APPENDIX B

SD100 ACCESS AND NOISE PLAN

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Division of Operations
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M E M O R A N D U M:

TO: William Nevin, Legal Counsel

FROM: Brooke A. White, Access Management Specialist

DATE: January 15, 2008

1/24/08 Approved by Transportation Commission

SUBJECT: SD100 Access and Noise Plan

The South Dakota Department of Transportation in conjunction with the City of Sioux Falls Public Works Department has developed the SD100 Access and Noise Plan. The following is a list of areas detailed within the document:

- Introduction-Introduces the new route and describes how the route is presented within the Environmental Assessment (EA) document.
- Background-Documents the intent of Access Management from the perspective of the Access Management Manual published by the Transportation Research Board and how using these guidelines will affect SD100.
- Alignment-Outlines the intended alignment of SD100 and references Exhibits 1-3 of the document to gain a visual perspective. Future plans for interchanges at 57th Street and Benson Road are also discussed in this section.
- Land Use Plans-Describes the anticipated land uses surrounding SD100 which include residential and small sections of commercial. This section also references Exhibit 4 of the document to gain a visual perspective.
- Access Spacing Guidance-Explains the access spacing guidelines adopted by SDDOT in 2001. SD100 will not directly follow these guidelines based on the access plan being developed specifically for the route.
- Operations Analysis-Conveys how HDR Inc. was hired by SDDOT and the City of Sioux Falls to determine the typical section needs along SD100 and its intersecting roadways. Access locations, along the intersecting streets, were also determined.
- Noise Consideration-Communicates different ways of mitigating noise pollution caused by SD100. Noise levels greater than 66 decibels are considered

unacceptable for human habitation. Noise contours showing the limits of the 66 decibels can be viewed on Exhibits 1-3.

- Access Plan and Maps-States the access plan for SD100. Access points along SD100 can be viewed on Exhibits 1-3. Information on side street access is contained within Table 2.
- Grandfathered Access-Articulates how access points that are in violation of the access plan, but were established prior to March 1, 2007 will be handled.
- Variances-Depicts what steps can be taken to apply for a variance to the access spacing criteria outlined in the plan. Extreme hardship and engineering analysis will be prerequisites for any variance considerations.
- Implementation-Identifies all jurisdictional entities who will have influence on the ultimate approval and implementation of the plan. Additional resources will be made available by the City of Sioux Falls to help in guiding development along the corridor.

It is requested that the Transportation Commission sign a resolution in support of the access and noise plan. The document has been discussed with the Sioux Falls Metropolitan Planning Organization (MPO) and the Infrastructural Advisory Board (IRAB). All parties concur that the request should be approved. In addition, Minnehaha and Lincoln County Commissioners will be holding a joint informational meeting to discuss the document on January 28, 2008.

SD 100 ACCESS AND NOISE PLAN

Prepared by South Dakota Department of Transportation and
City of Sioux Falls
February, 2007

Table of Contents

Table of Figures

Introduction

South Dakota Highway 100 (SD 100) is a new arterial roadway planned to traverse the developing east and south sides of Sioux Falls, SD. During initial planning and environmental analysis, the highway was also known as the Eastside Corridor.

The SD 100 concept was presented in the Environmental Assessment (EA), as quoted below:

> *"The Sioux Falls East Side Corridor is a proposed new limited access principal arterial roadway being planned to address future transportation system needs. The proposed four-lane, 45 mph roadway will be located within the City of Sioux Falls' 2025 growth area east and south of the current (2002) jurisdictional limits.*
>
> *"The proposed 17-mile roadway will be designed within a 200-foot wide corridor with 12-foot minimum travel lane widths, 20-foot medians, 10-foot shoulders, 10-foot berms, and 10-foot wide paved pedestrian/bicycle trails. Grade-separated interchanges have been proposed at intersections with Minnesota Avenue, SD Highway 11, and Rice Street. Grade-separated structures will span existing railroads and other local roads that are not provided with immediate access to the East Side Corridor. Other intersections will be at-grade with traffic controls (turning lanes, traffic signals) and placed with 1-mile access openings, except in future commercial areas, where ½-mile access openings will be permitted."*

The EA was signed in 2003 and project development began. The preferred alternative identified in the EA involved a new route which included portions of existing roadways and new construction in previously undeveloped areas. Some of the roadway characteristics described in the EA have been altered by subsequent design and will be addressed in an upcoming amendment.

This planning study provides access and noise details that will allow design and construction to proceed. Once adopted, the plan document will serve as the regulatory standard for access to the roadway.

Background

The proper location and spacing of driveways has a major influence on the safe, efficient operation of highways. In fact, using access management techniques can cut the crash rate on a roadway section roughly in half, while also keeping traffic flowing. The Access Management Manual, published by the Transportation Research Board of the National Academies, provides perspective on the use of access management:

> *"The purpose of access management is to provide vehicular access to land development in a manner that preserves the safety and efficiency of the transportation system. The contemporary practice of access management extends the concept of access design and location control to all roadways – not just limited-access highways or freeways.*

"From a planning perspective, contemporary access management is a systematic way to carry out the roadway functional hierarchy that is implicit in state, regional, and local transportation plans. Roadways are classified by function on the basis of the priority given to land access versus through-traffic movement. Access management is particularly important along arterials and other primary roads that are expected to provide safe and efficient movement of traffic, as well as access to property. However, access management is still necessary on lower-level roadways, such as minor collectors and residential streets, to address safety considerations, such as sight distance and corner clearance.

"Complicating access management is the fact that the relationship of roadway type to access and movement functions is not always uniform. For example, a major collector roadway in a residential area may exemplify a higher degree of access control and through-traffic movement than an older arterial with commercial strip development. Thus, the appropriate degree of access control varies according to the functions and traffic characteristics of a roadway, the character of abutting land, and long-term planning objectives. It may be desirable to have more restrictive access management standards on one arterial roadway and less restrictive standards on another. In addition, some major roadways may serve a mix of competing functions that are difficult to reconcile and that may require special design, traffic-calming, or access management measures."

Property owners and developers may be fearful of access management, out of the perception that any limitation of access to a property will be detrimental to business. Research, however, indicates that access management actually can increase a business' market area and make the business more attractive to customers by lessening trip time and congestion. The pamphlet "Safe Access is Good for Business," published the Federal Highway Administration, puts it this way:

"As congestion increases, so does delay, which is bad for the economy and frustrating to your customers. Well-managed arterials can operate at speeds well above poorly managed roadways – up to 15 to 20 miles per hour faster. This means more traffic past your door and better exposure for your business. It also means more convenient shopping experience for your customers."

SD 100 is planned to be a major arterial, which will facilitate the rapid movement of large traffic volumes around the perimeter of Sioux Falls. Using the proper access spacing will keep the traffic moving, and applying proper intersection spacing on the intersecting streets will prevent SD 100 intersections from bogging down under heavy traffic. Building SD 100 will likely provide opportunities for new development in Sioux Falls' growth area. Access management will allow those new developments to remain healthy and viable as traffic volumes increase.

Alignment

The roadway alignment identified in the EA has been refined by initial design. The planned alignment is shown in Figures 1-3. The new roadway will intersect with Interstate 29 at the existing Tea Interchange (exit 75) and will proceed east and north, before curving northward onto the alignment of the present SD 11. It will continue north beyond the existing SD 42 (Arrowhead Parkway)/SD 11 intersection along the alignment of Powder House Road, eventually intersecting with Interstate 90 at Timberline Road (exit 402).

Interchanges are now planned at the intersections of SD 100 with 57th Street and Benson Road, when traffic volumes dictate. At-grade intersections may be built at these locations to provide temporary service until interchanges are built.

Land Use Plans

The City of Sioux Falls has identified future land uses in its Growth Management Plan. Future land uses for the growth area surrounding the SD 100 corridor are expected to be primarily residential, with nodes of commercial property at attractive locations. Actual land uses fronting SD 100 may be influenced by the need to meet noise requirements. A development form that includes mixed uses and some multi-story buildings along SD 100 would be compatible with access and noise requirements. Other combinations of office, commercial and residential uses may also be used. The general, non-specific, future land uses are shown in Figure 4.

Access Spacing Guidance

The South Dakota Department of Transportation has developed access management administrative rules, which were adopted in 2001. The rules contain standards for spacing between access points and traffic signals, reproduced below.

Table 1 - South Dakota Access Spacing Criteria

Access Class	Signal Spacing Distance (mile)	Median Opening Spacing (mile)	Minimum Unsignalized Access Spacing (feet)	Access Density	Denial of Direct Access When Other Available
Interstate	N/A	N/A	N/A	N/A	Yes
Expressway	1/2	1/2	2640	at half-mile increments	Yes
Free Flow Urban	1/2	1/2 F, 1/4 D	1320	at quarter-mile increments	Yes
Intermediate Urban	1/2	1/2 F, 1/4 D	660	at eighth-mile increments	Yes
Urban Developed	1/4	1/4	100	2 accesses/block face	Yes
Urban Fringe	1/4	1/2 F, 1/4 D	1000	5 accesses/side/mile	Yes
Rural	N/A	N/A	1000	5 accesses/side/mile	Yes

NOTES:

1. Access to the Interstate system is governed by SDDOT interchange policy. No new access shall be provided on non-interstate routes within 1/8 mile of interstate ramp terminals.
2. N/A = Not Applicable, F = Full Movement – all turns and through movements provided, D = Directional Only – certain turning and through movements not provided.
3. SDDOT may defer to stricter local standards.
4. SDDOT will seek opportunities to reduce access density wherever possible.
5. Rural class minimum unsignalized access spacing may be reduced to 660' by the Area Engineer, based on results of an engineering study as described in 70:09:01:02

The type of roadway being planned for SD 100 would generally be classified as an Expressway, with access intersections occurring no less than ½ mile apart. Traffic signals would also be spaced no closer than ½ mile.

The criteria provide guidance for planning access to SD 100, but will be refined by the analysis in this document. SD Administrative Rules state that when an access plan has been prepared for a route, the plan takes precedence over the general spacing criteria.

Operations Analysis

The operation of the planned access points on SD 100 has been analyzed by HDR Engineering, Inc., under contract to SDDOT, and by the City of Sioux Falls. The analyses were used to determine the number of lanes needed on SD 100 and intersecting streets. Traffic queues at signalized intersections were also determined and used to site access points on streets intersecting SD 100. Details of the analyses are available in technical memos reproduced in the Appendix.

Noise Considerations

High volume roadways, such as SD 100, can have negative noise impacts on certain land uses in close proximity to the roadway. For instance, residents of houses built too close to a highway may experience difficulty carrying on a conversation in their backyard or may have difficulty sleeping because of traffic noise.

Noise impacts can be mitigated by building sound walls and other structures, but these devices can be very expensive and unsightly. SDDOT has concentrated on working with local governments to plan noise-compatible land uses along highways, instead of building sound barriers with money that could be spent on highway improvements. The benefits of planning for noise-compatible uses include:

- Protecting taxpayer investments in the existing highway system so that road funds can continue to be spent on road and street maintenance and improvements.
- Protecting quality of life next to highways.
- Enhancing the long-term attractiveness and economic viability of an area.
- Preserving property values and the tax base associated with those properties.

National standards dictate that outdoor noise levels of greater than 66 decibels are unacceptable for human habitation. SDDOT has facilitated planning of noise-compatible land uses by modeling and mapping the areas where expected noise levels will exceed the 66 decibel standard. This information will allow the local governments to plan land uses in those areas that will not be negatively impacted by noise. The 66 decibel noise contour is shown of Figures 1-3.

Access Plan and Maps

The access points on SD 100 and intersecting streets were planned to be in general compliance with spacing criteria and to provide access to planned land uses. In turn, land uses were refined in response to the noise and spacing constraints produced by a high volume regional arterial roadway. The SD 100 access points are shown in Figures 1-3.

The locations of the side-street access points nearest to SD 100 are shown in Table 1. These criteria are based on the need to maintain proper traffic signal spacing and to prevent interference with the operation of the SD 100 intersections.

TABLE 2 - SIDE STREET ACCESS SPACING

STREET TYPE	SPACING CRITERIA
MAJOR COLLECTOR (18TH, 33RD, UNNAMED BETWEEN MAPLE, MADISON)	TRAFFIC SIGNAL - 1/4 MILE INTERSECTION - 450 FEET
ARTERIAL	FULL INTERSECTION - 1/4 MILE PARTIAL INTERSECTION* - 660 FEET

* partial intersection may include right in/right-out and left-in movements

The locations of potential pedestrian and bicycle crossings on SD 100 are shown on Figures 1-3. These locations will be grade separated from SD 100 and have been sited to take advantage of natural terrain differences and pedestrian attractions.

Grandfathered Access

Access points on streets intersecting SD 100 that have been approved as part of a development plan prior to March 1, 2007 are grandfathered and may remain, even though they conflict with this plan's access criteria.

Variances

Variances from the access spacing criteria in Table 2 may be granted to recognize exceptional situations where an access will not interfere with the operation of SD 100 and its intersections and will be granted only in cases of extreme hardship. Variance applications must be made by letter to pertinent authority (SDDOT for access to SD 100 and City for access on intersecting streets). Variance procedures for access to state highways are described in South Dakota Administrative Rules 70:09:02:02. Variance

applications on streets intersecting SD 100 must be based on traffic operations analysis performed by an engineer with at least five years experience in traffic operations analysis. The analysis must address the following factors, using procedures described in Chapter 9 of the *Access Management Manual* (Transportation Research Board, 2003):

- Access on streets intersecting SD 100 – any proposed intersection or driveway will be no closer than the distances cited in Table 2, unless analysis shows that the proposed access point will not be within the functional area of the intersection, specifically:
    - Upstream – proposed access will not be within the area occupied by the expected queue storage, lane transition, and driver perception/reaction distance.
    - Downstream – proposed access will not be closer to SD 100 than the driveway influence area, at a maximum spillback rate of 10%.
- Any physical conditions that may make application of spacing standards impossible to achieve.

City and SDDOT staff will cooperatively consider each variance and the appropriate agency will notify the applicant of the disposition of the application. In cases where an access is granted, the agency will specify the type of access point granted.

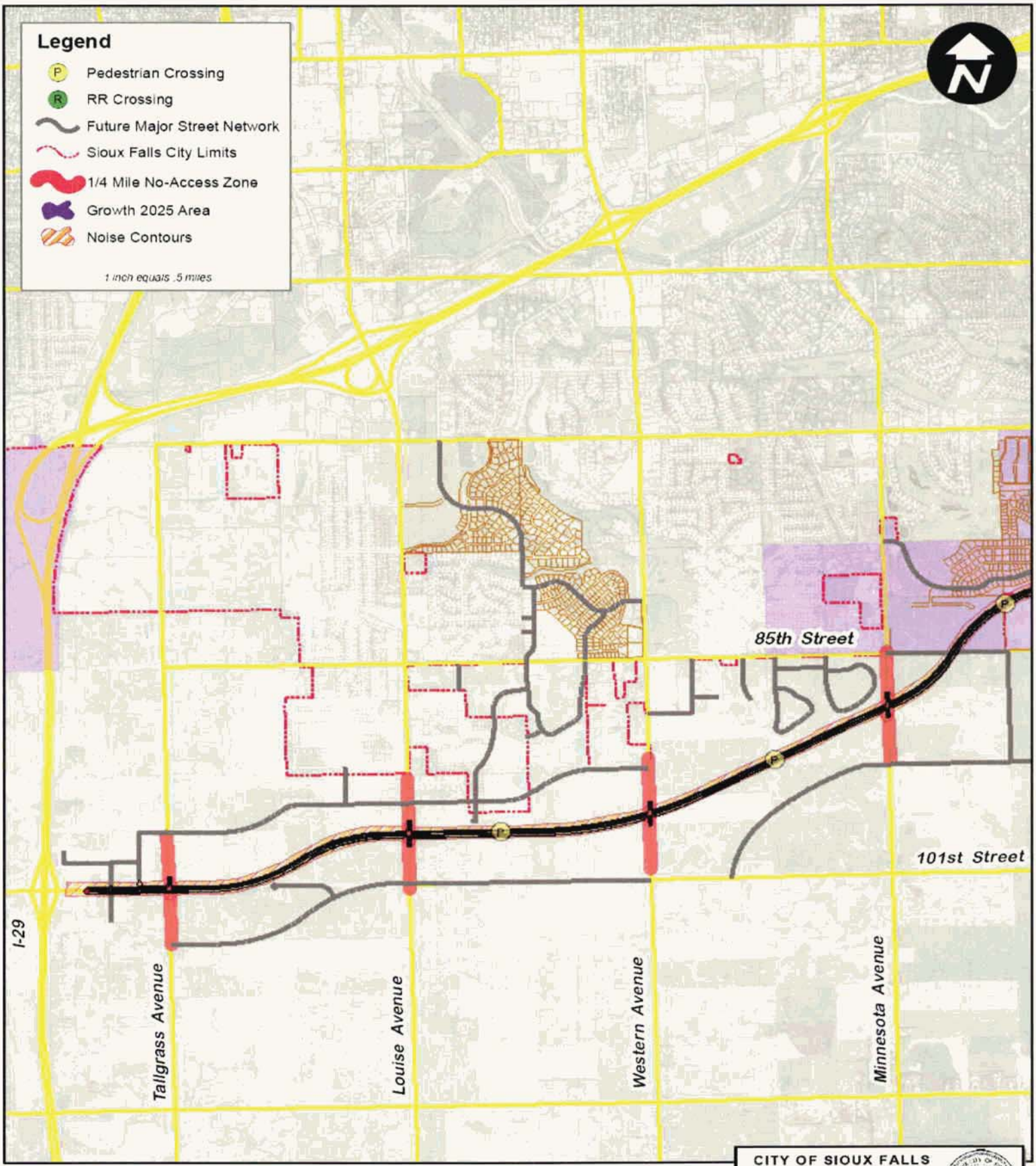
Additional rules and procedures may be adopted to further define the variance process.

Implementation

This plan represents the results of detailed analysis of the SD 100 corridor, addressing specific corridor access needs beyond analysis used to create general access spacing standards, and will be presented to the South Dakota Transportation Commission and Sioux Falls City Council. The Transportation Commission will be asked to consider the adoption of this plan to regulate access to SD 100. The access plan, once approved, will then take precedence over the SDDOT general spacing criteria. The Sioux Falls City Council will be asked to approve the SD 100 Access Plan to take precedence over the Engineering Design Standards (Chapter 8) to regulate the first adjacent access points on intersecting streets to SD 100.

The City of Sioux Falls intends to enact official maps and overlay zones as tools for guiding development in the SD 100 corridor. The official map will reserve land within the corridor for highway use and direct landowners to contact SDDOT, facilitating property negotiations between the parties. The overlay zones will be used to guide land use to prevent non-compatible uses, in terms of noise and highway adjacency.

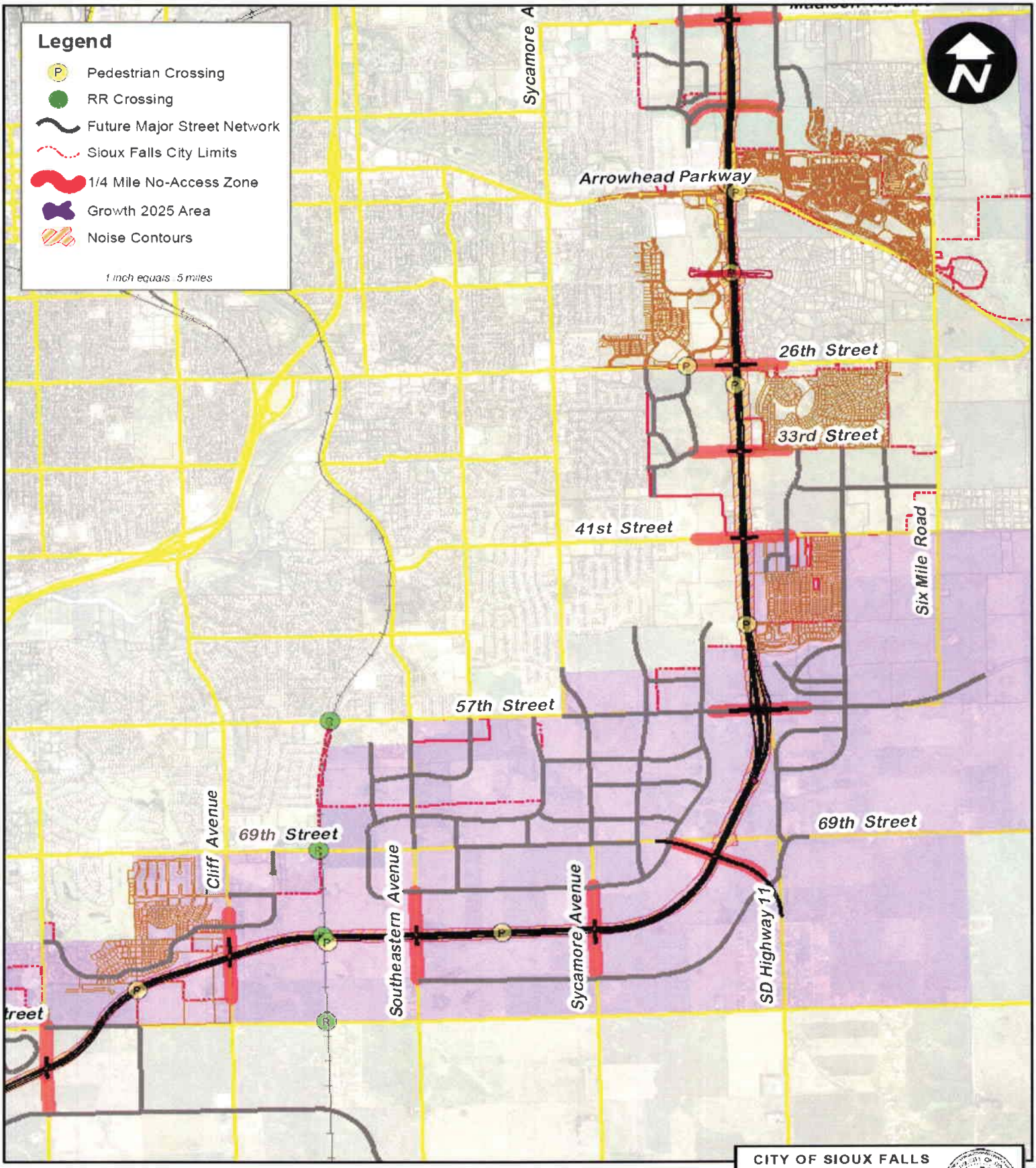
Lincoln and Minnehaha Counties are interested parties in this plan, but are not adopting agencies. The entire corridor is currently within the City's three-mile platting jurisdiction and decisions on development and land access will be made as part of City of Sioux Falls growth planning. The counties and the MPO transportation planning process will be briefed on the plan prior to adoption.



SD100 - EASTSIDE CORRIDOR

EXHIBIT 1

CITY OF SIOUX FALLS
PUBLIC WORKS
DIVISION OF ENGINEERING
224 W. 9TH STREET
SIOUX FALLS, SD 57104
(605) 367-8601



SD100 - EASTSIDE CORRIDOR
EXHIBIT 2

CITY OF SIOUX FALLS
PUBLIC WORKS
DIVISION OF ENGINEERING
224 W. 9TH STREET
SIOUX FALLS, SD 57104
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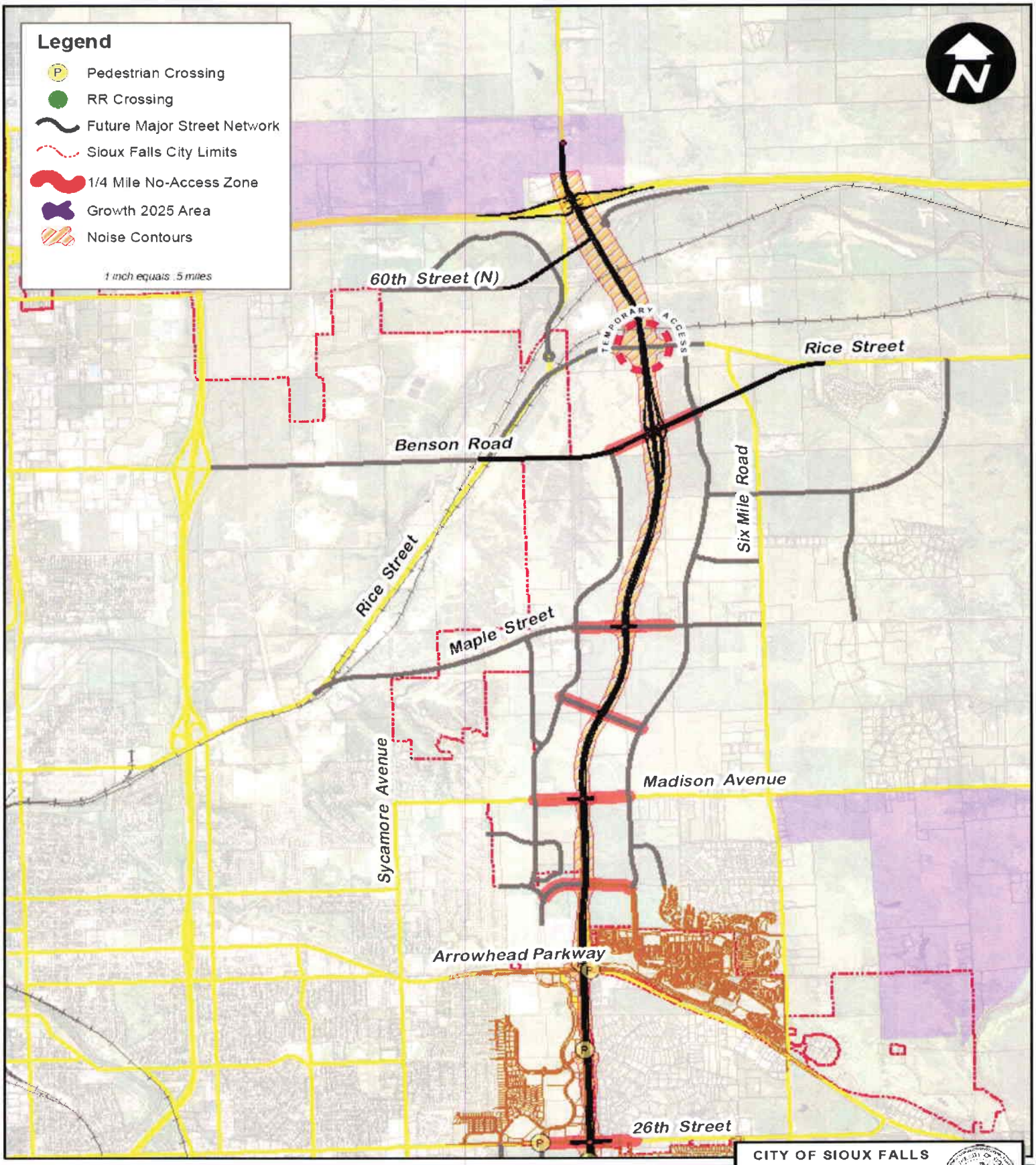


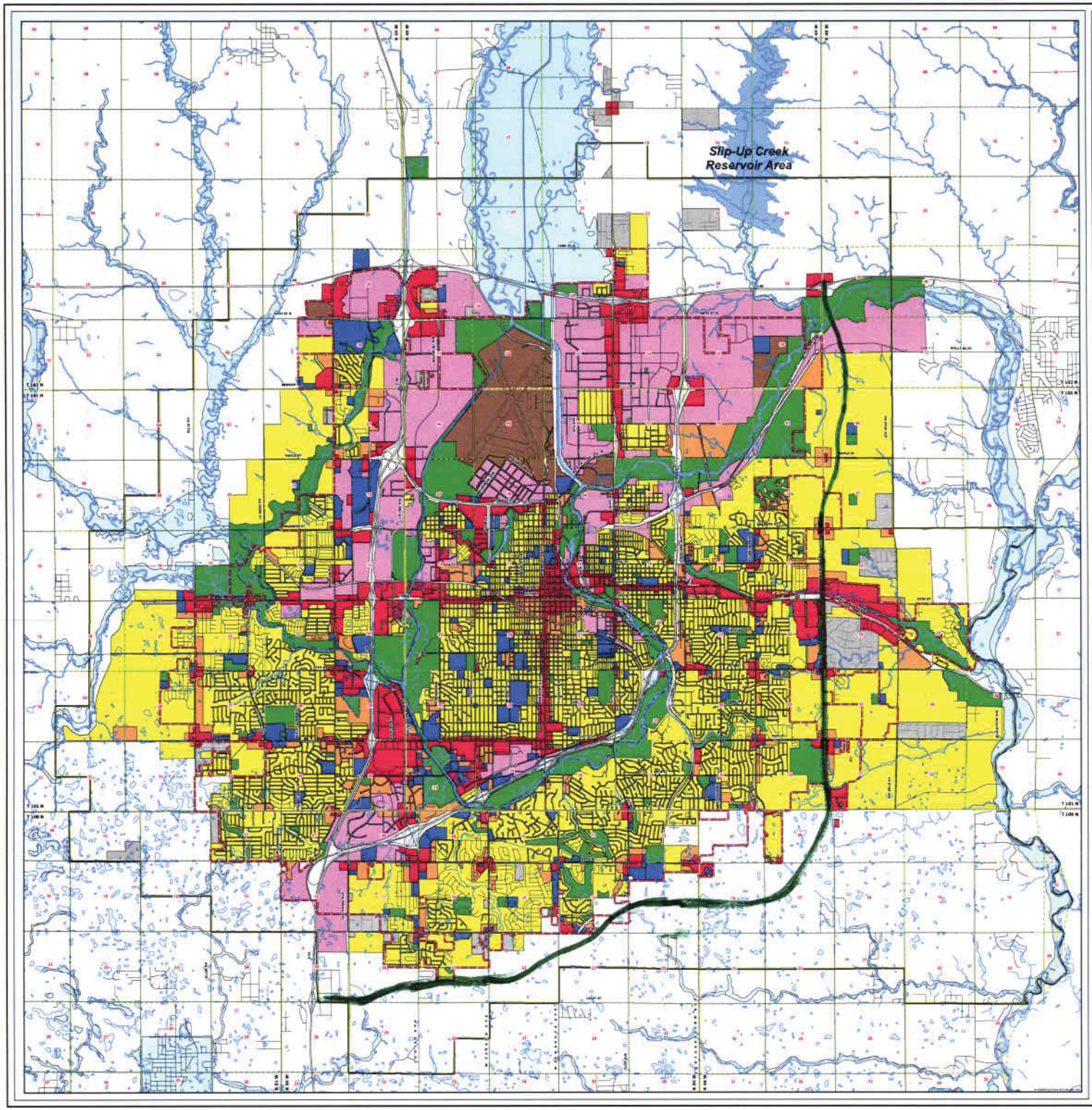
SD100 - EASTSIDE CORRIDOR

EXHIBIT 3

CITY OF SIOUX FALLS
PUBLIC WORKS
DIVISION OF ENGINEERING
224 W 9TH STREET
SIOUX FALLS, SD 57104
(605) 367-8601

Map IV (a)

Future Land Use Plan City of Sioux Falls and 2015 Growth Areas



Legend

- Existing City Limits
- Drainageways & Wetlands
- Platting Jurisdiction
- Single Family Residential
- Existing Rural Residential
- Multi Family Residential
- Industrial/Economic Development
- Transportation/Utilities
- Commercial
- Office/Institutional
- Parks & Open Spaces
- Rivers & Lakes
- 100-Year Flood Plain

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CITY OF SIOUX FALLS
PLANNING

Map Date: December 31, 2007