November 19, 2007

Rigby / Jefferson County Transportation Plan

KELLER ASSOCIATES

105085/07-863

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PROFESSIONAL ENGINEER
REGISTERED
8165
11/20/07
STATE OF IDAHO
THEODORE A. REYNEN

KELLER ASSOCIATES

105085/07-863

JEFFERSON COUNTY RESOLUTION NO. 08-02
CITY OF RIGBY RESOLUTION NO. 08-135

WHEREAS, a safe and efficient transportation system is vital to the City of Rigby and Jefferson County;

WHERAS; an important component of a safe and efficient transportation system is a transportation plan;

WHEREAS, a joint and cooperative venture between the City of Rigby and Jefferson County was established for these purposes;

WHEREAS, a document titled Jefferson County Transportation Plan has been prepared;

WHEREAS, the Transportation Plan will serve as an official document of Jefferson County and the City of Rigby;

NOW THEREFORE BE IT RESOLVED by the Board of County Commissioners of Jefferson County, and the Mayor and Council of the City of Rigby to approve the Transportation Plan to serve as the official plan for transportation of the two entities in a cooperative manner.

ADOPTED by the Board of county Commissioners of Jefferson County, Idaho, this 28th day of JANUARY, 2008.

ADOPTED by the Mayor and Council of the City of Rigby, Idaho, this 19 day of February, 2008.

Ron Baxter
Chairman of the Board of Commissioners

Commissioner Brett Olaveson

Commissioner Tad Hegsted

Christine Boulter
Jefferson County Clerk

Ryan Brown
Mayor of the City of Rigby

ATTEST:

Jeannie Kerbs
Rigby City Clerk

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CHAPTER 1 INTRODUCTION

In 2005, the City of Rigby, as the primary sponsor, received a grant for the development of the County-wide Transportation Plan presented in this document. The grant was funded and administered by the Local Highway Technical Assistance Council (LHTAC). The Planning Area includes all of Jefferson County, including the cities of Rigby, Roberts, Menan, Lewisville, and Ririe.

One of the key reasons prompting the City of Rigby to peruse funding for this study was improvements to US 20 by the Idaho Transportation Department (ITD) in the vicinity of Rigby. US 20 is the primary roadway serving Rigby and eastern Jefferson County. In 2003 the Idaho Transportation Board (IT Board) approved a program of access improvements to US 20 that included construction of an interchange at County Line Road and closing the at-grade intersection at Holbrook Road (200 North).

At that time the IT Board deferred construction of a new interchange south of Rigby; at the same time encouraging the City of Rigby and Jefferson County to prepare a county-wide transportation plan that would evaluate circulation and US 20 access needs in southeast Jefferson County. This plan is a result of that encouragement.

This process also included preparation of the South Rigby Interchange Study as a separate document (included as Attachment A). This study evaluates the need for and traffic related effects of a full interchange south of Rigby within the context of county-wide growth and traffic circulation needs.

The Transportation Plan presents an evaluation of the existing transportation network in Rigby/Jefferson County based on an inventory of the existing roadway system. Accident data was studied for all roadways within the county. Average Daily Traffic data as available from Rigby/Jefferson County and the Idaho Transportation Department was assembled and evaluated. Structured discussions with county citizens and officials were held to gain and understanding of problem areas within the transportation system and the challenges facing the Rigby/Jefferson County road & bridge departments in maintaining and improving the system. Collectively, these data were the basis for improvements proposed in this report. The Rigby/Jefferson County Transportation Plan establishes both a 5-year and long range Capital Improvement Program (CIP) responding to these needs.

Description of Jefferson County

Jefferson County is located in eastern Idaho about 30 miles west of Wyoming at its easternmost point. Jefferson County lies between Madison County (Rexburg) on the north and Bonneville County (Idaho Falls) on the south. See Figure 1. It has an area of 1,095 square miles; measuring a maximum of 54 miles east to west and 30 miles north to south.

FIGURE 1

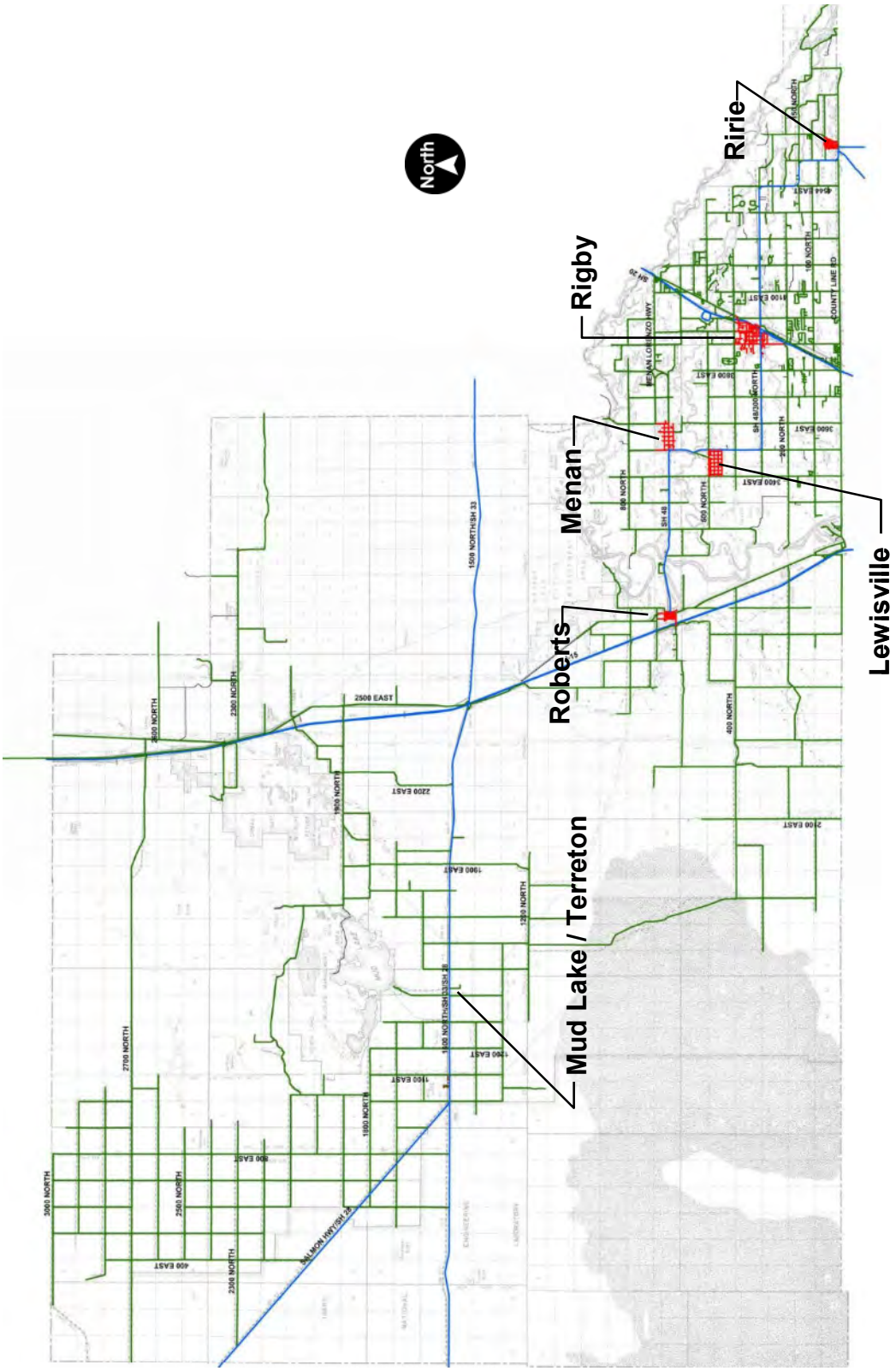


FIGURE 1
Jefferson County Transportation Plan
Study Area

About 51 percent of Jefferson County is public lands. Although Jefferson County is vast, most of the population and economic activity is located in the southeast 14 percent (about 150 sq miles) of the County. This area is bounded by I-15 on the west, the Snake River (county line) on the north, and County Line Road on the south.

Social-Economic Characteristics of Jefferson County

Table 1 presents a social-economic profile of Jefferson County extracted from US Census Data for the years 1990 and 2000. Updated population estimates for 2005 are shown along with the percent of growth from 2000 to 2005. The estimated 2005 population of Jefferson County is 21,580 – an increase of about 13 percent since 2000. The growth of Jefferson County during this period ranks 7th of all of the counties in Idaho. The estimated 2005 population of Rigby is 3,245 a growth of about 8 percent since 2000.

The growth trend in Jefferson County started in the 1990's, with the amount of housing starts over a 10 year period increasing 60 percent from 1990 to 2000. The 2000 Census reported 6,287 housing units in Jefferson County, of which 93 percent were occupied.

Employees residing in Jefferson County increased 26 percent from 1990 to 2000 period, to a total of about 8,300 persons. Agricultural and other land resource related employees dropped significantly. Office, retail, and service positions increased, reflecting the urbanization of the area and employment opportunities in Idaho Falls and Rexburg. Employment in wholesale and retail trade declined in Jefferson County. Employment in the construction industry increased 27 percent. A comparison of Jefferson County employees vs. employment within Jefferson County indicates a growing residential community that increasingly travels outside of the county for work and services.

Table 1
Jefferson County Transportation Plan
Social Economic Profile of Jefferson County

Description	Jefferson County 1990	%	2000	%	Percent Change 1990 to 2000
Population	**16,543**		**19,155**		**16%**
Preschool < 5	1,652	10	1,711	9	4%
School Age 5 -19	5,663	34	5,899	31	4%
Adult 20 - 64	7,606	46	9,770	51	28%
Senior > 64	1,622	10	1,775	9	9%
Dwelling Units	**5,383**		**6,287**		**17%**
Occupied	4,871	90	5,901	84	21%
Vacant	482	9	386	16	-20%
Seasonal/Recreation	30	1	53	3	77%
Housing Built in Last 10 Years	901	17	1,438	23	60%
Residence Location Five Years Ago					
Same House	9,447	63	10,699	62	13%
Same County	2,290	15	2,721	16	19%
Outside County	3,162	21	3,803	22	20%
Employed Population	**6,582**		**8,289**		**26%**
Management/Professional	2,244	34	2,520	30	12%
Sales and Office	690	10	1,965	24	185%
Production/Transportation	582	9	1,379	17	137%
Service	907	14	1,093	13	21%
Construction	476	7	908	11	91%
Farming, Fishing Forestry	1,683	26	424	5	-75%
Employment - Selected Industries					
Education, Health and Social Services	1,507	23	1,600	19	6%
Construction/Manufacturing	1,256	19	1,600	19	27%
Wholesale/Retail Trade	1,436	22	1,400	17	-3%
Agriculture, Forestry, Fishing, Hunting	1,016	15	1,000	12	-2%

2005 Population Update

Location	2005 Pop.	Increase '00 to '05
Hamer	12	0.0%
Lewisville	497	6.4%
Menan	726	2.7%
Mud Lake	270	0.0%
Rigby	3,245	8.2%
Ririe (pt.)	507	-2.5%
Roberts	665	2.8%
Balance of Jefferson County	15,658	15.7%
Jefferson County Total	**21,580**	**12.7%**

CHAPTER 2 Rigby/Jefferson County Highway System

Jefferson County is served by five US and State Highways with a total combined mileage of 73.7 miles. See Figure 2. Brief descriptions follow:

Interstate Route 15 (31.2 miles) - is the primary north-south corridor through eastern Idaho. There are three interchanges within Jefferson County –SH 48, SH 33, and Exit 150 serving the community of Hammer. The primary role of I-15 is the shipment of packaged vegetables out of Jefferson County. For the first 10 miles, I-15 lies on the western edge of the more heavily developed southeast area of Jefferson County. However, in this area as well as the rest of Jefferson County the presence of I-15 has not spawned significant growth as is often associated with Interstate Highways. This transportation study found no need to include comments related to I-15.

US 20 (8.3 miles) – is the most heavily traveled roadway within Jefferson County. It connects all activity centers in eastern Idaho starting at Idaho Falls northward (Idaho Falls, Rigby, Rexburg, St Anthony, Ashton, West Yellowstone). Many people who live or work in Bonneville, Jefferson, and Madison Counties commute via US 20 daily. US 20 passes through the populated southeast section of Jefferson County where access to US 20 is vital to the transportation system. One of the primary objectives of this study is to evaluate access to US 20 in the context of the existing and forecast needs of the Jefferson County transportation system.

SH 48 (24.1 miles) – is located almost wholly within Jefferson County. Beginning at I-15 at Roberts, it passes Menan, Lewisville, Rigby and Ririe, before ending at US 26. SH 48 is the "Main Street" of Jefferson County. As such, planning for county transportation needs cannot be separated from planning for the future of SH 48. This study will therefore make recommendations regarding the integration of SH 48 into the county transportation plans. In addition, ITD District 6 has joined this study, providing funding for completion of a separate SH 48 Corridor Plan. That document will provide ITD with additional details pertinent to a state highway corridor plan. However, fundamental needs of the county and state highway systems will be derived from the same planning framework.

SH 33 (35.6 miles) – runs directly east-west through the middle of the county, passing Mud Lake and Terreton, the largest community outside of southeast Jefferson County. Much of the traffic is related to the Idaho National Laboratory to the west and Rexburg to the east. The SH 33 corridor study prepared by ITD District 6 calls for three types of improvements along SH 33 within Jefferson County:

- Urban Improvements MP 44-48; Manage and delineate access points in response to increased accident frequency through Mud Lake and Terreton.

- Modernization MP 62; Reconstruct a railroad crossing including signals, gates, and a new driving surface.
- Modernization MP 38-42, 54-73; Increase shoulder width to avoid vehicle contact with jagged lava flows and larger rocks.

SH 28 (13.0 miles) – comes from the northwest, joining SH 33 west of Mud Lake. The corridor study prepared by ITD District 6 does not suggest improvements for SH 28 within Jefferson County.

County Road System

There are approximately 720 miles of roadways under the jurisdiction of Jefferson County. The number of miles of county roads by surface type is shown in Table 2 below. In addition to the County roads, there are 74 miles of State jurisdiction roads as described above and 46 miles of roads under community jurisdiction.

TABLE 2
Jefferson County Transportation Plan
Roadway Miles by Surface Type (2006)

Surface Type	Miles	Percent
Jefferson County		
Unimproved	13	2%
Graded &Drained Earth	1	-%
Graded & Drained Gravel	289	40%
Less Than One Inch Bitumen	0	0%
Low Bitumen	358	50%
High Bitumen	60	8%
Portland Cement	0	0%
Total Miles – Jefferson County	720	
Other Communities	46	
US and State Highways	74	
Total Roadway Miles	840	
Source: ITD Road Miles by County By Surface Type, 2006		
City Road Miles from Jefferson County GIS Files		

Only 2 percent of the roadways under Jefferson County jurisdiction are unimproved. About 58% of the roadways have a bituminous surface. The remaining 40% are graded and drained gravel.

The 46 miles of roadways located within communities are distributed as follows:

City of Roberts - 4.8 roadway miles
City of Menan - 8.2 roadway miles
City of Lewisville - 9.3 roadway miles
City of Rigby - 18.2 roadway miles
City of Ririe - 6.1 roadway miles

All of the community roadways have a bituminous surface.

Most of the county roadways are on a north-south, east-west one-mile grid pattern. Cities generally follow the same grid pattern. The most notable exceptions are I-15, US 20, and Yellowstone Highway. Both US 20 and Yellowstone Highway parallel the Eastern Idaho Railroad in a north-eastern heading. The grid is incomplete, with large areas of western Jefferson County lacking roads of any type. This is due to the presence of the Idaho National Laboratory (INL), BLM land including wildlife refuges, and the general unsuitable nature of the land for productive purposes.

More recent subdivisions within Jefferson County and Rigby have tended to be built within the mile grid "squares" with access to the mile grid. There has been no coordinated effort to develop sub-mile through streets internal to the mile squares.

FIGURE 2

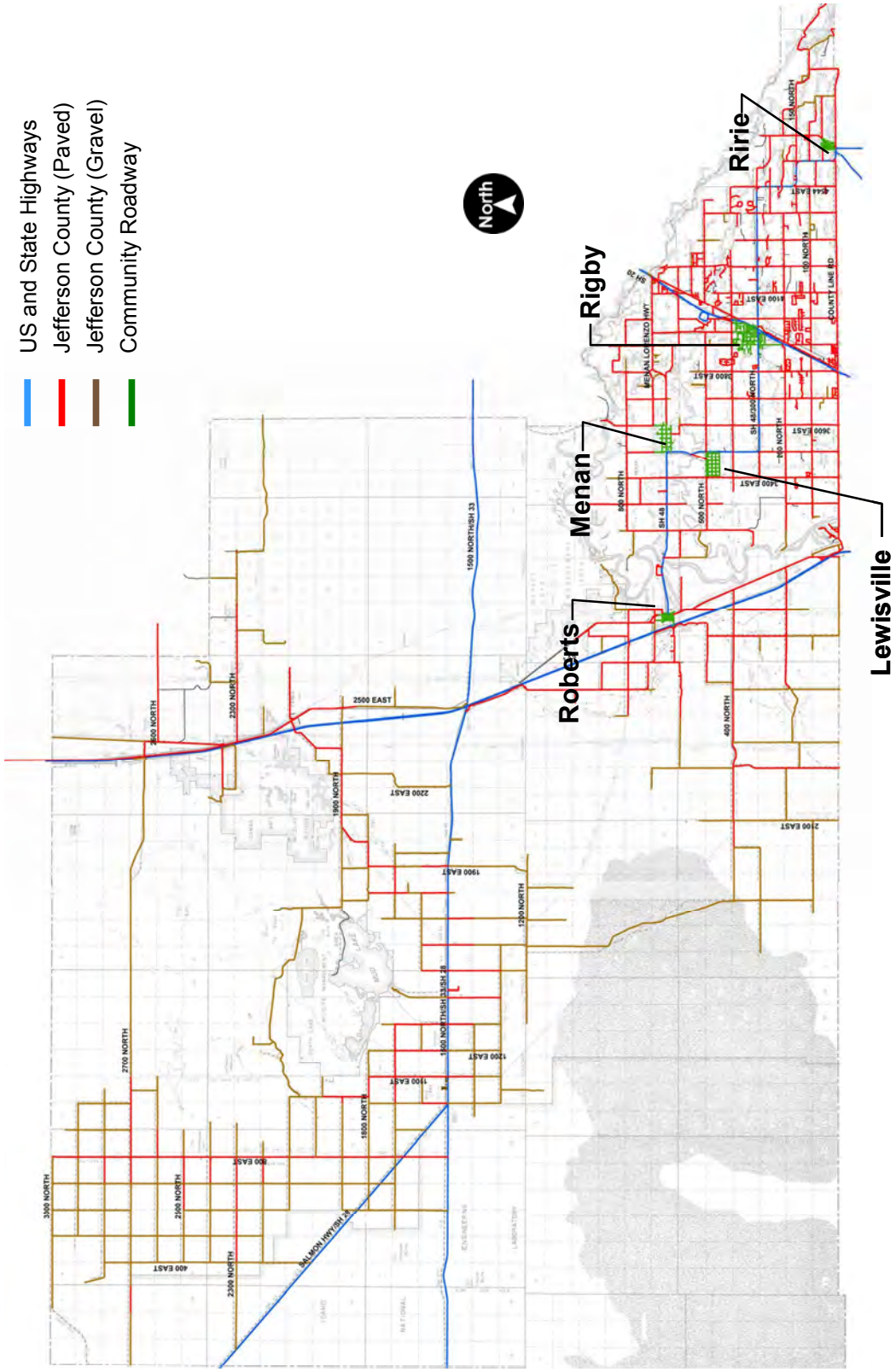


FIGURE 2
Jefferson County Transportation Plan
Roadways by Jurisdiction

Travel Patterns

Travel patterns vary considerably across Jefferson County. In the 86 percent of the area west of I-15, travel patterns are that of sparse rural development with trips in and out of the area to obtain goods and services located along US 20 in Rigby, Idaho Falls, and Rexburg. There are local trips to Mud Lake / Terreton, particularly to the Terreton Elementary School and the West Jefferson High School. SH 33 in the only continuous east-west route through western Jefferson County. Traffic on SH 33 is generally headed to INL or further west via connection to US 20.

In the populated southeast Jefferson County there is a mix of traffic, with rural/farm related traffic characteristics giving way to increased residential development. Most of the employment is located in this section as well as a county high school, middle schools, and the business and commercial opportunities in Rigby.

The smaller communities of Roberts, Menan, Louisville, and Ririe have lost most of their commercial activities and primarily residential in nature. The primary exception is a produce shipper located just outside of Lewisville, and a potato shipper located in Menan. Ririe is actively seeking to become a satellite commercial center. School traffic is sited as the largest concern within these communities.

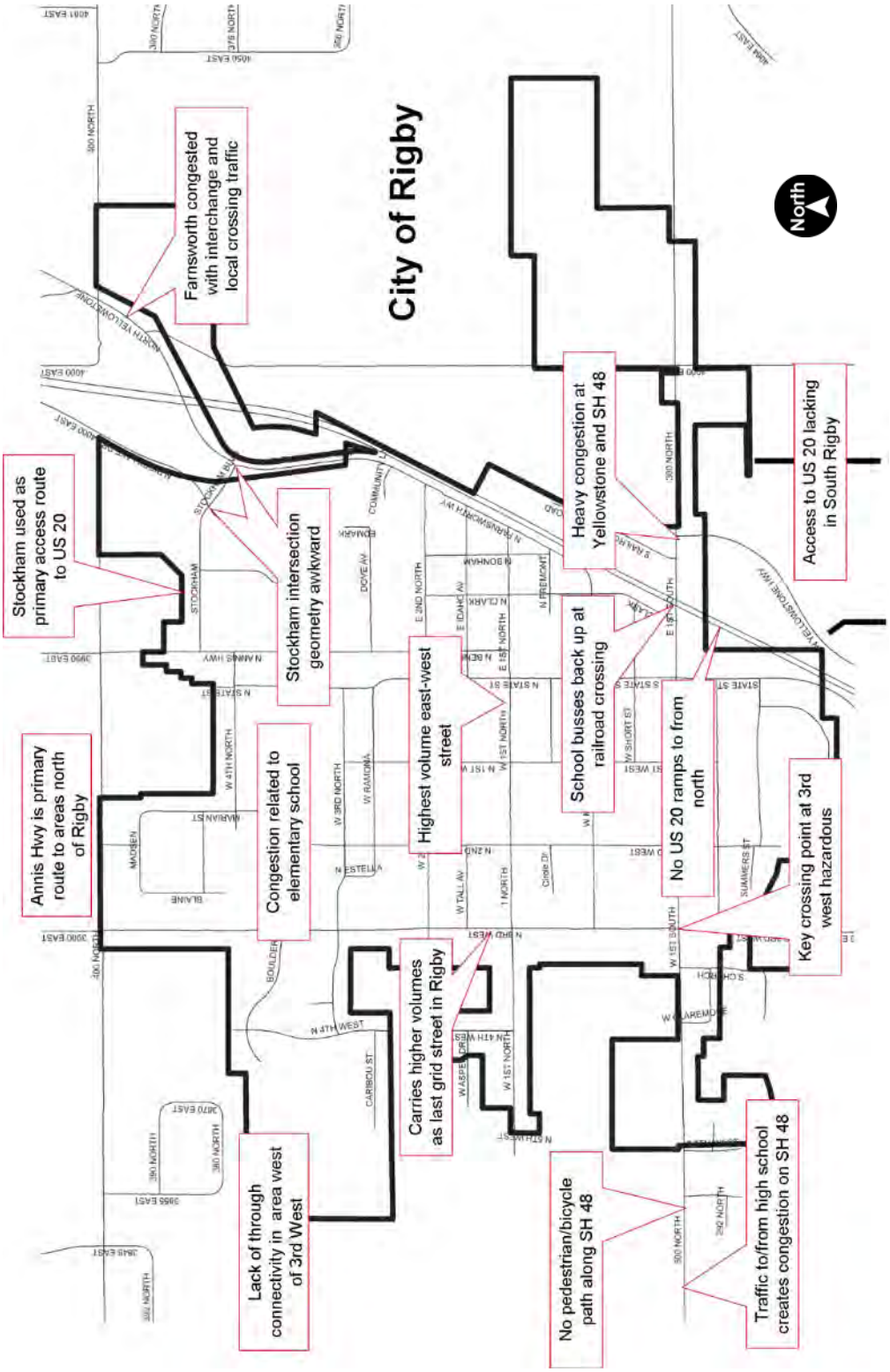
Most of the traffic occurring between these communities occurs on SH 48. SH 48 connects all of the communities in southeastern Jefferson County with both I-15 and US 20. SH 48 offers higher speed travel. Except in the vicinity of Rigby, SH 48 has no stop or signal control for through traffic.

The above discussion generally describes east-west traffic flow within the County. Much of the newer development are residences for people working in the Idaho Falls area south of the Jefferson County. Idaho Falls also is the regional retail center. US 20 is a primary route to and from Idaho Falls. However, many people also utilize the north-south grid roadways to access the Idaho Falls area. There are also a growing number of trips made to and from Rexburg, approximately 13 miles north via US 20. This upward trend is expected to increase as Rexburg continues to grow.

Traffic patterns within Rigby reflect patterns of school locations and areas of commercial activity. Figure 3 illustrates key elements affecting traffic patterns within Rigby.

FIGURE 3

Figure 3
Jefferson County Transportation Plan
Key Elements Affecting Traffic Patterns Within Rigby



Existing Traffic Volumes

Two types of county traffic data were obtained for this study. Traffic count data were obtained from ITD and the Jefferson County Road and Bridge. All counts made by the Idaho Transportation Department (ITD) from 1994 or later were obtained. These counts were 24 hour volume counts. The Jefferson County Road & Bridge Department completed afternoon peak period turning movement counts at 26 intersections throughout Jefferson County during the summer of 2006. All of the available data was arrayed and the most recent or reliable count information was selected for use in this project. The data used was taken to reasonably represent "Existing Traffic" volumes throughout the rest of the study. The combination of these two data sets is illustrated in Figure 4.

Excluding I-15 and US 20, the highest traffic volumes are found on SH 48 within Rigby where traffic reaches 6,200 vehicles per day (vpd). Other representative volumes shown are:

Yellowstone Highway	3,000 vpd
Stockham Way	2,000 vpd
Annis Highway	1,800 vpd
SH 33	1,300 - 2,200 vpd
County Line Rd	1,200 - 1,700 vpd
Menan-Lorenzo Highway	
400 North	1,100 - 1,300 vpd
3700 East	
3800 East	
3rd West	
4100 East	500 – 800 vpd
4200 East	
500 North	

Accident History

Data describing all accidents occurring in Jefferson County is collected and stored by the Idaho Transportation Department. ITD provided a listing of all accident data for the five-year period between 2000 and 2004. A total of 2178 accidents were reported in Jefferson County during the analysis period. Of these, 991 accidents were associated wholly with the US and State highway system. The remaining 1187 accidents were fully within county or city jurisdictions. Table 3 summarizes the Jefferson County accident experience during this period; breaking down accidents by city or county, severity, accident type, and conditions.

There were 15 fatal accidents on Jefferson County roads. Examination of these accidents revealed no pattern of location. Eight of the 15 accidents were single vehicle accidents. Weather conditions were not a factor. More interesting, 12 of the 15 accidents occurred at night, six involved alcohol. A review of all of the conditions suggests that wider roadways and shoulders better roadside conditions could reduce the severity of these accidents.

The above conclusion is valid for many of the accident occurring in Jefferson County. Most accidents could be susceptible to reduction by better roadway conditions. Over half of all accidents were single vehicle accidents. The roadway geometry is predominantly straight and flat, suggesting that the remaining roadway characteristics are very unforgiving.

As might be expected, the 319 accidents occurring in the cities are less severe and are more related to conflicts at intersections. Rigby accounted for about 75 percent of the accidents, reflecting the result of increased traffic exposure to accident potential.

FIGURE 4
Jefferson County Transportation Plan
Existing Traffic Volumes – Jefferson County

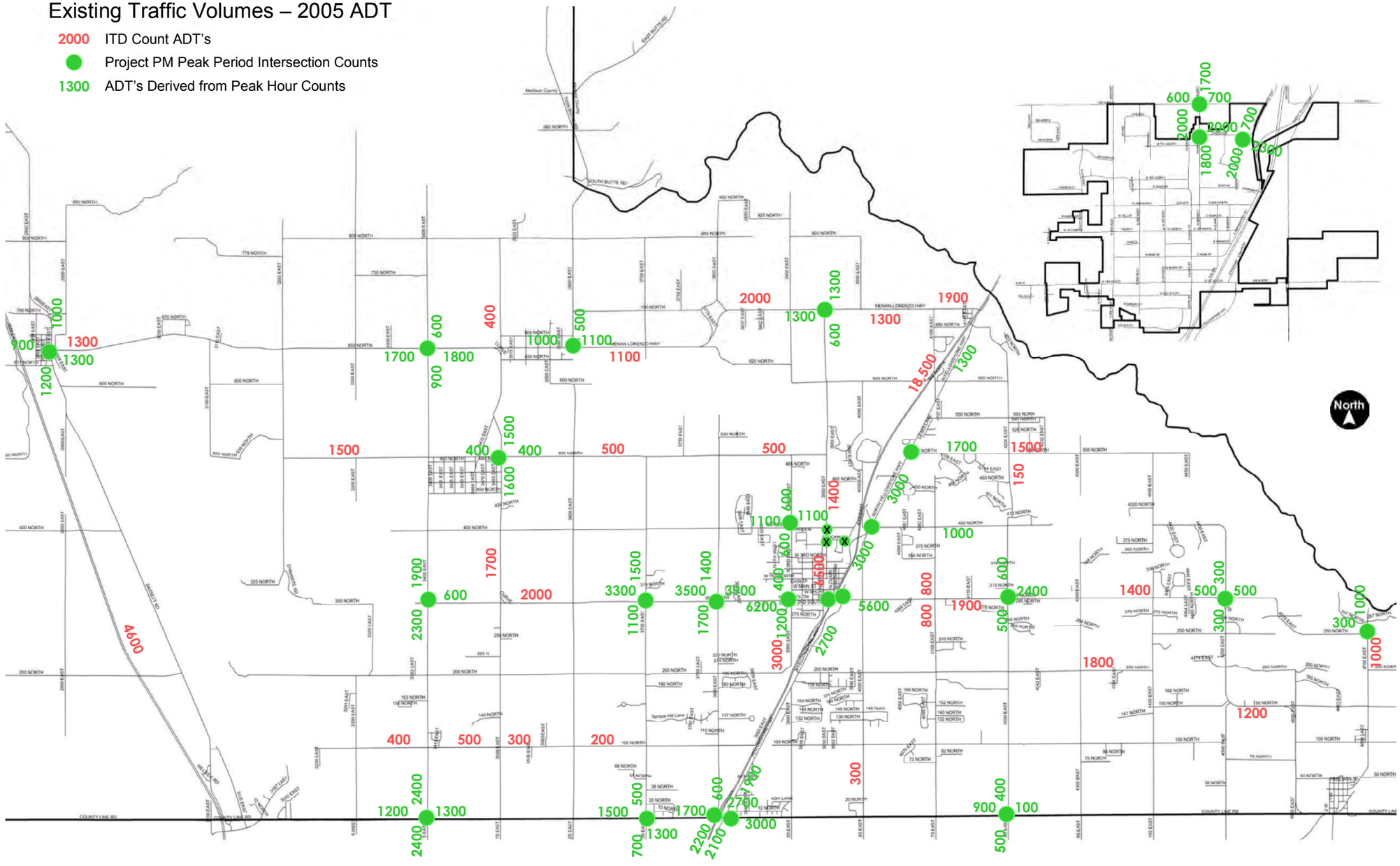


TABLE 3
Jefferson County Transportation Plan
Accident Summary, 2001 - 2005

	Jefferson County	Within Cities	Total	Percents County Roads	Percents City Roads
Total Reported Accidents	868	319	1187	*73*	*27*
Accident Severity					
Property Damage	548	226	774	*63*	*71*
C Injury Accident	176	71	247	*20*	*22*
B Injury Accident	94	19	113	*11*	*6*
A Injury Accident	35	2	37	*4*	*1*
Fatal Accident	15	1	16	*2*	
				100	*100*
Accident Type					
Loss of Control	220	40	260	*25*	*12*
Angle	141	54	195	*17*	*15*
Ran Off Road	136	15	151	*17*	*5*
Rear End	70	60	130	*8*	*17*
Domestic / Wild Animal	90	10	100	*10*	*3*
Angle Turning	34	25	59	*4*	*8*
Same Direction Turning	27	13	40	*3*	*4*
Head-On Turning	15	17	32	*2*	*5*
Fixed Object	16	16	32	*2*	*5*
Backed Into	12	19	31	*1*	*6*
Side Swipe Same	20	9	29	*2*	*3*
Side Swipe Opposite	12	11	23	*1*	*3*
Parked Car	4	19	23		*6*
Rear-End Turning	14	5	19	*2*	*2*
Drove L/R of Center	17	1	18	*2*	
Pedacyle/Pedestrian	4	5	9		*2*
Head On	2	4	6		*1*
Other	34	9	25	*4*	*3*
				100	*100*
Contributing Circumstance					
None	295	128	423	*34*	*40*
Speed Too Fast For Conditions	158	40	198	*19*	*13*
Inattention	86	42	128	*10*	*13*
Failed To Yield	79	30	109	*9*	*9*
Following Too Close	24	9	33	*3*	*3*
Off Roadway Overcorrected	28	1	29	*3*	
Alcohol Impaired	26	2	28	*3*	*1*
Vision Obstruction	18	10	28	*2*	*3*
Improper Braking	11	11	22	*1*	*3*
Asleep/Drowsy	20	1	21	*2*	
Improper Overtaking	18	2	20	*2*	*1*
Distraction In/On Vehicle	15	3	18	*2*	*1*
Passed Stop Sign	12	5	17	*1*	*2*
Improper Turn	8	7	15	*1*	*2*
Exceeded Posted Speed	9	5	14	*1*	*2*
Drove Left of Center	9	3	12	*1*	*1*
Other	48	19	67	*6*	*6*
				100	*100*

TABLE 3 (concluded)
Jefferson County Transportation Plan
Accident Summary, 2001 - 2005

Operator Action	Jefferson County	Within Cities	Total	Percents County Roads	Percents City Roads
Going Straight	607	178	785	*70*	*55*
Turning Left	68	49	117	*8*	*15*
Negotiating Curve	56	8	64	*6*	*3*
Turning Right	30	19	49	*3*	*6*
Backing	14	17	31	*2*	*5*
Stopped in Traffic	16	6	22	*2*	*2*
Passing	17	3	20	*2*	*1*
Leaving Driveway/Alley	10	8	18	*1*	*3*
Legally Parked	5	13	18	*1*	*4*
Avoiding Obstacle	16		16	*2*	
Slowing in Traffic	5	2	7	*1*	*1*
Avoiding Veh/Ped	5	2	7	*1*	*1*
Starting in Traffic	4	2	6		*1*
U-Turn	3	1	4		
Other	12	10	22	*1*	*3*
				100	*100*

Accident Breakdown By Community

Severity	Lewisville	Menan	Rigby	Ririe	Roberts	Total
Fatal Accident	1					1
A Injury Accident	2					2
B Injury Accident	1	1	14		3	19
C Injury Accident	11	3	52	2	3	71
Property Damage	21	6	177	8	14	226
Total	36	10	243	10	20	319
Accident Type	**Lewisville**	**Menan**	**Rigby**	**Ririe**	**Roberts**	**Total**
Rear End		1	56	2	1	60
Angle	9		40	1	4	54
Loss of Control	10	2	20	2	6	40
Angle Turning		2	20	1	2	25
Backed into		1	15	1	2	19
Parked Car		1	18			19
Head-On Turning	1		15	1		17
Ran Off Road	3		11	1		15
Same Direction Turning	1		10		2	13
Side Swipe Opposite		1	7	1	2	11
Side Swipe Same	1		8			9
Domestic Animal	3	1	1			5
Wild Animal	3		2			5
Rear-End Turning	1		4			5
Pedestrian	1		4			5
Head On		1	3			4
Fixed Object	1		3			4
Other	2		6		1	9
Total	36	10	243	10	20	319

CHAPTER 3 Condition of the Existing Roadway System

Measures of the condition of the existing roadway system followed the format and requirements of the Transportation Asset Management Software (TAMS). The TAMS software was developed by the Utah Technical Transfer (T2) Center and has been adopted by the Idaho Local Highway Technical Assistance Council (LHTAC) for use by local jurisdictions in Idaho. The program was developed with FHWA support and offers a simplified, economical approach to roadway condition evaluation and asset management forecasts suitable for use throughout rural Idaho. At this point in its development, TAMS is capable of detailed inventory of roadways and signing installations.

Roadway Inventory

To develop the TAMS roadway inventory, it is first necessary to have a GPS file corresponding to the centerlines of all roadways within county. The Jefferson County Road & Bridge Department had previously developed this file for use in routing 911 emergency services. The initial file was augmented with roadway width and pavement type information for use in the roadway condition inventory.

The second element is a visual examination of each roadway segment and recording any pavement defects. The TAMS software uses the rating of the various surface conditions and defects to determine the remaining service life (RSL) of the roadway. The observed characteristics included occurrences of:

- Fatigue cracking
- Longitudinal cracking
- Transverse cracking
- Block cracking
- Edge cracking
- Patching and Potholes
- Rutting
- Roughness
- Drainage defects

If any of the above defects were observed, they were assigned one of three levels of "severity" and one of three levels of "extent" – resulting in a rating of 1 to 9. Appendix A illustrates the criteria used in determining the condition rating of each type of defect.

This study was not funded to perform the actual rating. Rather, the intention was to instruct the County and the City of Rigby as to how to perform the inventory for their jurisdictions. As of the writing of this report, ratings were complete for the City of Rigby. The Jefferson County Road & Bridge Department has rated about 20 percent of the asphalt roadways in the county. This effort was coordinated to develop a reasonable

sample of conditions and is used as the basis for information summarizing roadway conditions that follows.

Governing Stress

Jefferson County – The largest categories of defects are Roughness (35 percent) followed by Edge Cracking (26 percent), Fatigue Cracking (22 percent), and Longitudinal Cracking (14 percent). While the extent of roadway exhibiting some defects may look large, it is normal for surfaces to exhibit some stress in the form of cracking. The severity of the defect has far more consequence relating to the need for and type of improvement. Examination of the individual ratings showed that 93 percent of the observations made indicated the minimum severity level. Figure 5 indicates the distribution of Governing Distress for the inventoried portion of Jefferson County. Implications as to the degree of improvements needed are brought out in the next summary – Remaining Service Life.

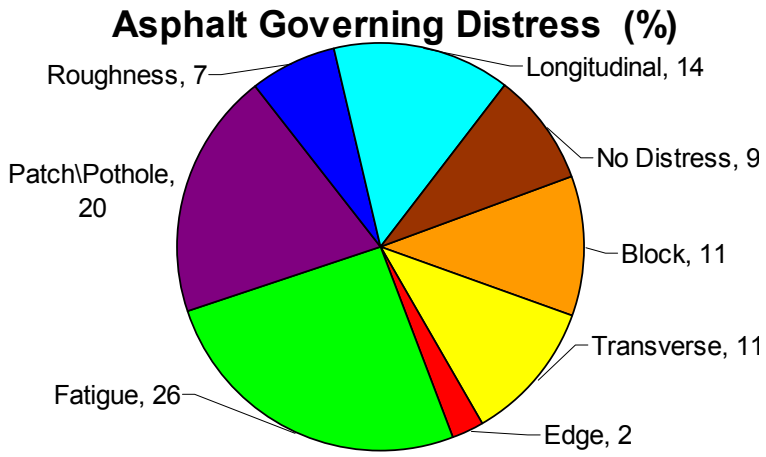
City of Rigby – No stresses were observed in nine percent of the mileage. The largest category of defect is Fatigue Cracking (26 percent), followed by Patch/Potholes (20 percent), and Longitudinal Cracking (14 percent). The remaining 31 percent was spread between, Block Cracking, Transverse Cracking, Roughness, and Edge Cracking in that order. Examination of the individual ratings showed that 82 percent of the observations made indicated the minimum severity level. That is a relatively low number. Longitudinal Cracking, Transverse Cracking, and Patch/Potholes all had about a third of their rankings in the moderate severity level. Figure 6 indicates the distribution of Governing Distress for the City of Rigby roadway network. Implications as to the degree of improvements needed are brought out in the next summary – Remaining Service Life.

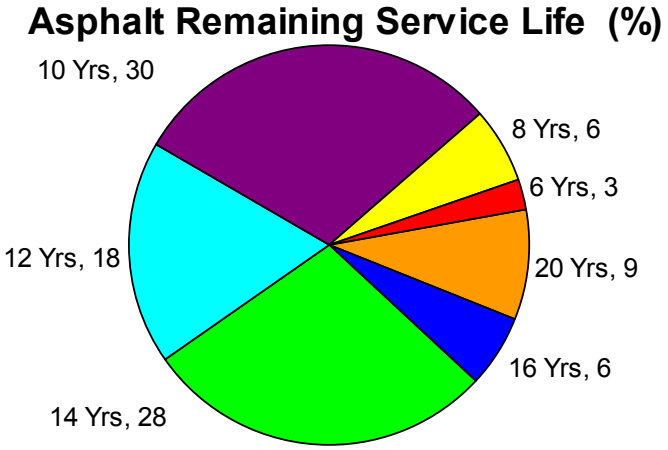
Remaining Service Life

The TAMS software determines a value for Remaining Service Life (RSL) for each segment based on the type and severity of defects observed for each roadway segment. Remaining Service Life can range from a maximum of 20 years for new pavement and decrease to 0 years for badly deteriorated roadways.

Jefferson County – Figure 5 shows the distribution of RSL for the 20 percent of the Jefferson County system that was inventoried. Eight percent of the mileage has an RSL of 16 years. Seventy-six percent of the system has a RSL of 10 years or more. Roadways in these categories respond well to routine and preventative maintenance. The remaining 24 percent of miles were rated as 4 to 9 years RSL. There were no segments rated with less than 4 years of service life; category representing a need for significant capital expense.

FIGURE 5
Jefferson County Transportation Plan
Summary of Existing Pavement Conditions – Jefferson County





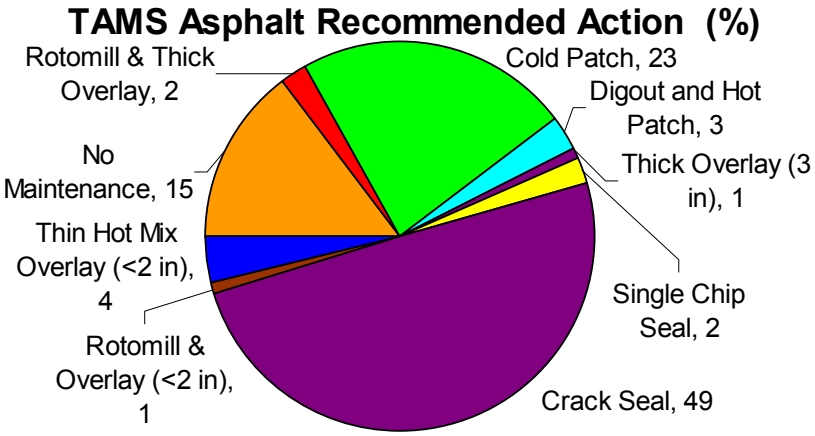
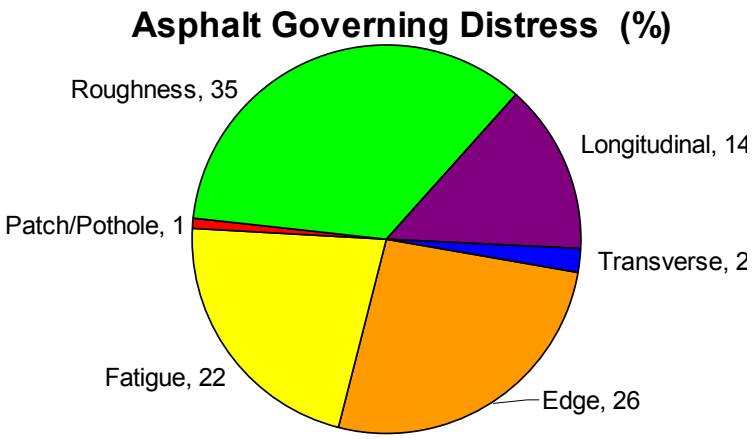
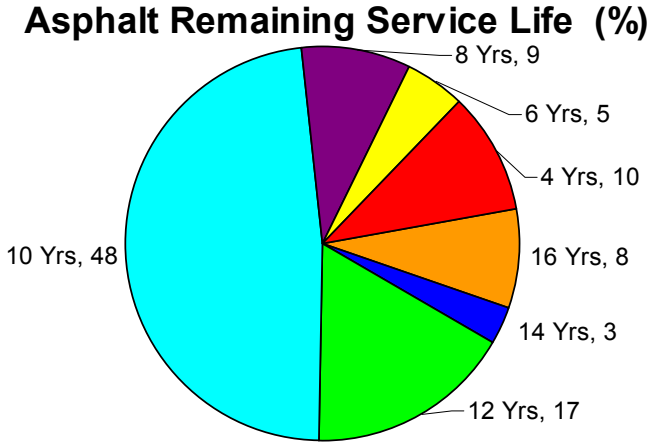
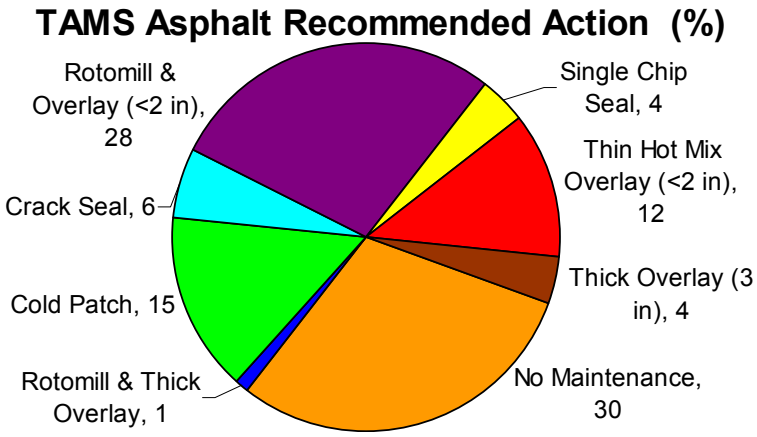


FIGURE 6
Jefferson County Transportation Plan
Summary of Existing Pavement Conditions – Rigby







City of Rigby – Figure 6 shows the distribution of RSL for the City of Rigby Roadway System based on conditions observed in October 2006. Fifteen percent of the mileage has a RSL of 16 years or more. Ninety-one percent of the system has a RSL of 10 years or more. These roadway segments can be well maintained by routine and preventative maintenance. The remaining 9 percent of miles were rated as 6 to 9 years RSL. There were no segments rated with less than 4 years of service life; the category representing a need for significant capital expense.

Suggested Treatments

Lastly, based on the observed conditions of each roadway segment, algorithms within the TAMS software determine a recommended action for each of the roadway segments evaluated.

Jefferson County – Figure 5 summarizes the TAMS recommended actions for the portion of paved roads inventoried in Jefferson County. No maintenance action is recommended for 30 percent of the system – either because the segments are rated with high RSL's and are thus in good condition or because the existing conditions do not warrant action within the next year. Routine maintenance (cold patch, crack seal) is recommended for 21 percent of the system. Preventative maintenance (single chip seal) is recommended for only four percent of the system. Reflecting more serious types of cracking defects and general roughness; higher level and more expensive treatments are recommended for 45 percent of the system. Rehabilitative maintenance (thin hot mix overlay or rotomill and overlay, <2 in.) is recommended for 40 percent the system. Rotomill and thick overlay (reconstruction maintenance) is recommended for five percent of the system.

City of Rigby – Figure 6 summarizes the TAMS Recommended Actions for the City of Rigby. No maintenance action is recommended for 15 percent of the system – either because the segments are rated with high RSL's and are thus in good condition or because the existing conditions do not warrant action within the next year. Routine maintenance (cold patch, crack seal, and dig out/hot patch) is recommended for 75 percent of the system. Preventative maintenance (single chip seal) is recommended for only two percent of the system. Rehabilitative maintenance (thin hot mix overlay or rotomill and overlay, <2 in.) is recommended for 5 percent of the system. Reconstruction (rotomill and thick overlay) is recommended for 2 percent of the system.

These recommendations may be interpreted as "immediate action" or "prioritization" type information valid for a short time after the roadway observations were made. This interpretation is based on the fact that three of the recommended actions (no maintenance, cold patch, and digout and hot patch) covering 51 percent of the system for Jefferson County and 80 percent of the system for City of Rigby yield no improvement in service life and are thus not effective in establishing a long term roadway preservation plan. Rather they serve to focus on specific short term maintenance needs based on the most recent observations. Appendix B lists the recommended action for each of the inventoried segments.

CHAPTER 4 Estimates of Future Traffic Demand

The 13 percent increase in population in Jefferson County between 2000 and 2005 clearly shows that Jefferson County is growing; and growth can be expected to continue. Northeastern Idaho is experiencing dramatic growth due to many factors including its scenic beauty, the growth of BYU-Idaho and appeal of the Yellowstone Park / Teton Mountain complex. Most of the growth in Jefferson County is residential and can be most directly associated with the growth of Idaho Falls to the south and Rexburg to the north. Jefferson County is not directly promoting industrial/commercial growth, although growth in the retail and service sectors can be expected as population climbs.

The future traffic forecast was developed using the traffic forecasting process illustrated in Figure 7. The county was first divided into 27 zones. The increase in trips to and from each zone was then estimated. The process involves three basic steps: Trip Generation, Trip Distribution, and Traffic Assignment. These are discussed below.

Trip Generation

Future trips in Jefferson County were estimated by first forecasting the growth in dwelling units for each zone. This was based on the number of existing dwellings in each zone provided by the Jefferson County Assessor, and an estimate of population growth that had been previously prepared by the Jefferson County Economic Development Office. This forecast is shown in Figure 8. Figure 8 indicates a 20-year population increase from 20,900 in 2005 to 38,200 in 2025. This represents a growth of 83 percent over the 20-year period or a compound rate of 3.07 percent per year.

The increase in population was assumed to apply to dwelling units as well. The number of dwelling units was thus forecast to increase from the existing (2005) total of 6,245 to a future total of 11,427. The total number of additional dwelling units were distributed to the various zones according to the spatial distribution of development shown as brown areas in Figure 8. Appendix C, Table C-1 shows the results of this process in terms of added dwelling units for each of the 27 traffic zones. The results are summarized in Figure 9 which shows the percent increase by various areas within the county.

Future additional trips resulting from the growth in dwelling units were estimated by assuming 1 trip per dwelling unit in the peak hour – resulting in 5,200 additional peak hour trips. This figure represents home-based trips with the home located in Jefferson County. Further adjustments were made to account for other trip making as follows:

- Non-Home Based Trips. Data from other studies indicates that trips between two non-home destinations is about eight percent of the total peak hour trips. 400 trips were added to account for non-home based trips.
- Census data indicates that about 50 percent of the workers in Jefferson County come from outside of the county. 1,300 trips were added to account for implied employment growth in Jefferson County.

FIGURE 7

FIGURE 7
Jefferson County Transportation Plan
Traffic Forecasting Process

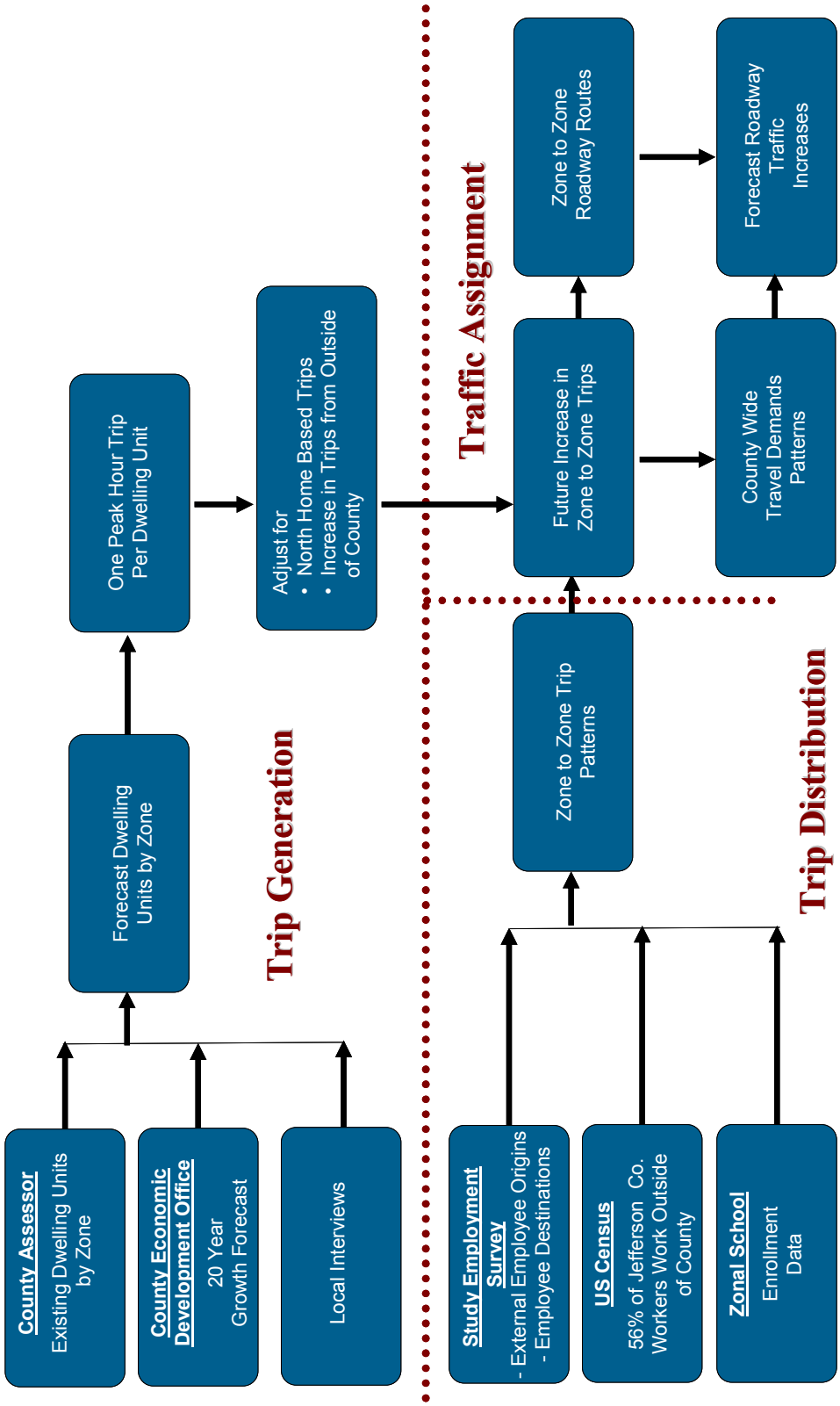
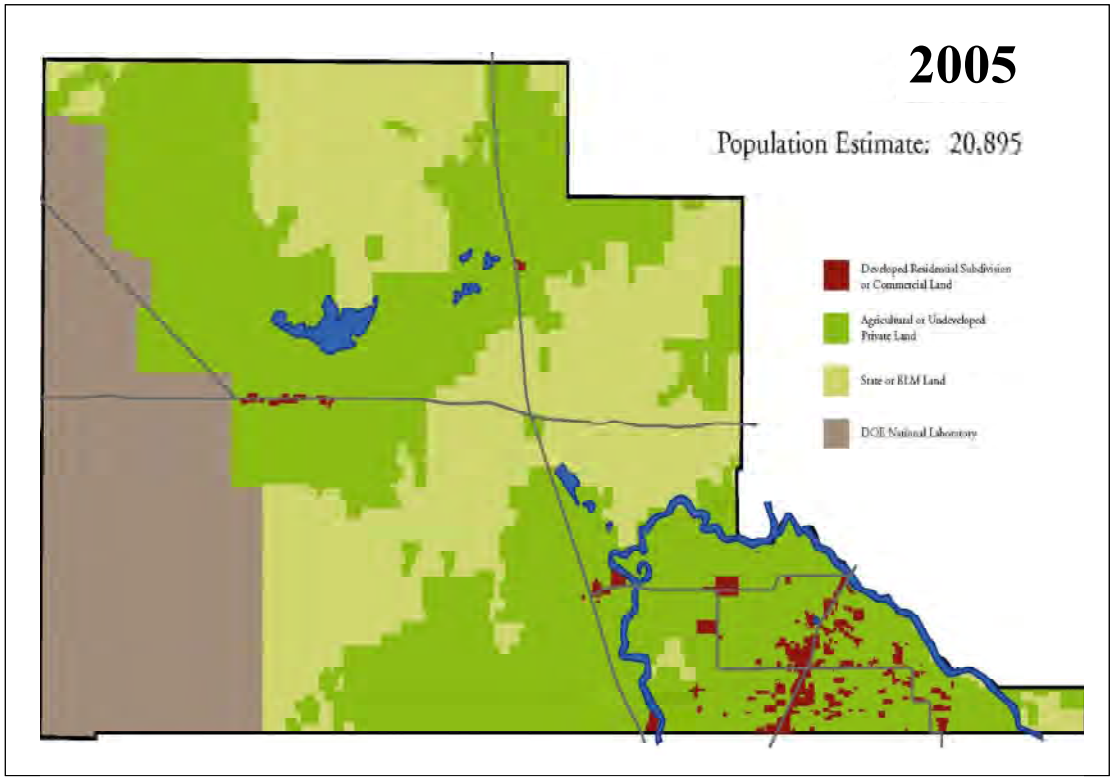


FIGURE 8
Jefferson County Transportation Plan
Estimate of Population Growth 2005 – 2025



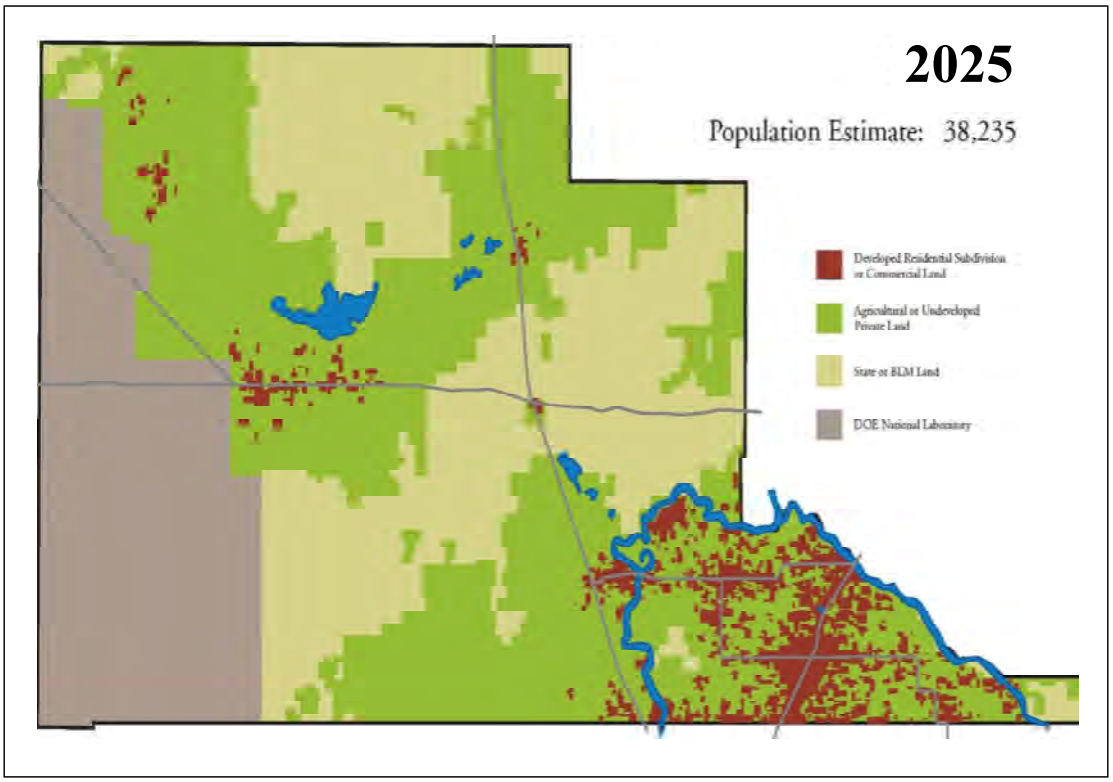


FIGURE 9

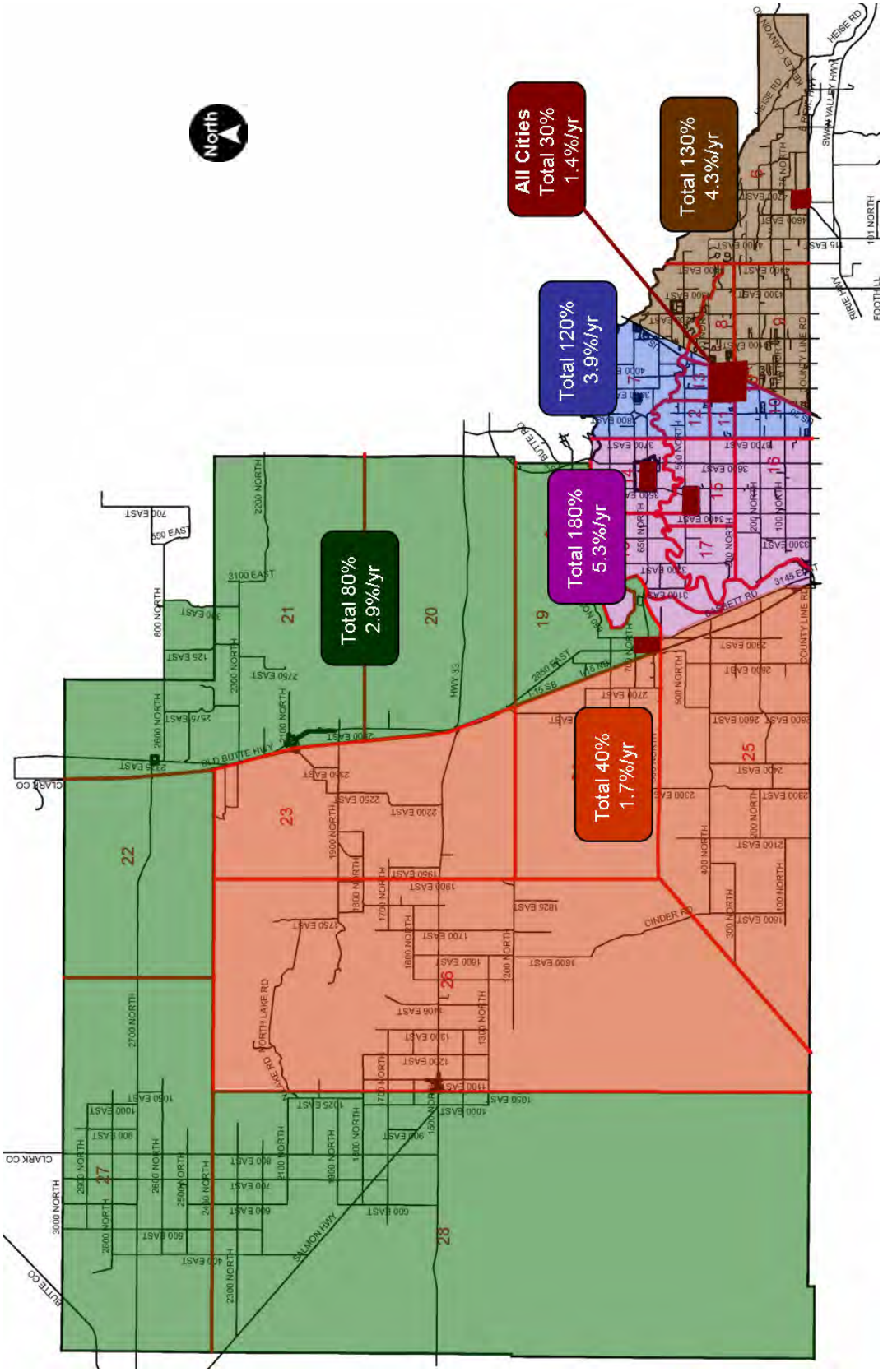


FIGURE 9
Jefferson County Transportation Plan
20-Year Dwelling Unit Forecast Summary by Area

Thus, the final 20-year increase in peak hour trips in Jefferson County was estimated to be 6,900 trips. The final step in the trip generation process is to apply factors to split trips by direction and to account for trips traveling into and out of the Jefferson County through the use of "External Zones". The results of this process are illustrated in Figure 10. Figure 10 shows the estimated number of additional peak hour trips beginning and ending in each of the 27 internal zones and eight external approaches to Jefferson County. The actual number of trips ends represented in this figure are shown in Appendix C, Table C-2.

Trip Distribution

In the trip distribution step, trips starting in any given zone are assigned ending zones to form a complete zone to zone movement. Data from a Jefferson County employers survey conducted as part of this study was used to estimate the pattern of trips traveling between zone to zone pairs. In the survey, employers were asked to report the general area of residence of there employees living within Jefferson County, or the roadway used to approach their location for employees living outside of Jefferson County. A zone map was provided to allow the employer to select areas or approach routes. Appendix D provides additional information regarding the content of the employer survey.

Figure 11 shows the home location of Jefferson County employees reported in the employer survey. Highlights of the information shown in Figure 11 include:

- 11 percent of the employees come from western Jefferson county or beyond.
- 31 percent of employees come from south of the county line including about 14 percent approaching via US 20.
- 10 percent of the employees travel to Jefferson County from the north via US 20.
- The remaining 48 percent of employees reside in Jefferson County, including 17 percent in Rigby.
- 10 percent come from east of US 20, including 3 percent from Ririe.
- 21 percent of employees come from areas west of US 20/ Rigby, including seven percent from Menan and Lewisville.

Figure 12 shows employment destinations within Jefferson County.

The above information indicates that almost half of the employees in Jefferson County reside outside of Jefferson County. This corresponds well with home to work census data that shows approximately one half of the residents of Jefferson County work outside of Jefferson County.

The distribution of travel represented by the data in Figures 11 and 12 was used to distribute the forecast additional trips derived in the trip generation step. The resulting table of forecast peak hour zone to zone trips is included as Appendix E.

FIGURE 10

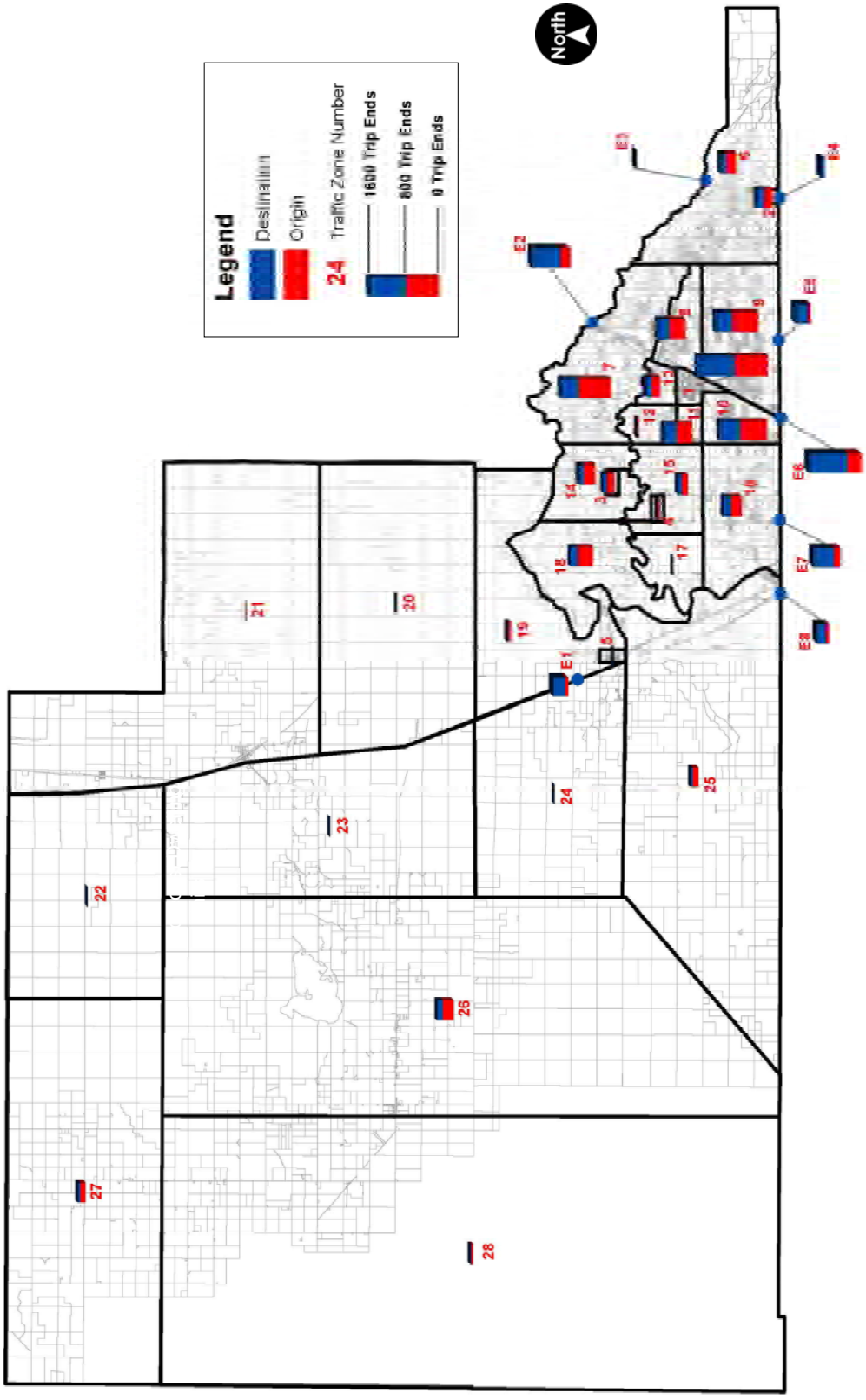


FIGURE 10
Jefferson County Transportation Plan
Forecast Additional Peak Hour Origins and Destinations by Zone

FIGURE 11

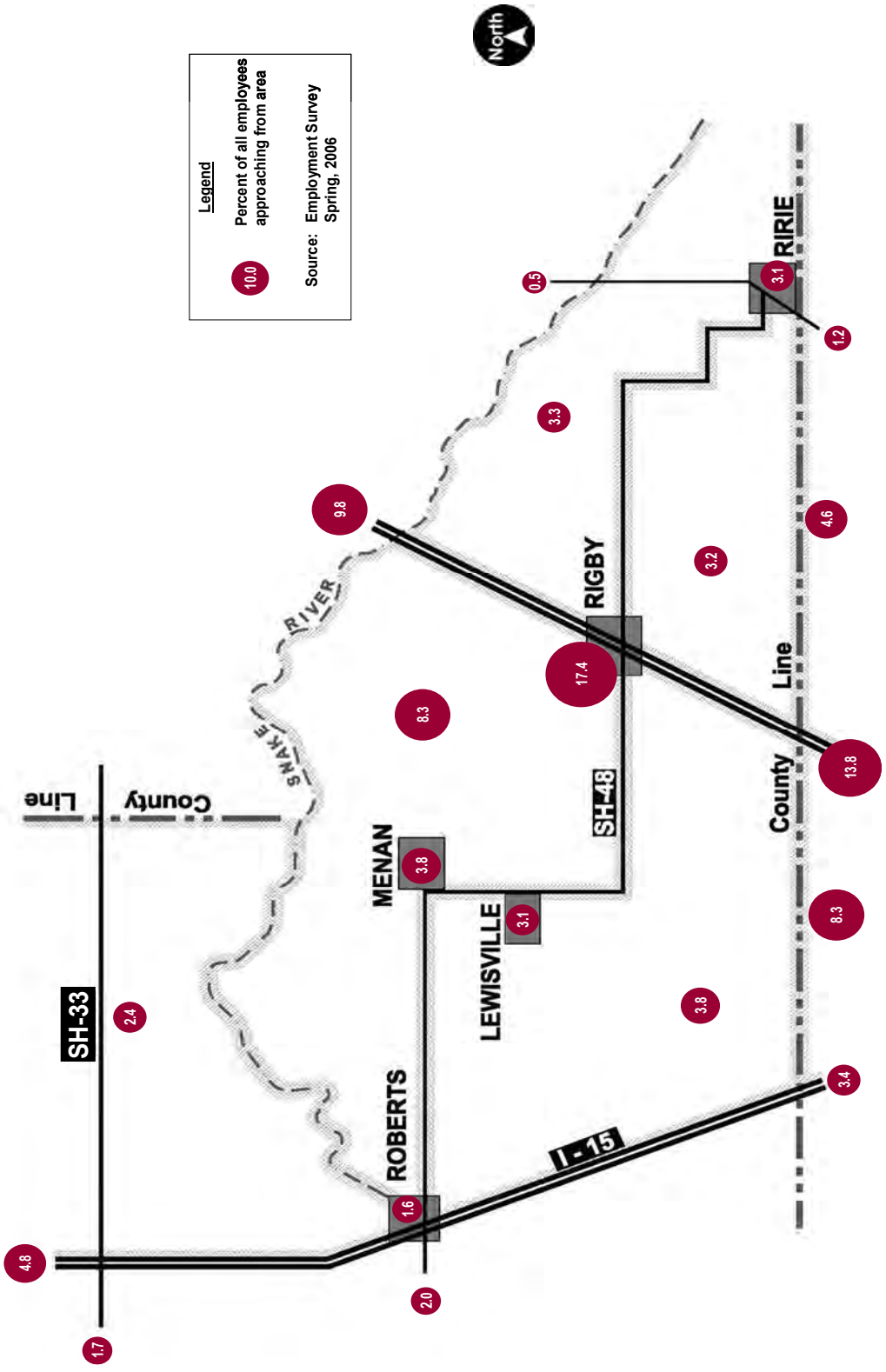


FIGURE 11
Jefferson County Transportation Plan
Distribution of Jefferson County Employee Home Locations

FIGURE 12

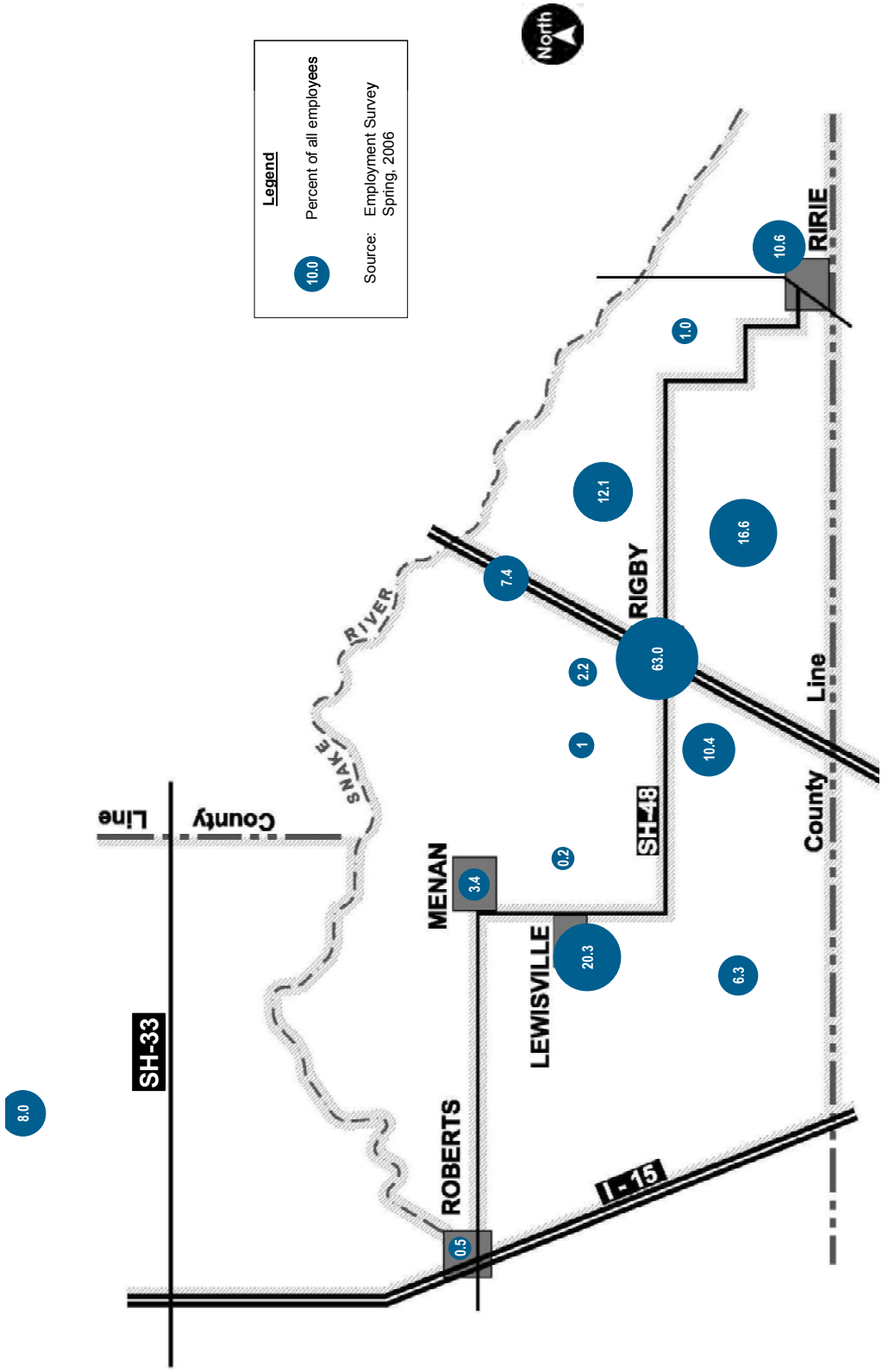


FIGURE 12
Jefferson County Transportation Plan
Distribution of Jefferson County Work Locations

Traffic Assignment

Trips from one zone to another can be routed along existing roadway links as needed to complete the trip, thus providing an indication of the number of additional trips traveling throughout various areas of the county. Figure 13 shows the results of this process. Because of the many choices available in a mile grid system and the size of the traffic zones, the process is not sensitive to predicting traffic on a specific roadway. Thus, estimates of existing and future traffic are shown in Figure 13 as corridor based movements from one area to another without specific assignment to a particular roadway. Translating the increases in traffic movements shown in Figure 13 into specific recommendations for improvements is discussed in Chapters 5 and 6.

FIGURE 13

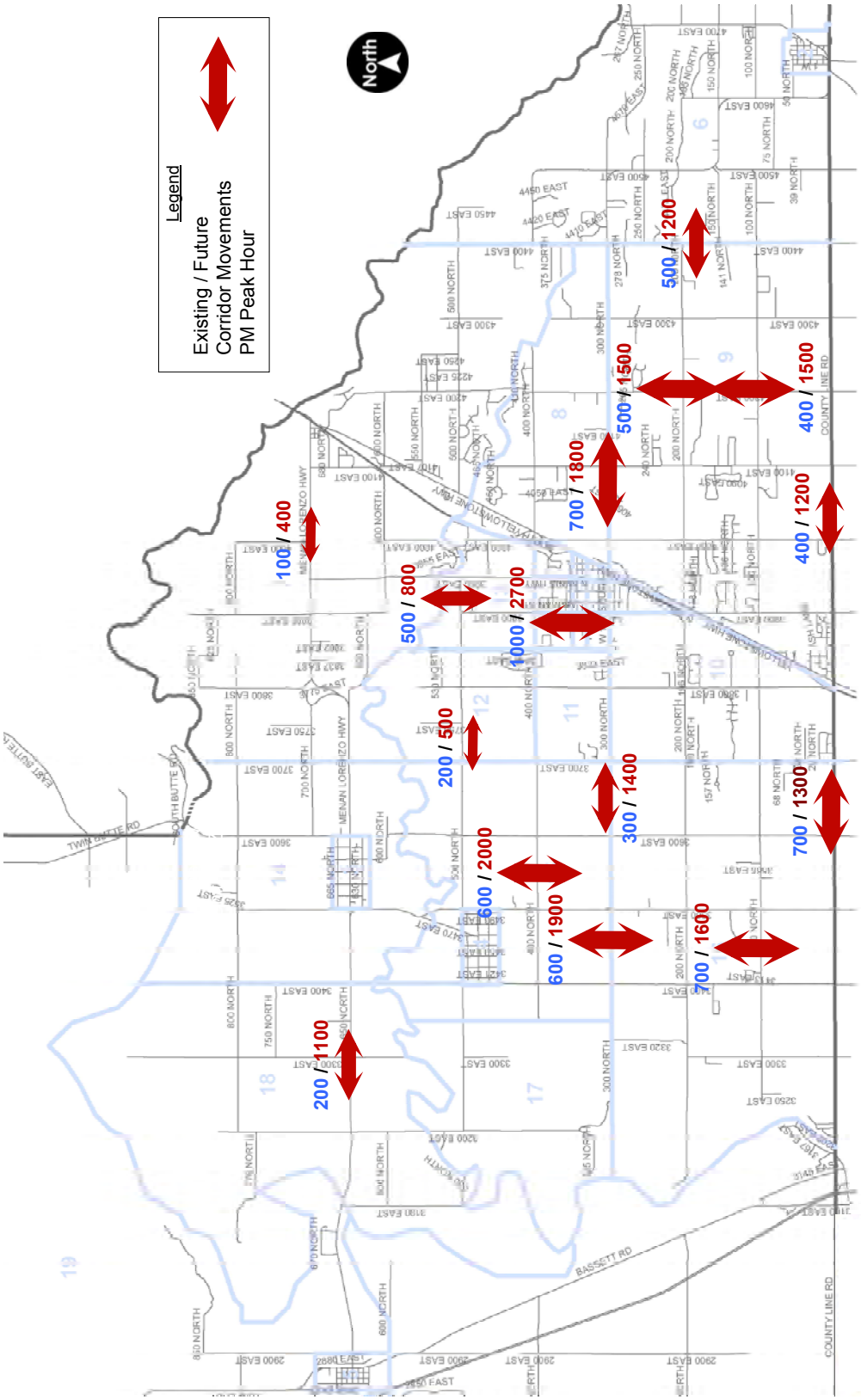


FIGURE 13
Jefferson County Transportation Plan
Existing and Future Traffic - Various Corridors

CHAPTER 5 Evaluation of Improvement Needs

Three elements contribute to the improvement needs of the roadway systems in Jefferson County:

- Maintenance and reconstruction improvements necessary to preserve and improve the condition of existing roadway system,
- Improvements necessary to correct existing deficiencies, and
- Improvements necessary to accommodate future traffic.

These are discussed below.

Preservation of the Existing Roadway System

Maintaining the existing system is important and perhaps the primary function of the Rigby and Jefferson County road and bridge departments. It has long been recognized that, over time, an effective maintenance program is far more economical than a routine of "emergency maintenance" ultimately leading to the need to fully reconstruct the roadway. A desirable roadway preservation program balances maintenance, rehabilitation and replacement efforts over many years to minimize overall system costs. The asset *management* function of the TAMS software provides a means to develop such an approach. The following are key elements of the methodology:

- Based on the most recent observations, the percent of the system mileage in 7 three-year RSL categories, ranging from 1 to 21 years (plus an eighth category for 0 remaining life) is calculated.
- If no improvements are made, the system will age year by year, with one third of the percent in each age category falling into the next lower category until the entire system has 0 remaining service life.
- Improvements that have the effect of increasing remaining service life are entered into the system. The costs of these improvements are estimated so that budget consequences are recognized.
- The effectiveness of inexpensive maintenance treatments diminishes as the RSL of the roadway decreases. Early, less expensive preservation work reduces the later need for expensive rehabilitation and replacement.
- A caution to understanding this analysis. It is based on percents of the system in various RSL groups, not discreet segments. Thus the results are valid as an overall strategy of resource allocation over future years. Strategies derived from this analysis can then be used as a guide for describing physical improvement projects with specific roadways, lengths, budgets, etc.

Table 4 shows the changes in RSL resulting from various types of improvements when applied to roadways with differing existing remaining service life. For example, crack sealing will add 3 years RSL to roadway segments with a current remaining service life of 16 to 18 years, but will not increase RSL for roadways with less than 10 years of RSL. The maximum service life obtainable is 20 years; the result of full reconstruction.

TABLE 4

Jefferson County Transportation Plan

Costs and Effects of Various Improvement Types on Remaining Service Life

Treatment Type	Years Service Life Added for a Given Remaining Service Life							
	Remaining Service Life							
	None	1 to 3 Yrs	4 to 6 Yrs	7 to 9 Yrs	10 to 12 Yrs	13 to 15 Yrs	16 to 18 Yrs	19 to 20 Yrs
Routine Maintenance								
Crack Seal	0	0	0	0	1	2	3	2
Cold Patch	0	0	0	0	0	0	0	0
Digout and Hot Patch	0	0	0	0	0	0	0	0
High Perf. Cold Patch	0	0	0	0	0	0	0	0
Fog Coat	0	0	0	1	1	2	2	2
Preventative Maintenance								
Sand Seal	0	0	0	1	2	2	2	2
Scrub Seal	0	1	3	5	5	5	5	5
Single Chip Seal	0	1	3	5	5	5	5	5
Slurry Seal	0	1	3	5	5	5	5	5
Microsurfacing	0	2	3	5	7	7	7	7
Rehabilitation								
Plant Mix Seal	0	3	4	5	7	7	7	7
Thin Hot Mix Overlay (<2 in)	0	4	6	7	7	7	7	7
HMA (leveling) & Overlay (<2 in.)	0	4	6	8	8	8	8	8
Hot Surface Recycling	0	3	5	7	8	8	8	8
Rotomill & Overlay (<2 in)	0	4	7	8	8	8	8	8
Reconstruction	For the Following Treatments - Remaining Service Life Fixed at Years Shown Below							
Thick Overlay (3 in.)	12	12	12	12	12	12	12	12
Rotomill & Thick Overlay (3 in.)	12	12	12	12	12	12	12	12
Base Repair\Pavement Replacement	16	16	16	16	16	16	16	16
Cold Recycling & Overlay (3 in.)	14	14	14	14	14	14	14	14
Base/Pavement Replacement	20	20	20	20	20	20	20	20

Maintenance Program Goals

The above methodology was employed to develop roadway maintenance/improvement strategies for Rigby and Jefferson County to satisfy the following overall goals:

- Minimize expenditures *above* the existing annual budget for roadway surface maintenance.
- Develop and maintain a system-wide average RSL of about 12 to 13 years.
- Keep the percent of the system with 0 to 3 years RSL under 3 percent.
- Achieve a relatively stable equilibrium between the level and mix of roadway treatments, remaining service life, and annual cost.

In practice the range of solutions in terms of percent of the system to be treated with any one of 20 different improvements (see Table 4) is huge. However, the task is made manageable by limiting the types of improvements used in the analyses to those most commonly employed in Rigby or Jefferson County. The following improvement types were used in the analyses performed for this study:

- Thin Hotmix Overlay (<2 in.) – A less than desirable, but least expensive means of "rehabilitating" roadways with 3-6 years of RSL. This treatment is effective as long as the roadway base is sound / not weakened by drainage issues.
- Base Repair \ Pavement Replacement – Used for "reconstruction" with 25 percent less cost than full base/pavement replacement.

Analysis of Roadway Maintenance Levels

Numerous analysis iterations were made to determine the costs and effects of various maintenance strategies over a 10-year analysis period starting in 2007. As noted under Chapter 3 - Existing Conditions, the condition of the existing paved Rigby and Jefferson County roadway systems are seen to be generally good at the time of the inspections.

Analyses were made to determine if the current level of roadway maintenance funding is sufficient to sustain the current condition of the roadway pavements. A review of revenue and expenditure reports submitted to ITD annually by Jefferson County and Rigby indicated that the current level of funding for roadway surface maintenance is approximately $1 million for Jefferson County and $30,000 for Rigby.

The results of this analysis are shown in Figures 14 and 15 for Rigby and Jefferson County, respectively. The upper graph in each figure illustrates the allocation of roadway treatments over the 10-year analysis period. The lower graph in each figure represents the effects on Remaining Service Life (RSL) and shows annual funding amount – the current budget for this analysis. The results of this analysis indicate that current funding

FIGURE 14
Jefferson County Transportation Plan
Pavement Maintenance Analysis
Effects of No Increase in Annual Maintenance Funding - Rigby

Chart Data	Year	Percent of Paved Roads Covered														
Improvement	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Single Chip Seal	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7

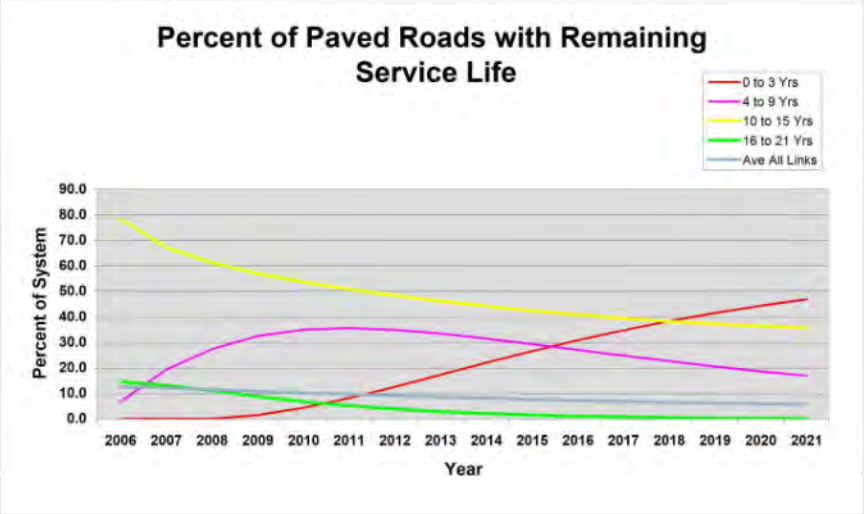


Chart Data Year	Cost $1,000's	Average Remaining Life
2006	30.0	12.72
2007	30.0	12.08
2008	30.0	11.48
2009	30.0	10.87
2010	30.0	10.28
2011	30.0	9.7
2012	30.0	9.14
2013	30.0	8.6
2014	30.0	8.11
2015	30.0	7.65
2016	30.0	7.23
2017	30.0	6.85
2018	30.0	6.52
2019	30.0	6.23
2020	30.0	5.97
2021	30.0	5.74
	$480 ($1,000's)	

FIGURE 15
Jefferson County Transportation Plan
Pavement Maintenance Analysis
Effects of No Increase in Annual Maintenance Funding – Jefferson Co.

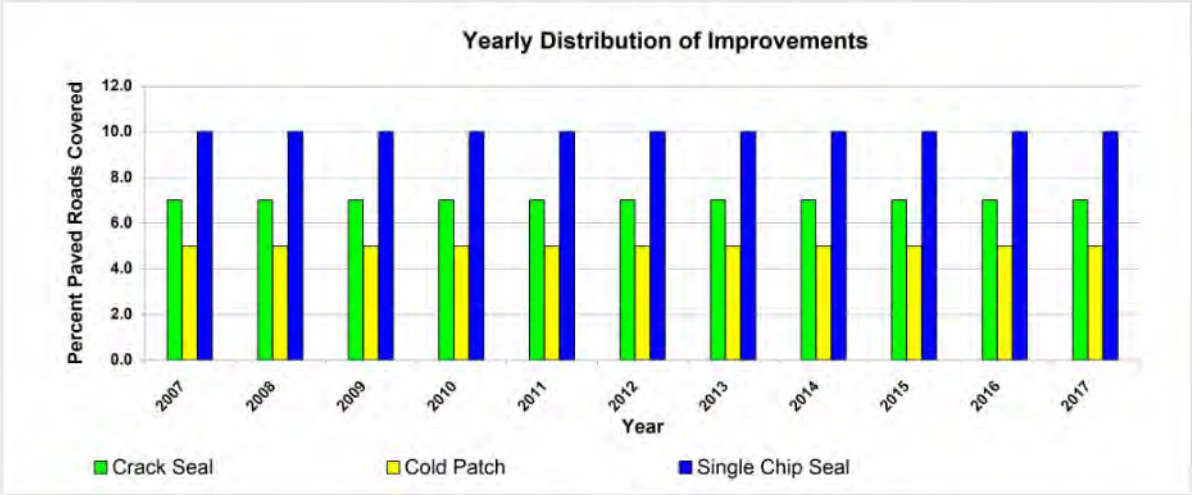


Chart Data	Year										
Improvement	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Crack Seal	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Cold Patch	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Single Chip Seal	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

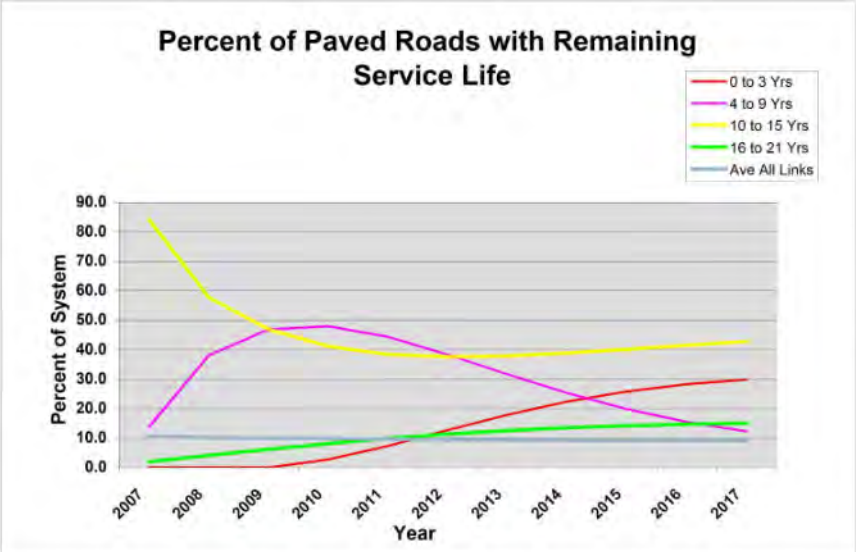


Chart Data		Average Remaining Life
Year	Cost $1,000's	
2007	131.0	10.57
2008	131.0	10.21
2009	131.0	10.01
2010	131.0	9.81
2011	131.0	9.61
2012	131.0	9.44
2013	131.0	9.3
2014	131.0	9.2
2015	131.0	9.13
2016	131.0	9.11
2017	131.0	9.12
	$1,441 ($1,000's)	

levels for both entities are not sufficient to sustain a reasonable system-wide average remaining service life over the 10-year analysis period. The current funding levels can only support the about half of the costs of routine maintenance activities design to extend the life of pavement in good repair. In time, the amount of pavement in need of more expensive rehabilitation and replacement increase, and the system deteriorates beyond routine maintenance levels.

A second analysis was performed to determine the minimum annual funding level necessary to maintain a reasonable system-wide RSL in the 12 to 13 year range. The results of these analyses are shown in Figures 16 and 17 for Rigby and Jefferson County, respectively.

Key observations regarding this approach for Rigby are:

- Maintaining the system average RSL between 12 and 13 years would require an annual expenditure of approximately $85,000 (in 2007 dollars), an increase of about $55,000 per year over present budget levels
- This approach provides excellent "stability", with the overall quality of the existing system being maintained at its current serviceability at the end of the analysis period.
- In the first year of implementation (2007) over half of the proposed budget is allocated to rehabilitating a growing amount of pavement falling below 6 years RSL.

Key observations regarding this approach for Jefferson County are:

- Maintaining the system average RSL at or near 12 years would require an annual expenditure of approximately $1.96 Million (in 2007 dollars), an increase of about $1 million per year over present budget levels. (Note that these figures are based on a sample of roadway inspections completed at the time of this writing and could change when the condition of the entire system has been evaluated.).
- This approach provides excellent "stability", with the overall quality of the system actually gradually increasing at the end of the analysis period.
- Due to the condition of the existing system, the budget emphasizes routine maintenance activities. However, the additional funding allows for more costly rehabilitation and reconstruction improvements to one percent of the system (over two miles per year on an annual basis.

FIGURE 16
Jefferson County Transportation Plan
Pavement Maintenance Analysis
Minimum Required Annual Maintenance Funding – Rigby

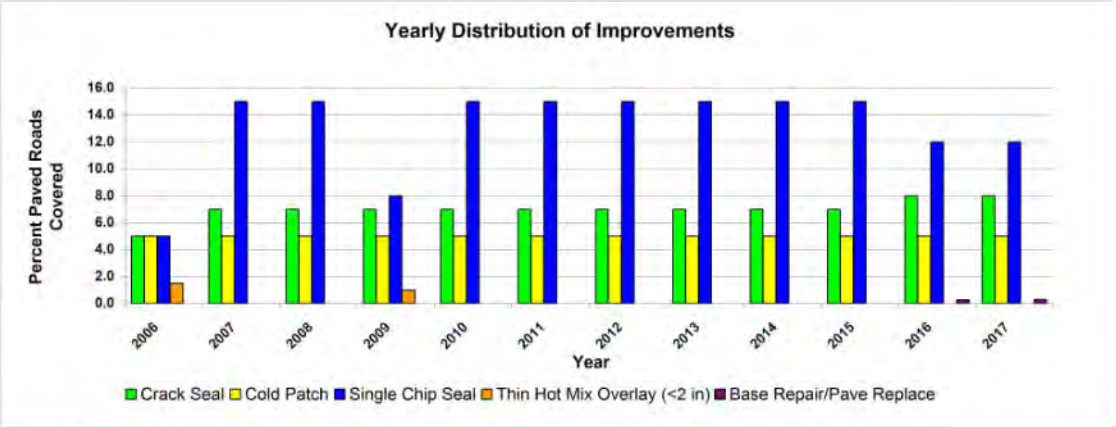


Chart Data	Year											
	Percent of Paved Roads Covered											
Improvement	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Crack Seal	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	8.0	8.0
Cold Patch	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Single Chip Seal	5.0	15.0	15.0	8.0	15.0	15.0	15.0	15.0	15.0	15.0	12.0	12.0
Thin Hot Mix Overlay (<2 in)	1.5	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Base Repair/Pave Replace	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3

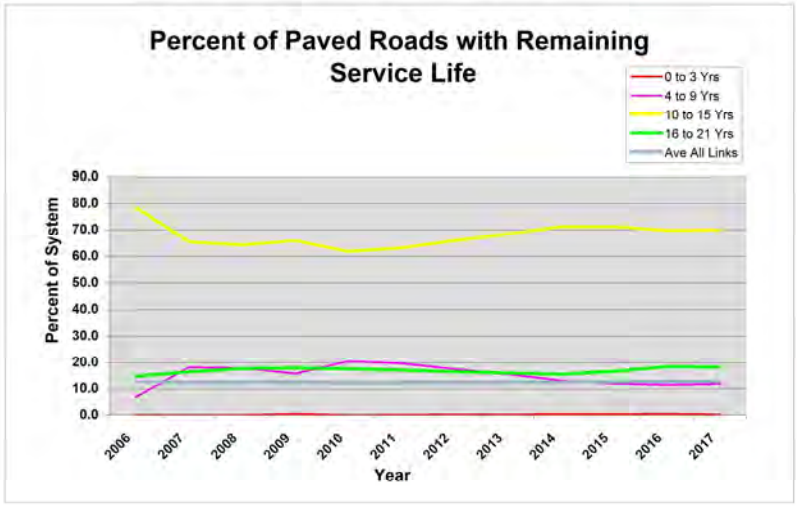


Chart Data		Average
Year	Cost $1,000's	Remaining Life
2006	84.3	12.72
2007	84.3	12.26
2008	84.3	12.37
2009	84.5	12.48
2010	84.3	12.22
2011	84.3	12.28
2012	84.3	12.36
2013	84.3	12.44
2014	84.3	12.54
2015	84.3	12.65
2016	84.6	12.76
2017	84.6	12.76
	$1,012 ($1,000's)	

FIGURE 17
Jefferson County Transportation Plan
Pavement Maintenance Analysis
Minimum Required Annual Maintenance Funding – Jefferson County

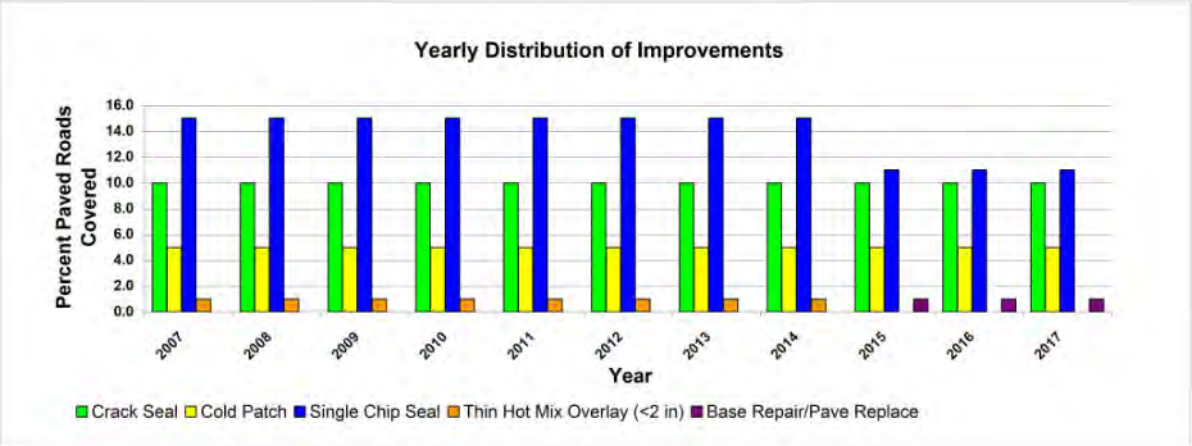


Chart Data	Year										
Improvement	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Percent of Paved Roads Covered										
Crack Seal	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Cold Patch	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Single Chip Seal	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	11.0	11.0	11.0
Thin Hot Mix Overlay (<2 in)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Base Repair/Pave Replace	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0

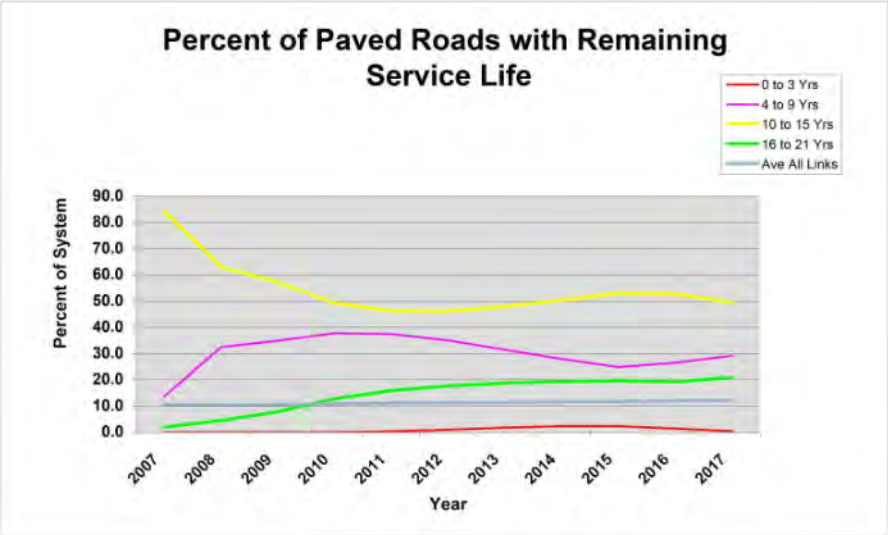


Chart Data		Average Remaining Life
Year	Cost $1,000's	
2007	254.8	10.57
2008	254.8	10.56
2009	254.8	10.77
2010	254.8	10.95
2011	254.8	11.13
2012	254.8	11.31
2013	254.8	11.5
2014	254.8	11.69
2015	255.5	11.88
2016	255.5	12
2017	255.5	12.08
	$2,804 ($1,000's)	

Roadway Improvements Based on Existing Deficiencies.

The second category of need is that based on existing deficiencies. This can include bottlenecks, lack of access, high accident locations or any other type of deficiencies where existing traffic levels are not adequately accommodated by the existing roadway system. Figures 18a and 18b indicate areas of concern as noted by public officials and citizens during the course of the study. A total of 20 comments are reflected on Figure 18. These can be grouped into four general categories as discussed below.

Access to US 20 – The following five comments are all related to access and other issues associated with US 20:

- Improvements to the county road system are needed to increase connectivity to the proposed US 20 Lorenzo interchange. (This issue is currently being studied by the Idaho Transportation Department during final design of the interchange.)
- Congestion occurs at the North Rigby US 20 interchange and Farnsworth Way.
- There is need for additional access to US 20 somewhere between 300 North (SH 48) and County Line Road to better serve southeast Jefferson County.
- When the proposed Lorenzo interchange is completed, all access to US 20 will be restricted to interchanges. Yellowstone Highway essentially serves as a frontage road on the east side of US 20. There is need to develop continuous frontage roads west of US 20, north and south of Rigby.
- Improved east-west travel across the US 20 "barrier" is needed.

All of the above issues related to US 20 were found to have merit and will be addressed in the proposed improvement plan.

School Traffic Issues – The following six comments are all related school traffic and safety:

- Jefferson County High School is located in the southeast quadrant of the intersection of SH 48 and 3800 East. This has caused significant congestion, particularly in the afternoon when school is over. SH 48 is the primary through route in Jefferson County and the intersection at 3800 North is under 2-way stop control. This creates larges delays for cars and busses wishing to enter or cross SH 48 at 3800 East. Similar difficulties are experienced at intersections east of 3800 East during peak school traffic times.
- Between 3800 East and 3rd West in Rigby, SH 48 is essentially a rural highway with no more than 2-foot shoulders and ditches on either side. There is no suitable roadside area for pedestrians and bicycles to travel the two miles between the high school at 3800 east and the City of Rigby.

FIGURE 18a

FIGURE 18a
Jefferson County Transportation Plan
Pavement Maintenance Analysis
Areas of Concern Noted in Public Comments - Jefferson County

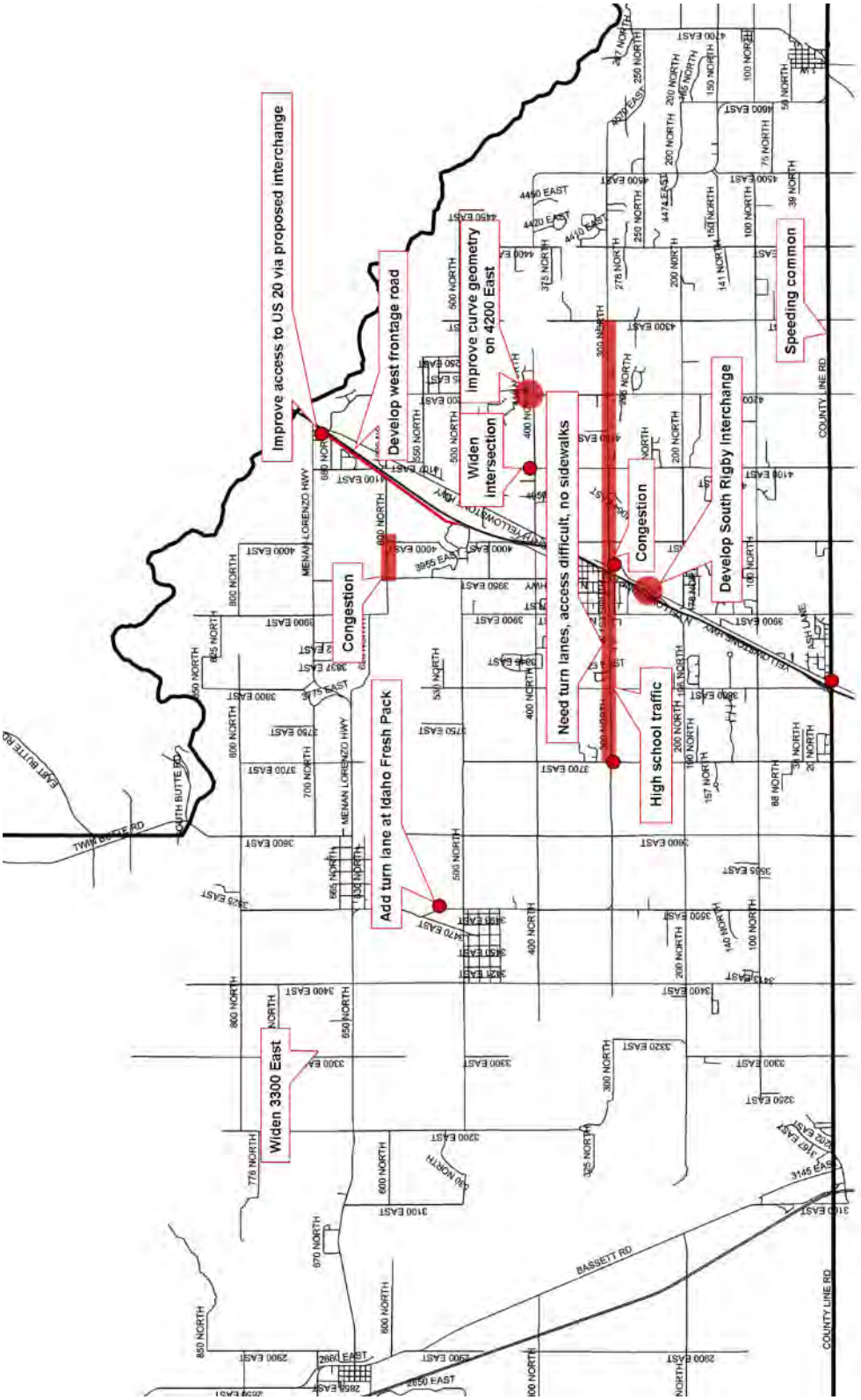
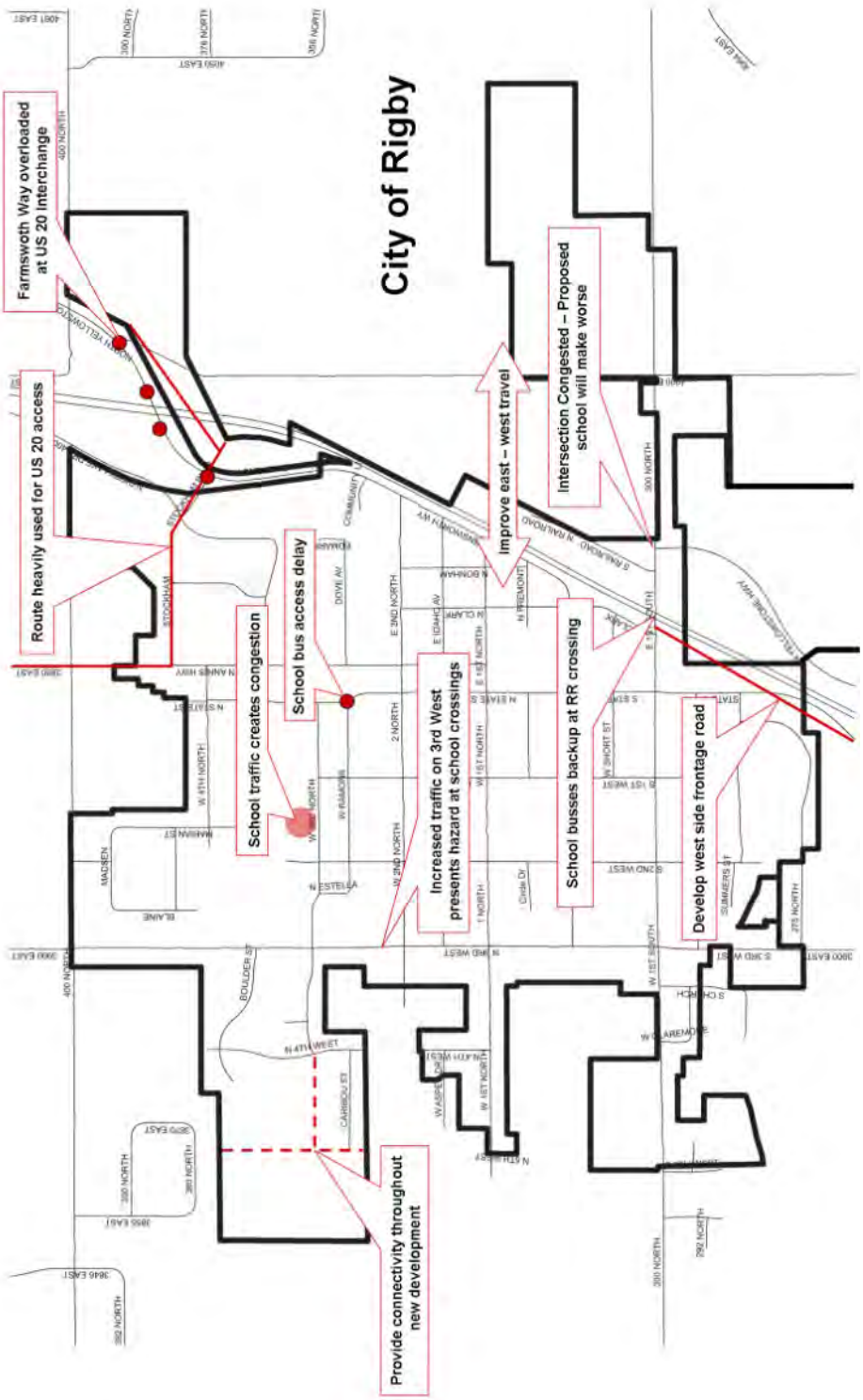


FIGURE 18b

FIGURE 18b
Jefferson County Transportation Plan
Areas of Concern Noted in Public Comments – Rigby



ITD is currently developing a design for improvements to SH 48 to address the above two concerns. Plans call for developing a continuous left turn lane on SH 48 between 3800 East and 3rd West to relieve turning congestion and make it easier for cars to enter SH 48. A continuous shared-use pedestrian/bicycle path along the south side of SH 48 will also be constructed to accommodate trips between Rigby and the High School.

- The intersection of SH 48 and Yellowstone Highway currently experiences heavy traffic and congestion. Access to a new elementary school site along 200 North would add traffic and car and bus traffic to this intersection. This require intersection improvements within the next several years.
- Directly to the west of Yellowstone Highway, school buses are required to stop before crossing the Eastern Idaho Railroad tracks. Significant delays results from a number of busses arriving at the crossing after school lets out in the afternoon. A separate lane that would allow school buses to stop at the railroad crossing without holding up all other vehicles has been suggested.
- Increased traffic on 3rd West Street generates a school crossing hazard. A significant amount of development has taken place on land west of 3rd West Street. Most of the developed area has access to 3rd West Street and thus traffic is increasing. At the same time, many students from these new neighborhoods must cross 3rd West Street to get to schools in Rigby.
- School buses that transport students from the Harwood Elementary School line up along Ramona Street. When leaving the area, access onto State Street is difficult.
- There is general congestion along North 3rd Street due to trips generated by the Harwood Elementary School.

Traffic Operations Issues - The following six comments suggest that increasing congestion is resulting from the combined effects of deficiencies inherent in a rural highway system and increased traffic demand.

- There is congestion at Annis Highway and 600 North.
- The intersection of 4100 East/4000 North should be widened.
- A series of curves on 4200 East between 400 and 450 North should be improved.
- A suggestion was made to add turn lanes on SH 48 the entrance to Idaho Fresh Pack, a large employer outside of Lewisville.
- A suggestion was made to widen 3300 East north of SH 48.
- Speeding is common on County Line Road.

Existing county roadways are typically not more than 24 feet wide including maximum shoulder widths of two feet. Intersections on the historical mile grid system often lack sight distance, are difficult to locate in advance, and have single lane approaches. The proposed plan will address the need for upgrading the mile grid system as development and growth continue. The comments noted above may point to specific locations of more immediate need. More importantly, they are symptomatic of a growing need for a general upgrade of the existing roadway system wherever growth is occurring.

System Continuity**:** – Two of the comments relate to the need to maintain the continuity of through roadways as areas develop. The existing mile grid system effectively served lands divided into fractions of square miles as is customary for farming activities. Jefferson County and Rigby are experiencing residential growth that divides land ownership and access needs into fractions of acres rather than fractions of square miles. A "sub-mile" system of through roadways to serve smaller land divisions does not exist outside of existing development within city limits. Square miles of land are being developed with no internal collector systems. Ultimately this pattern of development will drive the failure of the mile grid system because of the number of access points to the grid system needed, and the need for *all* trips to use the grid to go *anywhere*. A plan for street continuity on a sub-mile basis is necessary to create sub-mile collector systems as development occurs.

- Recent development on the west side of Rigby and extending beyond the City Limits has occurred with little attention given to through collector streets with sub-mile spacing.
- Stockham Road is heavily used as a connector between Annis Hwy and Farnsworth Way by vehicles en route to the North Rigby interchange with US 20. This requires numerous turns and adds a significant amount of through traffic on a roadway which must also serve a growing amount of adjacent commercial and retail development. Much of the misdirected travel to reach the interchange is a result of the current configuration of the North Rigby interchange. It is shaped to serve the historically predominant pattern of northeast-southwest movement parallel to the then Union Pacific Railroad and Yellowstone Highway. With the growth in Jefferson County, it is apparent that this configuration does not provide efficient east-west movement to and across US 20.

Need for Safety Improvements

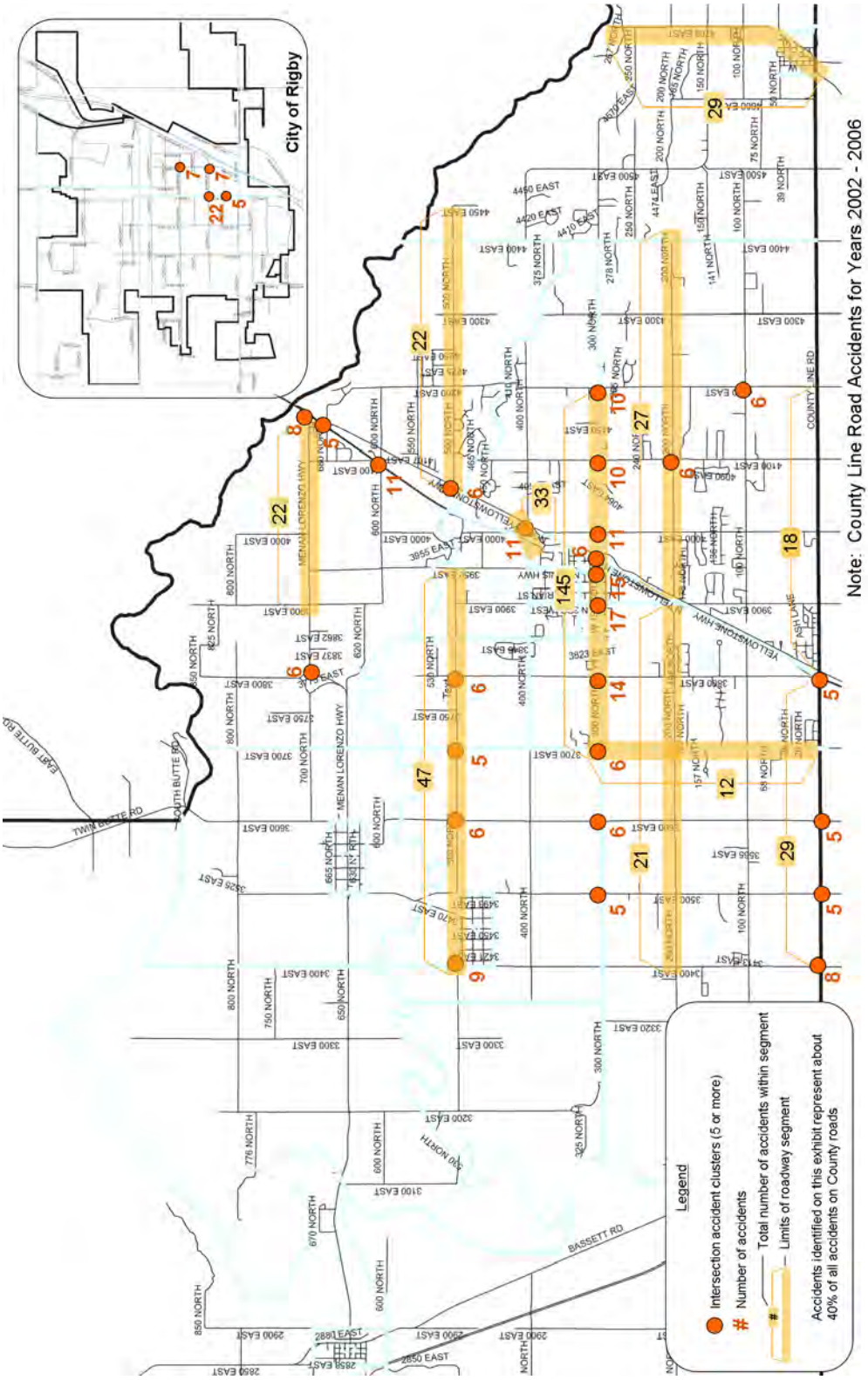
The general characteristics of accidents within Jefferson County were discussed in Chapter 2. To focus more directly on improvement needs as suggested by accident experience, accidents were grouped according to location. Figure 19 shows intersections with 5 or more accidents over the 5-year period evaluated (orange dots). Figure 19 also shows segments of various roadways with higher accident frequencies. The highest accident experience occurs along SH 48 between 3800 East and 4200 East. This is not suppressing considering the growing traffic volumes on SH 48 and the difficulty of entering the traffic stream.

Of perhaps greater interest and concern is the higher accident experience occurring along relatively low volume roads such as 500 North, 200 North, or County Line Road. The growing accident experience along segments of roadways and at various intersections throughout the growing southeast section of Jefferson County suggest that the existing rural grid system is already stressed by traffic to and from recent residential development. Some observed characteristics of the existing mile roads that would tend to increase accident experience are:

- Sub-standard shoulder widths,
- Steep drainage ditch slopes,
- Adjacent irrigation channels or embankments,

FIGURE 19

FIGURE 19
Jefferson County Transportation Plan
Locations with High Accident Frequency



- Poor sight distance at intersections,
- Little advance "presence" of many intersections.

The narrow shoulders and intersection areas provide little opportunity for recovery from an error and the increasing traffic provides increased opportunity for errors to occur. Over time it will be necessary to upgrade the roadside safety characteristics of the system and improve the capacity and visibility of the mile grid intersections.

County Roadway Improvements Based on Increased Travel Demand

This section presents various analyses and evaluations of the effect of the forecast traffic demand on the existing system and resulting need for improvements. First, capacity analyses were performed at a sampling of intersections throughout the Jefferson County to determine how the forecast traffic growth would affect operations at various intersections.

Future Capacity Analysis

Figure 20 illustrates the results of capacity analyses performed at a sampling of intersections throughout the county. Underlying this analysis is the idea that the major routes in the county (SH 48, County Line Road) can generally operate with two-way stop control. That is, traffic on the main road does not have to stop (with some exceptions). This is very desirable for longer trips through the county.

With the forecast growth in future traffic, the analyses indicated that this type of operation will be able to continue only at intersections shown with green circles. At the other end of the spectrum, intersections along SH 48 between 3800 East and 4200 East not be able to operate under either 2-way or 4-way stop control. Traffic will have to diverted to other roadways or a system of signal control will be required along SH 48.

Intersections along County Line Road may operate as stop controlled intersections, but only with 4-way stop control and the addition of right turn lanes on all approaches.

The above information illustrates what can happen to a rural roadway system under the pressure of increased development. Under existing conditions, traffic on main roads can operate freely, protected by stop signs on the cross roads. As traffic increases on the main roads, stopped traffic on the crossroads finds it increasingly difficult to enter or cross main road traffic. Ultimately, entering the main road becomes first hazardous and then "impossible" without some form of traffic control on the main road. Now the main road no longer operates freely.

SH 48

For Jefferson County, US 48 is the primary corridor connecting all of the existing communities. Growth pressures will likely be greatest along this corridor. However, SH 48 will not be able to service the forecast traffic growth, with or without improvements.

FIGURE 20

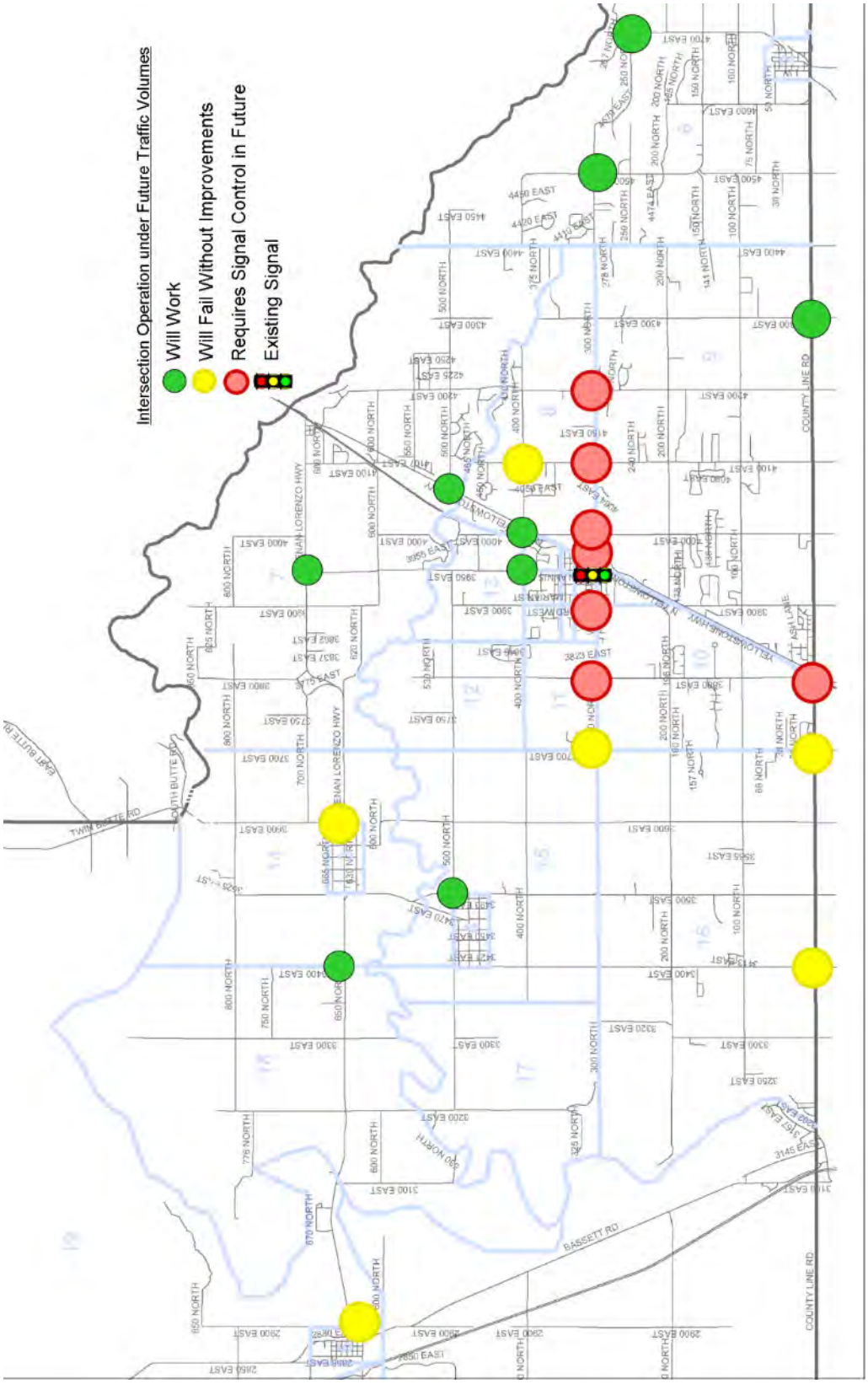


FIGURE 20
Jefferson County Transportation Plan
Evaluation of Future Operations at Selected Intersections

As traffic increases, it will be necessary to add some stop and signal control to SH 48. However, it is in County's interest to minimize the interruptions and maintain SH 48 as the primary cross county connection. To do this, it will be necessary for the future County roadway system to offer attractive alternatives to using SH 48. At the same time, the function of SH 48 must be protected by implementation of policies to control access along the highway. As SH 48 lies entirely within Jefferson County, this action is directly related to the interests of Jefferson County.

Corridor Traffic Needs Analysis

The primary conclusion from the above discussion is a need to develop a secondary system of desirable roadways within the county. The issue is where. Jefferson County contains several barriers to traffic including I-15, SH 20, the Snake River, and Dry Bed Creek. These barriers and the zigzag routing of SH 48 can distort the patterns of desired travel.

Figure 21 is a different way of looking at forecast traffic that can be helpful because it ignores traffic barriers and the form of the current system. Figure 21 was developed as follows:

- Trips from the 28 internal zones and 8 external zones were summed into nine "Districts"
- Districts A through I are represented as circles in the approximate location of the area each represents.
- Each district is connected directly to adjoining districts with links representing direct lines of travel or desire lines.
- Trips to and from each district were routed along the links – revealing the number of future additional trips along direct lines of travel.
- The volumes shown on the links are expressed as the estimated two-way average daily traffic corresponding to the forecast peak hour volumes. This was done to simplify link comparisons.

The following observations and conclusions are based on the future additional traffic demand as illustrated in Figure 21.

1) The 4,400 vehicles per day (vpd) forecast for link A-B represents one of the larger increases. However, given the low existing volumes (on the corresponding section of SH 48) this link volume would not prompt improvement of an alternative roadway corridor. The geographic constraints imposed by the Snake River and Dry Bed Creek would make development of an alternative corridor difficult. It is therefore important to protect the efficiency of this segment of SH 48 by means of a balance of roadway improvements and access management.

2) Low forecast volumes (2,400 vpd) on link B-C combined with low existing volumes on the Menan-Lorenzo highway suggest that no significant improvements are necessary in this corridor.

FIGURE 21

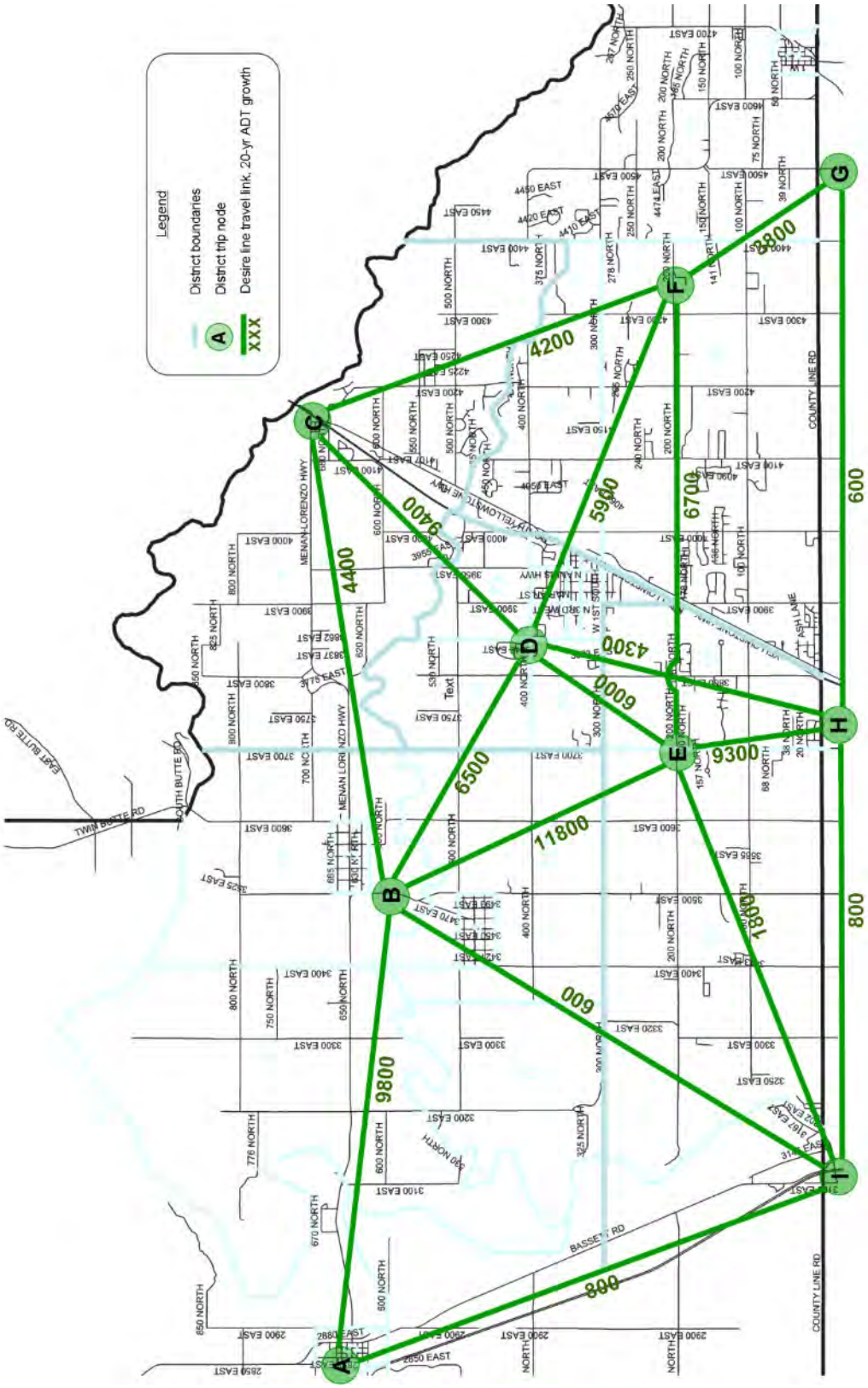


FIGURE 21
Jefferson County Transportation Plan
Future Traffic Desire Line Diagram

3) Link C-D shows a relatively high increase (4,300 vpd). There is already concern of congestion on Annis Highway (3950 East), the primary route for local northbound trips from Rigby. Improvements to be considered in this corridor should include a continuous frontage road west of US 20 and upgrading the county roadway system.

4) Link C-F (2,100 vpd) does not show a particularly large volume. However it does suggest the need for a north-south corridor with good continuity serving areas east of US 20. 4200 East is suggested for this role because it is centrally located to growth areas, as generally good continuity, and could best be routed to feed the proposed US 20 Lorenzo interchange.

5) Taken together, links D-F, E-F, and H-F show a strong increase in demand for east-west travel across the US 20 boundary. The total volume on these three links is 7,800 vpd. This increase in demand cannot be accommodated at the existing grade separated US 20 crossings at SH 48 and County Line Road. Two thirds of this increased demand is located south of SH 48 – suggesting a new crossing of SH 20 south of SH 48 would be beneficial. What is needed is a strong east-west corridor south of SH 48 between 4400 East and 3400 East. This is consistent with growth patterns as noted earlier. There is also the desire to develop a full interchange south of Rigby. These two issues support each other. The location of a new crossing should be selected in connection with the feasibility of a full interchange.

6) Links H-D (3,300 vpd) and E-D (2,900 vpd) suggest the need to develop a primary north-south corridor east of 3800 East. Link E-D traffic demand could also be helped by a full interchange south of Rigby.

7) Links E-H (3,600 vpd) and E-B (4,800 vpd) suggest that a westerly north-south corridor starting at the County Line, intersecting with the proposed east-west corridor and heading northward to 650 North will be needed. This functionality may be very well provided using the Lewisville Highway, but other more eastern corridors should be considered.

8) Link B-D (3,600 vpd) suggests that a east-west corridor north of Rigby could be attractive in serving more northerly movements. Either the 400 North or 500 North corridors should be considered for improvement as the primary east-west roadway north of Rigby Improvements in the US 20 interchange to enhance the east-west movement and provide easier access to the interchange should also be investigated.

Improvement Concepts to Address Jefferson County Roadway System Needs

Rather than a "one need – one project" approach, the needs of Jefferson County suggested a systems approach to improvement concepts that would address above improvement needs in more than one way. Figure 22 outlines a series of improvement concepts that addresses the above needs. The concepts illustrated in Figure 22 are described as follows:

County-Wide Circulation System

There is a need to upgrade a system of roadways to act as the primary circulation routes through the county as development intensifies. For this to occur in an orderly manner, it is necessary to identify roadways that would constitute the primary circulation system.

Sub-Mile Collector Planning

More recent development has abandoned the traditional grid roadway system. The pattern of development threatens to create large areas of land with no system of through collector roads. Planning and policy for establishing the location of through collector roadways to allow traffic to efficiently travel between individual sub-divisions and the surrounding area is essential.

SH 48 Corridor Upgrades

Capacity and safety improvements are needed along SH 48 between 3800 East and 4200 East.

Better Connectivity Between County Circulation and US 20

Improvements within this concept could include a new interchange south of SH 48, reconfiguration of the North Rigby interchange, and frontage roads west of US 20.

Intersection Upgrades

Improvements of this type refer to making improvements to intersections on the mile grid to improve safety and capacity. It is intended that these be made over time, on an "as needed" basis, depending on where development occurs.

Mile Grid Improvements

This concept involves making safety and capacity improvements to the mile grid roadways. As with the intersection projects, these improvements would be made on an as needed basis.

Further elaboration of these concepts is presented in Chapter 6 – Recommendations.

FIGURE 22

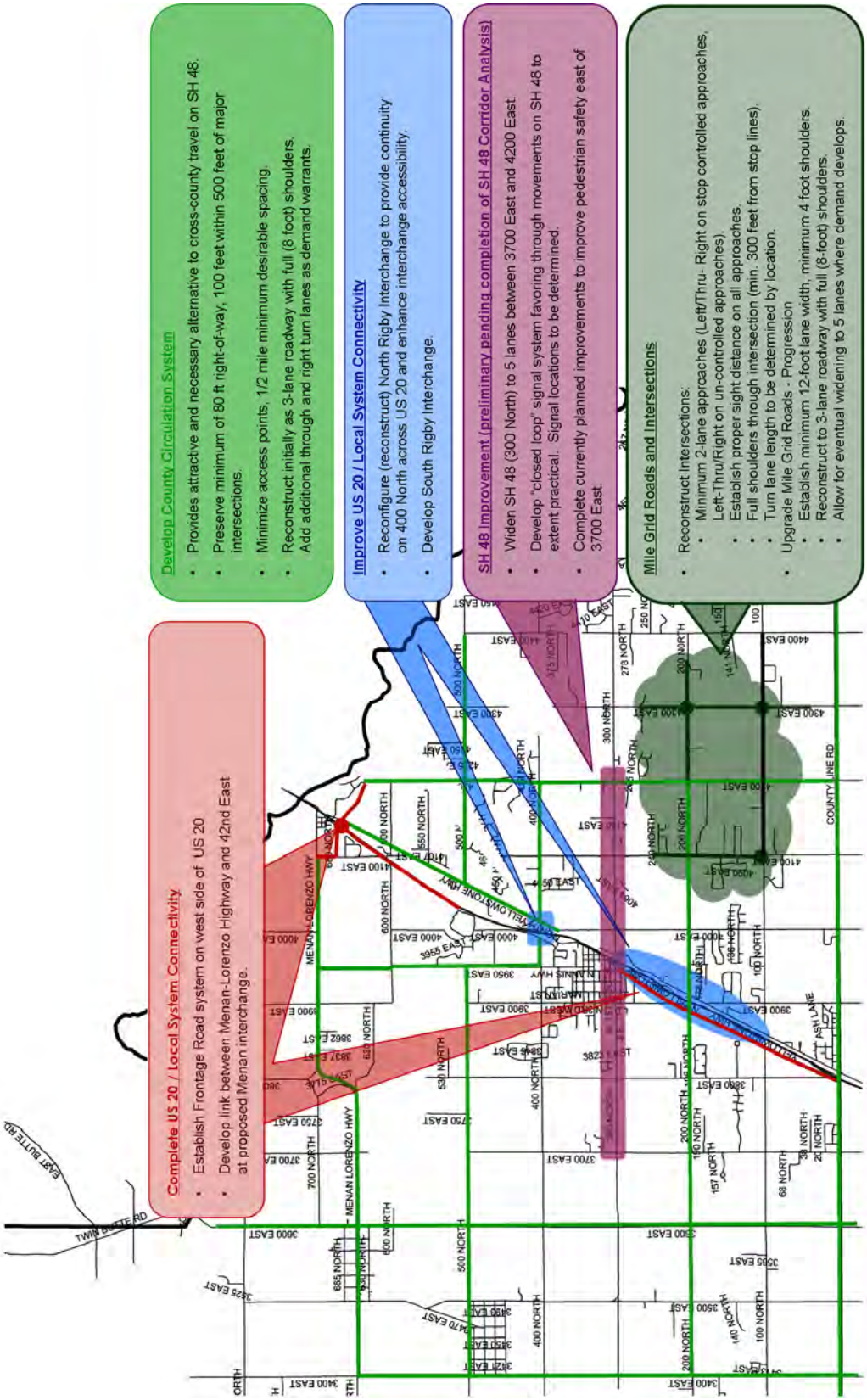


FIGURE 22
Jefferson County Transportation Plan
Transportation Needs Improvement Concepts

CHAPTER 6 Recommendations

Given the current and expected growth, Jefferson County and the communities within are facing an increasing need to maintain and improve the roadway systems. The needs for increase maintenance have been established in Chapter 5. This chapter addresses capital improvements. This is followed by a discussion on funding. The final section discusses enhancements to policies (development ordinances, access management, agency co-operation) that directly affect the quality and efficiency of the roadway system.

CAPITAL IMPROVEMENTS

Chapter 5 has identified capital improvement concepts that will be necessary to maintain transportation service throughout Jefferson County as the county continues to grow. In this section, the improvement concepts are further refined to become a list of definable projects, each with an order of magnitude cost estimate. This list, first organized by project type, is then organized along a time line and presented as a Capital Improvement Program.

Definition of Capital Improvement Projects

Table 5 is list of recommended capital improvement projects that addresses the identified needs and improvement concepts discussed in the previous chapters. The list includes 30 projects, grouped into eight project types. In addition to construction projects, this list includes several "studies". Studies have been include because they are often a prerequisite for project construction and studies represent one-time costs that become budget items similar to a capital improvement. A description of the various projects in the general order of grouping follows:

West Rigby Circulation Plan

This project involves masterplanning of a local circulation system generally west of Rigby. More recent development has abandoned the traditional grid roadway system. The pattern of development threatens to create relatively large areas of land with no system of through collector roads. A plan for establishing the location of through collector roadways to allow traffic to efficiently travel between individual sub-divisions and the surrounding area is essential.

North Rigby Interchange Concept Study

This study, potentially way ahead of any possible funding, involves development of a concept plan for the reconfiguration of the North Rigby Interchange to better serve the circulation needs of Rigby and Jefferson County. The point of including it in plan at a relatively early date is to identify the general right-of-way needs and thus be able to avoid intense development in areas needed for future improvements. Development of this concept report will also influence ITD decisions regarding maintenance to the existing interchange.

TABLE 5
Jefferson County Transportation Plan
Recommended Capital Improvement Projects

Rigby Projects

Jurisdiction	Project Description
Rigby	Study - West Rigby Circulation Plan
State/Rigby	Study - North Rigby Interchange Concept Plan
State/Rigby	Traffic Signal - SH 48 / 3rd W
State/Rigby	Traffic Signal SH 48 / Yellowstone
Rigby	Construct Local Connector Roadways
Rigby	Stockham/Rigby Lake/Farnsworth Circulation Improvements
Rigby	Roadway Upgrade - Annis Hwy / 3rd North-400 North
State/Rigby	North Rigby Interchange Approach Widening

Jefferson County Projects

Jurisdiction	Project Description
Jefferson Co.	Study - County-Wide Circulation Corridor Preservation Plan
Jefferson Co.	County Volume / Accident Monitoring Program
State/Jeff. Co.	Study - South Rigby Interchange Concept Plan
Jefferson Co.	Mile Grid Intersection Street Signs
Jefferson Co.	Mile Grid Intersection Advance Warning
State/Jeff. Co.	Widening - SH 48 to 3 Lanes - Yellowstone to 4200 East
State/Jeff. Co.	Traffic Signal - SH 48 / 3800 W
Jefferson Co.	Intersection Upgrade - 4100 East / 200 North
Jefferson Co.	Intersection Upgrade - 4000 East / 200 North
Jefferson Co.	Intersection Upgrade - 4200 East / 200 North
Jefferson Co.	Intersection Upgrade - Yellowstone / 400 North
Jefferson Co.	Intersection Upgrade - 4200 East / 100 North
Jefferson Co.	Intersection Upgrade - 3800 East / 500 North
Jefferson Co.	Intersection Upgrade - 3600 East / 500 North
Jefferson Co.	Intersection Upgrade - 3400 East / 500 North
Jefferson Co.	Mile Grid Roadway Upgrade - 4000 East / 100-300 North
Jefferson Co.	Mile Grid Roadway Upgrade - 3800 East / 100-300 North
Jefferson Co.	Mile Grid Roadway Upgrade - Annis Hwy / 400-500 North
Jefferson Co.	Mile Grid Roadway Upgrade - 200 North / Yellowstone - 4200 East
Jefferson Co.	Mile Grid Roadway Upgrade - 400 North / Yellowstone - 4200 East
Jefferson Co.	Mile Grid Roadway Upgrade - 200 North / 3600-3800 East
Jefferson Co.	Mile Grid Roadway Upgrade - 500 North / 3700 - 3950 East

Traffic Signals

These projects encompass the funding, design, and construction of new traffic signal installations. Since all of the locations suggested are on SH 48, traffic signal projects will require the approval of ITD and could be expected to be jointly funded with ITD. However local initiative will be necessary to get these projects into ITD improvement plans.

Stockham Blvd/Rigby Lake Road/Farnsworth Way Circulation Improvements

This project consists of planning, funding and reconstruction of local roads in the vicinity of the Stockham/Rigby Lake and Stockham/Farnsworth intersections to ease congestion for traffic approaching businesses along Stockham Blvd and the US 20 interchange on Farnsworth Way. This project assumes that a full reconstruction of the North Rigby interchange and associated circulation system would not occur for many years. Thus an interim reconfiguration of the Stockham/Rigby Lake intersection should be considered

Annis Highway Improvements (Rigby)

Beyond 400 North, Annis Hwy is designated as part of the County-wide Circulation System. Annis Highway is the primary northbound route out of Rigby. This project covers improvements within Rigby. At this time Annis Hwy is a 24 to 26 foot wide street operating as a two lane roadway and carries approximately 2,000 vpd. As traffic increases (forecasts indicate an additional 4,500 vpd in this corridor) it will be necessary to upgrade Annis Highway to better accommodate through and turning traffic and evaluate need traffic control other than the present 2-way stop control.

North Rigby Interchange Approach Widening

This project is fully within ITD jurisdiction but will need to be supported by Rigby, with possible joint funding of some portions of Farnsworth Way and Yellowstone Hwy approaching the interchange. It consists of adding approach lanes to the existing off ramps and interchange crossroad approaches (Farnsworth Way) to alleviate growing congestions and delay for US 20 ramp traffic. Elements of this project overlap other projects: Stockham Blvd/Rigby Lake Road/Farnsworth Way circulation improvements west of US 20 and intersection improvements at Yellowstone Avenue and 400 North.

County-Wide Circulation Corridor Preservation Study

The transportation plan has identified the need for upgrading a system of roadways to act as the primary circulation routes through the county as development intensifies. The full system will evolve over an extended period of time. Segments will be improved as required by development and as development is able to contribute to roadway improvements. For this to occur in an orderly manner, it is essential that Jefferson County develop a general plan for the improvements to each of the roadways in the circulation system. The plan would identify to which side widening would occur and establish general right-of-way requirements for roadway segments and intersections. This plan will then serve as to guide development decisions to allow for eventual completion of the system.

County Volume / Accident Monitoring Program

As development occurs, traffic volumes will increase and various roadway segments and intersections will need to be upgraded. Prioritizing capital expenditures for these improvements will become a continuous process. Frequent monitoring of accidents and traffic volumes on at least the mile grid will be necessary to justify and prioritize ongoing improvements. This cannot be done without a County level effort to maintain accurate traffic volume data and review accident locations. Accident data can be readily obtained from ITD. However a local process for evaluating this information is needed. Count information can best be obtained if the County makes a capital expenditure for counting equipment and software and establishes a rotation for making counts. This "project" would provide the funding for obtaining counters and developing the monitoring process for accident and traffic count data.

South Rigby Interchange Concept Plan

The South Rigby Interchange Study, completed as part of this study and included as Attachment 1, concluded that a new all-direction interchange located between SH 48 and County Line Road should be constructed as part of the overall Jefferson County transportation improvement plans. The first step towards implementation is to request that ITD perform a Concept Study. While it may be some time until funding sufficient for construction of the interchange is completed, it is important to pursue the concept study as soon as is feasible. The concept study will give the Rigby and Jefferson County a basis for preserving right-of-way and it will complete the first step in the ITD programming and funding allocation process.

Mile Grid Intersection Street Signs

The study has identified intersections on the existing mile grid roadway system that experience many accidents. As development continues to occur the safety of the existing intersections is likely to continue to decline. A low cost recommendation to improve safety is to make the locations of the intersections more visible from a distance by installing larger (12inch high) street signs at all of the mile grid intersections.

Mile Grid Intersection Advance Warning Signs

As a further aid to increase driver awareness of an upcoming major intersection, this project would erect advance warning signs on all four legs of all mile grid intersections.

Reconstruct SH 48 to 3 Lanes – Yellowstone Hwy to 4200 East

Existing accident experience and traffic volumes indicate a need for improvement of SH 48 between Yellowstone Hwy and 4200 East. Improvements should include initial widening to a three-lane road with provisions for future widening to 5 lanes, and widening of all major cross road approaches. This improvement, together with recommended signalization, will address growing needs at the SH 48/Yellowstone intersection. However, the needs of this intersection may require interim construction of turn lanes (westbound left and northbound right) to meet traffic demands until full length improvements to SH 48 can be accomplished. Installation of a second signal east of US 20 (in addition to the signal proposed at Yellowstone Hwy) to effectively control traffic operations through this urbanizing section of SH 48 should be considered. SH 48 is

under ITD jurisdiction, however solid support from Jefferson County and Rigby will likely be necessary to advance this project.

Intersection Upgrades

Projects of this type refer to making improvements to intersections on the mile grid to improve safety and capacity. It is intended that these be made over time, on an "as needed" basis. The minimum improvement recommended is to reconstruct all four legs of an intersection to allow for two-lane approaches on each leg. If appropriate to the area, curb and gutter may be added in the vicinity of the intersection as well. If the setting is generally rural, the reconstruction would entail adding a six foot shoulder on all legs. The shoulder reinforces the awareness of an upcoming intersection and allows vehicles more freedom to make accident avoidance maneuvers. It is recognized that making these improvements may require significant relocation of intersections where the existing roadways are adjacent to major irrigation facilities.

Intersection upgrade projects will be an ongoing effort triggered by increased traffic at specific locations, depending the actual pace and location of development. The initial project list includes eight intersections thought to be of more immediate importance. All have above average traffic volumes and accident experience. The intersections on 200 North are in an area where considerable growth has already taken place. In addition, 200 North is included in the County-Wide Circulation System and thus improvements of these intersections compliments the longer term plan of improvements to 200 North. Finally, the South Rigby Interchange, as developed thus far, uses 200 North as the primary County connector to the interchange. Thus improvements to 200 North will show the State that Jefferson County is providing the local roadway system necessary to make the South Rigby interchange fully effective. The intersections on 500 North also compliment the County-Wide Circulation System. The intersection improvements are a relatively low cost way to strengthen the 500 North corridor. This will make it easier for the County to control development along 5th North until full improvement of this corridor is feasible.

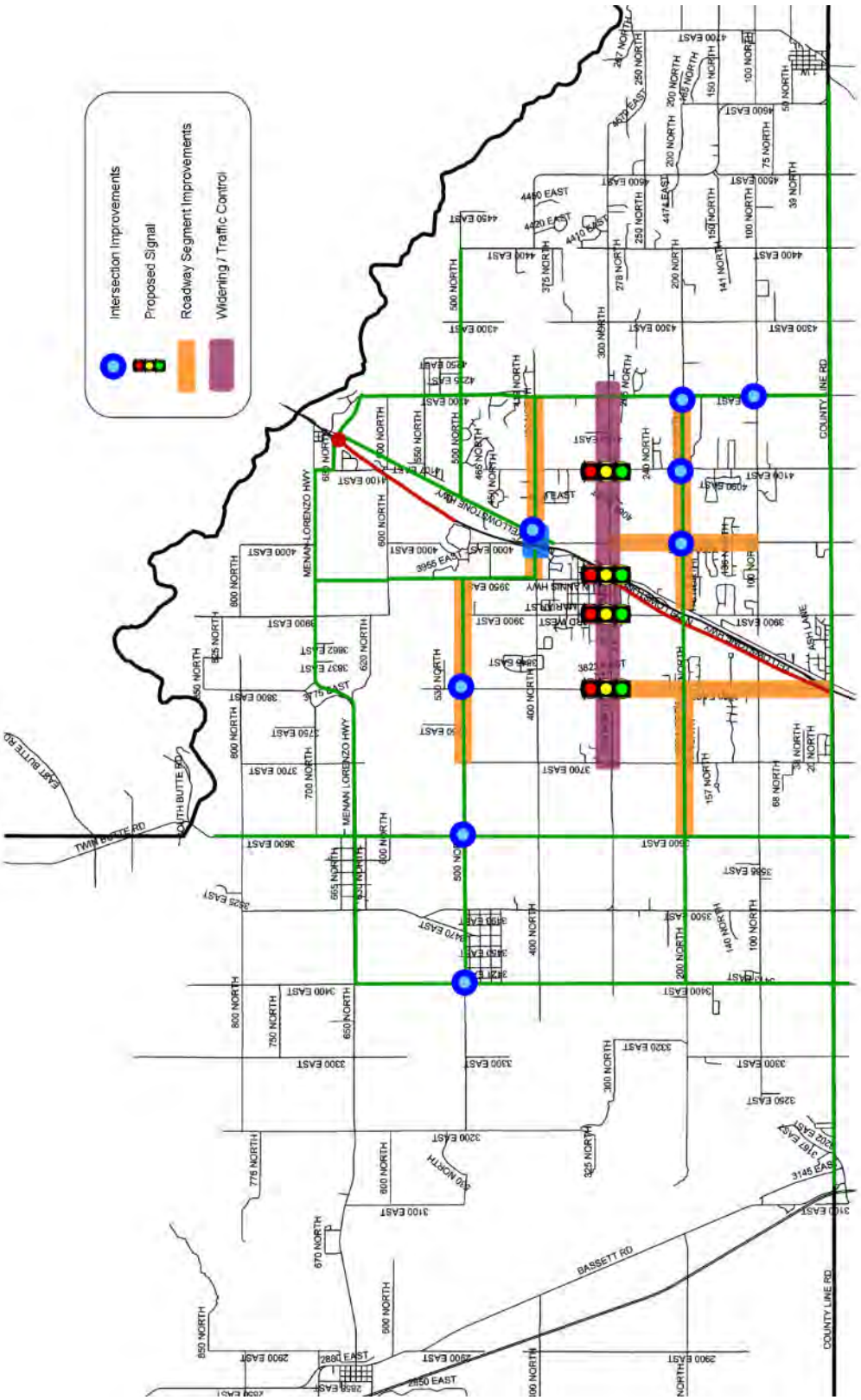
Mile Grid Improvements

This type of project involves making improvements to the mile grid roadways themselves. According to need, improvements may begin by widening to a standard 28 foot rural section (two 12-foot lanes and two 2-foot shoulders and progress to a three-lane roadway with 6-foot shoulders. For some roadways the ultimate configuration may be as a 5-lane road (plus bike lanes) with curb, gutter, and sidewalks. It is intended that the Primary Circulation System be planned as five-lane roads. Other grid roads would be widened to the extent necessary. As with the intersection projects, "simple" widening projects can be greatly complicated by nearby irrigation facilities.

Mile grid improvements will also be an ongoing effort triggered by increased traffic at specific locations, depending the actual pace and location of development. The initial project list includes seven roadway projects totaling 15 miles in length that are thought to be of more immediate importance. As with the intersection improvements the roadway segments selected respond to existing development patterns, the beginning of the

FIGURE 23

FIGURE 23
Jefferson County Transportation Plan
Recommended Capital Improvement Projects



County-Wide Circulation System and providing the local system connectivity with the proposed South Rigby Interchange.

Bridges

Bridges with a span of 20 feet and greater are inspected through a national program administered by ITD. From these inspections a sufficiency rating is calculated in a range of 0 to 100. The sufficiency rating reflects the structural condition, compliance with current design standards, and importance for public use. It determines eligibility for federal bridge funds.

There are 78 bridges in the County with a span of 20 feet and greater. These bridges are generally in good condition with an average sufficiency rating of around 83. Based on available inspection reports summaries there are five bridges that are structurally deficient and three that are functionally obsolete.

There are 118 structures in the County with spans less than 20 feet (short spans) and are not included in the national inspection program. Thus, little condition data is available. It is reasonable to assume that the condition of the short spans are similar general to that of the longer spans.

Table 6 lists bridges with sufficiency ratings below 80. This list suggests the need to replace / rehabilitate several bridges over the next 20 years. Two of the bridges have a sufficiency rating below 50, indicating a more urgent need for replacement.

Based on the condition and needs of the bridges with sufficiency ratings, and applying a similar need to the short structures, suggests an estimated cost to the county for bridge improvements of about $4 million during the next twenty years. This cost is distributed over segmented years as indicated in the Capital Improvement Plan.

A county level inspection program for short span structures it is recommended to further evaluate their condition to assist in systematically programming the needed replacement or rehabilitation work.

TABLE 6
Jefferson County Transportation Plan
Bridge Condition Summary

Bridge Spans 20 Feet and Greater

Bridge Key	Route	Water Features	Sufficiency Rating
32660	Old Hwy 20	Menan Canal	28.1
32270	700 North Rd	Butte Market Lake Canal	40.0
32445	100 North Rd	Burgess Canal	52.2
20945	Stc 6768	Farmers Friend Canal	63.6
32340	550 West Road	Long Island Canal	64.0
32430	N 4950 E Rd	Farmers Friend Canal	64.0
32425	160Th Road	Eagle Rock Canal	64.1
32320	1900 East Rd	Camas Creek	64.8
32280	Co.Rd;Plng#055B	Butte Market Lake Canal	67.2
32505	105Th East Rd	Burgess Canal	68.9
32590	Co.Rd;Plng#077B	Dry Bed Creek	69.0
32555	N 4300 E Rd	Dry Bed Canal	69.2
32415	County Road	Butte Market Lake Canal	69.8
32530	4100 East Rd	Burgess Cnl;Se.Rigby Br	70.3
32405	500 North Rd	Long Island Canal	70.5
32290	3900 East Rd	Burgess Cnl;Sw.Rigby Br	70.7
32645	Old Hwy 20	Parks Lewisville Canal	73.7
20905	Stc 6748;3950 East	Lewisville Canal	74.2
20910	Stc 6748;3950 East	Dry Bed	74.2
32545	Old Yellowstone Hw	Burgess Canal	75.4
32360	E 1800 N Rd	Camas Creek	76.2
32500	3700 East Rd	Burgess Canal	76.4
32470	1800 East Rd	Camas Creek	77.4
32575	3600 East Rd	Dry Bed Cr;Ne.Lewisville	78.5
32520	4800 East Rd	Burgess Cnl;Se.Labelle	78.8
32525	3800 East Rd	Burgess Cnl;W.Rigby Br	78.9

Short Spans (less than 20 feet)

There are 118 structures in Jefferson County less than 20 long.

Assuming the condition of these briges is similar to those above, 40 short span bridges are estimated to be in need of replacement or rehabiliation over the next 20 years

The Recommended Capital Improvement Plan

The above section has described a list of capital improvements identified by this study. The recommended Capital Improvement Plan (CIP) adds the elements of time and cost to provide Rigby and Jefferson County with a guide as to the priority of the various improvements and a general measure of future funding requirements. When reviewing this plan it is helpful to consider the following:

- It is possible to establish the magnitude of "needs" with some sense of certainty if one considers a long enough time period. Slicing that need into to 5-year increments creates a far greater amount of uncertainty because the division of needs is more dependant on the actual pace and location of development.
- The time line of projects implies an availability of funding (Federal, state, local) that looks more hopeless the closer the suggested improvement is. This rightfully influences the first 5-year time segment. However, after that, need is the driver rather than perceived funding availability. The CIP is intentionally not financially constrained. To do so would be to deny the reality of the current and forecasted growth and the consequential needs.

The above conditions are acceptable because, although there are certainly immediate needs, implementation of the recommended plan will take place over decades. During that time the plan should be checked against actual growth and need. It will be modified to reflect the actual reality as the future comes. Therefore, the risk of committing large amounts of capital to inefficient uses are minimal. The importance of a plan is to encourage a start towards meeting the foreseeable needs, with the confidence that actions taken now will be good steps towards an efficient whole.

Table 7 presents the recommended Capital Improvement Plan based on the identified needs and corresponding projects. The projects have been prioritized within 5-year increments for the 20-year study period. An order-of magnitude cost is provided for each project. The costs do not include allowances right-of-way or inflation. All are 2007 cost estimates.

Years 1 through 5

Projects in the first 5-year period focus on the studies necessary to guide future development so as not to preclude development of good transportation system in the future. Studies include sub-mile circulation plans, definition of the requirements for the County-wide Circulation Plan and the South Rigby Interchange Concept Plan. Installation of two traffic signals at now critical intersections on SH 48 is also included. Finally the heavy work of intersection upgrades (two included) and mile grid roadway upgrades (3 miles) are recommended in the first 5-year plan. The estimated cost of the Year 1 through 5 improvements is $5.4 million for Rigby and $14.5 million for Jefferson County. This estimate assumes that the costs of the signal installations will be 50 percent local funding.

TABLE 7
Jefferson County Transportation Plan
Recommended Capital Improvement Plan

City of Rigby

Years	Jurisdiction	Project Description	Units	Cost	Quantity	Amount ($1,000's)
1 thru 5	Rigby	Study - West Rigby Circulation Plan	Study	$ 35,000	1	$ 35
	Rigby	Construct City Collector Street	Mi	2,600,000	2	5,200
	State/Rigby	Traffic Signal - SH 48 / 3rd W	Signal	125,000	1	125
				Total - Years 1 thru 5		**$ 5,360**
6 thru 10	State/Rigby	Traffic Signal SH 48 / Yellowstone	Signal	$ 125,000	1	$ 125
	Rigby	Stockham/Rigby Lake/Farnsworth Circulation Improvements	Lump Sum	600,000	1	600
	State/Rigby	North Rigby Interchange Approach Widening	Lump Sum	100,000	1	100
	State/Rigby	Study - North Rigby Interchange Concept Plan	Study	-	1	-
	Rigby	Construct City Collector Street	Mi	2,600,000	2	5,200
				Total - Years 6 thru 10		**$ 6,025**
11 thru 15	Rigby	Roadway Upgrade - Annis Hwy / 3rd North-400 North	Lf	$ 80	5280	$ 422
	Rigby	Construct City Collector Street	Mi	2,600,000	2	5,200
				Total - Years 11 thru 15		**$ 5,622**
16 thru 20	Rigby	Construct City Collector Street	Mi	$2,600,000	2	$ 5,200
				Total - Years 16 thru 20		**$ 5,200**
				20-Year Total		**$ 22,207**
				20 Year Average		**$ 1,110**

Jefferson County

Years	Jurisdiction	Project Description	Units	Cost	Quantity	Amount ($1,000's)
1 thru 5	Jefferson Co.	Mile Grid Intersection Street Signs	Intersect	$ 700	130	$ 91
	Jefferson Co.	Mile Grid Intersection Advance Warning	Intersect	800	130	104
	Jefferson Co.	Study - County-Wide Circulation Corridor Preservation Plan	Study	25,000	1	25
	Jefferson Co.	County Volume / Accident Monitoring Program	Lump Sum	75,000	1	75
	State/Jeff. Co.	South Rigby Interchange Concept Study	Study	-	1	-
	Jefferson Co.	Intersection Upgrade - 4100 East / 200 North	Intersect	210,000	1	210
	State/Jeff. Co.	Traffic Signal - SH 48 / 3800 W	Signal	125,000	1	125
	Jefferson Co.	Intersection Upgrade - 3800 East / 500 North	Intersect	125,000	1	125
	Jefferson Co.	Mile Grid Roadway Upgrade - 200 North / Yellowstone - 4200 Eas	Mi	4,400,000	3	13,200
	Jefferson Co.	Brige Repair and Replacement				500
				Total - Years 1 thru 5		**$ 14,455**
6 thru 10	Jefferson Co.	Intersection Upgrade - 4000 East / 200 North	Intersect	210,000	1	$ 210
	Jefferson Co.	Intersection Upgrade - 4200 East / 200 North	Intersect	210,000	1	210
	Jefferson Co.	Intersection Upgrade - Yellowstone / 400 North	Intersect	210,000	1	210
	Jefferson Co.	Intersection Upgrade - 4200 East / 100 North	Intersect	210,000	1	210
	State/Jeff. Co.	Widening - SH 48 to 3 Lanes - Yellowstone to 4200 East	Mi	2,200,000	3	6,600
	Jefferson Co.	Mile Grid Roadway Upgrade - 4000 East / 100-300 North	Mi	4,400,000	2	8,800
	Jefferson Co.	Intersection Upgrade - 3600 East / 500 North	Intersect	210,000	1	210
	Jefferson Co.	Intersection Upgrade - 3400 East / 500 North	Intersect	210,000	1	210
	Jefferson Co.	Mile Grid Roadway Upgrade - 400 North / Yellowstone - 4200 Eas	Mi	4,400,000	2	8,800
	Jefferson Co.	Brige Repair and Replacement				1,500
				Total - Years 6 thru 10		**$ 26,960**
11 thru 15	Jefferson Co.	Mile Grid Roadway Upgrade - 3800 East / 100-300 North	Mi	$4,400,000	2	$ 8,800
	Jefferson Co.	Mile Grid Roadway Upgrade - Annis Hwy / 400-500 North	Mi	4,400,000	1	4,400
	Jefferson Co.	Mile Grid Roadway Upgrade - 200 North / 3600-3800 East	Mi	4,400,000	2	8,800
	Jefferson Co.	Mile Grid Roadway Upgrade - 500 North / 3700 - 3950 East	Mi	4,400,000	2	8,800
	Jefferson Co.	Intersection Upgrade - 1 per Year	Intersect	210,000	5	1,050
	Jefferson Co.	Brige Repair and Replacement				2,000
				Total - Years 11 thru 15		**$ 33,850**
16 thru 20	Jefferson Co.	Intersection Upgrade - 2 per Year	Intersect	$ 210,000	10	$ 2,100
	Jefferson Co.	Mile Grid Roadway Upgrade - 2 Miles per Year	Mi	4,400,000	10	44,000
	Jefferson Co.	Brige Repair and Replacement				2,000
				Total - Years 16 thru 20		**$ 48,100**
				20-Year Total		**$ 123,365**
				20 Year Average		**$ 6,168**

Years 6 through 10

This period includes widening of SH 48 between Yellowstone Hwy and 4200 East with a 40 percent local share. The remaining projects include six intersection upgrades and seven miles of roadway improvements. Improvement in Rigby include a traffic signal at SH 48 and Yellowstone, improving circulation in the Stockham Corridor and capacity improvements at the North Rigby Interchange and Farnsworth Way. The estimated cost of the Year 6 through 10 improvements is $6.0 million for Rigby and $27.0 million for Jefferson County.

Years 11 through 15

This period includes five intersection upgrades and seven miles of roadway improvements. The specific intersection upgrades identified in this study would have been completed in the previous period. The five intersections included in this period are assumed to occur at the rate of one per year with the location of these improvements dictated by need. The seven miles of roadway upgrade complete the segments named in the initial list of projects. A single project is Identified for Rigby – that of improving Annis highway within the City Limits. The estimated cost of the Year 11 through 15 improvements is $5.6 million for Rigby and $33.9 million for Jefferson County.

Years 16 through 20

The only identified projects in Rigby for this period are the continued need to construct sub-mile through collector streets. The County plan includes a continuation of the process of upgrading the rural mile grid system to accommodate anticipated urban growth patterns. This includes two intersection upgrades and two miles of roadway improvements per year. The estimated cost of the Year 16 through 20 improvements is $5.2 million for Rigby and $48.1 million for Jefferson County.

Because the estimated costs of the above plan may seem unattainable (an average of about $1.1 million per year for Rigby and $6.2 million per year for Jefferson County over the 20-year period), it is reasonable to consider if the plan has included too many projects. To put the plan into perspective, at the end of the 20-year period a total of 23 mile grid intersections will have been upgraded and 27 miles of mile grid roadway will have been upgraded. In the southeast area of Jefferson County that will directly benefit from these improvements there are approximately 130 grid intersections (including 20 intersections with SH 48) and 200 miles of grid roadways. The recommended County-wide Circulation System has 60 intersection and 44 miles of roadway. If we look at "an intersection" and "a mile of road" each as one element, at the end of the 20 year period the plan will have improved only 15 percent of all elements, or 48 percent of the elements included in the Circulation System. Given that perspective, the plan seems reasonable in scope.

FUNDING

The analysis of roadway maintenance needs in Chapter 5 and the enumeration of the capital improvement program above present Rigby and Jefferson County with a need for an enormous increase in roadway funding. There is no "easy" way to increase funding. However, there are a variety of sources or methods that may be employed. What follows is a discussion of various methods of funding and various assumptions necessary to put the additional funding needs in perspective over a 20-year time frame.

Funding Methods
The most prevalent forms of funding for local (county and city) roadway needs are as follows:

Idaho Users Revenue Fund is the primary source for ongoing roadway maintenance and rehabilitation The funds are collected by the state in the form of motor fuel taxes and license fees. It is distributed annually to all governmental units responsible for roadway maintenance based on a formula that considers population and number of roadway miles in the jurisdiction. In 2006 the amount of money given to Jefferson County and all of the city jurisdiction within was $1,986,000. This amount varies from year to year and has actually decreased from one year to the next. The average amount received for 2001 through 2006 was only 2 percent higher than in 2000.

License Plate Fees - The Idaho Code allows counties to raise revenue by increasing vehicle licensing fees. Section 49-207 of the Idaho Code states that "the voters of any county may authorize the board of county commissioners to adopt an ordinance by majority vote of the board of county commissioners to implement and collect motor vehicle registration fee not to exceed two (2) times the amount established in section 49-402". Section 49-402 stipulates state licensing fees for all vehicles less than 8,000 pounds gross vehicle weight.

In 2006, Jefferson County passenger car registration fees alone amounted to about $615,500. This represents a conservative amount of revenue that could be raised by raising registration fees since other vehicles are eligible. The average fee paid was about $30.00. As Jefferson County population grows, this revenue could be expected to increase accordingly.

Impact Fees - The number of county and city jurisdictions that are imposing impact fees on development is increasing. To do so it is necessary to determine the ultimate (build-out) improvement needs, the proportion related to new development, and a fee schedule based on a rational connection between development induced needs and fees. This can be an important source of revenue. However, rarely does this source of revenue pay for the full cost of constructing the roadway system and fees are usually not applicable for maintenance functions.

Property Taxes are the primary means by which local governments raise money to provide services. The are also perhaps the most politically unpopular method. Many

counties have yet to provide property tax support for their roadway system. Jefferson County funded about 14 percent of their Road & Bridge budget with $290,000 in property tax funding. Although this is contribution is far more than that in other counties, it is increasingly clear that all forms of funding (state and local) will need to be increased as roadway needs continue to grow.

STATE AND FEDERAL FUNDING

Local Rural Highway Investment Program (LRHIP)

The Local Rural Highway Investment Program is a grant program that provides funding for road paving, drainage structure replacement, signage upgrades, transportation planning, reconstructing roadways, and most other types of construction on any public road. Matching funds are encouraged but not required. If the project is $50,000 or more, the work must be contracted out.

The program is financed through an exchange of STP-Rural funds by LHTAC with the Idaho Transportation Department at $0.61 per $1.00 up to a maximum of $2.8 million in state funds.

Each September LHTAC makes the application available to all Local Highway Jurisdictions not located within a city of over 5,000 in population (see link below for application). Once the applications are returned by the November deadline, LHTAC will rate the applications and the highest rated applications will be funded up to the amount of funds available in any given year.

Applications for the 2009 award allocation are from mid September through October and due to LHTAC in mid November the same year. The application results will be made available on this web site after the March Council meeting each year.

LHTAC reserves $200,000 of this fund annually to help with emergency type projects. Up to $100,000 can be applied for to help with an emergency. If you have an emergency situation and you need additional information on the LRHIP Program, contact Jim Zier, Asset Manager at (208) 859-0197 or email at .

Surface Transportation Program (STP)

STP Local Rural

Surface Transportation Program (STP) Local Rural funds are allocated for projects in rural areas, and in cities with populations below 5,000. They may be used for new construction, reconstruction or rehabilitation of roadways functionally classified with FHWA as **rural major collectors** with a small percentage allowed for **minor collectors**. STP funds can also be used for activities such as transportation planning, corridor studies and the purchase of minimally corrosive anti-icing material. The local match requirement is 7.34 percent. The Idaho Transportation Board has designated approximately $10

million annually for the Program. The funds are awarded through the Local Federal-aid Incentive Program administered by LHTAC.

Eligible projects are identified, prioritized, and requested by the Local Highway Jurisdictions through a formal project application process November through February. Project proposals are reviewed and ranked by LHTAC and a prioritized list of projects, based on funding, is then presented to the Idaho Transportation Board, for inclusion in the draft Statewide Transportation Improvement Program (STIP) in June.

STP Local Urban

STP Local Urban funds are allocated for projects in urban areas of 5,000 population or greater. They may be used for new construction, reconstruction or rehabilitation of roadways functionally classified with FHWA as **urban collectors or arterials**. STP funds can be used for activities corrosive anti-icing material. The local match requirement is 7.4 percent. The Idaho Transportation Board has designated approximately $10 million annually for this Program. The allocation is divided using population data, between the six (6) metropolitan planning organizations (MPO) and all other cities above 5,000 population.

For cities greater than 5,000 population, but excluding the MPO areas, eligible projects are identified, prioritized, and requested by local agencies through a formal project application process from November through February. Project proposals are reviewed and ranked by LHTAC and a prioritized list of projects (based on available funding) is then presented to the Idaho Transportation Board, for inclusion in the draft Statewide Transportation Improvement Program (STIP) in June.

For additional information on the STP Local Rural and Urban program, contact Jerry Flatz, P.E., Federal Aid Manager by calling (208) 344-0565.

Federal Bridge Program

The bridge program provides funds for the replacement or rehabilitation of bridges. LHTAC continues to take applications for Bridge Replacement Projects on the local highway system. In order to qualify for Bridge Replacement funds, it must meet all four of the following criteria:

a) Must be in the National Bridge Inventory (NBI) Database, which requires that the bridge be longer than 20 feet and that it must carry a public road.

b) The bridge must have a sufficiency rating of less than 50. This is the number shown on your Annual Bridge Inspection Reports.

c) The bridge must be classified as either structurally deficient or functional obsolete or both.

The Idaho Transportation Board makes 35 percent of the Bridge funds available to use on local (non-state highway) bridges. Presently, there is approximately $5 million in the

"On-System" Program and $3.8 million in the "Off-System" Program with a 7.34 percent local match.

On the local highway system in Idaho, we have more than 240 bridges that qualify under this definition. If you are an entity that has a bridge that meets all of the above criteria, we encourage you download the bridge application by clicking on the link at the bottom of this page.

For more information contact Lance Holmstrom, LHTAC Local Highway Administrator, 1-800-259-6841, (208) 344-0565.

Congestion Mitigation & Air Quality Improvement (Cmaq)

Congestion Mitigation & Air Quality Improvement funds are directed at reducing transportation related sources and emissions throughout all areas of the state. The primary purpose of Idaho's CMAQ Program is to fund projects, planning, and programs in air quality non-attainment and maintenance areas, as well as areas of concern for ozone (O3), carbon monoxide (CO), and particular matter (PM) which reduce transportation-related emissions Geographic areas of concern will be identified in cooperation with the Idaho Division of Environmental Quality (IDEQ) as having measured air quality problems or the potential for air quality problems. CMAQ funds are available for construction and non-construction type projects. The match requirement is 7.34 percent.

Projects are solicited through an annual statewide application process targeted to communities with an air-quality problem from November to February. A CMAQ Technical Review Committee reviews the CMAQ Program applications and recommends high-ranking projects to the Idaho Transportation Board. Projects are evaluated and ranked on a statewide basis for air quality benefits and cost effectiveness. Final project selection is by the Idaho Transportation Board. Information and current year applications are available at the following web site: www.itd.idaho.gov/itd/planning under *Publications.*

For additional information on the CMAQ Program, contact Patti Raino, CMAQ Coordinator by calling (208) 334-8209.

STP Safety

STP Safety funds are for projects to reduce accidents at identified hazardous locations and for bicycle and pedestrian safety improvements, including on road facilities, public trails, and traffic calming activities, or for projects that improve motorist protection at railroad crossings. These funds are available for any state or local public road. The local or state match requirement is 7.34 percent.

Accident reduction projects at hazardous locations are identified from a systematic review of high accident locations produced from the statewide accident records system. All proposed local or state projects are prioritized statewide within available funding levels on a safety benefit to project cost ratio, which is heavily dependent on accident history and project cost data. Final project selection is by the Idaho Transportation Board.

Accident reduction projects at railroad/highway crossings are identified from a systematic review of hazardous crossing. All proposed local or state projects are prioritized statewide within available funding levels on a ranking formula, which considers vehicle traffic, train traffic, accident history, and other relevant crossing data. The Idaho Transportation Board makes the final project selection.

Public Lands Highway (Plh) Discretionary

PLH funds are available for any kind of transportation project eligible for assistance under Title 23, United States Code that is within, adjacent to, or provides access to the areas served by a public lands highway. These highways may be state highways, local roads, or federal agency roads. All applications for project funding must be submitted through the Idaho Congressional delegation. It is also strongly suggested you send the application to ITD Division of Planning, P.O. Box 7129, Boise, Idaho 83707. There is no required state or local match on PLH discretionary projects.

Our Congressional delegation generally solicits these projects. Contact your Congressional delegation for details. Project awards are announced by FHWA sometime after the beginning of the federal fiscal year. Information on the eligibility requirements for this national program is available at the following web site: www.fhwa.dot.gov/discretionary/index.htm.

For additional information on the Public Lands Discretionary Program, contact Dave Amick, Manager, Office of Transportation Investments by calling (208) 334-8264.

Scenic Byways

Funding is available on a nationally competitive basis for routes that have been designated as a state scenic, historic or back county byway. The Idaho Transportation Board determines routes what will be designated as a Scenic Byway. Currently 26 routes have Byway designations in Idaho. Information on Idaho Byways is available at the following web site: www.itd.idaho.gov/itd/planning under *Publications.* Projects can include the development of a corridor management plan for a specific byway or for road or enhancement work on the corridor once a management plan has been completed. Scenic Byway funds are announced and awarded at the federal level and administered once awarded by ITD. The match requirement is 20 percent.

All applications for project funding must be submitted through the state's transportation department. The Scenic Advisory Committee appointed by the Board then prioritizes project applications. The Board makes a final determination as to which projects are submitted to FHWA for funding consideration. Project awards are announced by FHWA some time after the beginning of the federal fiscal year. Application information is available on the national web site at http://www.bywaysonline.org/.

For additional information on the Scenic Byway Program, contact Garry Young, Scenic Byway Coordinator by calling (208) 334-8214.

A Funding Scenario

The uncertainty of defining transportation needs and associated costs has already been discussed. The uncertainty of funding through any one source is as great or greater. What follows is a series of assumptions and calculations that comprise one funding scenario. Many others are possible. The purpose of this presentation is to provide a 20-year perspective from one set of assumptions as a starting point from which citizens and local officials can craft an acceptable approach to funding needs.

The following are a list of assumptions necessary to develop this funding scenario:

- Whatever increases in Highway User Fund revenue may occur will be assumed to offset cost increases in the Road & Bridge budget other than direct roadway maintenance and improvements.
- Revenue from increased license fees (should the County chose to enable this) will be assumed to cover inflation and other capital costs not specifically enumerated in the plan.
- One half of the future funding needs identified in the plan (maintenance, capital improvements, and bridge replacement) will be raised from a combination of impact fees and state and Federal funding sources.
- One half of the future funding needs will come from increased property taxes.

Given the above assumptions, the most important questions is what effect this would have on property tax rates. In answering this question, it is important to consider that much of the need is the result of forecast growth. This growth will also increase the tax base, greatly reducing the implied increase in the tax rate. Thus the effect on property taxes must be measured over time. To illustrate this, the effect on property taxes was computed for two conditions:

- Using the present tax base and the average cost of increased needs for the first five years of the CIP, and
- under future conditions, using an increased tax base tied to the growth assumptions which generated the needs, and the average cost of increased needs in the last 5 years of the CIP.

The results of these calculations are shown in Table 8 which compares funding needs and property tax rates for each time period.

TABLE 8
Jefferson County Transportation Plan
Funding Needs and Property Tax Rates

First Five Years of Plan

Funding Needs		Amount ($1,000's)
Rigby	$	1,072
Jefferson County		2,791
Maintenance		1,055
Bridge Replacement		500
Total Annual Needs	**$**	**5,418**
Less 50% other Funding		(2,709)
Property Tax Share	**$**	**2,709**

Property Valuation	
Total Valuation - 2006	**810,120**

Tax Rate to Fund Needs	
Tax Rate Increase	0.334%
Existing Rate	1.028%
Total	1.362%
Percent Increase	**32.53%**

Last Five Years of Plan

Funding Needs		Amount ($1,000's)
Rigby	$	1,040
Jefferson County		9,220
Maintenance		1,055
Bridge Replacement		2,000
Total Annual Needs	**$**	**13,315**
Less 50% other Funding		(6,658)
Property Tax Share	**$**	**6,658**

Property Valuation		
Residential - 2006	**$**	**517,895**
20-Year increase @ 3%		417,475
Forecast Growth - 83%		429,853
Growth Increase 10 Yrs @ 3%		147,826
Total 20-Yr Residential Valuation	**$**	**1,513,049**
Commercial - 2006	**$**	**118,162**
20-Year increase @ 1%		26,019
Total 20-Yr Comm. Valuation	**$**	**144,181.0**
Other - 2006	**$**	**174,063**
Assume Unchanged		
Total 20-Year Valuation	**$**	**1,831,293**

Tax Rate to Fund Needs	
Tax Rate Increase	0.364%
Existing Rate	1.028%
Total	1.392%
Percent Increase	**35.36%**