

# Brookings Area Master Transportation Plan

*June, 2011*



**SOUTH DAKOTA  
DEPARTMENT OF  
TRANSPORTATION**

**CITY OF BROOKINGS**

**CITY OF AURORA**

**BROOKINGS COUNTY**

**HDR**



# Brookings Area Master Transportation Plan

June, 2011

The preparation of this report has been financed in part through grant(s) from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

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# TABLE OF CONTENTS

Executive Summary	1
Goals and Objectives	3
Procedures	4
Existing Conditions	5
Transportation System Needs	5
Functional Classification	12
Traffic Counts	12
External Travel	12
Volumes and Level of Service	14
Safety	18
Bicycle and Pedestrian	19
Transit	19
Special Events	20
Freight	20
Air	20
Future Conditions	22
Forecasting	22
Future Volumes and Level of Service	22
Pedestrian and Bicycle Plans	23
Transit Plans	24
List of Needs	24
Standards Development	31
Major Streets Plan	31
Design Standards	31
Pedestrian and Bicycle Facilities	31
Typical Street Cross-sections	31
Public Involvement	37
Transportation Program	44
Project List with Cost Estimates	44
Additional Projects	48
Funding Potential	50
Appendix	On CD
Part 1 – Traffic Count Summary Sheets	
Part 2 – Medary Avenue Technical Memorandum	
Part 3 – Special Events Technical Memorandum	
Part 4 – Design Standards Documents	
Part 5 – Online Survey Responses	
Part 6 – Other Technical Memoranda	
Part 7 – Cost Estimates	
Part 8 – Synchro files	

## Table of Figures

1 – Study Work Flow	4
2 – Public Survey Responses	5
3 – Transportation Issues, Northwest Quadrant	6
4 – Transportation Issues, Northeast Quadrant	7
5 – Transportation Issues, Southwest Quadrant	8
6 – Transportation Issues, Southeast Quadrant	9
7 – Transportation Issues, SDSU Campus Area	10
8 – Transportation Issues, Recreation Path/Bike Path Connectivity	11
9 – Major Street Plan	13
10 – External to External Trips	15
11 – 2010 Traffic Counts	16
12 – 2010 Intersection Level of Service	17
13 – Crash Analysis Summary	18
14 – Parks and Trails Map	21
15 – Traffic Analysis Zones	25
16 – 2020 Traffic Counts	26
17 – 2035 Traffic Counts	27
18 – 2020 Intersection Level of Service	28
19 – 2035 Intersection Level of Service	29
20 – List of Transportation Needs	30
21 – Future Pathways and Trails	31
22 – Proposed SDSU Fixed Routes	33
23 – Major Streets Plan	34
24 – Typical Sections	35
25 – Typical Sections	36
26 – Travel Mode Distribution	37
27 – Overall Regional Traffic Safety	38
28 – Traffic Congestion Concern	39
29 – Expected Difficulty of Travel in 20 Years	40
30 – Satisfaction with Components of the Transportation System	41
31 – Allocation of an \$100 Investment to Transportation Components	42
32 – Portion of Taxes Going to Transportation Should...	43
33 – Support for a Slight Increase in Local Taxes for Transportation	43
34 – Project List with Cost Estimates	49
35 – Potential Projects – Short Term	51
36 – Potential Projects – Medium Term	52
37 – Potential Projects – Long Term	53

## **Executive Summary**

This transportation plan has been prepared as part of the larger community planning effort conducted for the Brookings area. It has been conducted under the supervision and funding of the South Dakota Department of Transportation and the Federal Highway Administration, with cooperation and participation of the City of Brookings, Brookings County and the City of Aurora. It uses the general transportation goals and objectives identified in the Brookings comprehensive plan and reflects other state and local planning studies. The plan is comprised of the following components:

### Current conditions assessment

Data were gathered concerning current traffic volumes, traffic origins and destinations, crashes, and public perceptions regarding the transportation system. The data were analyzed to determine where improvements may be needed. Public perceptions were measured using survey instruments, including an extensive online survey. Some key findings of the surveys were:

- The primary mode of transportation in the Brookings area is the passenger car, with a large majority indicating that they drive to work, school or other activities. Other significant modes include carpools, walking, biking, motorcycles, transit, and taxis.
- The public views the safety of the transportation system favorably, with about 66% rating it adequate, good, or excellent.
- About 73% rated congestion as a minor or non-existent problem.
- When asked to allocate a hypothetical \$100 for transportation improvements, survey respondents assigned the most to maintaining and improving existing roads and streets, followed by investments in new roads and streets, existing rural roads, and transit.
- About 45% responded that the proportion of taxes directed to transportation should be increased slightly.
- Over 60% expressed support for a slight increase in taxes to improve roads and streets.

### Future conditions assessment

A traffic forecasting model was built and traffic volumes were forecast for 2020 and 2035. Traffic operations were analyzed to determine future transportation needs. The transportation needs were assembled into a list of potential projects.

### Public involvement

The public was involved in the planning process through the survey instruments, a website, a Facebook™ page, and public meetings. Public input was sought on transportation needs early in the process and on the list of potential transportation projects later in the study.

Prepare design standards and other support documents

Current regulations and guidance for design of transportation improvements were reviewed and updated documents were provided for consideration.

Prepare project program and study document

The final project program was prepared based on input from the public, elected officials, transportation professionals, and the Study Team. The study process was documented in this report. The project program can be found in Figure 34.

## Goals and Objectives

This Master Transportation Plan for the Brookings Area exists within the larger framework of comprehensive community planning that has been undertaken by the City of Brookings and other local governments. The City of Brookings has evaluated growth trends and community desires to create a statement of the planned community vision contained in Vision 2020, the most recent comprehensive plan.

Strategies for implementing the community's transportation vision are contained in the goals and objectives stated in the Vision 2020 report and reproduced below:

Transportation Goal: Develop and maintain a comprehensive transportation system that meets the current and future needs of Brookings.

### Transportation Objectives:

- Encourage an energy efficient system that provides adequate access to high volume traffic generation points.
- Minimize negative transportation effects upon residential neighborhoods.
- Promote efficient traffic flows around residential institutional uses such as schools, churches and major public recreation areas.
- Promote the installation of sidewalks and trails to facilitate safe travel for pedestrians and bicyclists.

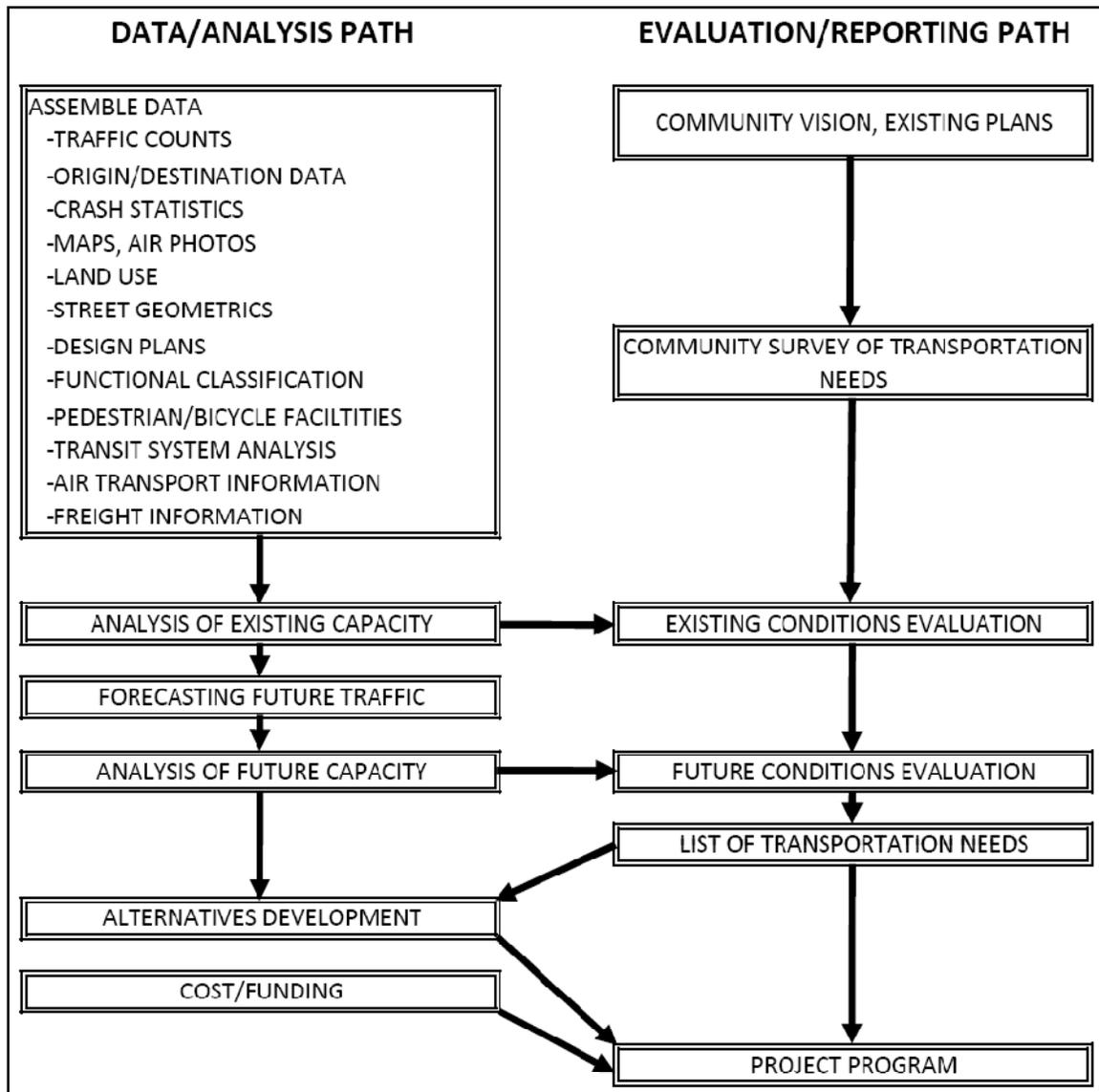
The goal and objectives are further detailed through the statement of the following transportation policies:

- Prevent through traffic on local streets within established neighborhoods.
- Create and maintain a grid system of major streets throughout the City.
- Require direct pedestrian and bicycle access from residential neighborhoods to schools, commercial centers and recreation areas.
- Separate vehicular traffic from pedestrian and bicycle traffic wherever possible through the use of sidewalks and recreational trails.
- Design residential street layouts to minimize both overall street lengths and the quantity of site grading required.
- Limit driveway entrances on arterial streets and collector streets wherever possible.
- Require continuity of collector streets between adjacent subdivisions.
- Secure sufficient rights-of-way to accommodate the City's major street plan.

The guidance provided by these statements of community vision has been used throughout the preparation of this transportation plan.

## Procedures

Preparation of this transportation plan followed a dual-track process. As shown in Figure 1, assembly and analysis of data provided input to the evaluation of existing and future conditions. The end result of the data and evaluation tracks was a program of future transportation improvements.



**FIGURE 1 – STUDY WORK FLOW**

The study data was assembled from existing databases and from counts and surveys conducted by the project team in 2010. Roadway capacity analysis was conducted using Highway Capacity Manual techniques via Trafficware® SYNCHRO software. A new regional travel demand model was prepared to facilitate traffic forecasts.

## Existing Conditions

A useful transportation planning effort begins with a comprehensive inventory of the existing transportation system. That inventory needs to include not just technical data, but also public perceptions of the existing transportation system. Therefore, the study proceeded with data gathering on two fronts: 1) assembly of technical information from traffic counts, origin/destination surveys, and database searches, and 2) survey of the public perception of existing transportation system needs.

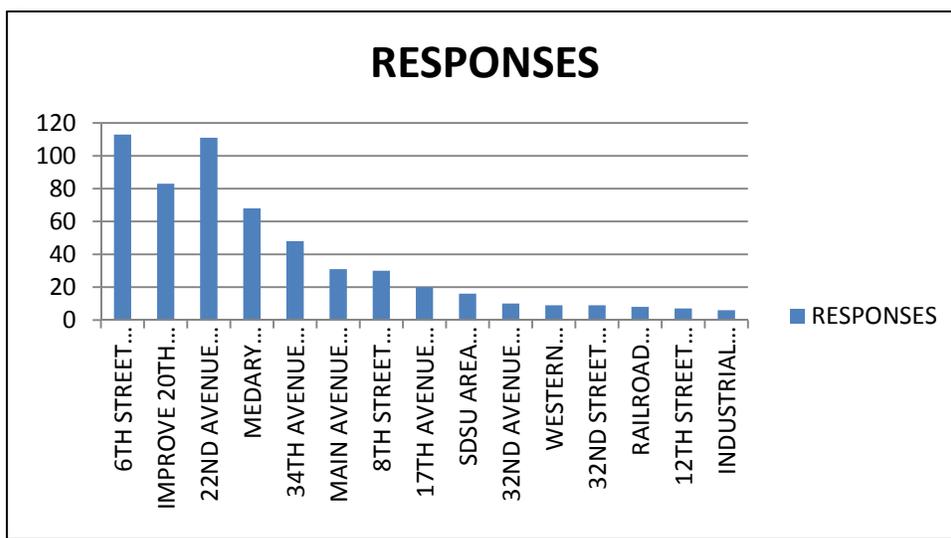
## Transportation System Needs

A list of potential transportation system needs was generated through a multi-pronged input effort, including:

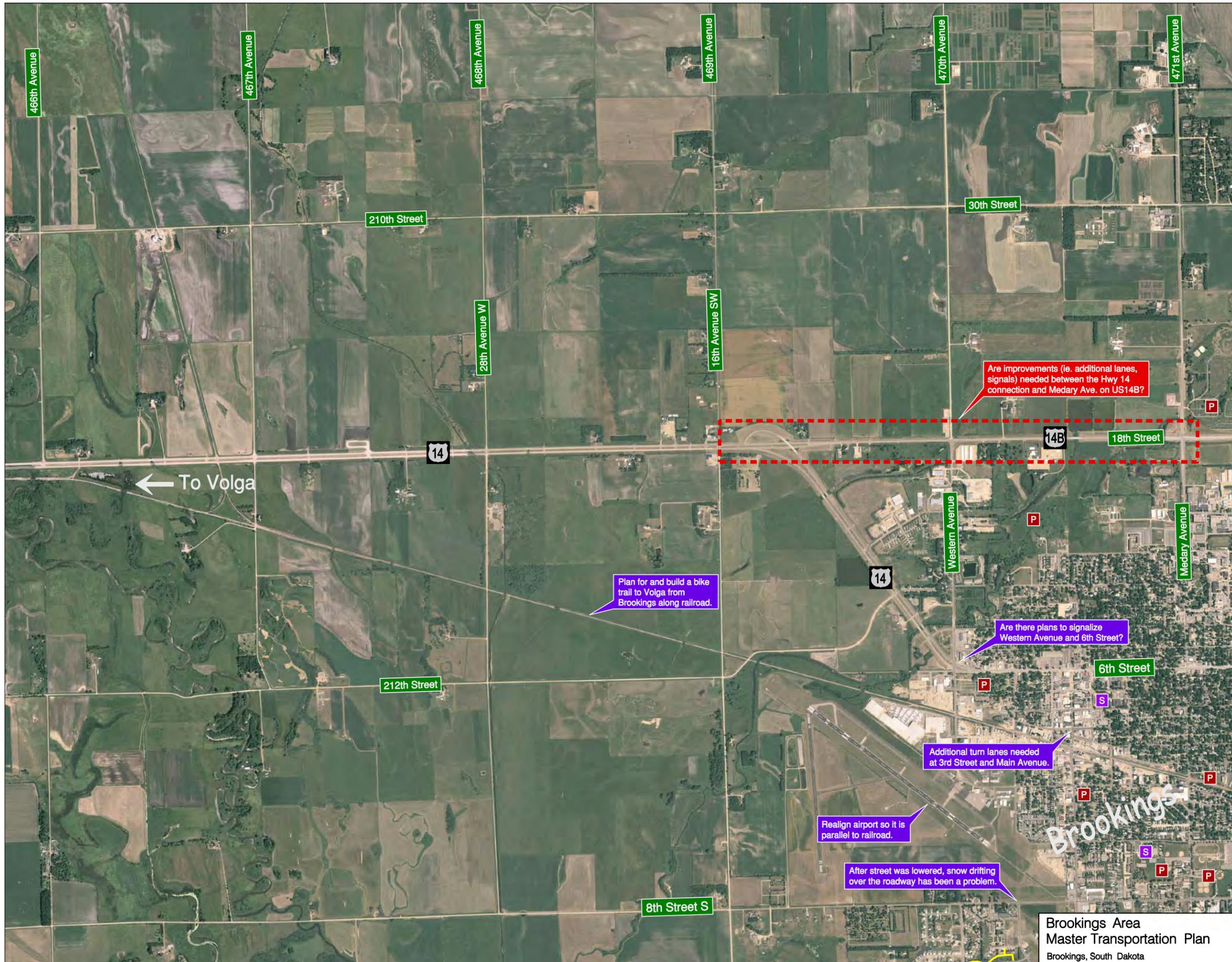
- Input from the project Study Team, comprised of State and Local transportation officials.
- Input from the public via written and spoken comments at the first public meeting.
- Input from the public via an online survey instrument.
- Input from the public via email and Facebook comments.

The input comments were assembled on Figures 3 – 8, reproduced on the following pages. They indicate that the primary areas of concern are related to the growing congestion in the City’s commercial areas, the crossings of Interstate 29 and roadways providing access to the Industrial Park. Other comments target the SDSU campus area and other isolated areas of concern.

The online survey instrument asked many qualitative questions about the perception of the Brookings-area transportation system, but also went further to evaluate the public’s assessment of the most important transportation issues in the Brookings area. Figure 2 shows the relative composite rankings of those issues. A more detailed summary of the survey results is contained in the Public Involvement section of this report.



**FIGURE 2 – PUBLIC SURVEY RESPONSES**



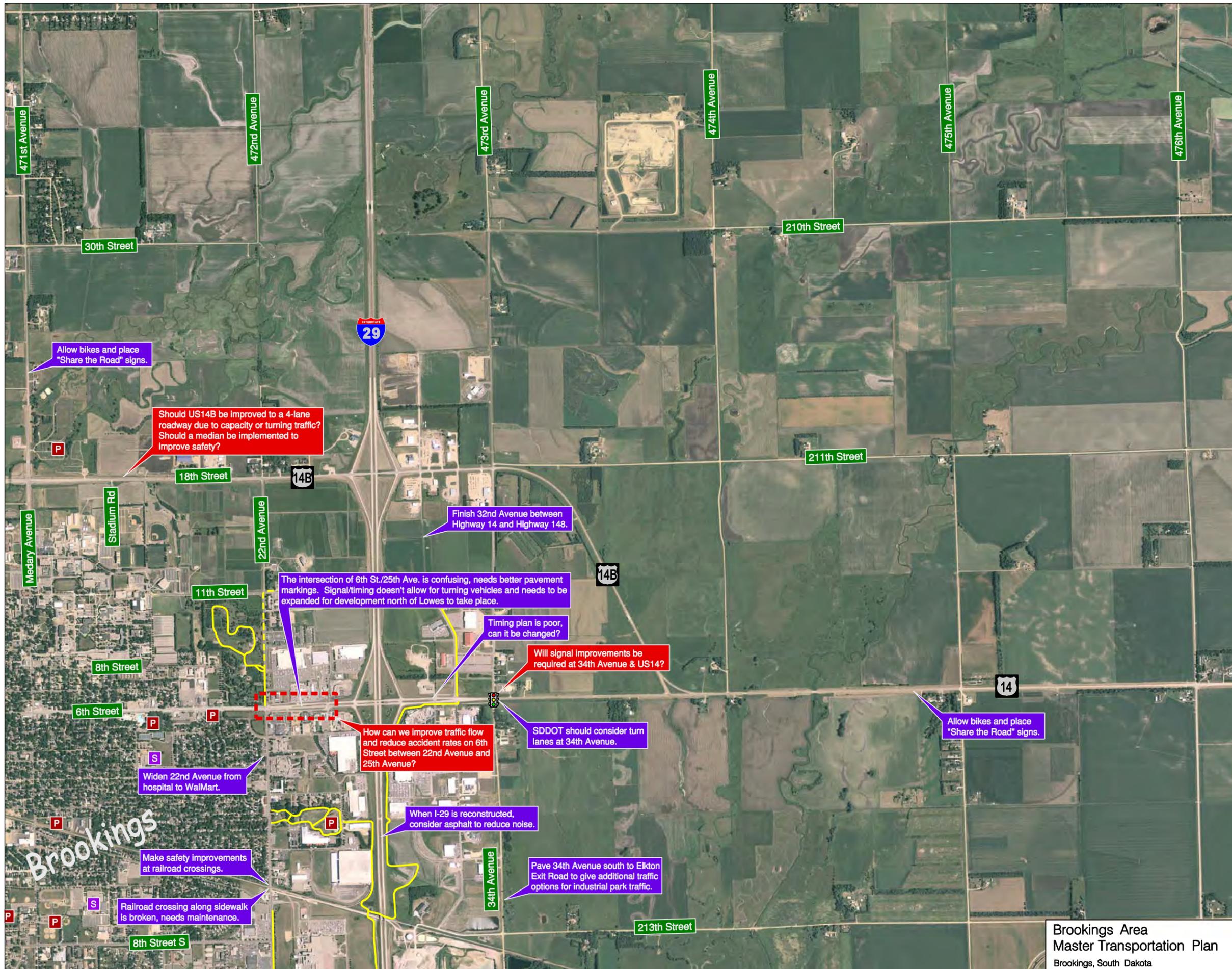
**Legend**

- P Park
- S School
- Shared Use Path
- Future Shared Use Path
- Study Advisory Committee Comments
- Public Comments



Brookings Area  
Master Transportation Plan  
Brookings, South Dakota

Figure 3  
Northwest Quadrant  
of Study Area



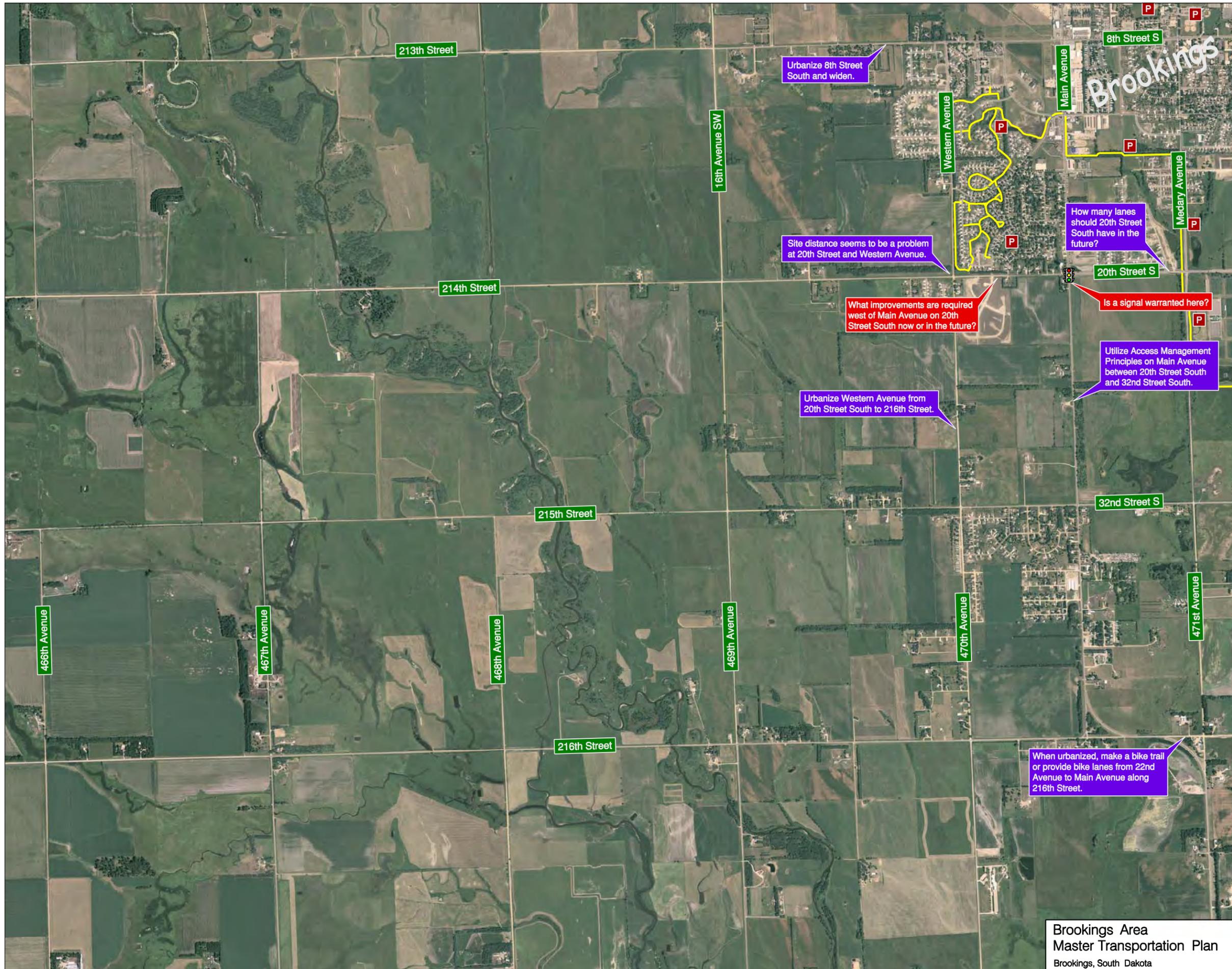
Legend	
<span style="background-color: red; color: white; padding: 2px;">P</span>	Park
<span style="background-color: purple; color: white; padding: 2px;">S</span>	School
<span style="border-bottom: 2px solid yellow; width: 20px; display: inline-block;"></span>	Shared Use Path
<span style="border-bottom: 2px dashed yellow; width: 20px; display: inline-block;"></span>	Future Shared Use Path
<span style="background-color: red; width: 15px; height: 10px; display: inline-block;"></span>	Study Advisory Committee Comments
<span style="background-color: purple; width: 15px; height: 10px; display: inline-block;"></span>	Public Comments

Brookings

Brookings Area  
Master Transportation Plan  
Brookings, South Dakota



Figure 4  
Northeast Quadrant  
of Study Area

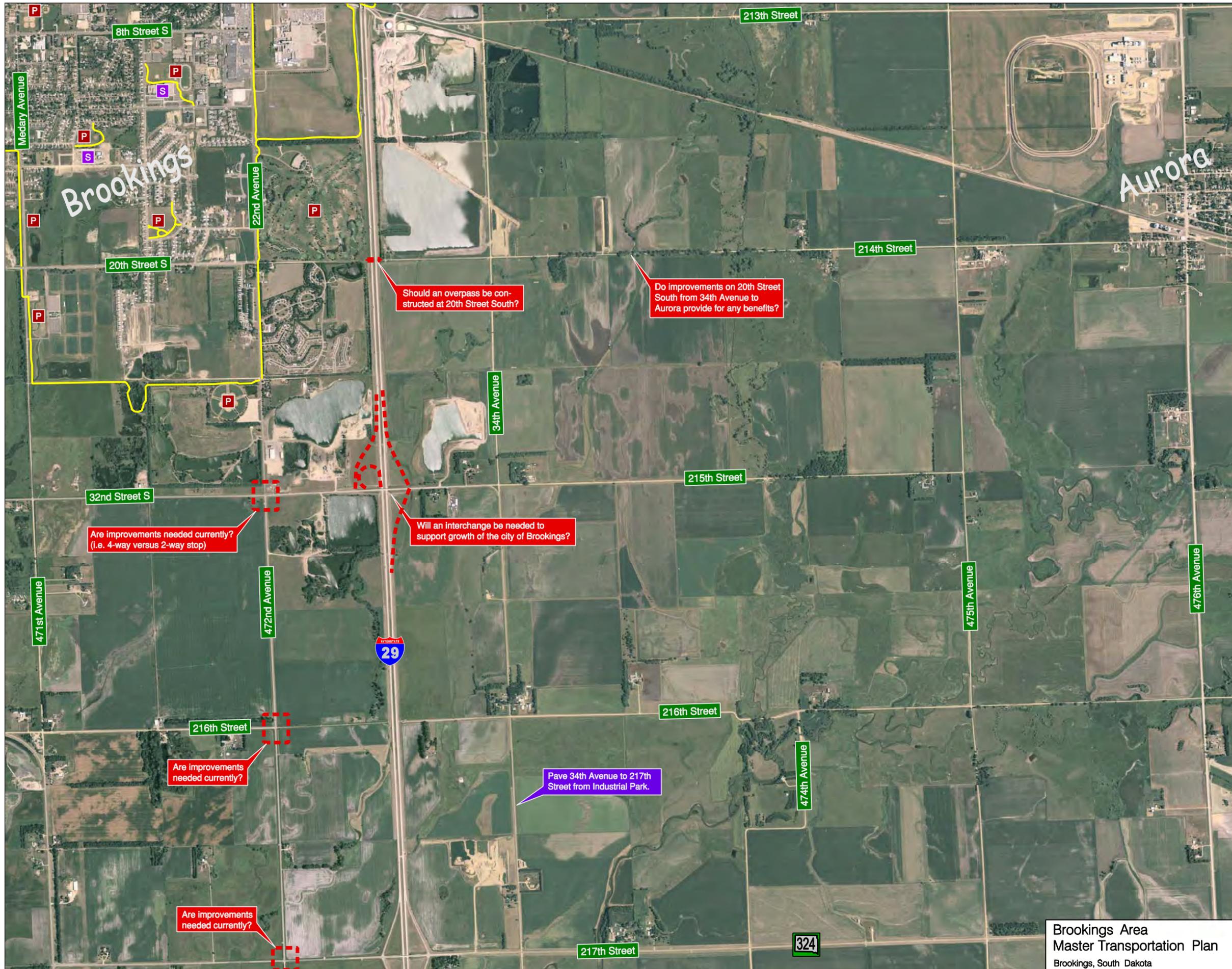


Legend	
<span style="color: red;">P</span>	Park
<span style="color: blue;">S</span>	School
<span style="color: yellow;">—</span>	Shared Use Path
<span style="color: yellow; border-bottom: 1px dashed yellow;">—</span>	Future Shared Use Path
<span style="color: red;">■</span>	Study Advisory Committee Comments
<span style="color: blue;">■</span>	Public Comments



Brookings Area  
Master Transportation Plan  
Brookings, South Dakota

Figure 5  
Southwest Quadrant  
of Study Area



- Legend**
- P Park
  - S School
  - Shared Use Path
  - Future Shared Use Path
  - Study Advisory Committee Comments
  - Public Comments

Should an overpass be constructed at 20th Street South?

Do improvements on 20th Street South from 34th Avenue to Aurora provide for any benefits?

Are improvements needed currently? (i.e. 4-way versus 2-way stop)

Will an interchange be needed to support growth of the city of Brookings?

Are improvements needed currently?

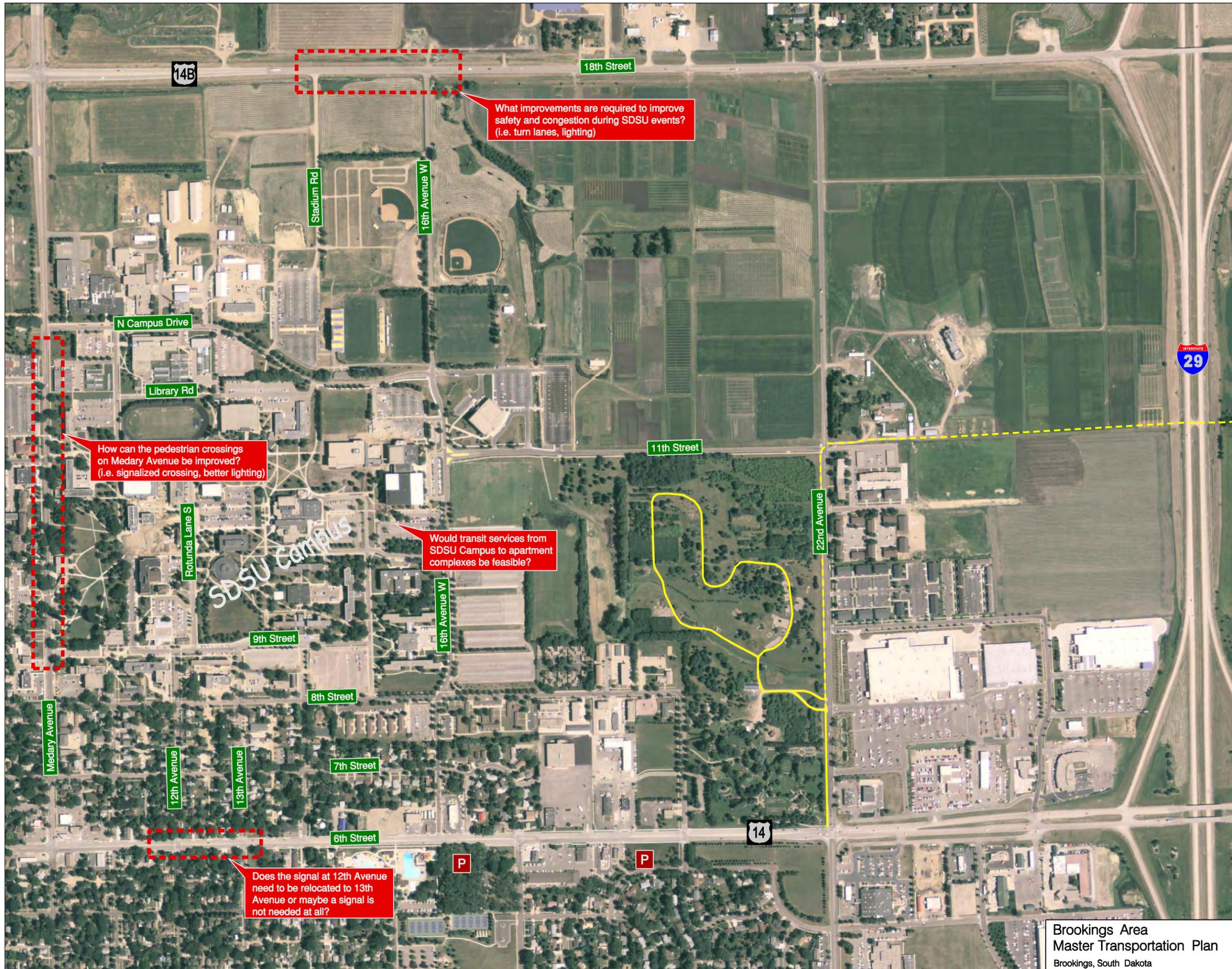
Pave 34th Avenue to 217th Street from Industrial Park.

Are improvements needed currently?

Brookings Area Master Transportation Plan  
Brookings, South Dakota



Figure 6  
Southeast Quadrant of Study Area



What improvements are required to improve safety and congestion during SDSU events? (i.e. turn lanes, lighting)

How can the pedestrian crossings on Medary Avenue be improved? (i.e. signalized crossing, better lighting)

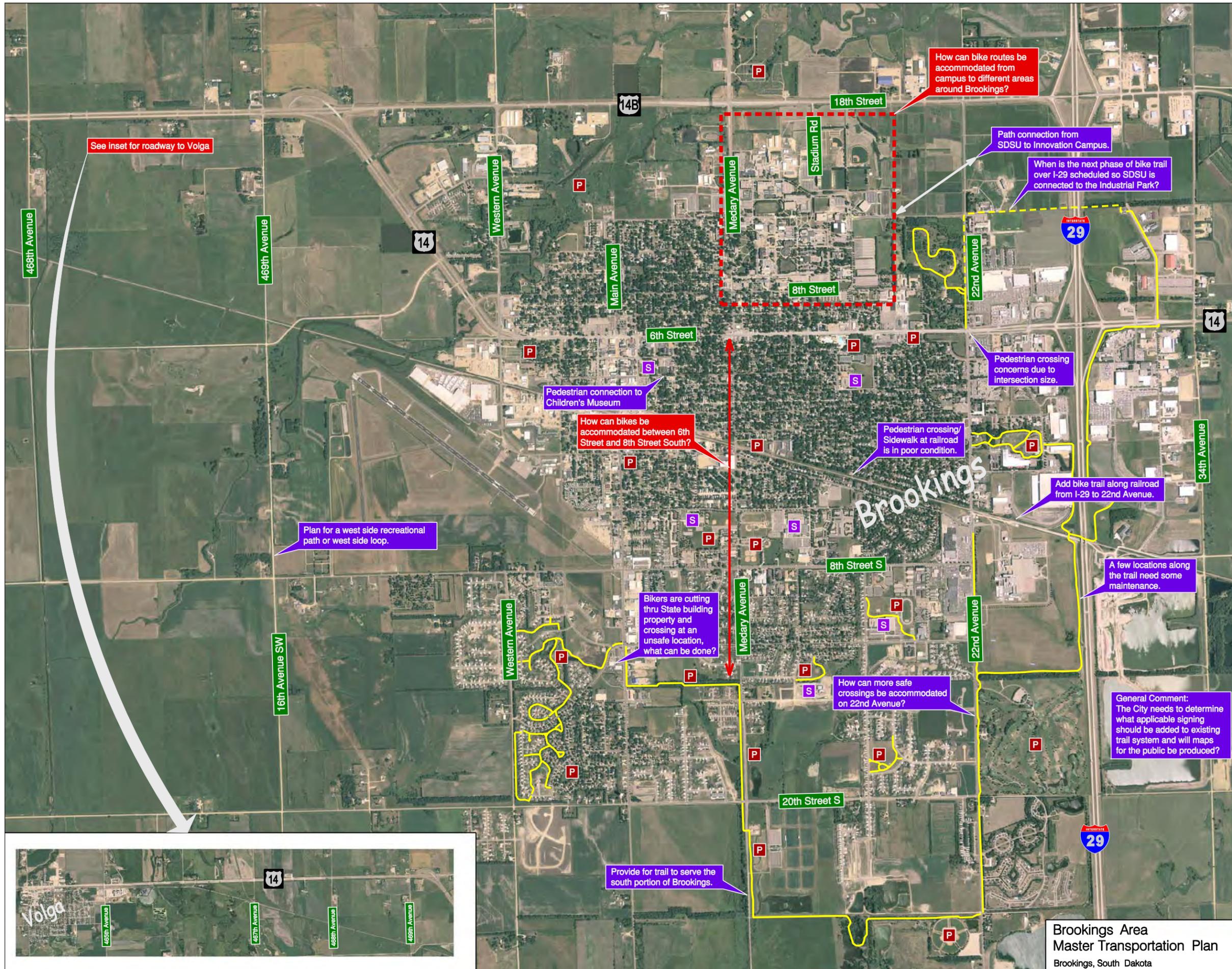
Would transit services from SDSU Campus to apartment complexes be feasible?

Does the signal at 12th Avenue need to be relocated to 13th Avenue or maybe a signal is not needed at all?



- Legend**
- P Park
  - S School
  - Shared Use Path
  - Future Shared Use Path
  - Study Advisory Committee Comments
  - Public Comments





0 1000  
SCALE

Legend

- P Park
- S School
- Shared Use Path
- Future Shared Use Path
- Study Advisory Committee Comments
- Public Comments



Brookings Area  
Master Transportation Plan  
Brookings, South Dakota

Figure 8  
Recreational Path /Bike Path  
Connectivity

## Functional Classification

A well-functioning transportation system depends on having streets serving all the types of transportation needs, from local access and circulation streets to Interstate highways. The existing Brookings-area roadway system provides the full compliment of streets and highways, with each street section classified according to its planned function.

The existing functional classification of the street system is shown in the current Major Streets Plan, Figure 9. It should be noted that the functional classification system maintained by local government may differ slightly from the Federal functional classification maintained by SDDOT due to mileage limitations on certain types of roadways.

## Traffic Counts

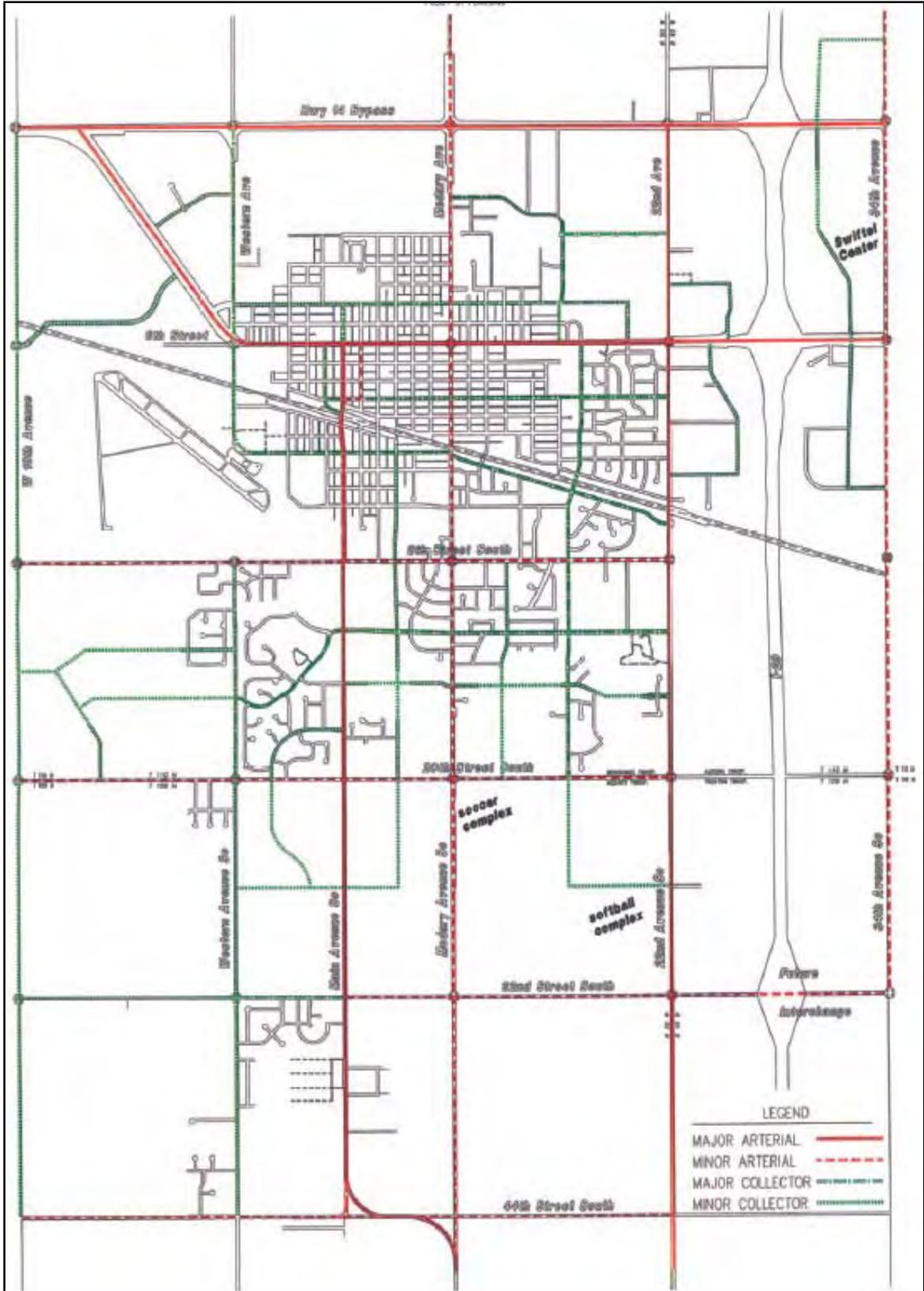
Vehicular turning movement counts were conducted to supplement existing traffic volume databases. Turning movement counts were performed as follows:

- US 14 bypass/Medary Ave. – 6:30 AM – 6:30 PM
- 8<sup>th</sup> St. S./Main Ave. – 6:30 AM – 6:30 PM
- US 14 bypass/Western Ave. – 7 AM – 11 AM, 2 PM – 6 PM
- US 14 bypass/22<sup>nd</sup> Ave. – 7 AM – 11 AM, 2 PM – 6 PM
- 11<sup>th</sup> St./22<sup>nd</sup> Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 8<sup>th</sup> St./22<sup>nd</sup> Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 6<sup>th</sup> St./13<sup>th</sup> Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 6<sup>th</sup> St./I-29 NB - 7 AM – 11 AM, 2 PM – 6 PM
- 6<sup>th</sup> St./32<sup>nd</sup> Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 3<sup>rd</sup> St./Main Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 3<sup>rd</sup> St./Medary Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 2<sup>nd</sup> St. S./Main Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 2<sup>nd</sup> St. S./Medary Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 8<sup>th</sup> St. S./Medary Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 8<sup>th</sup> St. S./17<sup>th</sup> Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 20<sup>th</sup> St. S./Main Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 20<sup>th</sup> St. S./Medary Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 20<sup>th</sup> St. S./17<sup>th</sup> Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 32<sup>nd</sup> St. S./Medary Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- Eastbrook Dr./22<sup>nd</sup> Ave. - 7 AM – 11 AM, 2 PM – 6 PM
- 12<sup>th</sup> St. S./17<sup>th</sup> Ave. - 7 AM – 11 AM, 2 PM – 6 PM

Count summary sheets have been provided in the Appendix, Part 1.

## External Travel

Origin/destination studies were conducted from September through October, 2010 to provide background data for the planning study and a basis for determining the amount of traffic



**FIGURE 9 – EXISTING MAJOR STREETS PLAN**

traveling completely through the study area. The origin/destination studies were conducted using a postcard survey method – postcards with survey questions were distributed to drivers as they entered the study area. The estimated daily trips between external stations are shown in Figure 10.

### **Volumes and Level of Service**

Daily traffic volumes are shown on Figure 11 – 2010 Traffic Counts. Figure 11 also displays the links in the existing street network that have reached Level of Service “C” or worse.

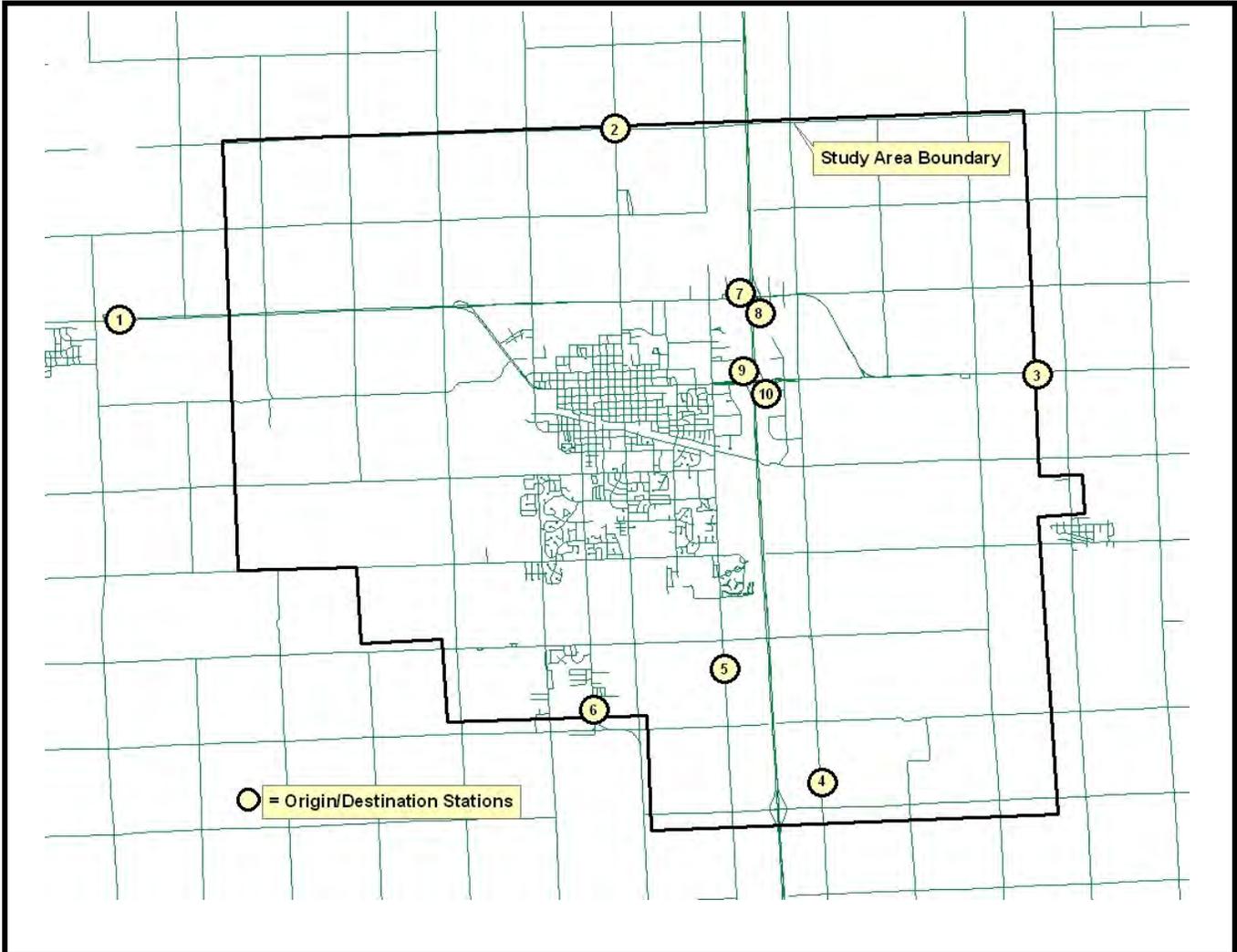
Observations of traffic volumes provide an understanding of the general nature of traffic, but are insufficient to indicate either the ability of the street network to carry additional traffic or the quality of service provided by the street system. For this reason the concept of *level of service* (LOS) was developed to correlate numerical traffic operational data to subjective descriptions of traffic performance at intersections. Each lane of traffic has delay associated with it and therefore a correlating LOS. The weighted average delay for each of these lanes of traffic for a signalized intersection is the intersection LOS. LOS categories range from LOS “A” (best) to “F” (worst).

The levels of service on roadway network links were determined by using tables developed by the Florida Department of Transportation for general planning-level assessment. The Florida tables are based on procedures developed for the Highway Capacity Manual and provide a quick way of estimating roadway level of service. They have become widely used across the country for planning purposes.

The level of service analysis indicates that several roadways have reached LOS C – the point where these roadway sections should be monitored for any further deterioration in service. Those roadway sections include:

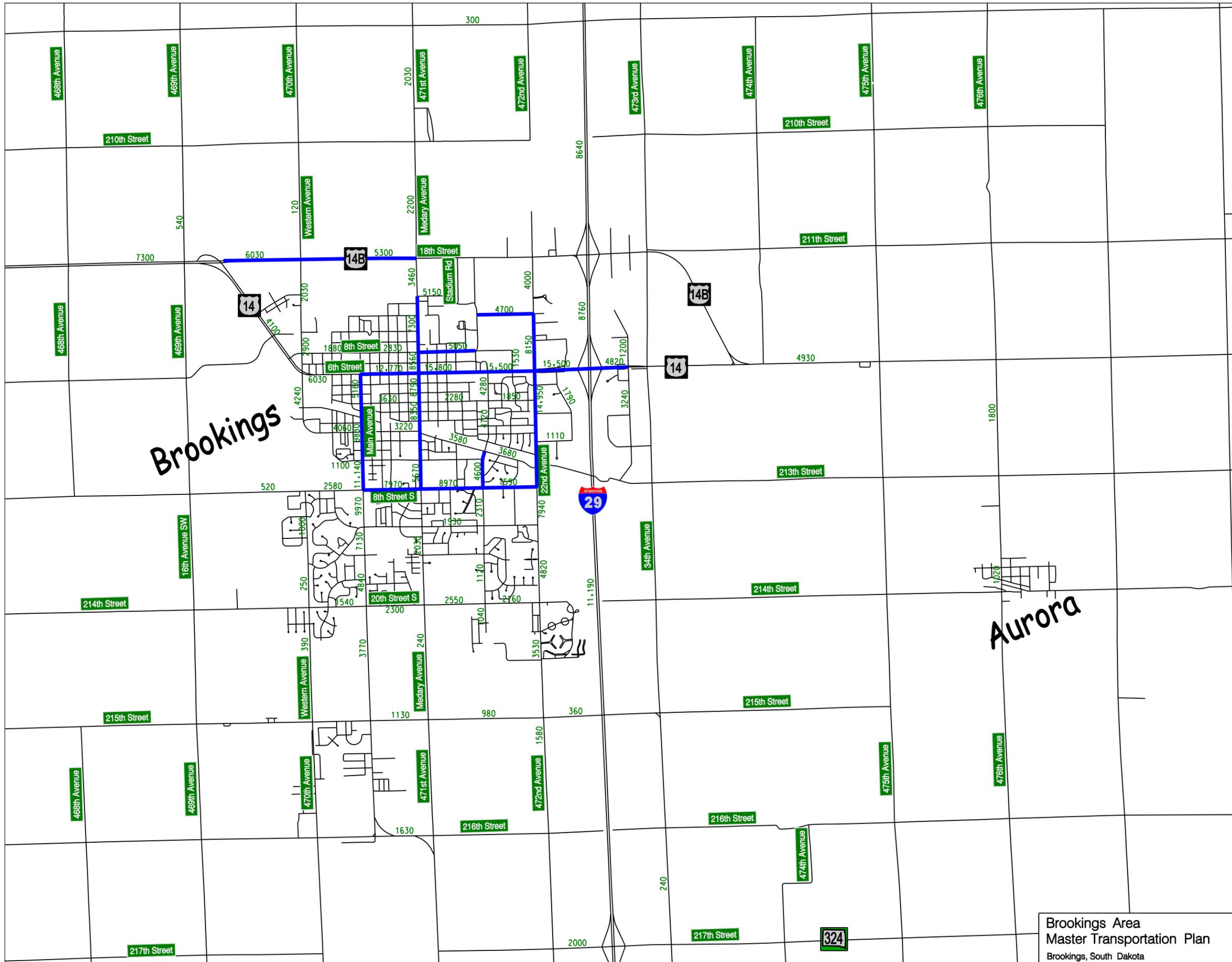
- US 14B – from US 14 junction west of Brookings to Medary Avenue
- 11<sup>th</sup> Street (N) – from 16<sup>th</sup> Avenue to 22<sup>nd</sup> Avenue
- 8<sup>th</sup> Street (N) – from Medary Avenue to 16<sup>th</sup> Avenue
- 6<sup>th</sup> Street (N) – from Main Avenue to 32<sup>nd</sup> Avenue
- 8<sup>th</sup> Street South – from Main Avenue to 22<sup>nd</sup> Avenue
- Medary Avenue – from Campus Drive to 8<sup>th</sup> Street South
- 17<sup>th</sup> Avenue – from Orchard Drive to 8<sup>th</sup> Street South
- 22<sup>nd</sup> Avenue – from 11<sup>th</sup> Street (N) to 8<sup>th</sup> Street South

Intersections may also be analyzed to determine their level of service. The level of service for each of the major intersections in the Brookings street system is shown in Figure 12. While a number of stop-sign controlled intersection approaches have existing levels of service of “D” or worse, this is fairly common on side-street approaches to arterial roadways. There is one intersection, however, where current operations need attention – the intersection of 6<sup>th</sup> Street and 22<sup>nd</sup> Avenue operates at LOS “E” in the P.M. peak hour.



STATION	DAILY COUNT	INCOMING TRAFFIC	OUTGOING TRIPS											
			1	2	3	4	5	6	7	8	9	10		
1 - US 14 WEST OF BROOKINGS	7300	3650			37			37	183	146				
2 - BROOKINGS COUNTY 77 NORTH OF BROOKINGS	2000	1000	30		20			20						
3 - US 14 EAST OF BROOKINGS	5000	2500	100									75	75	
4 - 473RD AVENUE SOUTH OF BROOKINGS	300	150	30											
5 - 22ND AVENUE SOUTH OF BROOKINGS	1600	800												
6 - BROOKINGS COUNTY 77 SOUTH OF BROOKINGS	2000	1000			10								10	
7 - I-29 EXIT 133 SOUTHBOUND	1600	1600	192	16	32									
8 - I-29 EXIT 133 NORTHBOUND	1900	1900	722	57										
9 - I-29 EXIT 132 SOUTHBOUND	1200	1200			24									
10 - I-29 EXIT 132 NORTHBOUND	1700	1700	85		17									

**FIGURE 10 - EXTERNAL STATIONS AND EXTERNAL TO EXTERNAL TRIPS**



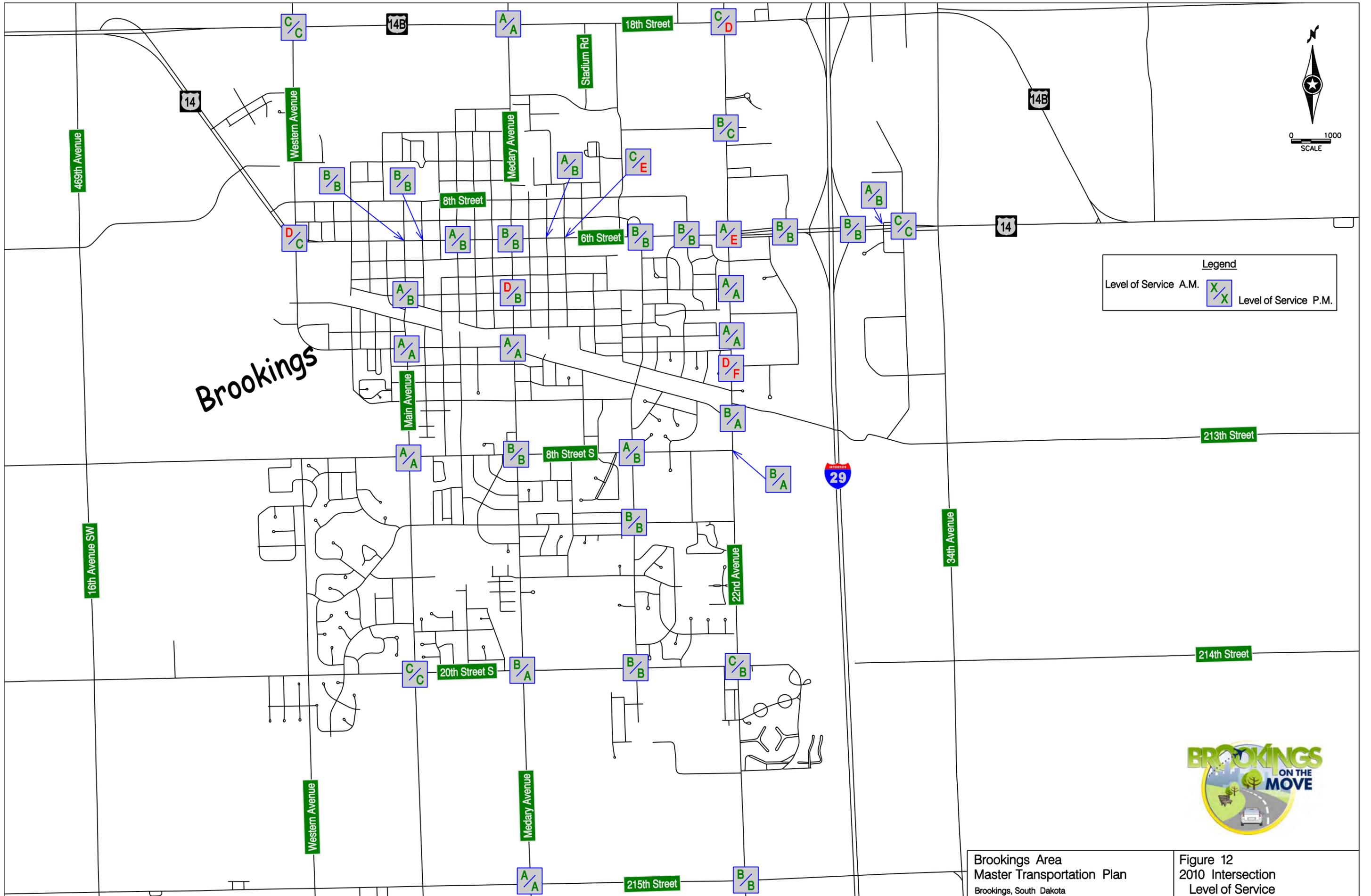
**Legend**

- xxx 2010 Existing Traffic Counts
- Blue line LOS C
- Orange line LOS D
- Purple line LOS E-F

Brookings

Aurora





Brookings



## Safety

The safety of the current Brookings transportation system was evaluated through review of crash location data, public comments and previous reports provided by the SDDOT Road Safety Inspection (RSI) program. Locations with clusters of crashes were identified through the use of crash plots or RSI references. The crash data for the cluster locations were then analyzed to determine potential needed safety improvements. The results of the crash analysis are shown in Figure 13.

LOCATION	NUMBER OF REPORTS IN 4 YEARS	POTENTIAL CAUSES	POTENTIAL IMPROVEMENTS
6TH STREET/MEDARY AVENUE	26	VEHICLES EXTENDING LEFT TURN ARROW	CHECK SIGNAL TIMING
6TH STREET/16TH AVENUE	9	VISIBILITY TO WEST ON 16TH	CONTINUE TO MONITOR - VOLUME DROPPING
6TH STREET/22ND AVENUE	58	LANE CONFIGURATION, SIGNAL PHASING	UPDATE WITH RECONSTRUCTION
22ND AVENUE, 6TH TO 12TH ST. S.	61	NARROW LANES, SLOW SPEED DRIVEWAYS	UPDATE WITH RECONSTRUCTION
6TH STREET/25TH AVENUE	8	NON-STANDARD LANES/ALIGNMENT	UPDATE WITH RECONSTRUCTION
6TH STREET/I-29 NORTHBOUND	10	RAMP DELAYS	SIGNAL INSTALLED
6TH STREET/32ND AVENUE	13	SIDE STREET DELAYS	SIGNAL INSTALLED
US 14B/WESTERN AVENUE	3	TRUCK TRAFFIC, NO LEFT TURN LANES, LIGHTING	MONITOR, UPDATE WITH RECONSTRUCTION
8TH STREET S/MEDARY AVENUE	8	NO TRENDS	CONTINUE TO MONITOR
8TH STREET (N)/MEDARY AVENUE	6	INTERSECTION VISIBILITY	MONITOR, REMOVE PARKING AND SIGHT OBSTRUCTIONS
5TH STREET (N)/MEDARY AVENUE	9	CAPACITY RESTRAINTS	UPDATE WITH RECONSTRUCTION
8TH ST. S./MAIN AVENUE	10	NON-STANDARD LANES/ALIGNMENT	UPDATE WITH RECONSTRUCTION
6TH ST./12TH AVENUE	6	NO TRENDS	CONTINUE TO MONITOR
12TH STREET S/17TH AVENUE	2	NO TRENDS	HIGH DEMAND DURING SCHOOL PASSAGE TIMES
12TH STREET S/22ND AVENUE	3	NO TRENDS	CONTINUE TO MONITOR
6TH STREET/WESTERN AVENUE	9	MULTIPLE APPROACHES, CURVED ROADWAY	REDUCE CONFLICT POINTS, PROVIDE POSITIVE GUIDANCE

**FIGURE 13 – CRASH ANALYSIS SUMMARY**

A special analysis was conducted at 12<sup>th</sup> Street S./17<sup>th</sup> Avenue because of public comments received in conjunction with the study survey of public opinion. There were several comments indicating excessive delays and potential safety problems at that location. An observation at the site showed that there were considerable traffic backups

during the morning and afternoon travel periods for the adjacent middle school and nearby intermediate school. The locations of the schools result in nearly every driver traveling to either school passing through the all-way stop intersection at 12<sup>th</sup> Street S/17<sup>th</sup> Avenue. The intersection is also a pedestrian crossing for students and is staffed by a crossing guard. The traffic backups haven't shown up in the current level of service analysis, but the future-year analysis indicates a capacity problem at this intersection. It appears reasonable to plan for future intersection improvements, including signalization.

The congestion at 12<sup>th</sup> Street South/17<sup>th</sup> Avenue points out the need for conducting studies for new schools to provide the input of experienced traffic engineers on vehicle circulation and pedestrian safety issues. School transportation issues can often be counter-intuitive and difficult to solve without experienced advice.

There were a number of on-line survey responses related to the safety of the railroad crossings in Brookings. There is also a history of concern among Brookings residents about a potential increase of rail service on the Dakota, Minnesota and Eastern railroad that bisects the area. Crash statistics do not show a current safety problem at the existing at-grade railroad crossings. Many cities, however, are planning for grade-separated crossings on arterial streets to avoid future traffic delays and safety problems. If Brookings adopted a policy to provide grade separations on important arterials, the most likely locations would be on Main Avenue, 22<sup>nd</sup> Avenue and 34<sup>th</sup> Avenue. Building grade separations on Main Avenue and 22<sup>nd</sup> Avenue could involve significant disruption of existing traffic patterns and potential right-of-way impacts in the vicinity of the railroad crossings. The cost of each grade separation could be relatively high due to the long structures required.

### **Bicycle and Pedestrian**

Bicycle and pedestrian travel in Brookings is characterized by an established network of facilities with plans for future expansion. A system of multi-use recreation trails serve parts of the community and has recently been expanded to the east side of Interstate 29. The existing system of trails is shown in Figure 14. Other bicycle and pedestrian travel occurs on existing streets and sidewalks.

The South Dakota State University campus sees considerable pedestrian and bicycle travel which extends to off-campus residences and destinations. These pedestrian and bicycle interactions with the larger community could be encouraged with continued planning for future pedestrian and bicycle facilities, particularly designated lanes/paths.

A specialized study of pedestrian issues along Medary Avenue on the SDSU campus was conducted and a technical memo outlining the analysis and recommendations of that special study has been included in the Appendix Part 2.

### **Transit**

The Brookings Area is served by Brookings Area Transit Authority (BATA), which provides advance-reservation transit service throughout the community and weekly service to other communities. BATA has conducted extensive system assessment and

planning for the future. Their current business plan calls for establishment of a new fixed route system serving the SDSU campus and other schools, commercial destinations in the downtown and outlying areas, and employment destinations. The BATA plan presents an exciting opportunity for public transportation service, but also present challenges in terms of funding.

### **Special Events**

A number of special events occur in the Brookings area each year and create high demand on the local transportation system. Those events include the Sidewalk Arts Festival, SDSU sporting events, and sporting events/programs at the Swiftel Center. Special studies were conducted for the Sidewalk Arts Festival and SDSU football game events. Memoranda detailing the findings and recommendations of those special studies are included in the Appendix.

### **Freight**

Freight transportation needs in the Brookings area are met by truck and rail services. The primary routes for intrastate and interstate truck traffic through the study area are Interstate 29 and US 14. Smaller truck volumes also use SD 324 and county roads to access the study area. Local hauling of bulk materials occurs on US 14B, 34<sup>th</sup> Avenue and 475<sup>th</sup> Avenue. Additional delivery activity occurs on Brookings city streets.

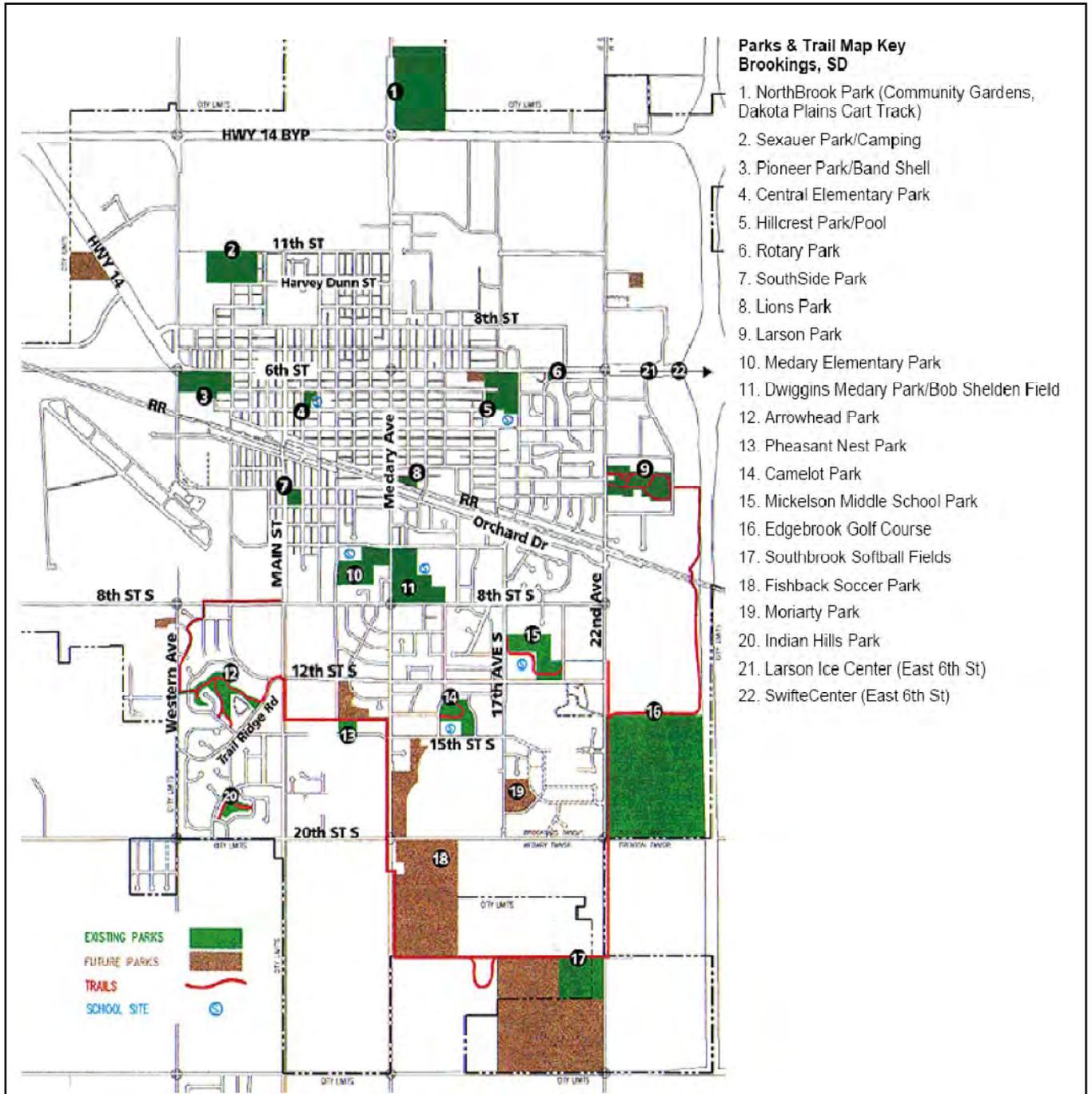
Freight rail service is provided by the Dakota, Minnesota and Eastern (DM &E) railroad which travels east and west through Brookings and provides connections to the Canadian Pacific rail network and other railroad systems. There are several sidings on the DM & E within the study area to serve sources for grain, sand/gravel, warehoused goods and ethanol.

Comments received from businesses and the general public during the study indicate that freight needs are currently being met and should continue to be met with normal growth of trucking and rail services. Business comments, however, supported improvements on 34<sup>th</sup> Avenue to provide a second paved access to the industrial park and sand/gravel sites.

### **Air**

General aviation services are provided at the Brookings Municipal Airport through a fixed-base operator. The nearest commercial passenger service is provided at Watertown or Sioux Falls. A recent airport planning effort has resulted in a new master plan and Environmental Assessment which identified realignment of runways at the existing airport as the preferred alternative for future airport facilities.

While there is a desire for commercial passenger service in Brookings, public comments indicated that having more affordable air travel alternatives at Sioux Falls or Watertown is more important to the Brookings-area traveler than other potential changes to local air service. Planned changes to the Brookings Municipal Airport should continue to provide needed service.



**FIGURE 14 – PARKS AND TRAILS MAP**

## **Future Conditions**

Transportation operating conditions were estimated for 25 years in the future to provide insight on which transportation improvements will be needed within the planning horizon. The future operating conditions were estimated by first forecasting future levels of traffic, and then analyzing operations based on the forecast traffic. Finally, future transportation deficiencies were identified and a list of transportation needs prepared.

The current Brookings comprehensive plan, Vision 2020, is reaching maturity and will need to be updated. Land use plans from Vision 2020 were augmented with recent development and zoning information to allow production of 25-year traffic forecasts.

## **Traffic Forecasting**

Traffic volumes for 2020 and 2035 were forecast through preparation and use of a travel demand model. The model was prepared using QRS II software and correlates traffic volumes to land use and subsequent trip generation within traffic analysis zones (TAZ's). The TAZ structure is shown in Figure 15 and represents areas of fairly uniform land use types with TAZ boundaries that fall along major area roadways. The model output was used to factor traffic counts and produce the 2020 and 2035 traffic forecasts. Link forecasts were evaluated using Florida Department of Transportation planning level of service tables to provide assessment of future operations. (See page 15 for discussion of use of Florida level of service tables.)

QRS II software was used because its cost is within reach of most municipal users and its flexible data structure allows use of simple land use/travel demand relationships. It is recommended that the forecasting model be periodically updated to allow it to provide continuing service. The next update should be scheduled for 2015. A model update process consists of gathering new count data, revising the street network to reflect construction, and revising and recalibrating the actual forecasting model. Under current rules, cities are not eligible for Federal urban planning funds until their population reaches 50,000 persons.

## **Future Volumes and Level of Service**

Forecast traffic volumes and Levels of Service for the 2020 and 2035 Brookings-area roadway network are shown in Figures 16, 17, 18 and 19. The analysis shows that the following roadway sections are anticipated to reach LOS "C" by 2035:

- US 14B – US 14 junction west of Brookings to Medary Ave.
- 11<sup>th</sup> Street (N) – 16<sup>th</sup> Ave. to 22<sup>nd</sup> Ave.
- 8<sup>th</sup> Street (N) – Medary Ave. to 16<sup>th</sup> Ave.
- 6<sup>th</sup> Street – Western Ave. to 22<sup>nd</sup> Ave.
- 6<sup>th</sup> Street – I-29 to 32<sup>nd</sup> Ave.
- US 14 – US 14B junction east of Brookings to 476<sup>th</sup> Ave.
- 2<sup>nd</sup> Street South – Division Ave. to Main Ave.

- 8<sup>th</sup> Street South – Western Ave. to Main Ave.
- 8<sup>th</sup> Street South – 17<sup>th</sup> Ave. to 22<sup>nd</sup> Ave.
- 20<sup>th</sup> Street South – Main Ave. to 22<sup>nd</sup> Ave.
- 32<sup>nd</sup> Street South – Main Ave. to Medary Ave.
- Western Avenue – US 14B to 6<sup>th</sup> Street
- Main Avenue – 6<sup>th</sup> Street to 20<sup>th</sup> Street South
- Medary Avenue – US 14B to 6<sup>th</sup> Street
- Medary Avenue – 3<sup>rd</sup> Street to 20<sup>th</sup> Street South
- 17<sup>th</sup> Avenue – Orchard Drive to 8<sup>th</sup> Street South
- 22<sup>nd</sup> Avenue – US 14B to 11<sup>th</sup> Street (N)
- 22<sup>nd</sup> Avenue – 8<sup>th</sup> Street South to 32<sup>nd</sup> Street South

The following roadway sections are expected to reach LOS “D” by 2035:

- 6<sup>th</sup> Street – 22<sup>nd</sup> Avenue to I-29
- 8<sup>th</sup> Street South – Main Ave. to 17<sup>th</sup> Ave.
- Main Avenue – 20<sup>th</sup> Street South to 32<sup>nd</sup> Street South
- Medary Avenue – 6<sup>th</sup> Street to 3<sup>rd</sup> Street
- 22<sup>nd</sup> Avenue – 11<sup>th</sup> Street to 8<sup>th</sup> Street South

In addition, the following intersections are expected to reach an actionable level of service by 2035:

- 6<sup>th</sup> Street/13<sup>th</sup> Avenue
- 6<sup>th</sup> Street/22<sup>nd</sup> Avenue
- 6<sup>th</sup> Street/25<sup>th</sup> Avenue
- 3<sup>rd</sup> Street/Medary Avenue
- Eastbrook Drive/22<sup>nd</sup> Avenue
- 8<sup>th</sup> Street South/Main Avenue
- 12<sup>th</sup> Street South/17<sup>th</sup> Avenue
- 20<sup>th</sup> Street South/Main Avenue
- 20<sup>th</sup> Street South/17<sup>th</sup> Avenue
- 20<sup>th</sup> Street South/22<sup>nd</sup> Avenue
- 32<sup>nd</sup> Street South/22<sup>nd</sup> Avenue

### **Pedestrian and Bicycle Plans**

The planned network of multi-use recreation trails and bicycle facilities is shown in Figure 21. This planned network was prepared through a community-based planning process and represents a 2030 planning horizon. Pedestrian travel will also be facilitated by sidewalks in all new street development. A potential gap in the network of multi-use facilities may be prevented by inclusion of a side-path along Medary Avenue, from 6<sup>th</sup> Street to 12<sup>th</sup> Street South. The Medary Avenue side-path may be built as part of other street reconstruction projects or by expansion of existing sidewalks. Details of the Medary Avenue side-path are shown in Figure 21.

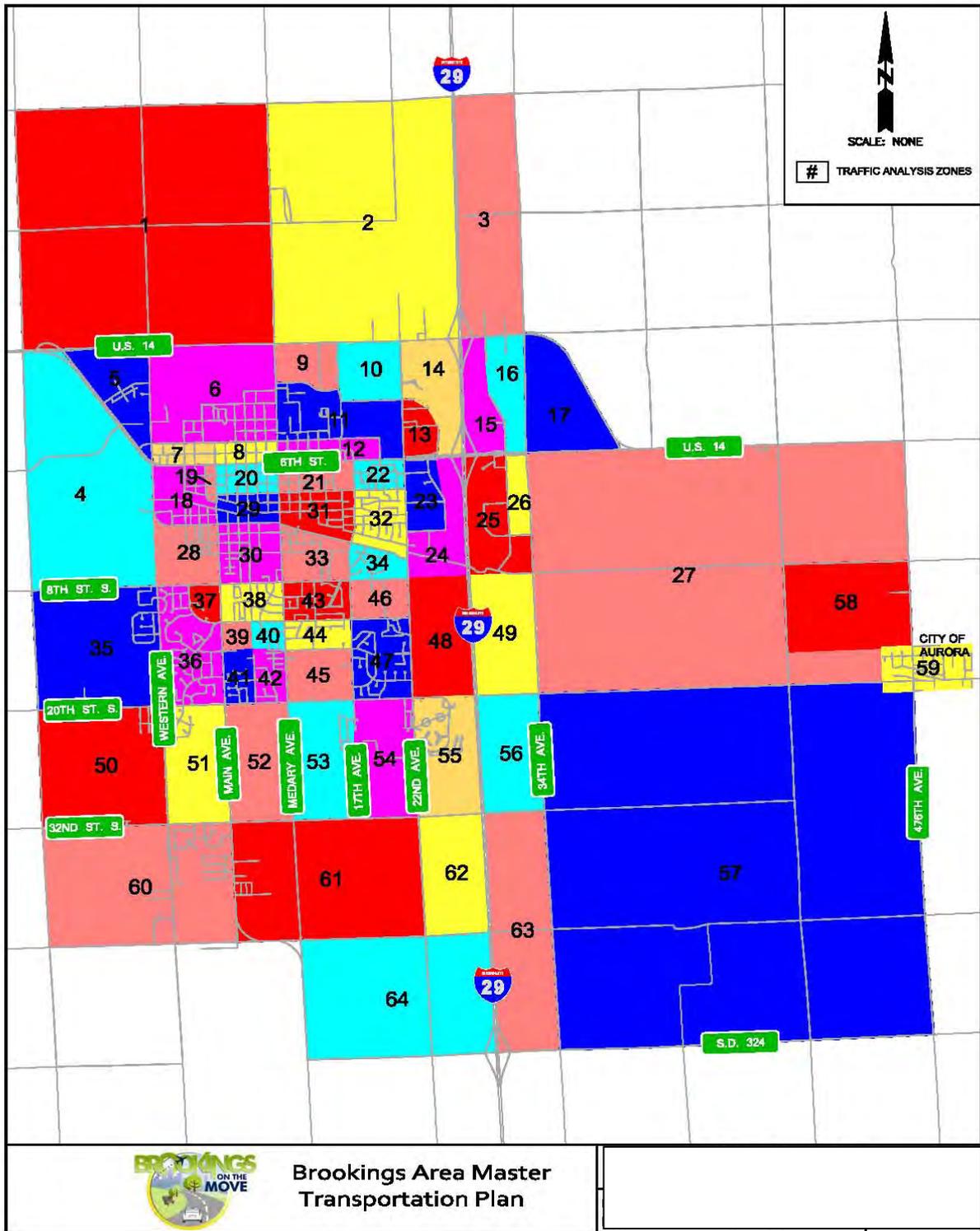
Pedestrian issues are also closely related to the planning and operations of schools. Tools such as coordinated school district/city planning, safe routes to school programs and school circulation studies provide the means for creating a safe, efficient pedestrian system and are recommended for implementation by Brookings-area local governments and agencies.

### **Transit Plans**

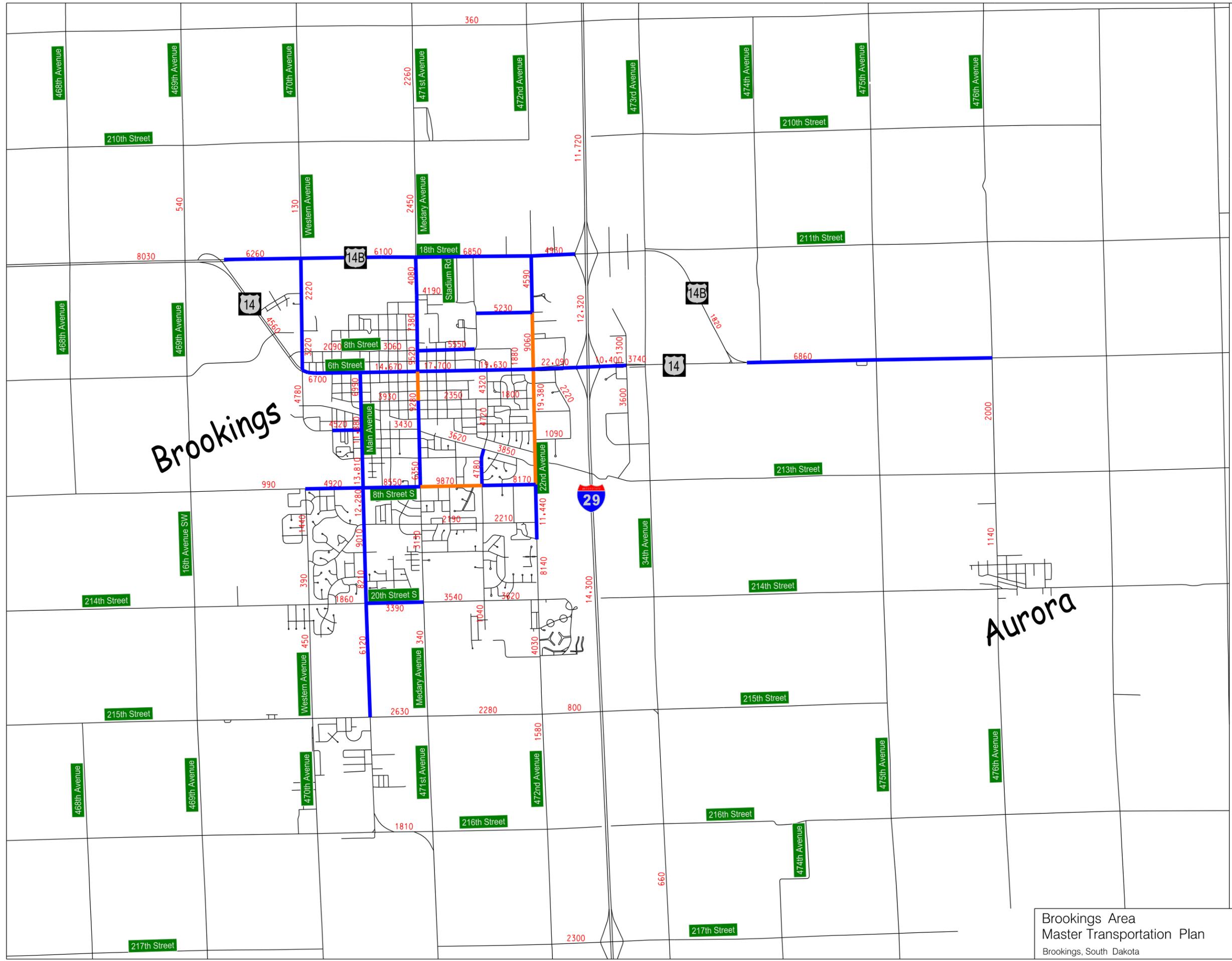
Brookings Area Transit Authority (BATA) has created a business plan for establishing a fixed-route system serving major destinations in the Brookings area. The fixed-route system is shown in Figure 22. It will require community financial support to become a reality, but has the potential to eliminate single-vehicle trips on the system and extend the time until street investments need to be made.

### **List of Needs**

A list of future transportation needs was prepared based on future year traffic analysis, safety analysis, existing plans and public comments. That list of needs is shown in Figure 20 and will serve as a basis for preparation of the ultimate project program found later in this report.

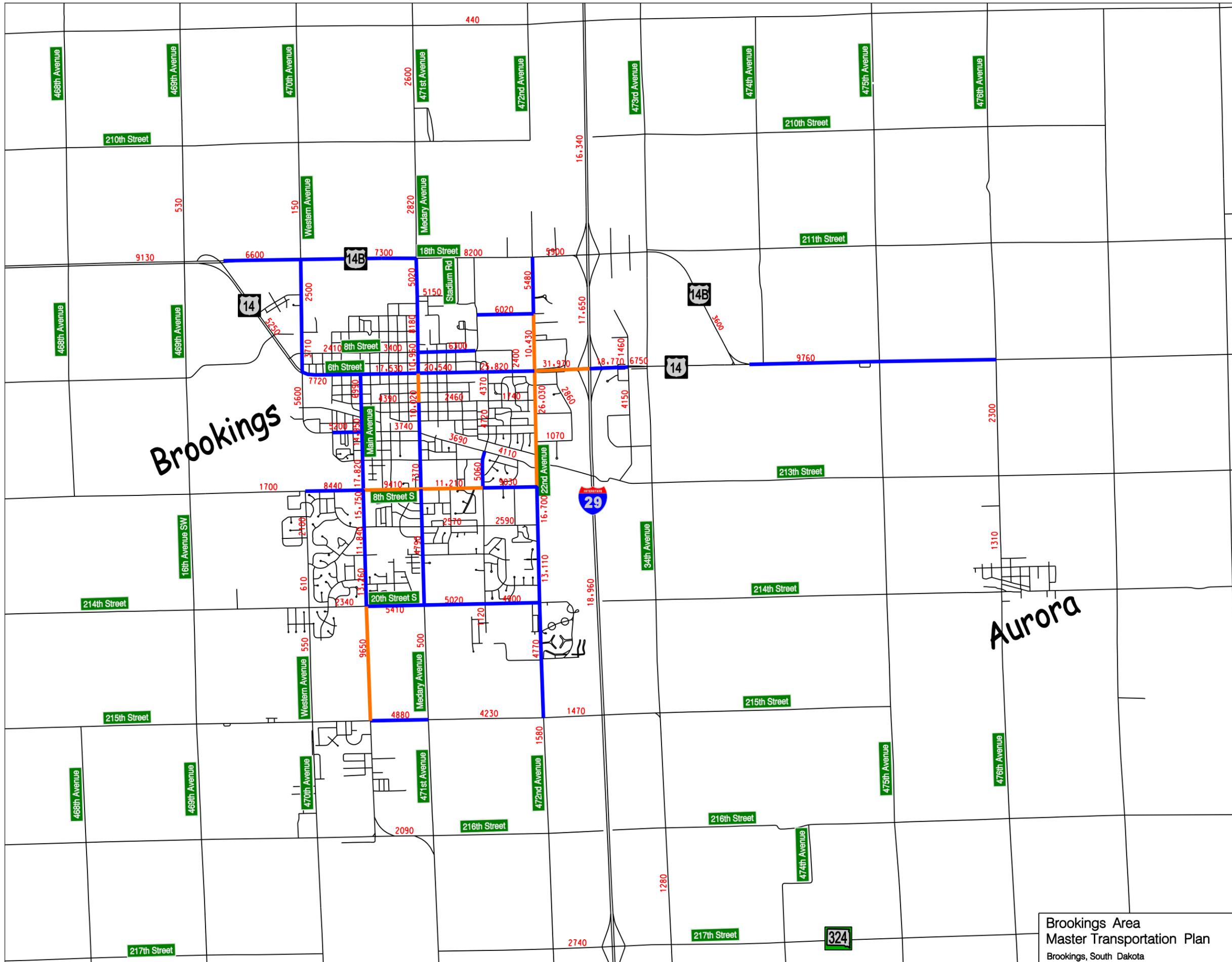


**FIGURE 15 – TRAFFIC ANALYSIS ZONE MAP**



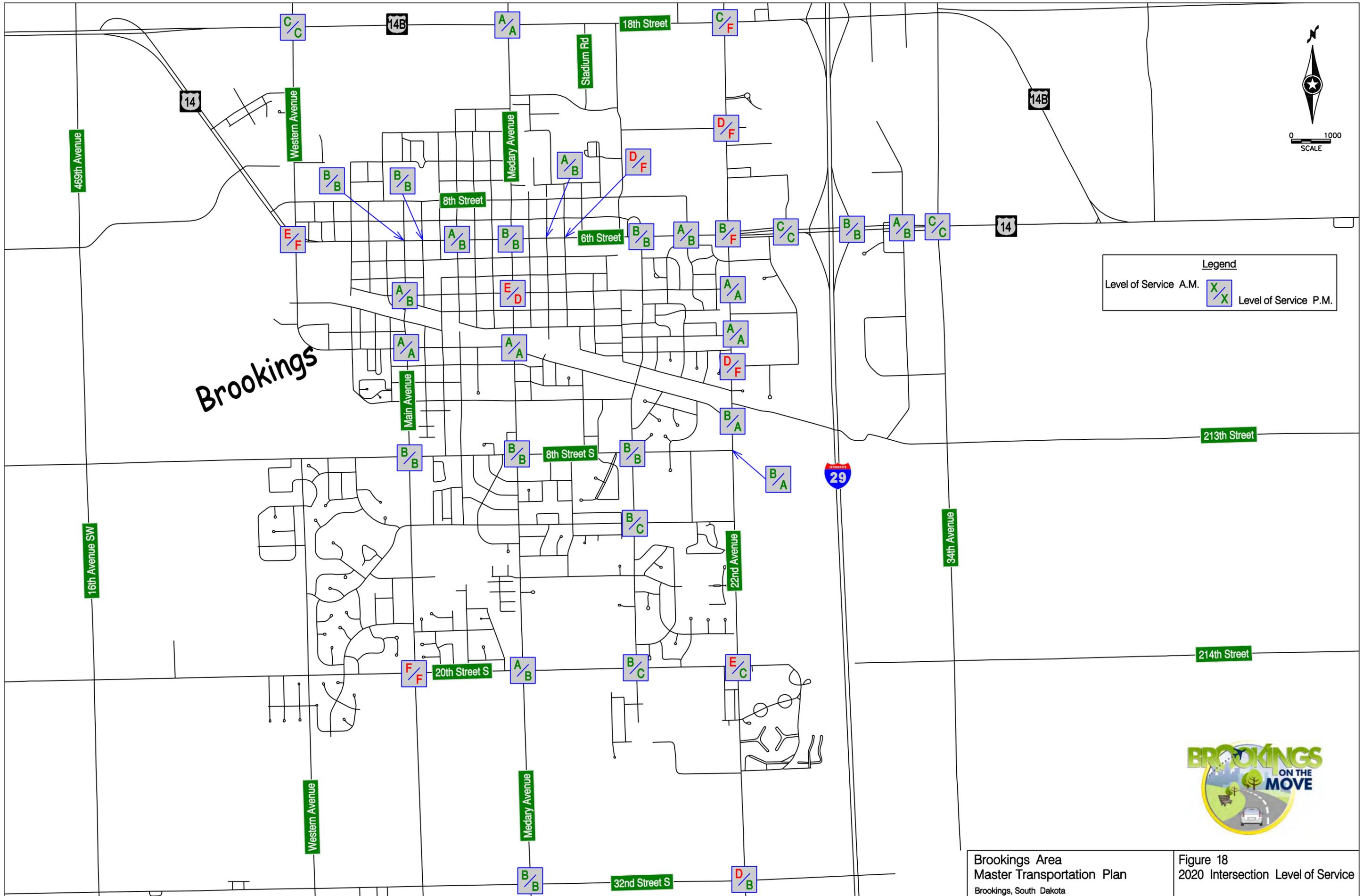
Legend	
xxx	2035 Traffic Counts
Blue line	LOS C
Orange line	LOS D
Purple line	LOS E-F





Legend	
xxx	2035 Traffic Counts
Blue line	LOS C
Orange line	LOS D
Purple line	LOS E-F



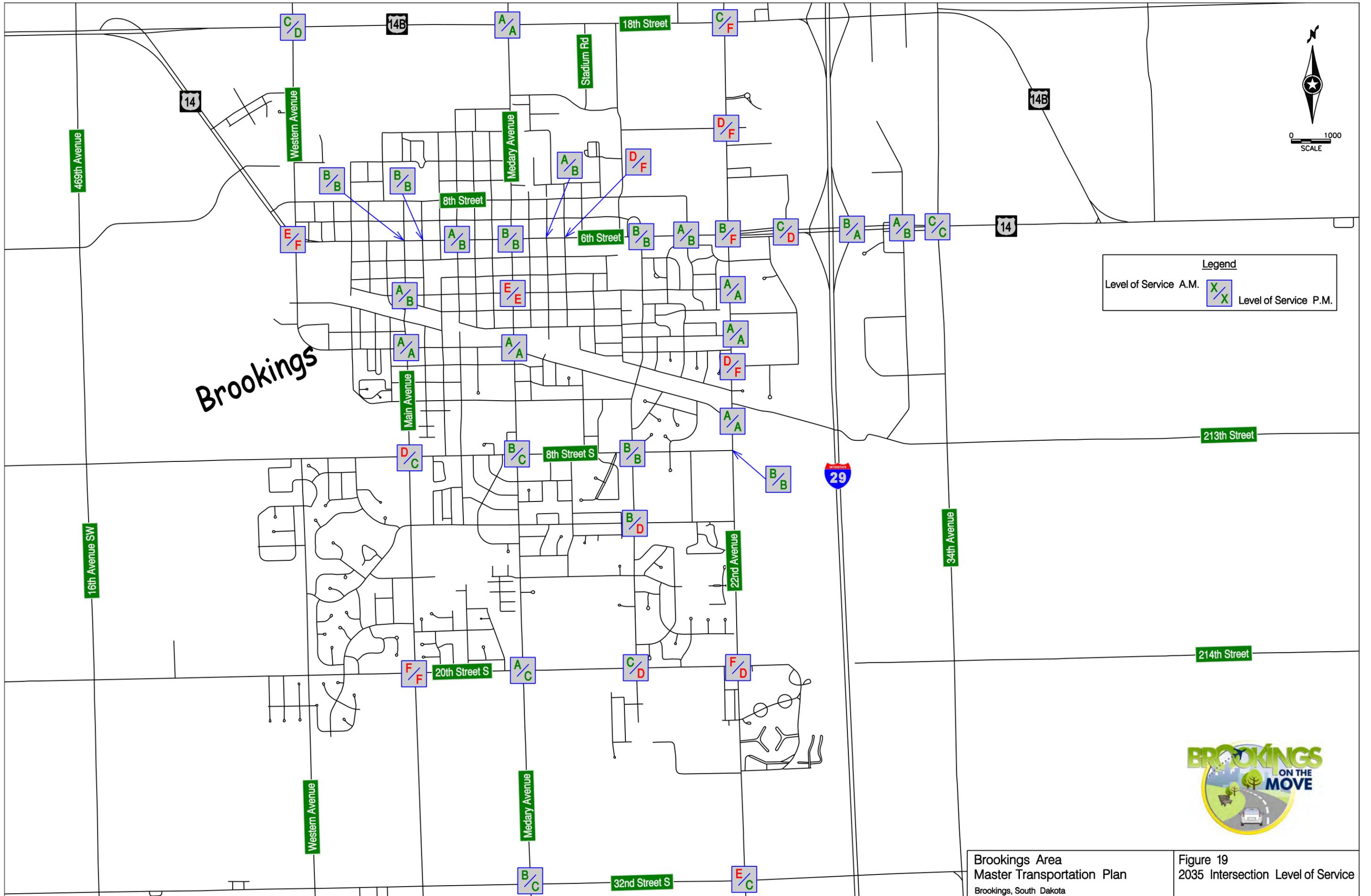


Brookings

**Legend**

Level of Service A.M. X / X Level of Service P.M.





**Legend**  
 Level of Service A.M. X X Level of Service P.M.

NEED	SOURCE	SCOPE
MAIN AVENUE, 20TH ST. S. TO 32ND ST. S	FORECAST CAPACITY, PUBLIC COMMENT	WIDEN TO 4-LANE OR 5-LANE SECTION
MEDARY AVENUE, 6TH ST. TO 8TH ST. S.	FORECAST CAPACITY, PUBLIC COMMENT, BIKE PLAN, SAFETY ANALYSIS	INTERSECTION IMPROVEMENTS AT 6TH ST., 3RD ST. PROVIDE SIDEPATH BICYCLE ROUTE
22ND AVENUE, 11TH ST. TO 8TH ST. S.	FORECAST CAPACITY, PUBLIC COMMENT, SAFETY ANALYSIS	INTERSECTION IMPROVEMENTS AT 6TH ST. PROVIDE 11' OR 12' LANES PROVIDE RADIUS COMMERCIAL DRIVEWAYS
6TH STREET, 22ND AVE. TO I-29	FORECAST CAPACITY, PUBLIC COMMENT, SAFETY ANALYSIS	INTERSECTION IMPROVEMENTS AT 25TH AVE. WIDEN TO 6-LANE OR PROVIDE 20TH ST. S. OVERPASS
8TH STREET SOUTH, MAIN AVE. TO 22ND AVE.	FORECAST CAPACITY, PUBLIC COMMENT, SAFETY ANALYSIS	WIDEN TO 5-LANE SECTION INTERSECTION IMPROVEMENTS AT MAIN AVE.
20TH STREET SOUTH, MAIN AVE. TO 22ND AVE.	FORECAST CAPACITY, PUBLIC COMMENT	INTERSECTION IMPROVEMENTS, RIGHT-OF-WAY FOR EXPANSION
20TH STREET SOUTH, 22ND AVE. TO 34TH AVE.	FORECAST CAPACITY, PUBLIC COMMENT	PROVIDE NEW ROUTE, INTERSTATE OVERPASS
34TH AVENUE, 8TH ST. S. TO SD 324	PUBLIC COMMENT	PROVIDE PAVED RURAL ARTERIAL CROSS-SECTION
17TH AVENUE, SELECTED IMPROVEMENTS	PUBLIC COMMENT	INTERSECTION IMPROVEMENTS/SIGNAL AT 12TH ST. S.
SDSU AREA IMPROVEMENTS	PUBLIC COMMENT, OBSERVATION, SAFETY ANALYSIS	PEDESTRIAN IMPROVEMENTS ON MEDARY SELECTED INTERSECTION IMPROVEMENTS
32ND AVENUE, SELECTED IMPROVEMENTS	PUBLIC COMMENT	PROVIDE NEW STREET CONNECTION TO US 14B
RAILROAD CROSSING IMPROVEMENTS	PUBLIC COMMENT	GATE ARMS OR GRADE SEPARATION ON MAIN, WESTERN, 17TH, 22ND, 34TH
WESTERN AVENUE IMPROVEMENTS	PUBLIC COMMENT	PROVIDE PAVED COLLECTOR STREET TO SINAI ROAD
32ND STREET SOUTH IMPROVEMENTS	PUBLIC COMMENT, FORECAST CAPACITY	INTERSECTION IMPROVEMENTS MAIN AVE., 22ND AVE.
US 14B, WESTERN AVE. TO 22ND AVE.	PUBLIC COMMENT, OBSERVATION	PROVIDE LEFT TURN LANES/LIGHTING AT WESTERN, 16TH, STADIUM

**FIGURE 20 - LIST OF TRANSPORTATION NEEDS**

## **Standards Development**

A City's goals and objectives are frequently translated into policies and procedures that guide future growth and development. Those policies and procedures have been included in updates and additions to Brookings' administrative documents, including the Major Streets Plan, Design Standards and Typical Street Cross-sections.

### **Major Streets Plan**

An updated version of the Major Streets Plan is shown in Figure 23. The Major Streets Plan was updated to show extensions of the urban street network into growth areas surrounding the city.

### **Design Standards**

Design Standards were created for the City of Brookings to help guide development of new transportation facilities. The Design Standards strengthen the connection between land uses and transportation facilities, provide access management standards and procedures for assessing the potential transportation impacts of new developments. The Design Standards are reproduced in the Appendix and are accompanied by a number of supporting documents.

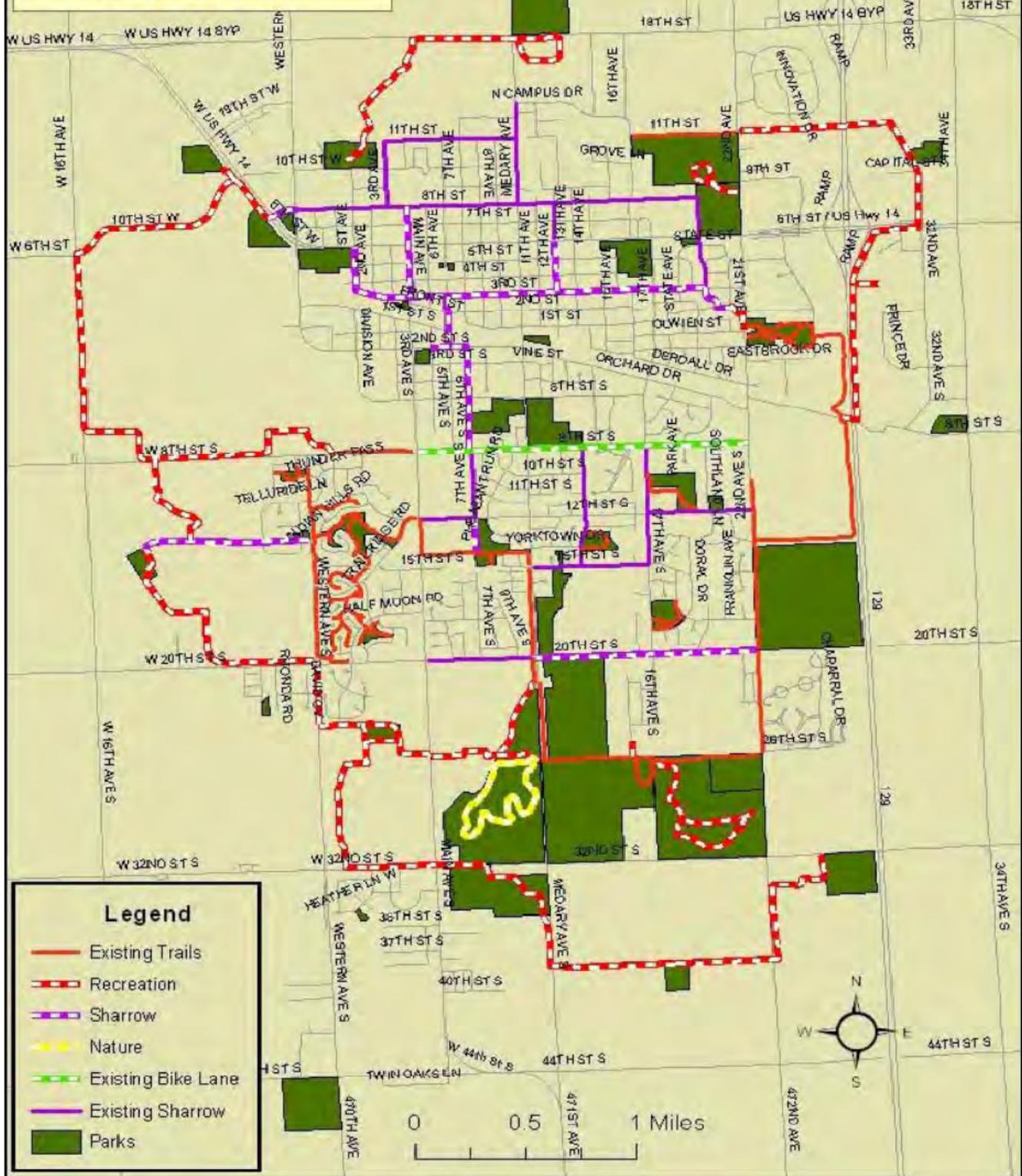
### **Pedestrian and Bicycle Facilities**

Extensive planning of bicycle and multi-user recreational facilities has already taken place in the Brookings area and a plan document has been adopted. Pedestrian and bicycle travel, however, also needs to be included as part of any future expansion of the transportation network. For that reason, pedestrian and bicycle facilities have been included as part of the Typical Street Cross-sections found in the Design Standards and in this report.

### **Typical Street Cross-sections**

The Typical Street Cross-sections are keyed to the various functional classes and will help guide the design of roadways shown in the Major Streets Plan. They are shown in Figures 24 and 25.

# Future Pathways and Trails



**FIGURE 21 – FUTURE PATHWAYS AND TRAILS PLAN**



Blue Route - Campus



Yellow Route - Campus



Eastside Route



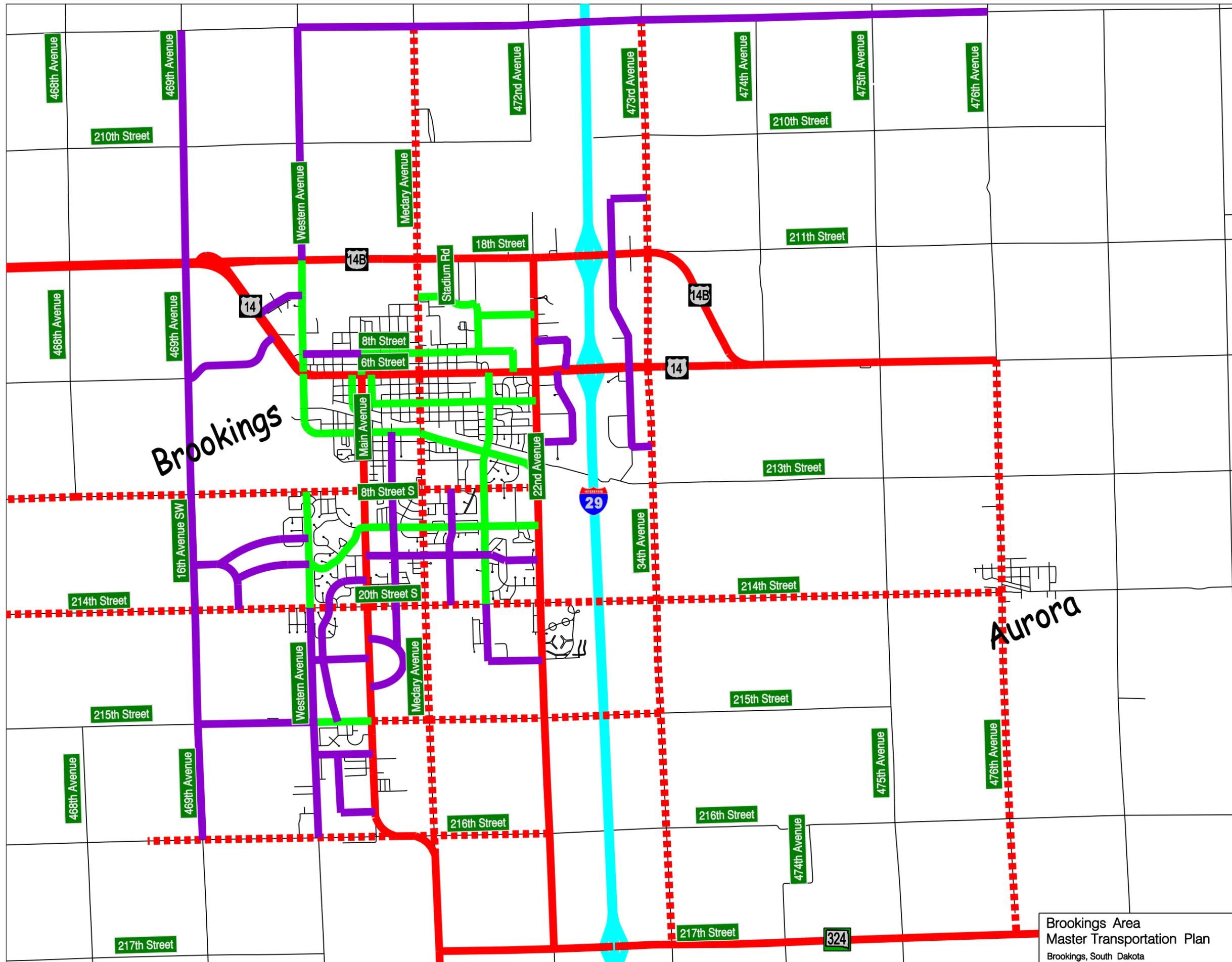
Downtown Route

- LEGEND**
- Red and black lines indicate existing streets
  - Other line types indicate proposed routes



Central Route

**FIGURE 22 – PROPOSED FIXED ROUTES (BROOKINGS AREA TRANSIT)**



**Legend**

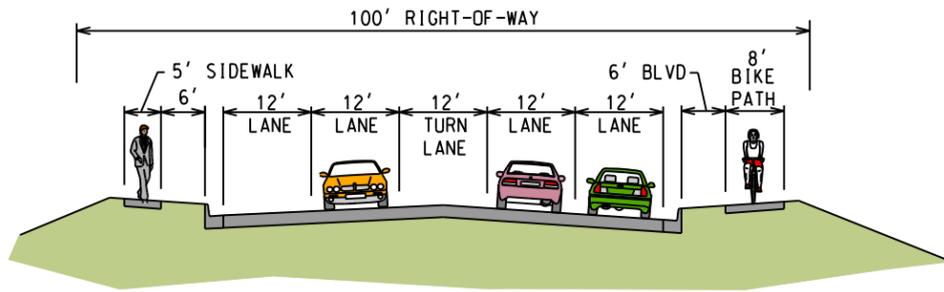
- Interstate
- Major Arterial
- Minor Arterial
- Major Collector
- Minor Collector

Brookings

Aurora

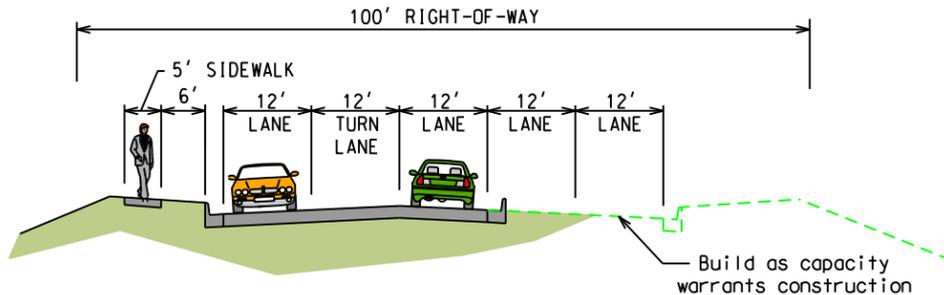


**Urban Arterial**  
Side Path Only



Planning Roadway Capacity > 10,000 ADT

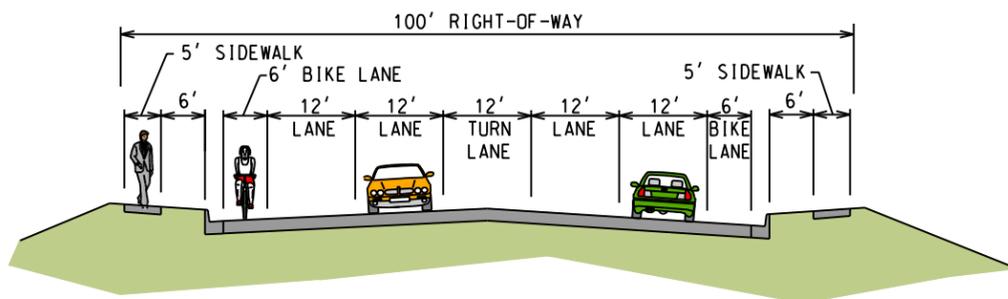
**Urban Arterial**  
Three Lane Half Street



Planning Roadway Capacity < 12,000 ADT

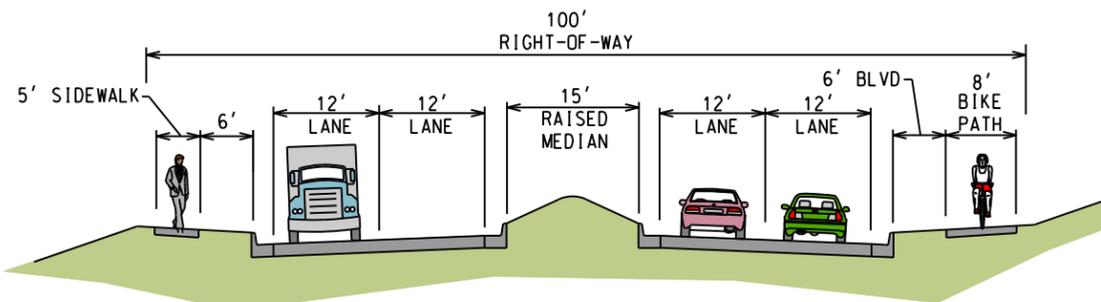
Build as capacity warrants construction

**Urban Arterial**  
On-Street Bike Lanes



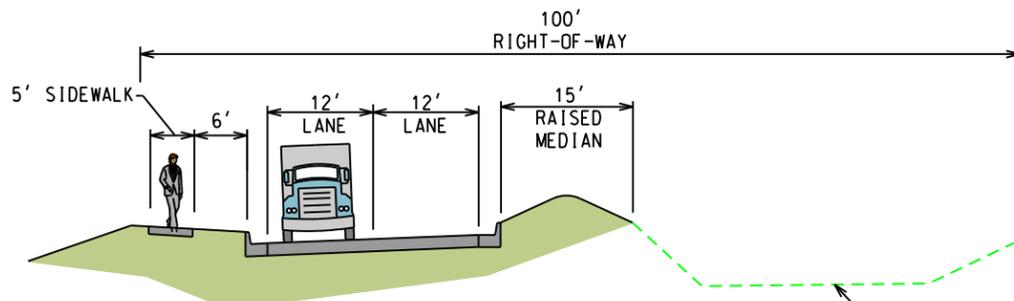
Planning Roadway Capacity > 10,000 ADT

**Urban Arterial**  
Side Path Only



Planning Roadway Capacity > 10,000 ADT

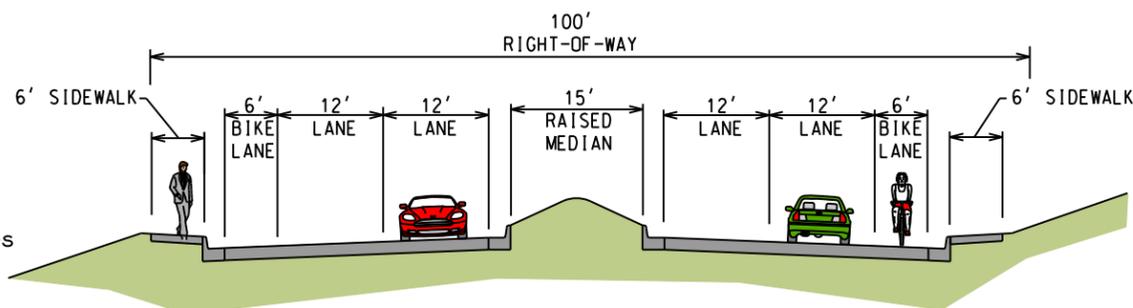
**Urban Arterial**  
Half Street Arterial Option



Planning Roadway Capacity < 10,000 ADT

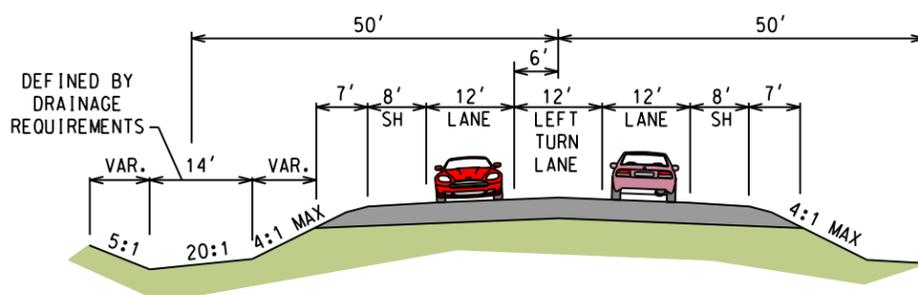
Use an open channel ditch until capacity warrants construction

**Urban Arterial**  
On-Street Bike Lanes



Planning Roadway Capacity > 10,000 ADT

**Rural Arterial**  
Possible Bike Lanes



Planning Roadway Capacity < 8,000 ADT

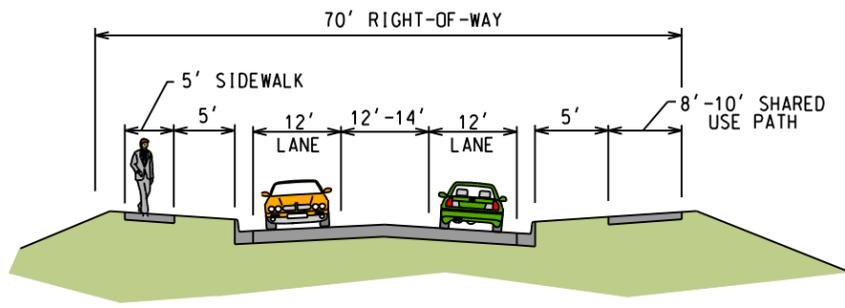


**Typical Sections - Arterial Streets**

Brookings Area Master Transportation Plan

Brookings, SD

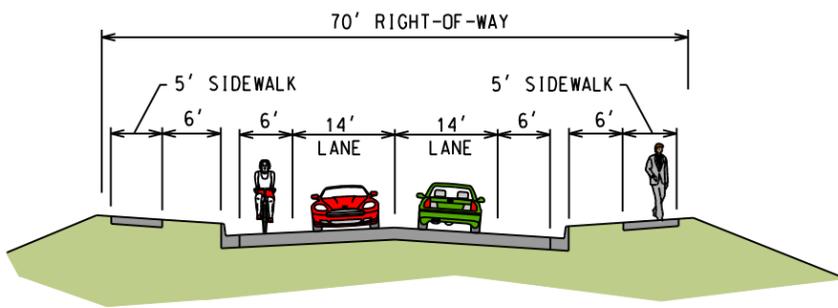
Figure 24



Planning Roadway  
Capacity < 12,000 ADT

**Urban Collector**

No On-Street Parking  
Side Path Only

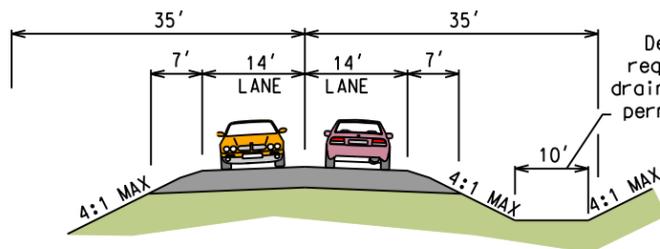


Planning Roadway  
Capacity < 10,000 ADT

If significant left turning  
present, use only with ADT < 3000

**Urban Collector**

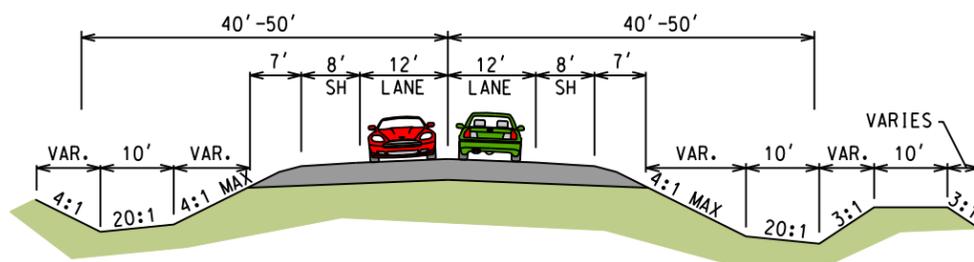
On-Street Parking/Bike Lanes



Defined by drainage  
requirements (May need  
drainage easement outside  
permanent right-of-way)

Planning Roadway  
Capacity < 8,000 ADT

**Rural Collector**



Planning Roadway  
Capacity < 8,000 ADT

**Rural Collector**

Possible Bike Lanes

(For this typical section, the City of Brookings will need to purchase right-of-way or obtain permanent drainage easements outside 70' right-of-way.)



## Public Involvement

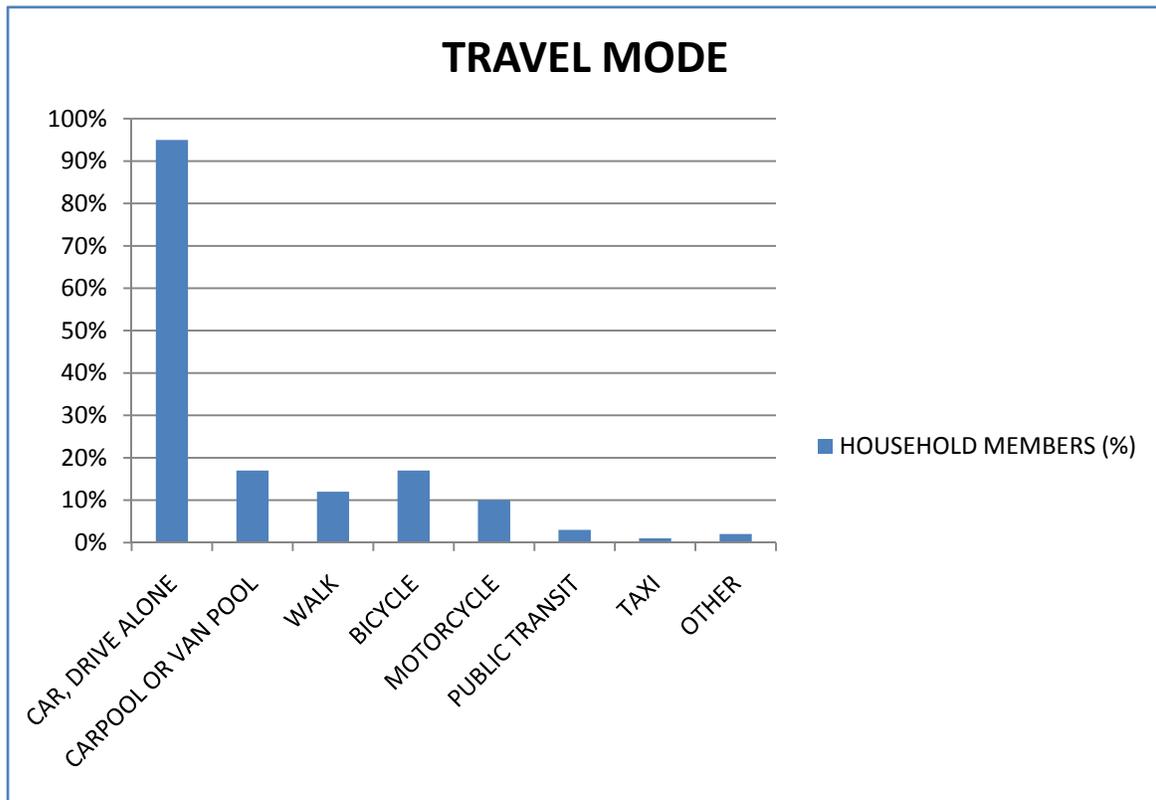
Public participation in the transportation planning process was actively solicited throughout the study process and public comments have helped to drive the development and selection of future transportation projects. Public involvement opportunities included:

- Comments provided as part of the origin/destination survey
- Structured responses to the online survey instruments
- Comments submitted via email and Facebook
- Written and verbal comments provided at two public meetings

Open communication was also maintained with the Study Advisory Team and local elected officials throughout the study.

The online survey instrument provided specific information on public attitudes to a number of aspects of Brookings area transportation. A detailed summary of the survey responses is contained in the Appendix, Part 5.

The survey shows that auto travel is the primary means of transportation in the community, but that other travel modes are also present. Figure 26 shows the distribution of travel modes.



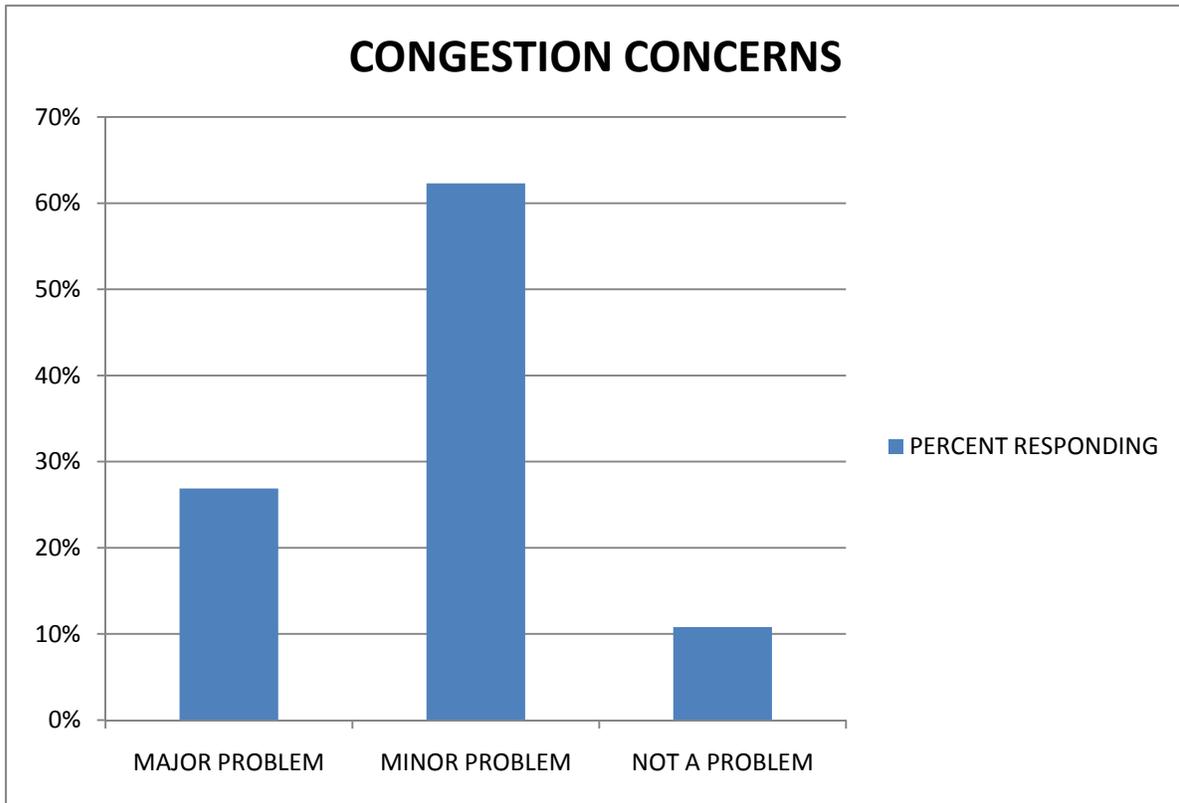
**FIGURE 26 – TRAVEL MODE DISTRIBUTION**

Survey respondents rated overall regional traffic safety favorably, with 66% responding adequate, good or excellent, while 34% responded poor or needs improvement. Traffic safety responses are shown in Figure 27.



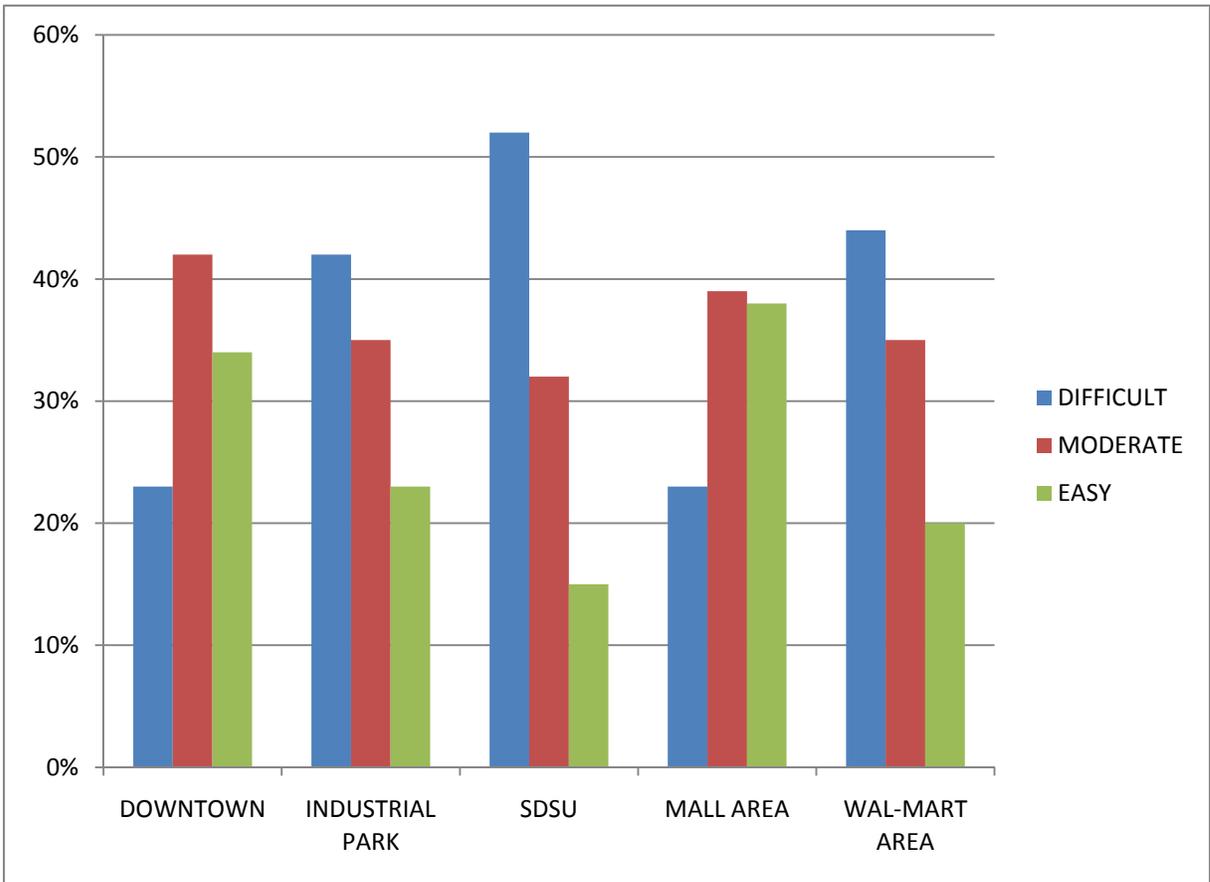
**FIGURE 27 – OVERALL REGIONAL TRAFFIC SAFETY**

Brookings area traffic congestion didn't appear to be a major concern of the survey respondents. Figure 28 shows that 73% rated traffic congestion as a minor or non-existent problem.



**FIGURE 28 – TRAFFIC CONGESTION CONCERNS**

Persons completing the survey feel that the difficulty of travel to some Brookings area destination to increase in the future. Figure 29 displays the response spectrum and shows that travel to and from SDSU is expected to be among the most difficult trips in the future, a concern that could be alleviated by a combination of street improvements, transit, walking and bicycling. Travel to and from the Industrial Park is also expected to be a future concern.



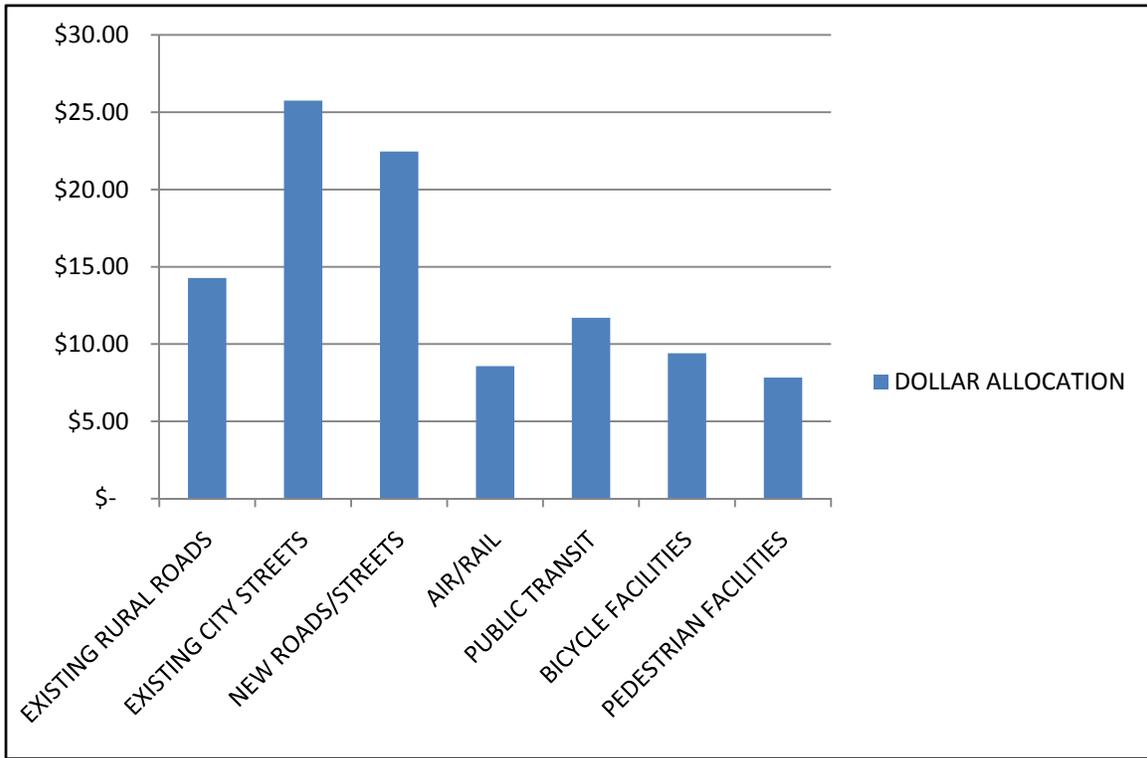
**FIGURE 29 – EXPECTED DIFFICULTY OF TRAVEL IN 20 YEARS**

Satisfaction with various components of the regional travel system was measured, with the responses shown in Figure 30. Ease of travel across the area were rated as the components needing improvement the most.

COMPONENT	NEEDS				
	POOR	IMPROVEMENT	ADEQUATE	GOOD	EXCELLENT
EASE OF TRAVEL TO/FROM BROOKINGS AND OTHER CITIES	2%	13%	31%	40%	14%
ADEQUACY OF SIGNING ON STREETS/HIGHWAY	3%	18%	36%	36%	7%
AVAILABILITY OF SAFE WALKING/PEDESTRIAN FACILITIES	6%	27%	38%	22%	7%
MAINTENANCE OF INTERSTATES/HIGHWAYS	2%	24%	37%	30%	6%
AVAILABILITY OF SAFE BICYCLING FACILITIES	9%	31%	33%	20%	7%
EASE OF TRAVEL FROM NORTH SIDE OF BROOKINGS TO SOUTH	7%	36%	39%	17%	1%
EASE OF TRAVEL FROM EAST SIDE OF BROOKINGS TO WEST	10%	34%	38%	17%	2%
MAINTENANCE OF RURAL ROADS	7%	32%	48%	12%	2%
AVAILABILITY OF PUBLIC TRANSIT SERVICES	9%	30%	41%	17%	3%
MAINTENANCE OF CITY STREETS	9%	25%	43%	20%	2%

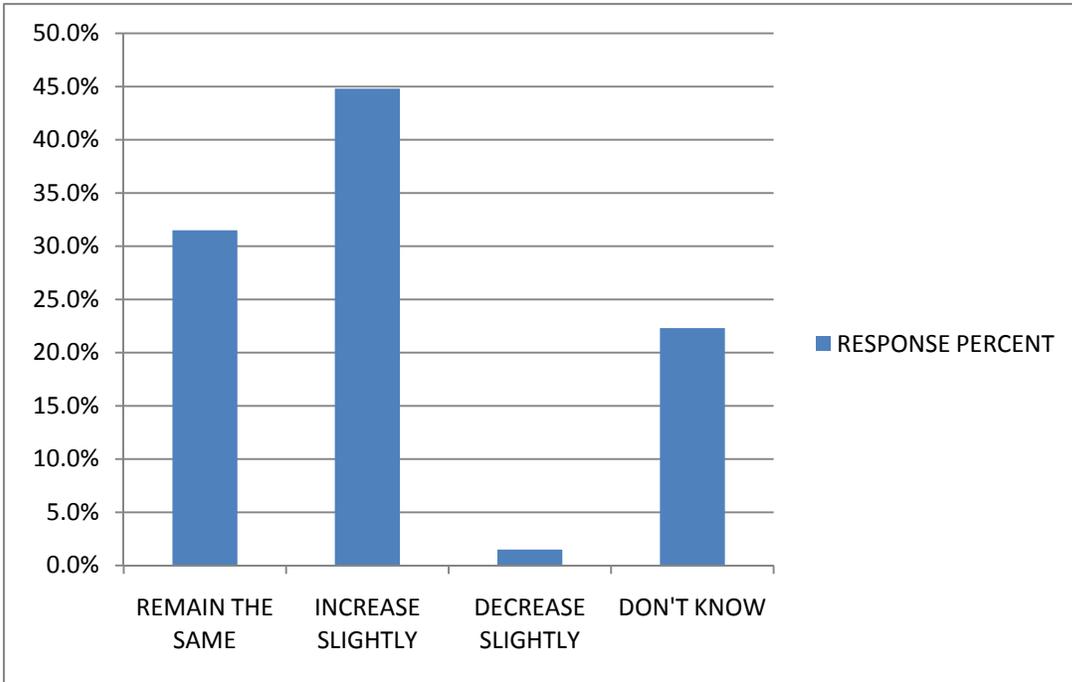
**FIGURE 30 – SATISFACTION WITH COMPONENTS OF THE TRANSPORTATION SYSTEM**

Question 21 of the survey provided the respondents an opportunity to allocate transportation investments into categories, rating the percent of a hypothetical \$100 investment that would be assigned to components of the transportation system. The results of that question are shown in Figure 31.

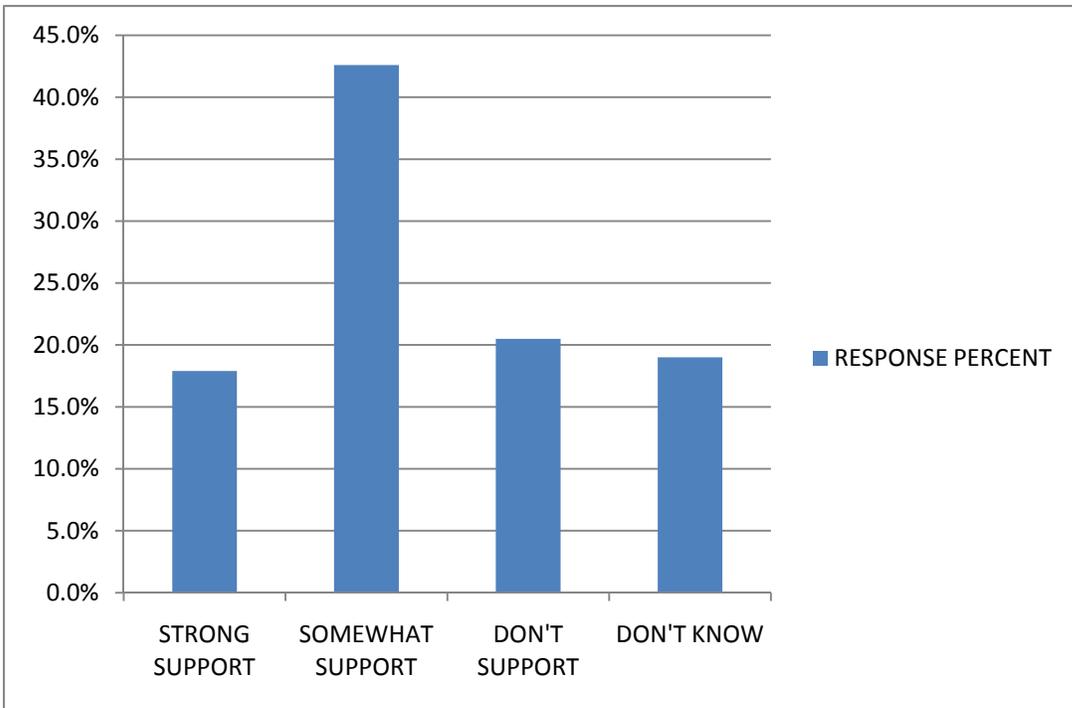


**FIGURE 31 – ALLOCATION OF AN \$100 INVESTMENT TO TRANSPORTATION COMPONENTS**

Survey respondents were carefully favorable toward investing in transportation, with the largest response favoring a slight increase in the proportion of taxes going to transportation and a similar percent of the respondents somewhat supporting a slight increase in local taxes for transportation improvements. Those responses are shown in Figures 32 and 33.



**FIGURE 32 – PORTION OF TAXES GOING TO TRANSPORTATION SHOULD...**



**FIGURE 33 – SUPPORT FOR A SLIGHT INCREASE IN LOCAL TAXES FOR TRANSPORTATION**

## Transportation Program

The final section of this plan documents the preparation of a program of transportation projects for future construction. The List of Transportation Needs was prioritized based on public input and the available funding for transportation improvements was forecast for the coming 25 years. The potential funding was applied to the ranked projects to result in the final transportation program.

### Project List with Cost Estimates

The previously-prepared Project List was modified to show planning-level estimates of construction cost (current day cost). The resulting Project List with Cost Estimates is shown in Figure 34. Each of the projects is discussed in the following paragraphs:

#### Main Avenue/20<sup>th</sup> Street S. – Traffic Signals

Delays and poor peak-hour level of service have prompted public requests for traffic signals at Main Avenue/20<sup>th</sup> Street S. Signal warrant analysis shows that signals will be needed at this location within a matter of years.

#### Main Avenue, 20<sup>th</sup> Street S. to 32<sup>nd</sup> Street S.

Traffic forecasts indicate that a four or five-lane roadway will be needed before 2035. Construction may be phased with a short-term project to reconstruct to a 3-lane urban roadway, followed by later addition of two more lanes.

#### Medary Avenue, 6<sup>th</sup> Street to 15<sup>th</sup> Street S.

In addition to a 2012 resurfacing project, intersection improvements at 3<sup>rd</sup> Street, including a traffic signal, and a side-path bicycle route will be needed. The side-path may also be extended north to the SDSU campus. An additional left-turn phase is also needed on the traffic signal at 6<sup>th</sup> Street.

#### 22<sup>nd</sup> Avenue, 11<sup>th</sup> Street to 8<sup>th</sup> Street S.

Capacity and safety of this roadways section will be enhanced by providing wider lanes and curb radii on commercial driveways.

#### 25<sup>th</sup> Avenue, between 9<sup>th</sup> Street and 10<sup>th</sup> Street

Future development will be facilitated by extending 25<sup>th</sup> Avenue north to connect with 10<sup>th</sup> Street, which will provide access to 22<sup>nd</sup> Avenue.

6<sup>th</sup> Street, 22<sup>nd</sup> Avenue to west of 34<sup>th</sup> Avenue

Reconstruction of this roadway section provides the opportunity to remedy a number of safety and capacity problems while revitalizing the busiest roadway in Brookings.

6<sup>th</sup> Street, west of Western Avenue to Main Avenue

Reconstruction of this roadway section will improve the Western Avenue intersection and update the urban arterial. Construction is currently planned for 2013.

6<sup>th</sup> Street, Main Avenue to Medary Avenue

Reconstruction of this roadway section will complete the reconstruction of 6<sup>th</sup> Street through Brookings.

8<sup>th</sup> Street South, Main Avenue to 22<sup>nd</sup> Avenue

Traffic forecasts indicate that expansion of this roadway to 5 lanes will be needed between 5 and 15 years in the future. Safety improvements are also needed at the 8<sup>th</sup> Street South, Main Avenue intersection.

20<sup>th</sup> Street South, Main Avenue to Cumberland Court

Construction of a 3-lane urban roadway is needed to serve the growing residential areas west of Main Avenue.

20<sup>th</sup> Street South, Main Avenue to 22<sup>nd</sup> Avenue

The potential for a new Interstate crossing or interchange could create the need to widen this roadway in the time period after 2035. Therefore, additional right-of-way should be protected before the adjacent property is fully developed.

20<sup>th</sup> Street South, 22<sup>nd</sup> Avenue to 34<sup>th</sup> Avenue

Analysis shows that an additional I-29 overpass or interchange will provide needed congestion relief on 6<sup>th</sup> Street and allow additional access to the industrial park. Of the alternatives considered, a new 20<sup>th</sup> Street S. interchange provides the greatest congestion relief. Any additional Interstate access is subject to Federal requirements for study and review.

34<sup>th</sup> Avenue, 8<sup>th</sup> Street S. to 20<sup>th</sup> Street S.

34<sup>th</sup> Avenue was recently reconstructed to provide an urban arterial roadway between 6<sup>th</sup> Street and 8<sup>th</sup> Street S. Providing a paved rural arterial roadway will connect to the potential new overpass/interchange at I-29 and provide alternative paved service to the industrial park. This project could include a grade-separate railroad crossing.

### 34<sup>th</sup> Avenue, 20<sup>th</sup> Street S. to SD 324

Improving the existing gravel roadway to a paved rural arterial roadway as far as 32<sup>nd</sup> Street S. will complete a vital arterial roadway between US 14 and SD 324. Selected improvements and resurfacing may also be needed between 32<sup>nd</sup> Street S. and SD 324.

### 17<sup>th</sup> Avenue, selected improvements

Providing intersection widening and a traffic signal at 12<sup>th</sup> Street S. will help alleviate current and future congestion problems.

### SDSU Area improvements

Pedestrian improvements on Medary Avenue were identified as part of a previous Technical Memorandum (included in Appendix, Part 2). These and selected intersection improvements will allow the street system to match campus growth.

### 32<sup>nd</sup> Avenue, 10<sup>th</sup> Street to US 14B

Completion of this section of 32<sup>nd</sup> Avenue will provide a collector roadway extending between US 14B and Prince Drive.

### 15<sup>th</sup> Street S., 7<sup>th</sup> Avenue

The City of Brookings has planned for these development-driven projects to connect gaps between existing portions of these streets.

### Transit System Additional Services

Brookings Area Transit has planned for expansion of services to include fixed routes between SDSU and other in-town destinations. While many of the costs associated with expanded service may be covered by Federal Transit Administration funding, local support will also be needed. It is appropriate to consider the transit costs along with the other transportation projects.

### Bike/Pedestrian Planned Improvements

The 2010 Park Master Plan identified a city-wide system of sharrows, trails and other improvements which will also be part of the transportation system. This project will facilitate consideration and implementation of the improvements.

### Railroad Crossing Improvements – Grade Separated Crossings

A planned expansion of service on the Dakota, Minnesota & Eastern Railroad spurred talk about adding grade-separated crossings on arterial streets in Brookings to deal with

expected delays and emergency response problems. Since the purchase of the DM&E by the Canadian Pacific Railroad, the likelihood of a large increase in rail traffic is uncertain. Grade separations, however, still have the capability to address potential rail crossing delays and safety problems. Building grade separations comes with a large potential cost for structures and impacts on existing properties. A grade-separation project has been included in the program to allow consideration along with other railroad crossing treatments.

Further study of the benefits and costs of building grade-separated crossings is recommended. Sample guidelines for study of grade-separated crossings is included in Appendix, Part 4.

#### Railroad Crossing Improvements – Gate Arms and other Improvements

This project would provide gate arms and associated improvements at the existing railroad crossings on Western Avenue, Medary Avenue, 17<sup>th</sup> Avenue, and possibly 34<sup>th</sup> Avenue.

#### Western Avenue Improvements – Trail Ridge Road to south of 20<sup>th</sup> Street South

Western Avenue would be improved to a paved collector street to serve the developing residential neighborhoods in southwest Brookings.

#### Western Avenue Improvements – south of 20<sup>th</sup> Street South to Sinai Road

This long-term improvement would extend the paved collector street south to serve planned development.

#### 32<sup>nd</sup> Street South Improvements

Traffic forecasts indicate that intersection improvements will be needed at the Main Avenue and 22<sup>nd</sup> Avenue intersections before 2035.

#### US 14B – Intersection improvements at 16<sup>th</sup> Avenue, Stadium Drive

Analysis indicates that turn lanes and intersection lighting will be needed to address safety needs.

#### US 14B – Intersection improvements at Western Avenue

Analysis indicates that turn lanes and intersection lighting will be needed to address safety needs.

## **Additional Projects**

One additional project was discussed as part of this study whose scope remains unclear. Currently a traffic signal serves the 6<sup>th</sup> Street/12<sup>th</sup> Avenue intersection and has provided service to the SDSU campus for many years. Campus roadways and parking are being updated, however, with the result that 13<sup>th</sup> Avenue having higher importance. But, 13<sup>th</sup> Avenue is narrow and has on-street parking, curb-side sidewalk and an offset intersection at 6<sup>th</sup> Street. The campus revisions and the potential fixed-route transit service both have the potential to reduce the vehicular traffic on 12<sup>th</sup> and 13<sup>th</sup>, which could produce a reduced need for a traffic signal at 12<sup>th</sup> or 13<sup>th</sup>. The question of whether to move the traffic signal to 13<sup>th</sup> Avenue will continue to be considered as campus revisions occur.

NEED	SCOPE	TIMING	ESTIMATED COST
MAIN AVENUE/20TH ST. S. INTERSECTION	TRAFFIC SIGNALS	SHORT-TERM	\$ 150,000
MAIN AVENUE, 20TH ST. S. TO 32ND ST. S. (2013 PROJECT)	RECONSTRUCT WITH 3-LANE SECTION	SHORT-TERM	\$ 4,154,245
MAIN AVENUE, 20TH ST. S. TO 32ND ST. S.	WIDEN TO 4-LANE OR 5-LANE SECTION	LONG-TERM	\$ 1,727,253
MEDARY AVENUE, 6TH ST. TO 15TH ST. S. (2012)	RESURFACING	SHORT-TERM	\$ 1,000,000
MEDARY AVENUE, 6TH ST. TO 8TH ST. S.	INTERSECTION IMPROVEMENTS AT 6TH ST., 3RD ST. PROVIDE SIDEPATH BICYCLE ROUTE	MEDIUM-TERM	\$ 1,300,708
22ND AVENUE, 11TH ST. TO 8TH ST. S.	INTERSECTION IMPROVEMENTS AT 6TH ST. - INCLUDED IN 6TH ST. PROJECT RECONSTRUCT TO PROVIDE 11' OR 12' LANES PROVIDE RADIUS COMMERCIAL DRIVEWAYS	MEDIUM-TERM	\$ 6,962,320
25TH AVENUE, EXTENSION NORTH TO 10TH ST. (DEVELOPER DRIVEN PROJECT)	EXTEND EXISTING SECTION APPROXIMATELY 1250' NORTH	MEDIUM-TERM	\$ 965,000
6TH STREET, 22ND AVE. TO END DIVIDED SECTION (CURRENT 2014 PROJECT)	INTERSECTION IMPROVEMENTS AT 25TH AVE., 22ND AVE. RECONSTRUCTION	SHORT-TERM	\$ 3,976,000
6TH STREET, WEST OF WESTERN AVE. TO MAIN (2013 PROJECT)	RECONSTRUCTION	SHORT-TERM	\$ 4,730,000
6TH STREET, MAIN TO MEDARY	RECONSTRUCTION	MEDIUM-TERM	\$ 3,547,500
8TH STREET SOUTH, MAIN AVE. TO 22ND AVE.	WIDEN TO 5-LANE SECTION	MEDIUM-TERM	\$ 6,956,520
20TH STREET SOUTH, MAIN AVE. TO CUMBERLAND COURT	INTERSECTION IMPROVEMENTS AT MAIN PROVIDE 3-LANE COLLECTOR APPROXIMATELY 1800' WEST OF MAIN	SHORT-TERM	\$ 1,390,000
20TH STREET SOUTH, MAIN AVE. TO 22ND AVE.	PROTECT RIGHT-OF-WAY	LONG-TERM	\$ 1,470,000
20TH STREET SOUTH, 22ND AVE. TO 34TH AVE.	PROVIDE NEW ROUTE, INTERSTATE OVERPASS OR INTERCHANGE	MEDIUM-TERM	\$ 7.2 M TO \$15M
34TH AVENUE, 8TH ST. S. TO 20TH ST. S.	PROVIDE PAVED RURAL ARTERIAL CROSS-SECTION, IMPROVE RR CROSSING	MEDIUM-TERM	\$ 2,347,870
34TH AVENUE, 20TH ST. S. TO SD 324	PROVIDE PAVED RURAL ARTERIAL CROSS-SECTION	LONG-TERM	\$ 6,143,609
17TH AVENUE, SELECTED IMPROVEMENTS	INTERSECTION IMPROVEMENTS/SIGNAL AT 12TH ST. S.	SHORT-TERM	\$ 431,404
SDSU AREA IMPROVEMENTS	PEDESTRIAN IMPROVEMENTS ON MEDARY SELECTED INTERSECTION IMPROVEMENTS	SHORT-TERM	\$ 371,200
32ND AVENUE, SELECTED IMPROVEMENTS (2012 PROJECT)	PROVIDE NEW STREET CONNECTION TO US 14B	SHORT-TERM	\$ 1,313,920
15TH STREET SOUTH, 7TH AVENUE (PETITION INITIATED PROJECTS)	PROVIDE COLLECTOR STREET CONNECTIONS SOUTH OF 12TH ST. S.	MEDIUM-TERM	\$ 1,909,000
TRANSIT SYSTEM ADDITIONAL SERVICES	ESTABLISH FIXED ROUTE SYSTEM, ETC. (SEE NOTE)	SHORT-TERM	\$ 1,188,175
BIKE/PED PLANNED IMPROVEMENTS	SHARROWS, TRAILS, BRIDGE	LONG-TERM	\$ 6,062,798
RAILROAD CROSSING IMPROVEMENTS	GRADE SEPARATED CROSSING AT 22ND AVE.	LONG-TERM	\$ 13,897,728
RAILROAD CROSSING IMPROVEMENTS	PROTECT CROSSINGS WITH GATE ARMS, ETC. (WESTERN, MEDARY, 17TH, 34TH)	SHORT-TERM	\$ 1,200,000
WESTERN AVENUE IMPROVEMENTS	PROVIDE PAVED COLLECTOR STREET TO SOUTH OF 20TH ST. S.	MEDIUM-TERM	\$ 3,715,860
WESTERN AVENUE IMPROVEMENTS	PROVIDE PAVED COLLECTOR STREET TO SINAI ROAD	LONG-TERM	\$ 8,689,134
32ND STREET SOUTH IMPROVEMENTS	INTERSECTION IMPROVEMENTS MAIN AVE., 22ND AVE.	LONG-TERM	\$ 431,404
US 14B, WESTERN AVE. TO 22ND AVE.	PROVIDE LEFT TURN LANES AND LIGHTING AT 16TH AVE., STADIUM DR.	SHORT-TERM	\$ 781,608
US 14B, WESTERN AVE. TO 22ND AVE.	PROVIDE LEFT TURN LANES AND LIGHTING AT WESTERN AVE.	SHORT-TERM	\$ 390,804

**NOTES:**

- 1) Transit system additional services includes a mixture of capital costs and on-going expenses and represents 5 years of additional local support. Other funding will also be required from Federal and State sources. See the BATA Business Plan for more details.
- 2) Cost estimates calculated using present day costs and may include all or portions of cost reports in State and Local programs and Appendix Part 7

**FIGURE 34 - PROJECT LIST WITH COST ESTIMATES**

## Funding Potential

Financial planning is an essential part of civic improvements such as those contained in this transportation plan. The realities of available financial resources will determine whether projects can be built and will constrain the implementation of the project program. Therefore, it is useful to estimate the amount of funding that may be available during the life of this plan.

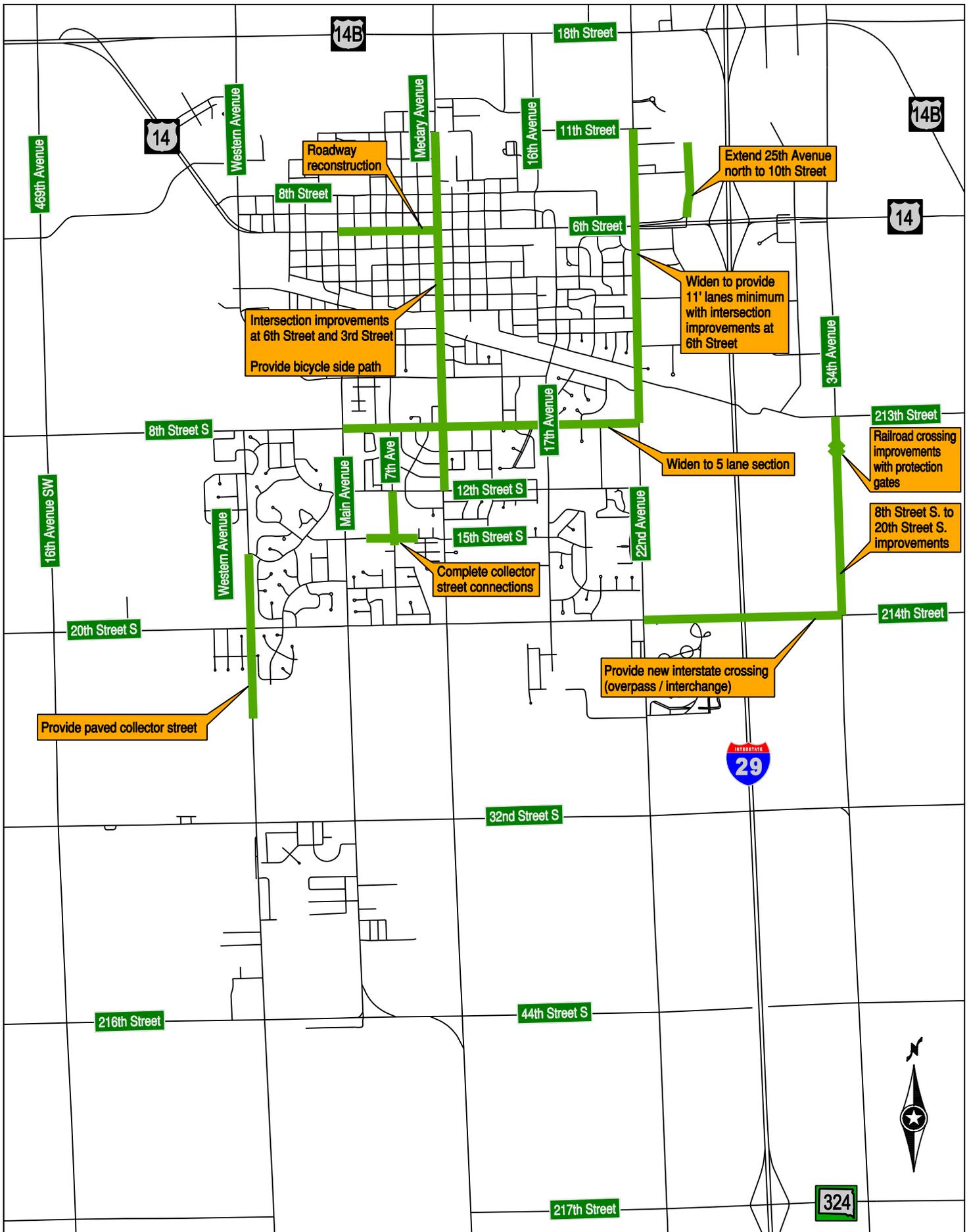
Transportation improvements in South Dakota may be funded by Federal, State or Local sources, with most projects receiving some mixture of funding sources. The South Dakota Department of Transportation administers Federal and State funds through a number of programs, including those specifically for the Interstate system, for urban roadways, for bridges, and for road safety. In addition, SDDOT has special programs for industrial park roads, transportation system enhancements and safe routes to school, among others. Counties and cities receive an annual apportionment of Federal funds and each local government has state-authorized revenue sources that are used for transportation.

Historically, SDDOT has spent an average of about \$1.7 million per year in the Brookings area through all programs. The City of Brookings allocates approximately \$1.5 million per year to transportation from sales and use tax. The City may also assess some costs to adjacent property owners. Based on these findings, we estimate that approximately **\$3.2 million** per year will be available to fund projects in this plan. Over the 25-year life of this plan the current sources could produce a total of **\$80 million**, expressed in current-year dollars.

With the economy recovering from a severe recession and governments on all levels dealing with recession-impacted budgets, the reliability of any revenue projections is subject to question. The funding potential provided here has been prepared with the best available information, but should be reviewed as conditions change.

While the estimate above provides financial context, it does not tell the whole story of transportation funding. Each year, the SDDOT and the local government entities program projects based on available funds. Those decisions are made based on whether a project qualifies for funding under the requirements of each funding source. Programming decisions are also based on the comparative advantages and disadvantages of each project. This plan provides information to make those programming decisions possible.





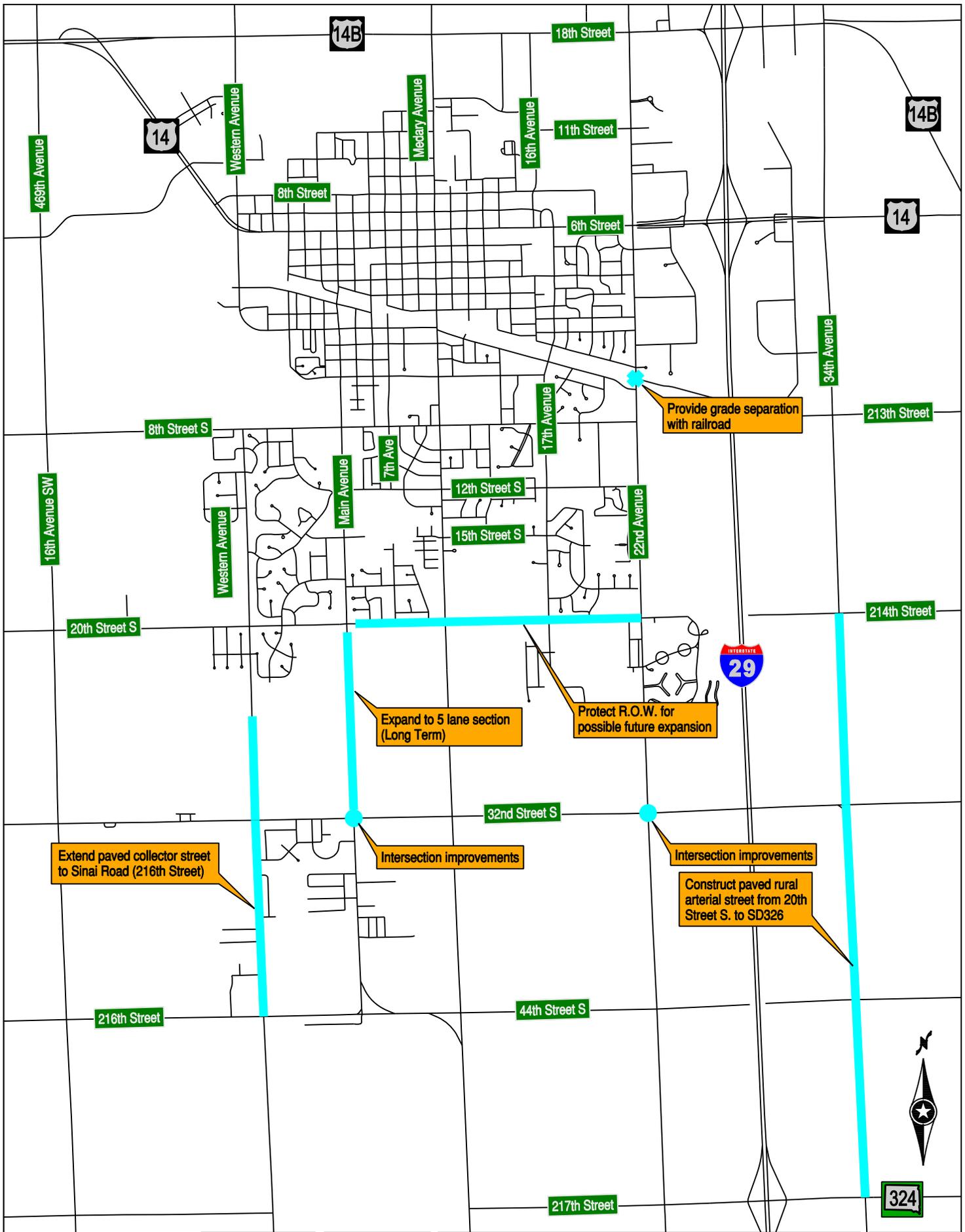
Potential Projects - Medium Term

Brookings Area Master Transportation Plan

Brookings, SD

Figure

36



Potential Projects - Long Term

Brookings Area Master Transportation Plan

Brookings, SD

Figure

37

## **Concluding Remarks**

The projects shown in Figures 34 – 37 are the result of technical analysis and input provided by the public, elected officials and the project Study Team. They are available to be chosen for inclusion in the local and statewide construction programs. The selection of projects is based on the latest understanding of transportation needs, public demand and available funding.

This plan is intended to serve as a resource for local and state planning and programming officials. It is limited, however, by a planning horizon of approximately 25 years and should be periodically updated to maintain the best utility.

## **APPENDIX (On CD)**

- PART 1 – Traffic Count Summary Sheets**
- PART 2 – Medary Avenue Technical Memorandum**
- PART 3 – Special Events Technical Memoranda**
- PART 4 – Design Standards Documents**
- PART 5 – Online Survey Responses**
- PART 6 – Other Technical Memos**
- PART 7 – Cost Estimates**
- PART 8 – Synchro files**

# Appendix Part 1—Traffic Count Summary Sheets

*June, 2011*



**SOUTH DAKOTA  
DEPARTMENT OF  
TRANSPORTATION**

**CITY OF BROOKINGS**

**CITY OF AURORA**

**BROOKINGS COUNTY**

**HDR**



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Apprch %	39.1	18.8	40.9	1.3		1.8	93.6	4.5	0.1		60.5	15.6	21.6	2.2		2.3	96.1	1.5	0.1		
Total %	1.4	0.7	1.4	0.0	3.5	0.8	43.7	2.1	0.1	46.7	2.1	0.6	0.8	0.1	3.5	1.1	44.4	0.7	0.1	46.3	

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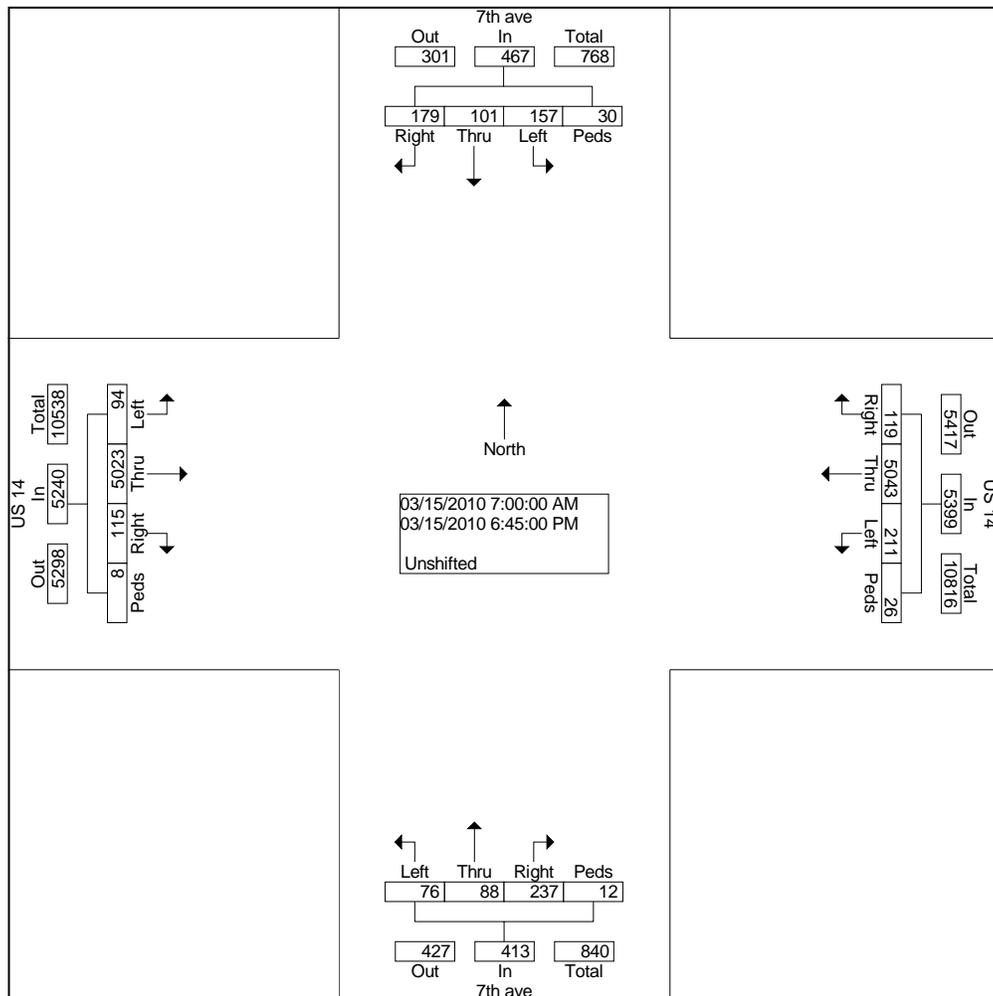
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10:15 AM	4	4	2	0	10	1	63	4	0	68	4	1	0	0	5	1	75	1	0	77	160
10:30 AM	4	0	2	1	7	1	67	3	0	71	4	1	0	0	5	0	82	0	0	82	165
10:45 AM	4	2	3	0	9	0	107	8	1	116	3	1	2	0	6	2	91	2	0	95	226
Total	14	7	8	3	32	5	318	16	2	341	12	3	4	1	20	6	334	3	0	343	736
11:00 AM	3	3	0	0	6	1	70	3	0	74	5	3	0	0	8	1	85	0	0	86	174
11:15 AM	4	1	3	2	10	1	102	2	2	107	5	2	2	0	9	2	100	4	0	106	232
11:30 AM	3	2	1	0	6	1	109	3	0	113	6	1	1	0	8	1	106	0	0	107	234
11:45 AM	0	4	2	1	7	5	139	1	0	145	5	1	1	1	8	1	130	3	0	134	294
Total	10	10	6	3	29	8	420	9	2	439	21	7	4	1	33	5	421	7	0	433	934
12:00 PM	3	3	1	0	7	4	142	7	1	154	8	3	2	0	13	15	123	4	1	143	317
12:15 PM	3	1	3	2	9	3	132	7	0	142	2	2	4	0	8	3	111	2	0	116	275
12:30 PM	3	3	4	0	10	1	114	8	0	123	7	3	1	0	11	3	119	1	0	123	267
12:45 PM	4	1	4	2	11	1	147	7	0	155	9	6	2	0	17	3	133	1	0	137	320
Total	13	8	12	4	37	9	535	29	1	574	26	14	9	0	49	24	486	8	1	519	1179
01:00 PM	3	0	5	0	8	3	119	8	0	130	7	0	2	0	9	2	164	3	0	169	316
01:15 PM	5	1	4	1	11	2	105	3	1	111	7	3	0	2	12	3	139	2	1	145	279
01:30 PM	4	1	5	0	10	3	122	3	1	129	4	3	1	0	8	0	134	2	0	136	283
01:45 PM	3	1	2	2	8	1	117	9	0	127	10	1	1	0	12	5	107	1	0	113	260
Total	15	3	16	3	37	9	463	23	2	497	28	7	4	2	41	10	544	8	1	563	1138
02:00 PM	7	1	3	0	11	2	140	4	1	147	3	0	2	1	6	6	108	2	0	116	280
02:15 PM	8	1	6	0	15	4	102	2	0	108	5	2	0	0	7	0	113	0	0	113	243
02:30 PM	12	5	5	2	24	1	101	6	1	109	4	1	0	0	5	2	100	1	0	103	241
02:45 PM	2	3	3	2	10	5	130	3	1	139	5	2	2	0	9	2	130	2	1	135	293
Total	29	10	17	4	60	12	473	15	3	503	17	5	4	1	27	10	451	5	1	467	1057
03:00 PM	8	2	3	0	13	2	141	5	2	150	5	1	2	0	8	1	112	2	0	115	286
03:15 PM	4	2	5	1	12	3	88	5	0	96	1	2	3	0	6	7	117	1	0	125	239
03:30 PM	2	3	3	0	8	4	110	7	0	121	6	1	1	1	9	4	107	0	0	111	249
03:45 PM	1	3	5	0	9	3	135	6	1	145	6	2	2	0	10	4	121	8	1	134	298
Total	15	10	16	1	42	12	474	23	3	512	18	6	8	1	33	16	457	11	1	485	1072
04:00 PM	8	2	2	0	12	2	173	6	1	182	5	0	2	0	7	6	147	0	0	153	354
04:15 PM	4	1	1	1	7	4	154	5	1	164	3	3	8	0	14	1	138	6	1	146	331
04:30 PM	7	3	6	0	16	1	148	1	0	150	2	0	1	0	3	4	148	2	0	154	323
04:45 PM	7	2	3	0	12	4	179	5	0	188	5	1	3	0	9	0	151	2	0	153	362
Total	26	8	12	1	47	11	654	17	2	684	15	4	14	0	33	11	584	10	1	606	1370

Default Titles  
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File Name : BROOKI-3  
 Site Code : 00000000  
 Start Date : 03/15/2010  
 Page No : 2

Groups Printed- Unshifted

Start Time	7th ave From North					US 14 From East					7th ave From South					US 14 From West					Int. Total				
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total					
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	
05:00 PM	5	7	5	0	17	9	155	12	2	178	13	2	3	0	18	0	150	3	0	153					366
05:15 PM	6	4	4	2	16	2	135	6	0	143	3	3	0	0	6	1	113	2	0	116					281
05:30 PM	2	2	0	0	4	6	132	4	0	142	5	1	2	0	8	2	126	4	1	133					287
05:45 PM	6	1	5	1	13	1	123	7	1	132	0	3	3	0	6	1	118	2	0	121					272
Total	19	14	14	3	50	18	545	29	3	595	21	9	8	0	38	4	507	11	1	523					1206
06:00 PM	2	3	6	1	12	4	110	2	0	116	3	1	1	0	5	0	107	2	0	109					242
06:15 PM	6	2	5	1	14	5	87	4	2	98	2	1	1	0	4	0	83	3	0	86					202
06:30 PM	2	1	4	1	8	1	91	4	0	96	5	2	1	0	8	0	117	3	0	120					232
06:45 PM	4	4	2	0	10	2	100	5	1	108	2	0	0	0	2	2	92	5	1	100					220
Total	14	10	17	3	44	12	388	15	3	418	12	4	3	0	19	2	399	13	1	415					896
Grand Total	179	101	157	30	467	119	504	211	26	5399	237	88	76	12	413	115	502	94	8	5240					11519
Apprch %	38.3	21.6	33.6	6.4		2.2	93.4	3.9	0.5		57.4	21.3	18.4	2.9		2.2	95.9	1.8	0.2						
Total %	1.6	0.9	1.4	0.3	4.1	1.0	43.8	1.8	0.2	46.9	2.1	0.8	0.7	0.1	3.6	1.0	43.6	0.8	0.1	45.5					



**Default Titles**  
**Change These in The Preferences Window**  
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**Then Click the Titles Tab**

File Name : BR8CDA~1  
 Site Code : 00000000  
 Start Date : 01/20/2010  
 Page No : 1

Groups Printed- 1 - Unshifted

Start Time	12Th Ave From North					US 14/6th Street From East					12th Ave From South					US14/6th Street From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	0	0	0	0	0	44	1	0	45	5	0	0	0	5	2	47	2	0	51	101
07:15 AM	0	0	0	0	0	2	46	0	0	48	6	4	0	0	10	0	81	2	1	84	142
07:30 AM	1	0	0	0	1	3	65	0	2	70	7	5	4	0	16	3	110	7	1	121	208
07:45 AM	3	2	3	0	8	7	109	3	1	120	34	12	3	0	49	1	174	5	1	181	358
Total	4	2	3	0	9	12	264	4	3	283	52	21	7	0	80	6	412	16	3	437	809
08:00 AM	3	2	0	0	5	2	69	3	0	74	16	7	7	1	31	3	119	1	2	125	235
08:15 AM	1	1	0	0	2	4	73	1	2	80	5	7	6	1	19	1	86	0	1	88	189
08:30 AM	0	1	1	0	2	7	73	1	5	86	15	4	0	0	19	3	80	5	5	93	200
08:45 AM	5	0	2	1	8	5	90	0	6	101	6	5	2	0	13	2	119	9	9	139	261
Total	9	4	3	1	17	18	305	5	13	341	42	23	15	2	82	9	404	15	17	445	885
09:00 AM	2	0	1	0	3	0	72	2	0	74	3	3	0	0	6	1	79	1	1	82	165
09:15 AM	2	0	2	0	4	4	62	0	0	66	4	1	0	0	5	1	76	2	0	79	154
09:30 AM	1	0	1	0	2	4	69	1	0	74	2	2	4	0	8	0	79	3	1	83	167
09:45 AM	8	4	6	2	20	4	101	2	7	114	10	2	5	0	17	0	99	2	1	102	253
Total	13	4	10	2	29	12	304	5	7	328	19	8	9	0	36	2	333	8	3	346	739
10:00 AM	1	1	3	0	5	1	114	4	1	120	3	0	0	0	3	1	108	0	3	112	240
10:15 AM	3	0	2	0	5	3	94	0	0	97	3	0	0	3	6	0	106	0	0	106	214
10:30 AM	4	2	1	1	8	3	83	2	1	89	4	2	2	0	8	1	91	6	2	100	205
10:45 AM	2	1	4	0	7	2	86	2	7	97	1	1	2	0	4	3	102	7	7	119	227
Total	10	4	10	1	25	9	377	8	9	403	11	3	4	3	21	5	407	13	12	437	886
11:00 AM	4	0	4	0	8	1	113	8	1	123	1	0	2	1	4	0	117	2	2	121	256
11:15 AM	3	2	0	0	5	2	109	2	1	114	5	0	1	0	6	0	103	0	0	103	228
11:30 AM	2	0	4	0	6	2	122	2	2	128	1	4	1	0	6	1	144	5	0	150	290
11:45 AM	1	0	6	1	8	3	168	6	4	181	5	1	0	1	7	0	131	4	6	141	337
Total	10	2	14	1	27	8	512	18	8	546	12	5	4	2	23	1	495	11	8	515	1111
12:00 PM	6	9	2	0	17	1	181	6	0	188	1	1	1	0	3	6	170	0	1	177	385
12:15 PM	3	4	2	0	9	3	163	9	1	176	13	1	0	0	14	1	161	5	3	170	369
12:30 PM	3	3	7	0	13	1	156	2	0	159	5	3	0	0	8	0	162	4	0	166	346
12:45 PM	3	5	6	0	14	4	165	3	0	172	15	7	0	0	22	2	187	7	6	202	410
Total	15	21	17	0	53	9	665	20	1	695	34	12	1	0	47	9	680	16	10	715	1510
01:00 PM	1	1	3	0	5	6	172	5	0	183	4	4	2	0	10	2	188	1	4	195	393
01:15 PM	0	1	2	0	3	4	165	3	0	172	5	3	1	0	9	1	158	1	2	162	346
01:30 PM	3	1	3	1	8	3	160	4	0	167	5	2	3	1	11	2	164	1	6	173	359
01:45 PM	8	3	11	0	22	6	137	3	0	146	7	4	0	1	12	0	136	6	5	147	327
Total	12	6	19	1	38	19	634	15	0	668	21	13	6	2	42	5	646	9	17	677	1425
02:00 PM	1	0	6	0	7	3	143	4	0	150	3	1	1	0	5	1	136	4	2	143	305
02:15 PM	7	0	1	2	10	2	151	5	3	161	7	2	0	1	10	4	139	0	5	148	329
02:30 PM	4	1	2	0	7	1	150	5	2	158	7	1	2	1	11	1	129	5	3	138	314
02:45 PM	10	3	6	0	19	3	146	6	2	157	11	3	0	0	14	1	190	1	0	192	382
Total	22	4	15	2	43	9	590	20	7	626	28	7	3	2	40	7	594	10	10	621	1330
03:00 PM	2	0	4	0	6	1	156	3	0	160	3	0	2	0	5	5	187	1	1	194	365
03:15 PM	3	0	1	0	4	3	163	4	5	175	3	1	4	0	8	4	166	3	1	174	361
03:30 PM	0	1	1	0	2	6	166	4	1	177	3	5	6	0	14	1	152	2	0	155	348
03:45 PM	5	2	6	0	13	3	175	2	1	181	3	2	4	0	9	3	213	3	1	220	423
Total	10	3	12	0	25	13	660	13	7	693	12	8	16	0	36	13	718	9	3	743	1497
04:00 PM	3	3	2	0	8	3	180	5	3	191	4	1	0	0	5	0	158	2	0	160	364
04:15 PM	3	1	2	0	6	1	168	8	0	177	5	0	0	0	5	1	171	1	0	173	361
04:30 PM	3	3	7	0	13	4	182	12	0	198	3	1	3	8	15	1	195	2	5	203	429
04:45 PM	4	2	4	1	11	4	224	9	1	238	2	2	2	1	7	1	178	2	5	186	442
Total	13	9	15	1	38	12	754	34	4	804	14	4	5	9	32	3	702	7	10	722	1596

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File Name : BR8CDA~1  
 Site Code : 00000000  
 Start Date : 01/20/2010  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	12Th Ave From North					US 14/6th Street From East					12th Ave From South					US14/6th Street From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
05:00 PM	7	14	5	1	27	4	206	7	3	220	5	2	0	0	7	3	252	1	0	256	510
05:15 PM	9	9	8	1	27	7	218	16	1	242	6	2	0	0	8	3	165	2	4	174	451
05:30 PM	7	3	1	0	11	3	162	1	1	167	3	1	2	0	6	0	169	0	1	170	354
05:45 PM	5	3	2	0	10	1	149	4	1	155	4	1	0	2	7	1	134	2	2	139	311
Total	28	29	16	2	75	15	735	28	6	784	18	6	2	2	28	7	720	5	7	739	1626
06:00 PM	3	1	3	0	7	2	133	7	0	142	6	1	0	0	7	1	128	3	3	135	291
06:15 PM	1	4	2	0	7	1	161	5	0	167	4	2	0	0	6	1	148	1	2	152	332
06:30 PM	0	0	5	0	5	5	140	10	0	155	4	1	0	0	5	0	111	2	0	113	278
06:45 PM	1	1	2	0	4	2	96	5	2	105	4	2	0	0	6	1	106	1	0	108	223
Total	5	6	12	0	23	10	530	27	2	569	18	6	0	0	24	3	493	7	5	508	1124
Grand Total	151	94	146	11	402	146	6330	197	67	6740	281	116	72	22	491	70	6604	126	105	6905	14538
Apprch %	37.6	23.4	36.3	2.7		2.2	93.9	2.9	1.0		57.2	23.6	14.7	4.5		1.0	95.6	1.8	1.5		
Total %	1.0	0.6	1.0	0.1	2.8	1.0	43.5	1.4	0.5	46.4	1.9	0.8	0.5	0.2	3.4	0.5	45.4	0.9	0.7	47.5	

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File Name : BRB815~1  
 Site Code : 00000000  
 Start Date : 03/24/2010  
 Page No : 1

Groups Printed- 1 - Unshifted

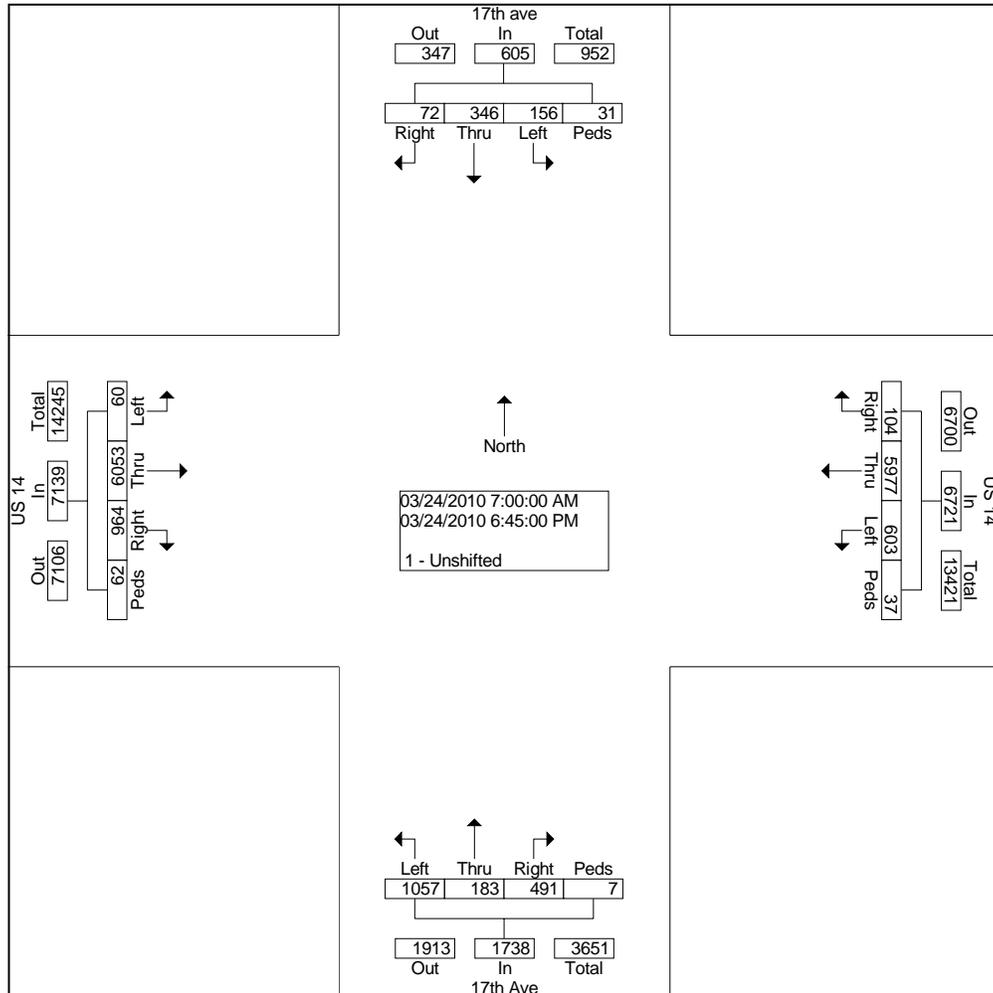
Start Time	17th ave From North					US 14 From East					17th Ave From South					US 14 From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	1	2	0	3	1	41	2	0	44	3	0	8	0	11	11	55	0	0	66	124
07:15 AM	0	6	2	0	8	0	53	4	0	57	6	1	20	0	27	11	63	1	0	75	167
07:30 AM	1	6	3	0	10	1	73	15	1	90	9	3	29	0	41	19	96	2	0	117	258
07:45 AM	0	9	3	0	12	4	111	14	0	129	16	3	47	0	66	12	130	2	0	144	351
Total	1	22	10	0	33	6	278	35	1	320	34	7	104	0	145	53	344	5	0	402	900
08:00 AM	0	2	2	0	4	3	83	9	0	95	12	4	44	0	60	18	113	0	2	133	292
08:15 AM	1	2	1	1	5	1	85	4	0	90	10	4	26	0	40	8	85	2	0	95	230
08:30 AM	0	2	0	0	2	1	98	4	0	103	7	4	43	0	54	14	87	1	1	103	262
08:45 AM	0	2	2	0	4	0	85	5	0	90	7	3	26	0	36	12	70	0	4	86	216
Total	1	8	5	1	15	5	351	22	0	378	36	15	139	0	190	52	355	3	7	417	1000
09:00 AM	2	1	1	0	4	1	86	3	0	90	8	0	16	0	24	20	69	0	0	89	207
09:15 AM	1	1	2	0	4	0	101	4	0	105	6	9	15	0	30	13	64	0	0	77	216
09:30 AM	1	2	2	0	5	0	84	1	0	85	7	6	16	0	29	6	67	2	0	75	194
09:45 AM	0	6	0	1	7	2	90	4	0	96	7	5	17	0	29	16	102	0	0	118	250
Total	4	10	5	1	20	3	361	12	0	376	28	20	64	0	112	55	302	2	0	359	867
10:00 AM	2	3	1	0	6	1	80	9	0	90	5	3	16	0	24	12	85	0	0	97	217
10:15 AM	2	6	3	0	11	3	81	3	0	87	2	2	14	0	18	6	97	2	1	106	222
10:30 AM	1	4	4	1	10	1	84	5	0	90	6	1	23	0	30	13	72	3	1	89	219
10:45 AM	2	3	1	2	8	1	93	5	0	99	9	2	17	0	28	23	112	2	0	137	272
Total	7	16	9	3	35	6	338	22	0	366	22	8	70	0	100	54	366	7	2	429	930
11:00 AM	3	3	4	0	10	1	104	3	0	108	5	2	17	0	24	24	122	0	1	147	289
11:15 AM	2	3	0	0	5	1	113	8	1	123	5	5	21	0	31	16	117	3	1	137	296
11:30 AM	0	6	6	0	12	0	168	16	0	184	17	3	24	0	44	25	154	0	0	179	419
11:45 AM	2	13	5	0	20	4	162	25	0	191	20	3	25	0	48	18	157	3	1	179	438
Total	7	25	15	0	47	6	547	52	1	606	47	13	87	0	147	83	550	6	3	642	1442
12:00 PM	6	19	5	0	30	1	225	23	0	249	14	5	17	0	36	18	238	2	0	258	573
12:15 PM	0	8	4	0	12	3	156	9	0	168	18	2	20	0	40	18	161	2	0	181	401
12:30 PM	4	9	6	0	19	5	183	14	0	202	10	4	28	0	42	18	161	3	4	186	449
12:45 PM	1	8	6	0	15	3	164	14	0	181	12	12	43	0	67	27	196	1	3	227	490
Total	11	44	21	0	76	12	728	60	0	800	54	23	108	0	185	81	756	8	7	852	1913
01:00 PM	4	6	7	0	17	2	156	13	3	174	7	3	31	0	41	16	153	2	0	171	403
01:15 PM	0	2	4	0	6	0	130	13	0	143	11	2	20	0	33	13	151	1	0	165	347
01:30 PM	3	8	1	1	13	5	130	7	0	142	6	1	27	0	34	11	113	3	0	127	316
01:45 PM	0	1	7	0	8	1	125	13	0	139	6	1	30	0	37	15	142	1	0	158	342
Total	7	17	19	1	44	8	541	46	3	598	30	7	108	0	145	55	559	7	0	621	1408
02:00 PM	4	5	2	0	11	2	126	12	6	146	4	2	15	0	21	39	134	0	2	175	353
02:15 PM	1	7	5	2	15	3	124	16	2	145	7	2	12	2	23	28	123	0	2	153	336
02:30 PM	1	15	3	1	20	4	115	6	1	126	18	11	26	0	55	13	125	2	0	140	341
02:45 PM	0	0	2	1	3	0	43	7	0	50	4	2	6	1	13	11	72	1	2	86	152
Total	6	27	12	4	49	9	408	41	9	467	33	17	59	3	112	91	454	3	6	554	1182
03:00 PM	1	6	4	0	11	2	139	11	1	153	12	3	17	0	32	23	167	0	1	191	387
03:15 PM	2	9	0	0	11	3	101	12	7	123	9	5	11	0	25	26	147	1	0	174	333
03:30 PM	2	11	3	0	16	2	141	13	0	156	12	6	10	0	28	33	141	2	1	177	377
03:45 PM	2	7	5	1	15	3	153	13	0	169	10	3	25	0	38	25	150	1	1	177	399
Total	7	33	12	1	53	10	534	49	8	601	43	17	63	0	123	107	605	4	3	719	1496
04:00 PM	1	8	3	2	14	2	150	17	0	169	8	6	21	0	35	29	160	1	0	190	408
04:15 PM	1	12	2	3	18	1	151	19	4	175	14	4	14	0	32	27	132	0	3	162	387
04:30 PM	2	7	4	0	13	5	197	43	0	245	7	5	22	0	34	35	180	3	1	219	511
04:45 PM	3	13	4	2	22	4	180	23	0	207	12	6	23	0	41	34	164	3	0	201	471
Total	7	40	13	7	67	12	678	102	4	796	41	21	80	0	142	125	636	7	4	772	1777

Default Titles  
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File Name : BRB815~1  
 Site Code : 00000000  
 Start Date : 03/24/2010  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	17th ave From North					US 14 From East					17th Ave From South					US 14 From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
05:00 PM	2	40	11	4	57	6	192	25	3	226	17	4	11	0	32	32	197	2	13	244	559
05:15 PM	2	14	1	4	21	3	181	17	0	201	27	8	19	0	54	22	197	0	1	220	496
05:30 PM	5	8	6	1	20	2	164	24	4	194	16	3	24	1	44	28	141	0	1	170	428
05:45 PM	1	6	2	0	9	4	152	19	0	175	5	0	38	0	43	33	143	1	4	181	408
Total	10	68	20	9	107	15	689	85	7	796	65	15	92	1	173	115	678	3	19	815	1891
06:00 PM	1	15	4	0	20	3	150	28	2	183	14	2	23	0	39	24	132	2	4	162	404
06:15 PM	1	5	5	0	11	2	131	22	1	156	18	3	16	1	38	21	117	1	3	142	347
06:30 PM	1	8	1	4	14	2	117	16	0	135	14	11	18	2	45	27	104	1	0	132	326
06:45 PM	1	8	5	0	14	5	126	11	1	143	12	4	26	0	42	21	95	1	4	121	320
Total	4	36	15	4	59	12	524	77	4	617	58	20	83	3	164	93	448	5	11	557	1397
Grand Total	72	346	156	31	605	104	597	603	37	6721	491	183	105	7	1738	964	605	60	62	7139	1620
Apprch %	11.9	57.2	25.8	5.1		1.5	88.9	9.0	0.6		28.3	10.5	60.8	0.4		13.5	84.8	0.8	0.9		
Total %	0.4	2.1	1.0	0.2	3.7	0.6	36.9	3.7	0.2	41.5	3.0	1.1	6.5	0.0	10.7	5.9	37.4	0.4	0.4	44.1	



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File Name : BROOKI~4  
 Site Code : 00000000  
 Start Date : 03/18/2010  
 Page No : 1

Groups Printed- 1 - Unshifted

Start Time	20th Ave From North					US 14 From East					20th Ave From South					US 14 From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	1	1	3	5	4	59	0	0	63	4	1	0	0	5	0	59	0	0	59	132
07:15 AM	0	0	2	0	2	4	62	0	1	67	3	2	1	1	7	0	87	0	0	87	163
07:30 AM	0	0	3	0	3	9	70	0	0	79	3	0	0	2	5	0	85	1	0	86	173
07:45 AM	0	1	7	1	9	17	108	0	0	125	5	2	0	0	7	0	118	1	0	119	260
Total	0	2	13	4	19	34	299	0	1	334	15	5	1	3	24	0	349	2	0	351	728
08:00 AM	0	0	10	0	10	7	74	0	0	81	3	0	0	0	3	0	106	1	1	108	202
08:15 AM	0	1	9	1	11	9	75	2	0	86	0	1	1	0	2	2	99	0	0	101	200
08:30 AM	2	1	6	0	9	10	104	0	0	114	1	2	3	0	6	4	76	4	0	84	213
08:45 AM	0	0	6	2	8	10	104	0	0	114	1	3	3	0	7	2	93	0	1	96	225
Total	2	2	31	3	38	36	357	2	0	395	5	6	7	0	18	8	374	5	2	389	840
09:00 AM	0	0	2	0	2	3	79	3	0	85	3	1	1	0	5	0	68	2	0	70	162
09:15 AM	1	0	6	3	10	8	75	1	0	84	2	0	2	0	4	0	78	2	1	81	179
09:30 AM	0	0	7	3	10	5	117	1	0	123	2	0	2	0	4	0	93	3	1	97	234
09:45 AM	0	3	8	2	13	2	124	0	0	126	1	1	2	0	4	2	100	1	0	103	246
Total	1	3	23	8	35	18	395	5	0	418	8	2	7	0	17	2	339	8	2	351	821
10:00 AM	2	1	9	3	15	6	125	1	0	132	4	1	6	0	11	1	97	1	0	99	257
10:15 AM	4	2	9	0	15	3	98	0	1	102	2	0	1	0	3	0	89	3	0	92	212
10:30 AM	0	1	8	2	11	5	94	0	0	99	3	0	2	0	5	2	91	1	0	94	209
10:45 AM	0	1	11	1	13	8	113	1	0	122	1	1	0	0	2	0	100	1	0	101	238
Total	6	5	37	6	54	22	430	2	1	455	10	2	9	0	21	3	377	6	0	386	916
11:00 AM	2	1	17	3	23	4	113	0	1	118	2	0	0	2	4	0	116	2	0	118	263
11:15 AM	2	1	14	1	18	8	158	0	0	166	1	1	1	0	3	2	101	2	0	105	292
11:30 AM	3	3	21	0	27	13	180	3	0	196	3	3	2	0	8	2	154	3	0	159	390
11:45 AM	6	1	31	3	41	11	213	3	0	227	1	0	4	0	5	3	176	7	0	186	459
Total	13	6	83	7	109	36	664	6	1	707	7	4	7	2	20	7	547	14	0	568	1404
12:00 PM	3	5	47	0	55	13	239	6	0	258	2	3	1	0	6	4	227	2	0	233	552
12:15 PM	7	0	33	1	41	12	185	3	0	200	2	0	1	0	3	2	192	6	0	200	444
12:30 PM	2	1	29	0	32	12	194	6	0	212	5	1	1	0	7	4	169	1	0	174	425
12:45 PM	1	1	47	2	51	11	157	1	1	170	3	0	1	0	4	5	160	3	0	168	393
Total	13	7	156	3	179	48	775	16	1	840	12	4	4	0	20	15	748	12	0	775	1814
01:00 PM	6	0	25	0	31	8	169	1	0	178	2	4	1	0	7	6	184	8	0	198	414
01:15 PM	6	0	24	1	31	10	136	1	0	147	2	0	2	0	4	5	172	3	0	180	362
01:30 PM	0	0	18	2	20	8	164	2	1	175	2	2	1	0	5	0	150	3	0	153	353
01:45 PM	0	0	28	3	31	10	157	1	0	168	3	2	4	0	9	0	170	1	0	171	379
Total	12	0	95	6	113	36	626	5	1	668	9	8	8	0	25	11	676	15	0	702	1508
02:00 PM	4	2	20	1	27	10	119	2	0	131	1	0	2	0	3	5	155	2	0	162	323
02:15 PM	2	1	24	1	28	6	151	2	0	159	1	1	4	0	6	1	157	2	0	160	353
02:30 PM	4	2	22	3	31	12	167	1	0	180	0	1	0	0	1	1	147	0	4	152	364
02:45 PM	2	1	40	0	43	10	153	4	0	167	2	2	3	1	8	5	189	1	1	196	414
Total	12	6	106	5	129	38	590	9	0	637	4	4	9	1	18	12	648	5	5	670	1454
03:00 PM	2	2	38	3	45	9	146	1	0	156	0	3	2	1	6	1	200	2	1	204	411
03:15 PM	2	0	18	2	22	5	142	1	2	150	1	0	1	0	2	1	166	4	0	171	345
03:30 PM	0	3	39	3	45	11	176	3	0	190	0	0	3	0	3	1	165	1	0	167	405
03:45 PM	5	0	26	6	37	12	166	2	0	180	4	1	2	0	7	2	168	5	0	175	399
Total	9	5	121	14	149	37	630	7	2	676	5	4	8	1	18	5	699	12	1	717	1560
04:00 PM	2	1	22	4	29	10	178	1	1	190	2	2	2	0	6	7	164	2	3	176	401
04:15 PM	3	0	25	4	32	4	182	4	0	190	0	1	0	0	1	3	181	1	1	186	409
04:30 PM	2	1	34	9	46	8	284	4	0	296	1	1	2	0	4	0	172	0	6	178	524
04:45 PM	4	2	29	10	45	12	209	1	0	222	2	0	0	0	2	1	204	3	6	214	483
Total	11	4	110	27	152	34	853	10	1	898	5	4	4	0	13	11	721	6	16	754	1817

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File Name : BROOKI~4  
 Site Code : 00000000  
 Start Date : 03/18/2010  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	20th Ave From North					US 14 From East					20th Ave From South					US 14 From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
05:00 PM	1	1	44	0	46	11	253	8	0	272	0	1	1	0	2	4	209	2	0	215	535
05:15 PM	3	1	43	3	50	14	202	1	0	217	2	1	1	0	4	0	173	4	2	179	450
05:30 PM	0	2	27	5	34	16	187	4	0	207	1	0	2	0	3	1	136	0	1	138	382
05:45 PM	2	4	19	6	31	10	170	4	0	184	3	0	1	0	4	4	175	5	1	185	404
Total	6	8	133	14	161	51	812	17	0	880	6	2	5	0	13	9	693	11	4	717	1771
06:00 PM	1	2	32	3	38	7	211	4	1	223	2	3	3	0	8	6	150	1	1	158	427
06:15 PM	3	2	28	5	38	9	142	6	0	157	1	0	4	0	5	3	131	0	1	135	335
06:30 PM	2	0	18	3	23	9	165	1	0	175	2	1	1	0	4	2	137	4	1	144	346
06:45 PM	2	1	26	2	31	13	144	4	1	162	0	4	1	0	5	2	111	0	0	113	311
Total	8	5	104	13	130	38	662	15	2	717	5	8	9	0	22	13	529	5	3	550	1419
Grand Total	93	53	1012	110	1268	428	7093	94	10	7625	91	53	78	7	229	96	6700	101	33	6930	16052
Apprch %	7.3	4.2	79.8	8.7		5.6	93.0	1.2	0.1		39.7	23.1	34.1	3.1		1.4	96.7	1.5	0.5		
Total %	0.6	0.3	6.3	0.7	7.9	2.7	44.2	0.6	0.1	47.5	0.6	0.3	0.5	0.0	1.4	0.6	41.7	0.6	0.2	43.2	

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File Name : BR3562~1  
 Site Code : 00000000  
 Start Date : 01/28/2010  
 Page No : 1

Groups Printed- 1 - Unshifted

Start Time	22ND AVE From North					US 14 From East					22ND AVE From South					US 14 From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	9	21	9	0	39	7	39	13	0	59	52	21	8	0	81	5	32	12	0	49	228
07:15 AM	21	30	8	0	59	6	47	41	0	94	73	35	10	0	118	17	36	11	0	64	335
07:30 AM	19	56	3	0	78	5	46	58	0	109	101	57	23	0	181	24	57	9	0	90	458
07:45 AM	18	63	21	0	102	6	80	51	0	137	135	68	41	0	244	22	109	18	0	149	632
Total	67	170	41	0	278	24	212	163	0	399	361	181	82	0	624	68	234	50	0	352	1653
08:00 AM	8	37	8	0	53	8	48	42	0	98	127	53	34	1	215	28	105	18	1	152	518
08:15 AM	12	29	2	0	43	10	50	35	0	95	93	47	39	0	179	29	69	22	0	120	437
08:30 AM	20	26	7	0	53	2	65	25	0	92	51	50	23	0	124	21	64	17	0	102	371
08:45 AM	22	29	4	0	55	6	65	29	0	100	57	44	27	0	128	28	63	21	0	112	395
Total	62	121	21	0	204	26	228	131	0	385	328	194	123	1	646	106	301	78	1	486	1721
09:00 AM	17	18	3	0	38	6	48	27	0	81	30	31	30	0	91	21	50	23	0	94	304
09:15 AM	20	26	5	0	51	6	46	21	0	73	21	27	23	0	71	29	32	29	0	90	285
09:30 AM	16	34	6	0	56	7	41	42	0	90	32	38	25	0	95	23	43	23	0	89	330
09:45 AM	26	25	3	0	54	6	56	24	0	86	27	41	27	0	95	36	55	36	0	127	362
Total	79	103	17	0	199	25	191	114	0	330	110	137	105	0	352	109	180	111	0	400	1281
10:00 AM	19	28	7	0	54	7	58	25	0	90	30	29	22	0	81	32	56	53	0	141	366
10:15 AM	31	28	2	0	61	4	55	31	0	90	27	42	33	0	102	30	44	34	0	108	361
10:30 AM	30	31	5	1	67	8	47	28	0	83	31	36	28	0	95	26	48	35	0	109	354
10:45 AM	32	34	5	0	71	6	53	49	0	108	44	37	37	0	118	34	51	36	1	122	419
Total	112	121	19	1	253	25	213	133	0	371	132	144	120	0	396	122	199	158	1	480	1500
11:00 AM	29	41	6	0	76	8	75	41	0	124	28	40	37	0	105	32	68	52	0	152	457
11:15 AM	30	42	5	0	77	8	86	39	0	133	29	30	27	0	86	42	85	29	0	156	452
11:30 AM	21	31	2	1	55	8	107	64	1	180	37	48	52	1	138	39	103	55	0	197	570
11:45 AM	37	48	11	0	96	13	111	63	0	187	47	63	45	0	155	39	114	49	0	202	640
Total	117	162	24	1	304	37	379	207	1	624	141	181	161	1	484	152	370	185	0	707	2119
12:00 PM	44	34	9	1	88	11	155	90	0	256	42	59	53	0	154	42	126	64	0	232	730
12:15 PM	29	48	21	0	98	9	95	63	0	167	51	32	37	0	120	39	109	44	0	192	577
12:30 PM	31	53	14	0	98	10	113	71	0	194	78	75	48	0	201	45	113	52	0	210	703
12:45 PM	35	43	21	0	99	7	65	51	0	123	68	74	45	0	187	58	138	57	0	253	662
Total	139	178	65	1	383	37	428	275	0	740	239	240	183	0	662	184	486	217	0	887	2672
01:00 PM	38	62	15	0	115	13	91	52	0	156	61	56	39	0	156	51	136	72	0	259	686
01:15 PM	32	42	14	0	88	10	57	43	0	110	42	37	26	0	105	28	75	34	0	137	440
01:30 PM	36	48	8	1	93	4	59	45	1	109	40	58	42	0	140	29	73	32	0	134	476
01:45 PM	34	59	12	0	105	12	60	42	0	114	34	45	26	0	105	25	60	58	0	143	467
Total	140	211	49	1	401	39	267	182	1	489	177	196	133	0	506	133	344	196	0	673	2069
02:00 PM	33	70	11	0	114	10	60	44	0	114	35	61	38	0	134	45	86	58	0	189	551
02:15 PM	37	44	4	0	85	5	69	30	0	104	47	56	31	0	134	38	64	44	0	146	469
02:30 PM	33	53	14	0	100	6	57	30	0	93	54	70	41	0	165	34	61	40	0	135	493
02:45 PM	34	76	19	0	129	7	57	47	0	111	56	58	34	0	148	51	80	52	0	183	571
Total	137	243	48	0	428	28	243	151	0	422	192	245	144	0	581	168	291	194	0	653	2084
03:00 PM	40	82	15	0	137	10	70	54	0	134	47	56	22	0	125	43	106	80	0	229	625
03:15 PM	38	64	15	0	117	8	73	65	0	146	65	59	41	0	165	35	79	54	0	168	596
03:30 PM	47	55	13	1	116	17	91	65	0	173	64	94	63	0	221	36	98	59	0	193	703
03:45 PM	44	63	12	0	119	5	79	61	0	145	71	76	53	0	200	36	92	84	0	212	676
Total	169	264	55	1	489	40	313	245	0	598	247	285	179	0	711	150	375	277	0	802	2600
04:00 PM	44	93	24	0	161	8	84	74	0	166	76	77	56	0	209	51	93	90	0	234	770
04:15 PM	39	77	23	0	139	10	100	91	0	201	61	86	42	0	189	42	101	88	0	231	760
04:30 PM	40	81	14	0	135	11	184	105	0	300	64	97	73	0	234	35	123	81	0	239	908
04:45 PM	48	96	17	0	161	17	144	128	0	289	66	91	52	0	209	21	104	92	0	217	876
Total	171	347	78	0	596	46	512	398	0	956	267	351	223	0	841	149	421	351	0	921	3314

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File Name : BR3562~1  
 Site Code : 00000000  
 Start Date : 01/28/2010  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	22ND AVE From North					US 14 From East					22ND AVE From South					US 14 From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
05:00 PM	56	77	23	0	156	16	182	155	0	353	76	88	70	0	234	51	135	98	0	284	1027
05:15 PM	69	78	14	0	161	10	163	151	0	324	68	87	60	0	215	37	91	100	0	228	928
05:30 PM	47	89	8	0	144	14	109	94	0	217	35	39	27	0	101	36	91	89	0	216	678
05:45 PM	31	59	11	0	101	15	88	68	0	171	58	80	43	0	181	24	59	43	0	126	579
Total	203	303	56	0	562	55	542	468	0	1065	237	294	200	0	731	148	376	330	0	854	3212
06:00 PM	30	66	10	0	106	9	80	76	1	166	41	54	29	1	125	31	68	57	0	156	553
06:15 PM	44	42	10	0	96	14	82	52	0	148	41	48	25	0	114	19	78	48	0	145	503
06:30 PM	47	55	8	1	111	12	70	65	0	147	36	47	25	0	108	23	57	35	0	115	481
06:45 PM	47	34	12	0	93	12	70	40	0	122	21	46	23	0	90	40	36	47	0	123	428
Total	168	197	40	1	406	47	302	233	1	583	139	195	102	1	437	113	239	187	0	539	1965
Grand Total	156	242	513	6	4503	429	383	270	3	6962	257	264	175	3	6971	160	381	233	2	7754	26190
Apprch %	34.4	53.0	11.7	0.1		6.2	55.0	38.8	0.0		36.9	37.9	25.2	0.0		20.7	49.2	30.1	0.0		
Total %	6.0	9.2	2.0	0.0	17.2	1.6	14.6	10.3	0.0	26.6	9.8	10.1	6.7	0.0	26.6	6.1	14.6	8.9	0.0	29.6	

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File Name : BROOKI~1  
 Site Code : 00000000  
 Start Date : 03/22/2010  
 Page No : 1

Groups Printed- 1 - Unshifted

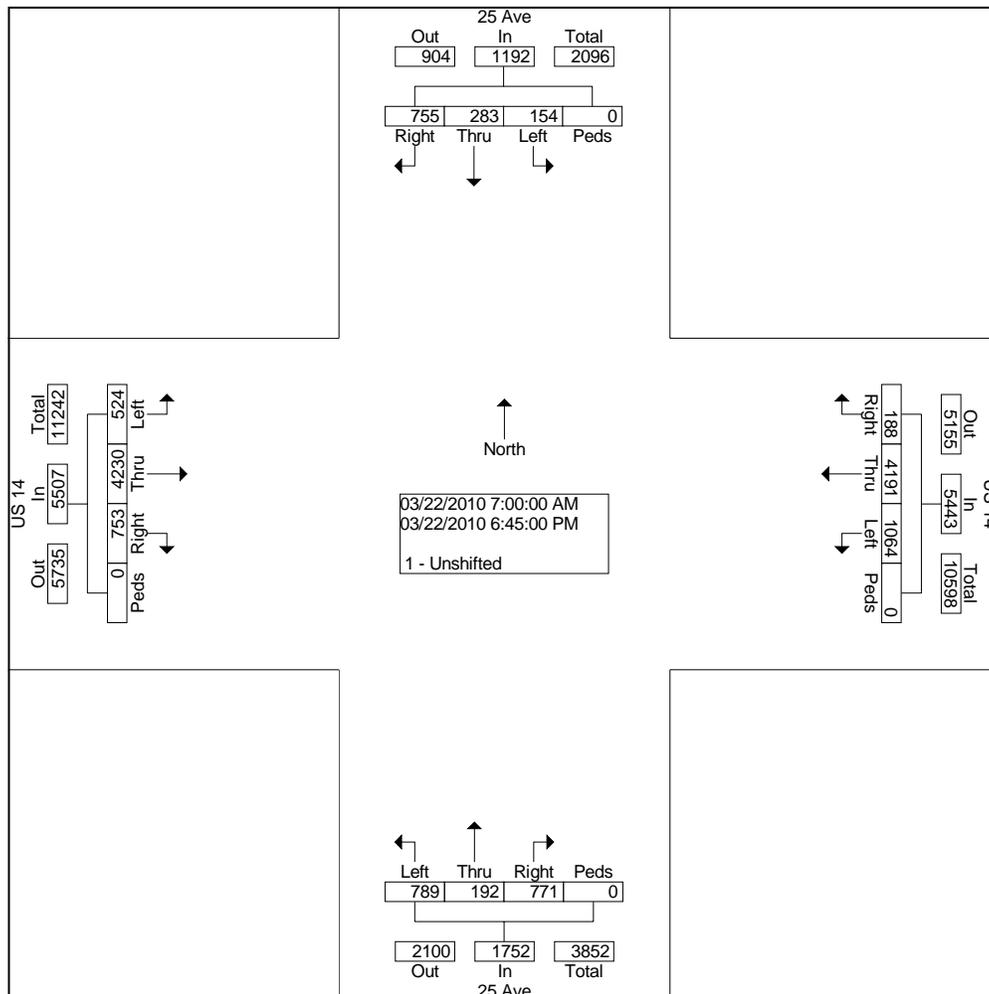
Start Time	25 Ave From North					US 14 From East					25 Ave From South					US 14 From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	8	0	2	0	10	1	66	4	0	71	6	1	5	0	12	6	55	5	0	66	159
07:15 AM	10	0	3	0	13	1	119	5	0	125	8	0	10	0	18	6	94	18	0	118	274
07:30 AM	9	2	2	0	13	5	121	5	0	131	1	2	10	0	13	8	105	21	0	134	291
07:45 AM	30	0	2	0	32	3	261	13	0	277	7	4	5	0	16	9	130	18	0	157	482
Total	57	2	9	0	68	10	567	27	0	604	22	7	30	0	59	29	384	62	0	475	1206
08:00 AM	12	6	0	0	18	0	170	17	0	187	12	0	8	0	20	13	115	11	0	139	364
08:15 AM	7	3	1	0	11	1	125	26	0	152	4	0	10	0	14	12	56	7	0	75	252
08:30 AM	17	1	1	0	19	3	99	15	0	117	11	3	7	0	21	13	77	14	0	104	261
08:45 AM	14	1	2	0	17	0	92	17	0	109	7	3	12	0	22	30	77	3	0	110	258
Total	50	11	4	0	65	4	486	75	0	565	34	6	37	0	77	68	325	35	0	428	1135
09:00 AM	10	5	0	0	15	2	59	17	0	78	9	2	12	0	23	17	59	6	0	82	198
09:15 AM	6	4	3	0	13	1	53	13	0	67	10	3	8	0	21	11	72	5	0	88	189
09:30 AM	11	1	2	0	14	5	56	15	0	76	14	1	14	0	29	12	72	9	0	93	212
09:45 AM	15	1	3	0	19	2	55	21	0	78	8	3	9	0	20	11	63	6	0	80	197
Total	42	11	8	0	61	10	223	66	0	299	41	9	43	0	93	51	266	26	0	343	796
10:00 AM	13	3	2	0	18	5	67	23	0	95	25	5	6	0	36	12	46	8	0	66	215
10:15 AM	12	1	2	0	15	2	52	15	0	69	22	1	13	0	36	8	47	5	0	60	180
10:30 AM	12	1	3	0	16	6	47	20	0	73	14	3	10	0	27	18	70	8	0	96	212
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	37	5	7	0	49	13	166	58	0	237	61	9	29	0	99	38	163	21	0	222	607
11:00 AM	8	3	1	0	12	6	62	20	0	88	22	6	17	0	45	11	70	6	0	87	232
11:15 AM	12	6	3	0	21	2	66	20	0	88	22	7	12	0	41	20	84	12	0	116	266
11:30 AM	17	3	3	0	23	6	74	32	0	112	26	3	16	0	45	17	139	17	0	173	353
11:45 AM	23	5	5	0	33	4	102	32	0	138	9	7	15	0	31	22	152	23	0	197	399
Total	60	17	12	0	89	18	304	104	0	426	79	23	60	0	162	70	445	58	0	573	1250
12:00 PM	28	21	6	0	55	5	96	40	0	141	20	12	20	0	52	33	162	28	0	223	471
12:15 PM	8	14	6	0	28	3	106	34	0	143	20	5	23	0	48	20	99	15	0	134	353
12:30 PM	23	15	11	0	49	3	140	24	0	167	25	9	23	0	57	21	98	23	0	142	415
12:45 PM	28	10	3	0	41	6	172	29	0	207	18	6	19	0	43	19	86	14	0	119	410
Total	87	60	26	0	173	17	514	127	0	658	83	32	85	0	200	93	445	80	0	618	1649
01:00 PM	16	7	6	0	29	7	117	33	0	157	23	4	18	0	45	14	85	12	0	111	342
01:15 PM	16	13	3	0	32	3	99	26	0	128	23	5	22	0	50	19	78	13	0	110	320
01:30 PM	17	6	4	0	27	3	77	24	0	104	12	5	20	0	37	12	69	14	0	95	263
01:45 PM	16	8	4	0	28	4	86	26	0	116	19	3	16	0	38	17	63	9	0	89	271
Total	65	34	17	0	116	17	379	109	0	505	77	17	76	0	170	62	295	48	0	405	1196
02:00 PM	20	3	5	0	28	7	93	29	0	129	11	5	16	0	32	7	58	7	0	72	261
02:15 PM	10	1	7	0	18	2	80	24	0	106	16	2	17	0	35	12	68	15	0	95	254
02:30 PM	14	8	2	0	24	6	72	33	0	111	17	6	22	0	45	11	75	15	0	101	281
02:45 PM	14	9	4	0	27	12	68	14	0	94	17	6	23	0	46	16	75	14	0	105	272
Total	58	21	18	0	97	27	313	100	0	440	61	19	78	0	158	46	276	51	0	373	1068
03:00 PM	21	6	8	0	35	7	81	16	0	104	12	5	19	0	36	15	82	9	0	106	281
03:15 PM	10	7	0	0	17	6	83	28	0	117	10	5	20	0	35	10	61	9	0	80	249
03:30 PM	29	24	3	0	56	3	91	32	0	126	26	2	23	0	51	20	100	12	0	132	365
03:45 PM	12	7	3	0	22	3	91	30	0	124	14	1	24	0	39	13	71	4	0	88	273
Total	72	44	14	0	130	19	346	106	0	471	62	13	86	0	161	58	314	34	0	406	1168
04:00 PM	23	7	0	0	30	5	104	38	0	147	21	7	19	0	47	30	115	15	0	160	384
04:15 PM	24	13	2	0	39	2	92	36	0	130	21	4	28	0	53	20	129	11	0	160	382
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	27	14	4	0	45	3	91	35	0	129	23	8	36	0	67	39	149	14	0	202	443
Total	74	34	6	0	114	10	287	109	0	406	65	19	83	0	167	89	393	40	0	522	1209

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File Name : BROOKI~1  
 Site Code : 00000000  
 Start Date : 03/22/2010  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	25 Ave From North					US 14 From East					25 Ave From South					US 14 From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
05:00 PM	34	10	8	0	52	10	118	35	0	163	44	6	34	0	84	36	224	12	0	272	571
05:15 PM	19	5	5	0	29	7	121	24	0	152	21	4	23	0	48	33	191	7	0	231	460
05:30 PM	26	5	5	0	36	6	84	33	0	123	28	8	40	0	76	10	121	12	0	143	378
05:45 PM	19	4	4	0	27	6	72	24	0	102	17	8	25	0	50	12	110	5	0	127	306
Total	98	24	22	0	144	29	395	116	0	540	110	26	122	0	258	91	646	36	0	773	1715
06:00 PM	20	4	1	0	25	6	61	17	0	84	24	2	15	0	41	19	94	10	0	123	273
06:15 PM	16	3	4	0	23	2	53	17	0	72	13	3	16	0	32	13	62	10	0	85	212
06:30 PM	9	6	1	0	16	3	49	17	0	69	17	6	18	0	41	18	66	6	0	90	216
06:45 PM	10	7	5	0	22	3	48	16	0	67	22	1	11	0	34	8	56	7	0	71	194
Total	55	20	11	0	86	14	211	67	0	292	76	12	60	0	148	58	278	33	0	369	895
Grand Total	755	283	154	0	1192	188	419	106	0	5443	771	192	789	0	1752	753	423	524	0	5507	13894
Apprch %	63.3	23.7	12.9	0.0		3.5	77.0	19.5	0.0		44.0	11.0	45.0	0.0		13.7	76.8	9.5	0.0		
Total %	5.4	2.0	1.1	0.0	8.6	1.4	30.2	7.7	0.0	39.2	5.5	1.4	5.7	0.0	12.6	5.4	30.4	3.8	0.0	39.6	



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File Name : BRE4AC~1  
 Site Code : 00000000  
 Start Date : 12/12/2007  
 Page No : 1

Groups Printed- 1 - Unshifted

Start Time	32 ave From North				US 14 From East				32 ave From South				US 14 From West				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	15	0	0	15	1	24	10	35	2	0	4	6	24	34	7	65	121
07:15 AM	27	0	0	27	0	40	17	57	3	0	5	8	60	21	2	83	175
07:30 AM	2	0	0	2	2	87	11	100	0	0	10	10	66	39	6	111	223
07:45 AM	0	0	0	0	1	94	17	112	1	0	5	6	84	28	27	139	257
Total	44	0	0	44	4	245	55	304	6	0	24	30	234	122	42	398	776
08:00 AM	6	1	1	8	0	51	19	70	5	2	10	17	87	17	20	124	219
08:15 AM	1	2	2	5	0	47	5	52	6	2	12	20	43	18	6	67	144
08:30 AM	1	1	2	4	0	41	1	42	5	3	17	25	32	28	6	66	137
08:45 AM	3	1	1	5	1	45	2	48	6	2	16	24	27	26	6	59	136
Total	11	5	6	22	1	184	27	212	22	9	55	86	189	89	38	316	636
09:00 AM	0	0	0	0	0	32	3	35	2	1	12	15	20	27	6	53	103
09:15 AM	5	0	0	5	0	37	2	39	1	1	11	13	19	26	8	53	110
09:30 AM	7	1	0	8	1	37	8	46	2	0	23	25	14	17	4	35	114
09:45 AM	9	0	0	9	1	34	4	39	0	0	14	14	25	29	5	59	121
Total	21	1	0	22	2	140	17	159	5	2	60	67	78	99	23	200	448
10:00 AM	2	0	0	2	2	26	2	30	2	0	15	17	16	20	6	42	91
10:15 AM	4	0	1	5	1	33	2	36	3	0	14	17	19	24	4	47	105
10:30 AM	2	1	1	4	1	19	7	27	2	0	17	19	14	24	3	41	91
10:45 AM	2	0	0	2	1	28	4	33	0	1	12	13	16	31	3	50	98
Total	10	1	2	13	5	106	15	126	7	1	58	66	65	99	16	180	385
11:00 AM	7	0	2	9	2	43	5	50	0	0	17	17	21	39	8	68	144
11:15 AM	6	0	0	6	3	41	3	47	1	0	27	28	28	44	9	81	162
11:30 AM	13	0	0	13	2	49	5	56	4	1	48	53	27	41	9	77	199
11:45 AM	17	2	0	19	2	42	4	48	2	1	52	55	42	40	8	90	212
Total	43	2	2	47	9	175	17	201	7	2	144	153	118	164	34	316	717
12:00 PM	15	0	0	15	0	55	4	59	7	0	52	59	25	32	15	72	205
12:15 PM	22	1	0	23	1	36	3	40	4	0	28	32	31	30	18	79	174
12:30 PM	5	0	1	6	0	38	5	43	3	0	35	38	46	38	10	94	181
12:45 PM	8	1	0	9	0	50	7	57	0	0	10	10	50	47	9	106	182
Total	50	2	1	53	1	179	19	199	14	0	125	139	152	147	52	351	742
01:00 PM	8	0	0	8	1	43	5	49	6	0	28	34	39	38	13	90	181
01:15 PM	4	0	0	4	3	41	6	50	4	0	7	11	29	41	10	80	145
01:30 PM	6	0	2	8	2	36	7	45	4	0	16	20	31	44	11	86	159
01:45 PM	4	1	1	6	2	32	7	41	5	1	17	23	26	45	9	80	150
Total	22	1	3	26	8	152	25	185	19	1	68	88	125	168	43	336	635
02:00 PM	8	1	0	9	2	42	8	52	2	0	26	28	20	43	10	73	162
02:15 PM	4	0	0	4	3	50	6	59	4	1	24	29	29	42	12	83	175
02:30 PM	3	0	0	3	3	41	8	52	5	0	17	22	14	49	9	72	149
02:45 PM	6	0	0	6	2	42	7	51	0	0	17	17	12	47	8	67	141
Total	21	1	0	22	10	175	29	214	11	1	84	96	75	181	39	295	627
03:00 PM	9	0	2	11	1	44	9	54	2	0	23	25	20	38	7	65	155
03:15 PM	5	0	2	7	1	39	5	45	2	0	14	16	23	42	7	72	140
03:30 PM	22	0	3	25	2	44	6	52	4	0	23	27	23	58	21	102	206
03:45 PM	13	0	2	15	2	37	5	44	6	0	21	27	33	45	11	89	175
Total	49	0	9	58	6	164	25	195	14	0	81	95	99	183	46	328	676

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File Name : BRE4AC~1  
 Site Code : 00000000  
 Start Date : 12/12/2007  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	32 ave From North				US 14 From East				32 ave From South				US 14 From West				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
04:00 PM	6	2	0	8	1	48	7	56	17	0	127	144	34	43	11	88	296
04:15 PM	9	0	0	9	1	31	10	42	12	1	90	103	46	54	12	112	266
04:30 PM	9	1	2	12	1	60	2	63	10	0	114	124	10	58	12	80	279
04:45 PM	15	0	1	16	1	45	2	48	10	0	102	112	20	62	29	111	287
Total	39	3	3	45	4	184	21	209	49	1	433	483	110	217	64	391	1128
05:00 PM	33	0	0	33	0	58	2	60	22	1	152	175	14	77	16	107	375
05:15 PM	13	0	1	14	3	48	7	58	8	2	81	91	11	59	10	80	243
05:30 PM	6	1	0	7	0	63	1	64	5	0	64	69	7	61	26	94	234
05:45 PM	21	0	1	22	3	45	1	49	4	0	45	49	10	36	23	69	189
Total	73	1	2	76	6	214	11	231	39	3	342	384	42	233	75	350	1041
06:00 PM	10	0	1	11	2	50	3	55	1	0	20	21	11	47	17	75	162
06:15 PM	18	1	1	20	1	49	2	52	0	1	22	23	16	47	30	93	188
06:30 PM	25	0	2	27	2	49	1	52	4	0	16	20	13	52	21	86	185
06:45 PM	36	0	1	37	3	52	2	57	0	0	9	9	13	50	10	73	176
Total	89	1	5	95	8	200	8	216	5	1	67	73	53	196	78	327	711
Grand Total	472	18	33	523	64	2118	269	2451	198	21	1541	1760	1340	1898	550	3788	8522
Apprch %	90.2	3.4	6.3		2.6	86.4	11.0		11.3	1.2	87.6		35.4	50.1	14.5		
Total %	5.5	0.2	0.4	6.1	0.8	24.9	3.2	28.8	2.3	0.2	18.1	20.7	15.7	22.3	6.5	44.4	

**Default Titles**  
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File Name : US14AN~1  
 Site Code : 00000000  
 Start Date : 12/06/2007  
 Page No : 1

Groups Printed- 1 - Unshifted

Start Time	South Bound Off Ramp From North				US 14 From East				North Bound Off Ramp From South				Us 14 From West				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	16	0	9	25	4	56	2	62	17	0	21	38	27	105	22	154	279
07:15 AM	11	0	33	44	7	95	3	105	26	0	23	49	16	184	14	214	412
07:30 AM	39	0	27	66	7	109	3	119	22	0	39	61	10	171	10	191	437
07:45 AM	31	0	30	61	2	124	1	127	36	0	47	83	18	246	10	274	545
Total	97	0	99	196	20	384	9	413	101	0	130	231	71	706	56	833	1673
08:00 AM	20	0	40	60	3	67	4	74	25	0	38	63	15	267	18	300	497
08:15 AM	16	0	16	32	5	57	3	65	18	0	28	46	15	141	17	173	316
08:30 AM	12	0	15	27	9	64	7	80	14	0	46	60	19	104	13	136	303
08:45 AM	19	0	9	28	7	70	5	82	16	0	30	46	10	86	14	110	266
Total	67	0	80	147	24	258	19	301	73	0	142	215	59	598	62	719	1382
09:00 AM	15	0	10	25	2	65	7	74	8	0	22	30	22	77	11	110	239
09:15 AM	11	0	7	18	13	53	4	70	13	0	25	38	11	57	20	88	214
09:30 AM	7	0	9	16	8	74	5	87	11	0	36	47	24	57	14	95	245
09:45 AM	24	0	8	32	6	54	3	63	14	0	25	39	12	67	15	94	228
Total	57	0	34	91	29	246	19	294	46	0	108	154	69	258	60	387	926
10:00 AM	15	0	4	19	9	45	6	60	6	0	23	29	26	54	14	94	202
10:15 AM	10	0	2	12	7	55	4	66	4	0	19	23	14	69	10	93	194
10:30 AM	17	0	4	21	1	70	5	76	7	0	27	34	23	52	16	91	222
10:45 AM	10	0	2	12	7	65	3	75	6	0	21	27	14	61	9	84	198
Total	52	0	12	64	24	235	18	277	23	0	90	113	77	236	49	362	816
11:00 AM	13	0	10	23	7	65	6	78	8	0	22	30	26	61	9	96	227
11:15 AM	9	0	3	12	8	67	8	83	6	0	18	24	15	58	16	89	208
11:30 AM	14	0	6	20	9	155	6	170	6	0	24	30	20	77	12	109	329
11:45 AM	20	0	6	26	16	173	7	196	7	0	23	30	23	113	9	145	397
Total	56	0	25	81	40	460	27	527	27	0	87	114	84	309	46	439	1161
12:00 PM	17	0	2	19	9	219	3	231	11	0	34	45	31	127	10	168	463
12:15 PM	21	0	7	28	9	117	7	133	12	0	20	32	37	141	13	191	384
12:30 PM	16	1	6	23	13	113	7	133	8	0	24	32	39	136	21	196	384
12:45 PM	16	0	6	22	7	93	6	106	4	0	24	28	26	188	8	222	378
Total	70	1	21	92	38	542	23	603	35	0	102	137	133	592	52	777	1609
01:00 PM	11	0	7	18	9	84	6	99	7	0	22	29	27	146	16	189	335
01:15 PM	15	0	11	26	5	77	8	90	7	0	14	21	38	115	13	166	303
01:30 PM	5	0	10	15	5	77	6	88	6	0	14	20	22	88	20	130	253
01:45 PM	21	0	5	26	7	71	8	86	8	0	21	29	30	101	12	143	284
Total	52	0	33	85	26	309	28	363	28	0	71	99	117	450	61	628	1175
02:00 PM	14	0	2	16	6	80	6	92	8	0	18	26	20	146	22	188	322
02:15 PM	12	0	7	19	6	74	3	83	8	0	18	26	29	87	15	131	259
02:30 PM	11	0	1	12	8	77	2	87	11	0	19	30	21	87	23	131	260
02:45 PM	11	0	8	19	15	71	8	94	10	0	26	36	41	91	24	156	305
Total	48	0	18	66	35	302	19	356	37	0	81	118	111	411	84	606	1146
03:00 PM	12	1	4	17	13	98	6	117	8	0	26	34	34	84	24	142	310
03:15 PM	12	0	6	18	9	81	12	102	5	0	16	21	35	93	20	148	289
03:30 PM	14	0	8	22	6	104	7	117	10	0	38	48	42	121	25	188	375
03:45 PM	12	0	10	22	14	113	7	134	7	0	22	29	27	147	15	189	374
Total	50	1	28	79	42	396	32	470	30	0	102	132	138	445	84	667	1348

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File Name : US14AN~1  
 Site Code : 00000000  
 Start Date : 12/06/2007  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	South Bound Off Ramp From North				US 14 From East				North Bound Off Ramp From South				Us 14 From West				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
04:00 PM	18	0	9	27	21	219	19	259	9	0	18	27	57	123	23	203	516
04:15 PM	13	0	5	18	30	170	17	217	8	0	23	31	30	139	25	194	460
04:30 PM	18	0	1	19	32	220	29	281	8	0	26	34	49	112	38	199	533
04:45 PM	23	0	5	28	17	209	19	245	6	0	33	39	56	123	24	203	515
Total	72	0	20	92	100	818	84	1002	31	0	100	131	192	497	110	799	2024
05:00 PM	15	0	5	20	19	278	19	316	3	0	31	34	56	122	25	203	573
05:15 PM	14	0	9	23	21	192	26	239	2	0	21	23	35	121	42	198	483
05:30 PM	20	0	6	26	14	162	15	191	3	0	23	26	45	111	36	192	435
05:45 PM	31	0	5	36	13	192	11	216	15	0	36	51	28	131	21	180	483
Total	80	0	25	105	67	824	71	962	23	0	111	134	164	485	124	773	1974
06:00 PM	21	0	8	29	15	108	9	132	7	0	38	45	30	79	29	138	344
06:15 PM	18	1	4	23	8	117	7	132	7	0	29	36	28	96	15	139	330
06:30 PM	34	0	3	37	7	107	8	122	8	0	26	34	26	79	17	122	315
06:45 PM	12	0	3	15	10	114	3	127	15	0	25	40	21	81	10	112	294
Total	85	1	18	104	40	446	27	513	37	0	118	155	105	335	71	511	1283
Grand Total	786	3	413	1202	485	5220	376	6081	491	0	1242	1733	1320	5322	859	7501	16517
Apprch %	65.4	0.2	34.4		8.0	85.8	6.2		28.3	0.0	71.7		17.6	71.0	11.5		
Total %	4.8	0.0	2.5	7.3	2.9	31.6	2.3	36.8	3.0	0.0	7.5	10.5	8.0	32.2	5.2	45.4	

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File Name : BRBBE2~1  
 Site Code : 00000000  
 Start Date : 01/14/2010  
 Page No : 1

Groups Printed- 1 - Unshifted

Start Time	Main From North					US14/6th Street From East					Main From South					US14/6th Street From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	2	0	4	0	6	1	13	3	0	17	12	3	3	0	18	3	20	0	1	24	65
07:15 AM	4	3	0	0	7	2	15	8	1	26	9	4	4	1	18	2	23	0	0	25	76
07:30 AM	1	3	11	0	15	0	29	4	2	35	9	7	5	0	21	3	53	3	0	59	130
07:45 AM	7	3	12	0	22	8	40	10	0	58	20	15	10	0	45	4	76	10	0	90	215
Total	14	9	27	0	50	11	97	25	3	136	50	29	22	1	102	12	172	13	1	198	486
08:00 AM	5	3	5	1	14	5	43	12	0	60	26	10	7	0	43	2	50	7	0	59	176
08:15 AM	2	6	4	0	12	2	32	13	0	47	17	10	4	1	32	11	51	4	0	66	157
08:30 AM	3	7	9	0	19	4	28	7	0	39	18	6	5	0	29	3	43	6	0	52	139
08:45 AM	5	9	4	0	18	8	32	12	0	52	20	7	11	0	38	9	51	4	1	65	173
Total	15	25	22	1	63	19	135	44	0	198	81	33	27	1	142	25	195	21	1	242	645
09:00 AM	4	6	3	0	13	6	42	13	0	61	21	8	11	0	40	7	31	1	2	41	155
09:15 AM	2	5	7	0	14	4	43	18	0	65	16	3	3	0	22	5	41	1	2	49	150
09:30 AM	3	6	5	0	14	8	48	12	2	70	28	6	9	0	43	4	41	5	0	50	177
09:45 AM	5	4	11	0	20	9	29	26	0	64	16	16	12	1	45	12	34	3	0	49	178
Total	14	21	26	0	61	27	162	69	2	260	81	33	35	1	150	28	147	10	4	189	660
10:00 AM	4	13	8	0	25	6	43	15	0	64	28	13	2	0	43	10	50	2	0	62	194
10:15 AM	5	6	6	1	18	13	35	22	0	70	40	7	9	2	58	7	38	2	3	50	196
10:30 AM	7	13	12	1	33	11	54	25	1	91	33	6	6	0	45	3	50	2	2	57	226
10:45 AM	3	10	12	0	25	8	48	17	1	74	36	8	6	0	50	6	55	2	0	63	212
Total	19	42	38	2	101	38	180	79	2	299	137	34	23	2	196	26	193	8	5	232	828
11:00 AM	2	6	14	0	22	10	54	19	0	83	40	13	9	1	63	12	51	3	1	67	235
11:15 AM	11	19	12	0	42	4	57	28	0	89	38	9	14	1	62	4	48	3	1	56	249
11:30 AM	10	11	7	0	28	12	57	29	0	98	38	14	10	1	63	12	49	3	2	66	255
11:45 AM	10	25	10	0	45	16	63	50	2	131	37	14	10	0	61	6	49	9	1	65	302
Total	33	61	43	0	137	42	231	126	2	401	153	50	43	3	249	34	197	18	5	254	1041
12:00 PM	9	25	17	0	51	17	66	39	2	124	58	17	6	0	81	6	87	5	1	99	355
12:15 PM	4	18	10	1	33	17	66	27	0	110	47	17	11	0	75	6	35	4	1	46	264
12:30 PM	5	11	16	0	32	12	71	28	0	111	41	13	8	1	63	4	49	5	0	58	264
12:45 PM	10	15	26	0	51	11	72	26	1	110	45	18	14	1	78	10	57	3	0	70	309
Total	28	69	69	1	167	57	275	120	3	455	191	65	39	2	297	26	228	17	2	273	1192
01:00 PM	11	19	17	0	47	12	67	42	0	121	35	15	14	0	64	7	57	5	0	69	301
01:15 PM	5	16	15	0	36	19	65	37	2	123	37	11	17	0	65	18	70	2	2	92	316
01:30 PM	7	12	12	0	31	15	54	41	1	111	44	11	14	1	70	10	69	5	0	84	296
01:45 PM	4	4	12	1	21	12	61	39	3	115	47	12	6	0	65	9	60	2	5	76	277
Total	27	51	56	1	135	58	247	159	6	470	163	49	51	1	264	44	256	14	7	321	1190
02:00 PM	6	9	10	0	25	16	66	26	0	108	31	9	18	2	60	10	81	2	3	96	289
02:15 PM	3	13	16	0	32	19	70	18	1	108	37	12	10	2	61	13	53	0	3	69	270
02:30 PM	7	16	17	0	40	15	68	27	0	110	35	8	16	3	62	12	55	3	2	72	284
02:45 PM	8	19	8	0	35	11	66	31	2	110	43	19	10	1	73	16	40	4	3	63	281
Total	24	57	51	0	132	61	270	102	3	436	146	48	54	8	256	51	229	9	11	300	1124
03:00 PM	6	17	10	1	34	11	49	33	0	93	43	19	15	2	79	6	48	4	2	60	266
03:15 PM	5	9	9	0	23	7	56	28	0	91	48	14	12	0	74	10	60	5	0	75	263
03:30 PM	8	18	10	0	36	20	65	22	1	108	39	9	7	0	55	11	52	3	1	67	266
03:45 PM	12	21	14	0	47	16	73	35	3	127	61	11	12	0	84	15	53	7	2	77	335
Total	31	65	43	1	140	54	243	118	4	419	191	53	46	2	292	42	213	19	5	279	1130
04:00 PM	9	17	14	0	40	16	64	32	1	113	41	15	8	0	64	10	60	3	0	73	290
04:15 PM	8	16	17	0	41	14	76	32	15	137	43	12	13	2	70	18	58	4	1	81	329
04:30 PM	9	7	19	1	36	18	98	33	1	150	36	8	25	1	70	15	69	3	3	90	346
04:45 PM	8	23	19	1	51	13	74	42	1	130	48	10	15	1	74	16	62	4	1	83	338
Total	34	63	69	2	168	61	312	139	18	530	168	45	61	4	278	59	249	14	5	327	1303

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File Name : BRBBE2~1  
 Site Code : 00000000  
 Start Date : 01/14/2010  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	Main From North					US14/6th Street From East					Main From South					US14/6th Street From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
05:00 PM	18	24	20	1	63	21	88	51	1	161	49	22	14	1	86	19	95	6	3	123	433
05:15 PM	12	21	22	0	55	21	70	37	0	128	44	13	19	0	76	11	57	9	1	78	337
05:30 PM	3	17	11	0	31	20	52	33	0	105	27	20	11	1	59	12	37	6	1	56	251
05:45 PM	5	24	8	1	38	29	60	36	1	126	29	36	7	0	72	13	34	10	1	58	294
Total	38	86	61	2	187	91	270	157	2	520	149	91	51	2	293	55	223	31	6	315	1315
06:00 PM	3	19	17	0	39	6	45	24	1	76	30	16	7	0	53	9	54	3	2	68	236
06:15 PM	4	8	7	0	19	10	42	31	1	84	29	9	10	0	48	12	42	6	2	62	213
06:30 PM	5	10	10	0	25	8	35	22	0	65	27	7	9	0	43	7	23	1	0	31	164
06:45 PM	1	10	12	0	23	14	41	22	0	77	25	22	5	1	53	7	24	2	3	36	189
Total	13	47	46	0	106	38	163	99	2	302	111	54	31	1	197	35	143	12	7	197	802
Grand Total	290	596	551	10	1447	557	2585	1237	47	4426	1621	584	483	28	2716	437	2445	186	59	3127	11716
Apprch %	20.0	41.2	38.1	0.7		12.6	58.4	27.9	1.1		59.7	21.5	17.8	1.0		14.0	78.2	5.9	1.9		
Total %	2.5	5.1	4.7	0.1	12.4	4.8	22.1	10.6	0.4	37.8	13.8	5.0	4.1	0.2	23.2	3.7	20.9	1.6	0.5	26.7	

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File Name : BR2E7A~1  
 Site Code : 00000000  
 Start Date : 03/16/2010  
 Page No : 1

Groups Printed- Unshifted

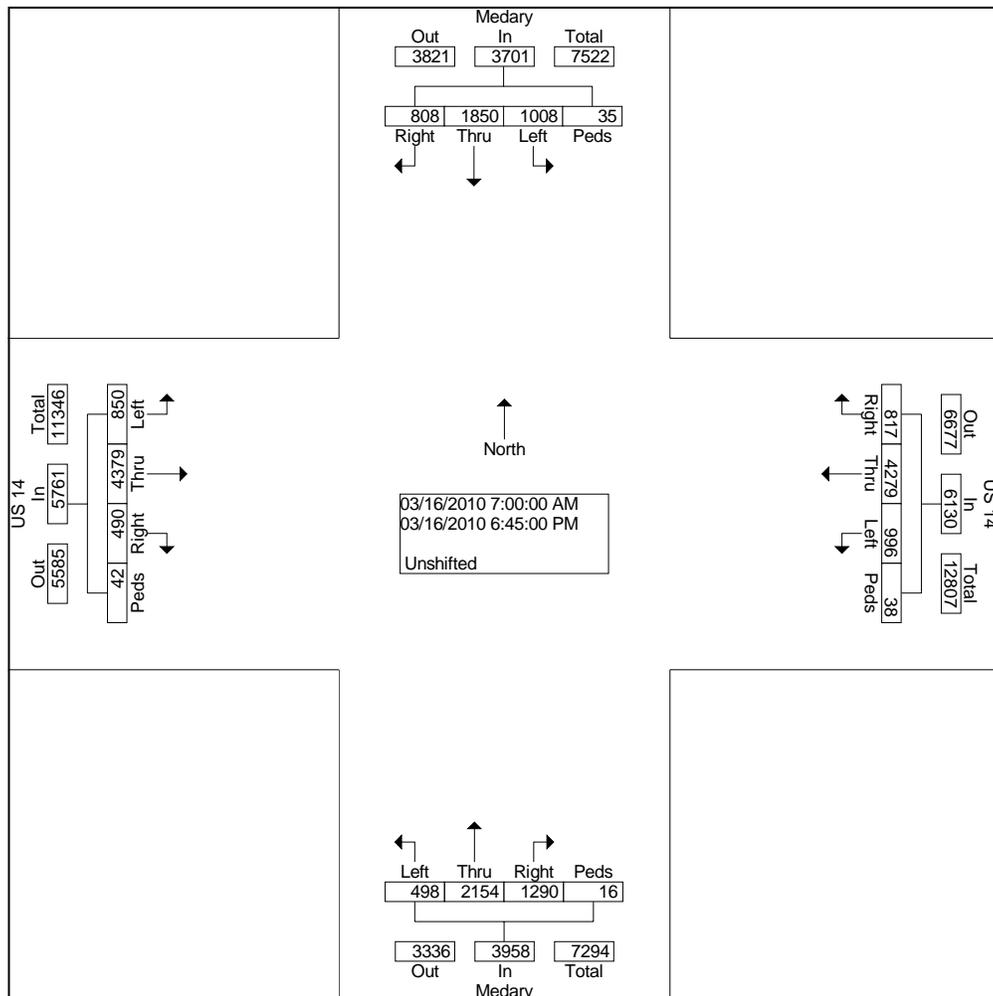
Start Time	Medary From North					US 14 From East					Medary From South					US 14 From West					Int. Total
	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	6	12	9	0	27	7	34	8	0	49	11	18	3	0	32	5	41	4	0	50	158
07:15 AM	5	20	10	0	35	11	31	8	1	51	29	27	8	0	64	7	57	12	0	76	226
07:30 AM	3	27	16	0	46	10	49	14	1	74	23	80	12	1	116	15	73	27	1	116	352
07:45 AM	7	46	22	0	75	22	78	19	0	119	50	107	10	0	167	16	120	17	3	156	517
Total	21	105	57	0	183	50	192	49	2	293	113	232	33	1	379	43	291	60	4	398	1253
08:00 AM	10	27	9	0	46	21	62	22	1	106	38	89	27	0	154	15	80	25	1	121	427
08:15 AM	13	18	7	0	38	22	64	11	1	98	33	85	5	0	123	3	53	11	0	67	326
08:30 AM	11	18	9	0	38	14	51	5	1	71	58	89	6	0	153	5	78	21	1	105	367
08:45 AM	7	25	18	0	50	14	55	17	2	88	46	79	10	1	136	9	57	15	1	82	356
Total	41	88	43	0	172	71	232	55	5	363	175	342	48	1	566	32	268	72	3	375	1476
09:00 AM	9	9	12	2	32	12	50	7	0	69	15	29	9	1	54	7	54	13	1	75	230
09:15 AM	16	21	13	0	50	13	41	9	0	63	14	33	7	0	54	6	47	19	0	72	239
09:30 AM	10	13	9	2	34	17	54	11	0	82	30	46	13	2	91	0	51	20	2	73	280
09:45 AM	19	23	23	1	66	13	71	23	5	112	45	42	2	0	89	6	60	11	1	78	345
Total	54	66	57	5	182	55	216	50	5	326	104	150	31	3	288	19	212	63	4	298	1094
10:00 AM	6	20	18	1	45	10	60	19	0	89	8	35	6	2	51	10	62	14	2	88	273
10:15 AM	18	20	24	1	63	20	72	8	1	101	23	26	4	0	53	7	72	10	0	89	306
10:30 AM	11	32	14	0	57	18	82	12	0	112	25	47	8	0	80	9	60	31	0	100	349
10:45 AM	26	47	30	1	104	14	81	29	1	125	29	50	12	0	91	5	72	19	1	97	417
Total	61	119	86	3	269	62	295	68	2	427	85	158	30	2	275	31	266	74	3	374	1345
11:00 AM	13	35	20	0	68	9	70	25	0	104	20	20	7	0	47	11	75	20	0	106	325
11:15 AM	27	40	23	1	91	16	71	18	0	105	18	38	12	0	68	3	75	13	0	91	355
11:30 AM	24	33	21	2	80	25	90	16	2	133	18	56	9	0	83	4	91	30	0	125	421
11:45 AM	22	55	41	0	118	17	127	27	1	172	43	57	15	0	115	8	112	25	2	147	552
Total	86	163	105	3	357	67	358	86	3	514	99	171	43	0	313	26	353	88	2	469	1653
12:00 PM	34	74	42	2	152	35	128	40	1	204	31	25	13	0	69	18	133	25	2	178	603
12:15 PM	19	64	37	1	121	27	123	35	0	185	35	42	7	0	84	19	151	30	2	202	592
12:30 PM	21	40	35	0	96	30	129	22	0	181	40	77	10	1	128	10	136	28	1	175	580
12:45 PM	28	47	47	1	123	28	142	26	1	197	46	72	16	0	134	8	141	28	0	177	631
Total	102	225	161	4	492	120	522	123	2	767	152	216	46	1	415	55	561	111	5	732	2406
01:00 PM	15	43	22	2	82	18	121	18	0	157	17	65	6	0	88	3	133	17	0	153	480
01:15 PM	19	32	19	0	70	14	114	21	1	150	22	28	8	0	58	6	101	13	0	120	398
01:30 PM	20	22	10	1	53	6	80	11	1	98	22	42	13	1	78	7	106	20	1	134	363
01:45 PM	30	44	24	1	99	9	93	28	0	130	26	52	10	0	88	7	106	18	3	134	451
Total	84	141	75	4	304	47	408	78	2	535	87	187	37	1	312	23	446	68	4	541	1692
02:00 PM	16	50	26	2	94	21	100	22	1	144	27	26	5	0	58	8	101	13	1	123	419
02:15 PM	13	22	14	0	49	13	90	26	1	130	27	15	10	0	52	13	86	21	0	120	351
02:30 PM	13	31	15	0	59	22	100	17	1	140	24	33	6	0	63	17	93	10	1	121	383
02:45 PM	23	62	21	1	107	19	85	26	2	132	24	56	12	1	93	20	110	21	1	152	484
Total	65	165	76	3	309	75	375	91	5	546	102	130	33	1	266	58	390	65	3	516	1637
03:00 PM	29	58	24	0	111	13	104	16	0	133	17	31	8	1	57	7	94	18	1	120	421
03:15 PM	16	56	23	1	96	18	106	29	0	153	19	31	11	0	61	8	86	15	0	109	419
03:30 PM	23	48	11	2	84	11	112	22	0	145	24	68	20	2	114	15	115	21	2	153	496
03:45 PM	28	52	27	2	109	27	115	32	5	179	30	46	12	0	88	14	115	21	1	151	527
Total	96	214	85	5	400	69	437	99	5	610	90	176	51	3	320	44	410	75	4	533	1863
04:00 PM	24	51	34	1	110	19	123	20	0	162	26	18	14	2	60	18	140	17	2	177	509
04:15 PM	22	41	27	0	90	13	110	25	1	149	21	28	10	0	59	9	87	17	0	113	411
04:30 PM	13	46	19	1	79	28	116	29	0	173	22	33	23	0	78	17	125	15	0	157	487
04:45 PM	20	55	24	0	99	22	122	24	1	169	23	35	9	0	67	22	129	17	1	169	504
Total	79	193	104	2	378	82	471	98	2	653	92	114	56	2	264	66	481	66	3	616	1911

Default Titles  
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File Name : BR2E7A~1  
 Site Code : 00000000  
 Start Date : 03/16/2010  
 Page No : 2

Groups Printed- Unshifted

Start Time	Medary From North					US 14 From East					Medary From South					US 14 From West					Int. Total				
	Rig ht	Thru	Left	Peds	App. Total	Rig ht	Thru	Left	Peds	App. Total	Rig ht	Thru	Left	Peds	App. Total	Rig ht	Thru	Left	Peds	App. Total					
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	
05:00 PM	21	88	38	0	147	11	124	33	0	168	28	39	6	0	73	17	125	17	0	159	547				
05:15 PM	14	74	27	2	117	17	112	31	0	160	19	30	21	0	70	12	115	18	0	145	492				
05:30 PM	11	31	16	0	58	27	121	26	2	176	24	40	13	0	77	15	100	11	0	126	437				
05:45 PM	14	32	11	2	59	13	90	20	1	124	30	37	13	0	80	9	70	11	2	92	355				
Total	60	225	92	4	381	68	447	110	3	628	101	146	53	0	300	53	410	57	2	522	1831				
06:00 PM	10	32	18	1	61	17	87	28	1	133	21	35	5	0	61	12	77	12	2	103	358				
06:15 PM	13	33	16	0	62	12	80	22	0	114	19	26	11	0	56	14	81	15	2	112	344				
06:30 PM	14	37	18	0	69	11	79	18	0	108	23	38	9	1	71	10	77	11	1	99	347				
06:45 PM	22	44	15	1	82	11	80	21	1	113	27	33	12	0	72	4	56	13	0	73	340				
Total	59	146	67	2	274	51	326	89	2	468	90	132	37	1	260	40	291	51	5	387	1389				
Grand Total	808	1850	1008	35	3701	817	4279	996	38	6130	1290	2154	498	16	3958	490	4379	850	42	5761	19550				
Apprch %	21.8	50.0	27.2	0.9		13.3	69.8	16.2	0.6		32.6	54.4	12.6	0.4		8.5	76.0	14.8	0.7						
Total %	4.1	9.5	5.2	0.2	18.9	4.2	21.9	5.1	0.2	31.4	6.6	11.0	2.5	0.1	20.2	2.5	22.4	4.3	0.2	29.5					



Default Titles  
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 Then Click the Titles Tab

File Name : BR051A~1  
 Site Code : 00000000  
 Start Date : 01/27/2010  
 Page No : 1

Groups Printed- 1 - Unshifted

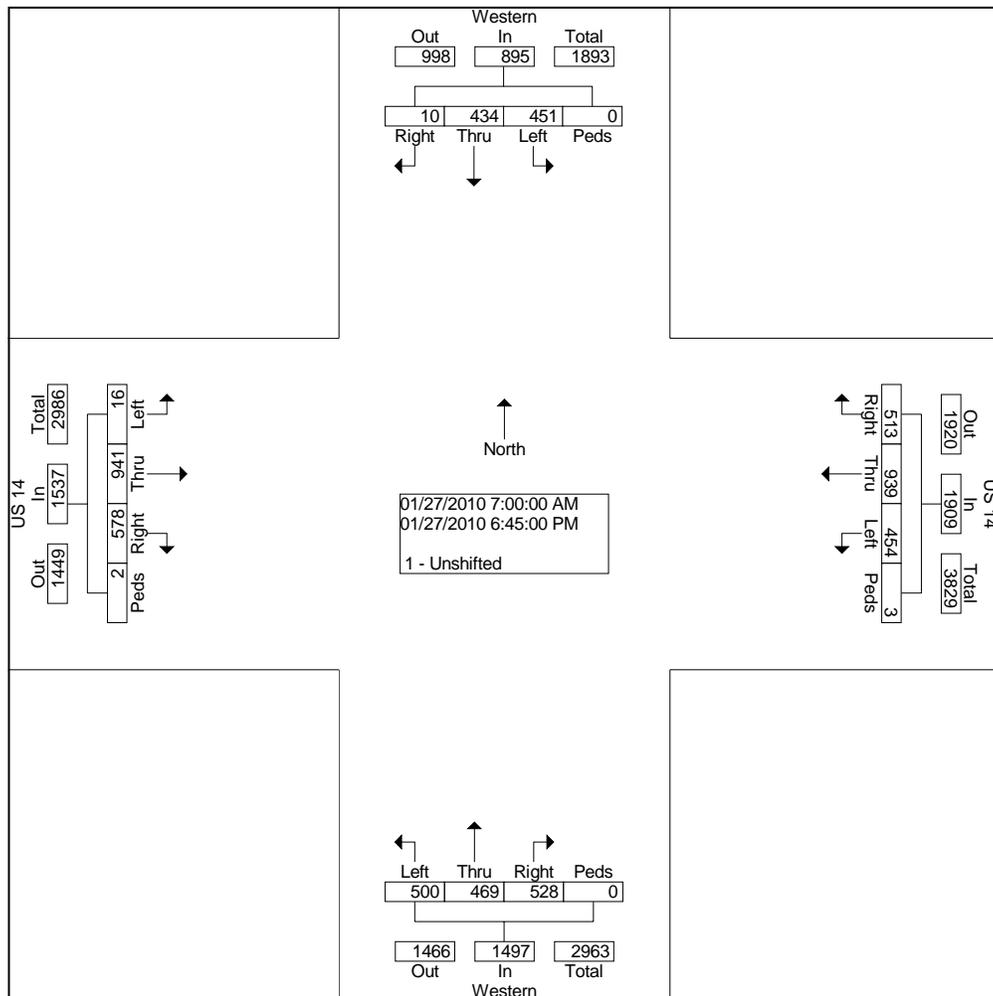
Start Time	Western From North					US 14 From East					Western From South					US 14 From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	1	1	0	2	1	4	1	0	6	4	3	6	0	13	13	11	0	0	24	45
07:15 AM	0	13	6	0	19	3	13	6	0	22	5	14	6	0	25	34	14	0	0	48	114
07:30 AM	0	8	10	0	18	8	8	11	0	27	0	16	10	0	26	41	27	4	0	72	143
07:45 AM	1	20	14	0	35	16	26	28	0	70	20	18	16	0	54	47	60	0	0	107	266
Total	1	42	31	0	74	28	51	46	0	125	29	51	38	0	118	135	112	4	0	251	568
08:00 AM	0	12	3	0	15	10	19	9	0	38	10	9	11	0	30	18	35	0	0	53	136
08:15 AM	1	13	12	0	26	8	9	9	0	26	15	8	11	0	34	12	34	0	0	46	132
08:30 AM	1	9	8	0	18	6	6	12	0	24	23	5	4	0	32	6	22	0	0	28	102
08:45 AM	0	5	9	0	14	12	12	9	0	33	7	11	8	0	26	9	14	0	0	23	96
Total	2	39	32	0	73	36	46	39	0	121	55	33	34	0	122	45	105	0	0	150	466
09:00 AM	1	6	14	0	21	9	7	6	0	22	15	10	4	0	29	8	18	0	0	26	98
09:15 AM	0	3	7	0	10	10	9	12	0	31	8	2	4	0	14	10	15	0	0	25	80
09:30 AM	0	8	10	0	18	8	10	11	0	29	6	8	4	0	18	7	11	0	0	18	83
09:45 AM	0	11	14	0	25	9	18	15	0	42	8	9	3	0	20	2	23	0	0	25	112
Total	1	28	45	0	74	36	44	44	0	124	37	29	15	0	81	27	67	0	0	94	373
10:00 AM	0	6	14	0	20	8	12	9	0	29	11	9	2	0	22	11	12	0	0	23	94
10:15 AM	0	2	7	0	9	6	18	6	0	30	8	8	9	0	25	5	10	0	0	15	79
10:30 AM	0	6	6	0	12	6	11	2	0	19	10	4	2	0	16	8	20	0	0	28	75
10:45 AM	0	6	8	0	14	8	6	17	0	31	16	7	6	0	29	8	17	2	0	27	101
Total	0	20	35	0	55	28	47	34	0	109	45	28	19	0	92	32	59	2	0	93	349
11:00 AM	0	14	6	0	20	8	17	7	0	32	9	6	5	0	20	4	17	0	0	21	93
11:15 AM	0	6	6	0	12	3	10	6	0	19	15	5	9	0	29	8	19	1	0	28	88
11:30 AM	1	4	10	0	15	6	17	9	0	32	9	4	5	0	18	5	21	1	0	27	92
11:45 AM	0	16	8	0	24	8	16	16	0	40	17	8	5	0	30	6	18	1	0	25	119
Total	1	40	30	0	71	25	60	38	0	123	50	23	24	0	97	23	75	3	0	101	392
12:00 PM	1	13	16	0	30	14	22	17	1	54	25	12	8	0	45	11	22	0	0	33	162
12:15 PM	0	7	12	0	19	20	17	10	0	47	14	10	9	0	33	8	27	0	0	35	134
12:30 PM	0	12	12	0	24	12	13	11	0	36	8	9	10	0	27	8	15	0	1	24	111
12:45 PM	1	10	9	0	20	16	23	24	0	63	14	14	6	0	34	12	25	0	0	37	154
Total	2	42	49	0	93	62	75	62	1	200	61	45	33	0	139	39	89	0	1	129	561
01:00 PM	0	6	7	0	13	5	22	12	0	39	10	14	11	0	35	6	22	1	0	29	116
01:15 PM	0	8	12	0	20	19	19	9	0	47	7	11	4	0	22	7	26	0	0	33	122
01:30 PM	0	5	13	0	18	17	18	12	0	47	10	9	7	0	26	9	12	0	0	21	112
01:45 PM	0	8	10	0	18	10	18	14	0	42	8	10	7	0	25	8	14	0	0	22	107
Total	0	27	42	0	69	51	77	47	0	175	35	44	29	0	108	30	74	1	0	105	457
02:00 PM	0	9	9	0	18	15	22	7	0	44	9	12	13	0	34	6	11	1	0	18	114
02:15 PM	0	12	10	0	22	8	19	9	0	36	9	7	8	0	24	5	21	0	0	26	108
02:30 PM	0	13	8	0	21	8	11	10	0	29	14	5	5	0	24	8	20	0	0	28	102
02:45 PM	0	9	12	0	21	11	16	7	0	34	8	6	15	0	29	12	22	0	0	34	118
Total	0	43	39	0	82	42	68	33	0	143	40	30	41	0	111	31	74	1	0	106	442
03:00 PM	1	8	6	0	15	10	29	7	0	46	7	8	10	0	25	13	19	1	0	33	119
03:15 PM	0	18	15	0	33	6	16	9	0	31	11	7	8	0	26	2	17	0	1	20	110
03:30 PM	0	9	8	0	17	15	28	8	0	51	19	21	19	0	59	9	15	0	0	24	151
03:45 PM	0	11	8	0	19	7	19	7	1	34	12	10	13	0	35	17	29	0	0	46	134
Total	1	46	37	0	84	38	92	31	1	162	49	46	50	0	145	41	80	1	1	123	514
04:00 PM	0	11	9	0	20	10	22	13	0	45	4	8	10	0	22	8	21	0	0	29	116
04:15 PM	0	4	12	0	16	11	20	12	0	43	14	12	20	0	46	13	20	1	0	34	139
04:30 PM	0	18	14	0	32	8	30	12	0	50	24	17	35	0	76	12	24	0	0	36	194
04:45 PM	0	8	11	0	19	13	33	7	0	53	9	13	18	0	40	20	19	1	0	40	152
Total	0	41	46	0	87	42	105	44	0	191	51	50	83	0	184	53	84	2	0	139	601

**Default Titles**  
 Change These in The Preferences Window  
 Select File/Preference in the Main Screenshot  
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File Name : BR051A~1  
 Site Code : 00000000  
 Start Date : 01/27/2010  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	Western From North					US 14 From East					Western From South					US 14 From West					Int. Total
	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
05:00 PM	0	12	9	0	21	12	62	9	0	83	39	20	38	0	97	16	32	1	0	49	250
05:15 PM	0	13	10	0	23	11	40	6	0	57	9	12	17	0	38	24	16	1	0	41	159
05:30 PM	1	12	16	0	29	23	47	4	1	75	8	11	25	0	44	18	14	0	0	32	180
05:45 PM	0	4	6	0	10	14	36	2	0	52	4	12	13	0	29	20	10	0	0	30	121
Total	1	41	41	0	83	60	185	21	1	267	60	55	93	0	208	78	72	2	0	152	710
06:00 PM	1	7	4	0	12	22	18	7	0	47	4	11	10	0	25	16	14	0	0	30	114
06:15 PM	0	5	8	0	13	11	22	3	0	36	6	4	12	0	22	9	12	0	0	21	92
06:30 PM	0	6	3	0	9	16	22	3	0	41	3	11	10	0	24	9	16	0	0	25	99
06:45 PM	0	7	9	0	16	16	27	2	0	45	3	9	9	0	21	10	8	0	0	18	100
Total	1	25	24	0	50	65	89	15	0	169	16	35	41	0	92	44	50	0	0	94	405
Grand Total	10	434	451	0	895	513	939	454	3	1909	528	469	500	0	1497	578	941	16	2	1537	5838
Aprch %	1.1	48.5	50.4	0.0		26.9	49.2	23.8	0.2		35.3	31.3	33.4	0.0		37.6	61.2	1.0	0.1		
Total %	0.2	7.4	7.7	0.0	15.3	8.8	16.1	7.8	0.1	32.7	9.0	8.0	8.6	0.0	25.6	9.9	16.1	0.3	0.0	26.3	



**SD DEPARTMENT OF TRANSPORTATION  
ABERDEEN REGION**

File Name : BROOKI~3  
Site Code : 00000000  
Start Date : 01/27/2010  
Page No : 1

Groups Printed- 1 - Unshifted

Start Time	Western From North					US 14 From East					Western From South					US 14 From West					Int. Total
	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	1	1	0	0	2	1	4	1	0	6	6	3	4	0	13	0	11	13	0	24	45
07:15 AM	6	13	0	0	19	6	13	3	0	22	6	14	5	0	25	0	14	34	0	48	114
07:30 AM	10	8	0	0	18	11	8	8	0	27	10	16	0	0	26	4	27	41	0	72	143
07:45 AM	14	20	1	0	35	28	26	16	0	70	16	18	20	0	54	0	60	47	0	107	266
Total	31	42	1	0	74	46	51	28	0	125	38	51	29	0	118	4	112	135	0	251	568
08:00 AM	3	12	0	0	15	9	19	10	0	38	11	9	10	0	30	0	35	18	0	53	136
08:15 AM	12	13	1	0	26	9	9	8	0	26	11	8	15	0	34	0	34	12	0	46	132
08:30 AM	8	9	1	0	18	12	6	6	0	24	4	5	23	0	32	0	22	6	0	28	102
08:45 AM	9	5	0	0	14	9	12	12	0	33	8	11	7	0	26	0	14	9	0	23	96
Total	32	39	2	0	73	39	46	36	0	121	34	33	55	0	122	0	105	45	0	150	466
09:00 AM	14	6	1	0	21	6	7	9	0	22	4	10	15	0	29	0	18	8	0	26	98
09:15 AM	7	3	0	0	10	12	9	10	0	31	4	2	8	0	14	0	15	10	0	25	80
09:30 AM	10	8	0	0	18	11	10	8	0	29	4	8	6	0	18	0	11	7	0	18	83
09:45 AM	14	11	0	0	25	15	18	9	0	42	3	9	8	0	20	0	23	2	0	25	112
Total	45	28	1	0	74	44	44	36	0	124	15	29	37	0	81	0	67	27	0	94	373
10:00 AM	14	6	0	0	20	9	12	8	0	29	2	9	11	0	22	0	12	11	0	23	94
10:15 AM	7	2	0	0	9	6	18	6	0	30	9	8	8	0	25	0	10	5	0	15	79
10:30 AM	6	6	0	0	12	2	11	6	0	19	2	4	10	0	16	0	20	8	0	28	75
10:45 AM	8	6	0	0	14	17	6	8	0	31	6	7	16	0	29	2	17	8	0	27	101
Total	35	20	0	0	55	34	47	28	0	109	19	28	45	0	92	2	59	32	0	93	349
11:00 AM	6	14	0	0	20	7	17	8	0	32	5	6	9	0	20	0	17	4	0	21	93
11:15 AM	6	6	0	0	12	6	10	3	0	19	9	5	15	0	29	1	19	8	0	28	88
11:30 AM	10	4	1	0	15	9	17	6	0	32	5	4	9	0	18	1	21	5	0	27	92
11:45 AM	8	16	0	0	24	16	16	8	0	40	5	8	17	0	30	1	18	6	0	25	119
Total	30	40	1	0	71	38	60	25	0	123	24	23	50	0	97	3	75	23	0	101	392
12:00 PM	16	13	1	0	30	17	22	14	1	54	8	12	25	0	45	0	22	11	0	33	162
12:15 PM	12	7	0	0	19	10	17	20	0	47	9	10	14	0	33	0	27	8	0	35	134
12:30 PM	12	12	0	0	24	11	13	12	0	36	10	9	8	0	27	0	15	8	1	24	111
12:45 PM	9	10	1	0	20	24	23	16	0	63	6	14	14	0	34	0	25	12	0	37	154
Total	49	42	2	0	93	62	75	62	1	200	33	45	61	0	139	0	89	39	1	129	561
01:00 PM	7	6	0	0	13	12	22	5	0	39	11	14	10	0	35	1	22	6	0	29	116
01:15 PM	12	8	0	0	20	9	19	19	0	47	4	11	7	0	22	0	26	7	0	33	122
01:30 PM	13	5	0	0	18	12	18	17	0	47	7	9	10	0	26	0	12	9	0	21	112
01:45 PM	10	8	0	0	18	14	18	10	0	42	7	10	8	0	25	0	14	8	0	22	107
Total	42	27	0	0	69	47	77	51	0	175	29	44	35	0	108	1	74	30	0	105	457
02:00 PM	9	9	0	0	18	7	22	15	0	44	13	12	9	0	34	1	11	6	0	18	114
02:15 PM	10	12	0	0	22	9	19	8	0	36	8	7	9	0	24	0	21	5	0	26	108
02:30 PM	8	13	0	0	21	10	11	8	0	29	5	5	14	0	24	0	20	8	0	28	102
02:45 PM	12	9	0	0	21	7	16	11	0	34	15	6	8	0	29	0	22	12	0	34	118
Total	39	43	0	0	82	33	68	42	0	143	41	30	40	0	111	1	74	31	0	106	442
03:00 PM	6	8	1	0	15	7	29	10	0	46	10	8	7	0	25	1	19	13	0	33	119
03:15 PM	15	18	0	0	33	9	16	6	0	31	8	7	11	0	26	0	17	2	1	20	110
03:30 PM	8	9	0	0	17	8	28	15	0	51	19	21	19	0	59	0	15	9	0	24	151
03:45 PM	8	11	0	0	19	7	19	7	1	34	13	10	12	0	35	0	29	17	0	46	134
Total	37	46	1	0	84	31	92	38	1	162	50	46	49	0	145	1	80	41	1	123	514
04:00 PM	9	11	0	0	20	13	22	10	0	45	10	8	4	0	22	0	21	8	0	29	116
04:15 PM	12	4	0	0	16	12	20	11	0	43	20	12	14	0	46	1	20	13	0	34	139
04:30 PM	14	18	0	0	32	12	30	8	0	50	35	17	24	0	76	0	24	12	0	36	194
04:45 PM	11	8	0	0	19	7	33	13	0	53	18	13	9	0	40	1	19	20	0	40	152
Total	46	41	0	0	87	44	105	42	0	191	83	50	51	0	184	2	84	53	0	139	601

SD DEPARTMENT OF TRANSPORTATION  
ABERDEEN REGION

File Name : BROOKI~3  
Site Code : 00000000  
Start Date : 01/27/2010  
Page No : 2

Groups Printed- 1 - Unshifted

Start Time	Western From North					US 14 From East					Western From South					US 14 From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
05:00 PM	9	12	0	0	21	9	62	12	0	83	38	20	39	0	97	1	32	16	0	49	250
05:15 PM	10	13	0	0	23	6	40	11	0	57	17	12	9	0	38	1	16	24	0	41	159
05:30 PM	16	12	1	0	29	4	47	23	1	75	25	11	8	0	44	0	14	18	0	32	180
05:45 PM	6	4	0	0	10	2	36	14	0	52	13	12	4	0	29	0	10	20	0	30	121
Total	41	41	1	0	83	21	185	60	1	267	93	55	60	0	208	2	72	78	0	152	710
06:00 PM	4	7	1	0	12	7	18	22	0	47	10	11	4	0	25	0	14	16	0	30	114
06:15 PM	8	5	0	0	13	3	22	11	0	36	12	4	6	0	22	0	12	9	0	21	92
06:30 PM	3	6	0	0	9	3	22	16	0	41	10	11	3	0	24	0	16	9	0	25	99
06:45 PM	9	7	0	0	16	2	27	16	0	45	9	9	3	0	21	0	8	10	0	18	100
Total	24	25	1	0	50	15	89	65	0	169	41	35	16	0	92	0	50	44	0	94	405
Grand Total	451	434	10	0	895	454	939	513	3	1909	500	469	528	0	1497	16	941	578	2	1537	5838
Apprch %	50.4	48.5	1.1	0.0		23.8	49.2	26.9	0.2		33.4	31.3	35.3	0.0		1.0	61.2	37.6	0.1		
Total %	7.7	7.4	0.2	0.0	15.3	7.8	16.1	8.8	0.1	32.7	8.6	8.0	9.0	0.0	25.6	0.3	16.1	9.9	0.0	26.3	

SD DEPARTMENT OF TRANSPORTATION  
ABERDEEN REGION

File Name : BRBBE2~1  
Site Code : 00000000  
Start Date : 01/14/2010  
Page No : 1

Groups Printed- 1 - Unshifted

Start Time	Main From North					US14/6th Street From East					Main From South					US14/6th Street From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	4	0	2	0	6	3	13	1	0	17	3	3	12	0	18	0	20	3	1	24	65
07:15 AM	0	3	4	0	7	8	15	2	1	26	4	4	9	1	18	0	23	2	0	25	76
07:30 AM	11	3	1	0	15	4	29	0	2	35	5	7	9	0	21	3	53	3	0	59	130
07:45 AM	12	3	7	0	22	10	40	8	0	58	10	15	20	0	45	10	76	4	0	90	215
Total	27	9	14	0	50	25	97	11	3	136	22	29	50	1	102	13	172	12	1	198	486
08:00 AM	5	3	5	1	14	12	43	5	0	60	7	10	26	0	43	7	50	2	0	59	176
08:15 AM	4	6	2	0	12	13	32	2	0	47	4	10	17	1	32	4	51	11	0	66	157
08:30 AM	9	7	3	0	19	7	28	4	0	39	5	6	18	0	29	6	43	3	0	52	139
08:45 AM	4	9	5	0	18	12	32	8	0	52	11	7	20	0	38	4	51	9	1	65	173
Total	22	25	15	1	63	44	135	19	0	198	27	33	81	1	142	21	195	25	1	242	645
09:00 AM	3	6	4	0	13	13	42	6	0	61	11	8	21	0	40	1	31	7	2	41	155
09:15 AM	7	5	2	0	14	18	43	4	0	65	3	3	16	0	22	1	41	5	2	49	150
09:30 AM	5	6	3	0	14	12	48	8	2	70	9	6	28	0	43	5	41	4	0	50	177
09:45 AM	11	4	5	0	20	26	29	9	0	64	12	16	16	1	45	3	34	12	0	49	178
Total	26	21	14	0	61	69	162	27	2	260	35	33	81	1	150	10	147	28	4	189	660
10:00 AM	8	13	4	0	25	15	43	6	0	64	2	13	28	0	43	2	50	10	0	62	194
10:15 AM	6	6	5	1	18	22	35	13	0	70	9	7	40	2	58	2	38	7	3	50	196
10:30 AM	12	13	7	1	33	25	54	11	1	91	6	6	33	0	45	2	50	3	2	57	226
10:45 AM	12	10	3	0	25	17	48	8	1	74	6	8	36	0	50	2	55	6	0	63	212
Total	38	42	19	2	101	79	180	38	2	299	23	34	137	2	196	8	193	26	5	232	828
11:00 AM	14	6	2	0	22	19	54	10	0	83	9	13	40	1	63	3	51	12	1	67	235
11:15 AM	12	19	11	0	42	28	57	4	0	89	14	9	38	1	62	3	48	4	1	56	249
11:30 AM	7	11	10	0	28	29	57	12	0	98	10	14	38	1	63	3	49	12	2	66	255
11:45 AM	10	25	10	0	45	50	63	16	2	131	10	14	37	0	61	9	49	6	1	65	302
Total	43	61	33	0	137	126	231	42	2	401	43	50	153	3	249	18	197	34	5	254	1041
12:00 PM	17	25	9	0	51	39	66	17	2	124	6	17	58	0	81	5	87	6	1	99	355
12:15 PM	10	18	4	1	33	27	66	17	0	110	11	17	47	0	75	4	35	6	1	46	264
12:30 PM	16	11	5	0	32	28	71	12	0	111	8	13	41	1	63	5	49	4	0	58	264
12:45 PM	26	15	10	0	51	26	72	11	1	110	14	18	45	1	78	3	57	10	0	70	309
Total	69	69	28	1	167	120	275	57	3	455	39	65	191	2	297	17	228	26	2	273	1192
01:00 PM	17	19	11	0	47	42	67	12	0	121	14	15	35	0	64	5	57	7	0	69	301
01:15 PM	15	16	5	0	36	37	65	19	2	123	17	11	37	0	65	2	70	18	2	92	316
01:30 PM	12	12	7	0	31	41	54	15	1	111	14	11	44	1	70	5	69	10	0	84	296
01:45 PM	12	4	4	1	21	39	61	12	3	115	6	12	47	0	65	2	60	9	5	76	277
Total	56	51	27	1	135	159	247	58	6	470	51	49	163	1	264	14	256	44	7	321	1190
02:00 PM	10	9	6	0	25	26	66	16	0	108	18	9	31	2	60	2	81	10	3	96	289
02:15 PM	16	13	3	0	32	18	70	19	1	108	10	12	37	2	61	0	53	13	3	69	270
02:30 PM	17	16	7	0	40	27	68	15	0	110	16	8	35	3	62	3	55	12	2	72	284
02:45 PM	8	19	8	0	35	31	66	11	2	110	10	19	43	1	73	4	40	16	3	63	281
Total	51	57	24	0	132	102	270	61	3	436	54	48	146	8	256	9	229	51	11	300	1124
03:00 PM	10	17	6	1	34	33	49	11	0	93	15	19	43	2	79	4	48	6	2	60	266
03:15 PM	9	9	5	0	23	28	56	7	0	91	12	14	48	0	74	5	60	10	0	75	263
03:30 PM	10	18	8	0	36	22	65	20	1	108	7	9	39	0	55	3	52	11	1	67	266
03:45 PM	14	21	12	0	47	35	73	16	3	127	12	11	61	0	84	7	53	15	2	77	335
Total	43	65	31	1	140	118	243	54	4	419	46	53	191	2	292	19	213	42	5	279	1130
04:00 PM	14	17	9	0	40	32	64	16	1	113	8	15	41	0	64	3	60	10	0	73	290
04:15 PM	17	16	8	0	41	32	76	14	15	137	13	12	43	2	70	4	58	18	1	81	329
04:30 PM	19	7	9	1	36	33	98	18	1	150	25	8	36	1	70	3	69	15	3	90	346
04:45 PM	19	23	8	1	51	42	74	13	1	130	15	10	48	1	74	4	62	16	1	83	338
Total	69	63	34	2	168	139	312	61	18	530	61	45	168	4	278	14	249	59	5	327	1303

SD DEPARTMENT OF TRANSPORTATION  
ABERDEEN REGION

File Name : BRBBE2~1  
Site Code : 00000000  
Start Date : 01/14/2010  
Page No : 2

Groups Printed- 1 - Unshifted

Start Time	Main From North					US14/6th Street From East					Main From South					US14/6th Street From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
05:00 PM	20	24	18	1	63	51	88	21	1	161	14	22	49	1	86	6	95	19	3	123	433
05:15 PM	22	21	12	0	55	37	70	21	0	128	19	13	44	0	76	9	57	11	1	78	337
05:30 PM	11	17	3	0	31	33	52	20	0	105	11	20	27	1	59	6	37	12	1	56	251
05:45 PM	8	24	5	1	38	36	60	29	1	126	7	36	29	0	72	10	34	13	1	58	294
Total	61	86	38	2	187	157	270	91	2	520	51	91	149	2	293	31	223	55	6	315	1315
06:00 PM	17	19	3	0	39	24	45	6	1	76	7	16	30	0	53	3	54	9	2	68	236
06:15 PM	7	8	4	0	19	31	42	10	1	84	10	9	29	0	48	6	42	12	2	62	213
06:30 PM	10	10	5	0	25	22	35	8	0	65	9	7	27	0	43	1	23	7	0	31	164
06:45 PM	12	10	1	0	23	22	41	14	0	77	5	22	25	1	53	2	24	7	3	36	189
Total	46	47	13	0	106	99	163	38	2	302	31	54	111	1	197	12	143	35	7	197	802
Grand Total	551	596	290	10	1447	1237	2585	557	47	4426	483	584	1621	28	2716	186	2445	437	59	3127	11716
Apprch %	38.1	41.2	20.0	0.7		27.9	58.4	12.6	1.1		17.8	21.5	59.7	1.0		5.9	78.2	14.0	1.9		
Total %	4.7	5.1	2.5	0.1	12.4	10.6	22.1	4.8	0.4	37.8	4.1	5.0	13.8	0.2	23.2	1.6	20.9	3.7	0.5	26.7	

File Name: 2ND ST S/MEDARY AVE  
 Start Date: 9/22/2010  
 Start Time: 7:00:00 AM

Start Time	MEDARY AVE From North				2ND ST S From East				MEDARY AVE From South				2ND ST S From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00	6	14	8	0	0	12	4	0	2	18	0	0	0	5	6	0	75
07:15	4	28	2	0	1	10	11	0	8	20	6	0	7	13	7	0	117
07:30	10	43	7	0	2	20	14	0	4	114	5	0	17	11	2	1	250
07:45	12	53	9	0	7	21	19	0	5	133	18	0	19	20	3	0	319
08:00	11	51	6	0	5	24	16	0	7	98	12	0	12	11	5	0	258
08:15	9	26	6	0	1	21	15	0	5	84	5	0	13	16	6	0	207
08:30	6	19	2	0	2	13	17	0	5	114	3	0	17	12	1	0	211
08:45	7	42	10	0	0	17	10	0	6	75	2	0	5	4	6	0	184
09:00	6	37	4	0	1	11	2	0	2	33	2	0	7	8	1	0	114
09:15	5	17	4	0	2	12	2	0	1	38	1	0	7	9	0	0	98
09:30	8	26	7	0	2	14	13	0	3	77	5	0	19	4	3	0	181
09:45	15	45	8	0	2	12	7	0	3	64	3	0	9	5	3	0	176
10:00	7	39	7	0	1	10	6	0	2	22	1	0	5	10	3	1	114
10:15	4	24	3	0	0	12	7	0	3	34	2	0	3	12	4	0	108
10:30	8	23	6	0	0	7	12	0	1	67	3	0	17	8	8	0	160
10:45	13	41	8	0	3	18	9	0	3	49	6	0	12	10	1	0	173
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	10	87	12	0	3	18	9	0	2	34	1	0	7	11	5	0	199
14:15	6	52	8	0	8	20	10	0	9	22	3	0	4	7	5	0	154
14:30	9	70	9	0	4	20	22	0	6	103	3	0	20	23	10	0	299
14:45	10	54	6	0	3	10	25	0	6	81	7	0	13	13	2	0	230
15:00	14	80	13	0	0	16	16	0	2	38	1	0	7	11	3	0	201
15:15	15	53	11	0	2	10	12	0	7	38	2	0	5	24	9	0	188
15:30	13	51	9	0	2	17	14	0	3	39	2	0	8	17	6	0	181
15:45	18	54	14	0	4	14	16	0	9	44	7	0	17	19	9	0	225
16:00	11	78	15	0	4	21	11	0	4	47	3	0	7	18	4	0	223
16:15	9	71	11	0	5	23	12	0	7	34	5	0	6	13	2	0	198
16:30	18	70	11	0	5	27	9	0	5	52	1	0	12	25	3	0	238
16:45	12	83	13	0	2	18	8	1	6	45	5	0	19	16	6	0	234
17:00	32	117	11	0	5	18	16	0	4	50	4	0	12	25	4	0	298
17:15	24	101	13	0	2	21	15	0	2	50	5	0	11	18	5	0	267
17:30	20	92	13	0	8	15	18	0	4	60	1	0	6	18	2	0	257
17:45	16	84	9	0	4	22	18	0	8	66	1	0	4	25	3	0	260

File Name: 2ND ST S/MAIN AVE

Start Date: 9/23/2010

Start Time: 7:00:00 AM

Start Time	2ND ST S From North				MAIN ST From East				2ND ST S From South				MAIN ST From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00	0	13	5	0	1	12	1	0	1	17	2	0	16	21	3	0	92
07:15	4	37	3	0	0	8	5	0	22	63	1	0	6	12	19	0	180
07:30	3	38	6	0	3	15	9	0	35	119	8	0	6	9	28	0	279
07:45	9	34	4	0	2	19	6	1	36	128	9	0	8	19	17	0	292
08:00	11	23	3	0	3	10	5	0	16	46	8	0	2	18	11	0	156
08:15	2	37	9	0	2	7	6	0	14	63	4	0	10	20	19	0	193
08:30	4	41	9	0	2	17	3	0	10	65	6	0	8	19	11	0	195
08:45	7	36	8	0	4	12	8	0	12	57	0	0	7	7	14	0	172
09:00	3	33	6	0	4	7	6	0	9	42	2	0	9	9	12	0	142
09:15	7	46	6	0	5	8	7	0	11	61	2	0	6	7	9	0	175
09:30	2	37	5	0	2	4	4	0	7	66	2	0	8	10	8	0	155
09:45	9	61	9	0	3	6	4	0	10	56	3	0	7	5	13	0	186
10:00	6	41	8	0	2	8	9	0	18	44	5	0	4	8	14	0	167
10:15	8	46	10	0	2	9	6	0	14	61	2	0	4	10	12	0	184
10:30	5	68	6	0	3	8	11	0	13	61	2	0	8	12	16	0	213
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	8	54	10	0	3	6	6	1	22	71	10	0	5	8	13	0	217
14:15	10	25	4	0	3	8	2	0	19	30	3	0	5	3	5	0	117
14:30	10	48	7	0	7	16	6	0	22	58	1	0	8	20	19	0	222
14:45	5	37	6	0	6	10	0	0	25	44	4	0	5	14	17	0	173
15:00	3	17	4	0	1	9	3	0	7	19	1	0	6	3	7	0	80
15:15	2	31	4	0	5	9	2	0	14	26	3	0	3	9	10	0	118
15:30	4	41	6	0	6	19	7	0	22	33	3	0	9	26	14	0	190
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	4	86	14	0	8	18	7	0	26	62	3	0	14	25	22	0	289
16:15	6	58	7	0	1	18	10	0	21	50	2	0	3	23	3	0	202
16:30	4	62	1	0	4	12	8	0	23	64	4	0	13	17	23	2	237
16:45	2	96	5	0	2	22	9	0	25	84	3	0	5	26	22	0	301
17:00	12	95	13	0	2	14	1	0	22	115	7	0	9	35	26	0	351
17:15	7	46	5	0	5	4	0	0	20	47	3	0	0	6	5	0	148

File Name: 3RD ST/MAIN AVE  
 Start Date: 9/21/2010  
 Start Time: 7:00:00 AM

Start Time	MAIN AVE From North				3RD ST From East				MAIN AVE From South				3RD ST From West				PERIOD
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	TOTAL
07:00	1	2	0	0	6	3	1	0	0	17	24	0	1	1	0	0	56
07:15	0	7	0	0	13	3	2	0	1	13	36	0	0	0	0	0	75
07:30	4	7	2	0	4	10	3	0	1	31	54	0	1	3	3	0	123
07:45	2	21	0	0	15	12	2	0	6	34	68	0	0	8	0	0	168
08:00	2	14	1	0	12	11	2	0	4	33	56	0	0	5	2	0	142
08:15	3	15	1	0	11	7	5	0	3	33	50	0	0	2	1	0	131
08:30	1	23	2	0	19	3	3	0	3	34	44	0	0	3	3	0	138
08:45	6	24	0	0	14	10	4	0	3	31	47	0	0	3	0	0	142
09:00	3	18	1	0	11	5	3	0	5	45	21	0	1	2	2	0	117
09:15	5	22	1	0	16	8	6	0	2	29	27	0	2	2	0	0	120
09:30	6	18	0	0	11	6	11	0	1	19	23	0	0	6	0	0	101
09:45	8	17	1	0	20	7	8	0	6	24	34	0	1	7	2	0	135
10:00	2	24	4	0	14	6	3	0	4	26	32	0	1	8	4	0	128
10:15	4	21	0	0	21	6	5	0	3	20	22	0	1	4	1	0	108
10:30	2	24	0	0	15	6	4	0	1	36	31	0	1	3	1	0	124
10:45	12	32	1	0	18	5	8	0	3	34	31	0	0	5	1	0	150
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	12	31	3	0	13	7	5	0	1	41	27	0	0	10	2	0	152
14:15	8	46	1	0	30	13	6	0	2	34	42	0	2	8	2	0	194
14:30	5	27	2	0	26	9	9	0	3	37	26	0	0	13	3	0	160
14:45	4	36	2	0	21	4	6	0	3	39	39	0	2	8	5	0	169
15:00	3	52	1	0	23	6	5	0	4	39	27	0	1	7	2	0	170
15:15	15	58	2	0	24	6	5	0	2	34	38	0	2	9	6	0	201
15:30	14	49	5	0	22	11	15	0	2	55	33	0	1	6	0	0	213
15:45	6	62	3	0	16	11	6	0	3	43	35	0	1	7	2	0	195
16:00	9	50	3	0	20	14	10	0	1	40	25	0	0	3	4	0	179
16:15	7	53	7	0	31	4	9	0	1	40	29	0	1	9	1	0	192
16:30	10	45	3	0	41	7	8	1	5	56	42	0	2	6	0	0	226
16:45	13	35	4	0	35	13	12	0	5	35	37	0	2	15	1	0	207
17:00	12	78	1	0	62	8	16	0	4	58	27	0	2	14	2	0	284
17:15	7	51	5	0	35	6	7	0	1	48	26	0	2	7	3	0	198
17:30	9	44	5	0	32	4	7	0	3	48	26	0	0	6	1	0	185
17:45	5	33	6	0	26	3	10	0	2	54	20	0	1	8	0	0	168

File Name: 3RD ST/MEDARY AVE  
 Start Date: 9/21/2010  
 Start Time: 7:00:00 AM

Start Time	MEDARY AVE From North				3RD ST From East				MEDARY AVE From South				3RD ST From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00	0	20	1	0	6	3	4	0	5	18	1	0	15	4	3	0	80
07:15	2	31	6	0	1	8	6	0	9	53	2	0	20	3	1	0	142
07:30	8	37	4	0	9	14	4	0	4	98	11	0	18	13	3	0	223
07:45	5	36	4	0	10	29	15	0	10	112	28	0	27	13	4	0	293
08:00	10	35	8	0	12	15	9	0	1	82	15	0	27	19	5	0	238
08:15	2	28	7	0	6	12	10	0	7	99	9	0	17	9	3	0	209
08:30	3	28	7	0	2	13	8	0	6	111	5	0	26	12	5	0	226
08:45	4	36	4	0	0	13	6	0	10	91	6	0	10	9	2	0	191
09:00	0	26	2	0	1	8	1	0	1	46	2	0	9	8	3	0	107
09:15	1	20	3	0	4	9	7	0	6	34	3	0	11	2	2	0	102
09:30	1	29	6	0	1	7	2	0	7	65	2	0	11	9	6	0	146
09:45	1	45	6	0	1	16	6	0	12	69	2	0	6	12	2	0	178
10:00	2	45	4	0	2	8	1	0	12	27	4	0	5	15	9	0	134
10:15	1	41	7	0	1	14	1	0	14	31	0	0	5	8	7	0	130
10:30	2	29	3	0	3	6	2	0	7	75	3	0	14	11	11	0	166
10:45	7	53	9	0	3	12	3	0	12	50	3	0	7	10	4	0	173
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	2	56	8	0	1	10	5	0	8	35	6	0	9	22	10	0	172
14:15	2	46	9	0	2	15	3	0	7	28	3	0	12	15	5	0	147
14:30	3	44	3	0	2	16	3	0	6	63	1	0	18	12	8	0	179
14:45	1	80	5	0	4	9	2	0	3	67	4	0	8	19	5	0	207
15:00	6	87	8	0	4	13	2	0	9	43	8	0	11	11	10	0	212
15:15	10	91	7	0	16	16	9	0	9	53	6	0	7	23	13	0	260
15:30	4	81	11	0	3	22	7	0	20	89	8	0	16	11	11	0	283
15:45	2	91	10	0	3	10	7	0	21	64	5	0	12	10	13	0	248
16:00	6	85	16	0	4	16	7	0	10	54	8	0	14	18	16	0	254
16:15	6	86	16	0	4	15	7	0	12	71	4	0	12	18	8	0	259
16:30	3	89	23	0	6	16	3	0	5	55	3	0	18	22	5	0	248
16:45	7	67	26	0	11	20	3	0	10	48	5	0	21	25	15	0	258
17:00	6	111	13	0	17	21	9	0	10	59	6	0	15	25	30	0	322
17:15	7	121	13	0	14	14	5	0	10	70	5	0	7	15	16	0	297
17:30	5	81	9	0	6	12	6	0	9	67	11	0	9	13	17	0	245
17:45	3	95	8	0	3	21	4	0	12	83	9	0	12	18	11	0	279

File Name: 6TH ST/13TH AVE  
 Start Date: 9/20/2010  
 Start Time: 7:00:00 AM

Start Time	13TH AVE From North				6TH ST From East				13TH AVE From South				6TH ST From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00	0	0	1	0	1	29	11	0	0	0	1	0	6	56	0	0	105
07:15	0	0	2	0	3	56	9	0	0	0	5	0	5	86	2	0	168
07:30	6	1	2	0	4	88	14	0	1	3	6	0	9	110	4	0	248
07:45	2	0	7	0	4	114	37	0	1	7	27	0	27	152	10	0	388
08:00	2	1	6	0	4	100	13	1	2	5	18	0	26	92	9	0	279
08:15	1	0	3	0	3	76	13	0	1	1	23	0	10	121	3	0	255
08:30	2	0	1	0	3	118	7	0	1	3	5	0	9	127	1	0	277
08:45	4	1	5	0	2	102	9	0	2	3	8	0	5	122	3	0	266
09:00	5	0	3	0	2	93	4	0	0	0	2	0	6	81	0	0	196
09:15	5	0	6	0	2	106	2	0	0	0	1	0	5	92	2	0	221
09:30	0	0	5	0	3	119	4	0	1	0	6	0	8	113	1	0	260
09:45	12	3	7	0	2	101	8	0	2	3	3	0	7	113	2	0	263
10:00	2	0	6	0	5	118	4	0	1	1	0	0	3	120	2	0	262
10:15	3	1	2	0	3	100	5	0	0	0	2	0	3	98	3	0	220
10:30	3	0	2	0	1	113	8	0	2	0	3	0	6	91	3	0	232
10:45	4	2	5	0	2	121	11	0	0	1	7	0	5	123	1	0	282
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	7	1	8	0	4	156	5	0	0	0	5	0	3	156	0	0	345
14:15	2	0	3	0	5	119	1	0	0	1	5	0	1	178	3	0	318
14:30	4	2	6	0	4	145	8	0	0	1	3	0	1	121	1	0	296
14:45	15	0	9	0	8	148	4	0	0	2	5	0	7	167	0	0	365
15:00	5	2	7	0	9	175	5	0	0	1	2	0	3	169	2	0	380
15:15	2	1	6	0	5	143	4	0	4	0	8	0	2	155	5	0	335
15:30	2	2	6	0	6	190	4	0	1	0	7	0	5	154	3	0	380
15:45	8	0	7	0	3	141	1	0	1	2	13	0	1	183	1	0	361
16:00	5	0	9	0	10	184	8	0	3	0	6	0	3	160	2	0	390
16:15	10	2	8	0	8	173	1	0	1	2	9	0	2	169	2	0	387
16:30	11	0	9	0	3	182	2	0	0	3	3	0	3	174	4	0	394
16:45	10	0	14	0	8	195	7	0	2	1	6	0	3	195	2	0	443
17:00	12	3	18	0	12	196	3	0	0	2	5	0	1	246	3	0	501
17:15	16	1	14	0	2	174	1	0	4	1	4	0	2	184	4	0	407
17:30	5	1	8	0	9	177	5	0	0	0	7	0	6	192	2	0	412
17:45	1	3	10	0	1	192	9	0	1	0	9	0	7	152	0	0	385

File Name: 6th St./32nd Ave.  
 Start Date: 9/16/2010  
 Start Time: 7:00:00 AM

Start Time	32ND ST From North				6TH ST From East				32ND ST From South				6TH ST From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00	0	0	1	0	10	20	0	0	4	0	0	0	4	34	17	0	90
07:15	0	0	0	0	19	41	1	0	2	0	6	0	4	20	43	0	136
07:30	0	0	1	0	16	70	0	0	11	1	1	0	11	25	46	0	182
07:45	0	1	0	0	33	63	3	0	10	4	2	0	32	38	115	0	301
08:00	0	2	0	0	27	37	1	0	13	2	3	0	19	30	78	0	212
08:15	0	1	5	0	8	29	2	0	6	5	4	0	16	23	59	0	158
08:30	1	0	0	0	13	31	0	0	15	0	5	0	10	26	36	0	137
08:45	0	1	1	0	5	35	0	0	16	1	3	0	7	40	22	0	131
09:00	0	1	1	0	3	32	2	0	12	2	3	0	5	19	14	0	94
09:15	0	0	2	0	4	30	0	0	7	0	1	0	5	20	10	0	79
09:30	0	1	1	0	5	30	2	0	15	1	2	1	3	21	14	0	96
09:45	0	2	2	0	4	28	0	0	19	3	5	0	3	32	16	0	114
10:00	0	2	2	0	9	33	1	0	15	0	2	0	2	33	9	1	109
10:15	0	2	0	0	3	43	0	0	12	0	2	0	3	26	14	0	105
10:30	0	0	3	0	2	30	0	0	15	2	4	0	6	29	21	0	112
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	4	4	0	3	27	2	0	13	2	5	0	8	28	20	0	116
14:15	0	1	1	0	4	33	0	0	18	0	3	0	8	40	21	0	129
14:30	0	0	3	0	0	36	0	0	18	0	3	0	5	40	11	0	116
14:45	0	2	1	0	2	38	0	0	16	4	6	0	3	46	18	0	136
15:00	0	1	8	0	7	35	0	0	21	2	3	0	8	50	20	0	155
15:15	0	1	4	0	4	35	0	0	18	2	2	0	1	36	14	0	117
15:30	0	2	5	0	6	35	0	0	32	3	5	1	8	56	25	0	178
15:45	1	0	4	0	4	41	0	0	28	1	11	0	2	56	19	0	167
16:00	1	2	7	1	10	37	1	1	45	2	4	2	9	44	43	2	211
16:15	0	0	4	0	3	44	4	0	67	1	11	0	9	63	17	0	223
16:30	0	1	4	0	4	53	1	0	227	4	32	1	3	65	8	0	403
16:45	1	0	4	0	5	42	0	0	140	1	21	0	5	62	13	0	294
17:00	1	0	5	0	6	48	0	0	161	1	24	0	6	71	15	0	338
17:15	0	0	3	0	0	56	0	0	72	2	10	0	6	43	4	1	197
17:30	0	0	2	0	2	51	1	0	65	6	7	0	9	70	33	0	246

File Name: 6TH STREET/I-29 NB  
 Start Date: 9/23/2010  
 Start Time: 6:45:00 AM

Start Time	6ST I29NB From North				A From East				6ST I29NB From South				A From West				PERIOD
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	TOTAL
06:45	0	0	0	0	0	40	2	1	23	0	11	0	16	87	0	0	180
07:00	0	0	0	0	0	50	9	0	17	1	7	0	21	58	0	0	163
07:15	0	0	0	0	0	66	7	0	24	0	20	0	24	111	0	0	252
07:30	0	0	0	0	0	86	7	0	41	0	17	0	11	143	0	0	305
07:45	0	0	0	0	0	64	5	0	38	0	30	0	11	243	0	0	391
08:00	0	0	0	0	0	64	12	0	22	0	20	0	17	173	0	0	308
08:15	0	0	0	0	0	63	9	0	36	0	14	0	16	139	0	0	277
08:30	0	0	0	0	0	54	9	0	40	0	13	0	13	86	0	0	215
08:45	0	0	0	0	0	60	7	0	37	0	18	0	14	85	0	0	221
09:00	0	0	0	0	0	56	7	0	22	0	9	0	11	56	1	0	162
09:15	0	0	0	0	0	59	7	0	36	0	15	0	11	50	0	0	178
09:30	0	0	0	0	0	65	8	0	24	0	8	0	8	57	0	0	170
09:45	0	0	0	0	0	53	9	0	20	1	8	0	10	79	0	0	180
10:00	0	0	0	0	0	50	4	0	17	0	9	0	18	59	0	0	157
10:15	0	0	0	0	0	60	3	0	24	0	5	0	13	61	0	0	166
10:30	0	0	0	0	0	67	11	0	27	1	12	0	14	59	2	0	193
10:45	0	0	0	0	0	39	7	0	16	0	3	0	20	51	0	0	136
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	57	2	0	13	0	6	0	21	49	1	0	149
13:45	0	0	0	0	0	77	13	0	28	0	11	0	29	94	0	0	252
14:00	0	0	0	0	0	70	2	0	23	1	9	0	24	72	0	0	201
14:15	0	0	0	0	0	57	4	0	18	0	6	0	26	71	8	0	190
14:30	0	0	0	0	0	57	6	0	12	0	12	0	30	76	0	0	193
14:45	0	0	0	0	0	75	10	0	31	0	10	0	34	72	0	0	232
15:00	0	0	0	0	0	84	8	0	32	0	14	0	51	95	0	0	284
15:15	0	0	0	0	0	90	10	0	19	0	8	1	38	103	0	0	269
15:30	0	0	0	0	0	82	14	0	28	0	9	0	44	121	0	0	298
15:45	0	0	0	0	0	91	10	0	23	0	11	0	32	98	0	0	265
16:00	0	0	0	0	0	89	8	0	25	1	10	0	21	81	0	0	235
16:15	0	0	0	0	4	98	13	0	25	0	5	0	12	34	3	0	194
16:30	0	0	0	0	0	146	6	0	21	0	5	0	26	73	2	0	279
16:45	0	0	0	0	0	169	8	0	29	0	22	0	37	88	0	0	353
17:00	0	0	0	0	0	172	14	0	40	0	11	0	23	80	1	0	341
17:15	0	0	0	0	1	135	13	0	25	0	11	0	40	87	0	0	312
17:30	0	0	0	0	0	120	14	0	32	0	8	0	22	75	0	0	271

File Name: 8TH ST/17TH AVE  
 Start Date: 9/22/2010  
 Start Time: 6:45:00 AM

Start Time	8TH ST S 17 AVE From North				A From East				8TH ST S 17 AVE From South				A From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:45	2	4	1	0	1	24	4	0	3	5	2	0	5	53	5	0	109
07:00	3	4	2	0	5	35	0	0	8	10	3	0	3	53	3	0	129
07:15	3	20	6	0	8	34	4	0	11	24	2	0	8	70	17	0	207
07:30	4	44	9	0	6	58	7	1	31	39	6	0	18	104	10	3	340
07:45	10	44	7	0	9	65	10	0	16	38	5	0	14	77	31	1	327
08:00	5	26	2	0	2	40	5	0	14	35	6	0	16	59	9	0	219
08:15	3	6	6	0	2	31	2	1	9	13	4	0	8	64	13	0	162
08:30	1	8	2	0	2	28	11	1	6	22	4	0	7	48	4	0	144
08:45	0	4	2	0	0	41	4	0	5	7	3	0	12	37	2	0	117
09:00	3	1	3	0	0	34	3	0	4	7	1	0	7	35	2	0	100
09:15	3	7	3	0	2	33	7	0	4	3	2	0	4	37	2	0	107
09:30	2	4	6	0	3	43	6	0	7	10	3	0	5	41	1	0	131
09:45	8	15	2	0	2	50	4	0	8	6	5	0	9	46	3	0	158
10:00	6	5	6	0	2	51	1	0	1	4	0	0	6	41	2	0	125
10:15	2	4	5	0	2	38	4	0	1	1	2	0	8	56	4	0	127
10:30	3	1	4	0	1	31	10	0	4	9	4	0	5	49	3	0	124
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	5	9	5	0	2	65	8	0	6	7	1	0	5	59	2	0	174
13:45	6	17	6	0	5	60	6	0	6	12	2	0	9	66	2	0	197
14:00	5	26	5	0	7	55	2	0	7	12	0	0	8	42	10	1	180
14:15	9	57	8	0	5	29	2	0	10	13	4	0	9	49	18	0	213
14:30	10	37	13	0	4	70	8	1	20	27	11	0	10	69	26	0	306
14:45	8	11	3	0	6	90	7	0	14	27	13	0	11	70	10	0	270
15:00	6	19	11	0	6	69	5	0	6	15	8	0	5	63	11	0	224
15:15	3	17	7	0	6	66	14	0	8	7	4	0	6	70	13	0	221
15:30	5	24	9	0	2	77	11	0	22	20	5	0	3	51	13	0	242
15:45	5	21	7	0	5	60	7	0	17	31	4	0	7	68	20	0	252
16:00	8	15	8	0	6	80	4	0	10	18	4	0	9	69	6	0	237
16:15	6	12	8	0	5	94	4	0	7	9	3	0	8	64	6	0	226
16:30	7	24	6	0	4	99	10	0	14	21	5	0	12	90	20	0	312
16:45	9	6	10	0	7	114	10	0	18	31	4	0	9	97	10	0	325
17:00	12	31	11	0	8	119	4	0	3	20	2	0	13	95	22	1	341
17:15	11	37	13	2	4	123	9	0	16	29	7	0	7	74	18	1	351
17:30	16	23	6	0	7	95	13	0	14	25	3	0	16	77	18	1	314

File Name: 8TH ST./22ND AVE

Start Date: 9/16/2010

Start Time: 1:45:00 PM

Start Time	22ND From North				8TH ST From East				22ND From South				8TH ST From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
13:45	0	57	38	0	0	0	0	0	8	65	0	0	49	0	6	0	223
14:00	0	77	41	0	0	0	0	0	11	72	0	0	43	0	13	0	257
14:15	0	71	33	0	0	0	0	0	12	71	0	0	46	0	10	1	244
14:30	0	79	47	0	0	0	0	0	11	60	0	0	50	0	9	0	256
14:45	0	75	41	0	0	0	0	0	16	70	0	0	49	0	9	0	260
15:00	0	88	56	0	0	0	0	0	31	73	1	0	50	0	4	0	303
15:15	0	77	54	0	0	0	0	0	16	54	0	0	48	0	14	0	263
15:30	0	95	61	0	0	0	0	0	15	74	0	0	59	0	20	0	324
15:45	0	85	47	1	0	0	0	0	19	79	0	0	54	0	10	0	295
16:00	0	92	61	1	0	0	0	0	22	77	0	0	43	0	13	0	309
16:15	0	105	52	1	0	0	0	0	18	70	0	0	52	0	8	0	306
16:30	0	136	78	0	0	0	0	0	14	73	0	0	53	0	15	0	369
16:45	0	131	71	0	0	0	0	0	16	81	0	0	61	0	17	0	377
17:00	0	178	103	0	0	0	0	0	19	93	0	0	45	0	14	0	452
17:15	0	175	94	0	0	0	0	0	16	109	0	0	55	0	11	0	460
17:30	0	164	66	0	0	0	0	0	16	110	0	0	51	0	9	0	416
17:45	0	121	65	0	0	0	0	0	15	87	0	0	44	0	18	0	350

File Name: 8TH ST/MAIN AVE

Start Date: 9/15/2010

Start Time: 7:00:00 AM

Start Time	MAIN AVE From North				8TH ST S From East				MAIN AVE From South				8TH ST S From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00	2	16	2	0	17	4	16	0	0	42	16	0	4	17	4	0	140
07:15	10	25	4	0	16	9	16	0	4	57	21	0	6	23	2	0	193
07:30	30	36	8	0	10	7	19	0	2	93	24	0	16	28	2	0	275
07:45	24	41	5	0	19	12	25	0	0	146	67	6	31	51	0	0	427
08:00	5	24	4	0	16	9	3	0	1	46	14	1	5	22	8	0	158
08:15	16	45	2	0	27	11	32	1	0	99	27	0	3	27	1	0	291
08:30	1	5	7	1	2	0	0	0	1	4	8	0	1	2	0	0	32
08:45	4	18	2	0	6	3	12	0	0	18	12	0	5	3	2	0	85
09:00	9	31	5	0	15	8	20	0	0	46	17	0	3	10	0	0	164
09:15	16	32	3	0	13	4	21	0	1	51	12	0	4	11	0	0	168
09:30	8	29	3	0	10	3	5	0	0	22	7	0	3	10	2	0	102
09:45	13	24	0	0	21	8	15	0	2	33	11	0	5	12	0	0	144
10:00	10	41	7	0	25	16	16	0	1	61	15	0	5	15	1	0	213
10:15	15	32	2	0	13	3	19	0	1	33	22	0	4	3	1	0	148
10:30	26	43	6	0	23	5	15	0	1	48	14	0	6	18	0	0	205
10:45	21	35	3	0	21	8	13	0	3	37	15	0	5	7	2	0	170
11:00	25	32	14	0	25	10	29	0	1	48	12	0	5	12	3	0	216
11:15	21	40	11	0	15	15	23	0	0	37	10	0	6	10	0	0	188
11:30	30	53	11	0	26	16	25	0	4	46	25	0	7	5	1	0	249
11:45	23	55	8	0	12	10	20	0	1	72	26	0	5	17	1	0	250
12:00	40	90	23	0	23	27	21	0	1	56	25	0	8	11	3	0	328
12:15	20	75	17	0	22	19	30	0	1	70	18	0	10	9	3	0	294
12:30	22	51	14	0	21	10	24	0	0	55	17	0	12	13	2	0	241
12:45	24	59	8	0	25	8	31	0	0	78	23	0	14	17	1	0	288
13:00	18	56	9	0	30	14	29	0	2	67	14	0	15	13	1	0	268
13:15	38	77	9	0	12	4	18	0	2	43	26	0	6	20	1	0	256
13:30	20	65	6	0	24	10	25	0	1	52	11	1	10	18	1	0	244
13:45	14	45	6	0	22	8	25	0	1	52	12	0	6	15	0	0	206
14:00	19	47	4	0	14	7	23	0	1	58	17	0	3	7	0	0	200
14:15	27	53	13	0	22	10	33	0	2	47	25	0	8	14	4	0	258
14:30	30	51	7	0	45	19	35	0	0	48	15	0	3	14	1	0	268
14:45	28	54	9	0	31	23	29	0	2	57	16	0	3	10	0	0	262
15:00	30	68	16	0	27	19	41	0	0	69	24	0	4	13	3	0	314
15:15	32	65	6	0	27	15	21	3	0	36	25	0	5	8	1	0	244
15:30	27	60	10	0	31	15	20	0	2	48	15	0	4	17	0	0	249
15:45	25	58	5	0	19	15	32	0	5	58	19	0	13	23	5	0	277
16:00	28	70	10	0	37	17	29	4	3	58	17	1	11	19	3	0	307
16:15	34	80	10	0	37	27	30	0	5	59	17	0	5	9	3	0	316
16:30	44	101	21	2	26	26	33	2	4	98	17	0	14	7	2	0	397
16:45	46	98	18	0	29	20	25	1	1	73	10	0	14	10	2	0	347
17:00	60	143	27	0	17	17	31	0	10	94	22	0	14	25	8	0	468
17:15	45	124	26	0	35	29	20	0	9	59	18	0	5	6	2	1	379
17:30	28	96	10	0	44	28	16	0	5	58	14	0	15	18	2	0	334
17:45	31	65	14	1	34	18	17	0	0	82	16	0	6	14	1	0	299
18:00	30	57	14	0	12	11	10	0	9	55	18	0	5	3	1	0	225

File Name: 8TH ST/MEDARY AVE  
 Start Date: 9/22/2010  
 Start Time: 7:00:00 AM

Start Time	MADERY From North				8TH STREET S From East				MADERY From South				8TH STREET S From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00	1	11	9	0	6	46	0	0	5	4	5	0	1	27	2	0	117
07:15	3	16	12	0	11	61	3	0	5	6	3	0	5	29	9	1	164
07:30	7	38	11	0	28	72	18	0	10	14	4	0	4	40	13	0	259
07:45	14	75	27	0	44	112	10	0	8	34	12	0	4	66	20	0	426
08:00	14	69	23	0	59	100	3	0	9	24	12	0	6	57	25	0	401
08:15	9	33	5	0	31	53	5	0	15	18	23	0	3	39	14	0	248
08:30	2	23	7	0	24	44	2	0	9	6	6	0	2	34	19	0	178
08:45	5	24	7	0	27	49	3	0	14	12	7	0	2	25	12	0	187
09:00	3	10	5	0	10	27	4	0	11	11	13	0	3	31	15	0	143
09:15	2	9	4	0	11	38	2	0	2	4	14	0	1	32	13	0	132
09:30	0	19	4	0	16	30	0	0	14	9	6	0	0	21	14	0	133
09:45	2	17	3	0	13	43	2	0	12	6	11	0	4	48	7	0	168
10:00	2	9	3	0	8	39	0	0	11	12	14	0	1	31	7	0	137
10:15	1	15	6	0	7	44	3	0	9	7	5	0	3	51	3	0	154
10:30	0	13	4	0	10	38	4	0	9	5	7	0	1	30	9	0	130
10:45	1	14	3	0	14	47	2	0	7	9	13	0	2	29	5	0	146
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	3	7	5	0	19	53	2	0	29	19	8	0	4	49	10	0	208
14:15	1	26	5	0	14	78	3	0	24	38	18	0	7	50	15	0	279
14:30	2	25	6	0	17	80	3	0	35	45	24	0	24	88	23	1	373
14:45	0	27	5	0	16	76	0	0	14	12	10	0	11	84	21	0	276
15:00	2	16	7	0	4	61	4	0	17	12	14	0	7	66	11	1	222
15:15	1	9	5	0	4	62	2	0	18	22	5	0	6	59	8	0	201
15:30	0	7	11	0	5	53	1	0	11	19	10	0	6	61	10	0	194
15:45	1	13	5	0	3	58	3	0	19	13	6	0	4	49	2	0	176
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	2	9	3	0	11	49	2	0	16	19	13	0	2	64	8	0	198
16:30	2	9	6	0	11	81	5	0	19	19	14	0	11	68	18	0	263
16:45	5	13	4	0	14	65	4	1	28	21	16	0	2	75	10	0	258
17:00	2	7	7	0	12	101	4	0	22	37	21	0	15	101	12	0	341
17:15	4	20	6	0	16	85	2	0	24	46	22	0	11	112	10	0	358
17:30	2	11	8	0	19	88	1	0	36	25	16	0	16	88	16	0	326
17:45	5	27	2	0	14	73	1	0	11	29	6	0	4	71	2	0	245

File Name: 11TH ST/22ND AVE  
 Start Date: 9/20/2010  
 Start Time: 7:00:00 AM

Start Time	22 AVE From North				11 TH ST From East				22 AVE From South				11 TH ST From West				PERIOD
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	TOTAL
07:00	0	22	4	0	0	1	0	0	16	19	1	0	0	0	9	0	72
07:15	1	30	2	1	0	0	0	0	19	30	2	0	0	0	11	0	96
07:30	0	58	2	0	0	0	0	0	81	21	0	0	2	1	14	0	179
07:45	0	52	6	0	0	0	0	0	97	27	1	0	2	1	21	0	207
08:00	1	31	3	0	0	0	0	0	41	26	0	0	0	1	12	0	115
08:15	0	1	0	0	29	18	1	0	5	1	17	0	0	30	0	0	102
08:30	0	27	7	0	1	0	0	0	91	15	0	0	2	0	11	0	154
08:45	0	28	2	0	0	0	0	0	66	23	0	0	2	0	33	0	154
09:00	1	25	0	0	0	0	0	0	19	13	0	0	0	0	13	0	71
09:15	0	19	4	0	0	0	0	0	31	19	0	0	0	1	10	0	84
09:30	0	23	3	0	0	0	0	0	65	23	0	0	0	0	17	1	132
09:45	0	20	4	0	0	0	0	0	63	18	2	0	1	0	29	7	144
10:00	0	14	4	0	0	0	0	0	12	10	0	0	1	2	22	0	65
10:15	1	21	4	0	0	1	0	0	15	21	0	0	1	0	16	0	80
10:30	0	22	3	0	0	0	0	0	57	26	0	0	0	0	20	0	128
10:45	0	23	1	0	0	0	0	0	35	18	0	0	0	1	50	1	129
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	17	1	0	1	1	0	0	28	30	1	0	7	5	53	0	144
14:15	0	34	1	0	0	0	0	0	31	34	0	0	2	0	28	0	130
14:30	0	31	4	0	0	0	0	0	51	27	0	0	2	1	24	0	140
14:45	0	28	1	0	0	0	0	0	37	33	0	0	4	0	80	0	183
15:00	0	19	1	0	0	1	0	0	22	48	0	0	4	4	75	3	177
15:15	0	22	1	0	0	0	1	0	30	38	0	0	3	2	41	1	139
15:30	0	30	2	0	0	0	0	0	53	63	1	0	2	1	40	3	195
15:45	0	32	0	0	0	0	0	0	51	52	1	0	8	2	48	0	194
16:00	0	33	0	1	1	0	3	1	38	52	1	0	1	3	64	0	198
16:15	1	32	1	0	0	1	0	0	34	54	3	0	3	4	62	1	196
16:30	0	41	1	0	0	2	0	0	33	52	0	0	2	5	49	0	185
16:45	3	21	31	1	0	10	2	0	30	25	2	0	16	17	46	0	204
17:00	3	0	108	0	0	48	2	0	0	0	0	0	33	86	1	0	281
17:15	2	0	53	0	0	32	4	0	0	0	0	0	30	75	2	0	198

File Name: 12TH ST S/17TH AVE  
 Start Date: 9/21/2010  
 Start Time: 6:45:00 AM

Start Time	12TH STS 17TH AVE From North				A From East				12TH STS 17TH AVE From South				A From West				PERIOD
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	TOTAL
06:45	2	4	2	0	1	3	0	0	5	4	6	0	2	13	0	0	42
07:00	0	5	0	0	2	2	5	0	2	15	6	0	2	4	1	0	44
07:15	3	5	5	0	10	17	17	0	2	34	13	0	17	13	2	0	138
07:30	0	11	1	0	12	26	21	1	7	46	9	0	33	18	0	0	185
07:45	3	12	1	0	10	41	23	0	2	38	14	0	36	21	2	0	203
08:00	0	12	0	0	4	9	11	0	4	22	4	0	4	5	2	0	77
08:15	2	3	1	0	4	3	4	0	2	15	3	0	6	5	3	0	51
08:30	2	3	0	0	0	1	3	0	0	28	5	0	1	7	2	0	52
08:45	0	3	1	0	2	6	1	0	2	10	6	0	0	4	0	0	35
09:00	0	7	0	0	2	2	3	0	2	2	1	0	3	7	1	0	30
09:15	0	0	2	0	2	4	1	0	2	1	3	0	2	2	0	0	19
09:30	1	3	4	0	2	1	0	0	4	6	3	0	1	5	0	0	30
09:45	2	4	1	0	5	8	2	0	0	5	3	0	2	8	3	0	43
10:00	1	9	0	0	2	6	1	0	2	4	3	0	1	6	0	0	35
10:15	2	4	3	0	6	5	3	0	0	5	2	0	1	2	5	0	38
10:30	1	6	2	0	3	4	2	0	0	7	2	0	3	5	2	0	37
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	2	5	0	0	3	10	2	0	1	14	9	0	2	11	1	0	60
13:45	3	5	2	0	8	7	4	0	0	6	7	0	2	8	2	0	54
14:00	4	6	3	0	4	12	4	0	3	8	6	0	2	11	0	0	63
14:15	2	5	2	0	9	11	4	0	5	4	7	0	3	10	0	0	62
14:30	0	7	2	0	6	11	9	0	2	12	2	0	2	11	1	0	65
14:45	1	14	1	0	6	10	5	0	3	10	4	0	4	3	1	0	62
15:00	1	16	5	0	10	14	9	0	4	12	11	0	6	12	2	0	102
15:15	3	20	3	0	10	20	7	0	6	14	11	0	20	12	2	0	128
15:30	5	19	4	0	18	33	15	0	5	22	10	0	8	20	5	0	164
15:45	3	12	2	0	14	22	18	0	3	16	6	0	7	11	4	0	118
16:00	6	14	3	0	18	18	12	0	5	11	8	0	2	14	5	0	116
16:15	5	30	5	0	8	25	10	0	1	11	7	0	5	12	1	0	120
16:30	3	26	6	0	10	27	12	0	5	20	8	0	9	19	2	0	147
16:45	2	19	7	0	23	42	21	0	1	19	4	0	8	16	6	0	168
17:00	7	26	5	0	31	50	19	0	2	27	16	0	4	18	2	0	207
17:15	12	24	2	0	34	60	27	0	1	25	16	0	3	22	9	0	235
17:30	6	28	8	0	29	34	13	0	1	17	4	0	4	18	1	0	163

File Name: 14B/22ND AVE  
 Start Date: 9/16/2010  
 Start Time: 6:45:00 AM

Start Time	2 From North				14BY From East				2 From South				14BY From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:45	0	0	0	0	4	30	0	0	4	0	8	0	0	30	27	0	103
07:00	0	0	0	0	3	20	0	0	13	0	13	0	0	38	17	0	104
07:15	0	1	1	0	8	32	0	0	16	0	9	0	1	44	17	0	129
07:30	0	3	1	0	23	73	1	0	19	0	9	0	0	49	63	1	242
07:45	0	2	0	0	13	54	0	0	7	2	14	0	1	57	38	0	188
08:00	1	0	0	0	8	29	0	0	20	0	9	0	0	39	26	1	133
08:15	0	0	2	0	9	45	0	0	15	0	10	0	0	41	17	0	139
08:30	1	0	1	0	5	44	0	0	7	0	3	0	1	36	21	1	120
08:45	0	1	0	0	7	31	0	0	17	1	2	0	2	26	31	0	118
09:00	0	3	0	0	5	34	1	0	13	0	12	0	0	28	15	0	111
09:15	0	0	0	0	8	33	0	0	16	2	9	0	1	32	14	0	115
09:30	0	1	2	0	3	46	0	0	25	0	11	0	1	21	19	0	129
09:45	1	0	0	0	7	23	0	0	13	1	4	0	0	36	22	0	107
10:00	0	0	0	0	6	35	0	0	15	0	6	0	0	24	19	0	105
10:15	0	0	0	0	4	30	0	0	22	0	9	0	0	23	15	0	103
10:30	0	2	1	0	10	35	1	0	15	0	3	0	0	36	19	0	122
10:45	0	0	1	0	8	16	0	0	10	0	4	0	2	17	18	0	76
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	4	0	0	1	0	2	0	0	7	3	0	17
13:30	0	1	1	0	11	25	0	0	24	0	7	0	0	32	24	0	125
13:45	0	0	0	0	6	25	0	0	19	1	11	0	0	35	17	0	114
14:00	0	1	0	0	10	25	1	0	26	1	8	0	3	34	19	0	128
14:15	0	1	1	0	11	26	1	0	32	0	11	0	0	28	16	0	127
14:30	0	4	2	0	6	25	0	0	19	0	8	0	3	36	25	0	128
14:45	0	0	0	0	4	22	0	0	19	0	11	0	0	40	29	0	125
15:00	0	1	0	0	8	33	0	0	32	0	10	0	0	25	18	0	127
15:15	0	1	0	0	7	19	0	0	29	1	9	1	0	17	18	0	102
15:30	0	1	0	0	6	19	0	0	21	2	14	0	1	25	18	0	107
15:45	0	2	0	0	5	34	0	0	22	0	12	0	1	30	22	0	128
16:00	0	4	1	0	9	39	1	0	42	1	8	0	1	36	28	0	170
16:15	0	0	0	0	4	40	0	0	44	1	18	0	0	42	25	0	174
16:30	0	2	0	0	10	56	2	0	63	1	20	0	1	45	27	0	227
16:45	0	2	0	0	18	53	0	0	46	2	10	0	0	44	36	0	211
17:00	0	1	0	0	9	37	0	0	45	1	16	1	0	49	29	0	188
17:15	0	0	0	0	21	50	0	0	63	1	13	0	0	32	21	0	201
17:30	0	0	0	0	16	26	0	0	48	3	15	0	0	28	22	0	158

File Name: 14B/WESTERN  
 Start Date: 9/16/2010  
 Start Time: 7:00:00 AM

Start Time	WESTERN AVE From North				14 BYPASS From East				WESTERN AVE From South				14 BYPASS From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00	0	0	0	0	9	14	0	0	0	0	5	0	0	48	2	0	78
07:15	0	0	0	0	14	25	0	0	5	0	19	0	1	66	0	0	130
07:30	0	1	0	0	12	23	0	0	0	0	19	0	0	102	5	0	162
07:45	0	0	0	0	27	23	0	0	2	2	18	0	0	106	7	0	185
08:00	0	0	0	0	9	18	0	0	5	0	20	0	0	68	2	0	122
08:15	0	1	0	0	5	24	1	0	7	1	17	0	0	49	3	0	108
08:30	0	1	0	0	17	29	0	0	1	0	15	0	0	54	0	0	117
08:45	0	0	0	0	10	20	0	0	5	1	15	0	0	53	0	0	104
09:00	0	0	0	0	7	27	0	0	0	0	10	0	0	26	1	0	71
09:15	0	1	0	0	12	26	0	0	5	0	12	0	0	35	1	0	92
09:30	0	2	0	0	6	29	0	0	3	0	10	0	0	34	0	0	84
09:45	0	1	0	0	16	32	0	0	4	0	15	0	0	32	1	0	101
10:00	1	1	0	0	7	33	0	0	1	0	11	0	0	27	4	0	85
10:15	0	0	0	0	11	26	2	0	6	2	14	0	0	27	5	0	93
10:30	0	2	1	0	9	31	0	0	2	1	10	0	0	40	1	0	97
10:45	1	1	0	0	10	38	1	0	3	2	9	1	0	36	0	0	102
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	1	1	0	0	9	30	0	0	3	0	19	0	0	23	5	0	91
14:15	1	1	0	0	15	46	0	0	5	0	15	0	0	37	1	0	121
14:30	0	0	0	0	15	36	0	0	8	1	18	0	0	27	6	0	111
14:45	2	0	1	0	12	43	2	0	7	0	15	0	0	40	2	0	124
15:00	0	0	0	0	18	45	1	0	5	1	17	0	0	34	5	0	126
15:15	1	1	0	0	19	51	0	0	6	0	15	0	1	24	2	0	120
15:30	1	1	0	0	10	67	3	0	5	0	13	0	1	27	2	0	130
15:45	3	2	1	0	14	40	1	0	2	0	15	0	0	41	3	0	122
16:00	0	0	0	0	14	72	0	0	7	1	14	0	0	42	4	0	154
16:15	0	0	0	0	18	52	1	0	4	2	9	0	0	34	1	0	121
16:30	1	0	0	0	12	73	0	0	6	0	14	0	0	32	3	0	141
16:45	0	0	0	0	19	92	1	0	8	1	15	0	0	47	2	0	185
17:00	1	0	0	0	21	117	0	0	7	0	20	0	1	42	2	0	211
17:15	2	1	0	0	28	89	0	0	4	0	12	0	0	34	4	0	174
17:30	0	1	0	0	16	76	0	0	8	3	15	0	0	34	7	0	160
17:45	2	1	0	0	10	62	0	0	0	0	12	0	0	32	2	0	121

File Name: 14B/MEDARY

Start Date: 9/14/2010

Start Time: 7:00:00 AM

Start Time	MEDARY From North				HWY 14 From East				MEDARY From South				HWY 14 From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00	8	12	2	0	6	19	4	0	5	2	4	0	1	45	11	0	119
07:15	8	14	4	0	7	33	4	0	5	5	4	0	3	67	16	0	170
07:30	9	40	10	0	24	35	2	0	2	8	3	0	5	84	25	0	247
07:45	12	33	4	0	24	33	4	0	7	15	10	0	2	101	37	0	282
08:00	6	19	5	0	23	34	4	0	5	11	12	0	1	48	19	0	187
08:15	6	15	2	0	13	22	6	0	3	2	9	0	1	36	20	0	135
08:30	3	20	4	0	15	24	5	0	5	9	3	0	5	63	24	0	180
08:45	1	7	3	0	12	33	4	0	9	8	10	0	5	40	17	0	149
09:00	7	9	1	0	14	28	2	0	4	9	11	0	0	33	5	0	123
09:15	1	8	2	0	6	23	6	0	0	5	8	0	3	41	5	0	108
09:30	6	9	3	0	14	25	5	0	2	2	4	0	0	31	7	0	108
09:45	5	6	2	0	12	27	5	0	8	11	9	0	5	32	10	0	132
10:00	5	5	1	0	7	41	8	0	1	22	6	0	4	29	2	0	131
10:15	9	5	0	0	6	29	3	0	5	7	3	0	2	35	8	0	112
10:30	0	10	4	0	7	44	10	0	2	4	5	0	0	36	8	0	130
10:45	3	8	2	0	3	31	2	0	14	10	16	0	2	37	6	0	134
11:00	6	12	2	0	3	33	4	0	12	9	8	0	1	28	6	0	124
11:15	6	10	3	0	9	35	5	0	9	12	6	0	2	32	7	0	136
11:30	11	24	3	0	10	40	4	0	9	7	8	0	1	38	6	0	161
11:45	7	18	1	0	12	34	3	0	8	6	16	0	3	45	11	0	164
12:00	4	8	2	0	6	40	10	0	11	10	16	0	4	32	7	0	150
12:15	6	9	1	0	8	34	7	0	8	17	12	0	2	34	8	0	146
12:30	4	5	1	0	11	27	11	0	11	10	5	0	3	47	12	0	147
12:45	7	14	4	0	6	36	5	0	4	9	14	0	2	26	12	0	139
13:00	5	12	0	0	8	45	11	0	11	19	7	0	1	40	5	0	164
13:15	6	14	1	0	7	32	6	0	3	8	10	0	1	32	4	0	124
13:30	5	11	8	0	4	46	7	0	5	4	8	0	2	40	5	0	145
13:45	8	9	2	0	6	41	7	0	10	9	14	0	4	37	5	0	152
14:00	2	10	3	0	4	45	8	0	9	11	12	0	0	33	3	0	140
14:15	4	9	0	0	7	34	3	0	7	9	18	0	3	47	4	0	145
14:30	6	8	1	0	11	46	2	0	9	10	1	0	4	36	3	0	137
14:45	5	7	3	0	8	38	6	0	6	18	8	0	2	27	4	0	132
15:00	3	15	1	0	11	59	4	0	7	8	10	0	1	42	2	0	163
15:15	4	14	1	0	7	57	7	0	8	12	6	0	1	34	3	0	154
15:30	5	12	3	0	10	72	13	0	16	15	12	0	6	52	4	0	220
15:45	4	10	1	0	4	61	6	0	13	9	12	0	3	58	8	0	189
16:00	14	8	1	0	19	65	14	0	11	11	16	0	8	38	6	0	211
16:15	4	11	4	0	11	67	13	0	15	13	15	0	2	45	3	0	203
16:30	3	19	3	0	12	83	4	0	24	10	6	1	7	35	11	0	218
16:45	3	17	4	0	14	79	7	1	20	20	20	0	4	34	4	0	227
17:00	8	9	7	0	15	91	14	0	38	29	17	0	3	32	4	0	267
17:15	5	11	1	0	10	71	12	0	22	25	22	0	6	30	6	0	221
17:30	11	6	1	0	8	65	21	0	16	21	9	0	10	27	14	0	209
17:45	2	11	3	0	8	72	7	0	8	26	10	0	3	50	4	0	204
18:00	2	8	4	0	6	73	6	0	13	16	10	0	3	32	9	0	182
18:15	7	11	4	0	8	52	12	0	9	13	8	0	4	42	7	0	177



File Name: 20TH ST./MAIN AVE.  
 Start Date: 9/21/2010  
 Start Time: 7:00:00 AM

Start Time	MAIN ST From North				20 TH S From East				MAIN ST From South				20 TH S From West				PERIOD
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	TOTAL
07:00	2	14	3	0	2	3	4	0	2	38	4	0	6	8	3	0	89
07:15	2	11	4	1	2	6	5	0	0	38	3	0	4	11	3	1	91
07:30	6	9	4	0	2	5	6	0	2	68	11	0	19	18	2	0	152
07:45	11	25	11	0	0	4	16	0	2	85	14	0	20	28	6	0	222
08:00	3	19	3	1	3	4	11	0	0	38	3	0	10	16	2	0	113
08:15	6	22	10	0	3	4	2	1	1	38	2	0	6	11	3	0	109
08:30	7	13	6	0	2	2	5	0	0	33	3	0	8	11	1	0	91
08:45	5	20	5	0	4	2	10	3	1	36	7	0	3	7	1	0	104
09:00	6	21	1	0	0	3	1	0	1	30	3	0	1	2	0	0	69
09:15	3	16	2	0	1	2	5	0	1	15	2	0	3	3	1	0	54
09:30	1	17	5	0	1	4	7	0	1	21	1	0	6	4	0	0	68
09:45	7	15	8	1	0	1	9	0	0	31	1	0	6	5	2	0	86
10:00	4	24	7	0	1	2	6	0	0	13	2	0	5	5	1	0	70
10:15	3	24	3	0	3	1	6	0	0	31	4	0	4	7	0	0	86
10:30	1	14	4	0	0	4	6	0	1	27	2	0	1	3	1	0	64
10:45	5	11	0	0	1	4	6	0	0	12	1	0	8	4	1	0	53
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
14:00	5	26	3	0	2	5	5	0	0	22	3	0	6	4	0	0	81
14:15	4	26	4	0	3	5	6	0	0	23	4	0	6	6	0	0	87
14:30	11	35	5	0	2	5	9	0	1	29	3	0	5	3	4	0	112
14:45	6	19	6	0	2	6	3	0	1	33	1	0	3	4	0	0	84
15:00	4	11	0	1	5	4	5	0	1	20	3	0	2	3	0	0	59
15:15	10	24	5	0	1	10	7	0	3	25	2	0	4	6	3	0	100
15:30	11	40	17	0	3	16	13	0	2	19	0	0	2	6	2	0	131
15:45	11	33	7	0	4	10	7	0	4	19	5	0	7	5	0	0	112
16:00	7	15	15	1	4	18	8	1	0	18	2	1	2	7	1	0	100
16:15	12	41	7	0	9	7	4	0	1	28	2	0	5	3	2	0	121
16:30	7	50	7	0	8	16	11	0	0	34	4	0	4	10	2	0	153
16:45	10	34	6	0	3	13	9	1	1	28	5	0	7	5	1	0	123
17:00	13	82	24	1	7	16	17	0	4	29	6	0	5	10	3	0	217
17:15	19	62	14	0	5	18	9	0	6	24	3	0	10	15	3	0	188
17:30	22	41	11	0	3	13	4	1	4	21	5	0	7	12	5	0	149

File Name: 20TH/MEDARY

Start Date: 9/27/2010

Start Time: 2:00:00 PM

Start Time	MEDARY AVE From North				20TH ST S From East				MEDARY AVE From South				20TH ST S From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
14:00	3	0	5	0	0	10	2	0	0	1	0	0	0	13	0	0	34
14:15	3	4	3	0	1	18	1	0	0	0	2	0	4	14	0	0	50
14:30	5	1	6	0	0	11	3	0	0	0	1	0	7	13	3	0	50
14:45	3	1	5	0	0	18	7	0	0	2	1	0	2	8	1	0	48
15:00	5	1	4	0	0	20	3	0	0	0	0	0	3	14	0	0	50
15:15	8	2	4	0	0	21	7	0	1	0	0	0	6	12	1	0	62
15:30	10	6	21	0	0	25	9	0	2	2	1	0	10	14	0	0	100
15:45	1	0	7	0	1	22	4	0	2	2	0	0	3	17	1	0	60
16:00	11	0	7	0	0	24	4	0	0	2	2	0	4	20	1	0	75
16:15	3	2	8	0	0	24	2	0	1	2	1	0	5	19	0	0	67
16:30	8	2	13	0	1	27	3	0	1	0	1	0	6	25	1	0	88
16:45	8	2	9	0	0	38	3	0	1	2	0	0	3	27	1	0	94
17:00	14	4	13	0	0	51	8	0	0	2	1	0	5	38	1	0	137
17:15	17	5	17	0	1	44	9	0	0	1	1	0	6	40	0	0	141
17:30	10	5	9	0	0	42	7	0	1	1	2	0	5	26	1	0	109
17:45	18	12	10	0	0	46	4	0	0	3	4	0	6	39	8	0	150

File Name: 20TH ST S/MEDARY AVE

Start Date: 9/23/2010

Start Time: 7:00:00 AM

Start Time	MEDARY AVE From North				20TH ST S From East				MEDARY AVE From South				20TH ST S From West				PERIOD
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	TOTAL
07:00	3	0	5	0	0	5	1	0	0	2	0	0	4	12	1	0	33
07:15	2	0	2	0	0	10	1	0	0	0	0	0	7	31	0	0	53
07:30	3	0	4	0	0	16	12	0	0	3	1	0	20	43	0	0	102
07:45	4	1	3	0	0	25	10	0	0	0	1	0	40	63	1	0	148
08:00	7	0	7	0	0	13	6	0	0	0	0	0	19	21	0	0	73
08:15	5	3	3	0	0	10	3	0	0	0	1	0	3	24	0	0	52
08:30	3	0	1	0	0	8	8	0	1	0	0	0	6	13	0	0	40
08:45	1	1	2	0	0	6	6	0	0	0	0	0	7	17	0	0	40
09:00	3	0	5	0	0	11	1	0	0	0	0	0	2	11	0	0	33
09:15	7	0	3	0	0	5	5	0	0	0	0	0	2	10	0	0	32
09:30	2	0	1	0	0	5	9	0	0	0	0	0	3	14	0	0	34
09:45	2	0	2	0	0	9	3	0	0	1	0	0	1	13	0	0	31
10:00	5	0	1	0	0	10	3	0	0	0	0	0	4	6	0	0	29
10:15	2	0	4	0	0	8	7	0	0	1	1	0	1	12	1	0	37
10:30	1	0	2	0	0	14	6	0	0	0	1	0	3	13	0	0	40
10:45	4	1	1	0	0	7	4	0	0	0	0	0	4	7	0	0	28

File Name: 32ND ST/22ND AVE

Start Date: 5/7/2008

Start Time: 7:15:00 AM

Start Time	22ND From North				32ND From East				22ND From South				32ND From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:15	3	14	8	0	0	1	3	0	0	21	0	0	9	4	0	0	63
07:30	2	13	2	0	0	1	6	0	1	32	0	0	28	5	1	0	91
07:45	0	14	3	0	0	3	5	0	0	32	0	0	24	4	0	0	85
08:00	1	17	1	0	0	0	4	0	0	10	0	0	3	1	0	0	37



File Name: 22ND AVE/EASTBROOK DR

Start Date: 9/27/2010

Start Time: 7:00:00 AM

Start Time	22ND AVE From North				EASTBROOK DR From East				22ND AVE From South				EASTBROOK DR From West				PERIOD TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00	4	46	0	0	7	0	0	0	0	90	9	0	0	0	0	0	156
07:15	3	72	0	0	2	0	1	0	0	132	14	0	0	0	0	0	224
07:30	7	94	0	0	0	0	2	0	0	181	7	0	0	0	0	0	291
07:45	5	142	0	0	3	0	6	0	0	307	42	0	0	0	0	0	505
08:00	1	88	0	0	2	0	3	0	0	260	9	0	0	0	0	0	363
08:15	6	86	0	0	2	0	0	0	0	180	10	0	0	0	0	0	284
08:30	2	62	0	0	4	1	4	0	0	116	7	0	0	0	0	0	196
08:45	3	77	0	0	0	0	2	0	0	133	4	0	0	0	0	0	219
09:00	4	61	0	0	4	0	1	0	0	94	4	0	0	0	0	0	168
09:15	1	83	0	0	1	0	1	0	0	72	4	0	0	0	0	0	162
09:30	1	70	1	0	5	0	0	0	0	95	5	0	0	0	0	0	177
09:45	6	72	0	0	3	0	1	0	0	106	2	0	0	0	0	0	190
10:00	2	123	0	0	3	0	1	0	0	82	2	0	0	0	0	0	213
10:15	4	104	0	0	7	0	4	0	0	94	3	0	0	0	0	0	216
10:30	1	78	0	0	2	0	2	0	0	106	2	0	0	0	0	0	191
10:45	1	96	0	0	4	0	1	0	0	106	2	0	0	0	0	0	210

File Name: 32ND STREET/MEDARY AVE

Start Date: 9/23/2010

Start Time: 7:00:00 AM

Start Time	MEDARYAVE From North				32ND ST From East				MEDARYAVE From South				32ND ST From West				PERIOD
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	TOTAL
07:00	1	0	0	0	0	1	0	0	0	0	0	0	1	13	0	0	16
07:15	0	0	0	0	0	9	0	0	0	0	0	0	0	20	1	0	30
07:30	0	0	0	0	0	7	0	0	0	1	3	0	0	35	0	0	46
07:45	0	0	1	0	0	9	0	0	1	0	0	0	0	33	0	0	44
08:00	0	0	0	0	0	5	0	0	1	0	1	0	0	17	0	0	24
08:15	1	0	0	0	0	9	0	0	0	0	1	0	1	15	0	0	27
08:30	0	0	0	0	0	14	0	0	0	0	1	0	2	22	0	0	39
08:45	0	1	0	0	0	13	0	0	0	0	0	0	0	11	0	0	25
09:00	0	0	0	0	0	12	0	0	0	0	0	0	0	6	0	0	18
09:15	0	0	0	0	0	5	0	0	0	0	0	0	0	8	0	0	13
09:30	0	0	0	0	0	4	0	0	0	0	0	0	0	11	0	0	15
09:45	0	0	0	0	0	4	0	0	1	0	0	0	0	8	0	0	13
10:00	0	0	0	0	0	3	0	0	0	0	0	0	0	11	0	0	14
10:15	0	0	0	0	0	8	0	0	1	0	0	0	0	8	0	0	17
10:30	0	0	0	0	0	4	0	0	0	0	0	0	0	4	0	0	8
10:45	0	0	0	0	0	10	0	0	0	0	0	0	0	5	0	0	15
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	9	0	0	1	0	1	0	0	8	2	0	21
14:15	0	1	0	0	0	10	0	0	1	0	0	0	0	8	0	0	20
14:30	0	0	0	0	0	11	0	0	0	0	0	0	0	8	0	0	19
14:45	0	0	0	0	1	9	0	0	0	0	2	0	0	7	0	0	19
15:00	0	0	0	0	0	10	0	0	1	0	0	0	0	13	0	0	24
15:15	0	0	0	0	0	13	0	0	0	0	0	0	0	9	1	0	23
15:30	0	0	0	0	0	14	0	0	0	0	1	0	0	11	3	0	29
15:45	0	0	0	0	1	18	0	0	0	0	0	0	0	3	0	0	22
16:00	0	0	0	0	0	12	0	0	0	0	0	0	0	12	0	0	24
16:15	0	0	0	0	0	27	0	0	0	0	0	0	0	6	0	0	33
16:30	0	0	0	0	0	26	0	0	0	0	0	0	0	17	1	0	44
16:45	0	0	0	0	0	24	0	0	2	0	0	0	0	10	1	0	37
17:00	0	0	0	0	0	30	0	0	0	0	0	0	0	15	0	0	45
17:15	1	0	0	0	0	22	0	0	0	0	0	0	0	13	1	0	37
17:30	0	0	0	0	0	27	0	0	0	0	0	0	0	17	2	0	46
17:45	0	0	0	0	0	32	0	0	0	0	0	0	0	9	0	0	41

# Appendix Part 2—Medary Avenue Technical Memo

*June, 2011*



**SOUTH DAKOTA  
DEPARTMENT OF  
TRANSPORTATION**

**CITY OF BROOKINGS**

**CITY OF AURORA**

**BROOKINGS COUNTY**

**HDR**



To: Brookings MTP Study Team

From: Rick Laughlin

Project: Brookings Area Master Transp. Plan

CC:

Date: 11/8/2010

Job No:

## RE: Observation of pedestrian operations, Medary Avenue at SDSU campus

An observation of pedestrian operations was conducted on Wednesday, November 3, 2010, to determine the conditions experienced by pedestrians crossing Medary Avenue on the South Dakota State University campus. This location has been identified as having heavy pedestrian traffic and frequent interaction between pedestrians and motor vehicles. The observed conditions suggest some potential improvements, provided in the recommendations section of this memo.

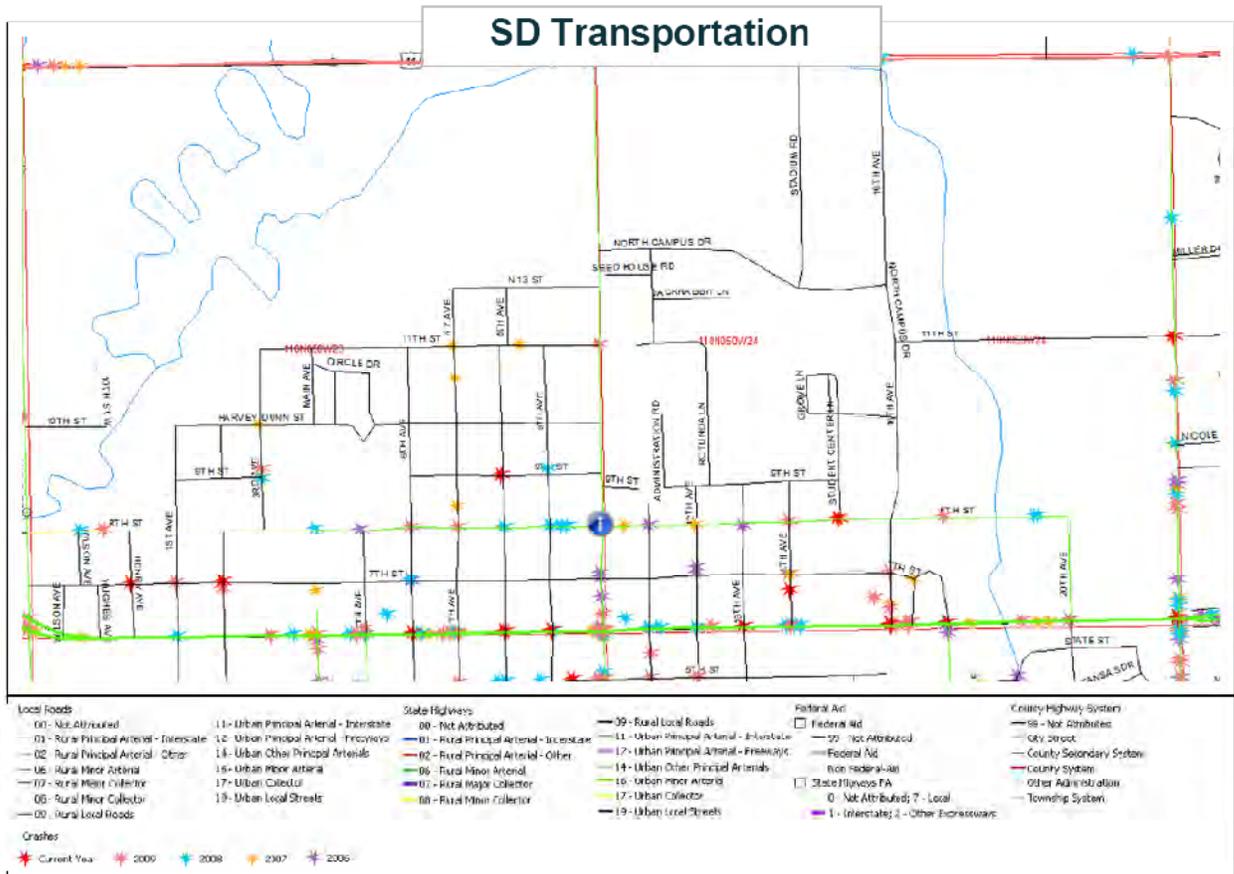


### Pedestrian Crossing Conditions on Medary Avenue – SDSU Campus

The observation was conducted between Campus Drive on the north and 8<sup>th</sup> Street on the south, an area that contains many marked crosswalks and street intersections. Weather conditions were conducive to heavy pedestrian and bicycle travel on campus, with sunshine and a high temperature in the 60's. Wednesday also represents a day of relatively high class incidence and attendance.

Observation notes are listed below:

- All the marked crosswalks were heavily used, particularly in the periods between classes. The pedestrian crossing activity seemed to be well distributed between the marked crosswalks. Bicycles also shared the sidewalks and pedestrian crossings, representing between 10% and 20% of the crossing volume.
- Students don't seem to spend much time checking traffic prior to entering the street. Rather, many students appear to assume that motor vehicles will be able to stop and yield the right of way. A check of crash records indicates that no pedestrian vs. vehicle crashes were reported to the State during the reporting period beginning in January, 2006 and ending with the most recently processed 2010 records. This pedestrian behavior makes it unlikely that pedestrian-activated signals will be well used because the pedestrians will be unwilling to wait for the signal to cycle.



**Figure 1 – Area Crash Map (SDDOT GIS)**

- Street lights were observed to have been extinguished while it was still difficult to see pedestrians in the early morning. Further, the lighting uniformity and intensity could be increased to provide better pedestrian visibility.
- Some of the crossings were marked with W11-2 warning signs, but did not have the required arrow plaque. Other crossings did not have warning signs.
- Drivers had difficulty seeing approaching pedestrians at some crossings because of adjacent trees and other obstructions.
- Drivers had difficulty making progress during heavy pedestrian crossing periods. Slow vehicular progress probably aided safety, but reduced the ability of Medary Avenue to carry traffic. Unfortunately, there is no parallel route for diversion of through-traffic without a relatively significant time cost.

## RECOMMENDATIONS

While pedestrian activity on Medary Avenue seems to be occurring relatively safely and efficiently, there are a few actions that could improve the uniformity of the crossing conditions and assist drivers in seeing and responding to pedestrians:

- Street amenities – pedestrian curb bump-outs at the crosswalk locations could help improve visibility at all times and control speeds during off-peak times. This technique was used in downtown Brookings as part of the recent streetscaping project. The curb bump-out can also be used with colored-pavement crosswalks to produce a visually pleasing and highly recognizable pedestrian crossing. Campus entrance features could also be employed at the ends of this section of Medary Avenue to help raise driver awareness of changed street conditions.
- Lighting – more uniform lighting could be provided to assist with pedestrian visibility during ambient low-light conditions. Other jurisdictions have combined low-height lighting in conjunction with pedestrian bump-outs to provide nighttime emphasis to crossing areas.
- Signs – it may not be necessary to provide warning signs at each crossing if curb bump-outs and other attention-drawing devices are used. It is appropriate, however, to warn motorists that they are entering an area with multiple pedestrian crossings. While many signing combinations might be applied, one that suggests itself is placing a W11-2 with a flashing beacon at the ends of the campus section of Medary Avenue, supplemented by campus signing indicating multiple pedestrian crossings ahead.

## APPENDIX

- Reference pages from Manual of Uniform Traffic Control Devices, Federal Highway Administration
- Informational brochure from City of Madison, WI, on street amenities.

**Standard:**

11 **The Emergency Vehicle (W11-8) sign (see Figure 2C-10) with the EMERGENCY SIGNAL AHEAD (W11-12P) supplemental plaque (see Figure 2C-10) shall be placed in advance of all emergency-vehicle traffic control signals (see Chapter 4G).**

**Option:**

12 The Emergency Vehicle (W11-8) sign, or a word message sign indicating the type of emergency vehicle (such as rescue squad), may be used in advance of the emergency-vehicle station when no emergency-vehicle traffic control signal is present.

13 A Warning Beacon (see Section 4L.03) may be used with any Vehicular Traffic Warning sign to indicate specific periods when the condition or activity is present or is likely to be present, or to provide enhanced sign conspicuity.

14 A supplemental WHEN FLASHING (W16-13P) plaque (see Figure 2C-12) may be used with any Vehicular Traffic Warning sign that is supplemented with a Warning Beacon to indicate specific periods when the condition or activity is present or is likely to be present.

**Section 2C.50 Non-Vehicular Warning Signs (W11-2, W11-3, W11-4, W11-6, W11-7, W11-9, and W11-16 through W11-22)**

**Option:**

01 Non-Vehicular Warning (W11-2, W11-3, W11-4, W11-6, W11-7, W11-9, and W11-16 through W11-22) signs (see Figure 2C-11) may be used to alert road users in advance of locations where unexpected entries into the roadway might occur or where shared use of the roadway by pedestrians, animals, or equestrians might occur.

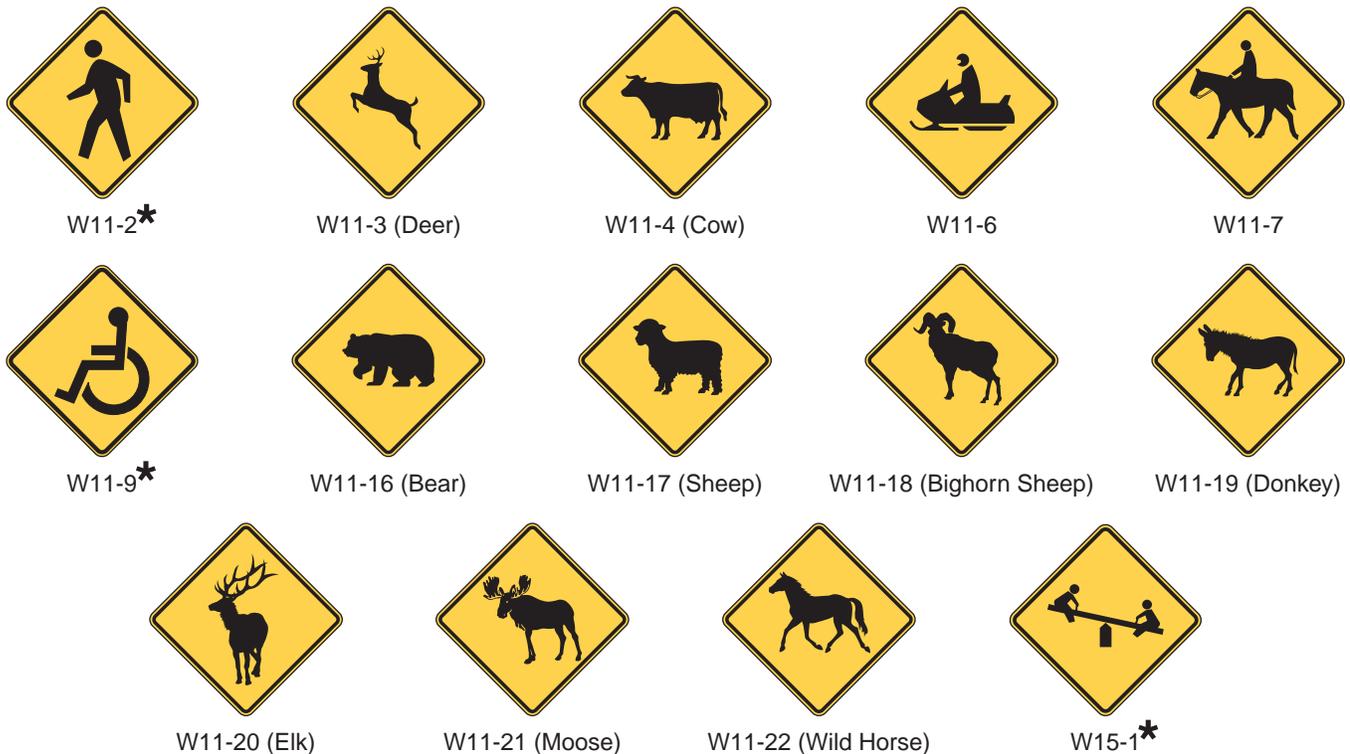
**Support:**

02 These conflicts might be relatively confined, or might occur randomly over a segment of roadway.

**Guidance:**

03 *If used in advance of a pedestrian, snowmobile, or equestrian crossing, the W11-2, W11-6, W11-7, and W11-9 signs should be supplemented with plaques (see Section 2C.55) with the legend AHEAD or XX FEET to inform road users that they are approaching a point where crossing activity might occur.*

**Figure 2C-11. Non-Vehicular Warning Signs**



\* A fluorescent yellow-green background color may be used for this sign or plaque.

**Standard:**

- 04 **If a post-mounted W11-2, W11-6, W11-7, or W11-9 sign is placed at the location of the crossing point where pedestrians, snowmobilers, or equestrians might be crossing the roadway, a diagonal downward pointing arrow (W16-7P) plaque (see Figure 2C-12) shall be mounted below the sign. If the W11-2, W11-6, W11-7, or W11-9 sign is mounted overhead, the W16-7P plaque shall not be used.**

## Option:

- 05 A Pedestrian Crossing (W11-2) sign may be placed overhead or may be post-mounted with a diagonal downward pointing arrow (W16-7P) plaque at the crosswalk location where Yield Here To (Stop Here For) Pedestrians signs (see Section 2B.11) have been installed in advance of the crosswalk.

**Standard:**

- 06 **If a W11-2 sign has been post-mounted at the crosswalk location where a Yield Here To (Stop Here For) Pedestrians sign is used on the approach, the Yield Here To (Stop Here For) Pedestrians sign shall not be placed on the same post as or block the road user's view of the W11-2 sign.**

## Option:

- 07 An advance Pedestrian Crossing (W11-2) sign with an AHEAD or a distance supplemental plaque may be used in conjunction with a Yield Here To (Stop Here For) Pedestrians sign on the approach to the same crosswalk.

- 08 The crossing location identified by a W11-2, W11-6, W11-7, or W11-9 sign may be defined with crosswalk markings (see Section 3B.18).

- 09 The W11-2 and W11-9 signs and their related supplemental plaques may have a fluorescent yellow-green background with a black legend and border.

*Guidance:*

- 10 *When a fluorescent yellow-green background is used, a systematic approach featuring one background color within a zone or area should be used. The mixing of standard yellow and fluorescent yellow-green backgrounds within a selected site area should be avoided.*

## Option:

- 11 A Warning Beacon (see Section 4L.03) may be used with any Non-Vehicular Warning sign to indicate specific periods when the condition or activity is present or is likely to be present, or to provide enhanced sign conspicuity.

- 12 A supplemental WHEN FLASHING (W16-13P) plaque (see Figure 2C-12) may be used with any Non-Vehicular Warning sign that is supplemented with a Warning Beacon to indicate specific periods when the condition or activity is present or is likely to be present.

**Section 2C.51 Playground Sign (W15-1)**

## Option:

- 01 The Playground (W15-1) sign (see Figure 2C-11) may be used to give advance warning of a designated children's playground that is located adjacent to the road.

- 02 The Playground sign may have a fluorescent yellow-green background with a black legend and border.

*Guidance:*

- 03 *If the access to the playground area requires a roadway crossing, the application of crosswalk pavement markings (see Section 3B.18) and Non-Vehicular Warning signs (see Section 2C.50) should be considered.*

**Section 2C.52 NEW TRAFFIC PATTERN AHEAD Sign (W23-2)**

## Option:

- 01 A NEW TRAFFIC PATTERN AHEAD (W23-2) sign (see Figure 2C-6) may be used on the approach to an intersection or along a section of roadway to provide advance warning of a change in traffic patterns, such as revised lane usage, roadway geometry, or signal phasing.

*Guidance:*

- 02 *The NEW TRAFFIC PATTERN AHEAD sign should be removed when the traffic pattern returns to normal, when the changed pattern is no longer considered to be new, or within six months.*

**Section 2C.53 Use of Supplemental Warning Plaques**

## Option:

- 01 A supplemental warning plaque (see Figure 2C-12) may be displayed with a warning or regulatory sign when engineering judgment indicates that road users require additional warning information beyond that contained in the main message of the warning or regulatory sign.

# Creating a Neighborhood Plan: *Transportation Strategies*



## TRANSPORTATION IMPROVEMENT EXAMPLES

### Crosswalk Bumpout or Knockdown



#### Benefits

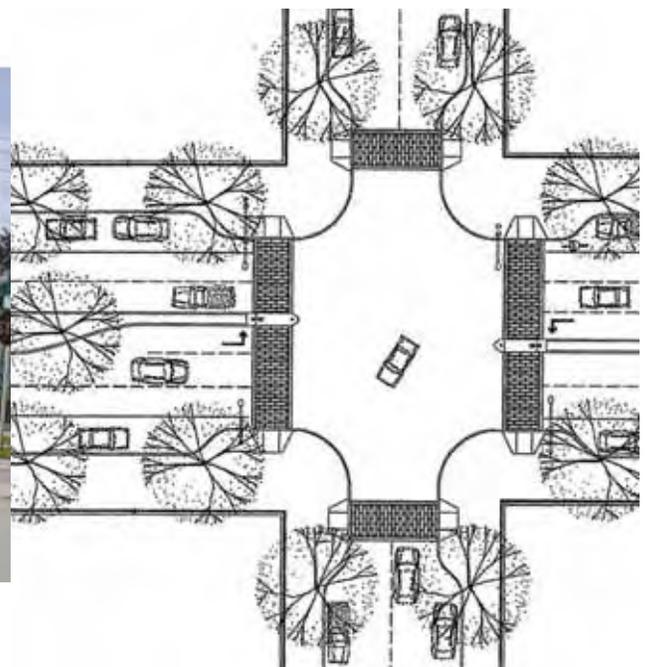
- Reduce roadway width curb to curb creating shorter crossing distances for pedestrians.
- Improve driver visibility of pedestrians.
- Slow vehicular traffic speeds.
- Allow for pedestrian amenities.

#### Concerns and considerations

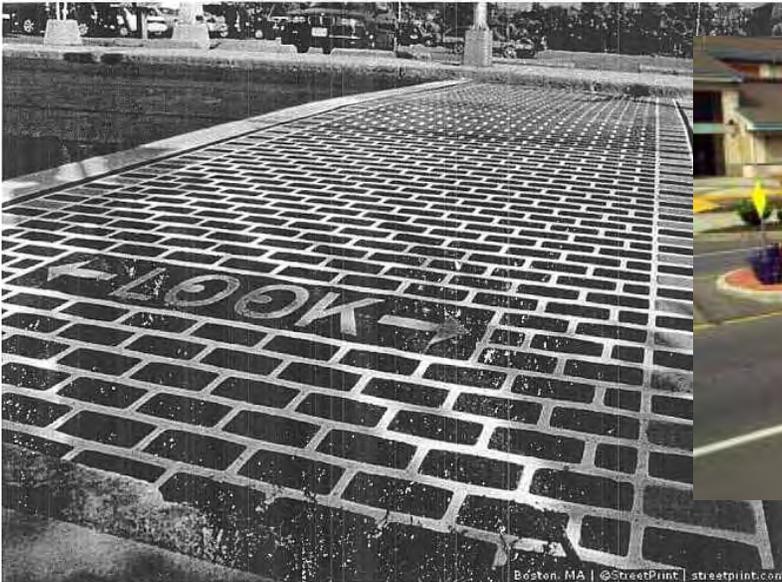
- May require additional snow removal effort.
- Need careful design in coordination with street parking, bus stops and bike lanes.



*Bumpout in West Palm Beach, FL*



## Additional Crosswalk Improvements



*Textured crosswalk in Boston, MA*



*Textured and colored crosswalk in Oakland, CA*



*Crosswalk with color in Madison, WI*

### Benefits

- Improves driver visibility of pedestrians and bicyclists.
- Gives pedestrians a more distinguished space to walk among other modes.
- Enhances appearance of intersection.

### Concerns and considerations

- May require more effort to maintain.
- Could be more costly to install than uncolored pavement.

# Creating a Neighborhood Plan: *Transportation Strategies*



## Traffic Circle: Kendall Avenue, Madison's Near Westside



### Benefits

- Improve driver visibility of pedestrians and bicyclists.
- Motorists must think more carefully about how to maneuver through intersection.
- Slows traffic, particularly in uncontrolled intersections.
- Provides place for plantings.

### Concerns and considerations

- More effort for snow removal and maneuvering of larger vehicles.
- Best used on lower volume residential streets where one vehicle is moving through the intersection at a time.

## Roundabout



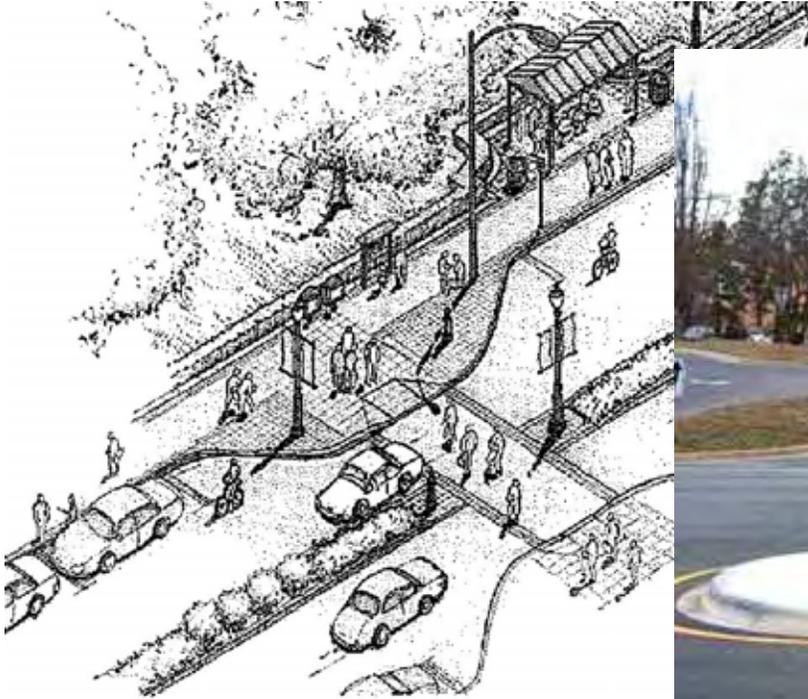
### Benefits

- Traffic is forced to slow down in a roundabout, creating a safer intersection for vehicles, pedestrians and bicyclists.
- No red lights to run – roundabouts are designed to keep traffic flowing without requiring vehicles to stop, so the incentive for drivers to speed up to make it through a yellow or red light is removed.
- Add to urban aesthetic with elimination of overhead wires and signal poles.
- Can be a distinctive feature of a gateway into a neighborhood.
- Could include a rain garden for a cost-effective, low-impact way to infiltrate stormwater (plant height restrictions).

### Concerns and considerations

- Provide directional signage to help drivers navigate through the roundabout, particularly in areas where drivers are unaccustomed to them.
- Need careful attention to design for pedestrian and bicycle safety.

## Pedestrian Refuge Island



### **Benefits**

- Provide pedestrians and bicyclists a refuge partway through crossing, often located mid-block.
- Require shorter pedestrian signal phases, thereby reducing traffic delays.
- Effective at unsignalized crossing of high-volume thoroughfares of four or more lanes, or high volumes of roadway traffic.
- Helpful where people walk more slowly such as near retirement communities, daycare centers, housing that accommodates people with disabilities, etc.

### **Concerns and considerations**

- Could be more effort for snow removal.
- Learning curve for both pedestrians and drivers not accustomed to pedestrian refuges, especially unsignalized mid-block crossings.

# Appendix Part 3—Special Events Technical Memos

*June, 2011*



**SOUTH DAKOTA  
DEPARTMENT OF  
TRANSPORTATION**

**CITY OF BROOKINGS**

**CITY OF AURORA**

**BROOKINGS COUNTY**

**HDR**



To: Jason Kjenstad	
From: Rick Laughlin	Project: Brookings MTP
CC:	
Date: 7/12/10	Job No:

**RE: Brookings Summer Arts Festival traffic operations**

Traffic operations were observed and the following conditions were noted:

- The permanent message signs on I-29 were not used during the festival.
- New traffic signals at the I-29/6<sup>th</sup> St. exit were under construction, but were not available for use during the festival.
- A highway patrol officer was observed directing traffic at the off-ramp, but had some difficulty due to the size of the intersection.



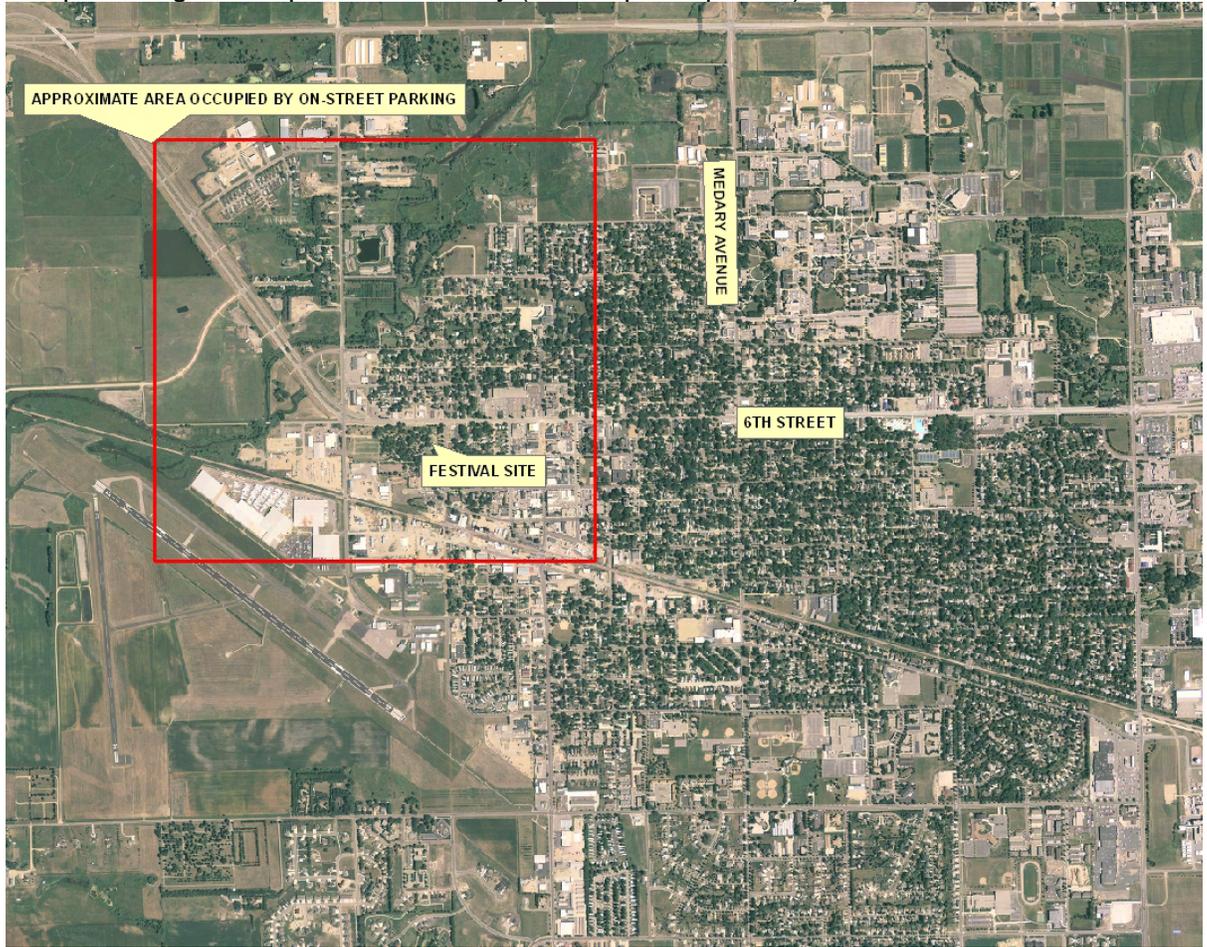
- A significant portion of the festival traffic was using the remote parking areas at Lowe's and the First Bank & Trust. At times the available parking was challenged and there were long lines of visitors waiting for the shuttle bus.



- Static signs directing drivers to remote parking were located where visibility of the signs was frequently blocked by vehicles.



- No temporary changeable message signs were used to direct traffic. On-street parking occupied a significant portion of the city (see map and picture).



- The portion of 6<sup>th</sup> Street adjacent to the festival grounds was a combination of pedestrian mall and through street, creating a considerable number of potentially-hazardous conflicts between pedestrians and vehicles.



**Recommendations:** The following preliminary recommendations are based on the festival observations:

- Communication – Use the permanent message signs on I-29 and temporary changeable message signs to communicate with drivers, directing them to available off-site parking areas. Temporary driver advisory radio would provide another good means of communication, if resources are available.
- Clarity – Clarify the role of 6<sup>th</sup> Street in the vicinity of the festival grounds. Either make a short stretch of the street (approximately three blocks) a pedestrian mall by use of temporary traffic control devices, or create well-marked crosswalks controlled by police officers or temporary traffic signals.
- Capacity – Provide more shuttle buses during the peak periods and identify other locations for external parking. Open areas on the SDSU campus north of Coughlin Stadium would provide a large area for parking and would allow greater use of both I-29 exits. Traffic signals on the northbound ramp terminal at I-29/6<sup>th</sup> Street would facilitate flow from the Interstate, but will probably require a special timing plan or external control for special events.

To: Study Advisory Team for Brookings Area Master Transportation Plan	
From: HDR	Project: Brookings MTP
CC:	
Date: 2/21/2011	Job No:

**RE: Game Day Special Event Analysis**

Traffic operations were observed on two occasions to determine the impact of a SDSU home football game special event on the Brookings-area transportation system. Observations were conducted on 9/18/2010 and 10/9/2010 and included the I-29 interchanges for 6<sup>th</sup> Street and US 14B, 6<sup>th</sup> Street, US 14B, 22<sup>nd</sup> Avenue and Medary Avenue.

The observations found that traffic generally flowed well, despite the additional demands placed by the special event. A few locations, however, showed periodic congestion and/or safety issues. They include:

- The northbound I-29 off-ramp at 6<sup>th</sup> Street experienced queues as long as ten vehicles. A new traffic signal had been installed and gap/extension times could be fine-tuned. Striping and signal visibility may also need to be adjusted.
- The intersection of 6<sup>th</sup> Street/22<sup>nd</sup> Avenue could be modified to provide more standard lanes and phasing for out-of-town drivers. Indecision and hesitation were noted on the north and south approaches.
- The intersections on US 14B at 16<sup>th</sup> Avenue and Stadium Drive were the site of conflicts and avoidance maneuvers as vehicles turned into the Stadium area (see pictures, note conflicts and skid marks). Left turn lanes and intersection lighting could aid operations and avoid growth in crash incidence.





Complete observation notes are attached for reference.

### **OPTIONS ANALYSIS**

The conflicts and delays related to turning traffic on US 14B could be corrected by separating the left turning traffic from the through traffic in one of two ways:

- Widen the roadway to provide for left turn lanes at 16<sup>th</sup> Avenue and Stadium Drive.
- Widen the roadway to provide a median from east of 16<sup>th</sup> Avenue to west of Stadium Drive. Provision could be made for all movements at the US 14B/16<sup>th</sup> Avenue intersection and the  $\frac{3}{4}$  movement intersection (westbound left turn and thru, northbound right turn, eastbound right turn and thru) could be provided at US 16B/Stadium Drive. This configuration would necessitate a circulation roadway between 16<sup>th</sup> Avenue and Stadium Drive to allow opportunities for all movements from Stadium Drive.

Roadway lighting should be included with any of these alternatives.

It appears that the first option is the least expensive and the most congruent with the potential benefits of any safety improvement at this location.

### **RECOMMENDATIONS**

The following actions are recommended to address issues observed on game day:

- Monitor and adjust signal timing at I-29 northbound/6<sup>th</sup> Street. Consider changes to pavement marking and signal visibility.
- Provide more standard lane configuration and phasing at 6<sup>th</sup> Street/22<sup>nd</sup> Avenue.
- Provide left turn lanes and intersection lighting on US 14B at 16<sup>th</sup> Avenue and Stadium Drive.

To: Study Advisory Team for Brookings Area Master Transportation Plan	
From: HDR	Project: Brookings MTP
Date: 9/18/10	

**RE: Game Day observations (9/18/10)**

- 3:30 to 5:00 pm observation on 6<sup>th</sup> Street and 22<sup>nd</sup> Avenue
  - Traffic on I-29 off Ramp is starting to increase, vehicle queues observed but all vehicles are able to clear during the cycle. Most vehicles observed sitting was 16 with an average around 8 vehicles per cycle after 3:30 pm.
  - Flow on 6<sup>th</sup> Street between I29 and Medary in both directions is very good. Some traffic congestion near the Burger King and McDonalds driveway, vehicles slow to make turning movements into the driveways.
  - Geometric constraints at 6<sup>th</sup> Street and 22<sup>nd</sup> Avenue cause hesitation, the north and south approaches are confusing to drivers. I observed many vehicles make lane changes near the intersection as they appeared to not know what lane they should be in. There is no left turn phasing southbound to eastbound, volumes are not high but there were cycles that didn't completely clear.
  - 6<sup>th</sup> Street and Medary functioned very well through the observation period.
  - 22<sup>nd</sup> Avenue was busy but I didn't observe any capacity or delay problems.
  - Only a few pedestrians were observed along 6<sup>th</sup> Street.
  - The pavement markings at I29 and 6<sup>th</sup> Street (east ramp) were updated with the installation of the signal, I seen many times when one vehicle followed the new markings and drivers that use the intersection frequently just do what they did before which means they cut the drivers using the new pavement markings off. This is a concern for accident potential. The SDDOT may want to put some tubular markers outside the edge line to delineate the new lane paths. This paragraph is referencing the RTL on the south approach at I29 and 6<sup>th</sup> Street.
  - Both Wal-Mart and Lowes seemed very busy during the few hours before the game, this adds to the congestion at 6<sup>th</sup> Street and 22<sup>nd</sup> Avenue.
- 5:00 to 5:50 pm observation on Highway 14 Bypass and Medary Avenue
  - Vehicles using the Hwy 14 Bypass during this time seemed to be traveling below the posted speed limit. The turning traffic and vehicles parked on the SDSU access roadways I believe caused other to slow down.

- The intersection of the Highway 14 Bypass and Medary Avenue operated with little to no delay.
- With all the congestion on the SDSU access roadways leading to the tailgating and parking areas, vehicles turning off of Highway 14 Bypass could not turn at high speeds. They turned very slowly which caused Highway 14 Bypass travelers to use the shoulder to go around the left turning vehicles and continue. No turn lanes at the SDSU access roadways certainly cause some concerns in regards to accident potential. Vehicle tire marks were observed on the Highway 14 Bypass at the west access roadway entrance.
- The Highway 14 Bypass does not have any street lights near the SDSU access roadways.
- The turn lanes at 22<sup>nd</sup> Avenue and Highway 14 Bypass appear to make getting off and on the Highway 14 Bypass more efficient.
- 8:35 to 9:30 pm observation on 6<sup>th</sup> Street
  - The lighting at the Ped crossings on Medary Avenue was poor, I observed pedestrians crossing at two locations and it was difficult to see them until they were in the street.
  - The progression on 6<sup>th</sup> Street after the game from Medary to I29 was very good; there was some delay on the north approach at 6<sup>th</sup> Street and 22<sup>nd</sup> Avenue for approximately 15 minutes.
  - Game was over at 8:47 pm and traffic by 9:25 pm was back to normal throughout the city, during the peak traffic congestion was minimal.

To: Study Advisory Team for Brookings Area Master Transportation Plan

From: HDR

Project: Brookings MTP

Date: 10/09/10

**RE: Game Day observations (10/09/10)**

- 3:00 to 6:00 pm observation on 6<sup>th</sup> Street, 22<sup>nd</sup> Avenue, US 14B, and Medary Avenue
  - Between 3 pm and 4 pm approximately 5 cars on average were observed at the I29, throughout the observation period it fluctuated from 3 to 12 cars queued at any given cycle but certainly no major delays.
  - 6<sup>th</sup> Street between I29 and 22<sup>nd</sup> Street was busy at times but long queues were not observed.
  - 6<sup>th</sup> Street from I29 to Medary Avenue operated well during the observation period.
  - 22<sup>nd</sup> Avenue was busy but I didn't observe any significant capacity problems, at the intersection of US 14B additional harvest truck traffic seemed to cause longer queues than observed during the September game. The Brookings area received some rainfall around 3 pm which may have caused an increase of harvest vehicles to transport what was harvested to keep moistures down.
  - At approximately 4:10 pm (2 hours before game start) both Stadium Road and 16<sup>th</sup> Avenue had parked cars from the existing stadium parking lots to US 14B. This as observed previously slows down vehicles turning off US 14B onto the access roadways to the stadium. In a few cases vehicles on US 14B had to slow down very quickly and there are a few skid marks indicating that some needed to brake quickly to avoid a rear-end collision.
  - Harvest traffic (semi's and grain sized trucks) were observed in the study area, this additional truck traffic added to the safety concerns and delays on US 14B.
  - Many vehicles turning from US 14B onto the stadium access roadways caused delays or required US 14B users to stop and wait for the turning vehicles. Some US 14B users would pass the turning vehicles on the shoulder of the roadway.
- 9:10 to 9:45 pm observation on 6<sup>th</sup> Street
  - The uniformity of the lights along Medary Avenue need improvement, lights exist but there are dark locations and cause concern for pedestrians crossing at night or during the evening hours.
  - Currently, no lighting exists on US 14B at either Stadium Road or 16<sup>th</sup> Avenue. When the stadium grounds clear after the game vehicles entering US 14B have a difficult time judging traffic that is traveling along US 14B. I observed many vehicles turning onto the highway causing the US 14B users to slow down to avoid rear end collisions.

To: Jason Kjenstad

From: Rick Laughlin

Project: Brookings MTP

Date: 9/20/10

**RE: Game Day observations (9/18/10)**

- 3:30 PM – I-29/6<sup>th</sup> St. – normal Saturday flows, signal operating OK
- 3:50 – parking at the tailgating site is filling up. All access roads to 14 Bypass are open, but are parked full on both sides.
- 3:53 – I-29/14 Bypass – traffic is light.
- 4:18 – light traffic on drives from SDSU to 14 Bypass. Movements on 14 Bypass are slowed because of stadium traffic. Sudden braking and evasive maneuvers seen on 14 Bypass to avoid turning traffic. Skid marks seen on pavement.
- 4:26 – Interstate ramp (I-29/14 Bypass) is still light.
- 4:33 – steady activity at 14 Bypass/22<sup>nd</sup> Avenue, but no backup. More activity on 22<sup>nd</sup> than on I-29 ramp. Quite a bit of EB RT traffic (Wal-Mart traffic?)
- 4:46 – poor gap acceptance practices from SDSU drives and 22<sup>nd</sup> Ave. as drivers enter 14 Bypass.
- 4:59 – another evasive maneuver to avoid WB LT into Stadium Drive.
- 5:08 – I-29/6<sup>th</sup> St. – continued activity on NB off ramp (~10 cars/green). Queue clears each cycle.
- 5:12 – I-29/6<sup>th</sup> St. – ramp not clearing, gaps develop as queue disperses, allowing gap-out. Signal could have longer gap time & ramp max green.
- 8:44 – many fans leaving game, most entering 14 Bypass are turning east. No queues observed.
- 8:46 – game ends
- 8:47 – queues building on SDSU entrances onto 14 Bypass.
- 8:53 – queues moving steadily, parking areas nearly clear.
- 9:10 – west drive has short queue, east drive still full.
- 9:16 – short queue east drive, no queue west drive.

# Appendix Part 4—Design Standards Documents

*June, 2011*



**SOUTH DAKOTA  
DEPARTMENT OF  
TRANSPORTATION**

**CITY OF BROOKINGS**

**CITY OF AURORA**

**BROOKINGS COUNTY**

**HDR**



# Street Design Standards

## City of Brookings

### I. Relation to existing plans and ordinances

These Design Standards serve to implement the goals and objectives of community planning efforts undertaken by the City of Brookings, as authorized under the laws of the State of South Dakota. The Design Standards are intended to preserve and protect the health, safety and welfare of Brookings' citizens.

General community goals and objectives are stated in the latest edition of the Comprehensive Plan (Vision 2020). Subdivision improvements are addressed in Chapter 51 of the Code of Ordinances and these Design Standards govern transportation aspects of those subdivision improvements. Chapter 66 establishes the Comprehensive Plan and Major Streets Plan, while other aspects of street development are covered in Chapter 94.

### II. Functional classification

Street-level transportation needs are best met by providing a complete array of street types, from high-speed, high-volume Interstate and expressway routes to low-speed, low-volume local streets. Higher volume roadways are usually well-spaced, while lower volume roadways form a dense network of neighborhood streets. The classification of Brookings' roadways is shown in the Major Streets Plan (Figure 1). The street types include:

- Major Arterial – highest volume routes serving inter-city and intra-city traffic
- Minor Arterial – middle volume routes serving primarily intra-city traffic
- Major Collector – middle volume routes connecting local streets with arterial streets
- Minor Collector – lower volume routes connecting local streets with arterial streets
- Local Street – low volume routes serving neighborhood traffic.

The street classification is also reflected in access and design provisions of these Design Standards.

### III. Access controls

The safety and efficiency of urban roadways is largely dependent on the density, location and design of access points, both intersections and driveways. Urban street systems are well managed by application of

appropriate controls on roadway access. Access controls for the City of Brookings are detailed below.

- a. Route classification – the functional classification, as shown in the Major Streets Plan, serves to classify the street system for access as well as other standards. State highway routes (Interstate 29, US 14, US 14B) have been classified by the South Dakota Department of Transportation and are governed by State law and South Dakota Administrative Rule 70:09.
- b. Access spacing – spacing of new access points onto the various street types shall be governed by Table 1. Table 1 shall also govern other access-related measures as shown in the table.

**Table 1 – Access Standards**

<b>Functional Class</b>	<b>Minimum Access Spacing</b>	<b>Minimum Signal Spacing</b>	<b>Minimum Median Opening Spacing</b>
Major Arterial	1320' full access 660' partial access	1320'	660'
Minor Arterial	330' full access	1320'	N/A
Major Collector	See Note 1	See Note 2	N/A
Minor Collector	See Note 1	See Note 2	N/A
Local Street	See Note 1	See Note 2	N/A

Note 1: One access per residential or commercial lot with shared accesses determined by development review on commercial lots and access prohibited within the intersection influence area of arterial street intersections.

Note 2: Traffic signal control will only be used on collector and local streets at arterial street intersections or for special uses as determined by the City Engineer.

All legally permitted access points existing at the time of adoption of these Design Standards are accepted without prejudice. Access spacing standards will be applied during review of all development proposals. Access spacing in variance to Table Y on routes in previously-developed areas may be accepted if a review of land ownership, zoning and road conditions determines that no other feasible access is available to the property in question.

When a property has frontage onto two or more streets, access from only the lower classified street will be deemed appropriate and sufficient.

Access on routes under the jurisdiction of the South Dakota Department of Transportation will be determined according to rules and procedures instituted by the State of South Dakota.

- c. Permits – an access permit will be required for any proposal for a new driveway or intersection onto the City arterial or collector street system coming from outside of City government. Permit applications will be available from the City Engineer’s office and must be completed, submitted and approved prior to construction of the driveway or intersection. A permit will not be deemed as completed until any supporting documents required by the City Engineer are supplied.
- d. Access studies – detailed transportation analyses may be needed to determine proper access onto the City roadway system.

The City Engineer may require a traffic impact study for any non-residential development proposal expected to produce more than 100 peak hour vehicle trips or for any residential development with 150 or more dwelling units. (See Table 2) Preparation of the report shall be the responsibility of the developer and shall be prepared by a licensed design professional with experience in transportation planning. The City will review submitted draft traffic impact studies and provide comments in written form. The developer and design professional will have the opportunity to revise the report prior to final submittal. All study reports must be reviewed by the City before acceptance. The traffic impact study will provide information for the City’s decision on any access permit and will be prepared in compliance with procedures available from the City Engineer. Any roadway or traffic control improvements recommended by the traffic impact study to maintain roadway safety and efficiency will be funded by the developer.

The City may also engage in transportation planning studies, either alone or in conjunction with the South Dakota Department of Transportation, which will determine future access locations on portions of the roadway system. Such transportation planning studies will be conducted with public input and presented to the City Council for adoption.

- e. Driveway design – driveways onto the City street system shall meet standards established by ordinance or subsequent standard adopted by the City Engineer’s office. Pertinent information is available from the City Engineer’s office.

#### IV. General roadway design

- a. Vertical alignment
  - i. Changing grades – the use of grade breaks, in lieu of vertical curves, is not encouraged. However, grade breaks with an algebraic difference in grade not exceeding eight-tenths (0.008ft/ft) will be permitted if necessary.

**TABLE 2 - LAND USE THRESHOLDS**  
**GENERALIZED INTENSITIES PRODUCING 100 PEAK HOUR TRIPS**

LAND USE	MEASURE	THRESHOLD
INDUSTRIAL PARK	EMPLOYEES	200
	1000 SQUARE FEET GROSS FLOOR AREA	75
	ACRES, TOTAL PARCEL AREA	8
MANUFACTURING	EMPLOYEES	250
	1000 SQUARE FEET GROSS FLOOR AREA	150
	ACRES, TOTAL PARCEL AREA	12
WAREHOUSING	EMPLOYEES	100
	1000 SQUARE FEET GROSS FLOOR AREA	250
	ACRES, TOTAL PARCEL AREA	8
MOTEL	OCCUPIED ROOMS	180
	TOTAL ROOMS	230
DAY CARE CENTER	EMPLOYEES	25
	1000 SQUARE FEET GROSS FLOOR AREA	8
	STUDENTS	125
NURSING HOME	BEDS	450
CLINIC	EMPLOYEES	80
	FULL TIME DOCTORS	27
GENERAL OFFICE BUILDING	EMPLOYEES	120
	1000 SQUARE FEET GROSS FLOOR AREA	20
MEDICAL-DENTAL OFFICE BUILDING	EMPLOYEES	10
	1000 SQUARE FEET GROSS FLOOR AREA	32
OFFICE PARK	EMPLOYEES	200
	1000 SQUARE FEET GROSS FLOOR AREA	3
	ACRES, TOTAL PARCEL AREA	1.6
BUSINESS PARK	EMPLOYEES	150
	1000 SQUARE FEET GROSS FLOOR AREA	65
	ACRES, TOTAL PARCEL AREA	6
BUILDING MATERIALS & LUMBER STORE	EMPLOYEES	43
	1000 SQUARE FEET GROSS FLOOR AREA	19
DISCOUNT SUPERSTORE	1000 SQUARE FEET GROSS FLOOR AREA	22
SPECIALTY RETAIL CENTER	1000 SQUARE FEET GROSS FLOOR AREA	33
SHOPPING CENTER	1000 SQUARE FEET GROSS FLOOR AREA	7
SUPERMARKET	1000 SQUARE FEET GROSS FLOOR AREA	3
CONVENIENCE MARKET WITH GAS PUMPS	FUELING POSITIONS	5
	1000 SQUARE FEET GROSS FLOOR AREA	1.7
PHARMACY/DRUG STORE WITH DRIVE-UP WINDOW	1000 SQUARE FEET GROSS FLOOR AREA	12
QUALITY RESTAURANT	1000 SQUARE FEET GROSS FLOOR AREA	13.5
HIGH-TURNOVER (SIT-DOWN) RESTAURANT	1000 SQUARE FEET GROSS FLOOR AREA	9
FAST FOOD RESTAURANT WITH DRIVE-UP WINDOW	1000 SQUARE FEET GROSS FLOOR AREA	3

- ii. Vertical curves – must comply with AASHTO standards. Vertical curves shall be used when the algebraic difference in grade (A) equals or exceeds eight-tenths (0.008 ft/ft). All vertical curves shall be labeled on profile with length of curve (L) and K (defined as L/A).

iii. Intersection criteria

1. The grade of the “through” street shall take precedence at intersections. At intersections of roadways with the same classification, the more important roadway, as determined by the City Engineer, shall have precedence.
2. The elevation at the end of the curb return on the through street is always set by the grade of the through street in conjunction with normal pavement cross-slope.
3. Carrying the crown of the side street into the through street is not permitted.
4. Dipping the flowline to the extent that the lip of the gutter is dipped is not permitted, except as specified by Standard Plates concerning curb opening inlets. Tipping an inlet for the benefit of drainage is also not permitted.
5. More detailed review shall be performed for arterial-arterial intersections to maximize driveability.
6. Flowline profiles and pavement cross-slopes shall be shown through an intersection until a normal cross-section is obtained. This information shall be submitted using a scale of 1”=20’ horizontally and 1”=2’ vertically.
7. Parabolic or curved crowns are not allowed. In no case shall the pavement cross-slope at intersections exceed the grade of the through street.
8. The rate of change in pavement cross-slope when warping side streets at intersections shall not exceed one (1) percent every twenty-five (25) feet horizontally on a local roadway, one (1) percent every thirty-seven and one-half (37.5) feet horizontally on a collector roadway, or one (1) percent every fifty-six and one-half (56.5) feet horizontally on arterial roadways.

iv. Curb Returns – minimum fall around curb returns shall be one-half of one (0.5) percent.

v. Connection with Existing Roadways

1. Existing grades shall be shown for a sufficient distance to assure that horizontal and vertical curve requirements are being or can be met with field-verified as-builts showing stations and elevations at twenty-five (25) foot intervals. In the case of connection with an existing intersection, these as-builts are to be shown within a one hundred (100) foot radius of the intersection. This information shall be included in the plan and profile that shows that

proposed roadway. Limits and characteristics of the existing improvement are the primary concern in the plan view. Such characteristics include horizontal alignment, offset intersections, limits of the improvements, etc.

2. Previously approved designs for the existing improvement are not an acceptable means of establishing existing grades; however, they are to be referenced on the construction plan where they occur.
3. The basis of the as-built elevations shall be the same as the design elevations (both flowline or both top of curb, etc.) when possible.

b. Horizontal alignment

- i. Any angular break in horizontal alignment of more than two (2) degrees shall require a horizontal curve.
- ii. Minimum curb return radius at street intersections shall be 15'. Curb return radii shall comply with AASHTO standards where truck traffic is significant.
- iii. The use of superelevation is discouraged for all streets. However, where superelevation is required for curves, arterial streets and collector streets, horizontal curve radius and superelevation shall be in compliance with AASHTO standards. Superelevation shall not be used on local roadways. All roadway designs using superelevation are subject to review and acceptance by the City Engineer.
- iv. Spiral curves shall not be used on streets within the City except on State highways or upon written acceptance of the City Engineer.
- v. The following criteria shall be used for the horizontal geometry of cul-de-sac turnarounds:
  1. Minimum property line radius: 60.0 feet
  2. Minimum back of curb radius: 42 feet
  3. Maximum length of cul-de-sac measured along centerline between the radius point of the turnaround and the right-of-way line of the abutting street: 600.0 feet.
- vi. If lanes are added, deleted, or adjusted, it will be necessary to construct a transition section for the safe conveyance of traffic. The following formula shall be applied to the taper or lane change necessary for this transition:

$L=WS^2/60$ , where:

L=Length of transition in feet

W=Width of offset in feet

S=Speed limit of 85<sup>th</sup> percentile speed

c. Grades:

<b>STREET TYPE</b>	<b>MIN GRADE (%)</b>	<b>MAX GRADE (%)</b>
ARTERIAL	0.5	6.0
COLLECTOR	0.5	7.0
LOCAL	0.5	8.0

- d. Lane widths – standard lane width shall be 11’ or 12’ for arterial streets and 11’ for collector streets. Refer to typical design cross-sections for more information.
- e. Turn lanes – turn lanes may be required along segments of arterial or collector streets if the proposed development constitutes a potential for creating a traffic hazard or unnecessarily impedes through-traffic movements as determined by a traffic impact study or the City Engineer. A high volume access must be provided with a turning lane to allow the driver to maneuver out of the main travel lanes before slowing. Left-turn lanes must be provided in the center or median of the road for left-turning traffic at a high-volume access. Turn lanes may be triggered by application of the volume warrants or by capacity analysis of an intersection. Turn lanes should be designed according to applicable standards.

**Volume Warrants for Right Turn Lanes**

	<b>Posted Speed of Street in MPH</b>				<b>For</b>
	<b>&lt;26</b>	<b>26 to 40</b>	<b>41 to 50</b>	<b>&gt;50</b>	
If design hour volume will exceed	500	400	200	150	2-lane
	1400	1200	800	600	4 or more lanes
And the design hour volume of the approach will exceed	50	40	20	15	2-lane
	70	60	40	25	4 or more lanes

**Volume Warrants for Left Turn Lanes**

	<b>Posted Speed of Street in MPH</b>				<b>For</b>
	<b>&lt;26</b>	<b>26 to 40</b>	<b>41 to 50</b>	<b>&gt;50</b>	
If design hour volume will exceed	500	400	200	150	2-lane
	1000	900	600	400	4 or more lanes
And the design hour volume of the approach will exceed	50	40	20	15	2-lane
	70	60	40	25	4 or more lanes

- f. Parking
  - i. Parking lanes will not be allowed on arterial streets. Parking lanes may not be allowed on major collector streets.
  - ii. Diagonal or perpendicular parking may only be allowed on City streets in the Central Business District or by approval of the City Engineer.

- iii. Refer to typical design cross-sections for the orientation of on-street parking.
  - g. Medians – medians should be constructed on major arterial streets, especially those arterial streets with more than 4 through lanes. Refer to the typical design cross-sections for the orientation of medians.
  - h. Intersections
    - i. Standard – at-grade 3 and 4-leg intersections should be designed so the intersecting streets meet at a 90-degree angle, or as close thereto as possible, and the interior pavement area of the intersection should be minimized. The lanes should be aligned to allow maximum visibility and positive guidance to the driver. Refer to AASHTO design standards for more information.
    - ii. Roundabout
      - 1. Modern roundabout intersections are acceptable for traffic control at appropriate intersections.
      - 2. Design of roundabout intersections shall be in accordance with the latest edition of *Roundabouts: an Informational Guide*, (Federal Highway Administration).
      - 3. Modern roundabouts shall be designed to accommodate a WB-67 design vehicle.
      - 4. Maximum entry speed for roundabout intersections shall not exceed 25 mph.
    - i. Dead-end streets – Dead-end streets should be avoided. The City Engineer may approve dead-end streets only upon a showing that site conditions create an unavoidable need for a dead-end. Provision should be made for adequate vehicular turn-around at all dead-ends.
- V. Pedestrian facilities
  - a. Sidewalks shall be constructed on both sides of all roadways unless specifically waived by the City Engineer. Refer to the typical design cross-sections for sidewalk locations.
  - b. Sidewalk features shall be designed to meet the requirements of the Americans with Disabilities Act.
- VI. Bicycle facilities
  - a. Bicycle facilities should be provided as part of the typical street design cross-section as planned in the Brookings Bicycle Plan and elsewhere wherever possible.
  - b. The current AASHTO Guide for the Development of Bicycle Facilities shall be used as a guide for development of all Brookings bicycle facilities.
- VII. Drainage
  - a. All drainage facilities shall conform to the Technical Criteria Manual maintained by the City of Brookings.

- b. Inlets shall be located to intercept the curb flow at the point curb flow capacity is exceeded by the storm runoff. Inlets shall also be installed to intercept cross-pavement flows at points of transition in superelevation. Due to the presence of curb ramps, inlets are not allowed in the curb return, but will be located at the tangent points of the curb returns. In general, inlets shall be placed on the upstream side of the intersection so as to intercept the water before it reaches the pedestrian crosswalk.
- c. Except at intersections or where superelevation is required, streets in general shall be level from top of curb to top of curb (or flowline to flowline) and shall have a one and one-half (1.5) percent to three (3) percent crown as measured from centerline to lip of gutter, or lip of median gutter to lip of outside curb on roadways with medians. Where the crown point is not centered in the street, the crown point can be no further out than the quarter point of the street.
- d. Temporary erosion control is required at the ends of all roadways that are not completed due to project phasing, subdivision boundaries, etc.
- e. Storm water from concentrated points of discharge shall not be allowed to flow over sidewalks, but shall drain to the roadway by use of storm sewers. Sidewalk chases will not be allowed unless specifically approved by the City Engineer. If permitted, sidewalk chases shall not be located within driveways.

VIII. Off-street parking

- a. Parking layouts shall conform to dimensions available from the City Engineer. Refer to Ordinances 94-431 through 94-433 for further requirements.
- b. Parking spaces should be so arranged that no vehicle will be required to be backed into the street in order to exit the lot except for single-family or duplex dwelling units.
- c. Parking spaces should be so arranged that no vehicle shall be required to back over a public sidewalk in order to exit the stall.

IX. Traffic control

- a. Construction work zone traffic shall be controlled by signs, barricades, detours, etc., that are designed in accordance with the *Manual on Uniform Traffic Control Devices (MUTCD)*, latest edition. A traffic control plan shall be submitted to and approved by the City Engineer prior to start of any construction.
- b. For construction of new facilities, traffic control should strive to keep the motorist from entering the facility through use of temporary barricades and signing in advance of the construction area. New construction shall not be opened to traffic nor should construction traffic control be removed without the approval of the City Engineer.
- c. The details of the traffic control plan must be shown on a map, as-built plans or construction plan drawings. Any plan for traffic control during construction that indicates a complete closure of an arterial

or collector street must show detour routes and must be approved by the City Engineer. Requirements for rerouting of traffic, signing, time of closure, and length of closure, will be determined on a case-by-case basis. When a local street is to be closed to traffic, the City Engineer must be notified at least 24 hours in advance.

- d. Direction access on roadways may be restricted (minimum travel lane width in construction areas is ten (10) feet), but proper controls including flagging must be indicated. Removal of on-street parking shall be considered and noted where applicable.
- e. Every precaution shall be taken to ensure that construction work does not interfere with the movement of pedestrian traffic which shall be maintained on the sidewalk at all times with flagmen provided for guidance as necessary.
- f. Where an excavation interrupts the continuity of the sidewalk, the Contractor shall provide suitable bridge or deck facilities to be supplemented by the use of such proper devices and measures as prescribed in the MUTCD for the safe and uninterrupted movement of pedestrian traffic. The edges or ends of the pedestrian bridge or decking shall be beveled or chamfered to a thin edge to prevent tripping.
- g. Temporary diversion walkways shall be hard surfaced and electric lighting shall be provided and kept continuously burning during hours of darkness when required by the City Engineer.
- h. Unless otherwise authorized by the City Engineer, pedestrians shall not be channeled to walk on the traveled portion of a roadway.
- i. Under certain conditions, it may be necessary to divert pedestrians to the sidewalk on the opposite side of the street. Such crossings shall only be made at intersections or marked pedestrian crossovers.
- j. Facilities satisfactory to the City Engineer shall be provided for pedestrians crossing at corners, pedestrian crossovers, and public transportation stops.

X. Lighting

- a. Design and construction of street lighting shall be coordinated with the City Engineer and Brookings Utilities.

XI. Pavement design

- a. Design of pavement thickness for collector and arterial streets and local streets in industrial and commercial zoned areas shall be based on *AASHTO Guide for Design of Pavement Structures*, latest edition. Pavement design shall be based on an inherent reliability of 75 percent. For traffic conditions where the equivalent 18 kip/single axle loading is less than 1,000,000, the low-volume road design method may be used. Recommendations and subgrade properties developed by a geotechnical exploration report shall be used in the design of the pavement structure.

- b. Industrial and arterial streets must be designed for pavement thickness on an individual street-by-street basis. However, in no event may the pavement thickness be less than that specified in Table Z. Local residential streets need not be designed on an individual basis, but must meet the minimum pavement thickness as set forth in Table Z.
- c. Minimum compressive strength for Portland Cement concrete paving shall be 4000 psi at 28 days.
- d. Where traffic data is available, actual counts shall be used along with projections of traffic growth to determine the pavement design. If traffic data is not available, Tables 3 and 4 may be used to provide data for the pavement design. Traffic data for all arterial streets will be determined by the City Engineer. Truck loading shall be considered in the design of all Commercial and Arterial Streets.

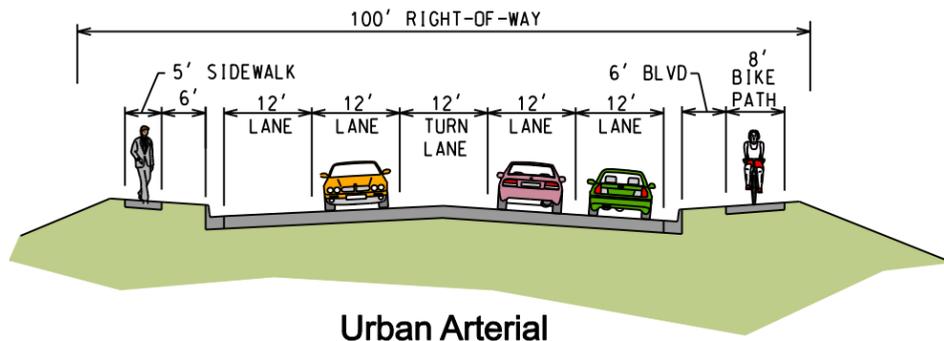
**Table 3 – Minimum Pavement Thickness Requirements**

	<b>Local Residential Streets</b>	<b>Commercial, Industrial &amp; Collector Streets</b>	<b>Arterial Streets</b>
Portland Cement Concrete over Aggregate Cushion	6"	8"	8"
Asphaltic Concrete with Aggregate Base	4" AC 6" Aggregate	5" AC 9" Aggregate	6" AC 12" Aggregate

**Table 4 – Pavement Traffic Loading**

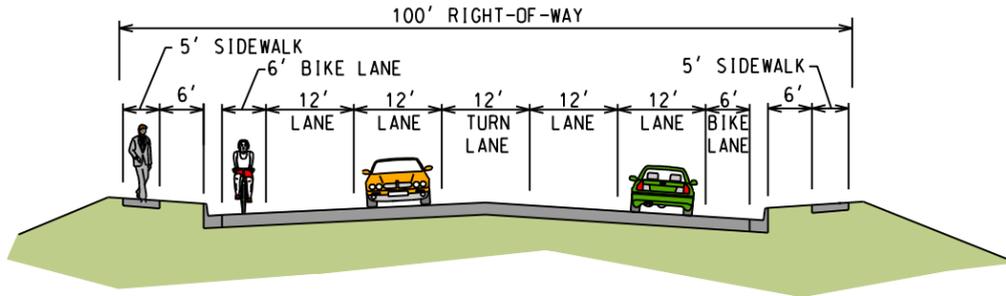
<b>Street Classification</b>	<b>ADT (2-way)</b>	<b>Number of Lots</b>	<b>18-kip ESAL Traffic</b>	<b>AASHTO Traffic Level</b>
Cul-de-sacs, Local Residential	200	20-30	10,000-50,000	Low
Local, Local Multi-Family or Commercial	300-700	60-140	50,000-300,000	Low
Local Industrial	200-700		400,000-600,000	Medium
Collector	7,000		400,000-1,000,000	High
Arterial	To be determined by the City Engineer			

XII. Typical design cross-sections



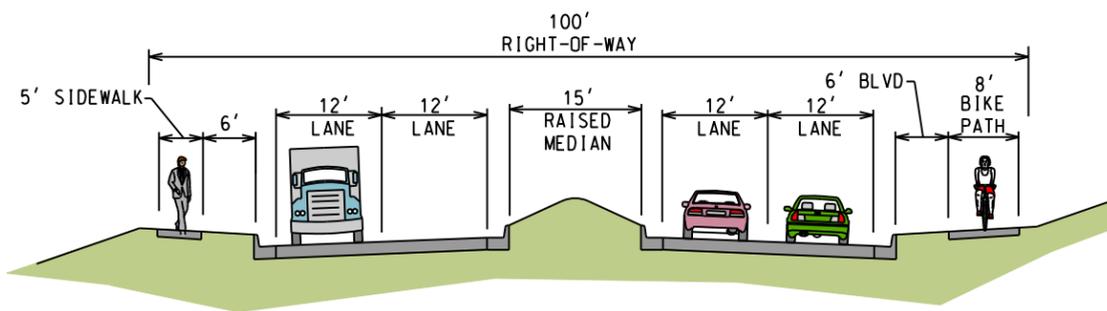
**Urban Arterial**  
Side Path Only

Planning Roadway  
Capacity > 10,000 ADT



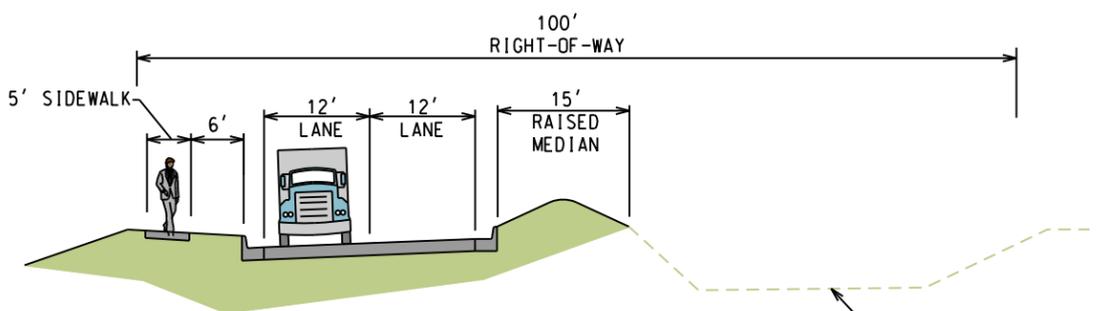
**Urban Arterial**  
On-Street Bike Lanes

Planning Roadway  
Capacity > 10,000 ADT



**Urban Arterial**  
Side Path Only

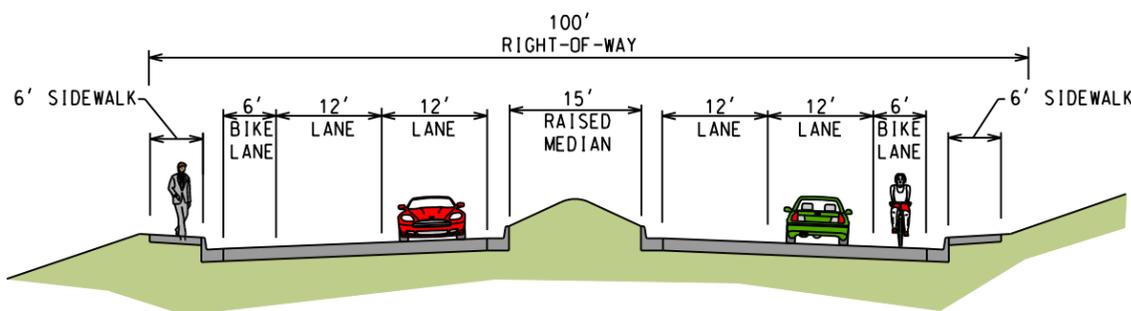
Planning Roadway  
Capacity > 10,000 ADT



**Urban Arterial**  
Half Street Arterial Option

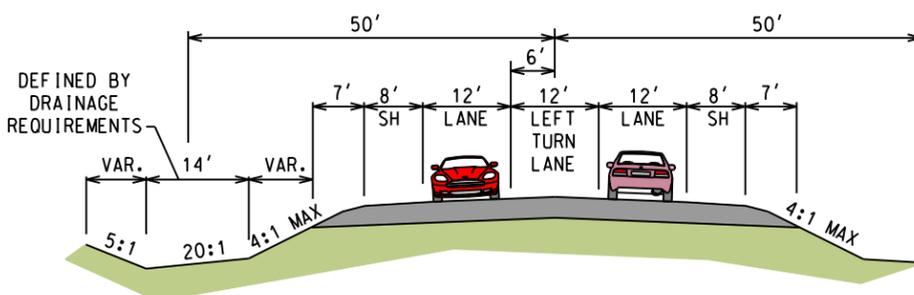
Planning Roadway  
Capacity < 10,000 ADT

Use an open channel  
ditch until capacity  
warrants construction



**Urban Arterial**  
On-Street Bike Lanes

Planning Roadway  
Capacity > 10,000 ADT



**Rural Arterial**  
Possible Bike Lanes

Planning Roadway  
Capacity < 8,000 ADT



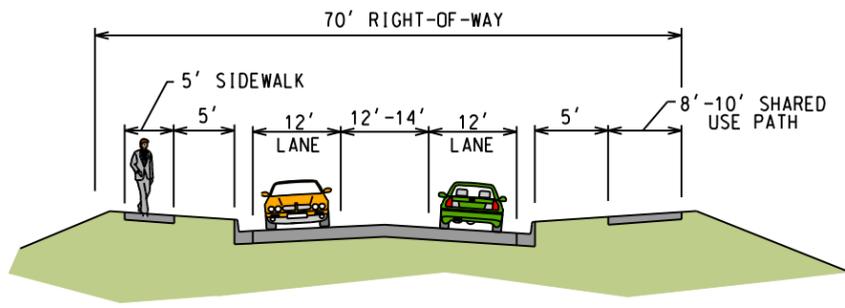
**Typical Sections - Arterial Streets**

Brookings Area Master Transportation Plan

Brookings, SD

Figure

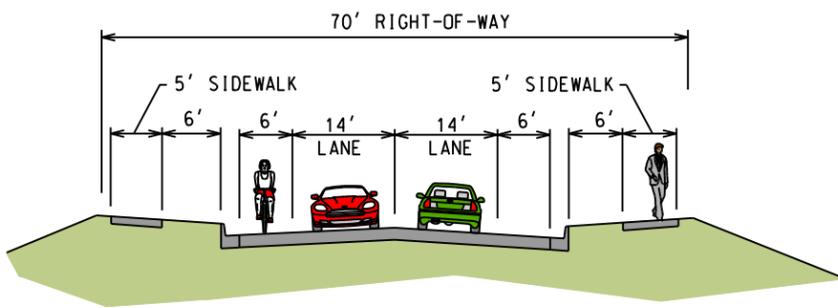
1a



Planning Roadway  
Capacity < 12,000 ADT

**Urban Collector**

No On-Street Parking  
Side Path Only

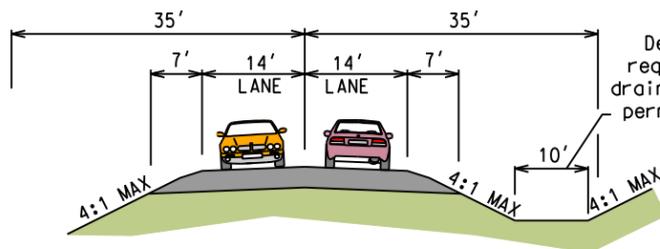


Planning Roadway  
Capacity < 10,000 ADT

If significant left turning  
present, use only with ADT < 3000

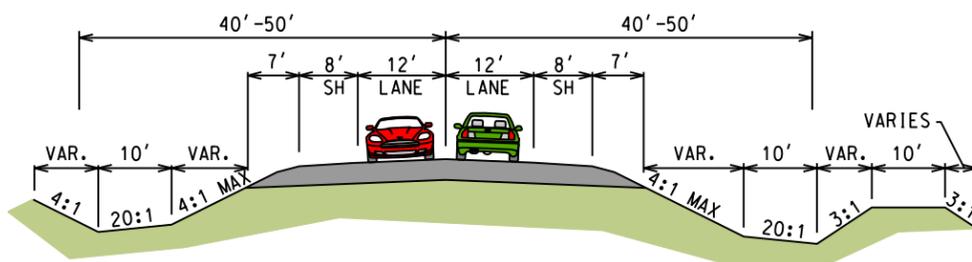
**Urban Collector**

On-Street Parking/Bike Lanes



Planning Roadway  
Capacity < 8,000 ADT

**Rural Collector**



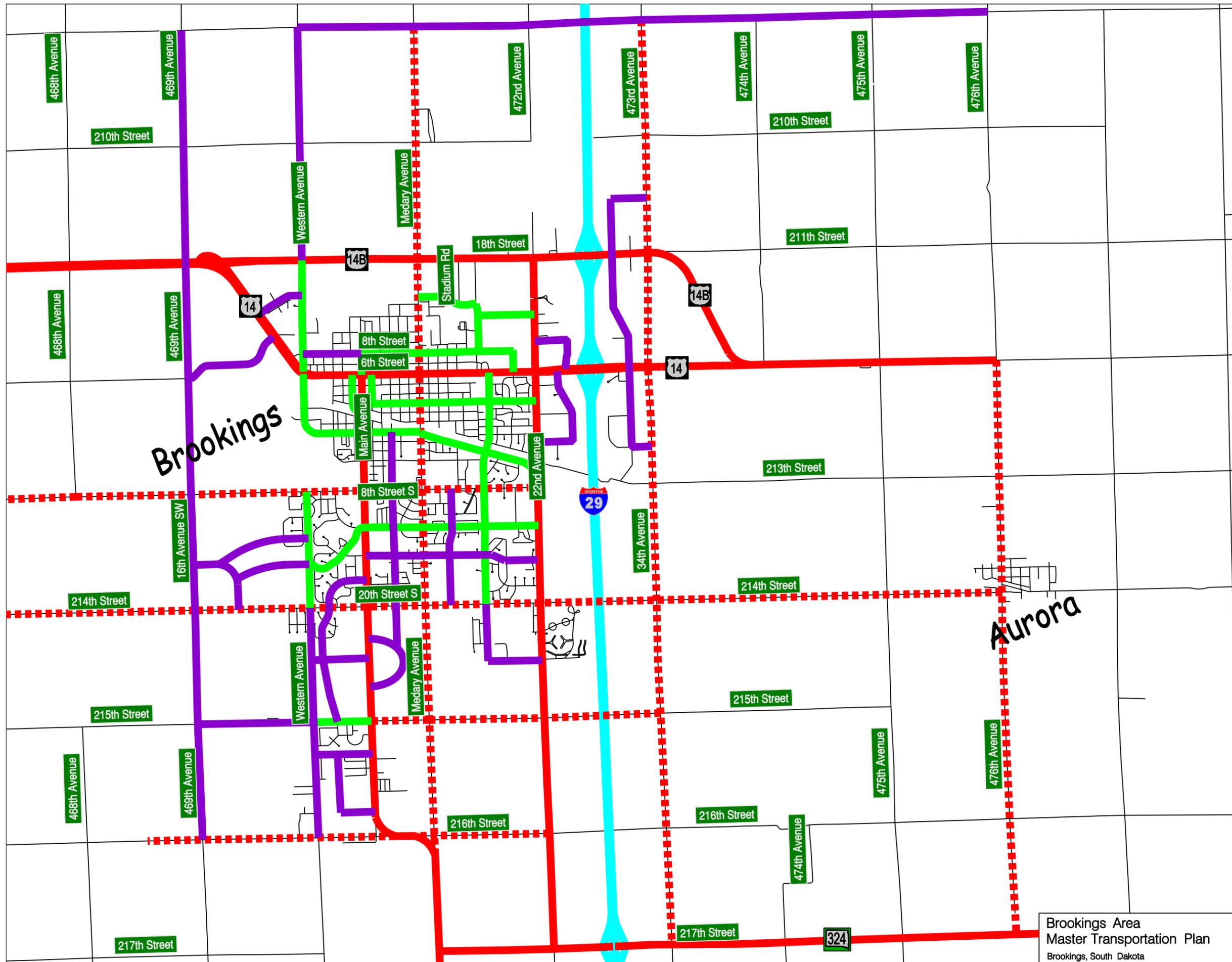
Planning Roadway  
Capacity < 8,000 ADT

**Rural Collector**

Possible Bike Lanes

(For this typical section, the City of Brookings will need to purchase right-of-way or obtain permanent drainage easements outside 70' right-of-way.)





**Legend**

- Interstate
- Major Arterial
- - - Minor Arterial
- Major Collector
- Minor Collector

**Brookings**

**Aurora**



# Application for Street Access Permit

City of Brookings, SD

<b>PERMIT APPLICATION (TO BE COMPLETED BY APPLICANT)</b>	<b>Instructions:</b> Please contact the City Engineer's office to determine what supporting documents must accompany this application. Please submit a separate application and supporting documentation for each access requested. Attach additional sheets as necessary. Please print or type.	
	<b>Property Owner:</b> Name(s): Mailing Address: City, State, ZIP Daytime Phone:	<b>Applicant (if different from Owner):</b> Name(s): Mailing Address: City, State, ZIP Daytime Phone:
	<b>Property to be Served by Access:</b> Subdivision: Block/Lot: Street Address:	<b>Street to be Accessed by Approach:</b> Street Name: Access would be ___ feet (north, south, east, west) from _____ (nearest cross street).
	<b>Estimated Date of Construction:</b>	
	<b>Signature of Applicant:</b> _____ <b>Date:</b> ___/___/___	
	<b>Signature of Owner (if different from applicant):</b> _____ <b>Date:</b> ___/___/___	
	<b>Applicant notes/comments:</b>	

<b>PERMIT DECISION (TO BE COMPLETED BY CITY OF BROOKINGS)</b>	<b>Supporting Materials Required:</b> (Required)		(Received)	<b>Application Received by City of Brookings:</b>  Date: ___/___/___
	<input type="checkbox"/> Access Approach Design <input type="checkbox"/> Vicinity Map <input type="checkbox"/> Traffic Volumes <input type="checkbox"/> Three Copies of Site Plan <input type="checkbox"/> Traffic Control Plan <input type="checkbox"/> Proof of Liability Insurance <input type="checkbox"/> Detailed Development Plan <input type="checkbox"/> Drainage Plan <input type="checkbox"/> Traffic Impact Study <input type="checkbox"/> Revegetation Plan <input type="checkbox"/> Other _____		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>Decision: (to be made after Application Review)</b>  <input type="checkbox"/> Access Approved <input type="checkbox"/> Access Approved with Variance:  <input type="checkbox"/> Access Denied
	<b>Terms and Conditions of Approval (or Reason for Denial):</b>			
	Access Must be Constructed By: ___/___/___			
<b>City Engineer Signature:</b> _____				
Date: ___/___/___				

**CITY OF BROOKINGS STREET ACCESS PERMIT REVIEW SHEET (TO BE COMPLETED BY CITY)**

**Functional Class:**

- Major Arterial
- Minor Arterial
- Major Collector
- Minor Collector

**Average Daily Traffic:** \_\_\_\_\_

**Accidents (three years):** \_\_\_\_\_

**Street Alignment to Left of Access** (as seen when standing on access)

- Flat
- Slopes up
- Slopes down

Stopping sight distance: \_\_\_\_\_ ft.  
 Entering sight distance: \_\_\_\_\_ ft.  
 Posted Speed Limit: \_\_\_\_\_ mph

- 0-3% grade
- 3-5% grade
- >5% grade

**Street Alignment to Right of Access** (as seen when standing on access)

- Flat
- Slopes up
- Slopes down

Stopping sight distance: \_\_\_\_\_ ft.  
 Entering sight distance: \_\_\_\_\_ ft.  
 Posted Speed Limit: \_\_\_\_\_ mph

- 0-3% grade
- 3-5% grade
- >5% grade

**Significant Design and Potential Impact Considerations (check all that apply and explain checked items):**

- Sidewalks or Bike Paths
- Curb & Gutter
- On-Street Parking
- Shoulder Width
- Historical Resources

- Surface Drainage
- Drainage Structures
- Major Structures
- Guard Rail
- Above-Ground Utilities
- Railroad Tracks

- Distance to Nearby Streets, Both Directions
- Distance to Nearby Driveways, Both Directions
- Other Streets with Access or Available Access
- Traffic Control Devices or Relocation Needed
- Median Crossovers

**Explain Impact on Design:**

**City Engineer Review:**

Comments:

**Signature:** \_\_\_\_\_

**Date:**

**APPROACH DESIGN SKETCH**

**List Attachments:**

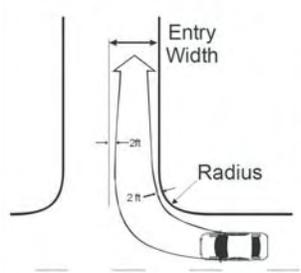
- Driveway details
- Culvert details
- Mailbox details
- Fencing details
- Sidewalk details
- Median crossovers
- Recreation paths
- Rail crossing
- Auxiliary lanes
- Storm sewer
- Pavement
- Curb & gutter
- Traffic control
- Sign/signal/markings
- Other

**City of Brookings Review Performed by:**

**Date:** \_\_/\_\_/\_\_

**EXTRACTS**  
**From NCHRP Report 659**

**Exhibit 5-22. Inverse relationship between entry radius and entry lane width.**

	Radius or Flare (ft.)	Single Lane Width for Entry for Passenger Vehicles (ft.)
	Typical flared driveway	
10 ft Radius		19 ft
15 ft Radius		17 ft
20 ft Radius		14 ft
25 ft Radius		14 ft
Over 25 ft Radius		12-14 ft

Source: adapted from *Access Management for Streets and Highways*, Flora and Keith, FHWA, 1982 p 63  
 Source: *FDOT Driveway Handbook*, p. 31, March 2005

**Exhibit 5-23. Driveway transition shape design guidelines.**

Category	Description of Common Applications*	Suggested Driveway Transition Shape Design (assuming curbed roadways in urban area, uncurbed in rural area)
<b>STANDARD DRIVEWAYS</b>		
Very high intensity	Urban activity center, with almost constant driveway use during hours of operation. Typified by a driveway serving a post-1950 major shopping center or office complex. Not uncommon for such driveways to be signalized.	Design as a street intersection. Provide separate right- and left-turn lanes on approaches to public roadways.
Higher intensity	Medium-size office or retail, such as community shopping center, with frequent driveway use during hours of operation. Also includes land uses with extreme peaking patterns, such as public schools, worship assemblies, and employee parking lots.	Use curb radius design. Consider separate right- and left-turn lanes on approaches to public roads.
Medium intensity	Smaller office or retail, such as convenience stores, with occasional driveway use during hours of operation. Also includes some apartment complexes.	Curb radius design is preferred.
Lower intensity	Typical applications include single-family or duplex residential, other types with low use. May not apply to rural residential.	Use either the curb radius or the flare/taper design.
<b>SPECIAL SITUATION DRIVEWAYS</b>		
Central business district	Building faces are close to the street. May have on-street parking or bus stops, a continuous sidewalk from the curb to faces of buildings, and higher pedestrian usage than in most other environments. Many situations will serve P-cars and some single-unit trucks.	Design will vary depending on location, land use, and traffic volumes.
Farm or ranch	May be a mixture of residential and industrial characteristics, used by a mix of design vehicles, such as P-car, single-unit truck, and agricultural equipment.	Design uncurbed radius or taper to accommodate farm/ranch vehicles.
Field	Serves a field or other similar rural land area that is seldom trafficked. Higher-clearance P-vehicles or heavy vehicles are expected.	Design uncurbed radius or taper to accommodate farm/ranch vehicles.
Industrial	Driveways frequently used by buses, tractor with semi-trailers, and other vehicles longer and wider than the design passenger car.	Design for trucks. The driveway may need a special design to accommodate the extra axles and longer wheelbase that will lead to much greater offtracking of vehicles entering the driveway.

\* These descriptions are intended to help the designer form a mental image of some of the more common examples of the category.

calling for smaller dimensions to make crossing the driveway easier for pedestrians, and others wanting larger dimensions to facilitate motor vehicle ingress and egress.

An operational analysis of the intersection between the driveway and the roadway provides a basis for decisions regarding the number of driveway lanes. The connection transition and the driveway width dimensions should complement each other to produce good driveway operations. The driveway width and the curb radius can perform in concert, so to some degree one can increase as the other decreases. In other words, a wide driveway can be used together with a small radius or flare to achieve similar operations to a narrower driveway with a larger radius or flare. When only one vehicle is expected to be using the driveway at any given time, such as a residential driveway serving a two-car garage, the smaller radii are suitable with the greater widths.

Exhibit 5-24 offers guidelines for driveway width and radius. These dimensions do not consider the presence of an offset between the outer edge of the traveled way and the end of the

**Exhibit 5-24. Driveway width and curb radius guidelines.**

Category	Description of Common Applications (Note: These descriptions are intended to help the designer form a mental image of some of the more common examples of the category.)	Driveway Width	Driveway Curb Radius (in ft)		
			Higher speed road	Moderate speed road	Lower speed road
<b>STANDARD DRIVEWAYS</b>					
Very high intensity	Urban activity center, with almost constant driveway use during hours of operation.	Many justify two lanes in, two to three lanes out. Refer to street design guides.	30–50	25–40	NA
Higher intensity	Medium-size office or retail (e.g., community shopping center) with frequent driveway use during hours of operation.	One entry lane, 12–13 ft wide Two exit lanes, 11–13 ft wide.	25–40	20–35	NA
Medium intensity	Smaller office or retail, with occasional driveway use during hours of operation. Seldom more than one exiting vehicle at any time.	Two lanes, 24–26 ft total width	20–35	15–30	NA
Lower intensity	Single-family or duplex residential, other types with low use, on lower speed/volume roadways. May not apply to rural residential.	May be related to the width of the garage, or driveway parking. Single lane: 9–12 ft Double: 16–20 ft	15–25	10–15	5–10
<b>SPECIAL SITUATION DRIVEWAYS</b>					
Central business district	Building faces are close to the street.	Varies greatly, depending on use	NA	20–25	10–15
Farm or ranch; Field	A mix of design vehicles; some may be very low volume.	Min. 16 ft, desirable 20 ft. Affected by widths of field machinery.	30–40	20–30	NA
Industrial	Driveways are often used by large vehicles.	Minimum 26 ft	50–75	40–60	40–60

NOTES: These widths do not include space for a median or a parallel bike lane or sidewalk.

Additional width may be needed if the driveway has a curved horizontal alignment.

For a flare/taper design, use the radius as the dimension of the triangular legs.

For industrial or other driveways frequented by heavy vehicles, consider either a simple curve with a taper or a 3-centered curve design.

For connection angles greatly different than 90 degrees, check the radius design with turning templates.

For connection corners at which a turn is prohibited, a very small radius is appropriate. Also see the section, Driveway Horizontal Alignment and Angle.

Driveways crossing an open ditch should have a minimum 2 ft shoulder on each side.

(source: Statewide Urban Design and Specifications, Iowa State U., Ames, IA (October 21, 2008) p. 4.

If the roadway has a usable shoulder, a somewhat smaller radius may perform acceptably.

of signal phases) that would not fit into a progression pattern (5-12). The median openings where U-turns would be made need to be designed to accommodate the additional turning movements.

Requests for a median opening or opposition to closing a median opening may be based on an assumption that a direct left-turn egress maneuver is preferable to a right turn followed by a U-turn. However, observations show that drivers often make a right turn followed by a U-turn where the median opening design permits a direct left turn from a driveway (5-13). The additional travel distance of turning right and then making a U-turn is offset by travel time savings by not having to wait for a gap in both directions that is needed for direct, left-turn egress.

### *Medians in the Driveway*

The benefits of restrictive medians in a roadway can also accrue when medians are installed in driveways. Medians in a driveway may be appropriate where one or more of the following conditions exists:

- The driveway has two or more entrance lanes.
- The driveway has two or more exit lanes.
- There is a large pavement area that may confuse drivers.
- The driveway operates as right-in/right-out, and this may be unclear to some drivers.
- The driveway serves a high volume of traffic.
- The driveway is or will be signalized.

A median in a driveway that separates the ingress and egress movements is appropriate for very high-intensity driveways, where the median may provide refuge for pedestrians, separate the opposing traffic flows, and channelize the traffic movements. Exhibit 5-31 provides guidance for when a median in a driveway may be beneficial.

The presence of a median will make the overall length of the pedestrian crossing wider. However, this may be more than offset by the pedestrian refuge effect the median creates in the middle of the driveway.

Where a driveway median is needed, there are minimum dimensions that apply to avoid having a median that is too short and narrow. There is also a possibility that if the median island is too wide, drivers may mistake one driveway with a median for two separate driveways (5-9, p. 46).

**Exhibit 5-31. Driveway median use recommendations.**

Driveway Category	Description of Common Applications (Note: These descriptions are intended to help the designer form a mental image of some of the more common examples of the category.)	Applicability of Median in Driveway
<b>STANDARD DRIVEWAYS</b>		
Very high intensity	Urban activity center, with almost constant driveway use during hours of operation.	Applicable
Higher intensity	Medium-size office or retail, such as community shopping center, with frequent driveway use during hours of operation.	May be applicable
Medium intensity	Smaller office or retail, some apartment complexes.	Usually not applicable, but may be applicable for some wider driveways
Lower intensity	Single-family or duplex residential, other types with low use. May not apply to rural residential.	Not applicable
<b>SPECIAL SITUATION DRIVEWAYS</b>		
Central business district	Building faces are close to the street.	Usually not applicable, but may be applicable for some wider driveways
Farm or ranch; Field	A mix of design vehicles; some may be very low volume.	Usually not applicable
Industrial	Driveways are often used by large vehicles.	Often not applicable, but may be applicable for some wider driveways

**Exhibit 5-32. Driveway median design guidelines.**

Aspect	Suggested Design	Rationale
Length	Minimum 40 ft, preferable 50 ft or more	Need adequate length for conspicuity, effectiveness.
Width	Absolute minimum: 4 ft Minimum to provide pedestrian refuge: 6 ft Width for visibility of landscaping: 8 to 10 ft Maximum for a driveway divisional island (width of the part that is unavailable for travel, i.e., not including turn lane widths): 12 to 16 ft.	Absolute minimum based on the Green Book. Maximum based on potential for drivers to mistake one driveway with a median for two separate driveways.
End treatment	The 2004 AASHTO Green Book states that for a median island less than 10 ft wide, a semicircular end shape is adequate. For median island widths of 10 ft or more, a bullet nose end shape is suggested. From observations, a bullet nose shape may be desirable for widths of less than 10 ft.	To fit the wheel path of a turning vehicle, per the 2004 Green Book (p.697).

Geometry of a bullet nose median-end shape

Half-bullet nose median-end shape

Exhibit 5-32 lists suggested minimum dimensions and presents two versions of bullet nose end geometry. The half bullet nose provides a larger radius to accommodate the path and offtracking of a vehicle nearing the end of its left turn. If the stop line and stopped position for vehicles leaving the site is close to the median nose end, then a lesser radius may be adequate for that movement. Examine the turning paths of left-turning vehicles to ascertain what shape will suffice.

**Islands in the Driveway**

Driveway triangular islands (pork chops) can be constructed in the driveway entry throat at driveway intersections with both divided and undivided roadways to

- Channelize right turns,
- Discourage or prohibit one or both left turns, or
- Provide refuge for pedestrians.

Exhibit 5-33 illustrates three different scenarios for using islands to discourage left turns.

A triangular island and an angled driveway can have some design objectives and features in common. The objectives of either design can include facilitating right turns and discouraging left turns. With both, the design can attempt to align vehicles at a skewed angle rather than perpendicular to the public roadway.

Exhibit 5-34 shows two schematics for islands to channelize right turns exiting a driveway (5-13). In the (a) schematic, a flatter entry-angle combined with a larger radius may increase the speed at which right-turning vehicles leave the driveway. The flatter entry-angle requires the driver's head to turn a greater number of degrees to the left to monitor oncoming traffic from the left. If the design evokes a subconscious association with a freeway entry ramp, it could theoretically give the driver a false sense of a free entry into the through roadway. This arrangement has been criticized for being

**Exhibit 5-38. When to use detectable warning surfaces.**

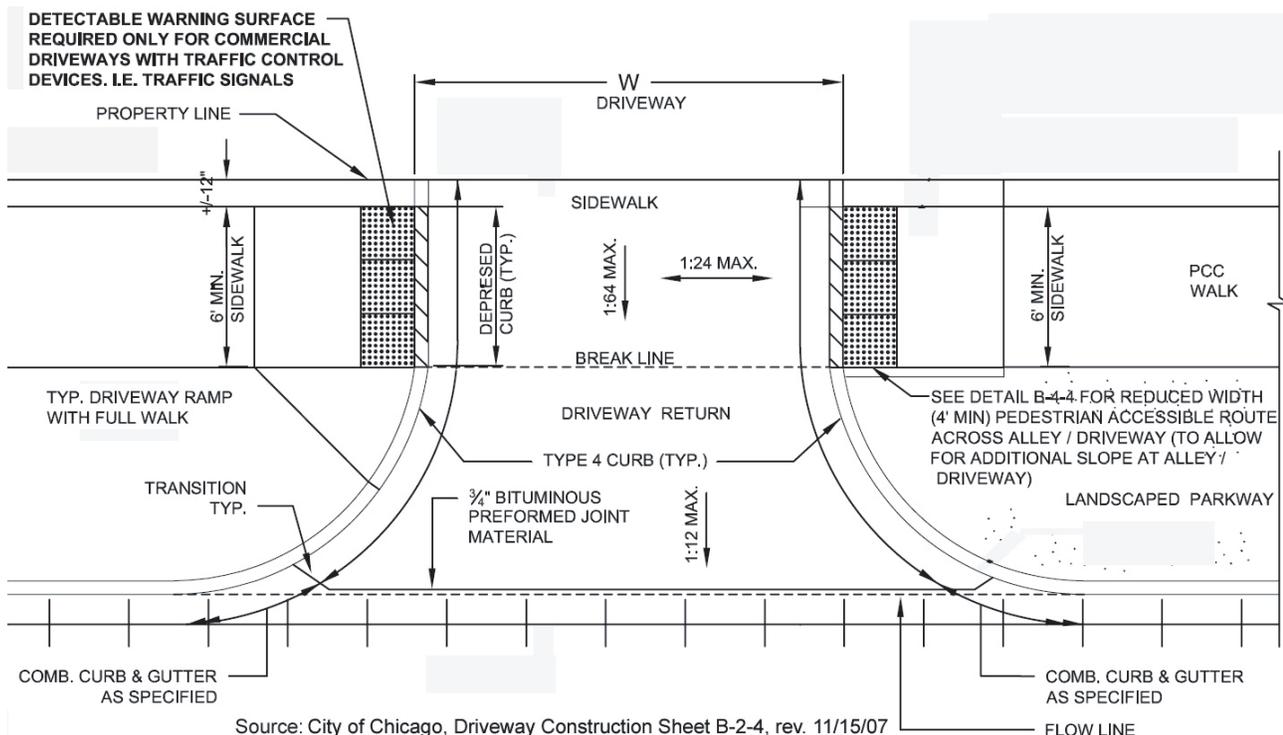
Advisory R221 Detectable Warning Surfaces. Detectable warning surfaces are required where curb ramps, blended transitions, or landings provide a flush pedestrian connection to the street. Sidewalk crossings of residential driveways should not generally be provided with detectable warnings, since the pedestrian right-of-way continues across most driveway aprons and overuse of detectable warning surfaces should be avoided in the interests of message clarity. However, where commercial driveways are provided with traffic control devices or otherwise are permitted to operate like public streets, detectable warnings should be provided at the junction between the pedestrian route and the street.

Source: Revised Draft Guidelines for Accessible Public Rights-of-Way, November 23, 2005  
 [http://www.access-board.gov/prowac/draft.htm#221 ]

the length of the driveway, one edge may be higher than the other, or the center line may be higher than the edges, creating driveway cross slope. Where the driveway and sidewalk intersect, the driveway cross slope is the same as the sidewalk grade.

In the absence of information specifically developed for driveways, these guidelines have incorporated cross slope recommendations from AASHTO. A minimum cross slope of 2% is recommended to provide surface runoff drainage. Where feasible, a maximum cross slope of 8% is recommended in areas where snow or ice can occur.

**Exhibit 5-39. Example of a detectable warning surface at edge of signalized driveway.**



**Exhibit 5-41. Example of a skew-angle driveway.**

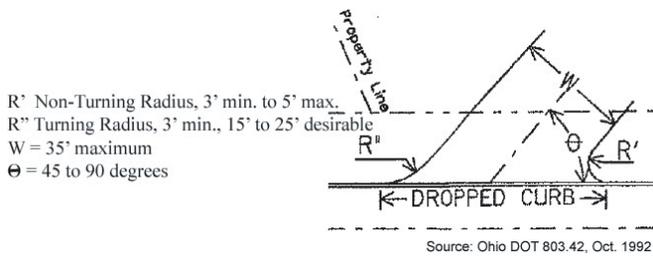


Exhibit 5-41 shows a guideline for angled, one-way driveways, from Ohio DOT design details. Exhibit 5-42 lists suggested minimum allowable intersection angles for driveways.

**Driveway Horizontal Alignment**

Past or back from the driveway connection transition area (the intersection with the roadway), the horizontal alignment (i.e., plan view) of a driveway should be straight, not curved. One reason for this is so the driver of a motor vehicle entering or leaving the driveway does not have the added task of steering in a compound or reverse or multiple curves, which diverts more attention from the task of monitoring crossing bicyclists, pedestrians, and vehicles. Another reason is that a straight alignment makes it easier for drivers to position and align their vehicles as they approach the intersection and make turning maneuvers and not sideswipe other vehicles. A third reason is to avoid creating situations where the vehicle exiting the site is unintentionally positioned at a skew angle to the roadway. Exhibit 5-43 recommends minimum lengths of straight approaches in advance of the actual physical intersection of a driveway with a roadway.

**Space for Bicyclists and Pedestrians**

Motor vehicles are not the only form of traffic traveling perpendicular to the roadway to and from a traffic generator set back from the roadway. Bicyclists and pedestrians also make these movements at many locations and, in the absence of a separate facility, they may bike or walk in the driveway.

Exhibit 5-44 shows a pedestrian on a gray, overcast day with light rain, forced to walk in the driveway because of the lack of a sidewalk. At this particular location, the lack of a sidewalk contributes to occasional conflicts between vehicles and pedestrians.

**Exhibit 5-42. Suggested driveway intersection angles with roadway.**

Driveway Category	Description of Common Applications*	Minimum Allowable Driveway Intersection Angle in Degrees
<b>STANDARD DRIVEWAYS</b>		
Very high intensity, Higher intensity, Medium intensity		70
Lower intensity	Very infrequent use, such as single-family or duplex residential, on urban lower volume, lower speed roadways	60
<b>SPECIAL SITUATION DRIVEWAYS</b>		
CBD, Farm or ranch, Field, Industrial		70
One-way, for either right-turn entry-only or right-turn exit-only	Flat, acute angle may discourage wrong-way use	45 to 60

\* These descriptions are intended to help the designer form a mental image of some of the more common examples of the category.

### Exhibit 5-43. Suggested minimum lengths of straight driveway alignment.

Driveway Category	Description of Common Applications*	Minimum Length of Straight Alignment on the Driveway Approach Adjacent to the Connection Transition with a Public Roadway
<b>STANDARD DRIVEWAYS</b>		
Very high intensity	Urban activity center with almost constant driveway use during hours of operation.	75 ft (based on length of 3 P-car) Local requirements for tangent at a signalized intersection may apply.
Higher intensity	Medium-size office or retail (e.g., community shopping center) with frequent driveway use during hours of operation.	50 ft (based on length of 2 P-car)
Medium intensity	Smaller office or retail, some apartment complexes, with occasional driveway use during hours of operation.	25 ft (based on length of 1 P-car)
Lower intensity	Single-family or duplex residential, other types with very low use. May not apply to rural residential.	25 ft (based on length of 1 P-car)
<b>SPECIAL SITUATION DRIVEWAYS</b>		
CBD, Farm or ranch, Field, Industrial	A mix of design vehicles.	Length equal to the design vehicle length, plus 5 ft

NOTE: The recommended lengths are based on orienting a likely number of vehicles to be present up to and through the driveway-roadway intersection. Further study to develop these values is needed.

\* These descriptions are intended to help the designer form a mental image of some of the more common examples of the category.

Exhibit 5-45 suggests situations where a separate facility parallel to the driveway may be needed and where it may be acceptable for the bicyclist or pedestrian to share the driveway with motor vehicles.

### Driveway Edge and Border Treatments

A driveway edge should be clearly defined and visible to all users, so users can ascertain the lateral limits of motor vehicle operation. From observations such as in Exhibit 5-46, a vertical wall at the edge of a driveway causes drivers to shift their vehicles toward the center line. It is suggested that no vertical face (e.g., a retaining wall) be within 2 feet of the edge of the intended way for vehicle use. A wider offset must be provided if there will be a sidewalk parallel to the driveway.

For driveways with flat edges (i.e., no curb) in a fill, drivers will find it harder to determine where the edge is in rain, fog, or darkness. The designer should not place a sudden drop off at such an edge. A relatively flat shoulder with a minimum width of 2 ft (after any rounding) is suggested before the side slopes downward. Some property owners install reflectors or other similar devices at the edge to help deal with this problem.

As shown in Exhibit 5-47a, the toe of a slope should not extend to the base of a driveway or sidewalk edge, because runoff and erosion can lead to a mud-covered driveway or sidewalk surface. Exhibit 5-47b shows the toe of the slope recessed from the pavement edge, a method which yields better results.

### Edge Clearance from Fixed Objects

Fixed objects such as utility poles, fire hydrants, and drainage inlets should be set back from the edge of the driveway and from the edge of the roadway. Reasons for this include allowing

**Exhibit 5-44. Lack of a sidewalk forces the pedestrian into the driveway.**



**Exhibit 5-45. Suggestions for separate facilities for bicyclists and pedestrians.**

Driveway Category	Description of Common Applications*	Need for a Facility Parallel to Driveway for Bicyclists or Pedestrians
<b>STANDARD DRIVEWAYS</b>		
Very high intensity	Urban activity center with almost constant driveway use during hours of operation.	Bicycle – the need for separate lane or path depends on bicycle use in the area Pedestrian – often need sidewalk
Higher intensity	Medium-size office or retail (e.g., community shopping center) with frequent driveway use during hours of operation.	Bicycle – shared use may be adequate Pedestrian – may need sidewalk
Medium intensity	Smaller office or retail and some apartment complexes with occasional driveway use during hours of operation.	Bicycle – shared use usually adequate Pedestrian – may need sidewalk
Lower intensity	Single-family or duplex residential, other types with low use. May not apply to rural residential.	Shared use is adequate
<b>SPECIAL SITUATION DRIVEWAYS</b>		
CBD	Building faces are close to the street.	Seldom applicable, because buildings are close to the street
Farm or ranch, Field	Seldom used, very low volume.	Shared use is adequate
Industrial	Driveways are often used by large vehicles. May have separate driveways for employees and/or customers.	Depends on the specific site plan and transportation modes used by the employees.

\* These descriptions are intended to help the designer form a mental image of some of the more common examples of the category.

**Exhibit 5-46. Effects of a vertical wall too close to the driveway.**



Given that one of the underlying factors to consider is the driveway volume, both entering and exiting vehicles during the peak time period, it may be necessary to estimate likely driveway usage before designing the length of the driveway throat.

**Design Suggestions**

The throat length must be long enough to avoid internal site conflicts associated with crossing or weaving movements. It also must be adequate to avoid spillback onto the public road or internal circulation system. There are different controls:

1. Designing sufficient length to react to conflicts,
2. Designing sufficient length to accommodate traffic queues, and
3. Designing sufficient length to accommodate weaving.

Different sources have developed different approaches for establishing minimum throat lengths. The following narrative presents the approaches from various sources.

**Koepke and Levinson Throat Length.** When more detailed, site-specific information is available, one could apply the recommendations by Koepke and Levinson in *NCHRP Report 348 (5-20)*. For signalized driveways, suggested on-site throat lengths (per lane) were based on the equation  $N = 2qr$ , where

- N = number of cars to store,
- q = vehicles per hour per lane, and
- r = effective red time per cycle.

Alternative guidelines were cited based on the number of parking spaces per exit lane for multi-family, residential, retail, office, and industrial uses. The following suggested guidelines were based on both sets of criteria:

- 50 feet for minor driveways that serve 50 to 100 apartments, less than 50,000 square feet of retail, or a quality restaurant;
- 150 feet, with at least two exit lanes, for shopping centers of up to 700,000 square feet, and office complexes up to 500,000 square feet; and
- 200 feet or more, with at least two exit lanes, for larger commercial complexes.

**Stover and Keopke Throat Length.** In *Transportation and Land Development*, Stover and Koepke (5-13, p. 7–28) state that the exit condition controls the throat length for high-volume traffic generators, while the entry condition controls the throat length for low-volume traffic generators. The exit side of a driveway should be designed to enable traffic to efficiently leave a site. The throat length and cross section are interrelated: the wider the cross section, the longer the exit throat length needed to accommodate the associated weaving maneuvers. Exhibit 5-55 presents the minimum throat length for stop-controlled and for signalized-access drives, based on the number of egress or exit lanes.

**Exhibit 5-55. Minimum throat length based on the type of control and number of lanes.**

Type of Control	Number of Exit Lanes Present			
	1 Exit Lane	2 Exit Lanes	3 Exit Lanes	4 Exit Lanes
STOP sign	30 to 50 ft	50 ft (2 cars)	--	--
Signal	--	75 ft	200 ft	300 ft

NOTE: -- indicates no value given

Sources: *Transportation and Land Development*, 2nd ed. (2002), p. 7-28 (5-13) and *Access Management Manual* (2003), p. 184-185 (5-21)

The study led to the suggestions following in Exhibit 5-68. Except where noted, these guidelines are based on observations of passenger vehicles (P-vehicle).

Where low-clearance vehicles are expected to traverse crest curves, refer to Exhibit 5-69 developed by Eck and Kang (5-26) that suggests vertical curve lengths for various breakover angles (i.e., algebraic difference in grades).

### Drainage Control

Surface runoff from the roadway should not inundate the sidewalk or spill over onto private property. It is also undesirable for the depth of flow to cover the driveway, making it difficult for motorists to determine where the edges of the driveway are.

#### Exhibit 5-68. Driveway vertical profile guidelines.

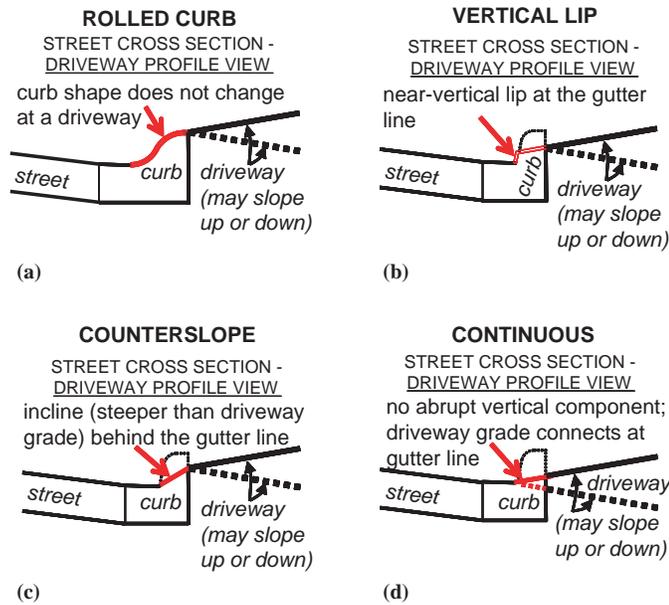
Category	Description of Common Applications*	Vertical Profile Guidelines	
		Suggestion	Rationale
<b>STANDARD DRIVEWAYS</b>			
Very high intensity	Urban activity center, with almost constant driveway use during hours of operation.	Refer to roadway design guidelines.	These driveways are often built to the standards of and resemble public roads and streets.
Higher intensity	Medium-size office or retail, such as community shopping center, with frequent driveway use during hours of operation.	<ul style="list-style-type: none"> <li>Limit the maximum driveway grade to +8% (except where a lesser grade is required, such as when crossing a sidewalk), and the maximum sag breakover without a vertical curve between the roadway cross slope and an uphill driveway grade to 9%.</li> <li>Limit the driveway profile maximum grade change without a vertical curve for: a crest to 10% and a sag to 9%.</li> </ul>	From observations of vehicles entering driveways with radii up to 20 ft and comparisons of Flatter (1.5-5%) and Moderate (6-9%) grades revealed (1) little difference between speeds and travel times of vehicles turning right; and (2) only slight differences between speeds and travel times of vehicles turning left.
Medium intensity	Smaller office, retail, or other sites with occasional driveway use during hours of operation.	<ul style="list-style-type: none"> <li>Limit the driveway profile maximum grade change without a vertical curve for: a crest to 10% and a sag to 9%.</li> </ul>	From measurements of 31 driveways with scrape marks, underside dragging became a problem at a crest of about 11%, and at a sag of about 10%.
	Apartment complexes	<ul style="list-style-type: none"> <li>May limit the sag to 7%.</li> </ul>	Due to trailers.
Lower intensity	Single family or duplex residential, other types with very low use. May not apply to rural residential.	<ul style="list-style-type: none"> <li>Limit the driveway profile maximum grade change without a vertical curve for: a crest to 10% and a sag to 9%.</li> </ul>	From measurements of 31 driveways with scrape marks, underside dragging became a problem at a crest of about 11%, and at a sag of about 10%.
<b>SPECIAL SITUATION DRIVEWAYS</b>			
CBD	Building faces are close to the street.	Refer to the guidelines above for "Higher intensity" and "Medium intensity."	
Farm or ranch; Field	A mix of design vehicles; some may be very low volume.	<ul style="list-style-type: none"> <li>Limit the driveway profile maximum grade change without a vertical curve for: a crest to 10% and a sag to 7%.</li> </ul>	These driveways should accommodate trailers.
Industrial	Driveways are often used by large vehicles.	<ul style="list-style-type: none"> <li>Varies, depending on types of vehicles. If low-boy trailers are expected, then limit crest breakover grades without a vertical curve to 3.5%.</li> </ul>	
Other	Motels	<ul style="list-style-type: none"> <li>Limit the driveway profile maximum grade change without a vertical curve for: a crest to 10% and a sag to 7%.</li> </ul>	Travelers pulling a trailer may stay at a motel; therefore, motel driveways should accommodate trailers.

NOTES: Additional information on which to assess ground clearance is in Chp 3.

The sag clearance for trailers is based on Eck's evaluation; truck+trailer clearances will vary.

\* These descriptions are intended to help the designer form a mental image of some of the more common examples of the category.

**Exhibit 5-71. Driveway threshold treatment types.**



**Exhibit 5-72. Driveway threshold treatment guidelines.**

Method	Advantages and Disadvantages	Comments
Rolled curb	Easiest threshold to construct, because the existing curb is not modified or removed. Confines the gutter flow, since the existing curb remains intact. Vehicles entering or exiting the driveway experience a jolt while crossing a curb of typical height.	This method is generally unsuitable. It may be acceptable for single-family or duplex access on lower volume, lower speed residential streets.
Vertical lip	Construction requires curb modification or removal. Can confine very low flows in the gutter and reduce the spread of the gutter flow. Bump created by the vertical lip is a minor impediment to automobile movements and a more significant problem for turning bicyclists (i.e., bicycle tire strikes the face at a skew angle).	Is often constructed by forming the threshold with lumber that leaves a vertical face or lip of 1 to 2 inches at the threshold.
Counterslope	Construction requires curb modification or removal. Can confine very low flows in the gutter and reduce the spread of the gutter flow. Less abrupt to cross, but can still be disruptive to automobiles and bicycles.	The proportion and amount of rise and run affect the degree of disruption to automobiles and bicycles.
Continuous OR Smooth	Construction requires curb modification or removal. Is more bicycle- and automobile-friendly. If the driveway immediately slopes downward from the gutter line, this does not confine the drainage as well.	With this method, the profile slopes continuously but not abruptly upward from the gutter line. Thus the drainage objective can be suitably achieved by means that do not create problematic bumps for bicyclists or drivers.

**Exhibit 5-77. Landscaping guidelines for driveways.**

Concern or Issue	Design Response	Specific Procedure and/or Information
Provide unobstructed lines-of-sight among bicyclists, pedestrians, and vehicles in the area	Do not install landscaping that blocks needed sight lines. Trees should be set back a sufficient distance from the driveway – public road intersections to avoid obstructing sight lines. In urban settings, trees generally should be set back at least 20 to 30 ft on the approach to intersections and 10 to 20 ft on the far side. However, in higher speed environments, greater setbacks may be required (5-29). The top of ground cover in driveway and street medians should not exceed 2 feet. This is 18 in. below the clear sight line of 42 in. The bottom of the tree canopy should be at least 5 ft (60 in. high).	Refer to the latest edition of the AASHTO Green Book for the procedure to calculate the needed distance.
Landscaping should not obscure or interfere with traffic control devices or other roadside fixed objects	Vegetation should be sufficiently removed from traffic signs. Vegetation should be sufficiently removed from utility lines.	
Landscaping should not create conflicts in the paths of users	Limbs or branches that overhang any pedestrian path should be at least 7 ft above the surface of the path. Vegetation should be sufficiently removed from pavement surfaces to prevent roots from damaging sidewalks. Vegetation should be sufficiently removed from pavement edges to avoid scraping vehicles. Planting arrangements should not create concealed spaces.	The ADA requires at least an 80 in. clearance above the pedestrian path (5-30).
Landscaping should not interfere with adequate artificial illumination	Trees should be set back at least 40 ft from luminaries.	
Preserve an adequate roadside clear zone	Along major highways, the clear zone should normally extend at least 10 ft beyond the edge of the shoulder.	See AASHTO <i>Roadside Design Guide</i> (5-31). More study is needed to better define the needed clear zone in lower speed, built-up urban street environments.

Business signs may be present outside of the roadway right-of-way, along driveways, or within parking areas. These signs should be placed so that they do not compete with traffic signs or obstruct sight lines of the various users.

Along a busy roadway, a business sign may help identify a driveway location. If placed close to the driveway, a sign can help motorists who are scanning the upcoming roadside to detect the location of the driveway they are searching for. Conversely, a business sign located far from the driveway may actually divert a motorist's view from the driveway location and be misleading and confusing.

### Auxiliary Right-Turn Lanes

Right-turn deceleration lanes are frequently constructed to remove the slower right-turning vehicles from the through travel lanes when right-turn volumes into a driveway are heavy and/or could have a significant adverse effect on through traffic. The benefits that accrue from having right-turn lanes include increased capacity, reduced speed differentials and brake applications, and reduced rear-end collisions.

## **1. Railroad Overpass Policy.**

The City of Brookings has many streets that cross railroad facilities. The majority of these crossings are at-grade, where the transportation facility and the railroad facility are at the same elevation. The remainder of the crossings are grade-separated, where the transportation facility and the railroad facility are separated by a bridge or an underpass. The grade-separated crossings provide a continuous flow for the transportation facility (includes both vehicles and pedestrians), reduce conflicts with the railroad facility, and increase safety for the rail facility and the transportation facility. The City of Brookings encourages grade-separated crossings whenever economically and spatially feasible.

Other communities in surrounding states, various State Departments of Transportation, and the Federal Highway Administration have been consulted on what policies and guiding objectives they use to determine the needs for grade-separated crossings. The majority of these agencies indicated they do not follow an “official” grade-separation policy, but construct them when feasible due to safety and pedestrian/traffic flow.

The following Evaluation Process is used by the City of Brookings when evaluating the need for a grade-separated crossing. These factors, combined with engineering design criteria, and financial and spatial considerations are essential in determining the need for a grade-separated crossing.

### **1.1 Design Criteria for a Grade-Separated Crossing.**

A grade-separated crossing should be considered when one or more of the following criteria exist:

1. The roadway is designated as an arterial street on the Major Street Plan.
2. The roadway design speed is at least 45 mph.
3. The roadway has a projected average annual daily traffic (AADT) that exceeds 10,000 vehicles per day.
4. The rail line has a design speed of at least 49 mph.
5. The rail line carries an average of three or more trains per day at the location under consideration.

The analysis of all relevant factors identified below should be completed when a location meets one or more of the above-listed design criteria.

### **1.2 Analysis of Factors.**

Five factors commonly used to analyze a grade-separated crossing are safety, vehicle and pedestrian accessibility, street connectivity, driver delay, and train noise. These factors are indirectly related to the above design

criteria and are all considered the same priority in the analysis. The information below should be analyzed and considered to determine if a grade-separated crossing is a better choice than an at-grade crossing.

### 1. Safety

Safety brings forth much emotion, publicity, and urgency. Vehicle-train crashes, while infrequent, do occur at at-grade crossings and can cause severe injuries and fatalities. Safety is a critical factor to be considered when evaluating possible grade-separated crossing locations.

### 2. Vehicle and Pedestrian Accessibility

In some areas, it may be relatively easy to bypass an at-grade crossing that is occupied by a train by accessing the nearest grade-separated crossing. In the urban core of Brookings, there are multiple local and arterial streets that provide an alternative if a crossing is blocked, although at times the nearby streets could also be occupied by a train.

However, in the newer areas of the city, the philosophy of constructing multiple crossings has changed due to the Rail Authority design objectives of reducing crossing conflicts, improving safety, and costs of crossing construction and maintenance. Therefore, crossings occur mainly at arterial streets and may be a mile or more apart. In these locations, the time to bypass the at-grade crossing may actually be longer than the time it takes to wait for the train. This accessibility is an important factor when considering a grade-separated crossing.

### 3. Street Connectivity

Roadways with grade-separated crossings connect major trip generators (commuters) to employment centers within a community. These roadway facilities tend to be a higher classification such as arterials and expressways because their main function is mobility versus access to a public right-of-way.

It is important to locate the grade-separated crossing at locations where they will receive the highest usage because of the increased construction costs of a grade-separated crossing versus an at-grade crossing.

### 4. Driver Delay

It is generally recognized that user costs are incurred by drivers waiting for trains at an at-grade crossing. However, that is not the only user

cost which may result from delaying drivers at rail crossings. The time it takes for a train to pass can be life threatening to a trauma victim on the way to an emergency room. Therefore, it is important to include the full range of social costs associated with delay at at-grade crossings when looking at delay as a factor in a grade-separated crossing.

## 5. Train Noise

Train and train whistle horn noise are a significant quality-of-life issue for many communities. The human voice cannot be heard over the noise of a train horn. Phone calls and conversations can be interrupted by the train noise, which may have an impact to property values. Measures, such as banning horn blowing, would create obvious safety concerns and are not supported by the Rail Authority. If an at-grade crossing is replaced with a grade-separated crossing, the need to blow a horn for the crossing is eliminated. Therefore, it is imperative to consider concerns about noise as a factor in a grade-separated crossing.

Consideration of establishing a *Whistle Free Zone* as described in the Federal Rail Authority (FRA) Regulations also needs to be considered as part of the evaluation. This process is lengthy and would need to be approved by the FRA and Local Rail Authority. Typically, this process would evaluate multiple crossings in an area to show a benefit to the surrounding land uses.

In addition, if an at-grade crossing is determined to be the most feasible crossing type, additional crossing improvements are required at each location and include: the installation of crossing gates and arms, the installation of a center median in the arterial street for a minimum of 110 feet back from the rail crossing, signal crossing lights, protected and signed pedestrian crossings. These costs are generally the responsibility of the agency requesting the rail crossing.

# Appendix Part 5—Online Survey Responses

*June, 2011*



**SOUTH DAKOTA  
DEPARTMENT OF  
TRANSPORTATION**

**CITY OF BROOKINGS**

**CITY OF AURORA**

**BROOKINGS COUNTY**

**HDR**



1. Please refer to the zone map. In which zone do you live?

		Response Percent	Response Count
I Live Outside The Zone Boundaries		18.4%	83
Zone 1		0.7%	3
Zone 2		0.9%	4
Zone 3		1.8%	8
Zone 4		0.9%	4
Zone 5		0.0%	0
Zone 6		3.5%	16
Zone 7		1.1%	5
Zone 8		1.1%	5
Zone 9		0.0%	0
Zone 10		0.0%	0
Zone 11		0.9%	4
Zone 12		0.9%	4
Zone 13		0.7%	3
Zone 14		0.4%	2
Zone 15		0.0%	0
Zone 16		0.0%	0
Zone 17		0.0%	0
Zone 18		0.0%	0
Zone 19		0.2%	1

Zone 20		1.3%	6
Zone 21		2.9%	13
Zone 22		1.3%	6
Zone 23		0.2%	1
Zone 24		0.2%	1
Zone 25		0.4%	2
Zone 26		0.0%	0
Zone 27		0.7%	3
Zone 28		0.2%	1
Zone 29		0.4%	2
Zone 30		3.1%	14
Zone 31		3.8%	17
Zone 32		5.1%	23
Zone 33		3.1%	14
Zone 34		1.6%	7
Zone 35		2.4%	11
Zone 36		6.4%	29
Zone 37		0.2%	1
Zone 38		1.1%	5
Zone 39		0.0%	0
Zone 40		0.2%	1
zone 41		2.7%	12
Zone 42		1.3%	6
Zone 43		4.0%	18
Zone 44		1.8%	8
Zone 45		0.9%	4

Zone 46		1.3%	6
Zone 47		4.2%	19
Zone 48		0.7%	3
Zone 49		0.0%	0
Zone 50		2.4%	11
Zone 51		0.0%	0
Zone 52		0.9%	4
Zone 53		2.0%	9
Zone 54		2.0%	9
Zone 55		1.3%	6
Zone 56		0.0%	0
Zone 57		0.4%	2
Zone 58		0.4%	2
Zone 59		1.1%	5
Zone 60		5.1%	23
Zone 61		0.4%	2
Zone 62		0.0%	0
Zone 63		0.0%	0
Zone 64		0.7%	3
<b>answered question</b>			<b>451</b>
<b>skipped question</b>			<b>0</b>

## 2. In which zone is your primary work or school location?

		Response Percent	Response Count
I work/attend school outside the Zone boundaries		2.4%	11
Retired, Unemployed or Other		1.6%	7
Zone 1		0.2%	1
Zone 2		0.9%	4
Zone 3		1.8%	8
Zone 4		0.7%	3
Zone 5		0.7%	3
Zone 6		2.2%	10
Zone 7		0.4%	2
Zone 8		0.9%	4
Zone 9		1.1%	5
Zone 10		0.2%	1
Zone 11		8.0%	36
Zone 12		0.4%	2
Zone 13		0.7%	3
Zone 14		0.2%	1
Zone 15		0.2%	1
Zone 16		0.2%	1
Zone 17		0.2%	1
Zone 18		3.1%	14
Zone 19		2.2%	10
Zone 20		3.1%	14

Zone 21		1.6%	7
Zone 22		0.0%	0
Zone 23		1.8%	8
Zone 24		1.1%	5
<b>Zone 25</b>		<b>34.8%</b>	<b>157</b>
Zone 26		1.1%	5
Zone 27		9.5%	43
Zone 28		1.3%	6
Zone 29		2.4%	11
Zone 30		0.7%	3
Zone 31		0.7%	3
Zone 32		0.4%	2
Zone 33		0.2%	1
Zone 34		0.4%	2
Zone 35		0.0%	0
Zone 36		3.8%	17
Zone 37		0.0%	0
Zone 38		0.0%	0
Zone 39		0.2%	1
Zone 40		0.0%	0
zone 41		0.2%	1
Zone 42		0.4%	2
Zone 43		0.2%	1
Zone 44		0.0%	0
Zone 45		0.0%	0
Zone 46		0.4%	2

Zone 47		0.0%	0
Zone 48	▮	0.4%	2
Zone 49	▮	0.2%	1
Zone 50		0.0%	0
Zone 51	▮	0.7%	3
Zone 52	▮	0.4%	2
Zone 53		0.0%	0
Zone 54	▮	0.2%	1
Zone 55	▮	0.2%	1
Zone 56	▮	2.4%	11
Zone 57	▮	0.9%	4
Zone 58	▮	0.7%	3
Zone 59	▮	0.4%	2
Zone 60		0.0%	0
Zone 61		0.0%	0
Zone 62		0.0%	0
Zone 63	▮	0.4%	2
Zone 64		0.0%	0
<b>answered question</b>			<b>451</b>
<b>skipped question</b>			<b>0</b>

### 3. Please fill in the time to the nearest 15 minutes.

		Response Percent	Response Count
I begin work / school at:		99.5%	397
I end work / school at:		99.7%	398
		answered question	399
		skipped question	52

### 4. Do you own a car?

		Response Percent	Response Count
Yes		99.3%	403
No		0.7%	3
		answered question	406
		skipped question	45

### 5. Do you own a bicycle?

		Response Percent	Response Count
Yes		72.5%	293
No		27.5%	111
		answered question	404
		skipped question	47

**6. Which of the following modes do you or other members of your household normally use to get to/from work, school or other frequently traveled destinations? Please check ALL that apply.**

	Household Members	Response Count
Car, drive alone	100.0% (385)	385
Carpool or van pool	100.0% (69)	69
Walk	100.0% (50)	50
Bicycle	100.0% (70)	70
Motorcycle	100.0% (40)	40
Public transit	100.0% (12)	12
Taxi	100.0% (3)	3
Other	100.0% (7)	7
<b>answered question</b>		<b>405</b>
<b>skipped question</b>		<b>46</b>

**7. Please rate the overall regional traffic safety.**

	Poor	Needs Improvement	Adequate	Good	Excellent	Rating Average	Response Count
Please select one.	2.0% (8)	31.6% (127)	<b>36.3% (146)</b>	27.1% (109)	3.0% (12)	2.98	402
<b>answered question</b>							<b>402</b>
<b>skipped question</b>							<b>49</b>

## 8. Please rate traffic safety near schools.

	Poor	Needs Improvement	Adequate	Good	Excellent	Rating Average	Response Count
Mickelson Middle School: 1801 12th St S.	5.0% (15)	28.4% (86)	<b>36.6% (111)</b>	27.1% (82)	3.0% (9)	2.95	303
Camelot Intermediate School: 1401 15th St S.	2.5% (7)	17.1% (48)	<b>45.2% (127)</b>	31.0% (87)	4.3% (12)	3.17	281
Brookings High School: 530 Elm Ave.	3.4% (10)	23.2% (68)	<b>44.7% (131)</b>	25.3% (74)	3.4% (10)	3.02	293
Hillcrest Elementary School: 304 15th Ave.	2.4% (7)	22.6% (67)	<b>43.2% (128)</b>	28.0% (83)	3.7% (11)	3.08	296
Medary Elementary School: 718 5th St. S.	1.4% (4)	18.5% (53)	<b>49.0% (140)</b>	28.0% (80)	3.1% (9)	3.13	286
<b>answered question</b>							<b>326</b>
<b>skipped question</b>							<b>125</b>

## 9. Please rate your overall concern about Brookings area traffic congestion.

	Major Problem	Minor Problem	Not A Problem	Rating Average	Response Count
Please select one.	26.9% (107)	<b>62.3% (248)</b>	10.8% (43)	1.84	398
<b>answered question</b>					<b>398</b>
<b>skipped question</b>					<b>53</b>

**10. Please rate ease of travel to each of the following destinations.**

	Difficult	Moderate	Easy	Rating Average	Response Count
Downtown	8.3% (33)	43.0% (172)	<b>48.8% (195)</b>	2.41	400
Industrial Park	<b>39.4% (154)</b>	34.5% (135)	26.1% (102)	1.87	391
SDSU	35.4% (139)	<b>48.3% (190)</b>	16.3% (64)	1.81	393
Mall Area	7.3% (29)	31.4% (125)	<b>61.3% (244)</b>	2.54	398
Wal-Mart Area	29.3% (117)	<b>46.5% (186)</b>	24.3% (97)	1.95	400
<b>answered question</b>					<b>403</b>
<b>skipped question</b>					<b>48</b>

**11. Please rate expected ease of travel in 20 years for each of the following destinations.**

	Difficult	Moderate	Easy	Rating Average	Response Count
Downtown	23.3% (84)	<b>42.2% (152)</b>	34.4% (124)	2.11	360
Industrial Park	<b>42.3% (152)</b>	34.5% (124)	23.1% (83)	1.81	359
SDSU	<b>52.2% (187)</b>	32.4% (116)	15.4% (55)	1.63	358
Mall Area	23.0% (82)	<b>38.8% (138)</b>	38.2% (136)	2.15	356
Wal-Mart Area	<b>44.4% (161)</b>	35.3% (128)	20.4% (74)	1.76	363
<b>answered question</b>					<b>365</b>
<b>skipped question</b>					<b>86</b>

**12. Please rate your overall perception of the region's travel system.**

	Poor	Needs Improvement	Adequate	Good	Excellent	Rating Average	Response Count
Please select one.	4.1% (15)	<b>52.7% (195)</b>	30.0% (111)	11.9% (44)	1.4% (5)	2.54	370
<b>answered question</b>							<b>370</b>
<b>skipped question</b>							<b>81</b>

### 13. Please rate your satisfaction with various components of the region's transportation system.

	Poor	Needs Improvement	Adequate	Good	Excellent	Rating Average	Response Count
Ease of travel to/from Brookings and other cities.	1.7% (6)	12.7% (46)	30.7% (111)	<b>40.4%</b> (146)	14.4% (52)	3.53	361
Adequacy of signing on streets/highways.	3.3% (12)	17.5% (64)	<b>36.2%</b> (132)	35.6% (130)	7.4% (27)	3.26	365
Availability of safe walking/pedestrian facilities.	6.1% (22)	27.0% (98)	<b>38.0%</b> (138)	22.3% (81)	6.6% (24)	2.96	363
Maintenance of Interstates/highways.	2.5% (9)	24.1% (87)	<b>37.4%</b> (135)	30.5% (110)	5.5% (20)	3.12	361
Availability of safe biking facilities.	8.6% (30)	31.3% (109)	<b>32.8%</b> (114)	20.4% (71)	6.9% (24)	2.86	348
Ease of travel from north side of Brookings to south.	7.2% (26)	35.6% (129)	<b>38.7%</b> (140)	17.1% (62)	1.4% (5)	2.70	362
Ease of travel from east side of Brookings to west.	9.6% (35)	33.9% (123)	<b>37.7%</b> (137)	16.8% (61)	1.9% (7)	2.67	363
Maintenance of rural roads.	6.9% (24)	32.0% (111)	<b>47.6%</b> (165)	11.5% (40)	2.0% (7)	2.70	347
Availability of public transportation services.	9.0% (31)	30.4% (105)	<b>41.4%</b> (143)	16.5% (57)	2.6% (9)	2.73	345
Maintenance of city streets.	9.1% (33)	25.5% (92)	<b>43.2%</b> (156)	19.9% (72)	2.2% (8)	2.81	361
<b>answered question</b>							<b>366</b>
<b>skipped question</b>							<b>85</b>

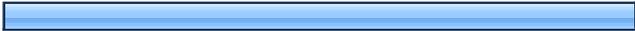
#### 14. Please rate the importance of the following components of the transportation system.

	Not Important	Somewhat Important	Very Important	Rating Average	Response Count
Ease of travel to/from Brookings and other cities.	4.7% (17)	42.1% (153)	<b>53.2% (193)</b>	2.48	363
Adequacy of signing on streets/highways.	3.3% (12)	41.3% (149)	<b>55.4% (200)</b>	2.52	361
Availability of safe walking/pedestrian facilities.	3.0% (11)	37.3% (135)	<b>59.7% (216)</b>	2.57	362
Maintenance of Interstates/highways.	0.0% (0)	25.4% (92)	<b>74.6% (270)</b>	2.75	362
Availability of safe biking facilities.	10.2% (37)	<b>46.5% (168)</b>	43.2% (156)	2.33	361
Ease of travel from north side of Brookings to south.	1.7% (6)	42.0% (152)	<b>56.4% (204)</b>	2.55	362
Ease of travel from east side of Brookings to west.	1.4% (5)	35.0% (127)	<b>63.6% (231)</b>	2.62	363
Maintenance of rural roads.	7.2% (26)	<b>51.5% (187)</b>	41.3% (150)	2.34	363
Availability of public transportation services.	9.7% (35)	<b>55.4% (199)</b>	34.8% (125)	2.25	359
Maintenance of city streets.	0.6% (2)	26.1% (94)	<b>73.3% (264)</b>	2.73	360
<b>answered question</b>					<b>365</b>
<b>skipped question</b>					<b>86</b>

#### 15. Have you ever used Brookings public transportation?

		Response Percent	Response Count
Yes		36.9%	136
No		63.1%	233
<b>answered question</b>			<b>369</b>
<b>skipped question</b>			<b>82</b>

**16. Reasons for not using public transportation. Choose all that apply.**

		Response Percent	Response Count
I use my car.		95.4%	314
Service not available WHEN needed.		15.2%	50
Service not available WHERE needed.		14.3%	47
I don't know how to use system.		14.6%	48
Weather.		0.6%	2
Don't feel safe.		0.0%	0
	Other (please describe)		53
<b>answered question</b>			<b>329</b>
<b>skipped question</b>			<b>122</b>

**17. What is the likelihood that you would use a fixed route transit system if it were available?**

		Response Percent	Response Count
Likely		35.5%	122
Unlikely		64.5%	222
<b>answered question</b>			<b>344</b>
<b>skipped question</b>			<b>107</b>

## 18. How important is it to have commercial air service in Brookings?

	Not Important	Minor	Moderate	Very Important	Rating Average	Response Count
Please select one.	27.3% (93)	<b>34.9% (119)</b>	25.2% (86)	12.6% (43)	2.23	341
<b>answered question</b>						<b>341</b>
<b>skipped question</b>						<b>110</b>

## 19. Are Brookings freight transportation needs being met?

		Response Percent	Response Count
Yes		<b>87.0%</b>	<b>267</b>
No		13.0%	40
<b>answered question</b>			<b>307</b>
<b>skipped question</b>			<b>144</b>

## 20. Which is more important?

		Response Percent	Response Count
Maintaining existing roads / streets.		<b>69.2%</b>	<b>236</b>
Adding new roads / streets.		30.8%	105
<b>answered question</b>			<b>341</b>
<b>skipped question</b>			<b>110</b>

**21. Allocate \$100 for improvements in 20 years: (Show how much of the hypothetical \$100 in transportation funding that you would spend on each item).**

		Response Average	Response Total	Response Count
Existing Rural Roads		15.78	4,419	280
<b>Existing City Streets</b>		<b>28.47</b>	<b>8,542</b>	300
New Roads / Streets		24.82	7,395	298
Air / Rail		9.47	2,462	260
Public Transit		12.93	3,542	274
Bicycle Facilities		10.40	2,839	273
Pedestrian Facilities		8.65	2,301	266
<b>answered question</b>				<b>315</b>
<b>skipped question</b>				<b>136</b>

**22. The portion of taxes going to transportation should:**

		Response Percent	Response Count
Remain the same		31.5%	106
<b>Increase slightly</b>		<b>44.8%</b>	<b>151</b>
Decrease slightly		1.5%	5
Don't know		22.3%	75
<b>answered question</b>			<b>337</b>
<b>skipped question</b>			<b>114</b>

**23. Support for slight increase in local taxes for transportation improvements:**

		Response Percent	Response Count
Strong support		17.9%	60
<b>Somewhat support</b>		<b>42.6%</b>	<b>143</b>
Don't support		20.5%	69
Don't know		19.0%	64
<b>answered question</b>			<b>336</b>
<b>skipped question</b>			<b>115</b>

**24. Which roads / streets should receive top priority for improvement?**

		Response Percent	Response Count
1.		100.0%	273
2.		76.6%	209
3.		53.8%	147
<b>answered question</b>			<b>273</b>
<b>skipped question</b>			<b>178</b>

**25. Can you think of any additional transportation needs in the Brookings area?**

	Response Count
	170
<b>answered question</b>	<b>170</b>
<b>skipped question</b>	<b>281</b>

# Appendix Part 6—Other Technical Memoranda

*June, 2011*



**SOUTH DAKOTA  
DEPARTMENT OF  
TRANSPORTATION**

**CITY OF BROOKINGS**

**CITY OF AURORA**

**BROOKINGS COUNTY**

**HDR**



To: Study Advisory Team for Brookings Area Master Transportation Plan	
From: HDR	Project: Brookings MTP
CC:	
Date: 2/21/2011	Job No:

## RE: 6<sup>th</sup> Street configuration

We have noted a number of public comments about the configuration of the intersection of 6<sup>th</sup> Street/25<sup>th</sup> Avenue as part of the preparation of the Brookings Area Master Transportation Plan. The intersection has also been identified as a location with a cluster of crashes and the need for a more standard intersection configuration.

There have also been discussions in the past about realigning 25<sup>th</sup> Avenue and/or Sunrise Ridge Road to create a single intersection.

In light of the intersection concerns, the possible realignment, and the upcoming 6<sup>th</sup> Street reconstruction, we have considered a number of options for realignment of streets in the vicinity of 6<sup>th</sup> St./25<sup>th</sup> Avenue. The options include:

- Provide back-to-back  $\frac{3}{4}$  intersections at 6<sup>th</sup>/Sunrise and 6<sup>th</sup>/25<sup>th</sup>.
- Realign 25<sup>th</sup> Avenue to intersect with the existing Sunrise Ridge Road.
- Extend 25<sup>th</sup> Avenue to the south to intersect with Minnesota Drive. The south frontage road would also be realigned and traffic from Sunrise Ridge Road would be able to reach 6<sup>th</sup> Street via Minnesota Drive and the 25<sup>th</sup> Avenue extension.

Each of these options has advantages and disadvantages as detailed below.

### Twin $\frac{3}{4}$ intersections:

The short distance between these two intersections (about 390') would make it difficult to provide the necessary transition and storage lengths for the left turn lanes. This configuration would also require that the left turn bays serve u-turn movements and that drivers negotiate across two thru lanes to make a u-turn. For these reasons, this option was not carried further.

### Realign 25<sup>th</sup> Ave. to meet Sunrise Ridge Road:

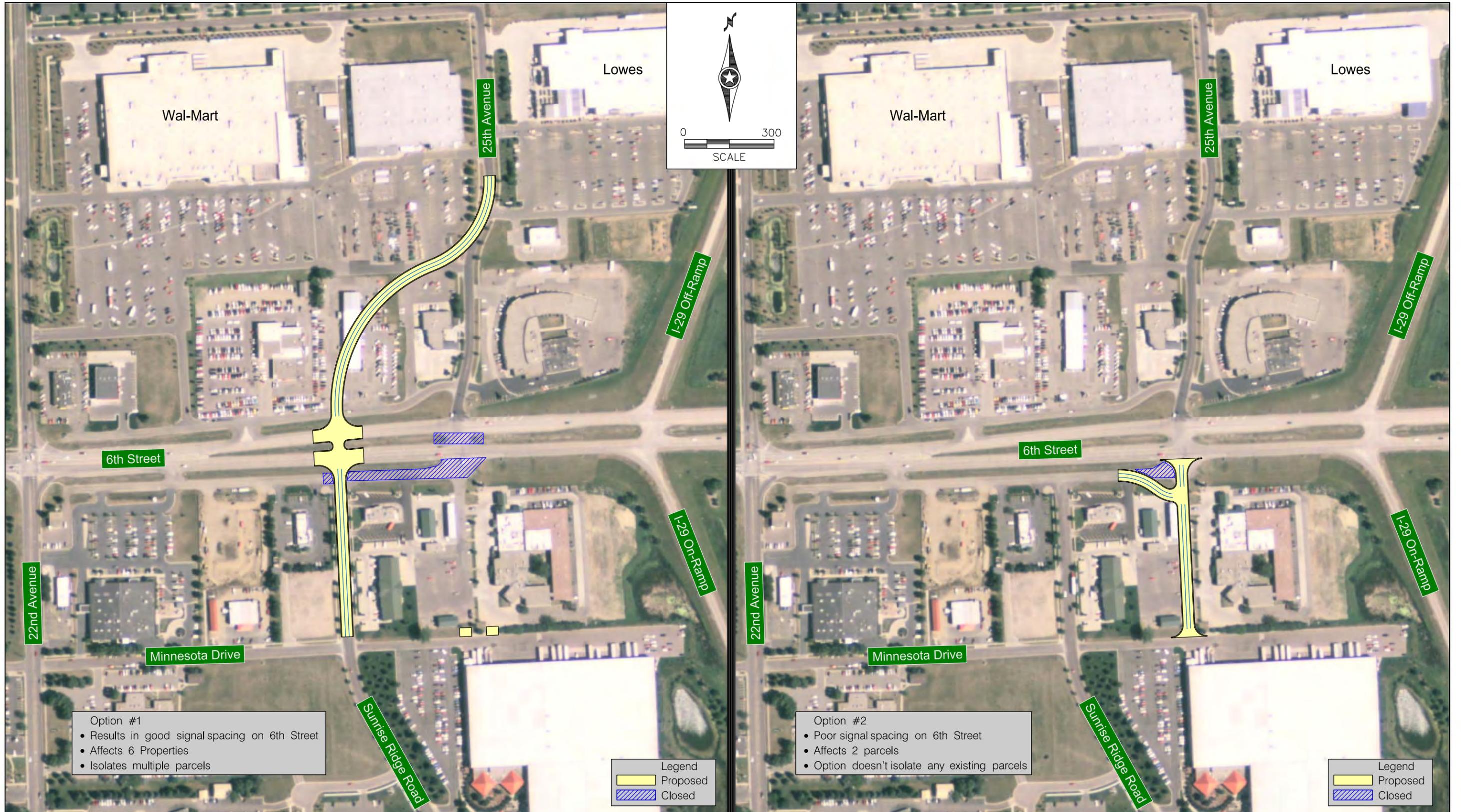
This configuration provides even signal spacing between 22<sup>nd</sup> Avenue and Interstate 29 and the potential for a fairly standard intersection. It would however, have direct right-of-way impacts on 6 properties and secondary impacts on several more properties, including the isolation of the two motels adjacent to I-29.

### Extend 25<sup>th</sup> Ave. to intersect with Minnesota Drive:

This option retains the existing short distance between 25<sup>th</sup> Avenue and I-29, but only directly impacts two properties. No parcels are isolated under this option.

## Recommendation

The 25<sup>th</sup> Ave. extension to Minnesota Drive appears to provide reasonable service without extensive property impacts and is recommended for consideration during scoping and design of the 6<sup>th</sup> Street reconstruction project. It may serve as a short-term solution until such time that the I-29 southbound ramps are signalized and the short intersection spacing becomes a greater problem. Narrowing the median or providing offset left turn bays on 6<sup>th</sup> Street may be advisable to provide greater visibility and positive guidance for drivers. Graphical layouts of the realignment and extension options are provided in the attached figure.



Option #1

- Results in good signal spacing on 6th Street
- Affects 6 Properties
- Isolates multiple parcels

Option #2

- Poor signal spacing on 6th Street
- Affects 2 parcels
- Option doesn't isolate any existing parcels

Legend  
 Proposed  
 Closed

Legend  
 Proposed  
 Closed



25th Avenue/6th Street Reconfiguration Options

Brookings Area Master Transportation Plan Brookings, SD

Figure

To: Brookings MTP Study Team	
From: Rick Laughlin	Project: Brookings Master Transportation Plan
CC:	
Date: 3/28/2011	Job No:

**RE: Interstate 29 analysis**

This technical memorandum summarizes our analysis of several alternatives for dealing with future congestion related to the Interstate 29 access points within the Master Plan study area. Additional Interstate access has been the subject of several previous studies, with the Brookings Industrial Park Traffic Impact Study (HDR) finding that an additional overpass on 20<sup>th</sup> Street South would provide relief for expected congestion on 6<sup>th</sup> Street, and the recent Decennial Interstate Corridor Study (FHU) finding that a folded diamond interchange at 20<sup>th</sup> Street South could be feasibly constructed. There has also been previous discussion of adding ramps to the existing overpass at 32<sup>nd</sup> Street South. This analysis updates previous analysis with the most recent traffic forecasts and understanding developed as part of the Master Transportation Plan. It may provide introductory information for, but will not replace, the required Interchange Justification Report and Environmental Assessment that must be prepared before Interstate access can be changed.

Forecast ADT volumes and peak hour levels of service have been provided for the alternatives discussed below. The volumes and levels of service are shown on the attached figures.

Alternative 1 – 2035 Volumes, No Improvements

This alternative shows service problems at several locations on the local street system, particularly at the 6<sup>th</sup> Street/22<sup>nd</sup> Avenue intersection in the PM peak hour. Review of a SimTraffic simulation for this alternative shows severe queue problems propagating from the 6<sup>th</sup>/22<sup>nd</sup> intersection in all directions and blocking the I-29 ramp terminals. Queues also extend down the I-29 exit ramps onto the mainline in both directions.

Alternative 2 – 2035 Volumes, Intersection Improvements Only

While improving the intersections on 6<sup>th</sup> Street provides considerable congestion relief, there are still some potential problems. Simulation shows queue backups that affect the ramp terminals in some, but not all, runs. Note that the 6<sup>th</sup>/22<sup>nd</sup> intersection has been improved to provide double left turn lanes, two through-lanes, and one right-turn lane on each approach for this alternative. Additional improvements with the greatest affect on queue backups would involve more than two left turn lanes.

Alternative 3 – 2035 Volumes, with 20<sup>th</sup> Street South Overpass

This alternative shows queues reduced to the point that no impact on Interstate off-ramps is produced. A portion of the traffic traveling to/from the Industrial Park is diverted, improving network travel time.

Alternative 4 – 2035 Volumes, with 20<sup>th</sup> Street South Interchange

Providing an interchange at 20<sup>th</sup> Street South has the greatest effect on traffic traveling to/from the industrial park. Operations on 6<sup>th</sup> Street are greatly improved and queues have been minimized.

#### Alternative 5 – 2035 Volumes, with 32<sup>nd</sup> Street South Interchange

This alternative provides the least diversion of Industrial Park traffic, compared to Alternatives 3, 4 and 6. Congestion on 6<sup>th</sup> Street is somewhat similar to Alternative 2, with the potential for queue interference with the Interstate ramp terminal operations.

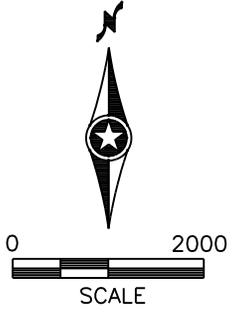
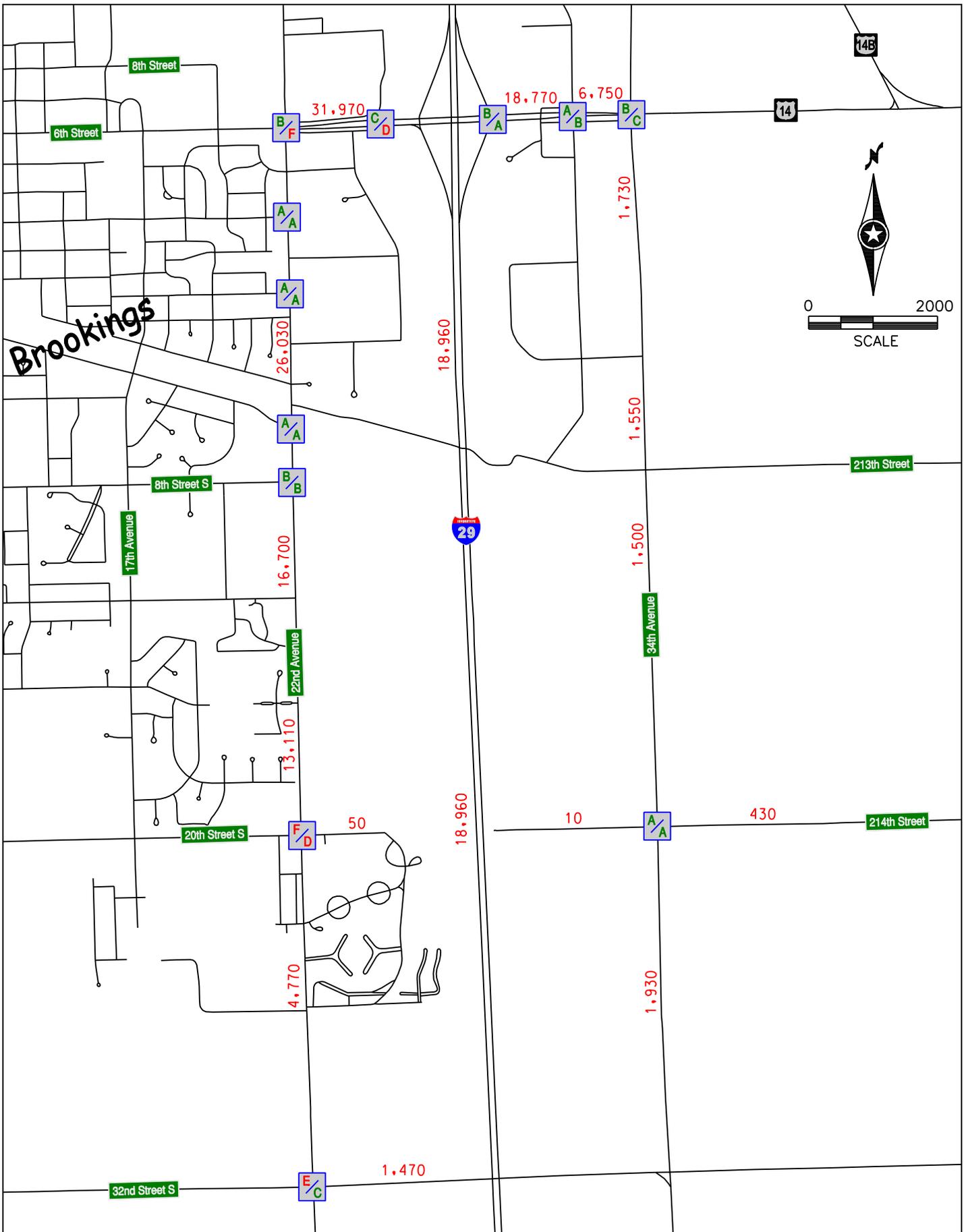
#### Alternative 6 – 2035 Volumes, with 32<sup>nd</sup> Street South Interchange and 20<sup>th</sup> Street South Overpass

The combination of a full interchange on Interstate 29 at 32<sup>nd</sup> Street South and an overpass at 20<sup>th</sup> Street South produces congestion relief on 6<sup>th</sup> Street greater than either the 32<sup>nd</sup> Street South interchange or the 20<sup>th</sup> Street South overpass, but less than a full interchange at 20<sup>th</sup> Street South. Network queues appear to be well-managed and don't impact Interstate ramp operation.

**NOTE: Alternatives 3 – 6 include intersection improvements developed in Alternative 2**

#### Conclusion

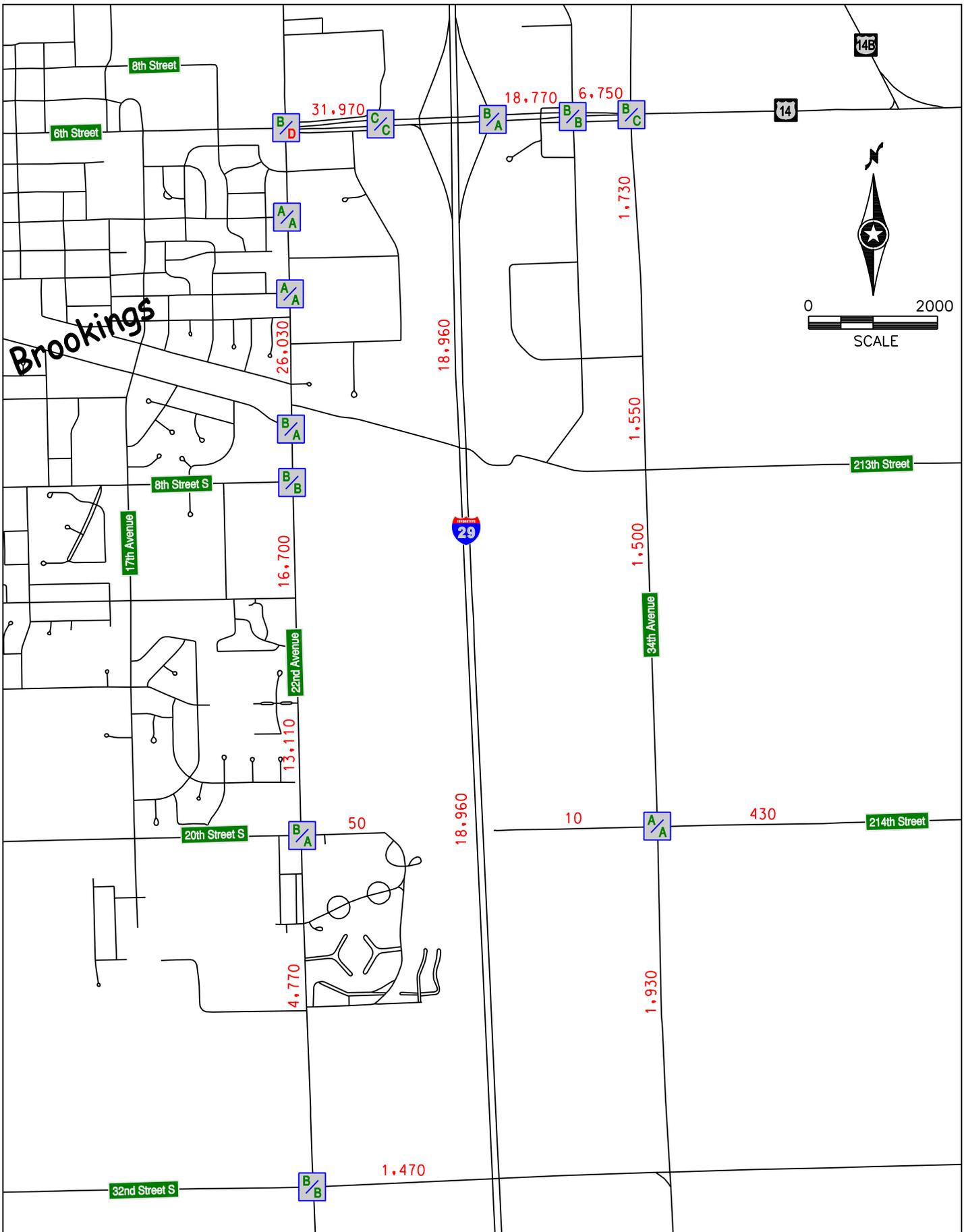
Of the alternatives examined in this analysis, Alternative 4 appears to provide the greatest congestion relief and do the most to alleviate potential problems with Interstate operations.



Alternative 1  
2035 Volumes, No Improvements  
Brookings Area Master Transportation Plan

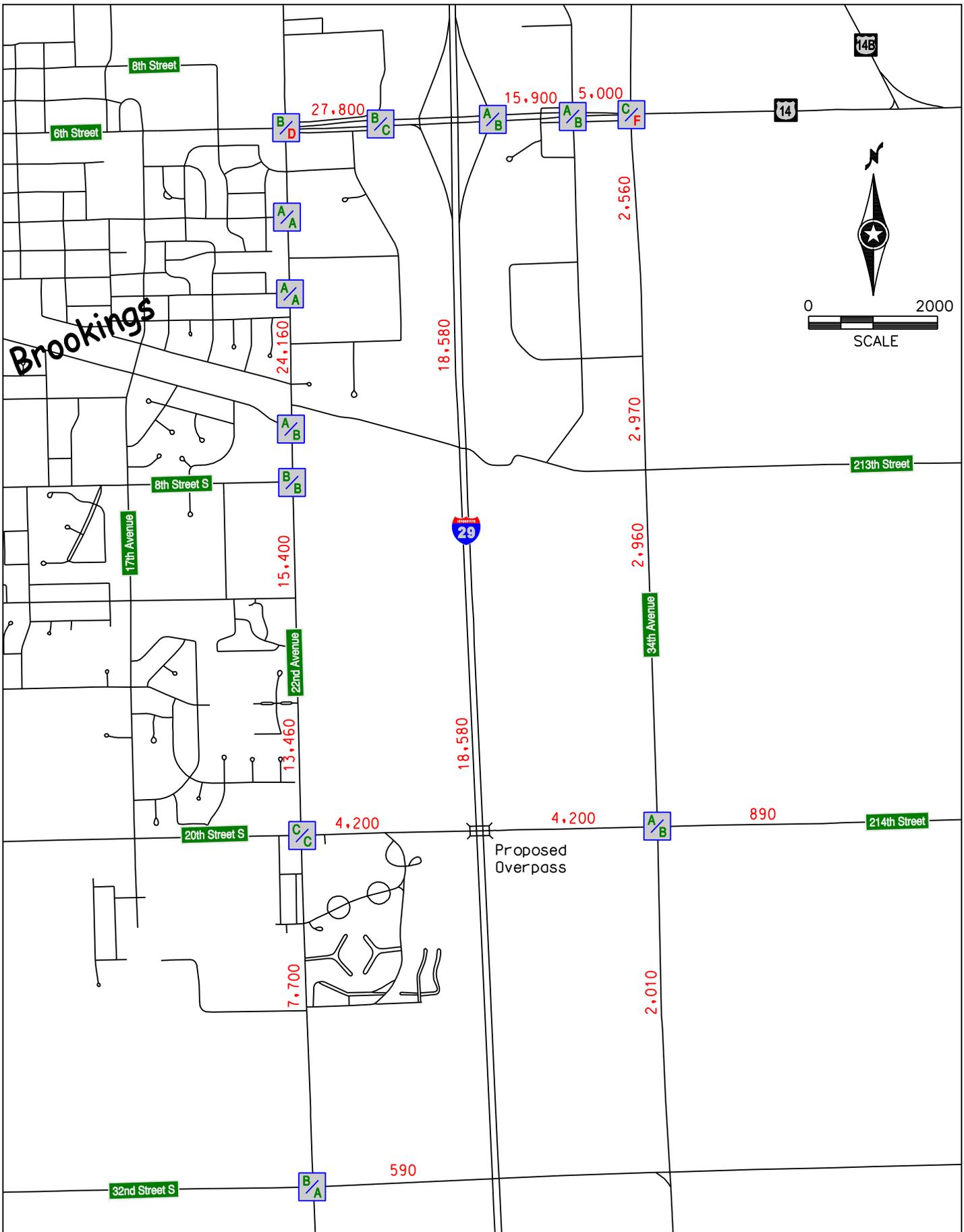
Brookings, SD

Figure  
1



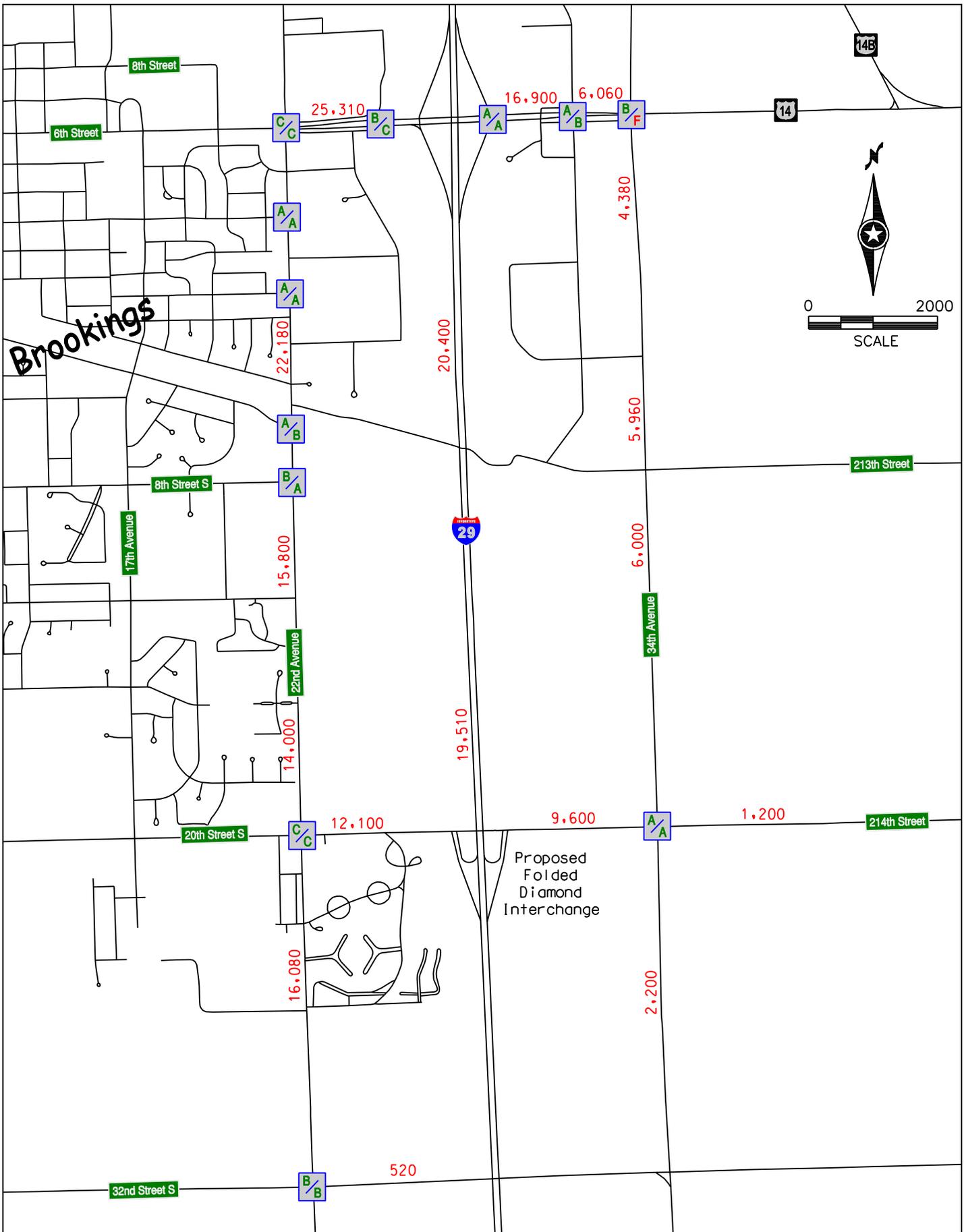
Alternative 2  
 2035 Volumes, Intersection Improvements Only  
 Brookings Area Master Transportation Plan  
 Brookings, SD

Figure  
 2



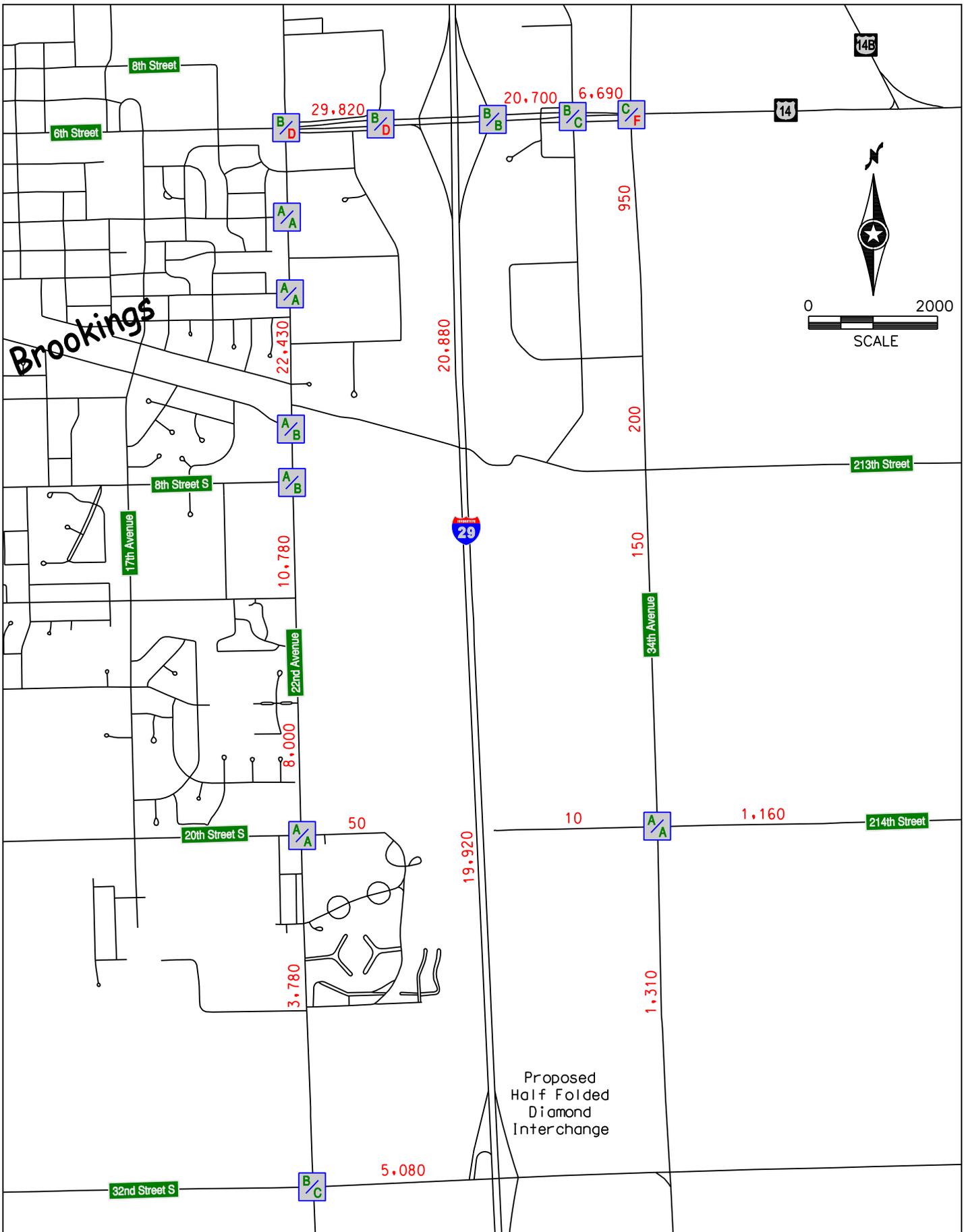
**Alternative 3**  
**2035 Volumes, With 20th Street S. Overpass**  
 Brookings Area Master Transportation Plan      Brookings, SD

Figure  
**3**



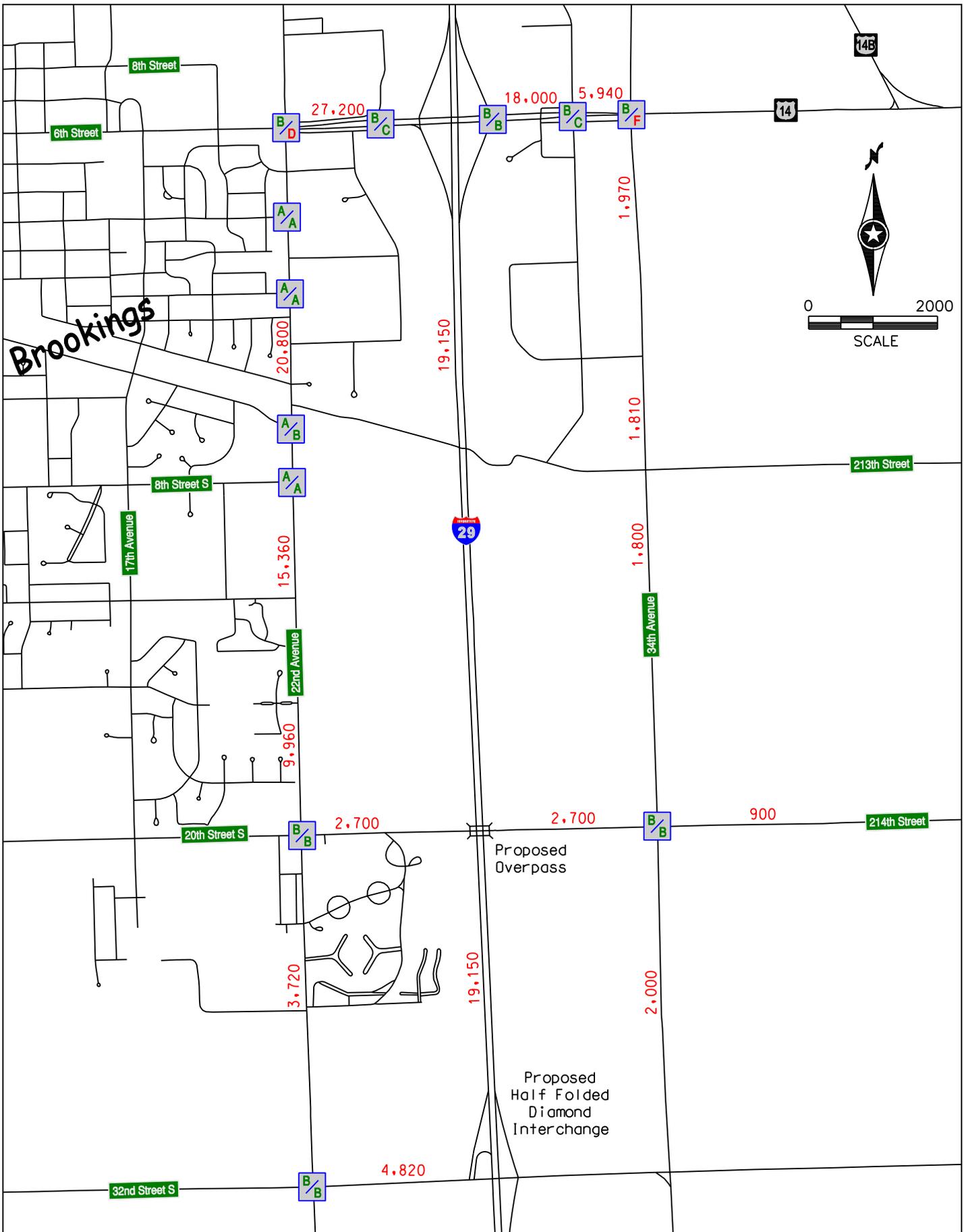
Alternative 4  
 2035 Volumes, With 20th Street S. Interchange  
 Brookings Area Master Transportation Plan  
 Brookings, SD

Figure  
 4

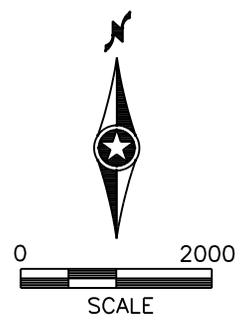


**Alternative 5**  
**2035 Volumes, With 32nd Street S. Interchange**  
 Brookings Area Master Transportation Plan      Brookings, SD

Figure  
**5**



Brookings



Alternative 6  
 2035 Volumes, With 32nd St. S. Interchange & 20th St. S. Overpass  
 Brookings Area Master Transportation Plan Brookings, SD

Figure  
 6

# Appendix Part 7—Project Cost Estimates

*June, 2011*



**SOUTH DAKOTA  
DEPARTMENT OF  
TRANSPORTATION**

**CITY OF BROOKINGS**

**CITY OF AURORA**

**BROOKINGS COUNTY**

**HDR**



## PROJECT COST ESTIMATE

### BROOKINGS AREA MASTER TRANSPORTATION PLAN

MAIN AVENUE, 20TH STREET SOUTH TO 32ND STREET SOUTH

SCOPE: Provide 4-lane arterial street with median, upgrade utilities and traffic control

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LS	1	\$260,000	\$260,000
2	REMOVALS	FT	5,280	\$10	\$52,800
3	BORROWED FILL	CY	75,000	\$5	\$375,000
4	CONCRETE PAVEMENT, C&G	FT	5,280	\$380	\$2,006,400
5	SODDING, TOPSOIL	FT	5,280	\$9	\$47,520
6	LANDSCAPING	FT	5,280	\$12	\$63,360
7	TRAFFIC CONTROL	FT	5,280	\$3	\$15,840
8	EROSION CONTROL	FT	5,280	\$15	\$79,200
9	STORM SEWER	FT	5,280	\$95	\$501,600
10	WATERMAIN	FT	5,280	\$70	\$369,600
11	SANITARY SEWER	FT	5,280	\$125	\$660,000
12	PERMANENT SIGNING	FT	5,280	\$2	\$10,560
13	PERMANENT MARKING	FT	5,280	\$11	\$58,080
14	LIGHTING	FT	5,280	\$30	\$158,400
15	TRAFFIC SIGNALS	LS	1	\$65,000	\$65,000
16	PERMANENT ROW EASEMENTS	SF	180,000	\$2	\$360,000
17	TEMPORARY ROW EASEMENTS	SF	100,000	\$0	\$30,000
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$5,113,360</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$818,138</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$5,931,498</b>

## PROJECT COST ESTIMATE

### BROOKINGS AREA MASTER TRANSPORTATION PLAN

MEDARY AVE., 6TH ST. TO 3RD ST., WITH BIKE PATH FROM 3RD ST. TO 12TH ST.

SCOPE: Provide 3-lane collector street, upgrade utilities and traffic control

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LS	1	\$60,000	\$60,000
2	REMOVALS	FT	1,320	\$27	\$35,640
3	CONCRETE PAVEMENT, C&G, SIDEWALK	FT	1,320	\$255	\$336,600
4	INSTALL BIKE PATH, 3RD TO 12TH	FT	5,500	\$35	\$192,500
5	SODDING, TOPSOIL	FT	1,320	\$7	\$9,240
6	LANDSCAPING	FT	1,320	\$3	\$3,960
7	TRAFFIC CONTROL	FT	1,320	\$20	\$26,400
8	EROSION CONTROL	FT	1,320	\$8	\$10,560
9	STORM SEWER	FT	1,320	\$75	\$99,000
10	WATERMAIN	FT	1,320	\$50	\$66,000
11	SANITARY SEWER	FT	1,320	\$100	\$132,000
12	PERMANENT SIGNING	FT	1,320	\$4	\$5,280
13	PERMANENT MARKING	FT	1,320	\$11	\$14,520
14	LIGHTING	FT	1,320	\$30	\$39,600
15	6TH STREET SIGNAL UPGRADE	LS	1	\$25,000	\$25,000
16	TRAFFIC SIGNALS AT 3RD STREET	LS	1	\$65,000	\$65,000
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$1,121,300</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$179,408</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$1,300,708</b>

# PROJECT COST ESTIMATE

## BROOKINGS AREA MASTER TRANSPORTATION PLAN

22ND AVENUE, 6TH STREET TO 12TH STREET SOUTH

SCOPE: Provide 5-lane arterial street with utility and traffic control upgrades

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LS	1	\$300,000	\$300,000
2	REMOVALS	FT	7,000	\$43	\$301,000
3	CONCRETE PAVEMENT, C&G, SIDEWALK	FT	7,000	\$350	\$2,450,000
4	SODDING, TOPSOIL	FT	7,000	\$8	\$56,000
5	LANDSCAPING	FT	7,000	\$3	\$21,000
6	TRAFFIC CONTROL	FT	7,000	\$15	\$105,000
7	EROSION CONTROL	FT	7,000	\$8	\$56,000
8	STORM SEWER	FT	7,000	\$85	\$595,000
9	WATERMAIN	FT	7,000	\$60	\$420,000
10	SANITARY SEWER	FT	7,000	\$100	\$700,000
11	PERMANENT SIGNING	FT	7,000	\$3	\$21,000
12	PERMANENT MARKING	FT	7,000	\$11	\$77,000
13	LIGHTING	FT	7,000	\$30	\$210,000
14	SIGNAL UPGRADES	EA	4	\$65,000	\$260,000
15	RAILROAD LIABILITY INSURANCE	LS	1	\$15,000	\$15,000
16	PERMANENT ROW EASEMENTS	SF	50,000	\$8	\$400,000
17	TEMPORARY ROW EASEMENTS	SF	15,000	\$1	\$15,000
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$6,002,000</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$960,320</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$6,962,320</b>

# PROJECT COST ESTIMATE

## BROOKINGS AREA MASTER TRANSPORTATION PLAN

6TH ST., 22ND AVE. TO I-29

SCOPE: Provide 4-lane arterial street with median, utility and traffic control upgrades

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LS	1	\$95,000	\$95,000
2	REMOVALS	FT	1,970	\$45	\$88,650
3	CONCRETE PAVEMENT, C&G, SIDEWALK	FT	1,970	\$380	\$748,600
4	SODDING, TOPSOIL	FT	1,970	\$9	\$17,730
5	LANDSCAPING	FT	1,970	\$12	\$23,640
6	TRAFFIC CONTROL	FT	1,970	\$25	\$49,250
7	EROSION CONTROL	FT	1,970	\$15	\$29,550
8	STORM SEWER	FT	1,970	\$95	\$187,150
9	WATERMAIN	FT	1,970	\$70	\$137,900
10	SANITARY SEWER	FT	1,970	\$125	\$246,250
11	PERMANENT SIGNING	FT	1,970	\$4	\$7,880
12	PERMANENT MARKING	FT	1,970	\$11	\$21,670
13	LIGHTING	FT	1,970	\$30	\$59,100
14	SIGNAL UPGRADES	EA	2	\$65,000	\$130,000
15	PERMANENT ROW EASEMENTS	SF	5,000	\$8	\$40,000
16	TEMPORARY ROW EASEMENTS	SF	1,000	\$1	\$1,000
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$1,883,370</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$301,339</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$2,184,709</b>

# PROJECT COST ESTIMATE

## BROOKINGS AREA MASTER TRANSPORTATION PLAN

8TH ST. S., MAIN AVE. TO 22ND AVE.

SCOPE: Provide 5-lane arterial street with utility and traffic control upgrades

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LS	1	\$300,000	\$300,000
2	REMOVALS	FT	8,000	\$28	\$224,000
3	CONCRETE PAVEMENT, C&G, SIDEWALK	FT	8,000	\$400	\$3,200,000
4	BORROWED FILL	CY	30,000	\$5	\$150,000
5	SODDING, TOPSOIL	FT	8,000	\$9	\$72,000
6	LANDSCAPING	FT	8,000	\$3	\$24,000
7	TRAFFIC CONTROL	FT	8,000	\$12	\$96,000
8	EROSION CONTROL	FT	8,000	\$12	\$96,000
9	STORM SEWER	FT	8,000	\$75	\$600,000
10	WATERMAIN	FT	8,000	\$40	\$320,000
11	SANITARY SEWER	FT	8,000	\$50	\$400,000
12	PERMANENT SIGNING	FT	8,000	\$3	\$24,000
13	PERMANENT MARKING	FT	8,000	\$11	\$88,000
14	LIGHTING	FT	8,000	\$30	\$240,000
15	SIGNAL UPGRADES	EA	2	\$65,000	\$130,000
16	PERMANENT ROW EASEMENTS	SF	4,000	\$8	\$32,000
17	TEMPORARY ROW EASEMENTS	SF	1,000	\$1	\$1,000
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$5,997,000</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$959,520</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$6,956,520</b>

**PROJECT COST ESTIMATE**

**BROOKINGS AREA MASTER TRANSPORTATION PLAN**

20TH ST. S., MAIN AVE. TO 22ND AVE.

SCOPE: Purchase protective right-of-way

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	PERMANENT ROW EASEMENTS	SF	225000	\$8	\$1,800,000
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$1,800,000</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$288,000</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$2,088,000</b>

# PROJECT COST ESTIMATE

## BROOKINGS AREA MASTER TRANSPORTATION PLAN

34TH AVE., 8TH ST. S. TO SD 324

SCOPE: Provide 3-lane collector with utilities

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LS	1	\$355,000	\$355,000
2	REMOVALS	FT	12,370	\$5	\$61,850
3	CONCRETE PAVEMENT, C&G, SIDEWALK	FT	12,370	\$190	\$2,350,300
4	BORROWED FILL	CY	40,000	\$5	\$200,000
5	SODDING, TOPSOIL	FT	12,370	\$10	\$123,700
6	TRAFFIC CONTROL	FT	12,370	\$3	\$37,110
7	EROSION CONTROL	FT	12,370	\$15	\$185,550
8	STORM SEWER	FT	12,370	\$95	\$1,175,150
9	WATERMAIN	FT	12,370	\$70	\$865,900
10	SANITARY SEWER	FT	12,370	\$125	\$1,546,250
11	PERMANENT SIGNING	FT	12,370	\$2	\$24,740
12	PERMANENT MARKING	FT	12,370	\$11	\$136,070
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$7,061,620</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$1,129,859</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$8,191,479</b>

# PROJECT COST ESTIMATE

## BROOKINGS AREA MASTER TRANSPORTATION PLAN

17TH AVE./12TH ST. S. INTERSECTION IMPROVEMENTS

SCOPE: Provide turn lanes, traffic signals

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LS	1	\$20,000	\$20,000
2	REMOVALS	SY	6,500	\$5	\$32,500
3	CONCRETE PAVEMENT, C&G, SIDEWALK	SY	4,700	\$40	\$188,000
4	BORROWED FILL	CY	2,000	\$5	\$10,000
5	SODDING, TOPSOIL	SY	1,800	\$3	\$5,400
6	LANDSCAPING	LS	1	\$2,000	\$2,000
7	TRAFFIC CONTROL	LS	1	\$7,000	\$7,000
8	EROSION CONTROL	LS	1	\$3,000	\$3,000
9	STORM SEWER	LS	1	\$5,000	\$5,000
10	WATERMAIN	LS	1	\$10,000	\$10,000
11	SANITARY SEWER	LS	1	\$10,000	\$10,000
12	PERMANENT SIGNING	LS	1	\$2,000	\$2,000
13	PERMANENT MARKING	LS	1	\$12,000	\$12,000
14	TRAFFIC SIGNALS & LIGHTING	LS	1	\$65,000	\$65,000
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$371,900</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$59,504</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$431,404</b>

# PROJECT COST ESTIMATE

## BROOKINGS AREA MASTER TRANSPORTATION PLAN

SDSU AREA IMPROVEMENTS

SCOPE: Add pedestrian facilities, intersection improvements

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LS	1	\$20,000	\$20,000
2	AREA IMPROVEMENTS	LS	1	\$300,000	\$300,000
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$320,000</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$51,200</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$371,200</b>

# PROJECT COST ESTIMATE

## BROOKINGS AREA MASTER TRANSPORTATION PLAN

32nd Ave., US 14B to 11th St.

SCOPE: Provide 3-lane collector with utilities

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LS	1	\$85,000	\$85,000
2	REMOVALS	FT	2,600	\$5	\$13,000
3	CONCRETE PAVEMENT, C&G, SIDEWALK	FT	2,600	\$250	\$650,000
4	BORROWED FILL	CY	40,000	\$5	\$200,000
5	SODDING, TOPSOIL	FT	2,600	\$10	\$26,000
6	TRAFFIC CONTROL	FT	2,600	\$2	\$5,200
7	EROSION CONTROL	FT	2,600	\$15	\$39,000
8	STORM SEWER	FT	2,600	\$65	\$169,000
9	WATERMAIN	FT	2,600	\$60	\$156,000
10	SANITARY SEWER	FT	2,600	\$100	\$260,000
11	PERMANENT SIGNING	FT	2,600	\$2	\$5,200
12	PERMANENT MARKING	FT	2,600	\$11	\$28,600
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$1,637,000</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$261,920</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$1,898,920</b>

# PROJECT COST ESTIMATE

## BROOKINGS AREA MASTER TRANSPORTATION PLAN

Railroad Grade Separation, 22nd Ave.

SCOPE: Structure costs only

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LS	1	\$465,000	\$465,000
2	STRUCTURE	SF	72,800	\$120	\$8,736,000
3	RAILROAD LIABILITY INSURANCE	LS	1	\$15,000	\$15,000
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$9,216,000</b>
<b>CONTINGENCY (30%)</b>					<b>\$2,764,800</b>
<b>TOTAL COST ESTIMATE</b>					<b>\$11,980,800</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$1,916,928</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$13,897,728</b>

# PROJECT COST ESTIMATE

## BROOKINGS AREA MASTER TRANSPORTATION PLAN

WESTERN AVE., 8TH ST. S. TO SINAI RD.

SCOPE: Provide 3-lane collector with utilities

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LS	1	\$535,000	\$535,000
2	REMOVALS	FT	15,840	\$8	\$126,720
3	CONCRETE PAVEMENT, C&G, SIDEWALK	FT	15,840	\$250	\$3,960,000
4	BORROWED FILL	CY	150,000	\$5	\$750,000
5	SODDING, TOPSOIL	FT	15,840	\$10	\$158,400
6	LANDSCAPING	FT	15,840	\$3	\$47,520
7	TRAFFIC CONTROL	FT	15,840	\$4	\$63,360
8	EROSION CONTROL	FT	15,840	\$20	\$316,800
9	STORM SEWER	FT	15,840	\$90	\$1,425,600
10	WATERMAIN	FT	15,840	\$65	\$1,029,600
11	SANITARY SEWER	FT	15,840	\$100	\$1,584,000
12	PERMANENT SIGNING	FT	15,840	\$3	\$47,520
13	PERMANENT MARKING	FT	15,840	\$11	\$174,240
14	LIGHTING	FT	15,840	\$30	\$475,200
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$10,693,960</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$1,711,034</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$12,404,994</b>

# PROJECT COST ESTIMATE

## BROOKINGS AREA MASTER TRANSPORTATION PLAN

32ND ST. S./22ND AVE. INTERSECTION

SCOPE: Provide turn lanes, traffic signals

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LS	1	\$20,000	\$20,000
2	REMOVALS	SY	6,500	\$5	\$32,500
3	CONCRETE PAVEMENT, C&G, SIDEWALK	SY	4,700	\$40	\$188,000
4	BORROWED FILL	CY	2,000	\$5	\$10,000
5	SODDING, TOPSOIL	SY	1,800	\$3	\$5,400
6	LANDSCAPING	LS	1	\$2,000	\$2,000
7	TRAFFIC CONTROL	LS	1	\$7,000	\$7,000
8	EROSION CONTROL	LS	1	\$3,000	\$3,000
9	STORM SEWER	LS	1	\$5,000	\$5,000
10	WATERMAIN	LS	1	\$10,000	\$10,000
11	SANITARY SEWER	LS	1	\$10,000	\$10,000
12	PERMANENT SIGNING	LS	1	\$2,000	\$2,000
13	PERMANENT MARKING	LS	1	\$12,000	\$12,000
14	TRAFFIC SIGNALS & LIGHTING	LS	1	\$65,000	\$65,000
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$371,900</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$59,504</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$431,404</b>

# PROJECT COST ESTIMATE

## BROOKINGS AREA MASTER TRANSPORTATION PLAN

US 14B INTERSECTIONS @ WESTERN, STADIUM, 16TH AVENUES

SCOPE: Provide turn lanes, traffic signals

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	MOBILIZATION	LS	1	\$55,000	\$55,000
2	REMOVALS	SY	19,500	\$5	\$97,500
3	CONCRETE PAVEMENT, C&G, SIDEWALK	SY	14,100	\$40	\$564,000
4	BORROWED FILL	CY	6,000	\$5	\$30,000
5	SODDING, TOPSOIL	SY	5,400	\$3	\$16,200
6	LANDSCAPING	LS	1	\$6,000	\$6,000
7	TRAFFIC CONTROL	LS	1	\$21,000	\$21,000
8	EROSION CONTROL	LS	1	\$9,000	\$9,000
9	PERMANENT SIGNING	LS	1	\$6,000	\$6,000
10	PERMANENT MARKING	LS	1	\$36,000	\$36,000
11	LIGHTING	FT	3,500	\$30	\$105,000
12	TRAFFIC SIGNALS	EA	1	\$65,000	\$65,000
<b>CONSTRUCTION COST ESTIMATE</b>					<b>\$1,010,700</b>
<b>ENGINEERING COSTS - DESIGN AND CONSTRUCTION (16%)</b>					<b>\$161,712</b>
<b>GRAND TOTAL COST ESTIMATE</b>					<b>\$1,172,412</b>

# Appendix Part 8—Traffic Operations

*June, 2011*



**SOUTH DAKOTA  
DEPARTMENT OF  
TRANSPORTATION**

**CITY OF BROOKINGS**

**CITY OF AURORA**

**BROOKINGS COUNTY**

**HDR**

