

## Section IV. Existing Transportation System

*The transportation system for Sioux Falls and surrounding area involves all modes of transportation used for achieving the safe, efficient, and convenient movement of persons and goods.*

*Sioux Falls 2015 VI-1*

Meeting the goals of the Long-Range Plan depends upon the region's vitality and the quality of life of its residents, both of which rely on the ease of moving people and goods from place to place and on the variety of travel opportunities. With this in mind, it's important to get an overview of the study area's existing transportation system.

The Sioux Falls area transportation system has improved and expanded considerably since the winter of 1870-1871 when Dr. Joshiah L. Phillips "laid out lots and marked streets in his newly acquired property, putting on paper for the first time the grid system that remains the layout of the city between Sixth and Ninth Streets from Phillips Avenue to Minnesota Avenue."

*Spirit of Sioux Falls, Woster, '92 p. 16*

There are currently over 2,900 lane miles of streets and highways (not including interstates) within the city limits of Sioux Falls. Lane miles are different from lineal miles; lane miles take into consideration the number of lanes within each street times the number of lineal miles on said street (there are approximately 570 lineal miles). The Sioux Falls area consistently grows at a faster rate than other communities or areas within South Dakota. In order to continue to prosper, growth has to be managed within certain parameters. The 2015 Growth Management Plan detailed the amount of land needed to serve the projected population increase in the most efficient manner. The goal of this document is to continue that planning aspect and develop an efficient transportation system that will serve the population and land areas through the year 2025.

As mentioned previously, the location of the study area adds to its importance to the regional and national transportation system. Specific impacts will be discussed within the various subsections below.

### **A. Federal Interstate Highway System**

*Within the urbanized area of Sioux Falls, the interstate highway system includes Interstates 29, 90, and 229. Interstate 229 functions mainly as a high-speed corridor, which serves local residents. Interstates 29 and 90 serve cross-country truck and passenger vehicles as well as local residents. The interstate roadway system is designed to carry a large volume of traffic at high speeds with few interruptions.*

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The Eisenhower Interstate Highway System (or, more formally, the National System of Interstate and Defense Highways) is a system of divided controlled access highways connecting every state. The system is now 99 percent complete and encompasses more than 45,000 miles. Responsibility for these highways remains with the state's Department of Transportation.

The previously described interstate system has both positive and negative impacts within the overall transportation system. The positives were described in the previous quote—efficient vehicle flow. The interstate system also supplements economic trade between the urban and rural communities (see areas of influence Map 4). It also allows interstate travel in this region of South Dakota, Iowa, Minnesota, and Nebraska. This region will continue to be influenced by its proximity to the junction of I-29 and I-90.

A negative impact of I-29 and I-229 is how they encircle and create an “island” of Sioux Falls. They are also symmetrical to the Big Sioux River, which creates separation between areas of the community. These two features create straits with north/south and east/west roadways. The issue of getting across the interstate, as well as access to the interstate, will continue to impact the workforce commute, retail trade, and freight shipping.

## **B. State and County Highway System**

The regional highway system is made up of both state-controlled and county-controlled roadways that act as regional arterials to allow commercial and domestic vehicles to travel relatively long distances.

State highways carry trips around, into, through, and out of the study area:

- South Dakota Highway 11 [Powderhouse Road]—Extends north and south through the eastern edge of the study area.
- South Dakota Highway 17—Extends north and south on the western edge of the study area.
- US Highway 18—Extends east and west between Grant and Delaware townships and through Lynn and Canton townships.
- South Dakota Highway 38 [West 60th Street North]—Extends east and west on the western edge of the study area and terminates at Interstate 29.
- South Dakota Highway 42 [10th/12th Street]—Extends east and west through the center of Sioux Falls and aligns with the 10th/12th Street system. Responsibility for this highway, within the Sioux Falls city limits, remains with the SDDOT.
- South Dakota Highway 44 [Worthing]—Extends east and west through Grant and Lynn townships.
- South Dakota Highway 115 [Minnesota Avenue]—Extends north and south through the center of Sioux Falls. Responsibility for this highway, within the Sioux Falls city limits, remains with the SDDOT.

County Highways carry trips around, into, through, and out of the study area:

- Minnehaha County 119 [Six Mile Road]—Extends north and south on the eastern edge of the study area.
- Minnehaha County 121 [Powerhouse Road]—Extends north and south on the northern edge of the study area.
- Minnehaha County 133 [Louise Avenue]—Extends north and south on the northern edge of the study area.
- Minnehaha County 136 [East 60th Street North]—Extends east and west on the northern edge of the study area.
- Minnehaha County 137 [LaMesa Drive]—Extends north and south on the western edge of the study area.
- Minnehaha County 139 [Ellis Road]—Extends north and south on the western edge of the study area and terminates with Lincoln County 111.
- Minnehaha County 140 [West Maple Street/East Rice Street]—Extends east and west on the north end of the study area, between Sioux Falls and Brandon.
- Minnehaha County 142 [Madison Street]—Extends east and west on the north end of the study area, between Sioux Falls and Brandon.
- Minnehaha County 148—Extends east and west on the south end of the study area.
- Lincoln County 111—Extends north and south on the western edge of the study area and terminates with Minnehaha County 139.
- Lincoln County 117—Extends north and south on the western end of the study area and terminates with Louise Avenue.
- Lincoln County 123—Extends north and south on the eastern end of the study area and terminates with Cliff Avenue.

How improvements are prioritized within the Transportation Improvements Program are a concern of both the MPO and the public; how they are funded is only a concern of the MPO. Funds for improvements to these two highway systems depend on who controls the Highway—State or County [Map 6].

### **C. Sioux Falls Area Street System**

The majority of the city of Sioux Falls is served by a rectangular grid street system that is common to the Midwest. Definitions and descriptions of arterials, collectors, central business district street networks, and river and interstate crossings are provided below. In general, arterials are placed on section lines with collectors at half-mile sections. Within the study area, the DOT differentiates between urban and rural street classifications.

See Map 6 Area Highway System Map

The MPO adopts a Major Street Plan comprised of existing and proposed street facilities. The streets are required to accommodate future traffic volumes forecasted to the year 2025. The alignments shown for the proposed new facilities are approximate and, along with right-of-way requirements, are subject to final engineering studies. The 2000 Major Street Plan is included in the Long-Range Plan to direct all future transportation planning projects. The City of Sioux Falls maintains a Functional Classification Map to define the existing roadways for federal funding eligibility under TEA-21.

Street facilities within the MPO are based on the following system descriptions.

- ◆ **Arterial streets** are the main traffic arteries through an area. They are more or less continuous across an area and act as a principal connecting street with state and federal highways. Within the Major Street Plan, highways are labeled as either principal or minor arterials, depending upon the projected volume of traffic.  
The Engineering Design Standards bases arterials on seven characteristics [Chart 5].
- ◆ **Collector streets** are secondary arteries through an area. They carry traffic from local streets to arterial streets or highways. They are also the main entrance street to residential developments and the streets for circulation within such a development. Within the Major Street Plan, there are major and minor collectors, depending on volumes, speeds, and connectivity.  
The Engineering Design Standards bases collectors on six characteristics [Chart 5].
- ◆ **Local streets** provide access to other streets from individual properties and provide right-of-way beneath the surface for various utilities, but are not intended to be used for through traffic.  
The Engineering Design Standards bases locals on seven characteristics [Chart 5].

Within the Sioux Falls transportation system, there are also the following street categories:

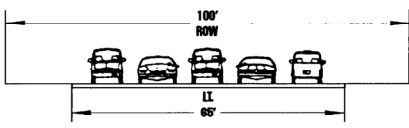
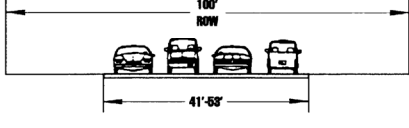
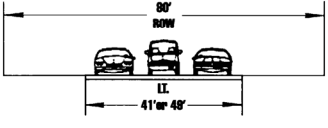
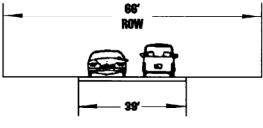
- ◆ **Central Business District**

The Central Business District of Sioux Falls remains the core downtown area. Like most downtowns, it has a very complicated transportation network as it is a major generator of commuter traffic. The arterials within Sioux Falls are designed as a network to lead traffic to and from the downtown area. Major east-west access is provided on 6th, 8th, 10th, 11th, and 14th Streets, while major north-south access routes are Minnesota, Dakota, Phillips, and Main Avenues. Phillips and Main Avenues and 10th and 11th Streets are one-way pairs. All other streets in the CBD are designated as major collectors.

## Chart 5 Sioux Falls Engineering Design Standards

### Street Design and Pavement Thickness

#### SIOUX FALLS ENGINEERING STREET GUIDELINES

Type	Speed Limit	AVD	Function	Length	Typical Design	Traffic Control Devices	Parking	Driving Lanes	ROW	Roadway Width	Lane Width
<b>Principal Arterial</b>	>=35 MPH	>15,000	Through traffic, intersecting with Minor Arterial and Collector Street only. <i>Provides continuity for rural arterials</i>	Continuous for several miles		Signals, limited access	No on-street parking	4 or more	100 ft. or more	65 ft. or more	12 ft.
<b>Minor Arterial</b>	>=35 MPH	>10,000	Through traffic, serve adjacent major developments. <i>Provides continuity for rural arterials</i>	Continuous for several miles		Signals	No on-street parking	4	100 ft.	41-53 ft.	12 ft.
<b>Major Collector</b>	>=30 MPH	>7,000	Loading from and onto local, other collectors, and arterials	Continuous for 2 or more miles		Signs	On-street parking may be prohibited	2-4	80 ft.	41 or 49 ft.	11 ft.
<b>Minor Collector</b>	>=30 MPH	<7,000	Loading from and onto local, other collectors, and arterials	Continuous for less than 2 miles		Signs	On-street parking may be prohibited	2	66 ft.	39 ft.	11 ft.

### ◆ **Through Streets**

Through streets are required by City ordinance to have all the side streets at all intersections to be controlled by either signs or signals.

No matter what type of street it may be classified as, there are still issues that need to be addressed for them to operate efficiently.

### ◆ **River Crossings**

Primarily due to the cost, river crossings are a constraint to the transportation system. Bridges, for vehicles or for trains, are comparatively more expensive to build than roads or rail lines. They are also within the river's floodplain—a more environmentally sensitive area. Therefore when designing east/west and north/south corridors, river (and creek) crossings negatively affect the proposals.

### ◆ **Interstate Crossings**

As with river crossings, interstate crossings are more expensive than other types of crossings and therefore impact the cost/benefit ratios. At the same time, the justification study for additional interstate crossings or access points are evaluated by the Federal Highway Administration and the SD Department of Transportation. The Federal Highway Administration has final approval of any plans to add points of access to, or exit from, the interstate system.

### ◆ **Traffic Signal Control**

Traffic signals allow vehicles (as well as trains, bicycles, and pedestrians) to safely cross or turn onto an intersecting street. With electronic technology, traffic signals can be programmed by computers to allow these movements to happen in the most efficient manner.

### ◆ **Traffic Volumes**

South Dakotans always have been, and will likely continue to be, a highly mobile society. At the same time, the public has shown a considerable willingness, and in some cases a desire, to live and work in already congested urban areas. As individuals travel, their vehicles are counted to show when and how many vehicles travel on any given roadway. Each trip gets counted against the overall volume capacity for that roadway. The majority of our daily trips take place during the work commute. It is these “rush hours” that tend to determine the capacity of our streets. If the public perceives the route they take to and from work has too much traffic or is congested with other vehicles, they request a reprieve to this situation.

On an average day, there are 200,000 trips made from home to work in Sioux Falls. That is 100,000 each morning and 100,000 each evening that need to be accounted for within the transportation system. In the Market Analysis results, it was estimated that 76 percent of these trips are done in single-occupancy vehicles. It is this work

commute that is the genesis of many of the system’s issues, traffic congestion, and travel times.

**Chart 6**

**Public Commuting Patterns**

	Nationwide	ETC Survey Results
Drive (alone)	80%	76%
Drive (car pool)	11%	8%
Transit	5%	10%
Other	4%	6%
	1995 National Personal Transportation Survey	1999 Market Analysis.

**◆ Congestion**

Congestion is related to the number of vehicles on a roadway at any given time. The definition of “severe congestion” is when the street’s directional volume-to-capacity ratios exceed .95 for one hour. It is considered to be pervasive if it occurs for at least three hours.

The City of Sioux Falls has tried to manage congestion by adding new lane miles over the years. However, with the population increasing, the number of trips per person increasing, and the number of vehicles per person increasing by an even greater amount, additional lane miles is not the only answer. Congestion is also related to a person’s time use. How long a trip takes today versus how long it took ten years ago or how long it will take ten years from today? What is the cost of this lost time?

In the Market Research and Analysis report, 46 percent of the households surveyed have two vehicles and 33 percent have three or more vehicles. It is also estimated that there will be 741,591 daily person trips by the year 2025 within the city of Sioux Falls (National Cooperative Highway Research Program—Report 365, “Travel Estimation Techniques for Urban Planning”).

**D. Freight**

The movement of freight into and out of the Sioux Falls area is critical to the overall economic health of the community. The majority of freight shipped in South Dakota is done by truck. Data from the U.S. Bureau of Transportation Statistics’ 1993 Commodity Flow Survey indicates that 80 percent of the freight tonnage originating in South Dakota is shipped by truck and 14.5 percent is by rail. When reviewing the percent value of the shipments, 80 percent is by truck, 3.3 percent is by rail, and 2.2 percent is by air. When further consideration is given to the 25.2 million tons of freight shipped, it specifies that 29 percent is farm products and 46.6 percent is shipped less than 50 miles, which clarifies the importance of this region’s highway system.

## ◆ Truck

Truck freight concerns largely fall into mobility and access issues. Examples of mobility issues are smooth and reliable traffic conditions, while examples of access issues deal with road geometrics, structure clearances, and the level of service between the transportation systems' roadways and major freight facilities.

Within South Dakota, the condition of the highways hinges upon trucks being properly loaded. One legally loaded 80,000-pound truck creates the same wear on the roads as 19,000 cars or pickups. Due to this issue, the State's Long-Range Plan states: "The State Preferential Truck Network is 3,415 miles of South Dakota highways and interstates that are the best routes for truck travel. The roads on this network already have or are planned to have wider shoulders, flatter grades, better sight distance, and stronger pavements." SILRP p. 42.

## ◆ Rail

The Surface Transportation Board defines three classes of rail lines: Class I is a national railroad having operating revenues of at least \$255.9 million per year; Class II is regional; and Class III railroads are local and operating within the study area. Within the study area, there are three rail lines: Burlington Northern Santa Fe, SD Rail Authority, and Ellis and Eastern [Map 7]. All three of them have existing at-grade crossings. There are a few at-grade crossings that can pose safety problems as well as problems of delay to auto traffic and emergency services. These should be analyzed for grade-separation benefits.

"The railway system has been stabilized since 1980 through actions by the state. In the early 1980s, the Milwaukee Railroad was the primary owner of the state's rail lines. When this Class I railroad went bankrupt, the state stepped in and rehabilitated the rail lines and contracted operations of the most important lines, referred to as the core system with the Burlington Northern Santa Fe Railroad and a profit sharing lease agreement." SILRP p. 28.

## ◆ Air

Aviation is generally separated into the following categories: air carrier, offering scheduled passenger service; military, operated under the various branches of the U.S. Department of Defense; and general aviation activities not encompassed by the previous two categories. Within the study area, all three categories are represented: Sioux Falls Regional Airport (Joe Foss Field), Air National Guard (Joe Foss Field), Canton Municipal Landing Area, and Lincoln County Marv Skie Airport (Tea).

See Map 7 Rail Lines

The Sioux Falls Regional Airport Authority completed an Airport Master Plan in October 1995.

“Sioux Falls Regional Airport is classified as a ‘medium haul’ primary commercial service airport. With this distinction, Sioux Falls Regional Airport primarily accommodates airline passenger needs for destinations within 500 miles. In addition, Sioux Falls Regional Airport is identified as a ‘small hub’ facility, which means that it is a commercial service airport which enplanes between 0.05 and 0.249 percent of the estimated 555 million total annual passenger enplanements in the country.” Airport Master Plan p. ii

Staff should review the master plan when making transportation-related decisions that may impact the airport as well as continue to have Airport Authority representation on the TAC. Issues that should be considered: transportation improvements for travelers to and from the airport; the land uses associated with the airport, land uses outside of the airport environs and their relationship to the height limitations, and noise impacts.

## **E. Public Transportation**

Public transportation services have been available in the Sioux Falls area since 1887 when R.F. Pettigrew established a horse-drawn streetcar system. In October 1907, an electric streetcar system was established. Today’s City-owned fixed-route motor bus system is a direct descendent of a private operation established in 1923 when a private entrepreneur began operating a fleet of five buses. Ridership reached its peak during World War II, when gas and tire rationing contributed to increases in ridership.

The Federal Transit Act separates public transportation into urbanized and nonurbanized areas. The urbanized area of Sioux Falls is served by Sioux Falls Transit. Sioux Falls Transit is currently managed by Laidlaw Transit Services Inc., a private corporation.

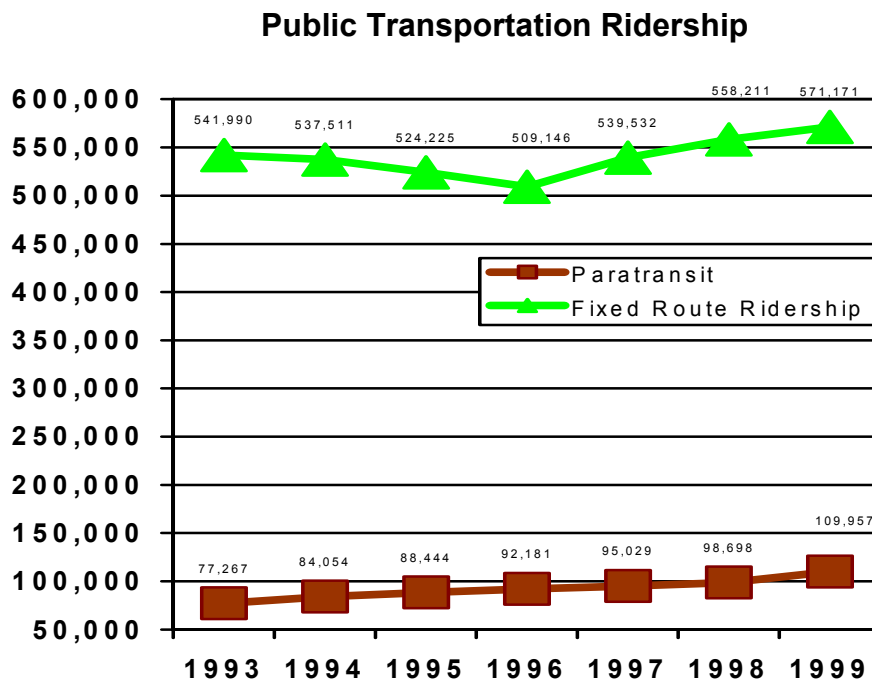
Sioux Falls Transit serves both as a discretionary alternative for persons with access to other transportation modes and as a vital means of mobility for persons unable to utilize private automobiles, including many low-income, elderly, or disabled persons. Sioux Falls Transit offers a variety of services including fixed-route bus service, an express bus to a technical institute, paratransit services for the mobility-impaired, and “tripper” buses aimed at carrying high school, vocational students, and seniors.

Sioux Falls has been served by a system of fixed local transit routes focused on the downtown Central Business District that has, traditionally, been the employment and commercial hub of eastern South Dakota. The Bus Stop is the hub of the radial transit system and is located at the geographic center of Sioux Falls on First Avenue between 10th and 11th Streets. The radial system has been easy to understand, has provided good geographical coverage within the city, has acceptable frequency of service, and has been supported by adequate ridership levels for many years.

A Comprehensive Operations Analysis (COA) was completed by Weslin Consulting Services in May 1994. A COA is a study to identify service improvements, realignments, and adjustments to improve operating effectiveness. A new COA will be completed in 2000. The 1994 COA found Sioux Falls Transit to be a system with some truly positive aspects such as an excellent fare structure, scheduling which affords transferring passengers a minimum wait time between buses, and passengers who are generally pleased with the service they are being provided on the fixed-route system.

The fixed-route service operates ten bus routes linking residential areas with major trip generators [Map 8]. Most of the routes operate six days a week (Monday through Saturday) on 60-minute headways. “Headway” is the time that separates buses moving in the same direction on the same route; therefore, you can expect to see a bus every 60 minutes. During peak periods in the morning and afternoon weekdays, headways are 30 minutes.

**Chart 7**



Paratransit service provides door-to-door transportation to those persons eligible for service as mandated under the Americans with Disabilities Act of 1991. This demand-responsive service is available within the entire boundary of the city of Sioux Falls and is not limited to those who live within 3/4 mile either side of a fixed-route bus route as strictly mandated by law. Paratransit ridership has increased over time—from a low in 1993 of 77,267 to a high in 1999 of 109,057.

See Map 8 Transit

## **F. Regional Bus Lines**

The other side of public transportation/busing is intrastate and interstate service. Both Greyhound and Jack Rabbit lines operate out of Sioux Falls. These private for-profit companies still need the support of area governmental agencies for information regarding roadway conditions (weather-related and construction-related) as well as proper system access to the locations people want to travel to and from.

## **G. Pedestrian**

A proper transportation system needs to include the movement of pedestrians. Pedestrian access to and from various locations is generally accomplished along sidewalks. The Engineering Design Standards state that sidewalks shall be constructed on both sides of all roadways unless specifically waived. Sidewalks are not required at the time of roadway improvements but are required to be constructed by the property owner as the property develops.

Studies show that pedestrians are willing to walk a distance of a one-fourth mile or less to reach various locations. Therefore, with proper land use planning, sidewalks provide convenient access to neighborhood schools, parks, and commercial services.

## **H. Bicycle**

In 1975, the City of Sioux Falls adopted the Sioux River Greenway Plan. With this plan, the City made a conscious choice to protect the lowland environment adjacent to the Big Sioux River as it flows through the area. Part of this plan included the provision for a trail system. There are currently 17.2 miles of existing trail and an additional 28.3 miles proposed. The width varies from 8 to 12 feet of asphalt trail [Map 9].

The trail system is primarily used for recreational purposes as it follows the Big Sioux River looping around the city. It provides access to numerous scenic areas and recreational opportunities. In the summers of 1998 and 1999, the Citizens' Advisory Committee completed bike trail traffic counts. During the 1999 counts, the following information was gathered: 65 percent of the trail users were bicyclists and 19 percent were walkers. On an average weekend, approximately 3,800 users (at five key locations) were counted; the peak hour count in 1999 was 168 users past one specific location.

See Map 9 Bike System

The bicycle plan was updated in 1994. One of the goals of the plan was to have a more efficient bicyclist commuter system. One step in reaching this goal was to complete a system of bicycle routes through the city. These routes have been identified as streets that are particularly well suited to bicycle traffic. The routes allow cyclists to travel north/south and east/west, access the trail system, and travel through Sioux Falls to areas outside the city limits. Criteria used to evaluate these routes included the following factors: street surface condition, perceived traffic volume, identifiable hazards and barriers, automobile parking conditions, perceived width, connectivity and directness, and general “comfort level.”

Currently, the routes include no additional features from the existing street system (on-street markings, dividers, etc.). However, during the summer of 1999, ten routes totaling 42 miles were signed throughout the City.