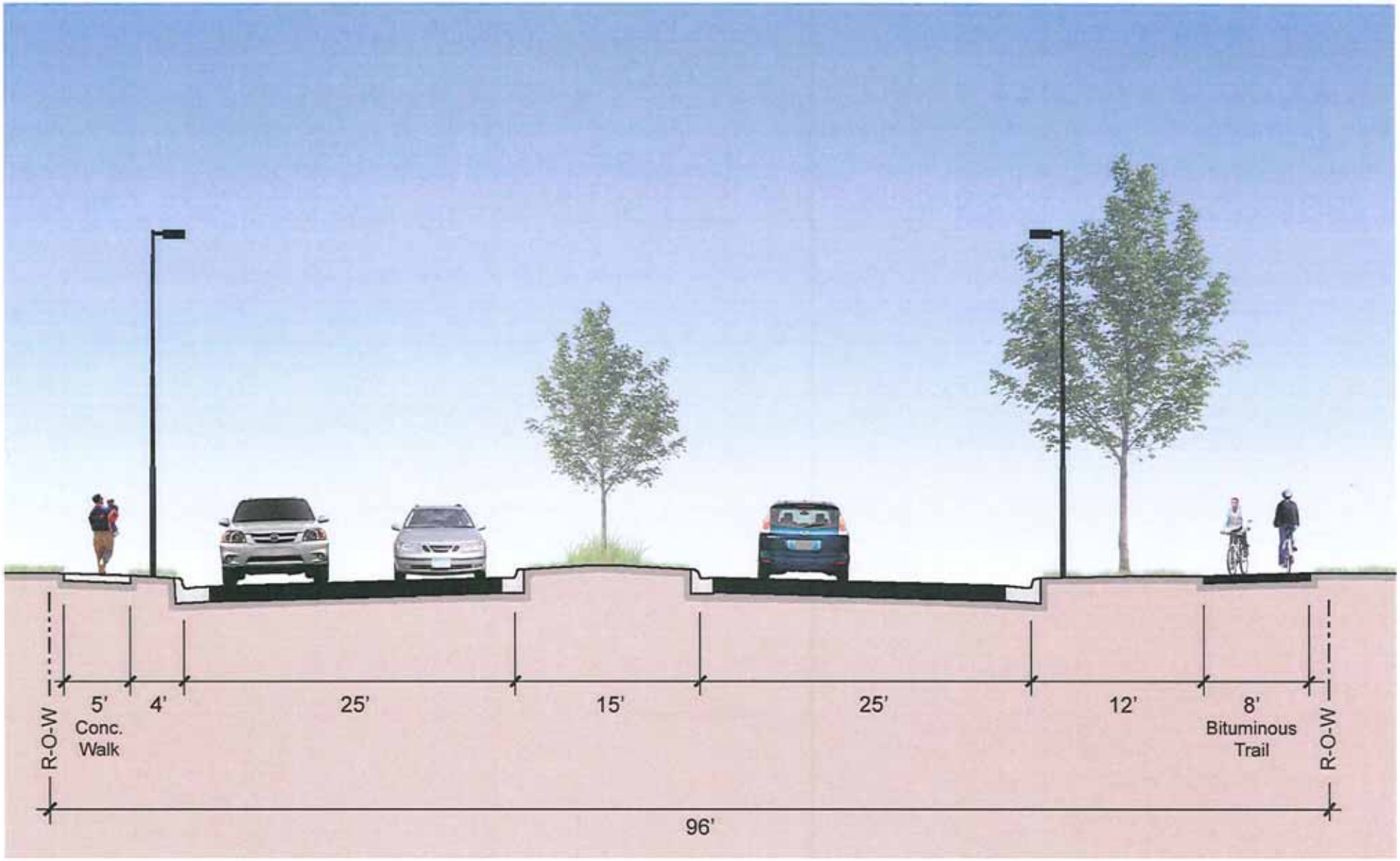
1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

SECTION A: 4' MEDIAN (LOOKING EAST)

Section A

City of MOORHEAD



SRF Consulting Group, Inc.

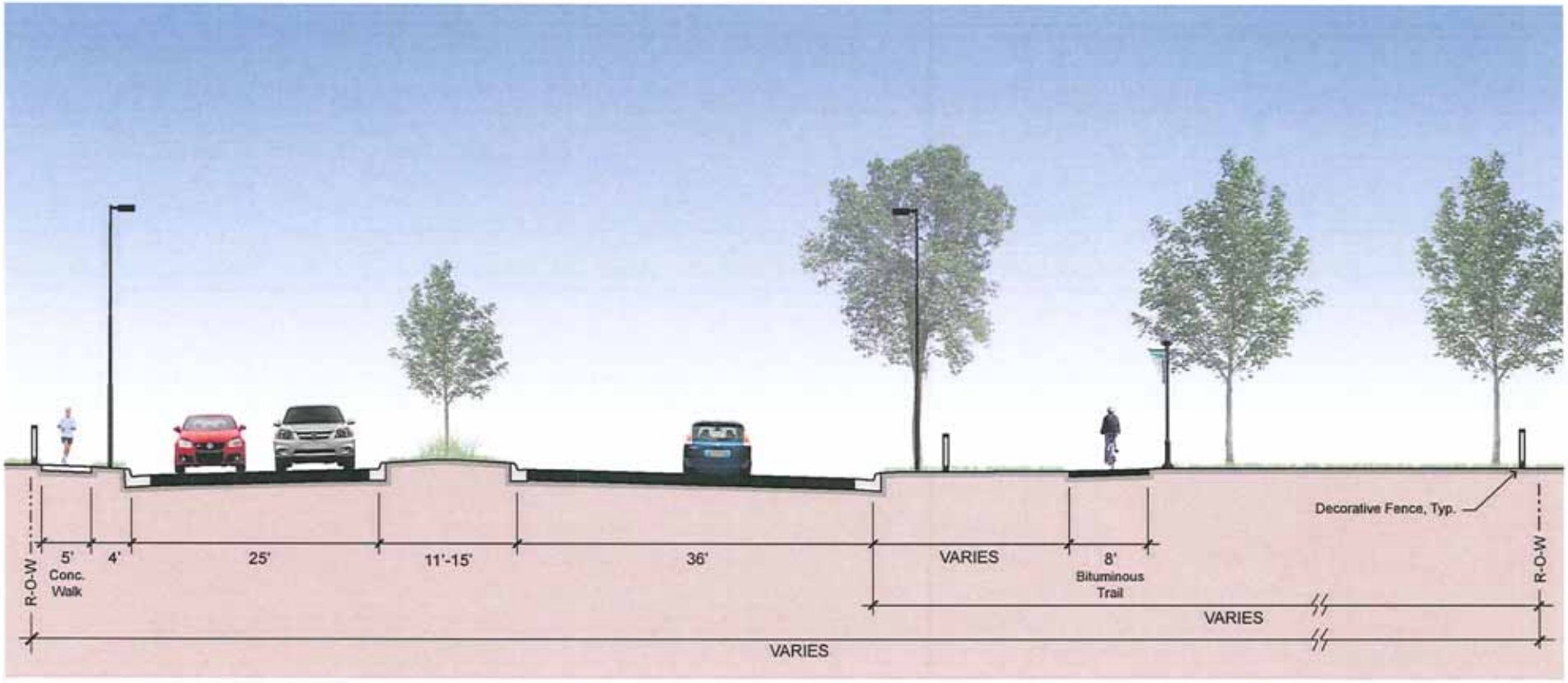
1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

SECTION B: 15' MEDIAN (LOOKING EAST)

Section B

City of MOORHEAD



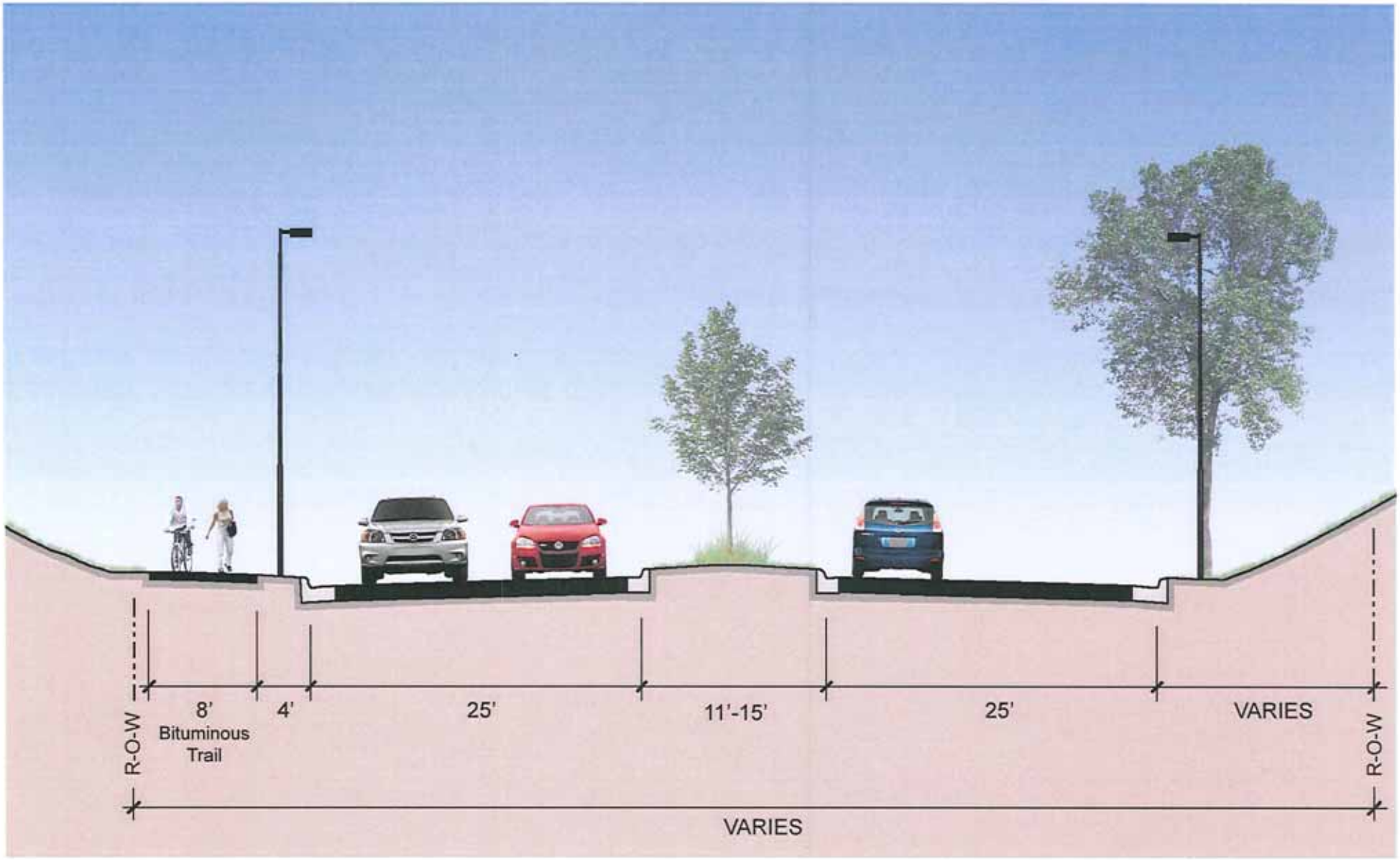
SRF Consulting Group, Inc.

1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

SECTION C: LINEAR PARK (LOOKING EAST)

Section C



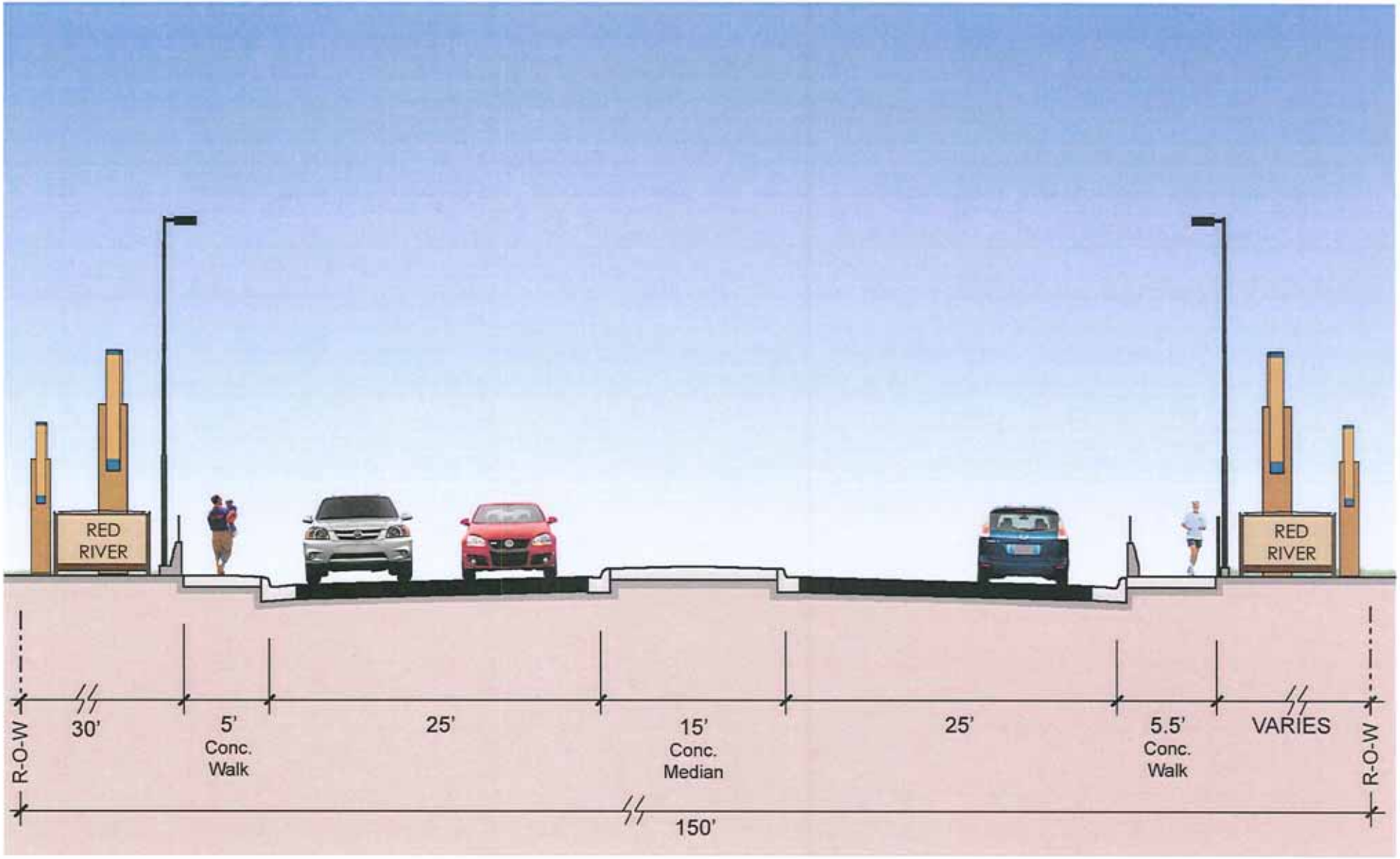
SRF Consulting Group, Inc.

1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

SECTION D: DEPRESSED ROADWAY (LOOKING EAST)

Section D



SRF Consulting Group, Inc.

1st AVENUE CONCEPT DESIGN

CITY OF MOORHEAD, MINNESOTA

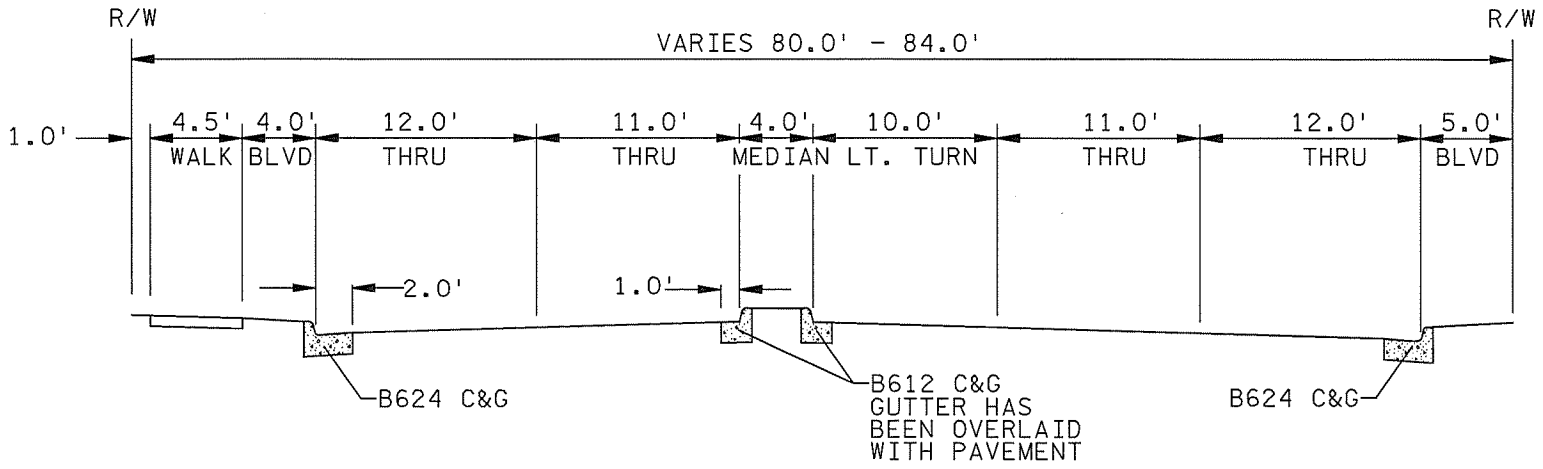
SECTION E: BRIDGE HEAD (LOOKING WEST)

Section E

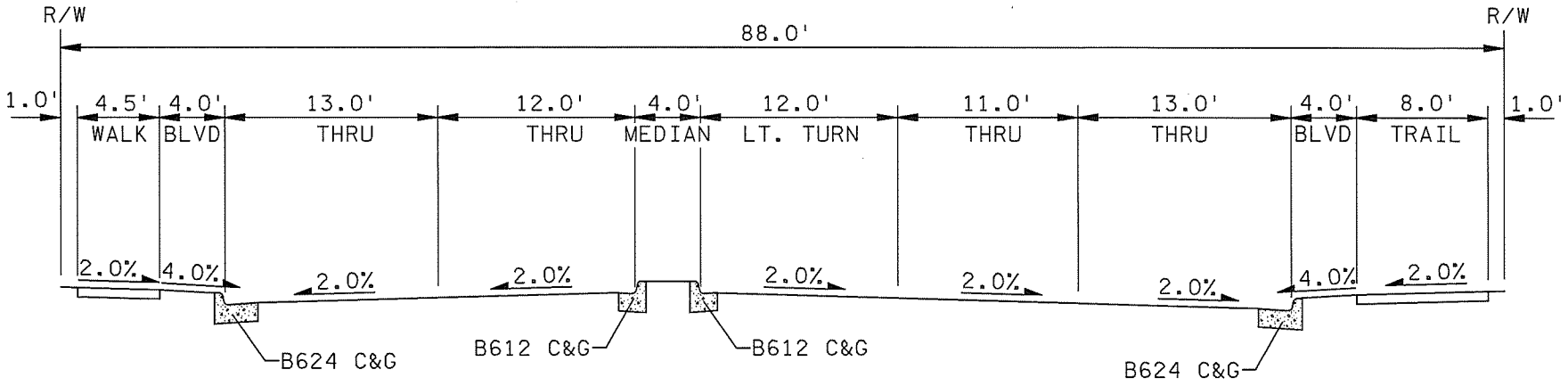
APPENDIX 7

LONG RANGE (ULTIMATE) IMPROVEMENT LAYOUTS

INSETS 1-11



EXISTING 1ST AVE N (8TH ST TO 17TH ST)



STATE AID MINIMUM 1ST AVE N (8TH ST TO 17TH ST)

h:\projects\6303\HI-MU\Base\6303_tsa.dgn

SRF Consulting Group, Inc.

TYPICAL SECTIONS

1st Avenue North
City of Moorhead

Job #6303
11/10/2008

Figure 1

h:\projects\6303\Hi-Mu\Base\6303_ubdrgra-ult.dgn

SRF Consulting Group, Inc.

Job #6303
10/23/2008

ULTIMATE LAYOUT

1st Avenue North
City of Moorhead

Inset 1

h:\projects\63031\HI-MU\Base\63303_ubdtpre-ult.dgn

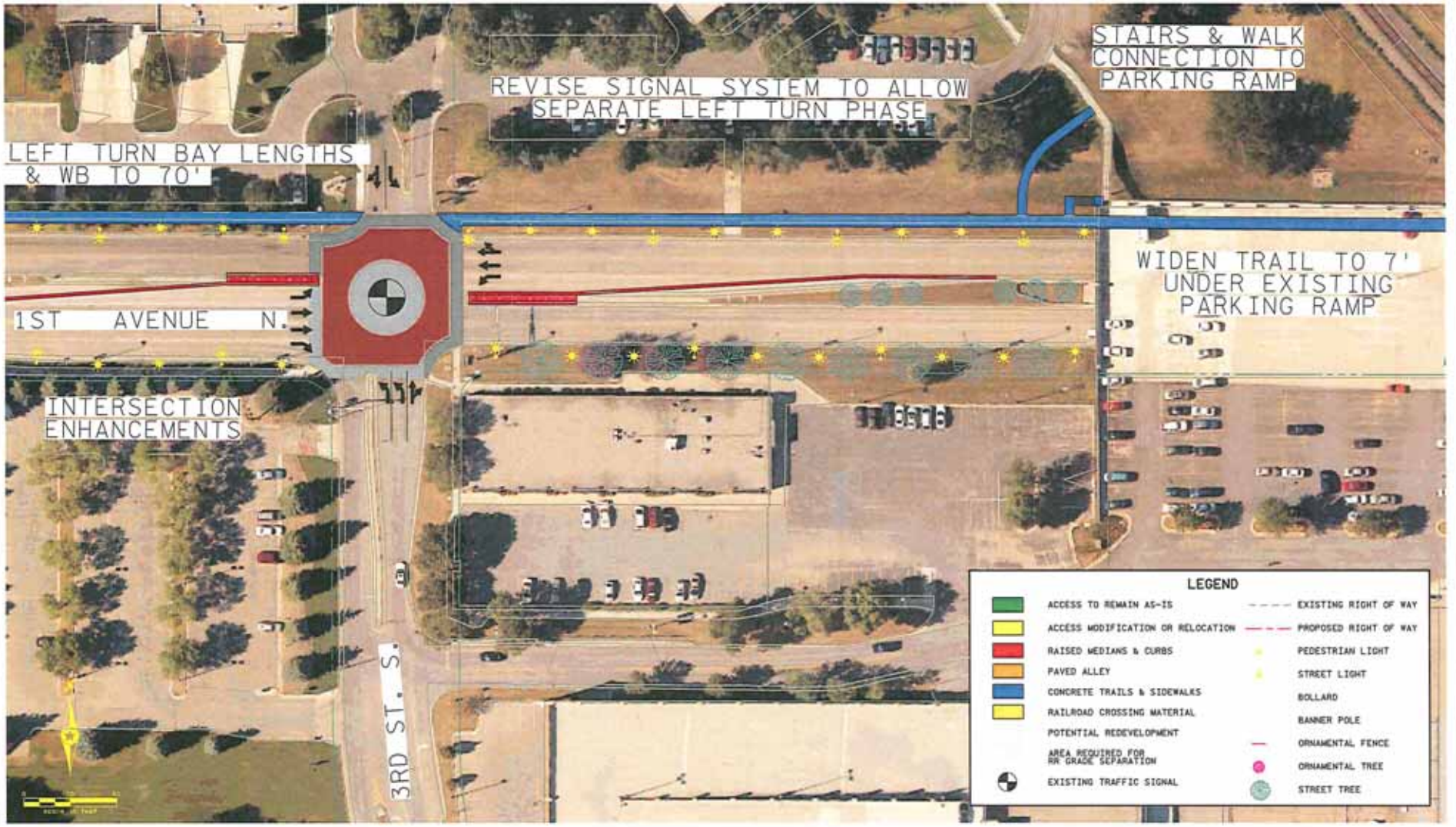
SRF Consulting Group, Inc.

Job #63303
10/23/2008

ULTIMATE LAYOUT

1st Avenue North
City of Moorhead

Inset 1



h:\projects\8303\SI-MU\Base\8303_ubdrgb-ult.dgn

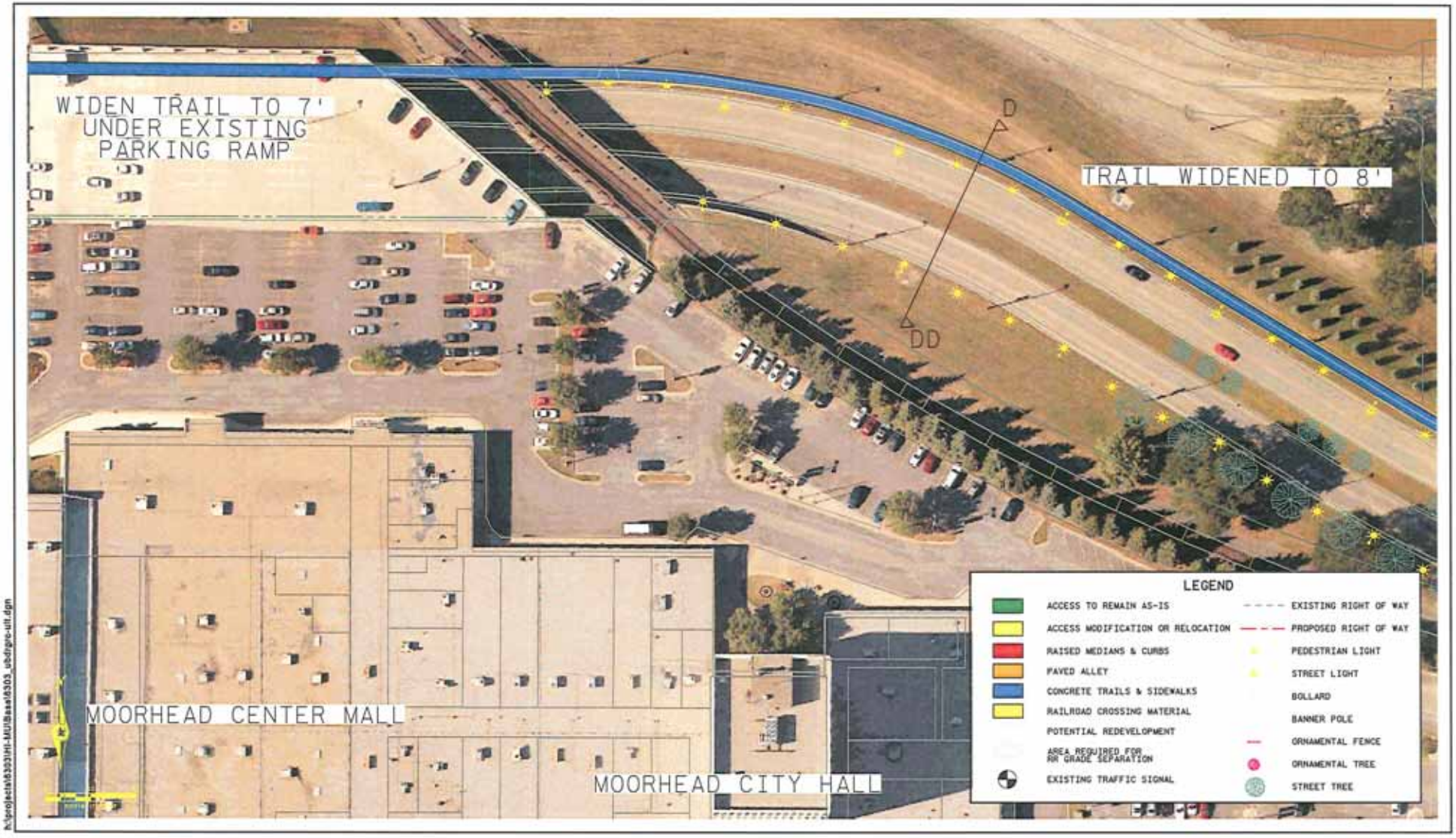
SRF Consulting Group, Inc.

Job #8303
10/23/2008

ULTIMATE LAYOUT

1st Avenue North
City of Moorhead

Inset 2



h:\projects\6303\HI-MU\Base\6303_ubdrgvc-uit.dgn

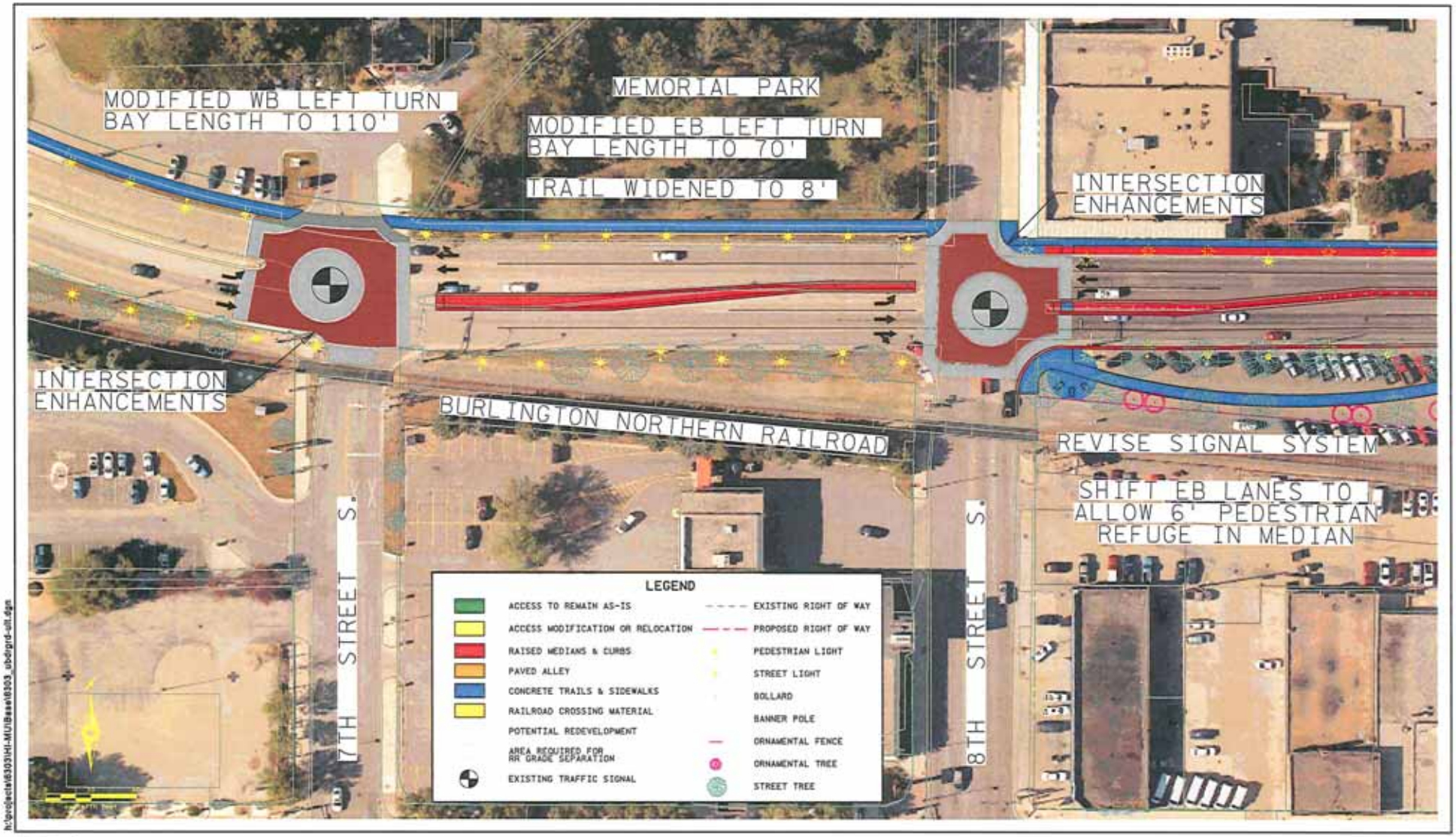
SRF Consulting Group, Inc.

ULTIMATE LAYOUT

1st Avenue North
City of Moorhead

Job #6303
10/23/2008

Inset 3



h:\projects\6303\HI-MU\Base\6303_ubdrgrd-ult.dgn

SRF Consulting Group, Inc.

ULTIMATE LAYOUT

1st Avenue North
City of Moorhead

Job #6303
11/10/2008

Inset 4

h:\projects\65303\HI-MN\Base\65303_ubdrpre-ult.dgn

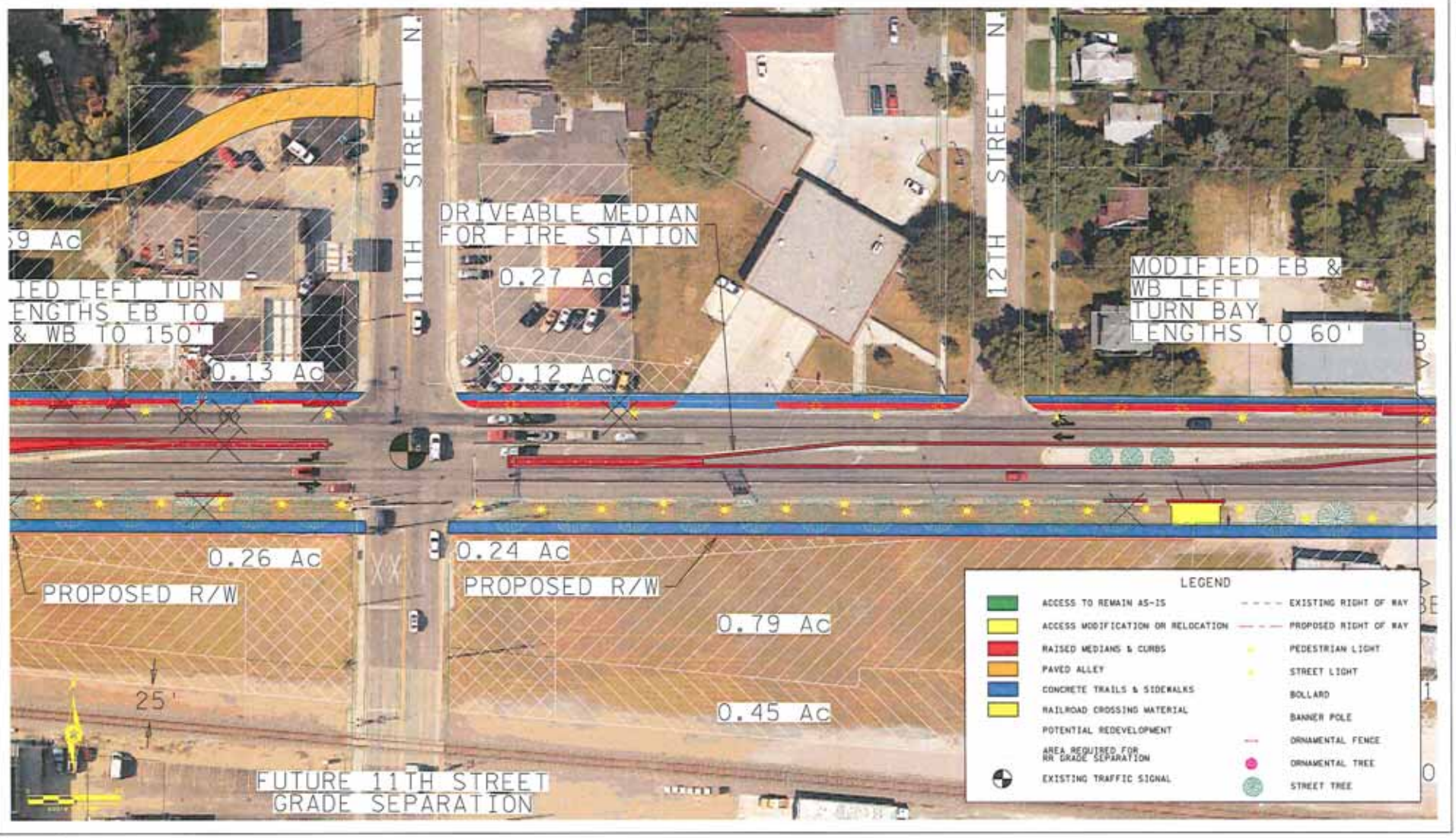
SRF Consulting Group, Inc.

ULTIMATE LAYOUT

1st Avenue North
City of Moorhead

Job #65303
10/23/2008

Inset 5



h:\projects\8303\HI-MU\Base\8303_ultdrpft-alt.dgn

SRF Consulting Group, Inc.

Job #8303
10/23/2008

ULTIMATE LAYOUT

1st Avenue North
City of Moorhead

Inset 6

h:\projects\6303\HI-MU\Base\6303_ultdrgrg-ult.dgn

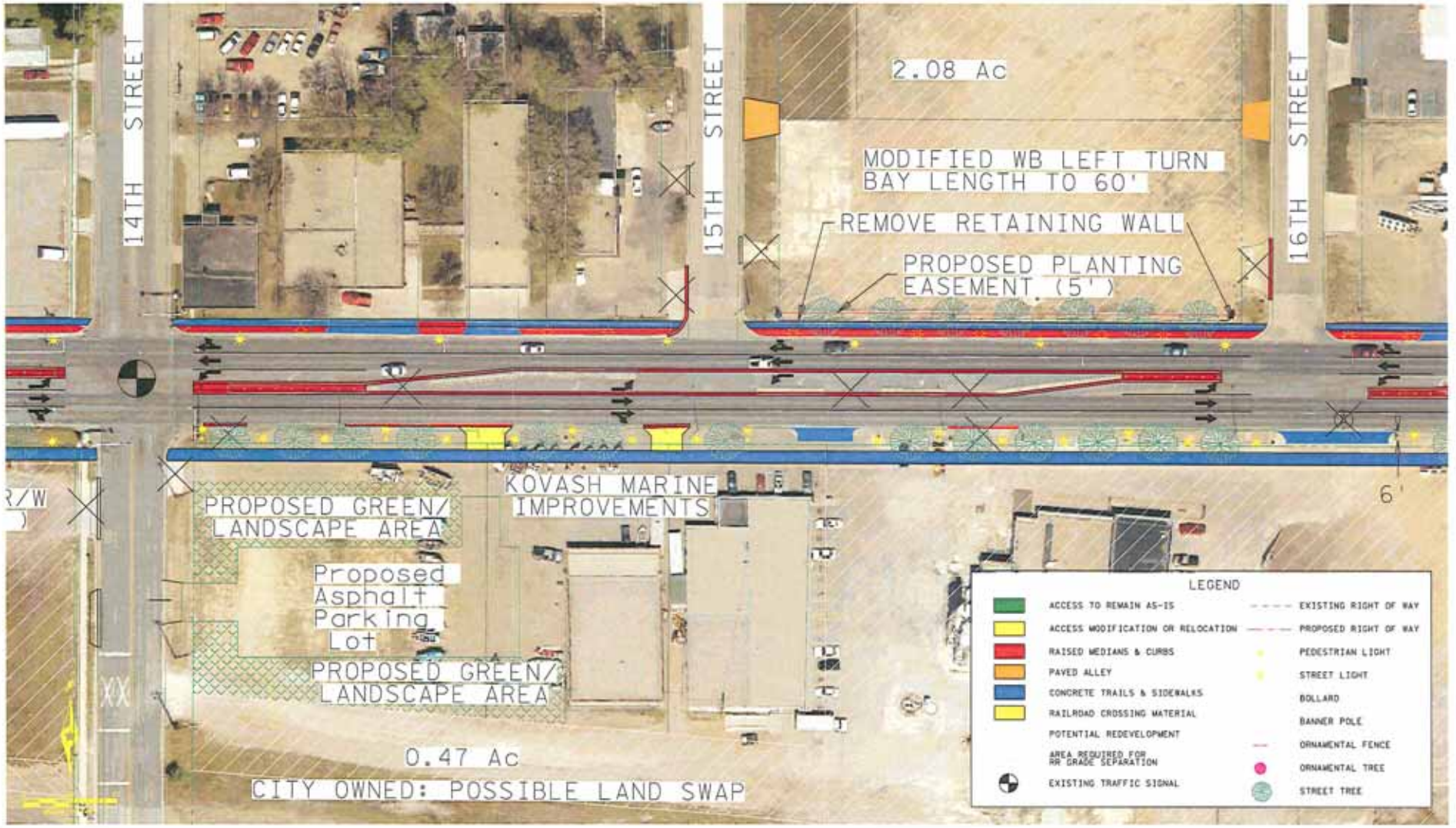
SRF Consulting Group, Inc.

ULTIMATE LAYOUT

1st Avenue North
City of Moorhead

Job #6303
10/23/2008

Inset 7



h:\projects\6303\HI-MU\Base\6303_ubdgrh-ult.dgn

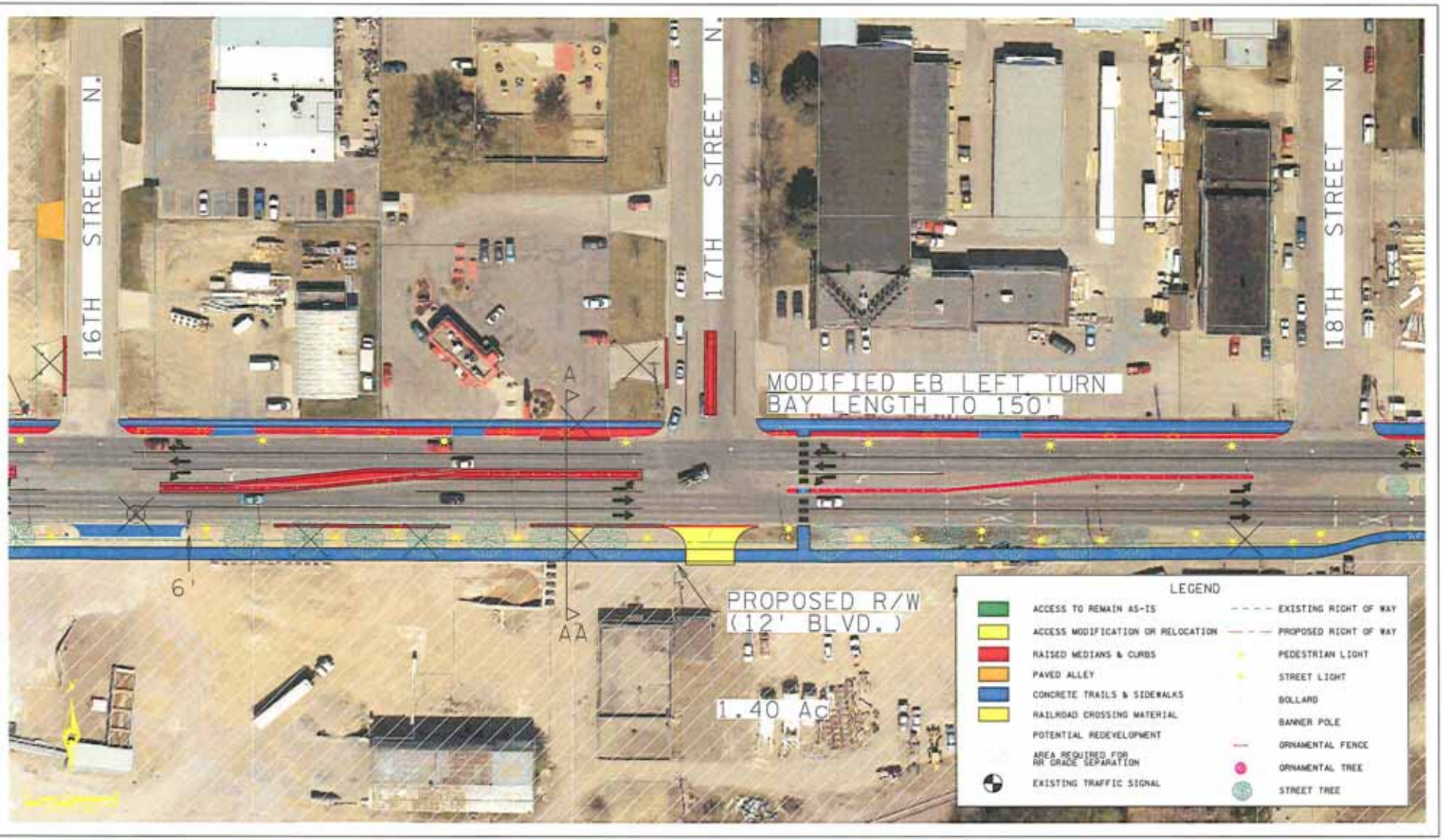
SRF Consulting Group, Inc.

Job #6303
10/23/2009

ULTIMATE LAYOUT

1st Avenue North
City of Moorhead

Inset 8



h:\projects\6303\ill-MU\Base\6303_ubdrgrl-ult.dgn

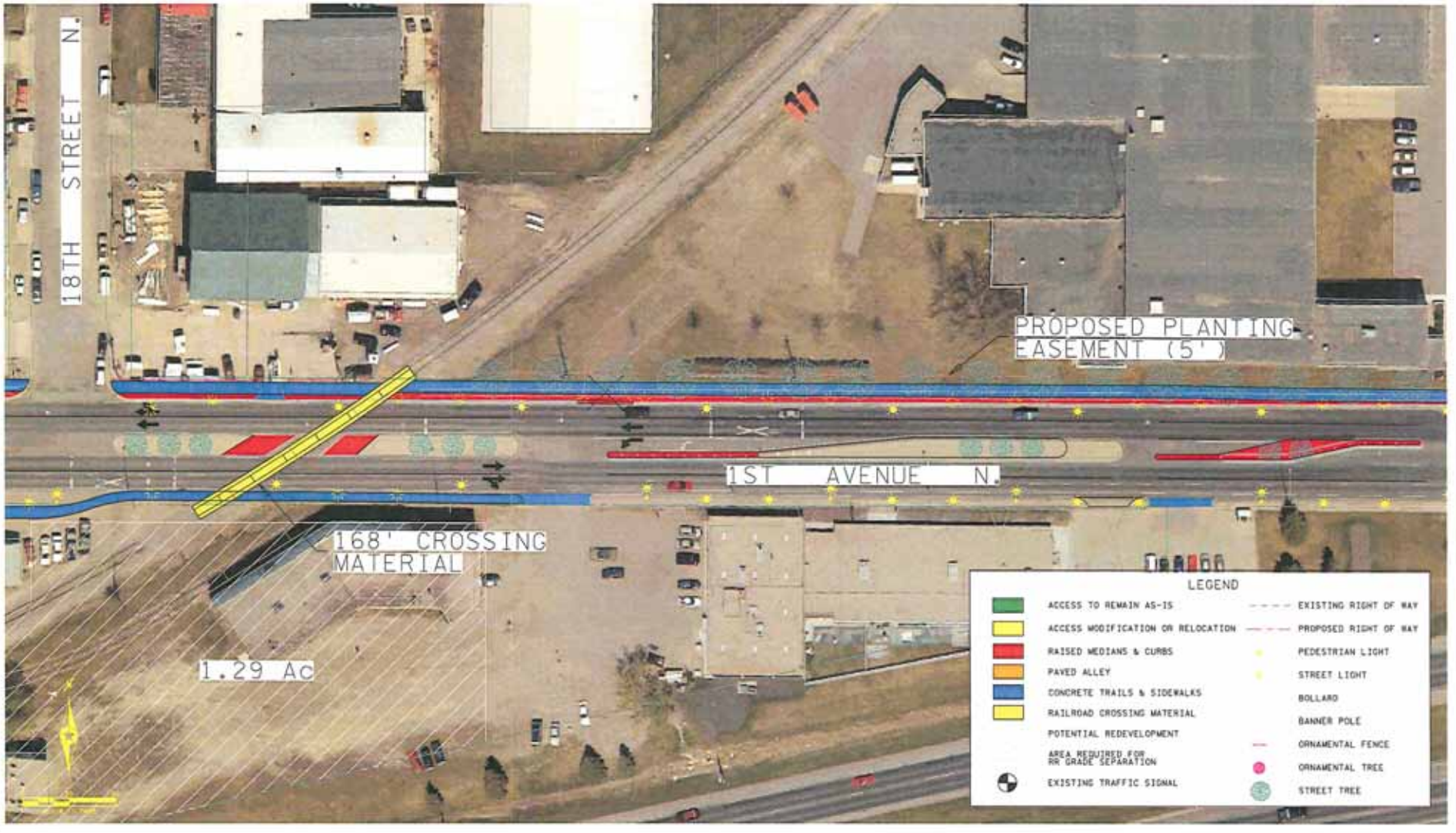
SRF Consulting Group, Inc.

Job #6303
10/23/2008

ULTIMATE LAYOUT

1st Avenue North
City of Moorhead

Inset 9



h:\projects\86303\H1-MUIBase\86303_ubdrgrf-ult.dgn

SRF Consulting Group, Inc.

ULTIMATE LAYOUT

1st Avenue North
City of Moorhead

Job #86303
10/23/2008

Inset 10

h:\projects\88303\HI-MUI\Base\88303_ubdtgrk-ult.dgn

SRF Consulting Group, Inc.

Job #88303
10/23/2008

ULTIMATE LAYOUT

1st Avenue North
City of Moorhead

Inset 11