KANAB CITY TRANSPORTATION



2018

Impact Fee Facilities Plan & Analysis

TRANSPORTATION IMPACT FEE FACILITIES PLAN & IMPACT FEE ANALYSIS

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TABLE OF CONTENTS

1 EXECUTIVE SUMMARY 1
1.1 Introduction 1
1.2 User Analysis 1
1.3 Existing Conditions 1
1.4 System Traffic Model 1
1.5 Recommended Improvements 2
1.6 Financial Viability 2
1.7 Guidelines & Policies 2

2 INTRODUCTION 3
2.1 Purpose and Scope 3
2.2 Background Information 3
2.3 Miscellaneous Resources 4

3 USER ANALYSIS 5
3.1 Planning Horizon 5
3.2 Historic Growth Rates 5
3.3 Projected Growth Rate 5

4 EXISTING CONDITIONS 6
4.1 Land Use 6
4.2 Roadway Classifications 6
4.2.1. Arterial 6
4.2.2. Major Collector 6
4.2.3. Minor Collector 7
4.2.4. Local Road 7
4.3 Traffic Counts 7
4.4 Traffic Accidents 8
4.5 Traffic Signal 10
4.6 Model Results 10

5 SYSTEM TRAFFIC MODEL 11
5.1 Future Land Use 11
5.2 Travel Demands 11
5.3 Projected Roadway Network 11
5.4 Model Output 11

6 RECOMMENDED IMPROVEMENTS 14
6.1 Key Considerations 14

7 FINANCIAL VIABILITY 15
7.1 Cost Estimates 15

7.2 Project Phasing 15
7.3 Impact Fee Analysis 15
7.4 User Rate Analysis 17
7.5 Cash Flow Analysis 17
7.5.1. Other Financing Options 18

8 GUIDELINES & POLICIES 19
8.1 Typical Sections 19
8.2 Access Management 20
8.2.1. Benefits of Access Management 20
8.2.2. Where to Use Access Management 21
8.2.3. General Access Management Principles 21
8.2.4. Access Management Techniques 21
8.2.5. Number of Access Points 21
8.2.6. Signalized Intersections 21
8.2.7. Un-signalized Driveways 22
8.2.8. Right-In/Right-Out Accesses 22
8.2.9. Residential Lots 22
8.2.10. Commercial Lots 22
8.2.11. Offset Distance 22
8.2.12. Corner Spacing 23
8.2.13. Medians 23
8.2.14. Width of Access Points 23
8.2.15. Turning Radius 23
8.2.16. Shared Access 24
8.2.17. Alignment of Access Points 24
8.2.18. Sight Distance 24
8.2.19. Turning Lanes 24
8.2.20. Pedestrian and Bicycle Access 25
8.2.21. Roundabouts 25
8.3 Maintenance 25
8.4 Corridor Preservation 25
8.4.1. Objectives 25
8.4.2. Corridor Preservation Techniques 26
8.4.3. Acquisition 26
8.4.4. Advance Purchase and Eminent Domain 26
8.4.5. Hardship Acquisition 26
8.4.6. Purchase Options 26
8.4.7. Development Easements 26
8.4.8. Public Land Exchanges 26
8.4.9. Private Land Trusts 27
8.4.10. Exercise of Police Powers 27
8.4.11. Impact Fees and Exactions 27

LIST OF TABLES

Table 1: Historic Population & Growth Rates 5
Table 2: Household Facts 5
Table 3: Roadway miles by Classification 7
Table 4: Kanab City Crash Data (Kanab City Accident Data) 8
Table 5: Intersection Accident Rates (Kanab City Accident Data) 9
Table 6: Roadway Segment Accident Rates (Kanab City Accident Data) 9
Table 7: Cost Estimate Summary 15
Table 8: Impact Fee Calculations 16
Table 9: Impact Fee Schedule 16
Table 10: Roadway Typical Section Configurations 19

LIST OF FIGURES

Figure 1: Kanab Roadway System 4
Figure 2: Existing Peak Hour Traffic and LOS 8
Figure 3: 2038 Peak Hour Traffic and LOS – No build Scenario 12
Figure 4: 2038 Peak Hour Traffic and LOS – Full build Scenario 13
Figure 5: US 89 looking toward Kanab 17
Figure 6: Major Local Road Typical Section 20

LIST OF APPENDICES

Appendix A – Maps
Appendix B – Tables and Figures
Appendix C – Financial Analysis
Appendix D – Impact Fee Certification
Appendix E – Additional Information

1 EXECUTIVE SUMMARY

1.1 Introduction

The primary objective of this study is to establish plans to guide the development of future roadway system improvements through modeling the existing system conditions, the 10-year conditions, as well as longer term 20-year conditions. The outcomes of this transportation study are: recommended improvements, estimated project costs, a maximum allowable impact fee, impact fee schedule, recommended guidelines and policies, and projected cash flow for Kanab's transportation system.

1.2 User Analysis

Table 1 shows historic annual growth rates of 1%-3%. Projected annual growth rates for this study are 3% per year for 10 years then 2% per year for the next 10 years. It was assumed that residential and commercial (or non-residential) growth will occur at the same rate.

- 2018 estimated population – 4,802
- 2028 estimated population – 6,390
- 2038 estimated population – 7,790

1.3 Existing Conditions

Kanab owns and maintains over 64.7 miles of roadway. US 89 and US 89A are arterial roadways that facilitate many of the traffic movements by residents and by pass-through vehicles. Traffic counts were measured in the fall in winter of 2017 and scaled to match expected peak summer traffic for worse case evaluation of the roadway network.

Roads Maintained by Kanab City*	
Road Type	**Total Length [mi]**
Arterial†	13.55
Local Road	39.00
Major Collector	13.72
Minor Collector	12.03

*Excludes US-89, US-89a, & Kaneplex Dr.

†All Arterial Roads are maintained by UDOT

An account of the accident data pertaining to Kanab City roads for 2015-2017 shows that there are several areas of concern that may require further consideration. There are several traffic signals in Kanab that service relatively high traffic volumes and therefore merit consideration of control improvements.

1.4 System Traffic Model

Due to the high volume of traffic that passes through the city of Kanab via US 89 and US 89A it is anticipated that commercial and Industrial facilities will expand along the US 89 and US 89A corridors. Residential traffic is also expected to increase, but mostly along major collectors and along the outer edges of existing development. The existing conditions as well as future conditions with a no-build scenario were evaluated during modeling.

A full build roadway network, with better connectivity and traffic flow, was also modeled with future traffic conditions. The model results formed the basis of the recommended improvements including location, timing, and size of improvements.

1.5 Recommended Improvements

The table below shows the recommended projects and the projected year they are to be completed.

Project Name	Projected Year	Inflation 3%		Impact Fee Eligible %	Impact Fee Eligible Cost
		2018 Cost	Inflated Cost		
1100 South & Kanab Creek Dr Realignment	2019	$740,800	$763,024	100%	$763,024
600 East (1100 South to HWY 89)	2021	$3,229,725	$3,529,208	100%	$3,529,208
300 South 700 East Signal	2023	$401,801	$465,797	0%	$0
1100 South Major Collector Widening	2026	$1,852,923	$2,347,228	100%	$2,347,228
650 South to HWY 89	2027	$2,238,689	$2,920,981	100%	$2,920,981
IFFPA (5 yr & 10 yr)	2023, 2028	$60,000	$75,096	100%	$75,096
TOTAL		$8,936,958	$10,539,507	-	$9,635,537

1.6 Financial Viability

Kanab City does not currently charge a user rate for transportation services. Commercial building less than the 2,000 sq-ft will have the same maximum allowable impact fee as residential connections of **$9,487.07**. Commercial building greater than the 2,000 sq-ft will have a maximum allowable impact fee of **$4.74** per square feet of total building area. A recommended impact fee schedule based on building use is presented to the left.

The cash flow in Appendix C illustrates that if these rates and fees are established as presented, all recommended improvements can be constructed if financing is available and paid for with user rates

Transportation	
Total 10-year Cost	$ 9,635,536.85
Residential	Non-Residential
63.9%	36.1%
$ 6,157,108.04	$ 3,478,428.80
649 ERC	734,000 sq-ft
$9,487.07 /ERC	**$4.74 /sq-ft**

*Assumed 2,000 sq-ft per ERC for non-residential ERCs. Analysis is based on a 10-year period. Percentage split based on Residential vs. Non-Residential projected growth.

1.7 Guidelines & Policies

Planning for and maintaining the roadway assets of a City is of critical importance for Kanab Public Works. Guidelines and policies regarding typical roadway sections, access management, maintenance, and corridor preservation provide the City with tools to best maintain the roadways and develop best practices that allow for superior roadway design and management.

2 INTRODUCTION

2.1 Purpose and Scope

The primary objective of this study is to establish plans to guide the development of future transportation improvements. This study includes a 10-year action plan as well as a longer term 20-year action plan. Additionally, transportation related guidelines and policies are also provided. These action plans and policies/guidelines will form a basis of information to aid the City in making informed decisions and allowing for advanced planning and budgeting.

The need for a study update were prompted by several factors including:

- 10 years since the last study
- Population growth
- Increasing traffic on regional facilities (US-89, US-89A)
- Increasing seasonal traffic
- On-going commercial and residential development
- Constraints of the existing transportation system
- Consideration of potential impact fees

The scope of the study focuses on roadway needs and opportunities. Multi-modal facilities such as bikeways and trails will be addressed in a separate study. Providing for a functional and efficient transportation network that promotes a diversified economy and well planned development is the goal.

This study also forms the basis for evaluation of anticipated costs and related funding. As such, this study is an impact fee eligible study.

A study area encompassing the existing community to an area anticipated to be developed within during the next 20 years was developed as shown in Figure 1. The study area incorporates updated zoning conditions consistent with recent City planning.

2.2 Background Information

Kanab is the commercial center of a large farming, ranching and recreational area. The city is the County seat of Kane County and has a long history as a film making and tourism hub. Nearby tourism destinations include multiple national parks and recreational areas such as Lake Powell. Kanab is located 7 miles north of the Arizona border on US-89A. For many years the community was one of the most isolated in the nation, being cut off from the east by the Colorado River. Today it is a tourist town inviting tens of thousands of visitors annually to enjoy the beauty of the area as well as its rich history.

The previous Transportation Study for Kanab was completed in April of 2008 and provided for planning out to a 20 year horizon (2028). With the continued and sustained growth of the community a 10 year update of this previous plan was deemed appropriate by the City and undertaken with the assistance of a consulting partner. This study is consistent with the previously approved and adopted plan and provides information reflective of current as well as forecasted conditions.

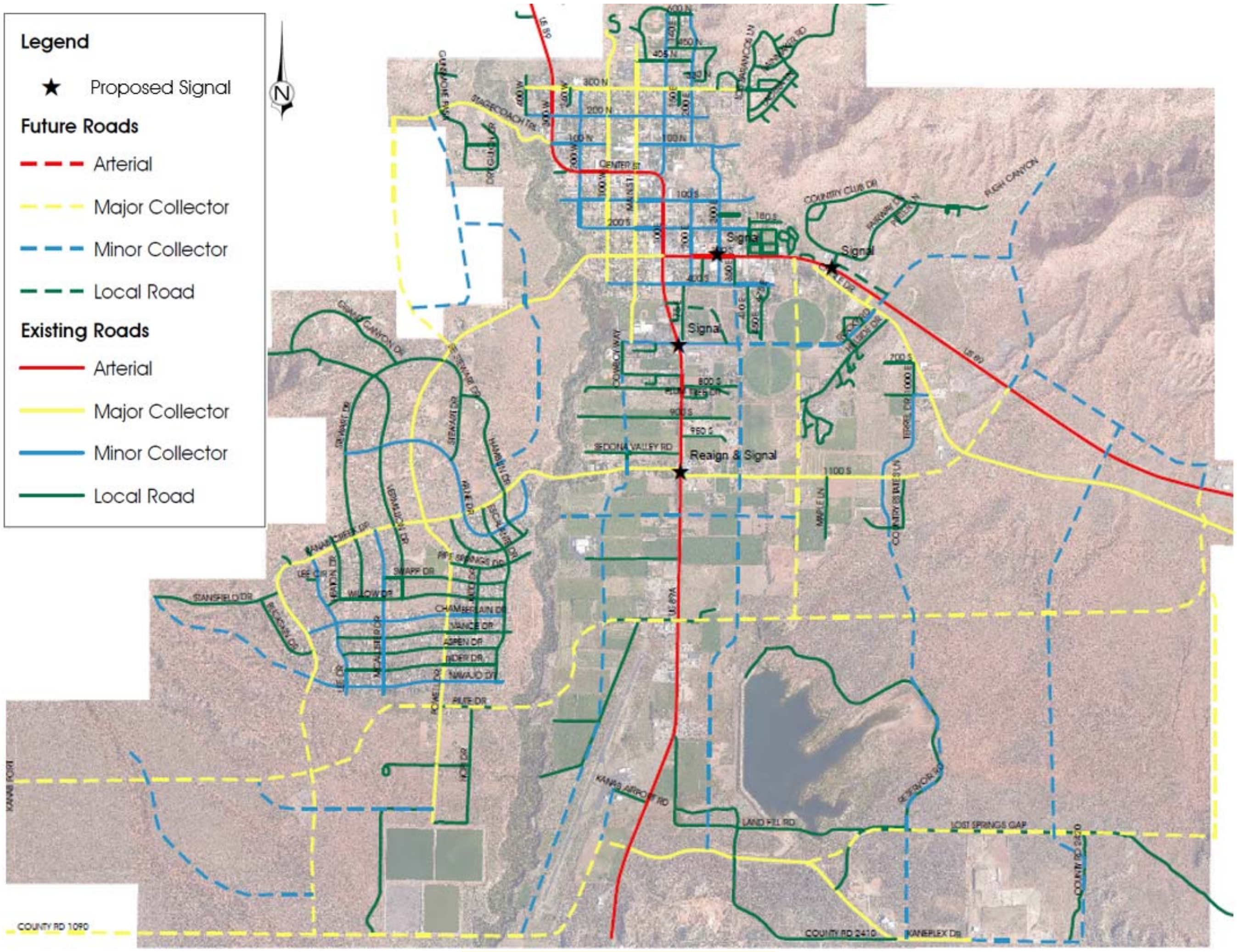


FIGURE 1: KANAB ROADWAY SYSTEM

Governing documents/codes for this study include the existing Kanab City General plan, all current zoning and development criteria, and the Utah Impact Fees Act.

2.3 Miscellaneous Resources

Resources used include traffic information published by the Utah Department of Transportation as well as published Transportation Improvement Plans (STIP) involving US-89 and US-89A.

3 USER ANALYSIS

3.1 Planning Horizon

This analysis considers three planning horizons: existing conditions, 10-year, and 20-year scenarios. The existing condition scenario evaluates the transportation network based on current traffic volumes. The 10-year and 20-year planning horizons evaluate potential deficiencies/needs and plan for related improvements.

3.2 Historic Growth Rates

Projecting the City's population and growth rate are essential to the development of a facilities plan. This study uses several resources for this projection including Census figures and historical traffic data to evaluate growth trends and provide a projection of how/where growth occurs. Census data and annual growth rates from 1970 to 2010 are included in Table 1.

TABLE 1: HISTORIC POPULATION & GROWTH RATES

DESCRIPTION	YEAR PERIOD	Population	GROWTH
10-year Historic	1970	1,381	-
10-year Historic	1980	2,148	4.5%
10-year Historic	1990	3,318	4.4%
10-year Historic	2000	3,564	0.7%
10-year Historic	2010	4,312	1.9%
20-year Historic	1970-1990	-	4.5%
20-year Historic	1980-2000	-	2.6%
20-year Historic	1990-2010	-	1.3%
30-year Historic	1970-2000	-	3.2%
30-year Historic	1980-2010	-	2.4%
40-year Historic	1970-2010	-	2.9%

Table 1 also shows the historic 10-year, 20-year, 30-year, and 40-year average annual growth rates for the dates specified. These historic rates serve as a comparison with projected growth rates.

3.3 Projected Growth Rate

It is projected that both residential and commercial development will continue to grow at a moderate rate for the duration of the 10-year and 20-year planning horizons. For this study it is projected that 2%-3% growth will occur for the next 20 years; 3% annually for 10 years, then 2% annually for the next 10 years. If actual growth occurs at rates that are substantively different than these projected rates then future improvements to support growth may need to be considered either earlier or later, as necessary. Impact fee revenue is directly related to the assumed growth rates. This report assumes that the residential household size remains the same and that residential and commercial growth occur at the same/very similar rates. Table 2 displays housing unit statistics and household size according to the latest federal census data

TABLE 2: HOUSEHOLD FACTS

HOUSING OCCUPANCY		
Total housing units	1,999	100%
Occupied housing units	1,729	86%
Vacant housing units	270	14%
Person per Household	2.44	

4 EXISTING CONDITIONS

4.1 Land Use

The existing Kanab transportation network services predominantly residential related trips as the area within the city limits is largely designated for residential use. The valley provides plenty of space for the projected growth. Additionally, with many natural attractions near Kanab the city receives substantial pass-through traffic, principally on US 89 and US 89A. This has resulted in growth and development of commercial properties and interests along these major routes. Land currently designated for commercial/industrial expansion is somewhat constrained within the existing city area, necessitating additional commercial growth planned to extend out from the current City center along US 89 and US 89A.

4.2 Roadway Classifications

Figure 1 shows the existing classifications for the Kanab City roadway network as well as the classifications of the proposed roadway improvements.

Functional classification is a method of classifying roads according to the major function a roadway serves. This method looks at the roadway network as a whole and then groups the roads together into classifications that are defined by many factors. These major factors include flow capacity, access type and frequency, traffic volumes, etc. Four roadway classifications were used to characterize the roads in Kanab City: Arterial, Major Collector, Minor Collector, and Local Road.

Functional classifications also establish the foundation for roadway design elements. For example, an Arterial would include features that promote easier flow such as wider shoulders and would avoid elements that disrupt traffic flow such as on-street parking. The result is that Arterials provide increased capacity for traffic flow while Local Roads provide the most access to homes, etc. These factors have been taken into consideration for standard roadway classification sizing and configuration, which will be covered in more detail later in the report.

4.2.1. Arterial

Arterials provide the primary links between major traffic generators such as cities and major attractions. Arterials are primarily focused on traffic conveyance. Subsequently there are usually policies in place to limit property access along Arterials. In the City of Kanab US 89 and US 89A are the only Arterials as they convey the major traffic flows between Kanab and nearby cities such as Orderville, Springdale, and Fredonia. These roads also serve as popular routes to Lake Powell from points west of Kanab. This major attraction generates high volumes of pass through traffic, primarily in the summer months.

4.2.2. Major Collector

Major Collectors connect Arterials to traffic generators such as neighborhoods, commercial centers, and industrial parks. Major Collectors focus on traffic conveyance and increase the level of accessibility to adjacent properties from that of an Arterial. Powell Drive and Kanab Creek Drive are examples of Major Collectors.

4.2.3. Minor Collector

Minor Collectors provide greater property access than Major Collectors, but are still focused on gathering traffic from neighborhoods, commercial centers, etc. and conveying it towards Arterial routes. Minor Collectors are usually found within the heart of a neighborhood and therefore provide good access to Local Roads that directly service homes. Minor Collectors are also configured to provide good property access, on-street parking, etc. while still allowing for uninterrupted flows.

4.2.4. Local Road

Local Roads focus on providing direct access to primarily residential properties. The increased accessibility limits the ability of Local Roads to provide free flow. This usually results in lower speeds on Local Roads. Table 3 shows the road-centerline miles of the different classifications of roadway.

4.3 Traffic Counts

Existing traffic conditions were observed and counted in the field over the course of multiple days in the fall of 2017. Intersection turning movements were observed in person and recorded by hand for the peak hour condition. Corridor volumes were recorded using pneumatic road tubes (PicoCount 2500). Pneumatic tubes were placed for a duration of 24 hours to record daily traffic (ADT). As this study was initiated in the fall of 2017, it is important to understand the effect of seasonal peak flows during the summer months in comparison to the actual field data that was gathered during the fall 2017 off peak period. To accomplish this, volumes on US 89 and US 89A were compared to historical traffic volume reports available from the Utah Department of Transportation (UDOT). The summer traffic volumes showed a 30% increase over the actual traffic counts completed for this study. Therefore, traffic counts were calibrated to provide this seasonal adjustment and allow for analysis based upon peak periods of the year. The result is a comprehensive representation of calibrated values for existing traffic volumes on each of the existing Arterial and Collector roadways as shown in Figure 2.

TABLE 3: ROADWAY MILES BY CLASSIFICATION

Roads Maintained by Kanab City*	
Road Type	**Total Length [mi]**
Arterial†	13.55
Local Road	39.00
Major Collector	13.72
Minor Collector	12.03

*Excludes US-89, US-89a, & Kaneplex Dr.

†All Arterial Roads are maintained by UDOT

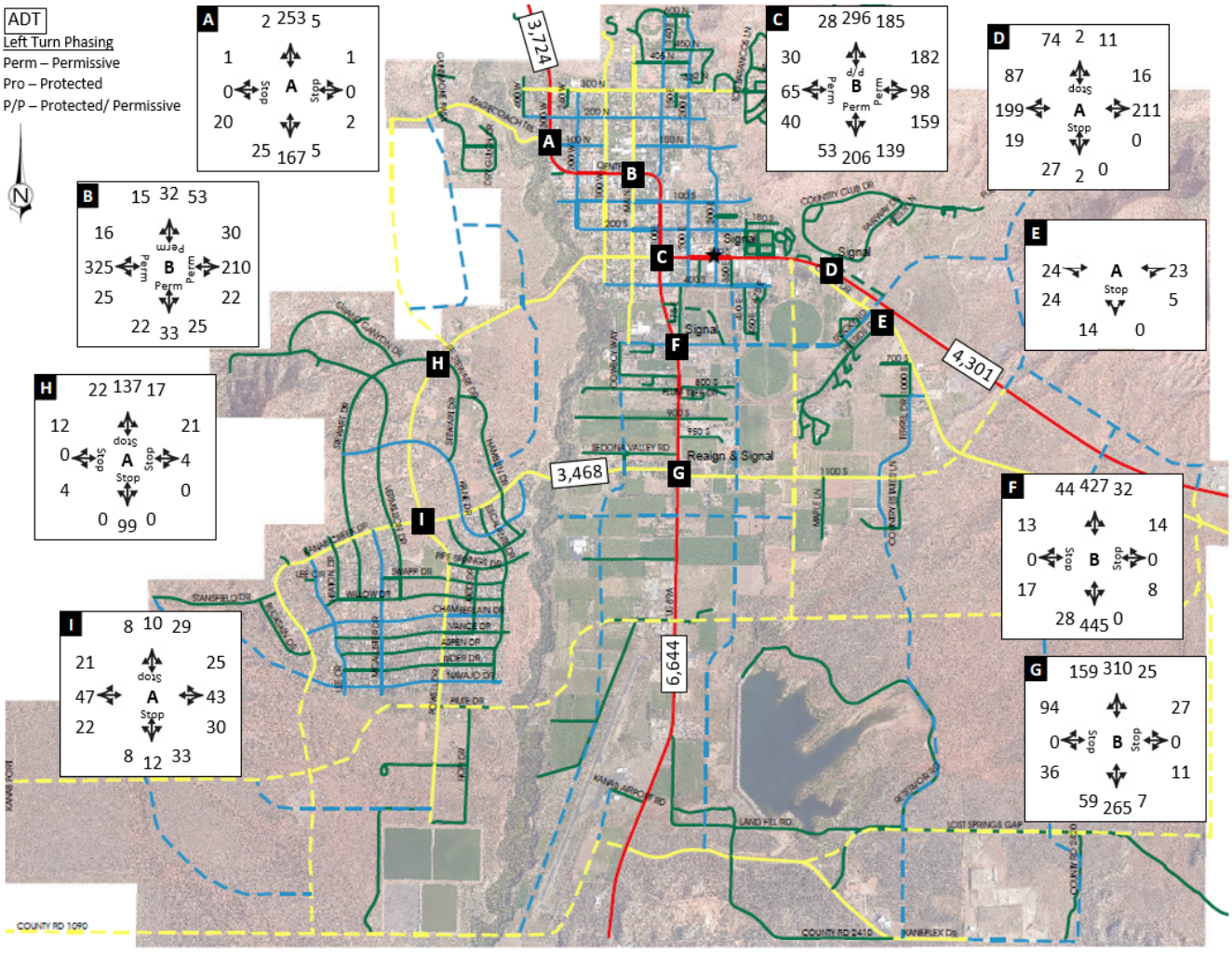


FIGURE 2: EXISTING PEAK HOUR TRAFFIC AND LOS

4.4 Traffic Accidents

Traffic accident data was collected from the City of Kanab for the previous three years (2015-2017). An evaluation of conditions indicates principal areas of interest in the downtown area and primarily related to intersections that merit traffic control improvements as discussed in more detail in the following section. The overall number of accidents appears to hold fairly steady with approximately 30 accidents per year. Table 4 details the information received from the City for the previous 3 years.

TABLE 4: KANAB CITY CRASH DATA (KANAB CITY ACCIDENT DATA)

Year	Injuries			Total
	None	Minor	Major	
2015	29	3	1	33
2016	20	6	1	27
2017	23	6	2	31

Accident rates at intersections are reported in annual accidents per million entering vehicles. This is a method allows for equivalent analysis of accident rates at intersections. An intersection with low traffic volumes may have a high accident rate with only a few accidents occurring per year. Table 5 depicts the intersections experiencing the highest number of accidents with their associated accident rates.

TABLE 5: INTERSECTION ACCIDENT RATES (KANAB CITY ACCIDENT DATA)

Major Road	Minor Road	Total Accidents (2015 – 2017)	Entering ADT	Annual Accidents per Million Vehicles
100 East (US 89)	300 South	6	14,762	0.37
Center St (US 89)	200 West	4	6,759*	0.54
Main Street	300 North	3	2,531*	1.08
300 South (US 89)	300 East	2	7,459*	0.24

*ADT's calculated from closest intersections with count data.

Accident rates for roadways are similarly represented by the number of annual accidents per 100 million vehicle miles traveled. As with the intersection accident rate a stretch of roadway can have a low number of accidents, but have a high accident rate because of a low volume. Conversely, a roadway with a higher number accidents and higher volume may have a lower accident rate. A few roadways of special interest are shown in Table 6.

TABLE 6: ROADWAY SEGMENT ACCIDENT RATES (KANAB CITY ACCIDENT DATA)

Roadway	From	To	Total Accidents (2015 – 2017)	ADT	Length (mile)	Annual Accidents per 100 Million Vehicle Miles
100 East (US 89)	Center St	300 South	9	9,246	0.35	2.54
100 East (US 89A)	300 South	800 South	4	9,434	0.56	0.69
300 South (US 89)	100 East	900 East	8	6,141	0.93	1.28
Center St (US 89)	300 West	100 East	9	6,102	0.53	2.54

According to UDOT the statewide average accident rate for an Urban Principal Arterial with an ADT of 0 – 20,000 is 2.74. The roadway segment accident rates in the City are lower than the statewide average, however, there a few areas of special interest:

- The intersection of Main Street and 300 North: From 2015 to 2017 this intersection experienced 3 accidents. All 3 of which occurred in the short period from June 2017 to December 2017. Continued local awareness of this location should be provided to assess if control measures should be considered.
- Center Street from 300 West to 100 East and 100 East from Center Street to 300 South: These two segments are adjacent to one another and form the heart of the Kanab City roadway network. It appears that an addition of a two-way continuous left turn lane would provide better protection for left turning movements to and from the numerous businesses that front these particular roadway segments.

4.5 Traffic Signal

Several existing intersections service relatively high traffic volumes and therefore merit consideration of control improvements. The locations of particular interest are shown in Figure 1 and in Appendix A (Map 3). Evaluation of whether these locations meet applicable signal warrants was completed with the results discussed in more detail in Section 6 of this report.

4.6 Model Results

Existing traffic volumes were collected during the months of December 2017 and January 2018. These volumes were converted to equivalent summer volumes. These equivalent summer traffic volumes were then integrated into an existing network analysis containing the existing major routes in the City of Kanab. This data was calibrated for a balanced flow throughout the roadway network. Existing traffic conditions were then modeled using Synchro 10 and SimTraffic 10 for the major routes and intersections in the existing roadway network. This network is shown in Figure 2.

Intersection and roadway functionality is assessed using level of service (LOS). Level of service is based on the average delay experienced by vehicles. Letter values from A to F are used for level of service scoring with A being the best and F being the worst. It is standard engineering practice to assume that a facility with LOS A to LOS D is within an acceptable range for most users. LOS E may also be acceptable, but usually only in urban areas. Using these guidelines the results of the existing model show that in general the current roadway system is adequate to convey the existing traffic volumes in the city of Kanab within a reasonable service level. There are some localized deficiencies involving roadway geometry/configuration as well as connectivity within the network. These locations are addressed within Section 6 of this study.

5 SYSTEM TRAFFIC MODEL

5.1 Future Land Use

Due to the high volume of traffic that passes through the city of Kanab via US 89 and US 89A it is anticipated that commercial and Industrial facilities will expand along the US 89 and US 89A corridors. This commercial and industrial growth is anticipated to occur at a moderate pace over the next 20 years. The city center is mostly built out. It is anticipated that residential growth will occur more on the outer edges of the city limits. This will likely include the transition of portions of the current rural agricultural lands to residential uses.

5.2 Travel Demands

The majority of the residential growth is anticipated to occur on the outer edges of the city limits. This will increase the flows on the collectors and arterials. The anticipated commercial growth along US 89 and US 89A and therefore is not anticipated to add additional pressure to local roads. It is anticipated the projected growth will result in the roadways still providing adequate levels of service. As discussed in greater detail in Section 5.4, the traffic model confirms this. However, there is benefit from expanding the roadway network to provide necessary connectivity. Currently there is only one route for traffic south of the city to travel north, US 89A. Additionally all traffic south and south west of the city must travel on US 89A and then onto US 89 to get east of the city as this is the only existing route for this movement. There are also only three existing roads that cross Kanab Creek which could potentially limit accessibility during a flood event.

The increased traffic volumes in likely to degrade the functionality of some of the existing intersections. This was analyzed in detail as part of the modelling of the future roadway network. The results of the model and specific intersection needs are discussed in greater detail in Section 5.4.

5.3 Projected Roadway Network

The Kanab City area was analyzed for traffic needs and potential roadways that would provide necessary accessibility and provide for future growth. The future roadway network is shown in Appendix A (Map 2). Currently residents in the Cedar Heights neighborhood have only one route across Kanab Creek. Adding a Major Collector between Stagecoach Trail and Powell Drive would provide an alternate route across Kanab Creek. This would also open approximately 250 acres to development. Proposed extensions of 600 South, 1100 South as well as proposed Piute Drive just north of the airport would provide alternate routes to east of town relieving the pressure on US 89 in the heart of the city. Many of the proposed roadways are aligned to provide access/connectivity to areas of anticipated growth.

5.4 Model Output

The existing roadway network was modeled for the anticipated 2038 traffic volumes to evaluate the impacts of the projected population growth on the current roadway network. This no-build scenario result is detailed in Figure 3. The projected 2038 no-build traffic volumes were calculated by applying the anticipated growth rates (3% annually for the next 10 years and 2% annually for the 10 years after that) to the existing traffic volumes. Evaluating the existing network with these project traffic volumes resulted

in the majority of the network operating at an acceptable level of service. There were two intersections with US 89A that provide poor levels of service under a no-build scenario: Kanab Creek Drive/1100 South and Red Shadow Lane/650 South. These two intersections are included in the proposed roadway improvements detailed in Figure 1 and in Appendix A (Map 3). It is anticipated that the proposed improvements will increase the future functionality of these two intersections and surrounding areas.

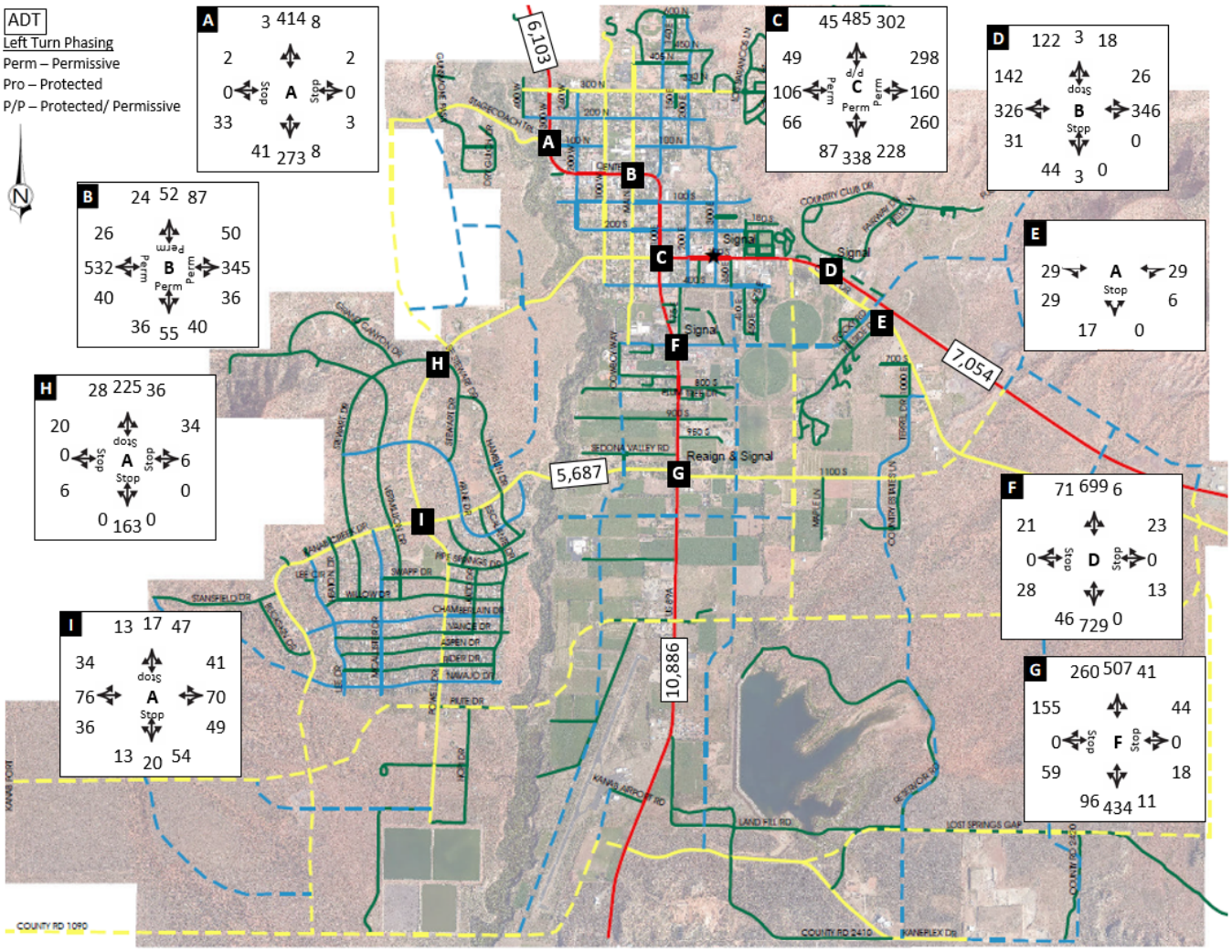


FIGURE 3: 2038 PEAK HOUR TRAFFIC AND LOS – NO BUILD SCENARIO

Two roadway corridors in the no-build condition provide lower than desirable levels of service: 300 South near US 89A and E Fairway Drive adjacent to the 7 Eleven/Wendy's. Both of these roadway segments have a high number of existing accesses. On E Fairway Drive there are currently 3 access points in 300 feet of roadway. It is anticipated that this is main contributor to the low levels of service. To increase the levels of service in the area it is recommended that access management measures such as consolidation or relocation be investigated.

The majority of the growth is anticipated to take place in new subdivisions that will necessitate providing related network connectivity that will drive the construction of many of the proposed roadways. A 2038

full-build Traffic model was developed incorporating the anticipated roadway improvements detailed in Figure 4. The anticipated growth/buildout of the Kanab area was utilized to distribute the projected traffic volumes over the expanded roadway network. The expanded roadway network introduces a number of new intersections with US 89 and US 89A. The high volumes along these principal arterials do not allow for efficient left turning movements. To achieve acceptable levels of service in the full-build model most of the proposed intersections with US 89 and US 89A had to be modeled with signals. The anticipated volumes at these intersections do not warrant signals, so signals were not included as part of the proposed roadway improvements in Appendix A (Map 3). It is recommended that each intersection be studied in greater detail in the future when they are designed and constructed. As discussed with the no-build scenario, it is anticipated that the roadways will be adequate to convey the projected traffic volumes. Due to signal operations it is recommended that four through lanes (2 northbound and 2 southbound) be extended along US 89 A from Plum Tree Drive to 1200 South.

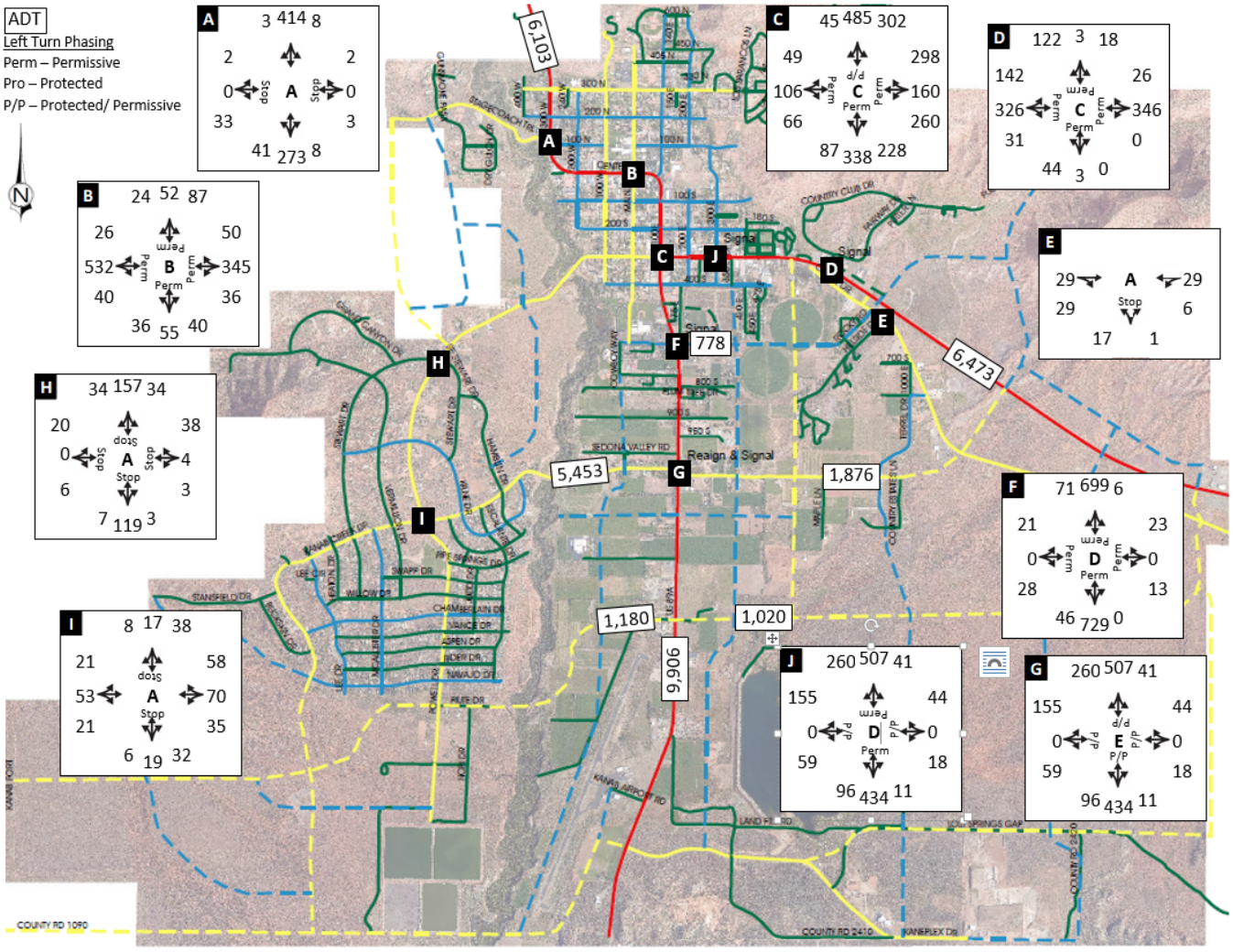


FIGURE 4: 2038 PEAK HOUR TRAFFIC AND LOS – FULL BUILD SCENARIO

6 RECOMMENDED IMPROVEMENTS

The full build roadway network was analyzed to determine which proposed roadways provide the most benefits. These were discussed with the city of Kanab and the following projects were projected to give the most benefit to the traveling public over the next ten years.

- 1100 South & Kanab Creek Drive Realignment: Kanab Creek Drive and 1100 South currently intersect US 89A with 150 feet separation. This proposed project would realign the two roadways to form a single signalized intersection with US 89A. This will provide for adequate left turn storage lengths for north and southbound traffic.
- 600 East from 1100 South to US 89: This project proposes a new roadway south of the Crazy Horse RV Campark. The proposed improvements would extend from US 89 (300 South) on the north to 1100 South.
- 300 South (US 89) and 700 East Signal: It is anticipated that a signal will be warranted in the future at this intersection. It is proposed that intersection improvements include access management considerations north of 300 South (US 89).
- 1100 South Widening: 1100 South is classified as a Major Collector. The existing pavement on this roadway is only 24 feet wide; less than half of the city standard of 51 feet. It is proposed to widen and stripe the roadway to match the current city standards.
- 650 South Extension to US 89: This project would provide an additional east-west corridor to alleviate the growing pressure on 300 South (US 89). A signal at the 650 South and US 89A intersection would also be evaluated as part of this project.

The remaining proposed improvements shown in Figure 1 and in Appendix A are anticipated to occur after the next 10 years. Many of these projects will be implemented as necessary to facility private development performed by others.

6.1 Key Considerations

As the City of Kanab continues to grow it is important to build upon the existing roadway network to expand interconnectivity to prevent future overloading of the existing primary travel routes. It is recommended that access management be considered with the anticipated commercial growth along the US 89 and US 89A corridors.

7 FINANCIAL VIABILITY

7.1 Cost Estimates

Civil Science has prepared cost estimates for each of the projects identified in the previous section. These estimates were created for planning purposes. Each cost estimate captures anticipated construction costs including: mobilization, construction layout, demolition, material and labor costs, surface restoration, professional services, incidentals, and contingency. The projects were organized in a manner so that costs are not shared between projects. This allows for better understanding of a singular project costs versus showing all the projects in an abbreviated cost estimate format. The table below shows project costs in 2018 dollars

7.2 Project Phasing

Recommended improvements were assigned a time frame in which the projects are expected to be needed based on growth projections, localized growth, and available impact fee funds as shown in the cash flow. Table 7: Cost Estimate Summary shows the recommended improvements within a 10-year period along with the projected year of construction and costs in 2018 dollars.

TABLE 7: COST ESTIMATE SUMMARY

Project Name	Project Year	2018 Cost
1100 South & Kanab Creek Dr Realignment	2019	$740,800
600 East (1100 South to HWY 89)	2021	$3,229,725
300 South 700 East Signal	2023	$401,801
1100 South Major Collector Widening	2026	$1,852,923
650 South to HWY 89	2027	$2,238,689
IFFPA (5 yr & 10 yr)	2023, 2028	$60,000
	TOTAL	**$8,523,938**

The improvements are planned to support continuing growth within the next ten years and are planned for implementation at times when the growing population base can theoretically generate enough revenue to fund the projects. It should be noted that growth in the study area may occur at a rate faster or slower than that predicted in the cash flow analysis. If growth occurs at a faster rate, more funds will be available to construct the projects at an earlier schedule than that specified by the phasing projections. On the other hand, if growth slows more than expected, implementation of the projects should be delayed until the population base can fund the improvements.

7.3 Impact Fee Analysis

Kanab City does not currently charge impact fees. It is a core goal of this report to establish a transportation impact fee for the City to allow the City to grow the roadway network according to new development.

The proposed transportation impact fee was calculated based on the estimated costs, projected construction year, inflation, and impact fee eligibility. Project impact fee eligibility is based on whether

the project is needed to address an existing issue, or what portion of the project is needed to serve new growth and development to the wastewater system. The impact fee calculations are presented Table 8. Impact fee eligible costs are based on inflated costs and impact fee eligibility.

TABLE 8: IMPACT FEE CALCULATIONS

Project Name	Projected Year	Inflation 3%		Impact Fee Eligible %	Impact Fee Eligible Cost
		2018 Cost	Inflated Cost		
1100 South & Kanab Creek Dr Realignment	2019	$740,800	$763,024	100%	$763,024
600 East (1100 South to HWY 89)	2021	$3,229,725	$3,529,208	100%	$3,529,208
300 South 700 East Signal	2023	$401,801	$465,797	0%	$0
1100 South Major Collector Widening	2026	$1,852,923	$2,347,228	100%	$2,347,228
650 South to HWY 89	2027	$2,238,689	$2,920,981	100%	$2,920,981
IFFPA (5 yr & 10 yr)	2023, 2028	$60,000	$75,096	100%	$75,096
	TOTAL	$8,936,958	$10,539,507	-	$9,635,537

TABLE 9: IMPACT FEE SCHEDULE

Transportation	
Total 10-year Cost	$ 9,635,536.85
Residential	Non-Residential
63.9%	36.1%
$ 6,157,108.04	$ 3,478,428.80
649 ERC	734,000 sq-ft
$9,487.07 /ERC	**$4.74 /sq-ft**

*Assumed 2,000 sq-ft per ERC for non-residential ERCs. Analysis is based on a 10-year period. Percentage split based on Residential vs. Non-Residential projected growth.

Because residential and non-residential ERC are assumed to use stormwater services at the same rate, 63.9% of future ERCs are calculated to be residential and the rest as non-residential. This splits the total impact fee eligible cost into residential and non-residential amounts. The residential amount is divided by the number of projected additional residential ERCs in the 10-year planning horizon to achieve the residential impact fee per ERC. The non-residential amount is divided by the number of projected additional commercial ERCs in the 10-year planning horizon multiplied by the assumed area of 2,000 sq-ft per commercial ERC to achieve the commercial impact fee per square-foot of building space.

The maximum allowable impact fee for residential connections is **$9,487.07**. Commercial building less than the 2,000 sq-ft will have the same maximum allowable impact fee as residential connections of **$9,487.07**. Commercial building greater than the 2,000 sq-ft will have a maximum allowable impact fee of **$4.74** per square feet of total building area. The recommended impact fee schedule is shown in. Table 9.

As required by the Utah Impact Fees Act, an Impact Fee Certification is included in Appendix D. It states that this analysis was done in accordance with the Impact Fees Act and its requirements.

Rules regarding the use of impact fees are covered by the Impact Fees Act. Generally, impact fees may only be used for system improvements that are required to service new development within the existing level of service or expected service requirements (road capacity, safety, etc.) and are included in this Impact Fee Facilities Plan. Impact fees must be used within six years of payment or they must be paid back. Alternative sources of revenue such as grants or shared construction costs should be

investigated to reduce the financial burden of the City and its new residents. At the time of this study, Kanab is not applying for, or holding, any grant funds related to wastewater system projects.

7.4 User Rate Analysis

Kanab City does not have a user rate for transportation related uses, nor does it plan to start charging a user rate. No user rate analysis was needed for this study.

7.5 Cash Flow Analysis

A cash flow analysis for a 20-year planning horizon was completed to show how the 10-year planning horizon improvement projects could be implemented, to show possible trends in impact fee and cash fund balances. Initial data for the cash flow analysis was taken from Kanab City audits for fiscal years 2016-2017. Values projected through the analysis are based on growth, interest, and inflation trends determined during the process of the study. It should be noted that the analysis is a general forecast only and will vary with the speed and pattern of development in the City. The entire cash flow analysis is included in Appendix C.

The upper section of the cash flow printout, entitled "Revenue", contains the basic data upon which many of the values in the cash flow spreadsheet are generated. Of note are the projected growth trends, the assumed inflation rates, impact fees, and the projected ERC quantities for the coming fiscal years. Most of the revenue in later parts of the cash flow spreadsheet are generated from the impact fees, and general fund transfers.



FIGURE 5: US 89 LOOKING TOWARD KANAB

The following section is the expenses section which attempts to quantify all the expenses incurred by the transportation system. Included in the expenses section are the operation and maintenance costs, existing debt service costs and new debt service costs. The difference between the total revenues and total expenses is the net cash flow for the system.

Total revenues and total expenses are broken down into impact fee and cash fund categories. This was done to help show that adequate funds would be available over the course of the projection period.

A system improvement implementation schedule for the next twenty years was included at the end of the cash flow analysis, this shows how the impact fee facilities plan improvement projects were incorporated into the cash flow analysis.

7.5.1. Other Financing Options

Where possible, Kanab should seek alternative financing for projects in order to reduce the financial burden of consumers in the form of lower user rates or lower impact fees. Kanab's transportation network is in good financial health and is currently able to maintain a positive cash flow for the duration of the analysis. Grant or loan options available to Kanab City are included below:

- Permanent Community Impact Fund Board (CIB)
- Utah Community Development Block Grant (CDBG)
- USDA Rural Development (RD)
- Interfund loans
- UDOT related funds

8 GUIDELINES & POLICIES

8.1 Typical Sections

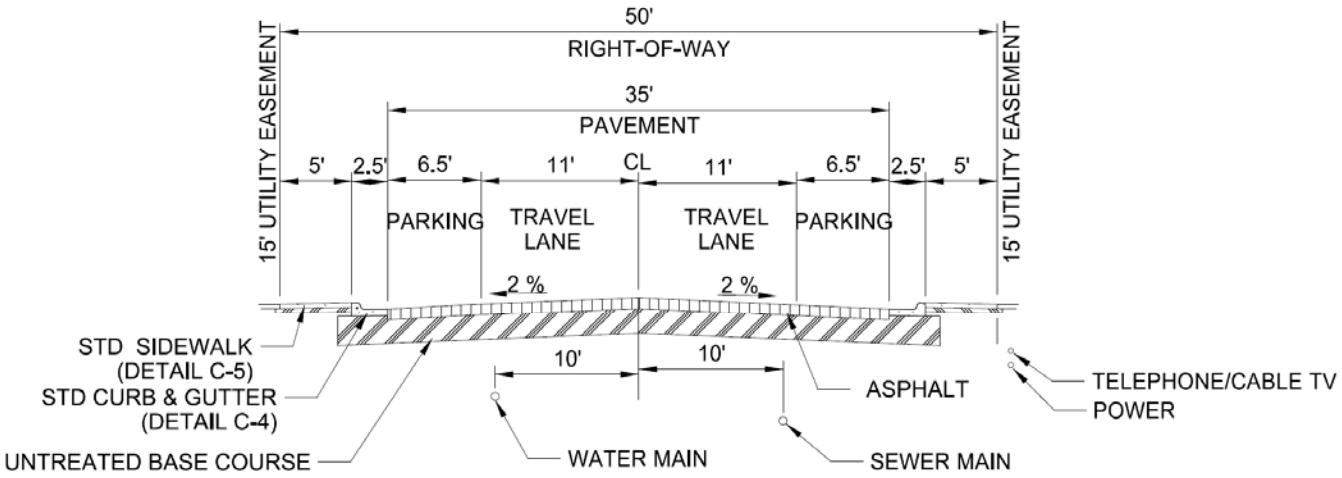
The requirements for roadway typical cross sections are based on traffic capacity, design speed, projected traffic volumes, system continuity and overall safety. These requirements are shown in Table 10. Figure 6 provides an example of the City's typical sections. Refer to Appendix B for typical sections for all roadway classifications. All new developments shall use typical sections with 50 feet or more of right-of-way. Access to commercial or multi-family developments shall use typical sections with 60 feet or more of right-of-way. Typical sections for US 89 and US 89A are governed by UDOT standards. Alternate typical sections incorporating a planting strip may be permitted if applicable safety and traffic standards are met and approved by the City Traffic Engineer.

TABLE 10: ROADWAY TYPICAL SECTION CONFIGURATIONS

Classification	Type	Design Volume (ADT)	Dwelling Units	Maximum Grade (%)	Right-of-Way (ft)	Pavement Width (ft)	Sidewalk Width (ft)	Recommended Design Speed (mph)
Residential Access	Private	<100	2-10	15	34/38	26	4 – one or both sides	25
Minor Local	Private	101-500	11-50	15	42	30	4	25
Rural Residential	Public	501 -1,250	1-125	15	50/60/66	26/26/40	-	25
Major Local	Public	501 -1,250	1-125	15	50	35	5	25
Minor Collector	Public	1,251-2,000	126-200	12	60	45	5	30
Major Collector	Public	2,001-6,000	201-600	10	66	51	5	35-40
Arterial	Public	>6,000	>600	8	≥90	≥67	6	≥40

1. Parking is not recommended on arterial roadways.
2. The smallest roadway maintained by the city shall be a 50 ft right-of-way.
3. Sidewalk widths for commercial areas will be determined on a case-by-case basis according to each individual site and the surrounding area.
4. Configuration of major collector and higher classifications may be adjusted with proper justification and approval of City.
5. The minimum right-of-way and pavement width is shown. Each may be increased when required by a traffic impact study.

Source: Kanab City Design Standards (May 11, 2010)



MAJOR LOCAL - 50' ROAD SECTION

SCALE: N.T.S.

NOTE: DETACHED SIDEWALKS CAN BE INCORPORATED INTO THIS SECTION WITH A MINIMUM OF 4' ADDITIONAL WIDTH ON EITHER OR BOTH SIDES.

FIGURE 6: MAJOR LOCAL ROAD TYPICAL SECTION

8.2 Access Management

Access management is the practice of coordinating the location, number, spacing and design of access points to minimize site access conflicts and maximize the traffic capacity of a roadway. 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.

8.2.1. Benefits of Access Management

A good access management program can accomplish the following:

- Improve overall roadway safety
- Decrease interruptions in traffic flow
- Minimize traffic delays and congestion
- Maintain roadway capacity
- Extend the useful life of roads
- Improve air quality
- Enhance pedestrian and bicycle facilities

These benefits can be realized with the following management approach:

- Limit the number of conflict points at driveway locations
- Separate conflict areas
- Reduce the interference of through traffic
- Provide sufficient spacing for signalized intersections
- Provide adequate onsite circulation and storage.

8.2.2. Where to Use Access Management

Access Management should be applied on roadways within Kanab City. Roadway access management strategies extend the useful life of roads at little or no cost to taxpayers. Access management can be used 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 in order to prolong the usefulness of the 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.

8.2.3. General Access Management Principles

Conflicts at intersections and driveways should be separated and the number reduced as much as possible.

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.

Un-signalized 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.

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 should not be compromised.

8.2.4. Access Management Techniques

There are many techniques that can be used in access management. The most common techniques are signal spacing, street spacing, and access spacing. There are various distances for each spacing dependent upon the roadway type being accessed and the accessing roadway.

8.2.5. Number of Access Points

Controlling the number of access points or driveways from a site to a roadway reduces potential conflicts between vehicles, pedestrian, and bicycles. Each parcel should normally be allowed one access point, and shared accesses are preferred where possible.

8.2.6. Signalized Intersections

Uniform or near uniform spacing of signals is essential for efficient traffic flow. In general, signals should be spaced at a distance of one-quarter mile (1,320 feet) apart.

8.2.7. Un-signalized Driveways

Un-signalized driveways are much more common than signalized driveways. Sound traffic engineering criteria indicates that 500 feet or more should be provided between full movement un-signalized accesses.

8.2.8. Right-In/Right-Out Accesses

Restricted access movement can provide for additional access to promote economic development with minimal impact to the facility. This type of access should be spaced to allow for a minimum of traffic conflicts and provide distance for deceleration and acceleration of traffic in and out of the access.

8.2.9. Residential Lots

The number of accesses on residential lots shall be based on the following:

- Number of Driveways: residential lots shall not have more than two (2) driveways, unless approved by the City Engineer.
- Width: No driveway shall be more than 32 feet in width, unless approved by the City Engineer. In no event shall the combined width of such driveways exceed 46 feet or 50% of the entire lot frontage, whichever is less.
- Corner Lots: 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 distances consistent with Kanab City Standards.

8.2.10. Commercial Lots

Commercial lots or developments are not limited to one access per lot and should be addressed on a case by case basis. Additional accesses (beyond 1) must be approved by the City upon completion of a 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.

Access spacing shall be measured from center of access to center of access. Major 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.

8.2.11. Offset Distance

Offset distance is the distance from the center of an access to the center of the next access on the opposite side of the road. On undivided roadways, access on opposite sides of the road should be aligned. Where alignment is not possible, driveways should be offset at a distance of 150 feet for collectors and 500 feet for arterial roadways.

8.2.12. Corner Spacing

Providing adequate corner spacing improves traffic flow and roadway safety by ensuring that the traffic turning into the driveway does not interfere with the function of the intersection. 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 100 feet for collectors and 200 feet for arterials. This distance is measured from the PC (point of curve) of the corner curve. A 25-foot radius is considered the minimum where the existing radius is less than 25 feet.

8.2.13. Medians

Medians are used to control and manage left turns and crossing movements as well as separating traffic moving in opposite directions. Restricting left turning movements reduces the conflicts between through and turning traffic, resulting in improved safety. Studies have shown that the installation of a non-traversable median will reduce crashes by 30% over that of a two way left turn lane (TWLTL).

The need for a median can be identified through an engineering review (a traffic study assessing the impact of a proposed project) and should be considered on any roadway that has a speed limit greater than 40 mph. Medians can improve pedestrian safety by providing a refuge area for the pedestrian.

Medians can also add to the overall aesthetics of a roadway corridor or a development by incorporating landscaping or other items of visual interest. However, care should be taken to maintain sight distance around the intersection/access locations. Ground cover plantings should be planted within 350 feet of an intersection/access opening. Care should be taken to select landscape material that will not intrude into the roadway and to locate materials such that they will not cause a safety problem. Trees should be selected that will not be larger than 4 inches in diameter when mature.

Two way left turn lanes should only be used to retrofit areas of existing development and should be limited to roadways with less than 15,000 ADT. In areas with greater than 15,000 ADT, consideration should be given to a raised median with appropriately spaced median openings.

8.2.14. Width of Access Points

In addition to limiting the number of access points, the width of the access point should be restricted based on the use of the site. Residential lot driveways should be limited to a maximum throat width of 32 feet at the back of the dive approach. The maximum width for a commercial or industrial site entrance with two-way traffic should be limited to 44 feet. The width includes 12 feet for right out, 12 feet for left out, 16 feet for an ingress lane, and two 2-foot shoulders. The width of the entrance should be determined based on the type of use for the site, the type of traffic (cars vs. 18 wheel trucks), and the projected volume of traffic.

8.2.15. Turning Radius

The turning radius of a driveway or access road affects both the flow and safety of through traffic as well as vehicles entering and exiting the roadway. The size of the turning radius affects the speed at which vehicles can exit the flow of traffic and enter a driveway. The larger the turning radius, the greater the speed at which a vehicle can turn into a site.

The speed of the roadway, the anticipated type and volume of the traffic, pedestrian safety, and the type of use proposed for the site should be considered when evaluating the turning radius and should be determined on a case-by-case basis as part of development planning.

8.2.16. Shared Access

Access points can be shared between adjacent parcels to minimize the potential for conflict between turning and through traffic. Interconnections between sites can eliminate the need for additional curb cuts, thereby preserving the capacity of the roadway. This is particularly important for commercial/industrial sites and should be used to encourage the development of interconnectivity between parcels. Future roadway rights-of-way should also be preserved to promote interconnected access to vacant parcels.

8.2.17. Alignment of Access Points

Accesses represent points of conflict for vehicles, bicycles, and pedestrians. To minimize the potential Conflicts and improve safety, intersections and driveways shall be aligned opposite each other wherever possible and roadways intersect at a 90 degree angle.

8.2.18. Sight Distance

Sight distance is the length of the road that is visible to the driver. A minimum safe sight distance should be required for access points based on the roadway classification. It is essential to provide sufficient intersection sight distance at the driveway point for vehicles using a driveway to see oncoming traffic and judge the gap to safely make their movement. Intersection sight distance varies depending on the design speed of the roadway to be entered and assumes a passenger car can turn right or left into a two-lane highway and attain 85 percent of the design speed without being overtaken by an approaching vehicle that reduces speed to 85 percent of the design speed. Sight distance values should be determined based upon actual conditions and relevant standards published in the latest edition of the AASHTO Policy on Geometric Design.

8.2.19. Turning Lanes

Turning lanes remove the turning traffic from the through travel lanes. Left turning lanes are used to separate the left turning traffic from the through traffic. Right turn lanes reduce traffic delays caused by the slowing of turning vehicles. These lanes are generally used in high traffic areas on arterial and collector roadways. A traffic impact study will determine the need for turning lanes. The provision for left turn lanes is important from both capacity and safety perspective, where left turns would otherwise share the use of a through lane. Shared use of a through lane will dramatically reduce capacity, especially when opposing traffic is heavy. Left turn lanes shall be provided at signalized intersections.

Right turn lanes remove the speed differences in the main travel lanes. This helps to reduce the number and severity of rear-end collisions. Right turn lanes also increase capacity of signalized intersections and may allow more efficient traffic signal phasing and should be installed where feasible.

8.2.20. Pedestrian and Bicycle Access

All new development and redevelopment of existing sites should address pedestrian and bicycle access to and within the site, consistent with associated City plans.

8.2.21. Roundabouts

Development of a roundabout should occur as a result of an intersection study by a qualified Traffic Engineer and when the minimum capacity and design criteria can be met.

8.3 Maintenance

Street maintenance is a regular function of the Kanab City Public Works Department. These activities include updating/upgrading pavement surfaces, cleaning of surfaces and related storm drain collection features, and general upkeep. It is recommended that a heightened focus on asset management be provided to ensure that maintenance funding and capital expenditures are focused on the areas of the highest long-term benefit. This focus will include two areas of specific emphasis:

1. Pavement Management and Preservation Program Development: This program will focus on an analytical approach to evaluating the condition of existing pavement conditions and recommending various rehabilitative techniques that focus on long term life cycle costs and benefits. The most substantial cost in constructing and improving street improvements is in the surface materials and this program would assist the City in preserving and maintaining existing streets/roads to a higher level for a longer period of time.

2. Street Asset Preservation Program Development: This program will focus on developing an assessment and maintenance/improvement program for street related features including signs, lighting, signals, and related infrastructure.

Both of these suggested programs when implemented will provide for enhanced understanding of the remaining life of transportation related facilities and provide the City with a tool set to appropriately prioritize and fund necessary maintenance and improvements.

8.4 Corridor Preservation

8.4.1. Objectives

The objectives of corridor preservation are as follows:

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

8.4.2. Corridor Preservation Techniques

Techniques for corridor (right-of-way) preservation fall into the following three major categories: (1) acquisition, (2) exercise of governmental powers, and (3) voluntary agreements and governmental inducements. The purpose of this Section is to provide a "toolbox" of techniques available, a summary of each is provided below.

8.4.3. 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 as outlined in the following paragraphs.

8.4.4. 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. Before property may be taken for a corridor the acquiring agency must identify the corridor location, general route and termini.

8.4.5. 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.

8.4.6. 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. 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.

8.4.7. 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.

8.4.8. Public Land Exchanges

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

8.4.9. 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.

8.4.10. 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.

8.4.11. 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. Impact fees and exactions can be assessed when 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. 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.

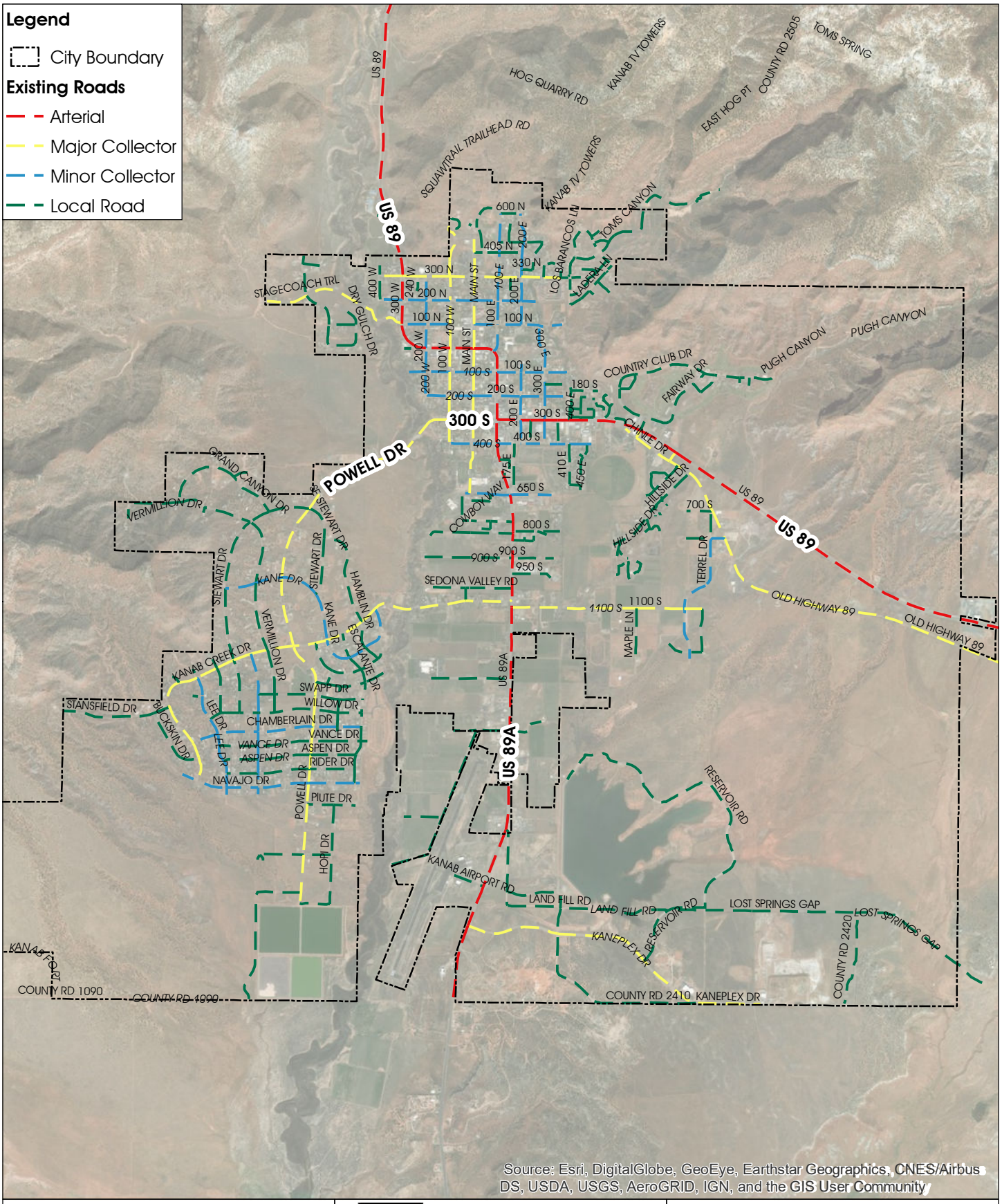
Appendix A

Maps

Map 1 Existing Roadways

Map 2 Existing Roadways & Recommended Roadways

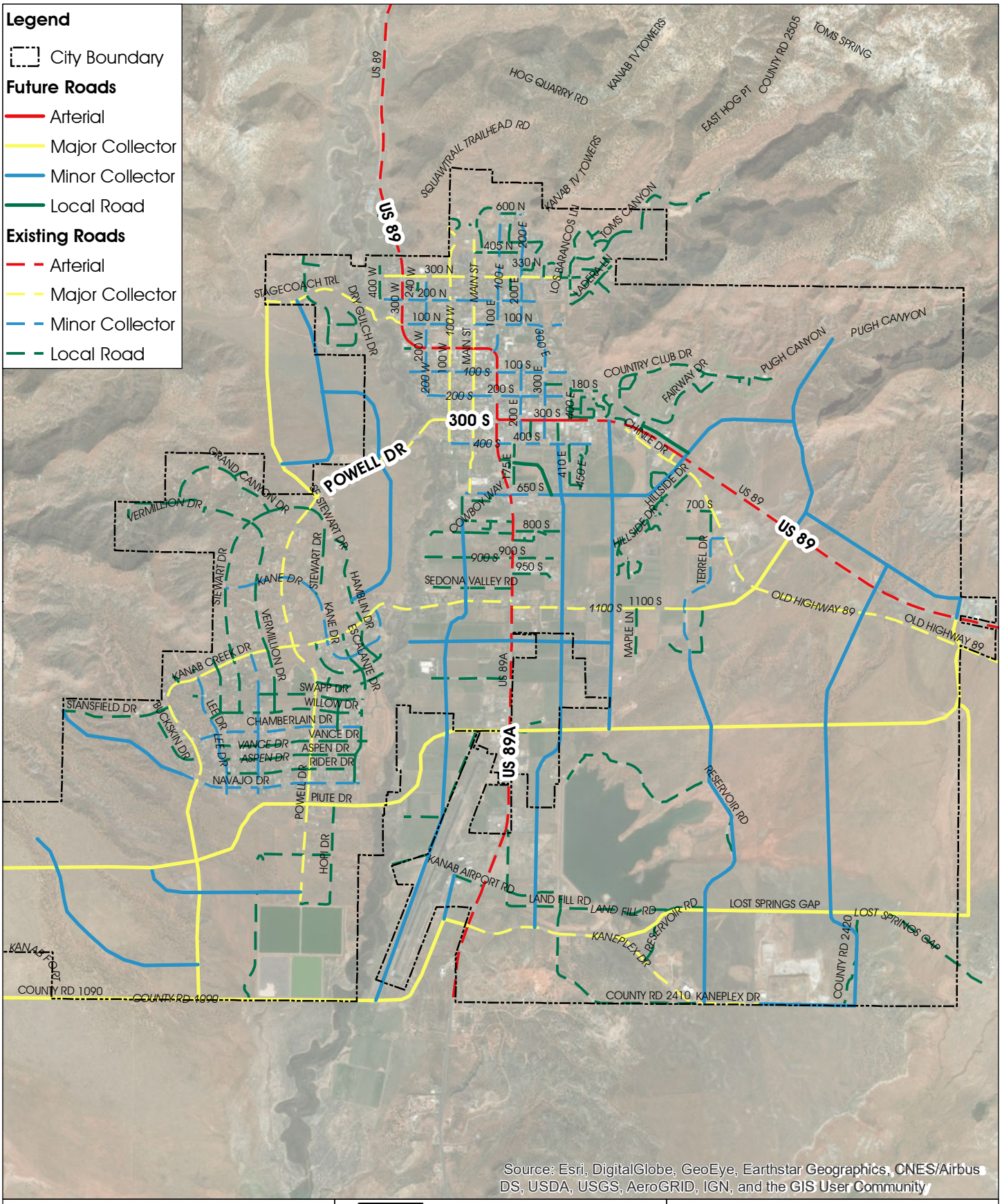
Map 3 Recommended Roadways & Projects

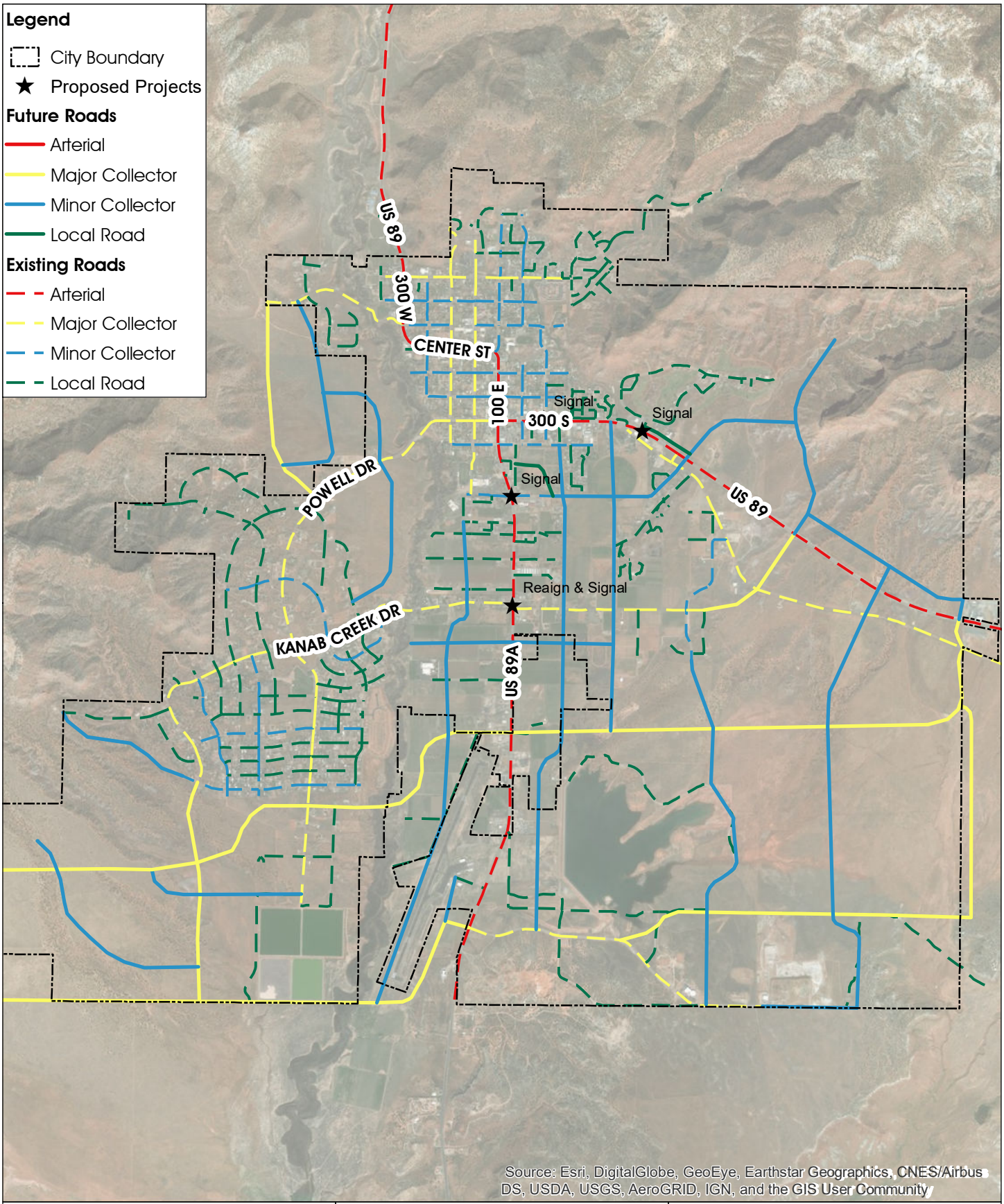


TRANSPORTATION IMPACT FEE FACILITIES PLAN

EXISTING ROADWAYS

Map 1


Legend
City Boundary
Future Roads
Arterial
Major Collector
Minor Collector
Local Road
Existing Roads
Arterial
Major Collector
Minor Collector
Local Road
US 89
US 89A
300 S
POWELL DR
SEDONA VALLEY RD
OLD HIGHWAY 89
KANAB AIRPORT RD
LAND FILL RD
RESERVOIR RD
KANEPLEX DR
LOST SPRINGS GAP
COUNTY RD 2410 KANEPLEX DR
COUNTY RD 1090
COUNTY RD 2420
HOG QUARRY RD
SQUAWTRAIL TRAILHEAD RD
KANAB TV TOWERS
EAST HOG PT
COUNTY RD 2505
TOMS SPRING
TOMS CANYON
PUGH CANYON
COUNTRY CLUB DR
FAIRWAY DR
CHINLE DR
HILLSIDE DR
TERREL DR
MAPLE LN
COWBOY WAY
STAGECOACH TRL
DRY GULCH DR
MAIN ST
LOS BARANCOS LN
VADERA LN
GRAND CANYON DR
VERMILLION DR
STEWART DR
KANE DR
HAMBLIN DR
ESCALANTE DR
KANAB CREEK DR
SWAPP DR
WILLOW DR
CHAMBERLAIN DR
VANCE DR
ASPEN DR
RIDER DR
NAVAJO DR
PIUTE DR
HOPI DR
STANSFIELD DR
BUCKSKIN DR
LEE DR
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
N
0 1,750 3,500 Feet
1:42,000
KANAB UTAH
CIVIL SCIENCE INFRASTRUCTURE, INC.
TRANSPORTATION IMPACT FEE FACILITIES PLAN
EXISTING ROADWAYS & RECOMMENDED ROADWAYS
Map 2



N

0 1,750 3,500 Feet

1:42,000

KANAB UTAH

CIVIL SCIENCE INFRASTRUCTURE, INC.

TRANSPORTATION IMPACT FEE FACILITIES PLAN

RECOMMENDED ROADWAYS & PROJECTS

Map 3

Appendix B

Tables & Figures

Project Summary Showing UDOT Related Projects

Impact Fee Schedule

Road Miles in Kanab

Typical Road Sections

UDOT Average Crash Rates

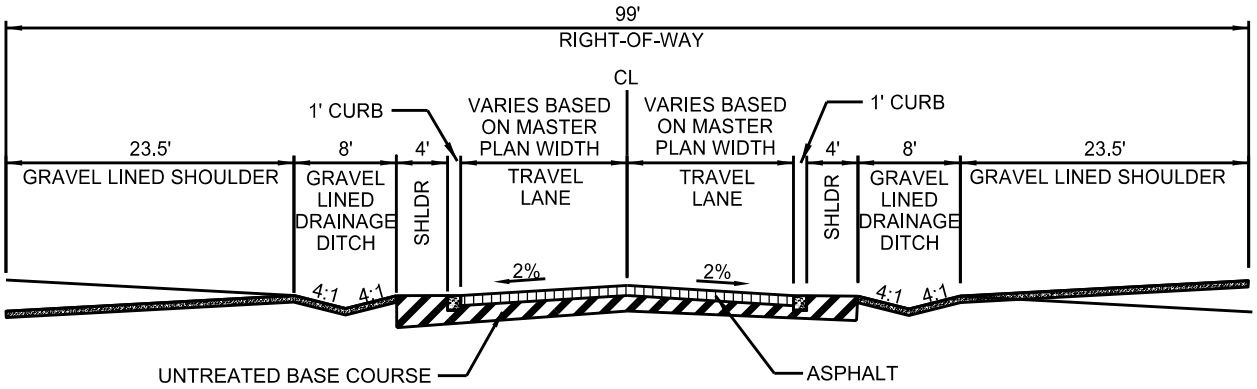
Project Summary Showing UDOT Related Projects

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1100 South Major Collector Widening	2026	$1,852,923	$2,347,228	100%	$2,347,228	
650 South to HWY 89	2027	$2,238,689	$2,920,981	100%	$2,920,981	
IFFPA (5 yr & 10 yr)	2023, 2028	$60,000	$75,096	100%	$75,096	
	TOTAL	$8,936,958	$10,539,507	-	$9,635,537	

Impact Fee Schedule

Transportation	
Total 10-year Cost	$ 9,635,536.85
Residential	Non-Residential
63.9%	36.1%
$ 6,157,108.04	$ 3,478,428.80
649 ERC	734,000 sq-ft
$9,487.07 /ERC	**$4.74 /sq-ft**

*Assumed 2,000 sq-ft per ERC for non-residential ERCs. Analysis is based on a 10-year period. Percentage split based on Residential vs. Non-Residential projected growth.



EXISTING 99' R/W - CITY STREETS

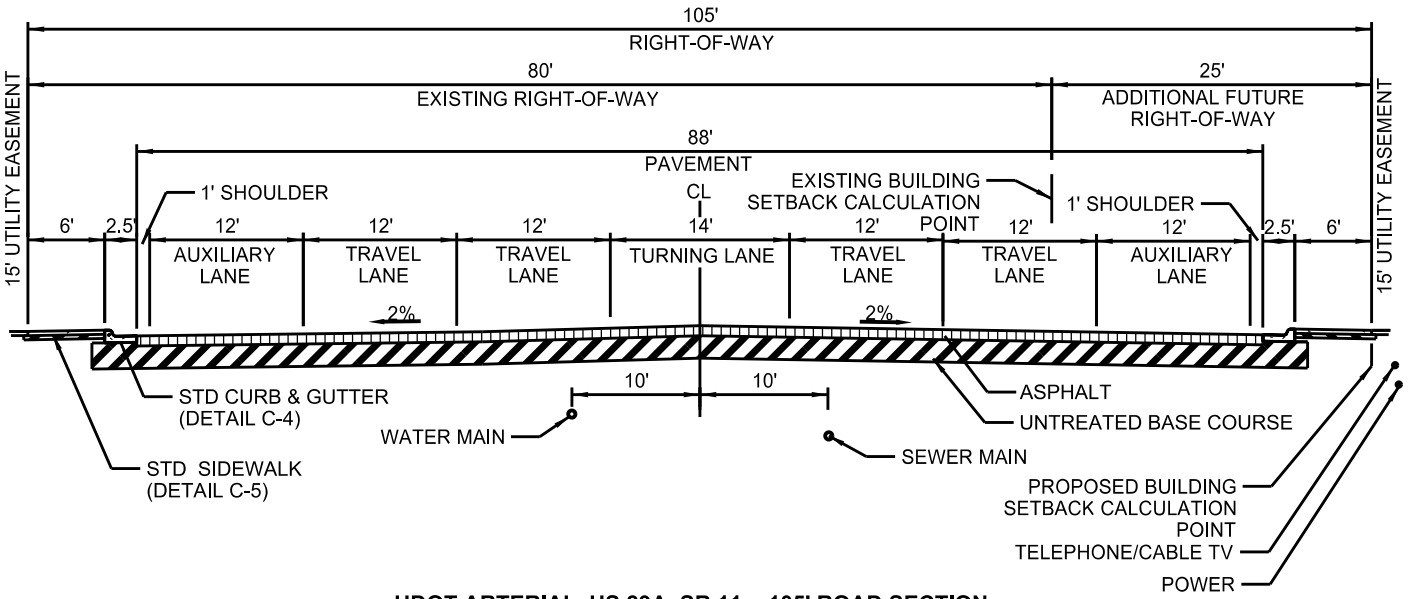
SCALE: N.T.S.

KANAB UTAH

CIVIL SCIENCE INFRASTRUCTURE, INC.

TYPICAL SECTION

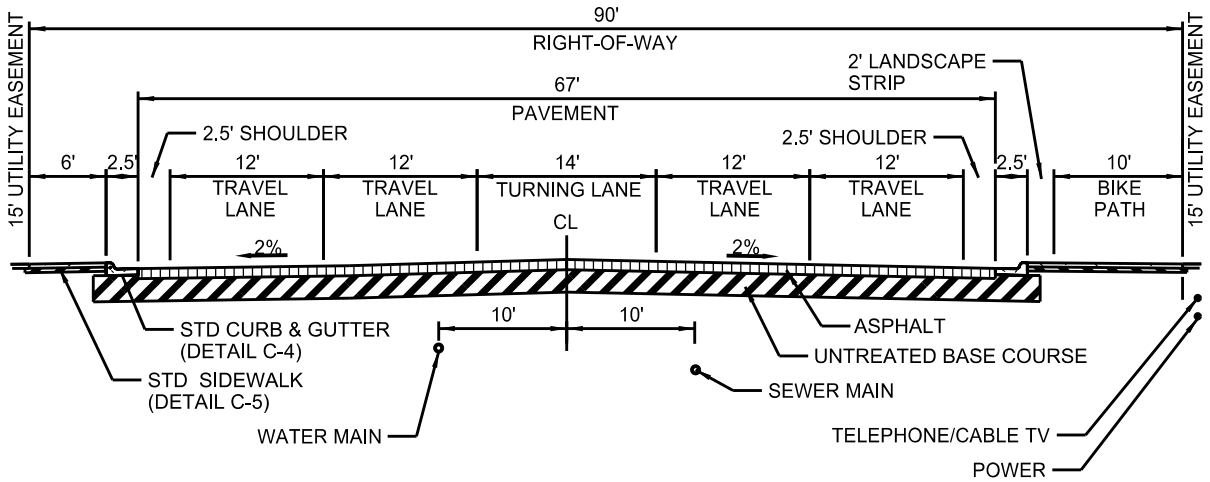
EXISTING 99' R/W - CITY STREETS



UDOT ARTERIAL, US 89A, SR 11, - 105' ROAD SECTION

SCALE: N.T.S.

NOTE: SETBACK LOCATIONS ONLY APPLY TO THE EAST SIDE OF US-89A FROM 1100 SOUTH TO SOUTH CITY LIMITS



ARTERIAL ROAD WITH BIKE PATH - 90' ROAD SECTION

SCALE: N.T.S.

NOTE: DETACHED SIDEWALKS CAN BE INCORPORATED INTO THIS SECTION WITH A MINIMUM OF 4' ADDITIONAL WIDTH ON THE SIDEWALK SIDE.

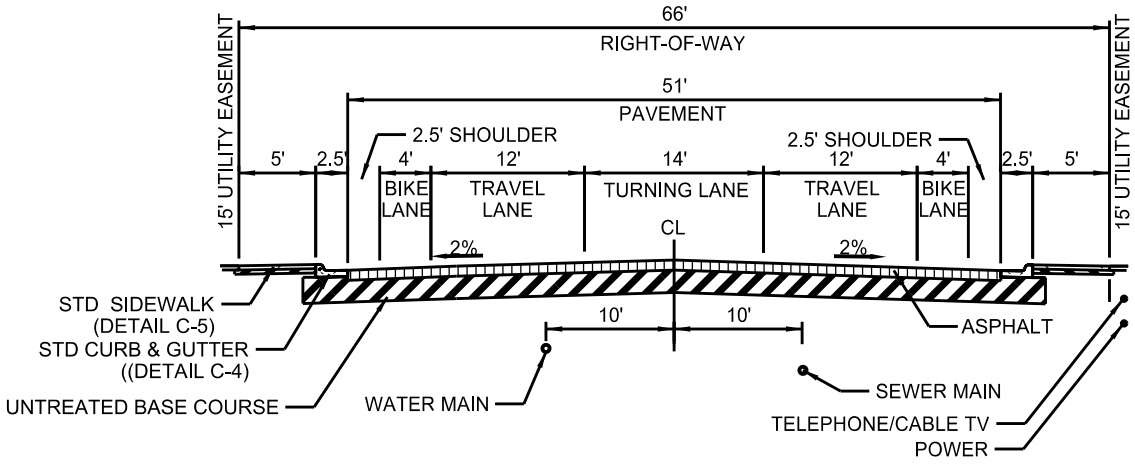
KANAB UTAH

CIVIL SCIENCE INFRASTRUCTURE, INC.

TYPICAL SECTION

UDOT ARTERIAL, US 89A, SR 11, - 105' ROAD SECTION

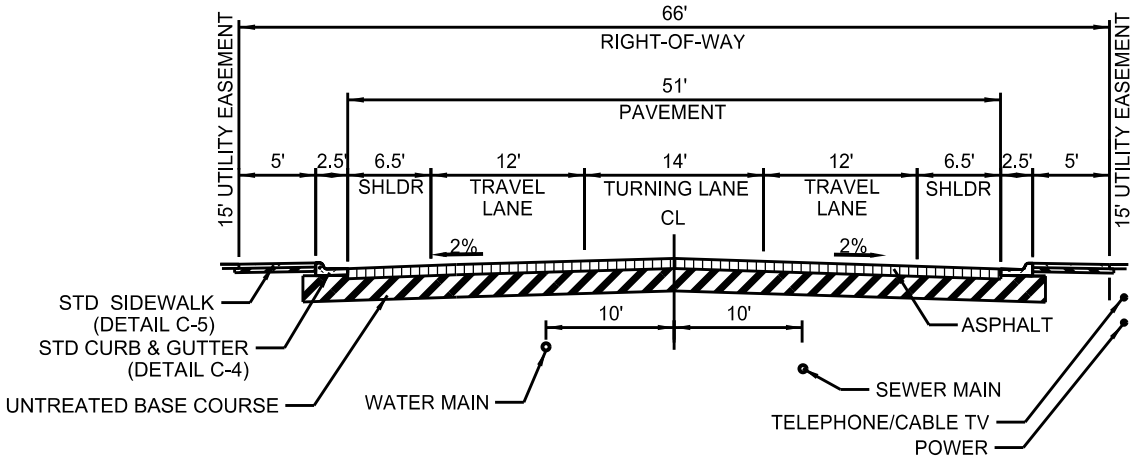
ARTERIAL ROAD WITH BIKE PATH - 90' ROAD SECTION



MAJOR COLLECTOR WITH BIKE LANE - 66' ROAD SECTION

SCALE: N.T.S.

NOTE: DETACHED SIDEWALKS CAN BE INCORPORATED INTO THIS SECTION WITH A MINIMUM OF 4' ADDITIONAL WIDTH ON EITHER OR BOTH SIDES.



MAJOR COLLECTOR WITHOUT BIKE LANE - 66' ROAD SECTION

SCALE: N.T.S.

NOTE: DETACHED SIDEWALKS CAN BE INCORPORATED INTO THIS SECTION WITH A MINIMUM OF 4' ADDITIONAL WIDTH ON EITHER OR BOTH SIDES.

KANAB UTAH

CIVIL SCIENCE INFRASTRUCTURE, INC.

TYPICAL SECTION

MAJOR COLLECTOR WITH BIKE LANE - 66' ROAD SECTION

MAJOR COLLECTOR WITHOUT BIKE LANE - 66' ROAD SECTION

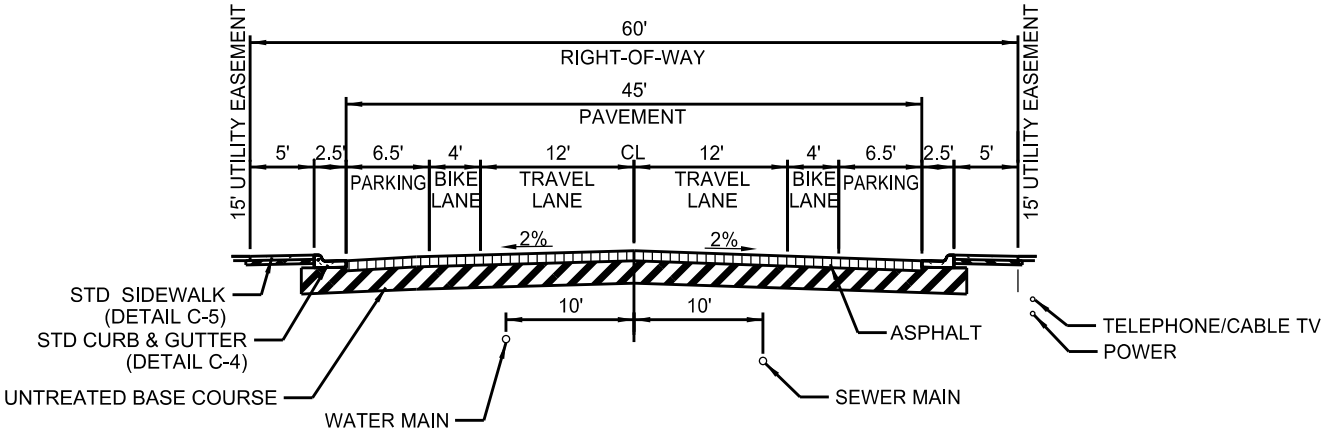
KANAB UTAH

CIVIL SCIENCE INFRASTRUCTURE, INC.

TYPICAL SECTION

MINOR COLLECTOR WITH BIKE LANE - 60' ROAD SECTION

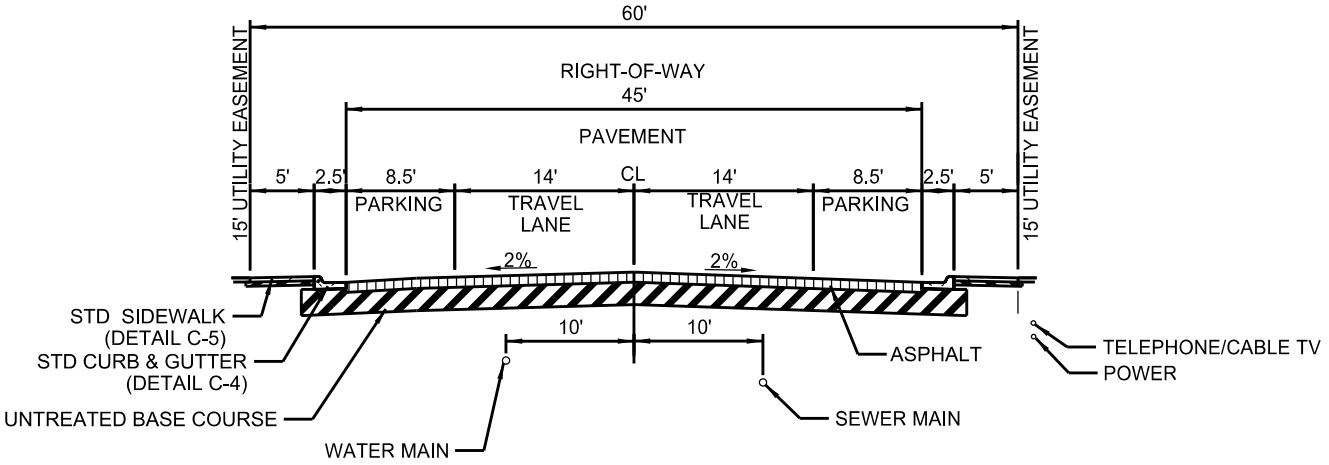
MINOR COLLECTOR WITHOUT BIKE LANE - 60' ROAD SECTION



MINOR COLLECTOR WITH BIKE LANE - 60' ROAD SECTION

SCALE: N.T.S.

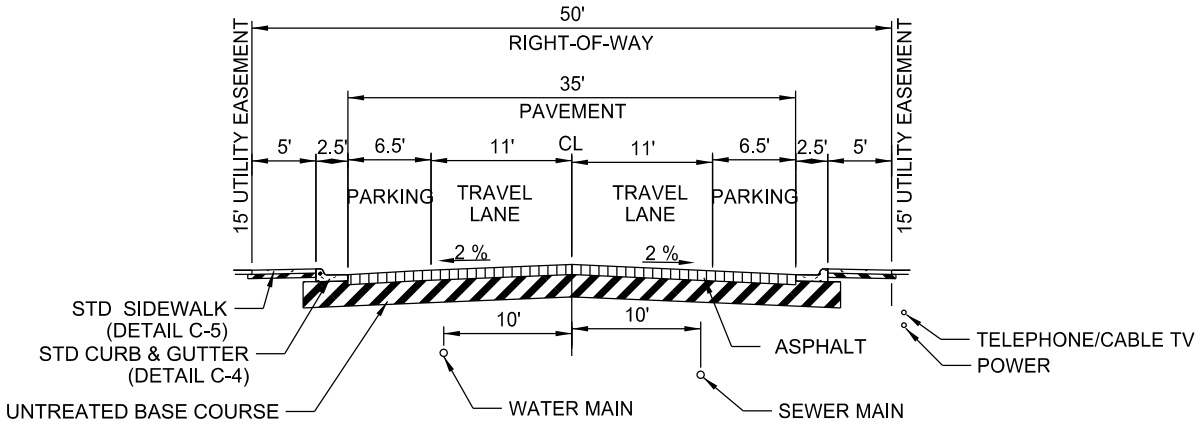
NOTE: DETACHED SIDEWALKS CAN BE INCORPORATED INTO THIS SECTION WITH A MINIMUM OF 4' ADDITIONAL WIDTH ON EITHER OR BOTH SIDES.



MINOR COLLECTOR WITHOUT BIKE LANE - 60' ROAD SECTION

SCALE: N.T.S.

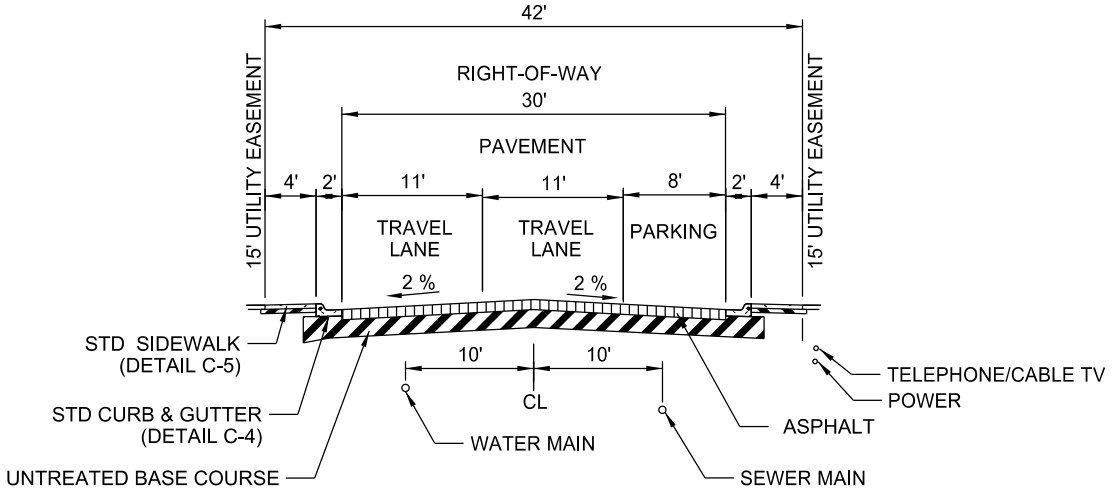
NOTE: DETACHED SIDEWALKS CAN BE INCORPORATED INTO THIS SECTION WITH A MINIMUM OF 4' ADDITIONAL WIDTH ON EITHER OR BOTH SIDES.



MAJOR LOCAL - 50' ROAD SECTION

SCALE: N.T.S.

NOTE: DETACHED SIDEWALKS CAN BE INCORPORATED INTO THIS SECTION WITH A MINIMUM OF 4' ADDITIONAL WIDTH ON EITHER OR BOTH SIDES.



PRIVATE MINOR LOCAL - 42' ROAD SECTION

SCALE: N.T.S.

NOTE: DETACHED SIDEWALKS CAN BE INCORPORATED INTO THIS SECTION WITH A MINIMUM OF 4' ADDITIONAL WIDTH ON EITHER OR BOTH SIDES.

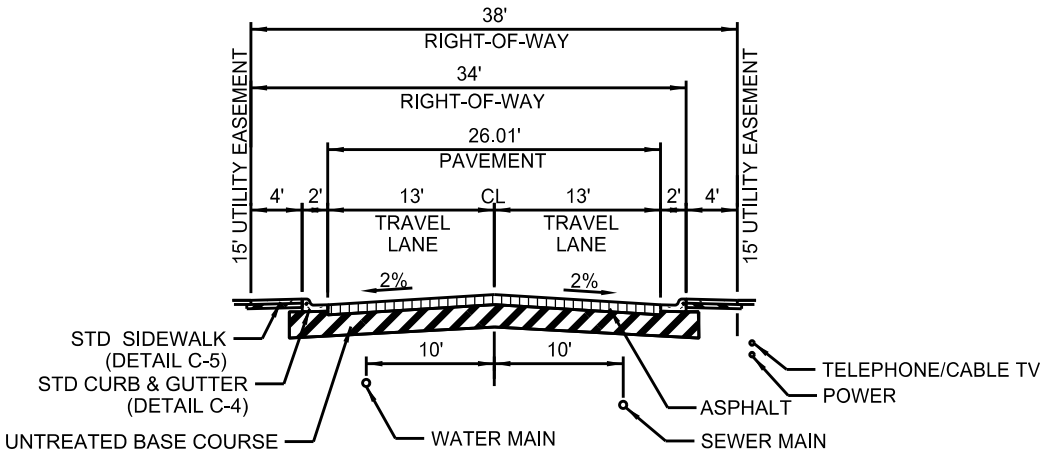
KANAB UTAH

CIVIL SCIENCE INFRASTRUCTURE, INC.

TYPICAL SECTION

MAJOR LOCAL - 50' ROAD SECTION

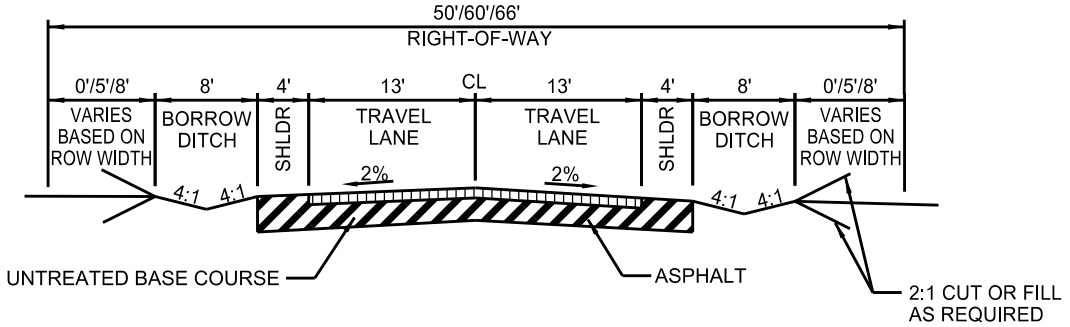
PRIVATE MINOR LOCAL - 42' ROAD SECTION



PRIVATE RESIDENTIAL ACCESS - 34'/38' ROAD SECTION

SCALE: N.T.S.

NOTE: DETACHED SIDEWALKS CAN BE INCORPORATED INTO THIS SECTION WITH A MINIMUM OF 4' ADDITIONAL WIDTH ON EITHER OR BOTH SIDES.



RURAL RESIDENTIAL STREET - 50'/60'/66' ROAD SECTION

SCALE: N.T.S.

KANAB UTAH

CIVIL SCIENCE INFRASTRUCTURE, INC.

TYPICAL SECTION

PRIVATE RESIDENTIAL ACCESS - 34'/38' ROAD SECTION

RURAL RESIDENTIAL STREET - 50'/60'/66' ROAD SECTION

UDOT Average Crash Rates 2009-2013

Crash Rates by Area Type, Functional Classification, and AADT

Area Type	Roadway Information		Crash Rates		Severe Crash Rates		Severity	Group Summary	
	Functional Class	AADT	Average Crash Rate	Tolerance	Average Severe Crash Rate	Tolerance	Average Severity	# of Segments	Total Centerline Miles
Urban & Small Urban	Interstate/Expressway/ Freeway[1]	0 - 75K	0.86	+/- 0.09	2.4	+/- 0.5	1.39	79	168
		75 - 250K	1.12	+/- 0.07	1.4	+/- 0.2	1.34	71	111
	Principal Arterial	0 - 20K	2.74	+/- 0.24	6.8	+/- 0.9	1.49	215	298
		20 - 60K	3.92	+/- 0.28	8.4	+/- 0.8	1.54	261	279
	Minor Arterial	0 - 10K	2.69	+/- 0.41	5.8	+/- 1.9	1.47	88	122
		10 - 30K	3.40	+/- 0.50	8.6	+/- 1.8	1.56	65	59
	Collector	0 - 25K	2.68	+/- 0.45	7.6	+/- 3.2	1.52	59	72

Area Type	Roadway Information		Crash Rates		Severe Crash Rates		Severity	Group Summary	
	Functional Class	AADT	Average Crash Rate	Tolerance	Average Severe Crash Rate	Tolerance	Average Severity	# of Segments	Total Centerline Miles
Rural	Interstate[1]	0 - 50K	0.75	+/- 0.07	3.5	+/- 0.5	1.54	135	692
	Principal Arterial	0 - 20K	1.35	+/- 0.12	5.1	+/- 0.8	1.47	227	1,157
	Minor Arterial	0 - 10K	1.71	+/- 0.22	9.5	+/- 1.6	1.53	250	1,259
	Collector	0 - 10K	1.86	+/- 0.16	10.4	+/- 2.7	1.47	351	1,587

1. Excludes ramp crashes

Definitions:

Crash Rates are expressed as crashes per year per million-vehicle miles

Severe Crash Rates are expressed as severe crashes (fatal and incapacitating injury crashes) per year per hundred million vehicle-miles

Tolerance is the plus/minus range of the true average based on a 95% confidence level

Average Severity is the weighted average of all crashes by their 1-5 severity class

CONFIDENTIAL: This data, as well as all UDOT safety program information, are protected under 23 USC 409

Print Date: 3/18/2015

Appendix C

Financial Analysis

Cost Estimates:

- 1100 South & Kanab Creek Dr Realignment
- 600 East (1100 South to HWY 89)
- 300 South 700 East Signal
- 1100 South Major Collector Widening
- 650 South to HWY 89
- Minor Collector per Foot
- Local Road per Foot

Cash Flow

Kanab City
1100 South & Kanab Creek Dr Realignment
January 30, 2018
17212.05

ENGINEER'S ESTIMATE CONCEPTUAL

CIVIL SCIENCE INFRASTRUCTURE, INC.
1453 S. Dixie Drive, Suite 150, St. George, UT
O: (435) 986-0100 | www.civilscience.com

ITEM NO.	ITEM DESCRIPTION	QTY	UNIT	UNIT COST	AMOUNT
CONSTRUCTION					
1	Mobilization	10%	Lump	$ 34,300.00	$ 34,300.00
2	Traffic Control	1	Lump	$ 12,000.00	$ 12,000.00
3	Subsurface Investigation	36	Hour	$ 150.00	$ 5,400.00
4	Materials Sampling & Testing	1	Lump	$ 10,000.00	$ 10,000.00
5	Dust Control & Watering	1	Lump	$ 5,000.00	$ 5,000.00
6	SWPPP Document & Compliance	1	Lump	$ 7,500.00	$ 7,500.00
7	Clearing, Grubbing, and Demolition	1	Lump	$ 30,000.00	$ 30,000.00
8	Utility Relocation	1	Lump	$ 30,000.00	$ 30,000.00
9	Roadway Excavation	2500	Cu Yd	$ 6.00	$ 15,000.00
10	Concrete Sidewalk	800	Sq Ft	$ 6.25	$ 5,000.00
11	Curb & Gutter	150	Ln Ft	$ 32.00	$ 4,800.00
12	Untreated Base Course	1500	Cu Yd	$ 40.00	$ 60,000.00
13	Subbase Class I or II	1500	Cu Yd	$ 38.00	$ 57,000.00
14	Soft Spot Repair	50	Cu Yd	$ 42.00	$ 2,100.00
15	Hot Mix Asphalt 1/2 Inch, AC-30	660	Ton	$ 90.00	$ 59,400.00
16	Signage & Striping	1	Lump	$ 5,000.00	$ 5,000.00
17	Drainage Improvements	1	Lump	$ 25,000.00	$ 25,000.00
18	Landscape Restoration	1	Lump	$ 10,000.00	$ 10,000.00
			Subtotal		$ 377,500.00
			Contingency	20%	$ 75,500.00
			Construction Total		**$ 453,000.00**
PROFESSIONAL SERVICES & INCIDENTALS					
1	Boundary Survey		Estimate	$ 5,000.00	$ 5,000.00
2	Topographical Survey		Estimate	$ 6,000.00	$ 6,000.00
3	Land & RoW Acquisition	1.75	Acre	$ 100,000.00	$ 175,000.00
4	Land & RoW Negotiation		Estimate	$ 5,000.00	$ 5,000.00
5	Engineering Design		Estimate	$ 39,300.00	$ 39,300.00
6	Geotechnical Report		Estimate	$ 2,500.00	$ 2,500.00
7	Permitting		Estimate	$ 10,000.00	$ 10,000.00
8	Bidding & Negotiating		Estimate	$ 5,000.00	$ 5,000.00
9	Construction Administration Services		Estimate	$ 25,000.00	$ 25,000.00
10	Construction Staking		Estimate	$ 15,000.00	$ 15,000.00
			Subtotal		$ 287,800.00
			PROJECT TOTAL		**$ 740,800.00**

Disclaimer:

This Engineer's estimate is made on the basis of Engineer's experience and qualifications and represents the Engineer's best judgement as an experienced and qualified professional generally familiar with the industry. However, since the Engineer has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from estimates as prepared by Engineer.

Notes:

1. Quantities are purely estimates based off conceptual drawings. Actual quantities will be determined at the conclusion of final design.
2. Unit costs are our best estimates based on similar projects. These costs are not guarantees. A number of factors may affect these costs when ultimately priced by a contractor.
3. Unit costs for Roadway Excavation are based on assuming an average of 2' of excavated material for the roadway.
4. Unit costs for RoW Acquisition are solely based on raw land purchase. Building purchase and/or the purchase of structures are not induded in this price.
5. The Engineer's Estimate does not include fees that may be charged by the Owner such as impact fees, building permit fees, review fees, etc.
6. The term "Estimate" under the unit cost column are general estimates. Actual amounts will be contracted at the time of design and/or prior to commencement of construction.

KANAB CITY
600 East (1100 South to HWY 89)
February 23, 2018
17212.05

ENGINEER'S ESTIMATE

CIVIL SCIENCE INFRASTRUCTURE, INC.
1453 S. Dixie Drive, Suite 150, St. George, UT 84770
O: (435) 986-0100 | www.civilscience.com

ITEM NO.	ITEM DESCRIPTION	QTY	UNIT	UNIT COST	AMOUNT
CONSTRUCTION					
1	Mobilization	5%	Lump	$ 109,800.00	$ 109,800.00
2	Project Sign	1	Lump	$ 1,500.00	$ 1,500.00
3	Traffic Control	1	Lump	$ 12,000.00	$ 12,000.00
4	Construction Layout	1	Lump	$ 13,600.00	$ 13,600.00
5	Subsurface Investigation	36	Hour	$ 150.00	$ 5,400.00
6	Materials Sampling & Testing	1	Lump	$ 10,000.00	$ 10,000.00
7	Dust Control & Watering	1	Lump	$ 5,000.00	$ 5,000.00
8	SWPPP Document & Compliance	1	Lump	$ 7,500.00	$ 7,500.00
9	Clearing, Grubbing, and Demolition	1	Lump	$ 15,000.00	$ 15,000.00
10	Utility Relocation	1	Lump	$ 10,000.00	$ 10,000.00
11	Roadway Excavation	35,063	Cu Yd	$ 6.00	$ 210,378.00
12	Concrete Sidewalk	32,175	Sq Ft	$ 6.25	$ 201,093.75
13	Curb & Gutter	6,435	Ln Ft	$ 32.00	$ 205,920.00
14	Untreated Base Course	12,375	Cu Yd	$ 40.00	$ 495,000.00
15	Subbase Class I or II	16,500	Cu Yd	$ 38.00	$ 627,000.00
16	Soft Spot Repair	215	Cu Yd	$ 30.00	$ 6,450.00
17	Hot Mix Asphalt 1/2 Inch, AC-30	4,233	Ton	$ 85.00	$ 359,805.00
18	Signage & Striping	1	Lump	$ 5,000.00	$ 5,000.00
19	Landscape Restoration	1	Lump	$ 6,500.00	$ 6,500.00
		Construction Subtotal			$ 2,306,946.75
1	Professional Services & Incidentals		Estimate	20.0%	$ 461,389.35
2	Contingency		Estimate	20.0%	$ 461,389.35
			CONSTRUCTION TOTAL		**$ 3,229,725.45**

Disclaimer:
This Engineer's estimate is made on the basis of Engineer's experience and qualifications and represents the Engineer's best judgement as an experienced and qualified professional generally familiar with the industry. However, since the Engineer has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from estimates as prepared by Engineer.

Notes:
1. Quantities are purely estimates based off planning estimates.
2. Unit costs are our best estimates based on similar projects. These costs are not guarantees. A number of factors may affect these costs when ultimately priced by a contractor.
3. The Engineer's Estimate does not include fees that may be charged by the Owner such as impact fees, building permit fees, review fees, etc.
4. Assumed that all Minor Collector Roadways be built within the 55 foot R/W with pavement width of 45 feet. Minor Collector roadway structure is to be built with 3" HMA, 6" UTBC, 8" Subbase.
5. Assumed that all Local Roadways be built within the 50 foot R/W with pavement width of 35 feet. Local roadway structure is to be built with 2.5" HMA, 6" UTBC, 8" Subbase.
6. Assume that 65% of roadway will build a 5 foot sidewalk and curb & gutter on each side of road.
7. Assume that all roadways within or located on UDOT collector will be built to UDOT Standard and Specifications. Prices obtained for roadways related to UDOT roads were estimated using similar related projects within the region of planned roadway.

KANAB CITY
300 South 700 East Signal
February 23, 2018
17212.05

ENGINEER'S ESTIMATE

CIVIL SCIENCE INFRASTRUCTURE, INC.
1453 S. Dixie Drive, Suite 150, St. George, UT 84770
O: (435) 986-0100 | www.civilscience.com

ITEM NO.	ITEM DESCRIPTION	QTY	UNIT	UNIT COST	AMOUNT
CONSTRUCTION					
1	Mobilization	10%	Lump	$ 29,300.00	$ 2,930.00
2	Project Sign	1	Lump	$ 1,500.00	$ 1,500.00
3	Traffic Control	1	Lump	$ 29,800.00	$ 29,800.00
4	Construction Layout	1	Lump	$ 12,100.00	$ 12,100.00
5	Subsurface Investigation	36	Hour	$ 150.00	$ 5,400.00
6	Materials Sampling & Testing	1	Lump	$ 2,100.00	$ 2,100.00
7	Dust Control & Watering	1	Lump	$ 7,500.00	$ 7,500.00
8	SWPPP Document & Compliance	1	Lump	$ 3,000.00	$ 3,000.00
9	Utility Relocation	1	Lump	$ 15,000.00	$ 15,000.00
10	Signals (Mast-Arms w/ Installation)	1	Lump	$ 175,000.00	$ 175,000.00
11	Asphalt Repair	1	Lump	$ 31,300.00	$ 31,300.00
12	Signage & Striping	1	Lump	$ 8,000.00	$ 8,000.00
13	Landscape Restoration	1	Lump	$ 4,000.00	$ 4,000.00
		Construction Subtotal			$ 297,630.00
1	Professional Services & Incidentals		Estimate	15%	$ 44,644.50
2	Contingency		Estimate	20%	$ 59,526.00
			CONSTRUCTION TOTAL		**$ 401,800.50**

Disclaimer:
This Engineer's estimate is made on the basis of Engineer's experience and qualifications and represents the Engineer's best judgement as an experienced and qualified professional generally familiar with the industry. However, since the Engineer has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from estimates as prepared by Engineer.

Notes:
1. Quantities are purely estimates based off planning estimates.
2. Unit costs are our best estimates based on similar projects. These costs are not guarantees. A number of factors may affect these costs when ultimately priced by a contractor.
3. The Engineer's Estimate does not include fees that may be charged by the Owner such as impact fees, building permit fees, review fees, etc.
4. Assumed that all Minor Collector Roadways be built within the 55 foot R/W with pavement width of 45 feet. Minor Collector roadway structure is to be built with 3" HMA, 6" UTBC, 8" Subbase.
5. Assumed that all Local Roadways be built within the 50 foot R/W with pavement width of 35 feet. Local roadway structure is to be built with 2.5" HMA, 6" UTBC, 8" Subbase.
6. Assume that 65% of roadway will build a 5 foot sidewalk and curb & gutter on each side of road.
7. Assume that all roadways within or located on UDOT collector will be built to UDOT Standard and Specifications. Prices obtained for roadways related to UDOT roads were estimated using similar related projects within the region of planned roadway.

KANAB CITY
1100 South Major Collector Widening
February 23, 2018
17212.05

ENGINEER'S ESTIMATE

CIVIL SCIENCE INFRASTRUCTURE, INC.
1453 S. Dixie Drive, Suite 150, St. George, UT 84770
O: (435) 986-0100 | www.civilscience.com

ITEM NO.	ITEM DESCRIPTION	QTY	UNIT	UNIT COST	AMOUNT
CONSTRUCTION					
1	Mobilization	5%	Lump	$ 63,000.00	$ 63,000.00
2	Project Sign	1	Lump	$ 1,500.00	$ 1,500.00
3	Traffic Control	1	Lump	$ 12,000.00	$ 12,000.00
4	Construction Layout	1	Lump	$ 7,800.00	$ 7,800.00
5	Subsurface Investigation	36	Hour	$ 150.00	$ 5,400.00
6	Materials Sampling & Testing	1	Lump	$ 10,000.00	$ 10,000.00
7	Dust Control & Watering	1	Lump	$ 5,000.00	$ 5,000.00
8	SWPPP Document & Compliance	1	Lump	$ 7,500.00	$ 7,500.00
9	Clearing, Grubbing, and Demolition	1	Lump	$ 15,000.00	$ 15,000.00
10	Utility Relocation	1	Lump	$ 10,000.00	$ 10,000.00
11	Roadway Excavation	8,333	Cu Yd	$ 6.00	$ 50,000.00
12	Concrete Sidewalk	29,250	Sq Ft	$ 6.25	$ 182,812.50
13	Curb & Gutter	5,850	Ln Ft	$ 32.00	$ 187,200.00
14	Untreated Base Course	6,250	Cu Yd	$ 40.00	$ 250,000.00
15	Subbase Class I or II	8,333	Cu Yd	$ 38.00	$ 316,666.67
16	Soft Spot Repair	215	Cu Yd	$ 30.00	$ 6,450.00
17	Hot Mix Asphalt 1/2 Inch, AC-30	2,138	Ton	$ 85.00	$ 181,687.50
18	Signage & Striping	1	Lump	$ 5,000.00	$ 5,000.00
19	Landscape Restoration	1	Lump	$ 6,500.00	$ 6,500.00
		Construction Subtotal			$ 1,323,516.67
1	Professional Services & Incidentals		Estimate	20.0%	$ 264,703.33
2	Contingency		Estimate	20.0%	$ 264,703.33
			CONSTRUCTION TOTAL		**$ 1,852,923.33**

Disclaimer:
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Notes:
1. Quantities are purely estimates based off planning estimates.
2. Unit costs are our best estimates based on similar projects. These costs are not guarantees. A number of factors may affect these costs when ultimately priced by a contractor.
3. The Engineer's Estimate does not include fees that may be charged by the Owner such as impact fees, building permit fees, review fees, etc.
4. Assumed that all Minor Collector Roadways be built within the 55 foot R/W with pavement width of 45 feet. Minor Collector roadway structure is to be built with 3" HMA, 6" UTBC, 8" Subbase.
5. Assumed that all Local Roadways be built within the 50 foot R/W with pavement width of 35 feet. Local roadway structure is to be built with 2.5" HMA, 6" UTBC, 8" Subbase.
6. Assume that 65% of roadway will build a 5 foot sidewalk and curb & gutter on each side of road.
7. Assume that all roadways within or located on UDOT collector will be built to UDOT Standard and Specifications. Prices obtained for roadways related to UDOT roads were estimated using similar related projects within the region of planned roadway.

KANAB CITY
650 South to HWY 89
February 23, 2018
17212.05

ENGINEER'S ESTIMATE

CIVIL SCIENCE INFRASTRUCTURE, INC.
1453 S. Dixie Drive, Suite 150, St. George, UT 84770
O: (435) 986-0100 | www.civilscience.com

ITEM NO.	ITEM DESCRIPTION	QTY	UNIT	UNIT COST	AMOUNT
CONSTRUCTION					
1	Mobilization	5%	Lump	$ 78,900.00	$ 78,900.00
2	Project Sign	1	Lump	$ 1,500.00	$ 1,500.00
3	Traffic Control	1	Lump	$ 80,000.00	$ 80,000.00
4	Construction Layout	1	Lump	$ 9,800.00	$ 9,800.00
5	Subsurface Investigation	36	Hour	$ 150.00	$ 5,400.00
6	Materials Sampling & Testing	1	Lump	$ 10,000.00	$ 10,000.00
7	Dust Control & Watering	1	Lump	$ 5,000.00	$ 5,000.00
8	SWPPP Document & Compliance	1	Lump	$ 7,500.00	$ 7,500.00
9	Clearing, Grubbing, and Demolition	1	Lump	$ 15,000.00	$ 15,000.00
10	Utility Relocation	1	Lump	$ 10,000.00	$ 10,000.00
11	Roadway Excavation	23,394	Cu Yd	$ 6.00	$ 140,364.75
12	Concrete Sidewalk	21,255	Sq Ft	$ 6.25	$ 132,843.75
13	Curb & Gutter	4,251	Ln Ft	$ 32.00	$ 136,032.00
14	Untreated Base Course	8,257	Cu Yd	$ 40.00	$ 330,270.00
15	Subbase Class I or II	11,009	Cu Yd	$ 38.00	$ 418,342.00
16	Soft Spot Repair	900	Cu Yd	$ 30.00	$ 27,000.00
17	Hot Mix Asphalt 1/2 Inch, AC-30	2,810	Ton	$ 85.00	$ 238,835.49
18	Signage & Striping	1	Lump	$ 5,000.00	$ 5,000.00
19	Landscape Restoration	1	Lump	$ 6,500.00	$ 6,500.00
		Construction Subtotal			$ 1,658,287.99
1	Professional Services & Incidentals		Estimate	15.0%	$ 248,743.20
2	Contingency		Estimate	20.0%	$ 331,657.60
			CONSTRUCTION TOTAL		**$ 2,238,688.78**

Disclaimer:
This Engineer's estimate is made on the basis of Engineer's experience and qualifications and represents the Engineer's best judgement as an experienced and qualified professional generally familiar with the industry. However, since the Engineer has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Engineer cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from estimates as prepared by Engineer.

Notes:
1. Quantities are purely estimates based off planning estimates.
2. Unit costs are our best estimates based on similar projects. These costs are not guarantees. A number of factors may affect these costs when ultimately priced by a contractor.
3. The Engineer's Estimate does not include fees that may be charged by the Owner such as impact fees, building permit fees, review fees, etc.
4. Assumed that all Minor Collector Roadways be built within the 55 foot R/W with pavement width of 45 feet. Minor Collector roadway structure is to be built with 3" HMA, 6" UTBC, 8" Subbase.
5. Assumed that all Local Roadways be built within the 50 foot R/W with pavement width of 35 feet. Local roadway structure is to be built with 2.5" HMA, 6" UTBC, 8" Subbase.
6. Assume that 65% of roadway will build a 5 foot sidewalk and curb & gutter on each side of road.
7. Assume that all roadways within or located on UDOT collector will be built to UDOT Standard and Specifications. Prices obtained for roadways related to UDOT roads were estimated using similar related projects within the region of planned roadway.

KANAB CITY
Minor Road (per 1 ft. or cross-section)
February 23, 2018
17212.05

ENGINEER'S ESTIMATE

CIVIL SCIENCE INFRASTRUCTURE, INC.
1453 S. Dixie Drive, Suite 150, St. George, UT 84770
O: (435) 986-0100 | www.civilscience.com

ITEM NO.	ITEM DESCRIPTION	QTY	UNIT	UNIT COST	AMOUNT
CONSTRUCTION					
1	Mobilization	10%	Lump	$ 66.00	$ 66.00
2	Traffic Control	1	Lump	$ 1.39	$ 1.39
3	Subsurface Investigation	36	Hour	$ 3.47	$ 124.81
4	Materials Sampling & Testing	1	Lump	$ 23.11	$ 23.11
5	Dust Control & Watering	1	Lump	$ 9.24	$ 9.24
6	SWPPP Document & Compliance	1	Lump	$ 11.56	$ 11.56
7	Clearing, Grubbing, and Demolition	1	Lump	$ 13.87	$ 13.87
8	Utility Relocation	1	Lump	$ 9.24	$ 9.24
9	Roadway Excavation	8	Cu Yd	$ 6.00	$ 45.45
10	Concrete Sidewalk	7	Sq Ft	$ 6.25	$ 40.63
11	Curb & Gutter	1	Ln Ft	$ 32.00	$ 41.60
12	Untreated Base Course	3	Cu Yd	$ 40.00	$ 101.00
13	Subbase Class I or II	3	Cu Yd	$ 38.00	$ 127.93
14	Soft Spot Repair	0	Cu Yd	$ 30.00	$ 8.25
15	Hot Mix Asphalt 1/2 Inch, AC-30	1	Ton	$ 85.00	$ 97.38
16	Signage & Striping	1	Lump	$ 2.31	$ 2.31
17	Landscape Restoration	1	Lump	$ 4.62	$ 4.62
		Construction Subtotal			$ 728.39
1	Professional Services & Incidentals		Estimate	15.0%	$ 109.26
2	Contingency		Estimate	15.0%	$ 109.26
			CONSTRUCTION TOTAL		**$ 946.91**

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5. Assumed that all Local Roadways be built within the 50 foot R/W with pavement width of 35 feet. Local roadway structure is to be built with 2.5" HMA, 6" UTBC, 8" Subbase.
6. Assume that 65% of roadway will build a 5 foot sidewalk and curb & gutter on each side of road.
7. Assume that all roadways within or located on UDOT collector will be built to UDOT Standard and Specifications. Prices obtained for roadways related to UDOT roads were estimated using similar related projects within the region of planned roadway.

KANAB CITY
Local Road (per 1 ft. or cross-section)
February 23, 2018
17212.05

ENGINEER'S ESTIMATE

CIVIL SCIENCE INFRASTRUCTURE, INC.
1453 S. Dixie Drive, Suite 150, St. George, UT 84770
O: (435) 986-0100 | www.civilscience.com

ITEM NO.	ITEM DESCRIPTION	QTY	UNIT	UNIT COST	AMOUNT
CONSTRUCTION					
1	Mobilization	10%	Lump	$ 50.00	$ 50.00
2	Traffic Control	1	Lump	$ 1.04	$ 1.04
3	Subsurface Investigation	36	Hour	$ 2.61	$ 93.83
4	Materials Sampling & Testing	1	Lump	$ 17.38	$ 17.38
5	Dust Control & Watering	1	Lump	$ 6.95	$ 6.95
6	SWPPP Document & Compliance	1	Lump	$ 8.69	$ 8.69
7	Clearing, Grubbing, and Demolition	1	Lump	$ 10.43	$ 10.43
8	Utility Relocation	1	Lump	$ 6.95	$ 6.95
9	Roadway Excavation	5	Cu Yd	$ 6.00	$ 32.40
10	Concrete Sidewalk	7	Sq Ft	$ 6.25	$ 40.63
11	Curb & Gutter	1	Ln Ft	$ 32.00	$ 41.60
12	Untreated Base Course	2	Cu Yd	$ 40.00	$ 78.56
13	Subbase Class I or II	3	Cu Yd	$ 38.00	$ 99.50
14	Soft Spot Repair	0	Cu Yd	$ 30.00	$ 7.50
15	Hot Mix Asphalt 1/2 Inch, AC-30	1	Ton	$ 85.00	$ 47.34
16	Signage & Striping	1	Lump	$ 1.74	$ 1.74
17	Landscape Restoration	1	Lump	$ 3.48	$ 3.48
		Construction Subtotal			$ 548.01
1	Professional Services & Incidentals		Estimate	15.0%	$ 82.20
2	Contingency		Estimate	15.0%	$ 82.20
			CONSTRUCTION TOTAL		**$ 712.41**

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5. Assumed that all Local Roadways be built within the 50 foot R/W with pavement width of 35 feet. Local roadway structure is to be built with 2.5" HMA, 6" UTBC, 8" Subbase.
6. Assume that 65% of roadway will build a 5 foot sidewalk and curb & gutter on each side of road.
7. Assume that all roadways within or located on UDOT collector will be built to UDOT Standard and Specifications. Prices obtained for roadways related to UDOT roads were estimated using similar related projects within the region of planned roadway.

Cashflow - Kanab Transportation Impact Fee Analysis

Proposed Impact Fee = $ 9,483.80 Interest Rate 3%

Title	2016	2017	2018	2019	2020
Revenue					
Total ERCs	2,646	2,980	3,069	3,161	3,256
New ERCs	-	334	89	92	95
Average User Rate	$ -	$ -	$ -	$ -	$ -
Charges for Services	$ -	$ -	$ -	$ -	$ -
Class C Road Revenue	$ 222,969	$ 264,377	$ 264,400	$ 264,400	$ 264,400
Grant Funds	$ -	$ -	$ -	$ -	$ -
Impact Fees Collected	$ -	$ -	$ -	$ 872,510	$ 900,961
Total Operating Revenue	$ 222,969	$ 264,377	$ 264,400	$ 264,400	$ 264,400
Expenses					
General	$ 423,887	$ 398,234	$ 410,181	$ 422,486	$ 435,161
Other Government Funds	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
Total Operating Expenses	$ 423,887	$ 398,234	$ 410,181	$ 422,486	$ 435,161
Accounts					
Net Cash	$ (200,918)	$ (133,857)	$ (145,781)	$ (158,086)	$ (170,761)
Operating Account Balance	$ -	$ (133,857)	$ (279,638)	$ (437,724)	$ (608,486)
Grant Account	$ -	$ -	$ -	$ -	$ -
Impact Fee Balance	$ -	$ -	$ -	$ 109,486	$ 1,010,447
Project Costs					
Project Cost		$ -	$ -	$ 763,024	$ -
Non-Impact Fee Eligible Cost	$ -	$ -	$ -	$ -	$ -
Impact Fee Eligible Cost	$ -	$ -	$ -	$ 763,024	$ -
Project Name(s)				1100 South & Kanab Creek Dr Realignment	

Title	2021	2022	2023	2024	2025
Revenue					
Total ERCs	3,354	3,455	3,558	3,665	3,775
New ERCs	98	101	104	107	110
Average User Rate	$ -	$ -	$ -	$ -	$ -
Charges for Services	$ -	$ -	$ -	$ -	$ -
Class C Road Revenue	$ 264,400	$ 264,400	$ 264,400	$ 264,400	$ 264,400
Grant Funds	$ -	$ -	$ -	$ -	$ -
Impact Fees Collected	$ 929,412	$ 957,864	$ 986,315	$ 1,014,767	$ 1,043,218
Total Operating Revenue	$ 264,400	$ 264,400	$ 264,400	$ 264,400	$ 264,400
Expenses					
General	$ 448,216	$ 461,662	$ 475,512	$ 489,778	$ 504,471
Other Government Funds	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
Total Operating Expenses	$ 448,216	$ 461,662	$ 475,512	$ 489,778	$ 504,471
Accounts					
Net Cash	$ (183,816)	$ (197,262)	$ (211,112)	$ (225,378)	$ (240,071)
Operating Account Balance	$ (792,301)	$ (989,564)	$ (1,200,676)	$ (1,426,054)	$ (1,666,124)
Grant Account	$ -	$ -	$ -	$ -	$ -
Impact Fee Balance	$ (1,589,349)	$ (631,485)	$ 320,052	$ 1,334,818	$ 2,378,036
Project Costs					
Project Cost	$ 3,529,208	$ -	$ 34,778	$ -	$ -
Non-Impact Fee Eligible Cost	$ -	$ -	$ -	$ -	$ -
Impact Fee Eligible Cost	$ 3,529,208	$ -	$ 34,778	$ -	$ -
Project Name(s)	600 East (1100 South to HWY 89)		IFFPA		

Title	2026	2027	2028	2029	2030
Revenue					
Total ERCs	3,888	4,005	4,085	4,167	4,250
New ERCs	113	117	80	82	83
Average User Rate	$ -	$ -	$ -	$ -	$ -
Charges for Services	$ -	$ -	$ -	$ -	$ -
Class C Road Revenue	$ 264,400	$ 264,400	$ 264,400	$ 264,400	$ 264,400
Grant Funds	$ -	$ -	$ -	$ -	$ -
Impact Fees Collected	$ 1,071,669	$ 1,109,605	$ 758,704	$ 777,672	$ 787,155
Total Operating Revenue	$ 264,400	$ 264,400	$ 264,400	$ 264,400	$ 264,400
Expenses					
General	$ 519,605	$ 535,193	$ 551,249	$ 567,786	$ 584,820
Other Government Funds	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
Total Operating Expenses	$ 519,605	$ 535,193	$ 551,249	$ 567,786	$ 584,820
Accounts					
Net Cash	$ (255,205)	$ (270,793)	$ (286,849)	$ (303,386)	$ (320,420)
Operating Account Balance	$ (1,921,330)	$ (2,192,123)	$ (2,478,972)	$ (2,782,358)	$ (3,102,778)
Grant Account	$ -	$ -	$ -	$ -	$ -
Impact Fee Balance	$ 1,102,478	$ (708,899)	$ 9,488	$ 787,159	$ 1,574,315
Project Costs					
Project Cost	$ 2,347,228	$ 2,920,981	$ 40,317	$ -	$ -
Non-Impact Fee Eligible Cost	$ -	$ -	$ -	$ -	$ -
Impact Fee Eligible Cost	$ 2,347,228	$ 2,920,981	$ 40,317	$ -	$ -
Project Name(s)	1100 South Major Collector Widening	650 South to HWY 89	IFFPA		

Title	2031	2032	2033	2034	2035
Revenue					
Total ERCs	4,335	4,422	4,510	4,600	4,692
New ERCs	85	87	88	90	92
Average User Rate	$ -	$ -	$ -	$ -	$ -
Charges for Services	$ -	$ -	$ -	$ -	$ -
Class C Road Revenue	$ 264,400	$ 264,400	$ 264,400	$ 264,400	$ 264,400
Grant Funds	$ -	$ -	$ -	$ -	$ -
Impact Fees Collected	$ 806,123	$ 825,091	$ 834,574	$ 853,542	$ 872,510
Total Operating Revenue	$ 264,400	$ 264,400	$ 264,400	$ 264,400	$ 264,400
Expenses					
General	$ 602,365	$ 620,436	$ 639,049	$ 658,220	$ 677,967
Other Government Funds	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
Total Operating Expenses	$ 602,365	$ 620,436	$ 639,049	$ 658,220	$ 677,967
Accounts					
Net Cash	$ (337,965)	$ (356,036)	$ (374,649)	$ (393,820)	$ (413,567)
Operating Account Balance	$ (3,440,743)	$ (3,796,778)	$ (4,171,427)	$ (4,565,247)	$ (4,978,814)
Grant Account	$ -	$ -	$ -	$ -	$ -
Impact Fee Balance	$ 2,380,438	$ 3,205,528	$ 4,040,103	$ 4,893,645	$ 5,766,154
Project Costs					
Project Cost	$ -	$ -	$ -	$ -	$ -
Non-Impact Fee Eligible Cost	$ -	$ -	$ -	$ -	$ -
Impact Fee Eligible Cost	$ -	$ -	$ -	$ -	$ -
Project Name(s)					

Title	2036	2037	2038
Revenue			
Total ERCs	4,786	4,882	4,980
New ERCs	94	96	98
Average User Rate	$ -	$ -	$ -
Charges for Services	$ -	$ -	$ -
Class C Road Revenue	$ 264,400	$ 264,400	$ 264,400
Grant Funds	$ -	$ -	$ -
Impact Fees Collected	$ 891,477	$ 910,445	$ 929,412
Total Operating Revenue	$ 264,400	$ 264,400	$ 264,400
Expenses			
General	$ 698,306	$ 719,255	$ 740,833
Other Government Funds	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
Total Operating Expenses	$ 698,306	$ 719,255	$ 740,833
Accounts			
Net Cash	$ (433,906)	$ (454,855)	$ (476,433)
Operating Account Balance	$ (5,412,720)	$ (5,867,575)	$ (6,344,007)
Grant Account	$ -	$ -	$ -
Impact Fee Balance	$ 6,657,632	$ 7,568,076	$ 8,497,489
Project Costs			
Project Cost	$ -	$ -	$ -
Non-Impact Fee Eligible Cost	$ -	$ -	$ -
Impact Fee Eligible Cost	$ -	$ -	$ -
Project Name(s)			

Appendix D

Impact Fee Certification

Certification of Impact Fee Analysis

In accordance with Utah Code Title 11-36a-306 Kelvin C. Smith, P.E., on behalf of Civil Science, Inc., make the following certification:

I certify that the attached impact fee facilities plan and impact fee analysis:

1. includes only the costs of public facilities that are:
    a. allowed under the Impact Fees Act; and
    b. actually incurred; or
    c. projected to be incurred or encumbered within six years after the day on which each impact fee is paid;
2. does not include:
    a. costs of operation and maintenance of public facilities;
    b. costs for qualifying public facilities that will raise the level of service for the facilities, through impact fees, above the level of service that is supported by existing residents; or
    c. an expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement;
3. offsets costs with grants or other alternate sources of payment; and
4. complies in each and every relevant respect with the Impact Fees Act.

This Certification is made with the following assumptions:

1. All data provided to Civil Science, Inc. is assumed to be correct, complete, and accurate.
2. Any changes to the impact fee facilities plan and impact fee analysis after the issuance of this certification will void same certification.
3. Recommendations will be followed in their entirety by Kanab City and City officials.
4. The undersigned is trained and licensed as a professional engineer and has not been trained or licensed as a lawyer. Nothing in the foregoing certification shall be deemed an opinion of law or an opinion of compliance with law which under applicable

professional licensing laws or regulations or other laws or regulations must be rendered by a lawyer licensed in the State of Utah.

5. This certification expresses professional opinion base on the undersigned best knowledge and understanding, and shall not be taken as a guarantee, warranty, or fact.

Civil Science, Inc.

By: _____

Dated: 4/19/2018

Appendix E

Additional Information

Utah MUTCD Ch. 4C – Traffic Control Signal Needs Studies

Kanab Signal Warrant 3 Data

CHAPTER 4C. TRAFFIC CONTROL SIGNAL NEEDS STUDIES

Section 4C.01 Studies and Factors for Justifying Traffic Control Signals

Standard:

01 **An engineering study of traffic conditions, pedestrian characteristics, and physical characteristics of the location shall be performed to determine whether installation of a traffic control signal is justified at a particular location.**

02 **The investigation of the need for a traffic control signal shall include an analysis of factors related to the existing operation and safety at the study location and the potential to improve these conditions, and the applicable factors contained in the following traffic signal warrants:**

Warrant 1, Eight-Hour Vehicular Volume
Warrant 2, Four-Hour Vehicular Volume
Warrant 3, Peak Hour
Warrant 4, Pedestrian Volume
Warrant 5, School Crossing
Warrant 6, Coordinated Signal System
Warrant 7, Crash Experience
Warrant 8, Roadway Network
Warrant 9, Intersection Near a Grade Crossing

03 **The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.**

Support:

04 Sections 8C.09 and 8C.10 contain information regarding the use of traffic control signals instead of gates and/or flashing-light signals at highway-rail grade crossings and highway-light rail transit grade crossings, respectively.

Guidance:

05 *A traffic control signal should not be installed unless one or more of the factors described in this Chapter are met.*

06 *A traffic control signal should not be installed unless an engineering study indicates that installing a traffic control signal will improve the overall safety and/or operation of the intersection.*

07 *A traffic control signal should not be installed if it will seriously disrupt progressive traffic flow.*

08 *The study should consider the effects of the right-turn vehicles from the minor-street approaches. Engineering judgment should be used to determine what, if any, portion of the right-turn traffic is subtracted from the minor-street traffic count when evaluating the count against the signal warrants listed in Paragraph 2.*

09 *Engineering judgment should also be used in applying various traffic signal warrants to cases where approaches consist of one lane plus one left-turn or right-turn lane. The site-specific traffic characteristics should dictate whether an approach is considered as one lane or two lanes. For example, for an approach with one lane for through and right-turning traffic plus a left-turn lane, if engineering judgment indicates that it should be considered a one-lane approach because the traffic using the left-turn lane is minor, the total traffic volume approaching the intersection should be applied against the signal warrants as a one-lane approach. The approach should be considered two lanes if approximately half of the traffic on the approach turns left and the left-turn lane is of sufficient length to accommodate all left-turn vehicles.*

10 *Similar engineering judgment and rationale should be applied to a street approach with one through/left-turn lane plus a right-turn lane. In this case, the degree of conflict of minor-street right-turn traffic with traffic on the major street should be considered. Thus, right-turn traffic should not be included in the minor-street volume if the movement enters the major street with minimal conflict. The approach should be evaluated as a one-lane approach with only the traffic volume in the through/left-turn lane considered.*

11 *At a location that is under development or construction and where it is not possible to obtain a traffic count that would represent future traffic conditions, hourly volumes should be estimated as part of an engineering study for comparison with traffic signal warrants. Except for locations where the engineering study uses the satisfaction of Warrant 8 to justify a signal, a traffic control signal installed under projected conditions should have an engineering study done within 1 year of putting the signal into stop-and-go operation to determine if the signal is justified. If not justified, the signal should be taken out of stop-and-go operation or removed.*

12 *For signal warrant analysis, a location with a wide median, even if the median width is greater than 30 feet, should be considered as one intersection.*

Option:

13 At an intersection with a high volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher of the major-street left-turn volumes as the "minor-street" volume and the corresponding single direction of opposing traffic on the major street as the "major-street" volume.

14 For signal warrants requiring conditions to be present for a certain number of hours in order to be satisfied, any four sequential 15-minute periods may be considered as 1 hour if the separate 1-hour periods used in the warrant analysis do not overlap each other and both the major-street volume and the minor-street volume are for the same specific one-hour periods.

15 For signal warrant analysis, bicyclists may be counted as either vehicles or pedestrians.

Support:

16 When performing a signal warrant analysis, bicyclists riding in the street with other vehicular traffic are usually counted as vehicles and bicyclists who are clearly using pedestrian facilities are usually counted as pedestrians.

Option:

17 Engineering study data may include the following:

A. The number of vehicles entering the intersection in each hour from each approach during 12 hours of an average day. It is desirable that the hours selected contain the greatest percentage of the 24-hour traffic volume.
B. Vehicular volumes for each traffic movement from each approach, classified by vehicle type (heavy trucks, passenger cars and light trucks, public-transit vehicles, and, in some locations, bicycles), during each 15-minute period of the 2 hours in the morning and 2 hours in the afternoon during which total traffic entering the intersection is greatest.
C. Pedestrian volume counts on each crosswalk during the same periods as the vehicular counts in Item B and during hours of highest pedestrian volume. Where young, elderly, and/or persons with physical or visual disabilities need special consideration, the pedestrians and their crossing times may be classified by general observation.
D. Information about nearby facilities and activity centers that serve the young, elderly, and/or persons with disabilities, including requests from persons with disabilities for accessible crossing improvements at the location under study. These persons might not be adequately reflected in the pedestrian volume count if the absence of a signal restrains their mobility.
E. The posted or statutory speed limit or the 85th-percentile speed on the uncontrolled approaches to the location.
F. A condition diagram showing details of the physical layout, including such features as intersection geometrics, channelization, grades, sight-distance restrictions, transit stops and routes, parking conditions, pavement markings, roadway lighting, driveways, nearby railroad crossings, distance to nearest traffic control signals, utility poles and fixtures, and adjacent land use.
G. A collision diagram showing crash experience by type, location, direction of movement, severity, weather, time of day, date, and day of week for at least 1 year.

18 The following data, which are desirable for a more precise understanding of the operation of the intersection, may be obtained during the periods described in Item B of Paragraph 17:

A. Vehicle-hours of stopped time delay determined separately for each approach.
B. The number and distribution of acceptable gaps in vehicular traffic on the major street for entrance from the minor street.
C. The posted or statutory speed limit or the 85th-percentile speed on controlled approaches at a point near to the intersection but unaffected by the control.
D. Pedestrian delay time for at least two 30-minute peak pedestrian delay periods of an average weekday or like periods of a Saturday or Sunday.
E. Queue length on stop-controlled approaches.

Section 4C.02 Warrant 1, Eight-Hour Vehicular Volume

Support:

01 The Minimum Vehicular Volume, Condition A, is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

02 The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

03 It is intended that Warrant 1 be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

Standard:

04 **The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:**

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

Option:

05 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 70 percent columns in Table 4C-1 may be used in place of the 100 percent columns.

Guidance:

06 *The combination of Conditions A and B is intended for application at locations where Condition A is not satisfied and Condition B is not satisfied and should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.*

Standard:

07 **The need for a traffic control signal shall be considered if an engineering study finds that both of the following conditions exist for each of any 8 hours of an average day:**

A. The vehicles per hour given in both of the 80 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; and

B. The vehicles per hour given in both of the 80 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

These major-street and minor-street volumes shall be for the same 8 hours for each condition; however, the 8 hours satisfied in Condition A shall not be required to be the same 8 hours satisfied in Condition B. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume

[b] Used for combination of Conditions A and B after adequate trial of other remedial measures

[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Option:

08 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 56 percent columns in Table 4C-1 may be used in place of the 80 percent columns.

Section 4C.03 Warrant 2, Four-Hour Vehicular Volume

Support:

01 The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Standard:

02 **The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) all fall above the applicable curve in Figure 4C-1 for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.**

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of Figure 4C-1.

Section 4C.04 Warrant 3, Peak Hour

Support:

01 The Peak Hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.

Standard:

02 **This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.**

03 **The need for a traffic control signal shall be considered if an engineering study finds that the criteria in either of the following two categories are met:**

A. If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:

1. The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach; and

2. The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes; and

3. The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

B. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.

Option:

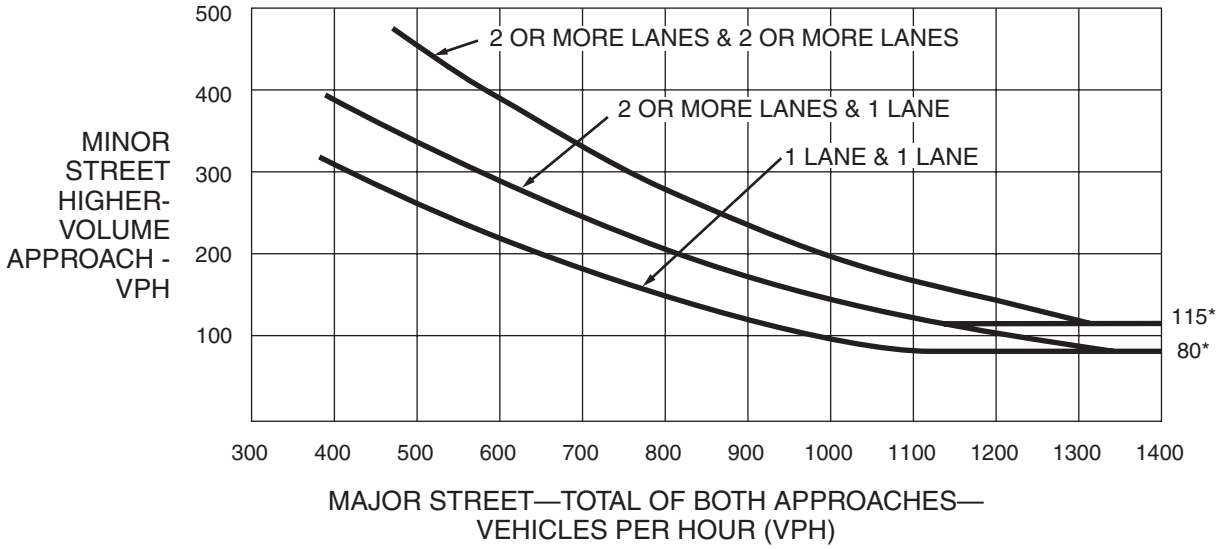
04 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-4 may be used in place of Figure 4C-3 to evaluate the criteria in the second category of the Standard.

05 If this warrant is the only warrant met and a traffic control signal is justified by an engineering study, the traffic control signal may be operated in the flashing mode during the hours that the volume criteria of this warrant are not met.

Guidance:

06 *If this warrant is the only warrant met and a traffic control signal is justified by an engineering study, the traffic control signal should be traffic-actuated.*

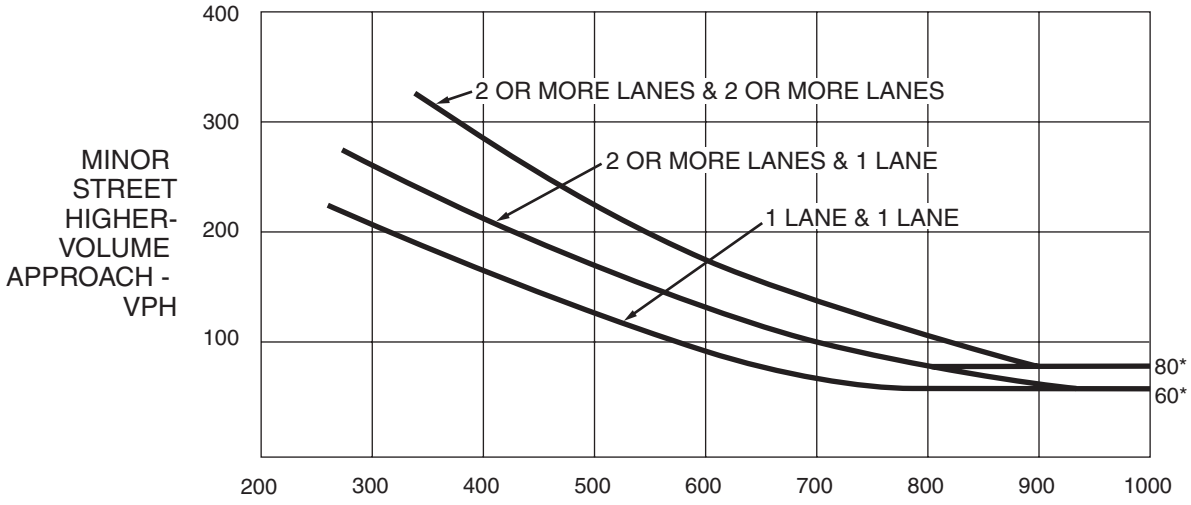
Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

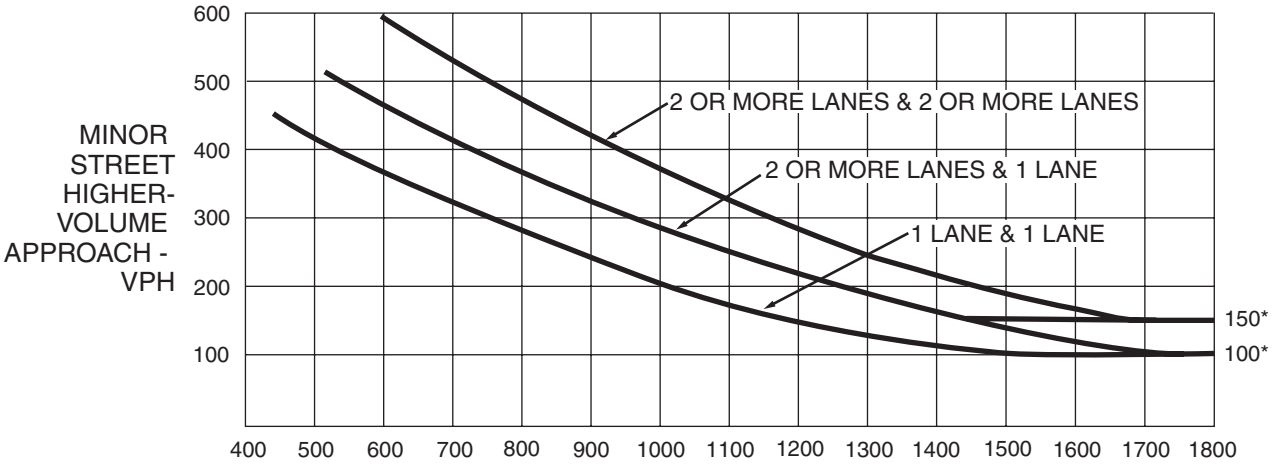
Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

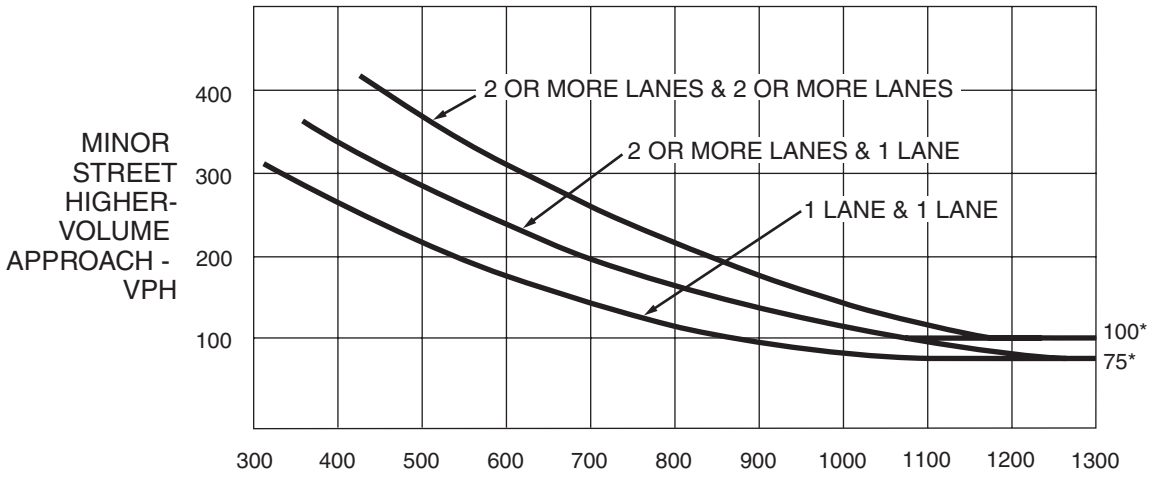
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Section 4C.05 Warrant 4, Pedestrian Volume

Support:

01 The Pedestrian Volume signal warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Standard:

02 **The need for a traffic control signal at an intersection or midblock crossing shall be considered if an engineering study finds that one of the following criteria is met:**

- **A. For each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) all fall above the curve in Figure 4C-5; or**
- **B. For 1 hour (any four consecutive 15-minute periods) of an average day, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) falls above the curve in Figure 4C-7.**

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 35 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-6 may be used in place of Figure 4C-5 to evaluate Criterion A in Paragraph 2, and Figure 4C-8 may be used in place of Figure 4C-7 to evaluate Criterion B in Paragraph 2.

Standard:

04 **The Pedestrian Volume signal warrant shall not be applied at locations where the distance to the nearest traffic control signal or STOP sign controlling the street that pedestrians desire to cross is less than 300 feet, unless the proposed traffic control signal will not restrict the progressive movement of traffic.**

05 **If this warrant is met and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E.**

Guidance:

06 *If this warrant is met and a traffic control signal is justified by an engineering study, then:*

- *A. If it is installed at an intersection or major driveway location, the traffic control signal should also control the minor-street or driveway traffic, should be traffic-actuated, and should include pedestrian detection.*
- *B. If it is installed at a non-intersection crossing, the traffic control signal should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs, and should be pedestrian-actuated. If the traffic control signal is installed at a non-intersection crossing, at least one of the signal faces should be over the traveled way for each approach, parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the crosswalk or site accommodations should be made through curb extensions or other techniques to provide adequate sight distance, and the installation should include suitable standard signs and pavement markings.*
- *C. Furthermore, if it is installed within a signal system, the traffic control signal should be coordinated.*

Option:

07 The criterion for the pedestrian volume crossing the major street may be reduced as much as 50 percent if the 15th-percentile crossing speed of pedestrians is less than 3.5 feet per second.

08 A traffic control signal may not be needed at the study location if adjacent coordinated traffic control signals consistently provide gaps of adequate length for pedestrians to cross the street.

Section 4C.06 Warrant 5, School Crossing

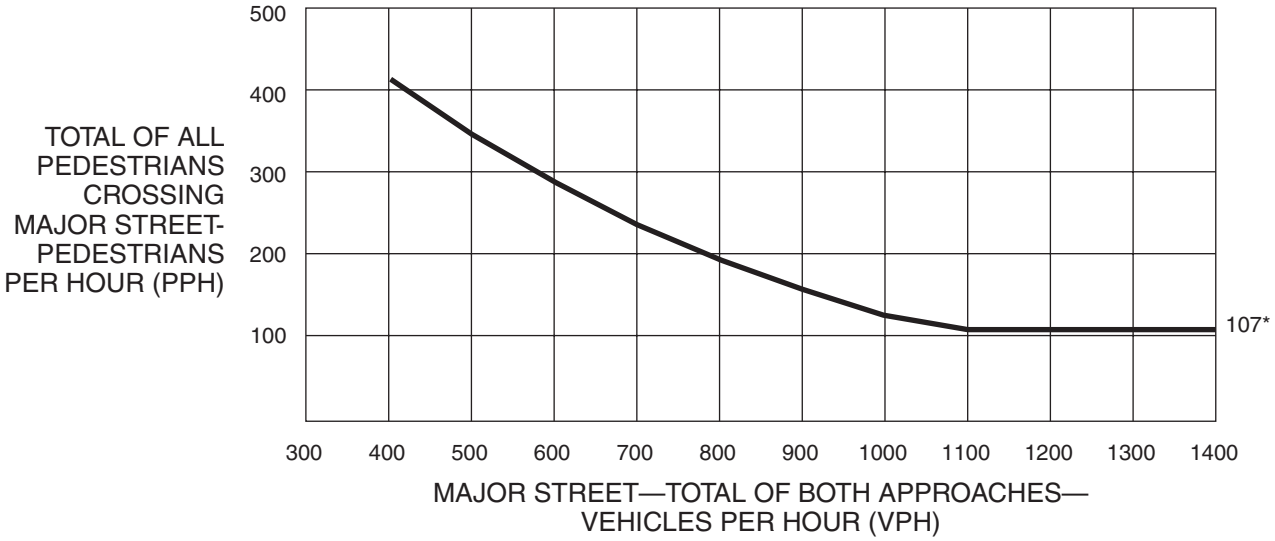
Support:

01 The School Crossing signal warrant is intended for application where the fact that schoolchildren cross the major street is the principal reason to consider installing a traffic control signal. For the purposes of this warrant, the word “schoolchildren” includes elementary through high school students.

Standard:

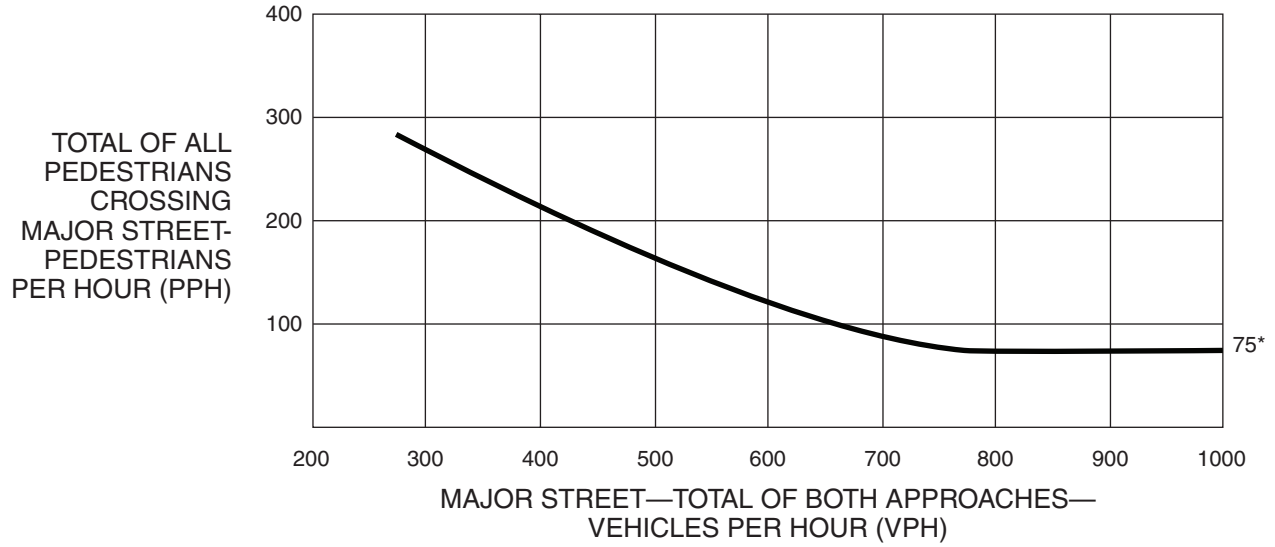
02 **The need for a traffic control signal shall be considered when an engineering study of the frequency and adequacy of gaps in the vehicular traffic stream as related to the number and size of groups of schoolchildren at an established school crossing across the major street shows that the number of adequate gaps in the traffic stream during the period when the schoolchildren are using the crossing is less than the number of minutes in the same period (see Section 7A.03) and there are a minimum of 20 schoolchildren during the highest crossing hour.**

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume



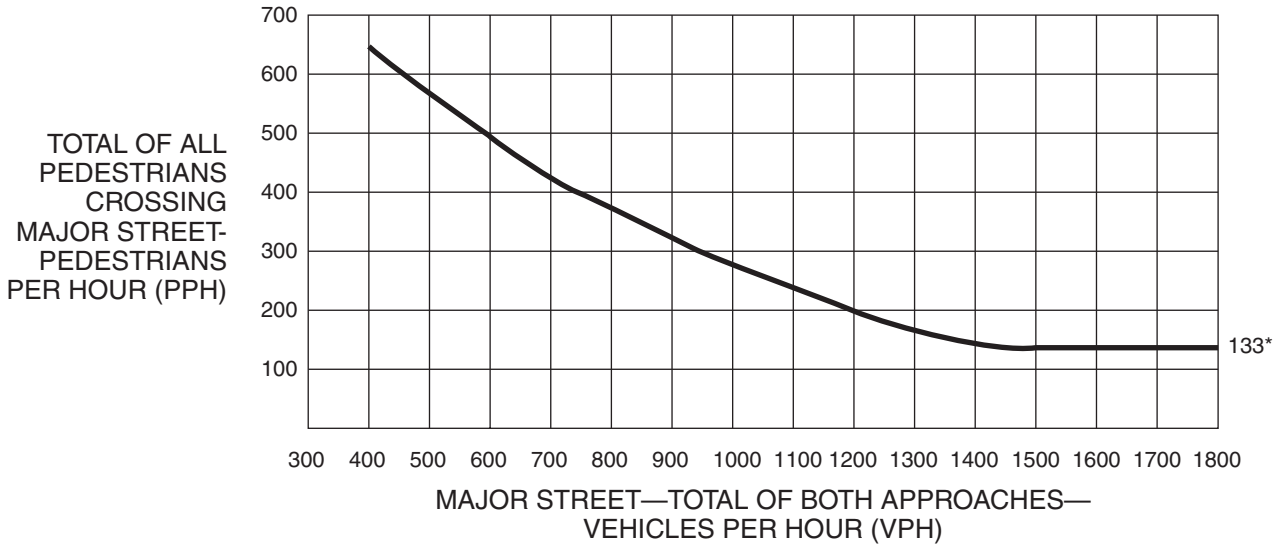
*Note: 107 pph applies as the lower threshold volume.

Figure 4C-6. Warrant 4, Pedestrian Four-Hour Volume (70% Factor)



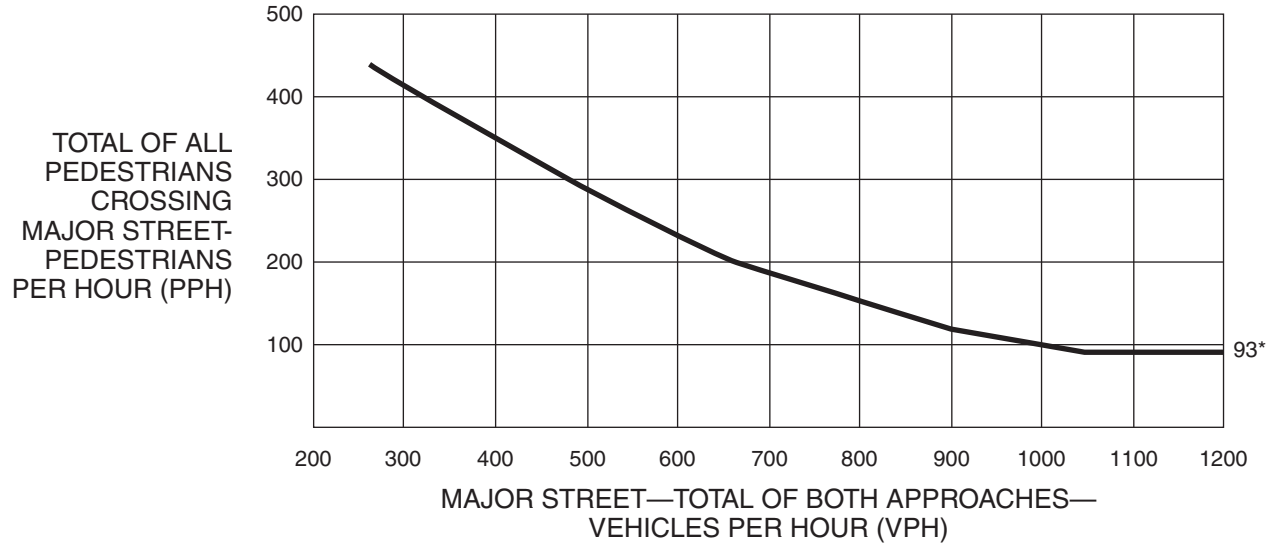
*Note: 75 pph applies as the lower threshold volume.

Figure 4C-7. Warrant 4, Pedestrian Peak Hour



*Note: 133 pph applies as the lower threshold volume.

Figure 4C-8. Warrant 4, Pedestrian Peak Hour (70% Factor)



*Note: 93 pph applies as the lower threshold volume.

03 **Before a decision is made to install a traffic control signal, consideration shall be given to the implementation of other remedial measures, such as warning signs and flashers, school speed zones, school crossing guards, or a grade-separated crossing.**

04 **The School Crossing signal warrant shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 300 feet, unless the proposed traffic control signal will not restrict the progressive movement of traffic.**

Guidance:

05 *If this warrant is met and a traffic control signal is justified by an engineering study, then:*

A. If it is installed at an intersection or major driveway location, the traffic control signal should also control the minor-street or driveway traffic, should be traffic-actuated, and should include pedestrian detection.

B. If it is installed at a non-intersection crossing, the traffic control signal should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs, and should be pedestrian-actuated. If the traffic control signal is installed at a non-intersection crossing, at least one of the signal faces should be over the traveled way for each approach, parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the crosswalk or site accommodations should be made through curb extensions or other techniques to provide adequate sight distance, and the installation should include suitable standard signs and pavement markings.

C. Furthermore, if it is installed within a signal system, the traffic control signal should be coordinated.

Section 4C.07 Warrant 6, Coordinated Signal System

Support:

01 Progressive movement in a coordinated signal system sometimes necessitates installing traffic control signals at intersections where they would not otherwise be needed in order to maintain proper platooning of vehicles.

Standard:

02 **The need for a traffic control signal shall be considered if an engineering study finds that one of the following criteria is met:**

A. On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.

B. On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.

Guidance:

03 *The Coordinated Signal System signal warrant should not be applied where the resultant spacing of traffic control signals would be less than 1,000 feet.*

Section 4C.08 Warrant 7, Crash Experience

Support:

01 The Crash Experience signal warrant conditions are intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal.

Standard:

02 **The need for a traffic control signal shall be considered if an engineering study finds that all of the following criteria are met:**

A. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; and

B. Five or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage apparently exceeding the applicable requirements for a reportable crash; and

C. For each of any 8 hours of an average day, the vehicles per hour (vph) given in both of the 80 percent columns of Condition A in Table 4C-1 (see Section 4C.02), or the vph in both of the 80 percent columns of Condition B in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection, or the volume of pedestrian traffic is not less than 80 percent of the requirements specified in the Pedestrian Volume warrant. These major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 56 percent columns in Table 4C-1 may be used in place of the 80 percent columns.

Section 4C.09 Warrant 8, Roadway Network

Support:

01 Installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway network.

Standard:

02 **The need for a traffic control signal shall be considered if an engineering study finds that the common intersection of two or more major routes meets one or both of the following criteria:**

- **A. The intersection has a total existing, or immediately projected, entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday and has 5-year projected traffic volumes, based on an engineering study, that meet one or more of Warrants 1, 2, and 3 during an average weekday; or**
- **B. The intersection has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of any 5 hours of a non-normal business day (Saturday or Sunday).**

03 **A major route as used in this signal warrant shall have at least one of the following characteristics:**

- **A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow.**
- **B. It includes rural or suburban highways outside, entering, or traversing a city.**
- **C. It appears as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study.**

Section 4C.10 Warrant 9, Intersection Near a Grade Crossing

Support:

01 The Intersection Near a Grade Crossing signal warrant is intended for use at a location where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic control signal.

Guidance:

02 *This signal warrant should be applied only after adequate consideration has been given to other alternatives or after a trial of an alternative has failed to alleviate the safety concerns associated with the grade crossing. Among the alternatives that should be considered or tried are:*

- *A. Providing additional pavement that would enable vehicles to clear the track or that would provide space for an evasive maneuver, or*
- *B. Reassigning the stop controls at the intersection to make the approach across the track a non-stopping approach.*

Standard:

03 **The need for a traffic control signal shall be considered if an engineering study finds that both of the following criteria are met:**

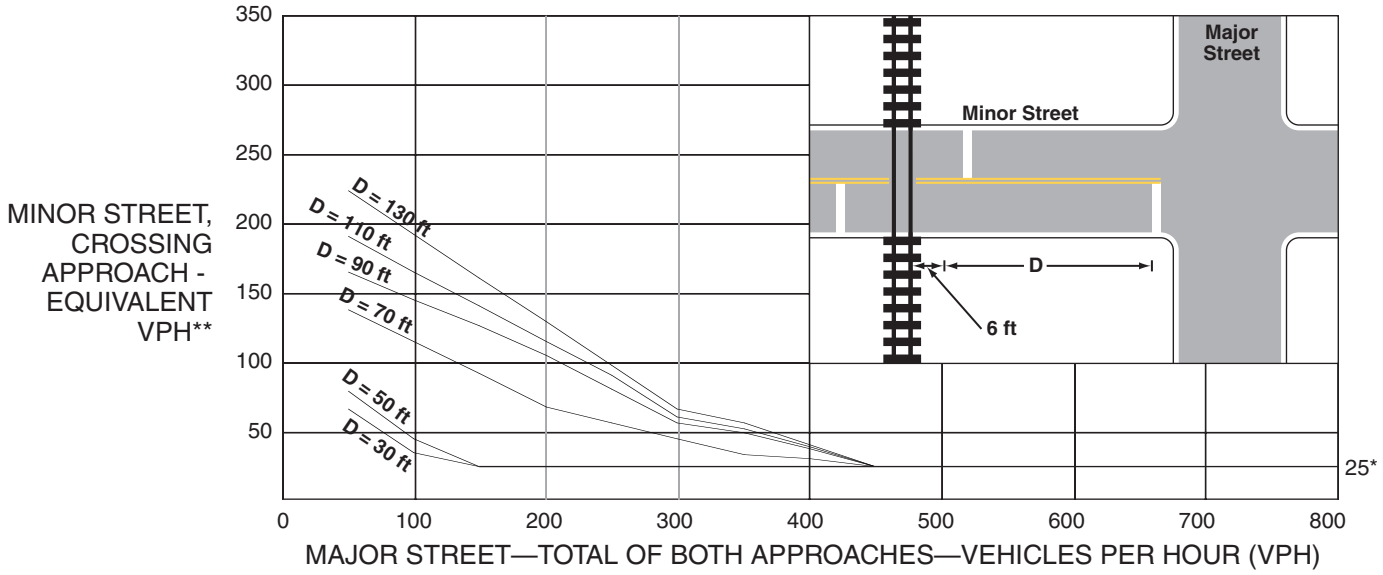
- **A. A grade crossing exists on an approach controlled by a STOP or YIELD sign and the center of the track nearest to the intersection is within 140 feet of the stop line or yield line on the approach; and**
- **B. During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the minor-street approach that crosses the track (one direction only, approaching the intersection) falls above the applicable curve in Figure 4C-9 or 4C-10 for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance as defined in Section 1A.13.**

Guidance:

04 *The following considerations apply when plotting the traffic volume data on Figure 4C-9 or 4C-10:*

- *A. Figure 4C-9 should be used if there is only one lane approaching the intersection at the track crossing location and Figure 4C-10 should be used if there are two or more lanes approaching the intersection at the track crossing location.*

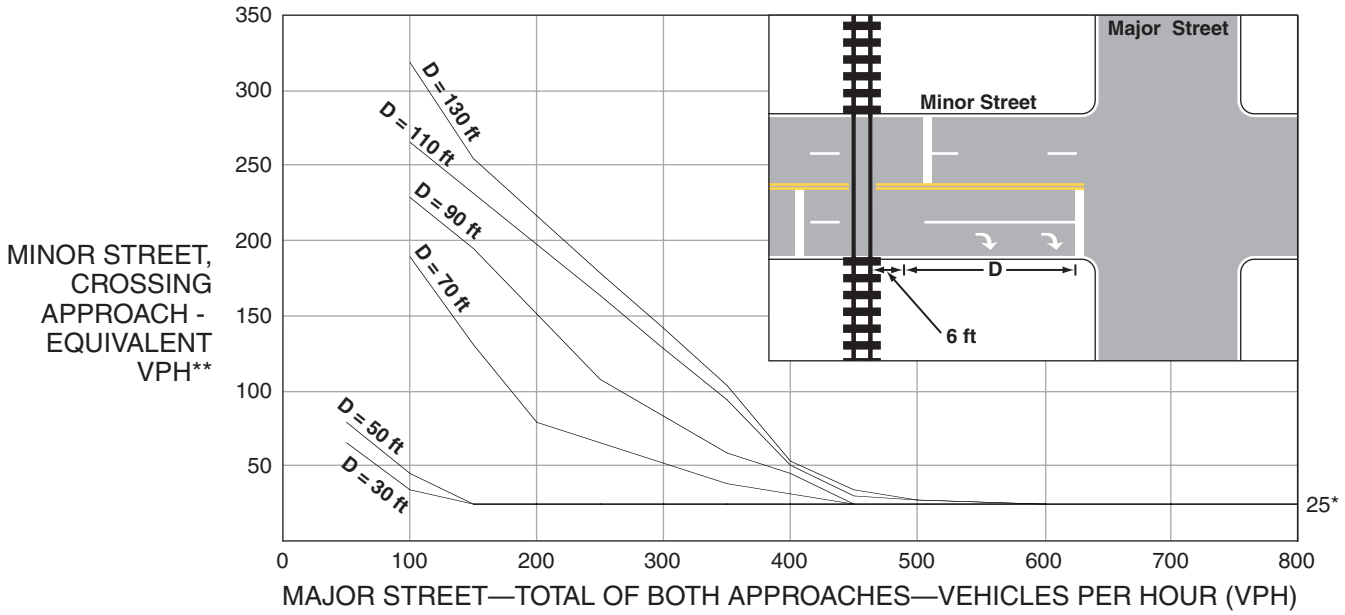
Figure 4C-9. Warrant 9, Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing)



* 25 vph applies as the lower threshold volume

** VPH after applying the adjustment factors in Tables 4C-2, 4C-3, and/or 4C-4, if appropriate

Figure 4C-10. Warrant 9, Intersection Near a Grade Crossing (Two or More Approach Lanes at the Track Crossing)



* 25 vph applies as the lower threshold volume

** VPH after applying the adjustment factors in Tables 4C-2, 4C-3, and/or 4C-4, if appropriate

B. After determining the actual distance D, the curve for the distance D that is nearest to the actual distance D should be used. For example, if the actual distance D is 95 feet, the plotted point should be compared to the curve for D = 90 feet.

C. If the rail traffic arrival times are unknown, the highest traffic volume hour of the day should be used.

Option:

05 The minor-street approach volume may be multiplied by up to three adjustment factors as provided in Paragraphs 6 through 8.

06 Because the curves are based on an average of four occurrences of rail traffic per day, the vehicles per hour on the minor-street approach may be multiplied by the adjustment factor shown in Table 4C-2 for the appropriate number of occurrences of rail traffic per day.

07 Because the curves are based on typical vehicle occupancy, if at least 2% of the vehicles crossing the track are buses carrying at least 20 people, the vehicles per hour on the minor-street approach may be multiplied by the adjustment factor shown in Table 4C-3 for the appropriate percentage of high-occupancy buses.

08 Because the curves are based on tractor-trailer trucks comprising 10% of the vehicles crossing the track, the vehicles per hour on the minor-street approach may be multiplied by the adjustment factor shown in Table 4C-4 for the appropriate distance and percentage of tractor-trailer trucks.

Standard:

09 **If this warrant is met and a traffic control signal at the intersection is justified by an engineering study, then:**

A. The traffic control signal shall have actuation on the minor street;

B. Preemption control shall be provided in accordance with Sections 4D.27, 8C.09, and 8C.10; and

C. The grade crossing shall have flashing-light signals (see Chapter 8C).

Guidance:

10 *If this warrant is met and a traffic control signal at the intersection is justified by an engineering study, the grade crossing should have automatic gates (see Chapter 8C).*

Table 4C-2. Warrant 9, Adjustment Factor for Daily Frequency of Rail Traffic

Rail Traffic per Day	Adjustment Factor
1	0.67
2	0.91
3 to 5	1.00
6 to 8	1.18
9 to 11	1.25
12 or more	1.33

Table 4C-3. Warrant 9, Adjustment Factor for Percentage of High-Occupancy Buses

% of High-Occupancy Buses* on Minor-Street Approach	Adjustment Factor
0%	1.00
2%	1.09
4%	1.19
6% or more	1.32

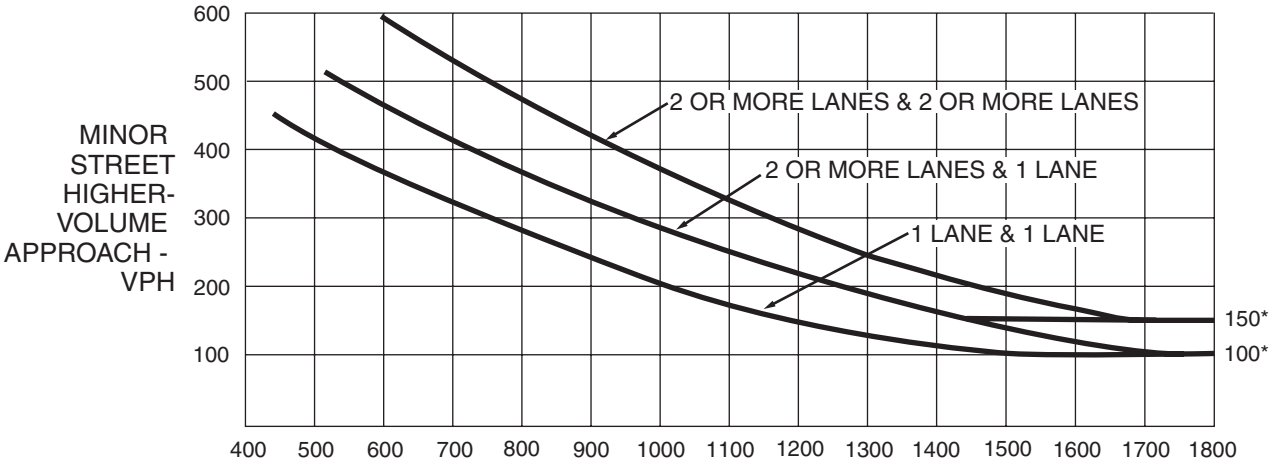
* A high-occupancy bus is defined as a bus occupied by at least 20 people.

Table 4C-4. Warrant 9, Adjustment Factor for Percentage of Tractor-Trailer Trucks

% of Tractor-Trailer Trucks on Minor-Street Approach	Adjustment Factor	
	D less than 70 feet	D of 70 feet or more
0% to 2.5%	0.50	0.50
2.6% to 7.5%	0.75	0.75
7.6% to 12.5%	1.00	1.00
12.6% to 17.5%	2.30	1.15
17.6% to 22.5%	2.70	1.35
22.6% to 27.5%	3.28	1.64
More than 27.5%	4.18	2.09

US 89 & E Fairway Dr

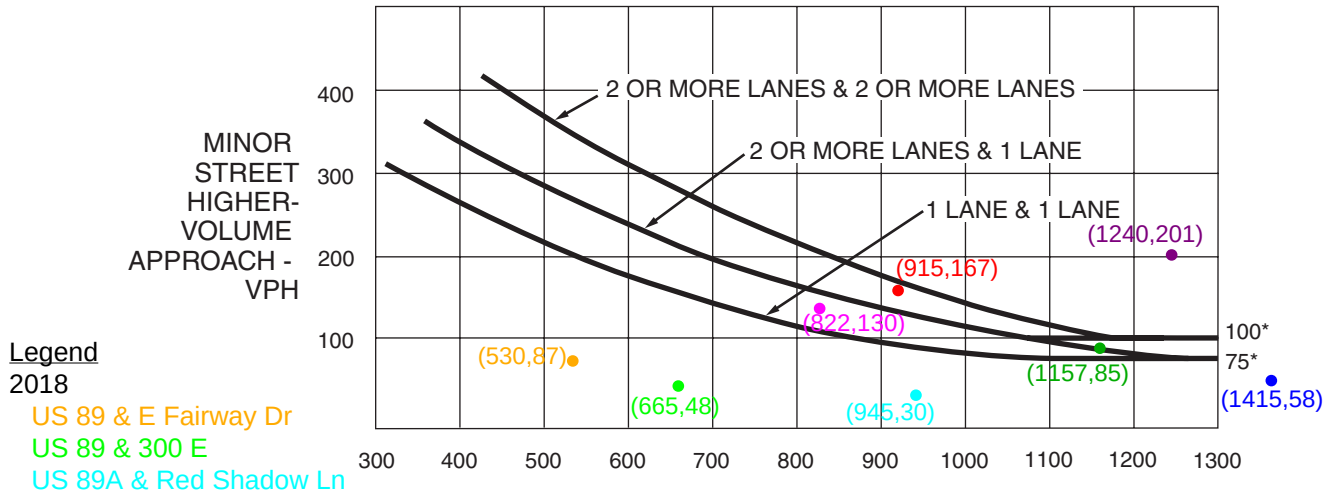
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



Legend
2018
- US 89 & E Fairway Dr
- US 89 & 300 E
- US 89A & Red Shadow Ln
- US 89A & Kanab Creek Dr

2038
- US 89 & E Fairway Dr
- US 89 & 300 E
- US 89A & Red Shadow Ln
- US 89A & Kanab Creek Dr

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.