HORROCKS ENGINEERS

IVINS CITY

TRANSPORTATION MASTER PLAN UPDATE

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DRAFT



Table of Contents

1 Introduction 5
1.1 Background 5
1.2 Study Need 5
1.3 Transportation Planning Purpose 5
1.3.1 Community Planning 7
1.3.2 Economic Viability 7
1.3.3 Safety of Citizens 7
1.3.4 Health of Citizens 7
1.3.5 Provides Legal Basis for Development Exaction 8
1.3.6 UDOT Coordination 8
1.4 Study Process 8
2 Existing Conditions 8
2.1 Population and Land Use Analysis 8
2.2 Historical Population 9
2.3 Existing Land Use 10
2.4 Future Land Use & Projected Buildout 12
2.5 Population Projections 14
2.6 Environmental 16
2.7 Street System Inventory 16
2.7.1 Analyses of Existing Roadways and Intersections 17
2.8 Traffic Accident Data 20
2.9 Bicycle and Pedestrian Traffic 24
2.10 Revenue Sources 25
2.10.1 State Class B and C Program 25
2.10.2 Federal Funds 27
2.10.3 Local Funds 27
2.10.4 Private Sources 28
3 Future Growth 28
3.1 Land Use and Transportation 28
3.1.1 Functional Street Classification 28
3.1.2 Roadway Cross Sections 29
3.1.3 The Central Core of Ivins 35
3.1.4 Importance of a City Core 35
3.2 Transportation Model 51
3.3 Roadway Network and Traffic Forecast 51
3.4 Operational characteristics 51
3.5 Proposed Gateways 54
3.6 Proposed Commercial Areas 54
3.7 Roundabouts 55
3.8 Bicycle and Pedestrian Traffic 59
3.9 Traffic Impact Study Guidelines 59
3.9.1 TIS Requirements 59

3.9.2 Initial Work Activity 60
3.9.3 Qualifications for Preparing TIS Documents 60
3.9.4 Analysis Approach and Methods 60
3.9.5 Trip Generation 61
3.9.6 Trip Distribution and Assignment 61
3.9.7 Capacity Analysis 62
3.9.8 Traffic Signal and Roundabout Studies 62
3.9.9 TIS Report Format 64
3.10 Public Transportation 67
3.11 Roadway Standards 67
3.11.1 Safe Transportation System 67
3.11.2 Street Design 68
4 Five Year Transportation Improvement Plan (TIP) 71
4.1 Basis for improvements 71
4.2 Five year transportation projects 71
4.3 Project Ranking 74
5 Ten Year Transportation Plan 74
5.1 Recommended system improvements 74
5.2 Project Ranking 75
6 Twenty Year Transportation Plan 76
6.1 Recommended system improvements 76
6.2 Project ranking 77
7 Access Management 79
7.1 Definition 79
7.1.1 Access Management Techniques 79
7.1.2 Access Management 79
7.1.3 Benefits of Access Management 80
7.1.4 Ten Ways to Manage Roadway Access 80
7.2 General Access Management Principles 81
7.2.1 Number of Accesses per Parcel 81
7.2.2 Corner Spacing 80
7.2.3 Residential Access 80
7.2.4 Medians 82
7.2.5 Location, Spacing and Design of Intersections and Accesses 82
7.2.6 Right-turn deceleration lanes 82
7.2.7 Where to Use Access Management 82
8 Street Lighting 83
9 Transportation Corridor Preservation 83
9.1 Introduction 83
9.2 Definitions 85
9.3 Corridor Preservation Techniques 85
9.3.1 Acquisition 86
9.3.2 Advance Purchase and Eminent Domain 86

9.3.3 Hardship Acquisition 86
9.3.4 Purchase Options 86
9.3.5 Development Easements 87
9.3.6 Public Land Exchanges 87
9.3.7 Private Land Trusts 87
9.3.8 Exercise of Police Powers 87
9.3.9 Impact Fees and Exactions 87
9.3.10 Setback Ordinances 89
9.3.11 Official Maps or Maps of Reservation 89
9.3.12 Adequate Public Facilities and Concurrency Requirements 90

List of Figures & Tables

Figure 1 - Study Area 6
Table 1 - Historical Population of Utah, Washington County and Ivins City 9
Figure 2 - Graph of Ivins City Historical Population 9
Table 2 - US Census Population 2000 vs 2010 9
Table 3 - Summary of Existing Development 10
Table 4 - Existing Land Use in Ivins City as of May 2014 11
Figure 3 - Existing Land Use Development 12
Figure 4 - Ivins City Land Use Plan (May 2014) 13
Table 5 – Land Use Data for Future Buildout Calculations 14
Figure 5 - Population Projections 15
Table 6 - Ivins Population Projection Data 15
Table 7 – Level of Service Definition – Intersections 17
Figure 6 – Existing Turning Movements 18
Figure 7 – ADT and LOS Information 19
Figure 8 – Accident locations from 2008 to 2014 21
Figure 9 – Proposed Bike Lanes and Trails 26
Table 8 – Apportionment Method of Class B and C Funds 27
Figure 10 – Functional Classifications 30
Figure 11 – Rural Street Cross-Section, West of 400 West 34
Figure 12 – 2040 Turning Movements 53
Figure 13 – Typical Roundabout 55
Figure 14 –Master Signal and Roundabout Plan 58
Table 9 – Street Cross-Sections 69
Table 10 – Roadway Cross Sections 70
Figure 15 – Access vs. Mobility 80
Table 11 – Access Distance from Corner According to Facility Type 82
Table 12 – Access Driveway Widths 83

Appendix

Appendix A ……....Ivins City 2014 Accident Data
Appendix B ...……..2015 Ivins City Intersection Counts
Appendix C …….. 2015 Ivins City Volume Counts
Appendix D ……..2015 Ivins City Traffic Model Input Data
Appendix E ……2015 Ivins City Traffic Model Output Data
Appendix F …… 2015 Ivins City Traffic Model Trip Ends
Appendix G ……2015 Ivins City Capital Facilities Plan & Estimates
Appendix H ……...…….. Ivins City Street Light Plan
Appendix I ……..…..…….Ivins City Traffic Volume Comparison, 2008 vs. 2015
Appendix J ……...……...Roundabouts vs. Traffic Signals, Estimates and Capacities

1 Introduction

1.1 Background

Ivins City is a vibrant community in the southwest corner of Washington County nestled at the base of the majestic cliffs of towering vermilion sandstone known as "The Big Red Mountain" and Snow Canyon State Park. Due to its proximity to the mountains, the city is known as "Our Home Beneath the Big Red Mountain". Ivins, settled in the early 1920's at the base of the towering vermilion sandstone, was a community built on agricultural purposes. Ivins was incorporated in 1935, which at that time was still an agricultural town with minimal growth occurring. Ivins still maintains its small town characteristics with little agricultural use continuing as it experiences its share of growth. Nowhere in the United States can so many reasons be found to relax and enjoy life as you will find here. A detailed map of the study area including the city limits and annexation areas is shown in Figure 1.

1.2 Study Need

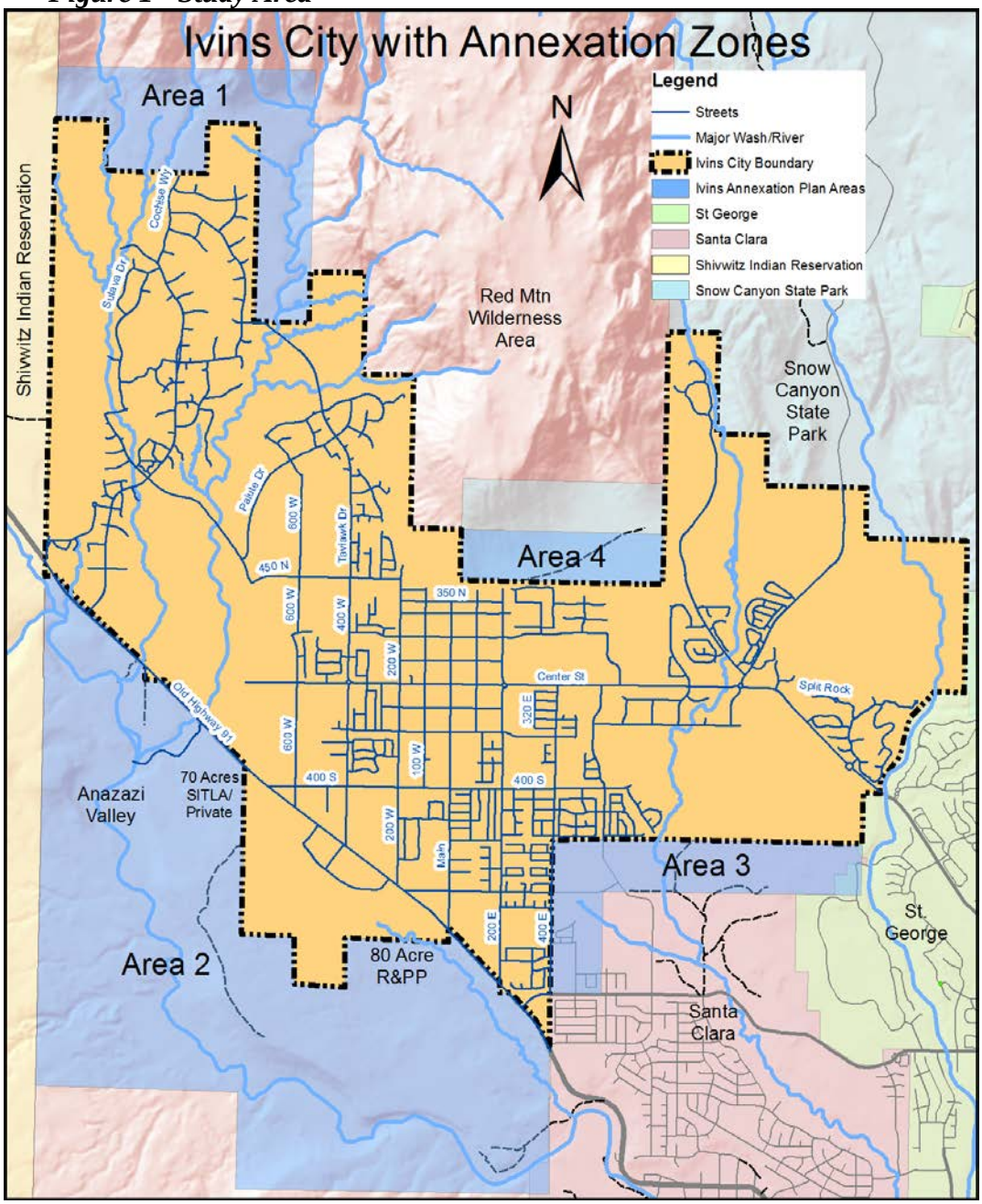
Washington County and Ivins City's population continues to increase at phenomenal rates. Historically, St. George was the recipient of much of the growth and for the most part it remains the destination for Washington County. However, in the past several years much of the growth has occurred in neighboring communities such as Ivins City. Associated with growth is an increase in commuter and seasonal traffic. Transportation facilities not designed to accommodate high traffic volumes can create safety problems, congestion and delay for both motorized and non-motorized travel. For Ivins to maintain its unique community character and build a stronger economy to serve its residents, importance must be placed on being proactive and influencing traffic patterns sooner than later. Transportation concerns identified in Ivins City include:

- Safety
- Mobility
- Bicycle and pedestrian mobility
- Gateway Treatments
- Street Classification
- Access Management
- Asset Management
- Future Land Use
- Aesthetics

1.3 Transportation Planning Purpose

The purpose of this study is to develop a transportation master plan for Ivins City and evaluate the influence on the plan from the surrounding communities, particularly St. George. The primary objective of the study is to establish a reliable transportation network to guide future developments and roadway expenditures. The master plan includes several major components:

Figure 1 - Study Area



1. Analysis of Existing Conditions
2. Analysis of Future 20 year Conditions
3. Five-year, short-range transportation plan
4. Ten-year, intermediate-range transportation plan
5. Twenty-year, long-range transportation plan
6. Access Management Plan

Five-year improvements focus on specific projects to improve deficiencies in the existing transportation system. The ten-year plan identifies improvements to accommodate immediate future growth and development. The twenty-year plan will identify those projects that require significant advance planning and funding to implement and are needed to accommodate future traffic demand. The initial plan was prepared in 2004 by Carter & Burgess and an update was made in 2008 by Horrocks Engineers. However, since being adopted in 2008, several amendments have been made and are now incorporated into this plan. Ivins City recognizes the purpose and benefits for development of this plan. The next section describes the planning process that was used to create this plan.

1.3.1 Community Planning

The planning process requires a target or goal. The community vision as outlined in the City's General Plan serves as this target and defines the planning process. This includes a master planning process that helps overall community planning and enhances the understanding of the relationship between individual community elements. The best example of this is the interrelationship between transportation and land use. An expensive cycle of incremental road improvements and land use changes will occur unless these two elements are planned in a coordinated fashion. Proper planning allows early implementation of the ultimate transportation facilities necessary to accommodate the ultimate land use adjacent to the roadway.

1.3.2 Economic Viability

Traffic congestion is bad for business. Raw material and product shipping costs increase proportionally to congestion. Customers will not visit stores that are difficult or dangerous to reach. The transportation system is the lifeline for economic viability; much like the human body's circulatory system provides blood to organs and muscles. Arterial blood clots can be fatal to the body and roadway traffic congestion can be fatal to a community's economic health.

1.3.3 Safety of Citizens

Traffic congestion leads to dangerous driving behavior and increased accident rates for vehicles and pedestrians. Nearly 34,000 people die every year in vehicle accidents in the United States, which makes traffic accidents the third leading cause of death in the country and the leading cause of death for people under the age of 30. Between 2011 and 2014, Utah averaged 220 fatal car accidents per year. Roadways that are planned and designed correctly can reduce the accident rate by as much as 30%. This plan addresses accident rates in Ivins City and recommends a strategy to decrease these rates.

1.3.4 Health of Citizens

Quality of life includes many factors and some of the factors that are important to the citizens in Ivins include but are not limited to work commute time, preservation of rural environment and scenic views, air quality, safety, architectural uniqueness, and development of recreational facilities. A poorly planned transportation system diminishes all of these elements. There are three reasons for planning improvements to the roadway system:

1. *Mobility* – Alleviate existing or anticipated traffic congestion
2. *Safety* – Improve safety for drivers, pedestrians, and cyclists.
3. *Access* – Provide access routes to newly developed portions of the City

1.3.5 Provides Legal Basis for Development Exaction

Due to the decrease in funding available from federal and state sources, local governments are asking land developers to pay for the infrastructure necessary to support proposed development projects. A long-range plan is the legal basis for these exactions and impact fees. Legal challenges will be minimized if the estimated roadway construction costs are based on the community vision and system plans that support the vision. These costs are estimates and should be used with the idea that this is a planning study.

1.3.6 UDOT Coordination

UDOT is responsible for the safe and efficient operation of state roads, even if they pass through cities. The Western Corridor is a major transportation facility and if federal money is used to construct this roadway, UDOT needs to know how this road will look in the future so they can grant driveway access permits on a site-by-site basis. Coordination with UDOT and the DMPO is essential in obtaining federal and state monies to construct transportation facilities. This coordination will also help the city place any of their projects in the State Transportation Improvement Program (STIP). Lack of overall planning and coordination leads to haphazard results and poor circulation along transportation corridors.

1.4 Study Process

The study update process in 2008 involved close collaboration with City staff and several meetings with an assembled group containing City staff and residents called the Technical Review Committee (TRC). The TRC offered guidance to keep the progress of the study on track. Meetings included a kick-off meeting, meetings with the Kayenta developer, three steering committee meetings, and a work meeting with the City Council and Planning Commission. This most recent update incorporates into the plan only those amendments that have been added or changed since 2008.

2 Existing Conditions

The transportation data in the updated 2008 Horrocks report was used as a baseline for existing conditions. This baseline condition was then compared to current traffic patterns to identify current transportation issues. This information is used as a baseline to identify improvements that will improve the transportation system.

2.1 Population and Land Use Analysis

This section reviews historical population, existing land use, future land use and estimate of buildout population, and a population projection to determine the approximate year of buildout.

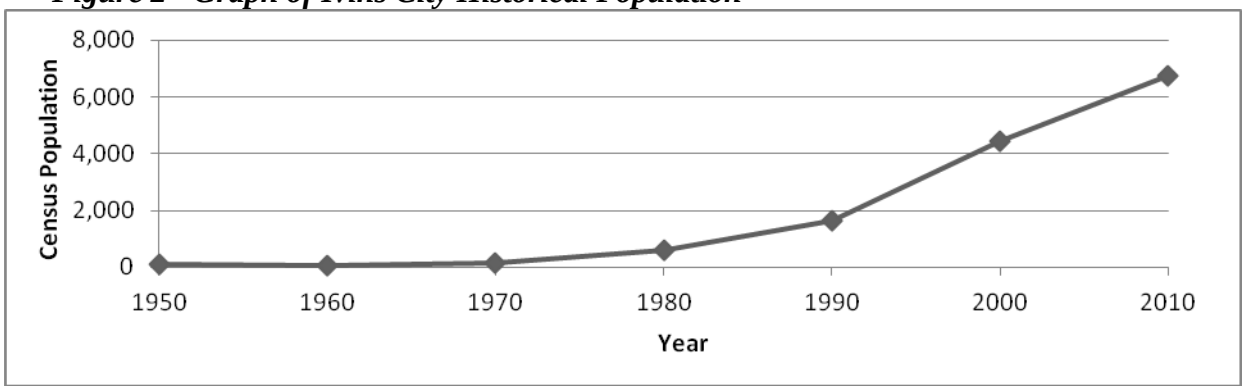
2.2 Historical Population

Ivins City has rapidly grown over the past three decades from a sparsely populated rural city to a significant suburban city being the fourth largest city in Washington County. Table 1 and Figure 2 below show the historical growth of Ivins since 1950 based on U.S. Census data.

Table 1 - Historical Population of Utah, Washington County and Ivins City

	1950	1960	1970	1980	1990	2000	2010
State of Utah	688,862	890,627	1,059,273	1,461,037	1,722,850	2,246,553	2,763,885
% Growth		29.3%	18.9%	37.9%	17.9%	30.4%	23.0%
Washington County	9,836	10,271	13,669	26,065	48,560	90,354	138,115
% Growth		4.4%	33.1%	90.7%	86.3%	86.1%	52.9%
Ivins City	95	77	137	600	1,630	4,450	6,753
% Growth		-18.9%	77.9%	338.0%	171.7%	173.0%	51.8%

Figure 2 - Graph of Ivins City Historical Population



In previous decades, Ivins had been growing at a rate well above the County rate. In the last decade, the growth rate shows to have slowed to be nearly the same as the County. In review of Ivins City garbage account data, which is a good indicator of the number of homes in Ivins, it indicates that construction growth was more than the population growth as Ivins City grew from 1,690 garbage accounts to 2,841 accounts indicating a 68.1% growth rate. This is shown in Table 2 below.

Table 2 - US Census Population 2000 vs 2010

	Year 2000	Year 2010	% Growth
US Census Population	4450	6753	51.8%
US Census Households	1435	2427	69.1%
US Census Housing Units	1598	2880	80.2%
US Census	3.10	2.78	

Persons per Household			
Vacant Housing Units including second homes	163 (10.2%)	453 (15.7%)	178%
Second Homes (Seasonal, Recreational, or Occasional Use)	91 (5.7%)	289 (10%)	217%

Even though population has only increased 52 percent over the 10 years between censuses, the housing units have increased 80 percent. The large gap between population growth and housing growth can be attributed to the following. First, the quantity of persons per household has significantly decreased to 2.78 from 3.10. This may be indicative of the attractiveness of Ivins as a retirement community as our population 65 and older has increased from 10.2 percent to 19.8 percent. There may also be a trend in local population demographics towards smaller sized families. Lastly, the attractiveness of Ivins for second homes has increased. As shown in Table 2 above the number of second homes has more than doubled and vacant housing (which includes second homes) now accounts for nearly 16 percent of Ivins residences versus 10 percent in the previous census.

2.3 Existing Land Use

Land use analysis is basic to City planning. It is necessary to understand the existing land use and compare to the future land use as determined by the adopted Land Use Plan which is Figure 1 of the General Plan. The City area was analyzed to determine the number of existing residences and the extent of commercial land uses. Table 3 below shows a summary of the existing land use analyzed by area in acres. Of the more than 6,000 acres within Ivins City's boundary, 2,242 acres or 36% is developed and another 14.5% is considered to be permanent open space.

Table 3 - Summary of Existing Development

	Total (acres)	%
Developed Residential	2,079	33.7%
Developed Commercial/Civic/School/Church	163	2.6%
Undeveloped	3,028	49.1%
Open Space	892	14.5%
Total	6,162	

As shown, 49% of the city still yet remains to be developed and is currently either naturally vegetated, cultivated, or fallow. A portion of this area may be undevelopable due to slopes, flood plains and other natural geographical features. This does not include the 400 acres of potentially developable land in the Anazazi Valley annexation zone. The existing land use

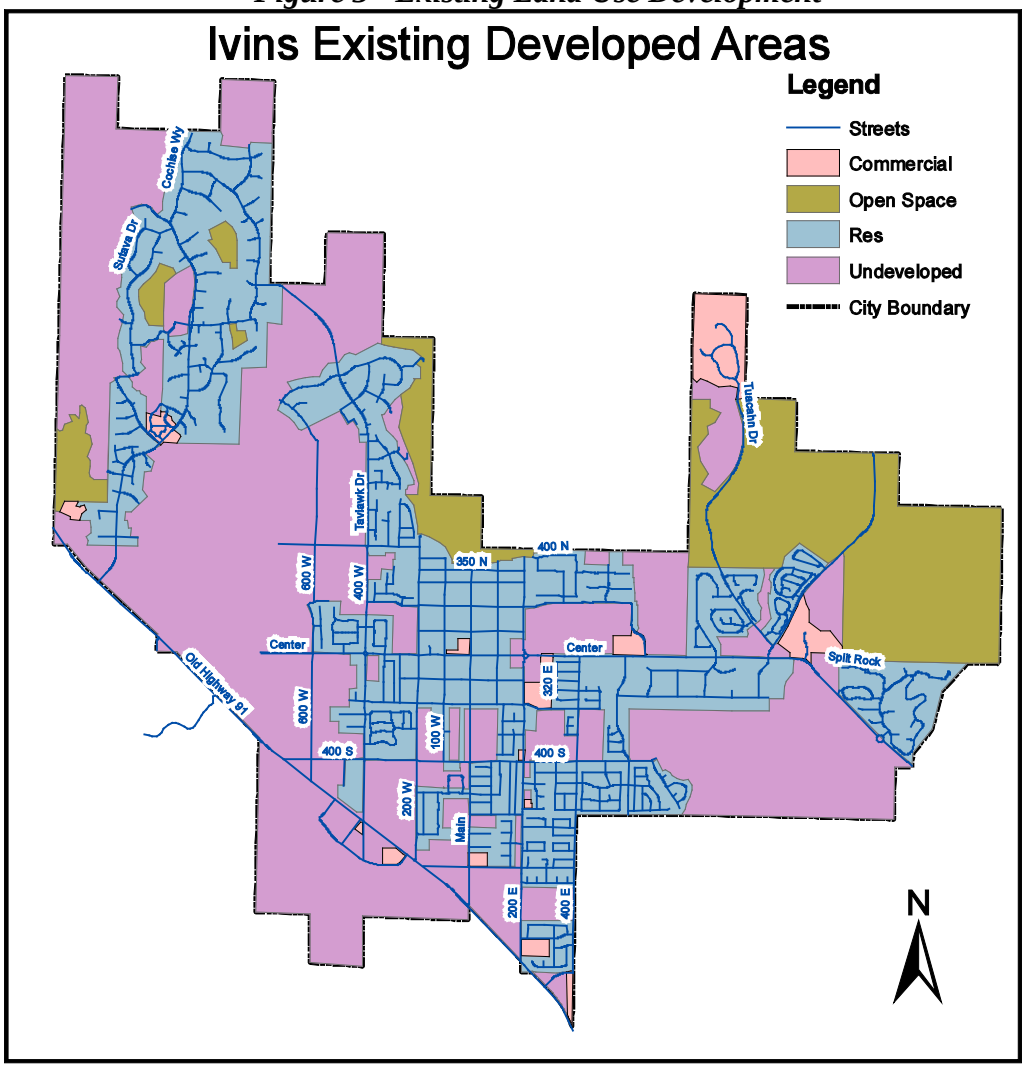
was further evaluated to determine a more exact number of residences. These results are given in Table 4 below.

Table 4 - Existing Land Use in Ivins City as of May 2014

	All Ivins City
Single Family Houses	3,121
Multi Family Units	69
Total Housing Units	3,190
Total Households (85% of housing units)	2,712
Estimated Population (2.78 x # of households)	7,539
Hotel/Spa Units	140
Single Family Vacant Lots	629

As shown, with a total of 3,190 residential units and estimating that 85 percent of these units are permanent households, the current population can be estimated at 7,539. Figure 3 shows the existing developed areas of Ivins City.

Figure 3 - Existing Land Use Development



2.4 Future Land Use & Projected Buildout

Figure 4 shows the current land use plan as of May 2014. The build out population was completed using GIS technology and is based on a detailed analysis of the land use plan and existing plans that have been submitted to Ivins City at various stages. The analysis identified areas for infill development as well as the development of the undeveloped areas. Table 5 shows the results of this analysis.

Figure 4 - Ivins City Land Use Plan (May 2014)

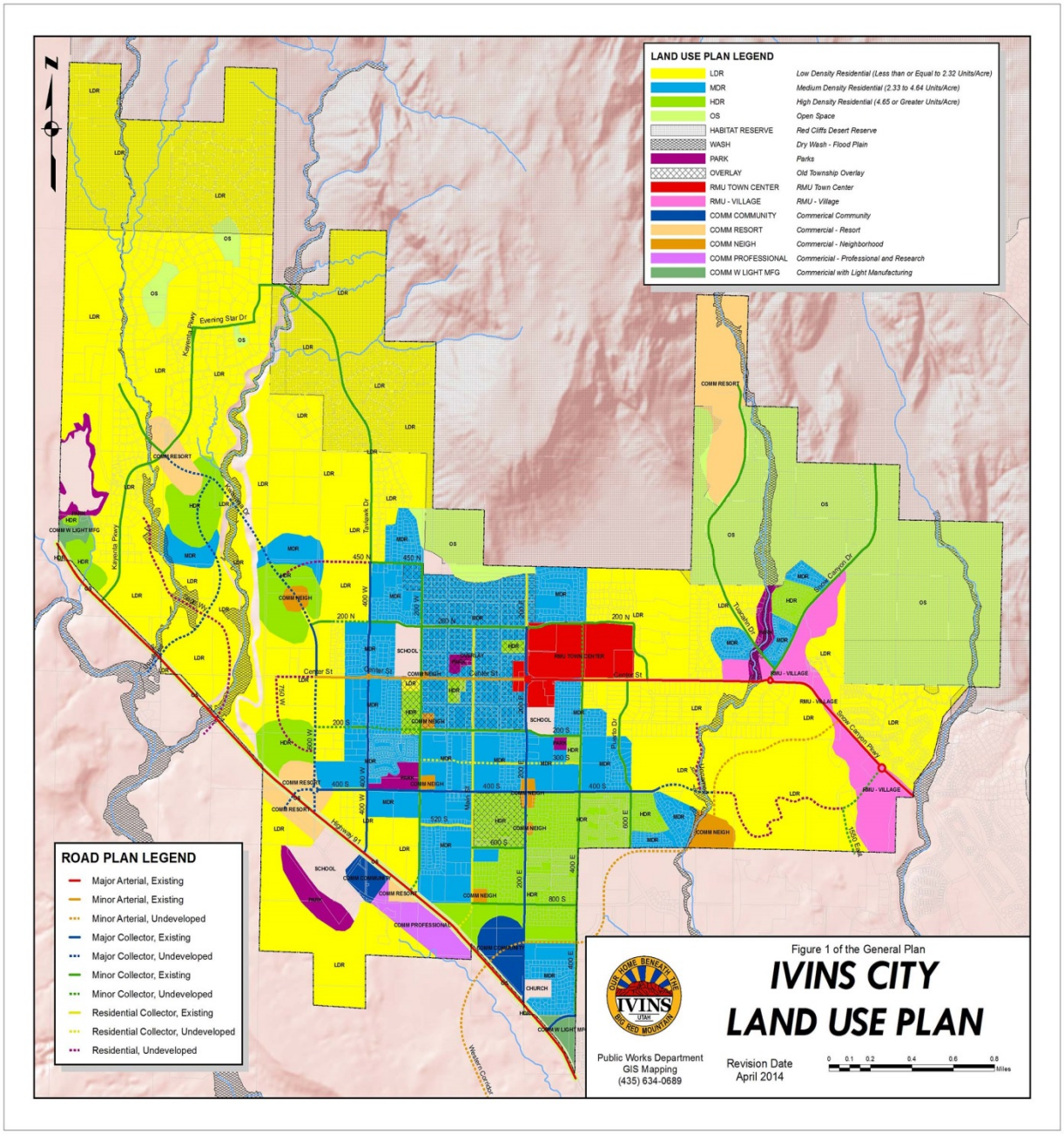


Table 5 – Land Use Data for Future Buildout Calculations

	Ivins City	
	Existing	Buildout
Single Family Housing Units	3,121	7,332
Multi Family Housing Units	69	475
Total Housing Units	3,190	7,807
Vacant Lots for Single Family Housing	629	0
Anazazi Valley SF Residences	0	500
Transient Units	140	582
Employees	547	3,996

The buildout number of residences is 7,807 plus 500 residences added for the annexation of Anazazi Valley for a **total of 8,307 residences**. Assuming that 15% of the residences are second homes or unoccupied in accordance with current conditions as calculated in the discussion of Historical Population, 7,061 would be considered resident households and using a household size of 2.7 (see population projections in Table 6) indicates a **buildout population of 19,100**.

This buildout population estimate will change with any changes to the land use plan. Lately the trend has been towards allowing more and more dense development with each modification of the land use plan, so there is a possibility that the estimated buildout population will increase as time moves forward. In prior capital facilities plans, an effort was made to estimate this larger population in anticipation of the land use plan being modified, however, this has been deemed unnecessary as these plans are updated every four to six years and should simply be adapted as the land use plan changes over time.

2.5 Population Projections

The population projections identify the timing of community growth and provide information to determine how soon capital facilities need to be placed into service. This growth projection is based on analysis of previous years of growth and an understanding of the local demographics. The State of Utah Governor's Office of Management and Budget (GOMB) is a source for population projections as well as other studies that are looking at the regional growth.

Figure 5 shows the GOMB population projections for Ivins City. Ivins City is using this projection as it appears to be reasonable and appropriate based on observed trends. The resulting population projection shows that the **buildout population of 19,100 will be reached in 33 years or by year 2046**.

Figure 5 - Population Projections

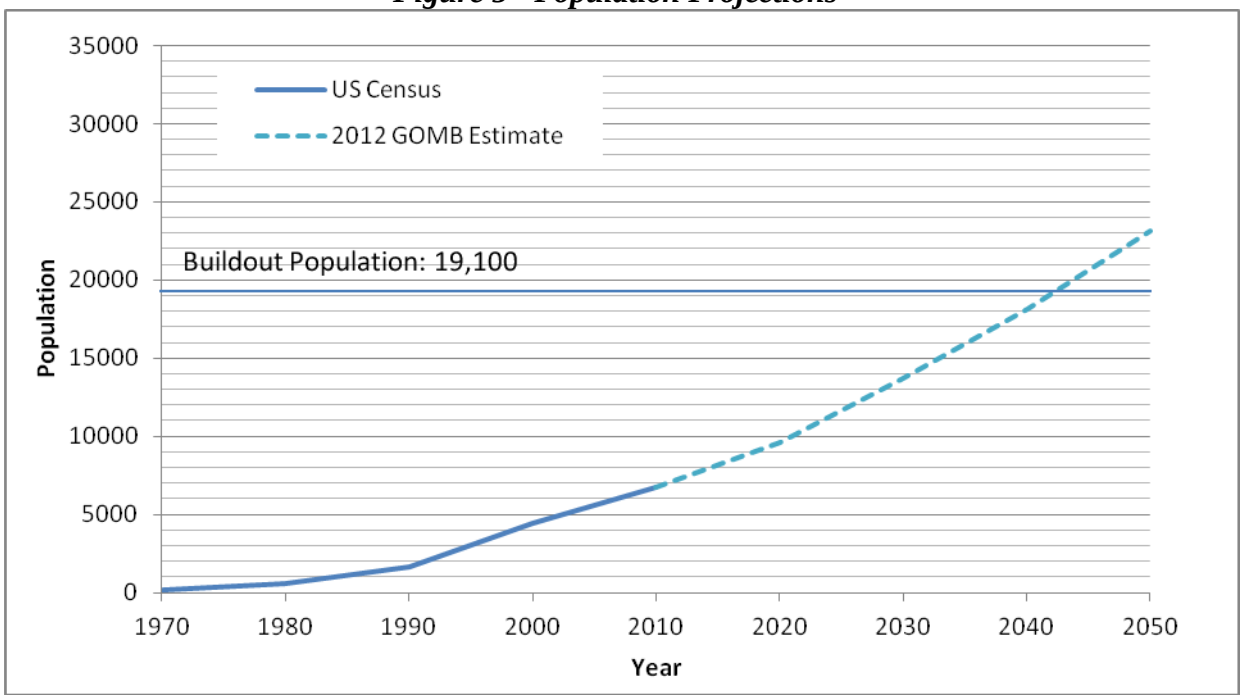


Table 6 - Ivins Population Projection Data

Year	Population	Population % Growth	Total Housing Units	Total Residences % Growth	Resident Households*	Household Size
1970	137					
1980	600	338%				
1990	1630	172%				
2000	4450	173%	1690		1435	3.10
2010	6753	52%	2880	70%	2427	2.78
↓ GOMB 2012 Projected Data ↓						
2020	9600	42%	4240	43%	3500	2.75
2030	13700	23%	5520	44%	5030	2.73
2040	18200	33%	7140	34%	6730	2.7
2050	23100	27%	9150	27%	8560	2.7

*Resident households are considered to be 85% of the total housing units accounting for 15% of homes considered to be second homes or otherwise unoccupied as currently exists per the 2010 US Census.

2.6 Environmental

Southern Utah is rich with cultural, historic, geologic and other natural features. Tourism in southern Utah accounts for a great deal of sustainability for many communities. Much of this tourism is based on features defined by natural and physical environments. Ivins, the city beneath the big red mountain, has some of the most pristine views in all of Utah. These views are attractive to many outsiders but are bounded by many environmental areas. Included among those areas are the desert tortoise habitat, which is protected by the Habitat Conservation Plan, and Snow Canyon State Park. Along with this unique landscape are issues of sensitive species, natural environmental and geologic concerns.

Some of the environmental concerns facing Ivins include Threatened and Endangered species, Wildlife Preserves, Archaeological sites, Geological sites, and water drainage areas (wash). Threatened and endangered species and their habitat are protected by the National Environmental Policy Act (NEPA). Developments in these areas are typically off limits, although in past history development has been allowed to encroach in these sensitive areas. Development that poses an impact to these areas will require an Environmental Impact Statement (EIS).

Natural drainage areas can be incorporated into many developments, which usually does not create an impact to the feature. The impact is usually felt by the development by the discovery that certain land is undevelopable and usually remains as an open space feature. Environmental concerns should be addressed when looking at an area for any type of improvement to the transportation system. Specific issues for Ivins will not be discussed here, as they are more related to specific projects as they are built.

2.7 Street System Inventory

Traffic and roadway data was collected in the original 2004 Carter & Burgess report in order to develop the Master Plan. This data was used for analyzing the baseline conditions and to help in developing the current and future conditions.

Roadway and Traffic Data

The following information was gathered:

- Number of lanes
- Speed limits
- Daily traffic counts on selected roadway segments
- AM and PM Peak Hour traffic counts at selected intersections
- Planned and funded roadway improvement projects
- Vehicle Accident information

Figure 6 shows the 2015 intersection turning movements at several important intersections in the city. These volumes show both the AM and PM peak hour scenario. It is important to know both the morning and afternoon peak hours in order to develop the percentages of traffic in the day that travel during these times. Figure 7 shows the existing Average Daily Traffic (ADT) on the major roadways in the City. This number represents the total number of cars traveling that roadway in both directions over an average day. These ADT's were

not adjusted for day of week and month of the year due to the fact that those adjustment factors are not available for Ivins. Adjustment factors are available for the St. George area but they are not relevant to the traffic patterns in Ivins.

2.7.1 Analyses of Existing Roadways and Intersections

Figure 7 shows the Level of Service (LOS) for each intersection that was counted. The analysis was based on procedures outlined in the Highway Capacity Manual (HCM) published by the Transportation Research Board (TRB). This type of analysis assigns a letter value based on average delay experienced by vehicles to indicate the level of service (LOS) of the intersection. The assigned letter values range from A to F with A being the best and F being the worst. An uppercase letter designates a signalized intersection LOS and a lowercase letter designates an unsignalized intersection LOS. A summary and definition of each LOS letter designation is provided in Table 7 for signalized and unsignalized intersections.

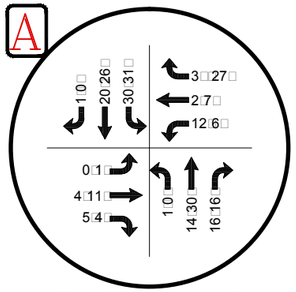
Table 7 – Level of Service Definition – Intersections

Signalized Intersection		Unsignalized Intersection		Definition
LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	
A	≤10.0	a	≤10.0	favorable progression
B	>10.0 and ≤20.0	b	>10.0 and ≤15.0	good progression
C	>20.0 and ≤35.0	c	>15.0 and ≤25.0	fair progression
D	>35.0 and ≤55.0	d	>25.0 and ≤35.0	noticeable congestion
E	>55.0 and ≤80.0	e	>35.0 and ≤50.0	limit of acceptable delay
F	>80	f	>50	approaching unacceptable delay

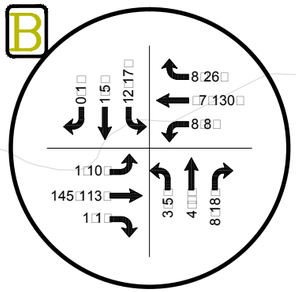
Source: *Highway Capacity Manual*, Transportation Research Board, 2000

It is standard engineering practice to assume that a facility with LOS A through LOS D is within an acceptable range for most users. In some instances, LOS E is also determined to be acceptable.

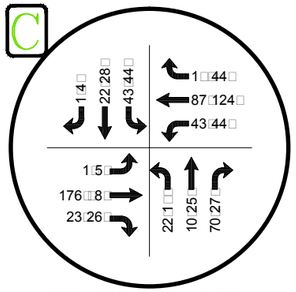
The LOS analyses show that all intersections are operating at acceptable levels of service.



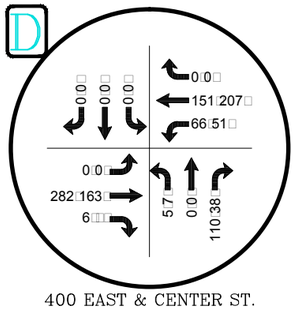
400 WEST & CENTER ST.



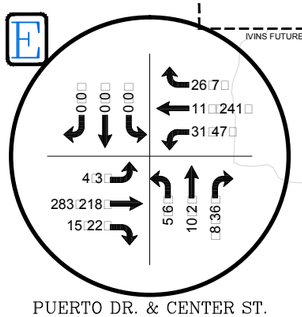
MAIN ST. & CENTER ST.



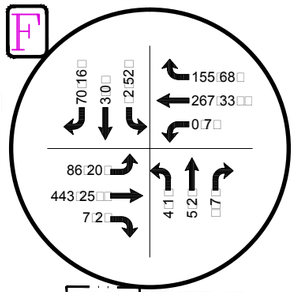
200 EAST & CENTER ST.



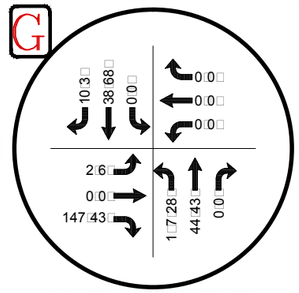
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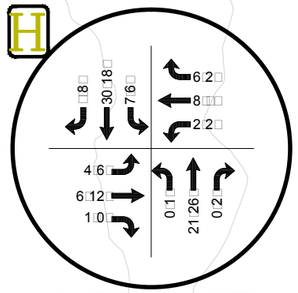
PUERTO DR. & CENTER ST.



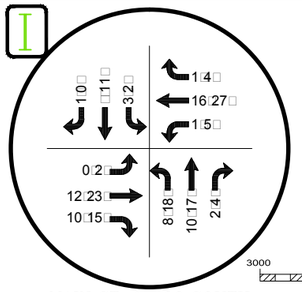
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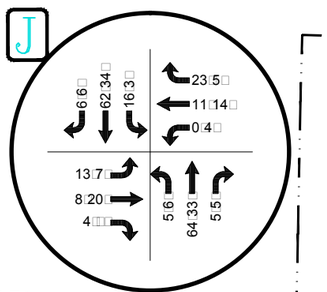
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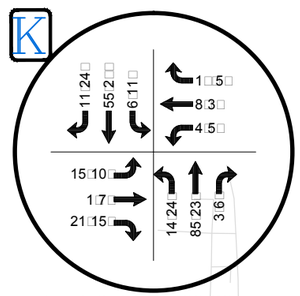
400 WEST & 400 SOUTH



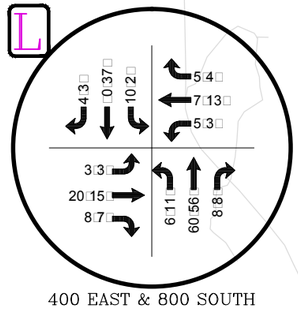
MAIN ST. & 400 SOUTH



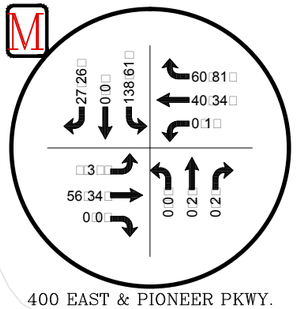
400 EAST & 400 SOUTH



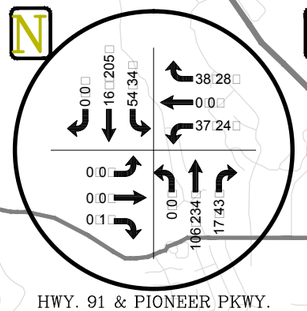
PUERTO DR. & 400 SOUTH



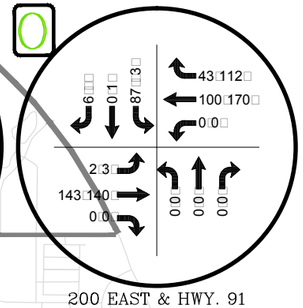
400 EAST & 800 SOUTH



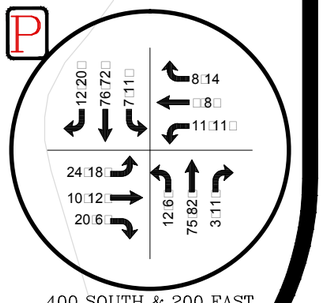
400 EAST & PIONEER PKWY.



HWY. 91 & PIONEER PKWY.



200 EAST & HWY. 91



400 SOUTH & 200 EAST

N

3000 0 3000 6000 9000 12000 FEET

SCALE: 1"=3000 Feet

LEGEND

□□ - AM VOLUMES

□□□ - PM VOLUMES

X - INTERSECTION LABEL

- TURNING MOVEMENT INDICATOR

NOTE: ALL INTERSECTIONS ARE LISTED WITH THE STREET RUNNING N-S FIRST AND THE STREET RUNNING E-W SECOND.

SCALE
1" = 3000'

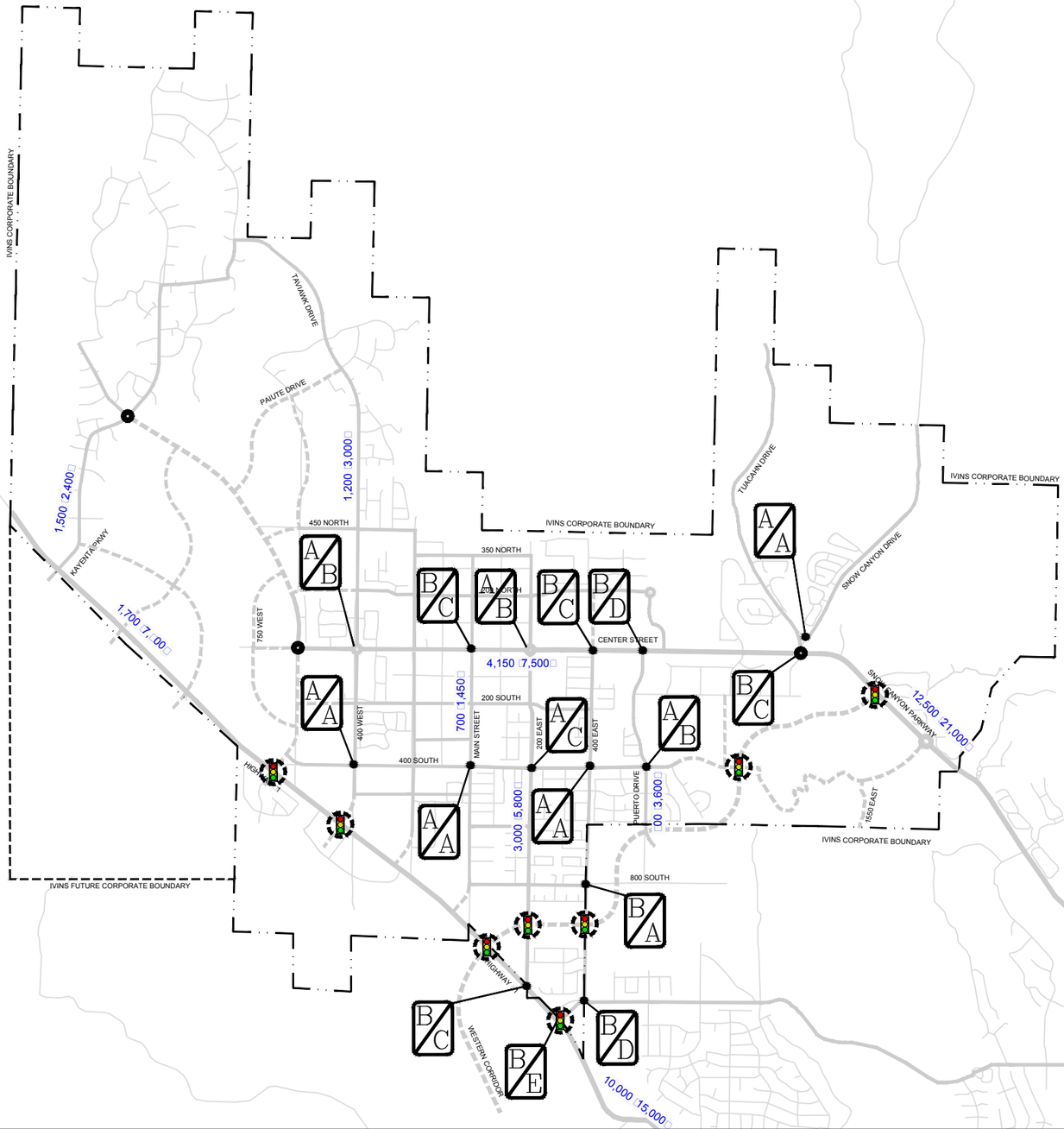
DATE
February 15, 2015

Ivins TMP Update

EXISTING VOLUMES

FIGURE NO.
6

H:\2014\SG-410-1412 Ivins Master Traffic\And\Transp Study Update\Project Data\Figures\Figures Rev12.dwg - Existing Volumes 2015 - 6/18/2015 02:39pm, ShannonM



LEGEND

- X/X – EXISTING LOS GRADE NO-BUILD
- X/X – 2040 PROJECTED LOS GRADE
- – STOP CONTROLLED INTERSECTION
- – FUTURE ROUNDABOUT INTERSECTION
- – PROPOSED TRAFFIC SIGNAL OR ROUNDABOUT
- □□ – EXISTING AVERAGE DAILY TRAFFIC (ADT)
- □□□ – PROJECTED AVERAGE DAILY TRAFFIC (ADT)

NOTE: LOS IS LISTED FOR THE WORST APPROACH AND NOT FOR THE OVERALL INTERSECTION. ALL INTERSECTIONS WITH A PROPOSED SIGNAL/ROUNDABOUT WILL NOT RETAIN THE SHOWN LOS DESIGNATION, BUT WILL BE IMPROVED WITH THE SIGNAL/ROUNDABOUT.

N

1" = 3000'

SCALE
1"□3000'

DATE
□une 25, 2015

HORROCKS ENGINEERS
555 SOUTH BLUFF STREET
SUITE 101
ST. GEORGE, UT 84770
□435□□86-7888

OUR HOME BENEATH THE BIG RED MOUNTAIN
IVINS UTAH

I□ins TMP Update

LEVEL OF SERVICE (LOS)

FIGURE NO.
7

H:\2014\SGS-410-1412 Ivins Master Traffic\Ona\Transp Study Update\Project Data\Figures\Figures Rev12.dwg - LOS(11X17) - 12/03/2015 03:45pm, shannonm

2.8 Traffic Accident Data

For this study, reported accident information was obtained from the Santa Clara - Ivins Police Department for the six and a half year period from January 2008 to May 2014. Total accidents for each of these years, broken down into type of accident and accident location, are displayed in the Appendix.

The City has summarized all of the reported accidents for this time period into a readable, reportable form. Included on Figure 8 are a series of seven pin maps for each year that assign an accident to a location of the occurrence.

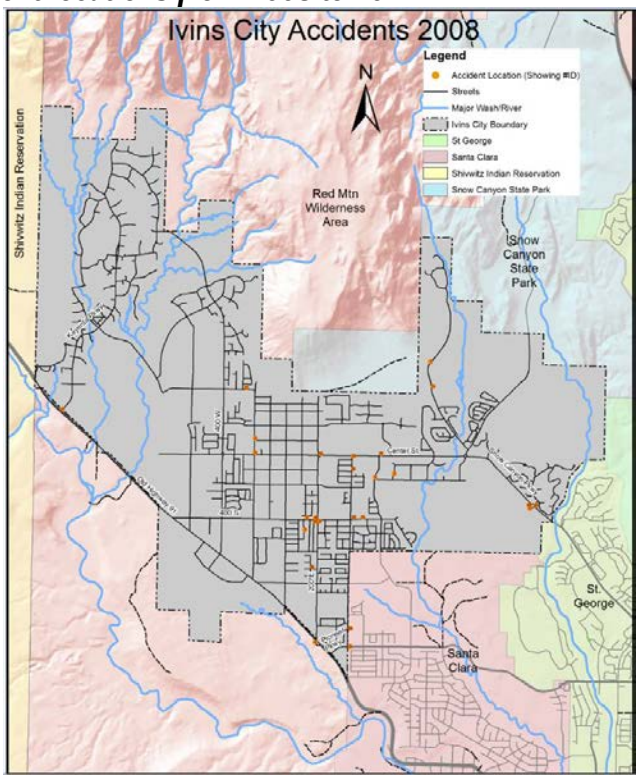
Although the sample is rather small, patterns that emerged from this data analysis is as follows:

1) Overall accidents average about 21 per year.
2) On average there are 4.9 injury accidents per year during the period studied. It ranges from two injury accidents in 2009 and nine injury accidents in 2008.
3) The locations with the highest number of reported accidents are:
    a. Center Street & 1500 East (roundabout) with 15 accidents during study period
    b. Center Street, from 200 East to Puerto with 13 accidents during study period
    c. Center Street & Snow Canyon Drive (roundabout installed in 2010), with 11 accidents during study period
    d. Center Street & 200 East (roundabout) with 5 accidents during study period

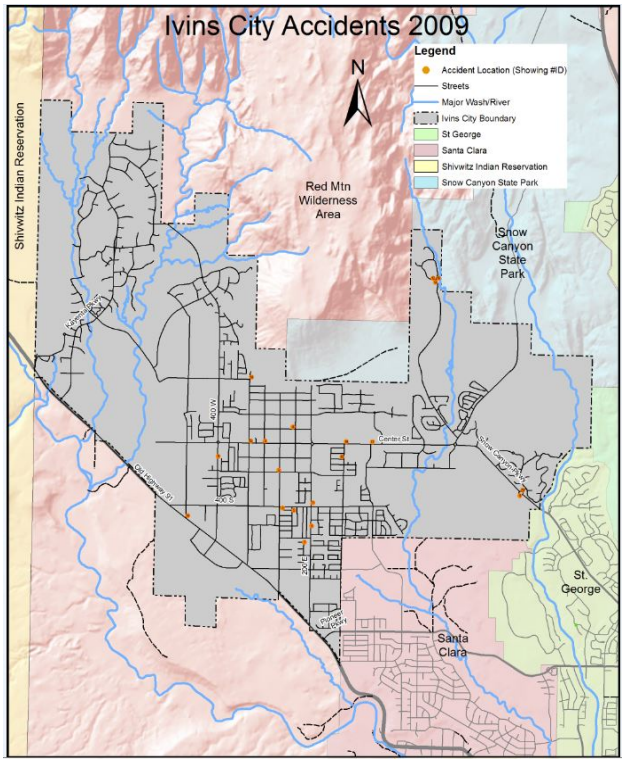
The prominent accident locations appear to be those locations where drivers have to avoid curbs and medians. Care should be taken to review these locations and be sure that appropriate signage is posted and appropriate lighting for night vision is placed. These features should have high visibility to drivers in various lighting and environmental conditions to help reduce future accidents at these locations.

The number and type of accidents in Ivins is not higher than usual. During this study period, 72% of the accidents involved only property damage to vehicles, and the remaining 28% were injury accidents. There was one fatality, a bicyclist, that occurred on Old Highway 91 in 2012. It is unfortunate that even one accident has to be endured by drivers and their passengers as they can sometimes be life-changing events.

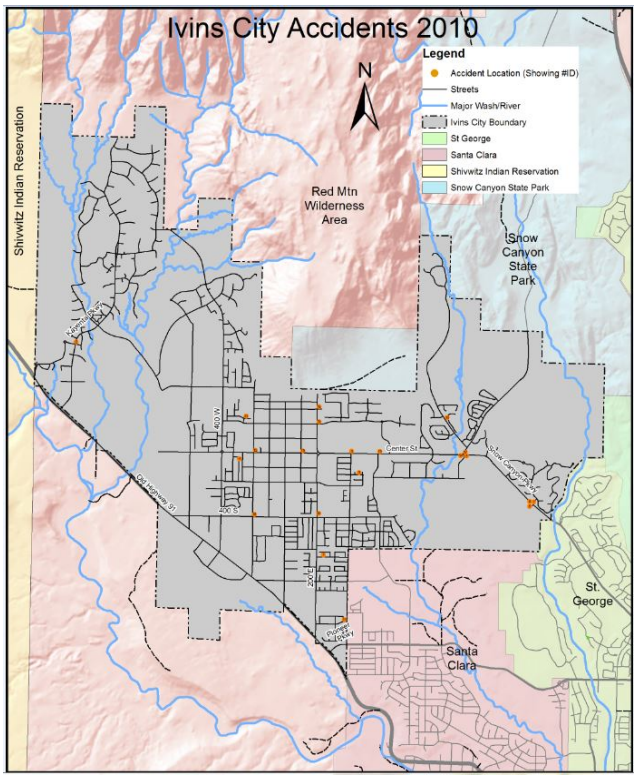
Figure 8 – Accident locations from 2008 to 2014



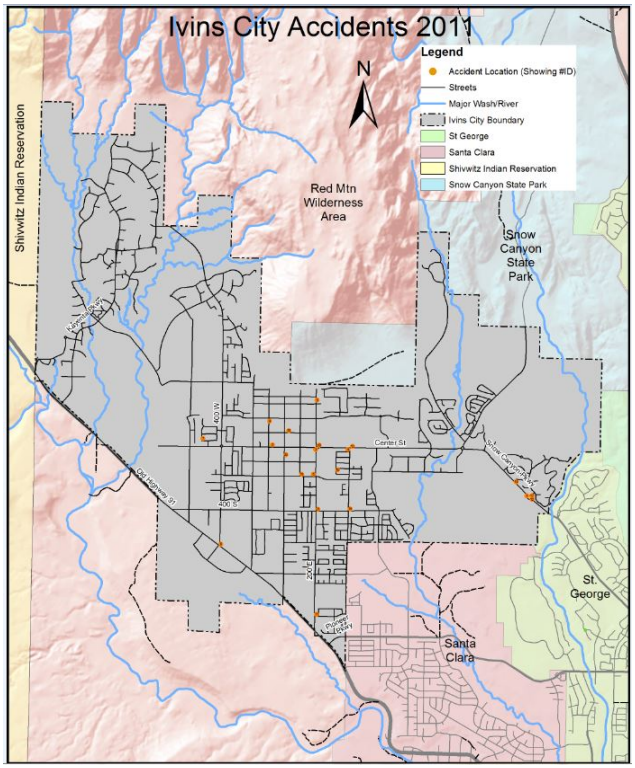
2008 Accidents



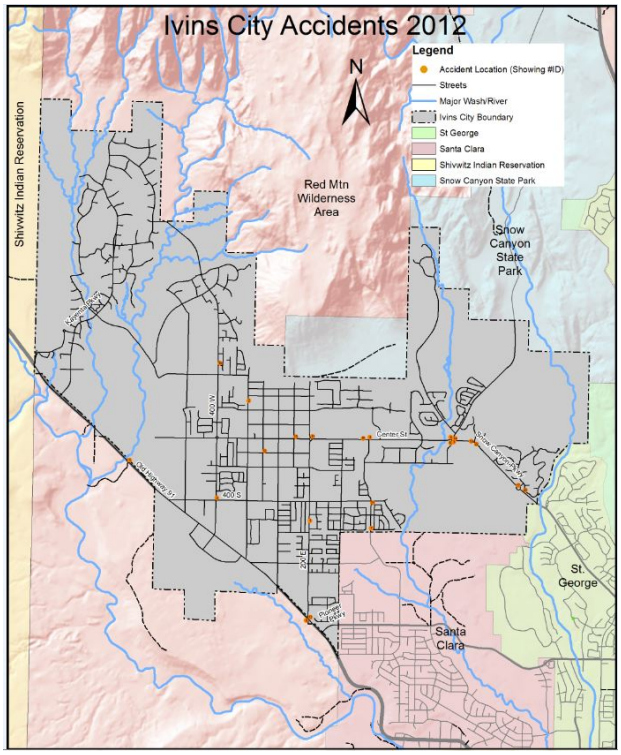
2009 Accidents



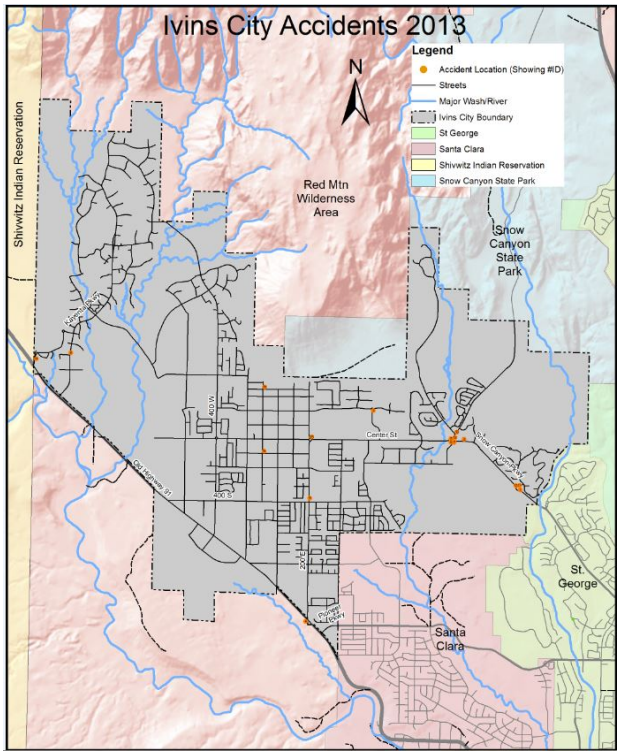
2010 Accidents



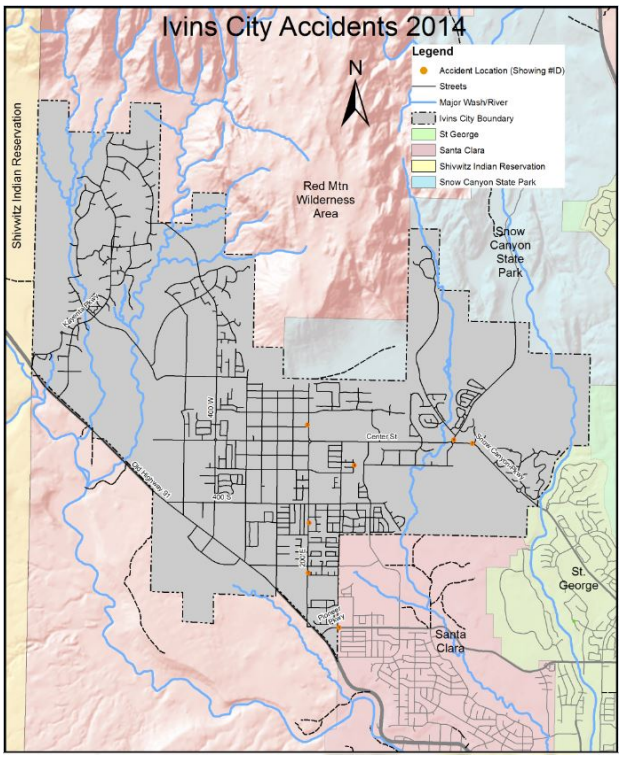
2011 Accidents



2012 Accidents



2013 Accidents



2014 Accidents

2.9 Bicycle and Pedestrian Traffic

A trails network that accommodates bicycle and pedestrian traffic is developed and shown on Figure 9. This network has been produced with the premise that with rising fuel costs and an increased emphasis on recreation and fitness, more people will use these on-road and off-road facilities than ever before. There has been a large increase in bicycle riders, both recreational riders and commuters. For those cyclists who want to enjoy a ride without interfering with motorized vehicles, there are off-road and shared use trails. For those cyclists who would like to stay on the road system, there are designated bike lanes that quickly and safely transport riders from point A to point B. A great deal of effort has been made to plan for future trail routes that promote connectivity between neighborhoods and attractions such as schools, parks and commercial centers.

This trails network has been coordinated with the adjacent community of Santa Clara and Washington County and provides an adequate connectivity of trails throughout the community. Sidewalks are also provided throughout the community to accommodate pedestrian traffic. Some areas lack sidewalk, which requires pedestrians to walk on the shoulder of the road. These areas that lack sidewalk have been identified and included as part of the improvement plan for future implementation. All new development is required to provide sidewalks except as noted in the roadway cross sections. These cross sections will also denote where bicycle lanes will be planned in new roadway construction.

2.10 Revenue Sources

Maintenance of the existing transportation facilities and construction of new facilities come primarily from revenue sources that include the Ivins City general fund, federal funds, transportation impact fees and State Class C funds. Financing for local transportation projects consists of a combination of federal, state, and local revenues. However, this total is not entirely available for transportation improvement projects since annual operating and maintenance costs must be deducted from the total revenue. In addition, the City is limited in their ability to subsidize the transportation budget from general fund revenues.

2.10.1 State Class B and C Program

The distribution of Class B and C Program monies is established by state legislation and is administered by the State Department of Transportation. Revenues for the program are derived from state fuel taxes, registration fees, driver license fees, inspection fees, and transportation permits. Seventy-five percent of the funds derived from the taxes and fees are kept by the Utah Department of Transportation for their construction and maintenance programs. The remaining twenty-five percent is made available to counties and cities.

Ivins City Transportation Master Plan

Updated: February 2014

Legend

- Existing Bike Trails
- Proposed Bike Trails
- Proposed Bike Lanes
- City Boundary
- Trailheads
- Trails, Unimproved
- Municipal Parks
- Major Wash/River
- RedCliffsDesertReserve
- City of St George
- City of Santa Clara
- Snow Canyon State Park
- Shivwits Reservation
- Streets

Proposed Bike Lanes & Trails

Figure No. 9

Class B and C funds are allocated to each city and county by a formula based on population, road mileage, and land area. Class B funds are given to counties, and Class C funds are given to cities and towns. Table 8 below identifies the method used to allocate B and C funds.

Table 8 – Apportionment Method of Class B and C Funds

Based on	Of
50%	Roadway Mileage
50%	Total Population

Class B and C funds can be used for maintenance and construction of highways, however thirty percent of the funds must be used for construction or maintenance projects that exceed $40,000. Class B and C funds can also be used for matching federal funds or to pay the principal, interest, premiums, and reserves for issued bonds.

2.10.2 Federal Funds

There are federal monies that are available to cities and counties through the federal-aid program. The funds are administered by the Utah Department of Transportation. In order to be eligible, a project must be listed on the five-year Statewide Transportation Improvement Program (STIP).

The Surface Transportation Program (STP) provides funding for any road that is functionally classified as a collector street or higher. STP funds can be used for a range of projects including rehabilitation and new construction. Fifty percent of the STP funds are allocated to urban and rural areas of the state based on population. Thirty percent can be used in any area of the State, at the discretion of the State Transportation Commission. The remaining twenty percent must be spent on highway safety projects and transportation enhancements. Transportation enhancements include 10 categories ranging from historic preservation, bicycle and pedestrian facilities, and water runoff mitigation.

The amount of money available for projects specifically in the study area varies each year depending on the planned projects in UDOT's Region Four. As a result, federal aid program monies are not listed as part of the study area's transportation revenue.

2.10.3 Local Funds

Ivins City, like most cities, has utilized general fund revenues in its transportation program. Other options available to improve the City's transportation facilities could involve some type of bonding arrangement, either through the creation of a redevelopment district or a special improvement district. These districts are organized for the purpose of funding a single, specific project that benefits an identifiable group of properties. Another source is

through general obligation bonding arrangements for projects felt to be beneficial to the entire entity issuing the bonds.

2.10.4 Private Sources

Private interests often provide sources of funding for transportation improvements. Developers construct the local streets within the subdivisions and often dedicate right-of-way and participate in the construction of collector or arterial streets adjacent to their developments. Developers can also be considered as a possible source of funds for projects because of the impacts of the development, such as the need for traffic signals or street widening.

3 Future Growth

3.1 Land Use and Transportation

Coordination between land use and transportation is critical for the future development of Ivins City. Street classification and development of streets can guide both desirable and undesirable land uses. The same holds true for land use development. It forces the street classification in advance that could be in opposition to the goals of the transportation plan. Therefore, it is imperative that the goals of land use and transportation are coordinated with each other to support and augment each other and not oppose each other.

Ivins future land use plan identifies areas for growth and non-growth. The new developing residential areas will impact the transportation system the greatest because of daily trip traffic. It is projected that Ivins will potentially reach buildout sometime between the years 2040 and 2050. This is based on current population trends that Ivins has experienced in the past and the availability of developable land at the current identified densities. Reclassification of street type has been recommended for these areas and is identified in the Roadway Functional Classification. Residential land use areas should be maintained as identified in the land use plan.

3.1.1 Functional Street Classification

Functional street classification is a subjective means to identify how a roadway functions and operates when a combination of the roadway's characteristics are evaluated. These characteristics include; roadway configuration, right-of-way, traffic volume, carrying capacity, property access, speed limit, roadway spacing, and length of trips using the roadway. Eight primary classifications were used in classifying selected roadways in Ivins. These classifications are: Major Arterial, Minor Arterial, Major Collector, Minor Collector, Residential Collector, Residential Standard, Residential Alternative, and Residential Private. Arterials provide a higher degree of traffic mobility with limited property access and often connect to the freeway system. Collectors provide a balance between mobility and property access trips. Residential streets and roads serve property access based trips and these trips are generally shorter in length. Traffic from residential roads is gathered on to the collector system and channeled to the arterials.

The east end of Center Street, Snow Canyon Parkway, and Old Highway 91, the major routes that connect Ivins with surrounding communities, are classified as Major Arterials. The Western Corridor and the west end of Center Street are routes which are functionally classified as Minor Arterials. 400 West, 400 South, 600 West (Kwavasa Drive), a future unnamed street connecting Kwavasa Drive to Highway 91, and 200 East are functionally classified as Major Collectors. There are several roads in the city that collect neighborhood traffic and distribute it to the higher classified roadways. These types of roads are classified as Minor Collectors and include 200 West, 400 East, 200 South, Snow Canyon Drive, Tuacahn Drive, Kayenta Parkway, Taviawk Drive, Puerto Drive, 800 South, and 200 North. The remaining roads are functionally classified as Residential Collector or various Residential type roads. A map of the roads and their classifications is shown in Figure 10. Included on this map are right-of-way widths and future proposed roadways. These features are discussed on the next several pages. The roadway cross-sections for new development have changed slightly from what they were in the past. This does not mean that every existing roadway in town will have to be reconstructed to meet these standards. This effort is to develop a standard section that will meet the city's needs and be used for future development plans. All new roadways will be required to meet this new standard. The new road cross sections are shown on the pages for Cross Sections 1.1 through 12.

3.1.2 Roadway Cross Sections

Cross sections are the combination of the individual design elements that constitute the design of the roadway. Cross section elements include the pavement surface for driving and parking lanes, curb and gutter, sidewalks and additional buffer/landscape areas. Right-of-way is the total land area needed to provide for the cross section elements.

The design of the individual roadway elements depends on the intended use of the facility. Roads with higher design volumes and speeds need more travel lanes and wider right-of-way than low volume, low speed roads. The high use roadway type should include wider shoulders and medians, separate turn lanes, dedicated bicycle lanes, elimination of on street parking, and control of driveway access. On most of the cross sections an additional buffer area is provided beyond the curb line. This buffer area accommodates the sidewalk area, landscaping, and recreational facilities. Locating the utilities outside the traveled way minimizes traffic disruption with utility repairs and when changes in service are needed.

The hierarchy of cross-sections provided for are residential (2 lanes), minor collector (2 lanes), major collector (2 lanes and a median/parking), and minor and major arterial roadways (4 lanes and a median). There are few dimensions used in street design that have been determined exact by research. The cross-section generally represents a consensus of opinions based on operating experience. The roadway cross-sections for Ivins are shown in Cross Sections 1-11. Typical elements of these roadway cross sections are identified in the following paragraphs.

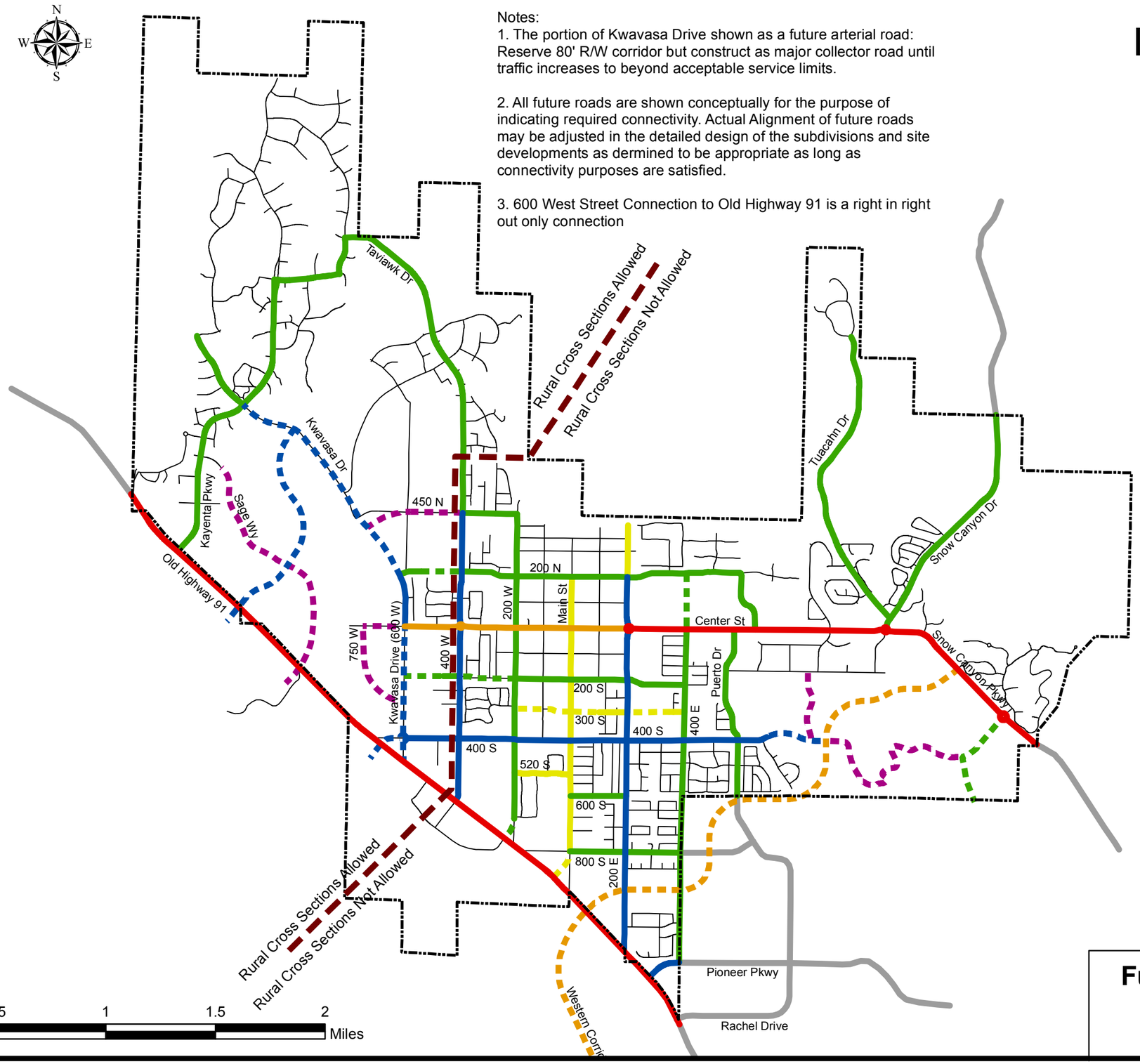
Ivins City Transportation Master Plan

Updated: February 2014

Notes:
1. The portion of Kwavasa Drive shown as a future arterial road: Reserve 80' R/W corridor but construct as major collector road until traffic increases to beyond acceptable service limits.

2. All future roads are shown conceptually for the purpose of indicating required connectivity. Actual Alignment of future roads may be adjusted in the detailed design of the subdivisions and site developments as dermined to be appropriate as long as connectivity purposes are satisfied.

3. 600 West Street Connection to Old Highway 91 is a right in right out only connection



Legend

- City Boundary

Functional Class

- Major Arterial, Existing (100' ROW)
- Minor Arterial, Existing (85'/90' ROW)
- Minor Arterial, Undeveloped (85'/90' ROW)
- Major Collector, Existing (66' ROW)
- Major Collector, Undeveloped (66' ROW)
- Minor Collector, Existing (60' ROW)
- Minor Collector, Undeveloped (60' ROW)
- Residential Collector, Existing (55' ROW)
- Residential Collector, Undeveloped (55' ROW)
- Residential, Undeveloped (see Xsec for ROW)
- Adjacent Cities Main Roads
- Existing Local (Residential) Streets

Functional Classification & Cross-sections

Figure No. 10

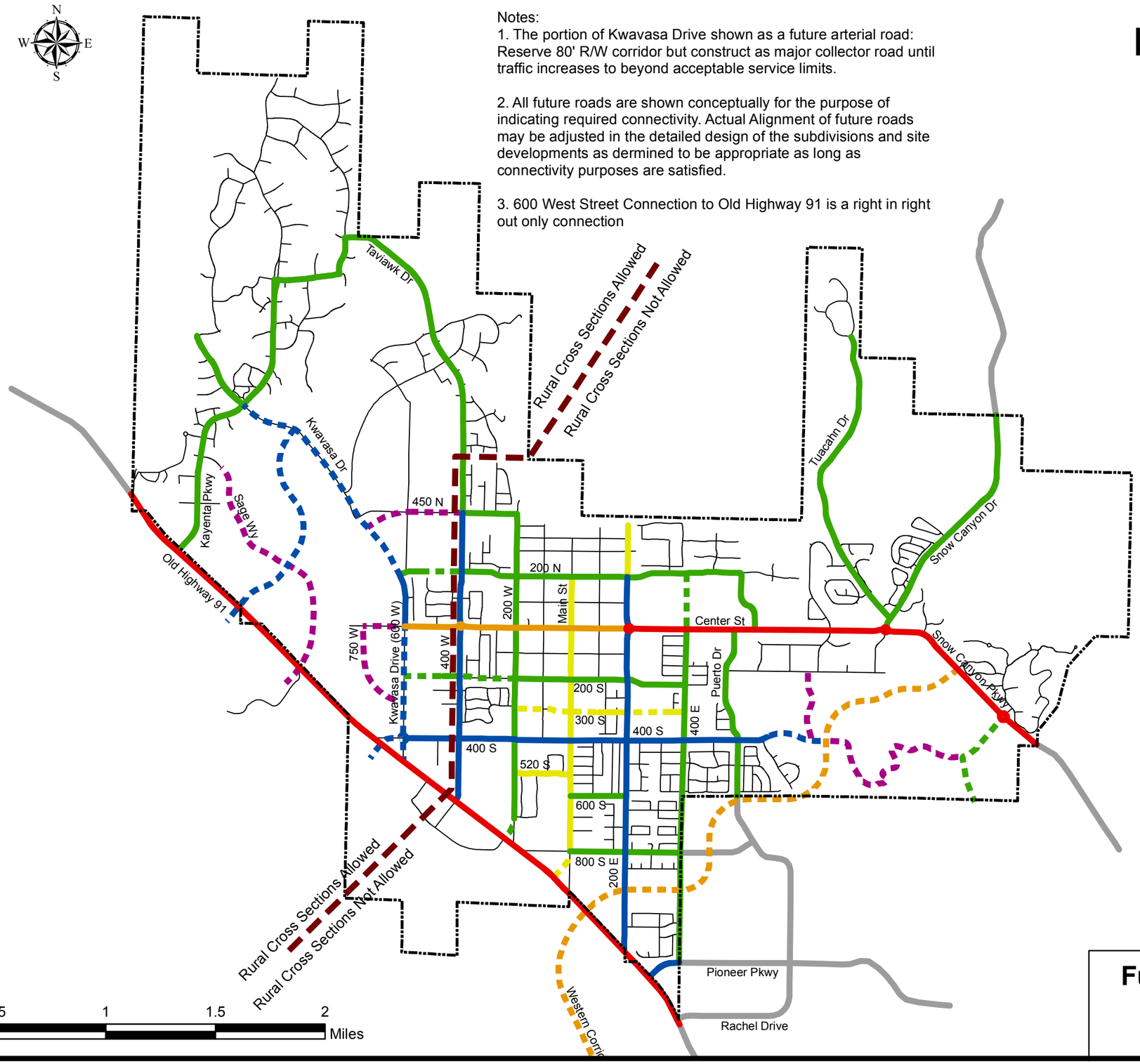
Ivins City Transportation Master Plan

Updated: February 2014

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Legend

- City Boundary

Functional Class

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- Minor Arterial, Existing (85'/90' ROW)
- Minor Arterial, Undeveloped (85'/90' ROW)
- Major Collector, Existing (66' ROW)
- Major Collector, Undeveloped (66' ROW)
- Minor Collector, Existing (60' ROW)
- Minor Collector, Undeveloped (60' ROW)
- Residential Collector, Existing (55' ROW)
- Residential Collector, Undeveloped (55' ROW)
- Residential, Undeveloped (see Xsec for ROW)
- Adjacent Cities Main Roads
- Existing Local (Residential) Streets

Functional Classification & Cross-sections

Figure No. 10

3.1.2.1 Residential Streets

Residential streets provide access to abutting land uses and service local traffic movement. Due to low traffic speeds and relatively small traffic volumes on the street, parking is usually allowed on the street and bicycles are allowed without a separate travel lane. The Residential Standard cross-section includes 50-feet of right-of-way, and 55-feet of right-of-way for the Residential Collector. This allows two travel lanes, parking on one side or both sides, and a park strip on each side to separate the pedestrians from the vehicular traffic.

There is a 43-foot wide Alternative cross section that does not have a planter strip between the curb and the sidewalk that is intended to be used where traffic volumes will be low and depends on the type of development, the location of the development, connectivity with neighborhoods, as well as other criteria. Staff, in conjunction with the TRC, will determine when this cross section can appropriately be used.

There is also a 38-foot wide Alternative cross section. This cross section only requires sidewalk to be installed on one side of the street. The approval and use of this cross section is similar to the 43-foot Alternative cross section.

The Private Residential Rural street cross-section is also provided only for use in the designated rural zone. Rural street cross-sections are described further on the following page.

3.1.2.2 Minor Collectors

Collector streets provide for traffic movement between local streets and arterial streets and provide access to abutting land uses. The Minor Collector is a two-lane section with 60-feet of right-of-way. The 60-feet allows for two 11-foot lanes, parking on one side, and park strips and sidewalks on both sides of the road. The increased width of this type of roadway versus that of the local streets allows for the development of on-street bus stops or a separate right turn lane by eliminating the on-street parking near the intersection. Due to higher speeds and increased traffic volumes, recreational bicyclists are served by using the sidewalks with the potential to increase their width and location in the landscape buffer area. More serious cyclists that are commuting or touring will use the shoulder that may be striped as a bike lane if parking is prohibited or the travel lane if parking is permitted.

3.1.2.3 Major Collectors

The major collector includes a 66-foot roadway cross-section. This design allows for two 12-foot lanes, a possible 12-foot two-way left-turn lane or shoulders for parking on both sides of the road, and park strips and sidewalks on both sides of the road. One of the sections also provides a bike path on one side of the road. Commuting or touring cyclists will use the travel lanes if the shoulder is not designated for bikes.

3.1.2.4 Arterials

Arterial streets provide major through traffic movement between geographic areas. These roadways typically have some form of access control that limits the location of driveways.

The Minor Arterial roadway includes either an 85 or 90-foot roadway cross-section. The 85-foot cross-section allows for a 10-foot center lane for left turns, four 10.5-foot travel lanes, 4-foot bike lanes, curb, gutter, sidewalk or trail, and a park strip on each side of the road. The 90-foot cross-section increases the width of the lanes to 11-feet and the median to 12 feet.

Old Highway 91, a 100-foot wide Major Arterial, is planned to be a 3-lane road with two 12-foot lanes, a 14-foot median, 6-foot bike lanes, and 14-foot gravel shoulders. The portion of the Highway between 200 East and the City limits at Santa Clara will be improved beginning in 2016 with Federal money allocated by the MPO members. The remainder of the Highway between 200 East and the Shivwits reservation is planned to be improved during the next 10 years. In the future beyond 10 years, the volume of the road will be such that the gravel shoulders will need to be used as travel lanes for an ultimate 5-lane section. The City will build the 3-lane section to meet their 10-year plan, and widening to 5-lanes will occur for the 20-year plan. As development occurs, these outside lanes may need to be paved in order to construct right-turn lanes for development access to this highway. The right-turn lanes are necessary to maintain traffic safety and future capacity of Old Highway 91.

3.1.2.5 Rural Streets

A new street can be designed as a rural street if it is located west of 400 West as delineated in Figure 11. In these rural areas, asphalt widths for all road designations should match those of urban cross sections except for residential streets which shall be allowed to follow Cross-Section 2 Residential Private Rural which allows a 26-foot pavement width. This reduced width road allowed with the condition that "No Parking" signage be installed per the adopted Fire Code. Pedestrian facilities (sidewalks or trails) are not required when traffic studies show that a road has a volume of less than 200 vehicles per day (approximately 20 dwelling units). All other rural streets shall provide either an 8-foot wide asphalt shared-use trail on at least one side of the street, per the Trail Network Plan shown on Figure 10, or a minimum 5-foot wide sidewalk on both sides of the street.

3.1.2.6 Roadside Drainage

For urban streets, curb and gutter is required to be installed on both sides of the street. For rural streets, there are three options along with installing the minimum width required for asphalt:

Option A: Curb and gutter on both sides of the street.

Option B: Rock-lined ditch on both sides of the street.

The ditch shall be a minimum 3-inch in depth, with a minimum 3-inch diameter rock. A drainage study needs to show that the ditch can handle a 10-year flood event where the ditch collects 600 feet or more of half-width residential street.

Option C: Unarmored ditch both sides

This option is only allowed in low erosion situations where velocities in the ditch during a 10-year event must not exceed 2 feet per second. Storm

water must flow into an underground drainage system or wash prior to velocities achieving 2 feet per second. Any place where velocities are expected to exceed 2 feet per second, the ditch or channel must be armored.

The City may require curb and gutter in the rural zone on a case-by-case basis in areas of commercial, industrial or medium/high-density residential.

3.1.2.7 Street Transitions

Many streets in Ivins City have been built according to a previous cross sectional standard. New street sections should be built to the cross section standards as they are approved. In instances where new streets are placed to continue older, existing streets, a transition from old to new sections may need to occur. However, there may be important design, right-of-way, drainage, maintenance, or other consistency reasons that may require that the previous cross sectional standard be continued for the new street. If this is the case, the City Engineer will determine where to allow the design and construction of the previous cross section to more smoothly transition into new road section areas. The end result is to provide a smooth transition that meets quality and design standards that Ivins City requires.

3.1.2.8 Private Streets

Where residential private streets are approved to be built, they shall be designed and built according to residential public street standards to maintain system integrity, consistency, and driver expectation in all areas of the City. Also, private streets have been a source of complaints by some residents that are left with the cost to maintain the streets while paying the same amount of taxes as all other residents. If a developer chooses to use private streets, it should be provided on some basis other than to lower development costs.

One exception to this requirement is a cross-section for a private residential shared access drive that meets the following parameters:

1. The access is not required for adequate emergency or fire response
2. Using public Street standards does not allow for reasonable development per property zoning

The private shared access drive requirements are:

1. 24-foot wide asphalt, concrete, masonry or equivalent improved drivable surface
2. Signed no parking on one side
3. Concreted curb and gutter is required on both sides when drive is longer than 200 feet except in rural zone. In all cases, it may be necessary to consider drainage improvements such as curb and gutter
4. The gutter is considered part of the drivable surface. A mountable curb is also considered part of the drivable surface
5. To reduce parking problems, vehicle garages shall be setback from alley at least 20 feet, unless an offstreet parking areas is provided within the project

A cross section of this 24 foot shared access drive is shown in Figure 11.

24’ Shared Access Drive Section

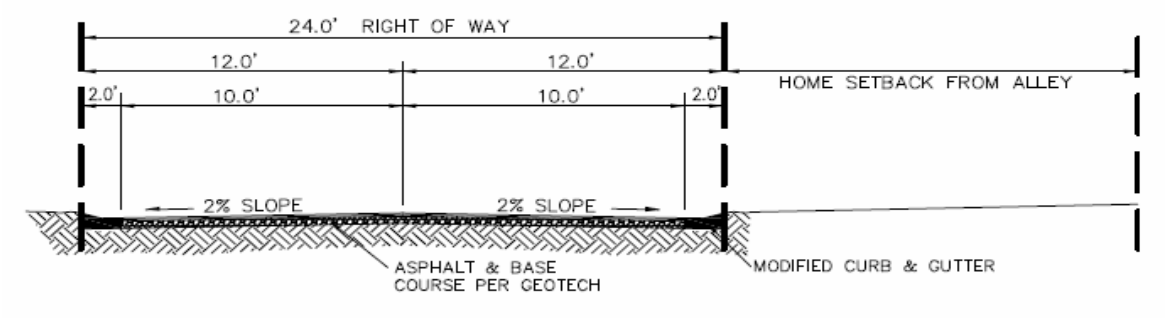


Figure 11 – Shared Access Drive Detail

Another exception is in the designated rural area on the west side of Ivins where residential streets without curb and gutter are allowed due to the Kayenta-style aesthetic treatment of rural desert lands. Cross-section 2 has been developed to allow this private road concept. No residential street will be accepted as a public road without curb and gutter and the minimum 28-feet of asphalt per cross-section 1.1, 1.2 and 1.3. Collector streets, however, shall be public in all circumstances even in rural areas where the developer is approved to use the rural side drainage.

3.1.2.9 Landscaped Medians

Landscaped medians shall be considered on major collectors and arterials. The landscaped median adds a pleasant aesthetic treatment to the streetscape, but it has many increased safety benefits, as well, by controlling location of left hand turns, calming traffic, and reducing collisions. This Transportation Master plan identifies installing landscaped medians on Center Street, portions of 400 South, 200 East, Highway 91 and the Western Corridor. Additionally, it is expected that developers will install landscaped medians on Kwavasa Drive.

Generally, landscaped medians should be installed such that at least 2 feet of clearance is provided from the face of a curb, and, per the adopted fire code, at least 20 feet of unobstructed drivable surface (including gutter pans or gravel shoulders) shall be provided on both sides of the median. A landscaped median will be maintained by the City on major collector and arterial streets. A landscaped median shall not be allowed on minor collector or lesser public streets unless a home owners association agrees to maintain it.

3.1.2.10 Landscape Buffer Areas

Landscape buffer areas are intended to provide an area of landscaped open space along all public streets where front yards of homes do not front the street. The intent is to provide the general public using the public streets with a more open view of scenic vistas prominent in the Ivins community and consistently beautify the public streets with softening landscaping. Landscape buffers shall be owned and maintained by the City on arterials and major collectors except where a home or commercial site fronts the street.

Otherwise the adjacent property owners shall maintain the buffer including the parkstrip or other landscape areas within the public right-of-way.

3.1.3 The Central Core of Ivins

Ivins should consider keeping their City Hall in the core of the downtown and work towards developing a city core over the long term. The philosophy behind this is that you allow civic uses to develop the downtown core and have ancillary uses evolve naturally to support the civic uses. These support services would be banking institutions and professional offices with service retail to support these uses. Because Ivins did not evolve with a traditional downtown core similar to many communities, it is not likely that one will naturally evolve without the City planning and guiding it. A common development pattern with growing cities similar to Ivins is the development of public/private/retail enterprises occurring along transportation corridors. This develops the multi-nucleus zone, which does not have a central core of civic and professional uses but possesses many uses. This does not create a "sense of place" which many communities are now struggling to create.

3.1.4 Importance of a City Core

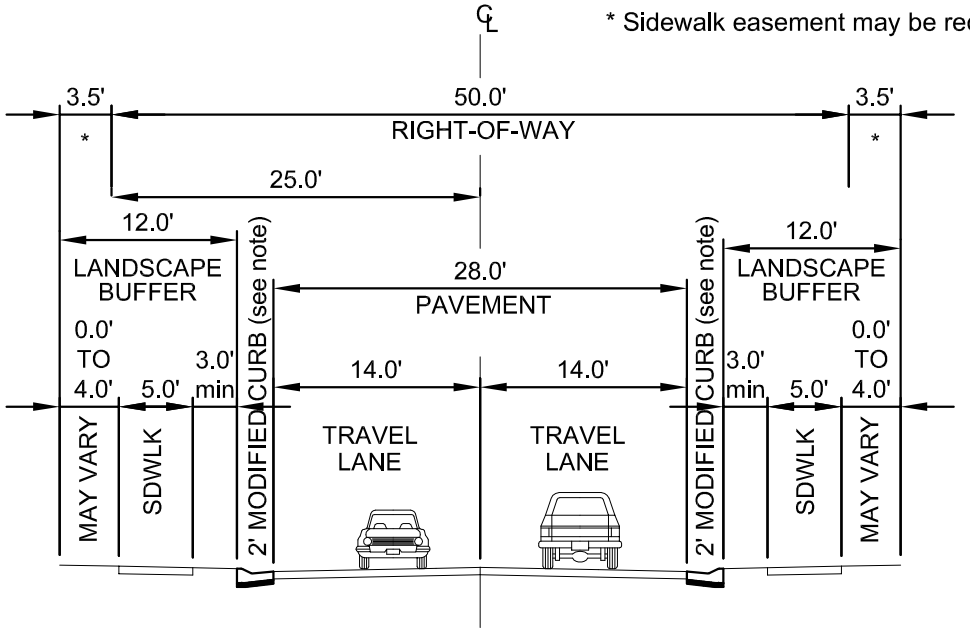
The downtown core is important for a couple of reasons. It identifies a place or an identity for a community. Many civic activities that promote and celebrate historic and cultural community activities are concentrated in one area, typically the civic block or core area. Concentration of government services in a central area provides efficient service and better communication for residents. Disjointed or separated government activities tend to create frustration and confusion for residents and employees. With population build-out projections estimated around 19,000 by year 2046, this area could easily support a city core.

Ivins is in a very unique situation in that it has a great opportunity to guide its future development pattern to create a very livable community based upon the classification of its transportation network. Additionally, the land use and transportation network have been coordinated to work in support with each other.

NOTE

1. Meandering sidewalk recommended where possible. Meander sidewalk through landscape buffer area.
2. Sidewalk may undulate but must meet clear zone requirements.
3. The City may require that the 2' modified curb be substituted by a 2.5' high back curb when
   - road is curvilinear and grade has portions steeper than 2 percent,
   - road is recieving water from an intersecting road or other drainage feature that has an apparent risk of storm water jumping the curb due to high velocities, or
   - a substantive drainage benefit is determined per approved drainage studies.

* Sidewalk easement may be required for meandering sidewalks.



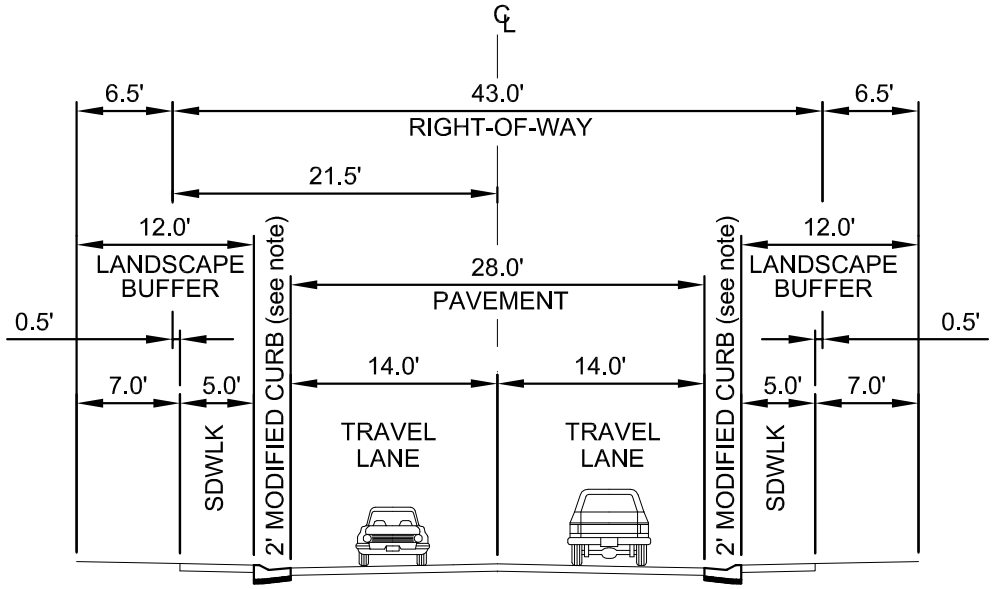
RESIDENTIAL STANDARD 50'

SCALE					CROSS SECTION NO.
NONE	HORROCKS ENGINEERS	285 WEST TABERNACLE SUITE 300 ST. GEORGE, UT 84770 (425) 986-7888	IVINS CITY	Ivins City	1.1
DATE				RESIDENTIAL STANDARD 50'	
Sept. 10, 2008					

NOTE

1. The City may require that the 2' modified curb be substituted by a 2.5' high back curb when
   - road is curvilinear and grade has portions steeper than 2 percent,
   - road is recieving water from an intersecting road or other drainage feature that has an apparent risk of storm water jumping the curb due to high velocities, or
   - a substantive drainage benefit is determined per approved drainage studies.

2. Where a 2.5' high back curb is required, the sidewalk may be reduced to 4.5' width.



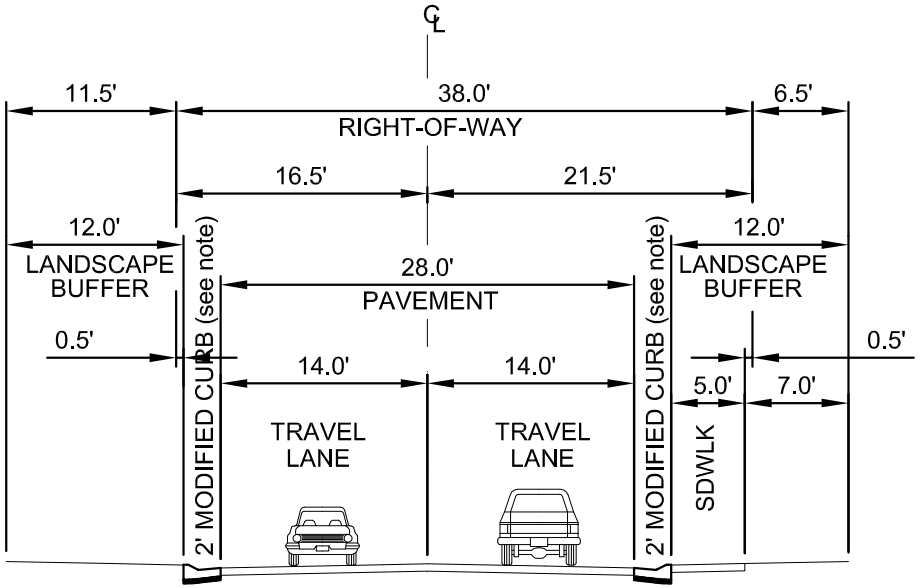
RESIDENTIAL ALTERNATIVE 43'

SCALE NONE DATE Sept. 10, 2008	HORROCKS ENGINEERS	285 WEST TABERNACLE SUITE 300 ST. GEORGE, UT 84770 (425) 986-7888	OUR HOME BENEATH THE BIG RED MOUNTAIN IVINS UTAH	Ivins City RESIDENTIAL ALTERNATIVE 43'	CROSS SECTION NO. 1.2

NOTE

1. The City may require that the 2' modified curb be substituted by a 2.5' high back curb when
   - road is curvilinear and grade has portions steeper than 2 percent,
   - road is recieving water from an intersecting road or other drainage feature that has an apparent risk of storm water jumping the curb due to high velocities, or
   - a substantive drainage benefit is determined per approved drainage studies.

2. Where a 2.5' high back curb is required, the sidewalk may be reduced to 4.5' width.

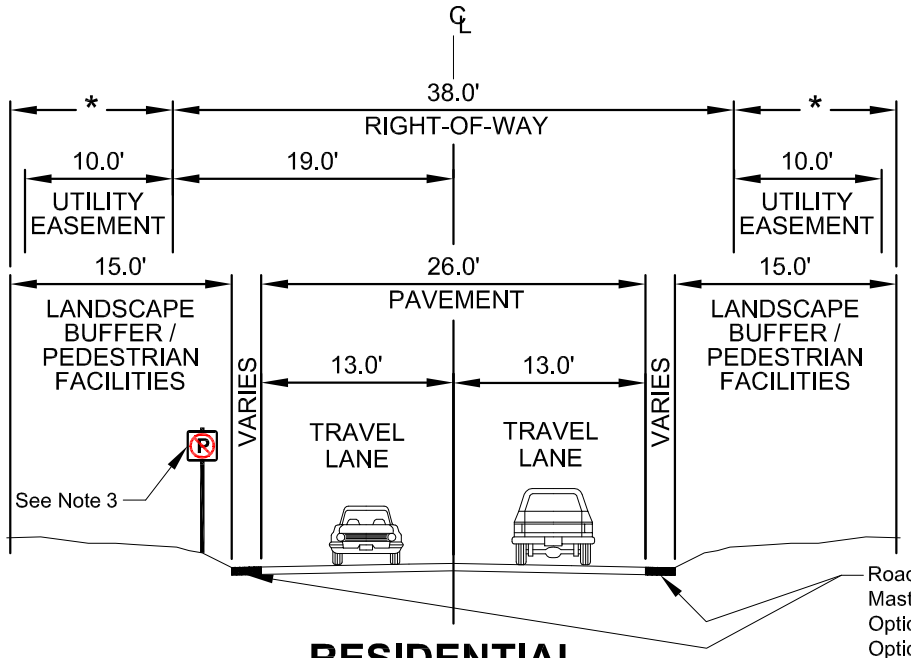


RESIDENTIAL ALTERNATIVE 38'

SCALE: NONE DATE: Sept. 10, 2008	HORROCKS ENGINEERS	285 WEST TABERNACLE SUITE 300 ST. GEORGE, UT 84770 (425) 986-7888	OUR HOME BENEATH THE BIG RED MOUNTAIN — IVINS UTAH	Ivins City RESIDENTIAL ALTERNATIVE 38'	CROSS SECTION NO. 1.3

NOTE

1. Pedestrian facilities required on rural streets per the Transportation Master Plan Chapter 3. Sidewalk/trail shall be located within landscape buffer area, meandering where possible.
2. Residential driveways shall be constructed to keep drainage within the roadway or natural drainage to prevent flooding of private property.
3. When driveable surface width (asphalt + shoulders) is 32 feet or less, "No Parking" signs shall be installed on one side of the road per adopted fire code. Driveable surface shall not be less than 29 feet.
4. Pedestrian facilities are not required when traffic studies show a road has a volume of less than 200 vehicles per day. Otherwise, an 8' wide asphalt path on one side, or a 5' concrete sidewalk on both sides shall be installed.



* Sidewalk / Trail easement, if required. Width varies per Road Side Drainage

Road Side Drainage (see Transportation Master Plan Chapter 3)
Option A: 2' Curb & Gutter
Option B: Rock lined ditch
Option C: Unarmored ditch 1.5' road base shoulder required minimum.

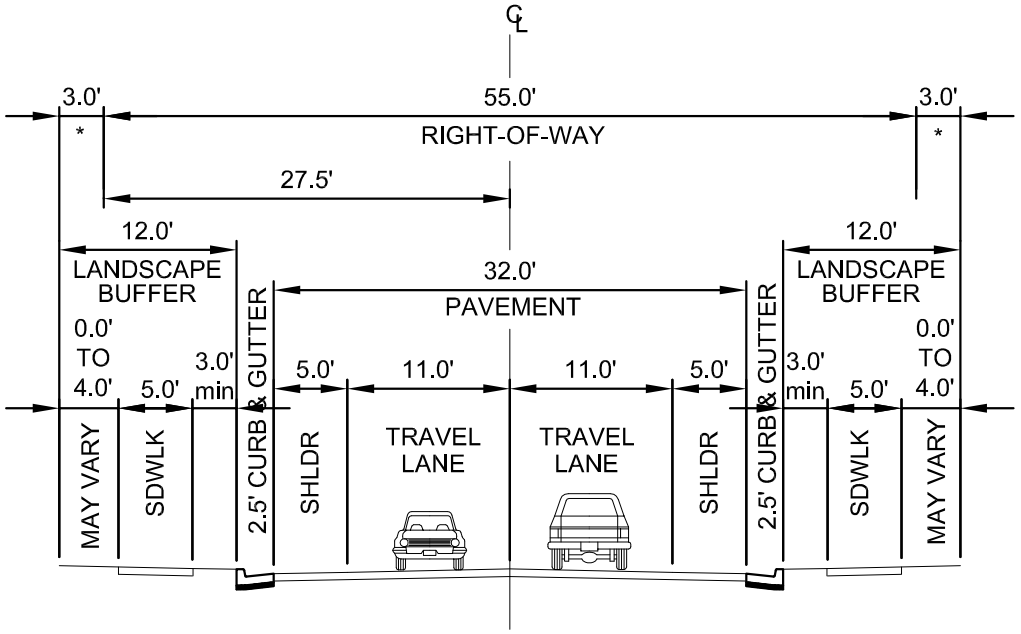
RESIDENTIAL PRIVATE - RURAL

SCALE NONE DATE Dec. 22, 2008	HORROCKS ENGINEERS	285 WEST TABERNACLE SUITE 300 ST. GEORGE, UT 84770 (425) 986-7888	OUR HOME BENEATH THE BIG RED MOUNTAIN IVINS UTAH	Ivins City RESIDENTIAL PRIVATE RURAL	CROSS SECTION NO. 2

NOTE

1. Meandering sidewalk recommended where possible. Meander sidewalk through landscape buffer area.
2. Sidewalk may undulate but must meet clear zone requirements.

* Sidewalk easement may be required for meandering sidewalks.



RESIDENTIAL COLLECTOR

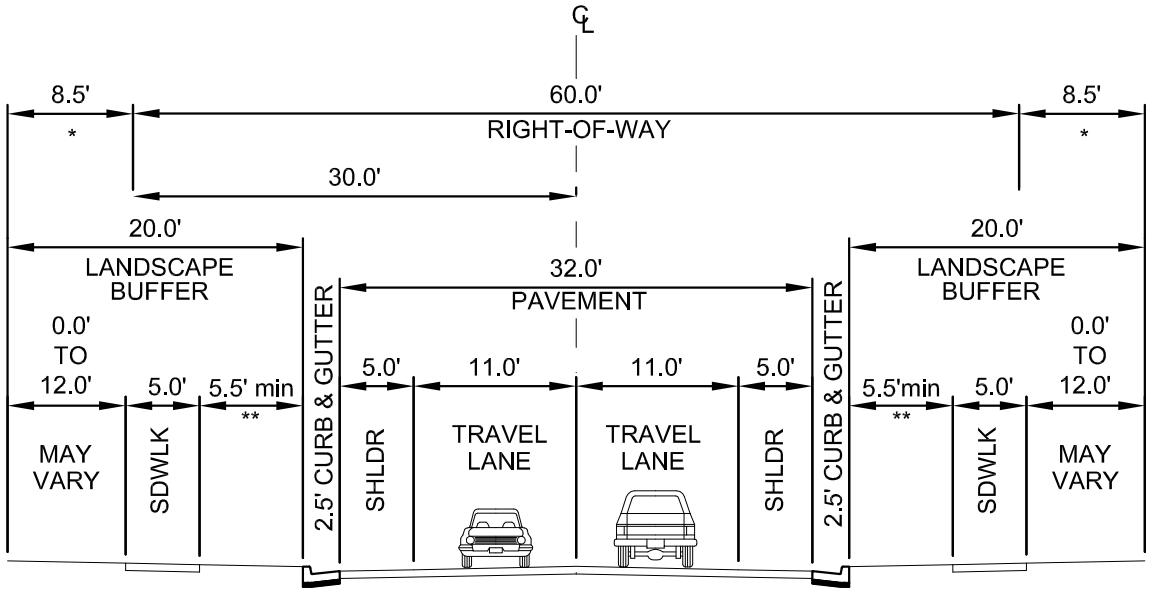
SCALE: NONE DATE: Sept. 10, 2008	HORROCKS ENGINEERS	285 WEST TABERNACLE SUITE 300 ST. GEORGE, UT 84770 (425) 986-7888	OUR HOME BENEATH THE BIG RED MOUNTAIN — IVINS UTAH	Ivins City RESIDENTIAL COLLECTOR	CROSS SECTION NO. 3

NOTE

1. Meandering sidewalk recommended where possible. Meander sidewalk through landscape buffer area.
2. Sidewalk may undulate but must meet clear zone requirements.
3. 5' Shoulder may be striped for a bicycle lane where indicated.

* Sidewalk easement may be required for meandering sidewalks.

** For meandering sidewalks, parkstrip width will vary with a required minimum width at closest point to be 3.0'.

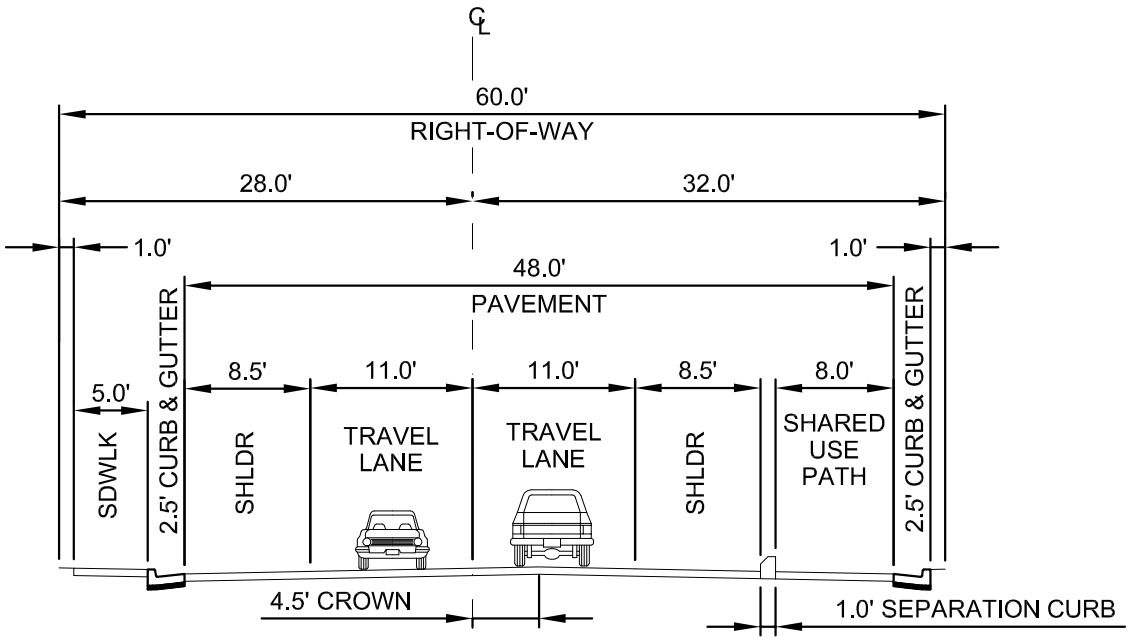


MINOR COLLECTOR

SCALE					
NONE	HORROCKS ENGINEERS	285 WEST TABERNACLE SUITE 300 ST. GEORGE, UT 84770 (425) 986-7888	OUR HOME BENEATH THE BIG RED MOUNTAIN — IVINS UTAH	Ivins City	CROSS SECTION NO.
DATE				MINOR COLLECTOR	4
Sept. 10, 2008					

NOTE

1. 1' separation curb shall not be continuous through residential drive ways.



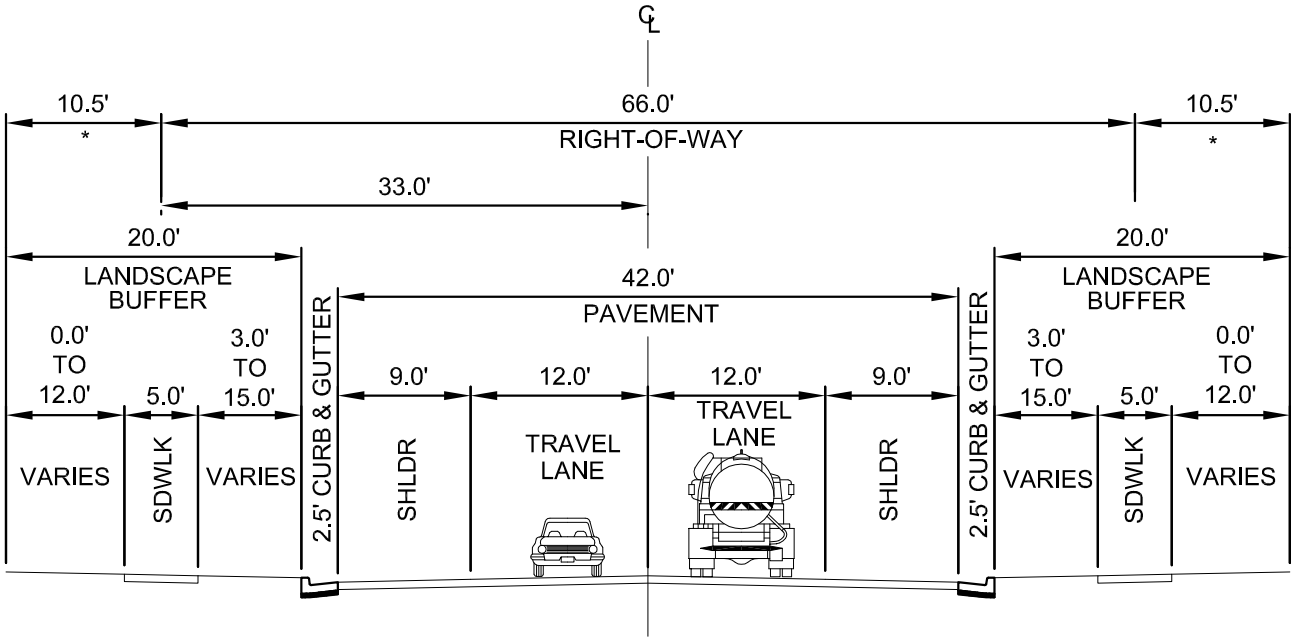
MINOR COLLECTOR - PUERTO DRIVE

SCALE NONE DATE Sept. 10, 2008	HORROCKS ENGINEERS	285 WEST TABERNACLE SUITE 300 ST. GEORGE, UT 84770 (425) 986-7888	OUR HOME BENEATH THE BIG RED MOUNTAIN IVINS UTAH	Ivins City MINOR COLLECTOR - PUERTO DRIVE	CROSS SECTION NO. 5

NOTE

1. Meandering sidewalk/trail required. Meander sidewalk through landscape buffer area.
2. Sidewalk may undulate but must meet clear zone requirements.
3. 9' shoulder with 2' of gutter pan may be separated into a 4' bike lane and 7' parking where indicated on the Ivins City Bike Lane Plan.

* Where homes or commericial sites do not front street, landscape buffer must be dedicated to City.



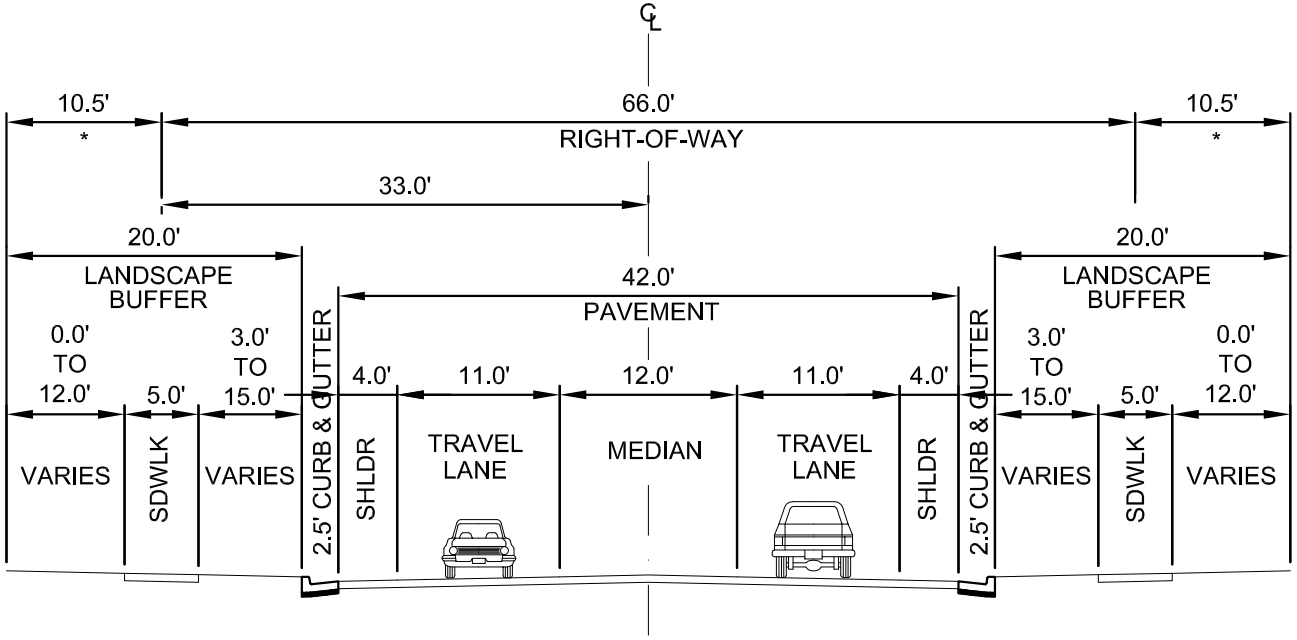
MAJOR COLLECTOR (STREET PARKING)

SCALE: NONE DATE: Sept. 10, 2008	HORROCKS ENGINEERS	285 WEST TABERNACLE SUITE 300 ST. GEORGE, UT 84770 (425) 986-7888	OUR HOME BENEATH THE BIG RED MOUNTAIN — IVINS UTAH	**Ivins City** MAJOR COLLECTOR (STREET PARKING)	CROSS SECTION NO. **6**

NOTE

1. Meandering sidewalk required. Meander sidewalk through landscape buffer area.
2. Sidewalk may undulate but must meet clear zone requirements.
3. 4' Shoulder may be striped for a bicycle lane where indicated.

* Where homes or commericial sites do not front street, landscape buffer must be dedicated to City.



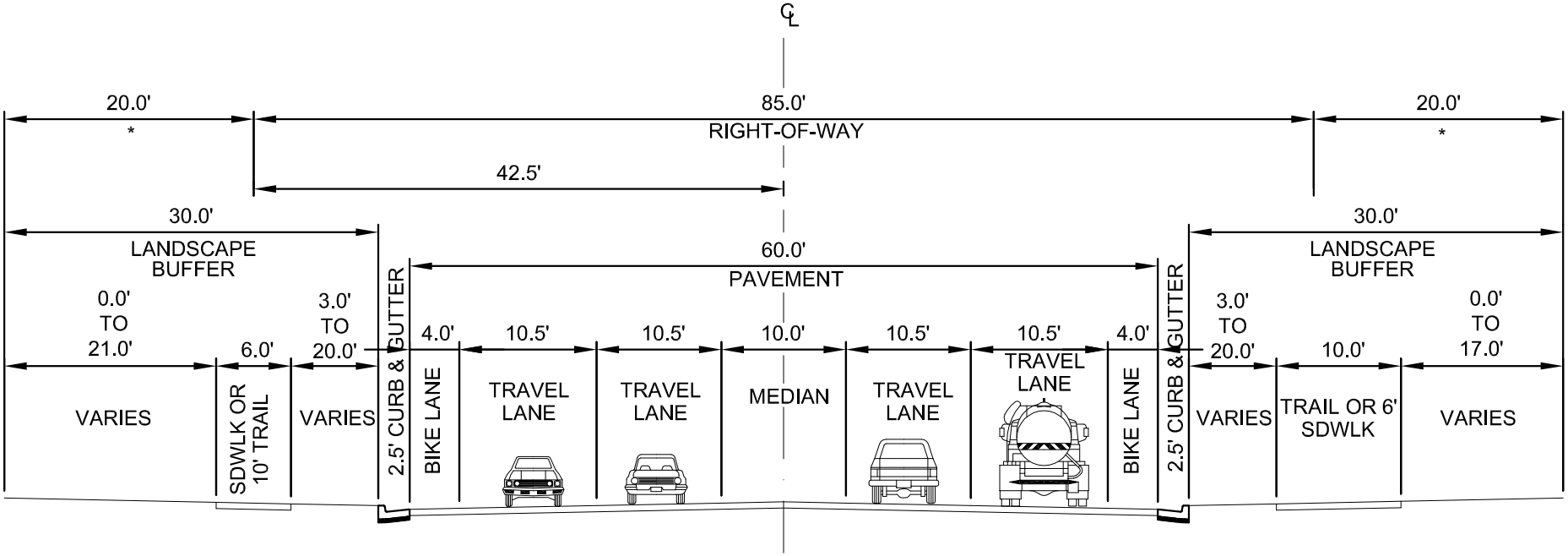
MAJOR COLLECTOR (CENTER LANE STRIPING)

SCALE: NONE DATE: Sept. 10, 2008	HORROCKS ENGINEERS	285 WEST TABERNACLE SUITE 300 ST. GEORGE, UT 84770 (425) 986-7888	OUR HOME BENEATH THE BIG RED MOUNTAIN — IVINS UTAH	Ivins City MAJOR COLLECTOR (CENTER LANE STRIPING)	CROSS SECTION NO. 7

NOTE

1. Meandering sidewalk required. Meander sidewalk through landscape buffer area.
2. Sidewalk may undulate but must meet clear zone requirements.
3. See city Trail Map for trail locations.
4. Additional width will be required at intersections for a 12-foot right turn lane as approved by the City Engineer.

* Where homes or commericial sites do not front street, landscape buffer must be dedicated to City.



MINOR ARTERIAL - CENTER STREET

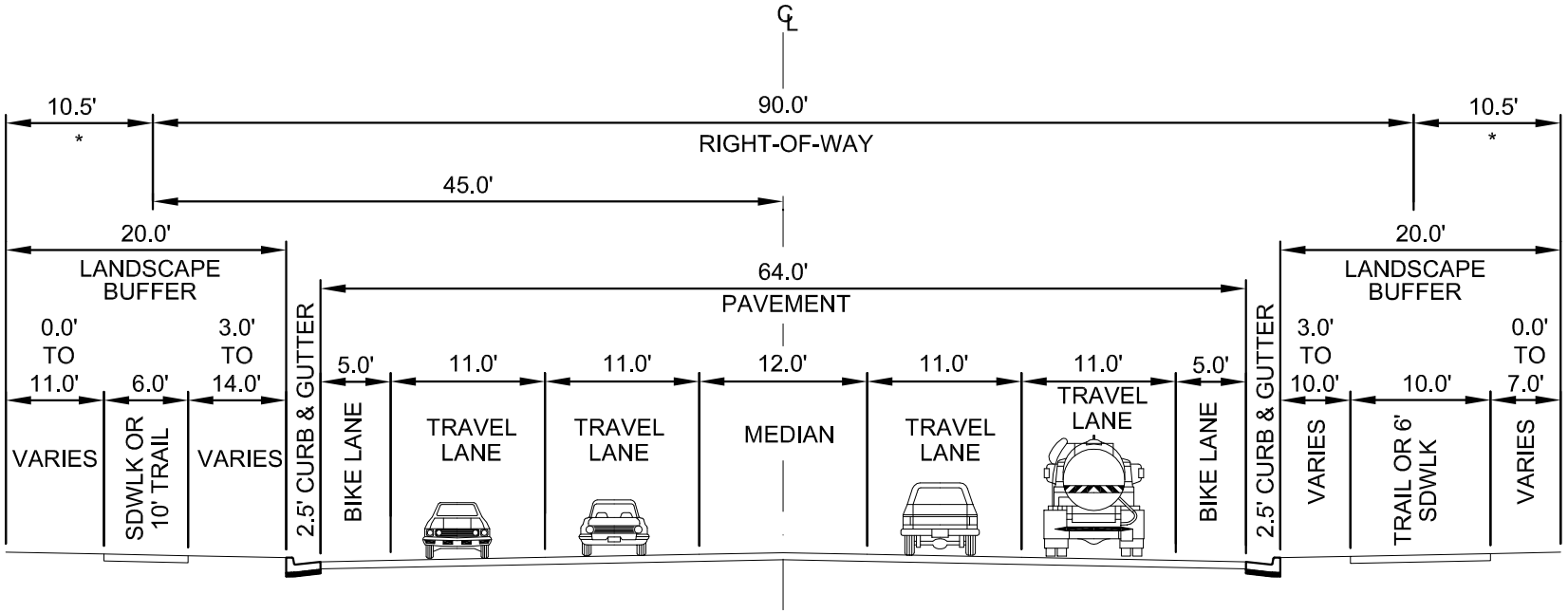
SCALE: NONE DATE: Sept. 10, 2008	HORROCKS ENGINEERS	285 WEST TABERNACLE SUITE 300 ST. GEORGE, UT 84770 (425) 986-7888	OUR HOME BENEATH THE BIG RED MOUNTAIN — IVINS UTAH	Ivins City MINOR ARTERIAL - CENTER STREET	CROSS SECTION NO. 8

NOTE

1. Meandering sidewalk required. Meander sidewalk through landscape buffer area.
2. Sidewalk may undulate but must meet clear zone requirements.
3. See city Trail Map for trail locations.

* Where homes or commericial sites do not front street, landscape buffer must be dedicated to City.

** Parkstrip minimum width may be 3.0' for a meandering sidewalk.



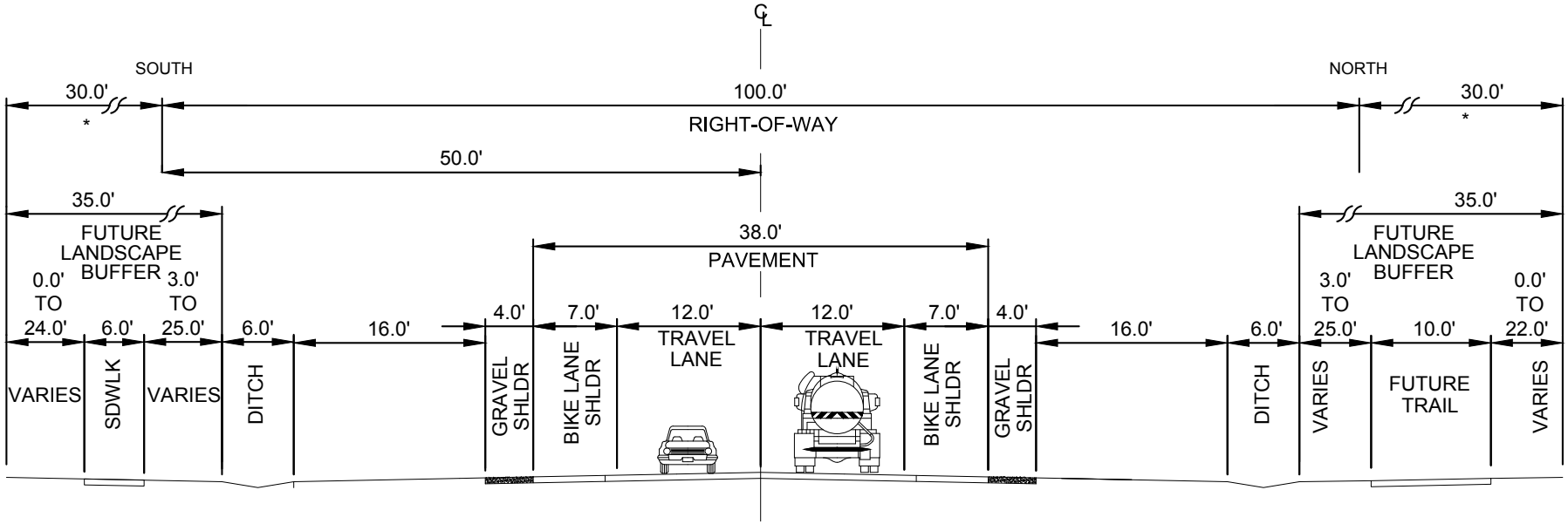
MINOR ARTERIAL - WESTERN CORRIDOR

SCALE: NONE DATE: Dec. 02, 2008	HORROCKS ENGINEERS	285 WEST TABERNACLE SUITE 300 ST. GEORGE, UT 84770 (425) 986-7888		Ivins City MINOR ARTERIAL - WESTERN CORRIDOR	CROSS SECTION NO. 9

NOTE

1. Meandering sidewalk/trail required. Meander sidewalk through landscape buffer area.
2. Sidewalk may undulate but must meet clear zone requirements.
3. See city Trail Map for trail locations.

* Where homes or commericial sites do not front street, landscape buffer must be dedicated to City.



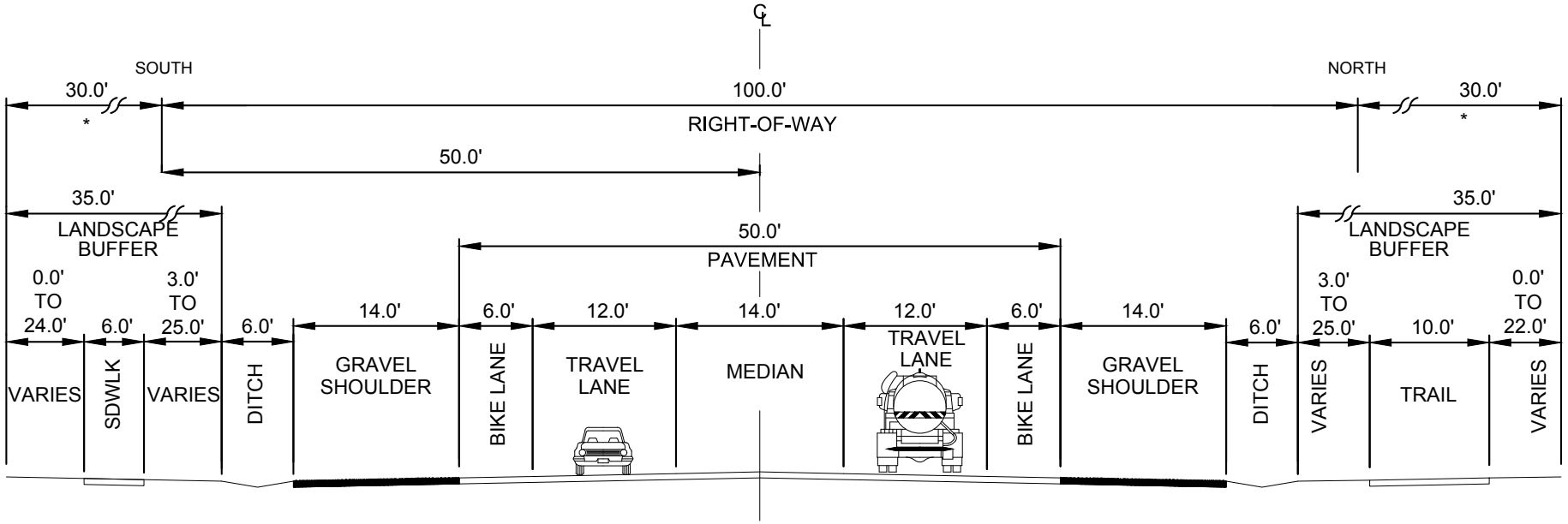
MAJOR ARTERIAL - OLD HIGHWAY 91 (2-LANE)

SCALE		Ivins City	CROSS SECTION NO.
NONE		MAJOR ARTERIAL - OLD HIGHWAY 91 (2-LANE)	10A
DATE			
Nov 23, 2015			

NOTE

1. Meandering sidewalk/trail required. Meander sidewalk through landscape buffer area.
2. Sidewalk may undulate but must meet clear zone requirements.
3. See city Trail Map for trail locations.

* Where homes or commericial sites do not front street, landscape buffer must be dedicated to City.



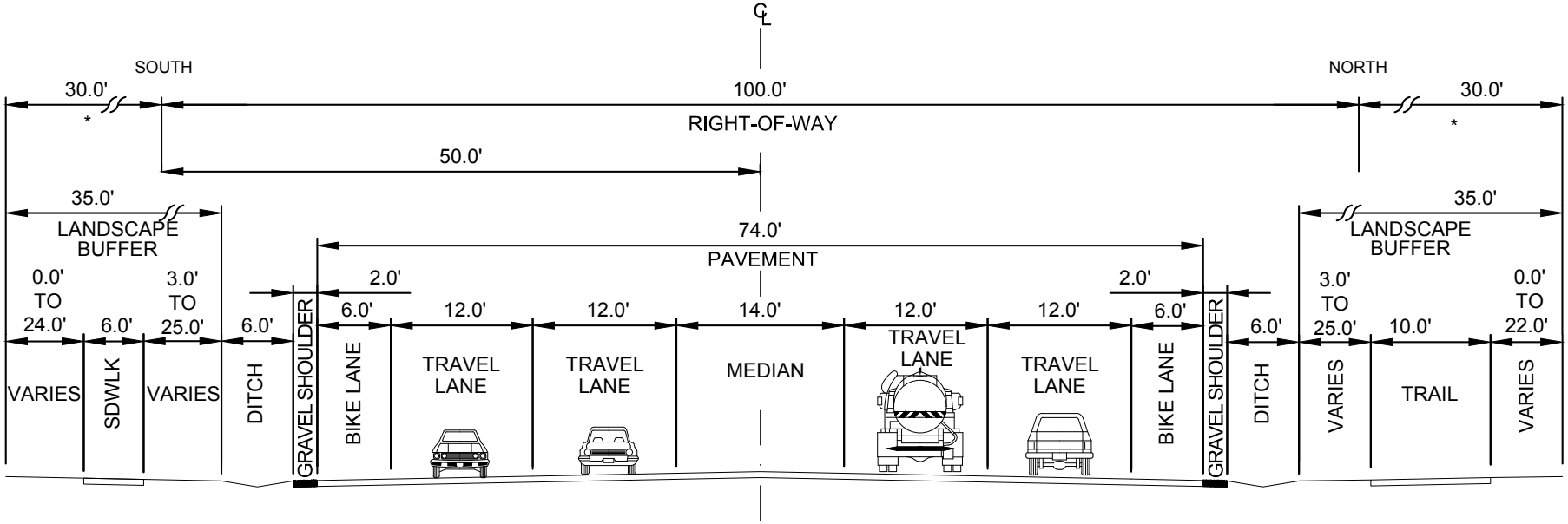
MAJOR ARTERIAL - OLD HIGHWAY 91 (3-LANE)

SCALE		Ivins City	CROSS SECTION NO.
NONE		MAJOR ARTERIAL - OLD HIGHWAY 91 (3 LANE)	10B
DATE			
Nov 23, 2015			

NOTE

1. Meandering sidewalk required. Meander sidewalk through landscape buffer area.
2. Sidewalk may undulate but must meet clear zone requirements.
3. See city Trail Map for trail locations.

* Where homes or commericial sites do not front street, landscape buffer must be dedicated to City.



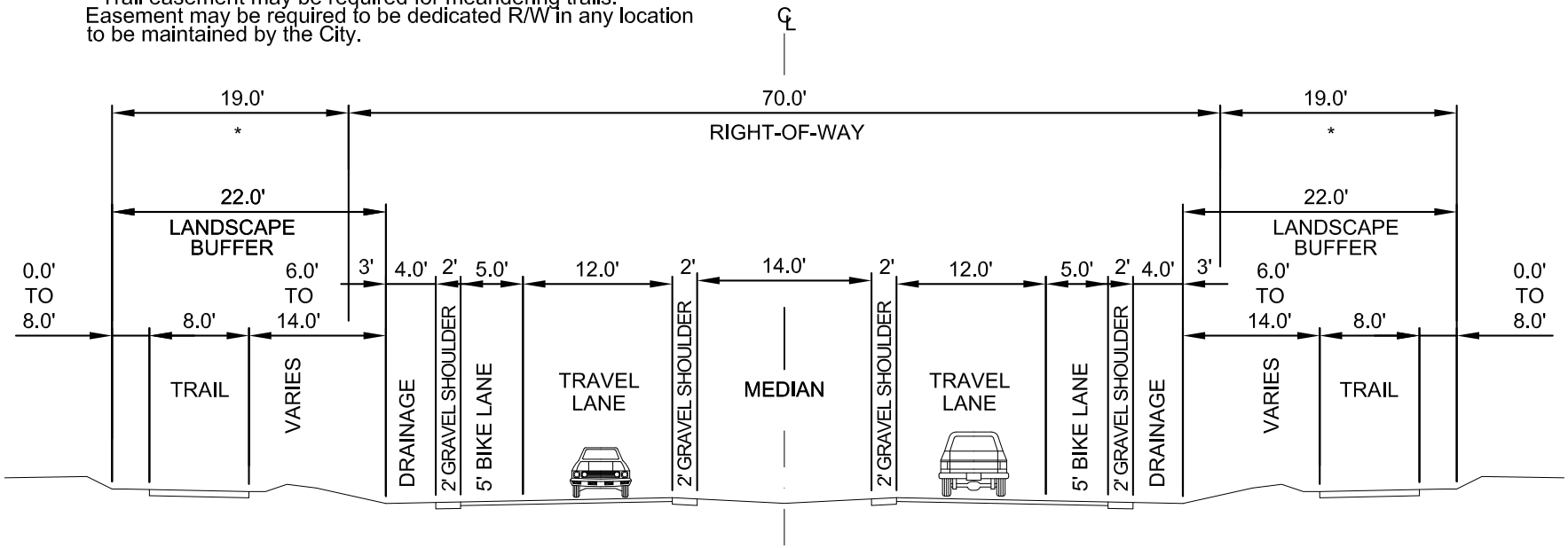
MAJOR ARTERIAL - OLD HIGHWAY 91 (5-LANE)

SCALE			CROSS SECTION NO.
NONE		Ivins City	11
DATE		MAJOR ARTERIAL - OLD HIGHWAY 91 (5-LANE)	
Nov 23, 2015			

NOTE

1. Trails and sidewalks may undulate but must meet clear zone requirements.
2. See city Trail Map for trail locations.
3. Where possible meander trail through landscape buffer area.
4. A concrete curb and gutter may be substituted at the outside edge of pavement for roadside drainage and may be required if specified by a drainage study.
5. The City may also require curb and gutter in the rural zone on a case by case basis in areas of commercial, industrial or medium- and high-density residential or as necessary to provide a reasonable and consistent transition from areas with curb and gutter to areas without.

* Trail easement may be required for meandering trails.
Easement may be required to be dedicated R/W in any location to be maintained by the City.



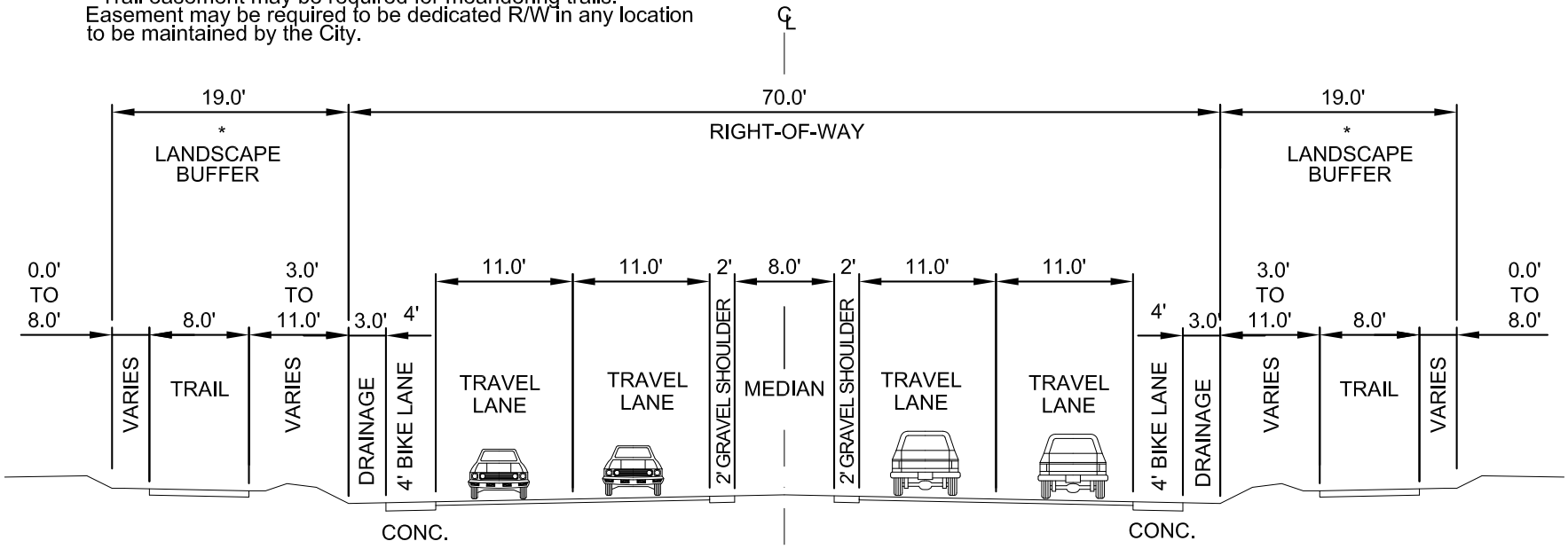
MAJOR COLLECTOR - LANDSCAPED MEDIAN IN RURAL ZONE

SCALE			CROSS SECTION NO.
NONE		Ivins City	12A
DATE		MAJOR COLLECTOR - RURAL	
Dec 12, 2013			

NOTE

1. Trails and sidewalks may undulate but must meet clear zone requirements.
2. See city Trail Map for trail locations.
3. Where possible meander trail through landscape buffer area.
4. A concrete curb and gutter may be substituted at the outside edge of pavement for roadside drainage and may be required if specified by a drainage study.
5. The City may also require curb and gutter in the rural zone on a case by case basis in areas of commercial, industrial or medium- and high-density residential or as necessary to provide a reasonable and consistent transition from areas with curb and gutter to areas without.

* Trail easement may be required for meandering trails. Easement may be required to be dedicated R/W in any location to be maintained by the City.



MINOR ARTERIAL - LANDSCAPED MEDIAN IN RURAL ZONE

SCALE			CROSS SECTION NO.
NONE		Ivins City	12B
DATE		MINOR ARTERIAL - RURAL	
Dec 12, 2013			

3.2 Transportation Model

Computer traffic models aid community planners to help forecast what growth can do to the current public transportation system. These models help to define what traffic pressures can be expected in the future and help to justify projects that enhance capacity. A transportation planning model was developed for the study area to facilitate the forecasting of future traffic volumes. The model is a mathematical representation of travel behavior and utilizes land use data, observed travel behavior, and roadway network information to forecast future traffic volumes along selected roadways.

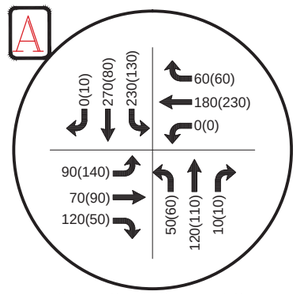
The Dixie Metropolitan Planning Organization (DMPO) has prepared a calibrated traffic model that covers the urbanized area of Washington County. Horrocks Engineers utilized the DMPO's model and prepared a 2014 traffic model and future 2025, 2035, and 2040 traffic models. Traffic counts were taken and compared to previous 2008 counts, and determined that Ivins has experienced a traffic growth rate of 27% during the A.M. peak hour primarily because of the improvements on Center Street and the opening of Vista School at Entrada in 2009. Since it is a charter school, it attracts drivers from areas outside of Ivins. The evening peak hour, however, experienced a reduction of 5% compared to 2008. Taking both of these times into account, an overall increase of 22% occurred.

3.3 Roadway Network and Traffic Forecast

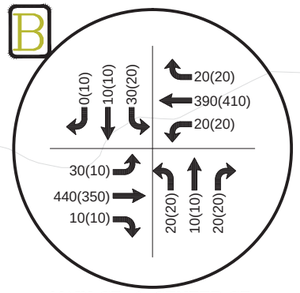
Existing and 2040 forecast ADT volumes for each major roadway in the City as well as intersection LOS are shown in Figure 7, and the year 2040 forecast intersection volumes are shown in Figure 12.

3.4 Operational characteristics

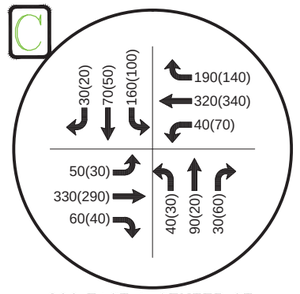
Very few of the intersections in Figure 12 shows an unacceptable LOS with the projected future volumes. The LOS is shown for the worst approach and not for the overall intersection. These intersections include Center Street & 400 East, Snow Canyon Parkway and Western Corridor connection, Old Highway 91 & Pioneer Parkway, and Old Highway 91 & 200 East. Adding signals or roundabouts to these locations greatly improves the LOS and in most cases elevates it to LOS "A". Signals should only be installed at these locations when signal warrants are met as outlined in the Manual on Uniform Traffic Control Devices (MUTCD). The intersection of Old Highway 91 & 200 East will need to be adjusted in the future with the connection of the Western Corridor. 200 East has a skewed alignment at Old Highway 91 and with the new connection at the Western Corridor, 200 East would not be the right intersection for a signal or roundabout. The signal or roundabout should be placed at the Old Highway 91 & Western Corridor intersection and the 200 East traffic should use this intersection. This would allow 200 East to be discontinued at Old Highway 91 or realigned at Old Highway 91.



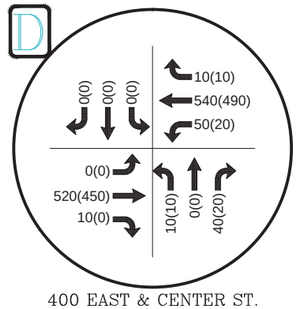
400 WEST & CENTER ST.



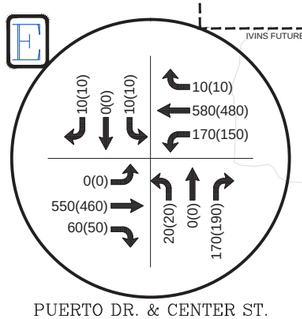
MAIN ST. & CENTER ST.



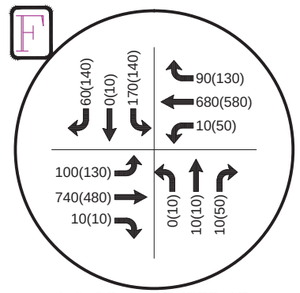
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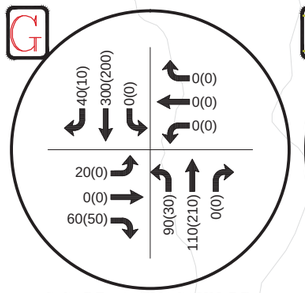
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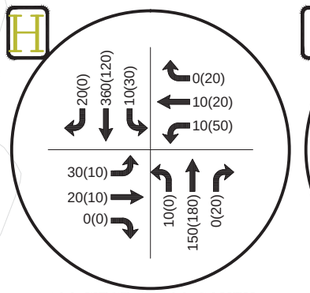
PUERTO DR. & CENTER ST.



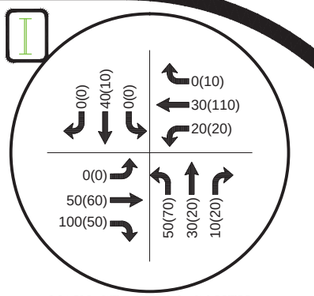
S.C. DR. & CENTER ST.



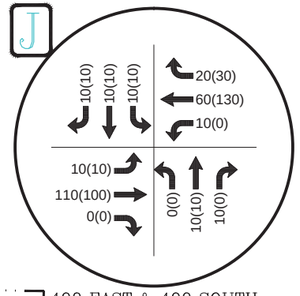
S.C. DR. & TUACAHN DR.



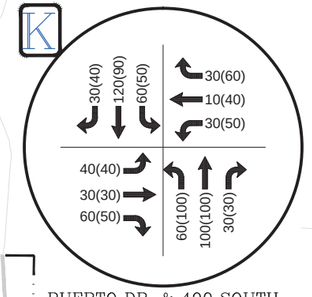
400 WEST & 400 SOUTH



MAIN ST. & 400 SOUTH



400 EAST & 400 SOUTH



PUERTO DR. & 400 SOUTH

LEGEND

XX – AM VOLUMES

(XX) – PM VOLUMES

X – INTERSECTION LABEL

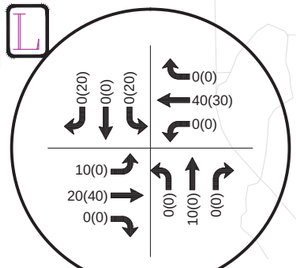
– TURNING MOVEMENT INDICATOR

NOTE: ALL INTERSECTIONS ARE LISTED WITH THE STREET RUNNING N–S FIRST AND THE STREET RUNNING E–W SECOND.

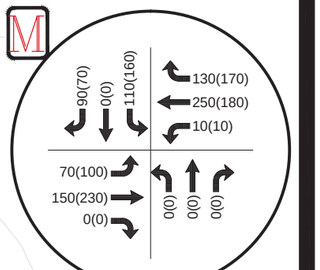
N

3000 0 3000 6000 9000 12000 FEET

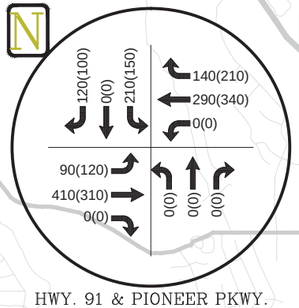
SCALE: 1"=3000 Feet



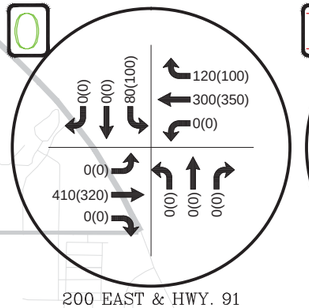
400 EAST & 800 SOUTH



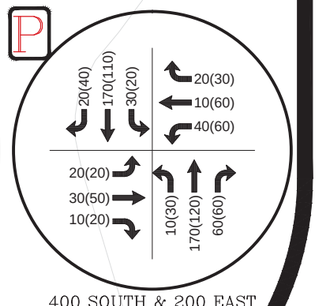
400 EAST & PIONEER PKWY.



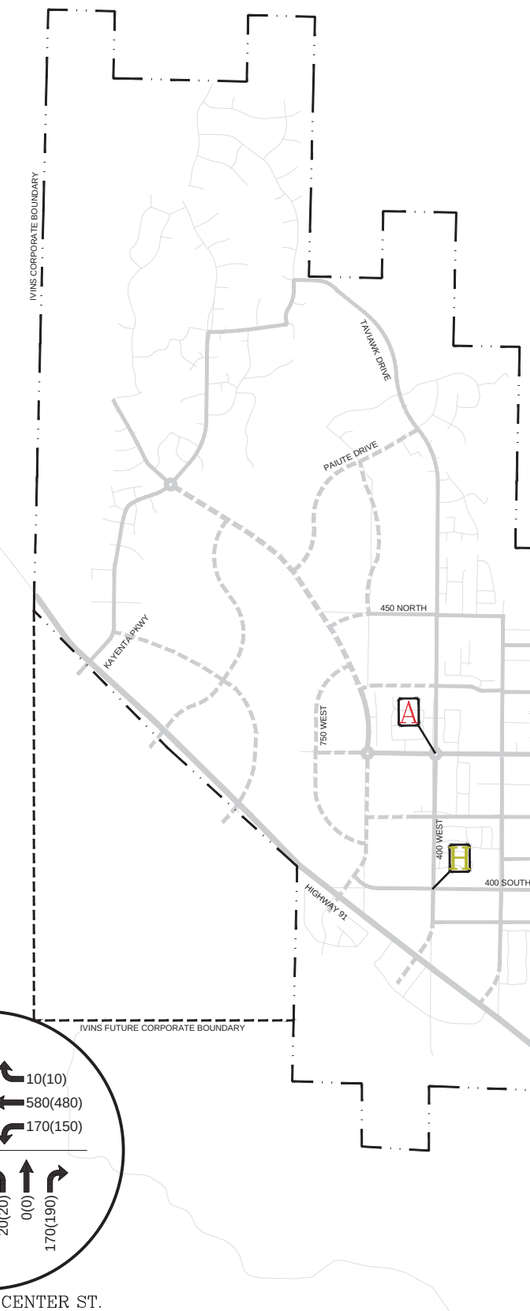
HWY. 91 & PIONEER PKWY.



200 EAST & HWY. 91



400 SOUTH & 200 EAST



SCALE: 1"=3000'	HORROCKS ENGINEERS	555 SOUTH BLUFF STREET SUITE 101 ST. GEORGE, UT 84770 (435) 986-7888	Ivins TMP Update 2040 **TURNING MOVEMENTS**
DATE: June 25, 2015			FIGURE NO. **12**

H:\2014\SG-410-1412 Ivins Master Traffic\And\Tramp Study Update\Project Data\Figures\Figures Rev12.dwg - 2040 PEAK Volumes - 6/25/2015 10:51am, ShannonM

3.5 Proposed Gateways

Ivins currently has two leading gateways into the City: Snow Canyon Parkway and 200 East (renamed Red Mountain Boulevard in 2010) at Old Highway 91. Other circuitous routes through Santa Clara also exist but do not possess the high visibility that Snow Canyon Parkway and 200 East hold. Gateways are ideal for special road treatments or enhancements into the community and ideal for concentrations of commercial land uses. Typical land uses at gateways are more conducive to regional or community centers supporting uses such as grocery, apparel, restaurant, and service oriented. These land uses rely on high visibility traffic corridors and high internal activity as well. Some uses that typically would not stimulate these commercial nodes are office and professional services because they are appointment driven and do not rely on high visibility or high traffic corridors. However, some mixed-use developments could support office and professional services on a second floor development pattern.

The proposed Western Corridor intersection at Snow Canyon Parkway is an ideal location for a regional or a community center because of the high traffic volumes and high visibility. Additionally, Snow Canyon Parkway serves as the gateway to the core of Ivins. The Western Corridor will eventually bring the high traffic volumes with its future route to I-15. The intersection of Old Highway 91 and 200 East is also a high visibility high traffic corridor that is ideal for community gateway development. As identified in section 3.1 of this document, 200 East has been identified as a major collector and Snow Canyon Parkway as a major arterial, which support the community gateway treatment for these roads.

Specific land use recommendations for these gateways:

- Maximum 50,000 square feet for a single retailer
- Sit down restaurants

Specific Design Criteria:

- Corner buildings should front the street. Parking should be oriented to the rear or the interior of the development.
- Maximum building height of 25 feet
- Provide a mix of building materials
- Major retailers should have a prominent front façade
- A pedestrian network plan is required

3.6 Proposed Commercial Areas

Commercial zones not only stimulate economic activity in a community, it also generates traffic, depending on what kind of commercial uses are in operation. The City has revised the Land Use Plan shown in Figure 4 where commercial zones are indicated.

3.7 Roundabouts

Many communities in the United States such as Ivins are beginning to embrace the concept of "roundabouts." A roundabout is composed of a circular, raised, center island with deflecting islands on the intersecting streets to direct traffic movement around the circle. Traffic circulates in a counter-clockwise direction making right turns onto the intersecting streets. There are no traffic signals; rather, entering traffic yields to vehicles already in the roundabout (see Figure 13).

Ivins City has taken progressive steps in designing and constructing roundabouts, and they have proven to be a superior traffic control device in many cases. Advantages of roundabouts include reduced traffic delays, increased safety and reduced right of way requirements. They can reduce delays because the stop signal phase (when vehicles entering the intersection are unable to move) is eliminated. At the same time, roundabouts can improve safety because the number of potential conflict points are substantially reduced over a conventional four-way intersection. Properly designed roundabouts can also accommodate emergency vehicles and trucks.

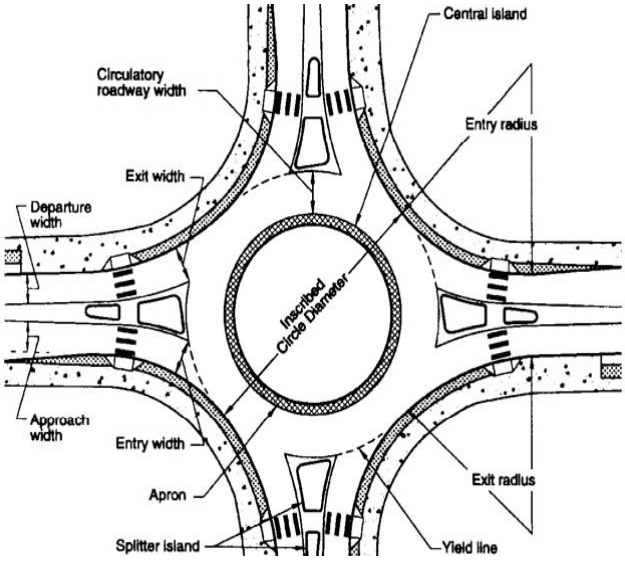


Figure 13 – Typical Roundabout

Design standards for roundabouts are very specific and the Federal Highway Administration (FHWA) has prepared a design guide for modern roundabouts in the United States. Development of a roundabout should only occur as a result of an intersection study by a qualified Traffic Engineer and when the minimum capacity and design criteria can be met. The FHWA has determined that the maximum flow rate that can be accommodated at a roundabout depends on the geometric elements (circle diameter, number of lanes), the circulating flow (vehicles going around the circle), and entry flow (vehicles entering the circle). A single lane roundabout can accommodate up to 1,800 vehicles per hour and a double lane roundabout can accommodate up to 3,400 vehicles per hour. The capacity of a roundabout will be lower, however, as the entry flow increases (i.e. more vehicles trying to

get in the roundabout conflicting with those already going around the circle).

The National Transportation Research Board examined traffic delays before and after roundabouts were installed at eight intersections in the United States. The study determined that delays (the time spent stopped and moving up to the intersection) decreased on average by 78% and 76% during the AM Peak Hour and PM Peak Hour, respectively. The results indicate that roundabouts can reduce congestion in certain circumstances. In addition, the FHWA studied safety characteristics of a sample of eleven roundabouts in the United States. The agency determined that the number of personal injury accidents and property damage-only accidents decreased 51% and 29%, respectively, after roundabouts replaced conventional intersections. Roundabouts may be an appropriate solution for certain problem intersections in Ivins City.

Ivins City has determined locations where signals and/or roundabouts will be considered to improve future intersection capacity. These intersections are identified in Figure 14. One intersection, 400 South and 200 East, was identified as a candidate for a future roundabout. However, computer modeling shows that a roundabout is not needed at this intersection and thus has been removed from Figure 14.

It shall be assumed that a roundabout will be the future form of traffic control and that in the case of future development adjacent to any of these intersections, right-of-way will be set aside for the future roundabout based on a conceptual design of the roundabout to be completed at the time of the said development. A roundabout shall be the only considered future traffic control at these intersections, unless, it is shown that a roundabout is impractical due to the cost of removing existing structures or to obtain necessary City right-of-way, or if an Intersection Control Study performed by a qualified traffic engineer shows that a roundabout could not provide a minimum level of service.

Traffic models have forecasted that 2025, 2035, or 2040 traffic volumes at the indicated intersections will be such that a higher-type of traffic control device will be needed such as a signal or roundabout. The dashed, circular symbols indicate locations of future roundabouts. These routes are more centrally located in Ivins where roundabouts would complement the objective of encouraging lower speed traffic and enhancing the appearance of neighborhoods. The symbols of signals with a circle around them on Old Highway 91 and the Western Corridor indicate either a signal or roundabout. Since these two routes are regional facilities and cross jurisdictional boundaries with other cities, further consideration needs to be taken to determine which traffic control device would be appropriate. Funding of regional facilities often come through the Dixie MPO who encourage traffic efficiency. Traffic signals can be advantageous due to their lower cost and if higher speeds are needed to maintain a progressive flow of traffic. Roundabouts, although more expensive than traffic signals, encourage slower speeds, fewer accidents, and less delay per vehicle, on average. Roundabouts are also more aesthetically pleasing and encourage a more peaceful driving experience.

Using 2028 traffic conditions, the computer model of the intersection of 400 South and

Puerto shows that a roundabout would control the expected traffic quite well. However, the approach angle of Puerto from the north may make it rather difficult to geometrically make a roundabout work. Since it is a residential area, a roundabout will be considered first since it is less intrusive than a traffic signal. If a roundabout will not work, then an alternative might include a 4-way stop controlled intersection or other traffic control solution other than a traffic signal.

Roundabouts can be considered for intersection locations other than a location that is identified in Figure 14. Generally, if developers desire to have a roundabout located adjacent to a residential project, Ivins City will consider its placement as an appropriate site based on expected volume, geometry, right-of-way needs, and costs. Developers should expect to pay for these requested intersection improvements.

Ivins City Transportation Master Plan

Updated: 2015

Legend

- City Boundary
- Existing Roundabout
- Future Roundabout
- Future Roundabout or Signal

Taviawk Dr
Kwavasa Dr
Kayenta Pkwy
Sage Wy
Old Highway 91
450 N
200 N
200 W
Main St
750 W
400 W
Kwavasa Drive (600 W)
Center St
200 S
300 S
400 S
400 S
520 S
600 S
800 S
200 E
400 E
Puerto Dr
Tuacahn Dr
Snow Canyon Dr
Snow Canyon Pkwy
Pioneer Pkwy
Rachel Drive
Western Corridor

0 0.25 0.5 1 1.5 2 Miles

Master Signal and Roundabout Plan

Figure No. 14

3.8 Bicycle and Pedestrian Traffic

For continued implementation and expansion of the trails network, all future development within the identified trail network should provide connectivity with existing trails, as shown on Figure 9. With the implementation of a bike lane plan, also shown on Figure 9, it is the City's hope that the bike lane network will gradually evolve into a legitimate alternative mode of travel that is both safe and efficient. These facilities are expected to be signed and striped for the safety of the traveling public.

3.9 Traffic Impact Study Guidelines

Ivins City may require a Traffic Impact Study (TIS) for any new development when the following guidelines indicate that a TIS is needed. The following sections are to be used to establish uniform guidelines for when a TIS is required and how the study is to be conducted, based on suggested guidelines established by the Institute of Transportation Engineers (ITE) and the American Public Works Association (APWA).

A TIS is a specialized study of the impacts that a certain type and size of development will have on the surrounding transportation system. It is specifically concerned with the generation, distribution, and assignment of traffic to and from the "new development". The term "new development" also includes properties that are being redeveloped.

3.9.1 TIS Requirements

A TIS shall be required for all new developments or additions to existing developments which generate 100 or more trips during the morning, afternoon or Saturday peak hours or which will have a significant impact on the City's transportation system as determined by the City. The TIS will help the city determine the required functional classification for each roadway in the development. Traffic Impact Studies are divided into three categories. The scale of development will determine which category of study will be required. Each category differs by specific analysis requirements for the study and the study's level of detail. Below is a description of each category.

3.9.1.1 Category I

A Category I TIS should be required for all developments which generate one hundred (100) or more new peak hour trips, but less than five hundred (500) trips, during the morning, afternoon or Saturday peak hour. Peak hour trips will be determined by the latest edition ITE *Trip Generation* Manual. In addition to the above threshold requirements, a Category I TIS may also be required by the City for any specific traffic problems or concerns such as:

- Proposed or existing offset intersections
- Situation with a high number of traffic accidents
- Driveway conflicts with adjacent developments
- Nearby intersections that have reached their capacity
- Proposed property rezones when there is a significant potential increase in traffic volumes, and

- When the original TIS is more than two years old, or where the proposed traffic volumes in the original TIS increase by more than twenty percent

For a Category I TIS, the study horizon should include the opening year of the development, and build-out of the entire development, if applicable. The minimum study area should include site access drives, affected signalized intersections and major unsignalized street intersections.

3.9.1.2 Category II

A Category II TIS should be required for all developments, which generate from five hundred (500) to one thousand (1,000) peak hour trips during the morning, afternoon or Saturday peak hour. The study horizon should include the opening year of the development, year of completion for each phase of the development, if applicable, and five years after the development's completion. The minimum study area should include the site access drives and all signalized intersections and major unsignalized street intersections within one-half mile of the development.

3.9.1.3 Category III

A Category III TIS should be required for all developments, which generate above one thousand (1,000) peak hour trips during the morning, afternoon or Saturday peak hour. The study horizon shall be for the year of completion for each phase of the development, the year of its completion, five years after the development's completion and ten years after the development's completion. The minimum study area shall include the site access drives and all signalized intersections and major unsignalized street intersections within one-half mile of the development.

3.9.2 Initial Work Activity

A developer, or their agent, should first estimate the number of vehicular trips to be generated by the proposed development to determine if a TIS may be required and if so, to determine the applicable category. The City must give concurrence on the number of trips to be generated by the proposed development. The developer may, if desired, request that the City assist in estimating the number of trips for the purpose of determining whether a TIS is required for the proposed development.

The City or designated representative shall make the final decision on requiring a TIS and determining whether the study falls within a Category I, II or III.

If a study is determined to be required by the City, the developer should prepare for submittal to the City, for review and approval, a draft table of contents for the TIS. The table of contents will be sufficiently detailed to explain the proposed area of influence for the study, intersections and roadways to be analyzed, and level of detail for gathering of traffic volume information and preparation of level of service analyses. There should also be included in the draft a proposed trip distribution for site traffic. After approval of the draft table of contents and trip distribution by the City, the actual TIS work activities may begin.

The Traffic Impact Study Scope of Work agreement between the developer and his/her traffic engineer should conform to the pre-approved draft table of contents. The findings, conclusions and recommendations contained within the TIS document should be prepared in accordance with appropriate professional Civil Engineering Canons.

3.9.3 Qualifications for Preparing TIS Documents

The TIS should be conducted and prepared under the direction of a Professional Engineer (Civil) licensed to practice in the State of Utah. The subject engineer should have special training and experience in traffic engineering and be a member of the Institute of Transportation Engineers (ITE). The final report shall be sealed, signed and dated.

3.9.4 Analysis Approach and Methods

The traffic study approach and methods should be guided by the following criteria:

3.9.4.1 Study Area, Horizon, and Time Period

The minimum study area should be determined by project type and size in accordance with the criteria previously outlined. The extent of the study area may be either enlarged or decreased, depending on special conditions as determined by the City. The study horizon years should be determined by project type and size, in accordance with the criteria outlined in Section 3.7.1 TIS Requirements.

Both the morning and afternoon weekday peak hours should be analyzed, unless the proposed project is expected to generate no trips, or a very low number of trips, during either the morning or evening peak periods. If this is the case, the requirement to analyze one or both of these periods may be waived by the City.

Where the peak traffic hour in the study area occurs during a different time period than the normal morning or afternoon peak travel periods (for example mid-day), or occurs on a weekend, or if the proposed project has unusual peaking characteristics, these additional peak hours should also be analyzed.

3.9.4.2 Seasonal Adjustments

When directed by the City, traffic volumes for the analysis hours should be adjusted for the peak season, in cases where seasonal traffic data is available.

3.9.4.3 Data Collection Requirements

All data should be collected in accordance with the latest edition of the ITE *Manual of Traffic Engineering Studies*, or as directed by the City.

- **Turning Movement Counts:** Manual turning movement counts should be obtained for all existing cross-street intersections to be analyzed during the morning, afternoon and Saturday peak periods (as applicable). Turning movement counts may be required during other periods as directed by the City. Turning movement counts may be extrapolated from existing turning movement counts, no more than two years old, with the concurrence of the City.

- **Daily Traffic Volumes:** The current and projected daily traffic volumes should be presented in the report. If available, daily count data from the local agencies may be extrapolated to a maximum of two years with the concurrence of the City. Where daily count data is not available, mechanical counts will be required at locations agreed upon by the City.
- **Roadway and Intersection Geometrics:** Roadway geometric information should be obtained. This includes, but is not limited to, roadway width, number of lanes, turning lanes, vertical grade, location of nearby driveways, and lane configuration at intersections.
- **Traffic Control Devices:** The location and type of traffic controls should be identified at all locations to be analyzed.

3.9.5 Trip Generation

The latest edition of ITE's *Trip Generation* Manual should be used for selecting trip generation rates. Other rates may be used with the approval of the City in cases where *Trip Generation* does not include trip rates for a specific land use category, or includes only limited data, or where local trip rates have been shown to differ from the ITE rates. Site traffic should be generated for daily, AM, PM and Saturday peak hour periods (as applicable). Adjustments made for "pass-by", “diverted-link” or "mixed-use" traffic volumes shall follow the methodology outlined in the latest edition of the ITE *Trip Generation* Manual or the ITE *Trip Generation Handbook.* A "pass-by" traffic volume discount for commercial centers should not exceed twenty-five percent unless approved by the City. A trip generation table should be prepared by phase showing proposed land use, trip rates, and vehicle trips for daily and peak hour periods and appropriate traffic volume adjustments, if applicable.

3.9.6 Trip Distribution and Assignment

Projected trips should be distributed and added to the projected non-site traffic on the roadways and intersection under study. The specific assumptions and data sources used in deriving trip distribution and assignment should be documented in the report and reviewed with the City. Future traffic volumes should be estimated using information from transportation models, or applying an annual growth rate to the base-line traffic volumes. The future traffic volumes should be representative of the horizon year for project development. If the annual growth rate method is used, the City must give prior approval to the growth rate used. In addition, any nearby proposed development projects currently under review by the City (“on-line”) should be taken into consideration when forecasting future traffic volumes. The increase in traffic from proposed "on-line" projects should be compared to the increase in traffic by applying an annual growth rate.

If modeling information is unavailable, the greatest traffic increase from either the "on-line” developments, the application of an annual growth rate or a combination of an annual growth rate and "on-line" developments, should be used to forecast the future traffic volumes.

The site-generated traffic should be assigned to the street network in the study area based on the approved trip distribution percentages. The site traffic should be combined with the forecasted traffic volumes to show the total traffic conditions estimated at development completion. A "figure" should be prepared showing daily and peak period turning movement volumes for each traffic study intersection. In addition, a "figure" should be prepared showing the base-line volumes with site-generated traffic added to the street network. This “figure” should be prepared showing the base-line volumes with site-generated traffic added to the street network. This "figure" will represent site specific traffic impacts to existing conditions.

3.9.7 Capacity Analysis

Level of service (LOS) shall be computed for signalized and unsignalized intersections in accordance with the latest edition of the *Highway Capacity Manual*. The intersection LOS should be calculated for each of the following conditions (if applicable):

- Existing peak hour traffic volumes (“figure” required)
- Existing peak hour traffic volumes including site-generated traffic (“figure” required)
- Future traffic volumes not including site traffic (“figure” required)
- Future traffic volumes including site traffic (“figure” required)
- LOS results for each traffic volume scenario (“table” required)

The LOS table should include LOS results for AM, PM and Saturday peak periods, if applicable. The table shall show LOS conditions with corresponding vehicle delays for signalized intersections, and LOS conditions for the critical movements at unsignalized intersections. For signalized intersections, the LOS conditions and average vehicle delay shall be provided for each approach and the intersection as a whole. If the new development is scheduled to be completed in phases, the TIS will, if directed by the City, include an LOS analysis for each separate development phase in addition to the TIS for each horizon year. The incremental increases in site traffic from each phase should be included in the LOS analysis for each preceding year of development completion. A “figure” will be required for each horizon year of phased development.

3.9.8 Traffic Signal and Roundabout Studies

An intersection needs study should be conducted for all new proposed roundabouts and/or traffic signals for the base year. If the warrants are not met for the base year, they should be evaluated for each year in the five-year horizon. Traffic signal and roundabout needs studies should be conducted by a method pre-approved by the City.

Speed Considerations

Vehicle speed is used to estimate safe stopping and cross corner sight distances. In general, the posted speed limit represents the 85th percentile speed. The design speed of the roadway should be used to calculate safe stopping and cross corner sight distances.

Improvement Analysis

The roadways and intersections within the study area should be analyzed, with and without the proposed development to identify any projected impacts in regard to LOS and safety.

Where the highway will operate at LOS C or better without the development, the traffic impact of the development on the roadways and intersections within the study area should be mitigated to LOS D for arterial and collector streets and LOS C on all other streets during peak hours of travel. Mitigation to LOS D on other streets may be acceptable with the concurrence of the City.

3.9.9 TIS Report Format

This section provides the format requirements for the general text arrangement of a TIS. Deviations from this format must receive prior approval of the City.

I. INTRODUCTION AND SUMMARY

1. Purpose of Report and Study Objectives
2. Executive Summary
   - Site Location and Study Area
   - Development Description
   - Principal Findings
   - Conclusions
   - Recommendations

II. PROPOSED DEVELOPMENT

1. Off-Site Development
2. Description of On-Site Development
   - Land Use and Intensity
   - Location
   - Site Plan
   - Zoning
   - Development Phasing and Timing

III. STUDY AREA CONDITIONS

1. Study Area
   - Area of Significant Traffic Impact
   - Influence Area
2. Land Use
   - Existing Land Use and Zoning
   - Anticipated Future Development
3. Site Accessibility
   - Existing and Future Area Roadway System
   - Traffic Volumes and Conditions
   - Access Geometrics
   - Other as applicable

IV. ANALYSIS OF EXISTINC CONDITIONS

1. Physical Characteristics
   - Roadway Characteristics
   - Traffic Control Devices
   - Pedestrian/Bicycle Facilities
2. Traffic Volumes
   - Daily, Morning, Afternoon and Saturday Peak Periods (as applicable)
3. Level of Service
   - Morning, Afternoon and Saturday Peak Hour (as applicable)
4. Safety

V. PROJECTED TRAFFIC

1. Site Traffic Forecasts (each horizon year)
   - Trip Generation
   - Mode Split
   - Pass-by Traffic (if applicable)
   - Trip Distribution
   - Trip Assignment
2. Non-Site Traffic Forecasting (each horizon year)
   - Projections of Non-site (Background) Traffic (methodology for the projections shall receive prior approval of City)
3. Total Traffic (each horizon year)

VI. TRAFFIC AND IMPROVEMENT ANALYSIS

1. Site Access
2. Capacity and Level of Service Analysis
   - Without Project (for each horizon year including any programmed improvements)
   - With Project (for each horizon year, including any programmed improvements)
3. Roadway Improvements
   - Improvements Programmed to Accommodate Non-site (Background) Traffic
   - Additional Alternative Improvements to Accommodate Site Traffic
4. Traffic Safety
   - Sight Distance
   - Acceleration/Deceleration Lanes, Left-Turn Lanes
   - Adequacy of Location and Design of Driveway Access
5. Pedestrian Considerations
6. Speed Considerations
7. Traffic Control Needs
8. Traffic Signal Needs (base plus each year, in five-year horizon)
9. Site Circulation and Parking

VII. FINDINGS

1. Site Accessibility
2. Traffic Impacts
3. Need for Improvements
4. Compliance with Applicable Local Codes

VIII. RECOMMENDATIONS/CONCLUSIONS

1. Site Access/Circulation Plan
2. Roadway Improvements
   - On-Site
   - Off-Site
   - Phasing (as applicable)
3. Transportation System Management Actions (as applicable)
4. Other

IX. APPENDICES

1. Existing Traffic Volume Summary
2. Trip Generation/Trip Distribution Analysis
3. Capacity Analyses Worksheets
4. Traffic Signal Needs Studies

X. FIGURES AND TABLES

1. The following items shall be documented in the text or Appendices
   - Site Location
   - Site Plan
   - Existing Transportation System
   - Existing Peak Hour Turning Volumes
   - Estimated Site Traffic Generation
   - Directional Distribution of Site Traffic
   - Site Traffic
   - Non-Site Traffic
   - Total Future Traffic
   - Projected Levels of Service
   - Recommended Improvements

(For Category 1, many of the items may be documented within the text. For other categories the items shall be included in figures and/or tables that are legible).

XI. DESIGN STANDARD REFERENCE

1. Design in accordance with current *Ivins City Standards*.
2. Conduct capacity analysis in accordance with the latest edition of the *Highway Capacity Manual.*

3.10 Public Transportation

Ivins City entered into an agreement with the City of St. George to expand the SunTran bus service to Ivins City. The agreement provides for a commuter bus route between St. George and Ivins and is compatible with St. George's public transit services as well as acknowledgement that such a commuter route is subject to the requirements of the Federal Transit Administration (FTA). The agreement also contains a provision that the contract can be negotiated to allow the service to be upgraded to a fixed route if Ivins finds it beneficial to the citizens.

If Ivins wanted to pursue a fixed route transit service, the Utah State Enabling Act allows for cities or counties to organize transit districts. Once a transit district has been established, the city or county can attempt to secure funding to provide transit service or they can vote to be annexed by the Utah Transit Authority (UTA). If the people in the city or county elect to be annexed by the UTA, a one-quarter percent sales tax is initiated in those communities that receive the transit services. If Ivins or the County elect not to pursue a transit district, any additional costs for the fixed route service would have to be paid for by the City.

3.11 Roadway Standards

All streets shall be designed to conform to the Engineering standards and technical design requirements contained within *Ivins City Standards*. The standards outlined in that document can be supplemented by this master plan, AASHTO (American Association of State Highways Transportation Officials), *A Policy on Geometric Design of Highways and Streets*, and the MUTCD (Manual on Uniform Traffic Control Devices). In cases of conflict, a determination shall be made by the City, whose determinations shall be final.

3.11.1 Safe Transportation System

A goal of Ivins City is to establish and maintain a safe transportation system. This should be a high priority and the City should work diligently to meet applicable safety standards. This can be best accomplished by:

- Require all major developments to provide adequate access for emergency vehicles
- Provide safe pedestrian street crossings, particularly near schools and recreation areas
- Encourage development of school routing and recreation plans that minimize vehicle/pedestrian conflicts
- Establish speed limits based on traffic engineering analysis. Enforce speed limits, especially near schools, in residential areas and downtown commercial areas.
- Provide guidance for vehicles on streets through striping, raised medians and islands, reduction of roadside obstructions, and other traffic engineering solutions
- Require all roadway features to meet minimum design standards established by the *American Association of State Highway and Transportation Officials* (AASHTO). All signs, pavement markings and traffic signals must meet standards established by the *Manual of Uniform Traffic Control Devices* (MUTCD). Exceptions can be

granted by the City on a case-by-case basis for those designs that demonstrate innovative superiority over the existing standards.

- Maintain optimal walkway conditions for walking, wheelchairs and strollers by:
    - Repairing cracks and bumps
    - Minimizing slopes
    - Maintaining visibility at corners
    - Avoiding abruptly ending walkways
    - Reducing speed and traffic
    - Keeping walkways clear of poles and other objects
    - Avoiding poor drainage and standing water on sidewalks, and
    - Providing curb cuts and ramps that comply with the Americans with Disabilities Act (ADA)
- Provide adequate emergency access and/or turnarounds on all dead-end streets or cul-de-sacs

Respecting clear zones are an important aspect of maintaining a safe transportation system. From AASHTO, the clear zone is "…used to designate the unobstructed, relatively flat area provided beyond the edge of the traveled way for the recovery of errant vehicles." Although the width of a clear zone is influenced by criteria such as traffic volume, speed, and embankment slopes, generally the clear zone is at least 10 feet (measured from the white edge line or edge or asphalt if no white line is present) in low-speed rural collector and rural local roads, and as far as is practical in urban settings where space for clear zones is generally restricted. Again from AASHTO regarding urban streets, "A minimum offset distance of 18 inches should be provided beyond the face of the curb, with wider offsets provided where practical…. However, since most curbs do not have a significant capability to redirect vehicles, a minimum clear-zone distance commensurate with prevailing traffic volumes and vehicle speeds should be provided where practical." It is of paramount importance that a conscious effort be made to look for opportunities to comply with this policy.

3.11.2 Street Design

All streets shall be designed to conform to the standards and technical design requirements contained within the *Ivins City Standard Specifications for Design and Construction*. The standards outlined in this document can be supplemented by AASHTO, *A Policy on Geometric Design of Highways and Streets*. In cases of conflict, a determination shall be made by the City, whose determinations shall be final.

Some of the basic elements of street design are outlined in this section. For the full text on Street Design issues, please refer to the *Ivins City Standard Specifications for Design and Construction*.

3.11.2.1 Street Cross-Section Standards

The requirements for the street cross-section configurations are shown in Table 9. These requirements are based on traffic capacity, design speed, projected traffic, system continuity and overall safety. All new developments shall use street cross-sections as

determined by the ADT in Table 9. Access to multi-family or commercial developments shall use street cross-sections with fifty-five feet (55') or more of right-of-way. Table 10 specifically assigns street segments in Ivins City to approved cross sections.

Table 9 – Street Cross-Sections

Street Cross-Section Configurations

Road Classification	Minimum ADT or [D/U's]	Traffic Index	R-O-W Width (ft)	Pavement Width (ft)	Planter Width (ft)	Sidewalk Width (ft)	Landscape Buffer (ft)
Residential Standard 50'	510 to 1,250 [51 to 125]	5	50	28	3 min	5	12
Residential Alternative 43'	210 to 500 [21 to 50]	5	43	28	N/A	5	12
Residential Alternative 38'	0 to 200 [0 to 20]	5	38	28	N/A	5 (One side)	12
Residential Collector	1,260 to 2,000 [126 to 200]	5	55	32	4	5	12
Minor Collector	1,260 to 2,000 [126 to 200]	5.5	60	32	6.5	5	20
Minor Collector *Puerto Drive*	1,260 to 2,000 [126 to 200]	5.5	60	48	0	5 [west side]	12
Major Collector (with street parking)	2,010 to 6,000 [201 to 600]	6	66	42	4.5	5	20
Major Collector (with center lane striping)	2,010 to 6,000 [201 to 600]	6	66	42	4.5	5	20
Major Collector (with landscaped median in Rural Zone)	2,010 to 6,000 [201 to 600]	6	66	44	N/A	6 [or 10' trail]	30
Minor Arterial *Center Street*	6,000 to 20,000	7	85	60	2	6 [or 10' trail]	30
Minor Arterial *Western Corridor*	6,000 to 20,000	8	90	64	5.5	5	20
Major Arterial *Old Highway 91 (3-lane)*	20,000 to 40,000	8	100	50	5 [w/ 6' ditch]	6 [or 10' trail]	30
Major Arterial *Old Highway 91 (5-lane)*	>40,000	8	100	74	5 [w/ 6' ditch]	6 [or 10' trail]	30

NOTES:

1. *See Ivins City Zoning Ordinances for applicable grades.*
2. *Pavement width measured from lip of gutter to lip of gutter.*
3. *The minimum right-of-way and pavement width is shown. Each may be increased when required by a traffic impact study.*
4. *Landscape Buffer is measured from the back of the curb.*
5. *Commercial Local roads share the same cross-section with Minor Collectors, but with a Traffic Index of 10.*
6. *Industrial Local roads share the same cross-section with Major Collectors, but with a Traffic Index of 10.*
7. *See Cross-Section drawings for additional specific notes.*

Table 10 – Roadway Cross Sections

Roadway Classification	Street Name	Cross Section
Major Arterial	Center Street - Ivins Boundary to 200 East Old Highway 91	Minor Arterial - Center Street Major Arterial - Old Highway 91
Minor Arterial	Center Street - 200 East to 600 West Western Corridor	Minor Arterial - Center Street Minor Arterial - Western Corridor
Major Collector	200 East - Old Highway 91 to 200 North 400 South - Old Highway 91 to future Western Corridor 400 West - Old Highway 91 to 450 North Kwavasa Drive – Center Street to Kayenta Parkway	Major Collector Major Collector Major Collector Major Collector in Rural Zone
Minor Collector	200 North - 600 East to Kwavasa Drive 200 South 400 East - Center Street to Pioneer Parkway Puerto Drive 600 South - Main Street to 200 East 800 South Kayenta Parkway Snow Canyon Drive - Center to Ivins Boundary Tuacahn Drive	Minor Collector Minor Collector Minor Collector Minor Collector - Puerto Drive Minor Collector Minor Collector Minor Collector Minor Collector Minor Collector
Residential Collector	Main Street - Old Highway 91 to 200 North 200 East - 200 North to 400 North 300 South - 400 East to 200 West 520 South - Main Street to 200 West	Residential Collector Residential Collector Residential Collector Residential Collector

3.11.2.2 Roadway Network Design

New roadway networks shall be designed in accordance with the general planning concepts, guidelines, and objectives provided in this section. The "Quality of Life" for residents should be a primary concern when designing a residential roadway network with safety as the overriding factor in design. An emphasis on proper street hierarchy should be adhered to, namely, local streets should access collectors; collectors should access arterials; etc. An emphasis on access management should provide careful control of the location, design, and operation of all driveways, median openings, and street connections to a roadway. For more information on access management, refer to the Access Management section of this document.

Residential streets should be designed in a curvilinear method in order to reduce or eliminate long straight stretches of residential roadways, which encourage speeding and cut-through traffic. Substantial increases in average daily traffic, due to development on adjacent property on established streets not originally designed to accommodate such increases should be avoided. Drainage methods should concentrate on meeting the drainage needs while not impeding the movement of traffic. Roads should be designed to lie within existing topographic features without causing unnecessary cuts and fills.

A reduction in the use of cul-de-sacs should be emphasized in order to provide greater traffic circulation. Circulation is of the utmost importance; long blocks and excessive

dead-end streets should be avoided. Stopping sight distance must be considered at all intersections and curves to ensure the safety of the public, in accordance with AASHTO standards. Pedestrian and bicycle traffic should be considered in the planning and design of all developed streets. All street grades shall have a maximum grade as specified in the Ivins City Zoning Ordinance.

3.11.2.3 Improvement Requirements

All improvements, including but not limited to the following, shall be constructed in accordance with the standard specifications and drawings unless otherwise approved. Required curb, gutter and sidewalk shall be constructed. Driveways shall be constructed in approved locations only. All streets, public or private, shall be surfaced to grade, with asphalt concrete pavement to the required minimum width and thickness in accordance with the *Ivins City Standard Specifications for Design and Construction*. No cross gutters shall be allowed across major collector or major and minor arterial streets. On commercial and industrial streets, cross gutters are generally not allowed and require approval by the City for use. When new construction occurs, handicap ramps shall be constructed at all street intersections, unless otherwise approved, in accordance with the standard drawings. In addition, when a project occurs where existing improvements are in place, handicap ramps shall be upgraded to meet current standards. Raised medians on public roadways shall be approved by the City. Design and construction shall be in accordance with applicable standards. Developments shall construct the minimum number of accesses needed to adequately address the needs of the development and only at approved locations. Adequate drainage facilities shall be installed to properly conduct runoff from the roadway. Sub-drains and surface drainage facilities shall be designed in accordance with the approved drainage study. The above required improvements are not all inclusive. Other improvements needed to complete the development in accordance with current engineering and planning standard practice may be required by the City.

3.11.2.4 Connected Street System or Grid System

When designing residential standard roadways, block lengths without an intervening collector roadway shall not exceed eight hundred feet (800') in length unless approval has been granted by the City (cul-de-sacs are not considered an intervening connecting street). Cul-de-sac streets shall not exceed seven hundred fifty feet (750') in length as measured from center of cross street to center of cul-de-sac unless approval has been granted by the City. Major collectors and higher functional classification roadways shall not be permanently dead-ended or end in a cul-de-sac unless approval has been granted by the City. Stub streets are required to serve adjacent undeveloped properties as directed by the City. Bicycle/pedestrian easements or access ways may be required at the end of cul-de-sacs or between residential areas and parks, schools, churches, or other activity centers as directed by the City.

4 Five Year Transportation Improvement Plan (TIP)

4.1 Basis for improvements

With the growth that is happening in Ivins and the topographic challenges of being land locked, it is imperative that a plan for future roadway and intersection improvements be created to address these issues.

4.2 Five year transportation projects

The proposed intersection and roadway improvements developed for the five-year TIP vary from small improvements to existing roadways to larger projects such as the Western Corridor and roadway widening.

Following are the recommended projects for the five-year TIP. The individual projects are discussed in general terms and are not in any priority. Each project is identified individually, including discussion of the project's needs, benefits, and costs.

Center Street Streetscape Improvements
Description: Development typically installs street improvements, however, the City finished constructing Center Street including curb, gutter, and a trail. Therefore, in lieu of constructing Center Street, development will install landscaped medians including lighting in the center of the roadway from 200 East to Snow Canyon Drive. The length of roadway to be improved will be 6,900 feet.

Estimated Cost: $636,913 for design and construction

Puerto Drive
Description: This project will include the installation of a high-back "A" curb to delineate a multi-use trail, with striping removal and street re-striping. The lanes will be changed from 12-feet wide to 11-feet wide and will be moved to the west. The road will reflect the Puerto Drive cross section (see Cross Section No. 5).

Estimated Cost: $178,360 for design and construction

Old Highway 91- Kayenta Pkwy to 200 East, Phase I
Description: This project will be the first phase of the Old Highway 91 project which will entail widening of the current roadway to accommodate bike travel. Therefore, the asphalt will be widened and the shoulders will be improved to enhance safety for all traffic on the road. It is envisioned that it will be a candidate for a 70% MPO-funded project, with a City match.

Estimated Cost: $1,600,000 for design and construction

Old Highway 91- Kayenta Pkwy to 200 East, 3 lanes, Phase II – Pre-Construction (Local Match)

Description: This project will be the environmental and design to reconstruct Old Highway 91 from Kayenta Parkway to 200 East to a three-lane roadway and will include some storm drain improvements. All commercial developments will be required to install frontage improvements for a three-lane facility with bicycle and pedestrian improvements and landscaping. The City will complete the road and landscaped medians after 50% of the road is completed by development. The construction of the project is programmed in the Ten-Year Plan. It is envisioned that it will be a candidate for a 70% MPO-funded project, with a City match.

Estimated Cost: $500,000 for pre-construction activities

400 East, from 200 North to Center Street
Description: 400 East from 200 North to Center Street is a segment of road that will provide vital access and circulation to Rocky Vista University. Ivins City will pay for the road and Rocky Vista University will provide the property dedication. The road will include curb, gutter, and sidewalk on the west side.

Estimated Cost: $350,000 for design and construction.

Other Signals and Roundabouts
Description: As needs arise, it is necessary to look closely at individual intersection control that requires more than just the installation of signs. As intersections become more congested due to increased development that is concentrated at a particular location, it becomes necessary to evaluate a warrant analysis for a traffic signal or a modern roundabout. In the next 5 years, there may be a need to install several of these types of control. A traffic signal will require about $140,000 to $180,000, whereas a roundabout will require about $200,000 to $400,000.

Possible intersections that may need to be addressed with this project fund:

- Center Street & Puerto Drive
- Center Street & 400 East

Estimated Cost: $800,000 to be partially funded and built by developers

Miscellaneous Projects for Safety, Road Gap Filling, or Streetscape
Description: As development occurs, there will be a need to contribute to capital improvement costs that should be borne by the City.

Estimated Cost: $300,000

Street Light Replacement
Description: The City has a program to replace outdated street lights with newer, more efficient hardware.

Estimated Cost: $300,000

4.3 Project Ranking

The most critical projects are the intersection projects because they resolve safety issues. 200 East corridor is the next most critical because it is being planned as the major route into Ivins from the south. The other projects are development driven and will most likely occur when land is developed adjacent to that roadway.

5 Ten Year Transportation Plan

The following are the recommended projects for the ten-year TIP. The individual projects are discussed in general terms and are not in any priority. Each project is identified individually, including discussion of the project's needs, benefits, and costs.

5.1 Recommended system improvements

Western Corridor

Description: This project will construct a new roadway just in Ivins City between 200 East and 400 East. The concept is to purchase the right-of-way using COG funds and the City will construct the entire roadway. This new roadway will be the western component of the Dixie Beltway, which is the beltway that travels around the combined metropolitan area of St. George, Washington, Ivins, and Santa Clara.

Estimated Cost: $1,200,000 for design and construction.

Old Highway 91- Kayenta Parkway to 200 East, 3 lanes (Local Match)

Description: This project will be the construction of the designed project in the Five-Year Plan. See the Five-Year Plan for project description. It is envisioned that it will be a candidate for a 70% MPO-funded project, with a City match.

Estimated Cost: $6,400,000 for design and construction,
includes $500,000 programmed in pre-construction activities in Five-Year Plan

Signals and Roundabouts

Description: Again, as needs arise, it is necessary to look closely at individual intersection control that requires more than just the installation of signs. As intersections become more congested due to increased development that is concentrated at a particular location, it becomes necessary to evaluate a warrant analysis for a traffic signal or a modern roundabout.

Estimated Cost: $1,000,000 to be partially funded and built by developers

Miscellaneous Projects for Safety, Road Gap Filling, or Streetscape

Description: As development occurs, there will be a need to contribute to capital improvement costs that should be borne by the City.

Estimated Cost: $500,000

Street Light Replacement
Description: The City has a program to replace outdated street lights with newer, more efficient hardware.

Estimated Cost: $730,000

5.2 Project Ranking

The Western Corridor and Old Highway 91 will become a need as the area develops. The timeline of these projects will be driven by development of the areas.

6 Twenty Year Transportation Plan

The following are the recommended projects for the twenty-year TIP. The individual projects are discussed in general terms and are not in any priority. Each project is identified individually, including discussion of the project's needs, benefits, and costs.

6.1 Recommended system improvements

Old Highway 91- Kayenta Parkway to Pioneer Parkway, 5 lanes
Description: This project will include the addition of two through lanes to make Old Highway 91 a five-lane facility from Kayenta Parkway to Pioneer Parkway. The project will include the installation of sidewalk, trail, bike lanes, and storm drain as well as installation of high-type traffic control (roundabouts or traffic signals) at major intersections when warranted.

Estimated Cost: $2,601,760 for design and construction

Western Corridor, Old Highway 91 to Snow Canyon Parkway (Except thru Santa Clara)
Description: This segment of the Western Corridor begins at Old Highway 91 and connects with the segment at 400 East that was done in the Ten-Year plan, and picks up again at 200 East to Santa Clara. The remaining portion is from the north side of Santa Clara to Snow Canyon Parkway. Right-of-way will be purchased from willing sellers using COG funding. If development is moving forward before right-of-way can be acquired, right-of-way will need to be dedicated. Development will be required to place 45-feet of asphalt (3-12-foot lanes plus 7-foot shoulders), landscaped median, pedestrian facilities, drainage, and landscaped ditches and earth shoulders. In the future, the City will widen the road to full width and install curb and gutter.

Estimated Cost: $1,515,255 for design and construction.

Western Corridor, from Old Highway 91 to I-15 (Local Match)
Description: In 2006, the Dixie MPO conducted a study to ascertain the future alignment of the 2-lane Western Corridor from Old Highway 91 to the south to I-15. The approximate cost of the project will be about $105 million. This project is anticipated to be paid with Federal Funds, which will require a local match of about $7 million. It is estimated that the approximate cost attributable to Ivins City is about one-third of this local match.

Estimated Cost: $2,400,000 for design and construction.

Kwavasa Drive
Description: Kwavasa Drive will be built jointly by Ivins City and Kayenta. Ivins City will pay for a chip sealed road and Kayenta will pay for road base preparation and property dedication. When developed further, Kwavasa will be installed in accordance with Cross

Section 12, paid for by the developer. However, the City will budget some funds to expand Kwavasa Drive to a five-lane facility if the need arises.

Estimated Cost: $1,041,936 for design and construction.

200 East Street Improvements
Description: This project will widen the 200 East corridor from 200 South to Old Highway 91. Development continues to complete the frontage of the 200 East corridor with curb and gutter, sidewalk, trail and ramps. In the future, there will be installation of appropriate traffic control at the intersection to the Western Corridor, upgrading all ramps to ADA standards, and a raised median will be installed. This will enhance safety by lowering speeds, reducing accidents, accommodate pedestrians, and reduce congestion as the area grows.

Estimated Cost: $1,710,000 for design and construction

400 South Streetscape Improvements
Description: Development will complete the construction of 400 South from 600 West to the Western Corridor, except for landscaped medians. This project will complete the landscaped medians from 600 West to Main Street, and from Puerto Drive to the Western Corridor. The project will increase the capacity of the current facility, reduce congestion and improve safety along the roadway.

Estimated Cost: $825,300 for design and construction

Other Signals and Roundabouts
Description: As traffic congestion patterns emerge in the twenty-year outlook, it is necessary to look closely at individual intersection control that requires more than just the installation of signs. A traffic signal will require about $140,000 to $180,000, whereas a roundabout will require about $200,000 to $400,000.

Possible intersections that may need to be addressed in the twenty-year horizon:

- 400 West & Old Highway 91 intersection
- Kwavasa Drive & Old Highway 91 intersection

Estimated Cost: $1,000,000 to be partially funded and built by developers

Miscellaneous Projects for Safety, Road Gap Filling, or Streetscape
Description: As development occurs, there will be a need to contribute to capital improvement costs that should be borne by the City.

Estimated Cost: $500,000

6.2 Project ranking

The need for additional roadways in Kayenta will be based on the growth in that development. As the area grows, Old Highway 91 will need to be widened to accommodate the future traffic volumes. Because Santa Clara Drive will not be an option to handle this amount of traffic, the need for the southern half of the Western Corridor will be crucial.

7 Access Management

This section will define and describe some of the aspects of Access Management for roadways and why it is so important. Access Management can make many of the roads in a system work better and operate more safely if properly implemented. There are many benefits to properly implemented access management. Some of the benefits are as follows:

- Reduction in traffic conflicts and accidents
- Reduced traffic congestion
- Preservation of traffic capacity and level of service
- Improved economic benefits businesses and service agencies
- Potential reductions in air pollution from vehicle exhausts

Though Access Management is generally used on roads that are larger and have more volume, it can have impacts on those roads that are defined as residential as well.

7.1 Definition

Access management is the process of comprehensive application of traffic engineering techniques in a manner that seeks to optimize highway system performance in terms of safety, capacity, and speed. Access Management is one tool of many that makes a traffic system work better with what is available.

7.1.1 Access Management Techniques

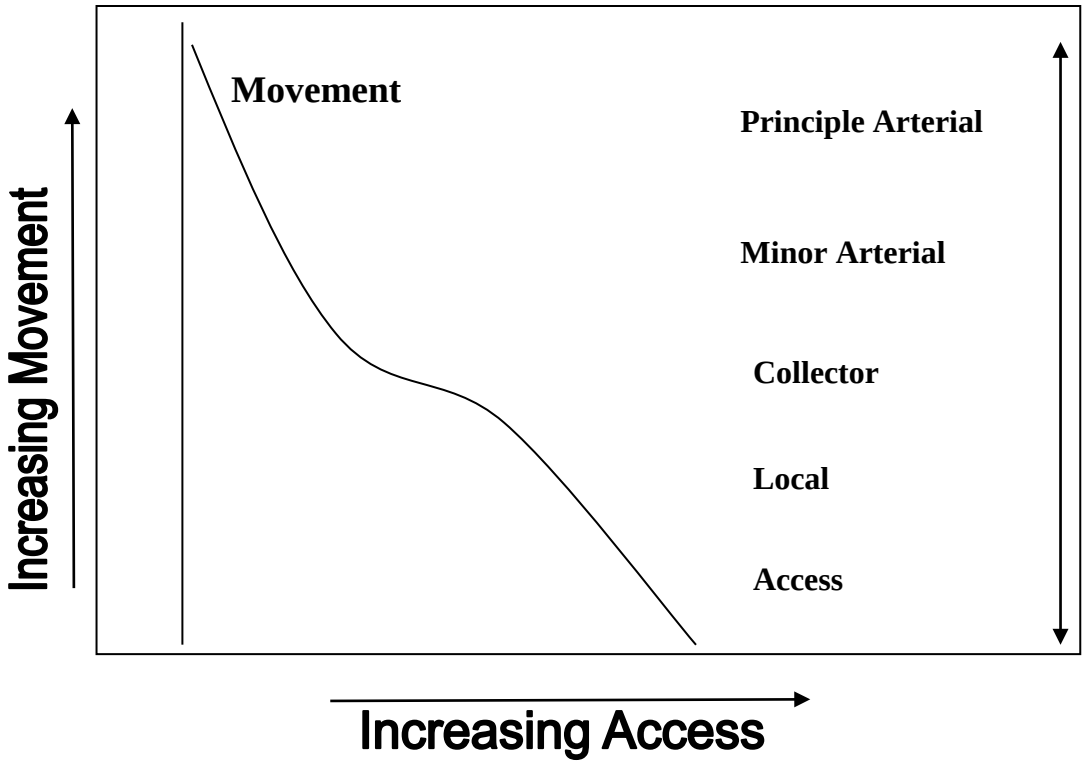
There are many techniques that can be used in access management. The most common techniques are signal spacing, street spacing, access spacing, and interchange to crossroad access spacing. There are various distances for each spacing dependent upon the roadway type being accessed and the accessing roadway. The Utah Department of Transportation has developed an access management program. More information can be gathered from the UDOT website and from the Access Management Program Coordinator.

7.1.2 Access Management

Access management is the process in which access is provided from the street network to adjacent land development while preserving traffic flow on the roadway system. Safety, capacity, and speed are determining factors on how land development is accessed by a roadway. Managing access is achieved by controlling the location, design, and operation of driveways, median openings, and street connections. In addition, auxiliary lanes (turn lanes or by-pass lanes) are also used to divert traffic out of the through traffic stream to improve the traffic flow and improve safety.

Roadways are classified for access control based upon their importance to local and regional mobility. For example, the strictest access control is applied to roadways that serve through traffic or regional trips. The least access control is given to local streets and residential areas that serve local traffic and short trips. Figure 15 shows the relationship between access and vehicular movement:

Figure 15 – Access vs. Mobility



7.1.3 Benefits of Access Management

Benefits of access management include:

- Decreased travel time
- Improved safety
- Preservation of roadway level of service
- Reduces the need for expensive roadway and intersection improvements
- Discourages poor site design
- Improves roadway appearance

7.1.4 Ten Ways to Manage Roadway Access

There are ten ways to manage roadway access to get the most out of a transportation system, they are:

1. Assure roadways are managed properly, by having a comprehensive plan to address key issues. Include goals, objectives, and policies related to access management. Make sure roads are classified per the functional classification plan. Provide for a wide variety of street types with varying design standards
2. Establishing a basic requirement that driveways are limited to one per parcel, with special conditions for additional driveways

3. Locating driveways away from intersections
4. Connecting parking lots and consolidate driveways
5. Providing residential access through neighborhood streets
6. Increasing minimum lot frontage on major roads
7. Promoting a connected street system
8. Encouraging internal access to outparcels
9. Regulating the location, spacing, and design of driveways
10. Coordinate with other municipalities and state agencies

7.2 General Access Management Principles

The following access management guidelines and policies shall be adhered to within Ivins City.

- Conflicts at intersections and driveways should be separated and the number reduced as much as possible.
- A "time-space" perspective should guide (a) the location, timing, and coordination of traffic signals; (b) the placement of access; and (c) the design and operation of intersections. Optimum progressive travel speeds along arterial roadways should be determined and maintained.
- Signal cycles should be as short as possible but consistent with capacity, pedestrian clearance, and coordination requirements. A cycle length range of 60 to 120 seconds is appropriate. Cycle lengths should not exceed 150 seconds.
- Unsignalized access should be located so as not to interfere with queues or maneuvering areas of signalized intersections and positioned to take advantage of gaps in, or less dense, traffic flows.
- Interference between through traffic and site traffic should be addressed by incorporating additional traffic lanes to accommodate turning vehicles and through vehicles. Adequate on-site storage and driveway dimensions should be designed to accommodate the traffic demand entering and exiting the site. Fewer, properly placed, and adequately designed driveways are preferable to a larger number of inadequately designed driveways, especially when spaced at least 500 feet apart. In all cases, the integrity of mainline traffic operations must not be compromised.

7.2.1 Number of Accesses per Parcel

Accesses are to be limited to one per lot or development for residential uses. Commercial lots or developments are not limited to one per lot and should be addressed on a case-by-case basis but not to exceed the access frontage requirements listed in the next sections. Additional accesses must be approved by the City upon completion of a circulation plan or Traffic Impact Study provided to the City indicating that more than one access is required to adequately handle the developments traffic volumes and further indicating that the additional access will not be detrimental to traffic flow on the adjacent street network. Circular driveways are considered one access. If a lot has a circular driveway then only a maximum of one more additional access may be granted.

All additional accesses in addition to the one stated above shall not exceed one access for frontage of 300 feet or less, two accesses for 300 to 600 feet of frontage and a maximum of two accesses for frontage greater than 500 feet, as approved by the City. Collector and Arterial roadways will have limited access. Where multiple parcels are consolidated, accesses shall also be consolidated according to City design and spacing standards. Temporary access may be granted to undeveloped property prior to completion of a final development plan if access is needed for construction or preliminary site access. Temporary accesses are subject to removal, relocation, or redesign after final development plan approval.

7.2.2 Corner Spacing

Access to corner lots should be from the lesser-classified road at the greatest distance possible from the intersection, and should not be less than the distances shown in Table 11. This distance is measured from the centerline of the proposed access to the curb face or pavement edge of the adjacent intersecting street. Accesses shall not be located within the functional boundaries of intersections as outlined in Table 11.

Table 11 – Access Distance from Corner According to Facility Type

Facility Type	Public Street Spacing	Required Sight Distance	Minimum Driveway Spacing	
			Same Side Upstream, Downstream, & Opposing Upstream	Opposing Downstream
Major Arterial	**1320’**	**500’**	**250’**	**150’**
Minor Arterial	**660’**	**500’**	**200’**	**150’**
Major Collector	**660’**	**400’**	**175’**	**150’**
Minor Collector	**250’**	**400’**	**150’**	**125’**
Residential Collector	**250’**	**300’**	**100’**	**75’**
Residential Standard	**150’**	**300’**	**50’**	**50’**

Notes:

1. **All access is determined by City and distances shown may be adjusted on a case-by-case basis if warranted by specific traffic conditions.**
2. **Measurement of public streets spacing shall be from centerline of right-of-way to centerline of right-of-way.**
3. **Measurement of driveway spacing shall be from centerline of proposed access to corner/edge of nearest driveway or road.**
4. **When two or more accesses serve the same multi-family/commercial development, distance between shall be at least 300 feet on Arterials and Major Collectors and 200 feet for all other roads.**
5. **When non-residential driveways cannot be separated with the spacing shown above they should be combined into a shared access with necessary access easements and agreements.**

7.2.3 Residential Access

New residential developments and subdivisions shall not have driveway access on arterials and major collectors. Minor subdivisions or “flag lots” are discouraged along arterials and

major collectors. Accesses for these minor subdivisions are under the same criteria for design and spacing listed in Table 11. When two or more accesses serve adjacent single-family residential property, the minimum distance between the nearest points of the two accesses shall be at least 12 feet. For corner residential lots, one access on each frontage may be permitted if it is determined by the City that two driveways are needed to provide safe access for traffic entering and leaving the lot because of site distance and geometric design considerations. Double frontage residential lots will only have one access onto the lesser classified roadway unless approved by the City. Circular driveways are considered one access. If a lot has a circular driveway then only a maximum of one more additional access may be granted. Single-family residential access driveways shall be a minimum of 12 feet in width and a maximum of 16 feet for a single garage, 20 feet for a double garage, and 27 feet for a triple garage. See Table 12 for all access widths.

Table 12 – Access Driveway Widths

	Single Family Residential	Commercial/Multi Family Residential	Industrial
Maximum Driveway Width	**27'**	**35'**	**40'**
Minimum Driveway Width	**12'**	**25'**	**35'**
Curb Radius	**2.5' - 10'**	**15' - 30'**	**20' - 30'**

Notes:

1. **All access widths are determined by City and widths may be adjusted on a case-by-case basis if warranted.**
2. **Driveways for accesses to large developments may be wider if necessary to accommodate turning lanes that are shown to be necessary by the traffic study.**

In 2010, Ivins City developed a Special Assessment Area (SAA) project in the Historic Township Area for the installation of curbs, gutters, and sidewalks along with new asphalt paved streets. Property owners have historically accessed their property from any location adjacent to the public streets in a manner that would now be difficult to make consistent with the current access management policies. Therefore, an addendum was approved to establish the allowance of exceptions and variances from the adopted Transportation Master Plan standards for properties within the SAA that have existing residential structures prior to the formation of the SAA.

The Ivins City Technical Review Committee has been given the authority to consider and approve these variances such as:

- Allowing a mountable (modified) curb on minor and residential collector streets
- Eliminating the required landscape strip between curb and sidewalk
- Allowing properties to continue accessing at historical locations on collector streets where there would be no concerns of affecting street capacity

- Other minor modifications to cross-sections and street network functional classes in a manner to meet the purposes established above

7.2.4 Medians

Based upon safety and operational studies, median treatments such as Two-Way-Left-Turn Lanes (TWLTL) and Raised non-Transferable medians may be required on major collector and arterial streets, as determined by the City.

7.2.5 Location, Spacing and Design of Intersections and Accesses

Design of accesses shall be in conformance to all City standards, where applicable, and should meet the design criteria as specified in Tables 11 and 12. Accesses should be aligned directly with existing access on opposite side of parcel. Where it is not feasible to align driveways, major driveways on opposite side of the street should not be offset less than 150 feet. Where commercial lots are not large enough to allow access on opposite sides of the street to be aligned, the center of driveways not in alignment should be offset a minimum of 250 feet on all collector streets, and 300 feet on all major and arterial streets. Greater distances may be required if needed for left-turn storage lanes.

Where two or more accesses serve the same or adjacent non-single family residential development, the minimum distance between the centerlines of accesses should be at least 200 feet on streets with design speeds below 30 mph and 300 feet on streets with design speeds above 30 mph. If adjacent driveways cannot be separated by the distances outlined, they should be combined into a single joint access. At least 300 feet of clear sight distance shall be provided for drivers entering or leaving all accesses onto local streets; 400 feet for collector streets; and 500 feet for arterial streets.

7.2.6 Right-turn deceleration lanes

Right-turn deceleration lanes remove the speed differences in the main travel lanes, thereby reducing the frequency and severity of rear-end collisions. They also increase capacity of signalized intersections and may allow more efficient traffic signal phasing. From the Manual of Uniform Traffic Control Devices, typical warrants for right-turn lanes are based on posted speed and traffic volumes. Minimum requirements for installation of a right-turn lane on a rural two-lane road that is 40 mph or less is 50 vehicles per hour (vph). For greater than 40 mph, right-turn traffic of 25 vph or more would require a right-turn deceleration lane. Taper lengths and storage lengths of these lanes shall comply with AASHTO's Policy on Geometric Design of Highways and Streets.

7.2.7 Where to Use Access Management

Access Management shall be used on all roadways within Ivins City. Roads, like other resources, also need to be carefully managed. Corridor access management strategies extend the useful life of roads at little or no cost to taxpayers. Access management can be used as an inexpensive way to improve performance on a major roadway that is increasing in volume. Access management should be used on new roadways and roadways that are to be improved so as to prolong the usefulness of the roadway.

8 Street Lighting

It will be important to maintain and upgrade street lighting as the years progress. Street lights will be replaced in a systematic fashion so all lights will be addressed. Appendix I shows the streetlight plan. For more information about how lights shall be installed, refer to Ivins City Standard Specifications and the Lighting Ordinance.

9 Transportation Corridor Preservation

This chapter identifies and evaluates techniques that can be used to preserve defined corridors for future transportation facilities.

9.1 Introduction

Several recent research efforts have addressed the issue of corridor preservation. The 1990 Report of the American Association of State Highway and Transportation Officials (AASHTO) Task Force on Corridor Preservation provided an identification and evaluation of various techniques. Subsequent efforts of the Federal Highway Administration (FHWA) and Transportation Research Board (TRB) have added to the literature. Drawing from these documents and a brief review of relevant Utah law, this chapter provides a discussion of potential techniques that may have applicability to Ivins City. A bibliography of the relevant publications is included.

9.2 Definitions

For purposes of this discussion, a "corridor" is defined as "the path of a transportation facility that already exists or may be built in the future". The AASHTO report defines corridor preservation as "a concept utilizing the coordinated application of various measures to obtain control of or otherwise protect the right-of-way for a planned transportation facility". The AASHTO report further defines the objectives of corridor preservation as follows:

- Prevent inconsistent development
- Minimize or avoid environmental, social, and economic impacts
- Reduce displacement
- Prevent the foreclosure of desirable location options
- Allow for the orderly assessment of impacts
- Permit orderly project development
- Reduce costs

9.3 Corridor Preservation Techniques

Techniques for corridor preservation fall into the following three major categories: (1) acquisition, (2) exercise of police powers, and (3) voluntary agreements and governmental inducements. The various issues associated with each corridor are unique. Therefore, one preservation technique cannot be recommended as the best for all situations. The purpose

of this chapter is to provide a "toolbox" of techniques available, a brief summary of each is provided below.

9.3.1 Acquisition

This technique involves the purchase of fee simple or lesser interests in property to bank or preserve it for the corridor location. This could be accomplished using federal funds or by using state funds where a project would be implemented without federal participation. The use of state funds could generally be accomplished with more flexibility and fewer requirements. If federal funds are used, or expected to be used for future elements of the project, certain federally required procedures must be followed. Acquisition can be accomplished in the following ways.

9.3.2 Advance Purchase and Eminent Domain

Undeveloped property is acquired, either by direct purchase or eminent domain, and "banked" until needed for construction. Such a method may systematically acquire the entire right-of-way or it may strategically acquire only selected parcels.

Under Utah statutes, acquisition of property by eminent domain is authorized if (a) the use is authorized by law, (b) the taking is necessary for such use, (c) the construction and use of property will commence within a reasonable time, and (d) fair compensation is paid. Fair value must be paid for interests taken and damages which accrue to the remainder of adjacent property not taken (Utah Code Annotated §78-34-1).

Before property may be taken for a corridor the acquiring agency must identify the corridor location, general route and termini. If the acquiring agency, without reasonable justification, does not commence or compete construction and use of a roadway within the corridor within the time specified, additional damages might be payable to a property owner (Utah Code Annotated §27-12-96).

9.3.3 Hardship Acquisition

Property is acquired to alleviate a particular hardship to a property owner. The hardship must occur as a result of an inability to sell the property due to public awareness of the pending project. Applies only to limited parcel-by-parcel actions in extraordinary or emergency situations (Utah Code Annotated §27-12-96).

9.3.4 Purchase Options

A conditional contract or option is executed that gives the public agency the right but not the obligation to buy the property at a future date. The contract would specify the terms and conditions of the future purchase (Utah Code Annotated §27-12-96). A related concept involves the use of rights of first refusal under which the government entity obtains the first right to purchase the property when a landowner determines to sell its property.

9.3.5 Development Easements

The government agency purchases development rights or a development easement. The agreement would specify the uses that would be allowed on the land. The public agency would purchase the property owner's right to develop the land, leaving the owner with all other rights of ownership. Thus, intensification of and use or development would be precluded.

Existing Utah law provides for conservation easements to maintain land or water areas predominantly in a natural scenic, or open condition, or for recreational, agricultural, cultural, wildlife habitat or other use or condition consistent with the protection of open land. Such easements must be granted to a tax-exempt organization or government agency and cannot be obtained by eminent domain. The easement may be terminated pursuant to conditions set forth in the easement document (Utah Code Annotated §47-18-1).

9.3.6 Public Land Exchanges

Surplus government land is exchanged as compensation for private property needed for right-of-way.

9.3.7 Private Land Trusts

Private land trusts play an increasingly important role in land conservation where public objectives are aligned with private trust objectives. Where government budgets are insufficient to acquire critical tracts in a given time frame, private land trusts may acquire the tracts and hold them for future acquisition by the government.

9.3.8 Exercise of Police Powers

Regulatory controls under the police power can be used to control the development of private property in order to preserve the transportation corridor. These measures impose requirements with no compensation to the landowner. Land use and development controls are typically administered by local governments (36 A.L.R.3d 751).

9.3.9 Impact Fees and Exactions

This method involves a mandatory property or monetary contribution by a developer to the local jurisdiction as a condition of a land use approval or permit. These approvals or permits could be associated with a contract zoning, site plan approval, proposed subdivision, special use permit, or other development permission. In most cases, impact fees and exactions can be assessed only after a jurisdiction makes an individualized determination that the required dedication is "roughly proportional" in both nature and extent to the impact of the proposed development. Impact fees and exactions include the following variations (Utah Code Annotated §11-36-201).

- In-kind contributions – Land owners and developers construct improvements or dedicate land for public facilities or right-of-way within or abutting the development site.
- Monetary payments in lieu of contributions – Developers pay money in lieu of or in addition to in-kind contributions. This method may be used where the pooled

contributions of numerous small developments is more effective than individual dedications of small parcels of land. The money is then used to acquire right-of way or make other improvements.

- Impact fees – This method applies to a broader range of improvements whose need is generated by a new development. The effected jurisdiction charges developers for a pro rata share of capital funding for the improvements based on relative contributions to the impacts of the development by newly developed property and existing developments.

Constitutional standards of reasonableness govern the validity and amount of impact fees and exactions. To be constitutional, an impact fee or exaction must be a fair contribution in relation to contributions by others. Thus, an impact fee or exaction must not require newly developed properties to bear more than their equitable share of the capital costs in relation to the benefits conferred.

Seven factors must be considered in analyzing the fairness of an impact fee or exaction (Utah Code Annotated §11-36-201):

1. The cost of existing facilities;
2. The manner of financing existing capital facilities (such as user charges, special assignments, bonded indebtedness, general taxes, or federal grants);
3. The relative extent to which the newly developed properties and other properties in the jurisdiction have already contributed to the cost of existing capital facilities (by such means as user charges, special assignments, or payment from the proceeds of general taxes);
4. The relative extent to which the newly developed properties in the jurisdiction will contribute to the cost of existing capital facilities in the future;
5. The extent to which the newly developed properties are entitled to a credit because the jurisdiction is requiring their developers or owners (by contractual arrangement or otherwise) to provide common facilities (inside or outside the proposed development) that have been provided by the jurisdiction and financed through general taxation or other means (apart from user fees) in other parts of the jurisdiction;
6. Extraordinary costs, if any, in servicing the newly developed properties; and
7. The time-price differential inherent in fair comparisons of amounts paid at different times.

In addition to constitutional limitations, in 1995 the Utah legislature in special session adopted stringent controls on the ability of local government to adopt impact fees to finance development growth. The new act requires that prior to the imposition of an impact fee, a government entity must do the following (Branberry Development Corporation v South Jordan City):

- Prepare a capital facilities plan that establishes that impact fees are necessary to achieve an equitable allocation to the costs borne in the past and to be borne in the future in comparison to the benefits already received and yet to be received.
- Prepare a written analysis of the impact fee identifying the impact on the system caused by the development activity, demonstrate how those impacts are reasonably related to the development activity, estimate the proportionate share of the impact cost that are reasonably related to the new development activity, and identify how the impact fee was calculated.
- Find that an impact fee is reasonably related to the new development based on analyses of specific factors.
- Calculate the impact fee based on a list of defined criteria.
- Hold public hearings on the adoption of the impact fee ordinance.
- Establish a service area within which the jurisdiction calculates and imposes impact fees for various land use categories and either adopts a schedule of such fees by use category or establishes the formula for calculating such fees by use category.

The act contains other requirements relating to environmental mitigation fees, definitions of public facilities and in some cases detailed standards governing the adoption and administration of impact fees.

9.3.10 Setback Ordinances

A local ordinance establishes a certain distance from a curb, right-of-way, property line, or structure within which construction is prohibited. These requirements may be contained within subdivision ordinances, zoning ordinances or building codes.

Setback requirements do not constitute a compensable taking (Hargraves v Young). But if setbacks or minimum lot sizes have the effect of prohibiting all economic use of property for otherwise permitted uses, a taking may occur.

9.3.11 Official Maps or Maps of Reservation

Development is prohibited within proposed right-of-way in areas covered by an official master street plan adopted by the jurisdiction. The official map may be used to plat future as well as existing streets. Generally, prohibition of development must not exceed a reasonable period after the implementing agency is advised of proposed development.

Prior to 1992, Utah law permitted the adoption of an official street map by municipalities and counties. Under prior law, the official street map had the legal effect of prohibiting development within the boundaries of the proposed street unless approved by the legislative body. Beginning in July of 1992, counties and municipalities were specifically prohibited from adopting an official map. Moreover, current law provides that an official map adopted under prior law does not require the municipality or county to acquire the property designated for eventual use as a public street. Utah law also expressly provides that an official map may not be used to unconstitutionally prohibit development of property (Utah Code Annotated §§17-27-7, 10-9-23).

Some courts have held that statutes permitting government to impose a development moratorium on property, located in a proposed transportation corridor during a period of reacquisition planning, unconstitutionally permits the taking of property without just compensation. Other courts have held that where the purpose of the government action is the prevention of development of land, that would increase the cost of planned future acquisition of such land by government, is unconstitutional. Some courts have found official maps unconstitutional if they also include compensation for the property owner for the period of temporary deprivation of the right to develop. Other statutory schemes have been validated when they allow development to proceed to avoid substantial damage to a property owner (Utah Code Annotated §§17-27-307, 10-9-306).

9.3.12 Adequate Public Facilities and Concurrency Requirements

Some communities address infrastructure needs by adopting ordinances that require a concurrency program intended to ensure that public facilities such as transportation systems are either in place, planned for, or provided as impacts occur from new development. Tools for implementation include carrying capacity limits, development caps, phasing systems, growth rate control, and other similar tools. This concept does not necessarily require developer's pay for improvement, but does require that such improvements be made when development occurs.

APPENDIX

APPENDIX A
Ivins City 2014 Accident Data

Name	Date	Address	Injury	Collision Type	Speed Limit	Year	Year Number
	1/14/2008 8:30	600 N Tuacahn Drive	PD	F2R	30	2008	1
	1/15/2008 15:11	200 E 400 S	PD	F2S	30	2008	2
	1/23/2008 9:00	127 S Otra Dr	PD	F2S	25	2008	3
	1/28/2008 18:10	100 N 200 W	PD	F2S	25	2008	4
	2/14/2008 8:45	120 E 375 S	PD	F2S	25	2008	5
	2/14/2008 17:49	200 W Center			35	2008	6
	3/6/2008 15:25	470 S 100 E	PD	F2R	25	2008	7
	4/7/2008 14:22	200 E Old Highway 91	PD	F2R	50	2008	8
	4/11/2008 16:13	Mesa Vista Rd & Puerto Dr	PD	F2S	25	2008	9
	5/6/2008 8:43	400 E Pioneer Pkwy	PD	F2R	25	2008	10
	5/6/2008 16:15	1500 E Snow Cyn Pkwy	PI	NA	40	2008	11
	5/12/2008 5:40	200 E Center St	PI	NA	0	2008	12
	5/16/2008 7:32	20 S 400 E	PD	NA	25	2008	13
123	7/25/2008 20:10	468 E 400 S	PD	R2R	25	2008	14
122	8/7/2008 3:00	500 N Tuacahn Dr	PI-NI	F2R	30	2008	15
121	8/14/2008 16:04	200 E & 400 S	PI	F2R	30	2008	16
120	8/20/2008 9:09	Kayenta Pkwy & Hwy 91	PI	F2F	25	2008	17
119	8/23/2008 23:54	200 E & 400 S	PI-NI	NA	30	2008	18
118	8/29/2008 9:58	Center St & Puerto Dr	PD	F2R	35	2008	19
117	9/22/2008 13:14	1500 E Snow Canyon Pkwy	PI-NI		40	2008	20
116	10/5/2008 10:00	284 W 450 N	PI-NI	NA	25	2008	21
	10/5/2008 13:14	1500 E Snow Cyn Pkwy	PI	NA	0	2008	22
115	11/15/2008 19:36	412 E 400 S	PD	NA	25	2008	23
114	11/24/2008 17:05	110 S 400 E	U	F2S	25	2008	24
113	12/8/2008 14:32	710 S & 160 E	PD	F2S	25	2008	25
112	12/24/2008 21:31	100 S & 400 E	PD	NA	25	2008	26
110	1/16/2009 16:23	555 S 200 E	PD	NA	30	2009	1
111	1/20/2009 14:43	13 W 200 S	PD	NA	25	2009	2
109	1/31/2009 10:48	100 W & Center St	PD	F2S	35	2009	3
108	2/16/2009 19:20	30 E 420 S	U	UNK	25	2009	4
107	3/9/2009 19:20	420 S & 75 E	PD	NA	25	2009	5
106	3/15/2009 16:15	1500 E Snow Canyon Pkwy	U	NA	40	2009	6
105	3/15/2009 22:53	640 S 160 E	PI-NI	NA	25	2009	7
104	3/17/2009 21:07	85 E 100 N	PD	NA	25	2009	8
103	3/20/2009 14:22	75 S 400 W	PD	NA	25	2009	9
102	4/5/2009 19:32	450 N & 200 W	PD	F2F	25	2009	10
101	5/24/2009 16:00	374 S 200 E	PD	NA	30	2009	11
100	7/26/2009 16:00	1100 N Tuacahn Dr	PD	NA	30	2009	12
99	8/25/2009 17:30	200 W Center St	U	F2R	35	2009	13
98	9/3/2009 8:44	1100 N Tuacahn Dr	PD	NA	30	2009	14
97	9/19/2009 14:47	372 E 100 S	PI-NI	R2S	25	2009	15
96	9/23/2009 23:08	600 W & Hwy 91	U	NA	50	2009	16
94	10/3/2009 11:33	Center St & Puerto Dr	U	NA	25	2009	17
95	10/3/2009 12:34	400 E Center St	U	F2R	35	2009	18
93	10/7/2009 18:22	1100 N Tuacahn Dr	PD	NA	30	2009	19
92	11/14/2009 20:40	1500 E Snow Canyon Pkwy	PD	NA	40	2009	20
91	2/10/2010 15:00	239 E 650 S	U	R2S	25	2010	1
90	2/27/2010 10:00	West Lake Dr & Kayenta Pkwy	PD	F2S	25	2010	2
89	3/1/2010 16:43	400 E Center St	U	F2R	35	2010	3
88	3/12/2010 8:10	56 S 285 W	PD	NA	25	2010	4
87	3/18/2010 23:10	Center St & Snow Canyon Dr	U	NA	35	2010	5
86	4/1/2010 18:17	1500 E Snow Canyon Pkwy	U	NA	40	2010	6
85	4/5/2010 21:42	1500 E Snow Canyon Pkwy	PI-I	NA	40	2010	7
84	4/16/2010 13:30	1500 E Snow Canyon Pkwy	U	NA	40	2010	8
83	4/23/2010 11:01	453 E 130 S	PD	F2R	25	2010	9
82	5/12/2010 12:00	200 E 200 N	PD	S2S	25	2010	10
81	8/10/2010 17:49	400 E 1060 S	PD	F2R	25	2010	11
80	8/25/2010 18:00	200 W Center St	PD	F2S	35	2010	12
79	9/10/2010 9:22	230 N Tuacahn Rd	PD	NA	30	2010	13

77	9/14/2010 13:25	Center St & Snow Canyon Dr	PD	F2F	35	2010	14
76	10/15/2010 7:50	200 E 300 N	PI-I	NA	25	2010	15
75	10/19/2010 15:01	Center St & Puerto Dr	PD	F2S	35	2010	16
74	10/23/2010 7:50	Center St & Snow Canyon Dr	PD	F2F	25	2010	17
73	11/8/2010 13:53	400 S 200 W	PD	UNK	25	2010	18
72	11/9/2010 3:00	100 W Center St	PD	S2S	35	2010	19
71	12/1/2010 8:58	390 S 200 E	PI-I	NA	30	2010	20
70	12/8/2010 10:30	251 W Talon Ct	PD	F2S	25	2010	21
69	2/15/2011 15:31	1500 Snow Canyon Pkwy	PI-NI	NA	40	2011	1
68	2/23/2011 14:00	80 W Center St	PD	S2S	35	2011	2
67	3/2/2011 6:55	200 E Center St	PI-NI	NA	35	2011	3
66	3/26/2011 15:29	400 E Center St	PD	F2R	35	2011	4
65	4/6/2011 16:54	178 E 200 S	PI-NI	NA	25	2011	5
63	5/13/2011 11:33	310 N 200 E	U	UNK	25	2011	6
62	5/21/2011 2:30	550 W Ithica Dr	PI-NI	NA	25	2011	7
61	7/15/2011 11:51	400 W & Hwy 91	PI-NI	F2S	25	2011	8
64	8/29/2011 13:40	100 W 75 N	PD	NA	25	2011	9
124	9/1/2011 16:25	20 E 100 N	U	UNK	25	2011	10
125	9/1/2011 17:47	1060 S & 200 E	PD	R2S	30	2011	11
60	9/2/2011 5:07	1500 Snow Canyon Pkwy	U	NA	40	2011	12
59	9/15/2011 15:39	400 E Center St	PI	F2S	35	2011	13
58	10/3/2011 14:50	1400 E Snow Canyon Pkwy	PI	F2S	40	2011	14
57	10/8/2011 21:18	400 S & 400 E	PD	UNK	25	2011	15
126	10/9/2011 13:00	150 S 320 E			25	2011	16
56	10/30/2011 16:00	1500 Snow Canyon Parkway	PD	NA	40	2011	17
55	11/3/2011 13:53	200 E Center St	PD	S2S	35	2011	18
54	11/27/2011 3:00	200 S 100 E	U	UNK	25	2011	19
53	12/12/2011 3:00	71 S Main	PD	UNK	25	2011	20
52	12/15/2011 18:08	400 S 200 E	PI-NI	NA	25	2011	21
51	2/15/2012 11:50	555 S 200 E	PD	F2S	30	2012	1
49	3/16/2012 8:40	250 N 200 W	PD	UNK	25	2012	2
48	3/17/2012 8:00	Center St & Snow Canyon Dr	PD	NA	35	2012	3
47	3/27/2012 9:39	Center St & Puerto Dr	PD	NA	35	2012	4
46	4/9/2012 8:30	3 Mile Lane & Hwy 91	F	NA	50	2012	5
45	4/17/2012 19:59	400 S & 400 W	PD	NA	25	2012	6
44	4/26/2012 8:48	590 S 600 E	PD	F2S	25	2012	7
41	5/3/2012 3:38	Center St and Snow Canyon Dr	PD	UNK	35	2012	8
43	5/9/2012 15:02	200 E & Hwy 91	PI-NI	F2S	30	2012	9
40	5/19/2012 17:53	Center St & Docena	PD	S2S	35	2012	10
39	6/27/2012 22:00	200 E Center	PD	NA	25	2012	11
38	7/11/2012 11:00	100 S & 100 W	PD	F2F	25	2012	12
33	8/25/2012 14:48	200 E & Hwy 91	PD	F2R	30	2012	13
32	8/27/2012 17:57	Center St & Snow Canyon Dr	PD	S2S	35	2012	14
31	9/15/2012 10:52	100 E & Center St	PD	S2S	35	2012	15
30	9/25/2012 16:40	Taviawk & Blackbrush Dr	PI-NI	NA	25	2012	16
28	10/1/2012 19:30	1500 E Snow Canyon Pkwy	PD	NA	40	2012	17
27	10/2/2012 11:50	1250 E Center St	PD	NA	40	2012	18
127	10/4/2012 7:00	585 E Center St	PD	NA	35	2012	19
26	10/5/2012 7:45	200 ft East of Snow Canyon RA	PD	NA	40	2012	20
29	10/18/2012 0:00	600 E 425 S	PI	F2R	25	2012	21
25	10/23/2012 21:01	1250 E Center St	PD	F2F	40	2012	22
24	3/8/2013 4:17	1500 E Snow Canyon Pkwy	PD	NA	40	2013	1
23	3/14/2013 0:04	1200 E Snow Canyon Pkwy	PD	NA	40	2013	2
22	4/11/2013 23:31	190 N Park Avenue	PD	NA	25	2013	3
21	5/23/2013 15:22	200 E & Hwy 91	U	UNK	30	2013	4
20	6/5/2013 11:55	374 S 200 E	U	UNK	30	2013	5
19	6/21/2013 10:34	Sandhill Circle & Kayenta Pkwy	PI-NI	NA	25	2013	6
17	8/13/2013 15:18	Center St & Snow Canyon Dr	PD	S2S	35	2013	7
18	8/21/2013 14:31	Center St & Snow Canyon Dr	PI-NI	UNK	35	2013	8
16	9/3/2013 17:57	Center St & Snow Canyon Dr	PI-NI	S2S	35	2013	9
15	9/4/2013 15:18	Snow Canyon Dr and Tuacahn Rd	U	UNK	25	2013	10

14	9/28/2013 22:02	95 W 350 N	U	UNK	25	2013	11
13	10/10/2013 14:59	Docena and Center St	PD	S2S	35	2013	12
12	11/21/2013 7:16	1500 E Snow Canyon Pkwy	U	S2S	40	2013	13
11	12/8/2013 20:48	Ivins Reservoir Rd (200 ft from Hwy 91)	PI	F2F	25	2013	14
9	12/15/2013 12:10	200 E Center	PD	S2S	35	2013	15
10	12/15/2013 14:49	100 W 100 S	PI	F2S	25	2013	16
8	12/27/2013 12:32	1500 E Snow Canyon Pkwy	PD	S2S	40	2013	17
7	1/3/2014 8:20	1200 S 400 E	PD	S2S	25	2014	1
6	1/13/2014 14:25	100 N 200 E	PD	S2S	25	2014	2
5	1/24/2014 13:09	550 S 200 E	U	UNK	30	2014	3
4	2/8/2014 13:05	473 E 165 S	PD	F2F	25	2014	4
3	3/11/2014 0:00	200 E & 855 S	PI-NI	F2R	30	2014	5
2	4/13/2014 14:43	Center St & Snow Canyon Dr	Property Damage	Unknown	35	2014	6
1	5/14/2014 14:36	1250 E Snow Canyon Pkwy	Property Damage	Unknown	40	2014	7

APPENDIX B
2015 Ivins City Intersection Counts

TRAFFIC COUNT SUMMARY

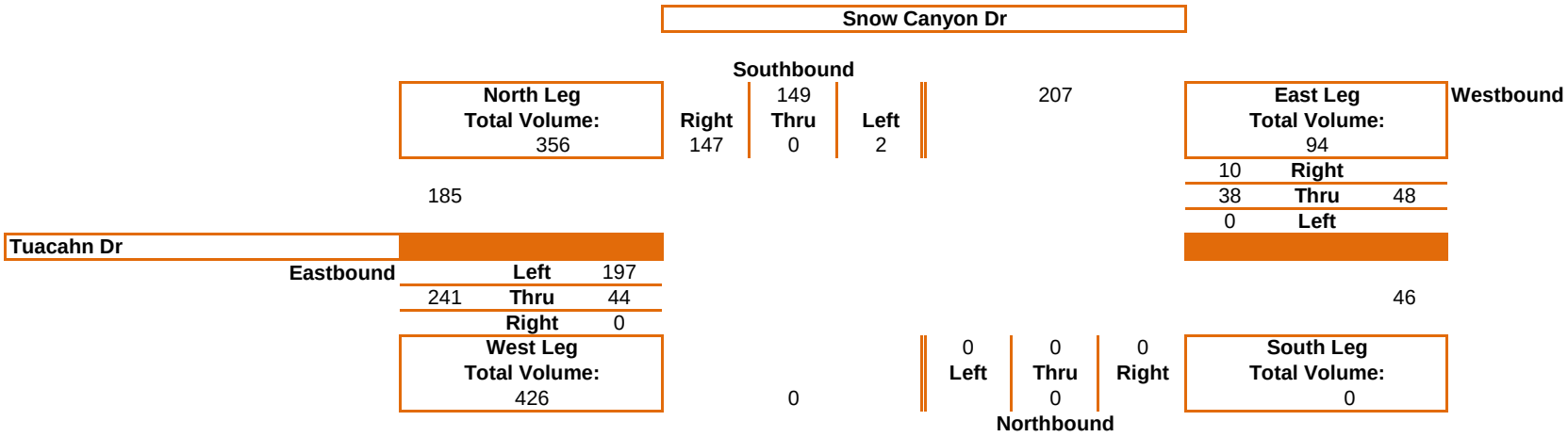
City: **Ivins, Utah**
N-S Street: **Snow Canyon Dr**
E-W Street: **Tuacahn Dr**
Date: **Tuesday, January 13, 2015**
Begin Time: **07:45 AM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:45 AM	08:00 AM	17	0	0	0	1	8	0	0	0	0	0	0	0	8	58	0	92	
08:00 AM	08:15 AM	70	0	1	0	7	6	0	0	0	0	0	0	0	11	118	0	213	
08:15 AM	08:30 AM	52	0	0	0	2	14	0	0	0	0	0	0	0	15	15	0	98	
08:30 AM	08:45 AM	8	0	1	0	0	10	0	0	0	0	0	0	0	10	6	0	35	438
08:45 AM	09:00 AM	7	0	0	0	1	4	0	0	0	0	0	0	0	6	11	0	29	375
09:00 AM	09:15 AM																	0	162
09:15 AM	09:30 AM																	0	64
09:30 AM	09:45 AM																	0	29



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2	0	147	0	38	10	0	0	0	197	44	0
	149			48			0			241	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		07:45 AM to 8:45 AM				Peak Vol:		438	PHF:		0.51

TRAFFIC COUNT SUMMARY

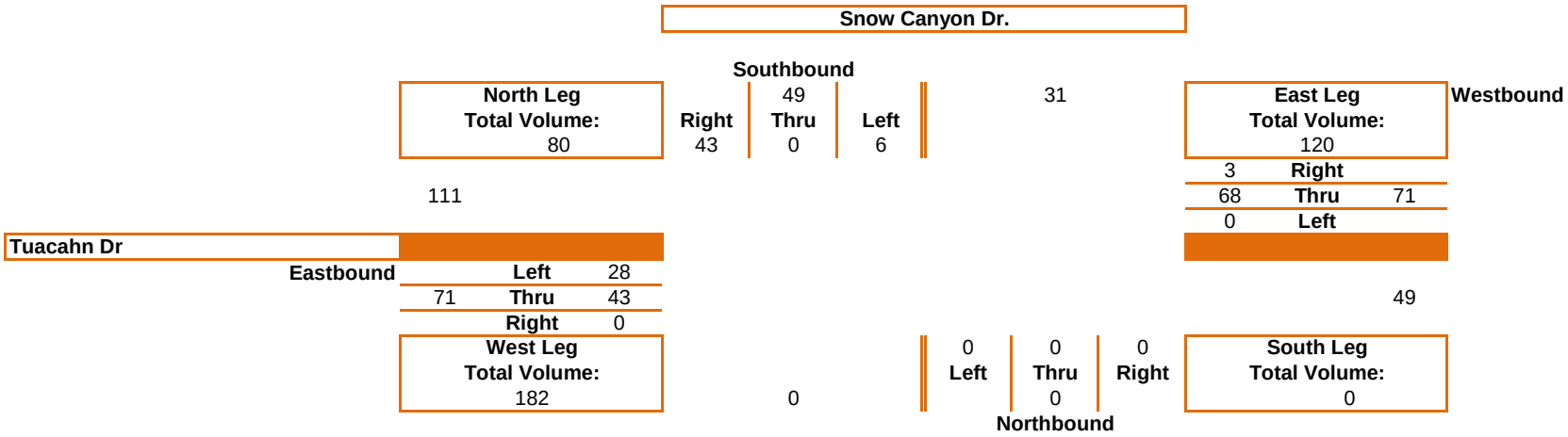
City: **Ivins, Utah**
N-S Street: **Snow Canyon Dr.**
E-W Street: **Tuacahn Dr**
Date: **Tuesday, January 13, 2015**
Begin Time: **04:30 PM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	12	0	2	0	0	15	0	0	0	0	0	0	0	9	8	0	46	
04:45 PM	05:00 PM	6	0	1	0	1	14	0	0	0	0	0	0	0	8	7	0	37	
05:00 PM	05:15 PM	12	0	0	0	0	30	0	0	0	0	0	1	0	17	9	0	68	
05:15 PM	05:30 PM	13	0	3	0	2	9	0	0	0	0	0	0	0	9	4	0	40	191
05:30 PM	05:45 PM																	0	145
05:45 PM	06:00 PM																	0	108
06:00 PM	06:15 PM																	0	40
06:15 PM	06:30 PM																	0	0



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES											
Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
6	0	43	0	68	3	0	0	0	28	43	0
	49			71			0			71	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		04:30 PM to 5:30 PM				Peak Vol:		191	PHF:		0.70

TRAFFIC COUNT SUMMARY

City: **Ivins, Utah**
N-S Street: **400 W** E-W Street: **400 S**
Date: **Wednesday, January 14, 2015**
Begin Time: **07:30 AM**
Interval Length: **15 min**

For Use with Jamar PetraPro Software

HORROCKS ENGINEERS

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:30 AM	07:45 AM	2	6	1	1	0	1	0	0	0	8	0	0	0	0	3	0	21	
07:45 AM	08:00 AM	1	5	0	0	0	2	2	0	0	4	0	0	0	1	1	0	16	
08:00 AM	08:15 AM	3	4	2	0	1	3	0	0	0	5	0	0	0	1	2	0	21	
08:15 AM	08:30 AM	0	10	5	0	4	0	0	0	0	6	0	0	0	3	0	0	28	86
08:30 AM	08:45 AM	3	11	2	0	1	3	0	0	0	6	0	0	1	1	1	0	29	94
08:45 AM	09:00 AM																	0	78
09:00 AM	09:15 AM																	0	57
09:15 AM	09:30 AM																	0	29

400 W

Southbound

North Leg Total Volume: 77

Right	Thru	Left
7	30	9

46

31

East Leg Total Volume: 31

Westbound

6	Right	
8	Thru	16
2	Left	

15

400 S

Eastbound

	Left	4
11	Thru	6
	Right	1

15

West Leg Total Volume: 26

33

Left	Thru	Right
0	21	0

South Leg Total Volume: 54

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
9	30	7	2	8	6	0	21	0	4	6	1
	46			16			21			11	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		07:45 AM to 8:45 AM				Peak Vol:		94	PHF:		0.81

TRAFFIC COUNT SUMMARY

City: **Ivins, Utah**
N-S Street: **400 W** E-W Street: **400 S**
Date: **Wednesday, January 14, 2015**
Begin Time: **04:30 PM**
Interval Length: **15 min**

For Use with Jamar PetraPro Software

HORROCKS ENGINEERS

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	0	5	2	1	0	1	0	0	0	7	0	0	0	5	3	0	23	
04:45 PM	05:00 PM	0	2	4	0	1	1	1	0	0	11	0	0	0	1	2	0	23	
05:00 PM	05:15 PM	3	6	1	0	0	3	1	0	1	4	1	0	0	2	0	0	22	
05:15 PM	05:30 PM	3	5	1	0	1	4	0	0	1	4	0	0	0	4	1	0	24	92
05:30 PM	05:45 PM																	0	69
05:45 PM	06:00 PM																	0	46
06:00 PM	06:15 PM																	0	24
06:15 PM	06:30 PM																	0	0

400 W

Southbound

North Leg Total Volume: 66			
	Right	Thru	Left
	6	18	8

32

34

East Leg Total Volume: 35		
2	Right	
9	Thru	13
2	Left	

Westbound

16

400 S

Eastbound

	Left	6
18	Thru	12
	Right	0

22

West Leg Total Volume: 34			
	Left	Thru	Right
	1	26	2

20

South Leg Total Volume: 49			
	Left	Thru	Right
		29	

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8	18	6	2	9	2	1	26	2	6	12	0
	32			13			29			18	
Trucks:		3%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		04:30 PM to 5:30 PM				Peak Vol:		92	PHF:		0.96

TRAFFIC COUNT SUMMARY

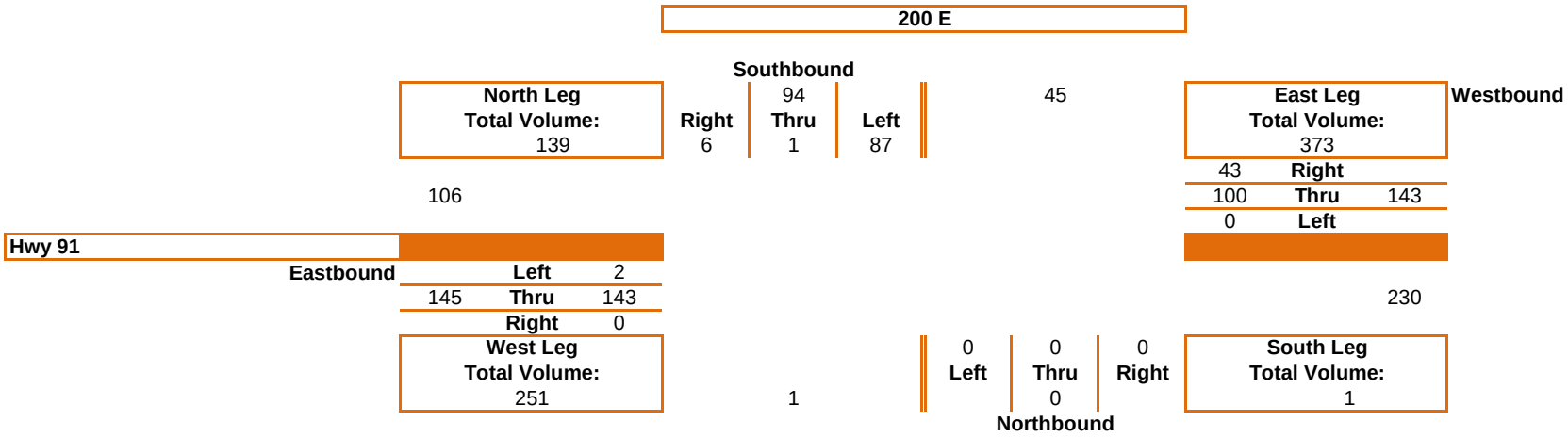
City: **Ivins, Utah**
N-S Street: **200 E**
E-W Street: **Hwy 91**
Date: **Tuesday, January 13, 2015**
Begin Time: **07:00 AM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:00 AM	07:15 AM	1	0	16	0	4	10	0	0	0	0	0	0	1	20	0	0	52	
07:15 AM	07:30 AM	0	0	19	0	7	9	0	0	0	0	0	0	0	19	1	0	55	
07:30 AM	07:45 AM	0	0	23	0	12	21	0	0	0	0	0	0	0	45	0	0	101	
07:45 AM	08:00 AM	2	0	24	0	5	16	0	0	0	0	0	0	0	47	0	0	94	302
08:00 AM	08:15 AM	1	1	15	0	12	31	0	0	0	0	0	0	0	33	0	0	93	343
08:15 AM	08:30 AM	2	0	15	0	10	28	0	0	0	0	0	0	0	29	0	0	84	372
08:30 AM	08:45 AM	1	0	33	0	16	25	0	0	0	0	0	0	0	34	2	0	111	382
08:45 AM	09:00 AM	2	0	26	0	9	16	0	0	0	0	0	0	0	38	1	0	92	380



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
87	1	6	0	100	43	0	0	0	2	143	0
	94			143			0			145	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		07:45 AM to 8:45 AM				Peak Vol:		382	PHF:		0.86

TRAFFIC COUNT SUMMARY

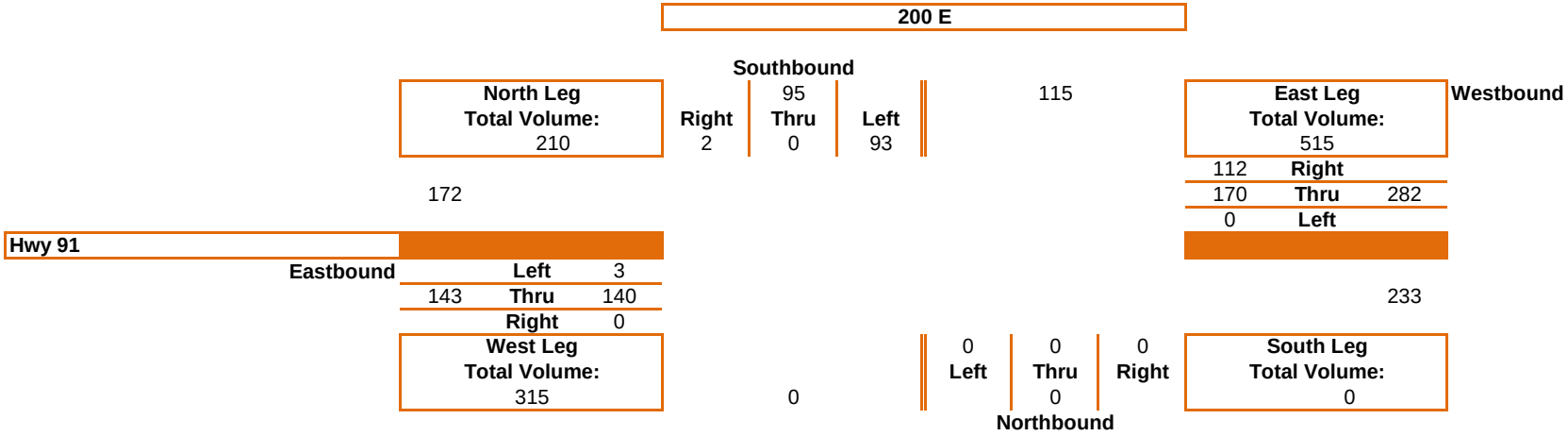
City: **Ivins, Utah**
N-S Street: **200 E**
E-W Street: **Hwy 91**
Date: **Tuesday, January 13, 2015**
Begin Time: **04:00 PM**
Interval Length: **15 min**

For Use with Jamar PetraPro Software

HORROCKS ENGINEERS

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:00 PM	04:15 PM	1	0	27	0	32	48	0	0	0	0	0	0	0	35	1	0	144	
04:15 PM	04:30 PM	0	0	21	0	31	51	0	0	0	0	0	0	0	36	2	0	141	
04:30 PM	04:45 PM	1	0	27	0	23	37	0	0	0	0	0	0	0	32	0	0	120	
04:45 PM	05:00 PM	0	0	18	0	26	34	0	0	0	0	0	0	0	37	0	0	115	520
05:00 PM	05:15 PM	0	0	21	0	27	38	0	0	0	0	0	0	0	35	0	0	121	497
05:15 PM	05:30 PM	0	0	17	0	31	41	0	0	0	0	0	0	0	31	2	0	122	478
05:30 PM	05:45 PM	1	1	17	0	28	36	0	0	0	0	0	0	0	29	0	0	112	470
05:45 PM	06:00 PM	1	0	7	0	30	33	0	0	0	0	0	0	0	30	1	0	102	457



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES												
Southbound			Westbound			Northbound			Eastbound			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
93	0	2	0	170	112	0	0	0	3	140	0	
	95			282			0			143		
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:			0%
Peak Hour:		04:00 PM to 5:00 PM				Peak Vol:		520	PHF:			0.90

TRAFFIC COUNT SUMMARY

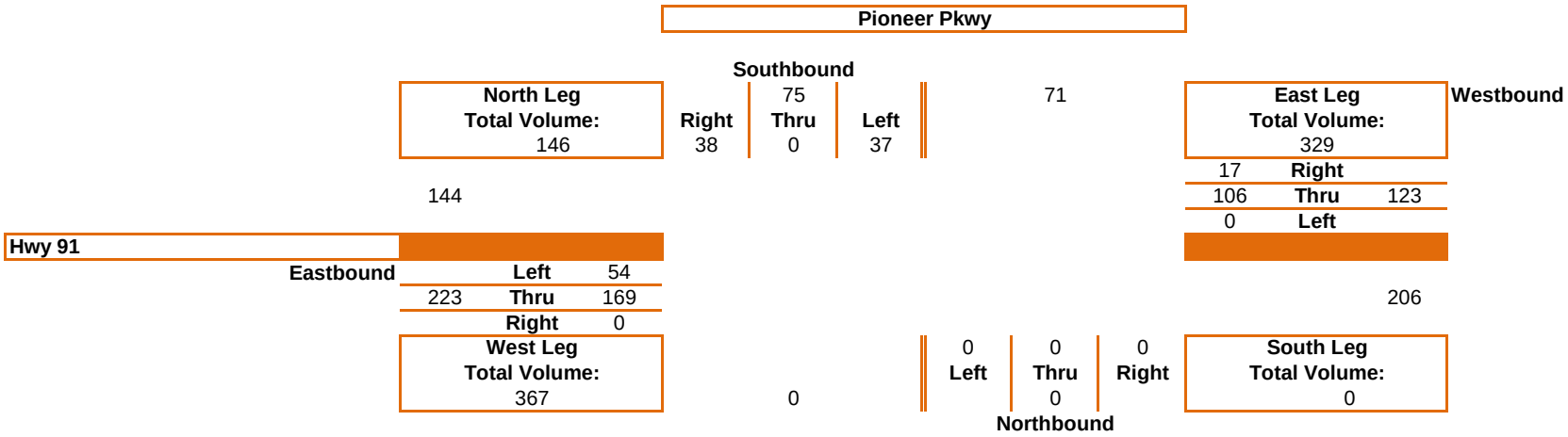
City: **Ivins, Utah**
N-S Street: **Pioneer Pkwy**
E-W Street: **Hwy 91**
Date: **Tuesday, January 13, 2015**
Begin Time: **07:00 AM**
Interval Length: **15 min**

For Use with Jamar PetraPro Software

HORROCKS ENGINEERS

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:00 AM	07:15 AM	3	0	6	0	3	16	0	0	0	0	0	0	0	27	5	0	60	
07:15 AM	07:30 AM	2	0	10	0	4	12	0	0	0	0	0	0	0	35	4	0	67	
07:30 AM	07:45 AM	14	0	9	0	8	23	0	0	0	0	0	0	0	50	6	0	110	
07:45 AM	08:00 AM	6	0	8	0	2	19	0	0	0	0	0	0	0	50	19	0	104	341
08:00 AM	08:15 AM	10	0	7	0	7	31	0	0	0	0	0	0	0	31	21	0	107	388
08:15 AM	08:30 AM	12	0	13	0	4	24	0	0	0	0	0	0	0	36	7	0	96	417
08:30 AM	08:45 AM	10	0	9	0	4	32	0	0	0	0	0	0	0	52	7	0	114	421
08:45 AM	09:00 AM	3	0	6	0	2	24	0	0	0	0	0	0	0	57	6	0	98	415



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
37	0	38	0	106	17	0	0	0	54	169	0
	75			123			0			223	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		07:45 AM to 8:45 AM				Peak Vol:		421	PHF:		0.92

TRAFFIC COUNT SUMMARY

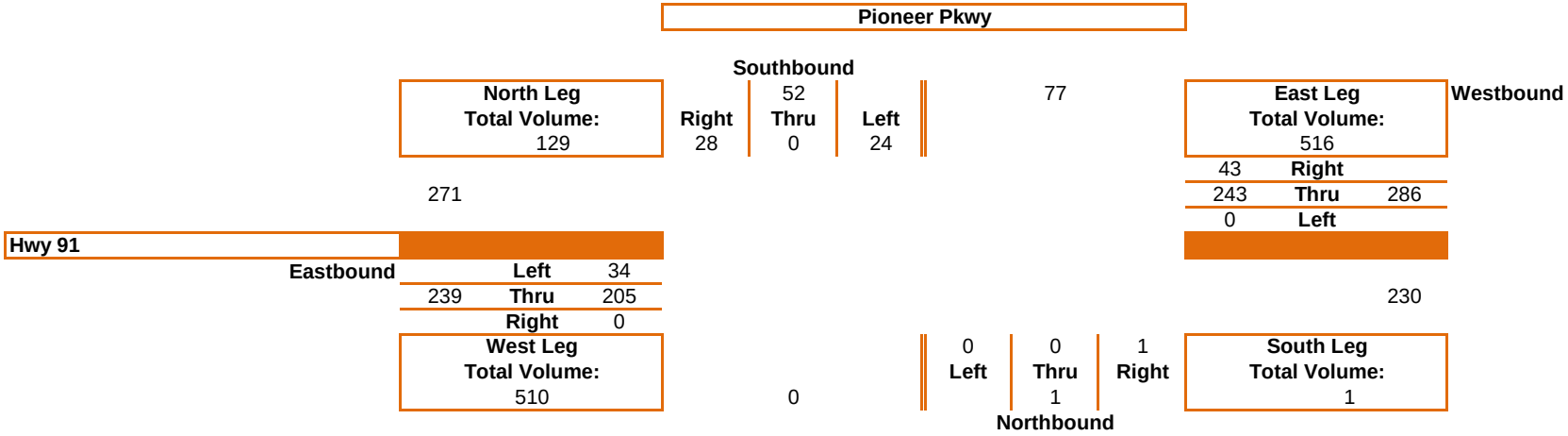
City: **Ivins, Utah**
N-S Street: **Pioneer Pkwy**
E-W Street: **Hwy 91**
Date: **Tuesday, January 13, 2015**
Begin Time: **04:00 PM**
Interval Length: **15 min**

For Use with Jamar PetraPro Software

HORROCKS ENGINEERS

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:00 PM	04:15 PM	9	0	5	0	10	68	0	0	0	0	0	0	0	59	5	0	156	
04:15 PM	04:30 PM	7	0	8	0	9	73	0	0	0	0	0	0	0	45	12	0	154	
04:30 PM	04:45 PM	6	0	7	0	14	47	0	0	1	0	0	0	0	54	9	0	138	
04:45 PM	05:00 PM	6	0	4	0	10	55	0	0	0	0	0	0	0	47	8	0	130	578
05:00 PM	05:15 PM	6	0	2	0	19	56	0	0	0	0	0	0	0	37	15	0	135	557
05:15 PM	05:30 PM	3	0	6	0	12	70	0	0	0	0	0	0	0	39	6	0	136	539
05:30 PM	05:45 PM	12	1	4	0	13	52	0	0	0	0	0	0	0	33	10	0	125	526
05:45 PM	06:00 PM	8	0	6	0	7	58	0	0	0	0	0	0	0	29	8	0	116	512



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
24	0	28	0	243	43	0	0	1	34	205	0
	52			286			1			239	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		04:00 PM to 5:00 PM				Peak Vol:		578	PHF:		0.93

TRAFFIC COUNT SUMMARY

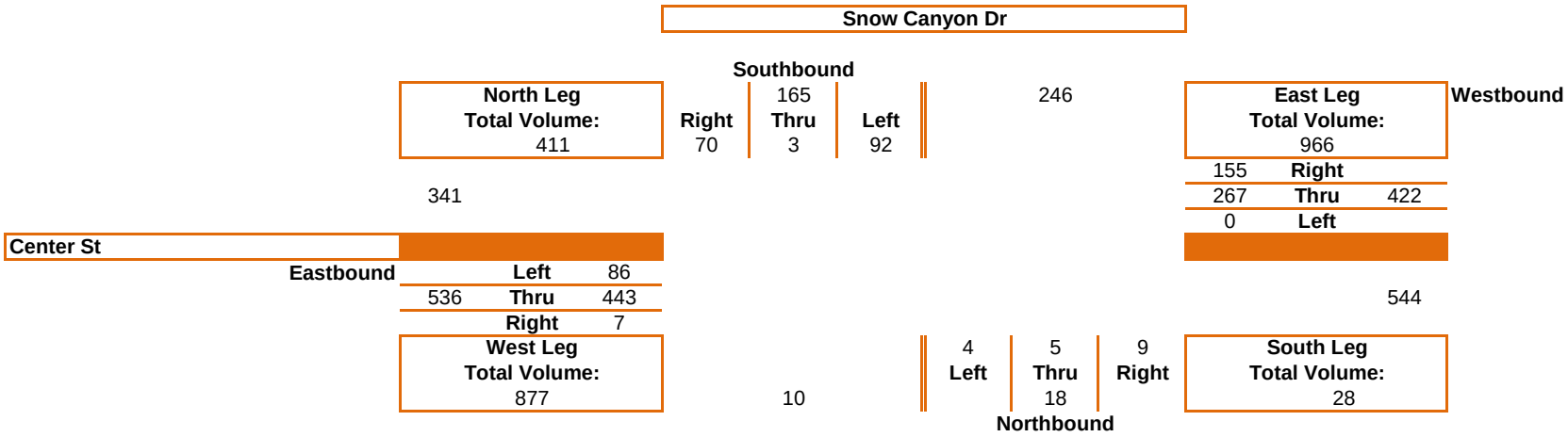
City: **Ivins, Utah**
N-S Street: **Snow Canyon Dr**
E-W Street: **Center St**
Date: **Tuesday, January 13, 2015**
Begin Time: **07:00 AM**
Interval Length: **15 min**

For Use with Jamar PetraPro Software

HORROCKS ENGINEERS

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:00 AM	07:15 AM	3	0	5	0	10	19	1	0	1	1	0	0	0	47	4	0	91	
07:15 AM	07:30 AM	1	0	5	0	14	22	1	0	2	0	0	0	1	77	6	0	129	
07:30 AM	07:45 AM	3	2	14	0	45	31	0	0	0	3	0	0	2	95	24	0	219	
07:45 AM	08:00 AM	30	0	45	0	76	48	0	0	3	1	0	0	2	104	34	0	343	782
08:00 AM	08:15 AM	25	1	19	0	20	108	0	0	4	1	4	0	1	88	14	0	285	976
08:15 AM	08:30 AM	12	0	14	0	14	80	0	0	2	0	0	0	2	156	14	0	294	1141
08:30 AM	08:45 AM	1	0	12	0	13	36	4	0	4	0	0	0	1	112	7	0	190	1112
08:45 AM	09:00 AM	4	1	15	0	10	35	0	0	4	0	0	0	0	73	7	0	149	918



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
92	3	70	0	267	155	4	5	9	86	443	7
	165			422			18			536	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		07:30 AM to 8:30 AM				Peak Vol:		1141	PHF:		0.83

TRAFFIC COUNT SUMMARY

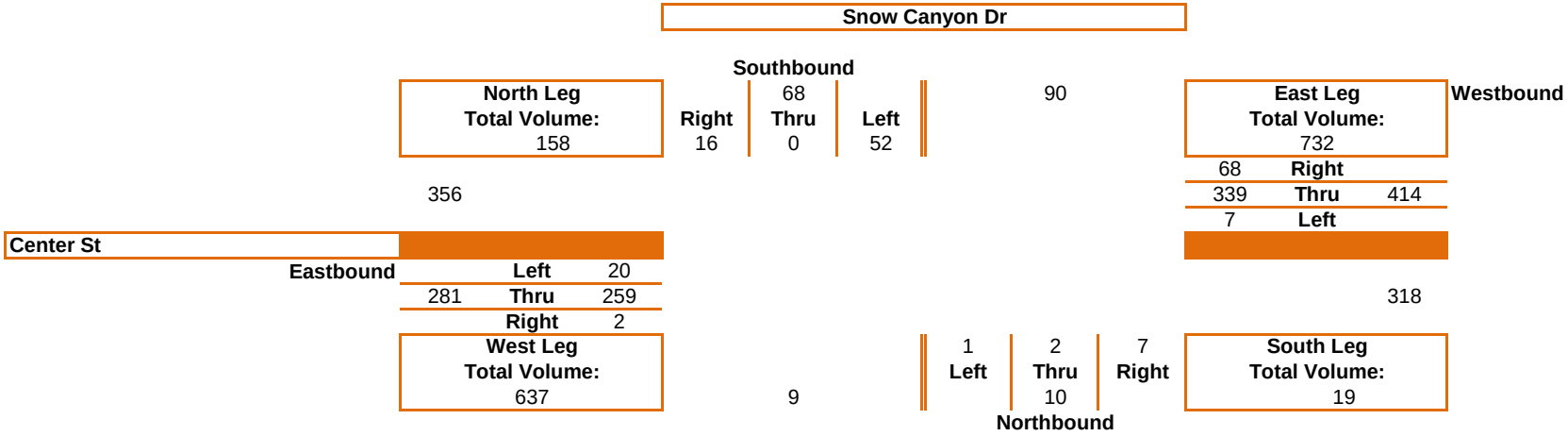
City: **Ivins, Utah**
N-S Street: **Snow Canyon Dr**
E-W Street: **Center St**
Date: **Tuesday, January 13, 2015**
Begin Time: **04:00 PM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:00 PM	04:15 PM	7	2	21	0	13	72	2	0	0	1	1	0	0	56	6	0	181	
04:15 PM	04:30 PM	9	1	10	0	6	86	0	0	1	0	0	0	0	60	4	0	177	
04:30 PM	04:45 PM	8	0	12	0	11	66	2	0	4	1	0	0	4	86	4	0	198	
04:45 PM	05:00 PM	2	0	15	0	17	60	0	0	1	0	0	0	1	79	7	0	182	738
05:00 PM	05:15 PM	8	0	14	0	15	80	2	0	3	1	0	0	0	62	3	0	188	745
05:15 PM	05:30 PM	2	0	14	0	13	107	5	0	1	0	0	0	0	45	2	0	189	757
05:30 PM	05:45 PM	4	0	9	0	23	92	0	0	2	1	1	0	1	73	8	0	214	773
05:45 PM	06:00 PM	8	0	15	0	9	74	2	0	2	0	2	0	2	45	5	0	164	755



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
52	0	16	7	339	68	1	2	7	20	259	2
	68			414			10			281	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		04:45 PM to 5:45 PM				Peak Vol:		773	PHF:		0.90

TRAFFIC COUNT SUMMARY

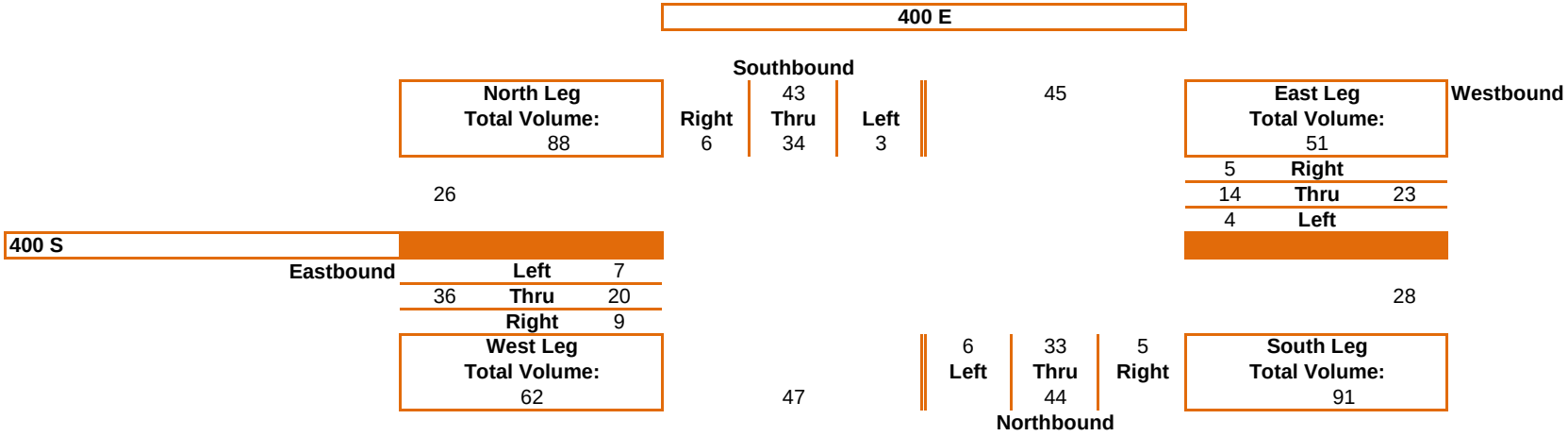
City: **Ivins, Utah**
N-S Street: **400 E**
E-W Street: **400 S**
Date: **Thursday, January 22, 2015**
Begin Time: **04:30 PM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	2	10	2	0	2	4	1	4	1	9	1	0	2	3	3	0	40	
04:45 PM	05:00 PM	1	7	0	0	3	6	1	8	1	11	2	1	2	5	1	0	40	
05:00 PM	05:15 PM	3	9	1	0	0	3	1	5	0	7	1	1	2	6	2	0	35	
05:15 PM	05:30 PM	0	8	0	0	0	1	1	3	3	6	2	0	3	6	1	0	31	146
05:30 PM	05:45 PM																	0	106
05:45 PM	06:00 PM																	0	66
06:00 PM	06:15 PM																	0	31
06:15 PM	06:30 PM																	0	0



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3	34	6	4	14	5	6	33	5	7	20	9
	43			23			44			36	
Trucks:		0%	Trucks:		87%	Trucks:		5%	Trucks:		0%
Peak Hour:		04:30 PM to 5:30 PM				Peak Vol:		146	PHF:		0.91

TRAFFIC COUNT SUMMARY

City: **Ivins, Utah**
N-S Street: **400 E**
E-W Street: **400 S**
Date: **Thursday, January 22, 2015**
Begin Time: **07:30 AM**
Interval Length: **15 min**

For Use with Jamar PetraPro Software

HORROCKS ENGINEERS

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:30 AM	07:45 AM	0	5	4	0	3	5	0	2	0	7	0	0	2	10	2	0	38	
07:45 AM	08:00 AM	0	10	4	0	2	4	0	3	4	10	0	1	1	3	1	0	39	
08:00 AM	08:15 AM	3	10	3	0	7	2	0	8	0	12	4	2	1	1	4	0	47	
08:15 AM	08:30 AM	3	30	6	0	10	1	0	2	0	27	1	0	0	1	3	0	82	206
08:30 AM	08:45 AM	0	12	3	0	4	4	0	1	1	15	0	0	2	3	5	0	49	217
08:45 AM	09:00 AM																	0	178
09:00 AM	09:15 AM																	0	131
09:15 AM	09:30 AM																	0	49

400 E

Southbound

North Leg Total Volume: 184

Right	Thru	Left
6	62	16

84

100

East Leg Total Volume: 63

Westbound

23	Right	
11	Thru	34
0	Left	

22

400 S

Eastbound

	Left	13
25	Thru	8
	Right	4

29

West Leg Total Volume: 47

66

Left	Thru	Right
5	64	5
	74	

South Leg Total Volume: 140

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
16	62	6	0	11	23	5	64	5	13	8	4
	84			34			74			25	
Trucks:		0%	Trucks:		41%	Trucks:		4%	Trucks:		0%
Peak Hour:		07:45 AM to 8:45 AM				Peak Vol:		217	PHF:		0.66

TRAFFIC COUNT SUMMARY

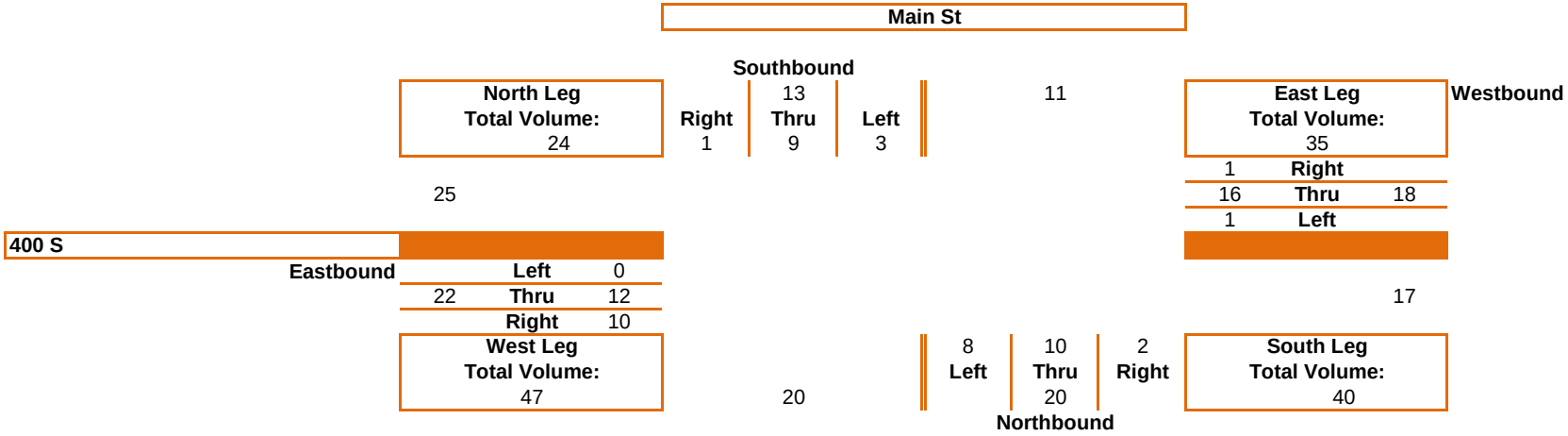
City: **Ivins, Utah**
N-S Street: **Main St**
E-W Street: **400 S**
Date: **Wednesday, January 21, 2015**
Begin Time: **07:30 AM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:30 AM	07:45 AM	0	2	0	0	1	2	0	3	2	5	3	0	1	3	1	0	20	
07:45 AM	08:00 AM	0	4	0	0	0	2	1	3	1	2	4	1	2	1	0	0	17	
08:00 AM	08:15 AM	0	2	1	0	1	2	0	3	1	3	0	0	1	3	0	0	14	
08:15 AM	08:30 AM	0	1	1	0	0	10	0	2	0	4	0	0	2	2	0	0	20	71
08:30 AM	08:45 AM	1	2	1	0	0	2	0	1	0	1	4	2	5	6	0	0	22	73
08:45 AM	09:00 AM																	0	56
09:00 AM	09:15 AM																	0	42
09:15 AM	09:30 AM																	0	22



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3	9	1	1	16	1	8	10	2	0	12	10
	13			18			20			22	
Trucks:		0%	Trucks:		50%	Trucks:		15%	Trucks:		0%
Peak Hour:		07:45 AM to 8:45 AM				Peak Vol:		73	PHF:		0.83

TRAFFIC COUNT SUMMARY

City: **Ivins, Utah**
N-S Street: **Main St** E-W Street: **400 S**
Date: **Wednesday, January 21, 2015**
Begin Time: **04:30 PM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	0	3	1	0	1	8	0	4	1	4	3	2	4	4	1	0	30	
04:45 PM	05:00 PM	0	1	0	0	1	10	2	8	2	3	7	3	3	7	0	0	36	
05:00 PM	05:15 PM	0	3	1	0	2	4	0	7	1	5	3	3	3	8	0	0	30	
05:15 PM	05:30 PM	0	4	0	0	0	5	3	9	0	5	5	0	5	4	1	0	32	128
05:30 PM	05:45 PM																	0	98
05:45 PM	06:00 PM																	0	62
06:00 PM	06:15 PM																	0	32
06:15 PM	06:30 PM																	0	0

Main St

Southbound

North Leg Total Volume: 36

Right	0	
Thru	11	13
Left	2	

23

East Leg Total Volume: 65

Westbound

4	**Right**	
27	**Thru**	36
5	**Left**	

45

400 S

Eastbound

	Left	2
40	**Thru**	23
	Right	15

29

West Leg Total Volume: 85

18	17	4
Left	**Thru**	**Right**
	39	

31

South Leg Total Volume: 70

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2	11	0	5	27	4	18	17	4	2	23	15
	13			36			39			40	
Trucks:		0%	**Trucks:**		78%	**Trucks:**		21%	**Trucks:**		0%
Peak Hour:		04:30 PM to 5:30 PM				**Peak Vol:**		128	**PHF:**		0.89

TRAFFIC COUNT SUMMARY

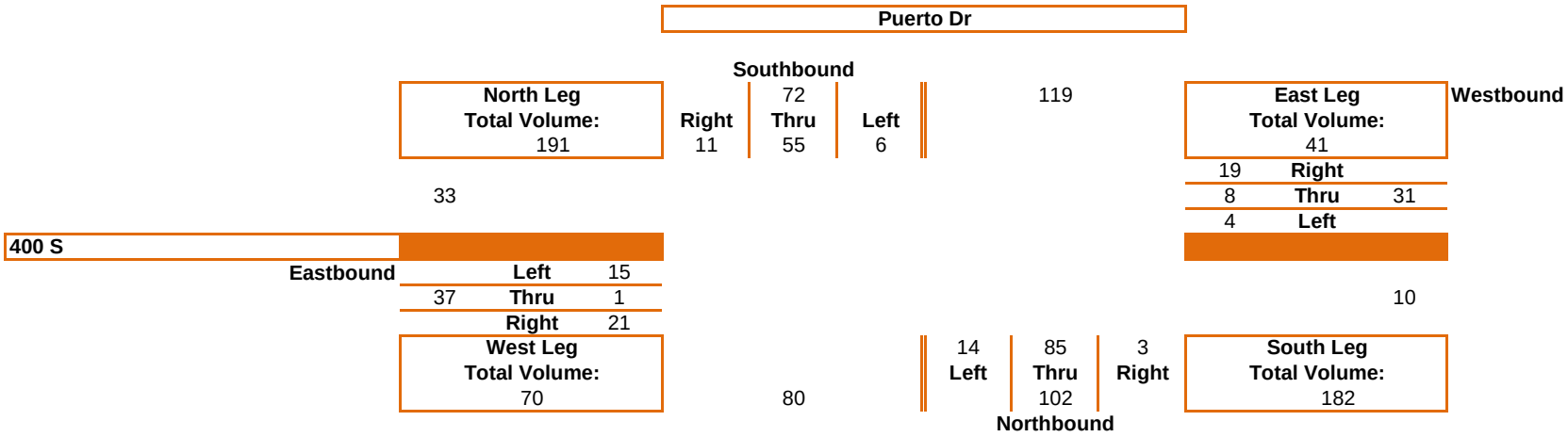
City: **Ivins, Utah**
N-S Street: **Puerto Dr**
E-W Street: **400 S**
Date: **Tuesday, January 13, 2015**
Begin Time: **07:30 AM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:30 AM	07:45 AM	3	11	1	0	4	2	0	0	1	19	3	0	10	0	1	0	55	
07:45 AM	08:00 AM	2	10	0	0	4	0	1	0	2	23	3	0	3	0	9	0	57	
08:00 AM	08:15 AM	2	15	1	0	5	1	3	0	0	25	3	0	4	0	2	0	61	
08:15 AM	08:30 AM	4	19	4	0	6	5	0	0	0	18	5	0	4	1	3	0	69	242
08:30 AM	08:45 AM	2	4	0	0	1	1	1	0	0	4	5	0	2	2	3	0	25	212
08:45 AM	09:00 AM																	0	155
09:00 AM	09:15 AM																	0	94
09:15 AM	09:30 AM																	0	25



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
6	55	11	4	8	19	14	85	3	15	1	21
	72			31			102			37	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		07:30 AM to 8:30 AM				Peak Vol:		242	PHF:		0.88

TRAFFIC COUNT SUMMARY

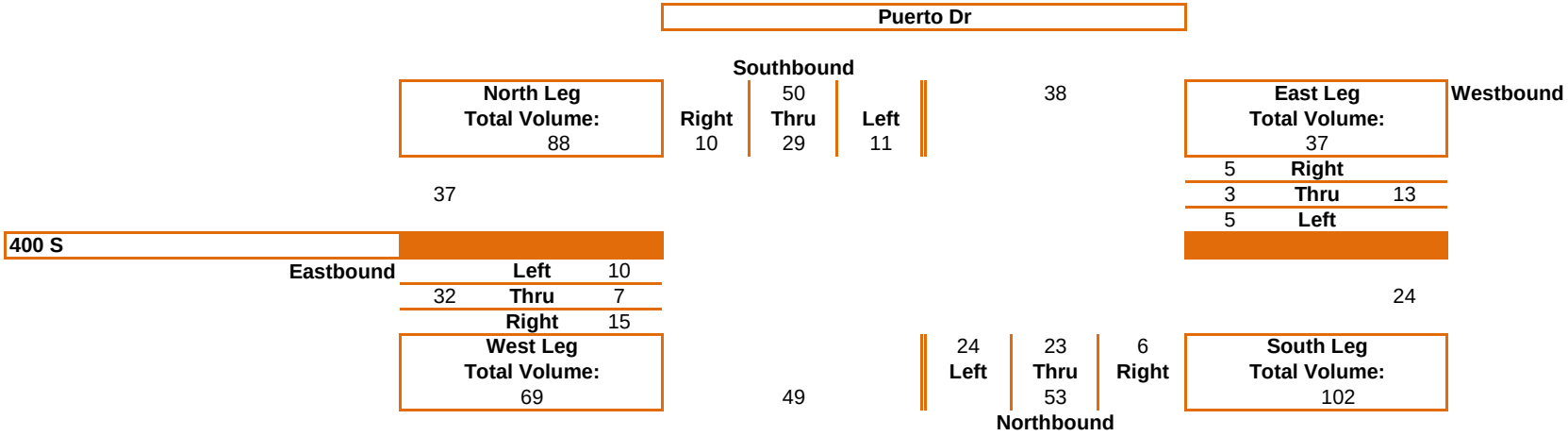
City: **Ivins, Utah**
N-S Street: **Puerto Dr**
E-W Street: **400 S**
Date: **Tuesday, January 20, 2015**
Begin Time: **04:30 PM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	2	9	7	0	1	0	2	7	0	7	9	2	5	2	5	0	49	
04:45 PM	05:00 PM	5	6	1	0	1	0	0	9	2	6	4	4	2	1	2	0	30	
05:00 PM	05:15 PM	2	7	3	0	1	2	1	10	2	5	4	0	3	1	3	0	34	
05:15 PM	05:30 PM	1	7	0	0	2	1	2	8	2	5	7	4	5	3	0	0	35	148
05:30 PM	05:45 PM																	0	99
05:45 PM	06:00 PM																	0	69
06:00 PM	06:15 PM																	0	35
06:15 PM	06:30 PM																	0	0



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES												
Southbound			Westbound			Northbound			Eastbound			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11	29	10	5	3	5	24	23	6	10	7	15	
	50			13			53			32		
Trucks:		0%	Trucks:		262%	Trucks:		19%	Trucks:			0%
Peak Hour:		04:30 PM to 5:30 PM				Peak Vol:		148	PHF:			0.76

TRAFFIC COUNT SUMMARY

City: **Ivins, Utah**
N-S Street: **Main St**
E-W Street: **Center St**
Date: **Thursday, January 15, 2015**
Begin Time: **07:30 AM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:30 AM	07:45 AM	0	1	4	0	0	19	1	0	4	1	0	0	0	36	1	0	67	
07:45 AM	08:00 AM	0	0	4	0	4	23	0	0	3	2	2	0	0	32	0	0	70	
08:00 AM	08:15 AM	0	0	1	0	4	35	4	0	9	1	1	0	1	45	0	0	101	
08:15 AM	08:30 AM	0	0	3	0	0	20	3	0	2	0	0	0	0	32	0	0	60	298
08:30 AM	08:45 AM	1	1	1	0	2	17	0	0	0	0	0	0	0	35	0	0	57	288
08:45 AM	09:00 AM																	0	218
09:00 AM	09:15 AM																	0	117
09:15 AM	09:30 AM																	0	57

Main St

Southbound

North Leg Total Volume: 26

Right	Thru	Left
0	1	12

13

13

East Leg Total Volume: 288 — **Westbound**

8	Right	
97	Thru	113
8	Left	

100

Center St

Eastbound

	Left	1
147	Thru	145
	Right	1

175

West Leg Total Volume: 247

10

Left	Thru	Right
3	4	18
	25	

South Leg Total Volume: 35

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
12	1	0	8	97	8	3	4	18	1	145	1
	13			113			25			147	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		07:30 AM to 8:30 AM				Peak Vol:		298	PHF:		0.74

TRAFFIC COUNT SUMMARY

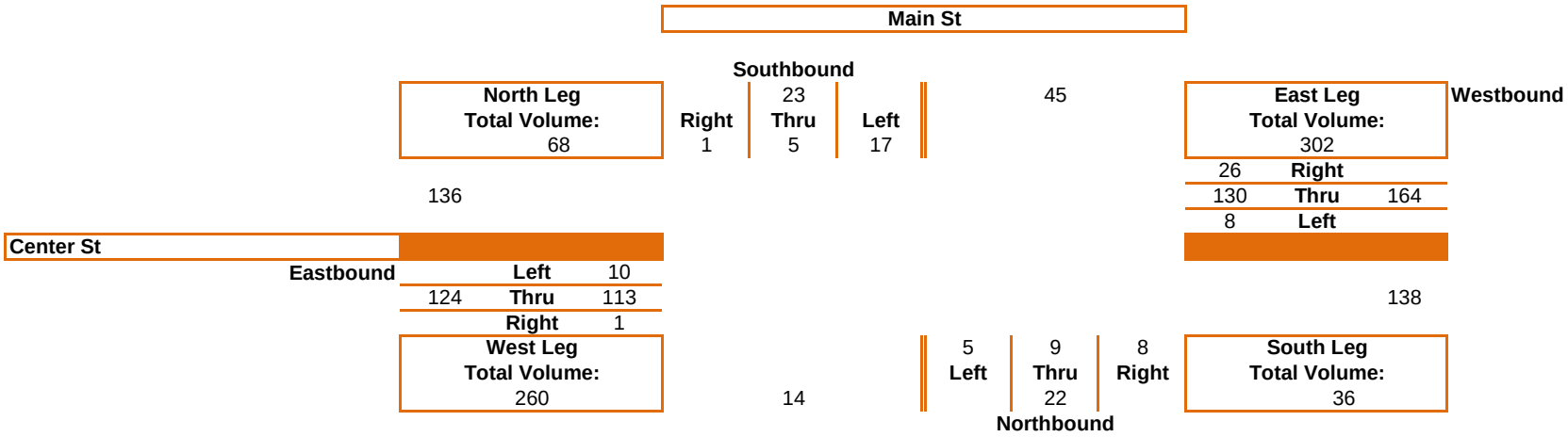
City: **Ivins, Utah**
N-S Street: **Main St**
E-W Street: **Center St**
Date: **Thursday, January 15, 2015**
Begin Time: **04:30 PM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	0	1	2	0	4	37	1	0	1	2	1	0	1	27	0	0	77	
04:45 PM	05:00 PM	0	0	5	0	4	31	2	0	1	1	0	0	0	32	0	0	76	
05:00 PM	05:15 PM	0	2	3	0	6	32	4	0	4	2	1	0	0	30	2	0	86	
05:15 PM	05:30 PM	1	2	7	0	12	30	1	0	2	4	3	0	0	24	8	0	94	333
05:30 PM	05:45 PM																	0	256
05:45 PM	06:00 PM																	0	180
06:00 PM	06:15 PM																	0	94
06:15 PM	06:30 PM																	0	0



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES												
Southbound			Westbound			Northbound			Eastbound			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	5	1	8	130	26	5	9	8	10	113	1	
23			164			22			124			
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%	
Peak Hour:		04:30 PM to 5:30 PM				Peak Vol:		333	PHF:		0.89	

TRAFFIC COUNT SUMMARY

City: **Ivins, Utah**
N-S Street: **400 W**
E-W Street: **Center St**
Date: **Thursday, January 22, 2015**
Begin Time: **07:30 AM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:30 AM	07:45 AM	0	3	4	0	6	0	2	0	6	11	0	0	0	0	2	0	34	
07:45 AM	08:00 AM	0	5	5	0	10	1	1	0	4	4	0	0	2	4	0	0	36	
08:00 AM	08:15 AM	0	5	7	0	7	1	4	0	3	4	0	0	0	2	0	0	33	
08:15 AM	08:30 AM	1	3	10	0	15	0	5	0	2	4	0	0	1	4	0	0	45	148
08:30 AM	08:45 AM	0	7	8	0	7	0	2	0	7	2	0	1	1	1	0	0	35	149
08:45 AM	09:00 AM																	0	113
09:00 AM	09:15 AM																	0	80
09:15 AM	09:30 AM																	0	35

400 W

Southbound

North Leg
Total Volume:
104

Right	Thru	Left
1	20	30

51

53

East Leg
Total Volume:
110

Westbound

39	Right	
2	Thru	53
12	Left	

3

Center St

Eastbound

	Left	0
15	Thru	11
	Right	4

57

West Leg
Total Volume:
18

36

Left	Thru	Right
0	14	16
	30	

South Leg
Total Volume:
66

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
30	20	1	12	2	39	0	14	16	0	11	4
	51			53			30			15	
Trucks:		0%	Trucks:		0%	Trucks:		3%	Trucks:		0%
Peak Hour:		07:45 AM to 8:45 AM				Peak Vol:		149	PHF:		0.83

TRAFFIC COUNT SUMMARY

City: **Ivins, Utah**
N-S Street: **400 W**
E-W Street: **Center St**
Date: **Thursday, January 22, 2015**
Begin Time: **04:30 PM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	0	5	8	0	9	1	1	0	4	8	0	0	2	0	0	0	38	
04:45 PM	05:00 PM	0	11	6	0	11	1	0	0	5	9	0	0	2	1	0	0	46	
05:00 PM	05:15 PM	0	5	10	0	2	2	2	0	4	4	0	0	0	1	1	0	31	
05:15 PM	05:30 PM	0	5	7	0	5	3	3	0	3	9	1	0	1	2	0	0	39	154
05:30 PM	05:45 PM																	0	116
05:45 PM	06:00 PM																	0	70
06:00 PM	06:15 PM																	0	39
06:15 PM	06:30 PM																	0	0

400 W

Southbound

North Leg Total Volume: 115

Right	Thru	Left
0	26	31

57

58

East Leg Total Volume: 91

Westbound

27	Right	
7	Thru	40
6	Left	

8

Center St

Eastbound

	Left	1
10	Thru	4
	Right	5

51

West Leg Total Volume: 18

37

Left	Thru	Right
1	30	16
	47	

South Leg Total Volume: 84

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
31	26	0	6	7	27	1	30	16	1	4	5
	57			40			47			10	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		04:30 PM to 5:30 PM				Peak Vol:		154	PHF:		0.84

TRAFFIC COUNT SUMMARY

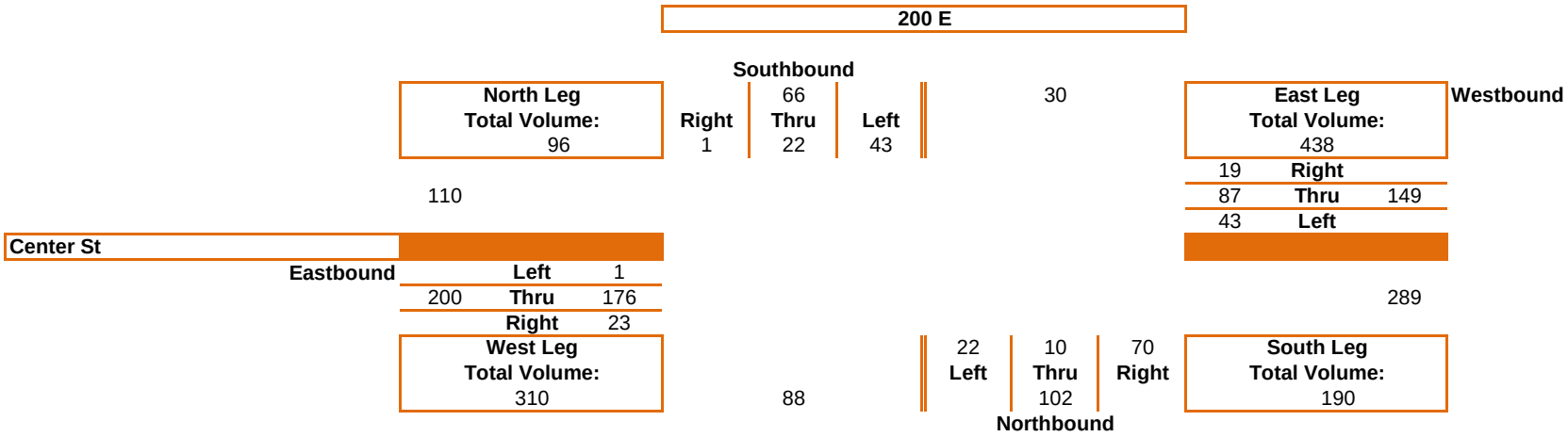
City: **Ivins, Utah**
N-S Street: **200 E**
E-W Street: **Center St**
Date: **Wednesday, January 21, 2015**
Begin Time: **07:30 AM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:30 AM	07:45 AM	0	5	11	0	5	12	2	0	20	1	3	0	7	53	1	0	120	
07:45 AM	08:00 AM	0	3	10	0	2	25	3	0	13	4	3	0	6	44	0	0	113	
08:00 AM	08:15 AM	1	6	8	0	3	21	16	0	15	3	9	0	6	42	0	0	130	
08:15 AM	08:30 AM	0	8	14	0	9	29	22	0	22	2	7	0	4	37	0	0	154	517
08:30 AM	08:45 AM	0	7	7	0	4	13	9	0	20	4	3	0	4	35	1	0	107	504
08:45 AM	09:00 AM																	0	391
09:00 AM	09:15 AM																	0	261
09:15 AM	09:30 AM																	0	107



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
43	22	1	43	87	19	22	10	70	1	176	23
	66			149			102			200	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		07:30 AM to 8:30 AM				Peak Vol:		517	PHF:		0.84

TRAFFIC COUNT SUMMARY

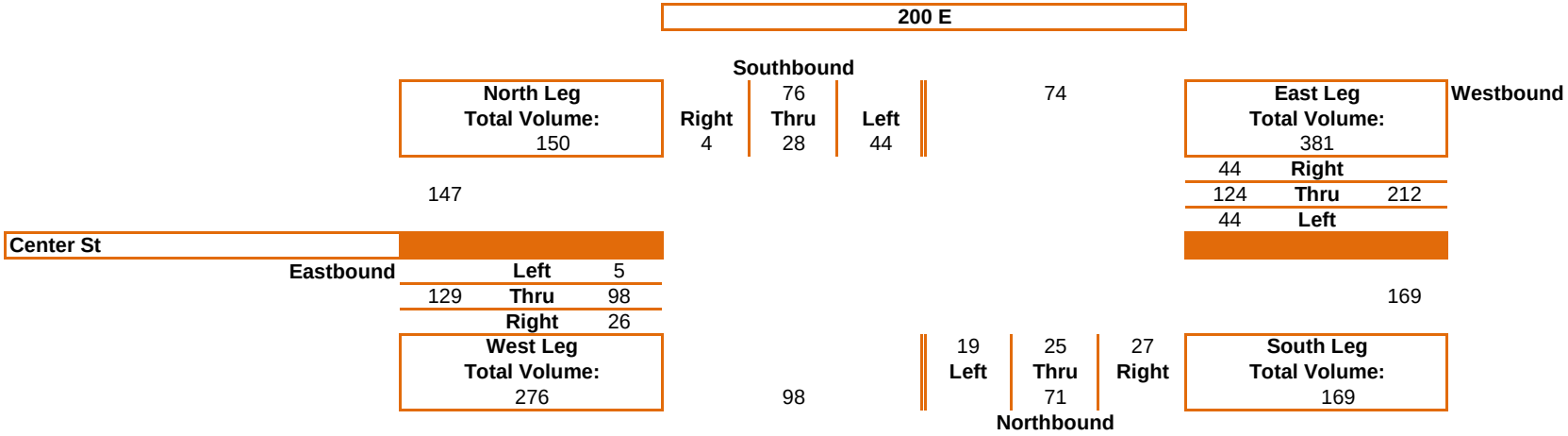
City: **Ivins, Utah**
N-S Street: **200 E**
E-W Street: **Center St**
Date: **Wednesday, January 21, 2015**
Begin Time: **04:30 PM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	1	8	14	0	5	26	4	0	12	3	5	0	3	20	1	0	102	
04:45 PM	05:00 PM	0	6	14	0	8	25	12	0	3	4	5	0	6	24	2	0	109	
05:00 PM	05:15 PM	1	8	10	0	11	35	8	0	6	7	2	0	11	23	1	0	123	
05:15 PM	05:30 PM	2	6	6	0	20	38	20	0	6	11	7	0	6	31	1	0	154	488
05:30 PM	05:45 PM																	0	386
05:45 PM	06:00 PM																	0	277
06:00 PM	06:15 PM																	0	154
06:15 PM	06:30 PM																	0	0



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES												
Southbound			Westbound			Northbound			Eastbound			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
44	28	4	44	124	44	19	25	27	5	98	26	
	76			212			71			129		
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:			0%
Peak Hour:		04:30 PM to 5:30 PM				Peak Vol:		488	PHF:			0.79

TRAFFIC COUNT SUMMARY

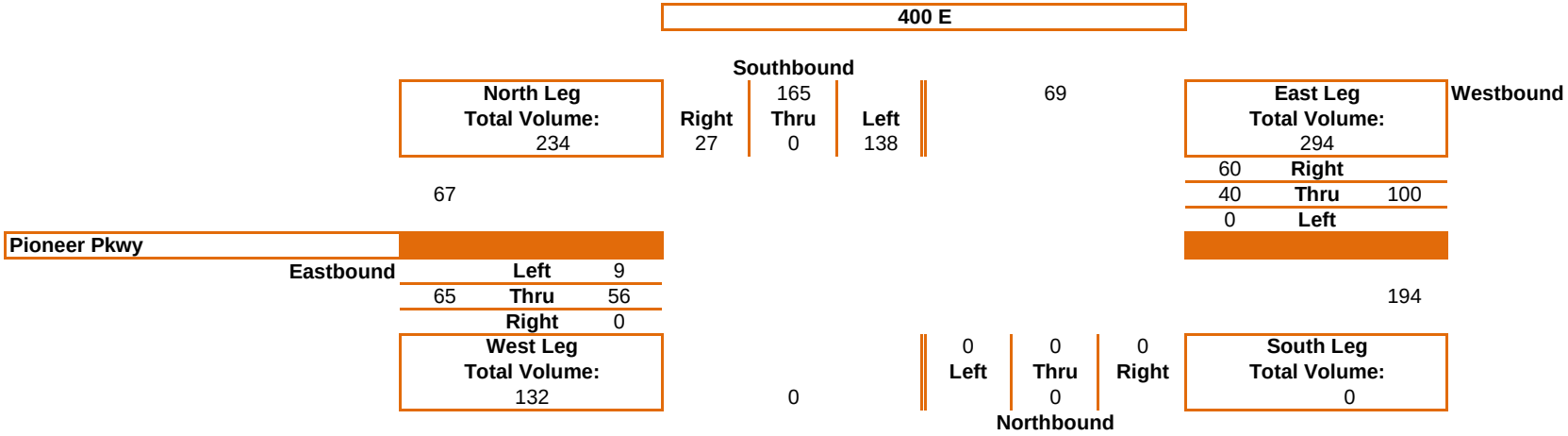
City: **Ivins, Utah**
N-S Street: **400 E**
E-W Street: **Pioneer Pkwy**
Date: **Tuesday, January 27, 2015**
Begin Time: **07:30 AM**
Interval Length: **15 min**

For Use with Jamar PetraPro Software

HORROCKS ENGINEERS

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:30 AM	07:45 AM	4	0	24	0	20	7	0	5	0	0	0	1	0	19	2	0	76	
07:45 AM	08:00 AM	7	0	35	0	7	13	0	4	0	0	0	1	0	11	2	0	75	
08:00 AM	08:15 AM	5	0	42	0	15	9	0	5	0	0	0	0	0	15	3	0	89	
08:15 AM	08:30 AM	11	0	37	0	18	11	0	4	0	0	0	1	0	11	2	0	90	330
08:30 AM	08:45 AM	8	0	16	0	5	7	0	1	0	0	0	0	0	6	4	0	46	300
08:45 AM	09:00 AM																	0	225
09:00 AM	09:15 AM																	0	136
09:15 AM	09:30 AM																	0	46



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
138	0	27	0	40	60	0	0	0	9	56	0
	165			100			0			65	
Trucks:		0%	Trucks:		18%	Trucks:		0%	Trucks:		0%
Peak Hour:		07:30 AM to 8:30 AM				Peak Vol:		330	PHF:		0.92

TRAFFIC COUNT SUMMARY

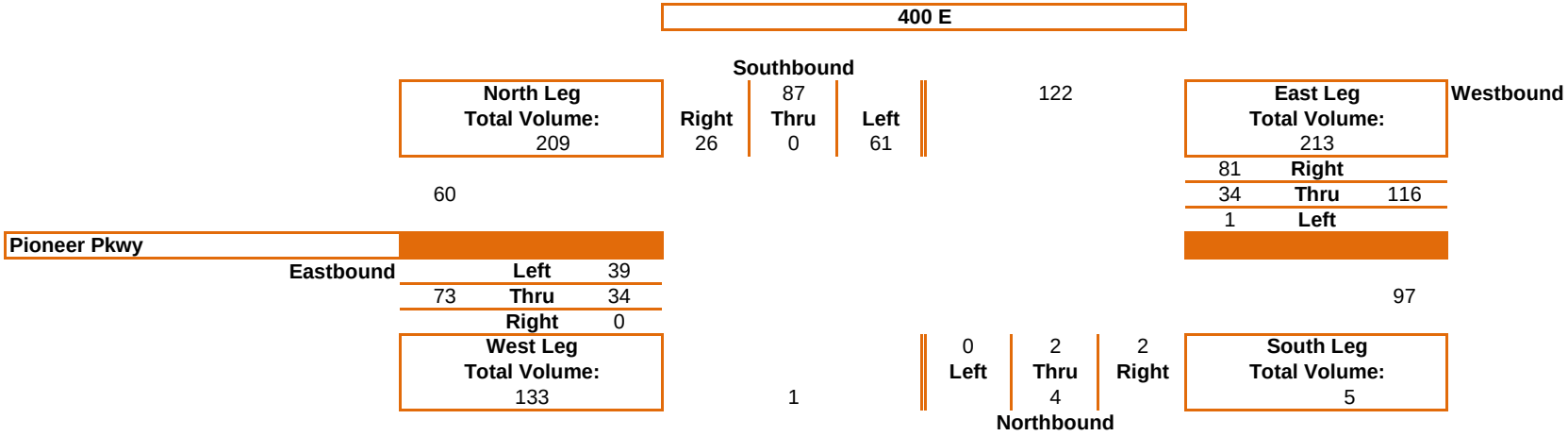
City: **Ivins, Utah**
N-S Street: **400 E**
E-W Street: **Pioneer Pkwy**
Date: **Wednesday, January 14, 2015**
Begin Time: **04:30 PM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	5	0	16	0	12	9	0	0	0	0	0	0	0	9	10	0	61	
04:45 PM	05:00 PM	6	0	13	0	15	7	0	0	0	1	0	0	0	10	5	0	57	
05:00 PM	05:15 PM	8	0	12	0	15	5	1	0	2	1	0	0	0	11	10	0	65	
05:15 PM	05:30 PM	5	0	18	0	26	14	0	0	0	0	0	0	0	7	12	0	82	265
05:30 PM	05:45 PM	7	0	18	0	25	8	0	0	0	0	0	0	0	6	12	0	76	280
05:45 PM	06:00 PM																	0	223
06:00 PM	06:15 PM																	0	158
06:15 PM	06:30 PM																	0	76



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
61	0	26	1	34	81	0	2	2	39	34	0
	87			116			4			73	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		04:45 PM to 5:45 PM				Peak Vol:		280	PHF:		0.85

TRAFFIC COUNT SUMMARY

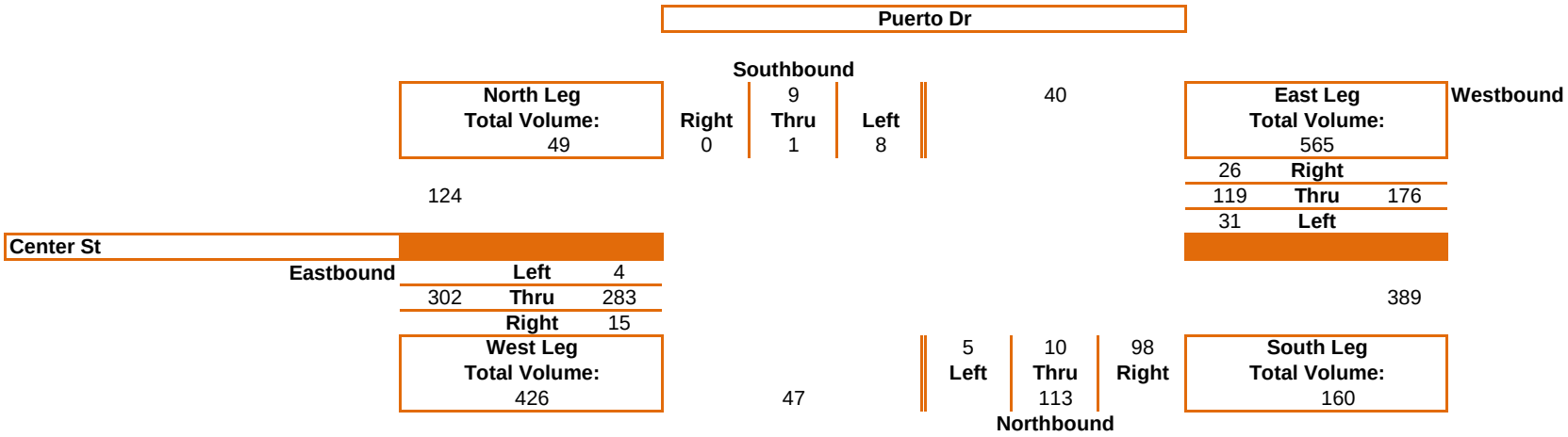
City: **Ivins, Utah**
N-S Street: **Puerto Dr**
E-W Street: **Center St**
Date: **Thursday, January 22, 2015**
Begin Time: **07:30 AM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:30 AM	07:45 AM	0	0	1	0	1	25	2	2	30	2	3	0	7	80	1	0	152	
07:45 AM	08:00 AM	0	0	1	0	6	25	6	2	30	3	1	0	3	75	1	0	151	
08:00 AM	08:15 AM	0	1	2	0	12	42	10	2	20	3	1	0	5	67	1	0	164	
08:15 AM	08:30 AM	0	0	4	0	7	27	13	1	18	2	0	0	0	61	1	0	133	600
08:30 AM	08:45 AM																	0	448
08:45 AM	09:00 AM																	0	297
09:00 AM	09:15 AM																	0	133
09:15 AM	09:30 AM																	0	0



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8	1	0	31	119	26	5	10	98	4	283	15
	9			176			113			302	
Trucks:		0%	Trucks:		4%	Trucks:		0%	Trucks:		0%
Peak Hour:		07:30 AM to 8:30 AM				Peak Vol:		600	PHF:		0.91

TRAFFIC COUNT SUMMARY

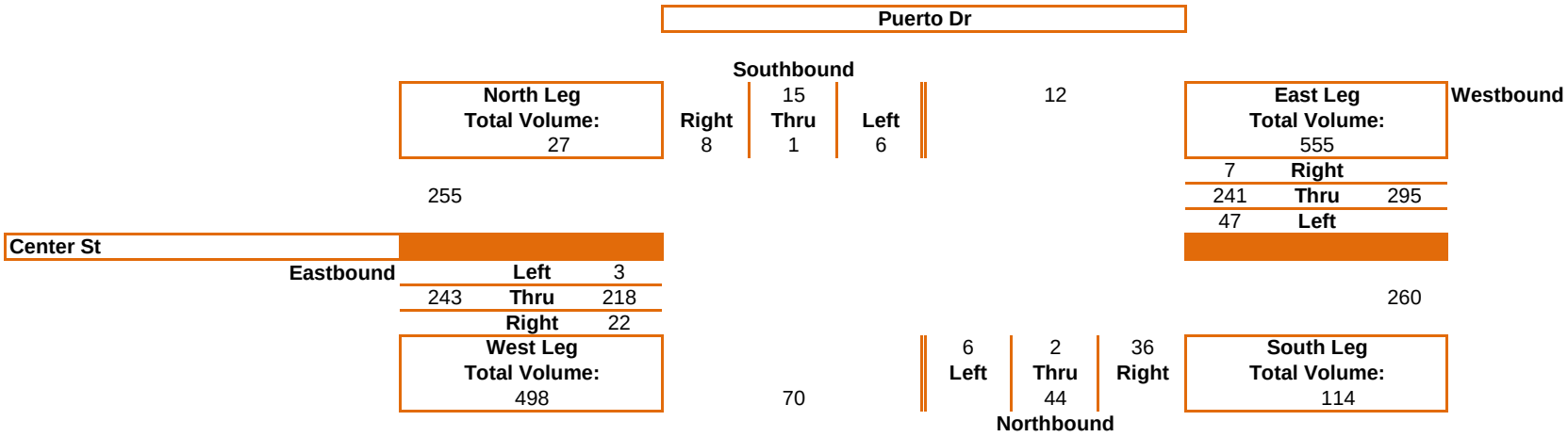
City: **Ivins, Utah**
N-S Street: **Puerto Dr**
E-W Street: **Center St**
Date: **Thursday, January 22, 2015**
Begin Time: **04:30 PM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	5	1	0	0	3	63	8	2	5	2	1	0	8	58	2	0	156	
04:45 PM	05:00 PM	3	0	4	0	3	50	16	5	14	0	1	0	6	60	1	0	158	
05:00 PM	05:15 PM	0	0	1	0	0	44	6	1	7	0	2	1	2	57	0	0	119	
05:15 PM	05:30 PM	0	0	1	0	1	84	17	3	10	0	2	0	6	43	0	0	164	597
05:30 PM	05:45 PM																	0	441
05:45 PM	06:00 PM																	0	283
06:00 PM	06:15 PM																	0	164
06:15 PM	06:30 PM																	0	0



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES												
Southbound			Westbound			Northbound			Eastbound			
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
6	1	8	47	241	7	6	2	36	3	218	22	
	15			295			44			243		
Trucks:		0%	Trucks:		4%	Trucks:		2%	Trucks:			0%
Peak Hour:		04:30 PM to 5:30 PM				Peak Vol:		597	PHF:			0.91

TRAFFIC COUNT SUMMARY

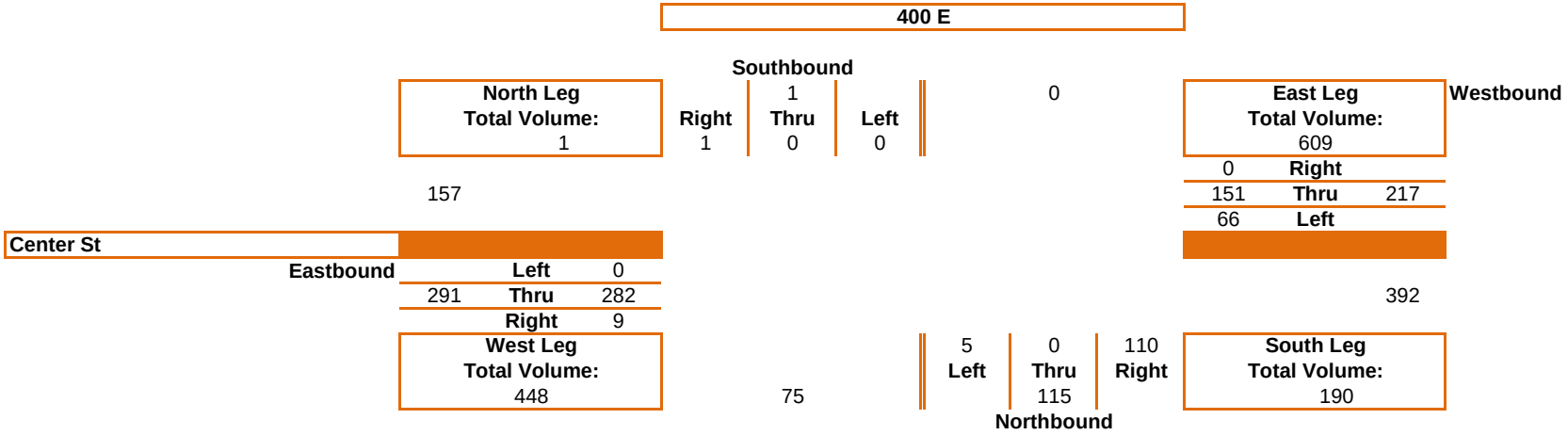
City: **Ivins, Utah**
N-S Street: **400 E**
E-W Street: **Center St**
Date: **Wednesday, January 21, 2015**
Begin Time: **07:30 AM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:30 AM	07:45 AM	1	0	0	0	0	21	1	1	20	0	1	0	4	68	0	0	116	
07:45 AM	08:00 AM	0	0	0	0	0	26	3	2	18	0	3	1	3	77	0	0	130	
08:00 AM	08:15 AM	0	0	0	0	0	37	9	6	28	0	0	0	2	52	0	0	128	
08:15 AM	08:30 AM	0	0	0	0	0	67	53	5	44	0	1	0	0	85	0	0	250	624
08:30 AM	08:45 AM	0	0	0	0	0	22	13	3	22	0	0	3	0	50	0	0	107	615
08:45 AM	09:00 AM																	0	485
09:00 AM	09:15 AM																	0	357
09:15 AM	09:30 AM																	0	107



OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
0	0	1	66	151	0	5	0	110	0	282	9
	1			217			115			291	
Trucks:		0%	Trucks:		6%	Trucks:		1%	Trucks:		0%
Peak Hour:		07:30 AM to 8:30 AM				Peak Vol:		624	PHF:		0.62

TRAFFIC COUNT SUMMARY

City: **Ivins, Utah**
N-S Street: **400 E**
E-W Street: **Center St**
Date: **Wednesday, January 21, 2015**
Begin Time: **04:30 PM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	0	0	0	0	0	41	9	0	5	0	0	1	0	36	0	0	91	
04:45 PM	05:00 PM	0	0	0	0	1	42	10	1	8	0	1	0	1	48	0	0	111	
05:00 PM	05:15 PM	0	0	0	0	0	51	13	3	16	0	2	2	2	34	0	0	118	
05:15 PM	05:30 PM	0	0	0	0	0	73	19	3	9	0	4	0	3	45	0	0	153	473
05:30 PM	05:45 PM																	0	382
05:45 PM	06:00 PM																	0	271
06:00 PM	06:15 PM																	0	153
06:15 PM	06:30 PM																	0	0

400 E

Southbound

North Leg Total Volume: 1

Right	Thru	Left
0	0	0

214

Center St

Eastbound

	Left	0
169	Thru	163
	Right	6

West Leg Total Volume: 383

57

1

Left	Thru	Right
7	0	38
	45	

Northbound

South Leg Total Volume: 102

East Leg Total Volume: 460

1	Right	
207	Thru	259
51	Left	

Westbound

201

OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
0	0	0	51	207	1	7	0	38	0	163	6
	0			259			45			169	
Trucks:		0%	Trucks:		3%	Trucks:		7%	Trucks:		0%
Peak Hour:		04:30 PM to 5:30 PM				Peak Vol:		473	PHF:		0.77

TRAFFIC COUNT SUMMARY

City: **Ivins, Utah**
N-S Street: **400 S**
E-W Street: **200 E**
Date: **Tuesday, January 20, 2015**
Begin Time: **07:30 AM**
Interval Length: **15 min**

For Use with Jamar PetraPro Software

HORROCKS ENGINEERS

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:30 AM	07:45 AM	0	17	2	0	4	0	5	0	2	22	3	0	2	3	2	0	62	
07:45 AM	08:00 AM	2	14	2	0	3	0	0	0	2	20	3	0	7	4	4	0	61	
08:00 AM	08:15 AM	3	20	0	0	1	2	3	0	0	22	2	0	7	2	8	0	70	
08:15 AM	08:30 AM	4	26	0	0	0	3	5	0	0	14	5	0	3	3	5	0	68	261
08:30 AM	08:45 AM	3	16	5	0	4	4	3	0	1	19	2	0	3	1	7	0	68	267
08:45 AM	09:00 AM																	0	206
09:00 AM	09:15 AM																	0	136
09:15 AM	09:30 AM																	0	68

400 S

Southbound

North Leg Total Volume: 202			
	Right	Thru	Left
	12	76	7

95

107

East Leg Total Volume: 48		
8	Right	
9	Thru	28
11	Left	

Westbound

33

200 E

Eastbound

	Left	24
54	Thru	10
	Right	20

20

West Leg Total Volume: 87			
	Left	Thru	Right
	12	75	3

107

South Leg Total Volume: 197			
	Left	Thru	Right
		90	

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7	76	12	11	9	8	12	75	3	24	10	20
	95			28			90			54	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		07:45 AM to 8:45 AM				Peak Vol:		267	PHF:		0.95

TRAFFIC COUNT SUMMARY

City: **Ivins, Utah**
N-S Street: **400 S**
E-W Street: **200 E**
Date: **Tuesday, January 20, 2015**
Begin Time: **04:30 PM**
Interval Length: **15 min**

For Use with Jamar PetraPro Software

HORROCKS ENGINEERS

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	6	20	3	0	4	0	3	4	4	24	2	0	1	1	5	0	73	
04:45 PM	05:00 PM	4	17	0	0	1	3	2	0	1	17	2	0	2	2	2	0	53	
05:00 PM	05:15 PM	5	21	4	0	3	4	3	0	4	21	1	0	1	7	5	0	79	
05:15 PM	05:30 PM	5	14	4	0	6	1	3	4	2	20	1	1	2	2	6	0	66	271
05:30 PM	05:45 PM																	0	198
05:45 PM	06:00 PM																	0	145
06:00 PM	06:15 PM																	0	66
06:15 PM	06:30 PM																	0	0

400 S

Southbound

North Leg Total Volume: 217

Right	Thru	Left
20	72	11

103

114

East Leg Total Volume: 67

Westbound

14	Right	
8	Thru	33
11	Left	

34

200 E

Eastbound

	Left	18
36	Thru	12
	Right	6

34

West Leg Total Volume: 70

89

Left	Thru	Right
6	82	11
	99	

South Leg Total Volume: 188

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
11	72	20	11	8	14	6	82	11	18	12	6
	103			33			99			36	
Trucks:		0%	Trucks:		24%	Trucks:		1%	Trucks:		0%
Peak Hour:		04:30 PM to 5:30 PM				Peak Vol:		271	PHF:		0.86

TRAFFIC COUNT SUMMARY

City: **Ivins, Utah**
N-S Street: **400 E**
E-W Street: **800 E**
Date: **Thursday, January 15, 2015**
Begin Time: **07:30 AM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB Right	SB Thru	SB Left	SB Trucks	WB Right	WB Thru	WB Left	WB Trucks	NB Right	NB Thru	NB Left	NB Trucks	EB Right	EB Thru	EB Left	EB Trucks	Total All Moves	Hourly Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
07:30 AM	07:45 AM	2	11	8	0	4	5	4	0	6	8	2	0	4	13	0	0	67	
07:45 AM	08:00 AM	1	23	2	0	0	1	0	0	1	12	1	0	2	2	0	0	45	
08:00 AM	08:15 AM	0	23	0	0	0	1	1	0	1	23	2	0	2	2	1	0	56	
08:15 AM	08:30 AM	1	33	0	0	1	0	0	0	0	17	1	0	0	3	2	0	58	226
08:30 AM	08:45 AM	1	17	1	0	1	1	1	0	0	8	0	0	3	3	0	0	36	195
08:45 AM	09:00 AM																	0	150
09:00 AM	09:15 AM																	0	94
09:15 AM	09:30 AM																	0	36

400 E

Southbound

North Leg
Total Volume:
172

Right	Thru	Left
4	90	10

104

68

East Leg
Total Volume:
55

Westbound

5	Right	
7	Thru	17
5	Left	

17

800 E

Eastbound

	Left	3
31	Thru	20
	Right	8

38

West Leg
Total Volume:
48

Left	Thru	Right
6	60	8
	74	

South Leg
Total Volume:
177

103

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound Left	Southbound Thru	Southbound Right	Westbound Left	Westbound Thru	Westbound Right	Northbound Left	Northbound Thru	Northbound Right	Eastbound Left	Eastbound Thru	Eastbound Right
10	90	4	5	7	5	6	60	8	3	20	8
	104			17			74			31	
Trucks:		0%	Trucks:		0%	Trucks:		0%	Trucks:		0%
Peak Hour:		07:30 AM to 8:30 AM				Peak Vol:		226	PHF:		0.84

TRAFFIC COUNT SUMMARY

City: **Ivins, Utah**
N-S Street: **400 E**
E-W Street: **800 E**
Date: **Thursday, January 15, 2015**
Begin Time: **04:30 PM**
Interval Length: **15 min**

HORROCKS ENGINEERS

For Use with Jamar PetraPro Software

Updated March 13th, 2014

Time Interval		SB				WB				NB				EB				Total	Hourly
		Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	All Moves	Totals
		2	3	4	1	6	7	8	5	10	11	12	9	14	15	16	13		
04:30 PM	04:45 PM	2	8	0	0	1	2	0	0	2	19	4	0	4	1	1	0	44	
04:45 PM	05:00 PM	1	13	1	0	0	1	0	0	0	11	0	0	1	4	1	0	33	
05:00 PM	05:15 PM	0	8	0	0	2	5	0	0	2	7	4	0	2	6	0	0	36	
05:15 PM	05:30 PM	0	8	1	0	1	5	3	0	4	19	3	0	0	4	1	0	49	162
05:30 PM	05:45 PM																	0	118
05:45 PM	06:00 PM																	0	85
06:00 PM	06:15 PM																	0	49
06:15 PM	06:30 PM																	0	0

400 E

Southbound

North Leg Total Volume: 105

Right	Thru	Left
3	37	2

42

63

East Leg Total Volume: 45

Westbound

4	**Right**	
13	**Thru**	20
3	**Left**	

27

800 E

Eastbound

	Left	3
25	**Thru**	15
	Right	7

25

West Leg Total Volume: 52

47

Left	Thru	Right
11	56	8
	75	

South Leg Total Volume: 122

Northbound

OPTIONAL Adjustment Factors	
Monthly:	1.00
Daily:	1.00
Interval:	1.00
Count:	1.00
Total:	1

ADJUSTED PEAK HOUR TRAFFIC VOLUMES

Southbound			Westbound			Northbound			Eastbound		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2	37	3	3	13	4	11	56	8	3	15	7
	42			20			75			25	
Trucks:		0%	**Trucks:**		0%	**Trucks:**		0%	**Trucks:**		0%
Peak Hour:		04:30 PM to 5:30 PM				**Peak Vol:**		162	**PHF:**		0.83

APPENDIX C
2015 Ivins City Volume Counts

Setup by: : Gubler
Location Address: : Snow Cyn Parkway near Red Mtn Spa
Weather Conditions: : Sunnry

Site: IV013
4/2/2015
Thursday

24 Hour Volume (Volume factor 0.500)

Interval Start	Westbound		Eastbound		Combined	
12:00 AM	6	20	0	14	6	34
12:15 AM	5		6		11	
12:30 AM	1		6		7	
12:45 AM	8		2		10	
1:00 AM	3	8	4	10	7	18
1:15 AM	2		3		5	
1:30 AM	2		1		3	
1:45 AM	1		2		3	
2:00 AM	2	10	1	6	3	16
2:15 AM	3		0		3	
2:30 AM	1		2		3	
2:45 AM	4		3		7	
3:00 AM	2	5	3	25	5	30
3:15 AM	2		4		6	
3:30 AM	0		6		6	
3:45 AM	1		12		13	
4:00 AM	4	27	7	63	11	90
4:15 AM	4		12		16	
4:30 AM	5		16		21	
4:45 AM	14		28		42	
5:00 AM	17	57	17	165	34	222
5:15 AM	14		35		49	
5:30 AM	8		48		56	
5:45 AM	18		65		83	
6:00 AM	24	228	32	306	56	534
6:15 AM	38		54		92	
6:30 AM	46		85		131	
6:45 AM	120		135		255	
7:00 AM	106	399	158	608	264	1007
7:15 AM	169		164		333	
7:30 AM	62		170		232	
7:45 AM	62		116		178	
8:00 AM	64	249	102	354	166	603
8:15 AM	58		90		148	
8:30 AM	79		78		157	
8:45 AM	48		84		132	
9:00 AM	68	276	94	366	162	642
9:15 AM	56		75		131	
9:30 AM	60		84		144	
9:45 AM	92		113		205	
10:00 AM	84	359	76	346	160	705
10:15 AM	87		97		184	
10:30 AM	94		82		176	
10:45 AM	94		91		185	
11:00 AM	68	348	108	410	176	758
11:15 AM	108		106		214	
11:30 AM	94		100		194	
11:45 AM	78		96		174	

Interval Start	Westbound		Eastbound		Combined	
12:00 PM	76	371	83	386	159	757
12:15 PM	96		104		200	
12:30 PM	92		94		186	
12:45 PM	107		105		212	
1:00 PM	95	451	74	385	169	836
1:15 PM	100		87		187	
1:30 PM	114		102		216	
1:45 PM	142		122		264	
2:00 PM	146	513	125	564	271	1077
2:15 PM	116		213		329	
2:30 PM	126		94		220	
2:45 PM	125		132		257	
3:00 PM	106	476	104	446	210	922
3:15 PM	143		134		277	
3:30 PM	117		100		217	
3:45 PM	110		108		218	
4:00 PM	124	541	83	368	207	909
4:15 PM	123		78		201	
4:30 PM	142		116		258	
4:45 PM	152		91		243	
5:00 PM	148	506	80	352	228	858
5:15 PM	110		109		219	
5:30 PM	120		81		201	
5:45 PM	128		82		210	
6:00 PM	180	556	68	225	248	781
6:15 PM	212		45		257	
6:30 PM	92		60		152	
6:45 PM	72		52		124	
7:00 PM	72	282	45	172	117	454
7:15 PM	75		45		120	
7:30 PM	73		54		127	
7:45 PM	62		28		90	
8:00 PM	56	216	62	154	118	370
8:15 PM	59		33		92	
8:30 PM	59		23		82	
8:45 PM	42		36		78	
9:00 PM	32	138	41	433	73	571
9:15 PM	40		124		164	
9:30 PM	40		213		253	
9:45 PM	26		55		81	
10:00 PM	34	112	45	87	79	199
10:15 PM	32		14		46	
10:30 PM	25		16		41	
10:45 PM	21		12		33	
11:00 PM	12	48	8	27	20	75
11:15 PM	16		8		24	
11:30 PM	10		4		14	
11:45 PM	10		7		17	

Volume Totals

	Westbound	Eastbound	Combined
12:00 AM - 12:00 PM	1986 (42.6%)	2673 (57.4%)	4659
12:00 PM - 12:00 AM	4210 (53.9%)	3599 (46.1%)	7809
24 Hours	6196 (49.7%)	6272 (50.3%)	12468

Peak Hours

12:00 AM - 12:00 PM

	Westbound	Eastbound	Combined
Started	6:45 AM	6:45 AM	6:45 AM
Volume	457	627	1084
Factor	0.68	0.92	0.81

12:00 PM - 12:00 AM

	Westbound	Eastbound	Combined
Started	5:30 PM	2:00 PM	1:45 PM
Volume	640	564	1084
Factor	0.75	0.66	0.82

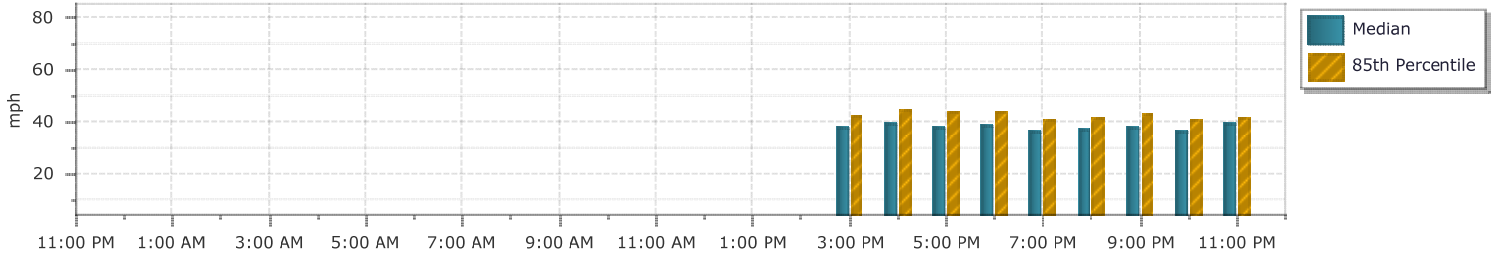
Setup by: : Gubler
Location Address: : Snow Cyn Parkway near Red Mtn Spa
Weather Conditions: : Sunnry

Site: IV013
4/1/2015
Wednesday

Speed Statistics

Sensor A

mph	AM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	PM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
Count	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	106	142	137	113	115	93	79	59	31
Minimum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22.9	23.5	16.0	2.5	23.4	23.8	23.4	21.9	19.4
Maximum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95.2	72.4	53.2	52.4	72.4	72.5	80.3	46.0	46.9
Average	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37.8	38.3	37.4	38.2	36.0	36.7	37.8	35.5	37.1
Median	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37.5	39.2	38.0	38.9	36.2	37.0	37.5	35.9	39.0
Pace Range	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32.9 - 42.9	34.8 - 44.8	34.0 - 44.0	34.1 - 44.1	31.1 - 41.1	32.4 - 42.4	33.9 - 43.9	30.9 - 40.9	32.3 - 42.3
Count	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71	92	77	73	79	68	52	38	20
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67 %	65 %	56 %	65 %	69 %	73 %	66 %	64 %	65 %
Percentiles																								
10 %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29.5	29.0	28.7	30.5	26.3	28.1	28.5	25.6	24.7
15 %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30.8	31.2	30.4	31.2	29.6	30.5	31.3	26.4	27.2
50 %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37.2	39.0	37.5	38.8	36.2	36.7	37.3	35.9	38.8
85 %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42.6	44.4	43.8	43.6	40.7	41.6	42.7	40.7	41.9
90 %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43.9	44.7	45.4	45.6	42.2	42.2	43.5	43.6	43.4
Speeds Exceeded																								
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105	140	134	112	109	90	77	56	28
																99 %	99 %	98 %	99 %	95 %	97 %	97 %	95 %	90 %
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	101	90	82	70	63	54	34	22
																66 %	71 %	66 %	73 %	61 %	68 %	68 %	58 %	71 %
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	11	16	14	5	2	6	2	3
																8.5 %	8 %	12 %	12 %	4.3 %	2.2 %	7.6 %	3.4 %	9.7 %
55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0	0	1	1	1	0	0
																0.9 %	0.7 %	0 %	0 %	0.9 %	1.1 %	1.3 %	0 %	0 %
65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0	0	1	1	1	0	0
																0.9 %	0.7 %	0 %	0 %	0.9 %	1.1 %	1.3 %	0 %	0 %
75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0	0	0	0	1	0	0
																0.9 %	0 %	0 %	0 %	0 %	0 %	1.3 %	0 %	0 %



Setup by: : Gubler
Location Address: : Old Hwy 91 near Ivins Res.
Weather Conditions: : Sunny

Site: IV014
4/7/2015
Tuesday

24 Hour Volume (Volume factor 0.500)

Interval Start	Eastbound		Westbound		Combined	
12:00 AM	0	4	1	4	1	8
12:15 AM	1		0		1	
12:30 AM	0		1		1	
12:45 AM	3		2		5	
1:00 AM	0	1	0	0	0	1
1:15 AM	0		0		0	
1:30 AM	1		0		1	
1:45 AM	0		0		0	
2:00 AM	0	0	0	0	0	0
2:15 AM	0		0		0	
2:30 AM	0		0		0	
2:45 AM	0		0		0	
3:00 AM	1	3	0	3	1	6
3:15 AM	0		2		2	
3:30 AM	1		0		1	
3:45 AM	1		1		2	
4:00 AM	0	5	0	6	0	11
4:15 AM	0		3		3	
4:30 AM	1		3		4	
4:45 AM	4		0		4	
5:00 AM	3	16	3	29	6	45
5:15 AM	2		6		8	
5:30 AM	4		4		8	
5:45 AM	7		16		23	
6:00 AM	2	31	10	25	12	56
6:15 AM	8		3		11	
6:30 AM	10		8		18	
6:45 AM	11		4		15	
7:00 AM	6	44	6	46	12	90
7:15 AM	13		10		23	
7:30 AM	11		17		28	
7:45 AM	14		13		27	
8:00 AM	9	32	14	60	23	92
8:15 AM	7		12		19	
8:30 AM	9		16		25	
8:45 AM	7		18		25	
9:00 AM	10	47	16	64	26	111
9:15 AM	14		17		31	
9:30 AM	4		22		26	
9:45 AM	19		9		28	
10:00 AM	18	76	12	85	30	161
10:15 AM	16		33		49	
10:30 AM	18		14		32	
10:45 AM	24		26		50	
11:00 AM	25	91	22	80	47	171
11:15 AM	14		28		42	
11:30 AM	28		10		38	
11:45 AM	24		20		44	

Interval Start	Eastbound		Westbound		Combined	
12:00 PM	20	86	10	56	30	142
12:15 PM	20		16		36	
12:30 PM	20		12		32	
12:45 PM	26		18		44	
1:00 PM	13	72	19	81	32	153
1:15 PM	25		16		41	
1:30 PM	20		28		48	
1:45 PM	14		18		32	
2:00 PM	31	109	11	96	42	205
2:15 PM	28		39		67	
2:30 PM	25		22		47	
2:45 PM	25		24		49	
3:00 PM	16	75	24	97	40	172
3:15 PM	24		24		48	
3:30 PM	17		21		38	
3:45 PM	18		28		46	
4:00 PM	20	100	22	66	42	166
4:15 PM	26		14		40	
4:30 PM	26		18		44	
4:45 PM	28		12		40	
5:00 PM	14	48	11	33	25	81
5:15 PM	9		11		20	
5:30 PM	13		3		16	
5:45 PM	12		8		20	
6:00 PM	7	41	10	42	17	83
6:15 PM	6		16		22	
6:30 PM	16		6		22	
6:45 PM	12		10		22	
7:00 PM	16	32	12	27	28	59
7:15 PM	6		7		13	
7:30 PM	4		3		7	
7:45 PM	6		5		11	
8:00 PM	4	16	5	18	9	34
8:15 PM	7		6		13	
8:30 PM	2		3		5	
8:45 PM	3		4		7	
9:00 PM	4	9	4	13	8	22
9:15 PM	2		4		6	
9:30 PM	3		2		5	
9:45 PM	0		3		3	
10:00 PM	1	4	2	3	3	7
10:15 PM	2		0		2	
10:30 PM	1		0		1	
10:45 PM	0		1		1	
11:00 PM	1	6	0	3	1	9
11:15 PM	1		1		2	
11:30 PM	2		2		4	
11:45 PM	2		0		2	

Volume Totals

	Eastbound	Westbound	Combined
12:00 AM - 12:00 PM	350 (46.5%)	402 (53.5%)	752
12:00 PM - 12:00 AM	598 (52.8%)	535 (47.2%)	1133
24 Hours	948 (50.3%)	937 (49.7%)	1885

Peak Hours

12:00 AM - 12:00 PM

	Eastbound	Westbound	Combined
Started	10:45 AM	10:15 AM	10:15 AM
Volume	91	95	178
Factor	0.81	0.72	0.89

12:00 PM - 12:00 AM

	Eastbound	Westbound	Combined
Started	2:00 PM	2:15 PM	2:00 PM
Volume	109	109	205
Factor	0.88	0.70	0.76

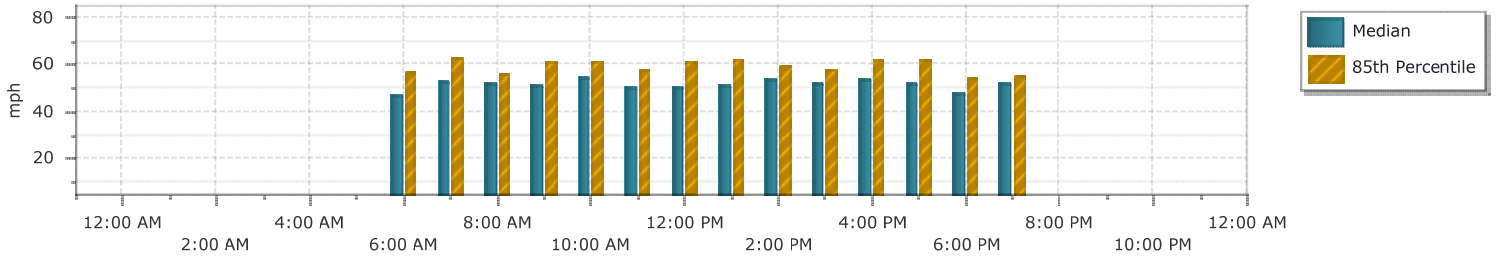
Setup by: : Gubler
Location Address: : Old Hwy 91 near Ivins Res.
Weather Conditions: : Sunny

Site: IV014
4/7/2015
Tuesday

Speed Statistics

Sensor A

mph	AM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	PM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
Count	4	1	0	3	1	13	21	34	23	32	36	46	46	39	56	43	41	38	30	26	16	9	4	6
Minimum	44.1	42.2	-	44.8	54.3	26.5	34.6	38.6	35.0	24.0	35.9	34.8	36.8	19.0	18.5	17.9	33.7	29.7	34.5	29.2	34.8	38.6	46.1	43.8
Maximum	55.4	42.2	-	72.7	54.3	63.1	72.0	68.4	70.1	73.9	63.3	85.3	90.8	102.7	148.0	70.3	71.4	69.0	62.5	78.8	77.0	66.5	54.5	57.9
Average	-	-	-	-	-	-	48.1	53.9	51.6	51.6	52.5	49.6	51.9	53.7	54.4	49.3	53.1	51.0	47.2	50.2	-	-	-	-
Median	-	-	-	-	-	-	46.9	52.9	51.7	51.1	54.0	49.8	49.7	51.0	53.7	51.5	53.7	51.9	47.3	52.1	-	-	-	-
Pace Range	-	-	-	-	-	-	43.5 - 53.5	47.9 - 57.9	47.3 - 57.3	41.9 - 51.9	46.0 - 56.0	48.6 - 58.6	39.0 - 49.0	44.5 - 54.5	46.7 - 56.7	49.8 - 59.8	49.6 - 59.6	41.2 - 51.2	38.5 - 48.5	47.8 - 57.8	-	-	-	-
Count	-	-	-	-	-	-	10	19	16	16	17	19	21	17	30	20	18	14	17	16	-	-	-	-
	-	-	-	-	-	-	48 %	56 %	70 %	50 %	47 %	41 %	46 %	44 %	54 %	47 %	44 %	37 %	57 %	62 %	-	-	-	-
Percentiles																								
10 %	-	-	-	-	-	-	35.8	42.2	38.9	38.2	40.3	37.1	39.0	35.1	42.7	33.3	37.3	33.4	38.5	33.1	-	-	-	-
15 %	-	-	-	-	-	-	35.8	45.0	39.2	41.9	41.1	39.5	40.2	39.5	44.4	36.5	39.8	39.8	39.0	35.7	-	-	-	-
50 %	-	-	-	-	-	-	45.2	52.2	51.6	50.9	52.4	49.3	48.7	50.9	52.8	50.6	53.5	51.0	45.6	50.7	-	-	-	-
85 %	-	-	-	-	-	-	57.0	62.9	55.8	61.5	61.0	57.6	61.1	62.0	59.8	58.1	61.8	62.0	54.5	55.4	-	-	-	-
90 %	-	-	-	-	-	-	57.8	64.2	58.3	62.6	62.1	59.6	63.9	67.3	64.6	59.4	62.9	64.2	58.2	55.8	-	-	-	-
Speeds Exceeded																								
25	-	-	-	-	-	-	21	34	23	31	36	46	46	38	55	41	41	38	30	26	-	-	-	-
							100 %	100 %	100 %	97 %	100 %	100 %	100 %	97 %	98 %	95 %	100 %	100 %	100 %	100 %				
35	-	-	-	-	-	-	20	34	22	30	36	45	46	37	54	39	40	35	29	24	-	-	-	-
							95 %	100 %	96 %	94 %	100 %	98 %	100 %	95 %	96 %	91 %	98 %	92 %	97 %	92 %				
45	-	-	-	-	-	-	12	29	20	25	29	29	33	29	47	32	32	26	16	19	-	-	-	-
							57 %	85 %	87 %	78 %	81 %	63 %	72 %	74 %	84 %	74 %	78 %	68 %	53 %	73 %				
55	-	-	-	-	-	-	5	14	5	12	14	12	15	15	20	16	17	14	5	6	-	-	-	-
							23.8 %	41 %	21.7 %	38 %	39 %	26 %	33 %	38 %	36 %	37 %	41 %	37 %	16.7 %	23.1 %				
65	-	-	-	-	-	-	1	3	2	3	0	3	5	5	6	3	5	3	0	2	-	-	-	-
							4.8 %	8.8 %	8.7 %	9.4 %	0 %	6.5 %	10.9 %	12.8 %	10.7 %	7.0 %	12.2 %	7.9 %	0 %	7.7 %				
75	-	-	-	-	-	-	0	0	0	0	0	1	1	3	3	0	0	0	0	1	-	-	-	-
							0 %	0 %	0 %	0 %	0 %	2.2 %	2.2 %	7.7 %	5.4 %	0 %	0 %	0 %	0 %	3.8 %				



Setup by: : Gubler
Location Address: : 30 W 400 S
Weather Conditions: : Sunnry, 65deg Hi

Site: IV11
2/26/2015
Thursday

24 Hour Volume (Volume factor 0.500)

Interval Start	EB		WB4		Combined	
12:00 AM	1	3	1	2	2	5
12:15 AM	0		1		1	
12:30 AM	2		0		2	
12:45 AM	0		0		0	
1:00 AM	0	0	0	0	0	0
1:15 AM	0		0		0	
1:30 AM	0		0		0	
1:45 AM	0		0		0	
2:00 AM	0	2	0	0	0	2
2:15 AM	0		0		0	
2:30 AM	0		0		0	
2:45 AM	2		0		2	
3:00 AM	0	0	1	1	1	1
3:15 AM	0		0		0	
3:30 AM	0		0		0	
3:45 AM	0		0		0	
4:00 AM	0	0	0	1	0	1
4:15 AM	0		0		0	
4:30 AM	0		1		1	
4:45 AM	0		0		0	
5:00 AM	0	1	0	1	0	2
5:15 AM	0		0		0	
5:30 AM	1		0		1	
5:45 AM	0		1		1	
6:00 AM	0	10	5	7	5	17
6:15 AM	2		2		4	
6:30 AM	4		0		4	
6:45 AM	4		0		4	
7:00 AM	0	18	1	12	1	30
7:15 AM	4		6		10	
7:30 AM	8		3		11	
7:45 AM	6		2		8	
8:00 AM	3	21	2	20	5	41
8:15 AM	5		4		9	
8:30 AM	9		6		15	
8:45 AM	4		8		12	
9:00 AM	6	22	6	19	12	41
9:15 AM	5		3		8	
9:30 AM	8		6		14	
9:45 AM	3		4		7	
10:00 AM	0	10	6	9	6	19
10:15 AM	3		2		5	
10:30 AM	3		1		4	
10:45 AM	4		0		4	
11:00 AM	6	20	6	21	12	41
11:15 AM	6		7		13	
11:30 AM	4		6		10	
11:45 AM	4		2		6	

Interval Start	EB		WB4		Combined	
12:00 PM	6	22	6	26	12	48
12:15 PM	4		9		13	
12:30 PM	6		3		9	
12:45 PM	6		8		14	
1:00 PM	8	25	8	30	16	55
1:15 PM	6		9		15	
1:30 PM	4		11		15	
1:45 PM	7		2		9	
2:00 PM	7	17	5	14	12	31
2:15 PM	2		3		5	
2:30 PM	3		1		4	
2:45 PM	5		5		10	
3:00 PM	5	21	6	40	11	61
3:15 PM	4		12		16	
3:30 PM	6		14		20	
3:45 PM	6		8		14	
4:00 PM	14	32	6	27	20	59
4:15 PM	5		5		10	
4:30 PM	4		8		12	
4:45 PM	9		8		17	
5:00 PM	3	30	11	31	14	61
5:15 PM	6		10		16	
5:30 PM	13		4		17	
5:45 PM	8		6		14	
6:00 PM	6	31	12	29	18	60
6:15 PM	7		4		11	
6:30 PM	10		9		19	
6:45 PM	8		4		12	
7:00 PM	3	19	4	10	7	29
7:15 PM	6		4		10	
7:30 PM	2		2		4	
7:45 PM	8		0		8	
8:00 PM	2	7	4	15	6	22
8:15 PM	1		4		5	
8:30 PM	3		3		6	
8:45 PM	1		4		5	
9:00 PM	2	10	0	9	2	19
9:15 PM	6		3		9	
9:30 PM	2		2		4	
9:45 PM	0		4		4	
10:00 PM	0	4	0	2	0	6
10:15 PM	1		0		1	
10:30 PM	2		0		2	
10:45 PM	1		2		3	
11:00 PM	1	1	0	0	1	1
11:15 PM	0		0		0	
11:30 PM	0		0		0	
11:45 PM	0		0		0	

Volume Totals

	EB	WB4	Combined
12:00 AM - 12:00 PM	107 (53.5%)	93 (46.5%)	200
12:00 PM - 12:00 AM	219 (48.5%)	233 (51.5%)	452
24 Hours	326 (50.0%)	326 (50.0%)	652

Peak Hours

12:00 AM - 12:00 PM

	EB	WB4	Combined
Started	8:15 AM	8:15 AM	8:15 AM
Volume	24	24	48
Factor	0.67	0.75	0.80

12:00 PM - 12:00 AM

	EB	WB4	Combined
Started	5:30 PM	3:00 PM	3:15 PM
Volume	34	40	70
Factor	0.65	0.71	0.88

Setup by: : Gubler
Location Address: : 30 W 400 S
Weather Conditions: : Sunnry, 65deg Hi

Site: IV11
2/26/2015
Thursday

Daily Speed

Sensor A

mph	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200	Avg.
12:00 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	23.4
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
2:00 AM	2	0	1	1	0	0	0	0	0	0	0	0	0	0	20.4
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
5:00 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	29.5
6:00 AM	6	0	2	2	1	1	0	0	0	0	0	0	0	0	24.1
7:00 AM	12	0	2	3	3	4	0	0	0	0	0	0	0	0	26.4
8:00 AM	18	1	2	6	6	3	0	0	0	0	0	0	0	0	24.7
9:00 AM	15	0	2	2	4	4	3	0	0	0	0	0	0	0	28.4
10:00 AM	7	1	2	3	1	0	0	0	0	0	0	0	0	0	19.5
11:00 AM	16	0	2	4	7	2	0	0	0	1	0	0	0	0	27.7
12:00 PM	14	0	1	4	7	2	0	0	0	0	0	0	0	0	25.5
1:00 PM	24	2	2	6	7	6	1	0	0	0	0	0	0	0	25.3
2:00 PM	17	0	2	3	4	6	2	0	0	0	0	0	0	0	27.9
3:00 PM	19	1	5	3	4	3	2	1	0	0	0	0	0	0	26.2
4:00 PM	28	1	3	6	9	7	2	0	0	0	0	0	0	0	26.4
5:00 PM	18	1	2	4	6	3	1	0	1	0	0	0	0	0	26.4
6:00 PM	25	1	2	10	8	3	1	0	0	0	0	0	0	0	24.7
7:00 PM	15	0	2	6	3	3	1	0	0	0	0	0	0	0	25.9
8:00 PM	7	0	0	1	3	3	0	0	0	0	0	0	0	0	29.3
9:00 PM	10	0	1	2	3	3	1	0	0	0	0	0	0	0	27.7
10:00 PM	2	0	0	2	0	0	0	0	0	0	0	0	0	0	22.4
11:00 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	34.5
Total	258	8	33	69	77	54	14	1	1	1	0	0	0	0	26.1
%		3.1	12.8	26.7	29.8	20.9	5.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	

Average (Mean) 26.1 mph **Minimum** 0.1 mph **Maximum** 50.7 mph **Pace Range** 22.3 - 32.3 mph 156 vehicles (60.5 %)

Percentile Speeds	10%	15%	50%	85%	90%
(mph)	18.8	19.8	26.0	31.9	33.8

Speeds Exceeded	25 mph	35 mph	45 mph	55 mph	65 mph	75 mph
	57.4 % (148)	6.6 % (17)	0.8 % (2)	0.0 % (0)	0.0 % (0)	0.0 % (0)

Setup by: : Gubler
Location Address: : 200 E @ Lightfoots ~550 S
Weather Conditions: : 70 deg Hi, Sunny

Site: IV009
2/12/2015
Thursday

24 Hour Volume, per Channel (Volume factor 0.500)

	NB/SB				
Interval Start			Interval Start		
12:00 AM	3	22	12:00 PM	66	231
12:15 AM	4		12:15 PM	46	
12:30 AM	7		12:30 PM	60	
12:45 AM	8		12:45 PM	59	
1:00 AM	1	3	1:00 PM	60	216
1:15 AM	1		1:15 PM	56	
1:30 AM	1		1:30 PM	54	
1:45 AM	0		1:45 PM	46	
2:00 AM	0	4	2:00 PM	56	193
2:15 AM	0		2:15 PM	48	
2:30 AM	2		2:30 PM	42	
2:45 AM	2		2:45 PM	47	
3:00 AM	0	4	3:00 PM	68	284
3:15 AM	1		3:15 PM	68	
3:30 AM	1		3:30 PM	88	
3:45 AM	2		3:45 PM	60	
4:00 AM	1	4	4:00 PM	66	232
4:15 AM	0		4:15 PM	52	
4:30 AM	1		4:30 PM	58	
4:45 AM	2		4:45 PM	56	
5:00 AM	3	13	5:00 PM	48	202
5:15 AM	3		5:15 PM	56	
5:30 AM	3		5:30 PM	46	
5:45 AM	4		5:45 PM	52	
6:00 AM	9	57	6:00 PM	49	209
6:15 AM	9		6:15 PM	58	
6:30 AM	18		6:30 PM	58	
6:45 AM	21		6:45 PM	44	
7:00 AM	29	138	7:00 PM	37	113
7:15 AM	39		7:15 PM	27	
7:30 AM	39		7:30 PM	22	
7:45 AM	31		7:45 PM	27	
8:00 AM	48	232	8:00 PM	24	114
8:15 AM	64		8:15 PM	28	
8:30 AM	54		8:30 PM	25	
8:45 AM	66		8:45 PM	37	
9:00 AM	52	184	9:00 PM	29	109
9:15 AM	38		9:15 PM	32	
9:30 AM	50		9:30 PM	28	
9:45 AM	44		9:45 PM	20	
10:00 AM	40	155	10:00 PM	34	61
10:15 AM	39		10:15 PM	8	
10:30 AM	38		10:30 PM	11	
10:45 AM	38		10:45 PM	8	
11:00 AM	46	217	11:00 PM	7	25
11:15 AM	51		11:15 PM	6	
11:30 AM	52		11:30 PM	9	
11:45 AM	68		11:45 PM	3	

24 Hour Total 3022

12:00 AM - 12:00 PM	
12 Hour Count	1033
Peak Hour	8:15 AM
Peak Volume	236
Factor	0.89

12:00 PM - 12:00 AM	
12 Hour Count	1989
Peak Hour	3:00 PM
Peak Volume	284
Factor	0.81

Setup by: : Gubler
Location Address: : 190 E Center Street
Weather Conditions: : Sunny 60-70 deg

Site: IV007
2/5/2015
Thursday

24 Hour Volume (Volume factor 0.500)

Interval Start	EB		WB		Combined	
12:00 AM	1	5	2	13	3	18
12:15 AM	1		7		8	
12:30 AM	3		4		7	
12:45 AM	0		0		0	
1:00 AM	1	5	3	8	4	13
1:15 AM	3		2		5	
1:30 AM	1		2		3	
1:45 AM	0		1		1	
2:00 AM	1	3	2	5	3	8
2:15 AM	1		1		2	
2:30 AM	0		2		2	
2:45 AM	1		0		1	
3:00 AM	0	3	0	2	0	5
3:15 AM	2		1		3	
3:30 AM	0		1		1	
3:45 AM	1		0		1	
4:00 AM	0	15	0	2	0	17
4:15 AM	4		1		5	
4:30 AM	6		0		6	
4:45 AM	5		1		6	
5:00 AM	6	36	0	3	6	39
5:15 AM	10		0		10	
5:30 AM	6		2		8	
5:45 AM	14		1		15	
6:00 AM	8	44	4	19	12	63
6:15 AM	10		3		13	
6:30 AM	16		3		19	
6:45 AM	10		9		19	
7:00 AM	26	148	8	69	34	217
7:15 AM	28		20		48	
7:30 AM	50		30		80	
7:45 AM	44		11		55	
8:00 AM	45	209	32	116	77	325
8:15 AM	62		40		102	
8:30 AM	46		23		69	
8:45 AM	56		21		77	
9:00 AM	50	176	36	114	86	290
9:15 AM	48		22		70	
9:30 AM	34		38		72	
9:45 AM	44		18		62	
10:00 AM	38	130	22	114	60	244
10:15 AM	26		28		54	
10:30 AM	34		28		62	
10:45 AM	32		36		68	
11:00 AM	46	165	27	117	73	282
11:15 AM	39		37		76	
11:30 AM	32		33		65	
11:45 AM	48		20		68	

Interval Start	EB		WB		Combined	
12:00 PM	32	149	34	169	66	318
12:15 PM	38		48		86	
12:30 PM	40		42		82	
12:45 PM	39		45		84	
1:00 PM	32	149	26	129	58	278
1:15 PM	39		45		84	
1:30 PM	42		30		72	
1:45 PM	36		28		64	
2:00 PM	46	160	44	156	90	316
2:15 PM	38		36		74	
2:30 PM	37		40		77	
2:45 PM	39		36		75	
3:00 PM	35	148	29	178	64	326
3:15 PM	28		50		78	
3:30 PM	50		45		95	
3:45 PM	35		54		89	
4:00 PM	20	141	39	167	59	308
4:15 PM	51		42		93	
4:30 PM	40		38		78	
4:45 PM	30		48		78	
5:00 PM	40	129	44	174	84	303
5:15 PM	39		50		89	
5:30 PM	28		44		72	
5:45 PM	22		36		58	
6:00 PM	24	158	36	132	60	290
6:15 PM	46		32		78	
6:30 PM	34		29		63	
6:45 PM	54		35		89	
7:00 PM	34	74	42	118	76	192
7:15 PM	18		38		56	
7:30 PM	12		21		33	
7:45 PM	10		17		27	
8:00 PM	13	39	30	79	43	118
8:15 PM	12		15		27	
8:30 PM	4		18		22	
8:45 PM	10		16		26	
9:00 PM	10	27	28	61	38	88
9:15 PM	11		11		22	
9:30 PM	4		15		19	
9:45 PM	2		7		9	
10:00 PM	3	10	13	38	16	48
10:15 PM	3		8		11	
10:30 PM	2		7		9	
10:45 PM	2		10		12	
11:00 PM	6	16	8	31	14	47
11:15 PM	4		12		16	
11:30 PM	6		7		13	
11:45 PM	0		4		4	

Volume Totals

	EB	WB	Combined
12:00 AM - 12:00 PM	939 (61.7%)	582 (38.3%)	1521
12:00 PM - 12:00 AM	1200 (45.6%)	1432 (54.4%)	2632
24 Hours	2139 (51.5%)	2014 (48.5%)	4153

Peak Hours

12:00 AM - 12:00 PM

	EB	WB	Combined
Started	8:15 AM	10:45 AM	8:15 AM
Volume	214	133	334
Factor	0.86	0.90	0.82

12:00 PM - 12:00 AM

	EB	WB	Combined
Started	6:15 PM	3:15 PM	3:30 PM
Volume	168	188	336
Factor	0.78	0.87	0.88

Setup by: : Gubler
Location Address: : 190 E Center Street
Weather Conditions: : Sunny 60-70 deg

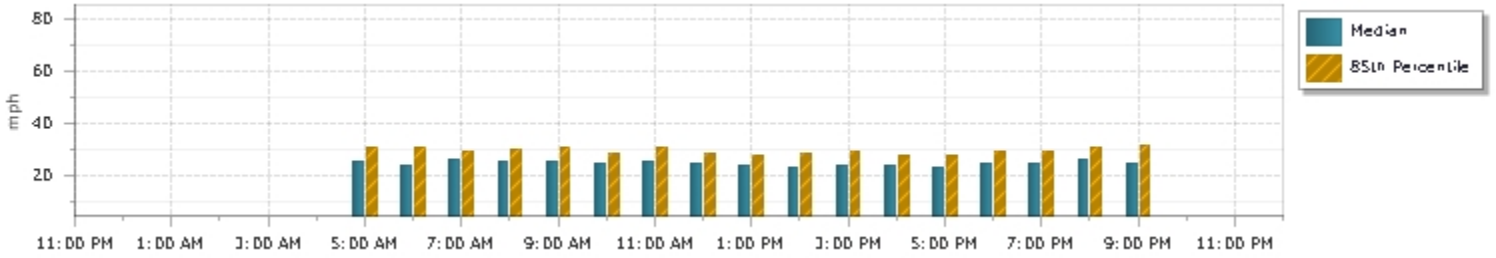
Site: IV007
2/5/2015
Thursday

Speed Statistics

Sensor A

mph

	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
Count	5	5	3	2	13	24	33	108	107	92	81	91	89	93	99	85	88	86	72	47	33	24	10	14
Minimum	23.9	18.3	24.2	23.8	18.6	17.2	11.3	10.6	7.9	6.0	14.7	15.1	7.5	9.9	7.3	12.7	9.4	10.5	7.0	16.6	16.8	16.8	20.1	20.0
Maximum	31.2	27.2	33.3	24.3	33.9	37.8	52.5	54.5	36.3	48.7	54.4	59.5	46.5	32.7	43.6	45.5	50.3	38.6	38.5	34.5	64.2	37.8	31.7	34.1
Average	-	-	-	-	-	26.0	26.1	25.7	25.3	26.0	24.5	26.3	24.1	23.6	23.8	24.2	24.0	23.6	24.3	25.3	27.8	24.9	-	-
Median	-	-	-	-	-	25.8	24.4	26.0	25.5	25.5	24.5	25.9	24.9	23.8	23.6	24.4	24.1	23.4	24.5	25.0	26.6	24.8	-	-
Pace Range	-	-	-	-	-	17.2 - 27.2	20.1 - 30.1	19.7 - 29.7	22.2 - 32.2	19.1 - 29.1	19.1 - 29.1	20.1 - 30.1	18.7 - 28.7	18.1 - 28.1	19.8 - 29.8	17.8 - 27.8	18.2 - 28.2	20.0 - 30.0	18.5 - 28.5	20.3 - 30.3	21.5 - 31.5	16.8 - 26.8	-	-
Count	-	-	-	-	-	15	21	85	75	62	63	68	65	73	73	57	62	66	49	41	28	15	-	-
	-	-	-	-	-	63 %	64 %	79 %	70 %	67 %	78 %	75 %	73 %	78 %	74 %	67 %	70 %	77 %	68 %	87 %	85 %	63 %	-	-
Percentiles																								
10 %	-	-	-	-	-	19.2	18.1	20.2	18.2	19.2	18.0	20.3	17.2	18.1	16.7	16.3	16.2	17.0	18.2	19.5	21.7	17.1	-	-
15 %	-	-	-	-	-	19.6	18.5	20.8	19.8	19.7	19.5	21.2	18.3	18.9	18.4	18.2	17.8	18.3	18.5	20.4	22.4	17.6	-	-
50 %	-	-	-	-	-	24.6	24.2	25.9	25.5	25.2	24.3	25.8	24.8	23.7	23.4	24.4	24.1	23.3	24.0	24.9	26.2	23.6	-	-
85 %	-	-	-	-	-	30.7	30.8	29.5	30.4	31.2	28.3	30.9	28.3	27.7	28.7	29.5	28.2	28.2	29.8	29.7	30.9	31.3	-	-
90 %	-	-	-	-	-	32.1	31.5	31.3	31.4	32.5	29.0	31.3	29.3	28.8	29.7	30.7	31.3	29.3	30.5	30.0	31.2	32.1	-	-
Speeds Exceeded																								
25	-	-	-	-	-	12	16	61	60	48	36	52	42	38	37	34	40	31	31	23	21	11	-	-
						50 %	48 %	56 %	56 %	52 %	44 %	57 %	47 %	41 %	37 %	40 %	45 %	36 %	43 %	49 %	64 %	46 %		
35	-	-	-	-	-	2	2	1	2	5	1	4	1	0	1	1	4	1	1	0	1	1	-	-
						8.3 %	6.1 %	0.9 %	1.9 %	5.4 %	1.2 %	4.4 %	1.1 %	0 %	1.0 %	1.2 %	4.5 %	1.2 %	1.4 %	0 %	3.0 %	4.2 %		
45	-	-	-	-	-	0	1	1	0	2	1	2	1	0	0	1	1	0	0	0	1	0	-	-
						0 %	3.0 %	0.9 %	0 %	2.2 %	1.2 %	2.2 %	1.1 %	0 %	0 %	1.2 %	1.1 %	0 %	0 %	0 %	3.0 %	0 %		
55	-	-	-	-	-	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	-	-
						0 %	0 %	0 %	0 %	0 %	0 %	1.1 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	3.0 %	0 %		
65	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
						0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %		
75	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
						0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %		



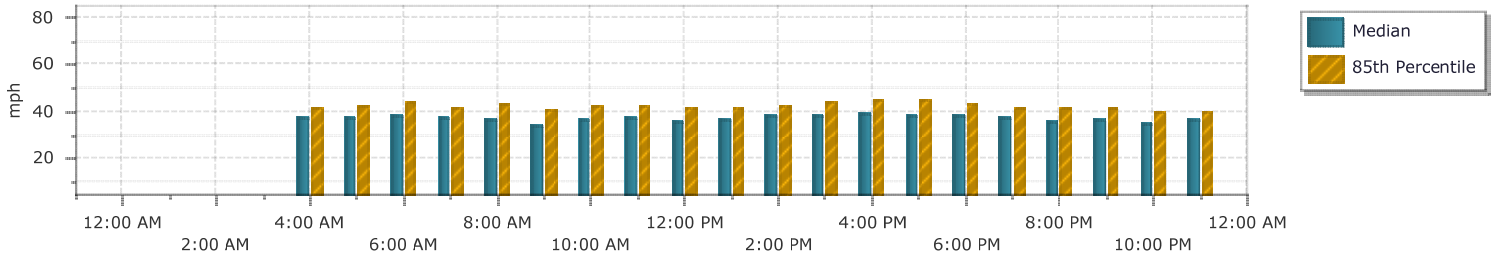
Setup by: : Gubler
Location Address: : Snow Cyn Parkway near Red Mtn Spa
Weather Conditions: : Sunnry

Site: IV013
4/2/2015
Thursday

Speed Statistics

Sensor A

mph	AM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	PM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
Count	18	8	8	3	24	47	91	122	122	135	123	134	139	131	141	128	126	124	121	124	107	93	81	42
Minimum	23.0	17.6	26.7	33.2	25.3	24.2	13.9	20.5	13.7	16.2	16.2	18.4	15.2	22.7	22.7	14.7	21.8	21.8	23.1	20.2	23.2	18.3	22.8	22.2
Maximum	101.0	48.0	45.8	50.9	43.0	51.7	56.8	48.8	54.5	86.8	96.9	50.6	50.3	69.3	83.3	80.8	55.8	65.5	93.2	55.1	48.0	67.6	68.0	54.8
Average	-	-	-	-	36.7	36.1	37.3	36.5	36.0	35.1	37.3	36.3	35.0	36.9	37.8	38.5	39.0	38.9	38.3	36.9	36.0	36.0	35.9	35.7
Median	-	-	-	-	37.6	37.3	37.9	37.4	36.2	34.1	36.2	37.1	35.3	36.5	38.0	38.0	38.7	38.5	38.0	37.1	35.7	36.4	35.0	36.7
Pace Range	-	-	-	-	32.8 - 42.8	30.1 - 40.1	30.6 - 40.6	32.5 - 42.5	30.5 - 40.5	31.5 - 41.5	30.8 - 40.8	34.1 - 44.1	31.2 - 41.2	30.9 - 40.9	31.7 - 41.7	33.2 - 43.2	35.4 - 45.4	33.3 - 43.3	32.2 - 42.2	33.1 - 43.1	33.3 - 43.3	32.9 - 42.9	30.0 - 40.0	29.8 - 39.8
Count	-	-	-	-	19	26	52	78	71	82	87	81	83	91	97	78	79	78	79	81	69	58	56	25
	-	-	-	-	79 %	55 %	57 %	64 %	58 %	61 %	71 %	60 %	60 %	69 %	69 %	61 %	63 %	63 %	65 %	65 %	64 %	62 %	69 %	60 %
Percentiles																								
10 %	-	-	-	-	26.0	27.5	28.1	28.0	25.7	27.0	29.4	27.6	26.1	29.5	30.7	29.6	31.0	31.0	30.9	29.2	27.5	27.4	28.8	27.1
15 %	-	-	-	-	26.9	28.4	30.6	29.7	27.4	28.8	31.7	28.9	27.5	31.1	31.8	31.7	32.9	32.6	32.5	30.8	29.6	28.9	29.7	27.9
50 %	-	-	-	-	37.2	36.2	37.8	37.3	36.1	34.0	36.1	37.1	35.2	36.4	37.8	37.9	38.7	38.4	37.9	37.0	35.7	36.3	34.9	36.1
85 %	-	-	-	-	41.5	42.3	44.3	41.9	43.0	40.9	42.1	42.8	41.2	42.0	42.1	44.3	45.1	44.9	43.6	41.7	41.7	41.7	39.9	39.8
90 %	-	-	-	-	41.6	43.1	46.0	43.0	44.1	41.7	44.8	43.7	42.6	43.6	44.6	46.2	46.0	46.1	44.9	42.9	43.3	42.2	42.3	43.2
Speeds Exceeded																								
25	-	-	-	-	24	46	88	119	112	127	122	128	130	127	138	126	123	121	119	121	104	90	79	40
					100 %	98 %	97 %	98 %	92 %	94 %	99 %	96 %	94 %	97 %	98 %	98 %	98 %	98 %	98 %	98 %	97 %	97 %	98 %	95 %
35	-	-	-	-	17	26	60	76	70	61	74	83	76	83	91	93	96	95	86	80	62	55	41	24
					71 %	55 %	66 %	62 %	57 %	45 %	60 %	62 %	55 %	63 %	65 %	73 %	76 %	77 %	71 %	65 %	58 %	59 %	51 %	57 %
45	-	-	-	-	0	2	13	6	11	7	12	9	10	10	12	19	22	18	13	10	5	4	4	3
					0 %	4.3 %	14 %	4.9 %	9 %	5.2 %	10 %	6.7 %	7 %	8 %	9 %	15 %	17 %	15 %	11 %	8 %	4.7 %	4.3 %	4.9 %	7.1 %
55	-	-	-	-	0	0	1	0	0	2	2	0	0	1	3	4	1	2	1	1	0	2	1	0
					0 %	0 %	1.1 %	0 %	0 %	1.5 %	1.6 %	0 %	0 %	0.8 %	2.1 %	3.1 %	0.8 %	1.6 %	0.8 %	0.8 %	0 %	2.2 %	1.2 %	0 %
65	-	-	-	-	0	0	0	0	0	1	2	0	0	1	2	1	0	1	1	0	0	1	1	0
					0 %	0 %	0 %	0 %	0 %	0.7 %	1.6 %	0 %	0 %	0.8 %	1.4 %	0.8 %	0 %	0.8 %	0.8 %	0 %	0 %	1.1 %	1.2 %	0 %
75	-	-	-	-	0	0	0	0	0	1	2	0	0	0	1	1	0	0	1	0	0	0	0	0
					0 %	0 %	0 %	0 %	0 %	0.7 %	1.6 %	0 %	0 %	0 %	0.7 %	0.8 %	0 %	0 %	0.8 %	0 %	0 %	0 %	0 %	0 %



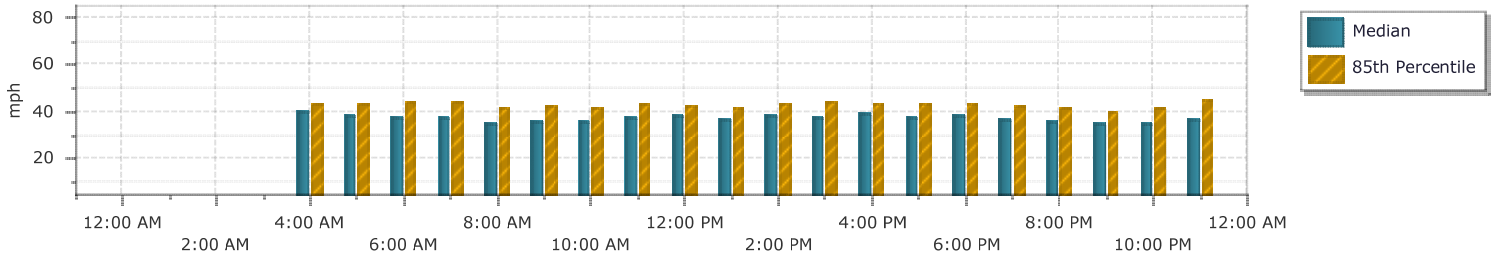
Setup by: : Gubler
Location Address: : Snow Cyn Parkway near Red Mtn Spa
Weather Conditions: : Sunnry

Site: IV013
4/3/2015
Friday

Speed Statistics

Sensor A

mph	AM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	PM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
Count	18	14	9	10	24	40	103	99	128	122	126	134	134	128	136	133	127	116	115	125	104	104	75	46
Minimum	27.9	27.9	27.3	30.9	24.0	25.3	18.6	16.1	21.3	20.7	14.7	25.6	15.7	21.2	24.6	22.1	22.0	23.9	12.6	16.0	23.3	20.4	16.3	21.8
Maximum	48.6	72.3	50.7	47.6	44.7	52.3	54.2	78.2	70.7	52.7	51.5	53.2	73.7	71.8	52.3	73.2	51.6	70.1	50.7	48.7	48.4	48.7	53.1	54.8
Average	-	-	-	-	38.5	36.9	37.2	37.8	35.7	35.4	35.8	37.6	37.1	36.6	37.9	37.3	38.4	37.8	37.5	36.2	35.1	34.8	36.1	37.2
Median	-	-	-	-	40.2	38.2	37.4	37.4	35.1	35.5	36.0	37.6	37.8	36.3	38.4	37.3	38.7	37.5	38.2	36.5	35.5	34.8	35.0	36.3
Pace Range	-	-	-	-	33.9 - 43.9	33.6 - 43.6	28.9 - 38.9	35.6 - 45.6	31.5 - 41.5	31.0 - 41.0	31.8 - 41.8	30.6 - 40.6	32.6 - 42.6	32.4 - 42.4	32.3 - 42.3	32.5 - 42.5	34.1 - 44.1	31.4 - 41.4	33.0 - 43.0	31.6 - 41.6	28.8 - 38.8	30.8 - 40.8	31.7 - 41.7	27.4 - 37.4
Count	-	-	-	-	17	25	52	54	76	74	83	84	86	85	94	75	82	72	76	79	68	70	52	27
	-	-	-	-	71 %	63 %	50 %	55 %	59 %	61 %	66 %	63 %	64 %	66 %	69 %	56 %	65 %	62 %	66 %	63 %	65 %	67 %	69 %	59 %
Percentiles																								
10 %	-	-	-	-	30.2	28.4	28.3	28.7	27.5	26.2	27.3	30.0	29.0	28.9	31.0	28.5	31.0	29.7	30.0	27.9	28.1	26.9	28.7	27.7
15 %	-	-	-	-	32.0	29.6	29.2	29.7	28.5	27.4	29.7	31.6	30.3	30.6	32.4	29.4	32.3	31.4	31.8	30.1	29.3	27.6	30.8	29.4
50 %	-	-	-	-	39.4	38.0	37.4	37.2	35.0	35.2	35.9	37.5	37.5	36.3	38.2	37.1	38.7	37.4	38.1	36.5	35.3	34.6	34.9	36.1
85 %	-	-	-	-	43.6	43.1	44.3	44.2	41.6	42.5	41.5	43.2	42.5	41.5	43.0	44.3	43.7	43.6	43.0	42.2	41.2	40.1	41.5	44.7
90 %	-	-	-	-	43.7	43.3	45.3	45.5	43.2	43.7	42.2	44.9	43.4	42.2	44.2	45.5	44.8	47.0	43.8	42.9	42.0	41.4	42.6	45.7
Speeds Exceeded																								
25	-	-	-	-	23	40	100	95	122	112	120	134	129	126	135	131	125	113	110	119	101	100	73	45
					96 %	100 %	97 %	96 %	95 %	92 %	95 %	100 %	96 %	98 %	99 %	98 %	98 %	97 %	96 %	95 %	97 %	96 %	97 %	98 %
35	-	-	-	-	18	24	62	64	66	66	76	87	84	81	100	82	93	74	81	74	53	49	38	29
					75 %	60 %	60 %	65 %	52 %	54 %	60 %	65 %	63 %	63 %	74 %	62 %	73 %	64 %	70 %	59 %	51 %	47 %	51 %	63 %
45	-	-	-	-	0	3	13	11	8	9	8	14	9	5	9	17	12	17	9	6	2	2	5	7
					0 %	7.5 %	13 %	11 %	6.3 %	7.4 %	6.3 %	10 %	6.7 %	3.9 %	6.6 %	13 %	9 %	15 %	7.8 %	4.8 %	1.9 %	1.9 %	6.7 %	15.2 %
55	-	-	-	-	0	0	0	2	2	0	0	0	1	1	0	2	0	3	0	0	0	0	0	0
					0 %	0 %	0 %	2.0 %	1.6 %	0 %	0 %	0 %	0.7 %	0.8 %	0 %	1.5 %	0 %	2.6 %	0 %	0 %	0 %	0 %	0 %	0 %
65	-	-	-	-	0	0	0	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0	0	0
					0 %	0 %	0 %	1.0 %	0.8 %	0 %	0 %	0 %	0.7 %	0.8 %	0 %	0.8 %	0 %	0.9 %	0 %	0 %	0 %	0 %	0 %	0 %
75	-	-	-	-	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
					0 %	0 %	0 %	1.0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %



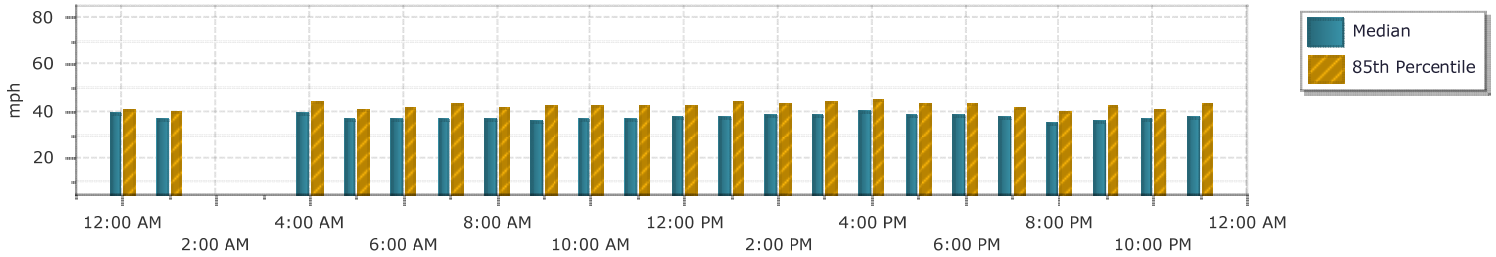
Setup by: : Gubler
Location Address: : Snow Cyn Parkway near Red Mtn Spa
Weather Conditions: : Sunnry

Site: IV013
4/4/2015
Saturday

Speed Statistics

Sensor A

mph	AM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	PM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
Count	22	23	6	11	31	38	68	99	127	143	123	139	123	119	130	115	128	134	108	106	121	87	68	47
Minimum	18.4	25.7	29.3	28.2	26.9	18.8	15.1	15.4	21.5	14.1	21.6	13.0	16.9	14.0	22.7	15.1	26.2	23.3	26.5	21.3	18.4	23.7	20.7	20.2
Maximum	45.6	46.9	45.3	45.5	51.4	56.5	53.7	54.7	76.7	73.7	72.4	49.9	50.2	51.1	77.9	72.2	95.0	53.6	56.9	100.8	58.4	59.5	68.1	47.6
Average	35.3	35.5	-	-	39.2	35.5	35.8	36.7	35.8	36.1	36.7	36.0	36.7	37.2	38.6	38.0	40.3	38.4	38.1	37.7	35.1	35.6	37.0	37.4
Median	38.8	36.6	-	-	38.7	36.4	36.3	36.2	36.1	36.0	36.8	36.6	37.3	37.3	37.9	38.0	40.2	38.2	38.2	37.3	34.7	35.8	36.7	37.0
Pace Range	32.1 - 42.1	31.7 - 41.7	-	-	36.3 - 46.3	31.2 - 41.2	31.8 - 41.8	33.8 - 43.8	31.6 - 41.6	32.2 - 42.2	31.3 - 41.3	32.2 - 42.2	33.3 - 43.3	30.0 - 40.0	33.4 - 43.4	34.4 - 44.4	35.6 - 45.6	34.1 - 44.1	34.5 - 44.5	32.0 - 42.0	30.3 - 40.3	30.2 - 40.2	31.0 - 41.0	32.3 - 42.3
Count	12	16	-	-	24	27	47	60	75	80	85	84	85	71	85	74	86	97	72	78	78	47	48	32
	55 %	70 %	-	-	77 %	71 %	69 %	61 %	59 %	56 %	69 %	60 %	69 %	60 %	65 %	64 %	67 %	72 %	67 %	74 %	64 %	54 %	71 %	68 %
Percentiles																								
10 %	24.6	26.9	-	-	29.3	27.8	27.1	27.5	26.0	26.5	29.4	27.7	27.8	29.5	28.8	29.2	31.1	31.0	30.3	29.5	27.9	26.1	29.9	28.0
15 %	25.0	27.1	-	-	32.0	29.4	29.8	30.8	27.0	27.9	31.3	29.1	30.6	30.7	31.0	31.4	33.9	32.9	30.8	32.0	29.2	27.3	31.0	32.3
50 %	36.3	35.7	-	-	38.5	34.6	36.1	36.2	35.9	36.0	36.6	36.5	37.3	37.3	37.7	37.5	40.0	38.1	38.0	37.1	34.6	35.5	36.4	36.5
85 %	41.1	39.6	-	-	44.0	40.8	41.2	43.6	41.3	42.3	42.2	42.3	42.1	44.0	43.4	43.9	45.3	43.1	43.4	41.5	40.3	42.1	41.0	43.0
90 %	42.1	40.1	-	-	44.4	41.1	43.0	44.9	43.9	43.7	42.7	43.3	42.8	46.0	45.2	45.2	46.7	44.0	44.1	42.9	42.5	43.1	43.0	44.7
Speeds Exceeded																								
25	20	23	-	-	31	37	63	96	120	137	119	136	118	113	128	112	128	133	108	104	117	81	67	45
	91 %	100 %			100 %	97 %	93 %	97 %	94 %	96 %	97 %	98 %	96 %	95 %	98 %	97 %	100 %	99 %	100 %	98 %	97 %	93 %	99 %	96 %
35	13	14	-	-	26	19	41	61	71	81	80	82	82	77	94	81	107	99	78	69	55	46	42	32
	59 %	61 %			84 %	50 %	60 %	62 %	56 %	57 %	65 %	59 %	67 %	65 %	72 %	70 %	84 %	74 %	72 %	65 %	45 %	53 %	62 %	68 %
45	1	1	-	-	3	1	3	10	9	12	5	9	7	16	15	13	22	11	9	7	6	5	5	5
	4.5 %	4.3 %			9.7 %	2.6 %	4.4 %	10 %	7.1 %	8 %	4.1 %	6.5 %	5.7 %	13 %	12 %	11 %	17 %	8 %	8.3 %	6.6 %	5.0 %	5.7 %	7.4 %	10.6 %
55	0	0	-	-	0	1	0	0	1	1	1	0	0	0	3	1	1	0	1	1	1	1	1	0
	0 %	0 %			0 %	2.6 %	0 %	0 %	0.8 %	0.7 %	0.8 %	0 %	0 %	0 %	2.3 %	0.9 %	0.8 %	0 %	0.9 %	0.9 %	0.8 %	1.1 %	1.5 %	0 %
65	0	0	-	-	0	0	0	0	1	1	1	0	0	0	3	1	1	0	0	1	0	0	1	0
	0 %	0 %			0 %	0 %	0 %	0 %	0.8 %	0.7 %	0.8 %	0 %	0 %	0 %	2.3 %	0.9 %	0.8 %	0 %	0 %	0.9 %	0 %	0 %	1.5 %	0 %
75	0	0	-	-	0	0	0	0	1	0	0	0	0	0	2	0	1	0	0	1	0	0	0	0
	0 %	0 %			0 %	0 %	0 %	0 %	0.8 %	0 %	0 %	0 %	0 %	0 %	1.5 %	0 %	0.8 %	0 %	0 %	0.9 %	0 %	0 %	0 %	0 %



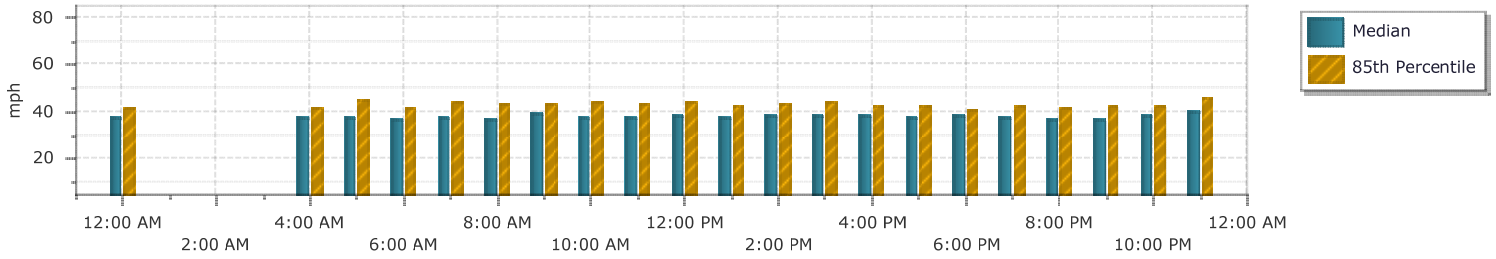
Setup by: : Gubler
Location Address: : Snow Cyn Parkway near Red Mtn Spa
Weather Conditions: : Sunnry

Site: IV013
4/5/2015
Sunday

Speed Statistics

Sensor A

mph	AM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	PM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
Count	35	13	8	9	38	42	108	74	107	96	119	119	136	123	124	117	112	106	82	85	74	60	37	26
Minimum	25.8	21.5	27.2	38.3	23.1	21.4	16.0	23.7	25.6	25.6	14.9	21.4	18.3	16.8	8.6	22.5	19.7	23.3	23.5	16.6	22.8	24.0	24.6	26.7
Maximum	46.8	41.1	46.5	50.7	47.5	67.5	82.6	54.9	76.8	51.4	114.0	59.9	75.4	78.9	71.2	48.6	73.9	68.7	46.8	49.6	51.3	46.3	59.4	73.5
Average	36.3	-	-	-	35.7	37.5	36.7	37.5	38.1	37.9	38.8	37.3	38.2	37.5	37.8	37.9	37.2	37.8	37.1	36.9	36.3	35.8	37.9	40.0
Median	37.1	-	-	-	37.3	37.2	36.3	37.6	36.7	39.1	37.7	37.7	38.3	37.3	37.9	38.6	37.8	37.5	38.1	37.1	36.5	36.1	38.0	40.2
Pace Range	32.7 - 42.7	-	-	-	30.2 - 40.2	29.2 - 39.2	29.9 - 39.9	30.1 - 40.1	30.0 - 40.0	32.4 - 42.4	33.3 - 43.3	31.9 - 41.9	31.9 - 41.9	32.7 - 42.7	33.2 - 43.2	34.7 - 44.7	32.6 - 42.6	32.8 - 42.8	32.4 - 42.4	34.3 - 44.3	33.7 - 43.7	30.2 - 40.2	34.2 - 44.2	36.8 - 46.8
Count	23	-	-	-	22	20	74	44	69	56	71	80	84	85	84	75	68	68	66	54	50	36	23	17
	66 %	-	-	-	58 %	48 %	69 %	59 %	64 %	58 %	60 %	67 %	62 %	69 %	68 %	64 %	61 %	64 %	80 %	64 %	68 %	60 %	62 %	65 %
Percentiles																								
10 %	26.5	-	-	-	25.9	26.6	29.2	26.9	30.3	29.4	29.8	27.8	30.3	29.2	30.1	28.8	28.2	30.5	30.3	29.1	28.2	27.5	25.6	27.7
15 %	28.2	-	-	-	26.8	27.9	30.3	30.2	31.4	31.1	30.8	31.2	31.9	31.9	32.2	31.5	30.0	31.2	32.5	29.6	30.4	29.0	30.3	27.8
50 %	36.8	-	-	-	36.6	36.2	36.1	37.5	36.7	38.9	37.4	37.6	38.1	37.3	37.9	38.2	37.7	37.4	37.9	37.0	36.2	35.9	37.9	39.6
85 %	41.7	-	-	-	41.7	45.0	41.3	44.0	43.7	43.6	43.9	43.2	43.9	42.5	43.0	43.8	42.5	42.7	41.1	42.7	41.8	42.2	42.7	45.5
90 %	42.2	-	-	-	43.4	47.5	42.8	45.5	46.4	44.7	46.6	45.5	44.8	43.1	44.5	44.6	43.5	46.6	41.9	43.2	42.6	43.4	43.0	46.2
Speeds Exceeded																								
25	35	-	-	-	36	40	105	70	107	96	118	114	133	118	121	115	108	105	80	83	72	56	36	26
	100 %				95 %	95 %	97 %	95 %	100 %	100 %	99 %	96 %	98 %	96 %	98 %	98 %	96 %	99 %	98 %	98 %	97 %	93 %	97 %	100 %
35	21	-	-	-	22	23	62	51	69	63	78	79	91	86	86	83	71	69	60	58	49	33	25	21
	60 %				58 %	55 %	57 %	69 %	64 %	66 %	66 %	66 %	67 %	70 %	69 %	71 %	63 %	65 %	73 %	68 %	66 %	55 %	68 %	81 %
45	2	-	-	-	2	7	7	9	15	9	16	13	13	9	10	9	8	13	2	5	5	2	4	6
	5.7 %				5.3 %	16.7 %	6.5 %	12.2 %	14 %	9.4 %	13 %	11 %	10 %	7.3 %	8 %	7.7 %	7.1 %	12 %	2.4 %	5.9 %	6.8 %	3.3 %	10.8 %	23.1 %
55	0	-	-	-	0	1	3	0	2	0	3	1	2	2	2	0	3	1	0	0	0	0	1	1
	0 %				0 %	2.4 %	2.8 %	0 %	1.9 %	0 %	2.5 %	0.8 %	1.5 %	1.6 %	1.6 %	0 %	2.7 %	0.9 %	0 %	0 %	0 %	0 %	2.7 %	3.8 %
65	0	-	-	-	0	1	2	0	2	0	2	0	2	1	1	0	1	1	0	0	0	0	0	1
	0 %				0 %	2.4 %	1.9 %	0 %	1.9 %	0 %	1.7 %	0 %	1.5 %	0.8 %	0.8 %	0 %	0.9 %	0.9 %	0 %	0 %	0 %	0 %	0 %	3.8 %
75	0	-	-	-	0	0	2	0	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0
	0 %				0 %	0 %	1.9 %	0 %	0.9 %	0 %	0.8 %	0 %	0.7 %	0.8 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %



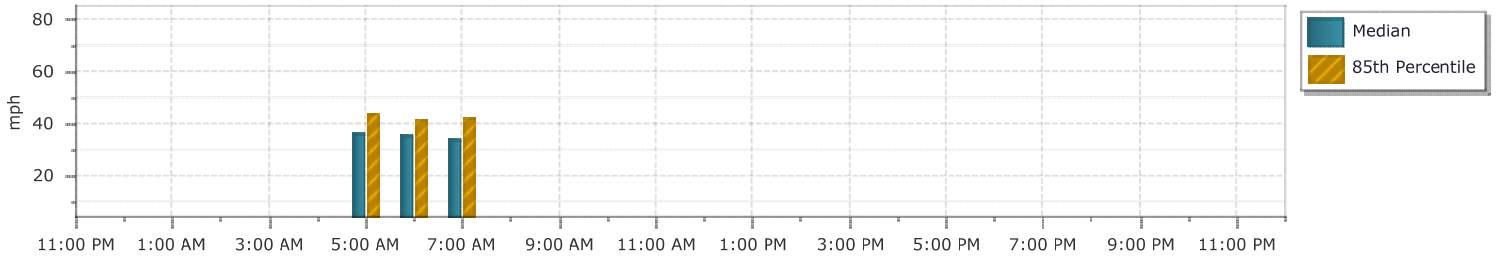
Setup by: : Gubler
Location Address: : Snow Cyn Parkway near Red Mtn Spa
Weather Conditions: : Sunnry

Site: IV013
4/6/2015
Monday

Speed Statistics

Sensor A

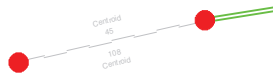
mph	AM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	PM 12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
Count	8	9	4	3	14	55	69	83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum	21.6	25.0	37.8	31.6	24.3	22.0	14.1	12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maximum	42.7	40.9	41.8	37.7	47.5	49.0	49.5	50.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average	-	-	-	-	-	36.3	35.6	34.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	-	-	-	-	-	36.3	35.6	33.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pace Range	-	-	-	-	-	29.7 - 39.7	32.8 - 42.8	25.9 - 35.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Count	-	-	-	-	-	31	40	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	56 %	58 %	55 %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Percentiles																								
10 %	-	-	-	-	-	27.8	26.1	26.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 %	-	-	-	-	-	29.7	29.1	27.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50 %	-	-	-	-	-	36.0	35.2	33.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85 %	-	-	-	-	-	43.9	41.8	42.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90 %	-	-	-	-	-	44.4	44.9	43.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Speeds Exceeded																								
25	-	-	-	-	-	53	65	79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						96 %	94 %	95 %																
35	-	-	-	-	-	31	36	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						56 %	52 %	47 %																
45	-	-	-	-	-	3	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						5.5 %	10.1 %	7.2 %																
55	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						0 %	0 %	0 %																
65	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						0 %	0 %	0 %																
75	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						0 %	0 %	0 %																



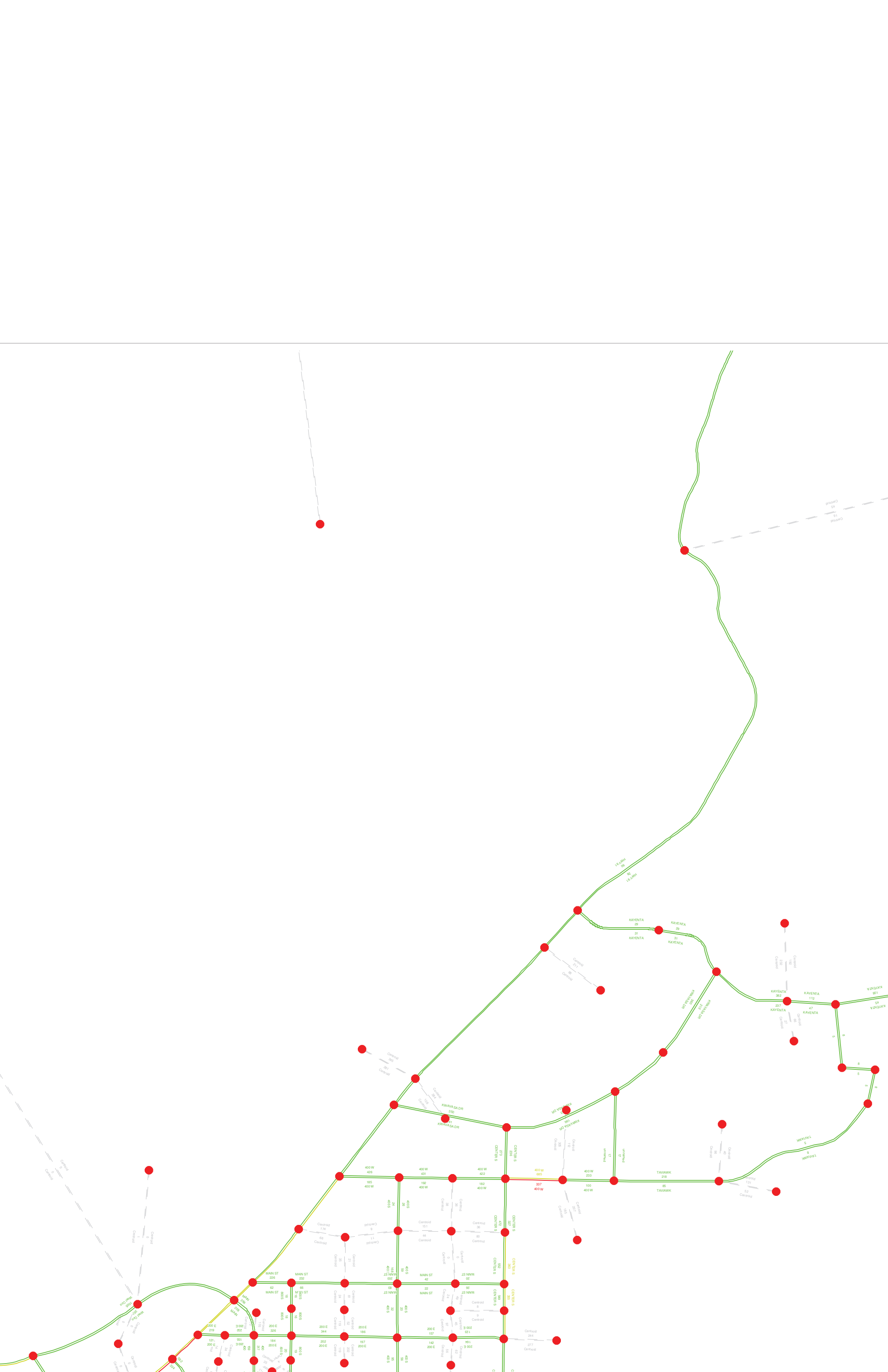
APPENDIX D
2015 Ivins City Traffic Model Input Data

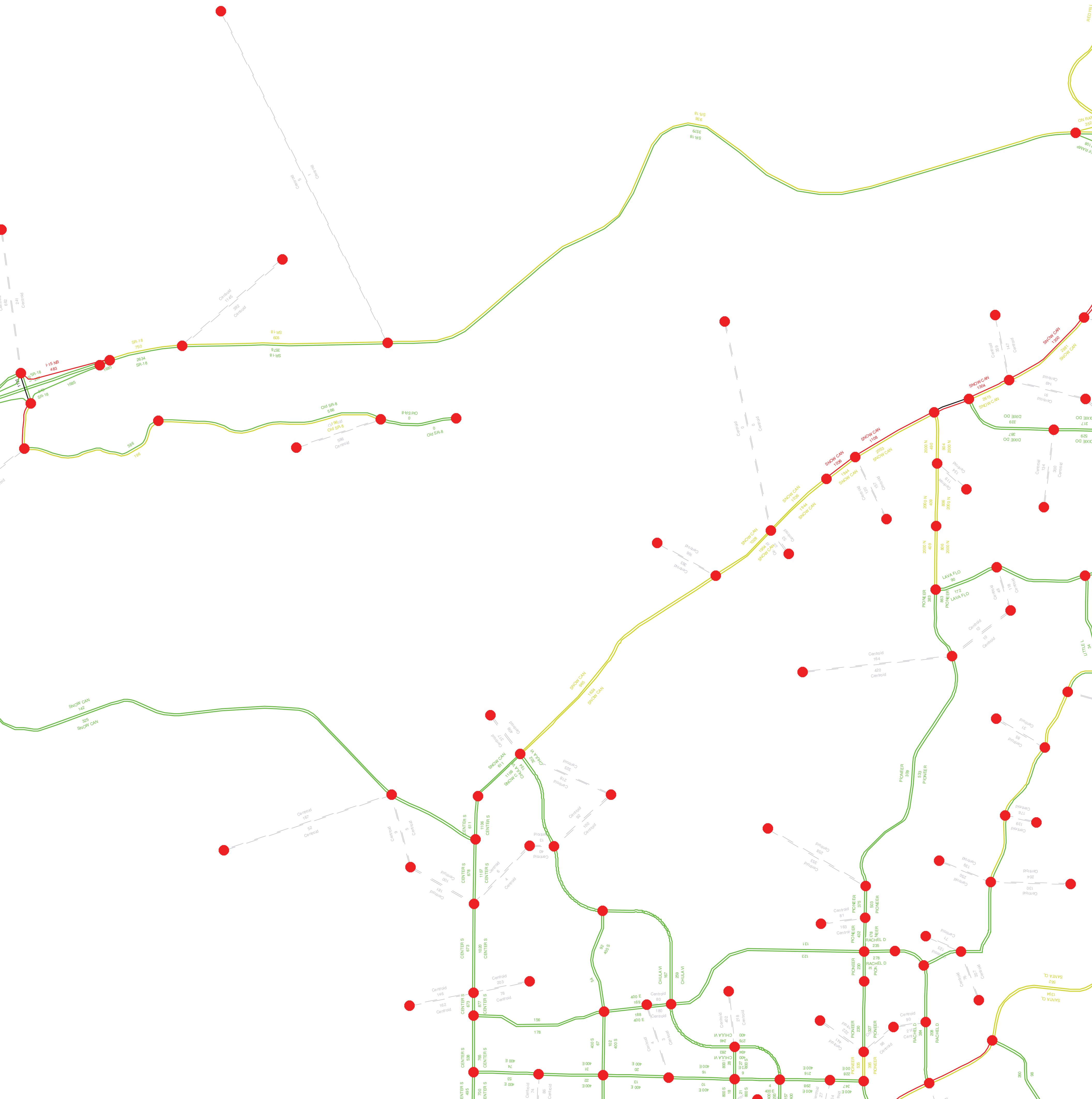
APPENDIX E
2015 Ivins City Traffic Model Output Data

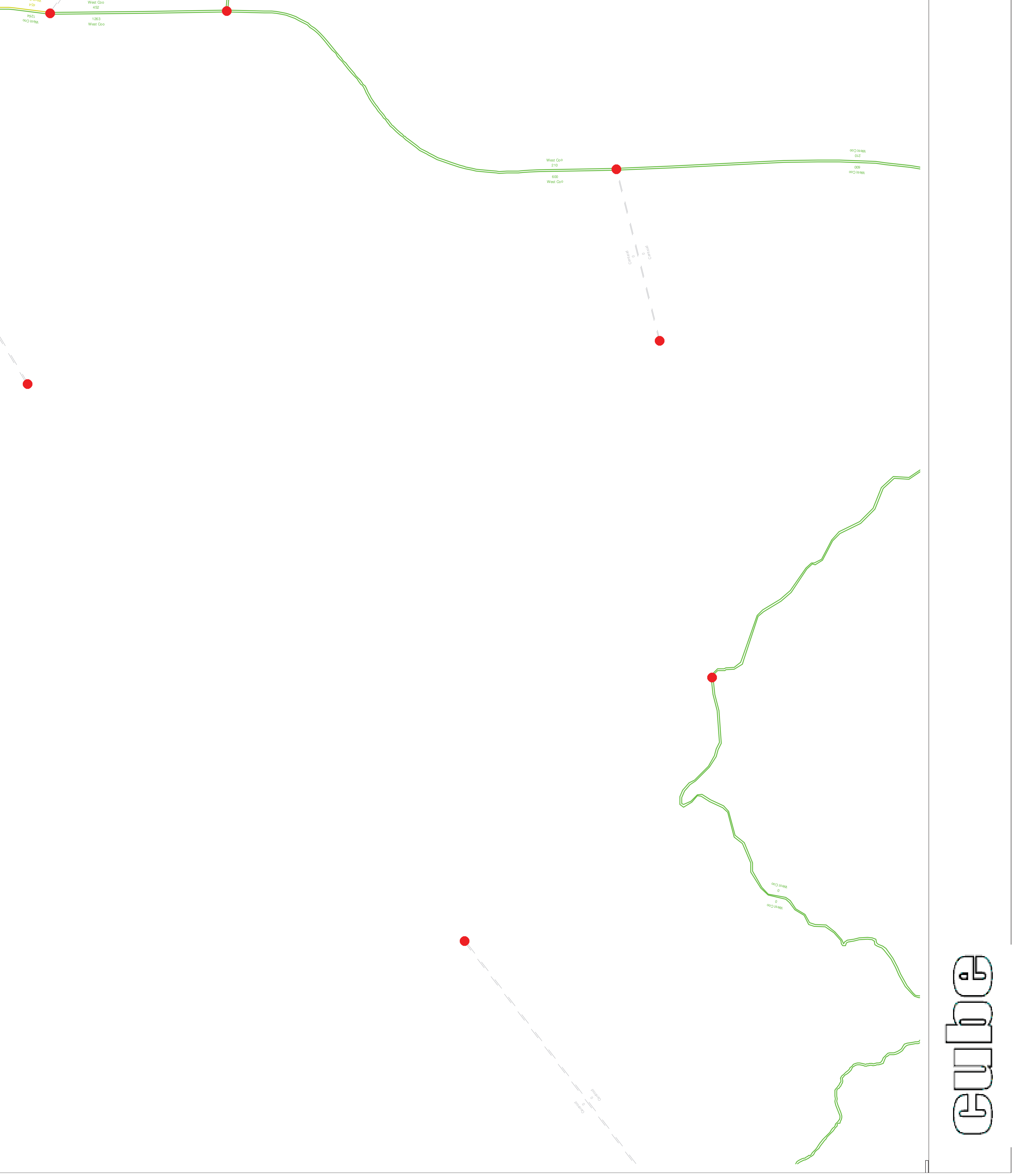
APPENDIX F
2015 Ivins City Traffic Model Trip Ends

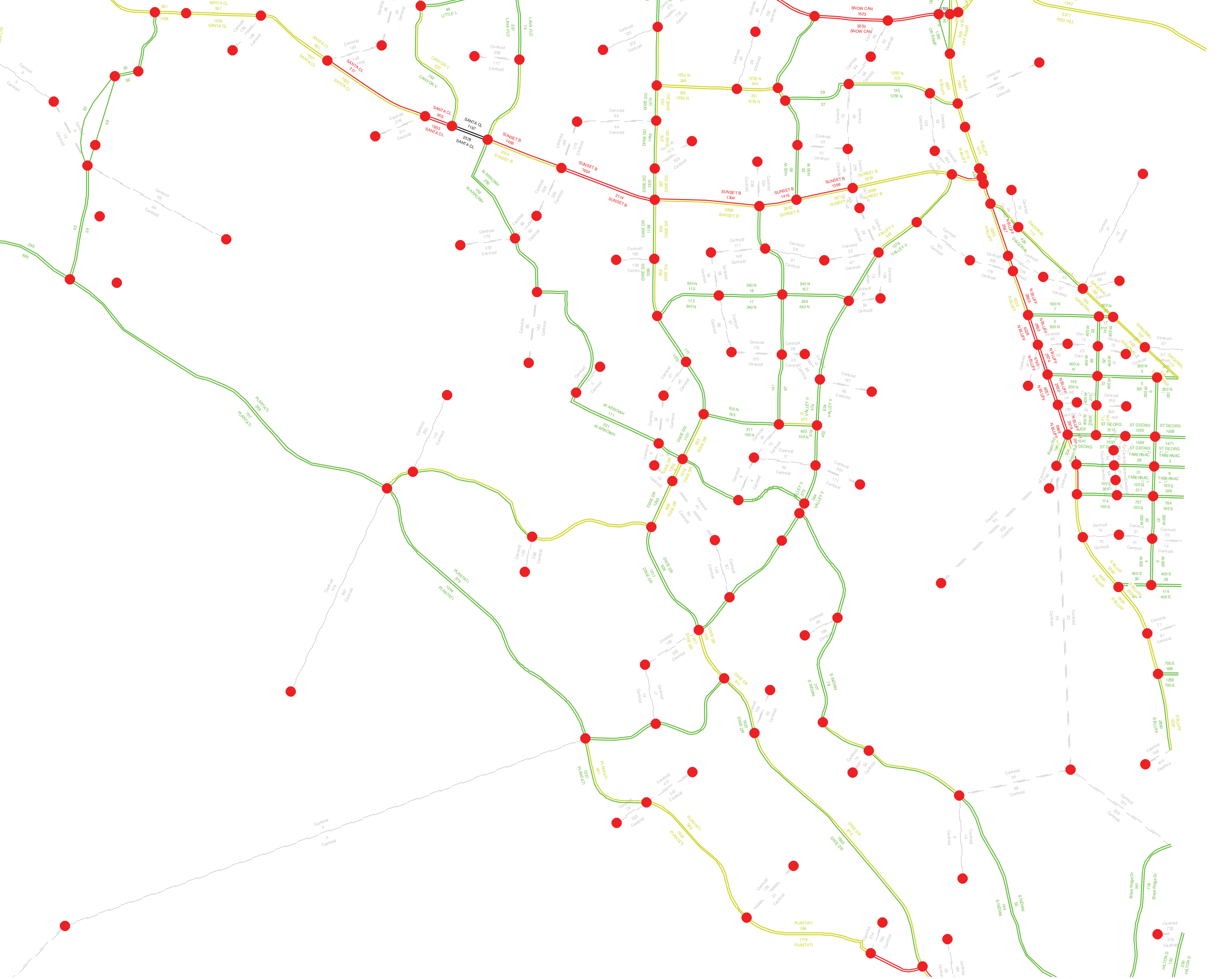

Cartoid
45
108
Cartoid


WINCHEST
0
WINCHEST
Centroid
266
99
Centroid
Centroid
59
155
Centroid
WINCHEST
147
WINCHEST
73
I-15 SB
SR-18
39.1
10.22
SR-18
SR-18
388
SR-18
SR-18
566
SR-18
1122
SR-18
SNOW CAN
129
SNOW CAN
284
Centroid
1
Centroid
Centroid
4
Centroid
Centroid
40
64
Centroid


KAYENTA
KWAVASA DR
MAIN ST
CENTER S
TAVIAWK
400 W
400 S
200 E
MAIN
Centroid


SR-18
I-15 NB
Old SR-8
SNOW CAN
RED HILL
ON RAMP
DIXIE DO
2000 N
LAVA FLO
PIONEER
LITTLE L
CENTER S
CHULA VI
400 E
400 S
RACHEL D
SANTA CL
Centroid


West Coo
452
1263
West Coo
West Coo
1264
454
West Coo
210
600
West Coo
West Coo
210
600
West Coo
Centroid
0
Centroid
0
West Coo
0
West Coo
0
Centroid
0
Centroid
0
cube



(Licensed to Horrocks Engineers)

APPENDIX G
2015 Ivins City Capital Facilities Plan & Estimates

APPENDIX H
Ivins City Street Light Plan

IVINS CITY
NEW STREET LIGHT PLAN
MARCH 2007



IVINS CITY
55 N. Main Street
Ivins, Utah 84738
435-634-0689
435-674-5486 (fax)

SCALE

PAPER UNITS	DRAWING UNITS
1"	N/A
0.5"	N/A
0.25"	N/A
0	N/A

IVINS CITY LIGHTING PLAN MARCH 20007

PROPOSED LIGHTING

DATE: 3/8/2007
DRAWN BY: CRG
CHECKED BY: CRG

SHEET NO.
1

TOTAL SHEETS: 1

Ivins City Street Lighting Cost Projections

Summary Costs

		Lights Removed	Lights Installed	Bollards Installed	Capital Immediate Total Costs	Monthly Maintenance Costs
Highway 91 (Major Arterial 100' R/W)		0	5	0	$29,025	30.3
Snow Canyon Parkway (Minor Arterial 80' R/W)		0	5	46	$115,990	76.3
Center Street (Minor Arterial 80' R/W)		25	30	113	$311,235	284.1
200 East Street (Major Collector)		24	21	0	$97,943	117.63
400 South Street (Major Collector)		6	17	16	$89,083	111.53
400 West Street (Major Collector)		2	12	16	$77,764	84.44
600 West Street (Major Collector)		0	1	17	$53,724	21.99
Minor/Residential Collectors		34	66	0	$178,470	348.6
Residential Public Streets		32	32	0	$71,008	165.74
	Subtotal:	123	189	208	$1,024,242	$1,241
				10% Contingency	$102,424	
				10% Engineering	$102,424	
				Total Cost for Immediate Retrofit:	**$1,229,090**	
				Total Annual Maintenance Cost:	**$14,888**	

Basis of Cost Analysis

Material Costs

	Pole	Head	Mount	Install	Total
Dbl Head/20'Pole/SP1	842	2326	392	1000	4560
Sgl Head/20'Pole/SP1	842	1163	0	800	2805
Dbl Head/15'Pole/SP2	700	1662	392	900	3654
Sgl Head/15'Pole/SP2	700	831	0	800	2331
Sgl Head/12'Pole/SP2	588	831	0	800	2219
Bounce Bollard		665		600	1265

Other Optional Costs

Street Sign

Maintenance Costs

	Cost per Month		
	Power	Repair/Replacement	Total
100W	2.33	2.66	4.99
150W	3.40	2.66	6.06
Bollard	0.5	0.5	1.00

Highway 91 (Major Arterial 100' R/W)

Standard: Lights at all future intersection traffic signals, 4 corners
Double Head, 18' Pole in median at a 400' Max spacing in Commercial Areas
Bollard Lighted Path Spacing: 80 ft

Length of Existing Trail 0
Length of Future Trail 16,400

		Unit Cost	Immediate Total Cost		Maintenance Costs/Mo
No. of Existing Lights to be Removed	0				
20' lights, Single Head, to be installed now	5	$2,805	$14,025	6.06	30.3
20' lights, Single Head, Future	22	(all at trafffic signals)			
No. of bollards to be immediately installed	0				
No. of bollards to be installed in future	206	$1,265			
Additional Costs for Power Supply			$15,000		
Highway 91 (Major Arterial 100' R/W) Subtotal			**$29,025**		

Snow Canyon Parkway (Minor Arterial 80' R/W)

Standard: Lights at all future intersection traffic signals, 4 corners
Double Head, 18' Pole in median at a 400' Max spacing
Bollard Lighted Path Spacing: 80 ft

Length of Existing Trail 4,500
Length of Future Trail 0

			Immediate	Maintenance Costs/Month	
		Unit Cost	Total Cost	Unit Cost	Total Cost
No. of Existing Lights to be Removed	0	$500	$0		
20' lights, Double Head, to be installed now	5	$4,560	$22,800	6.06	30.3
20' lights, Single Head, Future	3	traffic signal			
No. of bollards to be immediately installed	46	$1,265	$58,190	1.00	46
No. of bollards to be installed in future	0				
Additional Costs for Power Supply			$35,000		
Snow Canyon Parkway (Minor Arterial 80' R/W) Subtotal			**$115,990**		

Center Street (Minor Arterial 80' R/W)

Standard: Lights at all future intersection traffic signals, 4 corners
Double Head, 18' Pole in median at a 400' Max spacing
Roundabouts: 18' Pole in four corners
Residential Intersections: 12' pole at corner
Bollard Lighted Path Spacing: 80 ft

Length of Existing Trail 9,000 ft
Length of Future Trail 2,700 ft

		Unit Cost	Immediate Total Cost		Maintenance Costs/Mo
Lights to be removed	25	$500	$12,500		
12' lights to be installed now	10	$2,219	$22,190	4.99	49.9
20' lights, Single Head, to be installed now	20	$2,805	$56,100	6.06	121.2
20' lights, Double Head, Future	15	$4,560			
Bollards to be installed now	113	$1,265	$142,945	1.00	113
Bollards to be installed in future	34	$1,265			
Additional Costs for Power Supply	1	$90,000	$90,000		
Center Street (Minor Arterial 80' R/W) Subtotal			**$311,235**		

200 East Street (Major Collector)

Standard: Lights at intersections with collector streets, 2 corners, 14' poles
Double Head, 14' Pole in median at a 400' Max spacing
Residential Intersections: 10' pole at corner (125' min spacing)
Bollard Lighted Path Spacing: 80 ft

Length of Existing Trail 850 ft
Length of Future Trail 9,450 ft

		Unit Cost	Immediate Total Cost		Maintenance Costs/Mo
Lights to be removed	24	$500	$12,000		
12' lights to be installed now	9	$2,219	$19,971	4.99	44.91
15' lights, Single Head, to be installed now	12	$2,331	$27,972	6.06	72.72
15' lights, Double Head, Future	13	$3,654			
Bollards to be installed now	0	$1,265	$0		
Bollards to be installed in future	129	$1,265			
Additional Costs for Power Supply	1	$50,000	$50,000		
200 East Street (Major Collector) Subtotal			**$97,943**		

400 South Street (Major Collector)

Standard: Lights at intersections with collector streets, 2 corners, 15' poles
Double Head, 14' Pole in median at a 400' Max spacing
Residential Intersections: 10' pole at corner (125' min spacing)
Bollard Lighted Path Spacing: 80 ft

Length of Existing Trail 1,200 ft
Length of Future Trail 7,800 ft

		Unit Cost	Immediate Total Cost		Maintenance Costs/Mo
Lights to be removed	6	$500	$3,000		
12' lights to be installed now	7	$2,219	$15,533	4.99	34.93
15' lights, Single Head, to be installed now	10	$2,331	$23,310	6.06	60.6
15' lights, Double Head, Future	6	$3,654			
Bollards to be installed now	16	$1,265	$20,240	1.00	16
Bollards to be installed in future	98	$1,265			
Additional Costs for Power Supply	1	$30,000	$30,000		
400 South Street (Major Collector) Subtotal			**$89,083**		

400 West Street (Major Collector)

Standard: Lights at intersections with collector streets, 2 corners, 15' poles
Double Head, 14' Pole in median at a 400' Max spacing
Residential Intersections: 10' pole at corner (125' min spacing)
Bollard Lighted Path Spacing: 80 ft

Length of Existing Trail 1,200 ft
Length of Future Trail 5,800 ft

		Unit Cost	Immediate Total Cost		Maintenance Costs/Mo
Lights to be removed	2	$500	$1,000		
12' lights to be installed now	4	$2,219	$8,876	4.99	19.96
15' lights, Single Head, to be installed now	8	$2,331	$18,648	6.06	48.48
15' lights, Double Head, Future	9	$3,654			
Bollards to be installed now	16	$1,265	$20,240	1.00	16
Bollards to be installed in future	73	$1,265			
Additional Costs for Power Supply	1	$30,000	$30,000		
400 West Street (Major Collector) Subtotal			**$77,764**		

600 West Street (Major Collector)

Standard: Lights at intersections with collector streets, 2 corners, 15' poles
Double Head, 14' Pole in median at a 400' Max spacing
Residential Intersections: 10' pole at corner (125' min spacing)
Bollard Lighted Path Spacing: 80 ft

Length of Existing Trail 1,300 ft

Length of Future Trail 0 ft

		Unit Cost	Immediate Total Cost		Maintenance Costs/Mo
Lights to be removed	0	$500	$0		
12' lights to be installed now	1	$2,219	$2,219	4.99	4.99
15' lights, Single Head, to be installed now	0	$2,331	$0	6.06	0
15' lights, Single Head, Future	6	$2,331			
15' lights, Double Head, Future	7	$3,654			
Bollards to be installed now	17	$1,265	$21,505	1.00	17
Bollards to be installed in future	1	$1,265			
Additional Costs for Power Supply	1	$30,000	$30,000		
600 West Street (Major Collector) Subtotal			**$53,724**		

Minor/Residential Collectors

Standard: Single Head, 14' pole on one corner of intersections with collectors
Single Head, 10' pole at all project entries, min spacing 250'
No bollards on trails

		Unit Cost	Immediate Total Cost		Maintenance Costs/Mo
Lights to be removed	34	$500	$17,000		
12' lights to be installed now	48	$2,219	$106,512	4.99	239.52
15' light to be installed now	18	$2,331	$41,958	6.06	109.08
15' light to be installed in future	4	$2,331			
Additional Costs for Power Supply	1	$30,000	$30,000		
Minor/Residential Collectors Subtotal			**$178,470**		

Residential Public Streets

Standard: Single Head, 10' pole replace all existing
Future require one 10' pole at all intersections
No bollards on trails

		Unit Cost	Immediate Total Cost		Maintenance Costs/Mo
Lights to be removed	32	$500	$16,000		
12' lights to be installed now	32	$2,219	$71,008	4.99	159.68
Additional Costs for Power Supply	1	$0	$0	6.06	6.06
	Residential Public Streets Subtotal		**$71,008**		

APPENDIX I
Ivins City Traffic Volume Comparison, 2008 vs. 2015

EXISTING VOLUMES								
Intersection Label	Intersection Name	2008 AM	2008 (PM)	2015 AM	2015 (PM)	AM Growth %	PM Growth %	Total Growth %
A	400 W & Center St.	101	255	144	159	42.57%	-37.65%	4.93%
B	Main St. & Center St.	253	240	288	343	13.83%	42.92%	56.75%
C	200 E & Center St.	454	405	517	488	13.88%	20.49%	34.37%
D	400 E & Center St.	400	417	620	475	55.00%	13.91%	68.91%
E	Puerto Dr. & Center St.	406	509	591	582	45.57%	14.34%	59.91%
F	S.C. Dr. & Center St.	530	678	1141	773	115.28%	14.01%	129.29%
G	S.C. Dr. & Tuacahn Dr.	259	179	438	185	69.11%	3.35%	72.46%
H	400 W & 400 S	79	177	94	92	18.99%	-48.02%	-29.04%
I	Main St. & 400 S	126	204	73	128	-42.06%	-37.25%	-79.32%
J	400 E & 400 S	277	243	217	146	-21.66%	-39.92%	-61.58%
K	Puerto Dr. & 400 S	118	182	242	149	105.08%	-18.13%	86.95%
L	400 E & 800 S	236	266	226	162	-4.24%	-39.10%	-43.34%
M	400 E & Pioneer Pkwy.	315	388	330	280	4.76%	-27.84%	-23.07%
N	Hwy. 91 & Pioneer Pkwy.	444	620	421	569	-5.18%	-8.23%	-13.41%
O	200 E & Hwy. 91	387	559	381	528	-1.55%	-5.55%	-7.10%
P	400 S & 200 E	317	305	267	271	-15.77%	-11.15%	-26.92%
	TOTALS	4702	5627	5990	5330	27.39%	-5.28%	22.11%

APPENDIX J
Roundabouts vs. Traffic Signals, Estimates and Capacities

HORROCKS
ENGINEERS

