FORWARD JAMESTOWN

A **COMMUNITY-BASED** LAND USE & TRANSPORTATION PLAN

JULY 22, 2015

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introduction

Jamestown, home of Louis L'Amour and Peggy Lee, the World's Largest Buffalo and the North Dakota Sports Hall of Fame, Jamestown University and Jamestown Reservoir, is also home to over 15,000 people committed to moving the city forward. For over six decades, Jamestown has been a solid and productive community, stable during periods of change and economic cycles. Now, economic growth, generational change, and strategic investments are together creating unprecedented opportunities for the city's future. ***Forward Jamestown: A Community-Based Land Use and Transportation Plan*** represents an equally unprecedented project to develop and act upon a common vision that takes full advantage of these new and exciting possibilities.

Forward Jamestown is nominally about land use and transportation, and those two subjects are the core of the plan. The document provides a detailed look at how the city can and should develop between now and 2040 and what kind of transportation network in needed to address current problems and prevent new problems from surfacing. But much more than that, it is a plan for the future, of how a city that has grown justifiably comfortable with its notable stability and high quality can move forward in new ways, all the while maintaining the qualities and values in which it takes both pride and comfort.

Hundreds of people have participated in this process during the last 18 months by attending meetings, completing surveys, participating in workshops, and offering opinions, ideas, insights, and sometimes their worries and concerns. This plan represents a synthesis of this engagement and is by far the better for it. It does not and cannot answer every question about the future. But we hope that it will be a living document and a productive tool that provides guidance and ideas that Jamestown's citizens interpret and use as their city moves forward.

The plan is organized into ten chapters. The first three chapters describe Jamestown Today, the final seven describe directions, projects, and policies for the future.

Chapter One presents a concise economic and demographic profile of the city. It considers who lives in Jamestown, where they live and work, and how many of them there are likely to be in the future.

Chapter Two considers the built and natural environment of the city, analyzing patterns of land use and development and the natural and human-made features that influence where future development takes place. It also describes the amount of land that will be needed for future growth, providing the ingredients of a Future Land Use Plan.

Chapter Three examines the highways, streets, trails, and sidewalks that people use to move to, around, and through the city. It looks in detail at problems and issues that affect both mobility (how easy it is for people to move) and access (the efficiency with which they are able to reach their destinations), and highlights issues that affect the quality, duration, and safety of movement around the city.

Chapter Four describes the process that developed this plan and

the conclusions that resulted from the involvement of hundreds of Jamestown's citizens. It presents six guiding principles that unify the individual details and recommendation of the plan.

Chapter Five presents the Future Land Use Plan, outlining a vision of a connected, unified, and efficient city of 2040, along with the incremental stages that will help move toward that vision.

Chapter Six proposes a transportation system that meets the continued needs of the city's residents and visitors for safe and convenient access and serves the requirements of people on all modes of travel, motorized or self-propelled.

Chapter Seven considers special districts, with a special focus on creating a City Center that is both a strong economic engine and provides people with an experience that satisfies one definition of good city planning – to maximize interaction and minimize distress.

Chapter Eight looks at the other critical support systems required for a comfortable and productive life in the city, including public facilities, infrastructure, and parks and recreation.

Chapter Nine analyzes housing production and affordability issues from the perspective that housing development is intrinsic to economic development – Jamestown will be unable to take advantage of economic opportunity unless it provides places for existing and new citizens to live comfortably and affordably.

Chapter Ten address the implementation of the plan, with a special focus on transportation finance and project phasing. Other chapters include implementation concepts for their specific areas, but transportation is by far the most complex because of the variety of funding sources available.

FORWARD JAMESTOWN is a plan for the future, of how a city can move forward in new ways, while maintaining the qualities and values in which it takes both pride and comfort.

The RDG/KLJ consulting team was incredibly honored to have had this opportunity to work with the Jamestown community. We are especially grateful to Reed Schwartzkopf for his leadership, support, friendship, patience, intelligence, gentle prodding, and above all, his remarkable commitment to this process and the city of Jamestown. We greatly appreciate the participation of a terrific Steering Committee, who lent their time early in the morning and tremendous expertise to this project; to Mayor Katie Anderson and members of the City Council for their continued commitment to moving Jamestown forward; to city staff who met with our staff and were always forthcoming with their time and information and to Nancy Harty in particular for her friendliness and logistical support; to John Thompson, Michael Johnson, and Stephanie Hanson of the North Dakota DOT who guided us along the way and were always both forthcoming about their ideas and open-minded about ours; and to the hundreds of citizens who took time out of their days and evenings to contribute to this process.

The path forward is apply an integrated, comprehensive approach to the future, that realizes that different systems and priorities are inter-related and work toward the goal of a great and self-sustaining community. It is a challenge that calls on its citizens to work cooperatively, assess resources, and execute a realistic vision – to be neither so negative as to assume that the task is too hard, nor to fool ourselves into thinking it's easy. But the rewards of this coordinated or comprehensive approach will be enormous,, succeeding in making our city a great place for our own generations and those to come.

We hope this planning effort goes beyond "land use and transportation" to propel Jamestown forward along this path to its future.

chapter one

A Demographic and Economic Profile of Jamestown

This chapter examines demographic and economic trends that will affect Jamestown. The analysis examines population and demographic dynamics, including future population, and important regional issues that will affect the quality of the city's environment.

Jamestown's population has remained almost constant for the last half century, while the surrounding rural population has steadily declined. However, pending employment opportunities are likely to create new growth.

The Forward Jamestown Plan begins with an analysis of the people and economy of the city. This gives us an important perspective on the trends that will affect both the form and development patterns of the city and the demands that will be placed on systems like transportation that support the city's growth and economy. This chapter presents:

» A review of population change over the years and of the characteristics of today's population.

» Estimates of the city's future population.

» Analysis of principal housing and economic factors in the city.

» A summary of the policy and planning implications of these changes.

POPULATION HISTORY AND CHARACTERISTICS

Jamestown has experienced a remarkably stable population during the last 50 years.

» Jamestown's extraordinary period of growth occurred in the years after World War II. Between 1940 and 1960, the city's population almost doubled. But it has stayed almost exactly the same since then, reaching an historic peak in 1980 of 16,280. The 2010 Census recorded Jamestown's population at 15,427.

Rural areas surrounding Jamestown have steadily lost population during the same period.

» While Jamestown countered the trend of population decline in midwestern communities, surrounding rural areas lost population. Stutsman County's population outside of Jametown decreased by over 43% during the last 50 years.

Figure 1.1: Population Change, Jamestown and Stutsman County

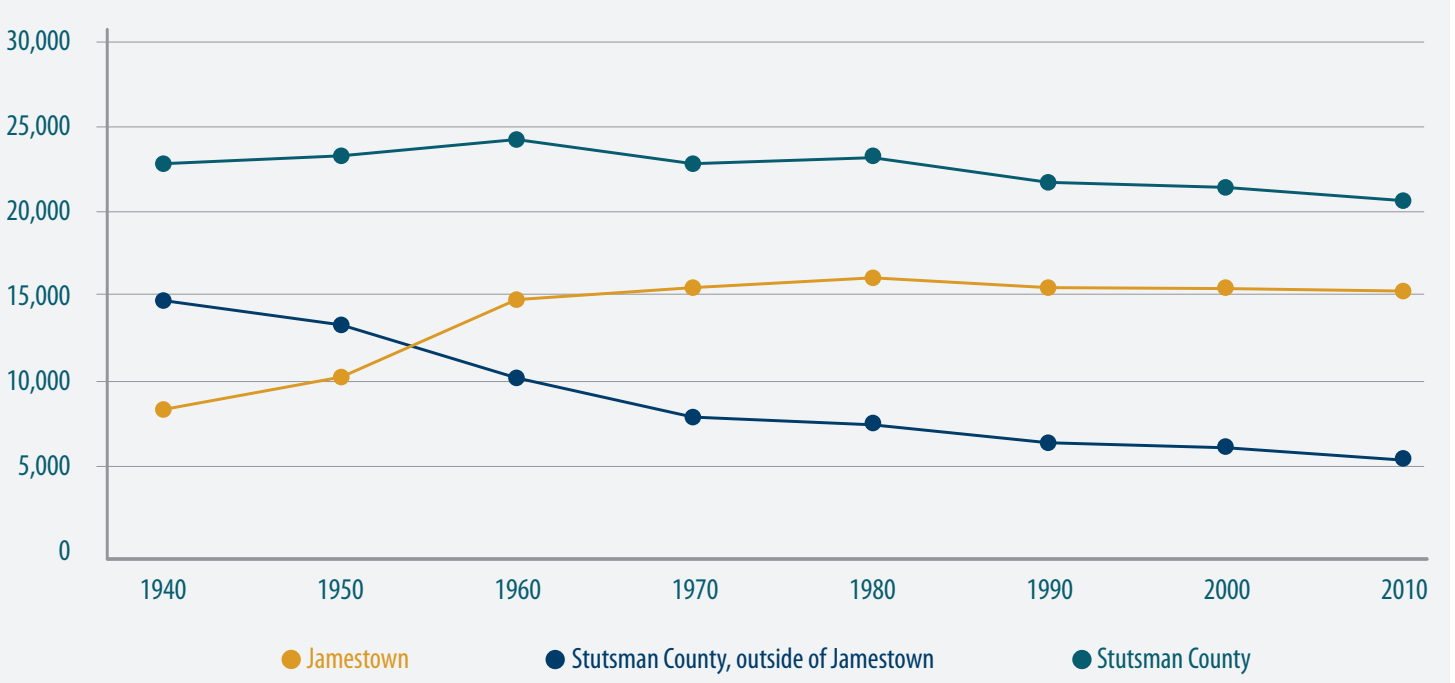


Figure 1.2: Population Change for Jamestown and Comparable Areas, 1960-2012

	% Change 1960-2010	% Change 2000-2010
Jamestown	1.7%	-0.6%
Stutsman County, outside of Jamestown	-43.1%	-11.1%
Stutsman County	-16.1%	-3.7%
Valley City	-15.7%	-3.6%
Fargo	126.2%	16.5%
Bismarck	121.4%	10.3%
Grand Forks	53.4%	7.1%
North Dakota	6.3%	4.7%

Source: US Census Bureau, RDG Planning and Design

North Dakota's larger cities have experienced significant population growth.

» Several of the state's larger cities have grown with new industrial and technology development, and with migration patterns from rural areas to urban centers of economic activity. Jamestown held its own but did not experience this phenomenon. However, pending economic projects over the next five years are likely to create a growth trend in the city and surrounding area.

POPULATION COMPOSITION AND CHANGE BY AGE GROUP

Jamestown is a mature community, but has a significant cohort of younger residents.

» In 2010, Jamestown's median age was 40 years, indicating a relatively mature population. However, the city has a large component of young adults, reflecting the influence of Jamestown University. Interestingly, the populations of the young adult group between ages 15 and 24 and older adults over age 65 were about equal in 2010.

While exhibiting overall population stability, the city has not successfully retained its young population into family formation years.

» Figure 1.3 displays a migration analysis. This method uses the 2000 population base and cohort survival ratios (following the average natural survival rate of each age group from 2000 to 2010) to predict the 2010 population counts by group. The difference between the predicted and actual counts are typically caused by migration – people in that group moving into or out of the city.

» In Jamestown as a whole, the predicted and actual population counts agree, being within 1% of each other.

» The higher than expected numbers of young adults are largely caused by the University. However, high negative variance among people in household formation ages (25 through 34) suggests that many of these people move out of the city: a lost opportunity.

» The city's middle-aged population tends to be very stable, reflect-

Figure 1.3: Age Composition as a Percentage of Total Population, 2000-2010

	2010 Predicted	2010 Actual Count	% of Total	Difference	Variance
0-15	2,694	2,543	16.5%	(151)	(5.6%)
15-19	854	999	6.5%	145	16.9%
20-24	993	1,363	8.8%	370	37.3%
25-34	2,573	1,982	12.8%	(591)	(23.0%)
35-44	1,660	1,695	11.0%	35	2.1%
45-54	2,259	2,226	14.4%	(33)	(1.5%)
55-64	1,941	1,949	12.6%	8	0.4%
65-74	1,127	1,071	6.9%	(56)	(5.0%)
75-84	907	1,035	6.7%	128	14.1%
85 and over	566	564	3.7%	(2)	(0.3%)
Total	15,574	15,427	100.0%	-147	-0.9%

Source: US Census Bureau, RDG Planning and Design

Jamestown retains its middle-aged households and attracts older adults. However, it has not been fully successful at retaining younger people who are setting up households and starting families.

New industrial development is anticipated to create accelerated population growth in the coming years.

ing a sound economic and social foundation for mature households rooted in the city.

» Migration patterns among older adults show mixed factors. Some younger seniors (ages 65-74) appear to move out of the city, probably attributable to people downsizing or seeking active retirement housing in other places. However, the cohort over 75 indicates substantial migration into the city, at least partially due to rural seniors moving to the city for medical services and housing settings.

POPULATION PROJECTIONS

Estimating Jamestown's population in the future is critical to understanding the city's future land, transportation, and facility needs. A simple trend analysis would suggest the same population stability over the next 25 years that the city has seen since 1960. Indeed, natural population change, trending toward an older population and smaller households, suggests a steady decline to about 14,500 people by 2040. However, Jamestown is poised to capitalize on a significant amount of new development in the agricultural value-added, manufacturing, and energy sectors. Figure 1.4 summarizes project new job and household growth attributable to economic development projects in the pipeline between 2015 and 2020. The analysis assumes that 5% of construction jobs and 50% of permanent jobs will ultimately bring new households to the city.

Based on this and long-term population and migration history, projections constructed five scenarios – a base case using natural population change and three growth scenarios distributing short-term employment growth and subsequent annual growth rates of 0.5%, 1.0%, and 1.5% over 2015 to 2040 plan period; and a front loaded scenario projecting 3% annual growth to 2025 and 0.5% thereafter. The planning growth scenario that most closely aligned with current population expectations of city and county development of-

Figure 1.4: Projected New Employment, Expected Projects between 2015-2020

	Construction Jobs	Permanent FTE Jobs
Total Projected Jobs	4,465	859
New Household Rate	5%	50%
New Jamestown Households	223	430
Population @ 2.5 people/hh	557	1,075

Source: Stutsman County Economic Development, RDG Planning and Design

Figure 1.5: Population Growth Scenarios, 2015-2040

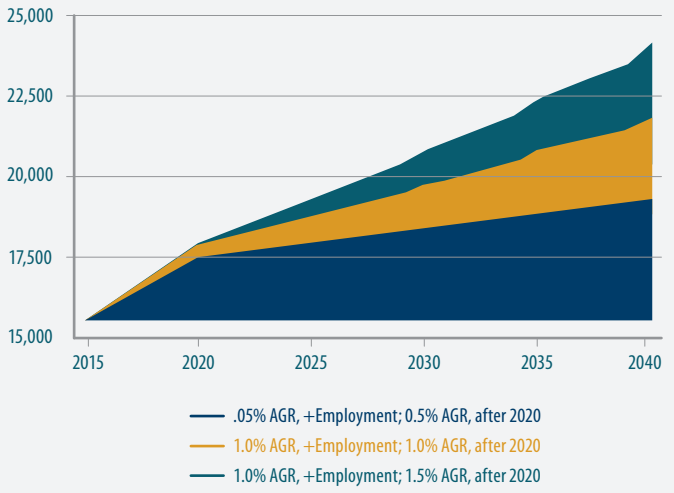


Figure 1.6: Population Projections for Jamestown, 2015-2040

	2015	2020	2025	2030	2035	2040
Natural Change	15,294	15,270	15,224	15,088	14,833	14,517
Low: Employment+0.5% AGR	15,466	17,487	17,928	18,381	18,845	19,321
Medium: Employment +1.0% AGR	**15,466**	**17,885**	**18,797**	**19,756**	**20,764**	**21,823**
High: Employment+1.5% AGR	15,466	17,885	19,267	20,756	22,360	24,088
Front Loaded: 3%/.05%	15,466	17,929	20,785	21,310	21,848	22,400

Source: US Census Bureau, RDG Planning and Design

ficials was a mid-level distributed alternative of short-term employment growth and a 1% basic annual growth rate. The 1% growth rate is typical of non-metropolitan cities that develop at a healthy but moderate rate. Figures 1.5 and 1.6 display the population scenarios.

From an estimated 2015 population base of 15,466, this scenario projects a 2020 population of 17,885, growing to 19,756 by 2030 and 21,823 by 2040. This projection is ***not*** a prediction, but reflects a reasonable goal for planning purposes. Phased development and improvement options provide the flexibility to adapt to slower or faster actual population change.

ECONOMIC FACTORS

Jamestown's economy was heavily influenced by the westward expansion of the Northern Pacific Railway. Originally, Jamestown served as a military outpost and as a service-point on the railroad. In the modern era, its economy has a strong base in manufacturing and agriculture, and it serves as a center of retail activity for the surrounding area.

EMPLOYMENT

The Jamestown employment market has experienced some change during the early 2000s, however, the total number of jobs remained relatively steady from 2000 to 2010.

» Between 2000 and 2010, Jamestown experienced a net loss of 106 jobs (about 1% of total jobs).

» Industries with notable growth in employment between 2000 and 2010 include Agriculture, Construction, Manufacturing, Transportation and Warehousing, Information Services, and Professional, Scientific, Management, and Administrative Services.

» Although some classes of occupation in Jamestown saw significant declines over the past ten years, such as sales and office, many of these 'lost' jobs were replaced by new jobs in other occupations, such as management and service.

» Jamestown's blend of industries is typical for a small city which serves as a regional destination for retail, education, government, and medicine. The opening of the new Jamestown Regional Medi-

Figure 1.7: Employment by Occupation, 2000-2010

	2000 Jobs	2010 Jobs	Change	% Change
Management, business, science, and arts occupations	2,314	2,537	223	10%
Service occupations	1,591	1,732	141	9%
Sales and office occupations	2,124	1,787	(337)	(16%)
Natural resources, construction, and maintenance occupations	748	648	(100)	(13%)
Production, transportation, and material moving occupations	944	911	(33)	(3%)
Total	**7,721**	**7,615**	**(106)**	**(1%)**

Between 2000 and 2010, overall employment in Jamestown as relatively stable. Manufacturing, agriculture, professional and administrative services, and transportation were sectors that experienced significant growth.

Among peer communities, Jamestown has a relatively smaller percentage of lower-income households and higher percentage of upper-income households.

Figure 1.8: Employment by Industry, 2000-2010

	2000 Jobs	2010 Jobs	Change	% Change
Agriculture, forestry, fishing and hunting, and mining	213	261	48	23%
Construction	374	435	61	16%
Manufacturing	893	1,088	195	22%
Wholesale trade	210	63	(147)	(70%)
Retail trade	921	843	(78)	(8%)
Transportation and warehousing, and utilities	324	423	99	31%
Information	95	163	68	72%
Finance and insurance, and real estate and rental and leasing	477	432	(45)	(9%)
Professional, scientific, and management, and administrative and waste management services	330	481	151	46%
Educational services, and health care and social assistance	2,288	2,163	(125)	(5%)
Arts, entertainment, and recreation, and accommodation and food services	813	696	(117)	(14%)
Other services, except public administration	495	264	(231)	(47%)
Public administration	288	303	15	5%
Total	7,721	7,615	(106)	(1%)

Source: US Census Bureau, RDG Planning and Design

cal Center is likely to increase the impact of the health care sector in the regional economy.

» As mentioned above, new economic projects in the pipeline are likely to produce about 900 new jobs during the next five years.

INCOME

While below the statewide average, Jamestown's median household income is comparable to other cities in North Dakota.

» Statewide median income is strongly, and increasingly, affected by high wages paid in the energy industry. This can create the impression that cities outside the Bakken are 'not keeping up'. In fact, a significant proportion of higher wages in the Bakken region are spent to account for the higher overall cost of living.

» The relative wealth of a city plays a significant role in both its retail economy and housing market, both of which are discussed more specifically below.

Among peer communities, Jamestown has a moderately smaller percentage of low-income households and a higher-percentage of upper-income households.

» Figure 1.9 displays the distribution of household income in comparable cities. Jamestown's median income is higher than all in this sample except for Bismarck, with its unusual concentration of workers associated with state government and related professions.

» Jamestown's proportion of low-income households is higher than Bismarck, about the same as Fargo, and lower than other cities in this sample. It has a similar relationship for higher earner households.

RETAIL SALES

Jamestown is a retail destination that imports consumer dollars, but has significant additional retail potential.

Figure 1.9: Household Income in Jamestown and Comparable Cities

	Median Household Income	Less than $15,000	$15,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 to $74,999	$75,000-$99,999	$100,000 or more
Jamestown	$42,205	16.4%	13.6%	11.1%	16.3%	19.7%	12.6%	10.4%
Valley City	$36,818	19.8%	13.7%	12.0%	17.4%	22.2%	5.5%	9.4%
Fargo	$41,558	16.7%	12.6%	13.2%	15.0%	17.7%	10.0%	14.8%
Bismarck	$47,560	11.6%	13.7%	11.6%	14.8%	19.2%	13.4%	15.8%
Grand Forks	$40,352	19.4%	14.2%	11.3%	14.4%	16.6%	10.7%	13.3%
Aberdeen	$40,352	23.9%	13.0%	15.1%	21.0%	9.8%	7.5%	10.3%
North Dakota	$46,781	14.3%	11.8%	11.8%	18.5%	15.0%	19.9%	14.5%

Source: US Census Bureau, RDG Planning and Design

Overall taxable retail sales in Jamestown were flat during the first years of the new century, increasing by less than 1% in actual dollars between 2001 and 2006, a loss of revenue in inflation-adjusted spending. Ironically, this trend reversed with the economic downturn beginning in 2007, as new businesses opened and more difficult times induced people to do their shopping at home. Between 2006 and 2012, taxable sales increased by 57%, with the largest annual increases recorded in 2008 (18.15% over previous year sales) and 2011 (16.12%). Figure 1.10 displays annual sales taxable sales between 2001 and 2012.

Figure 1.11 compares consumer demand with retail sales (supply) in Jamestown and comparison communities. Communities with a retail "gap" have a higher demand than supply, meaning they are "leaking" retail dollars. Communities with higher supply than demand have a retail "surplus," and are attracting retail dollars from other areas.

- Jamestown has a retail "surplus," showing its status as a center for commercial activity that attracts retail spending from residents in the surrounding area.
- Stutsman County as a whole has a retail "gap," suggesting that there are nearby retail needs that cannot presently be met in Jamestown, and residents are going out of the county for their purchases. This represents a potential opportunity for increased development.

Figure 1.10: Taxable Retail Sales, Jamestown, 2001-2012

	Taxable sales	% Change from previous year
2001	$167,432,936	-0.6%
2002	$163,156,517	-2.55%
2003	$158,840,593	-2.65%
2004	$172,762,037	8.76%
2005	$169,506,897	-1.88%
2006	$168,724,099	-0.46%
2007	$179,954,391	6.66%
2008	$212,622,810	18.15%
2009	$207,526,657	-2.40%
2010	$214,785,255	3.50%
2011	$249,413,834	16.12%
2012	$264,640,664	6.11%

Source: US Census Bureau, RDG Planning and Design

Jamestown is an importer of retail dollars but has the potential to be a stronger retail destination.

Figure 1.11: Retail Gap Analysis, Jamestown and Comparison Cities

	Retail Sales	Consumer Demand	(Gap)/Surplus
Jamestown	$239,193,729	$208,972,021	$30,221,708
Stutsman County, excluding Jamestown	$30,925,750	$78,339,351	($47,413,601)
Valley City	$137,393,315	$158,989,917	($21,596,602)
Fargo	$88,924,871	$90,209,345	($1,284,474)
Bismarck	$1,627,632,155	$892,758,986	$734,873,169
Grand Forks	$1,627,632,155	$751,029,605	$876,602,550
Aberdeen	$538,729,718	$354,113,553	$184,616,165

Source: Claritas,, RDG Planning and Design

Jamestown has the potential to have a stronger retail market. Its position as a destination for retail supports the potential expansion of businesses into under-served retail markets. If the correct blend of goods are offered, with the right pricing and promotion, it is likely that consumers in the outlying areas will select Jamestown as their most convenient shopping option.

The following retail markets are currently underserved in and around Jamestown.

» **Building Material and Supply Dealers.** Sales in this sector do not come close to meeting the market demand, indicating a significant potential for new business or business expansion. Much of this gap, evident from most recent available data, will be filled by the new Menard's store developed in 2014 on the south side of I-94.

» **Clothing Stores.** A significant gap exists between market demand and local sales in clothing retailers. Specific gaps exist in the following sub-markets:

- Women's Clothing Stores: $1.6 million gap
- Family Clothing Stores: $3.6 million gap
- Shoes Stores: $1.2 million gap
- Jewelry, Luggage, and Leather Goods stores: $1.0 million gap

» **Restaurants.** Residents of Jamestown spent $9.4 million more on dining in restaurants than were recorded in local retail sales. This suggests that they are spending those dollars in other communities. While this gap is surprising, given Jamestown's place as a center of regional commercial activity, it suggests a real opportunity for new restaurants and dining establishments.

HOUSING MARKETS

A city's housing market is an important component of its overall economy. Jamestown housing exhibits the following characteristics and trends:

» Jamestown's 60/40 split between ownership and rental units is fairly typical among cities in the region.

» A strong construction market between 2000 and 2007 supported a slight increase in owner-occupancy in the area.

» The vacancy rate has remained at a rate that provides variety in the market without significantly hampering construction rates. When vacancy rates get too low, it limits the amount of choice that potential buyers have in the market. This can potentially inhibit people from moving between sizes of housing as their family circumstances and finances change over time.

» Jamestown's market is, broadly speaking, affordable to many area incomes.

- Traditionally, owner-occupied housing that costs between 2 and 2.5 times a household's yearly income is considered affordable. Jamestown's value-to-income ratio is 2.25, which means that the median home value is 2.25 times higher than the median income.

» However, the relatively low median home value of $96,000 may not be sufficient to support substantial new construction. In many cases, replacement value may be higher than market value, a phenomenon in many smaller cities that discourages new construction in the needed $150,000 to $200,000 range. Indeed, an affordability analysis that compares housing rents and prices with the number of households who are able to afford that range indicates shortages of market rate rentals and ownership units over $150,000. When a lively market for middle-to-upper income 'move up' housing exists. existing affordable housing becomes available to moderate income households.

» Home values have increased only slightly faster than rental rates over the past 10 years. This suggests that the current split between

Figure 1.12: Change in Housing Occupancy Indicators, Jamestown

	2000	2010	Change
Total Housing Units	6,970	6,983	13
Owner Occupied Units	3,878	3,869	-9
% Owner Occupied Units	59.62%	58.92%	
Renter Occupied Units	2,627	2,698	71
% Renter Occupied Units	40.38%	41.08%	
Vacant Units	465	416	-49
Vacancy Rate	6.67%	5.96%	
Median Value	$68,600	$96,600	$28,000
Median Contract Rent	$365	$500	$135

Figure 1.13: Housing Value to Income Ratio, Jamestown and Other Communities

	Median HH Income	Median House Value	Value/Income Ratio
Jamestown	$42,205	$96,600	2.29
Valley City	$38,091	$88,000	2.31
Fargo	$42,710	$148,500	3.48
Bismarck	$50,062	$151,400	3.02
Grand Forks	$41,661	$148,400	3.56
Aberdeen, SD	$41,781	$116,100	2.78

Source: US Census Bureau, RDG Planning and Design

ownership units and rental units is meeting market needs.

Figure 1.13 presents a comparison of housing values to income for Jamestown and other comparable regional communities.

» On a citywide basis, a value to income ratio of 2.5 to 3.0 represents a good balance between affordability and housing values adequate to support new development. In North Dakota, this suggests that housing in Fargo and Grand Forks is relatively expensive for residents, while Jamestown's values again do not sustain the amount of new construction that the market may well demand in the near-term future.

While housing in Jamestown is relatively affordable, rents and home values as a whole might be somewhat low to support the new construction that the market may demand.

chapter two

The Built and Natural Environment

This section reviews the basic building blocks of Jamestown, its natural setting and the way land is currently used within the city limits.

Important determinants of Jamestown's development patterns: the James River system and the railroad corridor.

THE PHYSICAL AND NATURAL ENVIRONMENT

The previous chapter examined important demographic and economic factors that will affect land use, transportation, and community development policies. This chapter will investigate the city's physical environment. Each community has distinctive assets and features that can strengthen it if used to their greatest advantage. A good transportation and land use plan should consider the underlying structure and order of the community and its basic systems, such as land use and infrastructure. This environmental structure helps define the town's sense of place and inner harmony, and can build a vision for the future that grows from intrinsic character. Jamestown's physical form is largely defined by two key determinants, one natural, the other built.

The first of these determinants, the James River and its Pipestem Creek system, winds through the town and sculpts a landscape with both relatively steep edges and broader basins and plains.. The watercourse system both gives the city its unique character and creates edges and barriers that tended to channel commerce and transportation into well-defined corridors. It also creates specific limits and challenges, including flooding in extreme storm events.

The second of these determinants is the east-west railroad corridor (ex-NP, now BNSF), which bisects the city into north and south sides that are almost equal in area. The center of town naturally developed at the intersection of the railroad and the principal highway that served the city. Later, I-94, another major east-west transportation corridor, had a substantial impact on the city's development pattern that will frame some of this plan's major priorities.

JAMESTOWN'S LAND USE PATTERNS

Jamestown land use pattern follows principles that are common to many American cities and towns. Commercial concentrations occur at nodes or along major transportation corridors: the intersection of the railroad and the major regional highway (Downtown Jamestown), along major streets and highways (10th Street, 1st Avenue, US 281), and points of maximum access like interchanges (Exit 256 on I-94). Residential districts first grew around the city center and expanded into readily developable areas within the river valleys, and gradually expanded into higher, outlying areas. Industrial growth also gravitated to transportation corridors both because of access to road and railroad and the relative insensitivity of industries to the environmental effects of these corridors.

Figure 2.2: Land Use in Jamestown, 2014

Land Use Category	Acres	% of total acres	Acres per 100 People
Residential	1231	15%	7.98
Commercial	301	4%	1.95
Industrial	520	6%	3.37
Civic	2358	28%	15.29
Parks and Open Space	499	6%	3.23
Agricultural	1220	15%	7.91
Vacant	380	5%	2.46
Transportation	1840	22%	11.93
Total (Within City)	8348	100%	54.12

The density and intensity of development, measured by people per unit of area (acre or square mile) and areas of specific uses per 100 people, also reveal a great deal about the character and form of the city. Jamestown covers about 13 square miles, giving it a gross population density of a low 1,200 people per square mile. However, the city incorporates an exceptionally large amount of institutional, civic, and agricultural ground, with a commercial airport, the North Dakota State Hospital, and a university within its corporate limits. Controlling for this large amount of open land produces a much more urban density of 3,500 people per square mile. In addition, Jamestown's ratio of 7.9 acres of residential land per 100 people reflects a relatively compact form of housing development. Assuming an average of 2.5 people per household, this ratio of residential land use to population indicates a net residential density of about 5 oc-

cupied units per acre. Calculated another way, the city's 6,983 housing units are distributed across 1,231 residential acres, a net density of 5.6 units/residential acre. These densities indicate efficient development patterns for a northern plains city. The dispersion of people across the relatively large area is more the result of barriers and geography – the river and creek system and the railroad – than inefficient development.

Other use intensities in Jamestown also reflect the city's character. The ratio of about 2 acres of commercial per 100 residents reflects the city's status as a significant retail center. However, other major regional centers often display a higher amount of commercial land per population unit. The industrial land allocation of about 3.4 acres per 100 people indicates a relatively significant industrial presence, magnified by the nearby development of the Spiritwood Industrial Park which is not included in these numbers.

Figure 2.1 shows the distribution of land use in Jamestown, while Figure 2.2 compares land use in Jamestown to comparative communities. The discussion below summarizes key characteristics of individual use types.

RESIDENTIAL USES

Typical of most cities, residential land is the largest private land use category in Jamestown. But unusually, it accounts for only about 15% of the total area encompassed within the city's limits. This is the result of the very large relative proportion in civic, agricultural, and transportation use. Residential uses display the following features:

» **Mostly Single Family.** Although Jamestown offers a range of housing choices, from single family homes on large lots to apartments, the vast majority of residential land is developed as moderate-density single-family housing. Residential density is highest traditional neighborhoods around the city center, roughly between the James River on the west and north and the railroad/business loop corridors on the east. Lot sizes and densities decrease somewhat in post World War II urban residential development around this core.

» **Higher Density Areas.** Despite the dominant single-family character, Jamestown has significant areas of higher-density development near Jamestown University, east of the airport, in the Mill Hill area between the river and I-94, and around the Downtown district.

» **Large Lot Residential.** Large lot residential development predominates in areas around but outside the current corporate limits. This includes areas around Jamestown Reservoir, and outside the urban services area north and west of the city.

COMMERCIAL USES

» **Average amount of commercial land.** Despite its role as a regional center for commerce, Jamestown does not have an extraordinarily amount of land devoted to commercial purposes. In some cases, major trade centers with relatively low commercial land to population ratios have strong retail downtowns, but this is only partially the case in Jamestown. This suggests a potential for additional commercial and retail development as the city's population

Traditional residential neighborhoods account for the relative efficiency of residential land use in Jamestown.

Figure 2.2: Comparative Land Use by Acres per 100 Residents

	Jamestown, ND	Sturgis, SD	Ogallala, NE	Chadron, NE
Residential	8.0	14.7	10.6	4.2
Commercial	2.0	1.8	2.9	1.7
Industrial	3.4	1.9	2.3	0.6
Civic	15.3	6.4	4.2	4.7
Parks and Recreation	3.2	4.1	1.8	1.0
Transportation	11.9	6.4	18.0	4.7
Total Developed Area	43.7	31.2	39.6	18.4

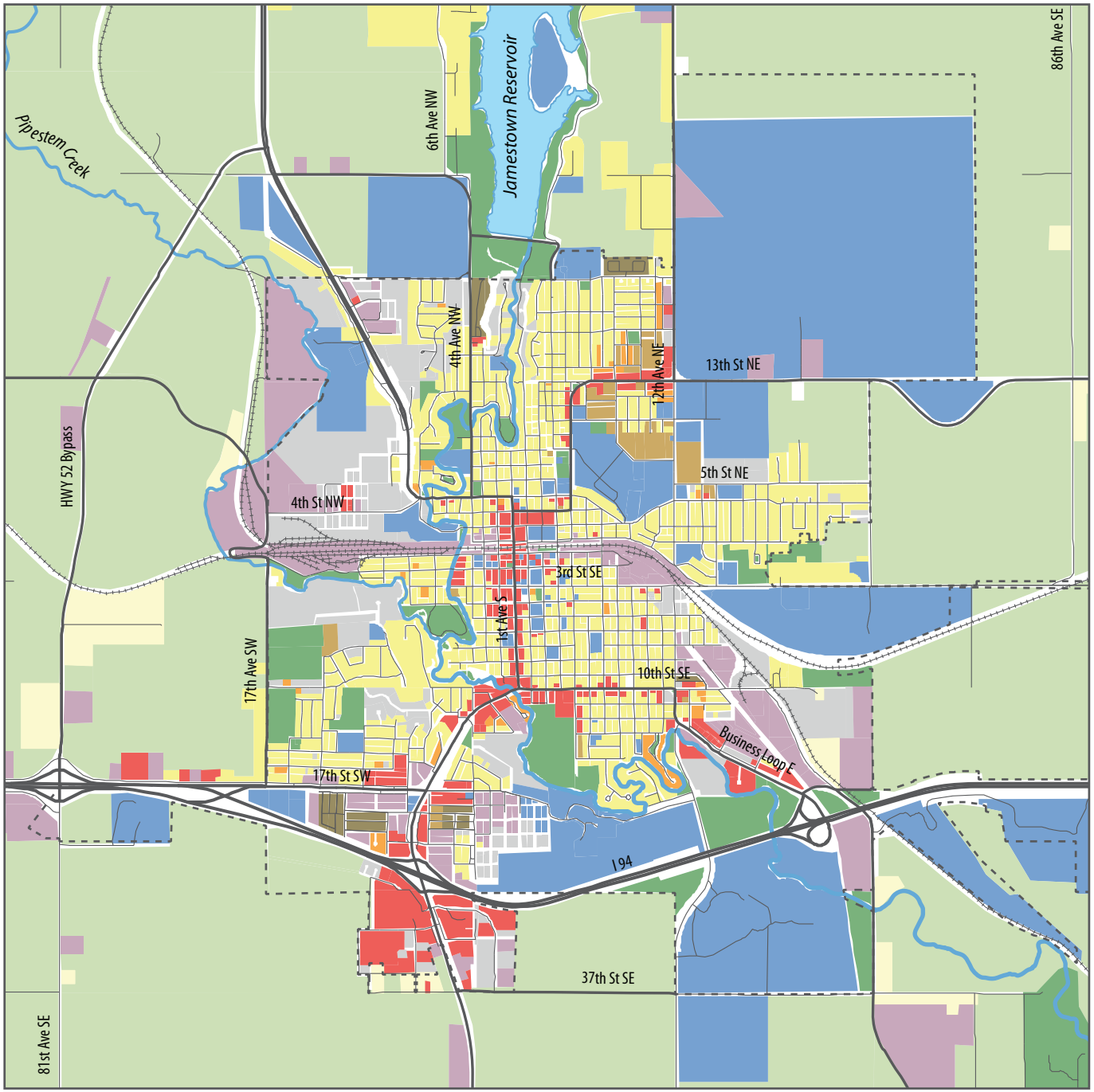


Figure 2.3: Existing Land Use

- City Boundary
- ETJ
- Railroads
- James River
- Major Rivers
- Minor Rivers/Streams
- Interstate
- Highways
- Major Arterial
- Major Collector
- Local Roads
- Alleys
- Major Lakes
- Agriculture
- Park/Open Space
- Civic/Institutional
- Rural Residential
- Low Density Residential
- Meduim Density Residential
- High Density Residential
- Manufactured Homes
- Commercial
- Mixed - Use Commercial/Residential
- Industrial
- Vacant

North

0 .25 .5 1 mile

increases and potential retail gaps are filled.

» **Retail and Service Dominant.** A significant portion of commercially-used land in Jamestown is dedicated to retail and service commercial businesses. Broadly speaking, these establishments are concentrated in the downtown core and on some large-scale sites at the junction of Interstate 94 and US Highway 281.

» **Diverse Districts.** Commercial districts exhibit different roles in the city.

Downtown is addressed in more detail in Chapter __. It is a relatively large mixed use district, roughly bounded by 4th Avenue East,, 3rd Ave West, and 4th Street North and South, and is bisected by the BNSF corridor. The south side of the district includes a main street corridor with mixed retail and service uses along US 281, civic uses (including the middle school and city hall) to the edges, and industrial and service uses along the railroad corridor. The north side is dominated by large format uses produced through urban renewal, and now including the Civic Center, Jamestown Business Center (originally built as a retail mall), and Gladstone Inn hotel.

South US 281/Exit 256 is the largest concentration of large-format retailing, and includes Jamestown Mall, the Walmart Supercenter,, the new Menard's store, and a variety of other retail projects, restaurants, and visitor services. This is likely to continue as the city's primary focus for contemporary, auto-oriented retailing.

First Avenue/Mill Hill. This corridor, carrying US 281, extends the main street district along First Avenue south of Downtown with a mix of retail, office, and service uses to 10th Street South. This pattern continues with small strip centers and free-standing commercial buildings to 13th Street SW, where the commercial patern is interrupted by the Mill Hill climb. Dominant commercial uses are re-established approaching I-94, with a combination of large retailers, visitor services, and other commercial establishments.

10th Street South. This corridor, designated the I-94 business route, has a variety of local service commercial development, including a supermarket, fast-food businesses, and small businesses. Commercial uses are concentrated between 1st Avenue and 8th Avenue SE

Scattered commercial on other major street corridors. 17th Street SW contains a mix of neighborhood commercial, trade services, and light industrial uses. Commercial development is also scattered on parts of the ND-20 (13th Street/5th Avenue NE) and US 281 (5th Street NW) corridors east and west of the city center.

Business Loop East. Commercial uses along this southeast connection to I-94 at Exit 260 are focused on visitor and truck services.

INDUSTRIAL USES

» **Significant Amount of Industrial.** Industrial sites in Jamestown are most closely associated with the rail and highway transportation infrastructure. Slightly more than 6% of land in Jamestown is currently put to industrial uses. Older industrial development clustered along the east-west railroad corridor and continued along the southeast branch off the BNSF mainline that now ends near 37th Street SE and 85th Avenue SE.

» **Strategic Locations for New Industry.** New industrial uses have emerged in several areas, mainly associated with access to over the road transportation. These include the Jamestown business park south of I-94 and east of US 281 and the US 52 Bypass on both sides of Exit 256. Light industrial uses have also developed along 17th Street SW. The largest focuses for large-scale new industries are Jamestown Stutsman Development Corporation's Airport Business Park on sites around the regional airport and the Spiritwood Energy Park ten miles east of the city.

PUBLIC AND SEMI-PUBLIC USES

Jamestown features exceptionally large areas within the city devoted to public and semi-public use. Many of these land uses represent elements that enhance the quality of life enjoyed by residents of Jamestown, and distinguish it from other regional cities.

» **Jamestown Regional Medical Center**: Located on a 45 acre site on 20th Street SW south of I-94, the Jamestown Regional Medical Center provides critical medical care to Jamestown and the surrounding region.

» **Jamestown Regional Airport**: Jamestown's airport is located on over 1300 acres, northeast of 12th Avenue (ND-20) and 13th Street NE. The airport provides both general and commercial aviation service.

» **University of Jamestown**: The University of Jamestown's campus is located in northeast Jamestown. This site covers over 100 acres is home to 967 students. The university is a private liberal arts college, originally founded by the Presbyterian Church.

Commercial districts. From top: Downtown, South US 281, 10th Street SE

National Register listings. Left: Alfred Dickey Public Library; above: Franklin School.

» **Jamestown Public Parks**: Jamestown has a robust public park system with 177 acres of city parks. Many of the largest parks border the James River/Pipestem Creek system. McElroy Park, the larest in the city system, provides 68 acres with play equipment, picnic facilities, and sports fields and an extensive system of walking paths.

HISTORIC DISTRICT AND RESOURCES

Historic buildings can provide significant value in a city, both in terms of a civic asset and a cultural attraction. Many cities have capitalized on their historic downtowns and residential districts as they work to 'brand themselves' as destinations.

Jamestown has established a historic district in their downtown that has been listed to the National Register of Historic Places. The district is roughly bounded by South 6th Street, East 4th Avenue, North 2nd Street, and West 3rd Avenue. Jamestown is also home to a number of individually listed historic properties and sites, including:

» The Alfred E. Dickey Free Library

» The Elizabeth Apartments

» The Franklin School

» Grace Episcopal Church

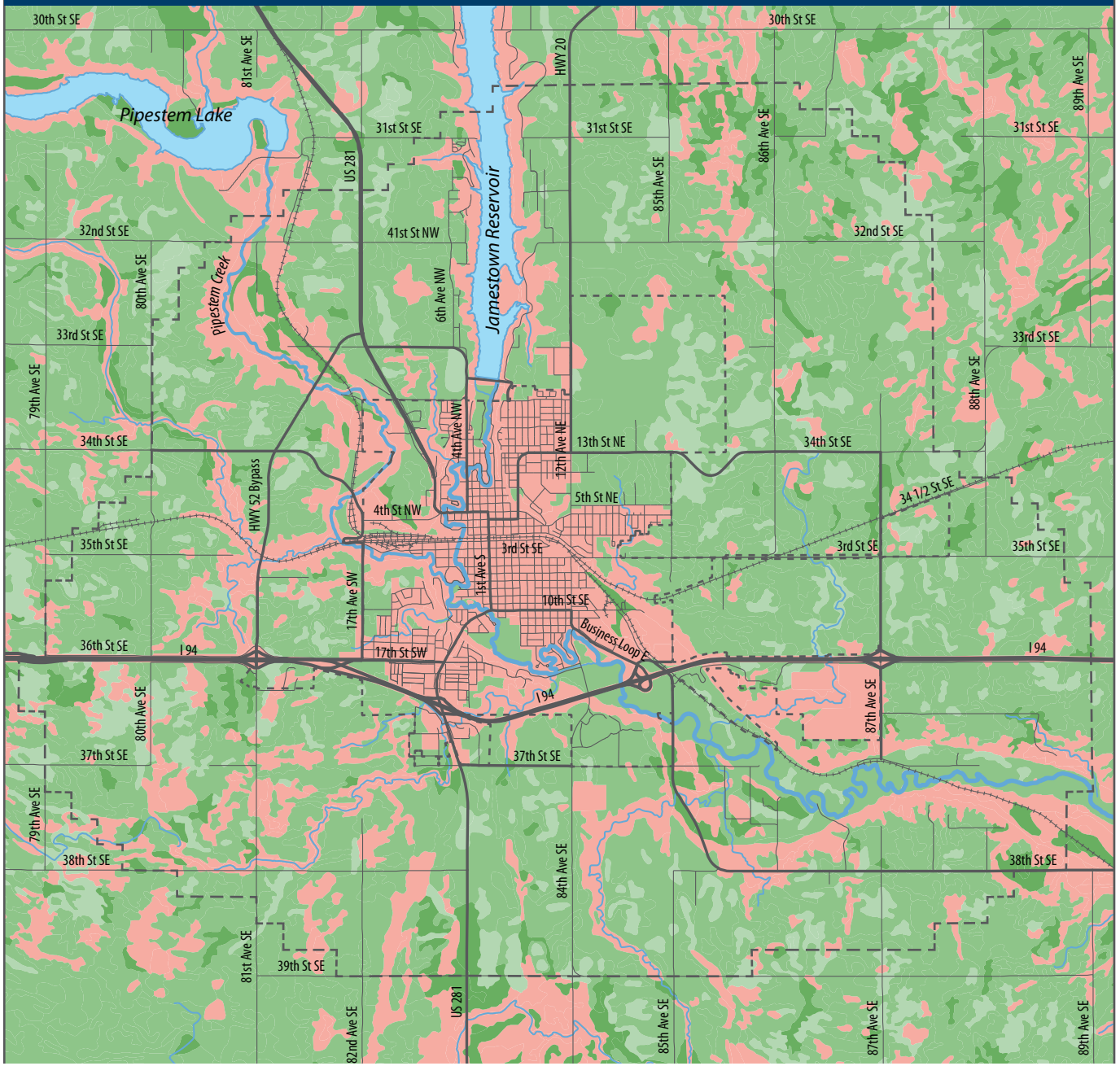
» The Seiler Building

» St. James Catholic Church

» The Stutsman County Courthouse and Sherriff's Residence/Jail

» The Voorhees Chapel

Figure 2.4: Soils and Agriculture



SOIL CLASSIFICATION

Agriculture plays a significant role in the economy of the region and Jamestown is surrounded by extensive agricultural lands that are classified as 'prime' or 'of statewide importance'. The most productive and valuable of these areas, many of which are still in active cultivation, are an important resource to the region. Ideally, new development should be directed to the most agriculturally marginal land available (while still maintaining adjacency to the developed areas of Jamestown). However, adjacent growth areas generally do include prime farmlands. Therefore, protection of soils is best served by maintaining compact, efficient development patterns that accommodate growth while minimizing the urban conversion of prime farmland.

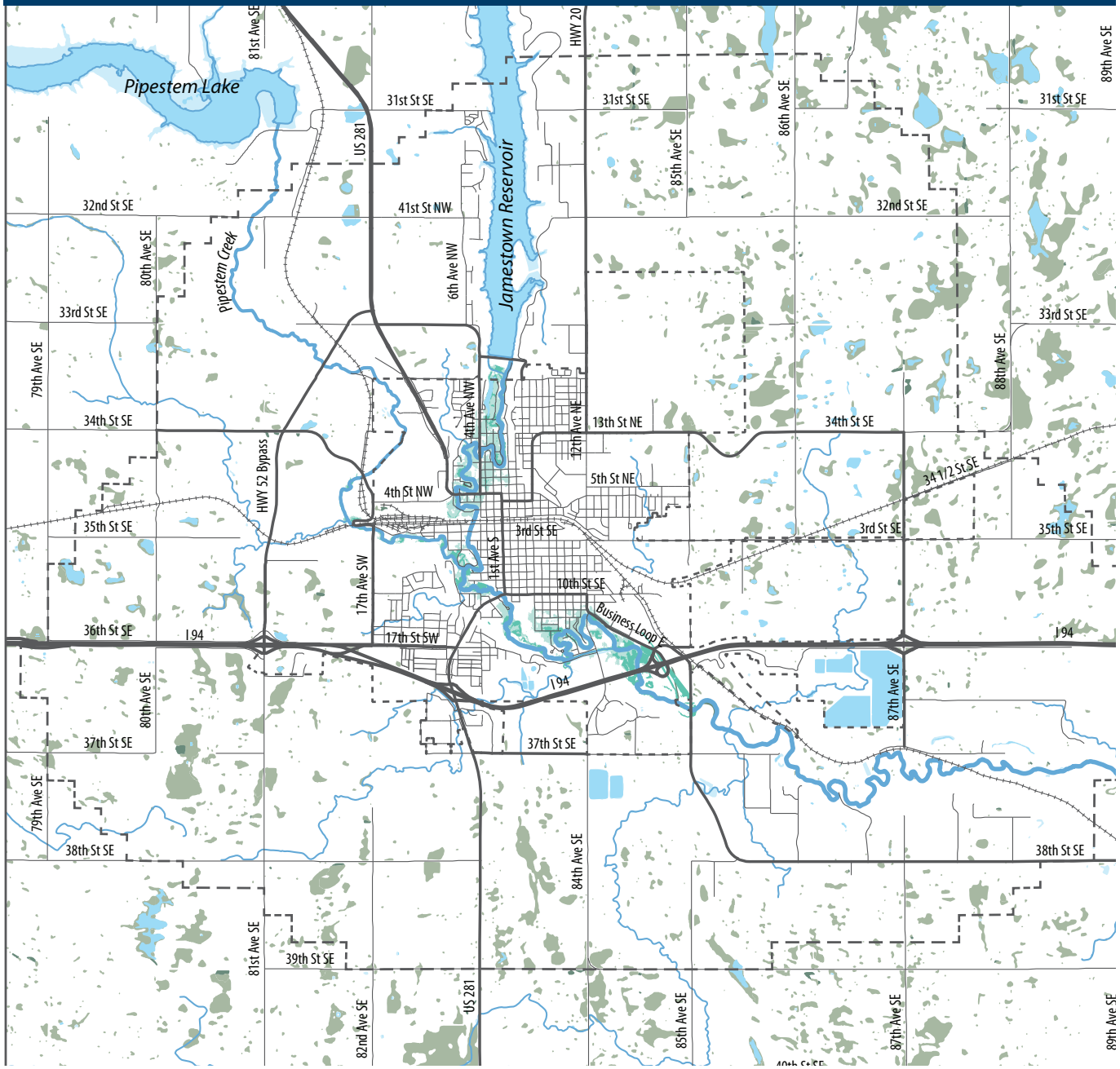
- City Boundary
- ETJ
- Railroads
- James River
- Major Rivers
- Minor Rivers/Streams
- Interstate
- Highways
- Major Arterial
- Major Collector
- Local Roads
- Alleys
- Major Lakes
- Farmland of Statewide Importance
- Prime Farmland
- Prime Farmland if Drained
- Not Prime Farmland

HYDROLOGY AND FLOODPLAINS

Jamestown and its surroundings are defined by a number of wetlands, watercourses, and floodplains. Land development has removed the majority of wetlands within the city limits. The presence of both persistent and incidental wetlands in the surrounding areas should be preserved as part of future development.

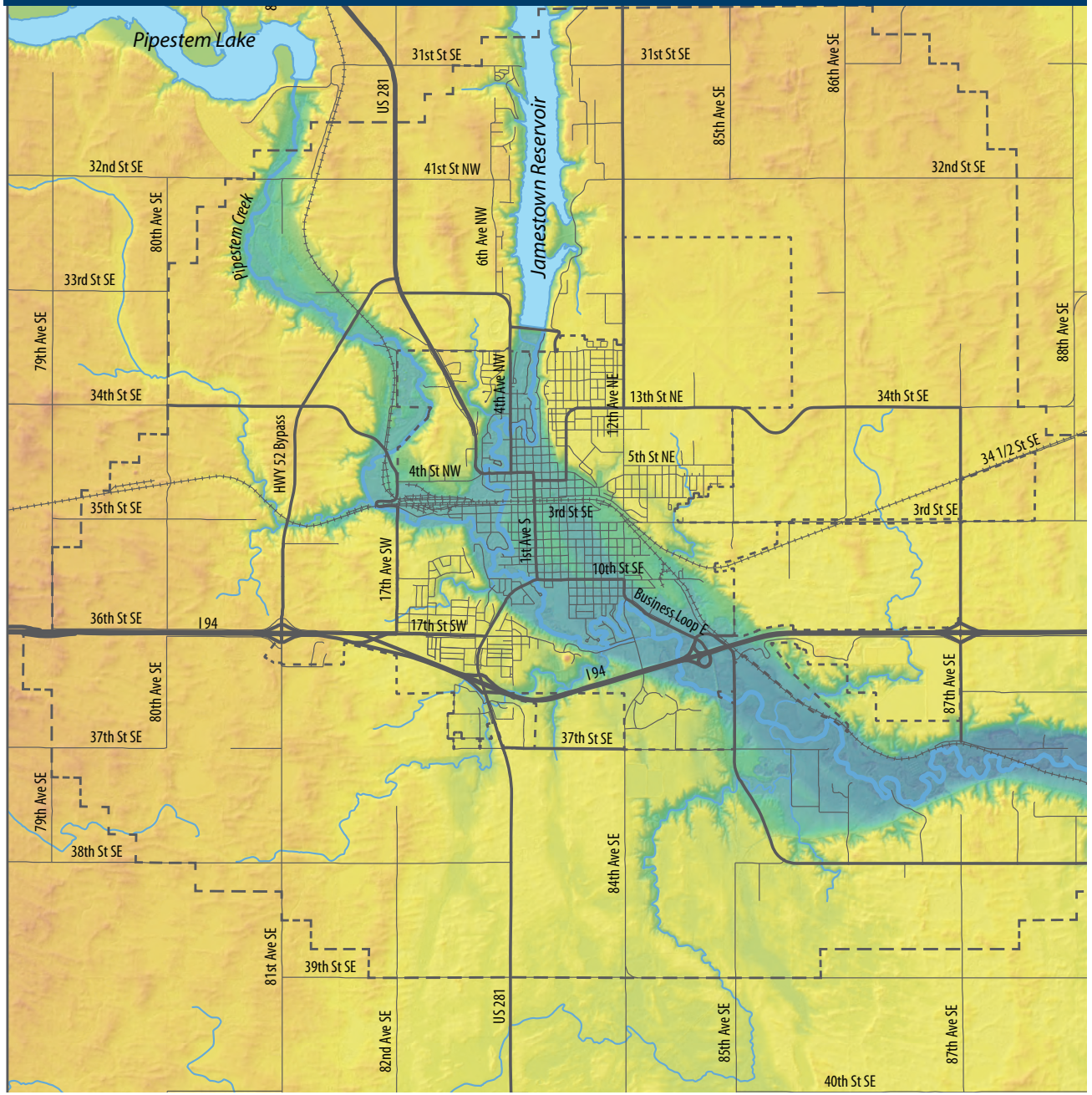
The form of Jamestown is partially defined by the waterways of the James River and Pipestem Creek, which merge on the city's west side. While the 100 year floodplains for each of these waterways are fairly clear of development, the 500 year floodplains penetrate significantly into the urban fabric, posing a potential threat to property, infrastructure, and public safety.

Figure 2.5: Hydrology and Floodplains



- City Boundary
- ETJ
- Railroads
- James River
- Major Rivers
- Minor Rivers/Streams
- Interstate
- Highways
- Major Arterial
- Major Collector
- Local Roads
- Alleys
- Major Lakes
- Minor waterbodies
- 100 year flood zone
- 500 year flood zone
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond/Riverine

Figure 2.6: Topography



City Boundary
ETJ
Railroads
James River
Major Rivers
Minor Rivers/Streams
Interstate
Highways
Major Arterial
Major Collector
Local Roads
Alleys
Major Lakes

Topography
1567′
1359′

TOPOGRAPHY

amestown was founded on the flat, fertile land of a valley carved by the historic course of the James River, and the majority of the city has been constructed within this valley. More recently developed areas of the city sit on higher ground to the northeast and southwest of the city center.

The approximately 150 foot variation in altitude across the city is significant enough to provide some areas of challenging slopes in excess of 12%, especially in the transition from the downtown and older residential areas to newer growth areas in the north east.

LAND DEVELOPMENT NEEDS

This section projects the amount of land that will be needed to accommodate Jamestown's future development needs between 2015 and 2040. Population and development projections help to guide forecasts of land consumption during the planning period. Chapter 1 presented a population growth scenario based on household increases related to probable employment growth for the next five year period and a 1% annual growth rate thereafter through the year 2040. This selected population scenario produces a 2030 population of 19,756 and a 2040 target of 21,823 (Chapter 1, Figure 1.6)..

RESIDENTIAL LAND NEEDS

Table 2.7 builds a 25-year housing demand model based on this projection and the following assumptions:

» Household population at the end of the period excludes residents living in group care facilities such as skilled nursing facilities, group or therapeutic settings, including the Anne Carlson Center and the North Dakota State Hospital. This "non-household population" does not produce a demand for conventional housing units. The housing needs forecast of Table 2.7 assumes that the proportion of the non-household population will remain stable through the planning period.

» Average people per household will gradually increase from the current estimate of 2.09 to 2.27 by 2040. This gradual increase in household size is based on family formation by the so-called millennial generation – children of baby boomers having their own children . It produces a conservative assumption of housing needs.

» Unit demand at the end of the period is calculated by dividing household population by the number of people per household. This equals the number of occupied housing units.

» Jamestown's current vacancy rate is estimated at a vanishingly small 1.24%, creating a short-term housing problem that is addressed later in this plan. This needs projection assumes a ten-year increase in this vacancy rate to an optimal 5%, remaining stable at that level through 2040. This vacancy rate provides adequate housing choice for new residents, while maintaining a tight enough market to maintain ownership values that protect the investments of homeowners and rent levels high enough to make continued new construction financially feasible.

» Unit needs at the end of each period are based on the actual household demand plus the number of projected vacant units.

» Replacement need is the number of housing units demolished or converted to other uses. Homes in poor condition or are obsolete

Figure 2.7: Jamestown Housing Needs Projection, 2015-2040

	2015 Base	2015-2020	2021-2025	2026-2030	2031-2035	2036-2040	Total
Population at the End of Period	15,466	17,885	18,797	19,756	20,764	21,823	
Household Population at End of Period	13,729	15,876	16,686	17,537	18,431	19,372	
Average People/Household	2.09	2.14	2.19	2.22	2.24	2.27	
Household demand at End of Period	6,569	7,419	7,619	7,917	8,228	8,553	
Projected Vacancy Rate	1.24%	2.37%	5.00%	5.00%	5.00%	5.00%	
Unit Needs at End of Period	6,651	7,657	8,020	8,334	8,661	9,002	
Replacement Need		28	35	35	35	35	168
Cumulative Need		692	746	349	362	376	2,526
Average Annual Construction		138	149	70	72	75	101

Source: US Census Bureau, RDG Planning and Design

should gradually be replaced in the city's housing supply.

» Cumulative need shows the number of total units needed between the base year of 2015 and the year indicated at the end of the period.

Sustainable community development will involve ongoing housing improvement (including replacement of substandard housing) and moderate, managed growth. Until recently, Jamestown has had very little new residential construction, caused by a variety of factors including the impact of relatively low rents and housing prices , static population, a relatively small homebuilding community, and the residual effects of the financial crisis of 2008. These factors produced unmet demand and a very low present vacancy rate. The year 2014 brought a number of new residential projects largely focused on multifamily construction. In the future, market trends will require the city to provide a full range of housing types, ranging from large lot single-family development through smaller and more efficient ownership alternatives to continued multifamily development.

Table 2.8, then, displays residential land demand based on the following distribution of housing types:

» 5% of total demand is allocated to rural or very large-lot single-family detached development. Ordinarily, this product will be served by septic or other self-contained sanitary systems and wells or rural water supply. Average gross density (including streets) of this development is projected at 0.5 units/acre.

» 50% of total demand is allocated to low-density single-family detached or attached development with urban services, including municipal water and sanitary sewer service. Average gross density of this development is projected at 3.0 units per acre. This is a lower residential density than Jametown's 2015 average, but is normal for contemporary low-density urban development.

» 25% of total demand is allocated to medium-density urban residential development including small-lot single-family detached or attached housing, duplexes, and townhomes. Average gross density of this category is projected at 6 units per acre.

» 20% of total demand is allocated to high-density urban residential development including townhomes and multifamily housing. Average gross density of this category is projected at 12 units per acre.

This distribution corresponds to a gross average residential density of about 4.25 units/acre and a net residential density (excluding streets) of about 5.5 units/acre, almost exactly the current pattern of development displayed in Jamestown in 2015. Land designated for residential development during the planning period will be 1.5 the area needed for actual construction to provide market choice and prevent artificial inflation of land cost.

Table 2.8 displays residential land needs for five year increments, related to population and development growth for each of those periods. It indicates a total hard demand for 821 acres of land for new housing and a need for the land use plan to designate about 1,231 acres or about two square miles for residential growth.

Residential Development Types. Clockwise from top left: Rural/Large Lot Single-Family; Low-Density Urban Single-Family; Medium-Density Urban; High-Density Urban

Figure 2.8: Residential Land Needs, 2016-2040

	Housing Types and Period	% of Demand	Units	Gross Density (du/A)	Hard Land demand (acres)	Designated Land (Hard demand x 1.5) in acres
2016-2020	Rural Residential	5%	35	0.5	69.2	103.8
	Urban Residential-Low	50%	346	3.0	115.4	173.0
	Urban Residential-Medium	25%	173	6.0	28.8	43.3
	Urban Residential-High	20%	138	12.0	11.5	17.3
	Period Total	**100%**	**692**		**225.0**	**337.4**
2021-2025	Rural Residential	5%	37	0.5	74.6	111.9
	Urban Residential-Low	50%	373	3.0	124.4	186.6
	Urban Residential-Medium	25%	187	6.0	31.1	46.6
	Urban Residential-High	20%	149	12.0	12.4	18.7
	Period Total	**100%**	**746**		**242.5**	**363.8**
2026-2030	Rural Residential	5%	17	0.5	34.9	52.3
	Urban Residential-Low	50%	174	3.0	58.2	87.2
	Urban Residential-Medium	25%	87	6.0	14.5	21.8
	Urban Residential-High	20%	70	12.0	5.8	8.7
	Period Total	**100%**	**349**		**113.4**	**170.1**
2031-2035	Rural Residential	5%	18	0.5	36.2	54.4
	Urban Residential-Low	50%	181	3.0	60.4	90.6
	Urban Residential-Medium	25%	91	6.0	15.1	22.6
	Urban Residential-High	20%	72	12.0	6.0	9.1
	Period Total	**100%**	**362**		**117.8**	**176.6**
2036-2040	Rural Residential	5%	19	0.5	37.6	56.4
	Urban Residential-Low	50%	188	3.0	62.7	94.1
	Urban Residential-Medium	25%	94	6.0	15.7	23.5
	Urban Residential-High	20%	75	12.0	6.3	9.4
	Period Total	**100%**	**376**		**122.3**	**183.5**

Figure 2.8: Residential Land Needs, 2016-2040

	Housing Types and Period	% of Demand	Units	Gross Density (du/A)	Hard Land demand (acres)	Designated Land (Hard demand x 1.5) in acres
Total 2016-2040	Rural Residential	5%	126	0.5	253	379
	Urban Residential-Low	50%	1263	3.0	421	632
	Urban Residential-Medium	25%	632	6.0	105	158
	Urban Residential-High	20%	505	12.0	42	63
	Period Total	**100%**	**2526**		**821.0**	**1231.4**

COMMERCIAL AND INDUSTRIAL LAND NEEDS

A growing population and an increased regional market share will produce commercial growth, which in turn will expand Jamestown's economy and its competitive attraction for new households. While this plan does not include a retail market analysis, adequate commercial space should be identified to meet probable market demands. However, designating too much commercial land can produce inefficient land patterns and scatter urban development the city. In contrast, sustainable land development patterns should locate commercial development closer to customers and be designed to encourage active transportation modes such as pedestrian and bicycle access.

The demand for future industrial land is linked to opportunity and recruitment, rather than exclusively to population growth. A single major corporate decision can dramatically increase (or decrease) the projected industrial demand in a community. In addition, a decision by the city to pursue industrial development aggressively can affect industrial land needs. Industrial demand in the Jamestown area will be both regional and local. Very large industries with significant external effects are likely to find the Spiritwood Energy Park, with excellent road and railroad access, very attractive. Innovative local enterprise and clean industries are likely to find locations in the city itself more attractive. JSDC has positioned itself successfully to meet both demands.

Despite these differences, similar projection methods are used to predict future commercial and industrial land needs. The Jamestown projections use two methods for comparison:

» Population proportion. This method relates land needs to population projections. It assumes that the absolute amount of commercial or industrial land per 100 people will remain relatively constant and that new development will grow in proportion to population growth.

» Residential use proportion. This assumes a constant relationship between the amount of land used for residential and commercial purposes, thereby relating commercial and industrial growth rates to residential development rates.

Table 2.9 compares the results of these methods for commercial uses . Using the midpoints, this calculation suggests a demand for about 170 acres of commercial land during the next 20 years. This accounts for only new commercial construction and not for additional commercial operations on existing vacant sites. To provide alternatives sites, the land use plan should designate 1.5 times the "hard demand" for commercial land. Thus, for planning proposes the city should designate about 250 acres of land for future commercial development.

Table 3.0 calculates additional industrial land needs within the city. Based on increasing population and residential use proportion methods described above, Jamestown should absorb about 290 acres of new industrial land. In order to provide maximum flexibility, the land use plan should designate about three times the demand or 870 acres for industrial and business park uses. This supply should be viewed on a regional basis, and includes the Spiritwood Energy Park as well as industrial growth within the immediate urban area.

Figure 2.9: Jamestown Commercial Land Needs Projection, 2015-2040

	2015 Base	2015-2020	2021-2025	2026-2030	2031-2035	2036-2040	Conversion Need	Designated Land
Population Proportion Method								
Projected Population	15,466	17,885	18,797	19,756	20,764	21,823		
Comm Use/100 res.	1.95	1.95	1.95	1.95	1.95	1.95		
Projected Commercial Use (acres)	301.7	348.9	366.7	385.4	405.1	425.7	124.0	186.0
Residential Use Proportion Method								
Residential Land (acres)	1230.7	1455.7	1698.2	1811.6	1929.4	2112.8		
Commercial/Residential Ratio	0.25	0.25	0.25	0.25	0.25	0.25		
Projected Commercial Use (acres)	301.7	356.9	416.3	444.1	473.0	517.9	216.2	324.4

Figure 3.0: Jamestown Industrial Land Needs Projection, 2015-2040

	2015 Base	2015-2020	2021-2025	2026-2030	2031-2035	2036-2040	Conversion Need	Designated Land
Population Proportion Method								
Projected Population	15,466	17,885	18,797	19,756	20,764	21,823		
Industrial Use/100 res.	3.37	3.37	3.37	3.37	3.37	3.37		
Projected Industrial Use (acres)	521.4	603.0	633.7	666.0	700.0	735.7	214.3	643.0
Residential Use Proportion Method								
Residential Land (acres)	1230.7	1455.7	1698.2	1811.6	1929.4	2112.8		
Industrial/Residential Ratio	0.42	0.42	0.42	0.42	0.42	0.42		
Projected Industrial Use (acres)	521.4	616.7	719.5	767.5	817.4	895.1	373.7	1121.2

Source: RDG Planning and Design

chapter three

Transportation Today

Transportation is a critical to Jamestown's ability to serve the present and future needs of the city. Mobility and access help form the city, advance public safety, expand the economy, and enhance the quality of life that Jamestown offers its citizens, businesses, and visitors. This chapter evaluates the transportation network to identify and analyze transportation deficiencies and improvement opportunities within the study area.

EXISTING CONDITIONS REPORT

This chapter evaluates the transportation network to determine transportation deficiencies and improvement opportunities within the Jamestown study area. The evaluation includes data necessary to assess the network and identify existing needs and future improvement strategies. Subsequent chapters present these improvement strategies and their relationship to overall community development goals and objectives.

TRAVEL CHARACTERISTICS

COMMUTING

Because Jamestown is relatively compact and most people work in the city and immediate vicinity, trip lengths are lower than state averages. Over 75 percent of daily commuters travelled less than 15 minutes to work. But as Figure 3.1 illustrates, factors such as population, city area, traffic friction, and distance to employment centers increase. Thus, as Jamestown grows, commuting times will also increase based on the existing system.

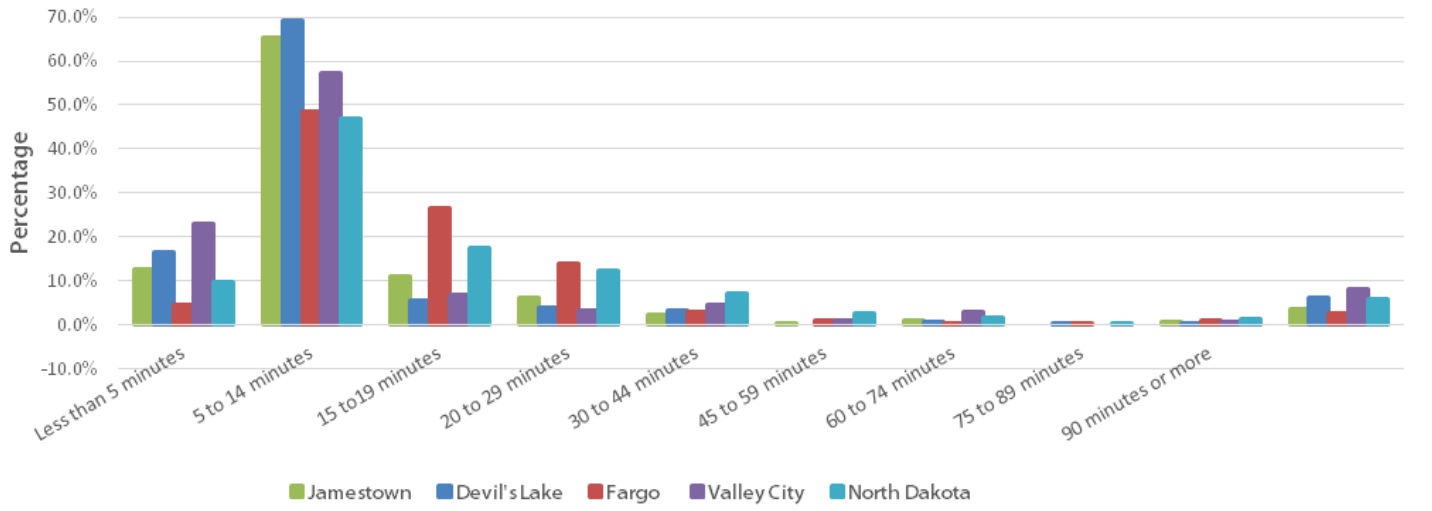
Mode choice – how people choose to travel – is also an important transportation indicator. People value a balanced system that provides them with transportation options. Across the United States the long-term trend of a growing percentage of workers driving alone has created inefficiencies in the use of both land and transportation resources, resulting in traffic congestion. Single-occupancy auto commuting is especially prevalent in North Dakota. As Figure 3.2 illustrates, Jamestown, Valley City, Devils Lake, Fargo and the State of North Dakota, about 80 percent of commuters drive alone to work.

ROADWAY NETWORK

NATIONAL HIGHWAY SYSTEM

Congress designated the National Highway System (NHS) in 1995 to facilitate infrastructure improvement spending on transportation projects that were important to the Nation's economy and interstate commerce. MAP-21, the Federal transportation bill adopted in 2012, updated this definition to include most principal arterials. Preserving and maintaining the NHS system is a key objective MAP-21. Map 3.3 depicts the NHS system within the Jamestown area, displaying a strong transportation framework including Interstate 94 (I-94), US Highway 281/52, US Highway 281/52 Bypass and North Dakota Highway 20.

Figure 3.1: Average Commuting Time for Jamestown and Other North Dakota Communities



Source: U.S. Census Bureau

INTERSTATE HIGHWAY ANALYSIS AND ISSUES

The interstate is a major component of the National Highway System, and is critical to regional travel and freight movement through North Dakota and the rest of the country. According to the Federal Highway Administration (FHWA), about one-quarter of all vehicle miles driven in the United States in 2011 use the Interstate System. The Interstate System through Jamestown includes Interstate 94 which has two lanes in each direction and five local interchanges. From east to west, these interchanges, located on Figure 3.4, include Exits 262 (Bloom), 260 (Jamestown), 258 (US 52/281 and Jamestown), 257 (Jamestown) and 256 (Truck By-Pass US 52 West, US 281 North). Exit 257 provides only limited movements, serving eastbound I-94 traffic bound for the center of town and westbound local traffic entering I-94.

Exit 256, the westernmost of the Jamestown interchanges, lacks signs that indicate that Jamestown or any services other than hospitals are accessible from the interchange. With the opening of the new Jamestown Regional Medical Center in 2011, a hospital wayfinding sign was installed on I-94. Immediately following Exit 256, an eastbound sign indicates "Jamestown Next 3 Exits" and includes symbol signs for various services available.

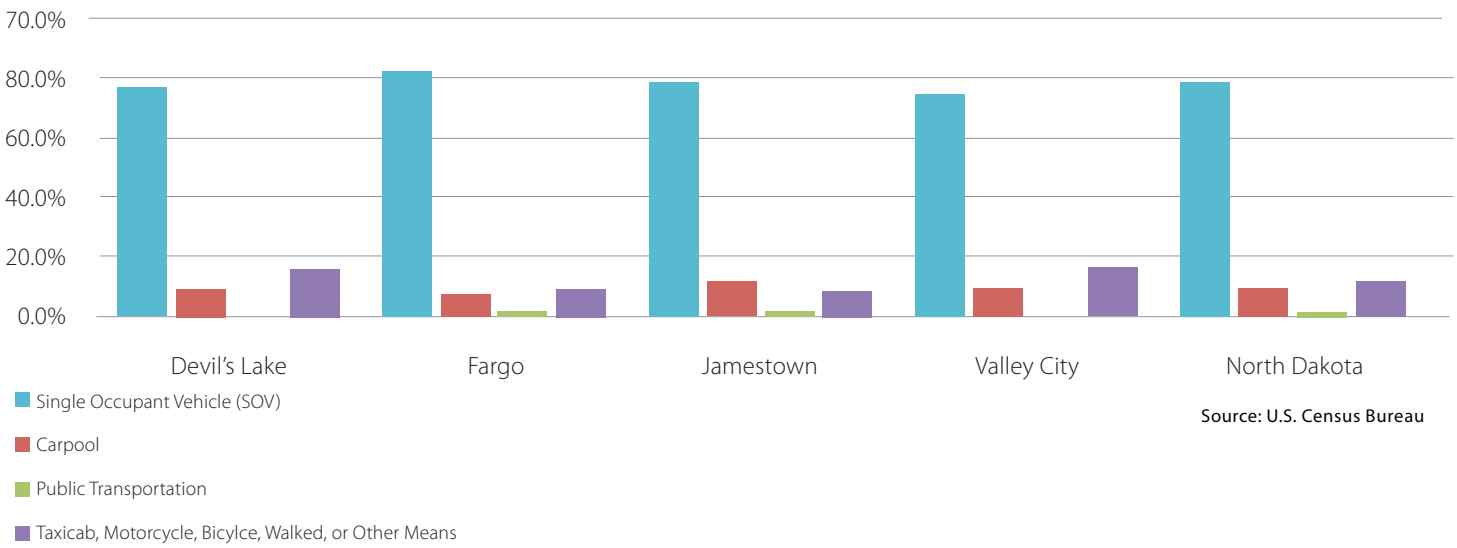
Center to center spacing of Exits 256 and 257 is less than a mile, creating weaving conflicts between these interchanges:

- Slower merging westbound traffic enter I-94 from 17th Street/ I-94 West Business Loop and mix with I-94 mainline westbound traffic turning off the interstate at Exit 256.
- Slower merging eastbound traffic entering I-94 from Exit 256 and then immediately leave the interstate using the left-hand ramp at Exit 257, all while mixing with high speed mainline interstate traffic. This is a particular safety issue given the demographic nature of many hospital users who make this difficult movement because of a lack of alternative routes.

The unconventional left-hand and limited access design of Exit 257 also presents a variety of issues:

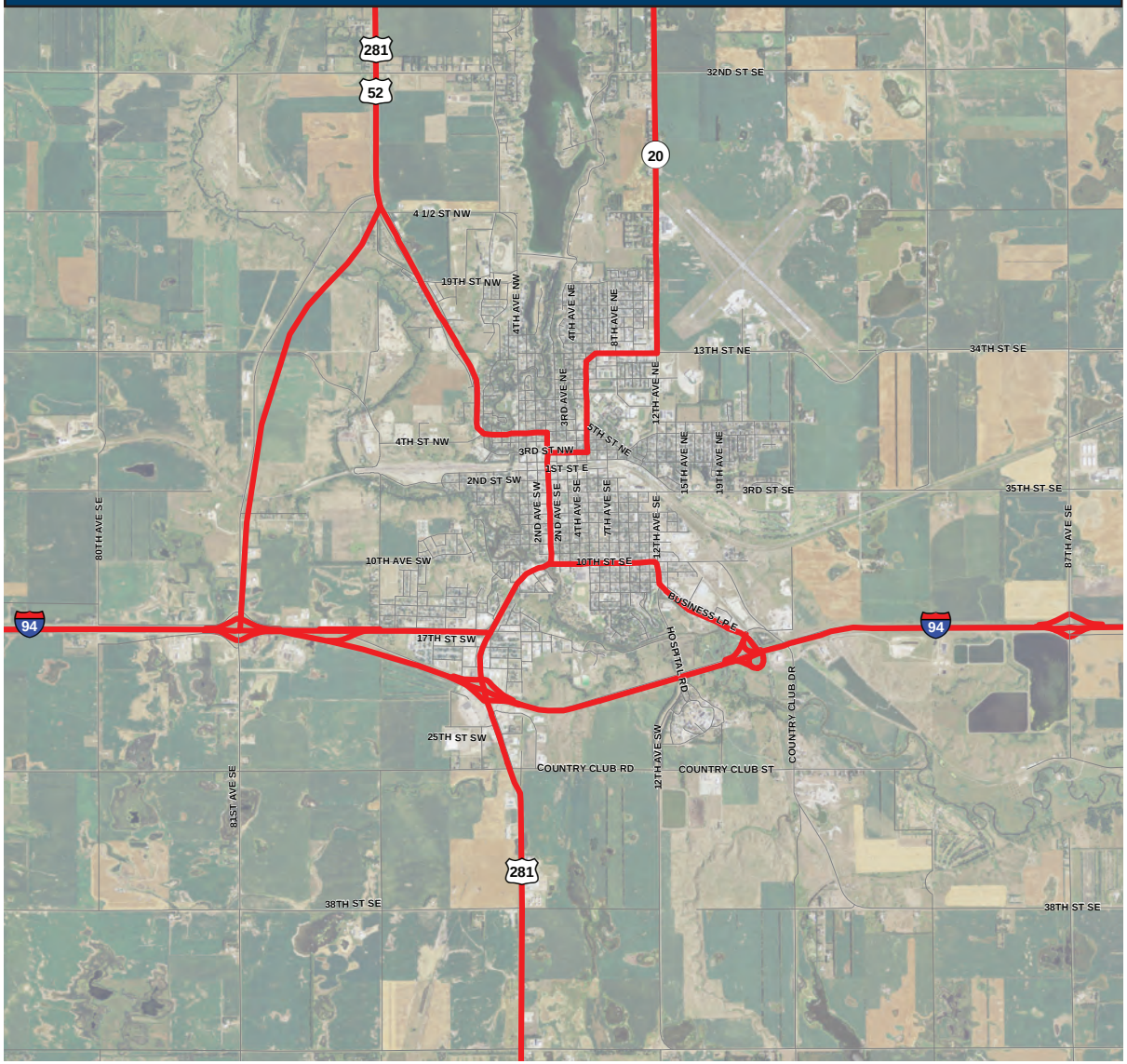
- The left-hand exit ramp was part of the original construction of I-94 and fails to meet current FHWA guidelines. Left-hand interstate entrances and exits are contrary to driver expectations and bring slower-moving ramp traffic into the higher-speed mainline lanes. With the exception of direct entrances to high-occupancy vehicle or managed lanes, left-hand entrances should be avoided.

Figure 3.2: Mode Split Comparison: Jamestown and Other North Dakota Communities



Source: U.S. Census Bureau

Figure 3.3: National Highway System in the Jamestown Region



Roadways on National Highway System

NHS Routes

» Only two of the eight basic interstate access movements (eastbound off-ramp, westbound on-ramp) are served by Exit 257. Current FHWA policy requires that interstate access points provide for each of the eight basic movements, except in the most extreme circumstances, because partial interchanges usually have undesirable operational characteristics and violate driver expectation increasing the possibility of wrong-way movements on ramps.

» Eastbound off-ramp onto 17th Street SW is supported by a bridge that does not meet desired vertical clearance for westbound I-94 under the bridge. As a result, this bridge is classified as functionally obsolete, and tall trucks have hit the bridge on many occasions. Other local accounts suggest that trucks, recognizing the vertical clearance deficiency, have avoided this bridge by backing up all the way to Exit 258 or using 17th Street SW. These practices create serious safety and operational deficiencies on the high-speed I-94.

An alternative to this problematic route exists, using the Exit 256 overpass and the I-94 north frontage road to 17th Street SW. However, this frontage road alternative requires improvement and clearer routing to 17th Street to make it attractive to local users.

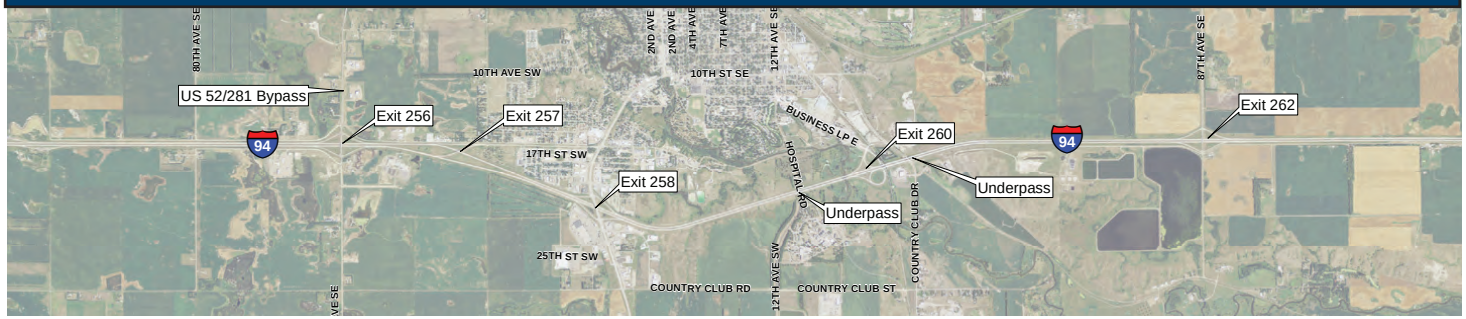
FUNCTIONAL CLASSIFICATION

A well laid-out and properly designated roadway network provides safe and efficient surface transportation by reducing travel times, increasing safety, assisting in emergency operations and guiding allocation of roadway funds. The network's components are placed into functional classifications, grouping streets and highways by their role in the system and the character of service they are intended to provide. Map 3.5 illustrates the Jamestown functional classification system, made up of the following categories:

» **Principal Arterials.** This system of roadways serves the major centers of activity of urbanized areas, the highest traffic volume corridors and the longest trips. The principal arterial system carries most of the trips entering and exiting the urban area, as well as most of the through movements bypassing the central city. Examples of principal arterials in today's Jamestown system include I-94, 17th Street SW, 10th Street SE, and First Avenue.

» **Minor Arterials.** This system of roadways accommodates trips of moderate length at a somewhat lower level of travel mobility than principal arterials. This system includes all arterials not classified as "principal." The system carries in-town travel, but ideally does not penetrate identifiable neighborhoods. The FHWA recommends

Figure 3.4: Interstate Highway Exits in the Jamestown Region



Signage conditions at exit 256

Overpass at Exit 257 with 17th Street SW in the fopreground.

spacing arterials at every one-half to one mile in urban settings with greater spacing in lower-density contexts. Examples of minor arterials in today's Jamestown system include 3rd Street SE, 13th Street NE, and 4th Avenue NW north of 4th Street NW.

» **Collectors.** Collector streets distribute traffic from the arterial system to local streets and may penetrate residential neighborhoods. Collectors provide both traffic service and land access service, but they should not handle the long-distance through traffic that arterials carry. If collectors provide long-distance continuity without traffic-calming characteristics, they may be misused as arterials.

» **Local Roads.** This class consists of those streets whose sole function is to provide access to immediately adjacent land. They make up a large percentage of the total street mileage of the city, but carry a small proportion of the vehicle miles travelled. Through traffic

Figure 3.5: Functional Classifications for Jamestown Network

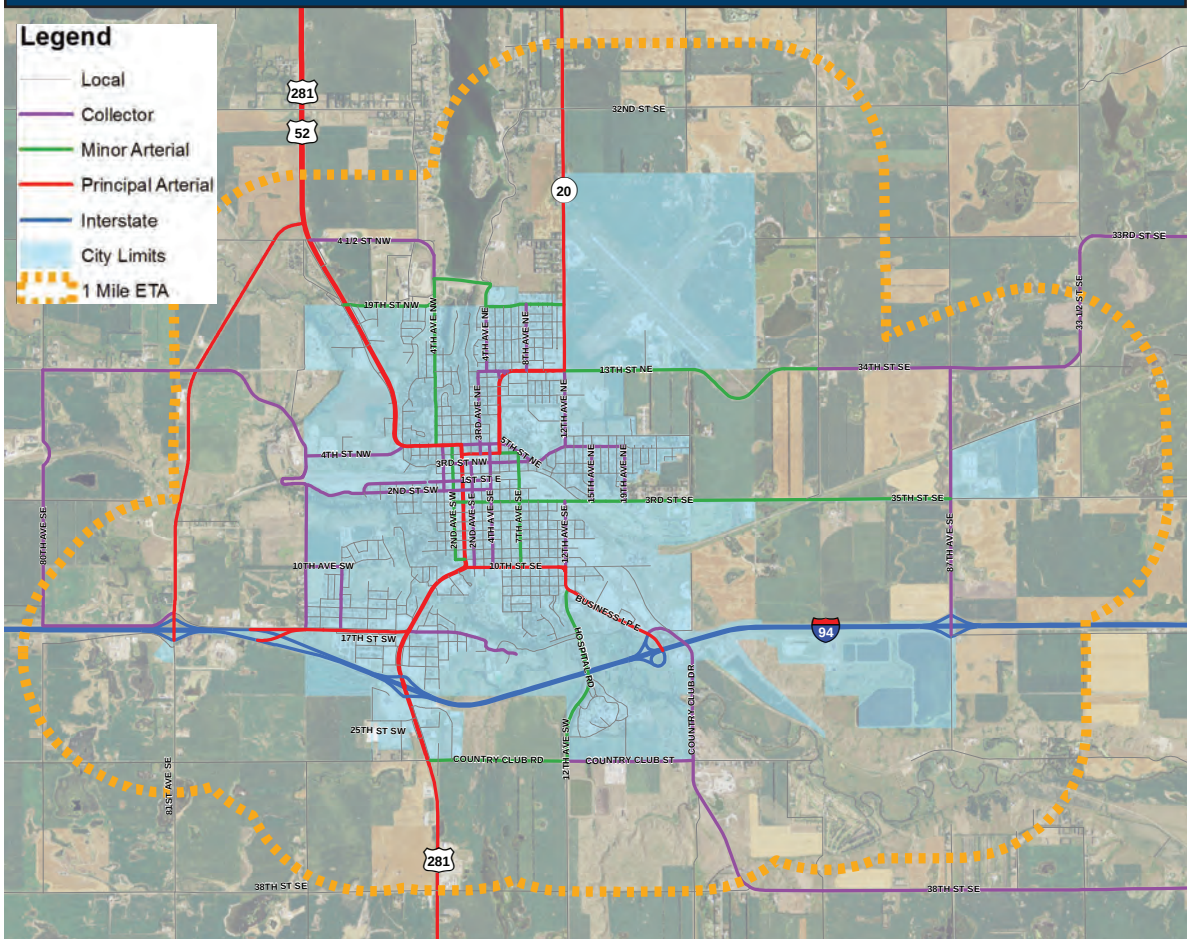


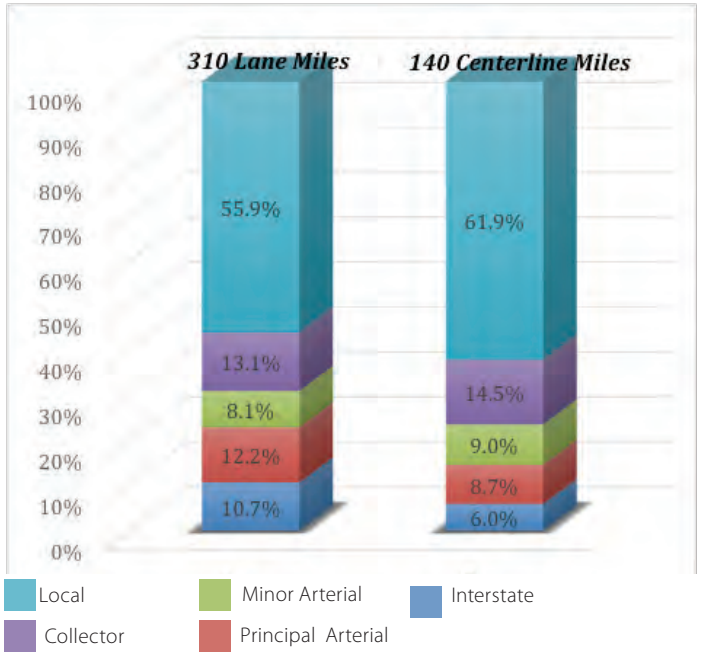
Figure 3.6: Functional Classification Distribution

Functional Classification	Centerline Miles	Travel Lane Miles	% of Lane Miles	% of Centerline Miles	FHWA Guidelines
Interstate	8.32	33.28	10.7%	6.0%	1% - 3%
Other Freeways/ Expressways	0	0	0.0%	0.0%	0% - 2%
Other Principal Arterial	12.14	37.9	12.2%	8.7%	4% - 9%
Minor Arterial	12.58	25.16	8.1%	9.0%	7% - 14%
Collectors	20.22	40.44	13.1%	14.5%	3% - 16%
Local	86.52	173.04	55.9%	61.9%	62% - 74%

on these streets should be discouraged, since their main function is to provide easy access to adjacent property and connect with collector or arterial streets.

Roadways designated under the functional classification system have access to federal transportation funds which can be used for studies, network improvements and construction. Local roads are not considered to be functionally classified and therefore federal funding as-

Figure 3.7: Functional Classifications for Jamestown Network



US 281 looking south toward Mill Hill.

sistance is not available for planning or roadway improvements.

The FHWA has established detailed guidelines for the functional classification network. This breakdown is illustrated in Figure 3.6 for the area inside the Jamestown urban area boundary. The FHWA functional classification guidelines pertain to centerline miles and not lane or segment miles. Roadways divided by a median are not separated into multiple centerline miles.

Figures 3.6 and 3.7 show that Jamestown has a well distributed functional classification system. Although the system has more interstate miles than prescribed in the FHWA guidelines, the combined allotment for all arterials in Jamestown (interstate, freeways/expressways, other principal arterials and minor arterials) falls well within FHWA guidelines. This backbone of functionally classified roads provides a foundation for future development. The functional classification should be periodically monitored for updates to ensure that the appropriate roads are functionally classified for funding purposes.

VEHICULAR TRAFFIC VOLUMES

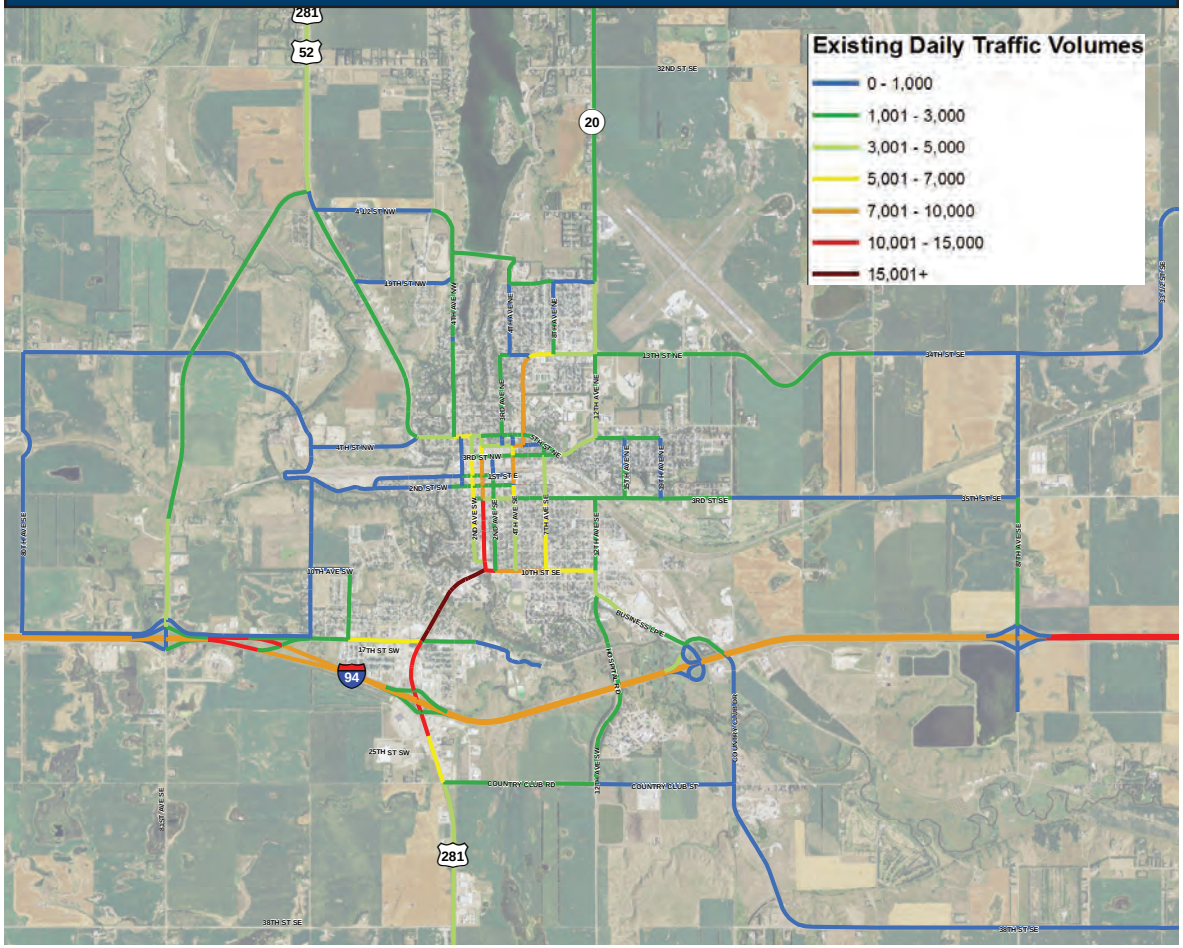
A review of traffic volumes is the true test of an effective functional classification system. In a well-designed and maintained system, functional classification is based on the degree of travel and surrounding land uses along roadways. Local roads and collectors with traffic volumes approaching or exceeding higher classified roads is a sign of unclear functional classification, roadway design and land use collaboration. The current traffic volumes generally indicate Jamestown's roadway network is operating consistently with the existing functional classification system. Figure 3.8 illustrates the current traffic volumes on major routes throughout Jamestown.

Principal Arterial

Minor Arterial

Collector

Figure 3.8: Average Daily Traffic (ADT) on the Jamestown Network

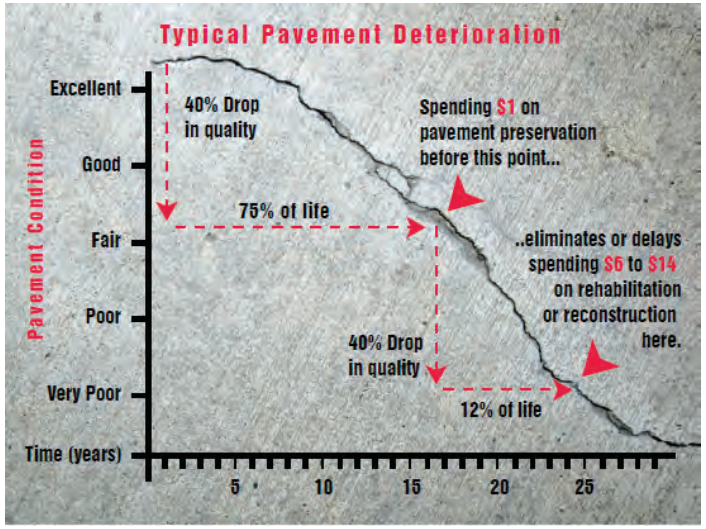


MAINTENANCE AND OPERATIONS

Eighty-six percent of the roadways in Jamestown are paved with either asphalt or concrete, as displayed in Figure 3.9. Studies have found that timely pavement rehabilitation has the potential to be six to 14 times more cost effective than rebuilding a deteriorated road. Another study found that rough roads add an average of $335 to the annual cost of owning a car due to damaged tires, suspensions, reduced fuel efficiency and accelerated vehicle depreciation.

Currently, the City of Jamestown maintains and operates all roads within the City limits unless owned or maintained by NDDOT through agreement, or privately owned roads, as is the case of University of Jamestown campus roads. NDDOT maintained roads include I-94, I-94 Business Loop, US Highway 52, US Highway 52/281 Bypass Route, US Highway 281 and ND Highway 20. The City of Jamestown maintains the I-94 Business Loop and US 52/281 through the city. In general, NDDOT maintains all of the principal arterials through Jamestown except for these two facilities and other city street sections of those routes that have been turned over to the City for maintenance.

NDDOT uses a pavement management system that revolves around periodic reviews of pavement surface conditions using the Distress Index methodology. Under the Distress Index, numbers are assigned to the index correlating to pavement conditions. Results from the Distress index are used to schedule improvements and determine scope of rehabilitation.



Source: National Center for Pavement Preservation

The City of Jamestown does not utilize a pavement management system, but rather maintains city roads on a seven-year cycle by splitting the city into seven districts. Cyclical roadway maintenance includes at minimum a seal-coat, but can include patching, curb repair and overlays if deemed necessary by engineering staff. Annual maintenance may include crack sealing and pothole repairs as needed. This approach has worked well in the past for Jamestown and has kept the City's roads in acceptable conditions.

BARRIER CROSSINGS

Bridges are an important aspect of any transportation network, as they allow for continuity of travel despite the presence of barriers such as rivers, ditches, steep terrain, railroads or interstate highways. It is important to assess the condition of existing bridges and estimate when transportation funds will be needed to repair or reconstruct them. Below is a summary of the major transportation barriers and crossings in Jamestown:

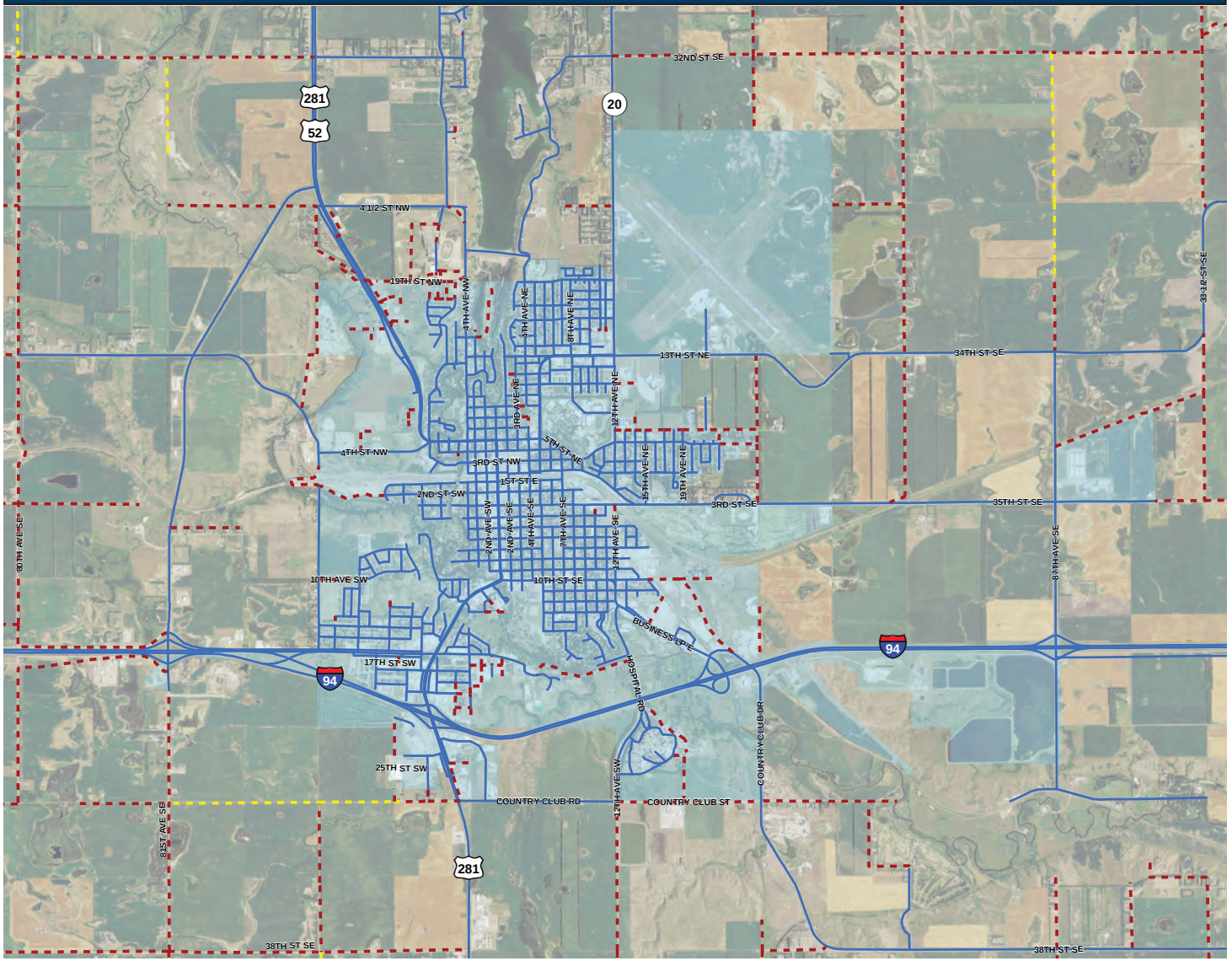
- Interstate System. Approximately four miles east to west with four north-south roadway crossings at 19th Avenue SE, 12th Avenue SE, US Highway 281 and the US 281/52 Bypass.

- Railroad Lines. Approximately 10.3 miles of railroad lines and spur tracks are within the Jamestown city limits. There are currently three grade separated crossings that allow roadway connectivity under the tracks when trains are present. The grade separated crossings are located on I-94, 4th Avenue E in downtown and 17th Street SE. Only one grade separated crossing is available for north-south traffic through town and the low clearance of that bridge does not accommodate large truck loads.

- Rivers. The James River and Pipestem Creek are approximately 9.5 miles in length total as they meander through Jamestown. There are currently 10 roadway crossings and three pedestrian and bicycle bridges in Jamestown. The rivers are also flanked by steep terrain that frequently interrupts roadway, bicycle and pedestrian continuity throughout the city.

Jamestown has 30 bridges within its one-mile extra-territorial area (ETA). These bridges range in size from a river bridge spanning

Figure 3.9: Roadway Surface Type



Paved
Gravel
Unimproved
City Limits

Functionally obsolete – Bridges that are functionally obsolete may be in good condition, but do not meet current engineering standards. For instance, they may have inadequate lane or shoulder widths or vertical clearance to serve today's traffic demands. Being functionally obsolete does not mean that the structure is unsafe.

Structurally deficient– Bridges are considered structurally deficient if one or more load carrying elements are found to be deficient. A bridge classified under the Federal definition of "structurally deficient" does not imply that it is unsafe. A structurally deficient bridge, when left open to traffic, typically requires regular maintenance and repair in service and may eventually require rehabilitation or replacement to address the deficiencies. To remain in service, structurally deficient bridges are often posted with weight limits to restrict the gross weight of vehicles using the bridge to less than the maximum weight allowed by statute.

the James River to a concrete box culvert for a drainage way under a roadway. Area bridges are inspected on a regular basis by the NDDOT. Following an inspection, a sufficiency rating is given to each bridge. The sufficiency rating is a means of quantifying a bridge's ability to remain in service.

Sufficiency ratings are conducted biannually and are used to determine eligibility for a bridge to receive federal funding for improvements. The rating scale is zero to 100, with a score of zero assigned an entirely deficient bridge and a score of 100 assigned to an entirely sufficient bridge. The formula includes factors for structural condition, bridge geometry and traffic considerations. A bridge with a sufficiency rating of 80 indicates a need for rehabilitation while replacement is advisable for a structure with a sufficiency rating of 50 or below. These scores once made bridge rehabilitation or replacement eligible for funding under the Highway Bridge Program. However, the termination of this program puts bridge projects under the same funding sources as the roads that they serve. Some off-system bridges still may qualify for direct funding.

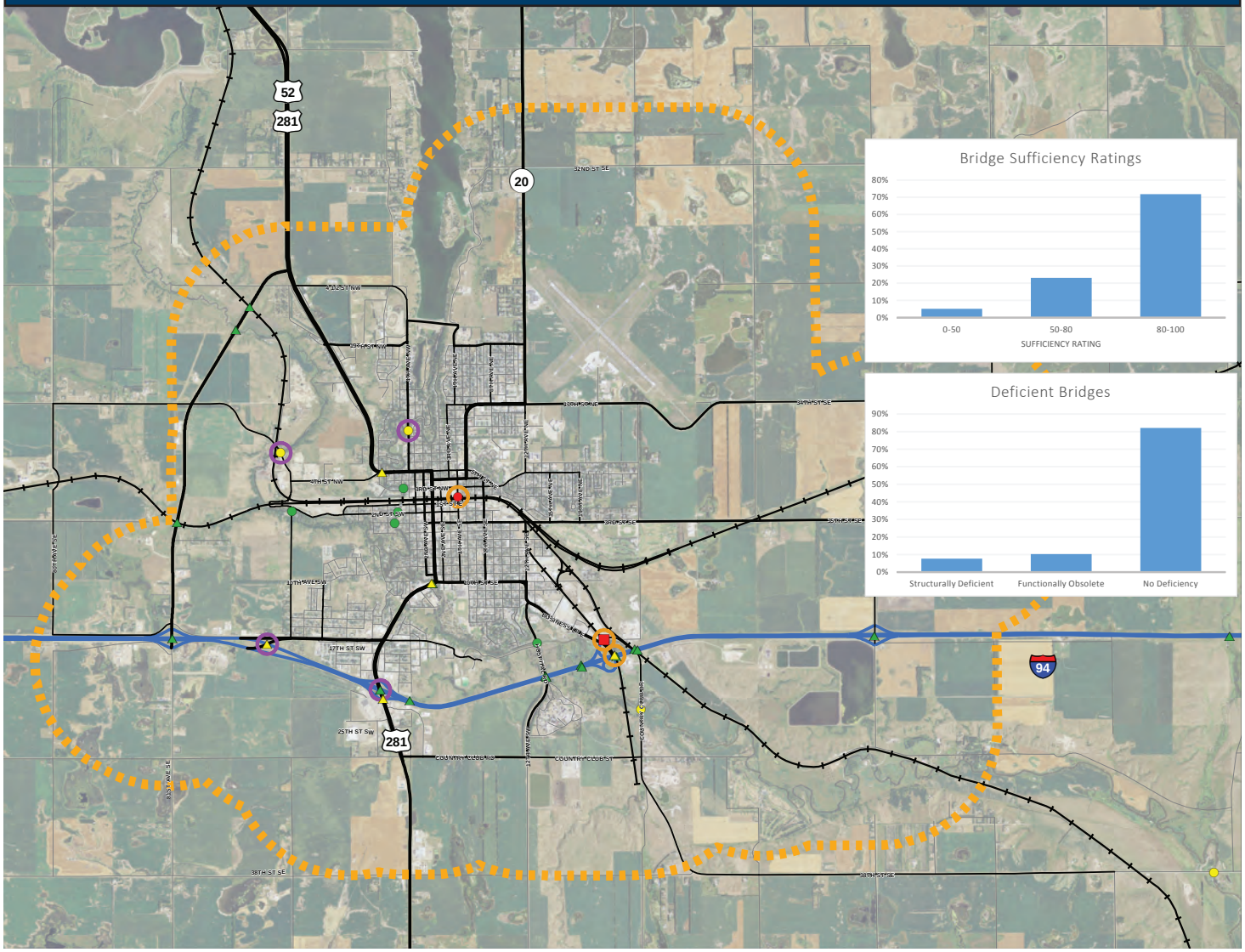
As part of the inspection, it is also noted whether bridges are found to be functionally obsolete or structurally deficient. Stutsman County, BNSF Railroad and NDDOT are responsible for the bridges in Jamestown. Jamestown is one of few cities that are not in charge of the bridges within their jurisdiction. Figure 3.10 shows the sufficiency ratings and locations of the bridges in the study area. The following is a summary of Jamestown's bridges:

- Nineteen bridges (63 percent) in Jamestown have sufficiency rating above 80 with no deficiencies.
- Eight bridges (27 percent) of Jamestown's bridges have a sufficiency rating between 80 and 50 and qualify for Federal bridge rehabilitation funding.
- Two bridges (seven percent) of Jamestown's bridges have a sufficiency rating below 50 and qualify for Federal bridge replacement funding.
- Four bridges (13 percent) of Jamestown's bridges are considered functionally obsolete.
- Three bridges (10 percent) of Jamestown's bridges are considered structurally deficient.

Structurally deficient underpass under the BNSF at 4th Avenue NE

2nd Street SW bridge under repair in Fall, 2013

Figure 3.10: Bridge Conditions



Bridge Conditions

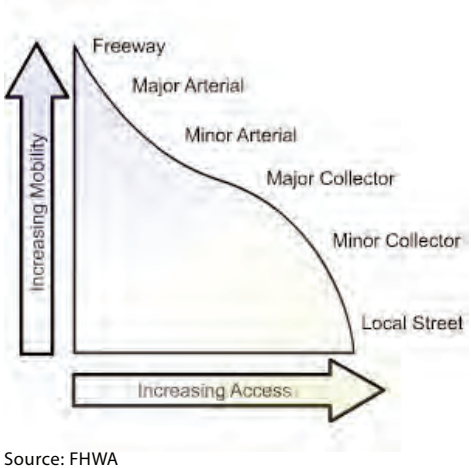
- Functionally Obsolete
- Structurally Deficient
- 1 Mile ETA

Bridge Ownership

- State
- County
- Railroad

Bridge Sufficiency Rating

- 0-50 (Poor)
- 50-80 (Fair)
- 80-100 (Excellent)



Source: FHWA

The Access/Mobility Relationship. Typically, mobility (speed and "smoothness") of travel increases as access (frequency of opportunities to enter or exit a roadway) decreases. So limited access freeways offer greater "mobility" at the expense of access and local streets offer greater access in favor of mobility. Urban transportation systems balance these two demands.

ACCESS AND RIGHT OF WAY MANAGEMENT

Access and right of way (R/W) management is the process of balancing the competing needs of traffic movement and land access. Streets and highway networks must play a dual role in providing access to property and providing mobility around Jamestown. Mobility is provided at varying levels of service and is reflected in operating speeds and travel times. Local facilities emphasize the land access function and are typically represented by a residential street. Arterials emphasize a high level of mobility for through movements. Collectors offer a compromise between both functions.

Access points introduce conflicts and friction into the traffic stream. Specifically, allowing dense uncontrolled access spacing results in deficiencies:

» **Safety.** According to NCHRP Report 420, Impact of Access Management Techniques, every unsignalized driveway increases the corridor crash rate by approximately two percent.

» **Traffic Operations.** Large numbers of driveways, alleyway and side street access points on major corridors increases conflict points and stop-and-go traffic, causing increased delays, inefficient fuel consumption, and vehicle emissions, and poor traffic flow and congestion. In fact, research included in the Highway Capacity Manual found that roadway speeds were reduced an average of 2.5 miles per hour for every 10 access points per mile (up to a maximum of a 10 miles per hour reduction).

The safety and operational issues caused by dense access spacing potentially makes an area less attractive to developers and the travelling public in general. This is in direct contrast to the preconceived notion of many who believe access management, or access restrictions, will hurt land values and repel business. National studies have shown most people have no problem making a slightly longer trip, including U-turns, to access destination businesses so long as the ride is pleasant and congestion-free. Although pass-by businesses (convenience stores, gas stations, fast food restaurants) may be affected more by access management modifications than specialty services, studies have shown that even pass-by businesses are not harmed as long as reasonable access is provided. As traffic flow is made more efficient, the roadway can handle more traffic and congestion levels decrease, actually increasing business exposure.

The Jamestown Municipal Code has several provisions pertaining to access management:

» Trunk highways, major thoroughfares and limited access trafficways shall have intersections at infrequent intervals of only six or fewer per mile at regular spacing.

» Driveways (curb cuts) shall be 15 feet from the nearest crosswalk or alley, 35 feet wide and must have 24 feet between driveways.

With the exception of the I-94 East Business Loop, all principal arterials through Jamestown are state or federal highways. NDDOT also has minimum spacing standards in the Design Manual. These standards do not apply to the interstate, which is a fully access controlled system.

» The minimum desirable spacing of access points is 400 to 600 feet or at the intersection with streets.

» Driveway throat widths shall fall within the following guidelines:

- 10 to 15 feet for private residences
- 20 to 30 feet for commercial properties
- 40 feet for industrial properties

Developed urban corridors in Jamestown generally are not consistent with the access management standards set forth in the city's own Municipal Code or the NDDOT Design Manual. Specifically, the average block length between avenues is approximately 350 feet and the average block length for streets is approximately 380 feet. This translates to 28 to 30 accesses per mile. In other words, the Jamestown and NDDOT access spacing standards are from 3.3 to five times more restrictive than the actual roadway configuration. These standards do not take into account signal spacing or restricted access approaches such as ¾ and right-in/right-out only intersec-

tions that are common in urban areas.

Figure 3.12 highlights the access spacing per mile on functionally classified roadways. Collectors through 100 percent residential areas were discarded from analysis because these corridors do not require the same level of mobility as arterials or collectors connecting to commercial and industrial land uses. The majority of these corridors have residential driveways accessing the collector throughout the entirety of the roadway. While it is desirable to avoid driveways onto collectors, there are few options that are not extremely intrusive to the adjacent land owners to resolve these issues.

As illustrated in the figure, several functionally classified corridors have very dense access spacing. Every access space is not created equally: a corridor with 30 to 40 driveways in a commercial area such as the I-94 West business Loop between 1st and 4th Avenue Southwest presents more operational and safety challenges relative to a corridor with more access points in a residential area. However, a minor arterial such as 4th Avenue Southwest cannot operate as intended with more than 60 access points per mile regardless of whether they are residential driveways or not.

Additional issues related to access driveways include sight distance

Figure 3.11: Closely-Spaced Access Points: The US 281 Example

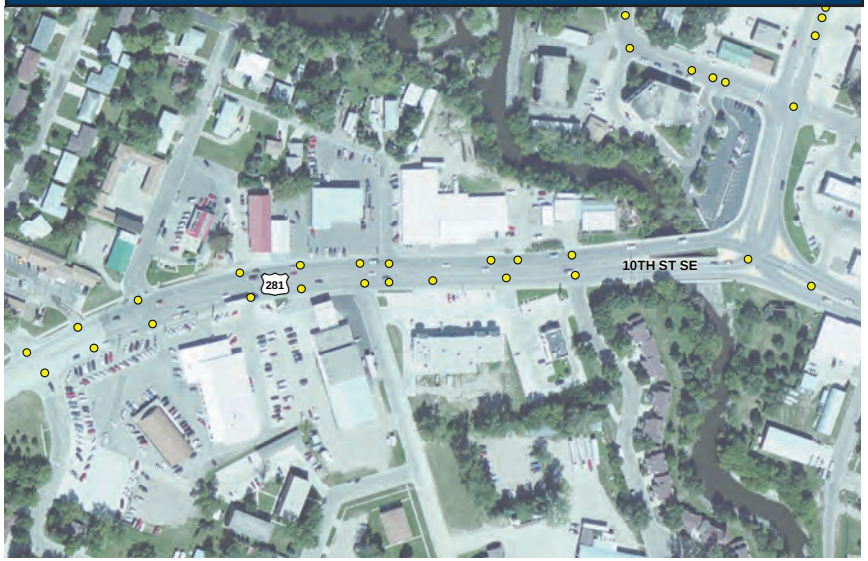
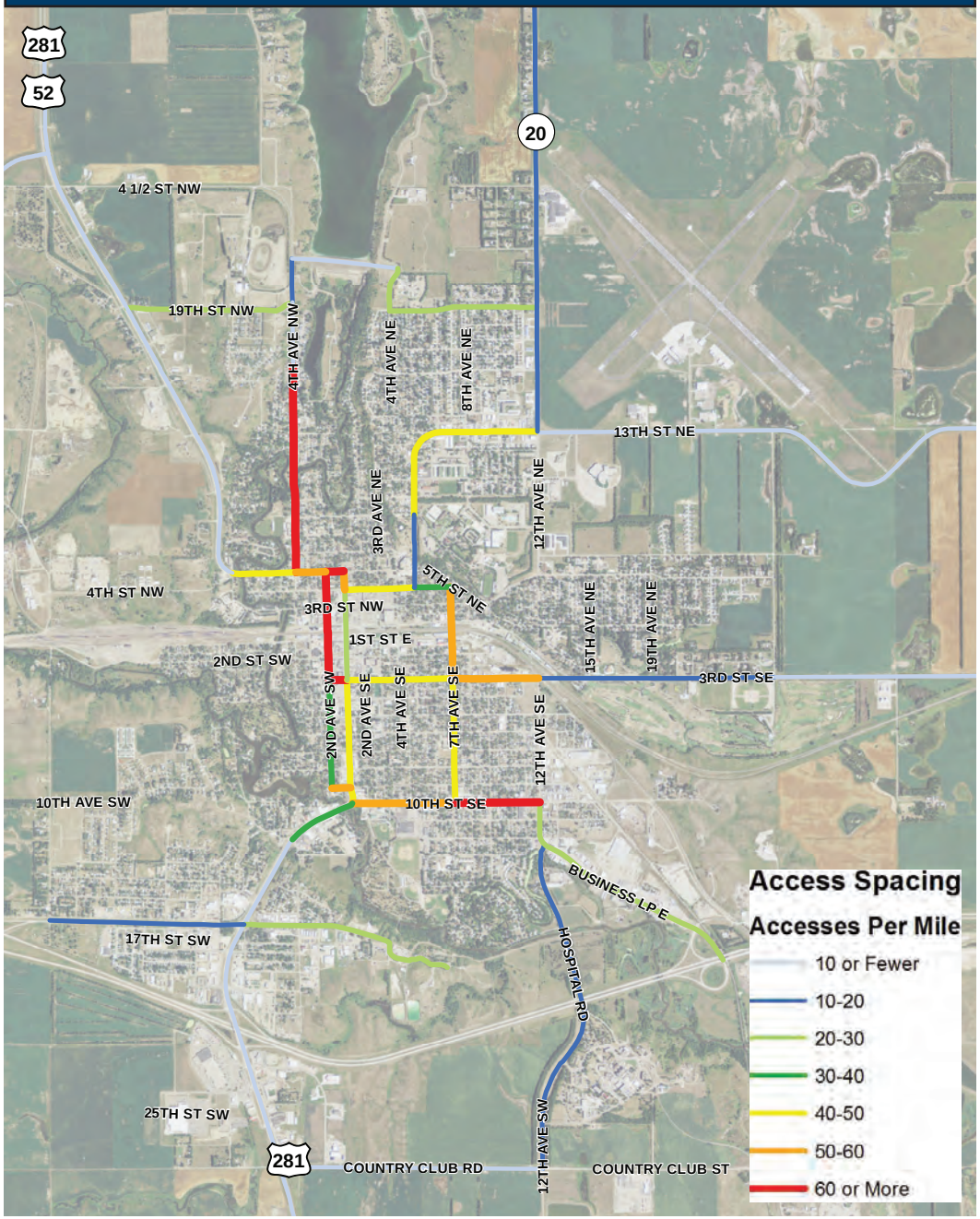


Figure 3.12: Closely-Spaced Access Points: The US 281 Example



Encroachment on right-of-ways denies space to pedestrians and creates unattractive and sometimes hazardous conditions along key community corridors.

and offset or staggered driveways on opposite sides of the road. Driveways located alongside buildings, trees or signs can also have restricted sight distance. While a driveway may have originally been permitted without a sight restriction, later placement of signs, displayed merchandise and landscaping sometimes occur within the public R/W, compromising the intended transportation function of the R/W.

A variety of R/W encroachments can create sight distance issues, block pedestrian or bicycle pathways, create hazards for vehicles or hinder emergency responder visibility and access to fire hydrants and electrical boxes. Photographs on this page show R/W encroachments along US 281 that block the pedestrian pathway and actually block continuity of a major shared-use path that connects over I-94 to major retail destinations south of the interstate. R/W encroachments can be temporary, such a snow piles, mobile signs and merchandise, or more permanent such as planters, signs and landscaping.

Access issues can be resolved using a variety of strategies:

- Removing redundant driveways
- Relocating driveways to side streets
- Consolidating adjacent driveway
- Reducing access with raised medians
- Centralizing access with frontage or backage roads

While it is certainly desirable to restrict access points, elimination of access to streets and alleys is often difficult for accessibility concerns for residents, emergency responders, snow plows, sanitation trucks, etc. This requires a context sensitive approach to implementing access management improvements in developed areas. To ensure that future corridors will not encounter similar deficiencies, developing a detailed set of access management standards for various contexts is vital.

Right-of-way encroachment along US 281.

ACTIVE TRANSPORTATION NETWORK

FACILITIES INVENTORY

In urban areas, active transportation, including walking and bicycling have become increasingly popular and infrastructure for these modes is an important component of the transportation network. Enhancing the ability of travelers to walk or bike involves providing the infrastructure as well as linking urban design, streetscapes and land use. Safety is also critical when developing an appealing pedestrian and bicycle network. According to national studies, pedestrians represent a disproportionate percentage of road-related fatalities; special focus should be given to addressing these safety concerns.

The City of Jamestown and surrounding ETA has 81.2 miles of bicycle and pedestrian facilities including sidewalks, shared-use paths, recreational trails and some wide shoulders used by cyclists. Figure 3.13 describes each type of facility. Shared use paths and trail with transportation functions include:

- The Mill Hill/US 281 path, extending from 37th Street SE to 4th Avenue SW north of 13th Street. This sidepath along the highway includes a crossing over I-94 and links the north side of the interstate with the commercial concentrations to the south. However, it ends abruptly at its north end and fails to provide continuous access into the more densely populated neighborhoods of the established central city.
- The 3rd Street sidepath, from 15th Avenue SE to 27th Avenue SE, serving the Bunker Park golf course and ballfields. A narrower walkway connects the 3rd Street SE corridor to 2nd Place NE.
- The Reservoir Trail from 19th Street and 7th Avenue NE to the Reservoir's east shore.
- Park trails in McElroy and Klaus Parks.

While highly useful, these facilities do not connect with each other. However, they can form elements of an active transportation network.

CONNECTIVITY

Despite the presence of pedestrian and/or bicycle facilities in and around Jamestown, there is a lack of connectivity between existing facilities (refer to Map 1.9). Additionally, connectivity to major pedestrian and bicycle generators is also uncommon. Specifically, there aren't connections to the majority of schools, employment centers, parks or shopping centers. To increase bicycle activity and reduce auto-dependence, bicycle facilities should be located and designed for convenient mobility, similar to arterial and collector roadways for vehicles.

Currently, there are a variety of barriers for pedestrian and bicycle travel, including:

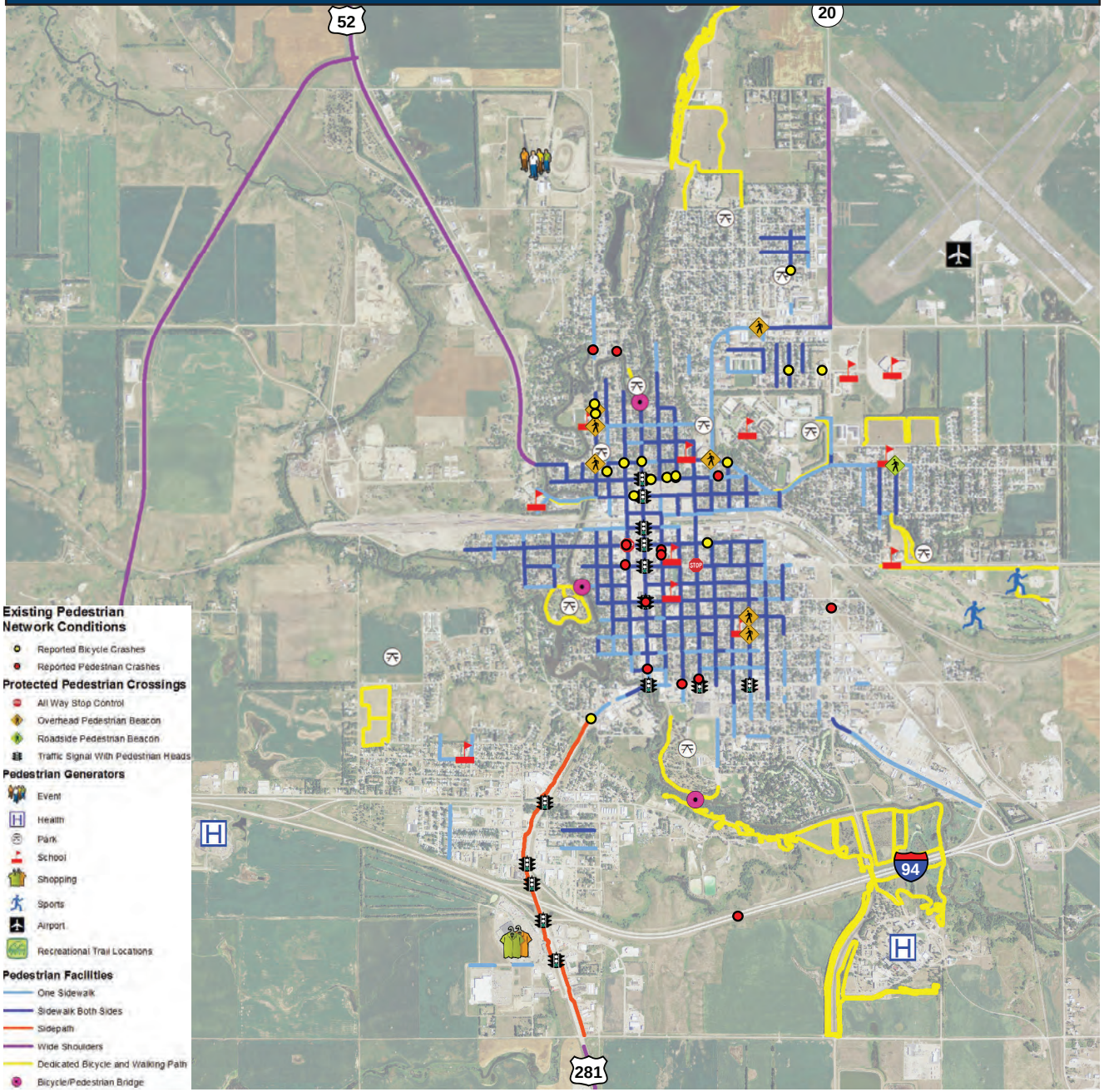
- Only one pedestrian/ bicycle crossing of I-94 (US 281).
- No grade-separated railroad crossings with bicycle facilities and only one with pedestrian facilities.
- Only three pedestrian river crossings, none of which meet shared-use path width design standards to accommodate bicycles.
- None of the 10 river crossings designed for vehicles have bicycle accommodations.
- Limited protected pedestrian crossings of US 281 and the I-94 Business Loop south of 5th Street South. This corridor includes 3.8 miles of high-volume high-speed arterial roadway that connects to several major commercial and residential areas. The intersection of these two roads lacks pedestrian/bicycle crossings.

Refer to Figure 3.14 for the locations of pedestrian crossing locations across arterials and collectors protected by pedestrian beacons. This

Figure 3.13: Active Transportation Facility Types and Inventory

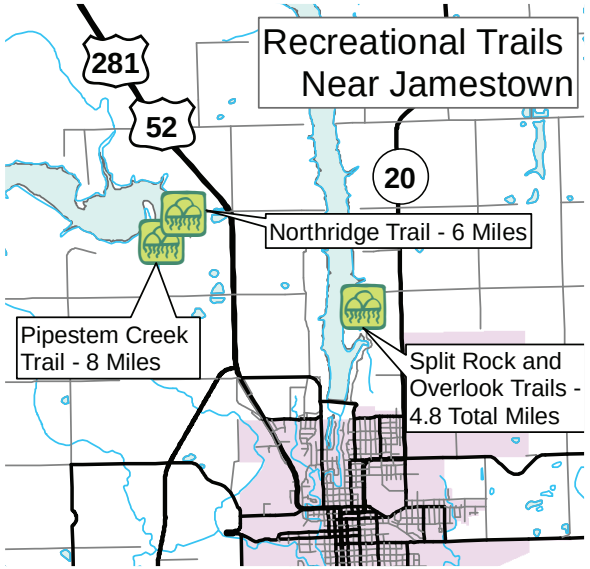
Facility Type	Description	Design Standards	Miles in Jamestown	Other
Sidewalks	Paved walkways designed to accommodate pedestrians, wheel chairs and other modes of non-motorized traffic. Usually parallel a roadway.	Typically between 4 and 6 feet in width. ADA standards prescribe 3 feet, with areas of 5 feet wide sidewalk every 200 feet to allow opposing pedestrians in wheelchairs to pass one another.	50.9 miles	Jamestown Municipal Code, restricts bicyclists from riding on the sidewalk in the central business district and underpasses if they are over the age of 12. Children under the age of 12 are only restricted from riding on the sidewalk in the central business district.
Shared-Use Paths	Paved paths designed to accommodate pedestrians, bicyclists, wheelchairs and any other mode of non-motorized traffic. Usually installed in parks, along water features or paralleling roadways.	Typically between 8 and 12 feet. Current design standards recommend 10 feet minimum unless R/W is limited.	6.5 miles	
Paved Shoulders	Paved shoulders are found on roadways without curb and gutter and typically found in rural areas. Paved shoulders provide a pathway for cyclists to travel that is outside of the vehicular travel-way.	Design standards to accommodate bicyclists include a paved shoulder at least 4 feet wide where roadside barriers are not present and 5 feet wide where barriers exist.	7.8 miles	
Recreational Trails	Gravel or natural surface and vary in width from a gravel service road to a single track hiking or mountain biking trail. A key distinguishing trait is that the primary purpose is for recreational activity, although some recreational trails do provide a transportation function of connecting one place to another.	None.	21.55 miles	Jamestown's recreational trails are primarily located north of city limits around North Ridge, Marina Island, Boy Scout, Overlook, Split Rock and Pipestem Creek.
Bike Lanes and Shared Lanes	Bike lanes are on-road bicycle facilities delineated by a single or double solid white line and bicycle symbol, indicating the lane is only for cyclists. They are directionally specific. Shared lanes are designated by shared lane markings (sharrows) indicating the lane of traffic is to be shared by both bicycles and motor vehicles.	Bike lanes vary in width, but at minimum should be 4 feet. Recommended minimum lane widths for shared lanes is 14 feet.	0 miles	
Local	86.52	173.04	55.9%	61.9%
Minor Arterial	12.58	25.16	8.1%	9.0%

Figure 3.14: Active Transportation Infrastructure



Notes:

- Reported crash data are for period between 9/1/2010 and 8/31/2013
- Protected pedestrian crossings only displayed for functionally classified roadways"



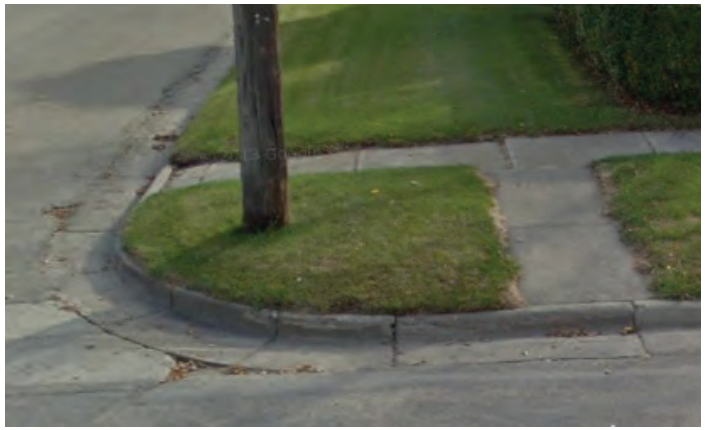
Connectivity resources. *Pedestrian bridges connect Klaus, McElroy, and Nickeus Parks over the James River to streets on the other bank.*

Connectivity issues. *Aerial view of 10th Street and First Avenue intersection shows lack of crosswalks and sidewalks in most instances. These omissions, combined with complicated traffic movements and right-turn bypasses, create very difficult conditions for pedestrians at a strategic location.*

Lack of boulevards (or sidewalk setbacks) compromise the pedestrian environment by placing pedestrians and vehicles next to each other without a buffer. This example contrasts sidewalk quality with and without buffering boulevard strips.

inventory does not include marked crosswalks. Although City and State code requires motorists to stop for pedestrians at marked crosswalks, research and local experience indicate that this is the exception, rather than the norm. In fact, studies have found that marked crosswalks without additional traffic control (i.e. beacons, signals, stop signs, etc.) have higher crash rates than unmarked locations due to the false sense of security provided by the markings. The solution to this problem, however, is increasing motorist compliance and pedestrian vigilance and improving crossing design, rather than removing crosswalks. There are eight flashing beacons located throughout

Discontinuities. *Breaks in the sidewalk system and lack of ramps at intersections force pedestrians into the street.*



the city to facilitate high volume pedestrian crossings. Flashing beacons and traffic control signs are discussed in greater detail later in this chapter.

MOBILITY

A person's decision to walk is influenced by many factors including distance, perceived safety and comfort, convenience and visual interest of the route. When sidewalks are immediately adjacent to the curb, pedestrians feel exposed and vulnerable when walking directly adjacent to the travel lane. Vehicle noise, exhaust, splashing or snow piles and the sensation of passing vehicles reduce pedestrian comfort. Additionally, street signs, hydrants and street lights are often placed behind the curb, limiting the available space for sidewalk users and often violating ADA minimum requirements. Factors that improve pedestrian comfort include a separation from moving traffic or a reduction in speed.

Jamestown, like many cities in North Dakota, is heavily oriented towards motor vehicle traffic, with pedestrian accommodations having less priority. Only 16 percent of the paved roadway miles within city limits have pedestrian or pedestrian and bicycle facilities along both sides of the roadway. Sidewalk continuity varies by neighborhood and discontinuity may occur abruptly in between blocks, forcing pedestrians to cross the street or walk along the street. Discontinuing sidewalks or only having sidewalks on one side of the road unnecessarily forces pedestrians to cross the street, increasing exposure to vehicular traffic.

Within the urban core of the city, sidewalks are common on both sides of the street. Sidewalks on both sides, or even on side, of the road becomes less common on the fringes. Studies have found that sidewalks reduce pedestrian crashes up to 88 percent.

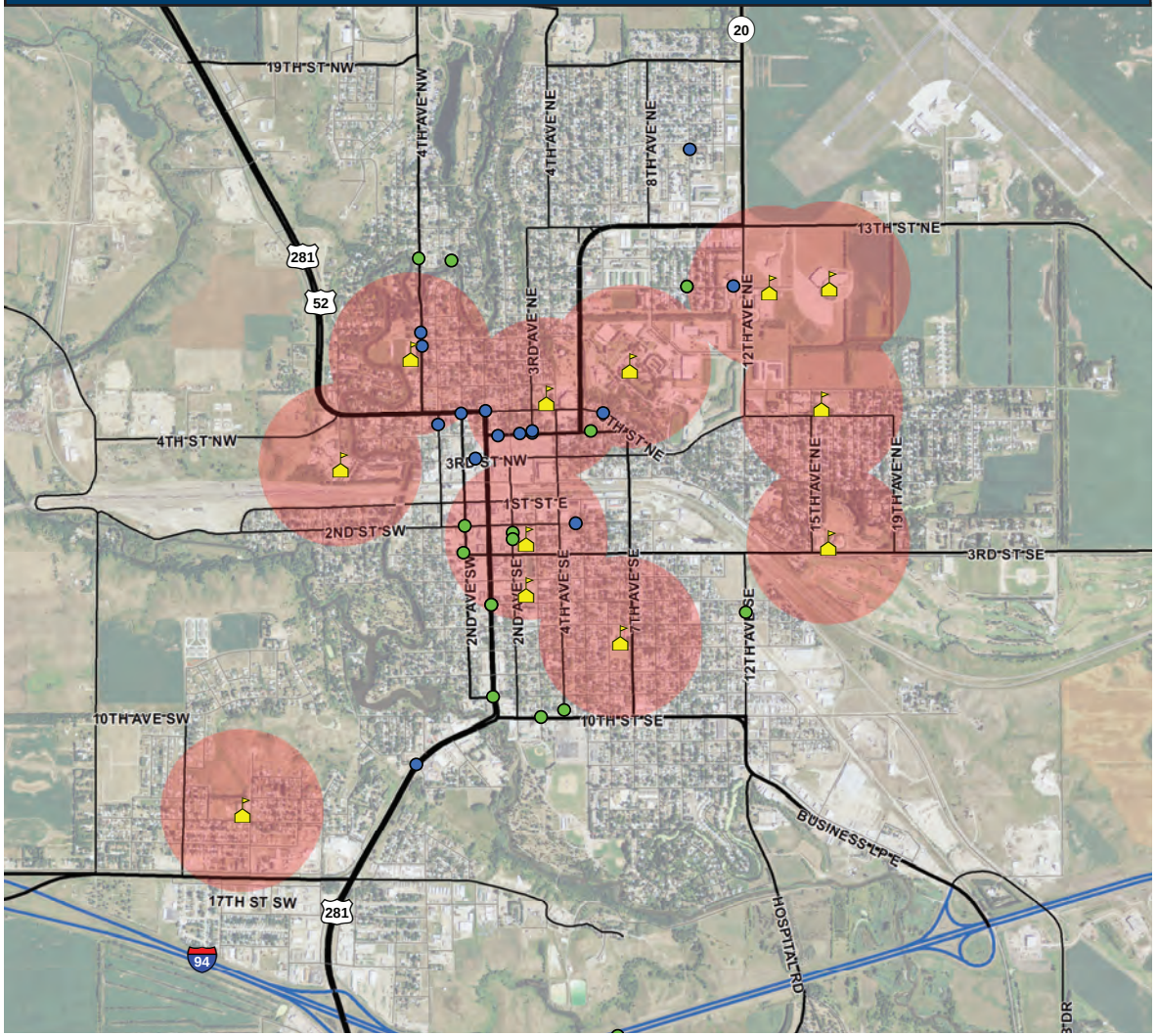
ACCESSIBILITY

The Americans with Disabilities Act (ADA) stipulates that no individual may be discriminated against on the basis of disability with regards to the full and equal enjoyment of the goods, services, facilities or accommodations of any place of public provision. This includes public R/W such as roadways and sidewalks. Interestingly, Jamestown became one of the first cities in America to require wheelchair cutouts in newly-constructed sidewalk curbs to accommodate the Anne Carlsen Center. This privately funded school has long been one of the country's leading centers for treatment and education of special needs students.

Pedestrian accessibility is typically a high priority for schools, public facilities and locations, such as the Anne Carlsen Center and the Jamestown Regional Medical Center. During the field review, a variety of recurring ADA deficiencies were noted. The purpose of this study is not to identify every ADA deficiency, but rather highlight overarching deficiencies that may require a more macro-level approach for resolution. The following summarizes the ADA deficiencies noted:

Accessibility issues. *Top left:: Lack of intersection ramps and poor sidewalk conditions make access for people with disabilities almost impossible. Bottom left: Sidewalk across a driveway fails to meet ADA sideslope criteria.*

Figure 3.15: Relationship between School Locations and Pedestrian/Bicycle Crashes



Bicycle and Pedestrian Crashes Near Schools

- Schools
- Areas Within 0.25 Miles of Schools
- Reported Pedestrian Crashes
- Reported Bicycle Crashes

» Curb ramps. A high percentage of intersections in older neighborhoods did not have curb ramps, or the existing curb ramps do not meet current ADA slope or detectable warning panel requirements. Curb ramps are necessary to accommodate pedestrians with limited ability or in wheelchairs, whereas detectable warning panels accommodate visually impaired pedestrians.

» Sidewalk conditions. Portions of the sidewalk and curbs along the corridor are cracked and broken or overgrown with vegetation, requiring maintenance. Broken sidewalks and vegetation may cause tripping hazards and difficulties for pedestrians in wheelchairs, as well as those with strollers or on in-line skates, skateboards, etc. Snow and ice accumulation also pose challenges for all users. According to Jamestown Municipal Code, sidewalk repairs and snow removal are the responsibility of the adjacent land owner; however, it is clear that this code is not often enforced.

» Sidewalk side slopes. ADA standards require that sidewalk side slopes should not be greater than two percent, including driveways, if the pedestrian path has to cross the driveway apron. Steeper cross slopes were observed in several areas where sidewalks abut the roadway, which can be challenging for wheelchairs and others to navigate.

SAFETY

In the past three years, there were 14 crashes involving a pedestrian and 11 crashes involving a bicycle. All 25 crashes involved a vehicle and resulted in an injury or fatality. Twenty percent resulted in an incapacitating injury or fatality, highlighting the hazardous nature of pedestrian and bicycle crashes. Upon a more detailed review of the crash data, two cluster locations were noted:

» 4th Street NE (ND 20) between 1st and 3rd Avenues

» 2nd Avenue between 2nd and 3rd Streets Southwest

A common trend between the two crash clusters is proximity to a school. In the past three years, 64 percent of all pedestrian and bicycle crashes occurred within 0.25 miles of a school. Research indicates that 0.25 miles is the distance typically associated with how far pedestrians will walk to a destination. Not only are schools one of the greatest pedestrian and bicycle generators in Jamestown, studies have found that due to their limited roadway experience, children cannot assess crossing scenarios as effectively as adults. Figure

3.15 illustrates schools in Jamestown with a quarter-mile buffer and the location of all pedestrian and bicycle crashes.

TRANSIT

Transit has been increasingly recognized as an element of livability and economic progress in cities. Transit is often considered a basic public service and a means of reducing traffic congestion and parking demand in high-density areas. Public transit for small urban cities often include buses, demand-response services (usually vans) and vanpools.

With the exception of two taxicab services in Jamestown (Jamestown Taxi Service and Last Leg Taxi), the only internal transit service is James River Public Transit. This service is a dial-a-ride destination to destination service with ADA-accessible vehicles. The transit service is subsidized with Federal Transit Administration (FTA) funding through NDDOT. A one-way fare using James River Public Transit is only $2.50. James River Public Transit also offers medical rides to Bismarck and Fargo for $35 round trip. James River Public Transit has six fully ADA accessible buses providing service to Jamestown. This system provides a very valuable service by transporting residents with limited travel options.

Jefferson Lines and Greyhound provides a regional transit option for travelers headed into and out of the city. These bus lines stop twice a day; one bus headed east toward Fargo and another west toward Bismarck. Buses stop near the southwest corner of 1st Avenue and 1st Street intersection, just south of the railroad tracks. The only shelter for bus riders at the bus stop's location is the small, unheated three-sided shelter near the railroad tracks.

Figure 3.16 illustrates the areas in Jamestown that meet the dwelling unit density threshold to support transit. Commercial land use and major generators are illustrated in the map to highlight employment centers.

Figure 3.16: Transit Demand Generators

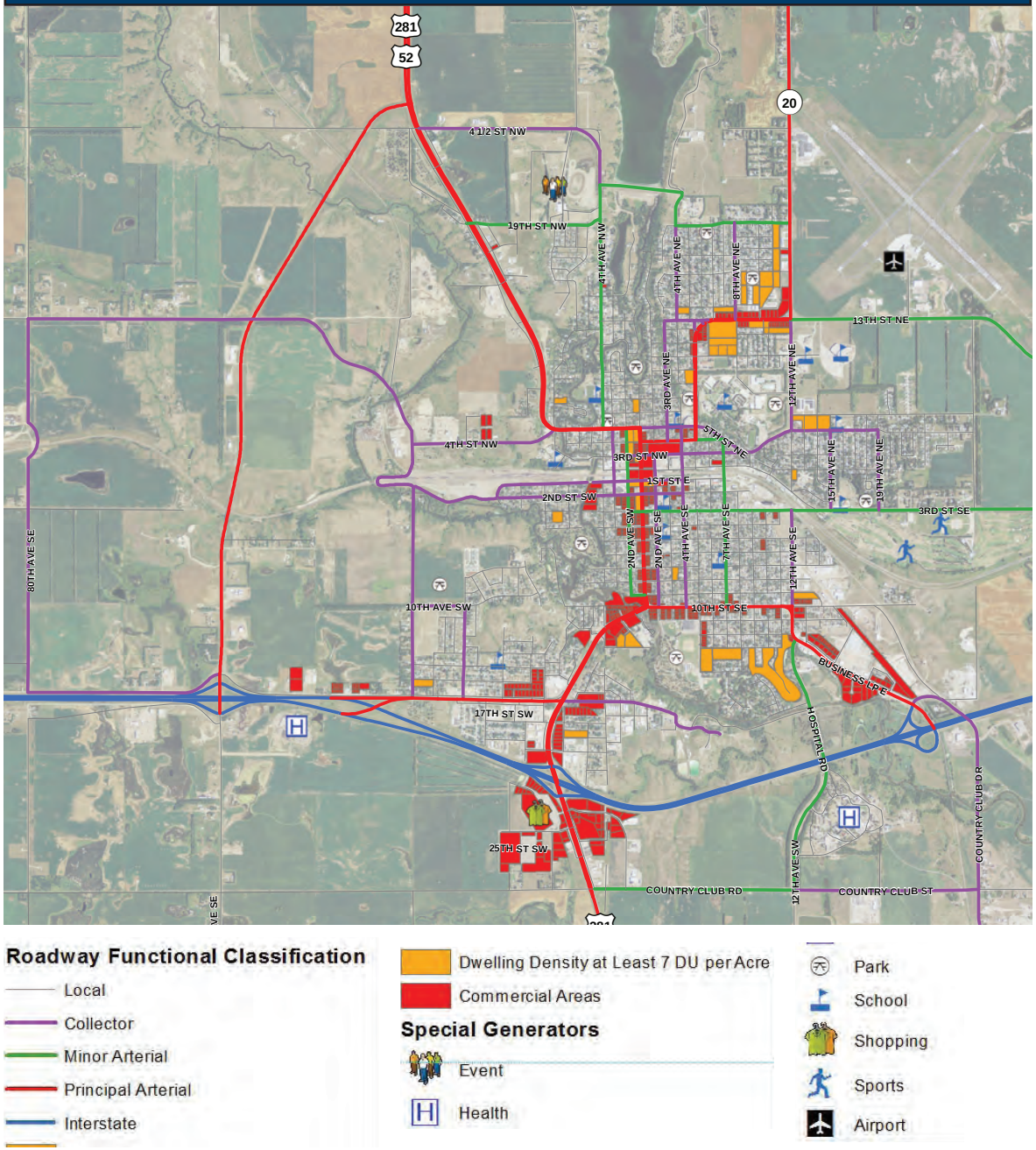
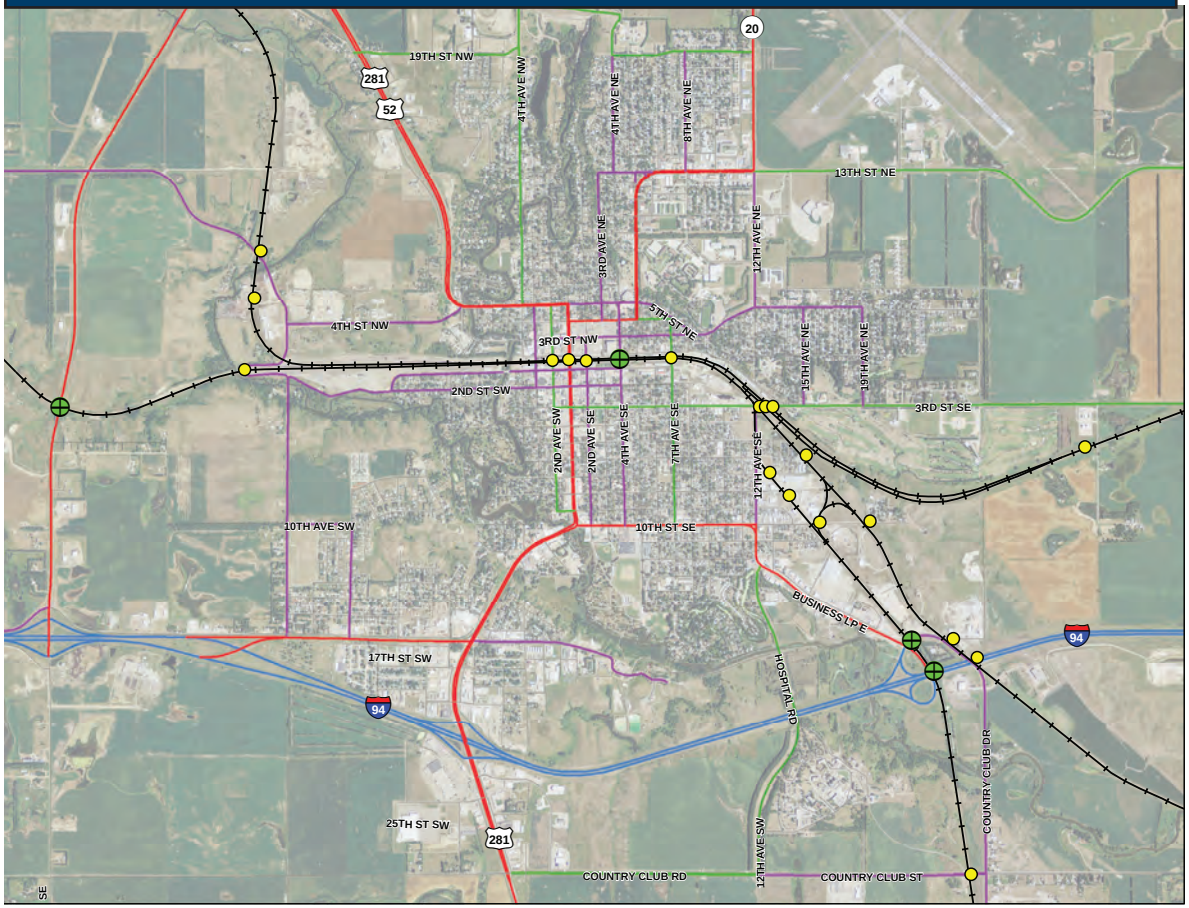


Figure 3.17: Railroad Network and Crossings in Jamestown Study Area



Railroad Crossings

Railroads

Railroad Crossings

At-Grade - Not Quiet Zone Compliant

Grade Separated

RAIL

Jamestown is served by the Burlington Northern Santa Fe Railroad's Prosper Subdivision, which provides freight-only service. The railroad's historic influence on the City of Jamestown cannot be overstated. The railroad has served as a primary outlet for freight transportation in Jamestown for over a century. The railroad repair yard was among the city's main industries until the 1960s.

The Prosper Subdivision extends from the Mandan, North Dakota rail yards to the Dilworth, Minnesota rail yards with connections as far east as Chicago and to the west coast through Montana, Idaho and Washington. Although the majority of freight travels through the city, a small portion of freight is generated locally, using the spur to the industrial park east of the city. The two-track mainline through Jamestown is restricted to a maximum speed of 30 miles per hour (according to Jamestown Municipal Code) and has a switch and repair yard on the west side of the city.

As mentioned in Chapter Two, the railroad bisects the city. During train passages, the city is effectively divided in two, creating delays and congestion. Currently, four arterials and two collectors intersect the railroad without a grade separation. I-94 and the US 281 Truck Bypass both have railroad grade separations, but provide little relief for traffic in the center of town. The only two grade-separated locations within town are on collector roadways with minimal connectivity. Even with minimal connectivity, these two crossings carry higher traffic volumes than other collectors in the city as motorists funnel to these locations during rail events.

The only grade separated crossing in the urban center of Jamestown is 4th Avenue SE. This structure does not provide adequate clearance for trucks or pavement rehabilitation equipment, lacks adequate width for bicycle facilities and floods in storms. It is very old and classified as structurally deficient and functionally obsolete according to NDDOT standards. Fourth Avenue SE terminates just three blocks north of the railroad, limiting overall connectivity for the community.

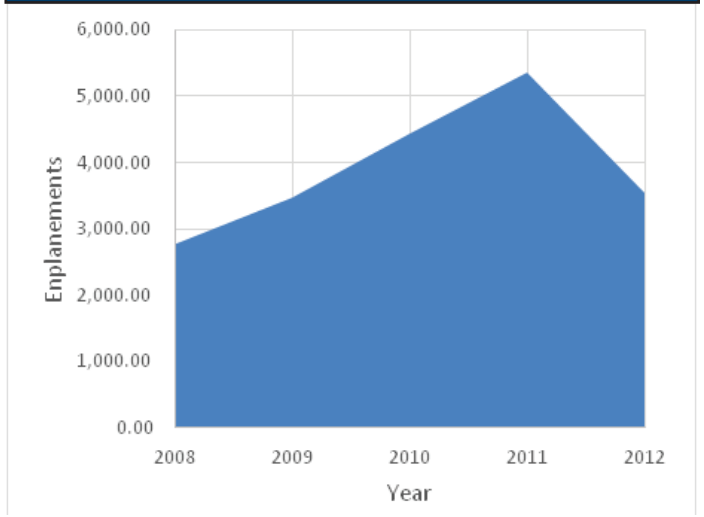
Railroad grade crossing issues. *Top: Inadequate spacing of signalized intersection and multi-track railroad crossing can create potential hazardous conditions. Bottom: The obsolete 4th Avenue underpass is the only grade separated crossing in the urbanized part of the Jamestown study area. Clearance for trucks is inadequate, the structure itself is deteriorating, and the underpass floods in major storms.*

AIR TRANSPORTATION

Jamestown Regional Airport provides daily commercial jet passenger service via SkyWest Airlines to Denver, Colorado with connections to anywhere within the United States and worldwide. In addition to its role as a commercial service airport, Jamestown Regional Airport supports a variety of general aviation activities. It has become increasingly important to the business community, both for those companies owning their own aircraft and to those chartering aircraft for business trips. Flying lessons, charter flights, air freight, aircraft sales and rentals, aircraft repairs and fuel can be obtained from on-airport businesses. The Army National Guard also uses the airport for occasional helicopter operations.

According to Federal Aviation Administration (FAA) records, for the 12th month period ending December 31, 2010, the airport had 37,252 aircraft operations, an average of 102 per day: 85 percent general aviation, 11 percent air taxi, 4 percent scheduled commercial and less than 1 percent military. At that time, there were 51 aircraft based at this airport: 96 percent single-engine, 2 percent multi-engine and 2 percent helicopter. Figure 3.18 displays commercial enplanement data. It is important to note that SkyWest's contract was completed in January of 2014. Minimal historic data regarding how

Figure 3.18: Emplanements at JMS, 2008-2012



this new carrier would affect boarding data was available at the time this report was developed. Recent statistics show July 2014 had 647 enplanements, the highest figure for the month of July since 1978.

The airport property also includes about 1,200 acres of farmland and hay land. Jamestown Regional Airport also has land available for industrial development. The airport currently has four major industrial companies located on the field including Goodrich, Dakota Brands International, Inc., Dome Pipeline and Westward Products, Inc.

Runway size and length limit the size and types of planes that can use the airport. As of this writing, the airport does not plan expansion or revision, with the exception of industrial park development. The current commercial service adequately serves Jamestown's current population.

FREIGHT

Freight is defined as the movement of goods. The efficient movement of goods is a fundamental prerequisite for a strong economy. Trucking and rail dominate the freight market due to their flexibility and cost characteristics. The Jamestown Regional Airport is limited in its size and ability to connect with international destinations to offer any efficient method for moving freight. Jamestown also lacks access to a commercially navigable waterway.

Much freight movement in Jamestown is through movement on state and federal highway facilities. These freight networks play an integral role in each state's economy and other major freight destinations across the nation. Preserving the interstate and other NHS/principal arterials' capacity for freight needs is in the best interest of the Jamestown area.

While data are available on a national level through the FHWA, detailed freight import and export data is not readily available for Jamestown. According to the national data, 80 percent of all freight produced in North Dakota stays in-state. In common with Jamestown, the primary mode for freight distribution is truck and rail, accounting for nearly 75 percent of the total freight distribution according to 2010 statistics.

The NDDOT State Freight Plan lists I-94 and US 52/281 as Level 1 freight routes (highest importance) and ND 20 as a level 2 highway in the State Strategic Freight System and the BNSF Railroad as Level 1 in the State Strategic Freight Rail System. Additionally, the Jamestown Regional Airport is one of only eight air freights airports in North Dakota. The United Parcel Service (UPS) is the air freight carrier at the airport.

On a local level, the primary outlet for freight movement is the principal arterial system. Providing an efficient truck freight system depends on effective linkages between the regional transportation system and freight generators. For instance, Jamestown and surrounding area is home to a variety of major businesses and industries, including big box retailers, regional shopping centers and manufacturing plants, all which generate and attract freight traffic. The nearby Spiritwood Energy Park is home to an ethanol plant, malting plant, coal fired power plant and a proposed fertilizer manufacturer that all would receive and generate large volumes of freight when completed. The coordinated regional transportation system must support a large agricultural industry that requires freight to move goods to the processing plants.

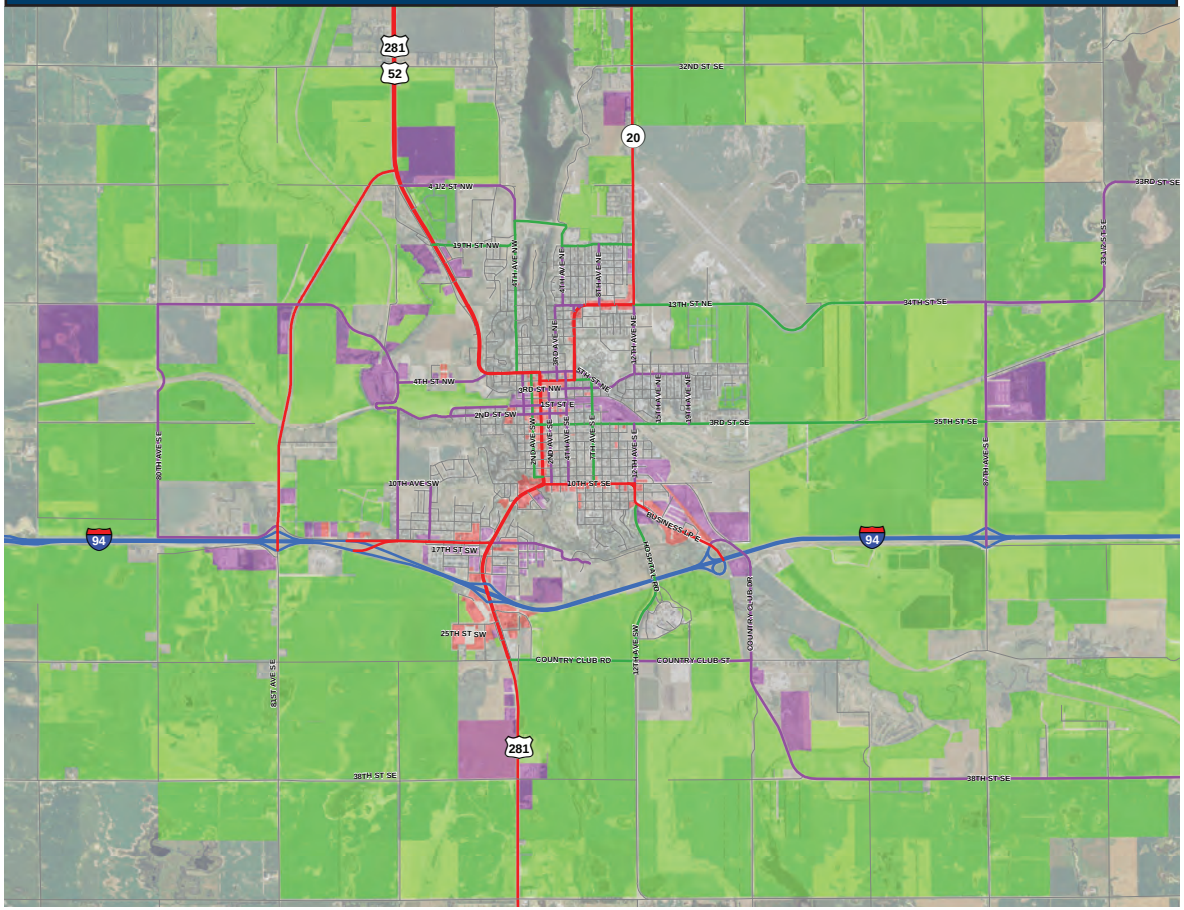
Good land use planning should naturally direct freight traffic to arterials designed to accommodate trucks. On other occasions, as in Jamestown, a bypass was developed to take trucks around the urban city center. This improvement both provided traffic relief within

the city and mitigated undesirable conflicts between trucks, including hazardous material trucks, through residential and commercial areas where pedestrian travel is common.

Gross vehicle weight limits on the interstate are 80,000 pounds, while 105,500 pound loads are allowed on the North Dakota State Highway System. These differences affect trucks moving north and south of Jamestown. For example, a truck that is loaded to 105,500 pounds approaching Jamestown on US 281 is not allowed on I-94 between the US 281 Truck Bypass interchange (Exit 256) and the US 281 Interchange (Exit 258), forcing trucks (including trucks transporting hazardous materials) that exceed the interstate load limit to travel along 17th Street Southwest or through downtown Jamestown.

Although the City's Municipal Code restricts trucks of certain weights to posted truck routes, the city currently lacks policies, route maps and minimal signage identifying these routes. Other than the US 281 Truck Bypass route, the truck routing signing consists of highway route marker signs along the city streets through Jamestown, with no other truck routing to connect truck generators to the major freight corridors, such as the elevator on 3rd Street. Communities often develop truck and hazardous material routes to ensure trucks focus travel where it can be best managed, avoiding lighter pavements and undesirable conflicts. These truck restrictions typically do not apply to delivery trucks that need to access businesses and schools for local deliveries. Figure 3.19 illustrates the existing functional classification system with land uses. Typically, truck access is provided to commercial, industrial and agricultural land uses and hazardous materials routes provided to industrial land uses.

Figure 3.19: Truck Service Areas and Available Roadways

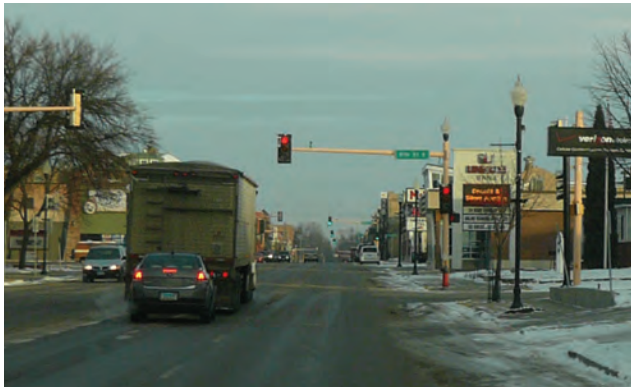


Freight Generators

- Local
- Collector
- Minor Arterial
- Principal Arterial
- Interstate

Existing Land Use

- Other
- Commercial
- Industrial
- Agricultural



TRAFFIC OPERATIONS

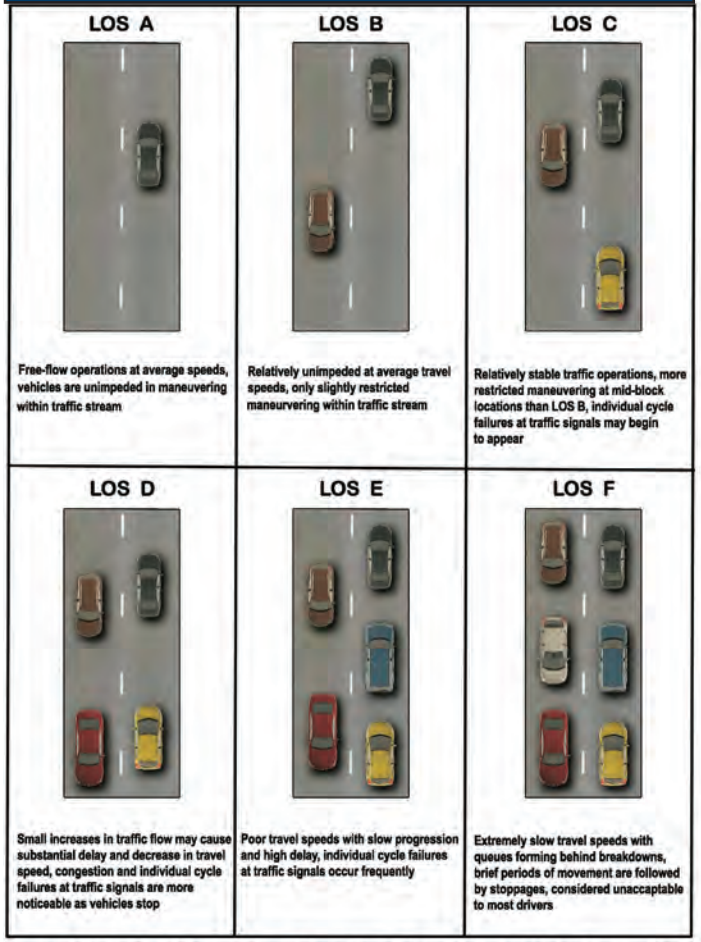
Corridor and intersection capacity analysis was conducted to determine existing delay and levels of service (LOS) throughout Jamestown. Level of service is a term used to describe operational performance of transportation infrastructure elements. Essentially, LOS is a letter grade that corresponds to specific traffic characteristics within a given system. For example, at intersections, LOS is a function of average vehicle delay whereas LOS for a roadway section is defined by the average travel speed. According to NDDOT standards, LOS "A" or "B" is desirable with LOS "C" being the lowest acceptable threshold value. Similarly, NDDOT specifies that LOS "D", "E" and "F" correspond to unacceptably deficient traffic conditions. Refer to Figure 3.20 for a breakdown of intersection LOS threshold values and Figure 3.21 for a graphical representation of corridor LOS.

Corridor level of service was evaluated at each functionally classified roadway in Jamestown. Intersection capacity analysis was conducted to supplement corridor analyses at the intersections currently experiencing the highest traffic volumes in the city. Specifically, intersection capacity analysis was conducted at every intersection that experienced more than 10,000 vehicles per day and other regionally significant locations. Additionally, data from transportation projects completed in 2013 in Jamestown were analyzed. In total, 22 intersections were evaluate. Figure 3.22 illustrates the current operations in the study area.

Figure 3.20: Highway Capacity Manual LOS Thresholds

Control Delay (seconds/vehicle)		VOLUME < CAPACITY	VOLUME > CAPACITY
UNSIGNALIZED	Signalized		
≤ 10	≤ 10	A	F
> 10-15	> 10-20	B	F
> 15-25	> 20-35	C	F
> 25-35	> 35-55	D	F
> 35-50	> 55-80	E	F
> 50	> 80	F	F

Figure 3.21: Traffic Flow Characteristics by Level of Service



Source: *2000 Highway Capacity Manual*, Transportation Research Board, 2000 and Corporation

As illustrated by the figure, Jamestown has ample capacity throughout their transportation system. Jamestown is built on a backbone of multi-lane arterials that efficiently move vehicular traffic through the system. The only location where a deficient peak-hour LOS was noted was at 4th Avenue Southeast and 3rd Street Southeast. This intersection is all-way stop controlled.

TRAFFIC CONTROL

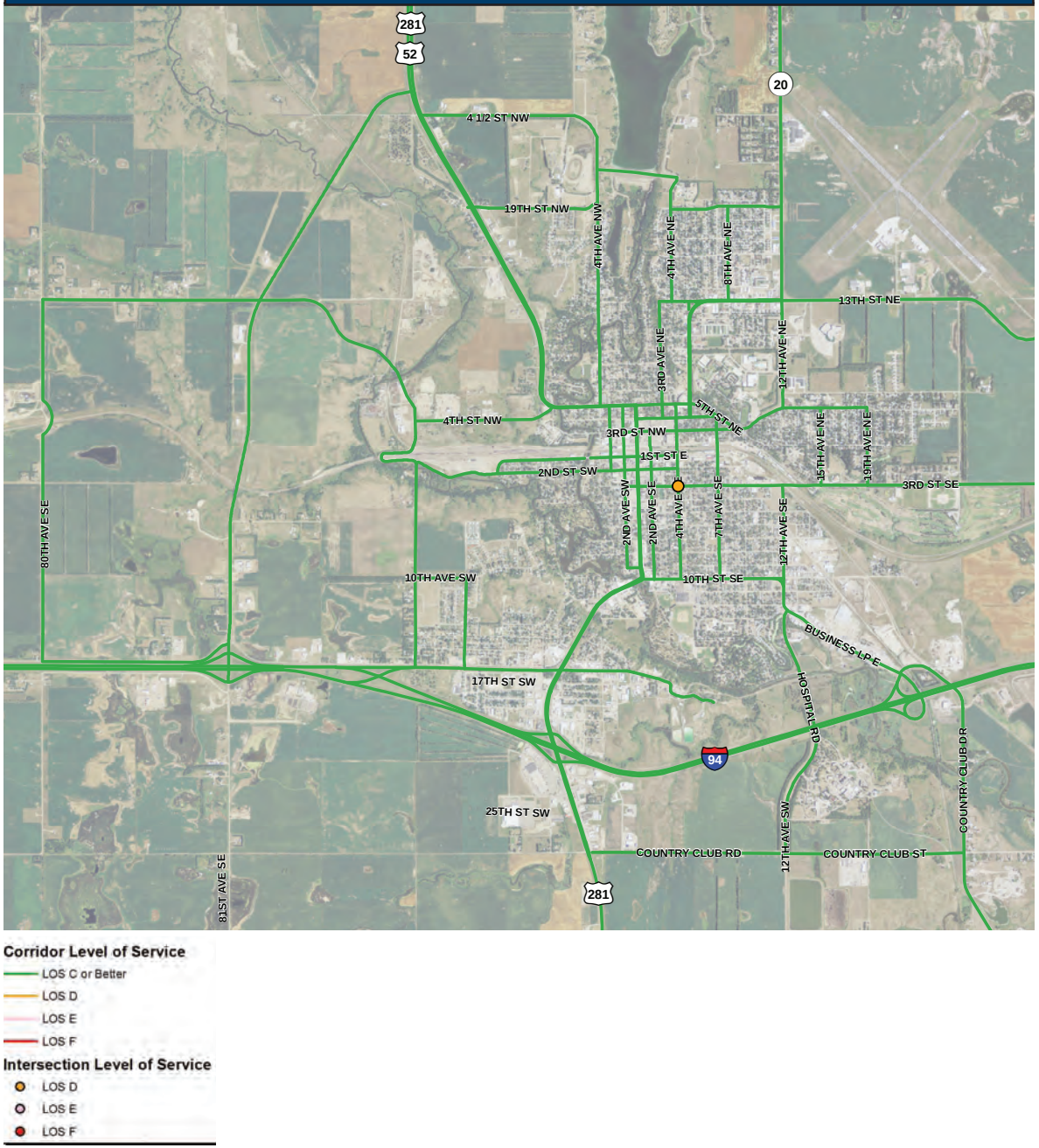
Appropriate traffic control is essential for efficient traffic operations and crash mitigation. Figure 3.23 illustrates the existing traffic control on functionally classified roadways. Traffic control analysis was based upon standards outlined in the 2009 Manual on Uniform Traffic Control Devices (MUTCD) published by the Federal Highway Administration. The MUTCD includes standards for all-way stop control, two-way stop control, traffic control signals and pedestrian hybrid beacons. The MUTCD does not have warrants for roundabouts or pedestrian beacons, however, these traffic control measures will be included in the discussion as potential traffic options.

TRAFFIC CONTROL SIGNALS

The MUTCD traffic control signal standards include warrants for varying roadway contexts ranging from railroad grade crossings to school zones. Warrants also include varying traffic data thresholds ranging from pedestrian and vehicular volumes to crash frequency. Typically right-turning traffic is not included in warrant analysis. The rationale for this practice is the movements are usually made relatively easily, have minimal conflicts and therefore do not require a traffic control signal to minimize delay or improve safety. Engineering judgment was used to determine whether zero, 50 percent or 100 percent of right-turn traffic was included in the warrant analysis, dependent upon right-turn LOS and overall right-turn volume.

There are currently 12 traffic signals in Jamestown on either US 281/52 or the I-94 Business Loop. Turning movement traffic counts were conducted at each location in the fall and winter of 2013 during the evening peak traffic hours, occurring between 4 P.M. and 6 P.M. The North Dakota 2012 Traffic Report produced by NDDOT was used to extrapolate those peak hour turning movement counts for the purposes of four and eight hour warrant analysis. Warrant analysis results indicate that traffic control signals are only warranted at

Figure 3.22: Existing Traffic Operations



Traffic Control

- Traffic Control Signal
- Multi-Way Stop Control (3/4 Approaches Controlled)
- Multi-Way Stop Control (All Approaches Controlled)
- E/W TWSC
- N/S TWSC
- E/W Yield
- N/S Yield
- Overhead Pedestrian Beacon
- Roadside Pedestrian Beacon
- Schools
- Local
- Collector
- Minor Arterial
- Principal Arterial
- Interstate

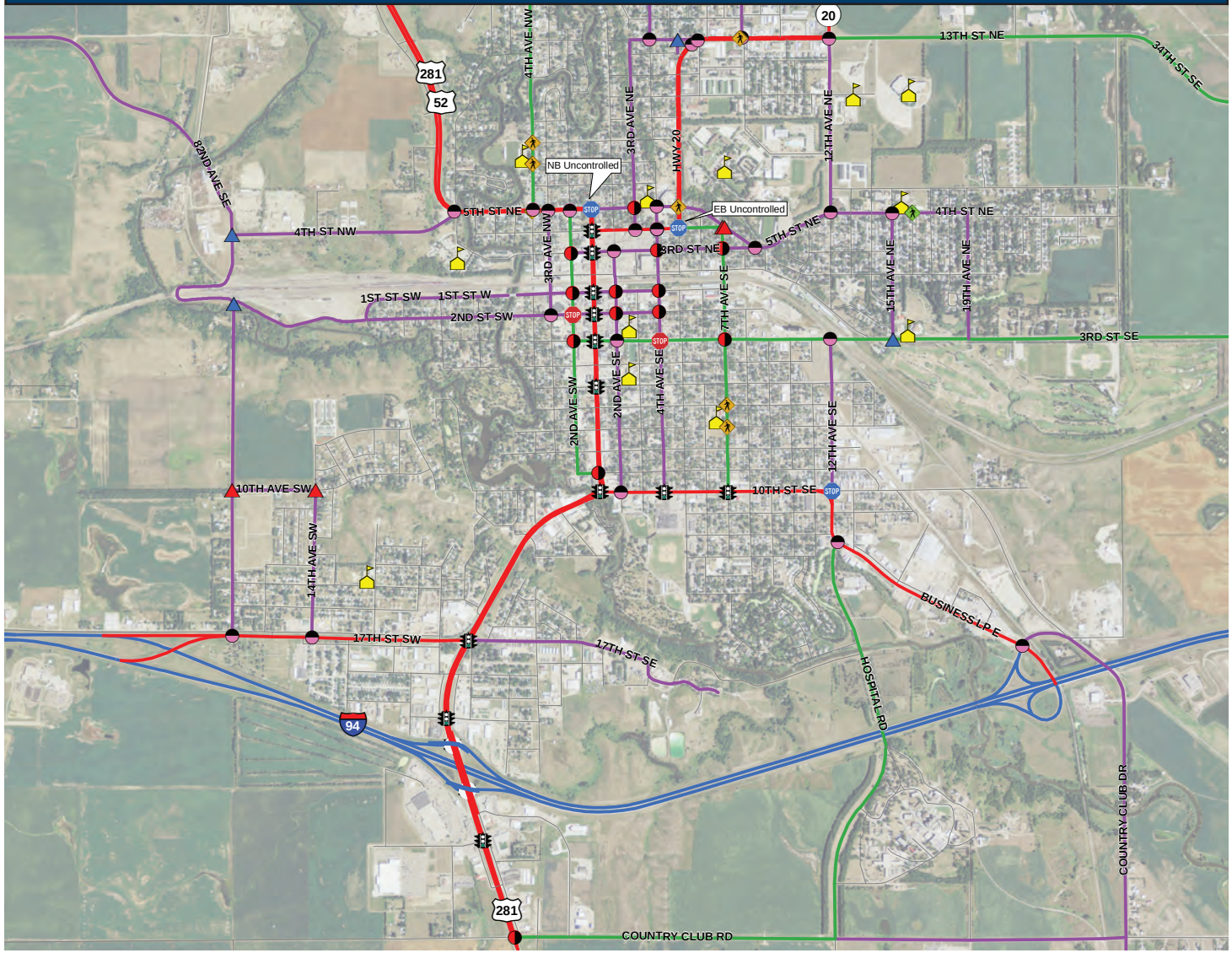
Note: Only locations where functionally classified roadways are controlled are identified.

four of 12 current locations under existing traffic patterns.

The above traffic control signal warrant analysis results align with a recent signal study that included the nine traffic control signals along 1st Avenue (US 281/52) and 10th Street (I-94 Business Loop). That August 2013 study recommended removal of four traffic control signals.

There were no unsignalized intersections that met traffic control signal volume warrants on the functionally classified network. Howev-

Figure 3.23: Existing Traffic Control on Functionally Classified Roadways



The city's busiest intersection. *The 10th Street SE and 1st Avenue intersection is a funnel for traffic coming into to town from I-94 and for traffic bound for major commercial development south of the interstate.*

er, there were two locations that met crash warrants:

- 5th Street Northwest/US 281/52 and 2nd Avenue Northwest intersection
- 7th Avenue Northeast and 3rd Street intersection

MUTCD warrants pertaining to crash thresholds require an adequate trial of alternatives are conducted prior to traffic signal installation. Alternatives and recommendations are presented in later chapters of the report.

MULTI-WAY STOP CONTROL

The MUTCD includes Multi-Way Stop Control (MWSC) warrants based on traffic volumes, motorist delay and crash frequency as well as one warrant that considers a combination of the two. Currently, there are four MWSC on the functionally classified roadway system in Jamestown:

- 3rd Street at 4th Avenue Southeast. All four approaches are stop controlled, including a supplemental mast arm mounted flashing beacon (refer to Figure 1.23).
- 2nd Avenue at 2nd Street Southwest. All four approaches are stop controlled.
- 1st Avenue (US 281/52) and 5th Street Northeast (US 281/52). Three of four approaches are stop controlled.
- 5th Avenue Northeast (ND 20) and 4th Street Northeast. Three of four approaches are stop controlled.

MWSC traffic warrants are met at each of these intersections. The MUTCD specifies that multi-way stop control should be limited to locations where the volume of traffic on the intersecting roads is approximately equal. Studies have found that when the minor approach experiences minimal traffic volumes, increased levels of motorist noncompliance are typically experienced on the major approaches as drivers start to ignore the stop sign, under the premise that opposing traffic will not be present.

The MWSC intersections with four controlled approaches are at least a 2:1 major to minor street volume split and would operate more efficiently as two way stop control (TWSC). The two intersections with MWSC with on uncontrolled approach are unique in that traffic is relatively evenly split on the east/west approaches versus the

Multi-way Stop Control with beacons. *Four intersections meet warrants for MWSC's. The intersection of 3rd Street and 4th Avenue SE also has a supplemental flashing beacon.*

Uncontrolled intersection with sight obstruction. *Two-way stop control or yield control signage should be considered at specific intersections where sight obstructions are present.*

north/south approaches. This is due to the fact that US 281/52 transitions from north-south to east-west and ND 20 transitions from east-west to north-south at these intersections. This alignment results in the major movements at the intersection to be turning movements. This unconventional style intersection may experience operational and/or safety deficiencies if established today; however, observed traffic operations and crash data indicates that this configuration is generally understood and accepted.

There are no additional intersections that meet both the traffic volume warrant and have evenly distributed traffic volumes on the major versus minor approaches. Of the intersections where traffic signal control is currently in-place but unwarranted, only 1st Avenue and 4th Street North meets warrants to install MWSC. A review of crash data indicates that there are two intersections on the functional classification system that have TWSC or no control that meet MWSC crash warrants. This list includes

» 5th Street NW/ US 281/52 and 2nd Avenue Northwest intersection

» 7th Avenue Northeast and 3rd Street intersection

Neither location would benefit from MWSC due to the major discrepancies in traffic volumes on the major versus minor approaches.

TWO-WAY STOP CONTROL AND YIELD CONTROL

The MUTCD guidance for installation of TWSC and Yield Control (YC) is based on either traffic volume thresholds, sight distance limitations or crash frequency thresholds. All intersections meeting the volumes thresholds that are not already controlled with a traffic signal of MWSC have TWSC/YC. A review of crash data indicates that there are no uncontrolled functionally classified intersections that meet the crash warrant for installation of TWSC/YC.

The MUTCD notes that TWSC/YC should be considered at an intersection of a less important road with a main road where application of the normal right-of-way rule would not be expected to provide reasonable compliance with the law. It is common in Jamestown that the intersection of a collector with a local road or intersection of two local roads be uncontrolled. Many of these intersections are within the urban center of the city and potentially have sight distance restrictions. Evaluating traffic control requirements for every intersection within the city was beyond the scope of this report.

PEDESTRIAN FLASHING BEACONS

Pedestrian flashing beacons (PFB) may be utilized at pedestrian crosswalks to enhance pedestrian visibility and induce vehicle stoppages. As previously noted, the MUTCD does not have warrants for these types of traffic control. However, NDDOT's policy regarding the installation of a flashing beacon for a crosswalk recommends an engineering study as outlined in the ITE publication "A Program for School Crossing Protection" which provides the following thresholds:

- Consider full signalization when a crossing is used by 50 or more school children in the peak hour.
- Consider a PFB when a crossing is used by 20 or more school children in the peak hour.
- Consider school crossing signing when a crossing is used by less than 20 school children in the peak hour.

Installation of these types of control should be judiciously selected based on a traffic operations study due to the construction, maintenance and operating costs. Additionally, research indicates that in-

stallation of traffic control devices at low volume unjustified locations results in reduced motorist compliance.

There are several PFBs in Jamestown (refer to Figure X for an example). All but one of these devices are located directly adjacent to or within walking distance from an elementary school. The only exception is located adjacent to the old hospital at the intersection of 12th Avenue (ND 20) and 5th Street Northeast. Each of these beacons are overhead type flashing beacons without pedestrian actuation located at intersections. The beacons are designed with two flashing beacons and a folding "20 MPH" speed limit sign. The beacons flash and the sign is only visible during established times of day. Recent studies have found these types of beacons to be less than 50 percent effective in terms of motorist compliance. More recent beacon designs, such as the rectangular rapid flashing beacon, only activate during pedestrian actuation, have been found to be as effective as 84 percent in terms of motorist compliance.

CRASH ANALYSIS

Crash records were obtained from the NDDOT for the October 1, 2010 to October 31, 2012 period (the most recent two years of crash records available at the time of this writing), indicated 406 crashes within the Jamestown ETA, including nearly two crashes per year resulting in a fatality and 90 crashes per year resulting in an injury (includes "possible injury" classifications). The National Safety Council (NSC) estimates economic impact of crashes based on wage and productivity losses, medical expenses, administrative expenses, motor vehicle damage and employer costs due to injuries. Using this data, the total costs associated with crashes with the Jamestown ETA were $12,500,000 per year. Upon further review of the crash data, general crash trends were identified and illustrated in Figure 3.24.

To identify overrepresented crash locations with the study area, a two-phase approach was adopted. First, crash frequency was studied to identify locations with the highest number of crashes. This is the most straightforward approach to determining locations susceptible to crashes (refer to Figure 3.25. This approach, however, ignores the rate at which crashes occur.

Typically, intersections with a high number of crashes also carry high levels of traffic. Many times, a low volume location may have fewer overall crashes, but on a per vehicle basis have a much higher susceptibility to crashes. Therefore, it is beneficial to identify which locations in the study area experience a statistically higher crash rate (refer to Figure 3.26).

To identify statistically higher crash rates, the critical crash rate method was used. This method was developed by the Minnesota Department of Transportation (MnDOT) and is included in the NDDOT Design Manual. The method incorporates traffic volumes and crash rates for a particular location and compares this rate against crash rates for similar facilities. Facilities were categorized by traffic control and by functional classification for links. Only the functional classification network was evaluated in this analysis. Thus, link lengths varied depending upon distance to the closest intersecting functionally classified road. Figure 3.25 illustrates the results of the analysis. As shown in Figure 3.26, there were two overrepresented intersections and eight overrepresented roadway links.

Pedestrian beacons. *Left: Example of a PFB in Jamestown.. Below: Installations of a HAWK (hybrid actuated crosswalk beacon), which is a pedestrian signal that when actuated flashes yellow before turning to a steady red. The installation in Chamblee, Georgia also uses a pedestrian refuge median and offset crosswalk to cross a major arterial.*

Figure 3.24: Crash Characteristics, 2010-2012

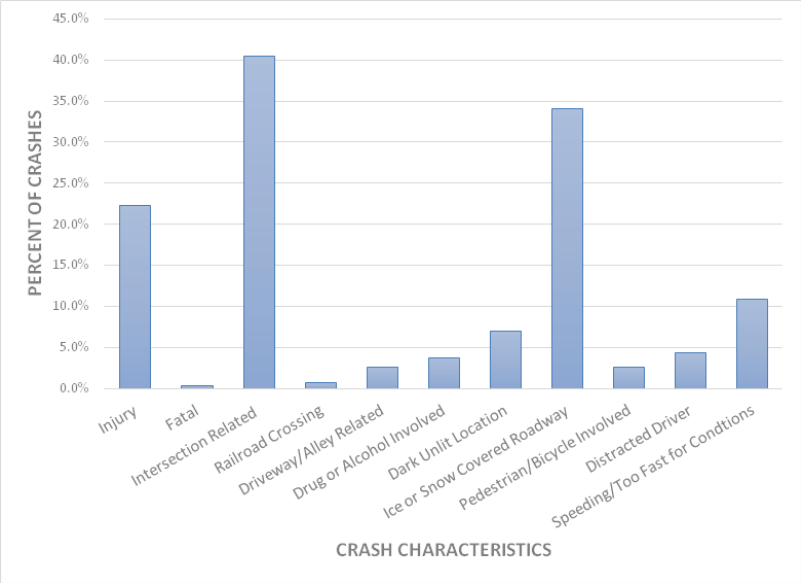


Figure 3.25: Crashes per Year

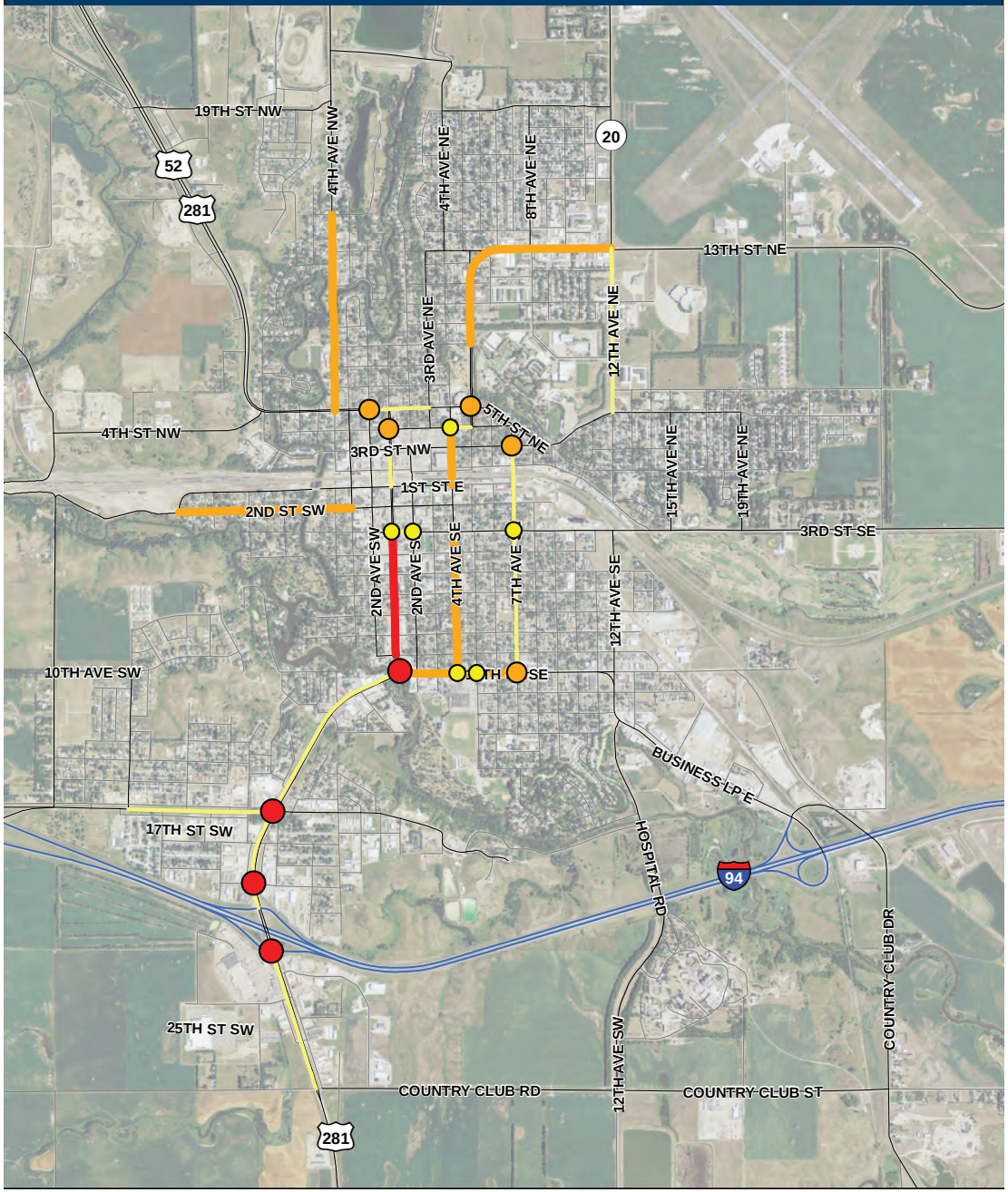
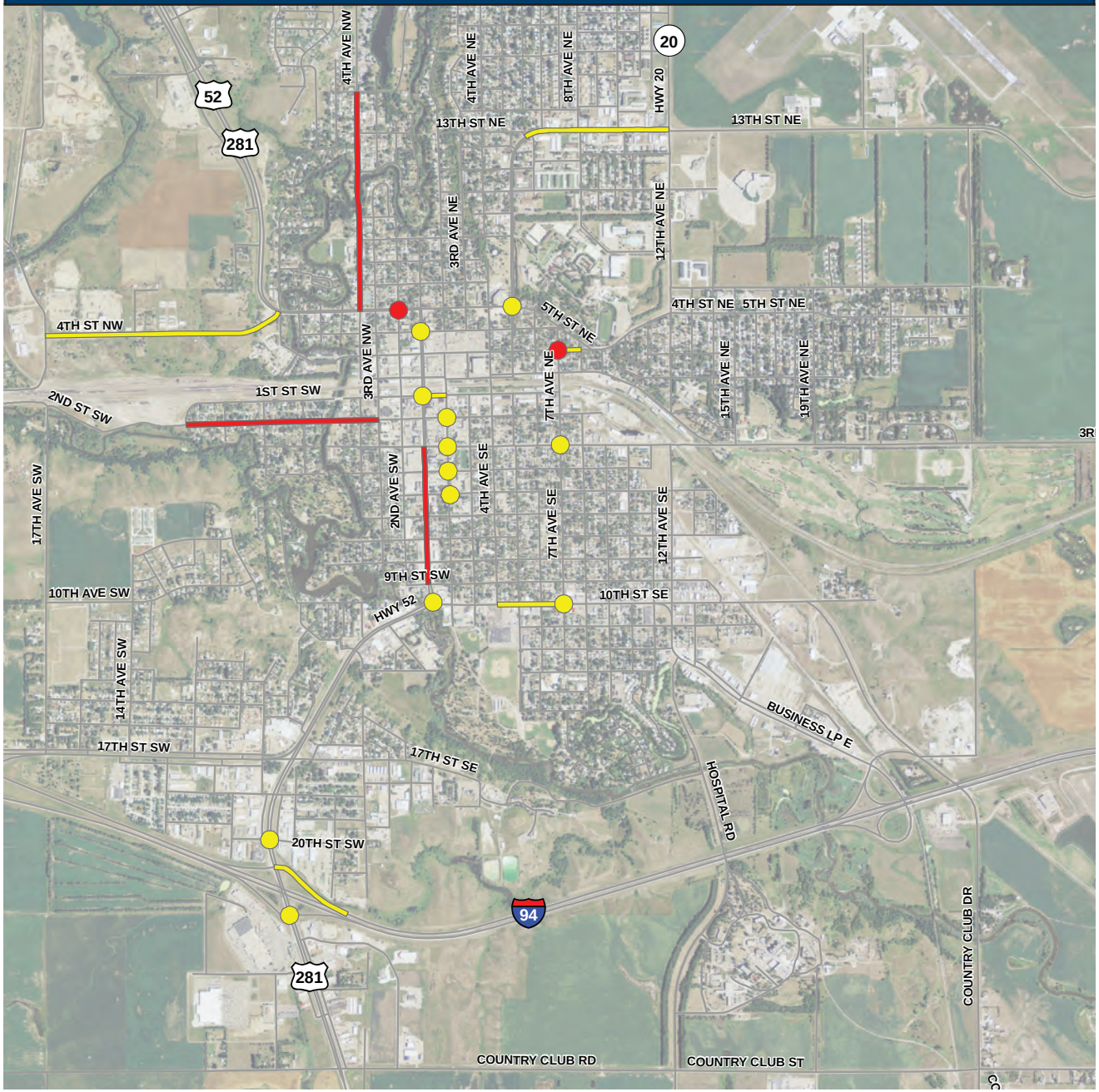


Figure 3.26: Crashes per Year



Intersections with critical crash rates. *From top, 5th Street and 4th Avenue NW and 7th Avenue and 3rd Street NE.*

Critical Crash Analysis

Above Average Crash Rate But Below Critical Crash Rate

Above Critical Crash Rate

Video detection device. *Installation at US 281 and 25th Street SW.*

INTELLIGENT TRANSPORTATION SYSTEMS

Intelligent Transportation Systems (ITS) is the application of advanced technology to solve transportation problems. ITS supports the movement of people, goods and services. ITS encompasses a broad range of communications based information and electronics technologies. When integrated into the transportation system's infrastructure, and sometimes within vehicles themselves, these technologies relieve congestion, improve safety and enhance productivity. ITS solutions are often employed as cost effective alternatives to improve traffic operations or safety without costly roadway improvements. Figure 3.27 displays the locations of specific ITS technologies. Currently, Jamestown uses two different types of ITS technologies:

» Video detection cameras. Video detection cameras are mounted on some part of the signal structure and are used primarily to detect traffic for signal phasing purposes. Video detection cameras can also provide live video feed for engineers needing to view intersection operations. Video detection can also be designed to automatically count traffic. Currently, video detection is installed at two intersections: US 281/ 52 and 20th Street SW and US 281 and 25th Street SW.

» Automatic traffic recorders. Automatic traffic recorders (ATRs) are permanent devices used to record traffic volumes, vehicle occupancy and sometimes other traffic conditions. The ATR uses induction loops which are installed in the pavement and are used primarily for traffic counts. There is currently one ATR, located just north of Jamestown on the Bypass.

POTENTIAL FUTURE APPLICATIONS

There are a variety of potential ITS applications that can be used in Jamestown:

» Permanent Dynamic Message Signs are used to display travel information to roadway users.

» Dynamic Speed Display Signs are used to highlight traveler speeds in real-time and flash when above certain thresholds to reduce motorist speeds.

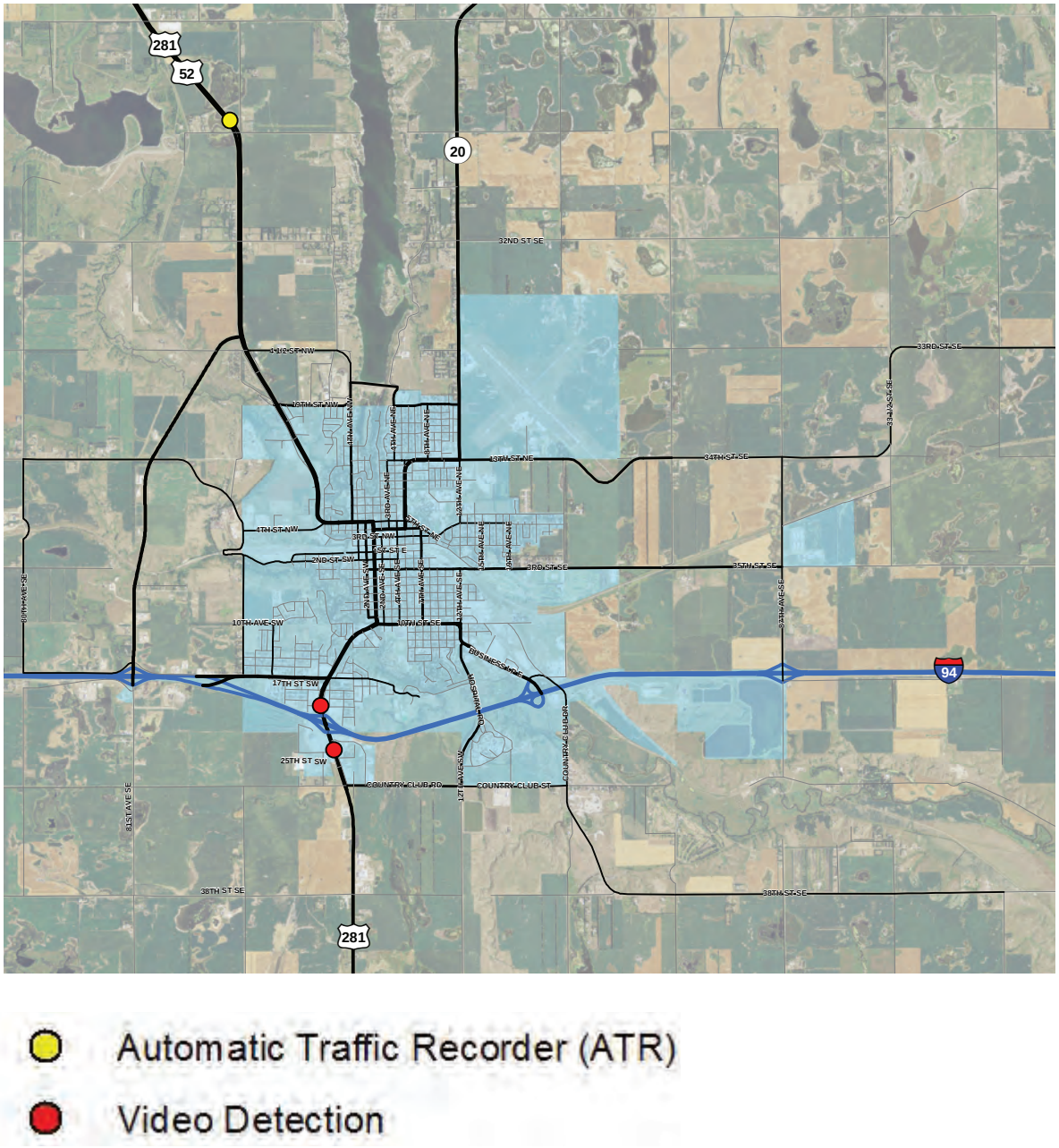
» Pan-Tilt-Zoom Cameras are used to monitor traffic operations, weather or safety conditions.

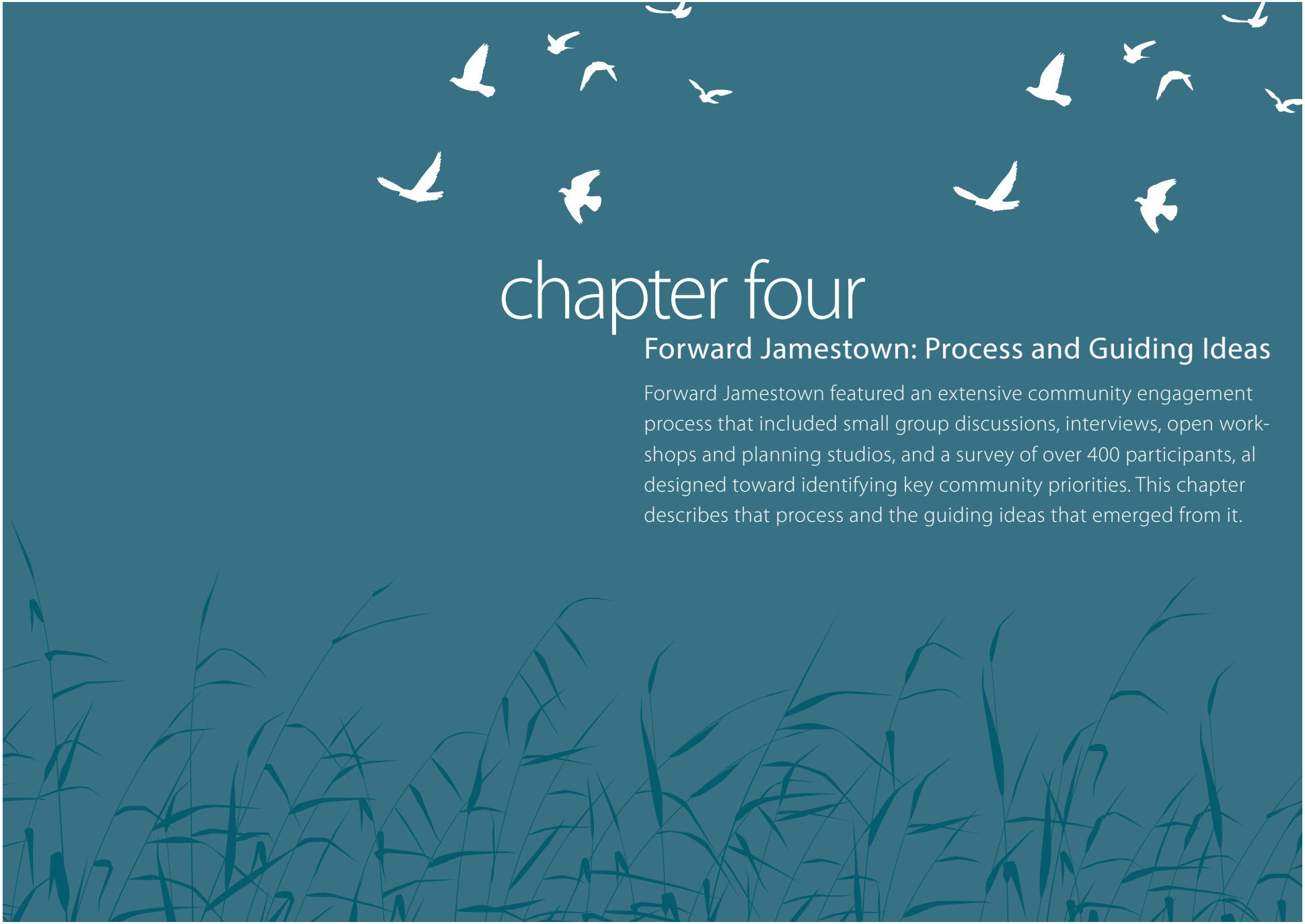
» Weigh-In-Motion Stations are used to weigh trucks while travelling to allow trucks under the weight limit to bypass static scales.

» Emergency Vehicle Preemption is used by emergency response vehicles to trigger traffic signals to display green lights, allowing the emergency vehicle to proceed, while all other movements are given a red light.

There are many other ITS solutions used around the country that include ramp metering, variable speed limit signs, intelligent lane control signs, dynamic curve warning systems, road weather information systems, bridge warning height systems, wildlife warning systems, traffic adaptive signal systems, intelligent work zones and many others. ITS applications in Jamestown currently have only been implemented on the State system where NDDOT personnel are responsible for maintenance and operations. A critical piece of successfully implementing ITS solutions is ensuring there is available staff with the necessary expertise to troubleshoot hardware and software when necessary.

Figure 3.27: Existing ITS Applications

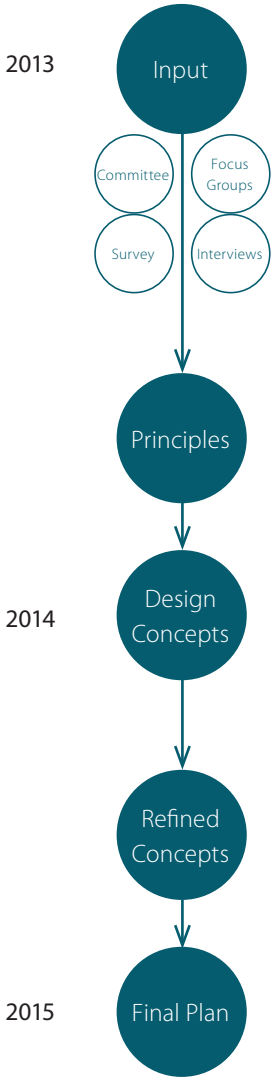




chapter four

Forward Jamestown: Process and Guiding Ideas

Forward Jamestown featured an extensive community engagement process that included small group discussions, interviews, open workshops and planning studios, and a survey of over 400 participants, al designed toward identifying key community priorities. This chapter describes that process and the guiding ideas that emerged from it.



Planning process spanned 20-months from initiation to completion.

STRATEGIC PLANNING PROCESS

A review of the goal-setting process is summarized in the process below. The results of the early stages of the plan established the guiding principles. These principles were refined and adopted as the goals for the plan, and development concepts were prepared with public participation to illustrate them. Components of the public participation process included:

» **Steering Committee.** The Steering Committee met at key points during the planning process to review the progress of the plan.

» **Kick-off Event.** A community kick-off event took place on September 23, 2013. This event included a public presentation that discussed the planning process and display boards reviewing the patterns and systems throughout the community. Also, the project team held a joint City Council and Planning & Zoning Commission meeting on September 24th to discuss the scope of the project, opportunities and trends, and schedule.

» **Website.** A project website provided the public an opportunity to follow upcoming events and updates of the planning process.

» **Public Questionnaire.** Launched in October 2013, the questionnaire could be completed either on-line or in hard copy. The survey identified potential opportunities and goals.

» **Focus Group Discussions & Individual Interviews.** Focus groups, held on November 5, 2013, provided discussions about the state of the city by topic area, and explored issues and directions for the community. Also, several individual interviews provided in-depth understanding of the community's emerging trends and challenges. The project team also met with representatives of the Jamestown Regional Medical Center on March 27, 2014.

» **Design Workshops.** Two multi-day planning workshops in Jamestown addressed development directions for the city as a whole and for downtown and significant corridors. Participants shared their ideas, issues and concerns informally with the design team, and helped define and test concepts for the future of the city. Concurrent with the Transportation and Land Use Plan, the consultant team met with the Jamestown Art Center to prepare concepts for the Arts Park in downtown.

» **Open House.** A public Open House occurred September 3, 2014. The open house provided the public an opportunity to review and comment on the development plan before further development and adoption.

» **City Council and Agency Updates.** Major milestones in the process led the design team to present to the City Council, Planning Commission, and NDDOT. These events affirmed recommendations of the emerging findings and recommendations.

» **Approval.** The plan was presented to the Planning & Zoning Commission and City Council for approval.

GUIDING PRINCIPLES

Each principle is supported by strategies that identify the approach to achieve the plan. The committee evaluated policy statements and strategies, and clarified them as needed. These were then presented to the public for further comment.

Grow and Capitalize on Opportunities

Create a community that attracts and accommodates new people and families, and enriches the lives of its citizens.

Connect the City

Provide safe and convenient mobility and access during all conditions, cross barriers, improve connectivity, and provide transportation choices.

Build on Assets

Strengthen and enhance the city's unique features, including parks, river and creek greenways, city center, and special attractions.

Be Economically Sustainable

Develop efficiently to deliver the services and facilities that citizens expect in an effective and affordable manner.

Create Great Places

Invest in a city center and support other activity focuses both delight their users and contribute to the growth and economy of the city.

Strengthen the Sense of Community

Strengthen community institutions and organizations that increase community spirit and engagement in civic life.

ACTIVITIES

- **Steering Committee**
- **Kick-off Event**
- **Website**
- **Public Questionnaire**
- Focus Group Discussions & Individual Interviews
- Design Workshops
- Open House
- City Council and Agency Updates
- Approval

Steering Committee

The steering committee met throughout the planning project to provide input, review the progress of the plan, suggest mid-course corrections, and contribute to development concepts. Participants in the committee are acknowledged at the front of this document and were instrumental in the preparation of the plan. Members also participated during other major events.

- **September 2013.** Kick-off meeting with steering committee and community.
- **November 2013.** Review emerging topics from discussions from focus groups.
- **January, 2014.** Review results from initial trends in land use and transportation going into the design workshop.
- **February 2014.** Review results from the design workshop focusing on citywide changes and downtown.
- **March 2014.** Review results from additional concepts.
- **June 2014.** Updates of the planning process and progress.
- **September 2014.** Host public open house and present recommendations of plan.
- **February 2015.** Presentation implementation strategies.

Kick-off Event

The official kick-off of the Transportation and Land Use Plan began on September 23, 2013. The event began with a short presentation of the project's scope, the planning process, and introduction of the team preparing the plan.

Website

Meeting announcements, copies of presentations and supporting information about the project were available on the project website. Updates were posted regularly to share the progress of the plan.

PUBLIC QUESTIONNAIRE

The process began with an opinion survey, designed to gather opinions and perceptions about Jamestown. Over a seven-week period, 399 people completed the survey on-line. This section summarizes key results, while the complete results can be found in the appendix.

Community Image and Values Observations

» Happiness, institutions, involvement are relative strengths.

» **Trouble spots.** Satisfaction with direction and ability to attract new residents.

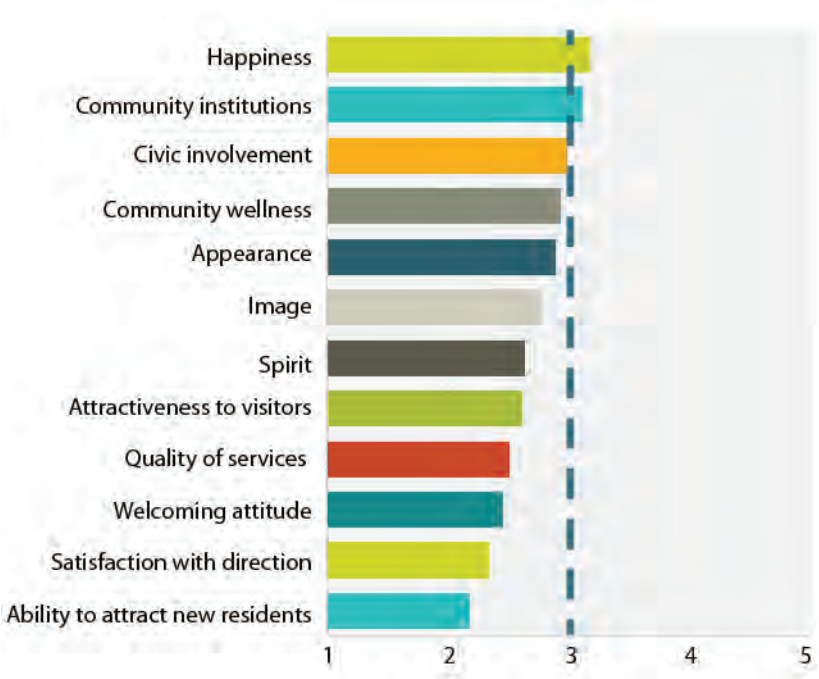
» **Key Strategic Issue.** New jobs and growth opportunities are emerging, and city is not positioned to attract necessary people

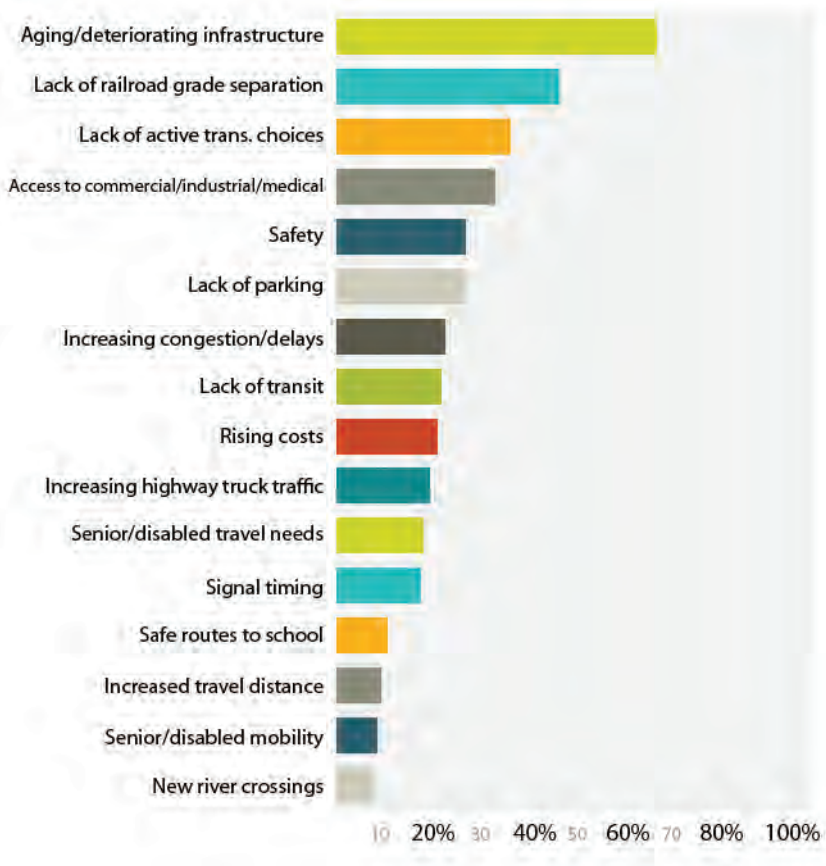
» **Overall lack of strong feeling**

Transportation Challenges

Four clear issues appeared in the survey, including:

1. Aging and deteriorating infrastructure
2. Lack of railroad grade
3. Active transportation
4. Access to major activity and job centers





ACTIVITIES

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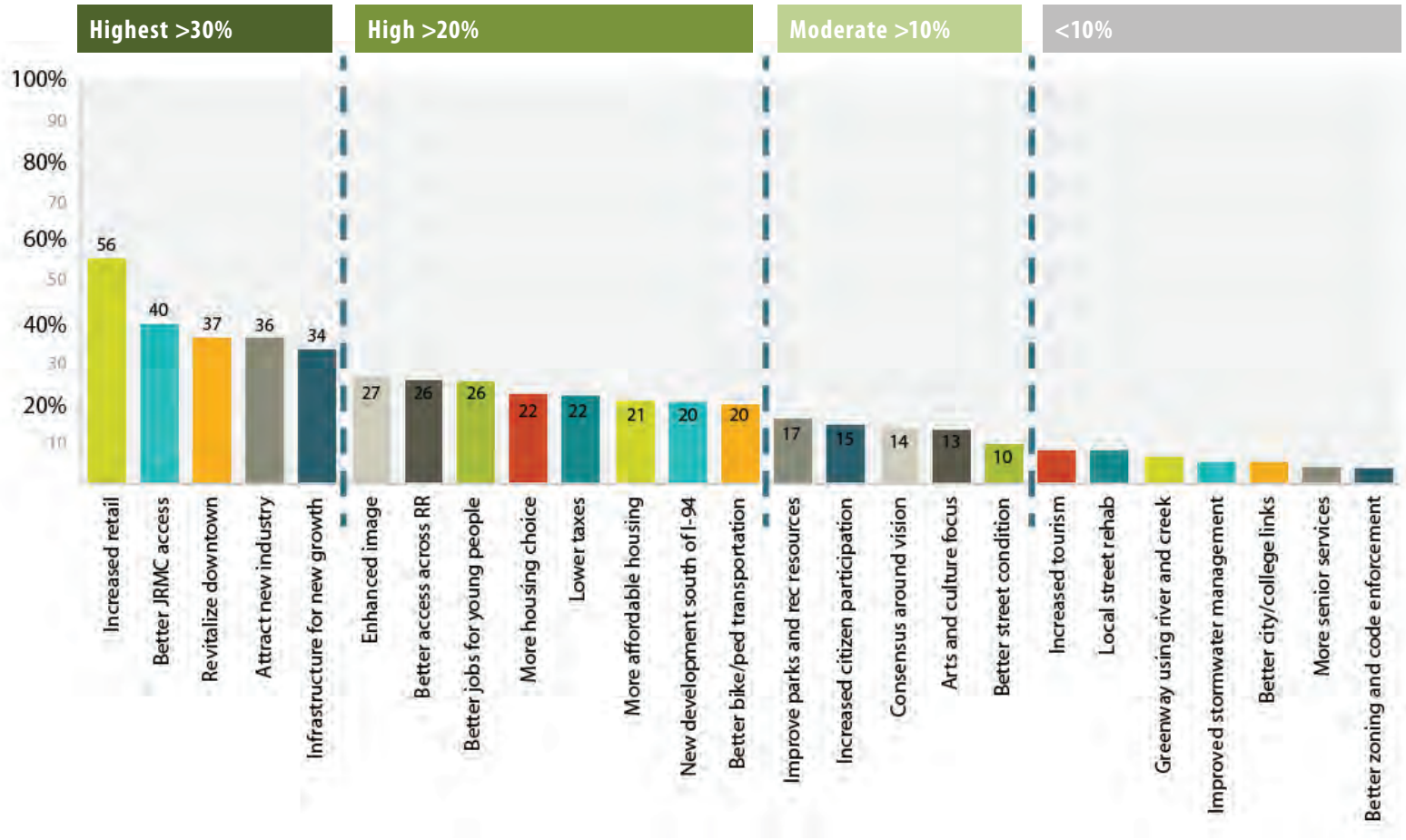
Priorities and Projects

Respondents identified their top five projects from a list of 25. All choices received a response, and 12 comments indicated a need for a new library. Five of the choices received the most attention, including increased retail, access to JRMC, downtown, new industry, and infrastructure to services growth areas.



Public Perceptions

Respondents were asked to score topic areas from economic development, land use, housing, public services, and parks and recreation. Areas receiving the highest scores, or most positive response, include services and parks, while the areas receiving the lowest scores include perspectives on economic development. The following is a summary of perspectives ranked in categories from high to neutral and low. Detailed responses are available in the appendix.

	Economic Development	Land Use	Housing	Public Services	Parks
HIGH	Prospects for Future Growth Available Industrial Sites	Technology (broadband, fiber optics, etc.) Flood Control Efforts	Satisfaction with your neighborhood	Public Safety Services (police, fire, first responders) Educational Facilities Medical and Health Services Utilities Senior Services Water Services Arts and Cultural Features Museums and Historical Attractions	McElroy Park Jamestown Reservoir Playing Fields Hillcrest Municipal Golf Course Klaus Park Jamestown's Overall Park System Small Neighborhood Parks
NEUTRAL	Tourism Potential Economic Development Programs and Agencies Jamestown's Overall Economy Incentives for Business Investment Job Quality	Water Systems Utility Costs Stormwater Management New Areas for Growth Sewer Service Resource Conservation	Availability of Senior Housing	Library Services Customer Friendliness Youth Activities Effectiveness of Zoning	Trails Aquatics / Swimming Facilities
LOW	Employment Growth Business Climate in Jamestown Support for New Business Available Workforce Ability to Attract / Retain New Employees Downtown Jamestown Retail Quality and Variety	Quality of Land Use Planning Control of Land Use Conflicts Recycling Program	Housing Affordability Housing Quality Availability of Rental Housing / Apartments Housing Supply	Day Care Services Local Leadership Effectiveness of City Government Efficient Use of Funds	Indoor Recreation

ACTIVITIES

FOCUS GROUP DISCUSSIONS AND INTERVIEWS

Focus group meetings and individual interviews that took place primarily in November 2013. Subsequent focus groups and interviews took place in January and February of 2014. Groups such as business and property owners (particularly in downtown and along 17th Street), financial institutions, public officials, nonprofit and arts organizations, housing, Jamestown Regional Medical Center, and others participated in roundtable discussions to share their opinion of the community and its future opportunities.

Transportation Discussion

Discussion was less about capacity improvements, and more about connectedness, system quality, and transportation choice. Frequent points by stakeholders, include:

- Creating connections across barriers, including the railroad, I-94, and river.
- Calming traffic speed through downtown.
- Connecting streets.
- Addressing Exit 257 and access south of I-94 and to Jamestown Regional Medical Center.
- Maintaining or improving access to/from I-94.
- Providing sidewalks, pedestrian paths and bicycle facilities.
- Improving non-motorized transportation and safe routes.
- Providing public transportation.

Economic Development Discussion

Discussion was less about major industrial recruitment, and more about attracting and retaining quality workforce, and taking advantage of opportunities. Frequent points by stakeholders, include:

- Increasing retail quantity and quality.
- Increasing labor supply and training skills.
- Improving job quality.
- Transportation and infrastructure importance.
- General high regard for economic development efforts.

Land Use and Growth Discussion

Discussion focused on growth directions and opportunities that require increased housing production, transportation connections, and downtown revitalization. Frequent stakeholder comments noted:

- A probable future of steady but not explosive growth.
- Importance of downtown.
- Need for public facilities and circulation network south of Interstate 94.
- Piecemeal and disconnected new development.
- Greater housing demand.
- Need to improve the river corridor.

Infrastructure and Facilities Discussion

Discussion was less about "invisible" systems", and more about the need for community center and service to growth areas. Frequent points by stakeholders, include:

- General satisfaction with school facilities.
- Providing school coverage and facilities address growth directions.
- Linking streets as key infrastructure focus.
- Improving the condition of the civic center, and providing a community recreation facility.
- Supporting anew downtown library.

Parks and Recreation Discussion

Discussion complimented the city's strong park and outdoor assets, and focused on connectedness of trails and paths to parks. Frequent points by stakeholders, include:

- Strong park system, including Reservoir and community parks.
- Connecting trails.
- Overall pedestrian and bicycle facilities and connections.
- Supporting river and creek greenway.
- Improving safe crossings of barriers, such as the reservoir dam, city to reservoir, pedestrian bridges to parks.
- Providing a multi-use community/recreation center.

DESIGN WORKSHOPS

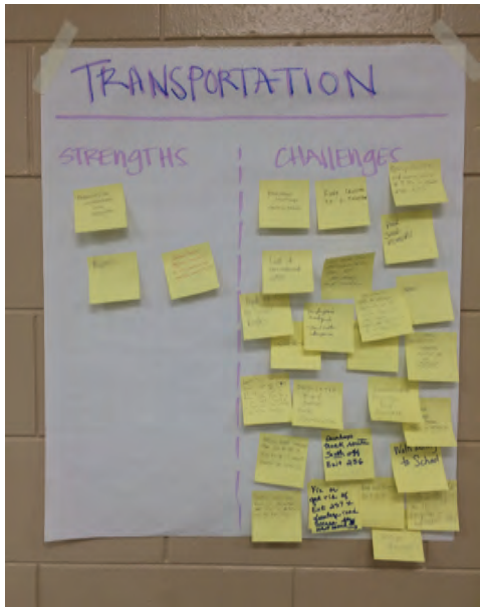
Multi-day public design workshops took place at City Hall in January and February of 2014. The concepts presented in plan reflect and refines the work done in these sessions. Flyers, e-mail blasts, postcards, and public notices were distributed by the city to announce these events and invited the public to participate. The event in January focused on citywide transportation and future land use, while the event in February focused on downtown and business corridors. The concepts were later refined from public comments and included in this plan.

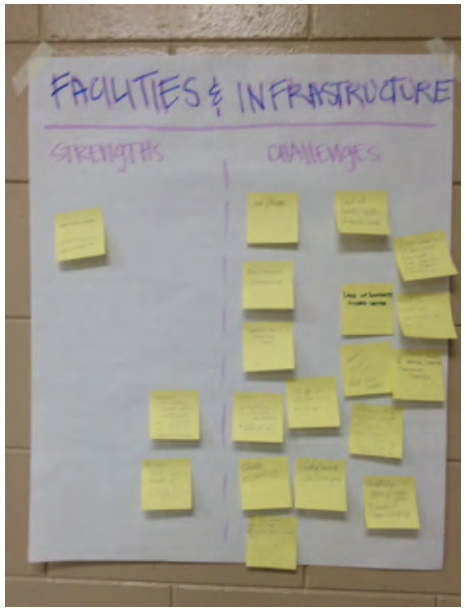
January 29, 2014 (City Hall)

January 30, 2014 (Civic Center)

February 25, 2014 (City Hall)

February 26, 2014 (City Hall)





ACTIVITIES

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- **City Council and Agency Updates**
- **Approval**

Design Workshops

(...continued)

The steering committee and public reviewed concepts to further refine concepts. The concepts were shared at public events, committee meetings, and on the project website.

OPEN HOUSE

The open house, held at Jamestown City Hall, provided the public an opportunity to review and comment on the development plan before advancing sections of the plan to completion. The event included a presentation and break-out discussions at various stations focusing on development areas.

CITY COUNCIL AND AGENCY UPDATES

The design team presented emerging trends and concepts resulting from the months of research and design when the project was 25% complete on June 2, 2014. Subsequent updates were provided by city staff. The design team presented initial recommendations for transportation and future land use to the North Dakota Department of Transportation on December 18, 2014. Following this meeting, the project team prepared supporting narrative and graphics for final publication.

APPROVAL

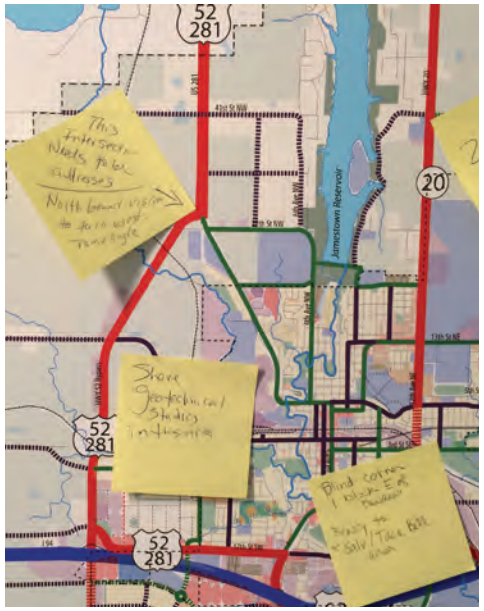
The project completion and approval schedule anticipates the following events:

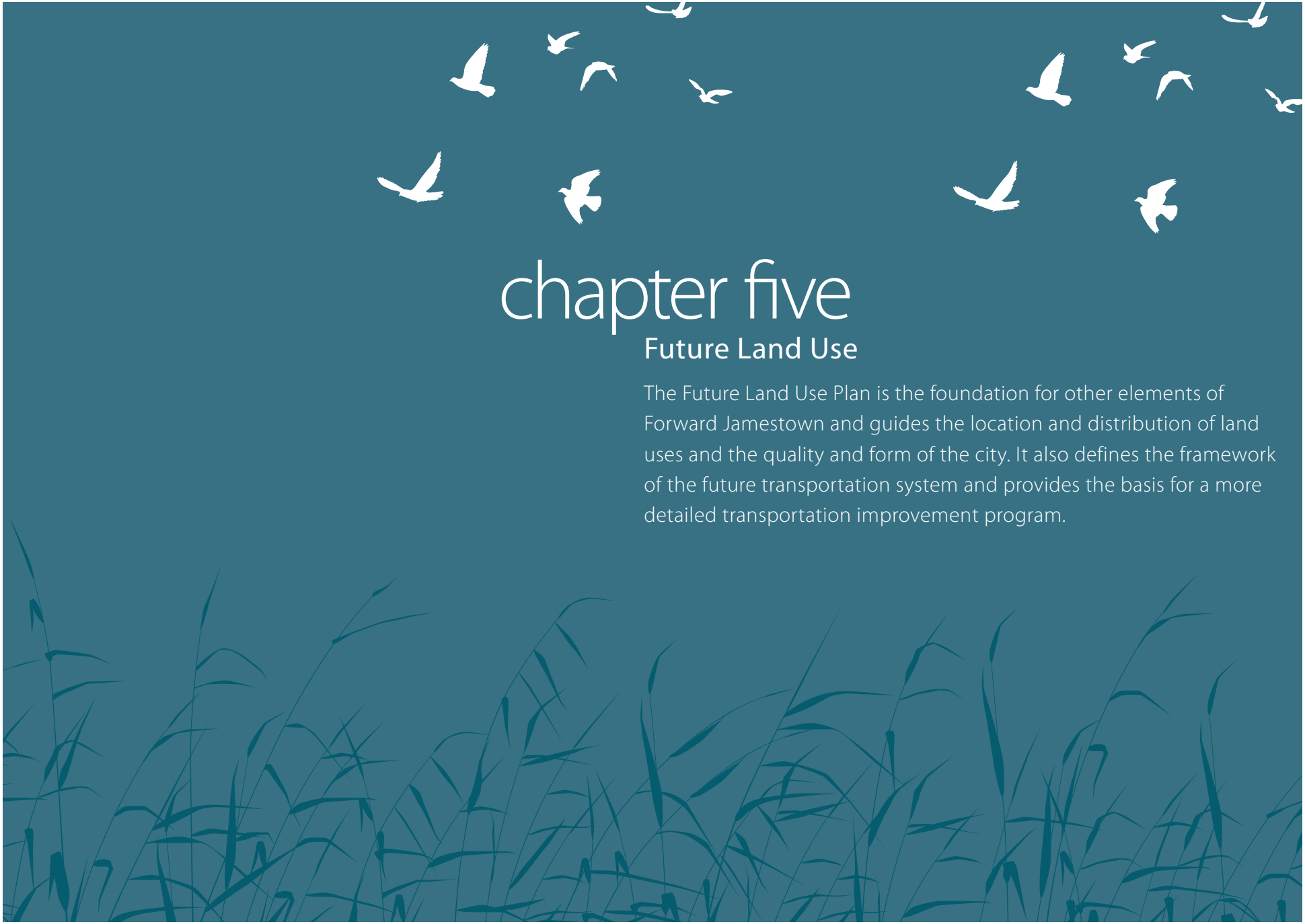
Planning Commission public hearing and review: May 18, 2015

Planning and Zoning Committee Discussion: May 19, 2015

City Council Public Hearing: June 1, 2015

City Council Action: July 6, 2015





chapter five

Future Land Use

The Future Land Use Plan is the foundation for other elements of Forward Jamestown and guides the location and distribution of land uses and the quality and form of the city. It also defines the framework of the future transportation system and provides the basis for a more detailed transportation improvement program.

DEFINING DEVELOPMENT DIRECTIONS

Chapter Two considered the existing distribution of land uses and identified future needs for urbanized land, based on population and housing projections and targets for various densities of residential development. The overall development projection indicated a need for about two square miles of new urbanized land, about two-thirds of which would be in residential use. However, an ultimate land use plan should provide a margin above the "hard demand" to account for the fact that some land may be unavailable and to provide options and flexibility. Therefore, the urban land needs projections, recapped in Table 5.1, multiply the hard demand for residential and commercial land by 1.5 and for more space intensive uses by three.

We should note that some of this land need will be outside the city limits of Jamestown. For example, most of the housing demand projected for "rural residential" will not use city water or sewer, and is likely to be adjacent to but outside the city. Similarly, a large portion of industrial demand, including sites for large industries, will be in planned sites like the Spiritwood Energy Park, administered by the Jamestown Stutsman Development Corporation (JSDC), convenient to but separated from the City of Jamestown itself. The Spiritwood facility provides about 550 acres of available land for major industrial development, meaning that industrial land designation within or adjacent to Jamestown will be in the range of 320 acres. Thus, the total urban land need in and immediately adjacent to Jamestown will be about 1,500 acres.

Figure 5.1: Recap of Urban Land Needs, 2016-2040

Land Use Type	Hard Demand (acres)	Designated Land Total (acres)	Designated Land within City (acres)
Rural Residential	253	379	50
Urban Residential-Low	421	632	632
Urban Residential-Medium	105	158	158
Urban Residential-High	42	63	63
All Residential	**821**	**1231**	**902**
Commercial	**170**	**255**	**255**
Industrial	**290**	**870**	**320**
Total Urban	**1281**	**2356**	**1477**

GROWTH SECTORS

The first step in the land use planning process is to identify the land areas most suitable for that new growth. Three factors determine these overall growth centers:

» **Existing land use patterns.** In cities of Jamestown's size, new development tends to build incrementally from existing patterns. Thus, major retailing , including large-format retailers, will tend to build from precedents rather than pioneer in completely new areas. Similarly, residential development will tend to occur where community facilities and previous growth already establish attraction, value, and a level of security. Industrial development follows a similar incremental pattern, but is also more sensitive to factors such as transportation and availability of large land areas with limited impact on pre-existing uses. Figure 2.3 in Chapter Two displays existing land use.

» **Environmental characteristics.** Environmental features such as the floodplains of the James River and Pipestem Creek, wetlands, topography that is difficult to develop or limits easy extension of utilities, soils, and cultural heritage resources help to define the location of major growth areas. Other features, such as prime agricultural soils, may be valuable, but do not specifically constrain development. Protection of these resources may be accomplished by regulatory policy or compact and low-impact development practices that minimize the amount of land that must be converted to urban use. Figure 5.2 aggregates environmental resources

» **Serviceability.** Areas that can be efficiently and economically provided with water and sewer services and the minimize infrastructure cost per unit of development are priority areas for new growth. For example, communities define "Urban Services Areas" as the large area that can be served by major public investments such as

existing water and wastewater treatment facilities. Land outside of these areas becomes extremely expensive to development, or resorts to inefficient or overlay land intensive practices such as low-density residential growth using septic or other self-contained systems. It is interesting to note that "rural residential" development is projected to account for 5% of the housing growth in the Jamestown area over the next 25 years, but consumes about 30% of the land that would be devoted to residential use. Figure 5.3 rates various parts of the city and adjacent potential development areas for ease of serviceability. Areas not designated are generally outside the Jamestown urban service area.

These interaction of these characteristics establish five growth sectors for the Jamestown planning area:. Figure 5.4 displays these sectors, overlaid on the existing land use map.

» **Southwest,** southwest of I-94 and US 281, including the Jamestown Regional Medical Center and most of the city's large-format retailing, but little existing housing. This area is bounded on the west by 81st Avenue SW (the continuation of the line of the US 52/281 bypass) and on the south by the drainageway south of 37th Street SW. The sector now lacks a connected street system, most notably the absence of continuous east-west local access between 81st Avenue and Highway 281. The major retail district is related directly to US 281 and gains most of its access from that highway corridor. JRMC receives access from I-94 via Exit 256, but its primary local access, 20th Street SW, has no eastward outlet.

» **Northeast,** including areas between 13th Street NE and the BNSF, from about 16th Street East to 86th Avenue. 86th Avenue is the eastern boundary of the exiting urban services area. Some of this development area has been at least conceptually platted, but is not developed.

» **West Central**, west of the traditional town grid and the approximate line of 10th Avenue West and east of the US 52/281 Bypass. This area has received urban development west to 17th Avenue. Even though most of the area is serviceable, some large lot platting has occurred west of 17th Avenue, and that street marks the boundary between city and rural water districts.

» **Central City**, where new development occurs through redevelopment or repurposing of sites, adaptive reuse, and infill. Central city

Figure 5.2: Aggregated Environmental Resources

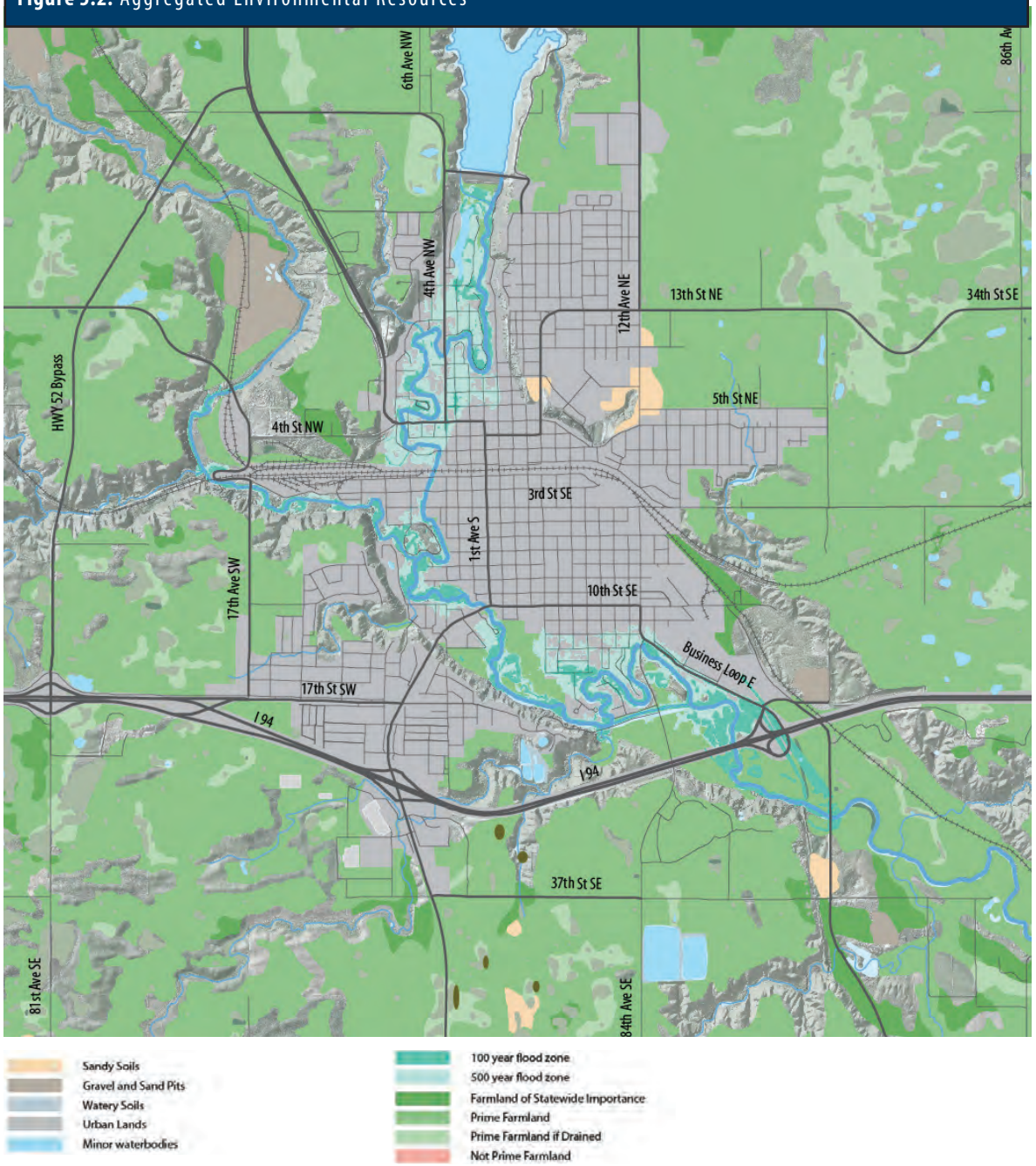
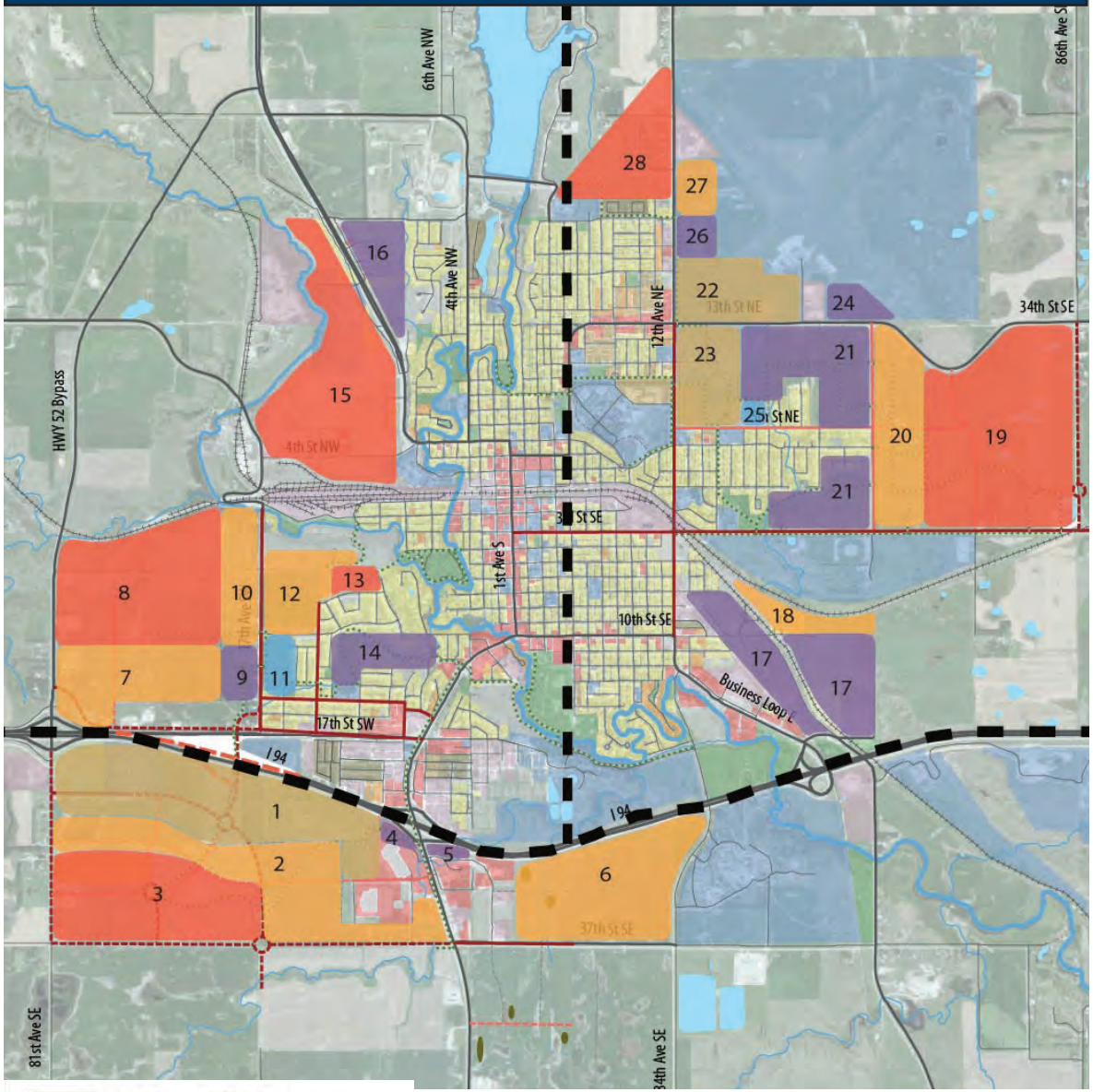


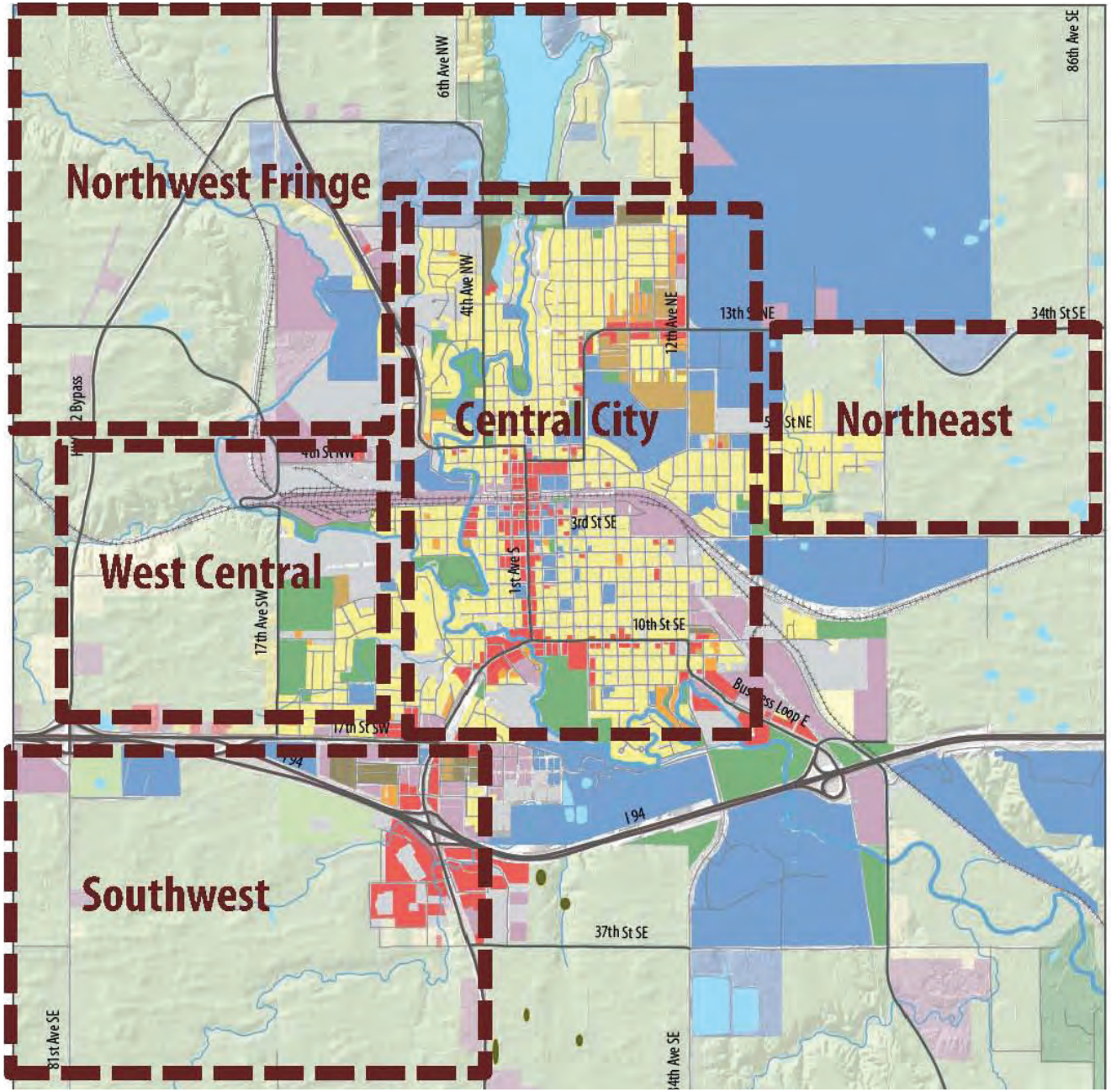
Figure 5.3: Urban Serviceability



opportunities include sites within and around Downtown; infill parcels that have been skipped over because of topography or ownership patterns; and parcels that might experience reuse because of possible institutional relocations like the Carlson Center or other changes in land use created by market forces and household pref-

Developable sites within the Urban Services Area. *Top: A rugged but scenic parcel north of Louis L'Amour elementary school. Bottom: Initial grading on low-density subdivision in the West Central sector west of 17th Avenue SW.*

Figure 5.3: Urban Serviceability



erences.

» **Northwest Fringe**, including much of the Jamestown Reservoir vicinity and generally beyond the reach of urban services.

DEVELOPMENT SCENARIOS

The land use planning process created alternative scenarios that assigned different levels of development to different growth sectors. Because of serviceability issues, most new urban development will occur in the southwest and northeast sectors during the next 25 years. Of the two, the southwest has fewer topographic limits to providing urban services and will probably be the dominant growth area in the long-term. As noted earlier, the West Central sector is experiencing some rural density development as of 2014/2015, but can also support urban development. Infill and reuse opportunities will dominate the central city, while the northwest fringe will continue to see very low density development on well or rural water with septic or self-contained community wastewater systems.

We selected three scenarios for testing for their fit to specific conditions, including development sector area, land availability, and feasible density. In all cases, the scenarios evaluated urban land development, assuming that large lot or rural density development would primarily be located outside the city. The comparison of land demand, density, and supply for each sector used three density points: urban low-density residential, with a gross density of 3 units per acre; medium-density at 6 units per acre; and high-density at 12 units per acre. These scenario assumptions and development assignments were as follows:

» Scenario One. This alternative assigned equal shares of 45% of the projected cumulative demand of about 2,400 units to the northeast and southwest growth sectors, with the remaining 10% to the combined central/west central sector. The scenario projects that the development in both the southwest and northeast sectors to be about 58% urban low, 24% urban medium, and 18% urban high density. It further assumes that the current pattern of low-density development in the west central sector continues and that all urban residential development takes place in medium and high density infill settings in the central city.

» Scenario Two. This alternative assigns 50% and 30% shares of the projected cumulative urban housing demand to the southwest and northeast growth sectors respectively, assuming that the southwest sector will be Jamestown's dominant future growth area. This allocation is consistent with the relative size of the two primary development areas. It also allocates a larger 20% residential share to the west central/central sector, assuming that some of the open land in the west central sector will be developed to urban density. The scenario projects that the development in both the southwest and northeast sectors to be about the same relative percentages of low, medium, and high density development, while the west central/central sector is projected at about 25% low density and 37.5% each medium and high density.

» Scenario Three assigns 55% and 35% shares of residential growth to the northeast and southwest sectors respectively, assumes a lower level of infill development in the central city, and allocates some low-density urban residential to the west-central sector.

Figure 5.4 displays the housing market share assignments, land requirements, and densities for each of the scenarios. Each scenario maintains overall land needs and densities as constants, making size of the sector and relative feasibility of development the primary variables.

Evaluation of the three scenarios leads to the following conclusions:

» Scenario One, assigning equal amounts of development to the northeast and southwest sectors, appears to exceed the amount of readily serviceable urban land in the northeast area. This would either require costly extensions of infrastructure and utility treatment facilities to meet the projected demand, or require housing density that is inconsistent with the basic single-family character of adjacent development. In addition, discounting any urban residential development in the west central sector reduces the number of new residents potentially served by existing parks and schools.

» Scenario Two was designed for consistency with the relative proportions of land in each sector that could feasibly receive urban services. It also assumes that the west central/central sectors accommodate diverse development, including infilll at higher densities, urban density single-family residential, and large-lot single-family that has already been platted in a portion of the area.

» Scenario Three reduces the amount of infill high-density development in the central sector, running counter to the overall guiding

Figure 5.4: Land Use Scenario Analysis

	Growth sector	% share of urban housing	Total Units	Urban Residential-Low	Urban Residential-Medium	Urban Residential-High	Required Land Area	Gross Density
Scenario One	Northeast	45%	1080	631	256	193	269	4.01
	Southwest	45%	1080	632	256	193	269	4.01
	Central/West	10%	240	0	120	120	27	8.89
	Total		2400	1263	632	505	565	4.24
Scenario Two	Northeast	30%	720	429	169	122	181	3.97
	Southwest	50%	1200	714	282	203	302	3.97
	Central/West	20%	480	120	180	180	85	5.65
	Total		2400	1263	632	505	568	4.22
Scenario Three	Northeast	35%	840	477	181	182	204	4.11
	Southwest	55%	1320	726	361	233	322	4.10
	Central/West	10%	240	60	90	90	42.5	5.65
	Total		2400	1263	632	505	568	4.22

idea of an enhanced city center, and requires more residential use in the southwest sector, potentially reducing the amount of land available in that area for continued retail development and new office and institutional uses related to the JRMC.

For these reasons, we believe that Scenario Two represents the best combination of consistency with the amount of land with potential for feasible urban services, development patterns and densities already established in the city, and good policy encouraging diverse development and efficient land use. The Future Land Use Plan is built on and expresses this scenario.

LAND USE CATEGORIES AND SITE CRITERIA

The selected land use scenario allocates the proposed future need for urban land and its various uses to the individual development sectors.

The Future Land Use Plan then establishes a vision for how each of these areas should develop between now and the 2040 target year. While not creating a unified vision, characteristics and site criteria for primary land uses establish a base of good practice for locating land uses. Figure 5.5 on the following pages identify the basic land use categories presented in the future land use plan; and describe the characteristics of each use, the criteria for locating them, and their service and infrastructure requirements. These criteria can also be used to help guide zoning and subdivision reviews and approvals.

Figure 5.5: Land Use Types: Characteristics, Site Criteria, and Urban Service Needs

Land Use	Use/Form/Intensity Characteristics	Location/Compatibility Characteristics	Service and Infrastructure Requirements
Agriculture	• Agriculture will remain the principal use during the planning period. • Very large minimum lot sizes	• Rural areas within the jurisdiction but outside city limits, focusing on areas with prime farmland soils. • Minimal pressure or conflicts from residential or other uses	• Minimal infrastructure. • Extension of urban services will not occur during the foreseeable future.
Rural Residential	• Very large lot, primarily single-family development, with typical lot sizes between 1/2 and 10 acres • Potential rural clustering with appropriate wastewater/water systems • Open space buffers should be provided along arterials for developments at higher densities	• Areas generally within the immediate jurisdiction. May be within the city limits but outside the urban services area. • Buffering or separation from pre-existing agriculture or agricultural industries	• Extension of urban services is unlikely during the foreseeable future. • Community water/wastewater systems in rural cluster developments
Low-Density Urban Residential	• Small to large lot residential, with typical net densities between 2 and 6 units/acre. Average gross density of 3 units/acres. • May include single-family attached at relatively low densities. • Potential lot clustering • Innovative subdivisions or site configurations encouraged through planned unit developments	• Areas should be buffered from uses with adverse environmental effects, including noise, odors, air and light pollution, and heavy traffic • Compatibility may be achieved with density and land use transitions, from lower to higher densities	• Full urban services • Framework of interconnected streets and sidewalks and trails
Medium-Density Urban Residential	• Small lot single-family detached or attached residential, duplex, or townhouse development with typical densities between 4 and 8 units/acre. Average gross density of 6 units/acre. • Potential lot clustering • Innovative subdivisions or site configurations encouraged through planned unit developments	• Reasonable access or location on or near collector or arterial streets • Convenient access to neighborhood commercial services or other significant community resources. • Buffering from or mitigation of adverse environmental effects, including noise, odors, air and light pollution, and heavy traffic • Compatibility may be achieved with density and land use transitions	• Full urban services • Framework of interconnected streets and sidewalks or paths. • Sidewalk and bicycle access is advisable • May include internal or alley access
High-Density (Multiple-Family) Urban Residential	• Townhomes and multiple family buildings, with typical densities up to 20 units/acre. Average gross density is 12 units/acre. • Innovative site configurations encouraged through planned unit developments • May be a component of mixed use projects, or include secondary retail and office uses.	• Adjacency to collector or arterial streets • Convenient access or integration into neighborhood and/or commercial services • Buffering from or mitigation of adverse environmental effects, including noise, odors, air and light pollution, and heavy traffic • Compatibility may be achieved with density and land use transitions	• Full urban services • Framework of interconnected streets and sidewalks or paths. • Sidewalk and bicycle access. • May include internal streets and connections to mixed uses

Figure 5.5: Land Use Types: Characteristics, Site Criteria, and Urban Service Needs

Land Use	Use/Form/Intensity Characteristics	Location/Compatibility Characteristics	Service and Infrastructure Requirements
Neighborhood Commercial	• Commercial clusters of developments serving a trade area up to two miles. • May be integrated into mixed use developments with office and residential uses. • Frontage along streets, with limited direct surface parking exposure along right of way lines. Pad sites may be used to shield parking lot exposure. • Cohesive sign design, with consistency of materials, lighting, and height	• For new facilities, location in commercial nodes, typically at or near intersections of collector and/or arterial streets. • Neighborhood nodes should restrict commercial use to one or two quadrants of intersections • Locations may vary as part of a planned unit development	• Full urban services • In most cases outside of planned developments, direct access to collector or arterial streets. Shared access with other projects is encouraged to minimize curb cuts • Direct pedestrian access from public sidewalks and paths. • Sidewalk and bicycle access • Convenient local access to surrounding neighborhoods with design that discourages external traffic
Community and Regional Commercial	• Commercial clusters of developments serving all of Jamestown and the surrounding area. • May be integrated wherever possible into surrounding office and residential uses. • Frontage along streets, with limited direct surface parking exposure along right of way lines. • Cohesive sign design, with consistency of materials, lighting, and height • Should include public or assembly space, typically in a plaza or urban sidewalk configuration with user amenities	• For new facilities, location in commercial nodes, typically at intersections of arterial streets and highways. • Locations may vary as part of a planned unit development	• Full urban services • In most cases outside of planned developments, direct access to collector or arterial streets. Shared access with other projects is encouraged to minimize curb cuts • When applicable, internal auto and pedestrian circulation systems. • Direct pedestrian access from public sidewalks and paths to major pedestrian ways within project • Pathway, sidewalk, and bicycle access • Convenient local access to surrounding neighborhoods with design that discourages external traffic. • Alternate routes to major facilities.
Offices and Business Parks	• Professional, consumer, and administrative offices • Compatible mixed uses, including medium-density residential and neighborhood commercial are encouraged • Low impact research uses with no perceptible external effects as part of a planned unit development • Minimal location of surface parking between buildings and public streets, with most parking located to side or rear of buildings • Visually restrained signage appropriate in neighborhood context	• Locations typically along collector and arterial streets. • Locations may vary as part of a planned unit development • May serve as a transitional use between residential and commercial development, with intensity and scale stepping down toward lower-intensity residential	• Full urban services • In most cases outside of planned developments, direct access to collector or arterial streets. Shared access with other projects is encouraged to minimize curb cuts • When applicable, internal auto and pedestrian circulation systems. • Direct pedestrian access from public sidewalks and paths. • Bicycle access is advisable

Figure 5.5: Land Use Types: Characteristics, Site Criteria, and Urban Service Needs

Land Use	Use/Form/Intensity Characteristics	Location/Compatibility Characteristics	Service and Infrastructure Requirements
Light Industrial and Business Parks	• Professional, consumer, and administrative offices • Compatible mixed uses, including medium-density residential and neighborhood commercial are encouraged • Low impact research and industrial uses with no perceptible external effects as part of a planned unit development • Visually restrained signage appropriate in neighborhood context	• Locations typically along collector and arterial streets. • Locations may vary as part of a planned unit development • May serve as a transitional use between residential and more intensive industrial development.	• Full urban services • In most cases outside of planned developments, direct access to collector or arterial streets. Shared access with other projects is encouraged to minimize curb cuts • When applicable, internal auto and pedestrian circulation systems. • Direct pedestrian access from public sidewalks and paths. • Bicycle access is advisable
General Industrial	• Broad range of industries with minor external environmental effects at property lines. May include outdoor storage, warehousing and distribution, manufacturing, and office/flex buildings • May include very limited supporting retail and commercial uses for the primary purpose of serving employee and business needs • Landscaping and screening at perimeter conditions and along street exposures. • Screening of high impact site components Special design controls to mitigate visual and operational impact	• Convenient access to major arterials, highways, railroads, and airport as needed. • Locations with limited visibility along major civic corridors. • Locations that are remote from or do not affect incompatible uses such as residential and major commercial.	• Full urban services with adequate availability of water and sewer to serve needs. • Excellent access to transportation facilities without encroaching on lower-intensity uses, particularly residential.
Heavy Industrial	• Broad range of industries with potential or actual external environmental effects at property lines. May include outdoor storage, warehousing and distribution, manufacturing, processing, and office/flex buildings. Some uses may involve hazardous materials. • Special permitting required for certain activities. • May include very limited supporting retail and commercial uses for the sole purpose of serving employee and business needs • Landscaping and screening at perimeter conditions and along street exposures. • Screening of high impact site components • Special design controls to mitigate visual and operational impact	• Convenient access to major arterials, highways, and railroads. • Locations must not affect residential neighborhoods, K-12 schools, and similar uses. • Locations along highways and major arterials with limited visibility from major civic corridors. • Rural locations such as Spiritwood Energy Park without higher density residential neighbors.	• Full urban services with extensively developed transportation, water, and sewer services. May have self-contained water and wastewater disposal systems. • Excellent access to transportation facilities without encroaching on lower-intensity uses. • Internal transportation networks to ensure high efficiency and ease of operation. • Transit service may be desirable in the form of special services or transit "brokerages."

THE FUTURE LAND USE PLAN

The Future Land Use Plan takes a comprehensive approach, integrating transportation, parks, open space, and infrastructure functions into an overall vision for the future city. The transportation and land use concepts are especially inter-related. Areas designated for new development closely approximate the land requirements calculated in Chapter Three. A discussion of major features of the plan for individual use categories follows. Figure 5.6 illustrates the Future Land Use Plan for the Jamestown planning jurisdiction. Figure 5.7 focuses on the immediate urban area and its development sectors.

RESIDENTIAL USES

Each development sector includes residential uses in the proportions provided by the preferred "50/30/20" land use scenario. The largest land use category in area is low-density urban residential, but higher-density residential development is integrated into each residential area.

» In the southwest sector, medium and high-density residential provides a transition between the sector's major concentration of commercial uses and the lower-density uses proposed for the balance of the sector.

» In the northeast sector, the land use plan proposes higher residential densities along major peripheral corridors – 12th Avenue NE, 13th Street NE, and 3rd Street SE – and medium-density development as a transition between these corridors and single-family housing. Medium-density residential also is proposed in neighborhood "cores" discussed below.

» The central sector includes new high-density development in infill sites around the University of Jamestown, Downtown, major mixed use corridors like 10th Street SE, and at opportunity sites that could be available in the future, such as the Anne Carlsen Center site if that institution relocates in the future. Medium-density development is also proposed on buildable parts of the Mill Hill development area north of Louis L'Amour School and west of 7th Avenue SW.

» For the west central development sector, the plan proposes medium-density residential north of Meidinger Park east of 17th Avenue SW and residential with urban services west of 17th Avenue between the extended alignments of 4th and 9th Streets SW. In other parts of this sector, the large-lot pattern established by pre-existing development and the planned Country Side Estates development northwest of 17th Street and 17th Avenue SW predominates.

High-density infill development. *New development serves the University of Jamestown and other multifamily markets.*

» Large-lot and rural density residential development continues in the northwest fringe and reservoir development areas, beyond the city's feasible urban services boundary.

COMMERCIAL USES

The plan for new commercial development continues trends already in place, and supports a policy of incremental contiguous development. It also concentrates on transportation links necessary to provide alternative local routes and reduce dependence on the US 281 corridor.

» Regional, large format retailing will continue to concentrate in the southwest development sector, but will continue to extend west from the original cluster around along US 281 and 25th Street SW, rather than south along the highway. The Menard's project has established this land use direction. The plan proposes transportation improvements, described below, to support this desirable development direction by providing alternative routes to I-94 and US 281.

» A new commercial cluster, probably with a focus on travel services, is proposed at Exit 256.

Commercial potential. *Transportation and public environment improvements can strengthen existing commercial and service corridors like 10th Street SE (top) and 17th Street SW.*

Figure 5.6: Future Land Use Plan, Jamestown and Jurisdiction

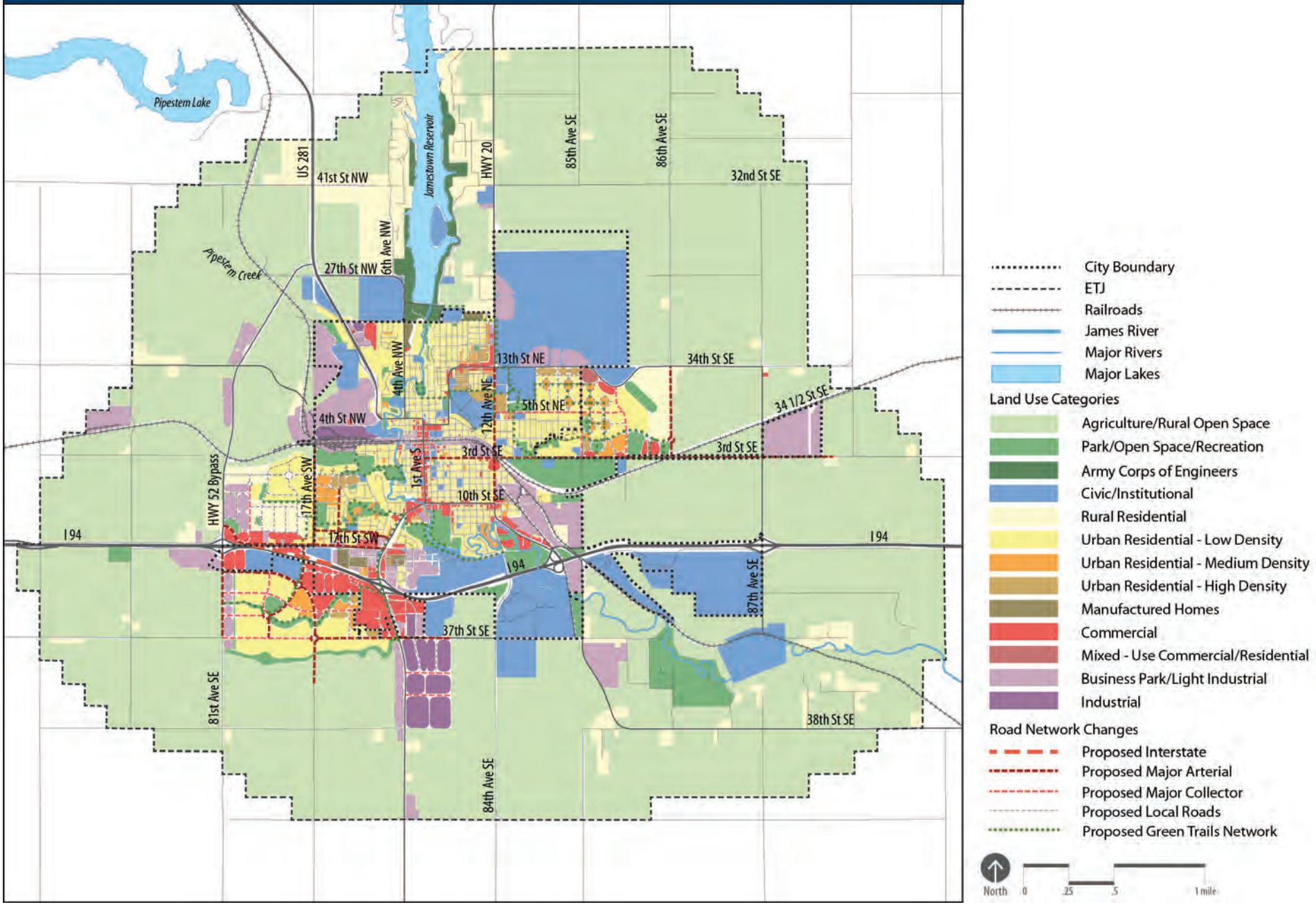
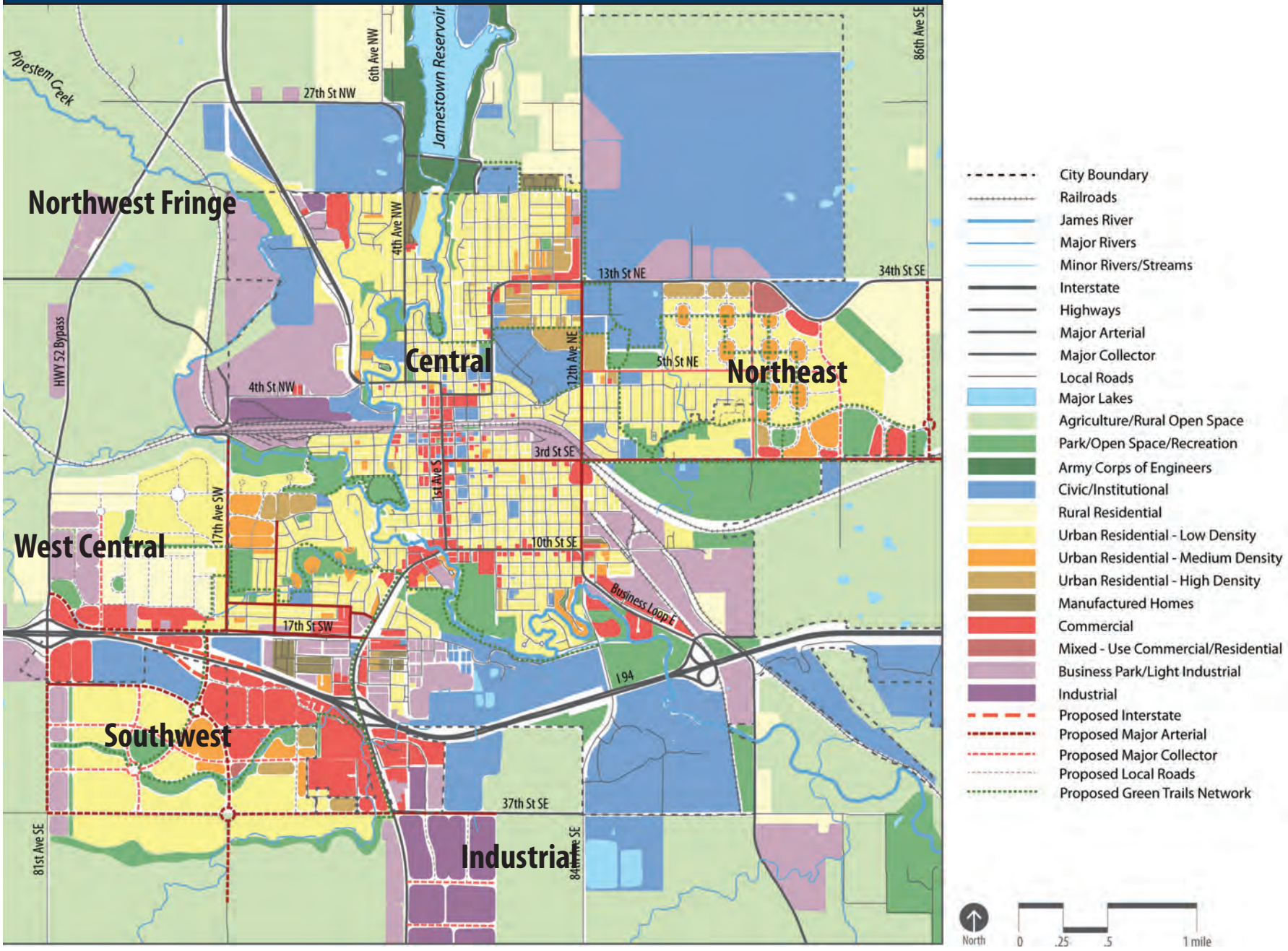


Figure 5.7: Future Land Use Plan, Jamestown Development Sectors



» The northeast growth sector will require a neighborhood commercial/mixed use center to support projected residential development. Consistent with the criteria in Figure 5.5, this commercial node would be located at 13th Street and 27th Avenue NW. Some convenience or neighborhood service development is also appropriate at available sites along 3rd Street SE.

» Tenth Street SE, US 281 between the 10th Street intersection and Mill Hill, 17th Street SW, and the east leg of the I-94 Business Loop can accommodate additional and upgraded commercial development. These areas are identified as special strategy areas and are considered in more detail later in Chapter Seven.

» Commercial and mixed use development in the City Center district (Downtown and the 1st Avenue South corridor to 10th Street) should be reinforced and expanded. Strategies to address these important districts are also discussed in Chapter Seven.

INDUSTRIAL

Much of the area's demand for new industrial sites will be taken by large JSDC developments outside the city, most notably Spiritwood Industrial Park. However, Jamestown will also accommodate significant industrial development in its immediate urban area. Industrial development will focus on the following areas:

» Increased utilization in existing industrial areas, including the I-94 East Business Loop/19th Avenue SE corridor, the railroad corridor, and the 4th Street NW area west of US 281/52.

» JSDC and airport-owned industrial sites adjacent to the regional Airport.

» Expansion of the Jamestown Business Park to the east on the north side of 37th Street SE and along the US 281 corridor south of 37th Street.

» Planned expansion of earlier industrial development along the US 281/52 Bypass south of 4th Street SW.

» New industrial sites with southwest development along 81st Street SW, the south extension of the western bypass.

TRANSPORTATION CONCEPTS

Chapter Six presents detailed transportation projections and network improvement proposals. However, the integrated approach taken by the Future Land Use Plan also assumes some specific major transportation initiatives that include:

» An interconnected street system serving the southwest development sector, linking the hospital east to US 281 by connecting to both 25th Street and 37th Street.

» Removal of Exit 257, and ultimately building a 17th Avenue overpass without an interchange to connect the north and south sides of the city.

» Upgrade of 17th Street SW, paralleling I-94 to the north, as a clear major street connection between the Bypass and Exit 256 and US 281 and Exit 258.

» A new eastside grade separation carrying 12th Avenue SE and potentially 3rd Street SE over the BNSF Railway.

» Major modifications to 1st Avenue in Downtown as a centerpiece to an overall Downtown development program.

» A citywide active transportation system that provides major east-west and north-south corridors, connects the city's peripheral trails, and improves pedestrian and bicycle access to city parks and major activity centers and mixed use corridors.

SECTOR CONCEPTS

In addition to their land use composition and distribution, the concepts for the primary development sectors include individual urban design features that require explanation. These features are highlighted in Figures 5.8 and 5.9.

SOUTHWEST DEVELOPMENT SECTOR

Significant special features in the southwest sector concept include:

» Street network for internal connectivity. Providing a complete network of collector streets will be vital to full utilization of land. The initial component is extension of 20th Avenue SW from its current terminus east to 25th and 37th SW, then using these two corridors to connect to US 281. Exit 257 would be replaced by a new I-94 overpass without interstate access. This provides a connection between the north and south sides of the city, with enhanced access

to the hospital and major retailing, that does not require people to use I-94 or US 281. This in turn expands the capacity and functionality of those principal arterials and reduces friction between local and through traffic. These major corridors would also be complete corridors, designed to accommodate pedestrian and bicycle transportation.

» Neighborhood Common. The plan recommends a central park and school; site in the center of the primary residential area, with road and trail linkages to the surrounding residential areas.

» Green infrastructure. Drainage backups have been a significant problem in the northeast parts of the development sector, as drainage patterns direct stormwater to conduits under the I-94/US 281 interchange. This problem could get worse with upstream urban development. The sector plan calls for expanding the east-west drainage swale to a full greenway with significant detention capacity. This greenway would also touch the central parksite, and include a trail that connects new residential neighborhoods to the mall area and the existing US 281/Mill Hill Path.

CENTRAL/WEST CENTRAL DEVELOPMENT SECTORS

Chapter Six discusses transportation initiatives in these areas and Chapter Seven presents detailed focuses on Downtown and the 10th Street SE Corridors. Other features proposed by this land use plan include:

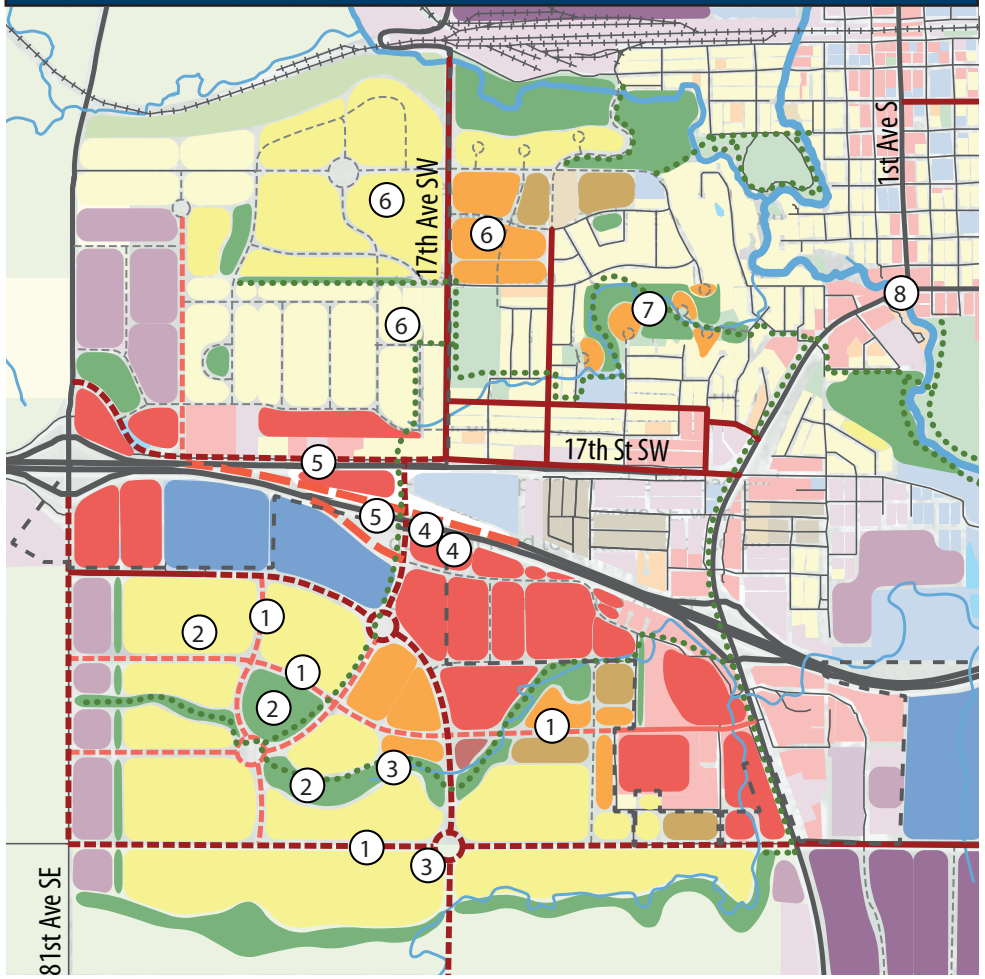
» Cluster residential development and trails and a greenway north of Louis L'Amour Elementary School. The concept for this rugged but promising site recommends clusters of relatively high-density single family homes on higher or relatively developable nodes reachable from 13th Avenue SW, 11th Avenue SW, 9th Avenue SW, and 7th Avenue SW. A lower valley area surrounded by steep slopes would be a greenway and trail corridor, connecting 7th Avenue SW to the elementary school. Local streets and paths would then connect to Meidinger Park and residential areas to the west, as well as to 17th Avenue SW and the future I-94 overpass. Figure 5.10 displays this concept.

NORTHEAST DEVELOPMENT SECTORS

Significant special features in the northeast sector concept include:

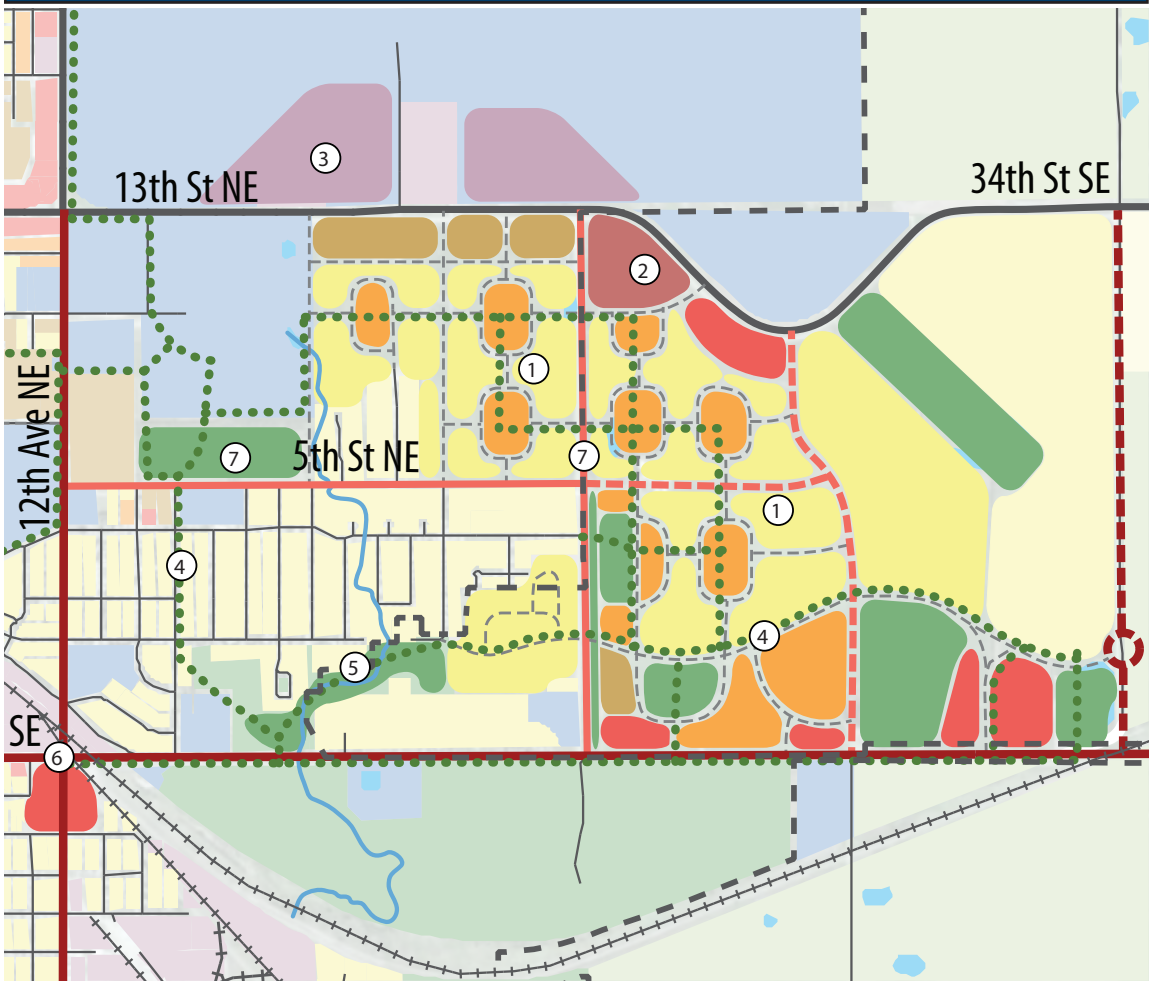
» A neighborhood unit concept. This concept provides street connectivity that discourages through traffic by interrupting a grid of

Figure 5.8: Southwest and West Central Sectors: Highlights



1- New southwest road system connecting the hospital with 25th Street and 37th Street.
2- New residential neighborhood and central park and school south of the hospital.
3- Greenway and trail for stormwater management, pedestrian and bicycle transportation linking new neighborhoods to the US 281 Path and commercial district, and recreation.
4- Replacement of the "left-off" Interchange 257 with a new 17th Avenue overpass without I-94 access to serve local traffic
5- Redesign of 17th Sby intertreet SW for continuity between the west bypass and US 281 and greater safety.
6- New residential areas along 17th Ave SW with medium density development north of Meidinger Park and low density single-family development west of 17th Avenue.
7- A Wilderness Park and trail with residential clusters north of Louis L'Amour School.
8- Improved bike/pedestrian connection from the 52/281 Path to Downtown, including redesign of the 1st Avenue and 10th Street intersection.

Figure 5.9: Northeast Sector: Highlights



1 - New northeast residential neighborhoods with connected streets and paths. Development diagram proposes medium density residential in the center of a neighborhood unit with a street pattern that maintains connectivity but discourages through traffic on local streets. Pedestrian paths and bicycle links connect the neighborhood units.

2 - Neighborhood commercial center.

3 - Airport Business Park sites.

4 - Greenway trails with links to high school, university, and the city center.

5- East-west greenway for trail and stormwater management.

6 - New overpass over the railroad and 3rd Street at 12th Avenue SE, with a quadrant road to connect back to 3rd.

7 - Proposed recreation center.

8- Improved 27th Avenue West.

streets with loops that enclose medium-density housing development. This pattern also establishes a grid of neighborhood paths and greenways that provide full pedestrian connectivity. This green path system connects to a neighborhood commercial center, the high school campus, and other major paths. Figure 5.11 illustrates the concept in more detail.

» Major greenway links. The greenways both assist with stormwater management and provide continuous greenways and trails that connect residential areas to major community resources. A north-south corridor extends from Jamestown High School through the proposed recreation center site and to Bunker Park via 15th Avenue NE to Bunker Park and the 3rd Street SE corridor. A east-west greenway would start at Bunker Park and continue east along a drainageway and swale as far as 86th Avenue SE.

DEVELOPMENT PHASING

The Land Use Plan is designed to accommodate Jamestown's expected development through 2040, with a reserve area to provide alternatives. However, this growth will not happen at once, nor will all supporting improvements be needed at the same time. Guiding development through a phasing plan encourages more affordable and incremental extensions of utilities, reducing public risk and avoiding unnecessary front-end costs. It also makes the plan more responsive to faster or slower than expected growth and makes transportation planning more precise, ensuring that projects are planned and funded as needed. The Land Use Plan classifies new growth into three tiers:

» **Tier One** are areas where development is anticipated between 2015 and 2025. Public infrastructure would be extended in these areas using public financing tools or public/private partnerships.

» **Tier Two** are areas where development is anticipated between 2025 and 2040, and the areas contiguous to Tier One can provide a reserve if some Tier One area are not available for urban development. Infrastructure may be extended into these areas, but at the developer's expense.

» **Tier Three** are areas where development is likely to occur after 2040, but provide a back-up reserve if some Tier Two properties are unavailable for urban development.

Landscape and potential development area north of Louis L'Amour Elementary School.

Land in the northeast development sector.

Figure 5.10: Louis L'Amour/Mill Hill Cluster Concept

Figure 5.11: Northeast Neighborhood Unit Concept

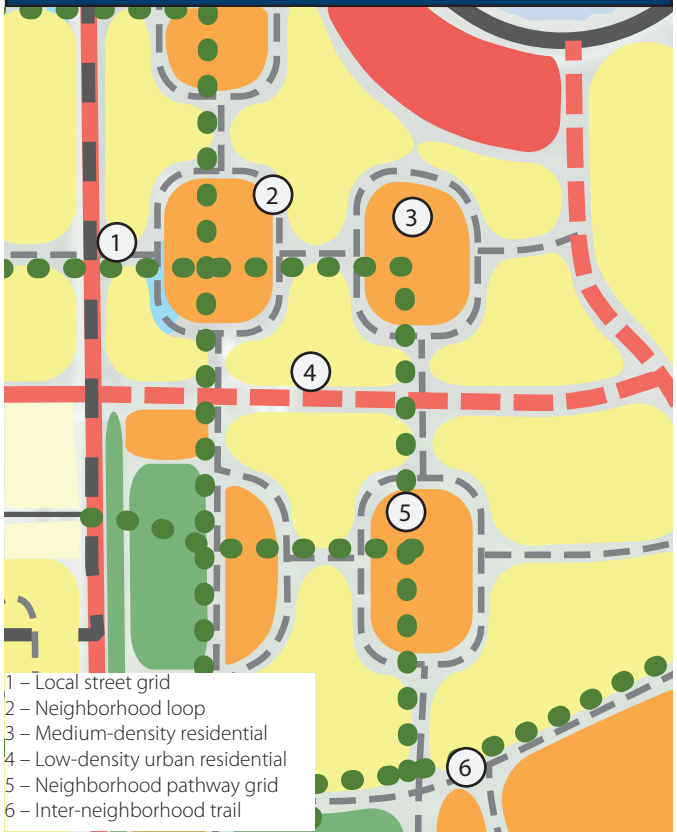
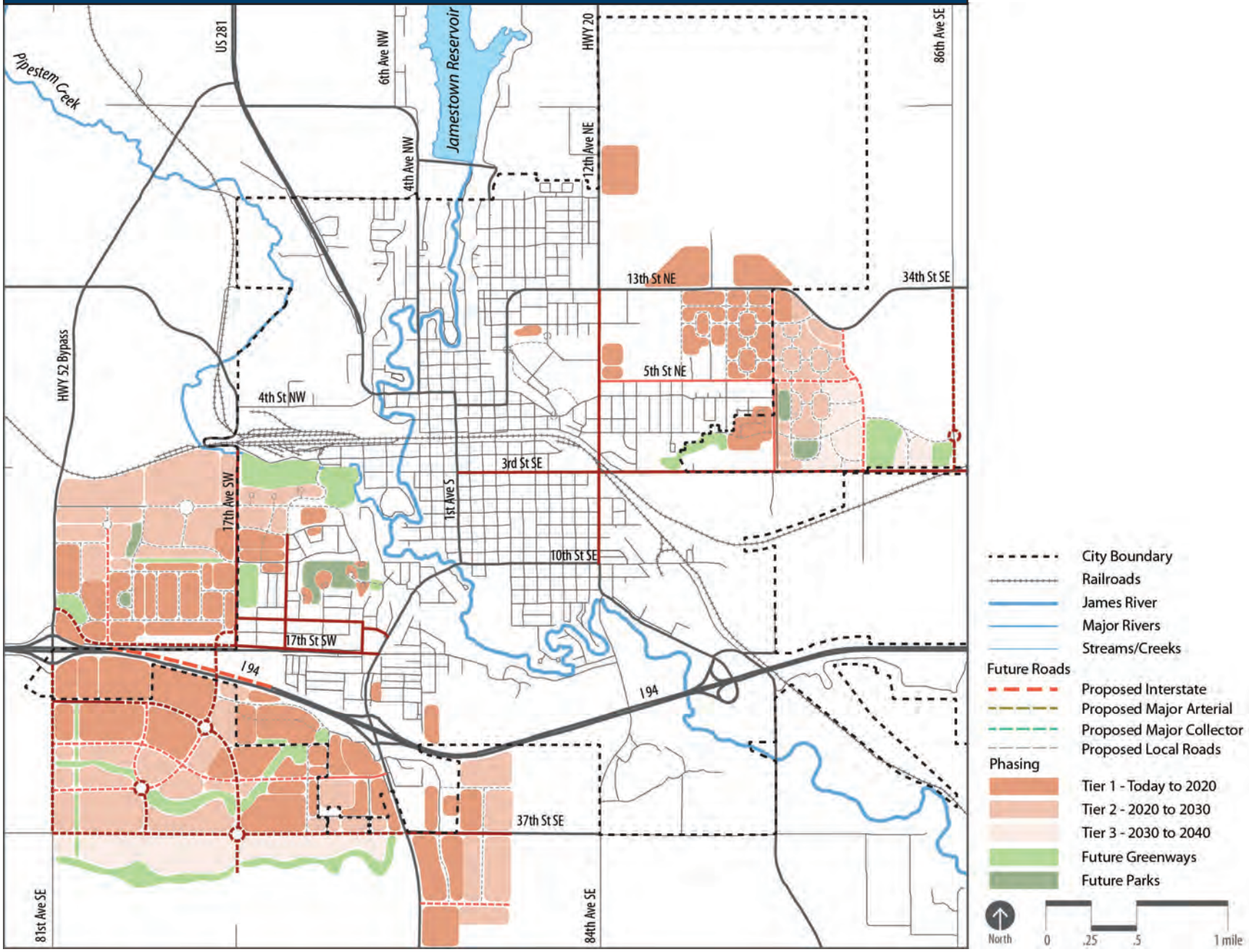


Figure 5.9: Northeast Sector: Highlights

	Tier One		Tier Two		Tier Three	
	Units	Acres	Units	Acres	Units	Acres
Southwest						
Urban Res-Low	407	136	201	67	106	35
Urban Res-Med	161	27	79	13	42	7
Urban Res-High	116	10	57	5	30	3
Northeast						
Urban Res-Low	244	81	121	40	64	21
Urban Res-Med	96	16	48	8	25	4
Urban Res-High	69	6	34	3	18	2
Central/West						
Urban Res-Low	68	23	34	11	18	6
Urban Res-Med	102	17	51	8	27	4
Urban Res-High	102	9	51	4	27	2

These size and sequencing of these areas is consistent with housing demands calculated by five-year increments for the next 25 years. These phases then establish midpoint projections that we can then use to help when specific transportation and facility improvements will become necessary. Figure 5.12 displays the number of urban residential units and amount of land that will be needed during each development phase, based on the preferred 50/30/20 growth scenario. Figure 5.13 maps the development phases.

Figure 5.13: Development Tiers



chapter six

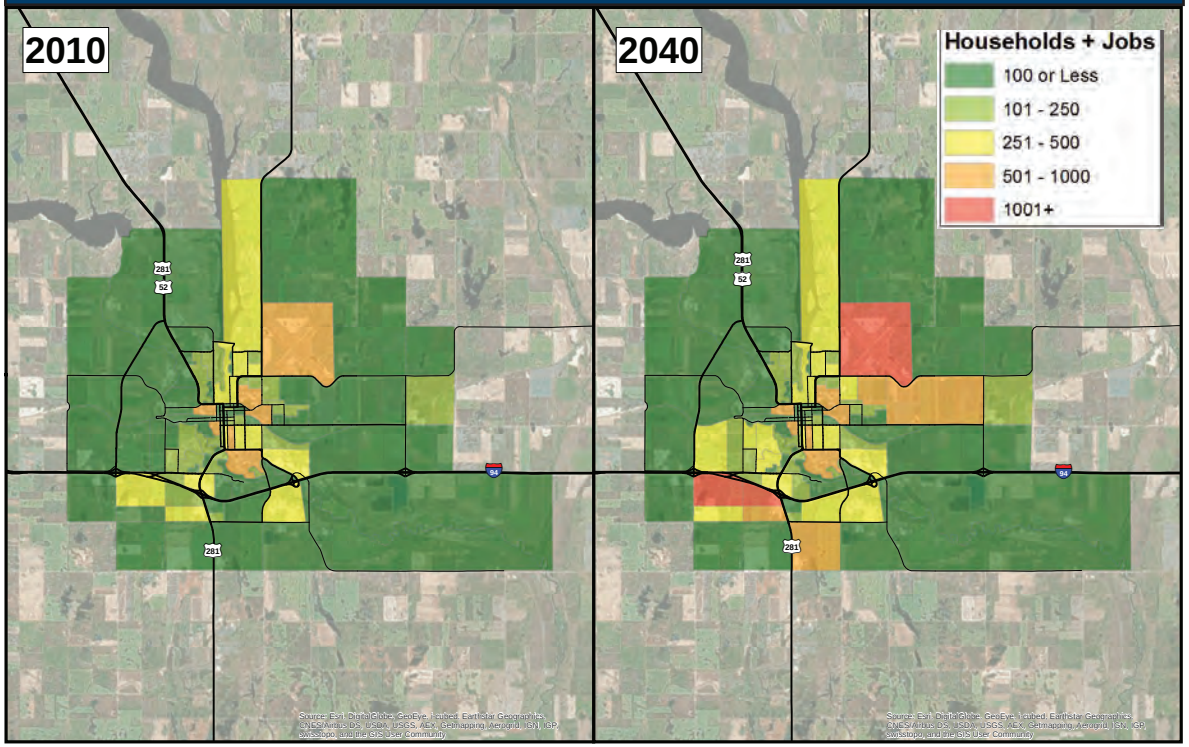
Moving Jamestown: The Transportation Plan

Transportation is the framework system that is perhaps most fundamental in supporting Jamestown's growth and future development vision. This chapter presents that plan for future improvements and includes three sections: traffic forecasts that project future traffic volumes; goals for the city's future transportation system; and the program of improvements that execute those goals.

PART ONE: FUTURE CONDITIONS

The Land Use Plan provides the basis for constructing a traffic demand model to project how probable development affects the transportation system, identifies future needs based on capacity issues, and tests the feasibility and beneficial impact of potential solutions. The Jamestown jurisdiction was previously divided into Transportation Analysis Zones (TAZ's), geographic areas used for the purpose of calculating trip generation and travel patterns. Household, population, and employment numbers projected by the year 2040 land use plan and a midpoint are calculated for each zone and changes tracked from the base year of 2010. Figure 6.1 displays these calculations and changes over this period. Estimated traffic volumes from future land uses were then assigned to the existing and future street network. Most of the functionally classified streets were included in the existing network. A few collector roadways in the downtown were not included due to the size of the TAZ and proximity to other functionally classified streets.

Figure 6.1: Housing and Employment Estimates by Traffic Analysis Zones, 2010-2040



The travel demand model was used first to estimate the amount of traffic on the existing road system for year 2040, the no-build scenario. The no-build conditions assumed future population and employment growth but no improvements to the roadway network. The no-build scenario, did, however include projects that already have funding committed for the next several years, none of which changed roadway capacity. Alternatives were identified and evaluated based on existing and future traffic volumes.

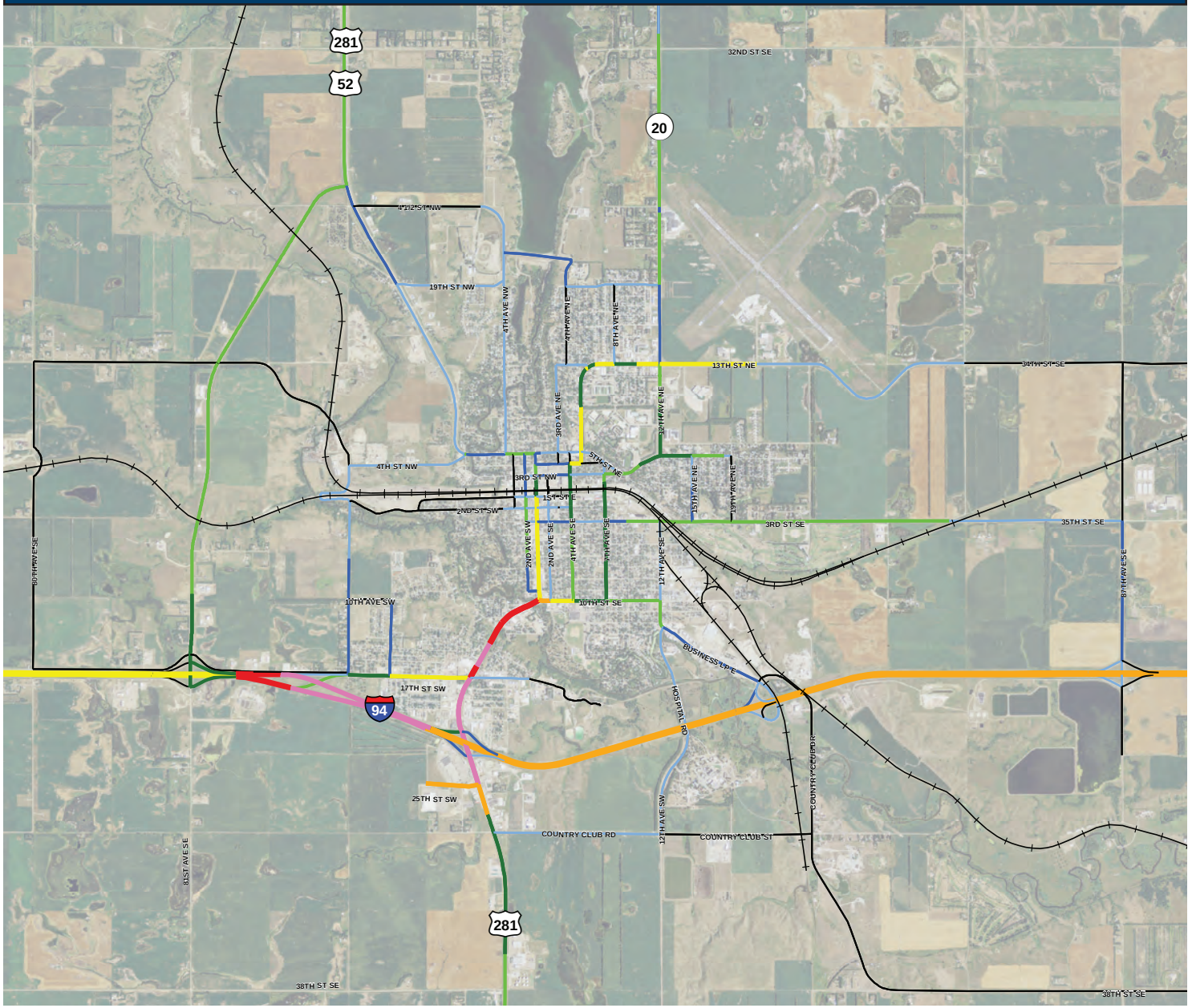
Secondly, the travel demand model was used to evaluate the impacts of new roads and new barrier crossings in the future street network. This becomes significant for analyzing potential project alternatives. Figure 6.2 illustrates projected 2040 traffic volumes under the existing transportation network in Jamestown.

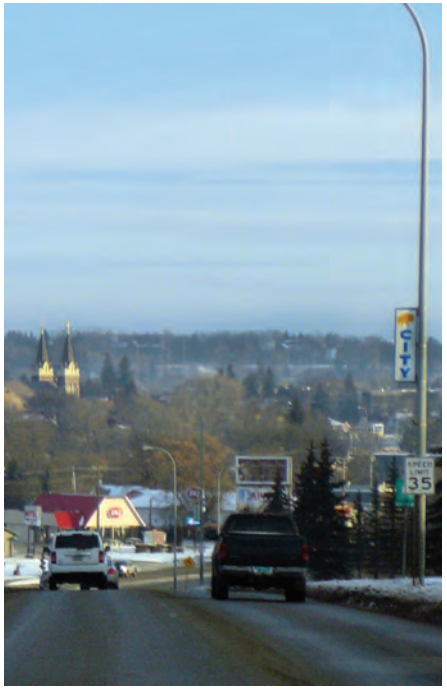
Estimated 2040 traffic volumes were used to determine the level of congestion that can be expected in Jamestown through 2040 under the existing transportation network. 2040 roadway levels of service on the existing roadway system can be seen in Figure 6.3.

Currently, Jamestown's street network operates at Level of Service (LOS) C or above, considered to be an good target for traffic operations in cities. Only one intersection, at 4th Avenue SE and 3rd Street SE operates at LOS D. Based on the model results, the existing and committed network (existing streets and projects to which funds have been committed) will continue to function at this level in 2040, even with projected development with two exceptions: 25th Street SW and 17th Street SW. 25th Street SW west of US 281 which drops to an unacceptable LOS F. This occurs because the lack of a supporting system and alternative routes, channels all traffic from future southside residential and commercial growth to this already busy commercial street.17th Street SW is expected to operate at LOS E.

The model reinforces the perception of participants in the planning process that Jamestown's transportation problems are not issues of lack of capacity or congestion. Instead, they relate to safety, emergency access, connectivity, and mode choice.

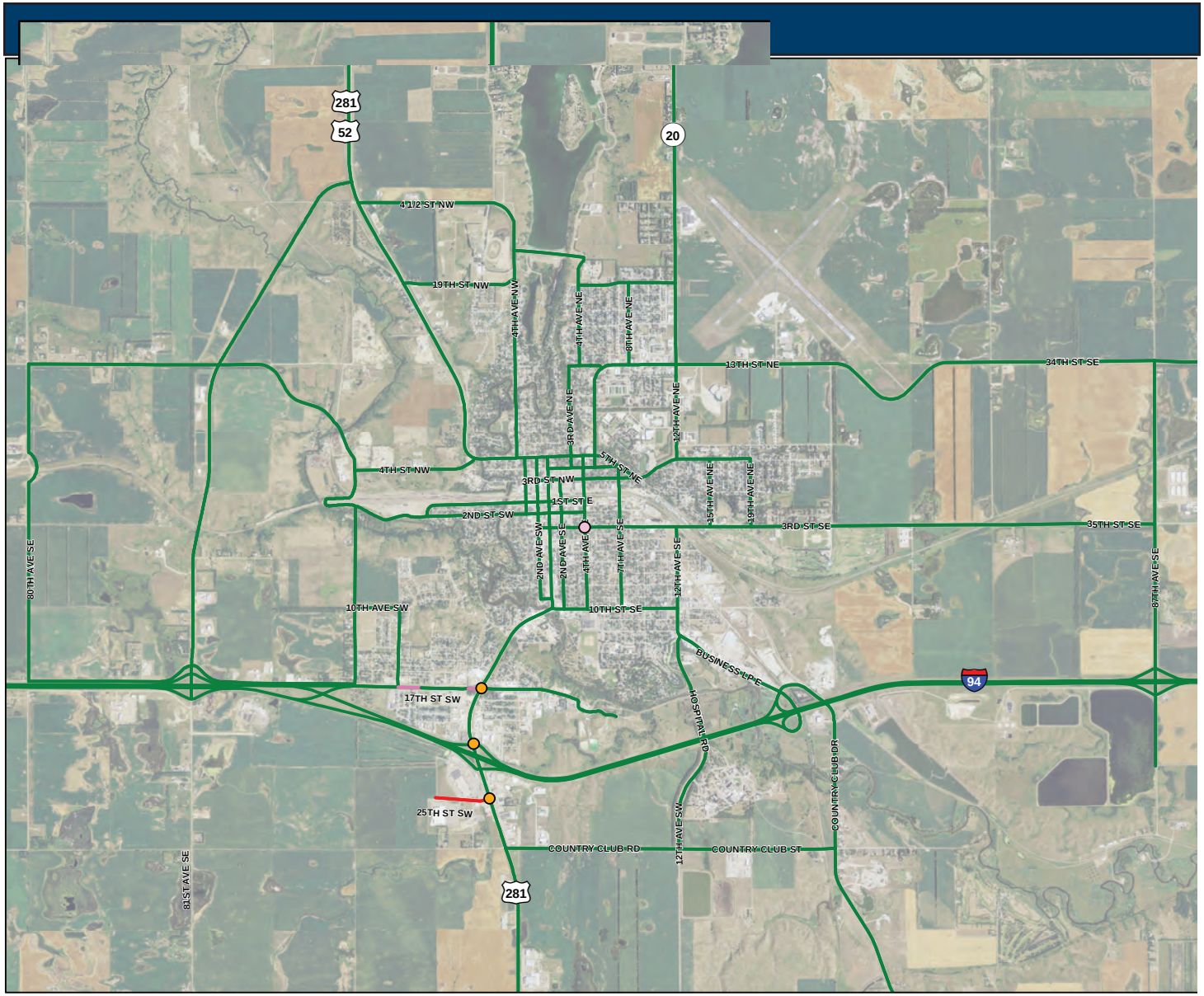
Figure 6.2: Projected 2040 Traffic Volumes on Existing and Committed Network





2040 Daily Traffic Volumes

- 0 - 1,000
- 1,001 - 3,000
- 3,001 - 5,000
- 5,001 - 7,000
- 7,001 - 10,000
- 10,001 - 15,000
- 15,001 - 20,000
- 20,001 - 25,000
- 25,001+



2040 Traffic Operations

Intersection Level of Service

- LOS D
- LOS E
- LOS F

- LOS C or Better
- LOS D
- LOS E
- LOS F

PART TWO: GOALS, OBJECTIVES, AND PERFORMANCE MEASURES

The current Federal Transportation authorization, Moving Ahead for Progress for the 21st Century Act (MAP-21), requires states and Metropolitan Planning Organizations to develop goals and objectives that conform to national standards outlined in the bill. While the City of Jamestown is not mandated by law to develop goals and objectives since its population is under 50,000, doing so will provide the ability to track progress and identify projects that fit into statewide goals.

MAP-21 established seven national performance goals:

1. **Safety** – To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
2. **Infrastructure Condition** – To maintain the highway infrastructure assets in a state of good repair.
3. **Congestion Reduction** – To achieve a significant reduction in congestion on the National Highway System.
4. **System Reliability** – To improve the efficiency of the surface transportation system.
5. **Freight Movement and Economic Vitality** – To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets and support regional economic development.
6. **Environmental Sustainability** – To enhance the performance of the transportation system while protecting and enhancing the natural environment.
7. **Reduced Project Delivery Delays** – To reduce project costs, promote jobs and the economy and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

MAP-21 also requires that plans adhere to eight Transportation Planning Factors introduced in the previous Federal Transportation Law, Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU):

1. **Economic Vitality** – Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency.
2. **Safety** – Increase the safety of the transportation system for motorized and non-motorized users.
3. **Security** – Increase the security of the transportation system for motorized and non-motorized user.
4. **Accessibility** – Increase the accessibility and mobility of people and for freight.
5. **Environment** – Protect and enhance the integration and con-

Figure 6.4: MAP-21 Goals Compared with SAFETEA-LU Planning Factors

		National Performance Goals						
		Safety	Infrastructure Condition	Congestion Reduction	System Reliability	Freight Movement & Economic Vitality	Environmental Sustainability	Reduced Project Delivery Delays
Transportation Planning Factors	Economic Vitality					•		
	Safety	•						
	Security							
	Accessibility			•	•			
	Environment						•	
	Connectivity Across Modes				•			
	System Management & Operation				•			
	System Preservation		•					

nectivity of the transportation system, across and between modes, people and freight.

6. **Connectivity Across Modes** – Enhance the integration and connectivity of the transportation system across and between modes for people and freight.
7. **System Management and Operation** – Promote efficient system management and operation.
8. **System Preservation** – Emphasize the preservation of the existing transportation system.

Figure 6.4 shows that most performance goals overlap with the planning factors; the planning factor "security" does not have a direct counterpart in the performance goals, while the performance goal "reduced project delivery delays" does not correspond with any of the planning factors.

Based on the goals and planning factors presented above, goals, objectives and performance targets were developed for the Jamestown transportation system. Goal priorities were based on public input from the first public input meeting and results of other parts of the community engagement process as discussed in Chapter Four.

GOAL 1: SAFETY

To achieve a significant reduction in traffic fatalities and serious injuries on all public roadways.

Objectives

» Reduce the number of fatality, injury and incident rates for all modes of travel.

» Increase public awareness of safety issues that results in changed behavior and a safer transportation system.

» Identify, improve and maintain Safe Routes to Schools.

» Promote Complete Streets concepts so that streets are planned, designed and operated to maximize safe access for all users of all ages and abilities.

» Improve awareness and safety for pedestrians and bicyclists by educating all pedestrians, bicyclists and motorists on rules and responsibilities.

Performance Targets

» Substantial progress toward the goal of zero roadway fatalities by 2040.

» Reduce crashes per capita by 2040.

Monitoring Activities

Every five years review crash data and reevaluate critical crash rates to confirm that improvements effectively mitigated crash susceptibility and confirm that new crash hotspots have not developed.

GOAL 2: SYSTEM RELIABILITY

To improve the efficiency of the surface transportation system.

Objectives

» Define a proper mix of local, collector and arterial streets according to land use and network continuity to ensure the future roadway system provides an acceptable balance of land access and travel mobility.

» Improve regional connectivity across barriers such as the interstate, railroad, rivers and harsh terrain.

- Provide transportation alternatives that are suited to, and supported by, existing and future land uses in the region and to catalyze centers including infill and redevelopment areas.
- Develop right-of-way preservation and roadway cross-section standards to promote organized and structured roadway expansion that allows for efficient network connectivity, mobility and accessibility.
- Improve bicycle and pedestrian system accessibility and connectivity opportunities.
- Create multimodal connections between bicycle, pedestrian and automobile travel.
- Performance Targets
- Reduce vehicle miles travelled per capita by 2040 through strategic barrier crossings and improved integration between land use and the transportation system.

Monitoring Activities

Continuously confirm that development patterns match the Land Use Plan by tracking building permits and platting activities. Every five years monitor vehicle miles travelled to confirm that completed improvements are effective in reduce miles travelled.

GOAL 3: FREIGHT MOVEMENT AND ECONOMIC VITALITY

To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets and support regional economic development.

Objectives

- Enhance the area's economic competitiveness through the movement of goods and services by the most direct route and by reduction or elimination of freight linkage deficiencies to commercial and industrial centers.
- Support the economic vitality of Jamestown by giving people better access to jobs and educational services as well as giving businesses access to markets with minimal impacts from freight and rail movement.
- Consider economic development activities in the transportation planning process.

Performance Targets

- Achieve and maintain acceptable levels of service on all major freight corridors through 2040.
- Maintain acceptable levels of service on all major commuter arterials that intersect freight corridors (roadway and rail.
- Ensure 90 percent of economic development initiatives are consistent with the Long Range Transportation Plan and Land Use Plan.

Monitoring Activities

Continuously track freight generators through building permits and platting activities. Every two years coordinate joint meetings with the freight community and transportation agencies to address needs. Every five years evaluate volume/ capacity ratios, levels of service and the amount of delay on key corridors to ensure operations are acceptable.

GOAL 4: REDUCED PROJECT DELIVERY DELAYS

To reduce project costs, promote jobs and the economy and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

Objectives

- Plan for a transportation system that is affordable, sustainable and makes the best use of public financial resources.
- Identify non-traditional funding opportunities to support transportation needs.
- Develop policies to support consistent application of development-related improvement requirements and streamlines project development.

Performance Targets

Complete 85 percent of programmed projects proposed in a given year by the city's Capital Improvement program.

Monitoring Activities

Annually monitor execution and seek out non-traditional funding opportunities.

GOAL 5: INFRASTRUCTURE CONDITION

To maintain the roadway infrastructure assets in a state of good repair.

Objectives

- Maintain pavement quality and bridges at an acceptable level.
- Equitably account for roadway, trail and sidewalk network maintenance in the financial element of the plan.
- Improve the cost-effectiveness of maintenance and preservation of the existing pavement.
- Performance Targets
- 100 percent of pavement classified at "Fair" or better by 2040.
- 100 percent of bridges classified as "Fair" or better by 2040.

Monitoring Activities

Every two years review bridge inspection reports. Every five years

collect pavement surface distress data.

GOAL 6: CONGESTION REDUCTION

To achieve a significant reduction in congestion on the transportation system.

Objectives

» Provide an acceptable level of service for all roadways and intersections during peak hours.

» Increase the use of alternative modes of travel. Specifically, ensure that mobility challenged populations, such as low income, persons with disabilities and senior citizens, have travel options in the region.

» Increase access to additional modes by replacing and retrofitting transportation facilities in the existing system to allow for a wide range of transportation options.

» Improve incident management and emergency response times within the Jamestown area.

Performance Targets

» Achieve and maintain acceptable levels of service on all roadways and intersections through 2040.

» Double the modal share of walking and biking by 2040.

Monitoring Activities

Annually monitor modal splits to evaluate whether improvements and initiatives intended to reduce dependency on motor vehicles are effective. Every five years evaluate volume/ capacity ratios, levels of service and delay on key corridors to ensure operations are acceptable.

GOAL 7: ENVIRONMENTAL SUSTAINABILITY

To enhance the performance of the transportation system while protecting and enhancing the natural environment.

Objectives

» Minimize adverse community, historical and environmental impacts during the planning and construction of transportation programs and projects.

» Encourage context sensitive design principles into project development for corridors and transportation infrastructure.

» Minimize vehicle miles travelled to reduce carbon emissions and other air pollutants associated with motorized vehicles to improve air quality. (Note: While not mandatory because North Dakota has no air quality non-attainment areas in 2015, reducing carbon emissions remains a desirable national and global objective)

» New or widened transportation facilities should seek to minimize impacts to established neighborhoods, specifically neighborhoods in areas of low incomes and minority concentrations.

Performance Targets

Reduce carbon dioxide emissions by reducing regional vehicle miles travelled and vehicle hours of delays by 2040 through increased modal split, reduced barriers, improved capacity and improved land use collaboration.

Monitoring Activities

Monitor modal splits using American Community Survey (ACS) data, other available information, and user surveys on a regular (potentially biennial) basis to evaluate the effectiveness of improvements and initiatives intended to reduce dependency on motor vehicles. Every five years monitor vehicle miles travelled and vehicle hours of delay

PART THREE: ISSUES, NEEDS IDENTIFICATION AND NETWORK PLAN

This part expands upon previously identified general issues to identify a program of improvements that achieves the plan's goals and objectives. This transportation element of ***Forward Jamestown***, takes a strategic approach, addressing key community needs and integrating all systems to create an economically stronger, more sustainable city. The city's fundamental transportation issues focus on north-south connectivity, safety, railroad corridor crossings, urban street function and quality, and transportation choice.

In this section, we present a detailed analysis of projects and priorities that determine the shape and sequencing of an implementation plan. This analysis uses the process illustrated in Figure 6.5 to identify and screen potential transportation improvements throughout Jamestown. Later, in Chapter Ten, we relate the improvement concepts that emerge to "fiscal constraints" to create a program that most effectively achieves community goals with the resources that we are likely to have.

KEY COMMUNITY TRANSPORTATION ISSUES: A RECAP

The transportation network analysis (Chapter Three) and community engagement process (Chapter Four), identified several key transportation issues for the city and the priorities of its citizens and businesses:

» Existing land use patterns and a lack of alternative routes that produce an "hour glass" shape of the north-south arterial and collector road system. This funnels crosstown north-south trips through the downtown district and along the US 281 conduit between the city center and I-94 Exit 258. As growth and north-south traffic movement increases, traffic conflicts and safety issues involving the mix of interstate traffic, truck movements, and local movements through the hourglass also increase.

» Mixing of through traffic and trucks with local automobile traffic.

» The lack of street connections between the Jamestown Regional Medical Center (JRMC) and the rest of the community, producing conflicts between slower speed local traffic and the high speed through traffic on I-94 between Exits 256 and 257. This lack of collector street links also restricts development in the southwest development sector, one of Jamestown's prime land resources given the medical center and concentration of major retailing south of I-94.

» The lack of grade separated crossings of the BNSF mainline and the deteriorating condition and vulnerability to flooding of the only north-south railroad grade separation within the city (4th Avenue East). This both leads to routine delay and inconvenience and puts Jamestown at risk to being physically divided during major cobtingencies like severe storms.

» Barriers to access presented by the meandering James River/Pipestem Creek system and the BNSF corridor.

» Negative impact of regional truck and automobile traffic on the character and vitality of the city center, residential neighborhoods, and major activity centers.

» The general lack of connected pedestrian and bicycle facilities throughout Jamestown, and specific safety problems and barriers faced by people moving under their own power. Pedestrians and bicyclists are discouraged when forced to compete in the same space with heavy car and truck traffic.

Figure 6.5: Improvement Project Selection Methodology

Chapter Five's Future Land Use Plan and transportation ideas considered these issues in shaping how proposed growth areas interact with the existing and future transportation system. For example, the 50/30/20 preferred land use concept's distribution of new residential growth and employment, along with its proposals for alternative

routes, reduces the "hour glass" effect. By promoting a more diverse mix of uses in different growth centers, more trips can avoid crossing town through the 1st Avenue/US 281 conduit. Also, integrating living, shopping, and employment environments can reduce trip length, increasing the feasibility of making those trips on foot or by bike. Implementing mixed use development, smart growth principles and key transportation system components can respond to community needs by:

- Creating a more connected community with more walking and bicycling opportunities.
- Shaping a more balanced, reliable and connected transportation system by providing route and mode choices through greater connectivity.
- Providing a more secure transportation system for reliable emergency access across barriers.

Forward Jamestown's transportation network recommendations are presented in the following categories of initiatives:

- Crossing barriers, focusing on improving both mobility and access by improving connections across the interstate, railroad, and river system and providing better service to currently isolated areas and uses.
- Traffic operations and capacity, addressing the fit between the intended function of transportation network elements (roadway functional classification) and current operations.
- Truck routes
- Infrastructure condition
- Traffic operations and safety
- Active transportation, making pedestrian and bicycle transportation integral parts of the Jamestown network.

CROSSING BARRIERS

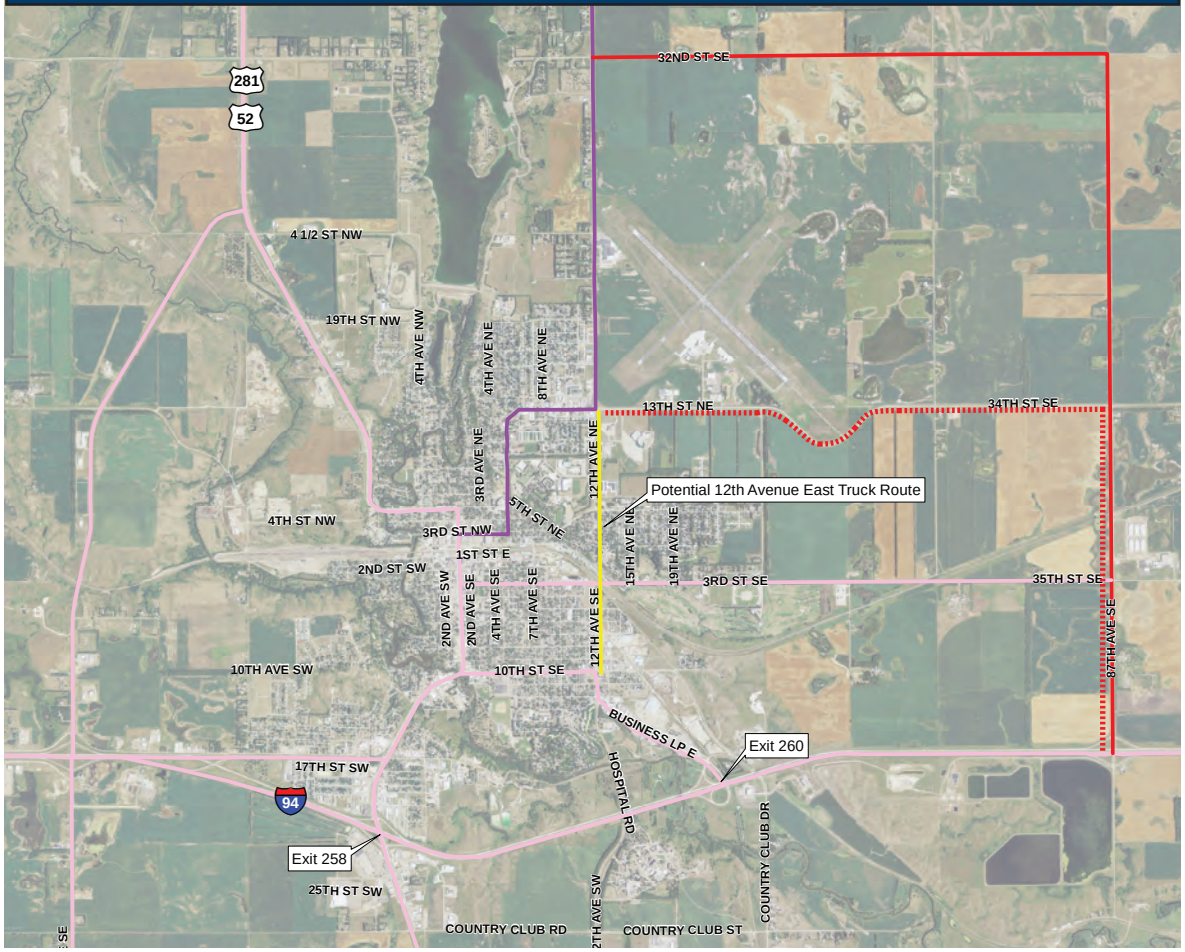
Barrier crossings are an important aspect of any transportation network. Barriers like rivers, steep terrain, railroads, and interstate highways limit transportation network connectivity and can force travelers to use longer routes or reduce travel options, compounding a variety of operational and safety problems. Jamestown, of course, has all these barrier problems in abundance. Barriers are most frequently crossed by bridges or grade separations, which are expensive to build and maintain. But these crossings also provide substantial benefits by reducing travel time and distance on the roadway system and providing access where none existed before. Unlike most spot improvements whose benefits are felt only in the immediate area, a well-placed barrier crossing can provide citywide and even regional benefits.

To plan effectively for future barrier crossing improvements, this plan identifies the needs, alternative solutions, and funding possibilities. However, proposed barrier crossing locations and alignments will inevitably require further study during the environmental clearance and design process.

The ***Forward Jamestown*** process considered barrier crossing needs and alternatives at several locations:

- Between ND 20 and I-94 in east Jamestown to relocate ND 20 truck traffic away from the city center.
- Across the BNSF railroad tracks as an additional grade separated

Figure 6.6: Alternative ND 20 Connections to I-94



Other Truck Routes

Existing ND 20 Route

Visionary ND 20 Bypass

ND 20 Short-Term Alternative

crossing for north-south travel

» Across I-94 to link the growing area to the southwest with the rest of the community, while also reducing concentrated traffic on the existing road network

» Across the James River in west Jamestown, where the river and steep terrain create gaps in the street system

» For pedestrian and bicycle access, across the James River in the vicinity of US 281 through central Jamestown (discussed in the Pedestrian and Bicycle section of this chapter)

ND 20 CONNECTION TO I-94

North Dakota Highway 20 currently winds through town on a route that takes it past the airport and along 13th Street NE, 5th Avenue NE, and 4th Street NW before joining the US 52/281 route at 1st Avenue N. Travelers can then reach I-94 by following US 52/281 to Exit 258, or the US 52/281 Business Loop to Exit 260. The route from the southwest corner of the airport (12th Avenue N/13th Street NE) to Exit 258 is 2.9 miles, while the route through town to Exit 260 covers 4.0 miles, both entailing travel through the city. An alternate route that avoids the more intensively urbanized area turns east on 13th Street NE past Jamestown High School, and uses the continuation of that road and 87th Avenue SE to the Bloom interchange at I-94, a distance of 5.1 miles. Figure 6.6 illustrates the existing ND 20 route and alternative routes to I-94.

An alternate ND 20 route that crosses the BNSF railroad tracks by utilizing a new 12th Avenue NE would provide a more direct connection to I-94 and the I-94 Business Loop/10th Street SE, provided a 12th Avenue railroad overpass is constructed (discussed in greater detail below). However, it would still require ND 20 truck traffic to travel through town, albeit on a much shorter route. A disadvantage of this highway route is its potential impact on several blocks of adjacent residential development between 2nd and 5th Street NE. This impact may be somewhat limited because of the very low truck volume on ND 20. NDDOT traffic data for the last four years show that daily truck volumes on ND 20 range from 70 to 200 trucks per day,

A second potential alternate route for ND 20 is a bypass that turns east a mile north of the airport on 32nd Street SE and turn south on 87th Avenue S to the Bloom I-94 interchange. Several miles of this proposed route lack an existing road and are two-track section line trails, and the entire route would need to be reconstructed to accommodate truck traffic. The low traffic volumes probably make reconstructing a long alternative route unfeasible.

Recommendations:

» Maintain the current highway routing of ND 20 for the foreseeable future.

» Consider an alternate 12th Avenue NE route with construction of a 12th Avenue overpass if design features can be incorporated that

mitigate potential impact on neighborhood residences.

» Preserve the alternate route corridor around the northeast side of the airport to the Bloom interchange for future use as a bypass route for ND 20, or as a local county truck route. Corridor preservation should include restriction of new access points as much as possible, preferably only at the section lines and quarter section lines in order to pre-serve a high speed functionality of the corridor. Any new rural residential developments are recommended to have access provided off the side section lines or quarter section lines, with no new driveways along the route.

BNSF RAILROAD GRADE SEPARATION

The existing 4th Avenue SE underpass is the only railroad grade separation in the center of Jamestown. This structurally deficient underpass was constructed in 1917, is prone to flooding in storm events, and has insufficient clearance for many trucks. Eventually a decision will need to be made to replace, modify, or remove this structure. Replacement with a facility that meets modern design standards and typical roadway clearance must address design challenges related to water table issues. Investigating the feasibility of replacement is beyond the scope of this transportation plan and is a subject for further study.

Citizen participants in the ***Forward Jamestown*** process ranked lack of railroad grade separations as the city's second highest transportation issue, behind aging and deteriorating infrastructure (which also applies to this structure). Alternatives for a replacement or additional grade separated crossing focused on the downtown area or at 12th Avenue East. A new downtown underpass site was excluded because of the same ground water concerns that affect the 4th Avenue NE underpass; an overpass was also ruled out because of the impact of the structure and required ramping on adjacent properties and the overall character and circulation of downtown. A downtown overpass would require elevating approach roadways in the range of 500 feet to 700 feet long, cutting off side streets and driveways and reducing or eliminating building access for nearly two blocks on either side of the tracks. A new railroad underpass would also reduce adjacent property access.

12th Avenue East Overpass

The construction of a 12th Avenue East overpass across the BNSF railroad tracks would improve north-south connectivity in east Jamestown, and improve access to the University of Jamestown, Jamestown High School and the James River Career and Technology Center. The overpass would also provide emergency vehicle access in virtually any condition. A new overpass should provide pedestrian and bicycle facilities, especially desirable because of the potential active transportation opportunities created by schools in the area. The improved connectivity and the provision of an additional vehicle-railroad grade separation is expected to reduce both railroad-related delay and railroad crossing exposure by 22% by 2040. Grade conditions also make an overpass at this location highly constructible. A hill north of the railroad corridor provides enough elevation to make additional approach ramps unnecessary.

Eastside overpass. *Left: Looking west along 3rd Street SE to the site of a potential dual overpass that would carry both 3rd and 12th Avenue SE over the BNSF mainline. Right: View of the site looking south from the 12th Avenue hill.*

An alternative design for this overpass would also grade separate 3rd Street SE at the railroad tracks, creating an elevated intersection of the two streets. This would reduce delays and exposure by an additional 9% over a structure limited to a single 12th Avenue separation. A double grade separation may also be more attractive for substantial funding assistance from the BNSF because potential rail-related crashes would be eliminated on two major streets instead of one.

Figure 6.7 presents a conceptual design for a dual 12th Avenue/3rd Street SE overpass.

Recommendations:

» Develop a plan for the future of the existing 4th Avenue under-

Figure 6.7: Conceptual 12th Avenue/3rd Street Overpass

pass. The plan should consider the service life of the structure; feasibility of replacement, reconstruction, or adaptive reuse; impact of closure; and the associated costs and funding sources

» Construct a new railroad overpass at 12th Avenue SE. A modification of the design to include 3rd Street SE is highly recommended if funding can be assembled.

CONNECTIVITY TO SOUTHWEST JAMESTOWN

Interstate 94's two mile segment between Exits 256 and 258 constitute a substantial barrier between the southwest development sector and the rest of the city, including nearly all its current population. While Exit 257 is located between these interchanges, movements are limited only to and from the west, and it lacks a local crossing over I-94. The Future Land Use Plan proposes removal of Exit 257 and introduces a new I-94 crossing between Exits 256 and 258, in the vicinity of 17th Avenue. This provides access for multimodal local traffic to southwest Jamestown, the city's primary retail and medical center. This new overpass would also reduce local trips and traffic friction on I-94, and accommodate bicycle/pedestrian access across I-94. But considering solutions to the entire development area's access issues begins with an understanding of the operations of I-94 and its interchanges that serve Jamestown.

Interstate Traffic Operations

Daily interstate traffic volumes indicate the overall interstate system through Jamestown is expected to operate at LOS "A" through 2040; therefore, the existing configuration with two lanes in each travel direction will be adequate well into the future. While the existing interstate cross section will provide ample capacity for many years, it is also important to ensure that merging and diverging movements from closely spaced interchanges will not create operational deficiencies at any of these interchanges.

Operational analysis was performed for closely spaced interchanges to evaluate weaving operations between these interchanges, using the Highway Capacity Manual methodology. For this analysis, closely spaced interchanges are defined as interchanges with crossing roadways spaced less than one mile apart along the alignment of Interstate 94. This definition was chosen to meet FHWA criteria for interchange spacing, which states that interchanges in urban areas should be spaced no less than one mile apart (measured between crossing road-ways).

The only pair of interchanges in the study area that fall within a one mile spacing criteria are Exits 256 and 257, which are spaced approximately 0.80 miles apart (see Figure 6.8). Weaving segment analysis indicates that the segment between Exits 256 and 257 will operate at LOS "B" through 2040, indicating that from a traffic operations standpoint, there is sufficient capacity.

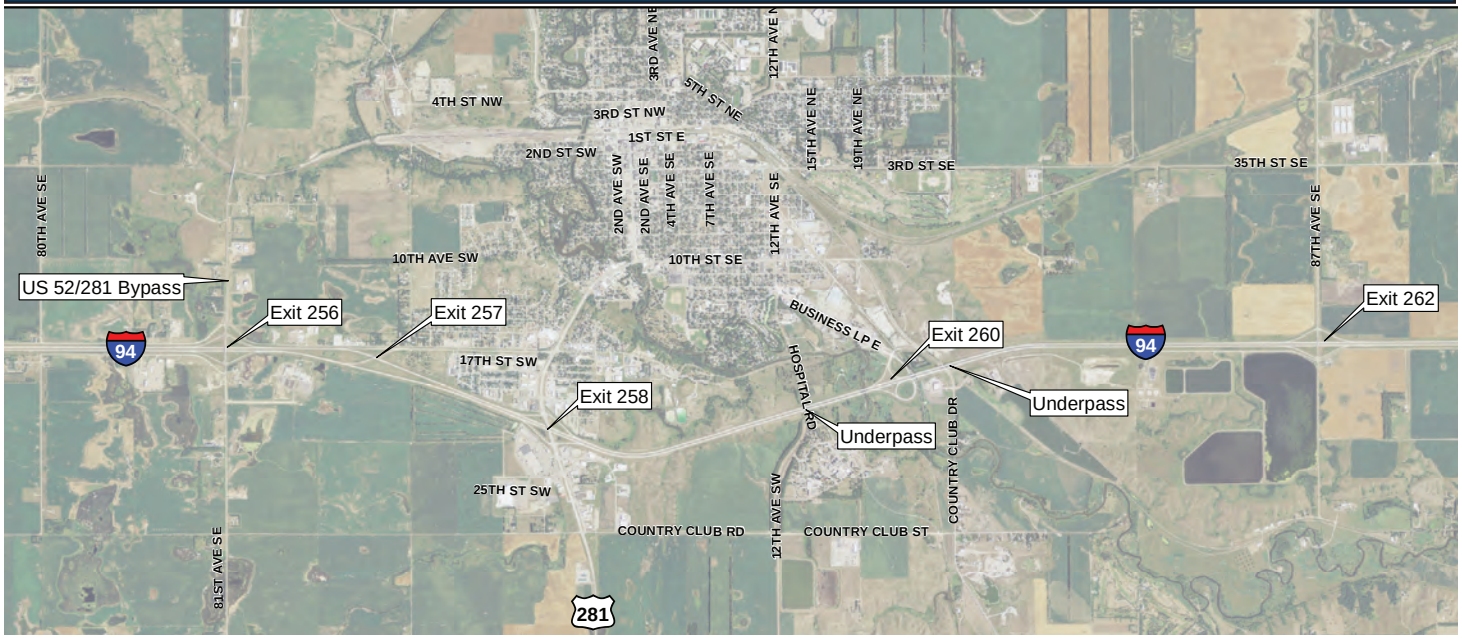
Deficiencies at Exit 257

While traffic operations near Exit 257 are expected to be at LOS "B" through 2040, there are other concerns regarding the configuration of this interchange.

Access Limitations

The configuration of Exit 257 only permits access to and from the west. There is no access to this interchange from westbound I-94 (i.e. from the east), nor can vehicles access eastbound I-94 at this interchange. FHWA guidelines state that interchanges should provide for

Figure 6.8: I-94 Crossings



all traffic movements, except for in the most extreme circumstances. In addition, the interchange does not provide an overpass across the eastbound lanes of I-94, so there is no access to the area south of I-94.

Safety Concerns

Guidance from FHWA and guidance in the AASHTO Green Book state that left-hand exits and entrances should be avoided except for in highly special cases. The eastbound off-ramp at Exit 257 is located on the left-hand side of I-94, which is undesirable. Left-hand exit and entrance ramps are contrary to driver expectation, and may bring slower-moving ramp vehicles into the higher-speed mainline lanes, creating safety concerns. The safety concern of slow moving local traffic mixing with high speed through traffic at this location was the most frequent and impassioned transportation issue at public and stakeholder meetings. The new Jamestown Regional Medical Center (JRMC) is located in the southeast quadrant of Exit 256, with the only access being through Exit 256. Consequently, many hospital patrons return to Jamestown by entering I-94 at Exit 256 and leaving I-94 and Exit 257 in the left lane off ramp, creating public concern over the differential speed and weaving conflicts.

Public comment also noted that the embankment on the north side of Exit 257 restricts sight distance for westbound vehicles. The view of vehicles entering I-94 westbound from the Exit 257 on-ramp is obscured from I-94 westbound through traffic.

Inadequate Vertical Clearances

The existing bridge structure at Exit 257 is classified as "Functionally Obsolete" because of restricted vertical clearance on westbound I-94 and width of the bridge. The bridge shows damage from being struck by trucks on many occasions (see Figure 6.9). The cross slope of the bridge would further reduce vertical clearances with widening: as the bridge becomes wider, the edges become lower. The bridge is currently in need of repainting and some repairs due to collision damage. Over-height load permits are directed to use 17th Street SW to go around the height restrictions at Exit 257.

Figure 6.9: Exit 257 Bridge Illustrating Structural Deficiencies

Recommendations: Removal of Exit 257

Exit 257 should be removed for the following reasons:

- Existing bridge is structurally deficient
- Existing bridge only crosses the westbound lanes of I-94
- Existing bridge alignment is not conducive to extending the bridge across the eastbound I-94 lanes for use as a north-south corridor
- Exit 257 does not provide a north-south connection to the local street system

A Southwest Jamestown Access Improvement Program

While removing Exit 257 from I-94 will improve safety, changes in traffic patterns could also have at least short-term negative effects elsewhere in Jamestown. In particular, business owners along the 17th Street SW corridor, currently served by Exit 257,expressed deep concerns about loss of exposure and business access with the removal of this partial interchange. Fortunately, these effects can be remedied in both the short and longer-term with a well-considered program to provide needed access to the entire southwest development sector.

Improve 17th Street SW

17th Street SW parallels I-94 to the north and is the feeder to Exit 257's ramps. This important corridor is a confusing mix of a main route and parallel frontage roads that, if improved, would connect Exit 256 (Jamestown Bypass) and US 281 and provide much safer and more legible access to businesses than currently exists. NDDOT has previously programmed Improvements for 2017 along 17th Street SW between westbound I-94 and US 281. Expanding the scope of this committed project could improve the corridor out to the bypass exit. Improved guide signing on I-94 would designate Exit 256 as a Jamestown West Entrance. Another recommended improvement would relocate the intersection of 17th Street SW and the US 52/281 bypass to the north, increasing separation from the I-94 ramps and improving traffic flow at the interchange.

Travel demand modeling indicates that 2040 average daily traffic volumes on 17th Street SW would drop from 13,800 ADT if Exit 257 were maintained to 10,000 ADT in a network without this exit. A significant part of this reduction would be accomplished by providing JRMC and other southwest area traffic with other travel options. This indicates that a three-lane section along 17th Street SW should be adequate through 2040. However, design details for this improved section of 17th Street should be confirmed as part of the preliminary engineering process for the project. This more detailed analysis should consider recommendations presented in this plan.

A significant advantage of this program is that it expedites removal of Exit 257 while maintaining and actually improving business access to corridor businesses for customers west of Jamestown.

Recommendations:

» Improve 17th Street SW between Exit 256 (Jamestown Bypass) and US 281

» Provide improved guide signing along I-94 to inform drivers that Exit 256 is a west entrance to Jamestown

» Move intersection of 17th Street SW and Jamestown bypass to the north for improved operations

Connect Jamestown Regional Medical Center to US 281

As discussed earlier, the lack of access to JRMC places most local medical center employees and visitors on Exit 257 and I-94. The interstate system is not intended for these local trips, and additional access to the hospital is a very high short-term community priority. These connections are especially important with the removal of Exit 257.

This plan recommends extension of 20th Street SW in a way that provides direct and natural connections to both 25th Street SW and ultimately to 37th Street SW. Most near-term development in southwest Jamestown is expected to occur near 25th Street, making this connection desirable from a retail business perspective.

Travel demand modeling indicates that this new connection between JRMC and US 281 is not expected to introduce capacity issues that are not expected in the 2040 base condition, and is likely to remove about 4,000 ADT from I-94. Additional discussion regarding roadway capacity analysis can be found in a later section of this chapter.

As the southwest quadrant of Jamestown continues to develop, it will be desirable to begin to funnel some traffic to/from US 281 to 37th Street to avoid potential capacity issues along 25th Street. This could be facilitated by a roadway design that emphasizes north-south traffic flow toward 37th Street over east-west flow toward 25th Street. This design is reflected in the Future Land Use Plan.

Recommendations:

» Provide a connection from JRMC to US 281 via 20th and 25th Streets SW, using a street design that facilitates future extension to 37th Street SW as demand emerges.

Develop a New I-94 Crossing for Local Jamestown Traffic

Interstate 94 now presents a two-mile long, impenetrable barrier between established Jamestown and the development sector that the Future Land Use Plan anticipates will receive 50% of its residential development and the lion's share of both retail and employment-based growth. A new, north-south local connection would literally bridge this barrier and ensure that as the city grows, it grows together.

On the north side, 17th Avenue SW is the only collector road in the area that crosses the James River and provides continuity beyond the immediate overpass area. This section line road is the logical receiver for a link across I-94. While 14th Avenue SW appears to be another option, it ends at 7th Street SW and a new river crossing to the north would be both expensive, faces difficult grade problems, disturbs cultural heritage sites, entails significant property impact and acquisition issues near I-94, and runs into the Menard's development site south of the interstate. This 17th Avenue overpass would be intended for local traffic only and would not provide access to I-94.

By 2040, the travel demand model projects that a 17th Avenue SW overpass would carry approximately 5,300 ADT if built, while removing approximately 3,000 ADT from 25th Street. The project (and traffic projections) require the removal of Exit 257.

Figure 6.10 illustrates a concept for the 17th Avenue overpass and the connecting road system in the southwest sector. The concept

Views of the overpass area. *Top: View from the west toward the existing Exit 257 and the site of a future local service north-south link. Below: Calvary Cemetery. The conceptual design uses roundabouts to shift the alignment west of the cemetery.*

Figure 6.10: 17th Avenue SW Overpass Concept

addresses Calvary Cemetery's location at the end of 17th Avenue SW by using roundabouts to shift the alignment west of the cemetery while maintaining good east-west access on the main 17th Street alignment. An evaluation of noise impacts during the environmental clearance phase could require additional design or alignment considerations. The new I-94 crossing would also require some access and alignment revisions along 17th Street SW in the area, but the design permits both the short-term improvement of 17th Street SW and the later addition of the I-94 crossing.

Recommendations:

» Construct a local service overpass over I-94 on the 17th Avenue SW alignment.

Develop a US 281 Southwest Truck Route

Since US 281 permits truck weights up to 105,500 pounds and I-94 only permits truck weights up to 80,000 pounds, legal loads over 80,000 pounds travelling on US 281 through Jamestown are required to use routes through the city as opposed to using I-94. A way to address this anomalous condition is development of a US 281 truck bypass in southwest Jamestown. This route would bypass the heart of the city by continuing the existing US 52-281 bypass alignment (81st Avenue SE) south to 38th Street SE, and upgrading that road to reconnect with South US 281. This project would require improving three to four miles of roadway to truck route design standards, prohibitively expensive in the short-term in view of higher priorities. As such, a southwest US 281 bypass should be considered as a long-term future project that becomes relevant as the southwest area of Jamestown continues to grow. Any roadway that is considered to be part of a future bypass should be access controlled to the maximum extent feasible to preserve those roadways for a potential

future bypass corridor.

In the meantime, trucks would be directed to use 17th Street SW to access the existing US 52-281 bypass. The short-term reconstruction of 17th Street SW could include capacity to carry large trucks, diverting some truck traffic from downtown Jamestown.

Recommendations:

» Designate 17th Street SW as a truck route with access to US 52-281 bypass

» Consider preserving right-of-way for a future southwest Jamestown bypass

Summary of Southwest Jamestown Improvements

Figure 6.11 summarizes modeled 2040 traffic volumes with the improvements discussed above. Figures 6.12 and 6.13 summarize the recommendations made for southwest Jamestown. Successful implementation of all improvements recommended for the southwest area of Jamestown will require a phased approach with coordination between the City of Jamestown, Stutsman County and NDDOT. The following implementation phasing is recommended, with discussion regarding actual implementation dates presented in Chapter 7 of this plan

Figure 6.12: 17th Avenue SW Overpass Concept

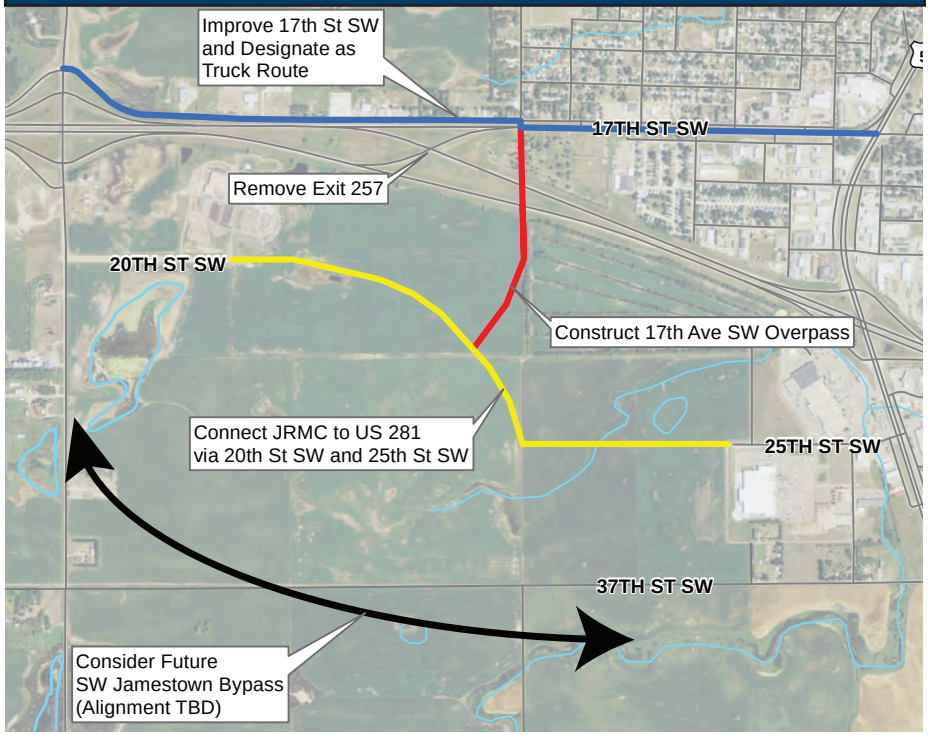
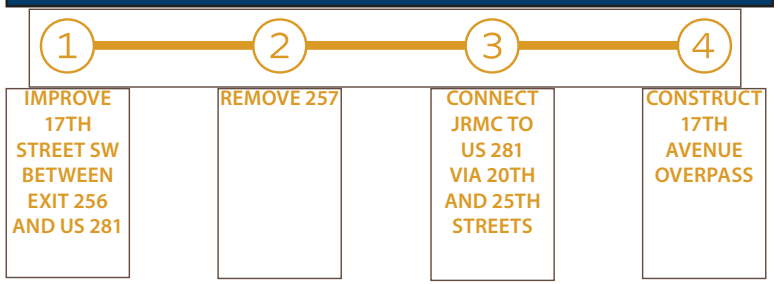


Figure 6.11: Average 2040 Daily Traffic Volumes with Improvements

Location	2010	2040			
	Existing + Committed	Existing + Commiteed	w/o Exit 257	w/o 257 + SW Connection	w/o 257 + SW Connection + Overpass
I-94 - East of Exit 258	8,630	27,800	26,000	21,900	21,500
I-94 - East of Exit 257	8,810	20,500	*	*	*
25th Street - West of US 281	8,210	18,491	18,680	17,112	14,426
US 281 South of I-94	10,525	23,265	23,489	21,452	18,941
US 281 North of I-94	14,390	24,653	28,400	28,253	24,714
17th Street - East of 17th Avenue	2,880	9,707	6,157	6,139	6,384
17th Street - West of 17th Avenue	unknown	<1,000	2,470	2,413	<1,000
20th/25th Street - East of 17th Avenue	*	*	*	5,631	6,266

Figure 6.13: Southwest Jamestown Implementation Sequence



***Deficient bridges.** Top: Timber railroad bridge over I-94 near Exit 260. Bottom: 4th Avenue NW bridge over the James River.*

Area-Wide Operational Benefits of East and Westside Overpasses

The two "barrier breakers" discussed in the section – the Eastside Overpass taking 12th Avenue (and ideally 3rd Street) SE over the BNSF mainline and the Westside Crossing, taking 17th Avenue SW over I-94 – are probably the two largest single projects proposed in Forward Jamestown and have the greatest potential beneficial impact on transportation patterns, convenience, and safety. As such, it is important to measure their operational impacts and fiscal benefits to justify this type of investment. The travel demand model projects that by the 2040 target year, these two projects together will reduce daily vehicle hours traveled (VHT) by 127 vehicle-hours per day; and will reduce daily vehicle miles traveled (VMT) by 12,310 vehicle-miles.

Bridge structures have a typical fifty year design life. If these two structures were built today, their combined equivalent monetary savings (using present-day dollars and USDOT cost factors) would total $189.3 million over their lifetime. Reduced travel time, allowing this time to be spent for more productive use, accounts for 41% of the total, or $77.4 million. Reductions in vehicle miles traveled, decreasing energy consumption, fuel costs, vehicle wear, and other factors, accounts for 59% of these savings, or $111.9 million.

The estimated cost for each of the proposed overpass projects is $11,000,000 for the 17th Avenue project (including Exit 257 removal and 17th Street SW improvements) and $9,300,000 for the 12th Avenue overpass project, or $20,300,000 total (in 2015 dollars). These probable costs produce a cost/benefit ratio of 9.3:1 from the construction of these two overpass structures. The estimated cost for the 12th Avenue overpass assumes a single grade separation along the north-south corridor and will require further refinement during the detailed design process to consider demolition, embankments, and connecting roads. The desirable addition of a 3rd Street SW grade separation with an elevated intersection is likely to require significant financial participation from the railroad.

These calculations do not include other incalculable benefits of the projects, including the possibility of injury or lives saved by better response time for emergency vehicles and providing safer and more comfortable routes for all types of travelers in the Jamestown area.

BRIDGE REHABILITATION/RECONSTRUCTION

Two existing bridges in Jamestown and two I-94 bridges ares structurally deficient. The two deficient bridges in the city are its two grade separated railroad crossings: the 4th Avenue NE underpass and the 1917-vintage railroad bridge adjacent to the Exit 260 westbound ramp As already discussed, the 4th Avenue NE structure is also classified as functionally obsolete, indicating a need for reconstruction or replacement. Similarly, the Exit 260 railroad bridge is a timber structure that needs replacement.

The I-94 bridges with structural issues are the aforementioned Exit 257 overpass, recommended for removal, and the I-94 Exit 260 bridge, which is structurally deficient. As previously noted, this bridge is scheduled for replacement in the current NDDOT Surface Transportation Improvement Program (STIP).

Although the life cycle of bridges is typically estimated at 50 years, the majority of bridges remain in service much longer than this. While material fatigue is driven primarily by traffic loads and design, the age of the bridge and historic sufficiency are also factors and are correlated to forecast future fatigue rates. This assumes that all bridges were at a 100 sufficiency rating when first built. Based upon this methodology, two additional bridges will decline into poor condition by the following estimated years:

- 4th Avenue NW across the James River by 2028. This bridge is also functionally obsolete
- 34th Street SE across Pipestem Creek by 2032. This bridge is also functionally obsolete

Since both of these bridges are functionally obsolete, full replace-

Figure 6.14: Recommended Bridge Replacement Projects

Project	Estimated Cost (2014 Dollars)
4th Avenue NE Bridge Replacement	$8,500,000
Railroad Bridge Replacement Adjacent to Exit 260	$1,050,000
4th Avenue NE Bridge Replacement	$420,000
34th Street SE Bridge Replacement	$250,000

ment is proposed. Figure 6.14 presents recommended bridge replacement projects and estimated project costs.

JAMES RIVER WEST CROSSING

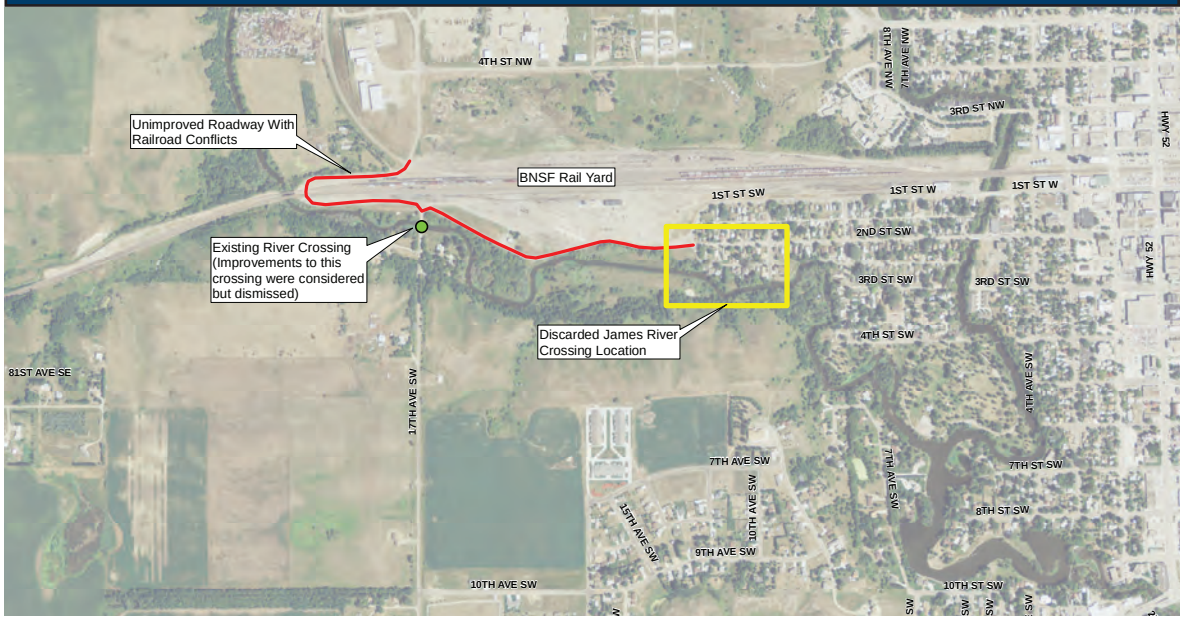
The James River/Pipestem Creek system is a significant barrier that divides the traditional town on the east bank of the James and the Klaus Park neighborhood north of the confluence of these two streams from the western part of the city. Seventeenth Avenue West is the only river crossing west of the US 281 bridge near the 10th Street and 1st Avenue intersection, and this street has serious connection issues. Northbound 17th Avenue traffic must negotiate a half-mile detour to a five-track railroad grade crossing at the west end of the BNSF Jamestown rail yard. Traffic headed east toward the city center must use 2nd Street SW, an unpaved road on the south edge of the yard that is actually part of the railroad property.

We considered a new route that would cross the James River east of 17th Avenue, connecting to 2nd Street SW in the vicinity of 7th or 8th Avenue SW, but a new river crossing in this area was ruled out due to steep terrain and environmental constraints. Other potential river crossings in the vicinity were also discounted because of residential development and property ownership, park property restricting roadway access to the river, and lack of good street connectivity on the east bank. However, a pedestrian/bicycle bridge connecting Klaus Park to the west side could have substantial transportation and recreation value. Figure 6.15 illustrates these dismissed concepts.

Recommendation:

- Since the construction of a new river crossing on the west side of Jamestown is infeasible, no additional motor vehicle river crossings are recommended in this plan.
- Incorporate a pedestrian/bicycle bridge connecting Klaus Park to the west side of the city into the active transportation plan.
- Cooperate with BNSF about improvement, including paving, of the extension of 2nd Street SW

Figure 6.15: Dismissed James River West Crossing Alternatives



The James River is a beautiful community feature but a formidable transportation barrier. The river's meandering character, terrain, and property ownership patterns make a west street crossing unfeasible. However, a non-motorized bridge could provide access on foot and by bike, and connect the west side to Klaus Park and the city center.

TRAFFIC OPERATIONS AND CAPACITY

CORRIDOR CAPACITY

A fundamental goal in transportation planning is determining whether a community's network is capable of meeting the demands that will be placed on it in the future. If the answer is "no," then the plan proposes projects and policies that will improve the network's capacity – its ability to handle future traffic.

But as we have seen, Jamestown's primary transportation issues are not related to capacity and the interruptions in traffic operations (measured by "level of service" or LOS) that result from more traffic than the system can handle. In previous chapters of the ***Forward Jamestown*** plan, we have shown that existing roadway capacity in the classified network can adequately accommodate both current and forecasted 2040 traffic volumes (LOS "C" or better). Only 25th Street SW west of US 281 (LOS "F") and 17th Street SW between US 281 and 14th Avenue SW (LOS "E") fail to meet this criterion.

We then analyzed performance of the system in 2040 if the barrier removal improvements discussed in the last section were implemented. For review, these include:

- Removing Exit 257 from I-94
- Improving 17th Street SW Between Exit 256 and US 281
- Connecting Jamestown Regional Medical Center (JRMC) to US 281 (via new segments of 20th Street SW and 25th Street SW)
- Building the Westside Crossing: the 17th Avenue West overpass at I-94
- Building the 12th Avenue/3rd Street East overpass at BNSF railroad tracks

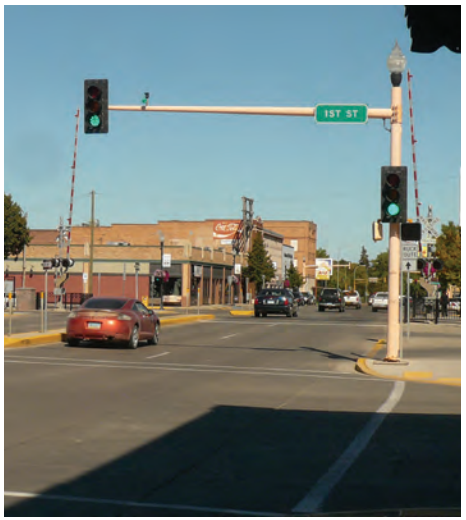
With the above improvements, the only corridor capacity deficiency is expected on 25th Street SW; however this deficiency also exists in the 2040 base condition as well (Figure 6.17). This indicates that 25th Street SW will require additional capacity once the southwest quadrant of Jamestown begins to develop as expected.

INTERSECTION TRAFFIC CONTROL AND OPERATIONS

Capacity analysis basically compares the design characteristics of street or road with the volume of traffic that we expect that street to handle. For example, a four-lane street will have more capacity than a two-lane street, and so will be able to handle more volume. There are subtleties in this. For example (as we shall see), in some situations, a three-lane street with one direct lane in each direction and a center turn lane can handle traffic more effectively than a traditional four-lane street. But traffic operations in most cases are more complex than cars moving non-stop along a linear corridor. We also have intersections to contend with, and intersections can cause operational problems such as delays and safety issues as well. THis discussion addresses how the city's intersections work and makes recommendations on how to deal with problems.

Signal Warrants Through 2040

Traffic signals are one of the most visible and commonly used meth-



Warranted and unwarranted downtown signals. *Signal at 1st Street South (top) does not meet signal warrants. However, signal at 3rd Street South, serving the library, housing, and the middle school one block to the east would be retained.*

ods of managing traffic at troublesome intersections. But to engineers, traffic signals should be used carefully because they interrupt the smooth flow of vehicles and, if used indiscriminately, can create their own problems. Therefore, signals (both existing and proposed) must be justified and these justifications are called "warrants." Guidelines for warrants are established on a national basis by the US Department of Transportation's ***Manual of Uniform Traffic Control Devices*** (MUTCD), but are interpreted by states and local governments. Warrants (or justifications) for signals are based on specific criteria such as traffic volume at intersections, incidence of crashes, pedestrian volume, operations of the signal or street network, or unacceptable delays on secondary streets that prevent access to the main roadway.

Traffic signal warrant analysis was completed using 2040 traffic volumes. Additional signals are expected to be warranted only at the north and south ramps of the I-94/US 281 interchange. Signal warrants are expected to be met under both the base condition and with implementation of the improvements listed in the Corridor Capacity section.

Unwarranted Signals

The analysis showed that existing signals at the following locations are not warranted under existing or projected 2040 traffic volumes. Figure 6.17 shows these locations:

» 10th Street and 7th Avenue SE

» 1st Avenue and 5th Street South

» 1st Avenue and 2nd Street South

» 1st Avenue and 1st Street South

» 1st Avenue and 3rd Street North

Projected 2040 traffic volumes under the existing traffic control along the 1st Avenue corridor also indicates that a signal at the 1st Avenue and 4th Street North intersection does not meet warrants. However, the removal of other signals along this corridor is likely to attract enough traffic to meet warrants at this location if the signal were maintained.

Consideration should be given to removing unwarranted signals to improve progression along the arterial routes on which these signals are located. A more detailed traffic signal study, completed in 2013, also found that these signals did not meet warrants. While analysis performed as part of this study indicates the signals do not meet warrants, 16 hours of intersection turning movement data should be collected at each of these locations to verify that signal removal is warranted.

However, removal of these signals does raise significant issues. Most are located in the center of Downtown Jamestown, which the community input process identified as a revitalization and community development priority. Most participants believed that heavy truck traffic and rapid traffic flow worked against the goal of a diverse, pedestrian friendly environment. They similarly believed that a modification of 1st Avenue s to calm traffic and make the street easier and safer for pedestrians of all ages to cross is critical to Downtown development. A successful revitalization effort could well generate new pedestrian demand that could meet warrants.

Removal of unwarranted signals does not necessarily create a less friendly downtown activity environment. But this action should be part of an overall program that upgrades the district's public environment. This program is discussed in more detail in Chapter Seven, but includes features such as curb extensions to improve pedestrian sight lines, reduce the distances that pedestrians must travel to cross 1st Avenue, incorporate pedestrian-actuated crossings and traffic calming measures, and provide more public space for street furniture, landscaping, and activities.

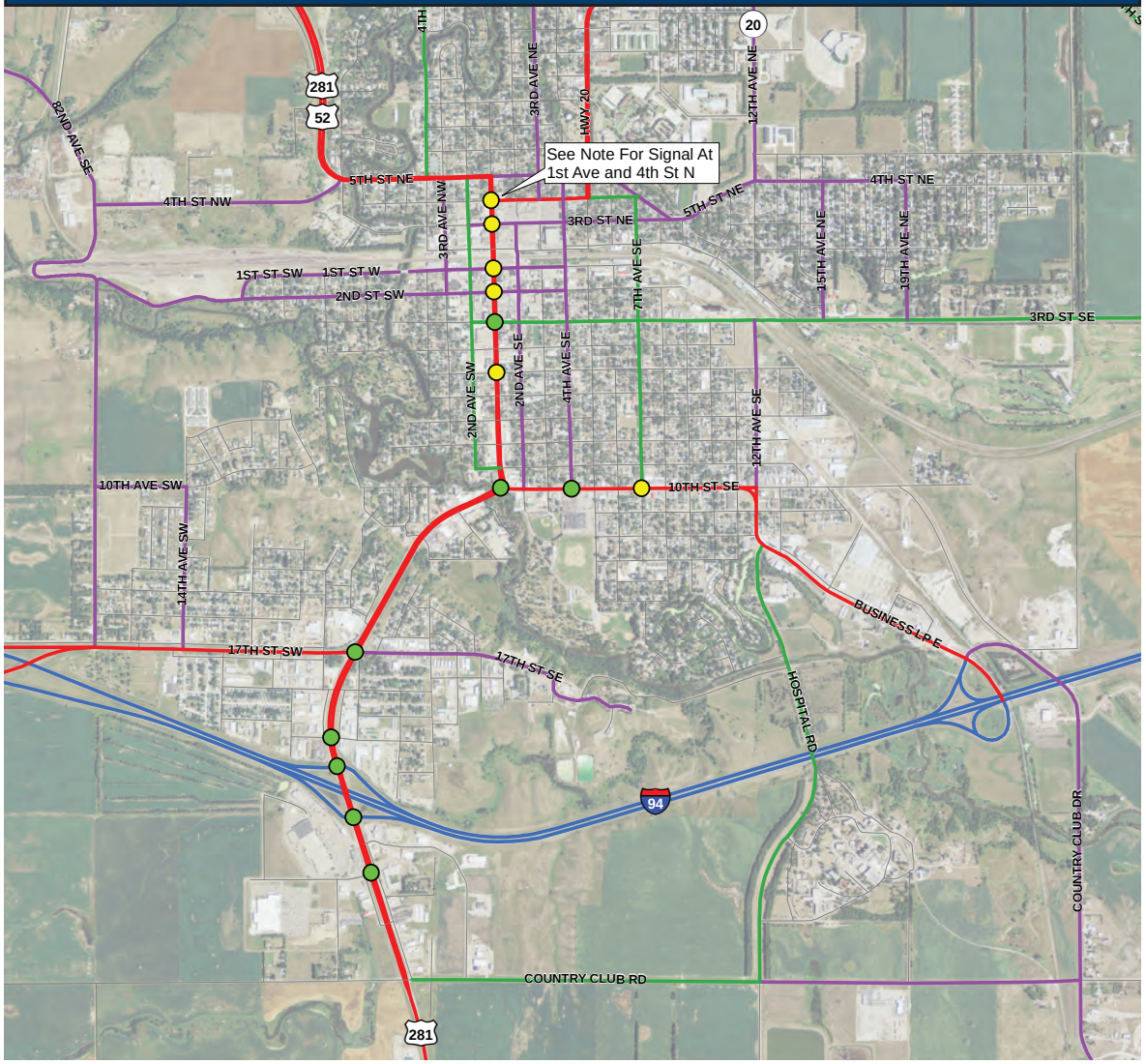
Recommendations:

» Following additional verification on turning movements, remove signals that do not meet traffic signal warrants at:

  - 10th Street and 7th Avenue SE
  - 1st Avenue and 5th Street South
  - 1st Avenue and 2nd Street South
  - 1st Avenue and 1st Street South
  - 1st Avenue and 3rd Street North

» Coordinate signal removal with an overall 1st Avenue enhancement project that includes curb extensions along 1st Avenue to improve pedestrian crossing safety, lane reductions, pedestrian signaliza-

Figure 6.16: 2040 Corridor and Intersection Operations



2040 Signal Warrant Analysis

- Unwarranted Signal
- Warranted Signal
- Local
- Collector
- Minor Arterial
- Principal Arterial
- Interstate

Notes:

- Only locations with functionally classified roadways are noted.

- A traffic signal at 1st Avenue and 4th Street N is expected to be warranted if an existing signal at 3rd Street N is removed.

tion, and other improvement to improve pedestrian comfort and safety.

» Install traffic signals at the north and south ramps of the I-94/US 281 interchange (Exit 258) when warranted:

2040 INTERSECTION OPERATIONS

While most of Jamestown's corridors will be adequate to handle traffic projections through 2040, it is important that intersections not act as bottlenecks because of isolated capacity problems. To this end, we completed an intersection capacity analysis based on 2040 forecasts, assuming that the package of transportation improvements proposed above in the capacity analysis are in place.

In 2040, only three intersections are expected to operate at LOS "D" or worse when these improvements above are considered. These intersections, discussed below, are US 52/281 and the I-94 north ramps at Exit 258; US 52/281 and 17th Street SW; and 4th Avenue and 3rd Street SE. If the West Crossing is not built but all other recommended southwest Jamestown improvements are completed, the intersection of US 281 and 25th Street is also expected to operate at LOS "D".

US 52/281 and I-94 North Ramps

With the improvements described above, this intersection is expected to operate at LOS "F" by 2040 because of high through volumes on the major approaches, a deterioration from LOS "D" forecast in the 2040 base condition. This drop in level of service is due to additional volumes being carried on US 52/281 as a result of improved connectivity to southwest Jamestown via 25th Street SW. However, this problem is fairly easily remedied by installing a signal, which is expected to achieve an intersection LOS "A".

Recommendation:

» Install traffic control signal when warranted

US 52/281 and 17th Street South

Under the existing lane configuration, this intersection is expected to operate at LOS "D" in 2040 due to high eastbound left turning volumes, which is also expected in the 2040 base scenario. The addition of a second eastbound left turn lane results in intersection LOS "C", which meets NDDOT design standards.

Recommendation:

» Consider adding a second eastbound left turn lane or provide space for one as part of future 17th Street SW improvements

4TH AVENUE SE AND 3RD STREET SE

This intersection is expected to operate at LOS "E" in 2040 with the existing lane configuration. The intersection is not expected to meet signal warrants through 2040; therefore the existing all-way stop control should be maintained. Additional turn lanes result in intersection LOS "C" through 2040.

Recommendations:

» Add a southbound right turn lane

» Reconfigure eastbound approach to have a dedicated left turn lane and a shared through/right turn lane

» Note that a three-lane roadway with a center two-way left turn lane is also recommended on 3rd Street SE east of 4th Avenue SE

3rd Street SE, looking west.

Figure 6.17: 2040 Daily Traffic Volumes with Improvements

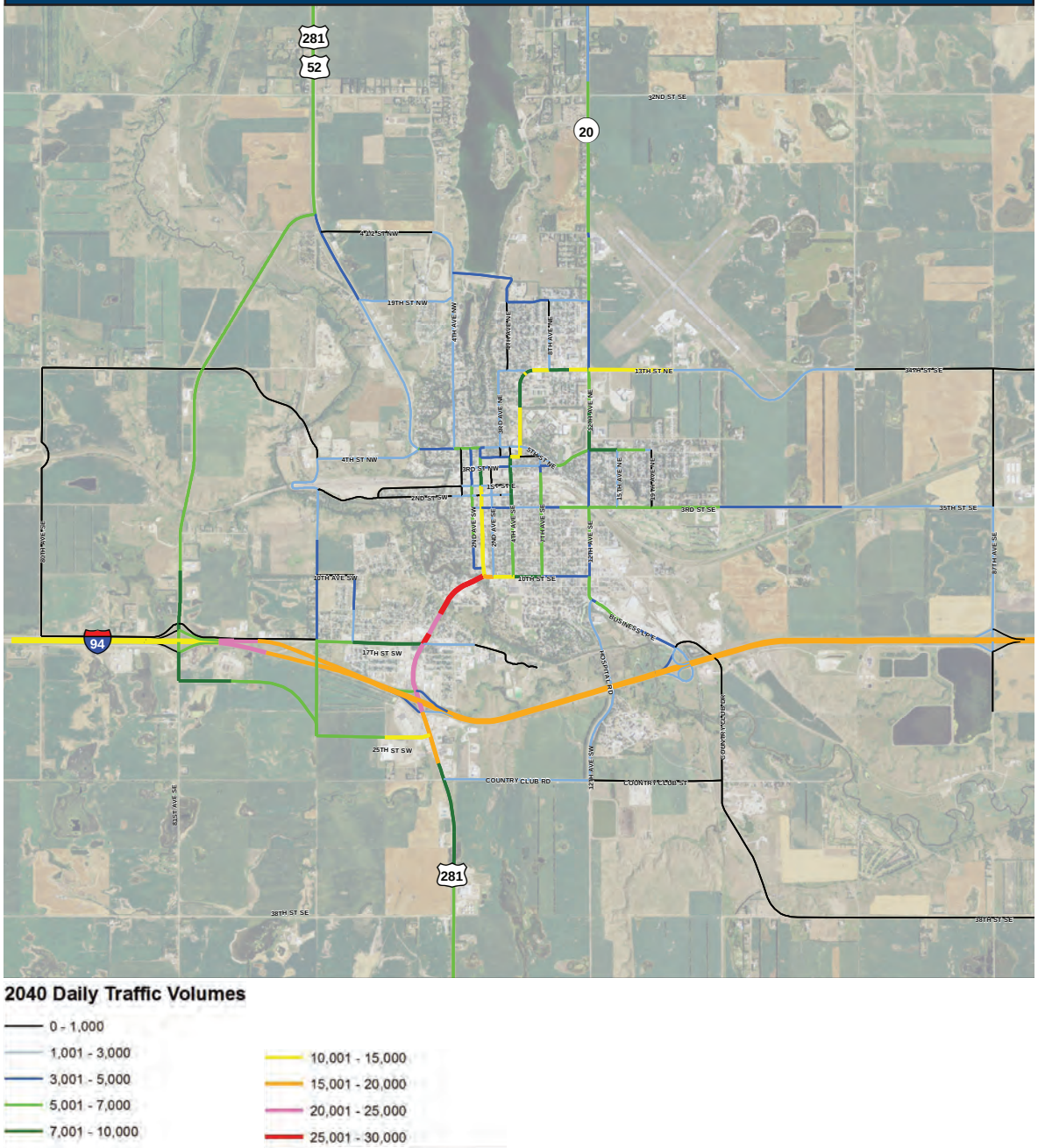
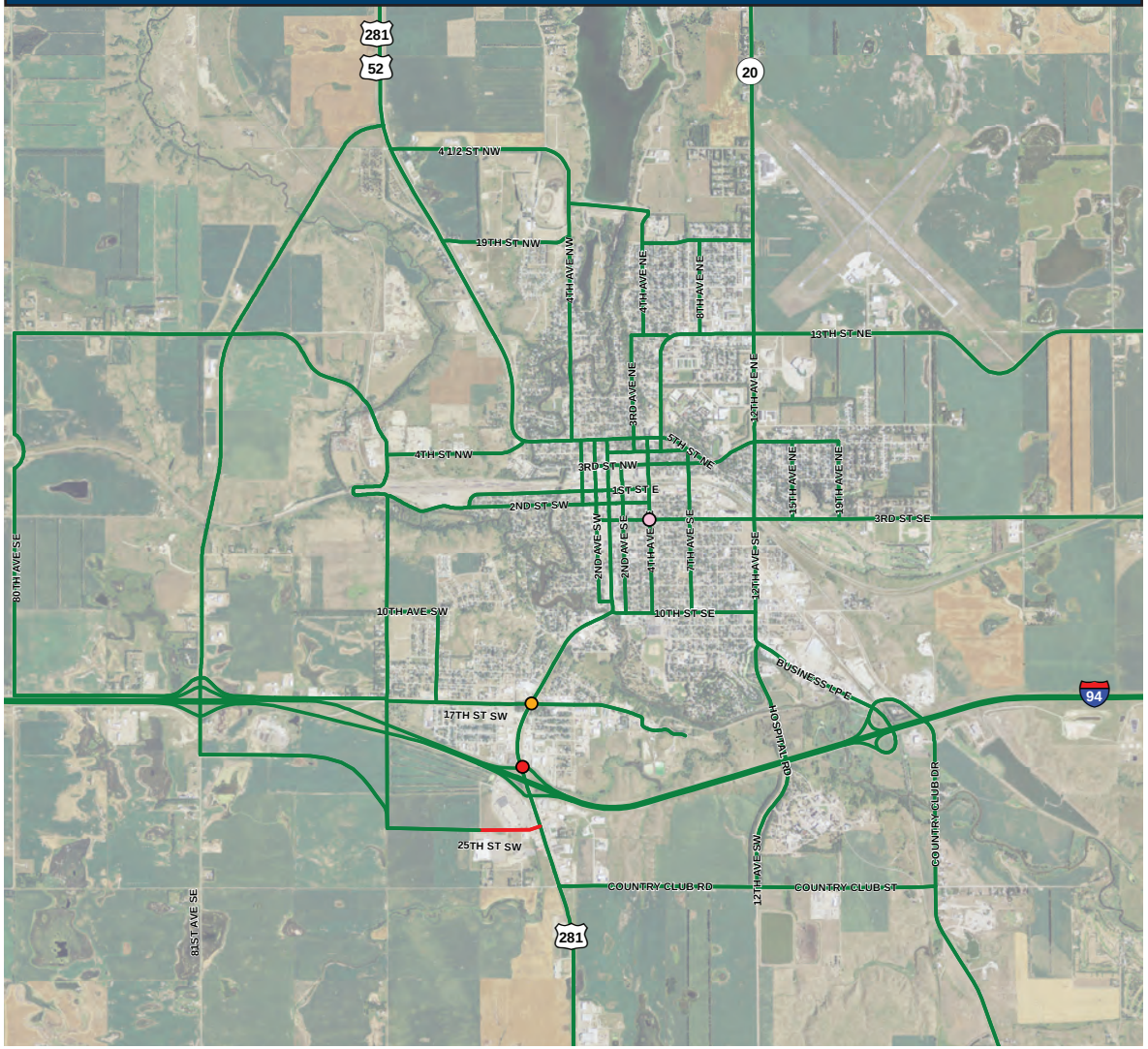


Figure 6.18: 2040 Corridor and Intersection Operations with Improvements



ROAD DIETS

Jamestown has several four-lane corridors with excess capacity. These corridors lack turn lanes, causing the inside through lane in each direction to function as a left turn lane, which in turn creates conflicts with through traffic. The two through lanes in each direction also encourages excessive speeds, enabling speeding motorists to pass slower vehicles (often on their right). Additionally, these four-lane corridors present unfavorable environments for self-propelled transportation..

One proven treatment for these corridors is a reduction in the number of lanes, usually referred to as a "road diet." Road diets most typically convert four-lane roads with excess capacity into three-lane sections with a center two-way left-turn lane, but can also apply to wider sections. Road diets accomplish several benefits, including reducing rear-end collisions, naturally decreasing speeding by bringing "design speed" and "desirable speed" into harmony, and providing space for pedestrian and bicycle transportation. Road diets have been found to reduce crashes by an average of nearly 30% according to the FHWA.

This plan limited consideration for road diets to streets capable of operating at LOS "C" or better after implementation. Road diets have the additional benefit of reversability – if more capacity is needed, these streets can be easily reconfigured to restore lanes.

Extra roadway capacity is expected through 2040 on four-lane roadway segments of 1st Avenue in downtown Jamestown, 5th Street NW, and 10th Street SE. As a result, road diets are proposed on these sections. Where appropriate, portions of the existing cross-section may be reallocated for bicycle and pedestrian facilities. The Active Transportation Network proposed later in this chapter addresses these possibilities. In addition, 3rd Street SE, while striped as a two-lane section, is extremely wide and sometimes operates as an unintentional and hazardous four-lane street. Applying road diet principles would define desired travel lanes and provide comfortable accommodations for both bicyclists and parallel parking.

Figure 6.19 displays recommended locations for road diets, which include:

» 1st Avenue: between 8th Street S and 5th Street N. A 1st Avenue road diet is a central part of the downtown enhancement program

Road diets before (left) and after (right)

Clayton Road in Saint Louis County, MO, a four to three lane conversion with bicycle lanes and enhanced sidepath.

described earlier, to be accomplished in tandem with removal of unwarranted signals and other initiatives.

- 5th Street NW: between 1st Avenue N and 7th Avenue NW
- 10th Street SE: between 4th Avenue SE and 12th Avenue SE
- 3rd Street SE: between 4th Avenue SE and 12th Avenue SE

Research shows that road diets work very well on corridors that carry less than 15,000 vehicles per day, and can also be successfully im-

Figure 6.19: 2040 Daily Traffic Volumes with Improvements

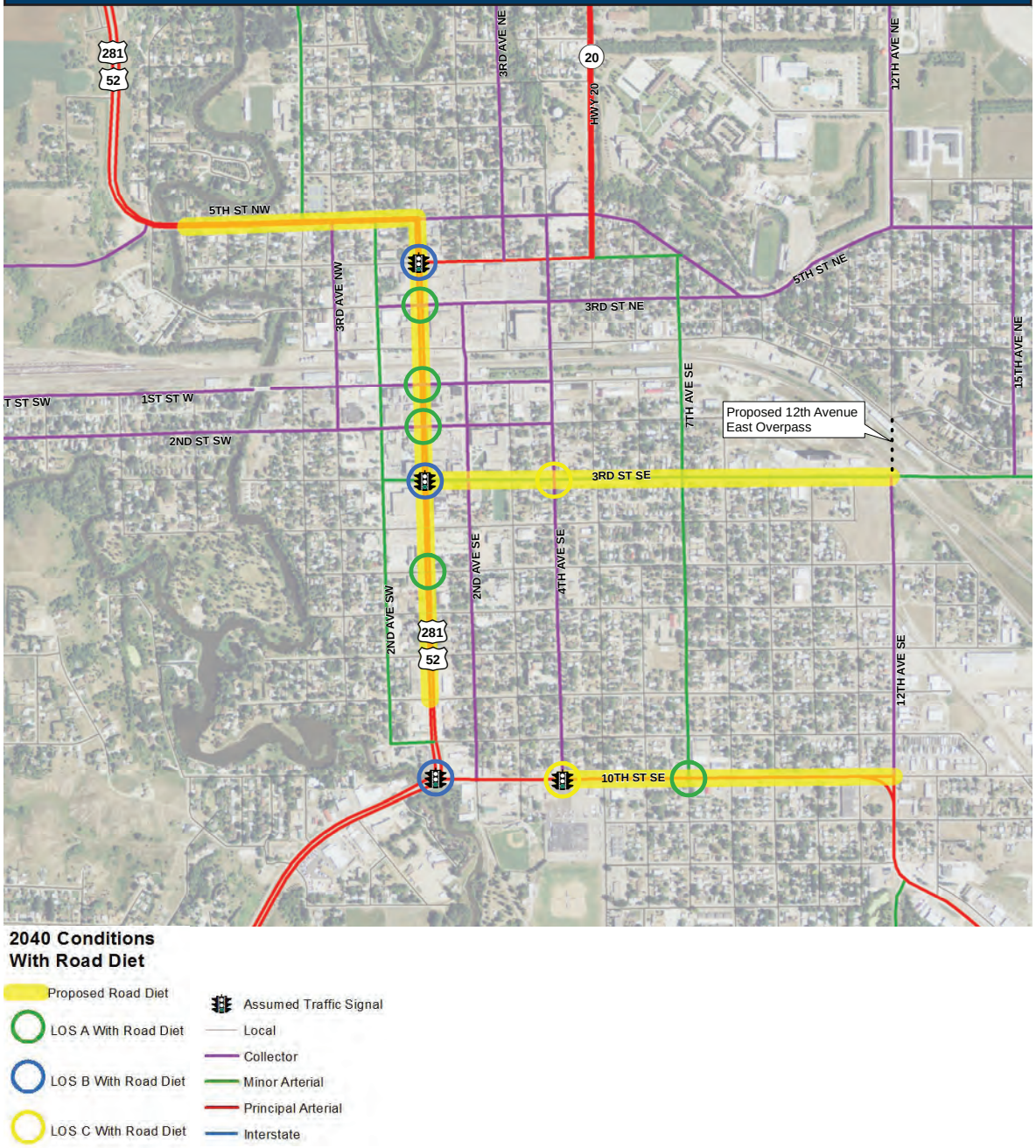


Figure 6.20: Expected 2040 Maximum ADTS on Proposed Road Diet Corridors

Road Diet Corridor	Maximum 2040 ADT
1st Avenue	15,000
5th Street NW	6,000
10th Street SE	8,000
3rd Street SE	4,000

plemented on corridors with 15,000 – 20,000 vehicles per day with appropriate turn lane placement and traffic control. Figure 6.20 displays the maximum ADT expected on each of the road diet corridors through 2040 with the recommended future road network.

The implementation of road diets on these corridors is expected to maintain intersection LOS "C" or better at all intersections where data was available through 2040 (see Figure 6.19). All analyses assumed removal of unwarranted signals.

Minor approach levels of service are expected to operate worse than LOS "C" during the peak hours. However, this is common in urban areas, and the existing grid network in the Jamestown core area offers many alternative route options during congested periods. Additionally, intersection operations could be improved if the recommended truck bypasses discussed previously are implemented, consequently removing the bulk of truck traffic and some through traffic from the urban core.

Implementation of Road Diets

It is recommended that the recommended road diets are implemented in conjunction with other types of improvements such as roadway maintenance or reconstruction. Discussions with NDDOT indicate that road diets could be easily included in pavement rehabilitation projects that would already be required in the next 5-12 years. Cost estimates in Table 6.4 for road diet recommendations include costs associated with pavement rehabilitation.

Figure 6.21: Estimated Road Diet Costs (Includes Pavement Maintenance Costs)

Proposed Road Diet Corridor	Estimated Cost (2014 Dollars)	Approximate Implementation Date (Would Coincide with NDDOT Maintenance Project)
1st Avenue + 5th Street NW	$2,750,000	2019-2023
10th Street SE	$1,500,000	2024-2028
3rd Street SE	$1,500,000	2024-2028

3rd Street SE Road Diet

The segment of 3rd Street SE between 1st Avenue and 8th Avenue SE is currently a two-lane section. However, the same principles of roadway width reallocation can be applied to tie in with the proposed three-lane road diet east of 8th Avenue SE. This is possible since this segment between 1st Avenue and 8th Avenue SE is 65 feet wide. This is sufficient width to provide a three-lane section with a center left-turn lane and protected bike lanes, while still maintaining on-street parallel parking. There are some sections of on-street angled parking between 1st Avenue and 5th Avenue SE. The 65 foot width is adequate to maintain this parking. Moreover, these spaces are not fully utilized east of 3rd Avenue, can be compensated for with other downtown parking improvements, create safety conflicts with both traffic and pedestrians during the peak hours on 3rd Street SE when school drop-offs and pick-ups occur, and run counter to NDDOT recommendations for streets on the federal aid system. There are several potential solutions for this section:

- Maintain diagonal parking on both sides between 1st Avenue and 3rd Avenue SE and convert bicycle access to shared lane markings in this segment. Continue the standard section of three lanes, protected bike lanes, and parallel parking between 3rd and 5th Avenue SE.
- Maintain diagonal parking on one side with parallel parking on the opposite side with either a narrow three lanes and bike lanes, or two lanes without the center turn lane and protected bike lanes. Back-in diagonal parking should be used whenever diagonal parking is adjacent to bike lanes for better visibility bicyclists of cyclists and safety when discharging passengers to sidewalks.
- Convert the existing angle parking to parallel parking and maintain the three-lane plus protected bike lane section to 1st Avenue.

Recommendations:

- Implement a three-lane section east of 3rd Avenue SE with parallel parking and protected bike lanes.
- Execute a planning process with the middle school, library, and

downtown community to determine the best of the three alternate solutions. We believe that the combination parallel/back-in diagonal solution offers the best solution to the various issues presented between 1st and 3rd Avenue SE. If necessary, complete a parking survey and school traffic circulation study to understand school traffic, pedestrian/bicycle safety issues, and parking demand in the area of the school and downtown.

Lane diet and protected bike lane in Minneapolis

Figure 6.22: 3rd Street SE Concept with Three Lanes and Protected Bike Lanes

SAFETY

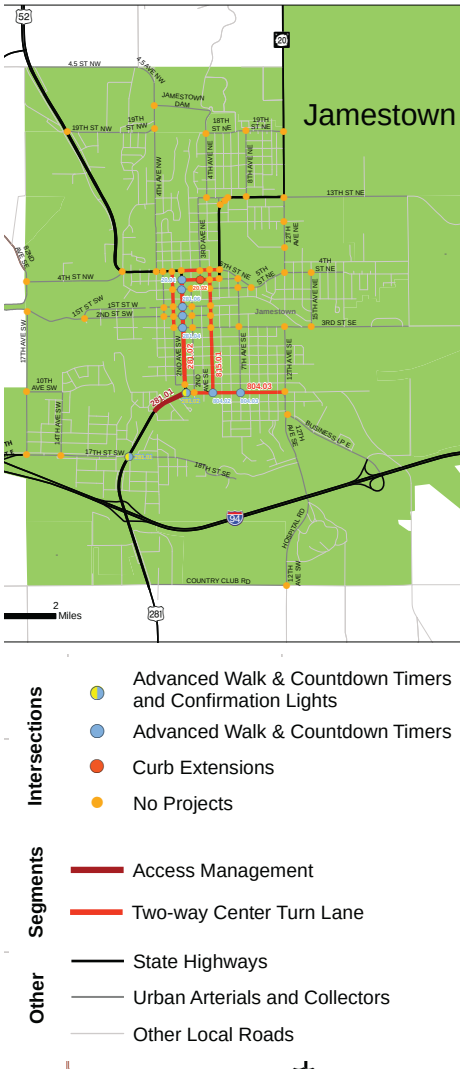
CRASH HOTSPOTS

This study included a detailed crash analysis at all locations classified as "susceptible to crashes." For a location to be deemed "susceptible to crashes," one of the following two criteria must be met:

- The location experiences greater than four crashes per year. Based upon a distribution of studied locations, this represents the highest 95th percentile of locations.
- The location has a crash rate above the critical crash rate with a crash frequency of two or more crashes per year. Locations with fewer crashes do not have enough data to identify reliable trends.
- The location has experienced two or more bicycle or pedestrian crashes in the past three years. The lower crash threshold for pedestrian and bicycle crashes is due to the minimal amount of pedestrian and vehicle activity and high severity of vehicular crashes involving pedestrians and bicycles.

The NDDOT's Local Road Safety Program study, published in March, 2015, addresses all counties and major urban areas including Jamestown and Stutsman County. The study identified roadway segment and right-angle and pedestrian/bicycle intersection projects with a projected cost of $631,011.

Trends found during the ***Forward Jamestown*** analysis are summarized below. The analysis did not include individual crash reports but only used overall community-wide crash data. It focused on functionally classified roads and identifying potential improvement strategies.



Local Road Safety Program Map for Jamestown. The Local Road Safety Program, published by the NDDOT in March, 2015 identified projects for roadway segments, right-angle intersections, and pedestrian and bicyclist intersection projects with a projected cost of $631,000 in 2015 dollars. Several priority segments did not receive projects because of insufficient roadway width. Many of these projects are addressed in this section's discussion.

4th Street NE (ND 20) – Between 1st Avenue and 3rd Avenue NE

This area experienced four bicycle crashes in the past three years. The number of driveways and sight line obstructions presented by buildings, trees and parked cars can create visibility issues for cyclists on the street. The roadway is a truck route on the state highway system. This crash cluster is a particular concern because three of the four crashes involved young cyclist of ages 10, 11 and 14. This is probably related to nearby Lincoln Elementary School, one block north. Although age 14 is old for people typically associated with an elementary school, this crash occurred during school dismissal and after-school activity hours. It is logical to assume that the truck route was routed along 4th Street to minimize truck traffic by the school.

Recommendations:

» Develop and communicate a safe-route-to-school plan for area students and parents.

» Identify lower traffic parallel corridors as preferred on or off street bike routes or bicycle boulevards.

» Integrate bike safety programs like the League of American Bicyclists BikeEd programs into physical or health education curricula.

2nd Avenue SE – Between 2nd Street SE and 3rd Streets SE

This block experienced two pedestrian crashes in the past three years, and is adjacent to Jamestown Middle School. The pedestrians' ages were 5 and 11. 2nd Avenue is a two-lane road with parallel parking allowed across from the school and bus loading in front of the school.

It is difficult to provide site specific recommendations without a detailed review of each crash report. However observations of operations of the street during peak morning and afternoon hours reveals a series of conflicts and visibility problems between regular traffic, on-street drop-off and pick-up movements of students including afternoon queuing, pedestrians, and on-street parallel and diagonal parking. This situation spills over into 3rd Street in the afternoon school dismissal period. Chapter Seven's downtown concepts include possible safety, parking, and circulation improvements.

Recommendations:

» Review individual crash reports along with detailed site analysis to identify any potential improvements

» Develop and communicate a safe-route-to-school plan for area students and parents

» Develop and implement street and pedestrian circulation concepts to reduce conflicts, increase visibility, and improve pedestrian safety.

2nd Street SW – Between 3rd Avenue SW and 8th Avenue SW

Seven of nine reported crashes along this roadway segment involved a moving vehicle hitting a parked car. Five of these crashes occurred at night, with crash data indicating four were on unlit roads. Roadway lighting is provided with two to three lights per block. Four of the nighttime crashes were eastbound vehicles, and parking is currently permitted on the eastbound (south) side of 2nd Street. The roadway is about 31 feet wide between curbs, which creates narrower lanes than many of Jamestown's streets. It appears the centerline dashed yellow stripe provides a slightly wider lane for westbound traffic, while providing eastbound traffic with 10–12 feet of room between the stripe and adjacent parked vehicles.

Recommendations:

» Confirm that existing roadway lighting is functioning properly and make necessary corrections.

» When the centerline stripe is replaced, stripe the westbound lane for a 10- to 10.5 foot lane width to allow for more clearance on the eastbound lane.

» Monitor crash trends after restriping to determine effectiveness or identify alternative actions.

4th Avenue NW – Between US 52/281 and 15th Street NW

Eight of the fourteen crashes reported on this segment involved a moving vehicle hitting a parked vehicle. The roadway narrows north of 8th Street NW (north side of the school) to 36 to 38 feet wide with parking allowed on both sides.

Two crashes involved school-age bicyclists near Washington Elementary School. The crash data indicated the bicycling children failed to yield. There are two flashing school speed limit beacons (20 mph) located near the school.

Recommendations:

» Consider allowing parking on one-side only north of 8th Street NW due to the narrow roadway

» Consider striping the parking lane to provide better definition of the relative territory of parking and driving lanes and contain parked cars as close as possible to the curb

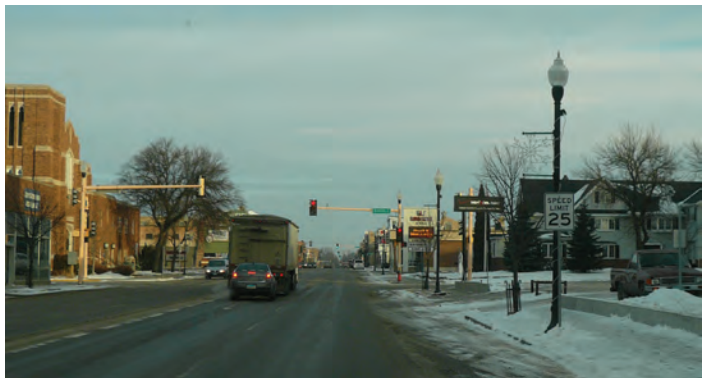
» Develop and communicate a safe-route-to-school plan for area students and parents

» Consider increased adult supervision near the school

» Improve sidewalk connectivity leading up to the school

» Integrate bike safety programs like the League of American Bicyclists BikeEd programs into physical or health education curricula.

Northbound sight restrictions on 2nd Avenue NW at 5th Street NW.



1st Avenue (US 281/US 52 Business Loop) – Between 3rd Street S and 9th Street S

This section of roadway experienced 35 crashes in 3 years with the following trends:

- Thirteen crashes (37%) involved motorists at a driveway.
- Eight crashes (23%) involved parked cars or vision obstructions caused by parked cars.
- Seven crashes (20%) were sideswipe crashes from motorists changing lanes, most often to avoid vehicles stopped in traffic to turn left.

Recommendations:

- Reduce sideswipe crash potential with a dedicated left-turn lane outside of the through traffic lanes. Implementing the road diet concept proposed earlier provides a dedicated turn lane, virtually eliminates the problem of sideswiping, reduces speeds and provides better clearance and maneuvering space for parked cars. The road diet could also provide room for bike lanes, but this extra area might be regarded more as buffer areas between poarking and travel lanes that could be used by cyclists. Bicycles generally should be directed to parallel bicycle boulevards.
- Consider restricting on-street parking adjacent to driveways to improve visibility and reduce crashes.

Intersection of 5th Street NW (US 281/52 Business Loop) and 2nd Avenue NW

This intersection of two minor arterial streets has two-way STOP control on 2nd Avenue NW, and has experienced 13 crashes over the past three years. Ten of these crashes were angled collisions involving a northbound motorist entering the intersection from the south approach. Nine of these ten incidents involved a failure to yield right-of-way, and one motorist disregarded the stop sign. The intersection has nearly 5,000 ADT east and west, and more than 3,500 ADT on the south approach. This intersection experienced six angled crashes in one year, meeting the minimum crash threshold to warrant a traffic signal or all-way STOP control. However, there are also minimum traffic volume thresholds for warranting a signal or all-way STOP, and a recent turning movement traffic count is not available.

Recommendations:

- Conduct a turning movement traffic count to capture the highest 8 hours of traffic and evaluate warrants for all-way STOP control and traffic signals
- Consider a northward curb extension at the southeast corner to bring the 2nd Avenue sidewalk crossing and STOP bar northward for improved visibility
- 5th Street is currently a four-lane roadway, which would not accommodate a curb extension due to intrusion into the outside eastbound lane. Instituting the proposed road diet on 5th Street would convert this to a three-lane roadway, which can accommodate a curb extension.

Intersection of 7th Avenue NE and 3rd Street NE

This intersection of two minor arterials is controlled by two-way STOP signs on 3rd Street, with flashing beacons above the STOP signs. The intersection experienced 14 crashes in three years, with half being angled crashes. The angled crashes are fewer than five in a given year, the crash threshold for warranting an all-way STOP. Nearly 80% of angled crashes involved southbound and eastbound traffic. Visibility in the northwest quadrant between these two directions of travel is obstructed by trees and parked vehicles. Current traffic volumes are 5,080 ADT on 7th Avenue and approximately 2,100 ADT on 3rd Street. 3rd Street is a much wider than 7th Avenue, creating a visual contradiction to the actual traffic control and volumes.

Recommendations:

- Add "Cross Traffic Does Not Stop" plaques below the STOP signs
- Restrict on-street parking along the west side of 7th Avenue from 3rd Street north to the first driveway
- Monitor crash history after recommendations are implemented
- Implement the pavement marking concept proposed above on 3rd Street to address the perceived disparity in traffic volume and control.

Intersection of 1st Avenue S (US 281/52 Business Loop) and 10th Street SE (I-94 Business Loop)

This intersection of two principal arterials is the city's busiest and presents a variety of problems to both motorists and pedestrians. It is signalized with free-flow right turn lanes on all three approaches. The intersection experienced 21 crashes in a three-year period, 18 of which were rear-end crashes. More than half (11/21) of the rear-end crashes occur in the free-flow right turn lanes, and half of those are eastbound, while 30% of rear-end crashes are westbound. Generally, free flow right turn lanes allow for higher speed right turns, although they tend to be susceptible to rear end crashes.

The traffic signals appear to be pre-timed without any vehicle detection to respond to fluctuating traffic. Casual observation noted that southwest approaching traffic, coming down from the Mill Hill grade, appears to exceed the 25 mph posted speed limit.

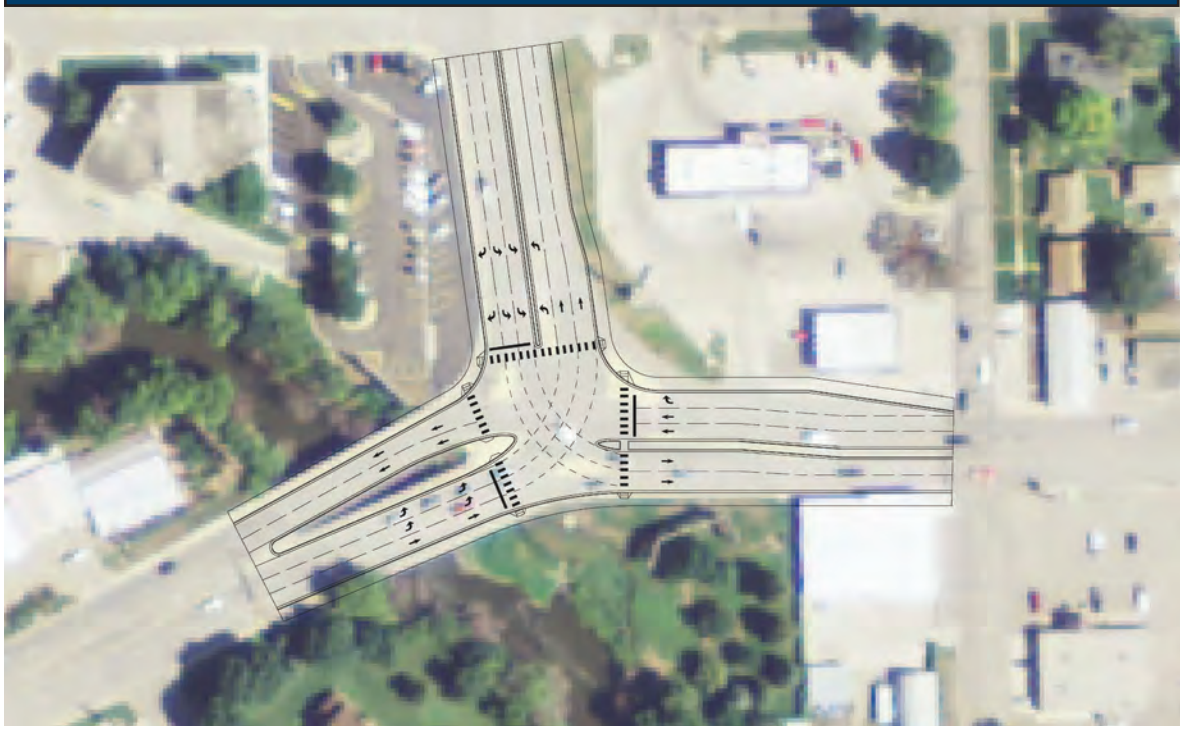
Although unrelated to motor vehicle crashes, this intersection is also a barrier to bicycle and pedestrian travel. This is a particular problem because of the major investment made in a shared use sidepath along US 52/281 between 37th Street SW and over I-94, which ends abruptly south of this intersection. Sidewalks exist on both sides of the southwest approach, and they continue north and east beyond the intersection. However, there are no provisions to allow pedestrian crossings on any of the three intersection approaches, and the northeast corner has no sidewalks. The free-flow right turn lanes further endanger pedestrians who venture through the intersection. In general, pedestrians appear to take the hint and avoid the area if at all possible.

Flashing yellow arrow signal head recommended for the 20th Street SW intersection

Recommendations:

- Conduct a speed study and review/update yellow and all-red clearance intervals to reflect actual speeds
- Consider upstream flashing beacons on the southwest approach to inform motorists when an impending stop should be expected
- Reconstruct the intersection and reconfigure the traffic signal to eliminate the free flow right turn lanes and accommodate pedestrian crossings (See Figure 6.23)
- Upgrade the traffic signal to actuated control in an effort to minimize queue lengths and resulting rear end collisions
- Improved signal coordination and progression would mitigate stop and go traffic, reducing rear-end crashes on this approach
- Provide clear pedestrian and bicycle routes to and through the intersection to other community destinations.

Figure 6.23: Proposed 1st Avenue/US 52-281/10th Street SE Intersection Geometric Revisions

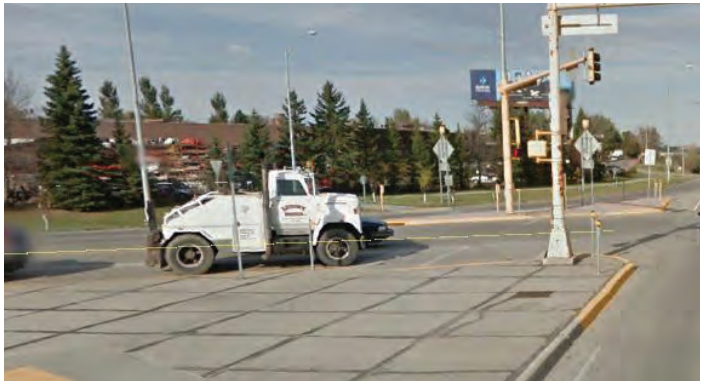


US 281/52/I-94 Business Loop and 20th Street SW

This signalized intersection experiences a higher than average susceptibility (9 of 21 incidents) to angled crashes. The majority of angled crashes were on the US 281/52 Business Loop (mainline) and occurred during left-turn movements. Contributing factors to the angled crashes may be the presence of negative offset left turns and absence of a protected left-turn phase on the higher speed US 281/52 approaches. A protected left turn phase with flashing yellow arrows may be appropriate on these approaches, combined with intersection modification. Studies show that the flashing yellow arrow will decrease the potential for angled left turn intersection crashes and provide corridor-wide signal timing progression benefits by allowing lagging protected left turn phasing without the threat of a left turn trap. Other contributing factors include wide, poorly defined driveway aprons to major visitor service destinations (gas and convenience store, hotel, restaurant) and the proximity of the frontage road off 20th Street to the intersection. These conflicts cause drivers to slow or hesitate, increasing the possibility of collisions.

Recommendation:

- Install a protected/permissive left turn phase with a flashing yellow arrow to the north/south approaches
- Modifying access to the 8th Avenue SW frontage road, moving it to the west to align with the hotel/restaurant drive and provide an additional cushion for left-turning traffic.
- Intersection and access redesign to define driveway aprons and minimize negative offset left turns.



US 281/52/I-94 Business Loop and 17th Street SW

This intersection of two principal arterials experienced 14 crashes over a three-year period. The crashes included a wide distribution of crash types and directions, making trends unclear. The oblique angle of the intersection between the business loop and 17th Street SW could contribute to driver confusion and create problems. Louis L'amour Lane, the eastern leg of the intersection, leads to Frontier Village and the Buffalo Museum. First-time tourists negotiating the unfamiliar geometry of this intersection could also be a factor.

Recommendations:

- Conduct a Road Safety Audit of the intersection, possibly as part of the scheduled improvement project on 17th Street to the west of this intersection
- Review/update yellow and all-red clearance intervals
- Consider updating to a flashing yellow arrow protected/permissive left turn signal
- Provide improved wayfinding direction to tourists leaving the Frontier Village area and heading for I-94.

I-94 Exit 258 Eastbound Ramps and US 281

This intersection of a principal arterial and an I-94 ramp terminal is STOP controlled on the off ramp approach. Of the 14 crashes at this intersection, 11 were rear-end or sideswipe crashes that occurred when a motorist was attempting to a make a right-turn onto US 281 from the westbound I-94 off-ramp. Based upon field observations, the combination of high speeds approaching this turn, the pedestrian sign blocking the view of the following yield sign (see photograph above) and driver behavior at the yield sign contribute to crashes. Motorists frequently look upstream to find gaps in traffic to merge into, and do not notice a driver stopped in front of them. This driver behavior is characteristic of free flow right turn lanes. A traffic signal is expected to be warranted by 2040, which could improve crash issues associated with gap acceptance. However traffic signals are also associated with rear-end collisions.

Recommendations:

- Check and reconfigure the locations of traffic control signs and pedestrian crossing signs to avoid sign visibility issues
- Revised traffic control to require a stop for all off ramp traffic. This is unlikely to create a significant delay for motorists
- Consider revising the off ramp right turn lane to be more perpendicular with US 281

Figure 6.24a: 2040 Functional Classification Distribution

Function Classification	Centerline Miles	Lane Miles	% of Lane Miles	% of Centerline Miles	FHWA Guidelines
Interstate	6.6	32.5	6.2%	2.6%	1% - 3%
Other Freeways/Expressways	0.0	0.0	0.0%	0.0%	0% - 2%
Other Principal Arterial	24.6	48.4	9.2%	9.7%	4% - 9%
Minor Arterial	25.3	50.5	9.6%	10.0%	7% - 14%
Major Collector	38.5	76.9	14.7%	15.2%	3% - 16%
Minor Collector	8.3	16.5	3.1%	3.3%	3% - 16%
Local	149.8	299.5	57.1%	59.2%	62% - 74%
Total	253.1	524.3	100.0%	100.0%	100.0%

Notes:

1. Local Road Mileage is Assumed to Grow Proportionally With Population Growth

2. Mileage Total Does Not Include Ramp Mileage

2040 FUNCTIONAL CLASSIFICATION NETWORK

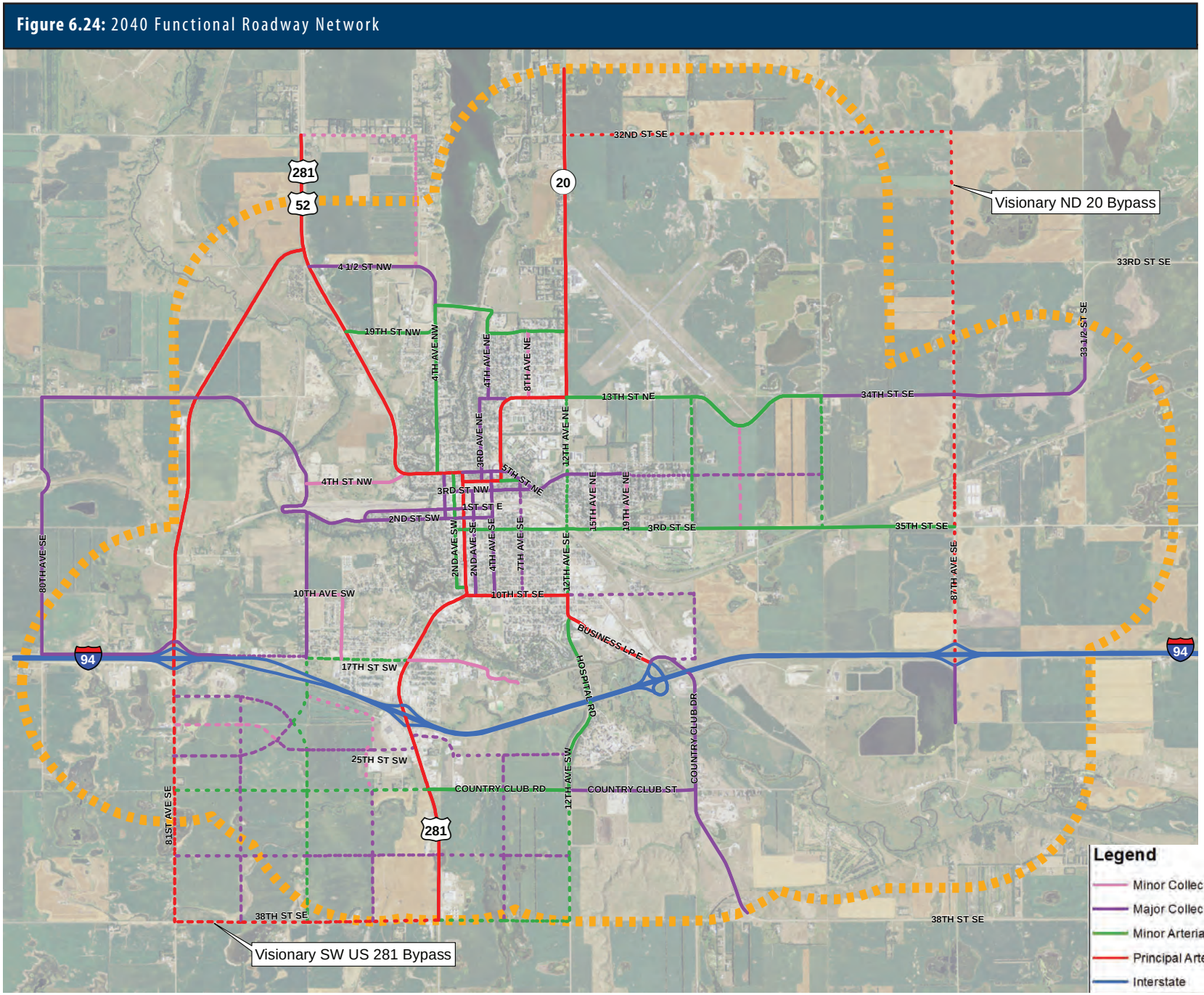
Figure 6.24 on the facing page assembles the recommendations of the preceding sections into the functional classification system for the year 2040. While largely an incremental expansion of Jamestown's existing network, it integrates both the transportation and land use recommendations of the plan and includes the following substantial changes:

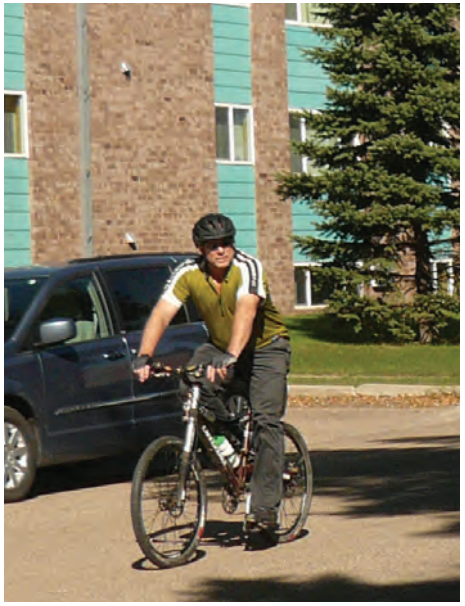
» Adding a street network to serve development south of I-94 to 38th Street SW from the bypass (81st Avenue SW) on the west to 85th Avenue SE. This includes replacing the existing Exit 257 partial interchange with the new 17th Avenue overpass, and connecting that overpass and 20th Street SW to US 281. In this sector, 17th Avenue SW and the existing 37th Street SW are classified as minor arterials and other through routes (including the existing 25th Street SW as collectors.

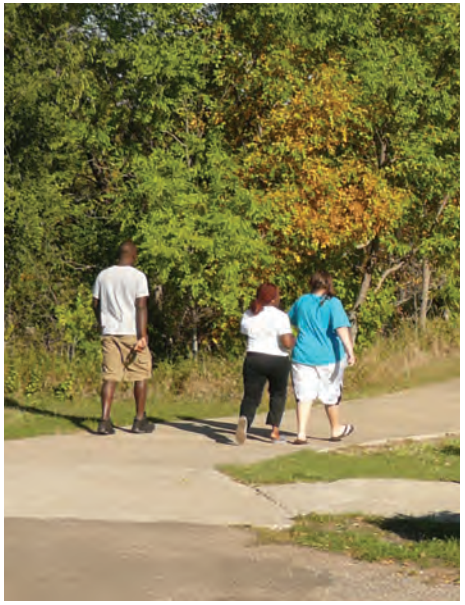
» Identifying two long-term highway bypass routes: a potential northeast route that uses 32nd Street NE and 87th Avenue East to connect Highway 20 to I-94 at the Bloom interchange; and a southwest quadrant of the US 281 bypass, utilizing 81st Avenue and 38th Street SE.

» Extending collector designation of 4th Street NE west to 86th Avenue East and minor arterial classification of 86th Avenue East between 3rd Street SE and 13th Street NE to serve the northeast development sector.

Figure 6.24: 2040 Functional Roadway Network







ACTIVE TRANSPORTATION: PEDESTRIAN AND BICYCLE ACCESS

Active transportation – walking and bicycling for utilitarian as well as recreational purposes – has significant potential for Jamestown. Among participants in the ***Forward Jamestown*** process, lack of active transportation options was the 4th most important transportation issue out of 16 issues ranked. The survey found the strongest local support for linking existing facilities, better lighting and maintenance, and off-street or separated facilities. On-street facilities such as bike lanes had lower support, although 40% of survey participants responded in favor of bike lanes.

While some larger North Dakota cities, most notably Bismarck-Mandan and Fargo, have excellent active transportation networks, Jamestown has more limited existing options for these modes. According to the American Community Survey (ACS averages for 2009-2013), only about 3.3% of Jamestown's workers walk or bike to work, although a larger share undoubtedly uses these modes for school, recreational, shopping, or social trips. At least part of this small number is caused by lack of infrastructure. Only 16% of the paved streets in Jamestown have pedestrian and/or shared use along both sides of the roadway. Roadways that accommodate all types of users are commonly called "complete streets." This type of roadway design approach offers the following benefits:

» Safety: A FHWA safety review found that streets designed with sidewalks, raised medians, traffic-calming measures and treatments for travelers with disabilities improves pedestrian safety.

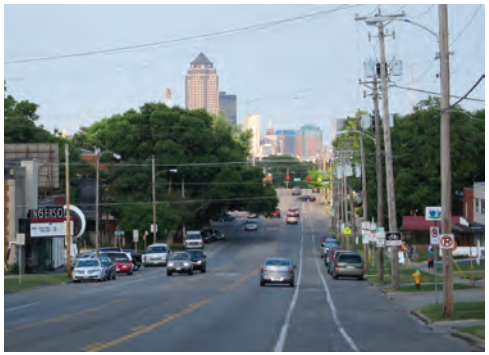
» Health: Multiple studies have found a direct correlation between walking and biking options availability and obesity rates. The Centers for Disease Control and Prevention recently named adoption of complete streets policies as a recommended strategy to prevent obesity.

» Reduced User Costs: Complete streets offer inexpensive transportation alternatives to roadway users. A recent study found that most families spend far more on transportation than on food.

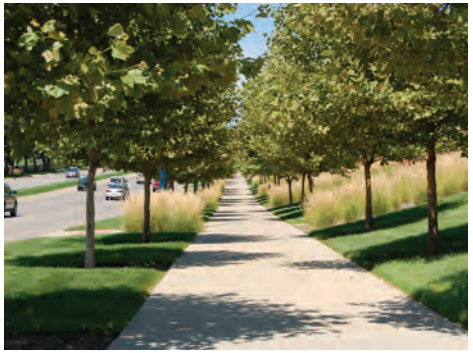
» Strengthened Communities: A recent study found that people who live in walkable communities are more likely to be socially engaged and trusting than residents living in less walk-able communities.

» Economic Benefits: Significant research has been completed on the overall economic impact of bicycle and pedestrian transportation in states such as Oregon, Iowa, New Jersey, Michigan, Wisconsin, and Arizona. Anecdotal information also indicates that bicycle facilities have had significant impact at an individual business level. However, research on the ***incremental*** impact of improved bicycle facilities in smaller cities remains rare. Recent research identified the following economic benefits of bicycle facilities. A nationwide study suggests that for every dollar spent, bicycle projects create 1.5 times the number of jobs of road projects. But most work in this area has focused on large cities. These studies show promising results, but may not be fully comparable to Jamestown. Examples of findings show that:

- 2/3 of business owners reported an increase after implementation of bicycle facilities in front of their businesses (San Francisco, CA)
- Bicycling and walking patrons were found to spend 14% and 10% more at establishments than driving patrons, respectively (New York, NY)
- 83% of survey participants indicated they would be more likely to patronize an establishment if it was accessible by bike or by







walking (New York, NY)

- Multi-modal cities tend to encourage areas of higher population density, providing more people within reach of specific businesses and consequently encouraging more business starts in walkable districts.
- Surveys on a local and national basis have shown that the millennial generation, incorporating much of the new workforce that Jamestown seeks to attract, place a high value on facilities for walking and bicycling, and the development patterns they encourage.

» Property Values: Home values were found to increase by 11% for every ½-mile closer to a bicycle trail (Indianapolis, IN)

COMPLETE STREETS PRINCIPLES

Increasingly, successful cities of all sizes have been adopting complete streets policies to offer more transportation options and become a more multimodal friendly city. The recommended plan for Jamestown includes the following complete streets principles:

» Vision: The vision for the following complete streets improvement plan is to create streets safe and accessible for travel by even the most vulnerable travelers: children, older adults and those with disabilities.

» Specific to All Users: Every trip begins and ends by walking or some use of a personal mobility device. Whether people use cars, bicycles, vans, or school buses, they become pedestrians to reach their final destination. Therefore, complete streets planning addresses the needs of all travelers along the road.

» Network Based Approach: The proposed complete streets approach is based on connecting people to places through a system of roadways that accommodates every user as much as practical. However, it is not cost effective or realistic to upgrade every street. Instead of trying to make each street perfect for every traveler, this plan developed an interwoven array of streets that provide reasonable accessibility for everyone as much as practical.

» Incorporates All Roadway Agencies: One of the major challenges to complete streets policy is including facilities (streets, highways,

Different paths to complete streets.

Top row from left: Lane diet created bike lanes on Ingersoll Avenue in Des Moines; Lane diet and reconfiguration of a six-lane arterial street on Capitol Drive in Milwaukee; Redesign and green bike lane in Wauwatosa (WI); cycle track in Evanston (IL)

Bottom row from left: Bicycle boulevard with minor changes and bike routing using local streets that parallel major arterials in Berkeley (CA); streetside trail on Martin Luther King Parkway in Des Moines; Sidepath and bike lanes on Tanglefoot Lane in Bettendorf (IA); concept for "complete alley" parallelig a busy but narrow street in Mason City (IA)

trails, and paths) owned and operated by different agencies. Often, jurisdictional changes happen quickly. For example, 7th Street SW east of 17th Avenue is owned and operated by the City, but it becomes a county and state responsibility west of 17th Avenue. The recommendations in this study will require coordination to address priorities, responsibilities, funding and maintenance.

» Context Sensitive: Proposed improvements must be sensitive to the community context. For example, sidewalks were not proposed along rural roadways with no development where they would not be used. Similarly, bike facilities are not proposed on narrow corridors with ROW constraints.

» Design Criteria: Existing design guides from AASHTO, NDDOT and the Americans with Disabilities Act Accessibility Guidelines provided the design backbone for complete streets improvements.

Once improvement strategies have been developed, the next step is to determine priorities, and then an implementation plan with identified funding. Strategies and details pertaining to implementation and funding are presented in later chapters. The following complete streets principles were used during these phases:

» Considered in All Projects: Every project, no matter the scale, was considered for complete streets potential. Under this approach, even small projects were evaluated for their potential to make meaningful improvements. In chip-seal projects for example, bike lanes or shared lane marking were considered for implementation where appropriate. Curb ramps for sidewalks could be added to any street improvement, or be a stand-alone project.

» Exceptions: Making a policy work in the real world requires developing a process to handle exceptions to providing for all modes in each project. The Federal Highway Administration's guidance on accommodating bicycle and pedestrian travel named three exceptions that have become commonly used in Complete Streets policies: 1) accommodation is not necessary on corridors where non-motorized use is prohibited, such as interstate freeways; 2) cost of accommodation is excessively disproportionate to the need or probable use; 3) a documented absence of current or future need.

ACTIVE TRANSPORTATION NETWORK PARAMETERS

An effective active transportation system is composed of a variety of facilities that include trails, sidepaths (wide shared use paths that are parallel to and usually on the same right of way as roadways), sidewalks, bike lanes in different variations, streets with minimum to moderate traffic and good connectivity, bridges, and support features like wayfinding graphics. Together, they form a network that should follow specific principles and performance measurements. We can use these measurements to evaluate Jamestown's current network and build this foundation into a truly functional and cost-effective system.

Some of the world's best work in identifying design principles was done by the Netherlands Centre for Research and Contract Standardization in Civil and Traffic Engineering (C.R.O.W.). This plan adapts the Netherlands concepts to the contexts of medium-sized American cities, identifying six guiding requirements for an effective bicycle network:

- **Integrity**: The ability of a system to link starting points continuously to destinations, and to be easily and clearly understood by users.
- **Directness**: The capacity to provide direct routes with minimum misdirection or unnecessary distance.
- **Safety**: The ability to minimize hazards and improve safety for users of all transportation modes.
- **Comfort**: Consistency with the capacities of users and avoidance of mental or physical stress.
- **Experience**: The quality of offering users a pleasant and positive experience.
- **Feasibility**: The ability to maximize benefits and minimize costs, including financial cost, inconvenience, and potential political opposition.

These six requirements express the general attributes of a good system, but must have specific criteria and even measurements that both guide the system's design and evaluate how well it works.

Figures 6.24 through 6.29 present criteria for each of the six more abstract requirements, and design guides and methods to manage ultimate performance. Each table includes:

- The **performance factors** relevant to each requirement. For example, the INTEGRITY requirement addresses the ability of users to understand the system and use it to get to their destinations. Examples of performance factors that help satisfy this requirement include clear wayfinding and directional information and continuity, ensuring that users do not confront dead-ends as they move along the route.
- The **measurements** that can be used to evaluate the success of the system and its ultimate design. For example, we can

System integrity issue. *The Mill Hill path along US 281 provides a necessary and generally well-designed connection between the north side of I-94 and major retailing on the south. But as it moves toward the city center, it narrows to a sidewalk at 13th Street SW and disappears entirely north of 4th Avenue SW, leaving pedestrians and bicyclists with no place to go. This fails the INTEGRITY performance standard of a complete transportation system.*

Figure 6.25: INTEGRITY Performance Measurements

Performance Factor	Measures	Performance Standard
Comprehensiveness	Number of connected destinations on system	Major destination types identified by survey and presented in destinations analysis should all be accessible by the network. 100 percent of top destination types, 80 percent of all destinations should be served. New destinations as developed should be developed along the network or served by extensions.
Continuity	Number of discontinuities along individual routes	Users headed on a route to a destination must not be dropped at a terminus without route or directional information. Even at incremental levels, route endings must make functional sense. Transitions between facility types must be clear to users and well-defined. Transitions from one type of infrastructure to another along the same route should avoid leading cyclists of different capabilities into uncomfortable settings or beyond their capacities. Infrastructure should be recognizable and its features (pavement markings, design conventions) consistent throughout the system
Wayfinding/directional information	Completeness and clarity of signage Economy and efficiency of graphics Complaints from users	Signs must keep users informed and oriented at all points. Sign system should avoid ambiguities that cause users to feel lost or require them to carry unnecessary support materials. Signs should be clear, simple, consistent, and readable, and should be consistent with the Manual on Uniform Traffic Control Devices (MUTCD). Use of the Clearview font is recommended.
Route choice	Number of alternative routes of approximately equal distance	Ultimate system provides most users with a minimum of two alternatives of approximately equal distance. Minimum distance between alternative routes should be about 500 feet.
Consistency	Percentage of typical reported trips accommodated by the ultimate network.	Typically, a minimum of 50-70 percent of most trips to identified destinations should be accommodated by the bikeways network.

Figure 6.26: DIRECTNESS Performance Measurements

Performance Factor	Measures	Performance Standard
Access	Coverage Access to all parts of the city	The network should provide convenient access to all parts of the city. As a standard, all urban residential areas should be within one-half mile from one of the system's routes, and should be connected to those routes by a relatively direct local street connection.
Bicycling speed	Design and average speed of system	The network should permit relatively consistent operation at a steady speed without excessive delays. System should be able to deliver an average point to point speed between 12 and 15 mph for users. A portion of routes should permit operation in a 15 to 20 mph range.
Diversions and misdirections	Maximum range of detours or diversions from a straight line between destinations. "Detour ratio:" Ratio of actual versus direct distance between two points.	Routes should connect points with a minimum amount of misdirections. Users should perceive that the route is always taking them in the desired direction, without making them reverse themselves or go out of their way to an unreasonable degree. Maximum diversion of a straight line connecting two key points on a route should not exceed 0.25 miles on either side of the line. Detour ratio (distance between two points/shortest possible distance) should not exceed 1:2 over long distances and 1:4 over short distances.
Delays	Amount of time spent not moving per mile	Routes should minimize unnecessary or frustrating delays, including excessive numbers of stop signs, and delays at uncontrolled intersections waiting for gaps in cross traffic. Routes should maximize use of existing signalized crossings. Target design should limit maximum delays to about 30 seconds per mile over long distances and 45 seconds per mile over short distances.
Intersections	Bicycle direction through intersections	Bicyclists should be able to continue through intersections as vehicles. Situations that force cyclists to become pedestrians in order to negotiate intersections should be avoided.

Figure 6.27: SAFETY Performance Measurements

Performance Factor	Measures	Performance Standard
Reduced number and fear of crash incidents	Number of incidents Reactions/perceptions of users	The network should reduce the rate of crashes over ten year periods. Data collection should be sufficient to trace baseline data and measure the impact of improvements. Bikeways system users should feel that the system protects their physical safety, as measured by both use of routes and survey instruments.
Appropriate routing: mixing versus separation of traffic	Average daily traffic (ADT)criteria for mixed traffic Traffic speed criteria for mixed traffic	System design should avoid encounters between bicyclists and incompatible motor traffic streams (high volumes and/or high speeds). Separation and protection of vulnerable users should increase as incompatibilities increase.
Infrastructure, visibility, signage	Pairing of context and infrastructure solutions Mutual visibility and awareness of bicycle and motor vehicles	Infrastructure should be designed for utility by at least 80 percent of the potential market. Warning signage directed to motorists should be sufficient to alert them to the presence of cyclists along the travel route. Surfaces and markings should be clearly visible to all users. Obstructions, such as landscaping, road geometry, and vertical elements, should not block routine visibility of cyclists and motorists. Trail and pathway geometries should avoid sharp turns and alignments that hide cyclists operating in opposing directions. Where these conditions are unavoidable, devices such as mirrors and advisory signs should be used to reduce hazards.
Door hazards and parking conflicts	Number of incidents Parking configurations Location of bicycle tracking guides	Component design should track bicycles outside of the door hazard zone. Back-out hazards of head-in parking should be avoided or mitigated when diagonal parking is used along streets.
Intersection conflicts	Location and types of pavement markings Number of intersections or crossings per mile	Intersections should provide a clearly defined and visible track through them for cyclists. Sidepaths should generally be used on continuous segments with a minimum number of interruptions.
Complaints	Number of complaints per facility type	Complaints should be recorded by type of infrastructure and location of facility, to set priorities for remedial action.

Figure 6.28: COMFORT Performance Measurements

Performance Factor	Measures	Performance Standard
Road surface	Quality and type of road surface Materials Incidence of longitudinal cracking and expansion joints	The network's components should provide a reasonably smooth surface with a minimum of potholes and areas of paving deterioration. Roads should be free of hazardous conditions such as settlement and longitudinal cracks and pavement separation. All routes in the urban system should be hard-surfaced, unless specifically designated for limited use.
Hills	Number and length of hills and inclines Maximum grades on segments for both long and short distances	As a general rule, routes should avoid more than one incline over 5 percent for each mile of travel. Maximum average design grades should not exceed 7 percent over a hill not to exceed 400 feet in length; or 5 percent over the course of a mile. Off-road climbing facilities should be provided where slow-moving bike traffic can obstruct motor vehicles and increase motorist conflict.
Traffic stress	Average daily traffic (ADT) Average traffic speed Volume of truck traffic	Generally, the network should choose paths of lower resistance/incompatibility wherever possible and when DIRECTNESS standards can be reasonably complied with. The network should avoid mixed traffic situations over 5,000 vehicles per day (vpd) when alternatives exist. Alternatives can include bike lanes, separations, or alternative right-of-way.
Stops that interrupt rhythm and continuity	Number of stop signs/segment	Network routes should avoid or redirect frequent stop sign controls. The number of stops between endpoints should not exceed three (1 per quarter mile average) per mile segment.

Satisfying safety. *Right turn bypasses with generous refuge medians help the US 52-281 sidepath crossing at 17th Street relatively safe and comfortable, despite the width and geometry of the intersection.*

Enjoying the experience. *Pictures speak louder than words in Klaus and McElroy Parks.*

Figure 6.29: EXPERIENCE Performance Measurements

Performance Factor	Measures	Performance Standard
Surrounding land use	Neighborhood setting Adjacent residential or open space use, including institutional campuses Adjacent street-oriented commercial	Surrounding land use should provide the network user with an attractive adjacent urban environment. As a design target, a minimum of 75 percent of the length of the route should pass through residential, open space, or street-oriented (main street) commercial environments. Routes should provide access to commercial and personal support services, such as food places, convenience stores, and restrooms.
Landscape	Location and extent of parks or maintained open space	Network should maximize exposure or use right-of-ways along or through public parks and open spaces. Environmental contexts to be maximized include parks, waterways and lakes, and landscaped settings.
Social safety	Residential development patterns Observability: Presence of windows or visible uses along the route Population density or number of users	The network should provide routes with a high degree of observability – street oriented uses, residential frontages, buildings that provide vantage points that provide security to system users. Areas that seem insecure, including industrial precincts, areas with few street-oriented businesses, or areas with little use or visible maintenance should generally be avoided, except where necessary to make connections.
Furnishings and design	On-trail landscaping, supporting furnishings	Network routes should include landscaping, street furnishings, lighting, rest stops, graphics, and other elements that promote the overall experience. These features are particularly important along trails.

Figure 6.30: FEASIBILITY Performance Measurements

Performance Factor	Measures	Performance Standard
Cost effectiveness	Route cost Maximum use of low-cost components Population/destination density	The network should generate maximum benefit at minimum cost. Where possible, selected routes should favor segments that can be adapted to bicycle use with economical features rather than requiring major capital investments. Initial routes should be located in areas with a high probability of use intensity: substantial population density and/or incidence of destinations. Initial investments should integrate existing assets, extending their reach into other neighborhoods and increasing access to them. Major off-street investments should concentrate on closing gaps in an on-street system.
Phasing and incremental integrity	Self-contained value Ability to evolve	The network should provide value and integrity at all stages of completion. A first stage should increase bicycle access and use in ways that make future phases logical. The network should be incremental, capable of building on an initial foundation in gradual phases. Phases should be affordable, fitting within a modest annual allocation by the city, and complemented by major capital investments incorporating other sources.
Neighborhood relationships and friction	Parking patterns Development and circulation patterns	The network should avoid conflict situations, where a route is likely to encounter intense local opposition. Initial design should avoid impact on potentially controversial areas, such as parking, without neighborhood assent. Involuntary acquisition of right-of-way should be avoided wherever possible. Detailed planning processes to implement specific routes should include local area or stakeholder participation.

THE ACTIVE TRANSPORTATION NETWORK

Jamestown's primary existing resources include the Mill Hill sidepath along US 281, Jamestown Reservoir Trail, and the 3rd Street SE sidepath, and paths and park roads within McElroy and Klaus Parks. However, these facilities are disconnected and fail to create a fully connected system. ***Forward Jamestown*** proposes a phased active transportation network made up of new shared-use path segments that largely extend and fill gaps in the existing system and serve significant community destinations; on-street bicycle facilities using the city's network of wide, lightly traveled streets at minimum capital cost; and sidewalks for pedestrians. Figure 6.30 illustrates the proposed ultimate network by type of facility. Figures 6.31 and 6.32 illustrate the tow major phases of development and summarize the highlights of each phase.

Figure 6.31: 2040 Active Transportation System by Facility Type

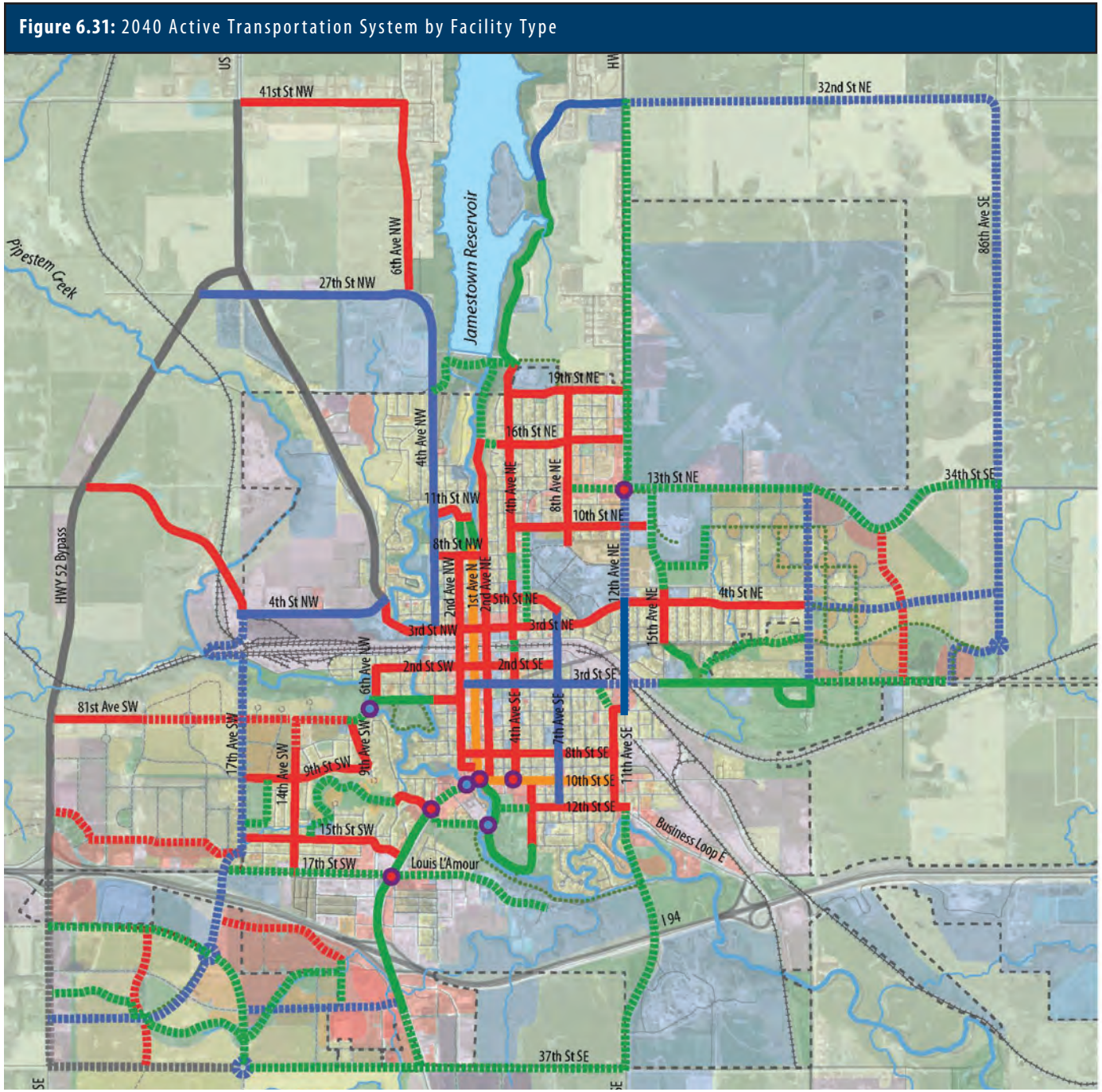
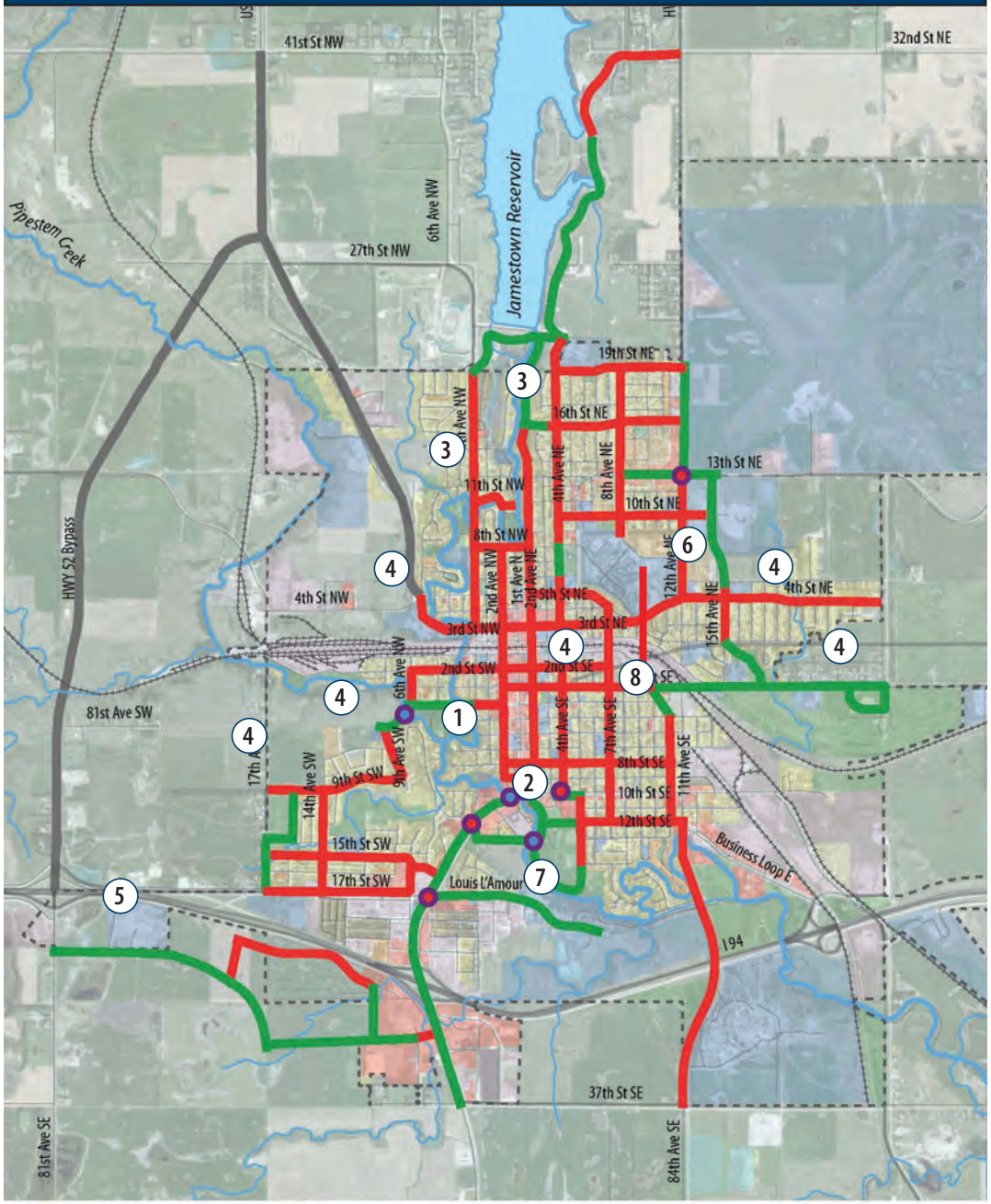


Figure 6.32: Phase One Active Transportation System, 2015-2025



Active Transportation Network

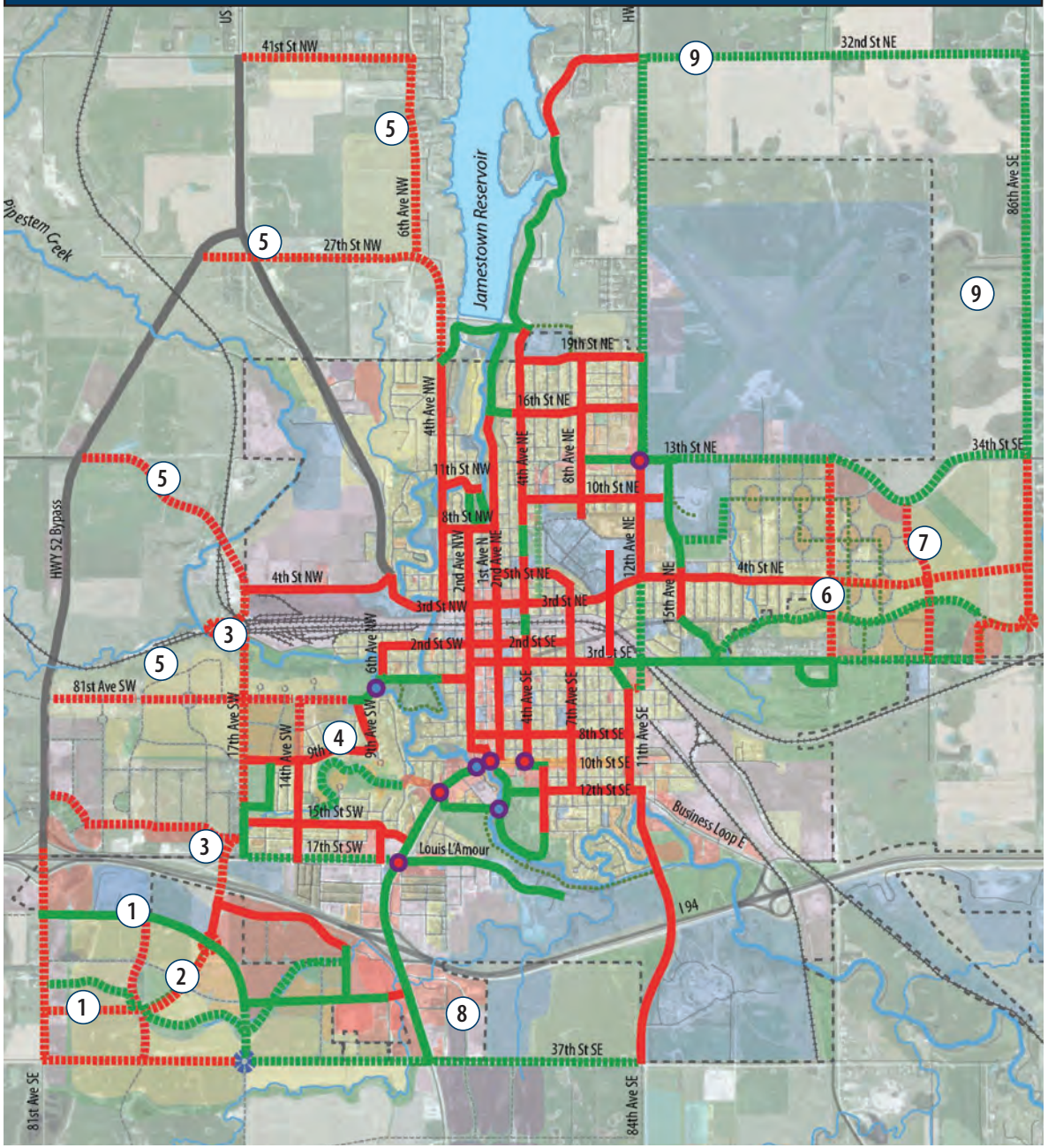
Ten Year Phase, 2015-2025

- City Boundary
- Railroads
- James River
- Major Rivers
- Minor Rivers/Streams
- Initial Phase Trails/Multi-use Paths
- Ultimate Phase Trails/Multi-Use Paths
- Initial Phase On-Street Facilities (Sharrows/Bike Lanes/Cycle Tracks)
- Ultimate Phase On-Street Facilities (Sharrows/Bike Lanes/Cycle Tracks
- Paved Shoulders
- Neighborhood Paths
- Pedestrian Corridors
- Proposed Pathway Bridges

INITIAL PHASE HIGHLIGHTS

1. » Extending the US 281 path into Downtown, including a new bridge or expanded path at the James River crossing, the reconfigured 1st Ave and 10th Street intersection, a shared use path connecting that intersection to 2nd and 4th Streets SE, and sharrow or bike lane marked routes along those streets to Downtown.
2. » A new extension and bridge from the US 281 path to McElroy Park.
3. » On-street routes linking Downtown to the Reservoir Trail.
4. » Crosstown east-west routes utilizing bike lanes on 3rd Street SE and 4th Street SE to Klaus Park; and on-street routes on 3rd Street NW and 4th Street NE.
5. » A shared use path developed as part of the 20th Street/25th Street SW extension, linking JRMC to the US 281 Path.
6. » An east-side connection from the 3rd Street SE path to the Jamestown High School campus.
7. » A shared use path to Frontier Village, the Buffalo Museum, and footpaths along the James River, linking both visitors and local citizens to these important community assets.
8. » 12th Avenue Overpass with pedestrian and bicycle facilities, with continuation to 5th Street.

Figure 6.33: Phase Two Active Transportation System, 2025-2040



Active Transportation Network

Ultimate Phase, 2025-2040

- City Boundary
- Railroads
- James River
- Major Rivers
- Minor Rivers/Streams
- Initial Phase Trails/Multi-use Paths
- Ultimate Phase Trails/Multi-Use Paths
- Initial Phase On-Street Facilities (Sharrows/Bike Lanes/Cycle Tracks)
- Ultimate Phase On-Street Facilities (Sharrows/Bike Lanes/Cycle Tracks
- Paved Shoulders
- Neighborhood Paths
- Pedestrian Corridors
- Proposed Pathway Bridges

ULTIMATE PHASE HIGHLIGHTS

1. » Complete street development on collectors in the Southwest Development Sector
2. » East-west trail in drainageway/greenway in Southwest Jamestown between 81st Avenue and US 281
3. » Trails and bike lanes on West Crossing over I-94 with continuation of multi-modal section along 17th Avenue SW.
4. » Trail through Mill Hill cluster development site linking US 281 Path with Louis L'Amour School and west side.
5. » Extension of shoulders or sidepaths to serve west bank of Reservoir and extensions to the Bypass.
6. » East-west trail along drainageway/greenway north of 3rd Street
7. » Extensions of complete street facilities to 86th Avenue, serving the Northeast Development Sector.
8. » Trail extension along 37th Street SE.
9. » Peripheral Northeast Trail around airport

measure the effectiveness of a wayfinding system by its ability to guide users intuitively without either creating too many signs.

- The **performance standards** that establish the design objectives and guidelines for each of these factors. For example, a wayfinding system should avoid ambiguities that confuse users and follow graphic standards that are immediately and clearly understood.

RECOMMENDED BICYCLE FACILITY DESIGN STANDARDS

Jamestown's bicycle infrastructure should follow the guidance found in the AASHTO ***Guide for the Development of Bicycle Facilities (Fourth Edition, 2012).*** Generally, facilities in the proposed Jamestown system are relatively standard, and include trails/shared use paths, bike lanes, and shared lanes. The general standards for these facilities are summarized here. Two specific variations of facilities are also discussed below. These include "sidepaths," separated shared use paths that are adjacent to and usually share right-of-way width streets and highways; and bicycle boulevards, a special kind of shared route that includes some specific features to enhance the bicycle and pedestrian environment.

Shared-Use Paths

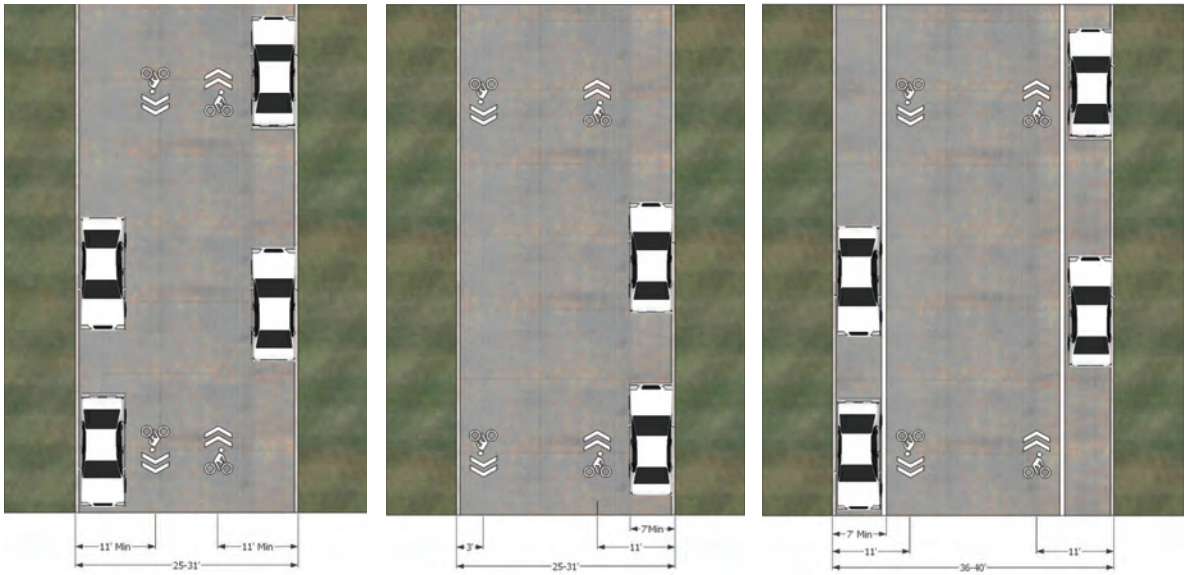
Shared-use paths should be 10 feet wide with 2-foot clearance from obstacles wherever possible. An 8-foot wide shared-use path is acceptable where there are ROW limitations such as environmental features, bridge abutments, utility structures, fences, etc.

Bike Lanes

Recommended width for bike lanes is 5 feet. When bike lanes are adjacent to parking lanes, additional width (up to a maximum of 7 feet) is desirable to give bicyclists space to avoid the "door zone." Conventional bike lanes are located to the left of the parking lane, although protected cycle tracks, which are growing in popularity in American cities, are often located between the curb and parked cars with a buffered separation. When bike lanes are located adjacent to curb and gutter, a minimum of 4 feet measured from the longitudinal joint of the gutter pan to the center of the bike lane line should be provided. The protected bike lane concept for 3rd Street SE, pre-

Shared use path at Jamestown Reservoir. *Fully separated facilities are favored by pedestrians and most recreational bicyclists.*

Bike lanes on streets with parking.



Shared lane markings (sharrows). *Illustrations show location of sharrows in different contexts. Minimum distance from curb to the center of the marking is 11 feet. Some cities have installed sharrows in the center of travel lanes to increase visibility, suggest that cyclists can use the full lane, and avoid tire tracks to extend the life of the marking.*

Best sidepath practices. *Bettendorf (IA) reconstructed a street as a three-lane section and provides both a bicycle land and a sidepath on a road with heavy school use. The bike lane gives an alternative for experienced riders and provides an extra margin of safety for the sidepath user. At right, Clayton Road in the Saint Louis metropolitan area clearly marks its sidepath crossings and provides clear cautions to motorists approaching on side streets.*

sented in the Road Diet discussion, recommends using the street's width to provide a buffer between the bike and travel lanes.

Shared Lanes

Shared lanes which have automobile and bike traffic use the same lane can be considered on low volume, low speed roadways (speed limit less than 35 mph) where sufficient roadway width is not available for the provision of dedicated bike lanes. Shared lanes of 14 feet wide are desirable if feasible, allowing a vehicle to pass a bicyclist without encroaching on the opposing through lane. But narrower roadways may also be used as bicycle routes with shared lane markings using AASHTO guidance.

Shared lane markings, also called sharrows, can be placed on the roadway to indicate that the lane is to be shared by automobiles and bicyclists. When located adjacent to parking lanes, shared lane markings should be located 11 feet from the back of the curb. When located adjacent to curb and gutter, shared lane markings should be located 4 feet from the back of the curb.

Sidepaths

Sidepaths are shared use paths separated from the stream of traffic but within the right-of-way of a street or road. They are a staple of European bicycle systems, but are controversial among facility designers and urban bicyclists. They present significant challenges at intersections but allow cyclists to operate comfortably on direct major routes. They are already in use in Jamestown along US 52/281 and 3rd Street SE, and will have a continuing role in the system.

Yet sidepaths have been controversial. The 1999 AASHTO standards generally advised against their use. The new 2012 standards are somewhat more tolerant, but still include major reservations about these roadside facilities. Objections to the use of sidepaths in this country are based on conflicts with dominant motor vehicle traffic and include:

- Hazardous intersections. On two-way paths, motorists do not expect, and often do not see, bicyclists in the counterflow direction. Right-turning motorists in many cases ignore path users moving straight ahead, creating the possibility of a crash. This always places path users on the defensive.
- Right-of-way ambiguities at driveways and intersections. Usually, cyclists on a sidepath along a major street are forced to yield to intersecting traffic. Cyclists traveling on streets, on the other hand, have the same right of way rights as motorists.
- Path blockages. Cross traffic on driveways and intersecting streets frequently blocks the sidepath by stopping across it.

But sidepaths, despite their shortcomings, are used frequently and remain popular with many users. Many cyclists justifiably fear rear-end (or overtaking) crashes or distracted drivers wandering into even a well-designed bicycle lane. Sidepaths also accommodate pedestrians and other wheeled users who cannot use streets. Because they are likely to have a significant role in Jamestown's ultimate active transportation network, and because they tend to serve families, children, inexperienced cyclists, people with disabilities, and

Figure 6.34: Sidepath Separation from Roadways

Adjacent Road Speed Limit (mph)	Recommended Sidepath Separation (feet)
35	5-8
45	12-14
55	20-24

pedestrians in general, they should receive special attention in this plan.

Sidepath Research and Applications in Jamestown

While research on American sidepath safety is scarce, a recent Harvard University study based on the Montreal system compared crash rates on sidepaths to on-street facilities. It suggested that sidepaths had higher crash rates at intersections and lower rates along their main line, producing about the same overall crash rates as on-street facilities. Since crashes at speed in mid-block areas have a higher probability of fatality than lower speed crashes at intersections, the study indicated that these facilities should not be excluded from urban bicycle systems in this country.

- Ideally, shared use sidepaths should be used in corridors with few driveway or street interruptions, and should not exclude use of on-road facilities when bike lanes and shoulders are feasible.
- Complete streets should include both on-street facilities and paths for pedestrians and bicyclists who are uncomfortable with riding even in protected, on-street bike lanes.
- Sidepath design guidelines should make these facilities as safe as possible, specifically by addressing their greatest weakness: road and driveway intersections.
- Sidepaths are safest when driveway and cross-street interruptions are fewest. Therefore, they work best along arterial streets that have long stretches of relatively uninterrupted frontage, like campuses, the airport, and roads with access management.

Pathway Setbacks

Research conducted for the Florida Department of Transportation indicates that, to maximize safety, separation of the sidepath from a roadway should increase as road speeds increase. The Florida data suggest that at lower adjacent road speeds, a smaller separation produces crash rates lower than those of the adjacent road, while that threshold is reached at greater separations for high speed facilities. AASHTO 2012 recommends a minimum separation of five feet without a physical barrier. Figure 6.32 displays a standard separation for sidepaths based on the Florida findings.

Access Management

Access management makes sidepaths safer. There is no one clear standard for frequency of access points. Reasonable guidance is provided by the Idaho Department of Transportation, recommending a maximum of eight crossings per mile, with a preferred maximum of five crossings per mile. This access management policy should apply to the primarily arterial streets proposed for these corridors.

Sidepath Concepts and Adjacent Roadway Character

As mentioned earlier, two-way sidepaths, in common use in American road design as "multi-purpose paths," set up an unexpected counterflow direction that creates the possibility of crashes. Florida DOT research indicates that two-way sidepaths appear safer along two-lane and three-lane roadways and less safe along multi-lane roads with 2 or more lanes in each direction. In addition to the higher speeds typical of wider roads, this phenomenon can be explained by:

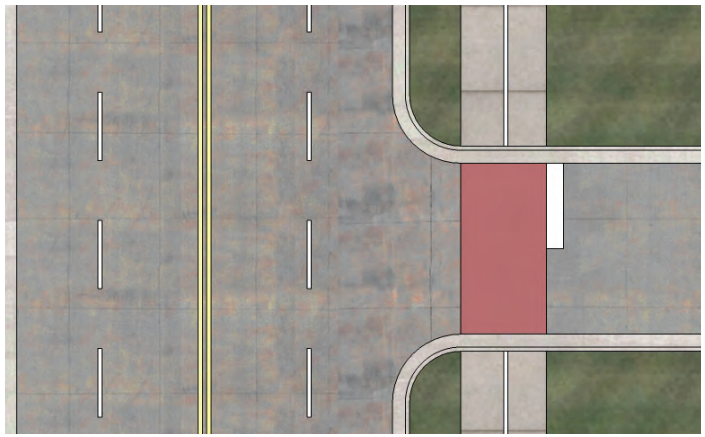
- The field of vision of motorists opposite the sidepath. On wider roadways, motorists cannot see or are less aware of a sidepath on the opposite side, creating a particular crash hazard between path users and left-turning traffic.
- Motorists exiting intersecting driveways or streets are looking for oncoming traffic at a shallower angle because of the greater street width, directing attention away from the already unexpected sidepath traffic to their right.

An option is a one-way sidepath. The previously discussed Harvard study on the Montreal system also suggests that sidepaths are safer than on-street operation between intersections, but more hazardous at street crossings. The one-way cycle track, in combina-

One-way sidepath in Cambridge, MA. *One-way sidepaths keep bicycle traffic moving in the same direction as traffic, reducing the potential hazard created by counterflow movements tghat motorists do not expect and often don't scan for.*

Sidepath Advance Warning Sign. *This sign, a variation of the Railroad Advance Warning Sign, is used on sidepaths in Denver that parallel multi-lane arterials.*

Visible Sidepath Crossing. *This application uses a change in paving material to increase visibility on MLK Parkway in Des Moines.*



tion with bicycle lanes or shoulders on the adjacent road, addresses these issues, and AASHTO 2012 tends to recommend this design, but they are not in frequent use. The one-way sidepath should be considered:

- Along four-lane divided or five-lane corridors with local street accesses.
- When a sidepath is recommended but, for various reasons, access cannot be closely managed.

In-line Crossings at Driveways and Streets

Sidepaths and multi-use trails share design characteristics at intersections. Recommendations for the special conditions presented by sidepath crossings are presented here.

Ramp Design. Curb/intersection cuts or ramps must be logical and in the direct travel line of bicyclists. We suggest avoiding the common practice of placing the ramp on a diagonal at the corner, tending to direct users into the middle of the intersection rather than to a crossing.

A design that places a curb in the direct travel line of bicyclists is hazardous. The intersection area must be free of obstructions, such as poles for traffic signal mast arms or lighting standards.

Separation Distance. The separation of the trail crossing from the edge of the roadway is a troublesome issue. Some sidepath designs put users in serious jeopardy by placement that either provides poor visibility or inadequate reaction time. Based on specifications in Finland and the Netherlands, where sidepaths are prevalent, the Florida DOT's path intersection design manual proposes three discreet and mutually exclusive separation distance categories:

» 1-2 meters (0-6.56 feet)

» 5-10 meters (16.4-32.8 feet)

» more than 30 meters (over 98.4 feet)

These distances are based on the interaction of five variables: motor vehicle turning speed, stacking distance, driver and/or pathway user awareness, and chance of pathway right-of-way priority. These categories are designed to prevent awkward conditions that may impair visibility and not give either the trail user or motorist opportunity to respond. Figure 6.33 summarizes the relative performance of each placement for these variables.

Defining Crossings

- All crossings across streets and major driveways should be clearly defined. Street intersection markings should utilize standard zebra or ladder markings incorporated at mid-block crossings and other major intersections. Colored concrete or asphalt surface treatments may also be used. A simpler dashed crosswalk boundary may be used as a convention at driveway crossings.
- At intersections controlled by stop signs or signals, stop bars should be provided for motor vehicles ahead of the crosswalk to discourage motorists from obstructing the path. Surface triangles that indicate a motorist yield may be used in place of stop bars. Unfortunately,

Figure 6.35: Performance Applications of Various Sidepath Separations

Parameter	1-2m 0-6.56 feet	5-10m 16.4-32.8 feet	over 30m over 98.4 feet
Motor vehicle turning speed	Lowest	Higher	Highest
Motor vehicle stacking space	None	Yes better at higher separation	Yes
Driver awareness of path user	Higher	Lower	High or Low
Path user awareness of driver	Higher	Lower	Highest
Chance of pathway ROW priority	Higher	Lower	Lowest

Source: *Intersection Design Manual, Florida Department of Transportation*

many American motorists do not understand this marking.

Signage

While not a standard MUTCD sign, warning signs along roads with sidepaths similar to advisories for parallel railroad tracks can be useful. This provides motorists with a background awareness of the parallel sidepath.

Right-of-Way Assignment

Ideally, pathway users paralleling a street with right-of-way priority should share that priority. It is common practice to place STOP signs facing the sidepath even at private driveway intersections, or to place a STOP control facing both an intersecting minor street and facing the sidepath. These practices create important ambiguites that require clarification. In any case, sidepath users must be advised to ride defensively, and assume that they will usually be forced to yield the right-of-way.

Overly frequent stop signs will cause many path users to ignore the traffic control entirely. The Florida manual states that path users may be intolerant to delay, wish to maintain momentum, or have limited traffic knowledge. When stop signs are installed on a path at extremely low volume intersections or even driveways, path users tend to disregard them. The wheeled user, cyclist or skater is, in effect, being taught this dangerous behavior by these "crying wolf" signs since he or she thinks there is little chance of cross traffic.

Intersection Geometrics

In addition to crossing visibility and access management techniques, the 2012 AASHTO advises the following design measures to address intersection and driveway crossing safety:

- Intersection and driveway design to reduce speed and heighten driver awareness of path users through tighter corner radii, avoidance of high-speed free flow movements, median refuge islands, and good sight lines.
- Design measures to reduce pathway user speed at intersection approaches, being certain that designs do not create hazards.
- Calming traffic speeds on the adjacent roadway.
- Designs that encourage good cyclist visibility between roadway and sidepaths at intersections.
- Keeping approaches to sidepaths clear of obstructions, including stopped motor vehicles, through stopbars and yield markings.

Signal Cycles

- Avoiding permissive left turns on busy parallel roads and sidepath crossings. Use a protected left-turn cycle with a sidepath-oriented bicycle/pedestrian signal, giving a red signal to the sidepath user when left turns are permitted.
- Prohibiting right turns on red at intersections with a major sidepath crossing.

Bicycle Boulevards

THe concept of "bicycle boulevards" adapts well to the proposed Jamestown system. Typically, "bicycle boulevards" are direct segments that run parallel to arterial streets, but serve the same destinations as busier arterials. Examples are 2nd Avenue SE and SW, quieter streets that parallel 1st Avenue and serve the same destinations.. Bicycle boulevards utilize the pavement marking conventions discussed above, but may include other identifying and functional enhancements. These vary in level of capital investment and complexity, and include (in relatively ascending order of complexity):

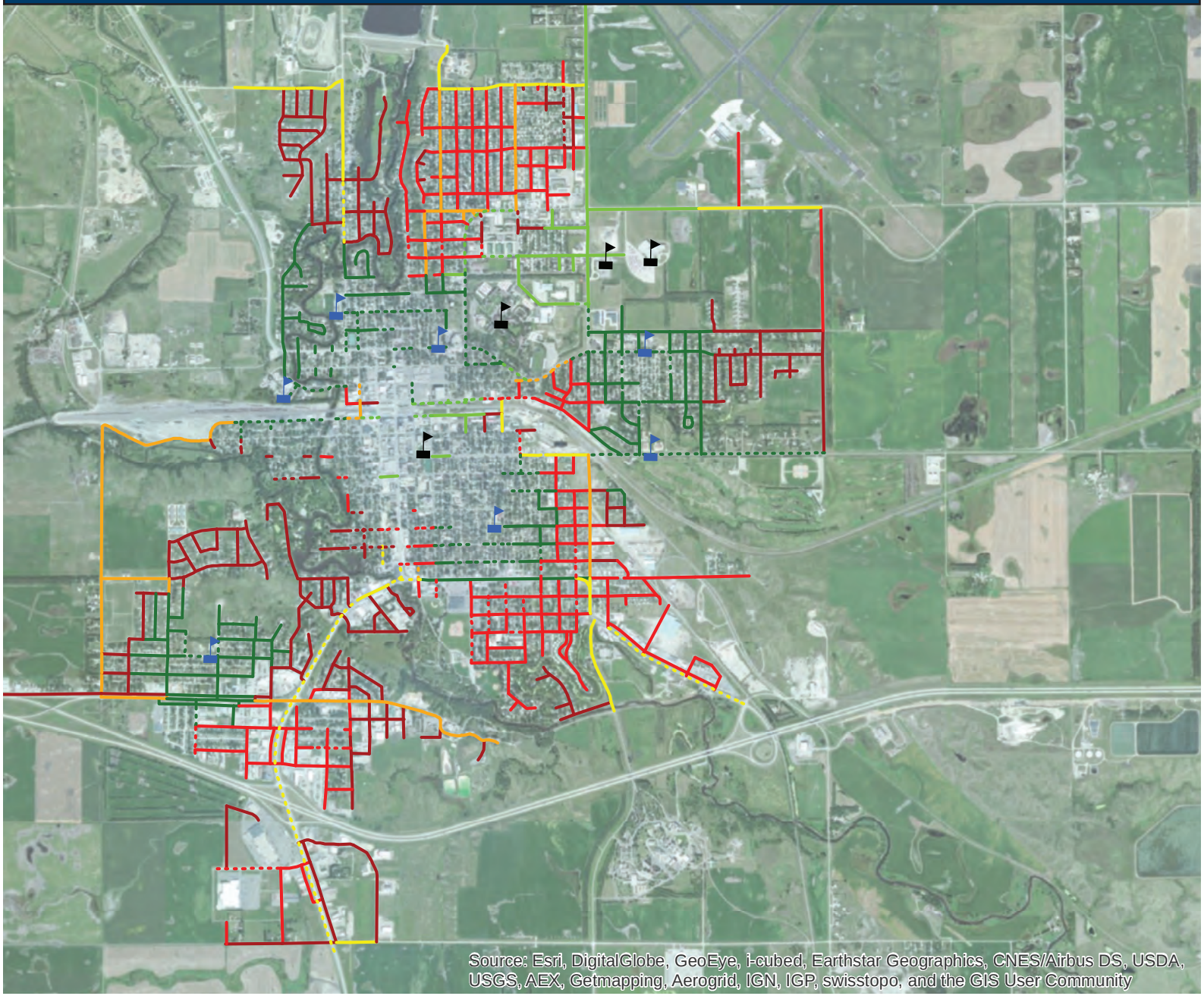
» Signage. Signage has the advantage of being highly visible and low in cost. Bicycle boulevard signs include identification signs (special street signs and bicycle boulevard identifiers) and advisory or caution signs (share-the-road signs).

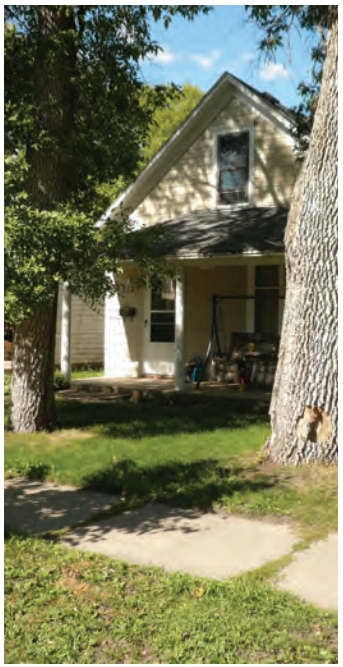
» Intersection and road priority. Bicycle boulevards should provide reasonable through priority to bicyclists, and by extension other users of the street. These include turning stop signs, to stop traffic on cross streets in favor of bicyclists and other users of the boulevard, and installing signs that explicitly give priority to cyclists.

» Traffic calmers. These features slow motor vehicle traffic at key points to equalize speeds between bicycles and cars. These techniques may include corner nodes with well-defined crosswalks, mini traffic circles, speed tables, and patterned or textured pavements at crosswalks or in intersections.

Bicycle Boulevard. *Special signage and sharrows are used to identify 5th Street in Topeka, KS as the preferred bicycle route. This street parallels a major arterial one block away.*

Figure 6.36: Sidewalk Improvement Program Rankings by Priority Tier





PEDESTRIAN NETWORK

The city's pedestrian network has the same responsibilities as the street network: to create a safe environment that provides access and mobility. As noted earlier, sidewalks can reduce pedestrian crashes up to 88%. To promote safe mobility of vulnerable populations (children, elderly, disabled), sidewalks must directly connect points of origins, such as people's homes, and destinations, such as schools. To accomplish this, ADA compliant sidewalks should desirably be installed on both sides of every city street with a few minor exceptions.

However, with only 16% of paved Jamestown streets having sidewalks on both sides of the street, meeting such a goal requires a massive financial investment. Many existing developments do not readily accommodate new sidewalks. Utilities, trees and other infrastructure may be in the way, adding substantially to sidewalk construction cost. Shallow building setbacks and terrain also eliminate sidewalk options in some areas. The very high cost of retrofitting sidewalks citywide makes it unrealistic to remedy this deficiency in the near future. Achieving a safe and efficient pedestrian network in Jamestown requires a dedicated, long-term approach.

This approach must start somewhere, and this involves setting priorities. Characteristics that determine high priority sidewalks include:

- Proximity to pedestrian generators: Studies have found that most pedestrians will walk a maximum of ¼- to ½-mile to a destination. Quarter-mile buffers were used at major pedestrian generators to account for the fact that buffers measure distance "as the crow flies" versus considering the actual zig-zag movements required on the grid of city streets.
- Type of adjacent pedestrian generator: As discussed in previous chapters, pedestrian generators such as schools produce more traffic from vulnerable young pedestrians.
- Commuter needs: implementing facilities only surrounding generators produced a disjointed pedestrian system. Pedestrians, even more so than motorists, prefer to the take the shortest route possible to destinations. For long trips, this typically involves using facilities adjacent to collectors or arterials as these corridors are the most direct and efficient routes through the city and between origins and destinations.

Figure 6.37: Sidewalk Construction Mileage and Costs

Tier	Mileage One Side	Mileage Both Sides	Total Mileage	Estimated Cost (2015 Dollars)
1	5.82	12.43	18.25	$ 5,183,693
2	1.19	3.58	4.77	$ 1,410,816
3	2.82	3.42	6.24	$ 1,632,154
4	0.45	6.99	7.44	$ 2,438,093
5	2.54	20.45	22.99	$ 7,339,622
6	0.97	23.43	24.4	$ 8,081,357
Total	13.79	70.3	84.09	$ 26,085,734

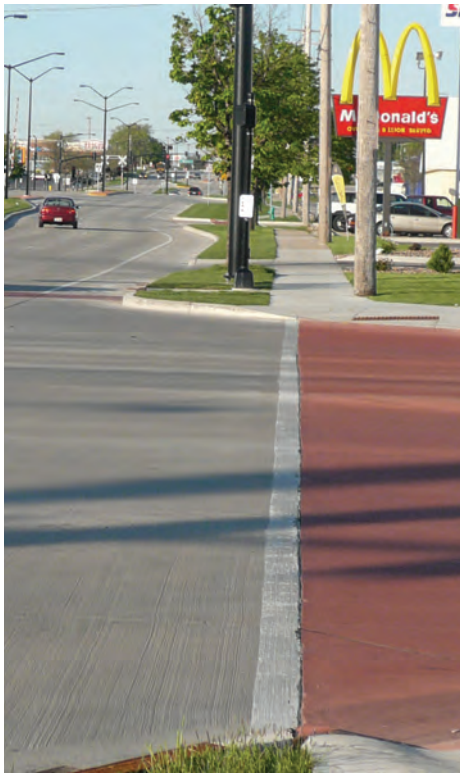
- Presence on the Active Transportation Network: Streets on the network illustrated in Figure 6.30 should include sidewalks if other pedestrian facilities such as shared-use paths are not present. Most of these streets fit the other three characteristics defined above.

Using these criteria, this incremental program establishes a priority tier system as follows:

- Tier 1: Sidewalks within 0.25 miles of elementary and special needs schools, starting from the schools and moving outward.
- Tier 2: Sidewalks within 0.25 miles of middle school, high school or college, starting from the schools and moving outward.
- Tier 3: Sidewalks along arterials and other streets in the active transportation network.
- Tier 4: Sidewalks along collectors.
- Tier 5: Sidewalks in areas of Traffic Analysis Zones (TAZ) with combined households and employment over 250, or connections to parks and recreation facilities.
- Tier 6: All remaining city streets where the road is paved alongside residential or commercial land use.

Many sections of sidewalks fall within more than one tier. For the sake of continuity, sidewalks are only categorized by the highest tier.

Figure 6.34 ranks sidewalk improvement segments by tier. This map is illustrative and should be used as a flexible tool in building new sidewalks. For example, a flexible approach will allow a particular segment of roadway to be retrofitted with sidewalks in response



Military Avenue in Green Bay, WI. *A complete street retrofit of a major arterial near Lambeau Field, home of the Packers.*

to new safety issues, even if this corridor may be designated as a longer-term improvement area. This would also allow filling short gaps that would complete sidewalk facilities along an entire corridor, even if those segments appear in a lower-priority tier.

Figure 6.35 displays recommended sidewalk construction mileage by tier and associated cost estimates. Funding for sidewalk development, especially at this scale, is a significant challenge. State and federal assistance is not available at levels approaching those for road construction, although pedestrian facilities and sidepaths are typically included in major projects on the functionally classified system. The Transportation Alternatives Program, Safe Routes to Schools, and Safety programs all can help finance pedestrian facilities, but the available resources fall well short of needs. Sidewalks on local streets, such as the service field around schools, are traditionally paid for by special assessments, requiring adjacent property owners to pay for facilities that they often do not believe provides them with a direct benefit.

Identifying a Major Sidewalk System, on the model of a major street network, provides one option for community-supported financing. This concept defines certain sidewalks as having primary benefits to the general community rather than to individual property owners. Thus, funding for this priority is a responsibility of the community at large, with incremental funds allocated through the budget process or as part of a bond issue. Tier 1, 2, 3 sidewalks and other segments that meet strategic priorities such as filling gaps in service, may constitute such a Major Sidewalk System.

ROADWAY CROSS-SECTION STANDARDS

During the next 25 years, Jamestown will undertake a number of significant street construction projects. These include street systems that will open new development areas, two important "barrier-breaking" overpasses that have multiple benefits for safety and access, and other street upgrades and reconfigurations. This provides the opportunity to promote a safer, cost effective, stronger and healthier community by taking a complete streets approach to roadway design. There is no single design prescription for complete streets because each street is unique and responds to its community context. However, the following policies can be prepared to ensure streets are designed for all modes of transportation, and not only for for motor vehicles.

Recommended Policies:

- All new developments have sidewalks on both sides of a local roadway, meet ADA guidelines and have grass boulevards separating the curb or edge of pavement from the sidewalk.
- All collector or arterial roadways should have either a sidewalk and on-street bicycle facility on both sides of the street, or a sidewalk on one side and an off-street pedestrian/bicycle facility on the other. The final configuration decisions should be based upon a review of the greater transportation system and area context (speed, right-of-way, connectivity, etc.).
- Developments along an existing or planned collector or arterial roadways should dedicate sufficient ROW to accommodate any pedestrian and/or bicycle facility requirements. Developers should also be responsible for facility construction along their public roadway frontage, and accommodate pedestrian access to their door.
- Roadway projects should begin and end pedestrian and bicycle facilities at logical termini and interconnect with the existing pedestrian and bicycle network.
- The City of Jamestown, NDDOT, Stutsman County, the University of Jamestown, and others should work together to ensure that planned pedestrian and bicycle improvements are connected, regardless of which agency is responsible for the roadway and abutting facility.

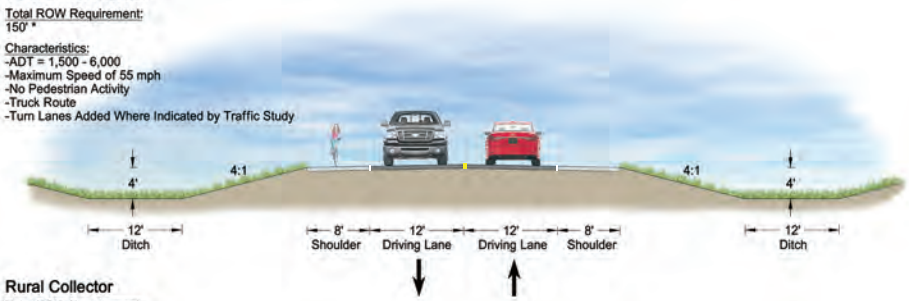
Adopting roadway cross-section standards as part of the local development code ensures that new roadways accommodate all forms of travel. Ensuring consistent roadway design is pivotal in developing an interconnected vehicular, pedestrian and bicycle networks. Figure 6.36 illustrates typical roadway cross-sections that execute these policies. The proposed configurations are consistent with the recommended corridor preservation standards outlined in the Corridor Preservation section of this plan.

Figure 6.38: Typical Roadway Sections

Rural Minor Arterial

Total ROW Requirement:
150' *

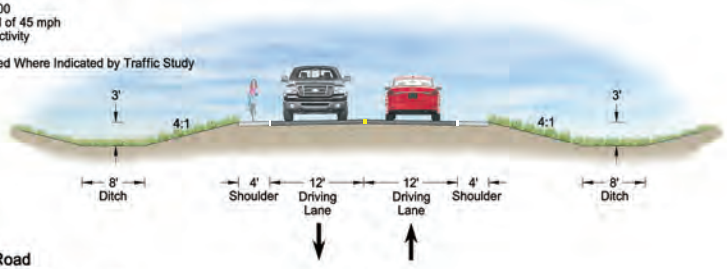
Characteristics:
-ADT = 1,500 - 6,000
-Maximum Speed of 55 mph
-No Pedestrian Activity
-Truck Route
-Turn Lanes Added Where Indicated by Traffic Study



Rural Collector

Total ROW Requirement:
110' *

Characteristics:
-ADT = 750 - 1,500
-Maximum Speed of 45 mph
-No Pedestrian Activity
-Truck Route
-Turn Lanes Added Where Indicated by Traffic Study



Rural Local Road

Total ROW Requirement:
80' (Backslopes Part of Adjacent Lots) *

Characteristics:
-ADT < 750
-Maximum Speed of 25 mph
-Service Trucks Only, Except in Industrial Areas
-Turn Lanes Added Where Indicated by Traffic Study

Urban Industrial Local Road

Total ROW Requirement:
80'

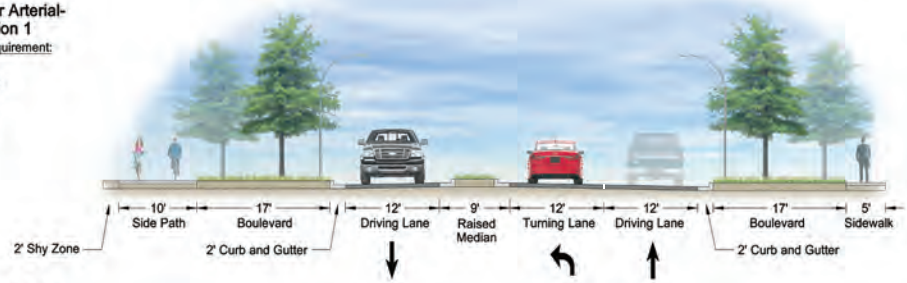
Characteristics:
-Parking Prohibited
-Unrestricted Truck Access
-Increased Corner Radii for Truck Movements

Notes:
*Additional ROW required where significant elevation disparities exist
-Additional ROW may be required at intersections in order to accomodate additional geometric configurations (i.e. turn lanes, signals, roundabouts, etc.)
-Clear zone is dependent on speed and additional clear zone is dependent on shoulder width
-Due to the features of the site or highway, the city may require additional ROW

Urban Minor Arterial- Bicycle Option 1

Total ROW Requirement:
100'

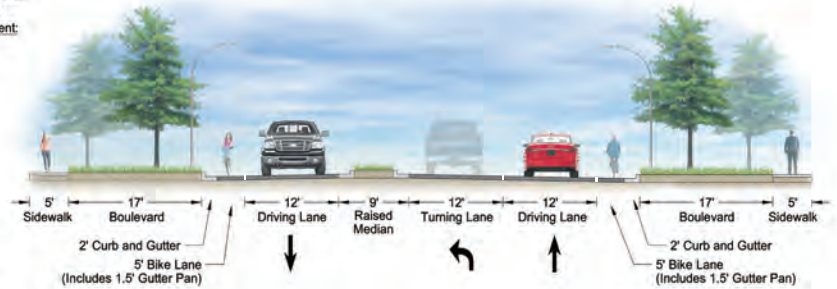
Characteristics:
-Non CBD
-Truck Route
-No Parking
-Side Path



Urban Minor Arterial- Bicycle Option 2

Total ROW Requirement:
100'

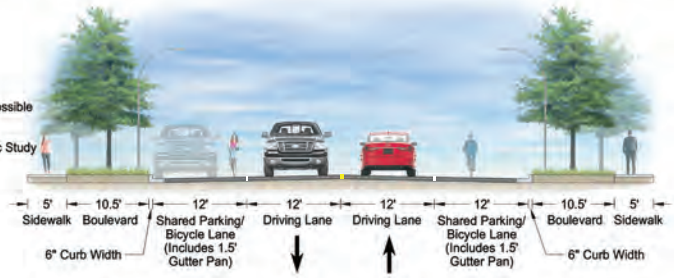
Characteristics:
-Non CBD
-Truck Route
-No Parking
-Bicycle Lanes



Urban Collector/ Commercial Road

Total ROW Requirement:
80'

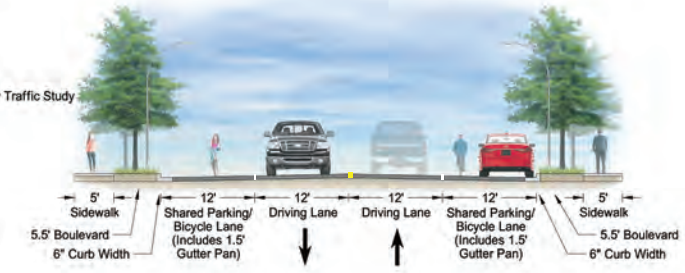
Characteristics:
-Non CBD
-No Median
-Bicycles Share the Road
-Restrict Parking to One Side of Road or No Parking on Urban Collector, if Possible
-Parking Allowed on Commercial Road
-Truck Route
-Turn Lanes Added Where Indicated by Traffic Study



Urban Residential Road

Total ROW Requirement:
70'

Characteristics:
-Parking Allowed
-Bicycles Share the Road
-Service Trucks Only
-Turn Lanes Added Where Indicated by Traffic Study



Safe Routes to School signage. *These signs in Omaha, NE mark good routes for kids to use on their way to elementary school.*

ADDITIONAL ACTIVE TRANSPORTATION RECOMMENDATIONS

ADA Transition Plan

The Americans with Disabilities Act (ADA) standards stipulate that state and local government, public entities or agencies of more than 50 people are required to perform self-evaluations of their current facilities to determine where improvements are necessary to achieve ADA compliance. The agencies are then required to develop a Program Access Plan, which can be called a Transition Plan, to address any deficiencies. The Plan is intended to achieve the following:

- Identify physical obstacles that limit the accessibility of facilities to individuals with disabilities.
- Describe the methods to be used to make the facilities accessible.
- Provide a schedule for making the access modifications.
- Identify the public officials responsible for implementation of the Transition Plan.

Currently the city of Jamestown has not adopted a formal ADA Transition Plan. Completing a full-scale ADA deficiency evaluation was beyond the scope of this report. The pedestrian improvement plan outlined previously should include ADA provisions for all new sidewalks. This still does not account for several hundred curb ramps and other ADA deficiencies noted in Chapter Three. An ADA Transition Plan typically goes beyond just public sidewalks, and usually includes other public facilities as well.

Recommendation:

- Develop an ADA transition plan to identify a systematic and achievable improvement plan for the City.

Safe Routes to School

Many routes typically used by children walking or biking to and from school are hindered by connectivity gaps and ambiguous route choices. Studies have found that children's limited roadway and cognitive experience prevents them from assessing street crossing situations as effectively as adults. A Safe Routes to School (SRTS) program promotes healthy and safer walking and bicycling to school. An SRTS plan identifies preferred routes for children to use between their home and school, and also identifies infrastructure improvements along designated routes.

The goal of the program is to increase the safety of children walking to and from school and increase the number of children who choose to walk and bicycle. On a broader level, SRTS programs can enhance children's health and well-being, reduce injuries from motor vehicles, ease traffic congestion near the school and improve air quality and improve community members' overall quality of life.

SRTS programs typically include the following five E's:

- Engineering: Creating operational and physical improvements to the infrastructure surrounding schools to reduce speeds and potential conflicts with motor vehicle traffic and establish safer and fully accessible crossings, walkways, trails and bikeways.
- Education: Teaching children and parents about the broad range of transportation choices, instructing them in important lifelong bicycling and walking safety skills and launching driver safety campaigns near schools.
- Enforcement: Partnering with local law enforcement to ensure traffic laws are obeyed near schools (including enforcement of speeds, yielding to pedestrians in crossings and proper walking and cycling behaviors) and initiating community enforcement, such as crossing guard programs.
- Encouragement: Using events and activities to promote walking and bicycling.
- Evaluation: Monitoring and documenting outcomes and trends through data collection, including collection of data before and after.

The pedestrian network improvement plan is the first step toward completing the engineering phase of the SRTS plan. A SRTS plan includes a much more detailed engineering improvement plan including but not limited to an evaluation of such factors as pick-up/drop-off locations, traffic control, pavement markings, and signage. Many SRTS plans focus on elementary schools, although the original SRTS program included K-8 students. Students older than elementary-age are typically much more experienced and do not require

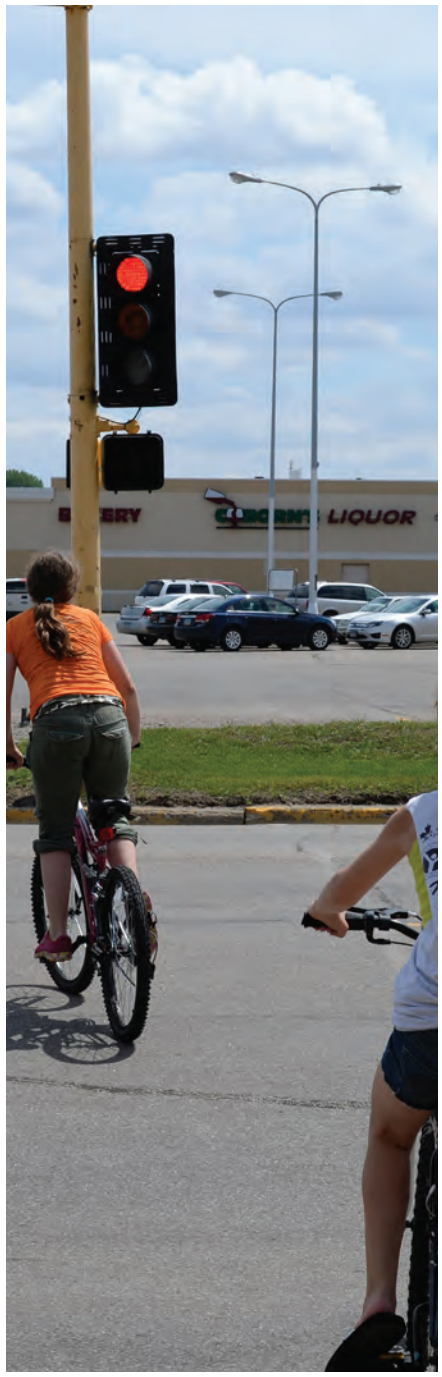
extensive SRTS features. Additionally, many older students will choose to drive to school rather than walk or bike. However, school traffic circulation studies at high schools and campuses can provide benefits to motorists and non-motorists alike.

Recommendation:

» Develop a Safe Routes To School plan for Jamestown's elementary and middle schools.

Transit

The ***Forward Jamestown*** process sought public input on the need for fixed route transit system. In common with virtually every transit system in the country, farebox revenues would be far from adequate to support operating costs and a significant subsidy would be needed. The results indicated that fixed or flexible route transit beyond current services was not a high priority for Jamestown. If demand for transit increases into the future, the analysis in Chapter Three can help advance discussions and future analyses. If transit rises on the community agenda, a detailed feasibility study should be conducted at that time.



chapter seven

Special Districts

Jamestown's citizens appreciate the importance of Downtown and other significant districts to the quality and economy of the city. People believe that creating an active, living downtown as a high community priority that will both improve the lives of today's residents and make the city more attractive in the future. Yet, despite significant assets, they also believe that the city center jell as a compelling destination. This chapter examines possibilities for Downtown Jamestown, and other strategic districts and corridors, where land use, transportation, urban design, community quality, and economic opportunity coincide.

DOWNTOWN JAMESTOWN

Jamestown's citizens identify a strong city center as a key community priority. They recognize the importance of a strong and vital downtown in accomplishing the strategic goal of attracting new households and offering both a quality lifestyle and economic opportunity. They also believe that Downtown Jamestown falls short of providing this kind of active urban environment.

But it is sometimes easy to dismiss and overlook strengths, and Downtown Jamestown has many assets. These include a strong business mix, a major health care presence, successful residential reuse projects, the Civic Center, a downtown hotel, the excellent Jamestown Art Center, public educational facilities in the Middle School and public library, a downtown supermarket, and stable surrounding neighborhoods. These features provide a solid foundation for building the type of center that is alive and active around the clock and around the year.

Forward Jamestown's downtown approach is based on building a public environment that creates opportunities for private business and reinvestment. While Downtown has abundant public spaces in parking lots and railside green space, they separate rather than reinforce activity. In addition, most downtown stakeholders view 1st Avenue, the center's main street, as a barrier rather than a magnet. But these streets and public spaces also hold the key to revitalization.

The MSDA Strategic Plan

Building an approach to Downtown that integrates land use, transportation, and public space starts with a review of recent assessment and thinking about the district. In 2013, the Jamestown Main Street Downtown Association undertook a strategic planning process with the assistance of Strategic Plan ND. The planning process included an assessment of strengths, weaknesses, opportunities, and threats relevant to both the organization and the district. Organizational issues, while extremely important to the success of Downtown, are outside the focus of this plan. But the assessment of physical issues, such as environment, public space, parking, and transportation are very helpful in defining physical development strategies. To use the words of the strategic plan document, the process attempted to define three to five specific projects that "matched SW (strengths and weaknesses) with OT (opportunities and weaknesses). The ideas contained in this chapter build on this foundation.

From the perspective of the physical (rather than programmatic or organizational environment), the MSDA process viewed downtown **strengths** as:

- Trees (with some dissent)
- Historic buildings
- Quiet zone improvements

Weaknesses included:

» Vacant buildings, including vacant, upper-level housing units.

» Lack of adequate parking both for businesses and prospective residents.

» Lack of vision or direction

Opportunities included:

» The proposed Art Park project, development of a public open space on land owned by the Jamestown Art Center on the northwest corner of 2nd Street NW and 1st Avenue.

» Possibility of additional retailing from the regional mall by accommodating tenants who might relocate because of high occupancy costs.

» The alternatives for relocation or enhancement of the Library.

» Demand and preferences for Downtown housing.

» The potential markets and activities created by proximity to the University of Jamestown.

» The Civic Center and opportunities for increased use and conference events.

» New landscaping and lighting.

» The downtown arts and cultural environment, including thr Jamestown Arts Center.

Threats cited by the strategic plan process included:

» Lack of parking.

» The width and barrier effect of First Avenue and traffic on the street.

» Pedestrian safety.

» Downtown buildings that either need work or have experienced "renovation" projects that do not support the historic or original quality of the structures.

» Continued decentralization of retailing to the Mall area or to strip centers.

» Possible relocation of the library.

» Lack of activity centers.

In response to this analysis, the MSDA strategic plan focused on four areas of activity:

» Organizational rebranding of the downtown association.

Jamestown Arts Center and Art Park today (above). *The Arts Center and its Art Park picture epitomize the opportunity presented for downtown by an emphasis on arts and culture.* ***First Street (left)*** *is expected to perform both as a highway and a pedestrian-friendly street, but was viewed as a threat during the MSDA strategic planning process.*

***Linear green space** between the Civic Center and the railroad is underutilized now but could provide an important opportunity in the future.*

***Jamestown Civic Center** is an anchor for Downtown Jamestown, but requires both upgrades and an improved surrounding environment.*

- Infrastructure Advocacy, focusing on modifications to First Avenue with a road diet and investigation of diagonal parking; and improvement of downtown parking lots.
- Art Park Advocacy, including planning and implementation of the Art Park.
- Repurposing Projects, including library options, location and programming of the Two Rivers Activity Center, a major community recreation center initiative that is discussed in Chapter Eight.
- Improvement and expanded utilization of the Civic Center, including expansion options and environment enhancement.

A Long-Term Downtown Vision

This strategic planning effort provides an extremely helpful platform for defining a long-term vision for Downtown, with shorter-term steps and projects that advance this vision. It also helps to crystallize the nexus between the land use and transportation focuses of Forward Jamestown in relation to city center revitalization.

MSDA's vision for Downtown is "to become a thriving, vibrant, innovative, sustainable heart of the community." However, a vision needs specific goals to become meaningful. Based on the strategic plan and the observations and discussions held with stakeholders during the Forward Jamestown process, the Downtown of the future should:

Provide Jamestown's citizens and visitors with many reasons to be Downtown. Today's Downtown is seen as being a single-purpose service environment that lacks interest and "closes" in the evening. This is not entirely true – the district has a solid if small retail base, a major downtown supermarket, a superb and innovative community arts center, cultural/educational institutions that include a library and middle school, a university within walking distance, a large hotel, the city's major events center, and a significant medical and office presence. But it lacks the "glue" and features that bring people downtown for more than one purpose at a time, or that injects a sense of discovery or finding the unexpected.

Create public spaces that make Downtown both attractive and fun. Downtown lacks a public square, a great park, or other outdoor events space. Almost every great downtown has a great public space somewhere, either traditional or recently built. That's because the importance of quality public space has been repeatedly demonstrated in both big and small cities. Fun and experience are important to successful downtowns, and most people do not perceive Downtown Jamestown as fun. We also must remember that Jamestown has long, cold winters. This does not mean that Downtown does not need outdoor public space, but rather needs to develop space that hosts activity for four seasons. The emphasis on the Art Park in the MSDA strategic plan suggests that the community recognizes the value of quality public space.

Connect downtown's assets. While Downtown Jamestown is actually fairly compact, its distances seem vast – a problem that contributes the feeling that it does not quite "hang together." The central corridor in what is basically a five-block long district is taken up by a mainline railroad and parking lots with some valuable but little-used linear green space. And the three major assets from the city's urban renewal program – the Civic Center, Gladstone Hotel, and Business Center – are separated by two square block surface parking lots. Considering and providing clear and safe connections can help break up these distances.

Create a safe and pleasant main street environment. First Avenue must be both a highway and a pedestrian-oriented main street, and does not fully succeed in either role. Its four-lane section with

From Left: *The dividing effectsof the BNSf mainline and surrounding parking lots splits Downtown into north and south areas; upper level building areas provide owners with development possibilities for future housing possibilities; Jamestown Business Center.*

parallel parking and sixty-foot width are designed to move major traffic, but present a major barrier to pedestrians and affect the feel and scale of the street. On the other hand, traffic signals at three intersections that lack warrants for signals are intended to ease pedestrians and local cross-traffic, but creates a frustrating stop-and-go traffic flow that has not created a good street environment. Most downtown stakeholders regard the First Avenue environment as a top priority. Chapter Six's plan for a road diet with features to make the street easier to cross at strategic locations is consistent with this goal.

Build on arts, cultural, and educational themes. The Jamestown Art Center is a unique mission-based asset that has already established a regional destination in the arts. The library is another important asset that has decided to reinvest in Downtown. It is restructuring its approach to a needed facility improvement after defeat of a bond issue in 2014. Jamestown Middle School places young people in the center of the district. The Civic Center hosts a variety of events, including concerts and productions, and the University of Jamestown is within easy walking distance of downtown, but does not have a visible presence. These assets can be coordinated to create a compelling arts and cultural presence in the district, that can also have commercial and even residential spin-offs.

Increase customer convenience. Downtown must work on both functional and experiential levels, and function begins in many downtowns with the availability and convenience of parking. Numerical availability is rarely the problem, and under normal conditions, Downtown Jamestown has an overabundance of places to put cars. Convenience is another item entirely. Customers are far more tolerant of distance to front door in the large parking lot of a mass retailer than in a more finely scaled downtown business district. In Downtown, everyone wants to park immediately outside the front door of the one business that they are visiting. Of course, this is impossible, but there are several ways to address this problem in the context of a downtown.

Make downtown a neighborhood. Many revitalizing downtowns have found housing to be an indispensable part of their programs. Jamestown benefits from having solid residential neighborhoods adjacent to the city center, but incorporating housing into the downtown core creates an environment that lives after sunset. A sense of neighborhood also implies vigilance that addresses deteriorating or underused properties, and puts them to more productive use.

A DOWNTOWN DEVELOPMENT CONCEPT

While ***Forward Jamestown*** is not specifically a downtown development plan, its comprehensive character must address this important community priority. The downtown development program described in this section is designed to create a public project and policy environment that helps to advance desirable private for-profit and civic reinvestment in the district – to help set forces in motion that advance Downtown Jamestown in its quest to realize the vision statement of its Main Street association. This program is illustrated in Figure 7.1. We can describe the concept through four inter-related focuses:

- First Avenue
- The Civic Center area
- Railside corridor
- Art Core
- Library and Middle School area
- Neighborhood Development

First Avenue

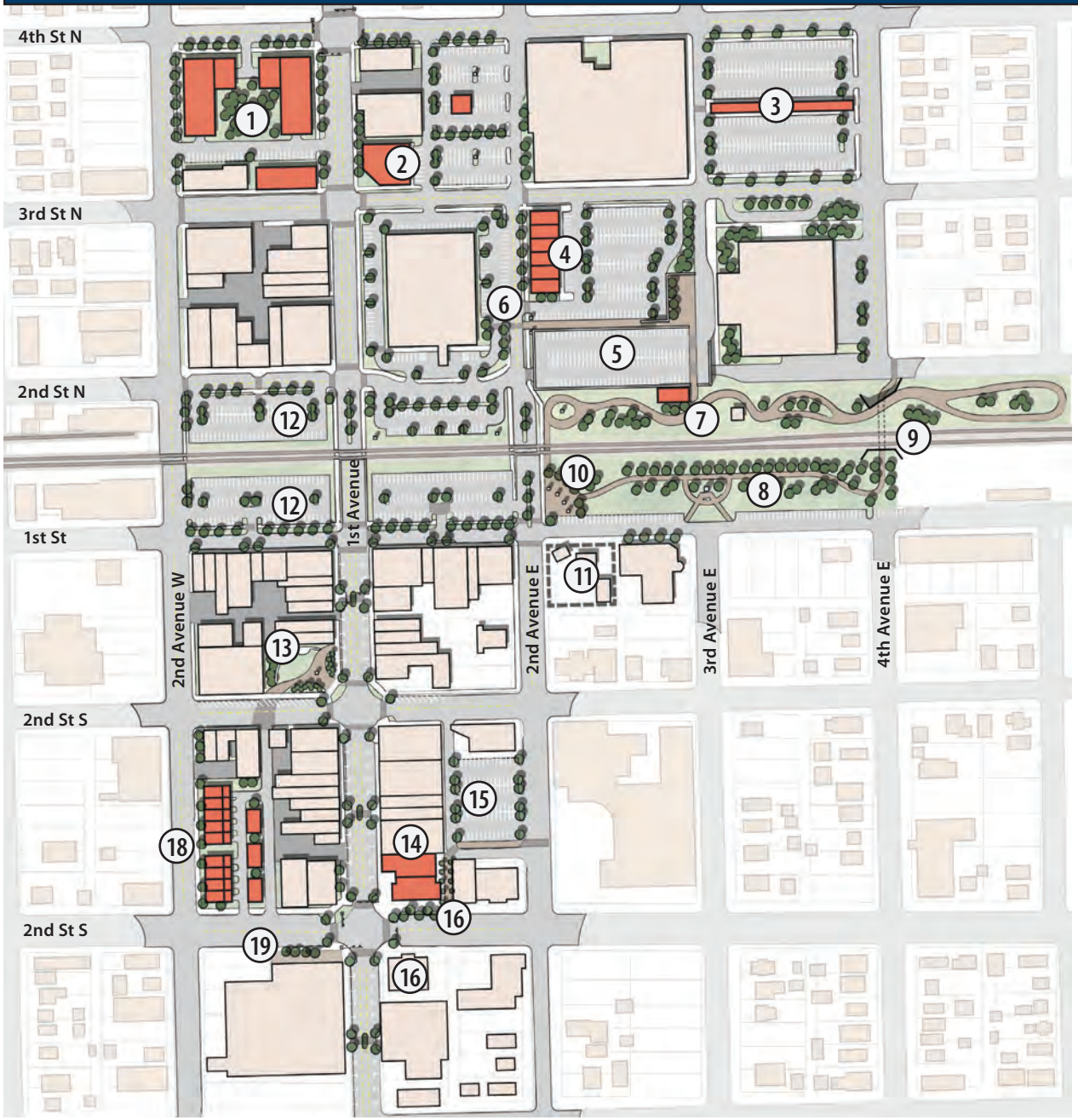
First Avenue (US 281) represents a nexus of transportation and community development priorities. As discussed in Chapter Six, current ADT and 2040 projections show that 1st Avenue will function successfully at LOS C with a three-lane section. This road diet will make it easier for people to cross the street on foot. The use of curb extensions at corners can further reduce the distance that pedestrians must negotiate.

A previous traffic signalization analysis indicates that existing traffic signals at 4th Street N, 3rd Street N, 1st Street N and S, and 5th Street S are unwarranted. ***Forward Jamestown*** proposes retaining signals at 3rd Street S and 4th Street N (also serving the active transportation network), and removing other signals. However, removal of signals without compensating measures will reduce gaps for pedestrians in traffic and again tend to increase speeds. The road diet will decrease speeds and, together with corner curb extensions, will

Curb extensions. *These curb extensions are designed to act as rain gardens.*

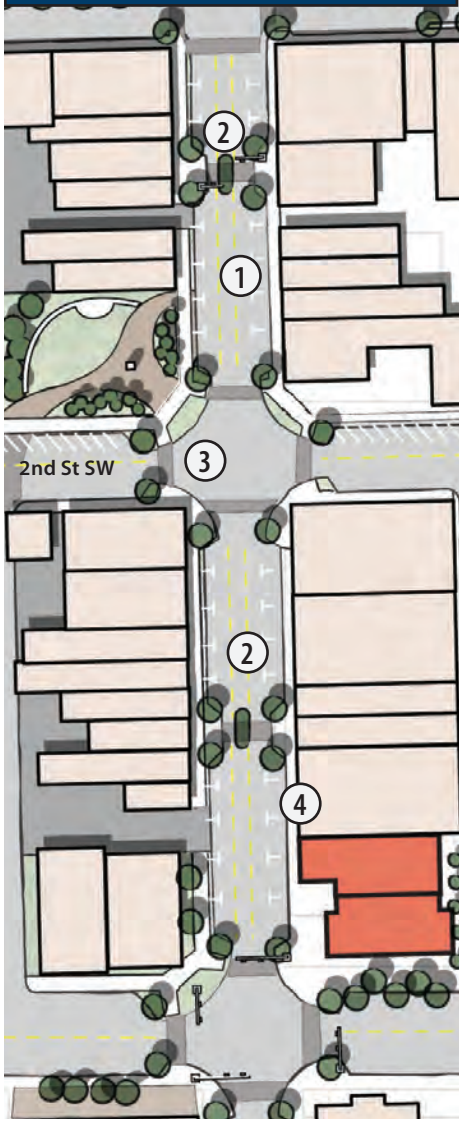
Pedestrian refuge median. *This mid-block median creates a safe pedestrian crossing without signalization on West Broadway in Council Bluffs, IA.*

Figure 7.1: Downtown Jamestown Concept



1. Residential Redevelopment
2. Commercial Redevelopment
3. Market Hall Walkway and Parking Redesign
4. Mixed Use/Live Work Development
5. Parking Structure
6. 2nd Ave Continuation/Gladstone Lot Redesign
7. Promenade/Skating Trail
8. Promenade/Greenspace
9. 4th Avenue Pedestrian Underpass
10. 2nd Avenue Plaza
11. Possible Commercial Redevelopment Site
12. Railroad Lot Redesigns
13. Art Park
14. Library Restoration/Expansion
15. 2nd Avenue Lot Redesign
16. Middle School Pedway
17. Masonic Temple Reuse
18. Art Alley with Townhomes/Workspace Units
19. Buffer/Hugo's Art Wall

Figure 7.2: 1st Avenue Concept



1. Road Diet to 3-Lanes
2. Mid-block pedestrian crossings with medians
3. Curb extensions with defined crosswalks
4. Parallel parking

reduce crossing distances at intersections. In addition, the center turn lane, which is not necessary in the middle of a long downtown block, could be replaced by pedestrian refuge medians, requiring pedestrians to cross only one lane at a time. At one location, probably between 1st and 2nd Street, a contemporary pedestrian signal like a HAWK (High-intensity Activated Crosswalk Beacon) could be installed.

The Civic Center District

This focus district considers the "urban renewal" sector of Downtown, late 19th and early 20th century commercial buildings were assembled, demolished, redeveloped with three "big box" projects: the Civic Center, the hotel that is now the Gladstone Inn, and a shopping mall, now the Jamestown Business Center. This area is generally defined by the edge of the railroad corridor, 4th Street NE, 4th Avenue NE, and 1st Avenue N. Objectives of the concept are to:

- Improve parking and the environs of the Civic Center, including providing substantial barrier-free parking at the facility's front door.
- Improving circulation and connectivity within the area and to the rest of Downtown south of the railroad.
- Break parking expanses into smaller blocks and providing pedestrian routes through these lots.

Concepts for this subarea include:

-Taking advantage of natural grades to build a two-level parking deck on the south side of the Civic Center parking lot. This both adds to the parking inventory in the area and provides space to improve the Civic Center's functional and aesthetic environment. The upper deck of the structure would be the same level as the main (west) entrance of the Civic Center, providing a fully accessible parking supply for patrons.

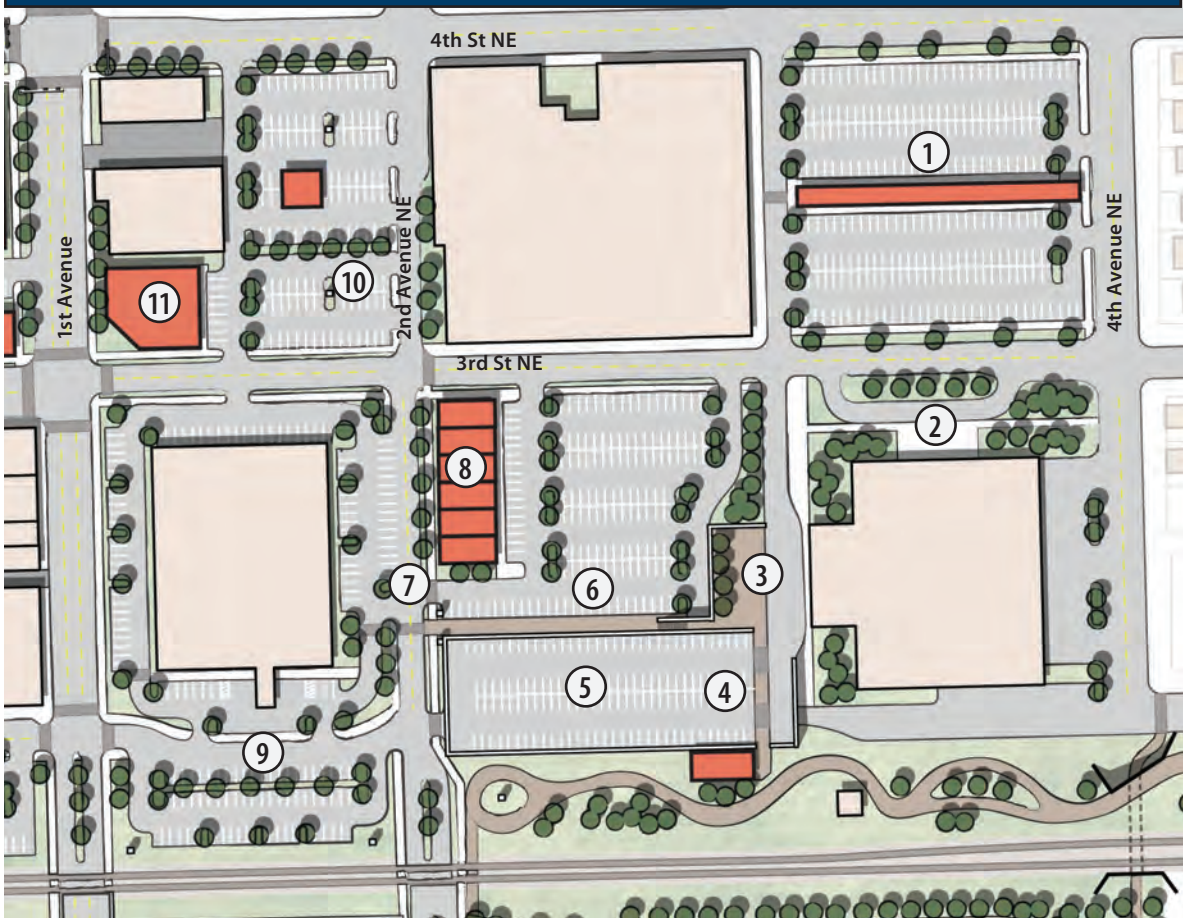
-Redesigning the urban renewal era parking lots, using landscaping and walkways to divide them into smaller, more penetrable blocks, including a sheltered walkway between the east entrance of the Business Center and 4th Avenue NE; a walkway linking the Gladstone Inn and Civic Center; and a sidewalk along 2nd Avenue NE with pedestrian links to the Gladstone and Business Center. The

central sheltered walkway at the Business Center could also serve events like a Farmers' Market.

- Reconfiguring the Gladstone parking area to increase parking by improving circulation, and unifying the railside lot and the Gladstone south parking area.

- Improving the character and clarity of 2nd Avenue NE as a connection through the site, and developing a street-oriented, mixed com-

Figure 7.3: Civic Center Area Concepts



1. Market Shelter/ Walkway
2. Improved Civic Center Turnout
3. Upgraded Plaza/Seating Terrace
4. Pedestrian Link to Railside Promenade
5. Civic Center Parking Deck
6. Civic Center-Gladstone Walkway
7. Upgraded 2nd Avenue NE Connection
8. Street-Oriented Commercial/Residential
9. Reconfigured Gladstone-Railside Parking
10. Redesigned Business Center Parking with pedway to 1st
11. Possible Commercial Redevelopment

mercial/residential project on the east side of the street . This new development visually defines the Business Center and Gladstone, and can provide needed retail and visitor services in the heart of this district. It also strengthens the connection of this area to the south side of Downtown.

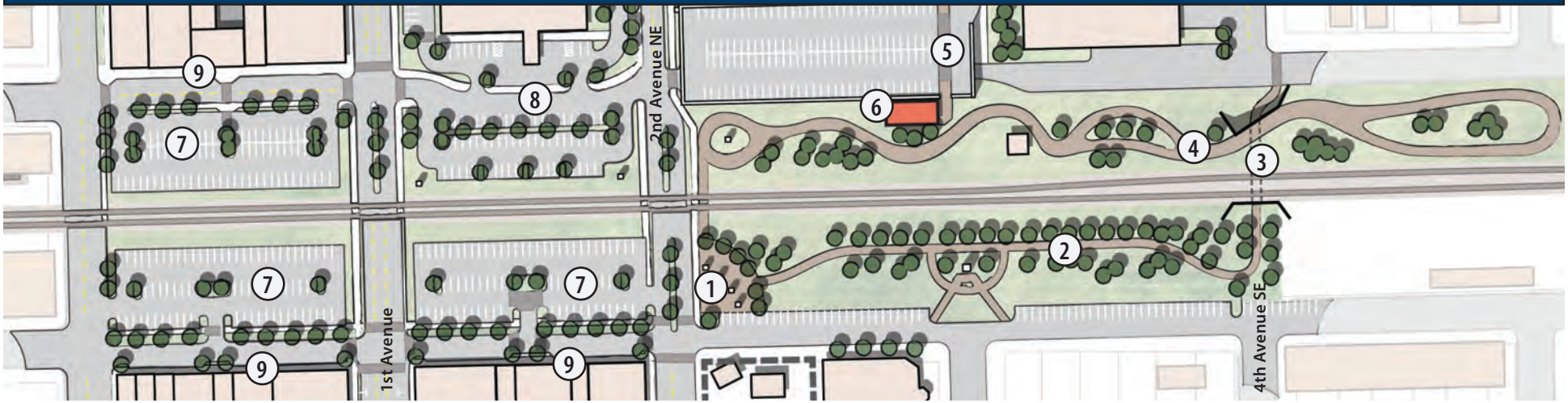
- Expanding the Civic Center Plaza at the main western entrance and linking the plaza to the Railside Promenade described below.

- Promoting commercial redevelopment or reuse at the 3rd Street NE intersection.

The Railside Corridor

The BNSF corridor could be construed today as a major barrier that splits Downtown jamestown in half. But it does have significant assets that give it the promise of being more bridge than barrier: major parking resources, underutilized but potentially important linear green spaces, and historic features such as the historic gazebo and the depot site interpretation. The quiet crossing program and ornamental fences have also tended to calm the normal negative environmental effects of a busy railroad mainline.

Figure 7.3: Railside Corridor Concepts



1. 2nd Ave Plaza
2. Southside promenade on kiosk
3. Pedestrianized underpass
4. Northside promenade/ice skating trail
5. Promenade link to Civic Center
6. Warming house/"Depot"
7. Parking lot redesign
8. Gladstone-railside lot redesign
9. Mid-block crossings

-Redesigning the railside lots to improve circulation, increase the parking supply, provide landscaping and pedestrian access, and connect these lots more effectively to adjacent retail blocks. On the south side, the illustrated concept adds parking and landscaping by narrowing 1st Street, using the added space to convert to 90 degree parking and treating the sidewalk as a widened greenway. Circulation is clarified and made safer by providing wider central access to the east-west streets with central access and limiting access adjacent to the tracks. Mid-block pedestrian crossings would be provided between the railside lots and adjacent storefonts across 1st Street SE and 2nd Street NW.

- Converting the railside green spaces on both sides of the BNSF into a Railside Promenade, designed to be a signature feature that will attract evening users to Downtown, provide four-season recreation, and enhance the Civic Center and other area resources. The Promenade at its core would be a lighted walking loop between 2nd and 4th Avenues, enhanced with a variety of special features or "rooms"

along its way. The north side of the promenade could be designed for conversion in cold weather to an ice skating trail, providing the district with a unique regional attraction. A similar project, developed in Elkhart, Indiana, has proven to be a hugely popular attraction. The Promenade could also feature a repurposing of the 4th Avenue underpass as a pedestrian way with dramatic lighting effects, should that underpass be closed and replaced by a new 12th Avenue/3rd Street grade separation.

Art Core

This area is anchored by the Jamestown Arts Center and creates an opportunity for mixing art, retail development, creative space, and housing into a core district for Downtown. Its features include:

- Development of the Jamestown Art Center's Arts Park as planned for the corner of 1st Avenue S and 2nd Street SE. The Art Park design concept includes performance space, walks and places for both art activities and people watching, places for winter activity like a fire pit. Construction on the first phase is scheduled to take place in 2015.

- Redevelopment of the vacant Eagles Building site and other properties along the east side of 2nd Avenue SW between 2nd and 3rd Streets. The concept calls for the development of an Arts Alley long the alley behind 1st Avenue storefonts, lined by gallery and workshop space. The 2nd Avenue frontage itself could be urban townhomes, some of which are live/work units that would again have gallery or workshop space on the street level with shopowners or artists living above.

- Landscaping and a possible wall art installation on the blank walls of Hugo's Supermarket along 3rd Street SW and 1st Avenue.

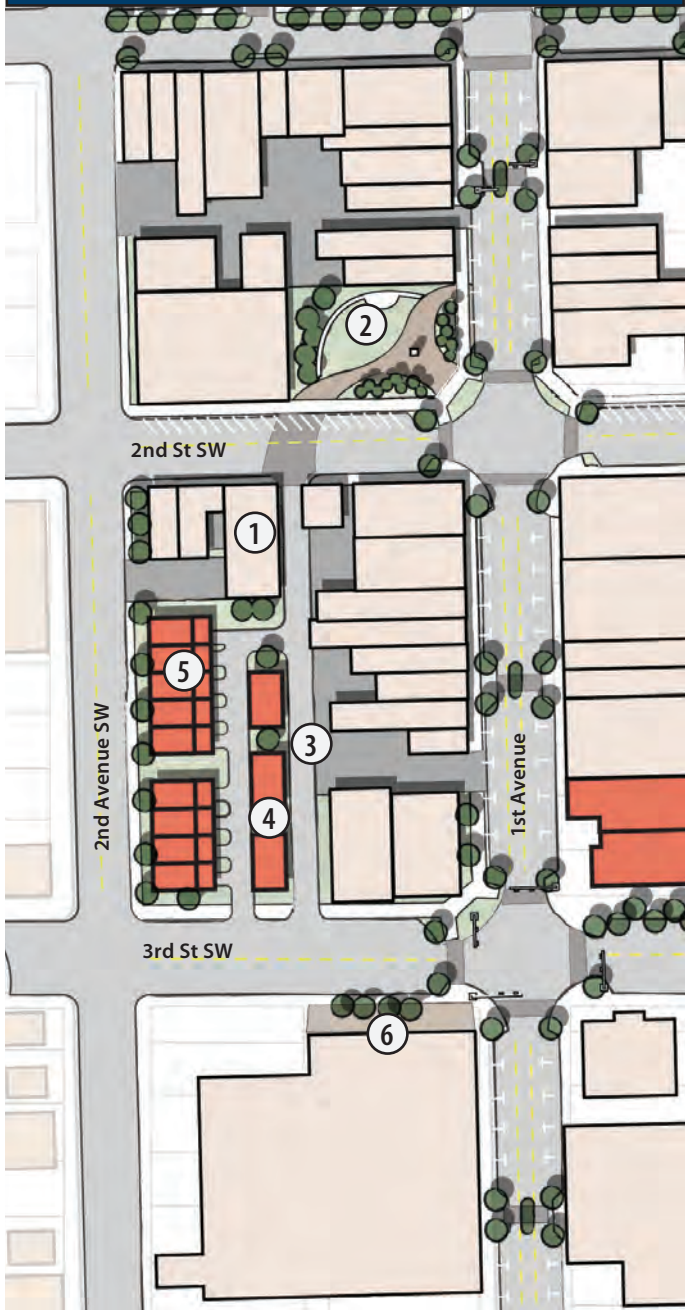
The Art Core presents an excellent opportunity for involvement by the University of Jamestown in downtown development. Workshop space along the Alley could be available to students and faculty of the university's art departments, and community-based programs could be connected to other activities of the Arts Center.

Railside Promenade Ideas. *Clockwise from left: Bird feeders along the High Line in New York City, an elevated promenade that has become one of the city's leading tourist attractions; the NIBCO Water and Ice Park in Downtown Elkhart, Indiana, featuring a path that converts in winter to an ice-skating trail; artistic portal to a pedestrian underpass under US 36 in Boulder, CO; LED lighting on the High Trestle Trail near Madrid, IA. The 4th Street underpass, if closed or altered, could become an attraction with special art or dramatic lighting.*

Left: *Current concept for Arts Park at 1st Avenue and 2nd Street. (Hanson Design Associates)*

1. Jamestown Arts Center
2. Proposed Arts Park
3. Art Alley
4. Artists Workshops
5. Townhomes or Live/Work Units
6. Hugo's Art Wall

Figure 7.4: Art Core Concepts



Art Core Ideas. *From top: Live-work townhomes in Clear Lake, Iowa, a model that could be used along 2nd Avenue; an art alley in Fairfield, Iowa with small shops and galleries in an alley between the city square and the courthouse; an alley conversion in Roslindale, MA.*

Library/Middle School Area

This subarea addresses parking and functional problems associated with traffic movements around the Middle School, a high demand city parking lot along 2nd Avenue, and future plans for the Public Library. The concept increases parking in the 2nd Avenue lot, creates safer pedestrian movements, and provides for library expansion options. Its components include:

- Expanding off-street parking by moving the curb line of 2nd Avenue out to the edge of the existing parking lane and removing off-street parking from the west side of the street. This allows reconfiguration of the lot to a more efficient east-west aisle arrangement.

- Widening the existing alley to 24 feet and defining a loading loop that uses parking drive aisles and an alley exit on the south side of the lot.

- Creating a protected pedestrian path using a defined crosswalk from the middle school, a dedicated walkway and a pedestrianized alley along the east edge of the library property.

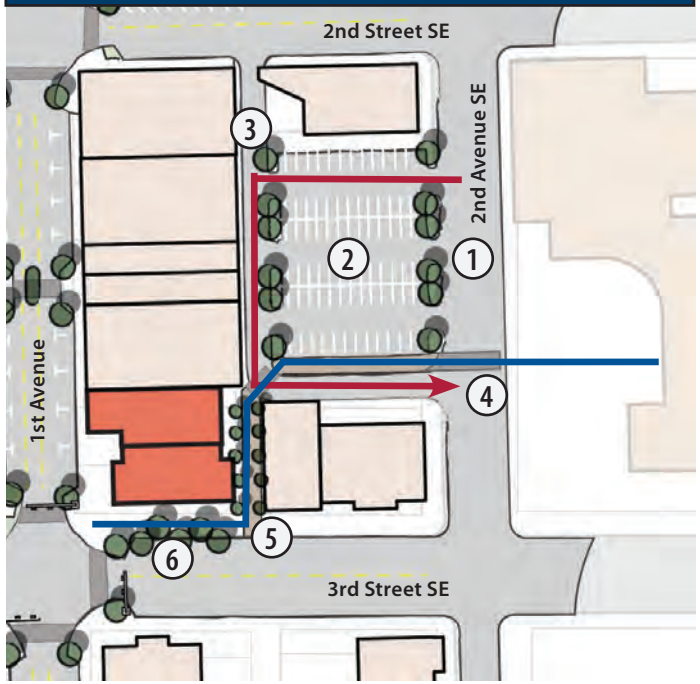
The benefits of the parking and circulation changes are independent of any decision on library reuse or relocation.

Neighborhood Development

Residential development can be an important element of downtown revitalization and has the tremendous benefit of both introducing 24-hour occupancy and making the city center home territory for a permanent population. Some of the other components of the downtown concept, notably the Civic Center and the Art Core, have housing components. In addition, other improvements can open the market for higher quality residential use of upper levels of commercial buildings. This component, though, envisions the block between 1st and 2nd Avenue from 3rd to 4th Street NW, much of which is now vacant or used for storage or quasi-industrial purposes, as a residential block. The concept illustrated here envisions :

- Restoration of rowhouses on 3rd Street NW and development of a new rowhouse block immediately east of that building on the site of an existing deteriorating three story structure. Restoration of that

Figure 7.5: Library/Middle School Concepts

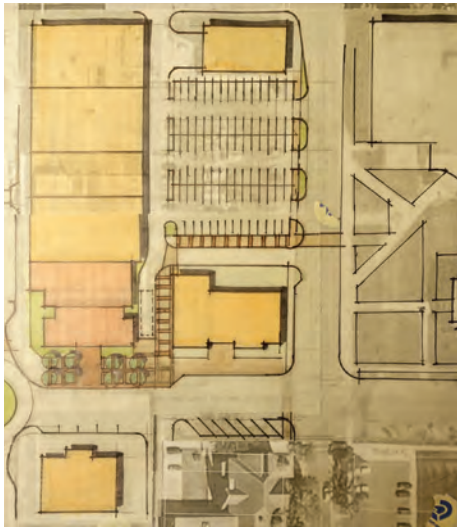


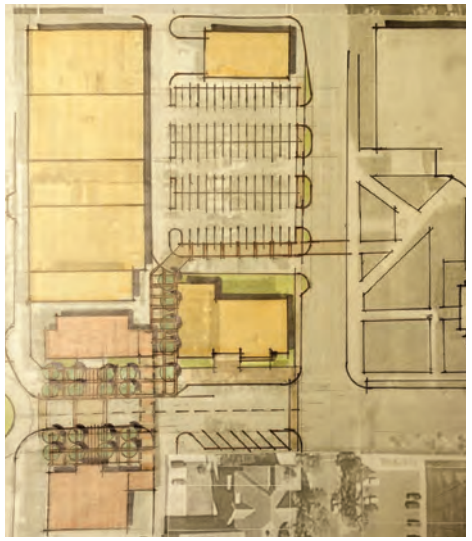
1. Relocated curb line
2. Lot reconfiguration
3. Upgraded alley
4. Crosswalk and sidewalk along alley exit
5. Pedestrianized alley
6. Plaza in front of Albert Dickey Building

Loading Route

Pedestrian Route

Library options. *Two alternative concepts to the library plan that was placed before the voters in 2014. One concept (top right) expands one building site to the north, the other (middle right) utilizes both the existing Albert Dickey Building and the Masonic Temple to the south with a covered crosswalk between the two buildings. Bottom right: Covered crosswalk concept in Salina, KS*





1. Restored Rowhouses
2. New rowhouses or adaptive reuse
3. New multifamily residential
4. Alley parking
5. Commercial redevelopment

Figure 7.5: Neighborhood Development Concept

structure for apartments would also be desirable, but the building may be too deteriorated for feasible adaptive reuse.

- A new multi-family or townhome project on the north half of the block with interior or overed parking a half-level below grade with residential units above.

10TH STREET CORRIDOR

The 10th Street Corridor between 1st and 5th Avenues SW require special consideration because of its various accessibility issues that also affect development potential. This area includes the city's busiest intersection at 1st Avenue, the "head" of the hourglass pattern discussed extensively in Chapters Three and Six.

Figure 7.6 illustrates a detailed access management diagram that includes the following elements:

- Continuation of the Mill Hill/US 281 Sidepath to First Avenue. This requires reclaiming right-of-way from encroaching uses, some of which are using right-of-way for parking, and arranging more satisfactory and safer parking arrangements. These actions could encouragement redevelopment of some sites to more contemporary forms.

- Development of a new standard pathway bridge at the James River crossing, either independently or as part of the reconstruction of the bridge discussed in Chapter Six.

- Development of a conventional sidewalk on the south/east side of US 281, also incorporated into reconstruction or enhancement of the corridor.

- Reconfiguration of the 1st Avenue and 10th Street SE intersection to a T-intersection without free-flow right-turn lanes, to minimize right-of-way conflicts and provide pedestrian access.

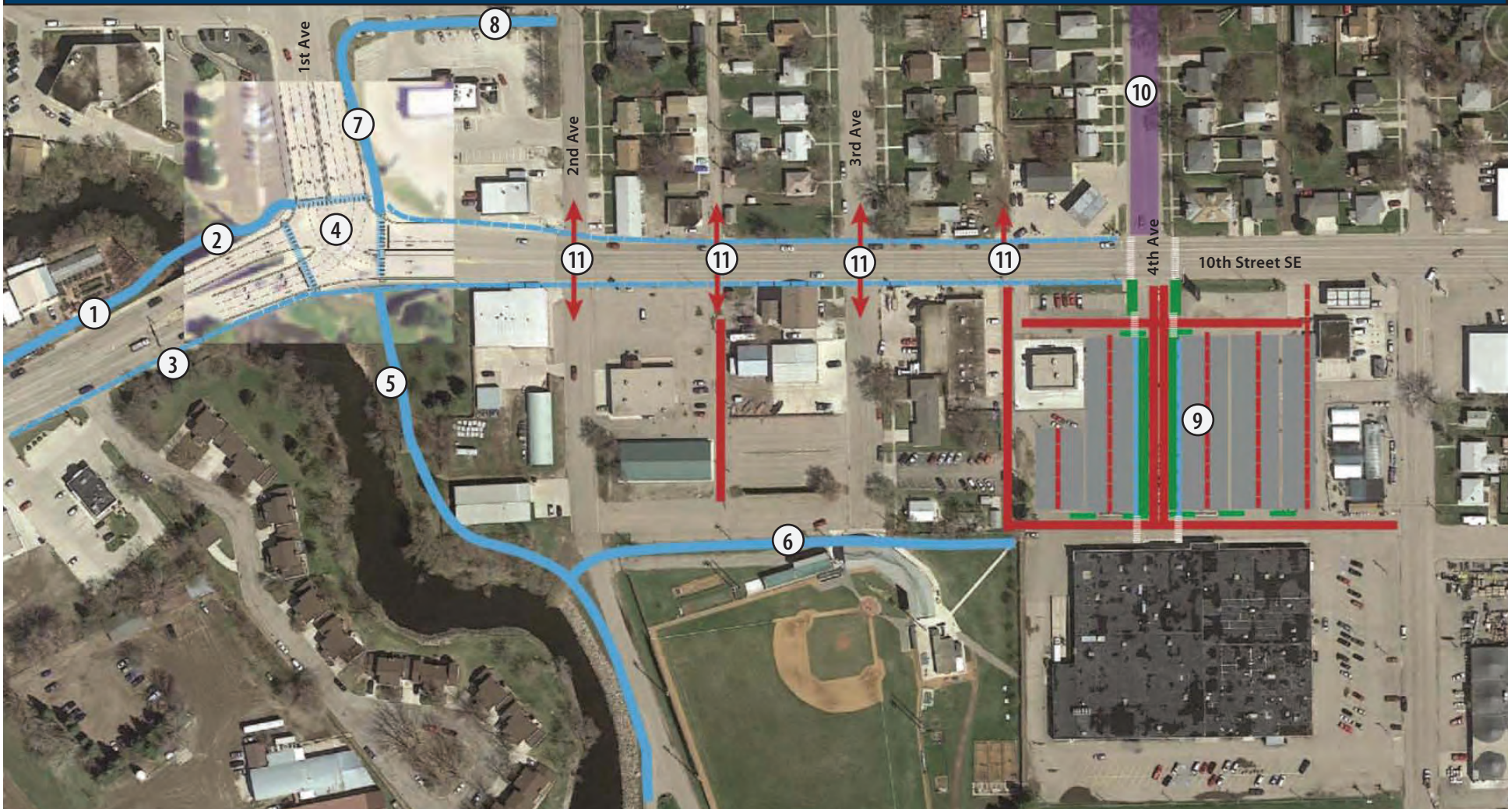
- Connecting the existing McElroy Park trail to the 1st Avenue and 10th Street intersection, aligning the path along the back side of the existing parks maintenance yard. Providing an offshoot path on the north edge of the ballfield to link to the Coburn's Supermarket.

- Providing a shared use path along 1st Avenue and 2nd Street SE to 2nd Avenue, which is then defined as a bicycle and pedestrian complete street leading to Downtown.

- Working cooperatively with the supermarket property on parking lot design to remove current stacking problems, provide pedestrian and bicycle access from 4th Avenue to the store, provide clear east-west drive aisles, and maximize use of the available parking area.

- Limiting local access cuts to blocks and mid-blocks.

Figure 7.6: 10th Street Corridor Access Concept



1. Continuation of Mill Hill Path/US 281 Path
2. New Pathway Bridge
3. Sidewalk with Road Improvement
4. Intersection Redesign
5. McElroy Park Path Extension
6. Path Link to Grocery
7. Shared Use Path on 1st Avenue
8. Shared Use Path to 2nd Avenue via 2nd Street SE
9. Supermarket Parking Lot Redesign
10. 4th Avenue SE "Bicycle Boulevard"
11. Local Access Points

chapter eight

Community Facilities

This chapter reviews key community facilities in Jamestown, and provides further detail on some systems addressed earlier in the ***Forward Jamestown*** Plan. It considers the condition and prospects of key public facilities, summarizes infrastructure issues and key findings of other studies, and provides a geographic analysis of serviceability needs. These serviceability issues were introduced in Chapter Three, and helped to define the Future Land Use plan. This chapter concludes with an evaluation of park needs and directions for Jamestown.

Jamestown City Hall (left) and the historic Alfred Dickey Building of the public library.

PUBLIC FACILITIES

Community facilities such as recreation centers, municipal offices, and fire stations are an important facet of Jamestown's quality of life and are critical to public safety. These facilities represent large capital assets that must respond to the needs of current and future residents and future growth needs. Although these features sustain life in the community – they are often only noticed when they are absent or something goes wrong. Yet, they have a major impact on residents' satisfaction with the city and with the direction of future growth.

As part of the planning process, staff members were surveyed regarding the condition of city facilities. For the majority of facilities, the primary requirement is routine maintenance and minor upgrades and repairs. However, staff indicated a number of more significant needs and initiatives that are on the horizon for city facilities. These include:

- New or expanded library facility. Library options were previously discussed in Chapter Seven, in reference to downtown development.
- Study fire response service for growth areas.

City Hall

Overview: Jamestown's City Hall, built in 1990, is a one-story brick facility located at 102 3rd Avenue SE. There is sufficient parking on site for both employees and visitors and the facility is fully accessible. City Hall houses the major managerial and administrative functions of the city's government including human resources, finance, utilities, forestry, civil engineering, planning, and permitting.

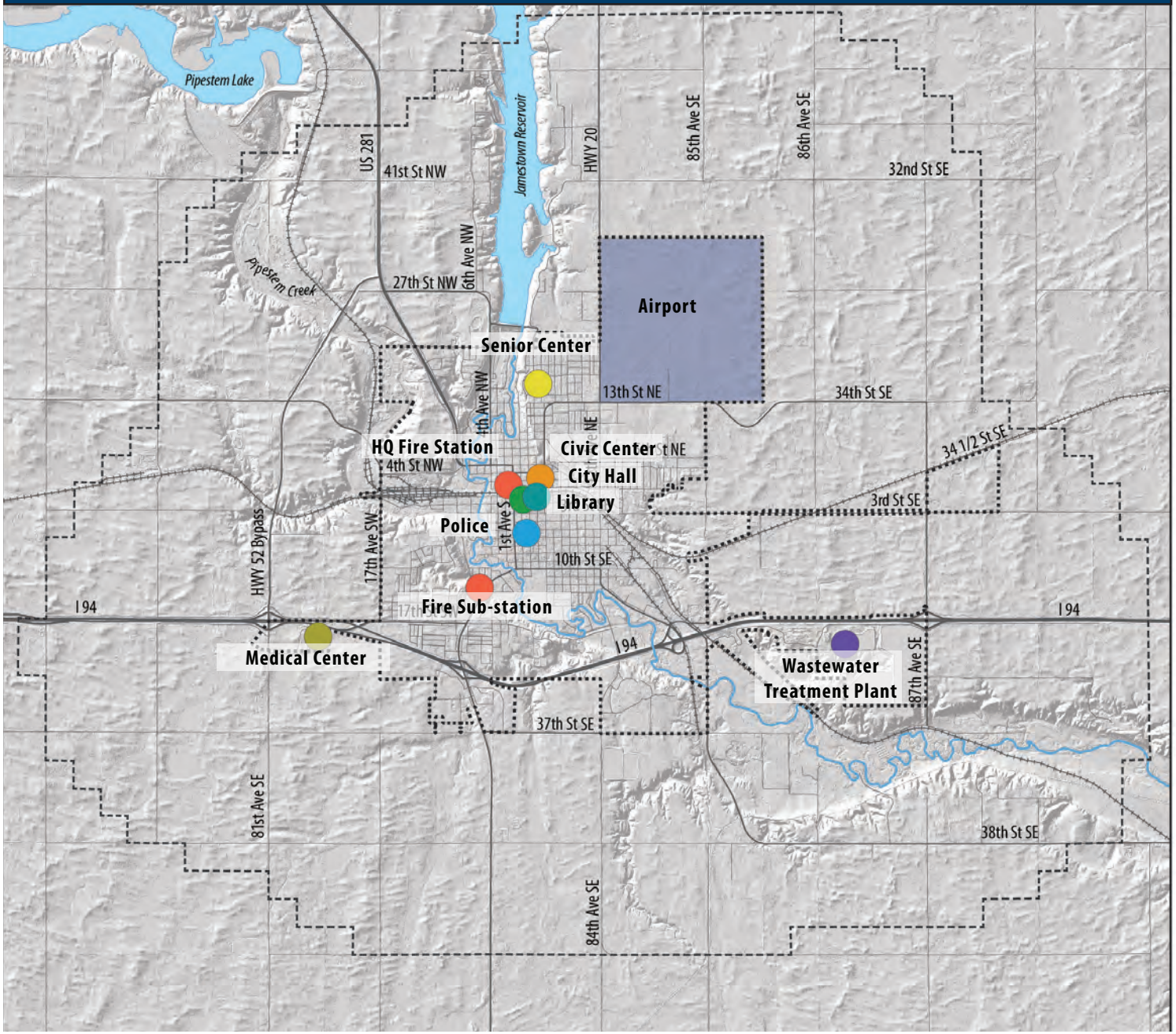
Condition: The building is relatively new and has been well-maintained. City Hall functions have appropriate space and facilities to achieve their objectives.

Future: There is space for future expansion in the basement of the building. It has no anticipated facility needs beyond continuing regular maintenance and upkeep.

Jamestown Public Library

The main Alfred Dickey Public Library, located at 3rd Street SE and 1st Avenue S, is Jamestown's city library. The one-story brick building was constructed in 1908. The library is operated by the James River Library District, which also operates another facility and a 'bookmobile' and serves the county at large.

Figure 8.1: Public Facilities



City Boundary
ETJ
Railroads
James River
Major Rivers
Major Lakes

Public Facilites

Fire Stations
Police Station
Wastewater Treatment Facility
Jamestown Medical Center
City Hall
Senior Center
Civic Center
Library

Airports

Condition: The building is in good condition but experiences conditions common to older buildings. During significant rain events there is frequently water infiltrating through the foundation, occasional water leaking though vents in the roof, and condensation from the air conditioning system that builds up within the wall systems, creating the conditions for mold.

Future: The two libraries were joined in 2009 through a public referendum, but there are still two separate library facilities. The Library District considered a number of alternative sites before settling on a concept to rehabilitate and expand the Alfred Dickey Building. The proposed concept called for acquiring and demolishing the two buildings immediately north of the existing library, building an addition to the north, and using the balance of the site for a small surface parking lot. In 2014, the District's voters defeated a bond issue to finance this project. Since then, the District has regrouped and is considering concepts illustrated in Chapter Seven that address a number of significant area issues, including parking, circulation, and pedestrian safety. The revised concepts only involve acquiring one additional property, and one idea utilizes the long vacant Masonic Temple across 3rd Street from the Alfred Dickey Building.

James River Seniors Community Center

The James River Seniors Community Center is located at 419 15th Street NE. The senior center opened their new space (office and meal site) in May of 2013, while its bus garage remains at their old site at 502 10th Avenue. The 501(c)3 organization assists seniors to remain non-institutionalized and active for as long as possible. Services include meals, public transportation to all citizens, and opportunities for socializing.

Condition: The building is in excellent condition as it was remodeled space in the old hospital. The Center's lease requires renewall in 2023.

Future: The fleet of vehicles (buses and vans) will need to be cycled every 10 years (or 200,000 miles for buses and 100,000 miles for vans). Four buses need to be replaced at an estimated cost of $60,000 each. The senior center plans to raise funds for the required 20% local match.

Fire Department

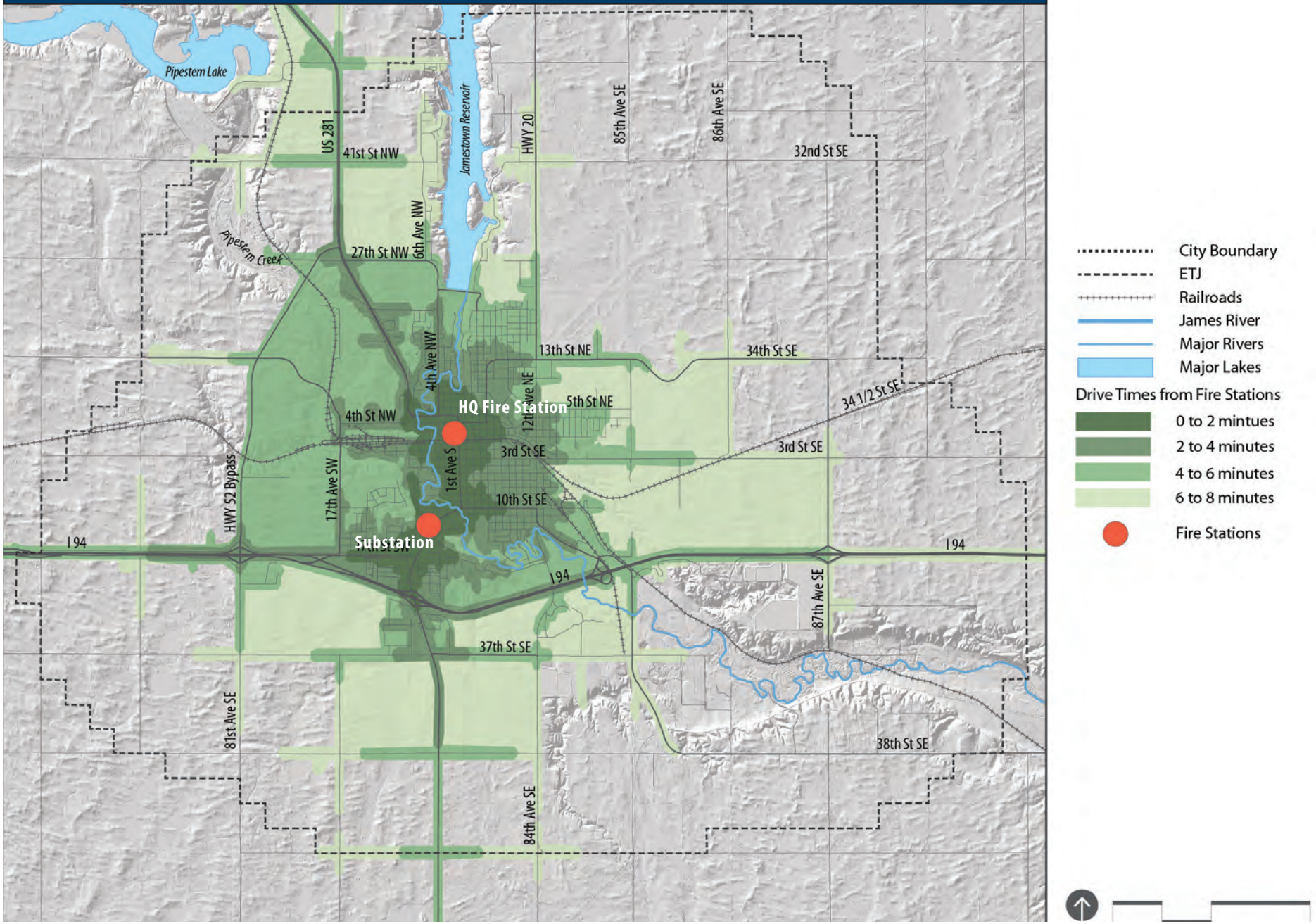
Jamestown's fire department is responsible for supporting the county's hazardous materials response team, and houses the dive team for the county, which responds to emergencies around the region.

Primary Facility: The department's primary facility is located at 209 2nd Avenue NW in a one-story brick building, built in 1965. The building includes offices for the departmental leadership, a full training facility with video conferencing capability, three primary equipment bays, and a backup dispatch center for emergencies.

Substations: In addition to the main fire station, the department has a substation in central Jamestown, near the intersection of US 281 and 4th Avenue SW. This facility, which primarily serves the southern areas of town, was built in the 1970s and refurbished in the 1980s.

Conditions: Due to the location of their two stations, the depart-

Figure 8.2: Fire Emergency Response Times



ment has limited access to southwest Jamestown. The substation building requires significant upkeep and maintenance. Figure 8.2 indicates response time for the fire department. This model was generated in ArcGIS, an online subscription service.

Future: Given that the southwest area is a likely place for future growth, the city should establish a development threshold for building a public safety building in this area that would house elements of all emergency services. Some of the funds for construction should be factored into the costs of private development in this area. Options for addressing these issues are discussed in the Implementation Program in Chapter Ten.

Police Department

Jamestown's police department is housed at the Law Enforcement Center at 205 6th Street SE, along with the Stutsman County sheriff and some elements of the state highway patrol. This 1986 facility also provides on-site holding for suspects. There are 29 sworn officers and three support personnel. The department owns seven marked vehicles, three unmarked vehicles, an animal control vehicle and an off-road vehicle. The fleet is in good condition, as vehicles are on a replacement cycle of two to three years.

Condition: The facility is in good condition and continues to serve the city and region well. Although its central location is a benefit for visibility and ease of access by the public, it presents a growing challenge to response times to southern areas of Jamestown.

Future: As the Jamestown continues to grow and develop, the police force will need to expand to meet the needs of the population. Staff representatives have identified a need for an expanded and improved location for the handling and storage of evidence, along with a contemporary computer system for tracking evidence. This could be housed in an off-site expansion with the creation of a public safety facility in the southwest quadrant of Jamestown.

Jamestown Regional Airport

Jamestown Regional Airport accommodates aviation needs for scheduled airlines, air freight carriers, general aviation, corporate, air taxi and charter operators, and the military. The Airport covers 1,500 acres with two asphalt runways. This facility serves the general aviation market, and some scheduled commercial service is operated by the federal Essential Air Service program. This service supports weekly flights to and from Denver, Colorado. Since the re-establishment of commercial service in 2014, boardings have increased each month.

Condition: Facilities are in good condition and there is significant room for potential growth of hangar and other facilities on site.

Future: As Jamestown's economic futures continue to improve, it is expected that enplanements and secondary business generated by the airport will increase.

Civic Center

The Jamestown Civic Center, located at 212 3rd Avenue NE, is a 48,000 square foot facility built in 1973. The concrete and brick structure has 6,500 seats, an 18,000 square foot exhibition space, and 11 meetings rooms. The space can be used for a variety of events, including conventions, headline entertainment, trade shows, athletic events, banquets, and weddings. In addition to serving as a community events and entertainment venue, the facility is home to the Jimmies Basketball Team from the University of Jamestown.

Condition: The building is in good condition. The age of the building warrants an architectural/engineer review to assess the building's condition. An energy audit by Energy Services Group revealed opportunities to improve efficiencies. Many of the recommendations have been implemented.

Future: Continue ongoing maintenance and modernization to remain competitive. Retain professional to assess the building's condition. Chapter Seven presented a Civic Center environs program that included expanded parking, including a parking deck to provide parking at the main entrance levels; better landscaping; and connections to other proposed amenities, including the railside Promenade proposed in this plan.

Jamestown Regional Airport

INFRASTRUCTURE SERVICEABILITY

As Jamestown grows, demands on city services such as water, wastewater, and stormwater systems will increase. The type of development experienced can have a substantial impact on service costs. For example, lower density neighborhoods are typically more costly to serve than higher density areas, since households are spread out over larger areas. Service providers, from solid waste collection to emergency services have more miles to cover to respond effectively to calls.

Infrastructure extension is one of the most powerful tools that any city has to help guide development in economical and efficient directions. Thus, the city must be strategic in infrastructure extension, encouraging development in areas that will be cost effective, and allowing continued high level of service.

Strategic areas for utility extensions should meet three measures. First, city policy has identified these areas as desirable growth areas, based on the Future Land Use Plan and other policy documents; second, it is efficient to grow there; and third, the market is likely to support growth in that area. Strategic growth areas may include revitalization areas and new development areas. As development occurs, the city should ensure that services can support new development without diminishing service to existing neighborhoods.

Figure 8.3 summarizes the aggregated serviceability of growth areas, which considers service by future sanitary sewer and water. Additional study is required to fully understand serviceability. The evaluation here is a snapshot based on information from city staff. Opinions on serviceability based on known conditions. Geographic areas were scored using the criteria on the opposite page.

Stormwater System Review

Jamestown's location in the low-lying lands at the confluence of Pipestem Creek and the James River gives rise to some ongoing and significant drainage issues, especially during large local rain events.

In 2011, the city undertook a significant citywide storm water study to identify areas that needed intervention. These included:

- **3-5 Year.** A new storm sewer line on 8th Avenue NE, a new storm sewer on 10th Street SE between 5th Avenue and 2nd Avenue, and new inlets at the intersection of 25th Street and the entrance to the Applebee's parking lot.
- **6-10 Years.** A new detention pond adjacent to Jamestown Regional Airport, a new storm sewer line on 19th Street NE, A new storm sewer line on 16th Street NE, new storm sewer on 12th Street NE between James Avenue and Thomas Avenue, and detention ponds and new storm sewer in the SE-1 watershed (which encompasses the central area of Jamestown.
- **Beyond 10 Years.** A new storm sewer on 6th Street SW, and a new storm sewer from the intersection of 7th Avenue and 11th Street SW to outfall.

In addition to these stormwater management measures, new development should use surface drainage and green infrastructure to the maximum degree possible. For example, ***Forward Jamestown's*** development concept for the southwest growth sector maintains an east-west drainage corridor as green space and a trail corridor to reduce the velocity and impact of surface runoff.

Water Supply System Review

Jamestown's water is supplied from six wells in southeast Jamestown. The drinking water treatment plant is in southeast Jamestown, and has a maximum capacity of 7.2 million gallons per day. Daily demand fluctuates, but averages around 3.2 million gallons. The most water that has ever been drawn through the plant in one day is 6.2 million gallons.

Condition and Future: As Jamestown continues to expand and grow, additional capacity may be needed. This is especially true if water-intensive industrial or light industrial operations locate in the area and require water service from the city.

In 2011, the city created a plan for improvements to the water distribution system. This plan was designed with a 25-year development horizon and makes recommendations for the expansion of the water infrastructure in three key growth areas, one each to the west, south, and east of Jamestown.

Sanitary Sewer System Review

A wastewater treatment facility located one mile east of Jamestown, and 20 lift stations throughout the city, serves the city. The treatment plant has a design capacity of four million gallons a day and treats an average of 1.3 million gallons per day. The plant is a combination mechanical and lagoon system. The mechanical plant was last upgraded in 1995, while the lagoons date to the 1950s.

Conditions and Future: A 2010 study of the sanitary sewer system identified areas of concern and recommended interventions that will ensure that the system can successfully handle another flooding event. Lift stations are being serviced incrementally according to the results of this study. The treatment facility continues to meet the city's needs, though routine maintenance and upgrades are ongoing.

SERVICEABILITY BY AREA

New growth areas require sewer and water service and city policy must address both the efficiency of providing these services and the mechanism for financing them. A public role in financing pioneer infrastructure is particularly critical in a market like Jamestown, where absorption of lots is relatively slow and developers have difficulty shouldering the front-end and interest costs of opening new sectors to development. ***Forward Jamestown*** provides an efficient policy framework by 1) focusing growth in areas where urban service extension is feasible; and 2) establishing a phased approach that favors incremental development and extension of services.

Southern Area

Describing areas south of I-94, the Southern Area is characterized by large areas of undeveloped land, significant pockets of civic and commercial development. The Development Concepts builds on this existing civic and commercial Uses at the Highway 281 and 81st Avenue SE interchanges to create a mixed use cluster which includes residential, commercial, civic and green space areas.

From an infrastructure perspective, the areas near to I-94 generally have the highest serviceability rating and this rating decreases with distance from the corridor.

- **Area 1**: Good serviceability. This area receives water service from Stutsman Rural rural and sewer from the City. A study is required to identify issues related to stormwater management.
- **Area 2**: Serviceable, requires study. This area requires study into stormwater management but otherwise, it is likely the areas can be serviced by water and sewer with a relatively manageable cost.
- **Area 3**: Unknown serviceability. The area is a significant distance from the nearest development from the north, the city will need to study the water and stormwater systems. The capacity of the stormwater system is unknown. Water service would be provided by Stutsman Rural.
- **Areas 4/5**: Serviceable, requires improvements. Improvements are needed to the water and sanitary, while stormwater conditions require study.
- **Area 6**: Serviceable, requires study. The stormwater system and the sewer system require study, but it is likely the area can be serviced with water infrastructure.

Western Area

The Western Area includes areas of conventional residential neighborhoods and undeveloped land, both at the interior of the city and at the fringe of the community. The development concept promotes low density neighborhood on the east with a more rural character west of 17th Avenue SW. A small pocket of commercial will developed at the NE corner of the Interstate 94 and Highway 52 bypass interchange.

- **Area 7**: Serviceable, requires study. While it is likely that Stutsman Rural will be able to provide water service, the capacity of the system is unknown. Study will be required of the sanitary, water, and stormwater system.
- **Area 8**: Unknown serviceability, requires study. Primarily rural and undeveloped, this area has not been studied for infrastructure service. Prior to development, the water, sanitary, and stormwater systems would require study.
- **Area 9**: Serviceable, requires improvements. This area is currently under development as a rural subdivision. Water will be provided by Stutsman Rural.

» **Area 10**: Serviceable, requires study. Study will be required to evaluate the water, sanitary, and stormwater systems. While water will likely be provided by Stutsman Rural, the capacity of the system is unknown. A portion of this area is under development as a rural subdivision.

» **Area 11**: Serviceable. The area will require only minor improvements to the water, sanitary, and stormwater systems.

» **Area 12**: Serviceable, requires study. Primarily vacant and identified as low-medium density residential, this area is located at the fringe of existing development. The sanitary, water, and stormwater systems require study.

» **Area 13**: Unknown serviceability, requires study. A small parcel of land surrounded by development on three sides, the area will require study to evaluate the water and stormwater systems. Sanitary sewer will be available at the southern extent of the area.

» **Area 14**: Serviceable, requires improvements. The development concept identifies the area as a mix of green space with pockets of medium density residential. While it is likely area can be served with minimal extensions of water and sanitary sewer, the stormwater system will require study.

» **Area 15**: Unknown serviceability, requires study. Primarily rural and undeveloped, this area has not been studied for infrastructure service. Prior to development, the water, sanitary sewer, and stormwater systems will require study.

» **Area 16**: Serviceable, requires improvements. The water and sanitary sewer system will require improvements while the stormwater system will require study.

Eastern Area

The Eastern Area includes areas of traditional residential development, highway commercial, and the Jamestown Airport. The development concept showsr residential, commercial, a limited section of industrial land. From an infrastructure perspective, this area is relatively serviceable due to the concentration of recommended development along corridors and in close proximity to existing development.

» **Area 17**: Serviceable, requires improvements. While the area can likely be serviced through minor extensions of the water and sanitary sewer, the stormwater system will require study.

» **Area 18**: Serviceable, requires study. This area acts as a geographic extension of Area 17 and therefore, it is likely that service to Area 17 will also enable this area to develop. A study of the stormwater and sanitary systems will be required for this area.

» **Area 19**: Unknown serviceability, requires study. Area 19 is at the eastern fringe of the community and therefore, the City has not planned for service to this area in the near future. Prior to development, the water, sanitary, and stormwater systems will require study.

» **Area 20**: Serviceable, requires study. This area is currently undeveloped but is identified as a future phase of low density residential development as development progresses to the east. The area requires study of the water and stormwater systems. Upon development of Area 6 (immediately west) it is possible the sanitary sewer will be viable to serve Area 20 for development. Water will likely be provided by Stutsman Rural but the capacity of the system requires study.

» **Area 21**: Serviceable, requires improvements. Both sections are adjacent to the existing development edge and therefore have relatively good access to infrastructure. The stormwater system requires study but it is likely the water and sanitary systems will require minimal improvements to support development.

» **Area 22**: Good serviceable. Adjacent to the Jamestown Airport and to the current development edge, this area requires minor study into the stormwater system and only minor improvements to the water and sanitary systems.

» **Area 23**: Serviceable, requires study. With much of the land area already developed, this area will require virtually no improvements to service the site. A minor study of the storm water system is required.

» **Area 24**: Serviceable, requires improvements. A study of the stormwater system is required as minor issues are anticipated; however, the extension of sanitary and water infrastructure should be minimal upon development of Area 21 to the south.

» **Area 25**: Serviceable. A small pocket of undeveloped land in close proximity to developed land, minor improvements are required to the water and sanitary systems. The stormwater system requires a minor study.

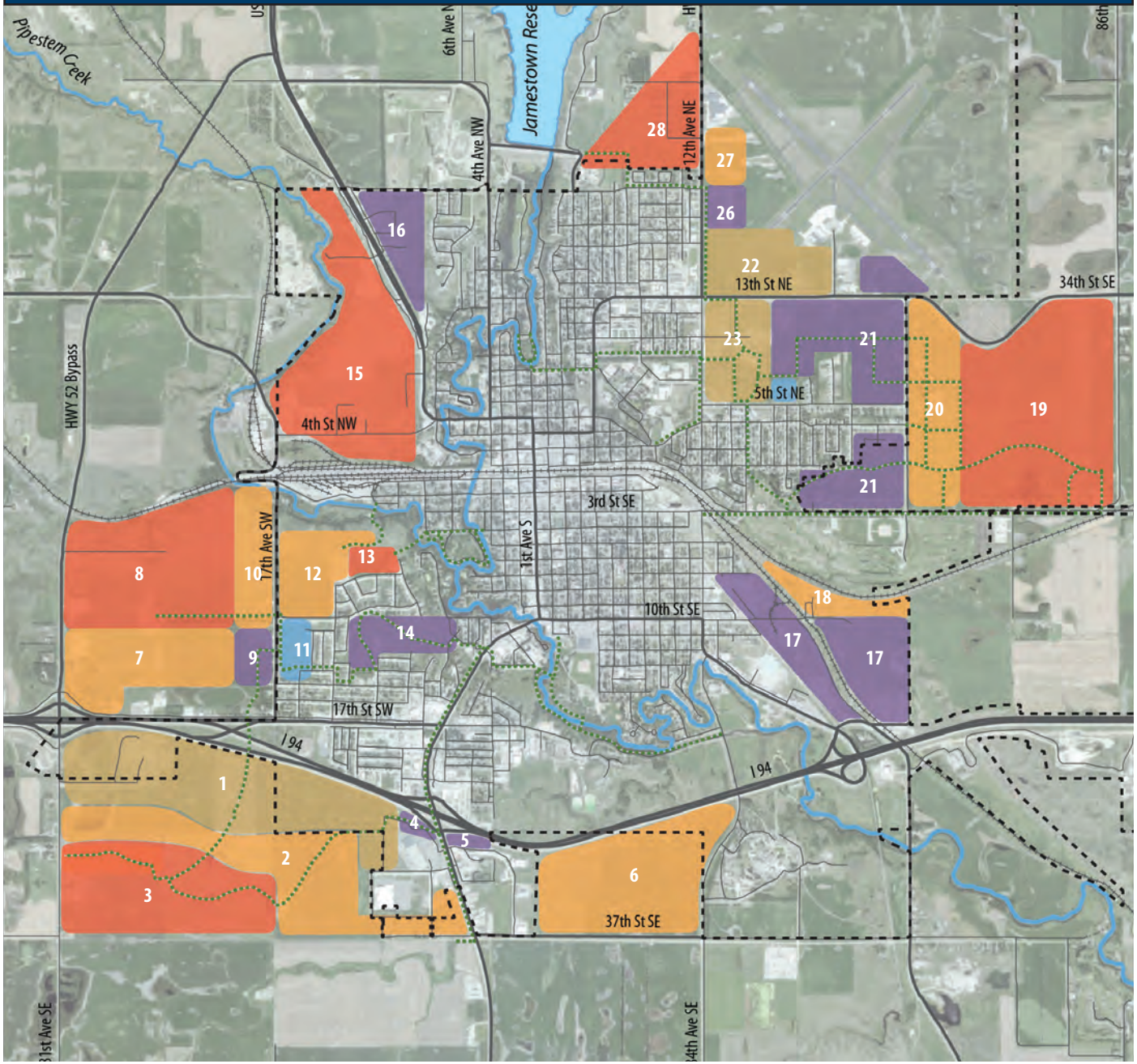
» **Area 26**: Serviceable, requires improvements. The area requires improvements to the stormwater, water, and sanitary systems to enable development.

» **Area 27**: Serviceable, requires study. Approaching the northern de-

velopment fringe of the community, a study of the stormwater system is required. Other services can likely be extended from adjacent development.

» **Area 28**: Unknown serviceability, requires study. Area 28 is at the eastern fringe of the community and therefore, the City has not planned for service to this area in the near future. Prior to development, the water, sanitary, and stormwater systems will require study.

Figure 8.3: Urban Serviceability



Good serviceability. The area can be adequately served for proposed land uses by existing infrastructure. Affordable upgrades required.

Serviceable. The area can be adequately served for proposed land uses. For example, extension to the system is required and typical for conventional development. This is a typical rating for conventional development.

Serviceable, but requires improvements. The city has planned or is planning improvements for this area. For example, the city knows that we need a lift station or water tower is needed.

Serviceable, but requires study. The city assumes the area can be serviceable through improvements. For example, the city believes that a lift station or water tower is needed

Unknown serviceability, requires study. The city has not planned for service to this area.

PARKS AND RECREATION

Jamestown operates 11 parks that cover a total of 133 acres throughout the City. In addition, the US Army Corps of Engineers owns and manages the Jamestown Reservoir, one of the region's most important recreational resources, and readily accessible to the city by car and bike. The Reservoir's features include seven boat launches, seven picnic shelters, two swimming beaches, a highly-rated disc golf course, three miles of hard-surfaced trails, a playground, campgrounds, concessions, and over 2,400 surface acres of water.

Local parks have a significant economic impact on Jamestown. A recent economic impact study by North Dakota State estimated that the city parks system adds about $3.6 million to the local economy each year, and the golf course generates about $2 million per year.

Park System Conditions

Service Level:

» **Types.** Jamestown has a good mix of community parks (larger parks) and neighborhood parks (smaller parks). Figure 8.4 explains the classification system. Figure 8.4 illustrates the location of each park and Figure 8.5 provides a description, size and list of facilities at each park.

» **Acreage.** Jamestown provides a slightly below average amount of city park acreage for its population. Its 8.6 acres of park land per 1,000 residents is moderately less than the traditional standard of 10 acres of park land per 1,000 people. However, Jamestown Reservoir more than compensates for this modest shortfall. Nevertheless, this suggests that easy recreational access to the Reservoir is important to operation of the whole system.

» **Distribution.** Jamestown parks are well distributed throughout the community. Almost all residential areas are within a ¼-½ mile radius of a park, which is considered walking distance. Figure 8.5shows the service areas of the existing parks. Despite this overall distribution, the southeastern quadrant of the established city is relatively deficient in park coverage, especially given the fact that the the railroad and topography limit the natural service area of So-

Figure 8.4: Park Classification Descriptions (NRPA)

Classification	Function	Typical Size	Service Radius	Jamestown's Level of Service	Jamestown Examples
Community	Meet diverse community-based recreation needs, preserve significant natural areas and provide space for larger recreation facilities. May include special attraction such as a pool or trails.	30-50 acres	½ - 3 miles	2 parks; 77 acres; 5 acres per 1,000 residents	McElroy Park, Klaus Park
Neighborhood	Basic unit of a community's park system, providing a recreational and social focus for residential areas. Accommodate informal recreational activities.	5-10 acres	¼ - ½ mile (walking distance)	6 parks; 51 acres; 3.3 acres per 1,000 residents	Leapaldt Park, Solien-Denault Park
Specialty	Meet a niche recreational need for the community, such as a sports park or wilderness area.	Varies	Varies	NA	Bolinger Park, Wilson Arena Park

lien-Denault Park.

Community Needs: The community has placed a high priority on development of a new community recreation center. This project, the Two Rivers Activity Center (TRAC), would be developed south of Jamestown High School and will include an indoor pool and water feature, multisport courts, a fitness center, child care, meeting rooms, and an indoor turf air structure. A second phase, to be built if resources are available, will add multisport courts, a climbing wall, and a gymnastics facility. Part of the funding will be derived from a 1% local sales tax, to be decided by the voters in June, 2015.

Tree Health. Jamestown parks have many Ash and Elm trees The infestation of the Emerald Ash Borer and spread of Dutch Elm disease threatens the health of the city's tree cover. The city's forestry department has a tree program to replace and plant a variety of tree types in their parks.

Play Equipment: Participants during the process indicated a need to replace much of the city's play equipment. Meanwhile, the city continues to work on repairing the outdated equipment.

Park System Needs

Jamestown's population is projected to a target population of about 22,000 in 2040. In order to maintain the current level of service (parks acres per person) as this growth occurs, Jamestown would need to **add approximately 64 acres of new park land by 2040**. Figure 8.8 shows the estimated future park land need, while Figure 8.7 on the previous page identifies possible locations for future parks. The projection is based on maintaining the current level of service, but the city may also elect to increase the level of service. New parks will provide service to emerging neighborhoods.

New parksites that can meet these service requirements and fill existing gaps in service include:

» A Southeast Neighbohood Park. This park could be developed in conjunction with the 12th Avenue/3rd Street overpass and could use abandoned railroad right of way and adjacent sites, some of which are publicly owned. This would fill the gap in neighborhood park service for southeast residential areas in the established city.

» A Westside Park between 1st Avenue and Meidinger Park, in low areas along the trail corridor proposed as part of the cluster residential development proposed for the north side of Mill Hill and north

Table 8.5: Park System Overview, City of Jamestown

Facility	Description	Acres
COMMUNITY PARKS		
McElroy	Nestled in a bend in the James River, McElroy Park is one of Jamestown's largest and most thoroughly programmed public parks. It features numerous picnic areas as well as a skate park, walking trails, 16 public horseshoe courts, playground facilities, and permanent restrooms. The park is adjacent to a number of baseball diamonds, which are scaled for a range of youth and adult recreational uses.	57.1
Klaus	Located on a peninsula created by the confluence of Pipestem Creek and the James River, Klaus Park features a disc golf course, covered picnic facilities with public grill stations, playground equipment, a walking trail, and fishing areas.	20.1
TOTAL ACRES		77.2
NEIGHBORHOOD PARK		
Solien-Denault	This facility is immediately north of 3rd Street Southeast and features a paved walking trail, an unstructured play field, and a picnic shelter. There is parking for one or two cars available on a paved surface adjacent to 3rd Street and the walking trail provides a pedestrian connection to the neighborhoods to the north.	12.7
Nickeus	Nickeus Park is set in an oxbow in the James River. There is a recreational drive along the perimeter of the park providing easy access to most areas of the park. Park facilities include a playground, picnic facilities, and a walking trail. Visitors may park along 10th Street NW or just to the side of the recreational drive.	6.3
Feton	Feton Park is located immediately to the east of the Jamestown YMCA. It is primarily unstructured play space and features three tennis courts. These courts are not lit for evening play and were resurfaced in 2006.	4.6
Leapaldt	Set on one city block, this neighborhood park features a basketball court, playground equipment, a picnic shelter, an unstructured play space, and an office for park programming.	2.2
Buchholtz	This park features playground equipment and a picnic area with shelter. Parking is available on-street.	1.1
Meidinger	Located just south of 10th Street SW, along 17th Avenue SW, Meidinger Park is primarly a large open space suitable for playing soccer. The site features a system of paved walking trails designed in an angular figure-eight configuration. Parking is available on adjacent residential streets.	24.2
TOTAL ACRES		51.1
SPECIAL USE PARKS		
Art Center Park	A small pocket park in Downtown Jamestown. The site features landscaping and tables for picnicking. There is a plan for redesign of this site that includes improved landscaping, public art installations, a gas-fueled fire pit, seating, and a performance area.	0.3
Wilson Arena Park	This site is adjacent to Wilson Arena and is home to Jamestown's public pool and some playground facilities. The playground equipment is in need of updating to meet the level of service provided by other parks. Parking is available in the lot associated with Wilson Arena.	2.9
Bolinger	Bolinger Park is on a half-block site between 5th and 6th Streets NW at 3rd Avenue. The site is entirely devoted to six tennis courts that are lit for evening play. These courts were resurfaced in 2006.	1.5
TOTAL ACRES		4.7
TOTAL PARKS & RECREATION ACRES		133.0

Figure 8.6: City Parks and Neighborhood Service Areas

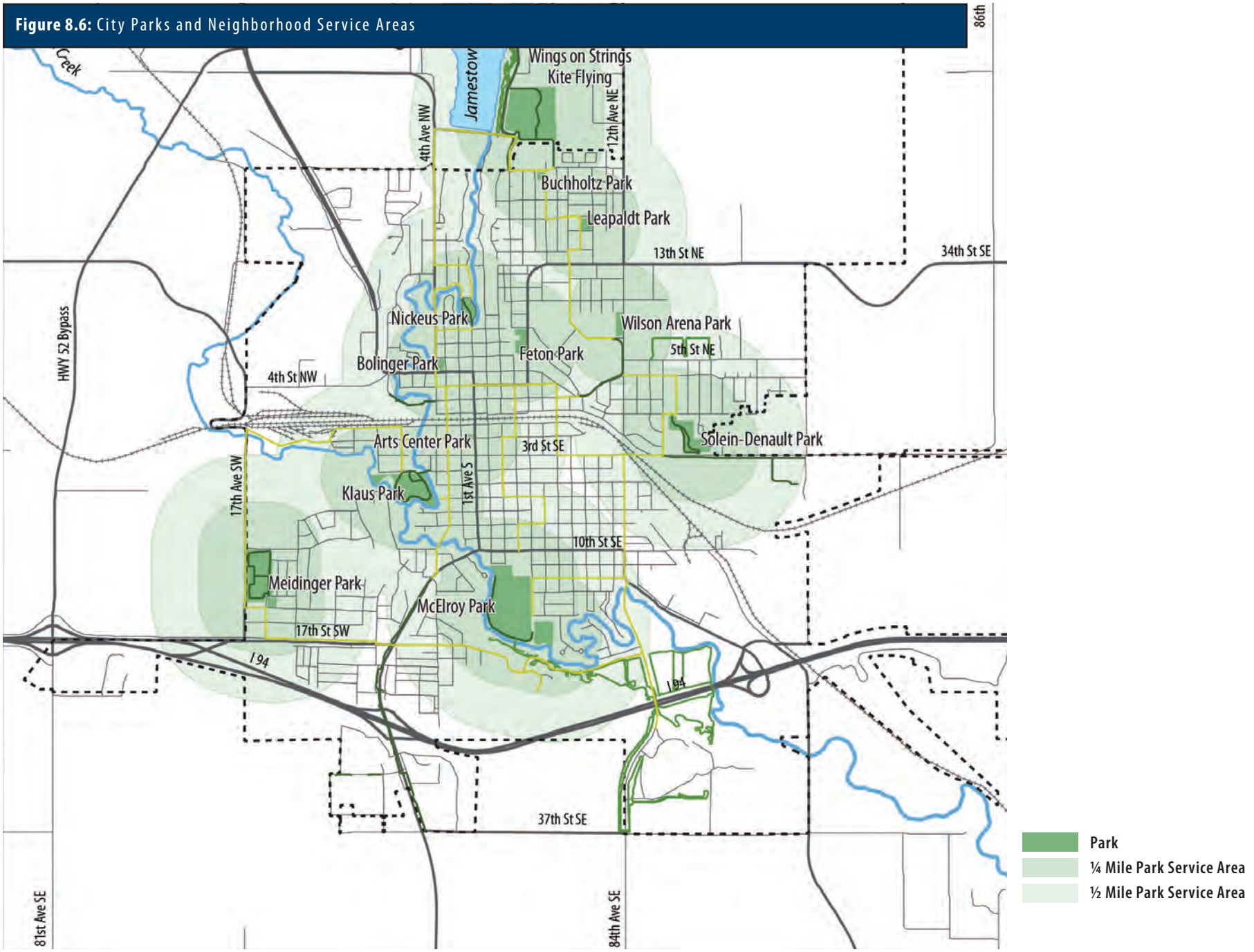


Figure 8.7: Park System Features

Facility	Acres (Total 133)	Play Equipment	Picnic Shelter	Picnic Tables	Grills	Rest Rooms	Ball Diamond	Tennis Courts	Basketball Courts	Sand Volleyball	Jogging Trail
COMMUNITY PARKS											
McElroy	57.1	●	●	●	●	●	●		●	●	
Klaus	20.1	●	●	●	●	●	●		●		
NEIGHBORHOOD PARK											
Solien-Denault	12.7		●	●							●
Nickeus	6.3	●	●	●	●	●	●				
Feton	4.6			●				●			
Leapaldt	2.2	●	●	●	●		●		●		
Buchholtz	1.1	●	●	●	●		●				
Meidinger	24.2	●	●	●	●		●		●		
SPECIAL USE PARKS											
Art Center Park	0.3										
Wilson Arena Park	2.9	●		●	●					●	●
Bolinger	1.5			●				●			

Source: City of Jamestown

The proposed Two Rivers Activity Center. *A local option sales tax to support financing for this facility will be voted on in June, 2015.*

of Louis L'amour Elementary School.

» The Central Park and school site proposed in the Southwest Growth Sector.

» The Southwest Greenway, providing for stormwater management, multi-use trail, and associated green area along the east-west drainageway between I-94 and 37th Street SW.

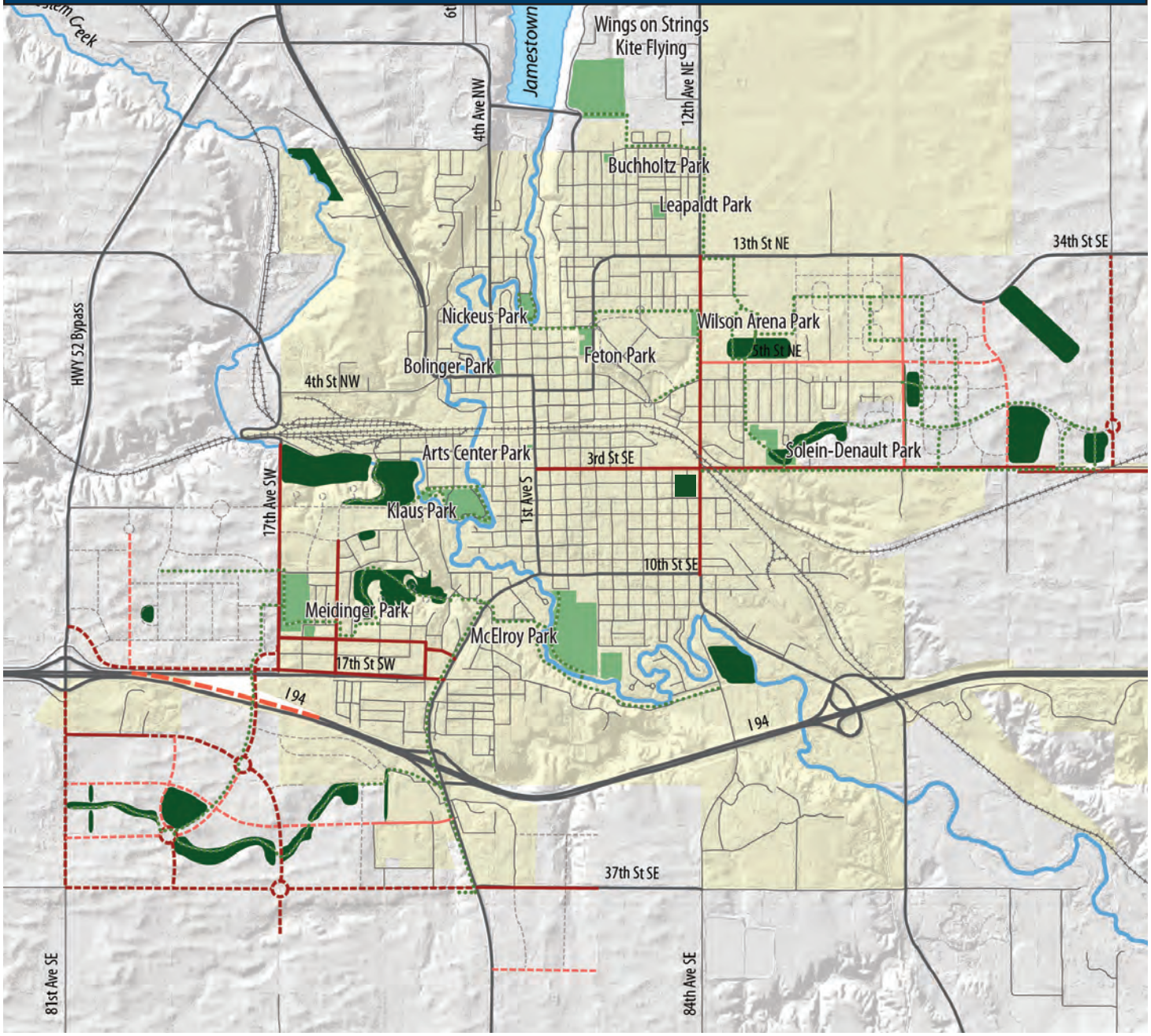
» A Northeast neighborhood park, integrated into the development concepts and circulation system discussed and illustrated in Chapter Three.

» The Railside Promenade discussed in Chapter Seven.

In addition, upgrades to existing parks are programmed, including:

» **Golf Course Renovation.** A $2 million renovation is planned for

Figure 8.8: Existing and Potential Park Sites



Existing Park
Possible Future Park

Figure 8.9: Future Parkland Growth Needs to Maintain Existing Level of Service

Park Type	Total Acres	Acres per 1,000 Residents	2040 Need(1)	Additional Acres Needed
Neighborhood Parks	51.1	3.3	72.6	21.5
Community Parks	77.2	5.0	110.0	32.8
Special Use Parks*	4.7	NA	10	5.3
Total Area	133.0	8.3	192.6	64.3

Source: City of Jamestown, RDG Planning & Design
(1) Assumes 2040 population of 21,823
* Includes special use parks identified in other parts of the FJ Plan

Hillcrest Golf Course.

» **New 15-acre Park.** About 17 acre acres were donated at across the river from McElroy Park, and will be called Rueben & Clarice Liechty Park. Two acres of this became Pepper Dog Park, while the remaining 15 acres require a plan.

» **Skateboard Park.** The city is considering options for relocating skateboard park from McElroy to somewhere more visible.

» **Art Park**. The Jamestown Arts Center will begin construction on the Art Park at the northwest corner of 1st Avenue SW and 2nd Street SW, described in Chapter Seven in 2015.

Trail System Conditions and Needs

Jamestown's proposed active transportation system is both a transportation and recreation asset. In fact, a significant number of transportation trips are made to recreational facilities, and the proposed TRAC is certain to be a major destination. The Active Transportation Network, illustrated in Chapter Six and reproduced here, is designed to serve the city's parks as well as the Jamestown Reservoir, high school campus, and the planned TRAC site. As discussed earlier, the system creates a network of paths using off-street, on-street, and trails that relate to major destinations and development opportunities.

Park and Trail Funding & Maintenance

Funding the construction and maintenance of parks and trails is often a difficult task. Jamestown should continue to execute a funding strategy that provides for both construction and maintenance of parks and trails. The funding sources for parks and trails can differ and the city should pursue all options.

Park Funding Strategy

New residential development creates a demand for neighborhood park services within a reasonable distance. Sometimes, this can be resolved by requiring park dedications for all development, established through the city's land development ordinances. The obligation for land dedication/trail construction is typically a function of:

» Acres in the development
» Development density
» Number of people per housing unit
» The city's desired level of service of parks

This option can work in some instances, especially where some land is desirable for recreational purposes but less desirable for residential development. This applies to areas that are in or near drainage corridors, for example, such as the proposed Southwest Greenway. However, in small cities, the dedication required for incremental development is smaller than the ideal neighborhood park size. Individual dedications can produce a pattern of scattered mini-parks that are expensive to maintain and provide poor service. The parks concepts implicit in the Future Land Use Plan call for larger neighborhood or community parks, linked to all parts of their service areas by complete streets and pathways. Two conceptual approaches can help produce an effective park system in growing areas with smaller-scale, incremental platting patterns:

1. Request that developers dedicate land at the edges and corners of the development when property includes or is adjacent to sites proposed for park development. This allows adjacent developments to combine several parcels of dedicated land to form the desired, larger parcel.
2. Allow payment of cash in lieu of dedication of land by developers. This money should not and often by statute cannot go into the city's general fund. Rather, it should provide a direct benefit to the residents of the area. A park within walking distance or a trail connection that ties the subdivision directly to a park or a larger trail system are good examples of a direct benefit.

Trail Funding Strategy

» Provide an ongoing budget item for trail construction and improvement

» Continue to identify and take advantage of available grant funding from local, state and federal agencies and from non-profit foundations. Recent emphasis on healthy lifestyles and tourism has made trail funding more available, but highly competitive.

Other Park Funding Sources

Other financing sources can contribute to the growth and improvement of Jamestown's park system, including:

» **General Obligation (GO) Bonds.** GO bonds obligate general tax revenues toward retirement, and represent the highest level of security to bondholders. Issuance of bonds requires voter approval. These bonds typically form the core of park financing mechanisms, with proceeds used for a variety of rehabilitation and development purposes.

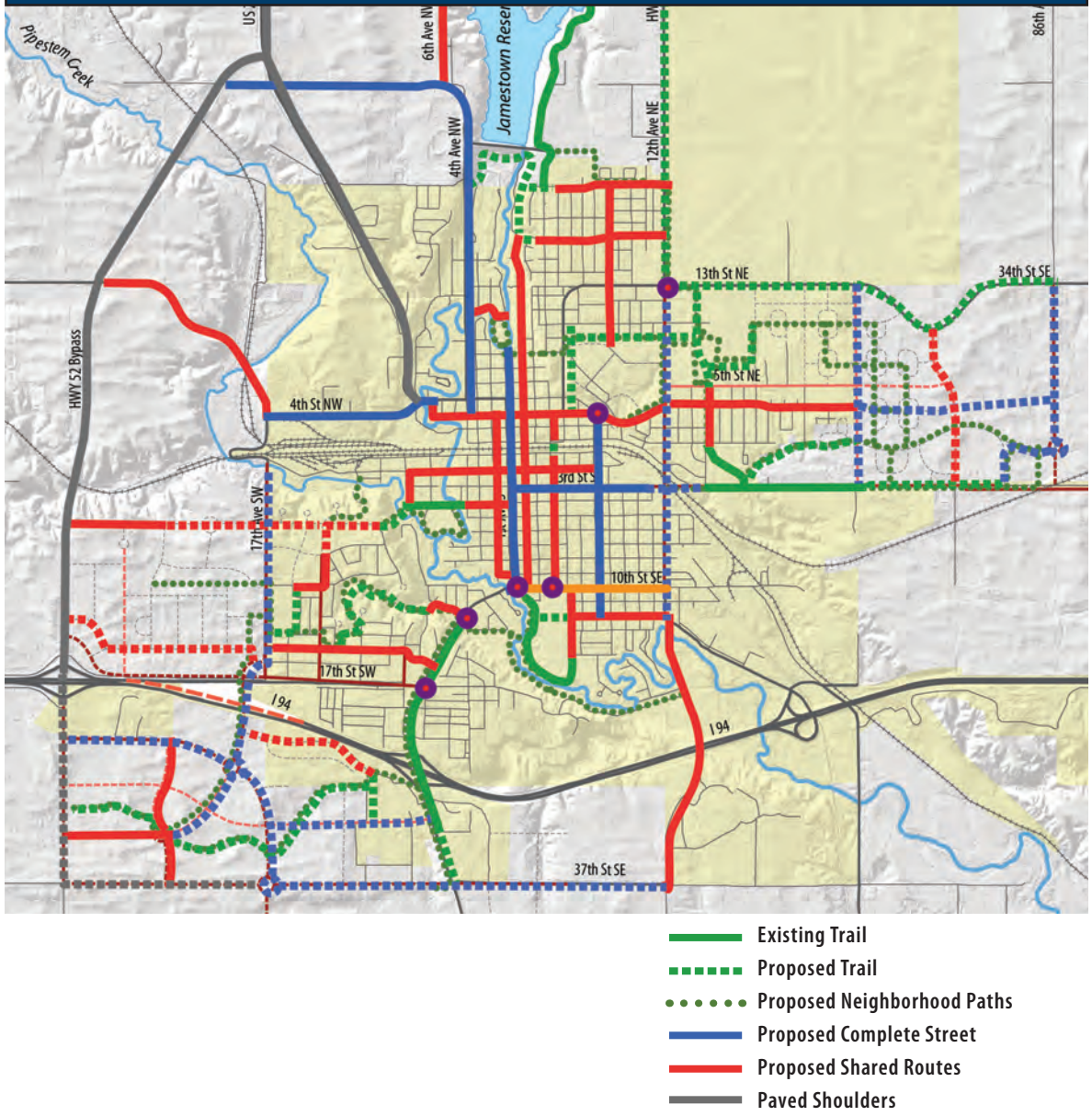
» **Transportation Alternatives Program (TAP).** TAP funds are appropriated for trails, corridor beautification, and enhancement. This program is administered through the North Dakota Department of Transportation and provides 80% funding for approved projects. Matching funds are typically provided through general obligation park bonds. Projects funded by TAP funds must have a demonstrable transportation function. The Recreational Trails Program (RTP) of the US Department of the Interior, can finance projects that have solely recreational uses.

» **Surface Transportation Program (STP).** This is the primary federal road financing program. STP funds may be used for path facilities that are developed as part of a major transportation corridor.

» **Private Foundations and Contributions.** Foundations and private donors can be significant contributors to park development, especially for unique facilities or for major community quality of life features.

Chapter Ten, addressing implementation, incorporates probable TAP funding into a proposed transportation network program for the city.

Figure 8.10: Existing and Potential Park Sites



chapter nine

Housing for the Future

For Jamestown to take advantage of growth opportunities, it must provide affordable places for its people to live. This chapter reviews past analysis of housing needs in Jamestown, incorporating material gathered during the Forward Jamestown process and as part of the North Dakota Planning Region VI Study that included Jamestown and Stutsman County. It presents a strategic program that can help Jamestown meets its future housing challenges.

HOUSING FOR THE FUTURE

The majority of urban land in almost every city in America is used for housing. We spend the majority of our lives in our homes, and housing represents the major capital asset for a majority of America's households. Furthermore, the condition and appearance of our housing stock and neighborhoods affects both our own lives and the perception and economic value of our communities.

These considerations are as important in Jamestown as for any other city. But in Jamestown, housing also is in many ways synonymous with economic development. The city, in partnership with Stutsman County, have done many things right from a development point of view. The Jamestown-Stutsman Development Corporation has developed a variety of location assets, from smaller sites in the Jamestown Business Park to very large sites at the Spiritwood Energy Park. The city and county have a solid portfolio of incentives, executed good industrial marketing campaigns, and provided quality infrastructure and public services as required. These efforts have paid off in the significant employment gains expected during the next five years and expectations that these advances will continue in the years beyond. The city has also begun to realize its retail potential and has responded to challenging requirements even in the last year to implement partnerships that attract major retailers and other commercial development.

Yet, all these efforts will not succeed if the city is unable to attract a younger workforce to fill these jobs, start new enterprises that spin off of existing industry, and sell the goods. And attracting that workforce begins having affordable, high quality places to buy and rent. Many cities have had significant growth opportunities stymied because prospective employees could not find acceptable housing.

We are also entering a period where a generation of new consumers is entering the market. Surveys done in all parts of the country show that a significant part (although not all) of this new market have different consumer preferences. A growing share of younger prospective housing consumers prefer quality and compactness over size; they are more comfortable with density and want walkable and even bikeable environments; and are open to new types of housing. The 2008 financial crisis has made them by choice or necessity more concerned about equity housing investment, and they often choose to rent for a period before settling down and buying a house. The Great Recession also made them more aware of the need for housing to retain its value. All of these issues are relatively recent and many small and medium sized cities, with a long history of building specific types of products, have been slow to respond.

In 2013, North Dakota Planning Region VI, recognizing the need to quantify housing needs, released a major housing needs analysis completed by Maxfield Research Inc. This assessment identified a variety of challenges, many of which pertain to Jamestown and its immediate surroundings. These include affordable housing development, conversion of affordable owner-occupied housing

to rental occupancy, housing for older adults, appraisal levels too low to support home puchases or new construction, condition of existing neighborhoods, escalating construction costs, inability of developers to finance infrastructure, and others. This chapter summarizes findings of this needs analysis and aspects of the Forward Jamestown process to help define a housing development strategy for Jamestown that will enable the community to meet the housing demands of the future.

Housing Units and Occupancy Indicators

Figure 9.1 (also included in Chapter One) considered overall housing occupancy factors and changes in Jamestown. That review compared occupancy factors from 2000 to 2010 to assess the change in these indicators over time.

- The total number of housing units increased by only 13 units between 2000 and 2010, when including vacant units.
- The total number of owner occupied units decreased by 9, the total number of rental units increased by 71 and the total number of vacant units decreased by 49. The nominal vacancy rate decreased from 6.7% to about 6%.
- The total number of occupied housing units has increased by 62 units.

As indicated in Chapter One, median home value in Jamestown is estimated at $96,000, a relatively low number given the overall good quality of the city's housing stock. The Region VI report indicated a countywide median resale value of $115,000 in 2012 and an average market rent of $530. These numbers are generally below the level necessary to support a robust new construction market.

Figure 9.1: Change in Housing Occupancy Indicators, Jamestown

	2000	2010	Change
Total Housing Units	6,970	6,983	13
Owner Occupied Units	3,878	3,869	-9
% Owner Occupied Units	59.62%	58.92%	
Renter Occupied Units	2,627	2,698	71
% Renter Occupied Units	40.38%	41.08%	
Vacant Units	465	416	-49
Vacancy Rate	6.67%	5.96%	
Median Value	$68,600	$96,600	$28,000
Median Contract Rent	$365	$500	$135

Figure 9.2: Housing Value to Income Ratio, Jamestown and Other Communities

	Median HH Income	Median House Value	Value/Income Ratio
Jamestown	$42,205	$96,600	2.29
Valley City	$38,091	$88,000	2.31
Fargo	$42,710	$148,500	3.48
Bismarck	$50,062	$151,400	3.02
Grand Forks	$41,661	$148,400	3.56
Aberdeen, SD	$41,781	$116,100	2.78

HOUSING AFFORDABILITY IN JAMESTOWN

Value to Income Ratio

Figure 9.2 (also included in Chapter One) compared median household income to median value for Jamestown and other surrounding markets to measure housing affordability. An affordable, self-sustaining housing market, with adequate value and revenues to support market-rate new construction, will typically have a value to income ratio between 2.5 to 3.0. Ratios above 3.0 exhibit significant affordability issues while ratios below 2.0 are significantly undervalued relative to income.

Owner-occupied housing that costs between 2.0 and 2.5 times a household's yearly income is considered affordable. Homes priced above this range can mean that housing costs are greater than what many in the market can afford.

Jamestown displayed a value-to-income ratio of 2.29, well below that of competitive cities. That suggests that Jamestown's existing

housing stock is affordable relative to incomes in the area. But on the other hand, it also suggests that housing prices or rent levels are still too low to support enough market rate construction to satisfy potential demand.

Housing Affordability by Cost Range

Figure 9.1 matches housing supply by price bracket to median household income. The median price of a community's housing supply in relation to the median income of its residents helps define whether the city's housing is affordable for its citizens. Theoretically, a household budget must be divided among basic housing costs, other essential needs, and costs to maintain a home. Households spending a disproportionately large share of income on basic housing have less money to spend on other living essentials and fewer resources to maintain their homes. In Jamestown, however, a shortfall exists in the supply of housing in the middle and upper income ranges while a significant surplus exists in the low-to-median income ranges.

Figure 9.3 confirms this finding by comparing income distribution with the quantity of housing affordable to each income group. A positive balance indicates a surplus of housing within the affordability range of each respective income group, while a negative balance indicates a shortage. This analysis indicates that the greatest shortages are for households above the city's household median income of $50,000, with the largest negative balances in the $50-75,000 and $100-150,000 ranges. These coincide with starter workforce housing prices ranges ($100-150,000) and higher-end units over $200,000. It also suggest that Jamestown's residents tend to have lower housing cost burdens than people in other areas. This is a very good thing for existing residents, but reduces the ability of private, for-profit developers and builders to "make the numbers work."

A shortage of housing in the middle and upper-middle ranges makes it more difficult for Jamestown to attract residents earning above the median income, and indicates a lack of opportunities for higher-income households to "move-up" to higher value housing. Generally, the market adequately serves demand for its highest-cost housing without public intervention. Although some subdivisions have been developed since 2000 to meet the needs of middle to upper income families, these have been outside the city limits and slow to build out. Several conclusions may be drawn from these trends:

- A limited amount of new buildable land within the city limits. Several areas of the city, most notably the northeast, have experienced conceptual platting, but many of these projects have not progressed.
- Reluctance to construct new housing developments because of

Figure 9.3: Housing Affordability Analysis by Income Group

Income Range	% of City Median	% of Households	# Households in Range	Affordable Range for Owner Units	# of Owner Units	Affordable Range for Renter Units	# of Renter Units	Total Affordable Units	Balance
$0-25,000	59.00%	28.80%	1,891	$0-50,000	689	$0-400	1114	1803	-88
$25,000-49,999	59-118%	28.51%	1,872	$50,000-99,999	1343	$400-800	1456	2799	927
$50,000-74,999	119-178%	20.09%	1,319	$100,000-149,999	1006	$800-1,250	103	1109	-210
$75-99,999	179-237%	11.60%	762	$150,000-200,000	574	$1,250-1,500	0	574	-188
$100-150,000	238-355%	7.40%	486	$200-$300,000	223	$1,500-2,000	12	235	-251
$150,000+	Over 355%	3.61%	237	$300,000+	34	$2,000+	13	47	-190
Median	$42,205	100.00%	6,567.00		3,869		2,698	6,567	0

Source: RDG Planning & Design

concerns about pricing houses (including starter homes) above the average market.

» Limited opportunities exist for middle to upper income households to move-up in the housing market.

Policy options for addressing the problems may include:

» Capitalizing on limited infill development as a way to stabilize neighborhoods

» Creating a delivery mechanism capable of delivering both affordable workfoce housing and move-up opportunities in potential growth areas.

» Emphasizing neighborhood conservation and preservation of existing homes to improve and stabilize existing neighborhoods

» Create alternative housing settings, such as independent living units, for older adults. This will free up some of the supply of sound and affordable housing for middle to upper income households.

» Encourage higher value housing developments that provide realistic "move-up" options to some higher-earning households.

FUTURE HOUSING DEVELOPMENT

This section projects future demand for new construction and considers the price range targets for new development in Jamestown. Chapter Two's discussion of Land Use Needs included a housing demand projection in Jamestown and the surrounding jurisdiction for about 1,440 units over the next ten years, an annual production average of 144 units, and a long-term demand for 2,526 units, an annual production level of about 100 units. This is very similar to the Region VI study's Stutsman County projection of 1,041 units between 2012 and 2020, an annual production of about 130 units. Figure 9.4 shows that long-term building permit falls well below that projected level, rarely reaching 30 units in any one year between 2000 and 2012. The very low increase in actual housing units during these same years indicates that almost as many units left the market as was introduced to it. Net housing gains average only about seven units annually between 2000 and 2010. Several recent apartment projects in the city have boosted that average, however, suggesting that the market is beginning to catch up, at least for market-rate rentals.

The overall development demand figures developed in Chapter Two must correspond to the income and affordability needs of the community. Distributing overall demand around affordability ranges indicates the types and price points of housing likely to be needed. Additionally, these demand figures can be broken out into ownership and rental housing units.

Based on the 2012 income distributions provided by the American Communities Survey, about 40% of all owner occupied units, or

Figure 9.4: Building Permits, 2000-2012

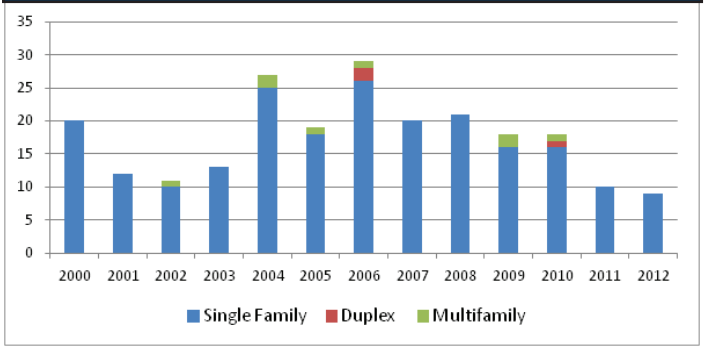


Figure 9.5: Housing Development Goals/Needs by Rent and Cost Range, 2015-2040

	2015-2020	2020-2025	2026-2030	2031-2035	2036-2040	Total
Total Need	692	746	349	362	376	2526
Total Owner Occupied	381	410	192	199	207	1389
Affordable Low: $75-100,000	60	65	30	31	33	219
Affordable Moderate: $100-130,000	88	95	45	46	48	323
Moderate Market: $130-200,000	107	116	35	56	58	372
High Market: Over $200,000	125	135	63	65	68	456
Total Renter Occupied	311	336	157	163	169	1137
Low: Less than $500	124	134	63	65	68	454
Affordable: $500-750	103	111	52	54	56	376
Market: Over $750	84	90	42	44	46	306

Source: RDG Planning & Design, Claritas Inc.

Successful multifamily development. *Top: The former Downtown Post Office, redeveloped by MetroPlains; Bottom: Contemporary multifamily project near the University.*

542 units, should ideally be priced below $130,000 (current dollars). Many of these units may be produced indirectly by developing higher cost housing that serves the "move-up" market of owners that now occupy lower value homes. Affordability ranges are also influenced by interest rates – people afford more expensive homes when interest rates are low. Increasing residential interest rates may reduce the list of affordable "workforce housing." About 33% of the rental market falls within the moderate cost ranges.

A diverse housing supply is necessary to support future economic growth, Units at the lowest cost end will meet the needs of entry-level production workers and those in the service sector, while higher-cost housing will attract and retain manager- and executive-level positions. Entry level housing is typically produced in two ways:

» Direct production, using various techniques to produce new or rehabilitated housing affordable to the city's workforce.

» Developing higher-cost or alternative housing that frees up the existing housing stock for more moderate income households.

HOUSING DIRECTIONS

Jamestown is positioned for steady growth in the coming yearsand housing is a critical element in determining the city's ability to sustain that growth, Demand will be fueled by such diverse groups as young professionals entering the housing market, young families settling in the city and for appropriate ownership options, and seniors looking for services within an enviable small city atmosphere. Analysis of both the city's assets and issues suggest a housing and community development strategy for Jamestown that:

» Improves overall housing quality. By improving the quality of housing, a city serves the interests of all residents from the perspectives of physical and economic well-being. Upgrading housing quality creates market security in addition to increasing values and marketability. Conversely, deteriorating housing inevitably produces deteriorating housing values.

» Continuing to develop quality market-rate rentals. Low interest rates and easy financing tend to reduce the short-term costs of home ownership and therefore, discourages rental development and occupancy. With the crash of the subprime market in 2007-08, mortgage financing standards became more rigorous and,

consequently new demand emerged for rental housing. Jamestown has a number of affordable rental options but many stakeholders cited the continuing difficulty in finding good quality, market-rate rentals for families and young professionals.

» Providing mechanisms to produce development in new growth sectors. Properties in readily serviceable areas tend to be in relatively unified ownership, and people appear to be of a mind to convert this property to urban use. But the cost and risks of developing infrastructure are daunting to private developers, leading to outcomes that are both inefficient and undesirable from a city point of view. Those outcomes include development at very low density in surrounding rural areas and discouraging new housing construction altogether.

» Developing moderate cost ownership housing, where the economies of scale utilized in bigger cities doesn't exist and where risks to builders are high and profit margins are low.

A program capable of realizing these goals should:

» Develop moderately-priced, market-rate housing for both owners and renters.

» Increase availability of buildable lots in and near the city, and provide infrastructure in development sectors.

» Conserve existing housing stock and use available land that is already served by infrastructure

» Define a distinctive niche and community marketing program to take advantage of existing markets.

» Emphasize neighborhood conservation for existing and design new developments to create a cohesive neighborhood.

Actions in pursuit of these goals will fall within five primary categories:

1. A Housing Development Partnership
2. Program Focuses
3. Rehabilitation and Property Maintenance Programs
4. Land Development

Housing Development Partnership

Jamestown should develop a partnership with the flexible capability to address its specific housing needs.

An effective community housing partnership should provide project development, financing, and marketing capabilities. The components of a Jamestown Housing Partnership should include:

» A Jamestown Community Housing Development Corporation

» A Lenders Consortium

» The City of Jamestown

» Current and prospective homebuilders

Community Housing Development Corporation

A Community Housing Development Corporation is a nonprofit developer governed by a Board of Directors and operating in the same entrepreneurial way as a conventional developer. They often grow out of established organizations that have identified housing as vital to their work, or of other community organizations (such as churches, human services groups, or community action agencies) that identify housing as a critical need.

JSDC can also be a vital resource for building partnerships. It has developed industrial parks and structured incentive packages to recruit employers.

A community housing development corporation may be either a for-profit or nonprofit organization. On the nonprofit side, a corporation may be organized as a "community development housing organization," or CDHO. CDHOs require majority community board representation, in return, they enjoy a special allocation of tax credits for affordable housing financing through the state ghousing finance agency. The key roles of the CHDO in the housing partnership will be such programs as rehab/resale projects and construction on infill sites as described below under the program component Project Focuses.

Lending Consortium

A community development corporation must have a source of financing to do its work. Such a financing program should be designed for maximum leverage (in the language of community

Community housing initiatives. *Top: Workforce owner-occupied housing in Sioux Center, IA, developed by a for-profit community housing development company. Houses are priced at about $130,000 and about 80 have been sold in this town of about 5,000. Below: Brewer Creek Estates in Webster City, IA. The city developed this multi-phased and highly successful subdivision and front-ended development costs, which are reimbursed either at closing or through special assessments.*

New products for a new generation. *Towns at Little Italy in Omaha is a high-density single-family development adjacent to the Union Pacific and BNSF main lines in Omaha, NE. They have been very popular with urban homebuyers of several age groups.*

development, "leverage" is the ability of program dollars to generate private investment in response to a principal investment); shared risk; and quick turnover rather than long-term financing. The Housing Partnership should include a "lenders consortium," a cooperative venture among lending institutions active in Jamestown that spreads individual exposure. In addition, these cooperative ventures can attract the support of other agencies such as the housing finance agency and the Federal Home Loan Bank.

A lending consortium is an ideal instrument to provide short-term financing for a modest but adequate inventory of moderately-priced, owner-occupied houses, and to provide interim financing for projects developed by the CHDC and City.

The City of Jamestown

Cities generally have the responsibilities of providing and maintaining urban infrastructure and municipal services. Consistent with these powers, the city should finance capital improvements using techniques that reduce and/or defer the front-end cost of lots, assembles or acquires property for development or redevelopment as needed, and acts to promote other projects or remove obstacles to desirable development. The city's roles in the housing partnership could include:

- Assisting with acquisition and site preparation of infill redevelopment sites
- Financing assistance through CDBG, TIF and other programs
- Subdivision development with infrastructure

Builders and Realtors

While some Community Development Corporations (CDC) have established their own construction and marketing capacities, there is no reason for a Jamestown corporation to move in this direction. The private sector of builders and Realtors, working in concert with the other partners, will be the primary delivery mechanism for new products.

Housing Trust Fund

A Housing Trust Fund provides a source of seed capital, unconstrained by program regulations, for a city or development corporation to use for the purpose of developing needed housing types. Trust funds can be generated in several ways, including dedication of a specific share of local option sales taxes, fees, local revenue bond issues, or grants and charitable contributions.

Program Focuses

Three special project focuses appear most appropriate in Jamestown given housing demand and economic character: affordable equity housing, rental housing development, rent-to-own projects, and downtown housing.

Affordable Equity Housing

New owner-occupied housing can upgrade the city's housing stock by attracting new target households looking to build equity in the city. New housing may be built in either contiguous developments or on infill lots within built-up areas. New developments should take advantage of Jamestown's environmental features, such as Mill Hill, and in configurations that distinguish them from standard subdivisions. In either case, a housing trust fund may provide recoverable, front-end funding for such items as project design; the city may acquire property or develop infrastructure through TIF or revenue bonds; the CHDC is the master developer and contracts with private builders for home construction; and the lenders consortium provides interim financing for the corporation. Realtors may also participate by reducing commissions on selected projects. Potential target markets for new affordable units may include younger households, people with stable incomes, and downsizing empty-nesters.

Another proven affordable ownership development technique is an acquisition/rehab/resale program. Here, the CHDC acquires houses that are then rehabilitated and resold on a "turnkey" basis to new owner-occupants. The lending community may participate cooperatively in this effort by providing interim financing. Mortgage financing for low and moderate income buyers may be assisted by CDBG or HOME "soft-second" loans. This approach recognizes the limited number of prospective buyers who want to carry out a major home rehabilitation project. It works best when candidate houses can be purchased at relatively low cost.

Rent-to-Own (CROWN)

CROWN projects provide a middle-ground approach between ownership and rental occupancy, giving new residents who cannot afford homeownership at present an avenue to build equity in the city. In the rent-to-own program, the development corporation may build houses using the Low Income Housing Tax Credit. A portion of the family's rent is placed in an escrow account for a future downpayment. At the end of a specific period, the residents can then use the accumulated downpayment escrow to purchase either a new house or an existing unit. Rent-to-own programs have the advantage of providing rental housing to residents, while incorporating aspects of owner-occupancy.

The rent-to-own approach gives young families the opportunity to try out the city as well as building equity and wealth. It provides a transitional opportunity by which young households can build equity and become integrated into the larger community.

Rental Housing

Demand for rental housing in Jamestown crosses several income ranges. New rental housing should include market-rate rentals for professionals, workforce housing, and housing for people with urgent needs. Funding sources such as the lending consortium and housing trust fund can be used to develop new inventory, and tax credits may be employed to address the needs of lower income households. Tax Increment Financing, CDBG/HOME funds, and tax credits can also help create affordable multi-family housing. The housing partnership and lending consortium should be active participants in multi-family housing finance by distributing the risk of projects across several lenders.

Downtown Housing

Chapter Seven identified several housing conditions that are attractive focuses for a CHDC. These include acting as the agent or actual developer of the 1st to 2nd Avenue NW block, proposed for significant housing development; or the mixed use projects along Art Alley or in the Civic Center area. These projects may require recruitment or partnership with a quality developer, and Jamestown has already experienced the benfits of such a relationship in the successful Post Office reuse by MetroPlains at 1st Avenue and 3rd Street.

Independent senior living. *This development, in an urban redevelopment area in Omaha, NE, was built by a nonprofit community development corporation.*

Rehabilitation and Property Maintenance

The city should implement a comprehensive approach to rehabilitation that broadens the reach and effectiveness of rehabilitation efforts, and reduces the amount of substandard housing in the city.

Directions for a rehabilitation program in Jamestown include:

Owner Assistance

While Jamestown's housing supply is generally sound and well-kept, some units require at least moderate repairs or rehabilitation. and aging householders sometimes have more difficulty maintaining even the essential envelope of their homes. A coordinated rehabilitation strategy, operating on a reliable, multi-year basis, can ensure preservation of the area's critical supply of existing housing. A comprehensive rehabilitation program, appropriate to the

respective needs of individual residential areas, should include five program types. These include:

1. Emergency repair program. For very low income residents, an emergency repair program should be established. This type of program is often funded through Community Development Block Grant (CDBG) funds in the form of grants or forgivable loans. The loans are recaptured over time but additional funding from both private sources and grants should be added to expand the program. Emergency repair programs are designed to meet critical individual needs, but also to keep viable housing from deteriorating further. Thus, when funds are limited, assistance should be focused on fundamentally sound structures.

2. Direct rehabilitation loan programs. This program would make direct forgivable loans and grants to homeowners from CDBG or HOME funds. The program is most appropriate to homeowners with low incomes who are not otherwise bankable. These efforts should generally be focused in strategic areas where loans support other areawide investments, such as substantial infill development.

3. A leveraged rehabilitation loan program. This approach leverages private loan funds (often through the FHA Title I Home Improvement Loan program) by combining private loans with CDBG or other public funds to reduce the amount that homeowners must borrow. The program is effective in expanding the amount of improvements completed by a fixed amount of public funding. Loans in a leveraged loan program can be originated through individual lenders or through the proposed lenders' consortium. They may be structured in such a way that all or part of the public share of th eproject may be recovered on sale of the property.

4. Acquisition/rehab/resale programs. An acquisition/rehabilitation/resale program is particularly useful in adapting older houses to the preferences of contemporary, moderate income buyers.

5. Energy efficiency loans. Funding may be leveraged through utilities to provide loans that improve the energy efficiency of older homes. These low-interest or no-interest loans can be used to replace windows, heating and cooling systems, or any other upgrades that improve the energy efficiency of the home.

Rental Rehabilitation

The city should also consider a rehabilitation program focused on rental properties that provides leveraged loans combined with code enforcement. This program provides financing for the improvement of sound rental properties in need of rehabilitation.

Rental rehabilitation must include effective housing code enforcement to require that units meet minimum housing standards. But the reluctance of tenants to file complaints can seriously hamper effective life safety enforcement. Some communities have instituted rental registration or licensing programs. Here, all rental units must register to be certified for occupancy. Registration requires a life safety inspection and compliance with minimum standards. These programs can be effective, but are staff-intensive and must be administered to avoid displacing low-income households. However, the potential of loss of revenue, combined with available financing, can induce participation by property owners in this kind of program.

Mechanically, the foundation of a rental rehabilitation program should be private financing. An individual institution or the CHDC, acting as a referral agency, may take a leading role in marketing the availability of rehabilitation loans to small rental property owners. A reservation of HOME funds could be utilized by the city to provide blended loans when some form of subsidy is needed.

Property Maintenance Program

The best housing and neighborhood conservation programs combine awareness of the need for reinvestment with the tools to finance home repairs and rehabilitation. The strategy begins with a Property Maintenance Standards Program, an effort that encourages voluntary compliance with community standards while also establishing a legal basis for code enforcement. The city should consider the following ideas:

» Preparing and distributing a Property Standards Manual. This should be a friendly and clear document that sets out the expectations that Jamestown as a community has for individual building and property maintenance. It can also help to provide useful information, such as sites to dispose of or recycle unwanted household items.

» Organizing voluntary efforts through church and civic groups to assist seniors and disabled people with property maintenance, including fix-up items, painting, routine repairs, and disposal of trash and other items.

» Review and modify the city's current Property Maintenance Ordinance, assuring that the ordinance clearly addresses those

items that have the greatest impact on life safety, visual quality, and preservation of community maintenance standards. This review should be done in light of recent efforts to identify those areas that remain a concern or continual issue.

» Holding neighborhood focus meetings. City staff and community organizations should set up periodic meetings in appropriate areas to explain the city's property maintenance standards and to answer any questions. These should be done at locations within each neighborhood and focused to the needs of each area.

Land Development

The land development issue is especially important to Jamestown because of three factors: the relative scarcity of subdivided, buildable lots; the built-up nature of the established community, forcing a high reliance on new development sectors; and the requirement for unified approaches that are efficient but require significant up-front investments. Fulfilling both the land use and development goals of ***Forward Jamestown*** and meeting future housing demand will require a public/private solution to this problem.

While not intended to dictate a complete solution to this problem, we suggest the following strategy:

1. Complete a thorough development cost analysis of local transportation, infrastructure, parks and recreation, and public service facility needs (such as a public safety base) in the primary Southwest and Northeast development sectors. The major street framework proposed in the land use and transportation elements(such as the 20th/25th/37th Street system or the West ern Crossing) should be considered general benefits, to be financed through the overall transportation program. Street costs in this analysis should be focused on special benefit. In some cases, as in collector streets, benefits may be both special and general.
2. Use the development yields and phases identified in Chapters Two and Five to establish a cost per unit of development. Cost per unit for higher density development will generally be less than for single-family because of the efficiency of serving more people per unit of infrastructure. Commercial and industrial development costs may be allocated on unit of land or building area.

3. Calculate the relative public and private share of these costs. This share should be worked out through negotiation and through public policy and may run the gamut from 100% private to 100% public, depending on priorities and perspective.
4. Establish a mechanism for public front-end financing of these costs in their relative phases. Front-end financing, often through revenue bonds, will probably be critical to building transportation an durban service infrastructure necessary. However, it is essential to build incrementally, and the serviceability diagram in Chapter Eight can help define that process.
5. Provide for reimbursement of the private share through a benefit fee when development or building permits are issued; through a special assessments, or through innovative techniques such infrastructure banks or tax increment financing for certain kinds

of public-interest development, such as workforce housing.

Financing Alternatives for Selected Project Types

Financing techniques that avoid burdening moderate income homebuyers with land and infrastructure development costs can be extremely important. In many communities, special assessments are used to finance infrastructure. While assessments reduce the initial purchase price of the house, they are retired through monthly payments, and so add to the monthly or overall cost of housing.

» Infrastructure Bank. In a new subdivision targeted specifically to affordable ownership housing, Jamestown should consider an "Infrastructure Bank" approach. Here, the city finances the infrastructure as a "participatory" deferred loan. The infrastructure loan comes due when the house is sold by the original owner. The city may choose to forego interest, may establish an annual simple interest rate, or may participate in the appreciation (or depreciation) of the property. In a participation alternative the repayment represents the same percentage of the sale proceeds that the initial infrastructure loan made up of the original price. Figure 9.6 provides an example of such a scenario. In this scenario the cost of infrastructure related to the price of the house is 10%. When this same portion is applied to the final sale price of the house ($125,000) the city earns $2,500 that can be put towards new housing projects. In addition, the property taxes generated by a house that might otherwise not be built must also factor into the equation. Grants from the Federal Home Loan Bank, TIF, North Dakota Housing Finance Agency (NDHFA), or state-administered Federal programs such as CDBG or HOME can also help with infrastructure financing.

» Tax Increment Financing (TIF). In redevelopment areas, TIF can be a significant tool for land acquisition and development financing. TIF uses the added tax revenue created by the redevelopment to finance project-related costs like land acquisition and public improvements.

Figure 9.6: Infrastructure Bank Repayment Scenario

	Initial Price	Price at Sale
Sale Price	$100,000	$125,000
Infrastructure Cost (deferred in initial price)	$10,200	
Infrastructure/Price Ratio	.10	.10
Amount of Repayment (based on initial investment/price ratio)		
Equivalent Interest Rates		
5-Year Resale		4.56%
7-Year Resale		3.24%
10-Year Resale		2.26%

Source: RDG Planning & Design

chapter ten

Implementation

This chapter provides a program for implementing the ***Forward Jamestown*** Plan with a special emphasis on transportation components – arguably the highest priority of publicly funded infrastructure priorities. It also investigates options for other priority projects, including high priority public facilities, development financing, an downtown development.

This chapter helps crystallize strategic directions on implementing the transportation network envisioned by the *Forward Jamestown* process, as well as considering implementation methods for other important priorities such as development financing. However, of all the items on the community agenda, transportation is both the most basic in terms of being a prerequisite for development, and arguably the most expensive. Furthermore, transportation financing affects other initiatives. For example, the downtown community considers the function and character of First Avenue, the district's main street, as fundamental to the district's success. Execution of the First Avenue concept is largely a question of having available funds to improve these factors.

This section of the chapter, then focuses on funding and executing a transportation program that is both within the limits of available resources and capable of moving Jamestown in the policy and land use directions envisioned by the plan. This discussion:

- Analyzes expected revenues available for implementation during the 2015 to 2040 planning period and calculates the deficit between needs and revenues.
- Sets priorities, establishing criteria for evaluating and defining the sequencing of both the roadway and active transportation network development.
- Presents alternative revenue sources to complement existing programs, also interacting with other items on the community agenda.

TRANSPORTATION REVENUES AND FISCAL CONSTRAINTS

The revenue estimates presented in this section provide a fiscal constraint for future transportation investments identified through the *Forward Jamestown* process. Available revenue estimates are also used to account for required operations and maintenance (O&M) needs, including major rehabilitation and reconstruction needs on the existing transportation system. Revenue estimates are based on a review of current and projected funding conditions for the City of Jamestown and the North Dakota Department of Transportation (NDDOT) – Valley City District.

Revenue estimates for local and state funds were based on the City of Jamestown's 2014 budget condition for sales tax revenue and state funds received through the highway tax distribution formula. Estimates do not account for any special funding that might result from current or future legislative sessions. In addition, revenue estimates do not include funding derived from Jamestown's General Fund through property taxes.

Time Bands

The revenue estimates used to support the Plan were based on the following time frames:

- **Committed:** Reflects the years 2016–2018, representing the final three years programmed by the NDDOT Statewide Transportation Improvement Program (STIP).
- **Short Range:** Reflects the years 2019-2023, representing the first five years beyond the current NDDOT Surface Transportation Improvement program (STIP).
- **Mid-Range:** Reflects the years 2024-2028.
- **Long Range:** Reflects the years 2029-2040.

Revenue Sources and Methodologies

Revenues sources considered as pertinent to the Plan cover the following local, state, and federal funding programs. Revenue estimates assume an annual growth rate of 1.5%.

Sales Tax: This estimate assumes the City of Jamestown could set aside 50% of future sales tax revenues for investment in new or expanded transportation infrastructure. Base year estimate is $610,000 ($1,220,000 x 50%). We assume that this calculation is based on existing rates and excludes a dedicated additional sales tax, such as the one cent local option tax proposed to help finance the Two Rivers Activity Center.

One-half of available estimated sales tax revenue was allocated each year to augmenting the city wide operations and maintenance (O&M) program. This source is potentially available revenue for new, expansion, or mobility related improvements in Jamestown. However, given current commitments by the City, sales tax revenue is not expected to be available for fiscal constraint of future transpor-

tation needs.

Special Assessments: To remain consistent with Jamestown's current practice of funding most of its street related O&M programs through special assessments, this analysis assumes continued dedication of special assessment revenue each year specifically to O&M programs. The base year assumption was $750,000 in revenue, covering 75% of the annual O&M needs, with the remainder derived from sales tax.

State: This estimate accounts for Jamestown's annual apportionment through the North Dakota Highway Tax Distribution Formula. It assumes that 50% of this amount is set aside for new or expanded transportation infrastructure. Base year estimate of $547,500 ($1,095,500 x 50%).

Urban Roads Program (URP): This estimate accounts for Jamestown's annual apportionment (for planning purposes) of NDDOT's Urban Roads Program (URP) funds. It assumes a planning balance in 2018 of $1,008,855 to match the current balance shown by NDDOT for Jamestown to account for the committed projects in the 2015-2018 STIP. Future estimates are based upon a 1.5% growth on NDDOT estimates of URP for Jamestown in 2019 of $863,744.

Transportation Alternatives Program (TAP): These revenues assume that Jamestown will receive funding for one TAP-eligible project ($200,000 Federal) every five years between 2018 and 2040. These funds would be used to fund transportation projects for pedestrian and bicycle facilities.

Highway Safety Improvement Program (HSIP): This estimate assumes that Jamestown will receive part of the NDDOT HSIP apportionment. While HSIP funds are not distributed on the basis population, the analysis assumed that Jamestown will receive 2.3% (50% of its total URP apportionment percentage) annually of the total NDDOT apportionment of $12,852,000. Base year amount is $295,550 ($12,850,000 x 2.3%). It is assumed that these funds would assist in funding HSIP eligible projects within each time band based on identified HSIP eligible needs.

Regional/National Highway Performance Program (NHPP): This funding category assumes funding through the NDDOT Valley District for roadway needs on the Primary Regional System within the Jamestown Urban area. While these funds are not apportioned on a population basis, this analysis assumes that 4.6% (its URP apportionment percentage) of the total Regional Roadway funds set aside by NDDOT would be spent in Jamestown annually. Based year amount is $828,000 (18,000,000 x 4.6%). Revenue estimates assume the all Regional Funds are committed through 2018, so new Regional roadway needs could be constrained after 2019.

This financing plan is developed under the assumption that NDDOT may devote Regional funds to one additional project on 10th Street SE (12th Avenue to James River) and on US 281/52 from 10th St SE to 17th Street SW. This would be in addition to the current Regional funds committed to the reconstruction of the 17th Street SW from US 281 to I-94 WB at Exit 257, and would be part of the turnback of this corridor from the Regional to Urban system.

Figure 10.1 below summarizes available revenues by time band that will be collected by the City of Jamestown through 2040. Figure 10.2 summarizes funds that are extracted to develop a more realistic (if not required) fiscal constraint element of the implementation element of the ***Forward Jamestown*** Plan.

Available revenues are divided between Urban/Local and Regional. Urban/Local includes sources available to the City of Jamestown through the State Highway Distribution Formula and the Urban Roads Program. Because a large share of current sales tax revenue is committed to other needs within the City of Jamestown, including O&M needs, sales tax revenue is not included in Table 3. However, additional sales tax revenue would help address significant short

Figure 10.1: Potential Available Transportation Revenues

	2019-2023	2024-2028	2029-2040	Total
Sales Tax	$3,335,741	$3,593,541	$9,798,788	$16,728,070
Assessments	$4,101,321	$4,418,288	$12,047,690	$20,567,299
State	$2,993,965	$3,225,350	$8,794,814	$15,014,128
Urban Roads	$4,450,245	$4,794,177	$13,072,658	$22,317,080
TAP	$200,000	$200,000	$400,000	$800,000
HSIP	$1,616,194	$1,741,100	$4,747,593	$8,104,887
Regional/NHPP	$4,527,859	$4,877,790	$13,300,650	$22,706,298

Figure 10.2: Available Revenue for Jamestown Transportation Investments

	2019-2023	2024-2028	2029-2040
2019-2023	$11,545,530	$4,527,859	$200,000
2024-2028	$12,437,815	$4,877,790	$200,000
2029-2040	$33,915,162	$13,300,650	$400,000
Total (2019-2040)	$57,898,507	$22,706,299	$800,000

to mid-term needs that, under current funding conditions, can be credibly described only as part of a larger transportation vision, rather than elements of a more realistic investment program.

Regional funds relate directly back to funds available for improvements on the NDDOT Primary and Secondary Regional System, which constitute a blend and mixing of both Surface Transportation Program (STP) funds as well as National Highway Performance Program (NHPP) funds.

Given the uncertainty of future available funds and the uniqueness of their programming, not all of the funding identified as part of the financial plan is directed to actual projects. As an example HSIP funds are not considered as part of the available revenue; however, it is understood that eligible projects for highway safety funding exist on both Jamestown's Urban and Regional systems.

Operations and Maintenance Needs

To accurately reflect life cycle and O&M needs on both the Urban and Regional system, this analysis estimates future investment needs was generated. Figure 10.3 shows necessary funds that should be committed to O&M needs on both the Urban and Regional Systems. These funds are allocated first from available revenues, ahead of investments in expansion or mobility needs.

The major O&M needs identified for the NDDOT Regional System were developed in cooperation with the NDDOT Valley City District Engineer. O&M needs for NDDOT exclude needs for pavement and concrete maintenance on I-94, which are considered outside the scope of this study.

The overall project list identifies short and mid-term O&M needs on the through-town Regional System as addressing expansion and mobility needs. Because no long-term NDDOT needs were readily identifiable, a baseline assumption of $5,000,000 is shown to reflect additional needs that will inevitably arise between the years 2029 and 2040.

Expansion and Mobility Needs

Once O&M needs have been satisfied, remaining expected funding can be committed to meet Jamestown's expansion and mobility needs on the Urban/local and Regional System, identified in the plan. Figure 10.4 below displays the amount of revenue needed to support the overall ***Forward Jamestown*** roadway system implementation plan for improvements.

Fiscal Constraint Analysis: The Gap between Revenues and Needs

Figure 10.7 shows the substantial shortfall that exists between identified mobility and expansion needs in the City of Jamestown and

Figure 10.3: Operations and Maintenance Needs

Time Band	Urban/Local	Regional
2019-2023	$6,336,331	$5,540,000
2024-2028	$7,709,116	$0
2029-2040	$26,019,833	$5,000,000
Total (2019-2040)	$40,065,280	$10,540,000

Figure 10.4: Expansion and Mobility Needs

Time Band	Urban/Local	Regional
2019-2023	$9,740,000	$0
2024-2028	$37,050,000	$2,400,000
2029-2040	$52,080,000	$0
Total (2019-2040)	$98,870,000	$2,400,000

Figure 10.5: Forward Jamestown Transportation Project List: NDDOT Regional System Projects

	Location	Project	Year	Project Number	Construction Cost (2014 Dollars)	Year of Implementation Dollars
NDDOT Regional System	Exit 260*	Structure Replacement*	2015	R-1	$2,920,000	$3,040,000
	US 52 Bypass*	Safety Improvements*	2015	R-2	$749,000	$780,000
	US 52 Bypass*	Microsurfacing*	2015	R-3	$425,000	$440,000
	ND 20 - 19th St NE to Urban Limits*	Overlay*	2016-2018	R-4	$391,000	$440,000
				2015-2018 Regional Subtotal	**$4,485,000**	**$4,700,000**
	Exit 257	Remove Interchange	2019-2023	R-5	$50,000	$70,000
	1st Ave (US 52/281) - 8th St S to 5th St N + 5th St NW (US 52/281) - 1st Ave N to 7th Ave NW	Pavement Rehabilitation and Road Diet	2019-2023	R-6	$2,750,000	$3,620,000
	US 52/281 - Mill Hill to 10th St SE	Pavement Rehabilitation, Bridge Improvements, Intersection Improvements at 1st Ave/10th St	2019-2023	R-7	$1,000,000	$1,320,000
	ND 20 - City Limits to 1st Avenue	Preventative Maintenance	2019-2023	R-8	$400,000	$530,000
				2019-2023 Regional Subtotal	**$4,200,000**	**$5,540,000**
	10th St SE - 4th Ave SE to 12th Ave SE	Preventative Maintenance and Road Diet	2024-2028	U-6	$1,500,000	$2,400,000
				2024-2028 Regional Subtotal	**$1,500,000**	**$2,400,000**

Figure 10.5 (continued): Forward Jamestown Transportation Project List: Jamestown Urban System Projects

	Location	Project	Year	Project Number	Construction Cost (2014 Dollars)	Year of Implementation Dollars
Jamestown Urban System	17th St - I-94 to US 281*	Roadway Reconstruction*	2016-2018	U-1	$10,000,000	$11,250,000
				2015-2018 Urban Subtotal	**$10,000,000**	**$11,250,000**
	4th Ave NW James River Crossing	Bridge Replacement	2019-2023	U-2	$400,000	$530,000
	17th St SW - 17th Ave SW to US 52 Bypass	Roadway Reconstruction	2019-2023	U-3	$3,000,000	$3,950,000
	20th St SW, 17th Ave SW and 25th St SW	New Construction	2019-2023	U-4	$4,000,000	$5,260,000
				2019-2023 Urban Subtotal	**$7,400,000**	**$9,740,000**
	10th St SE - 4th Ave SE to 12th Ave SE	Preventative Maintenance and Road Diet	2024-2028	U-6	$1,500,000	$2,400,000
	17th Ave SW, 37th St SW	New Construction, Roadway Reconstruction	2024-2028	U-7	$3,800,000	$6,080,000
	10th Ave SW - 25th St SW to 37th St SW	Roadway Reconstruction (Reconstruct as Urban Collector)	2024-2028	U-8	$1,000,000	$1,600,000
	25th St - US 281 to 10th Ave SW	Roadway Reconstruction	2024-2028	U-9	$2,500,000	$4,000,000
	3rd St SE - 1st Ave S to 12th Ave SE	Pavement Rehabilitation and Road Diet	2024-2028	U-10	$1,500,000	$2,400,000
	12th Ave E/3rd St SE/BNSF Railway Crossing	Grade Separation	2024-2028	U-11	$9,300,000	$14,890,000
	4th Ave NE Railroad Grade Separation	Bridge Replacement	2024-2028	U-12	$4,000,000	$6,400,000
	Country Club Drive and BNSF RR Grade Separation (Adjacent to Exit 260)	Bridge Replacement	2024-2028	U-13	$1,050,000	$1,680,000
				2024-2028 Urban Subtotal	**$23,150,000**	**$37,050,000**
	17th Ave SW Across I-94	Construct Grade Separation and New Roadway Construction to 20th St	2029-2040	U-14	$11,000,000	$25,070,000
	12th Ave and 4th Street NE Roundabout	Construct Roundabout	2029-2040	U-15	$250,000	$570,000
	27th Ave E - 13th St NE to 3rd St SE	Roadway Reconstruction (Upgrade to Urban Minor Arterial)	2029-2040	U-16	$3,000,000	$6,840,000
	17th Ave W - I-94 to 2nd St SW	Roadway Reconstruction (Upgrade to Rural Collector)	2029-2040	U-17	$1,700,000	$3,870,000
	81st Ave SE - 20th St SW to 25th St SW	Roadway Reconstruction	2029-2040	U-18	$700,000	$1,600,000
	Future Urban Collector (25th/26th Street SW) - 81st Ave SE to 17th Ave SW	New Construction	2029-2040	U-19	$3,200,000	$7,290,000
	Future Urban Collector (Approx. 22nd Street SW) - 81st Ave SE to 17th Ave SW	New Construction	2029-2040	U-20	$3,000,000	$6,840,000
				2029-2040 Urban Subtotal	**$22,850,000**	**$52,080,000**

Figure 10.5 (continued): Forward Jamestown Transportation Project List: Jamestown Urban System Projects

	Location	Project	Year	Project Number	Construction Cost (2014 Dollars)	Year of Implementation Dollars
	34th St SE Pipestem Creek Crossing	Bridge Replacement	2029-2040	C-1	$250,000	$570,000
				2029-2040 County Subtotal	**$250,000**	**$570,000**
	ND 20 NE Truck Bypass	Reconstruct routes to truck bypass standards	2040+	C-2	$14,000,000	$57,460,000
	US 281 SE Truck Bypass	Reconstruct routes to truck bypass standards	2040+	C-3	$8,000,000	$32,830,000
				2040+ County Subtotal	**$22,000,000**	**$90,290,000**
	Recap					
				NDDOT Regional System, 2016-2040	**$10,185,000**	**$12,640,000**
				Jamestown Urban System, 2016-2040	**$63,400,000**	**$110,120,000**
				County System, 2016-2040	**$250,000**	**$570,000**
				County System beyond 2040	**$22,000,000**	**$90,290,000**
				Total	**$95,835,000**	**$213,620,000**

Figure 10.5 Notes

*Currently programmed project

1. 2016-2018 projects have an assumed completion date of 2017 (4% annual inflation)
2. 2019-2023 projects have an assumed completion date of 2021 (4% annual inflation)
3. 2024-2028 projects have an assumed completion date of 2026 (4% annual inflation)
4. 2029-2040 projects have an assumed completion date of 2035 (4% annual inflation)
5. 2040+ projects have an assumed completion date of 2050 (4% annual inflation)

Figure 10.6: Forward Jamestown Transportation Project Locator

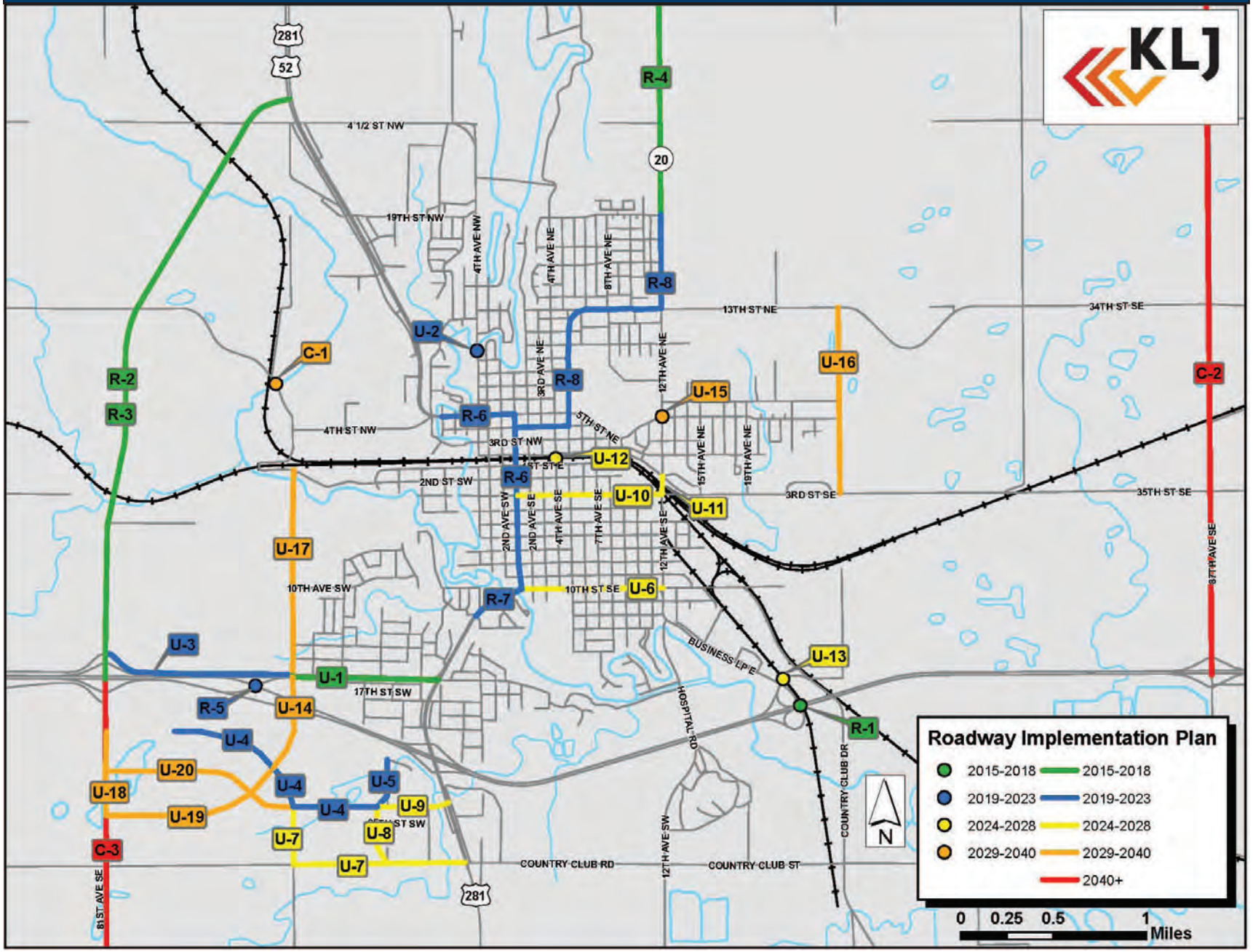


Figure 10.7: Fiscal Constraint Analysis: Needs versus Resources

Time Band	Urban/Local	Regional
2019-2023	-$4,530,801	-$1,012,141
2024-2028	-$32,321,301	$2,477,790
2029-2040	-$44,184,672	$8,300,650

probable available future revenue. This deficit becomes far wider during the last ten years of the planning period, where the need for some major street projects to serve growth sectors will emerge. These late-term projects include a 17th Avenue overpass over I-94, urban collectors in the Southwest growth sector, and an upgrade of 27th Avenue E to an urban arterial. These projects, coordinated with new development, together account for the entire shortfall for this time band. It is also noteworthy that these calculations assume that revenue sources will increase over the years at a substantially slower rate than construction cost inflation. This also contributes to the increasing gap.

While this Transportation and Land Use Plan is not required to be fiscally constrained, realism is necessary and the plan should presents a more narrowly defined list of fundable short to midrange project priorities.

SETTING PRIORITIES

It is clear that existing revenue sources will not fund all the transportation needs and projects proposed by Forward Jamestown. This leads to two parallel strategies:

» Set priorities based on strategic needs and criteria identified by the plan.

» Establish new sources of funding for transportation and other major community priorities.

Key criteria for evaluating projects and establishing priorities include:

» **Connectivity**: Does the project connect separated parts of the city and increase access to major community destinations?

» **Safety**: Does the project address an existing or potential safety hazard?

» **Alternative Routes and Emergency Response:** Does the project provide better access to facilities or duplicate routes that reduce contingency situations?

» **Development:** Does the project further community or economic development goals.

» **Transportation options:** Does the project improve safe access for pedestrians and bicyclists?

» **Operations:** Does the project address an existing or future capacity or operational problem?

» **Immediacy**: Does the project respond to a significant existing need?

» **Maintenance**: Does the project address or correct a deteriorating structure or reduce future maintenance cost?

To assist with setting priorities, we used a matrix to score various projects. The "immediacy" and "maintenance" criteria were double weighted, while other criteria were single-weighted. Scores were assigned to each criterion on a 3 (very high relevance) to 0 (low relevance). It is very important to note that this kind of process is highly subjective, and should be combined with an understanding of overall community needs and dynamics. Given that caveat, our analysis suggests the following strategic priorities and approaches.

PRIORITY 1: SOUTHWEST CONNECTION: JMRC TO US 281 AND OTHER SOUTHWEST CORRIDOR NEEDS

Connecting Jamestown Regional Medical Center east to US 281 is the top priority road project in the Forward Jamestown analysis.

This is particularly important because of the necessity of taking short-distance and potentially slow local traffic off I-94. Two strategic options exist to address this situation:

» Option 1- The most probable and lowest-cost short-term option is connecting 20th Street SW to US 281 via 25th Street SW. This option provides best access for existing and planned commercial development and would make the most logical sense from an overall traffic circulation perspective.

» Option 2 - The second option would connect JMRC (20th Street

SW) and US 281, using a future 17th Avenue and 37th Street. This option potentially deflects traffic from the intersection of 25th Street and US 281 in the short term. However, as the street network matures in the southwest area and 25th Street connects into the future roadway network in the southwest sector, traffic is likely to navigate to the shortest route possible route, which in the mid- to long-term would be 25th Street.

Nevertheless, the top priority for the City of Jamestown is completion of a connection from 20th Street to US 281. While there is still some uncertainty about the impact of a direct connection to 25th Street, this connection is most logical from phasing and implementation perspective. More detailed study is needed as to how this intersection will respond to future traffic demand, and options available to improve both 25th Street and US 281 to accommodate future traffic demand. Furthermore, the plan envisions a design that provides for a future continuation to 37th Street SW as development in the southwest sector continues.

PRIORITY 1A – SOUTHWEST SUBAREA STUDY

The City of Jamestown and NDDOT should develop a detailed subarea wide study that looks specifically at issues surrounding the status of Exit 257, implications of a possible removal of the exit on the 17th Street SW project, and area improvements related to the Southwest Connection.

Exit 257. Previous discussion has identified the immediate safety problems posed by Exit 257. The operational and safety problems posed by this left-hand exit for eastbound traffic and confusing merge for westbound traffic from 17th Street SW has intensified with the development of JMRC on 20th Street SW near Exit 258. NDDOT preferred solution, supported by Forward Jamestown, is removal of Exit 257.

17th Street SW. Removal of Exit 257 calls into question the scope for the programmed reconstruction of 17th Street from US 281 to 17th Avenue, and potential extension of an improved section to the US 281 bypass. The existing roadway from 17th Avenue to the US 52 Bypass is not a convenient corridor for traffic traveling between US 52 and US 281, and current travel demand models developed for the plan do not demonstrate significant future demand for this 17th Street Extension. On the other hand, the existing 17th Street SW is a significant business corridor, and throughout the Forward Jamestown process, corridor businesses raised concerns about loss of access if Exit 257 were removed.

A potential solution to moderate the impact of removing Exit 257 is to include a modified improvement plan for 17th Street SW to the Bypass, transitioning the current I-94 ramp to the frontage road alignment, relocating the frontage road intersection at the Bypass north to increase separation from the interchange ramp, and designating Exit 256 as a Jamestown exit for I-94 traffic. This project should attempt to fall within the committed NDDOT funding for the 17th Street SW project.

17th Avenue Overpass. One of Forward Jamestown's important concepts is the proposed construction of a local I-94 overpass without interstate access at 17th Avenue. While viewed as a longer term project need, the overpass should be considered a part of the overall mobility plan to improve transportation access within the City of Jamestown, and to serve future development in the southwest growth area.

To address these issues, the City of Jamestown and NDDOT should develop a detailed subarea wide study that looks specifically at:

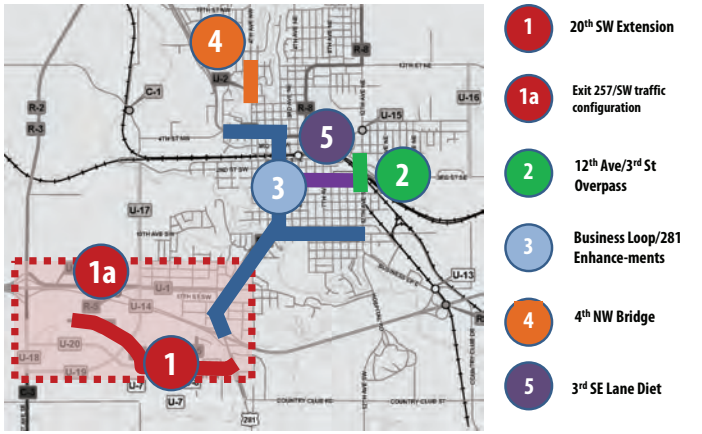
- Options for removing Exit 257 and the best strategies for impacts this would have on the potential need to reconstruct 17th Street from US 281 to 17th Avenue and benefits of reconstructing and upgrading 17th Street from 17th Avenue to the US 52 Bypass.
- Impact of the Southwest Connection on the 25th Street SW and US 281 intersection, along with required traffic improvements at that intersection.
- The potential benefits of a 17th Avenue overpass to minimize future impacts to the 25th Street/US 281 Intersection based on future projected developed in the Southwest growth area.

This subarea plan would then guide the use of Urban and Regional funds currently programmed to the reconstruction of 17th Street to obtain a best fit set of improvements.

PRIORITY 2 – 12TH AVENUE/3RD STREET OVERPASS

Following resolution of southwest access issues, the city should proceed with engineering and development of the 12th Avenue/3rd Street overpass.

Figure 10.8: Roadway Network Priorities

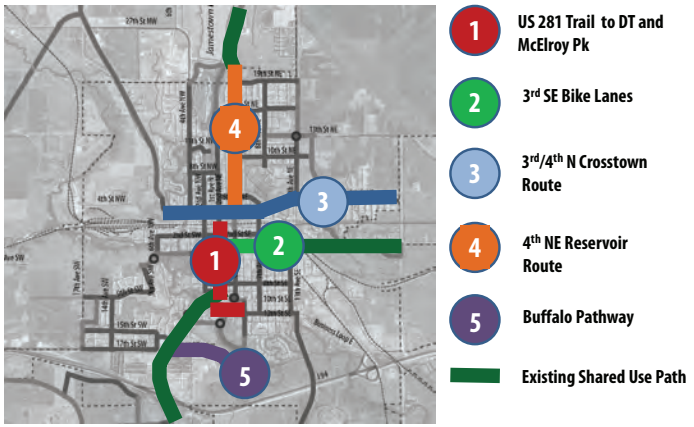


Resolution of railroad grade separations is a critical transportation and public safety issue for Jamestown. The *Forward Jamestown* Plan strongly favors a two corridor overpass, serving both the 12th Avenue and 3rd Street SE corridors. Initial conversations should explore financial participation with the BNSF and implications for other at-grade crossings and the condition and need for 4th Avenue underpass. The underpass may be downgraded or closed, freeing resources to devote to the 12th Avenue/3rd Street project. Closing the 4th Avenue underpass may also advance part of the Downtown amenity program.

PRIORITY 3: COORDINATE ENHANCEMENTS TO 10TH STREET SE AND US 281 AS PART OF REGIONAL MAINTENANCE PROJECTS

Road diets and corridor enhancements identified for 10th Street SE from 4th Avenue SE to 12th Avenue SE; US 281/1st Avenue from 17th Street S to 5th Street N (including reconfiguration of the 1st Avenue and 10th Street S intersection) ; and 5th Street NW can all be \ accommodated within identified maintenance work on these three corridors. The City of Jamestown and the NDDOT Valley City District should work closely over the next 3 to 5 years to study in more detail how identified corridor enhancements, including reduction to three lanes and other streetscape options can be integrated into future maintenance projects on these corridors. As part of the turn back of some of these corridors from Regional to Urban roadways, NDDOT may agree to fund an additional maintenance project with Regional funds. The US 281 enhancement is also part of the top active transportation priority.

Figure 10.9: Active Transportation Priorities



PRIORITY 4: 4TH AVENUE NW BRIDGE REPLACEMENT

This project received a high priority score, despite having relatively limited impact on major priorities. It is provides the most direct connection from the center of the city to the reservoir area and is critical to maintaining good street connectivity on the west side of Jamestown.

PRIORITY 5: 3RD STREET SE LANE DIET AND ENHANCEMENT

This project would complete the lane diet program, create a safer street, and satisfy one of the top active transportation priorities. It provides an opportunity to upgrade difficult intersections at 4th Avenue and 7th Avenue, and would connect the 3rd Street SE corridor and shared-use path with Downtown Jamestown.

Active Transportation Priorities

The revenue estimates project that Jamestown can expect to receive one TAP grant in the range of $200,000 during each five year period. Top priority projects are:

PRIORITY ONE: CONTINUATION OF THE MILL HILL SHARED USE PATH TO DOWNTOWN.

From its current terminus at 4th Avenue SW, the path would continue across a new or widened James River Bridge and reconfigured 10th Street intersection, then continuing into Downtown with an on-street route. A significant part of this project may be funded as part of the US 281 Corridor Enhancement described as priority three above. A related priority is a connection between the Mill Hill Trail and McElroy Park.

PRIORITY TWO: 3RD STREET SE PROTECTED BIKE LANES.

This is part of the 3rd Street lane diet project west of Downtown, and would continue with on street routes to Klaus Park. A priority following sufficient westside development is a new bridge from Klaus Park to the West central Development Sector, creating a complete east-west pedestrian and bicycle connection.

PRIORITY THREE: 4TH STREET NE/3RD STREET NW BIKE ROUTE.

This relatively low capital project creates a north side crosstown complete street from 27th Avenue NW to the existing Anne Carlsen Center site.

PRIORITY FOUR. 4TH AVENUE NE ROUTE TO THE RESERVOIR.

This relatively low capital project uses 4th Avenue NE, improves an existing path in Feton Park, and continues to connect to the Jamestown Reservoir's path system.

ENHANCING REVENUES

While the last section filtered the many potential projects into key short and mid-term priorities, this section explores options for increasing revenues that could expand existing sources of funds.

Figure 10.8: Potential Available Sales Tax Revenue

Time Band	.25 Cent	.50 Cent
2019-2023	$1,667,871	$3,335,741
2024-2028	$1,796,770	$3,593,541
2029-2040	$4,899,394	$9,798,788
Total	$8,364,035	$16,728,070

Sales Tax

The City of Jamestown should seriously consider dedicating more of existing or future sales tax revenue to expansion and mobility needs identified by the Transportation and Land Use Plan. As shown in Table 10.8, Jamestown could generate an additional 16.7 million dollars during the 25-year planning period by dedicating a ½ cent sales tax to expansion and mobility needs within the City. While these would not address all the needs identified, it would be sufficient to address critical short term needs in the Southwest and augment possible NDDOT funding on planning, maintenance, and enhancements on both US 281 and corridors that have reverted from the Regional to Urban system.

Additionally, Jamestown's retail development efforts could generate greater than expected sales tax revenues. Spinoff benefits of projects like the new Menard's store will increase Jamestown's share of regional retail receipts. These incremental sales taxes could be used to help fund key projects in areas specifically benefitted by those projects.

While sales taxes can be a highly effective way of generating funds for transportation, the pending one-cent local option sales tax to fund the TRAC could restrain this source. An analysis of projected revenues would be required to demonstrate whether acceptable sales tax levels could finance both the recreation center and additional transportation improvements.

Railroad Financial Participation

The 12th Avenue/3rd Street overpass concept benefits the BNSF Railway by removing at least one hazardous grade crossing at 3rd Street SE and could expedite closing of one other grade crossing. There are many precedents for financial participation in major grade separation projects, and the BNSF may be expected to make a significant contribution to this project.

Development Area Benefit Fees

Initially, but especially in later years, some high cost projects involve construction of a street network to open areas to new development. A benefit fee assesses developers for part of the cost of public im-

provements (major streets, interceptor sewers, and parks) that are necessary to support their development. A special district could be created with a per lot or per acre charge that is dedicated to funding improvements within the boundaries of the specifically benefitted area. This technique will not be sufficient to build the entire transportation system for the two primary growth sectors, but can contribute significantly to area development.

Transportation Bond Issue.

A bond issue with debt service retired by property taxes could be considered as part of an overall financial package for transportation and other community improvements.