Herriman City
Transportation Capital Facilities Plan

Founded 1851

Herriman

Prepared By
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TABLE OF CONTENTS

1 Introduction 5
1.1 Objectives 5
2 Recent Changes 7
2.1 Population Changes 7
2.2 Land Use Changes 7
2.3 Transportation Planning Changes 9
2.4 Agency Coordination 9
3 Existing Transportation Facilities 11
3.1 Existing Roadways 11
3.2 Existing Level of Service 15
3.2.1 Roadways 15
3.2.2 Intersections 18
3.3 Existing Functional Classification 19
3.4 Existing Alternative Travel Modes 22
3.4.1 Bicycle and Pedestrian Facilities 22
3.4.2 Transit 22
3.5 Existing Truck Routes 22
4 Future Needs Assessment 24
4.1 Population Growth and Trends Affecting Travel 24
4.2 Traffic Demands from New Development 24
4.3 Regional Travel Model 25
4.3.1 Analysis 25
5 Addressing Future Demands 31
6 Cost Analyses 35
6.1 Cost Estimating Breakdown 35
7 Appendix 41

TABLE OF TABLES

Table 3-2 Roadway Functional Classification 20
Table 3.3 – Roadway Classification Standards 21
Table 4.1 – Level of Service for Roadways 26
Table 4.2-2020 Roadway Average Daily Trips (ADT) and Recommended Class 27
Table 6.1 Roadway Categories 37

TABLE OF FIGURES

Figure 2.1 Herriman Land Use Changes 8
Figure 3-1 Existing Roadways 14
Figure 3-2 Existing Average Daily Traffic 16
Figure 3-3 Existing Level of Service 17
Figure 3.4 – Relationship of Service 19
Figure 3-5 Existing Truck Routes 23
Figure 4.1 – 2020 Average Daily Traffic 30
Figure 5.1 – Transportation Improvements 34

Executive Summary

This Transportation Capital Facilities Plan (CFP) has been developed to allow Herriman City to properly plan and budget for essential existing and future transportation needs. Substantial changes over the past year have occurred requiring Herriman City to update their Transportation Master Plan and Transportation Capital Facilities Plan. Changes include the incorporation of approximately 4000 acres in East Herriman, final alignment of the Mountain View Corridor, and a recent update of the Comprehensive land use plan.

In order to prepare this Capital Facilities Plan a systematic approach was utilized to evaluate the improvements that should be associated with meeting the needs of existing transportation users as well as identify and quantify the cost associated with the improvements that are needed to serve future users. In order to differentiate between the requirements associated with meeting current Level of Service and future capacity, a capacity analysis of each arterial and collector roadway within the proposed system was developed. This capacity analysis was based upon a preferred minimum operational Level of Service (LOS) D for arterial roadways and LOS C for collector roadways.

The current Herriman City land use map was used as the basis for development of population, employment and related trip generation estimates. These estimates were integrated into the consideration of capacity and Level of Service for each of the roadways within Herriman City that are classified as minor collector through arterial.

Table 6.1 summarizes transportation improvements impact fee eligible and the estimated cost for the Herriman City. Figure 5.1 identifies the roadways recommended for improvements.

This document is for planning purposes only and does not constitute a required course of action. Determination of actual project work in any given year will be established by the City. The project years shown in this document are only a recommendation and may vary from the year that projects are actually completed.

1 Introduction

This Capital Facilities Plan was prepared as an update to the recently adopted Capital Facilities Plan, March 2008. Several substantial land use changes have occurred since the preparation and adoption of the prior plan, that require a reevaluation of the phasing of the recommended improvements. Key concerns include a preferred alignment for the Mountain View Corridor and the incorporation of the East Herriman area, which was de-annexed from Bluffdale City and annexed to Herriman City in the summer of 2008.

Herriman City is experiencing significant growth that has caused this one-time agricultural community to be one of the fastest growing communities in the State of Utah. This growth has placed demands upon the existing roadways. Herriman City has commissioned a comprehensive review and update of the Transportation Master Plan (TMP) to study how Herriman City will meet these demands. The TMP identified proposed roadway improvements through the year 2030. This Capital Facilities Plan has been developed to identify the overall phasing and sequencing of these improvements, identification of the associated costs and an allocation of those costs for the purpose of justifying the collection of impact fees for developments anticipated in the future.

1.1 Objectives

The purpose and objectives of this Capital Facilities Plan are as follows:
1. Identify the existing facilities
2. Identify anticipated development
3. Estimate the demands placed on the existing facilities by new development
4. Define how Herriman City's transportation system will meet these demands
5. Estimate cost of proposed projects and provide evaluation of revenue sources

In order to prepare this Capital Facilities Plan a systematic approach was utilized to evaluate the improvements that should be associated with meeting the needs of existing transportation users as well as identify and quantify the cost associated with the improvements that are needed to serve future users. A capacity analysis of each roadway within the proposed system was developed to differentiate between the requirements associated with meeting current Level of Service (LOS) deficiencies, and the needs of the future users. Transportation needs were determined such that a minimum operational LOS D for arterial grade roadways and LOS C or D for collector grade roadways.

A field review was conducted of the current roadways to identify the existing conditions. The assessment of the existing roadways includes both those roadways that are completed and those roadways that remain to be widened and improved but are planned. The Existing LOS conditions were developed as part of the Transportation Master Plan Update and were based upon a comparison of the existing traffic volume against the of each roadway.

The current Herriman City land use plan and map was used as the basis for development of population, employment and related trip generation estimates. Future traffic conditions were evaluated through planned land use information and future population projections provided by Herriman City. These estimates were then integrated into the consideration of capacity

and LOS for each of the roadways within Herriman City that are classified as collector and arterial.

Based upon recommendations developed within the Transportation Master Plan Update and coordination with Herriman City staff, the transportation improvements were recommended. The phasing of these improvements was determined based on current development trends and the availability of other existing infrastructure such as water and sewer. Determination of the planned schedule of improvements was based upon coordination with Herriman City staff in conjunction with review of the system analysis performed as part of the Transportation Master Plan Update.

2 Recent Changes

This Chapter provides a brief overview of population, land use and transportation changes which have taken place warranting a reevaluation of capital facilities since the adoption of the 2009 Transportation Master Plan (referred as existing TMP) and the 2009 Capital Facilities Plan (referred to as existing CFP).

2.1 Population Changes

The existing TMP used a population projection prepared by the Wasatch Front Regional Council (WFRC). The WFRC projection was prepared based on the build-out scenario for Herriman City, and the expected population density for that area. The WFRC build-out scenario was based on the 2005 city limits. The WFRC estimate placed the build-out population to be between 37,000 to 42,000 people. The existing TMP also used a build-out population estimate, but included the newly annexed East Herriman resulting in a build-out population estimate of 100,000.

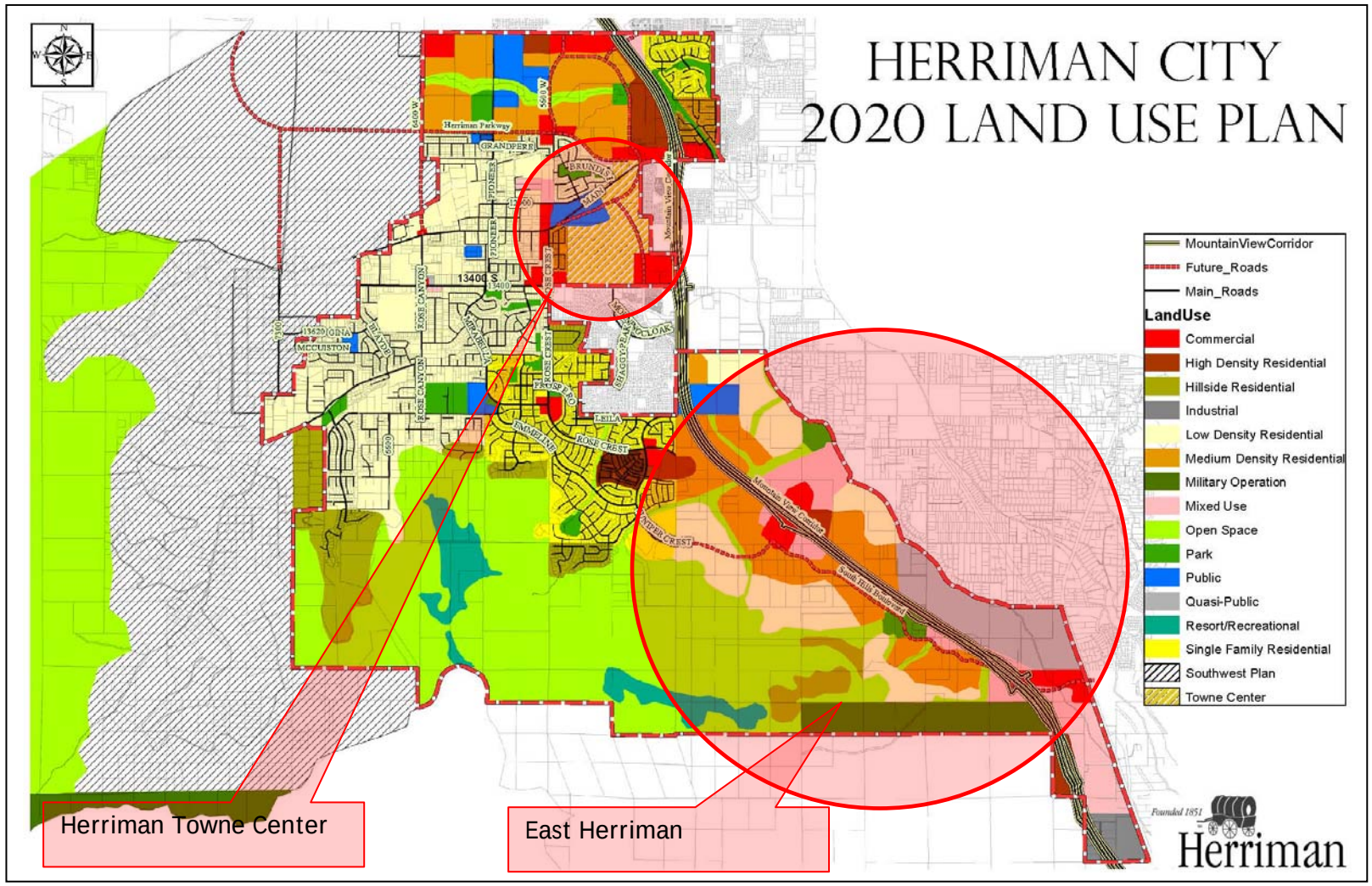
Since the development of the existing TMP, Herriman City has prepared new 20-year land use population projections. Herriman City now forecasts a population of 40,000 persons in the year 2020. The recent projection implies that Herriman City will be nearing build-out conditions by 2040. Both build-out scenarios and 20-year population projections are appropriate for use in transportation planning. This Transportation Master Plan update will use the Herriman City 2020 projection, as it is the most recently available data.

2.2 Land Use Changes

One of the most significant changes since the adoption of the existing TMP is the annexation of East Herriman development. While the annexation was being considered during the development of the existing TMP, data needed for transportation planning was not readily available. The annexation changed the variety of land use in Herriman City, and introduced a new type of land use: mixed-use development. These land use changes were not considered in the existing TMP.

The second significant change that has occurred since the existing TMP was the final adoption and approval of the Herriman Towne Center land use plan. The Herriman Towne Center is between 5600 West and the proposed Mountain View Corridor, 13400 South, and Main Street (12600 South). Although transportation concerns at this location were considered in the existing TMP, the type and designation of land uses was not. The Towne Center will accommodate approximately 377 acres of mixed-use development including housing, commercial, and recreational land use (Figure 2.1 – Herriman Land Use Changes).

Figure 2.1 Herriman Land Use Changes



2.3 Transportation Planning Changes

The Wasatch Front Regional Council (WFRC) is the designated Metropolitan Planning Organization for the greater Wasatch Front Region. As such, the WFRC is required by the Federal Highway Administration to develop and approve a Regional Transportation Plan and update it every three years. This Transportation Master Plan usually covers a time span of 30 years and governs regionally significant highway and transit development across the urbanized areas of Salt Lake, Davis and Weber Counties. The most recent Long Range Transportation Plan (LRTP) for the Wasatch Front Regional Council area was adopted in May 2007.

To address future roadway needs, the WFRC has planned improvements for several sections of roads. The roads are administered by state and local governments. The current LRTP identifies two projects that will have a substantial change in mobility and travel for Herriman City: the Mountain View Corridor, which will be a new state highway between Utah County and Davis County and currently planned on the west side of the Salt Lake County. A UTA mass transit extension planned to service the west-bench communities of South Jordan, West Jordan, Taylorsville, Herriman, Riverton, and Bluffdale.

The Mountain View Corridor has been in the planning stages for several years. A preferred alignment has recently been identified, and so information was not available during the development of the current TMP. During the development of that plan it was not known where interchanges were planned which greatly limited the ability to make roadway classifications, not project daily traffic, and estimate LOS. The final EIS and Record of Decision were approved in late 2008.

The UTA mass transit corridor is not completely defined but more is known now than it was during development of the existing TMP. The corridor alignment and station north of Herriman in South Jordan City has been identified. The railway corridor alignment south into Herriman is currently being evaluated, but a general area has been identified. Regardless of the final plan details, future mass transit and transit stations will have substantial effect on land use and the traffic patterns. Planning roads in conjunction with the WFRC allows communities to apply for and receive funds from the STIP and other State and Federal funding programs.

2.4 Agency Coordination

As part of the development of the Transportation Master Plan and Capital Facilities Plan the plans and facilities of adjacent jurisdictions and shared jurisdiction were considered and reviewed. This review included current transportation and trails planning documents as well as various contacts and discussions with officials.

East Herriman Plan (2008): This document was reviewed for incorporation into this inclusive Capital Facilities Plan.

Kennecott West Hills (2007): This document covers the Daybreak development roadway, transit and land use plans were analyzed and included in this Capital Facilities Plan.

Riverton City's Transportation Master Plan (2000): Roadways including 12600 South and 13400 South are shared by Riverton City and Herriman City. The connectivity of these facilities was considered as part of this Capital Facility Plan.

South Jordan City's Transportation Master Plan (2004): This document was referred to determine South Jordan's plans for the roads which provide connectivity to Herriman City. Results were directly integrated into the Herriman City study to effectively consider roadway and trail compatibility with specific focus on South Jordan City.

Bluffdale City Transportation Master Plan: This roadway planning document was integrated into this study to provide connectivity and configuration compatibility. Many new roadways in East Herriman will have some connectivity to Bluffdale City roads.

UDOT and **Mountain View Corridor Plans** were obtained and coordinated with this Herriman City planning effort. Of particular interest was The Mountain View Corridor and how it will affect the area adjacent to 11800 South, 12600 South, 13400 South and East Herriman.

Wasatch Front Regional Council (WFRC) and **Salt Lake County Regional Plans** were considered including roadway models and regional trail plans. Regional issues such as east-west connectivity, and the possibility of regional classification of roadways was discussed and considered.

3 Existing Transportation Facilities

The preparation of the update to the Transportation Master Plan and this Capital Facility Plan was predicated upon an evaluation of the existing transportation facilities currently in service within the study area. This Capital Facilities Plan considers the area inside the Herriman City boundaries only. Future planned roads shown within these boundaries or service area are considered part of impact fee eligible improvements. The Transportation Master Plan Update included an evaluation of existing traffic conditions and locations of proposed or anticipated improvements.

3.1 Existing Roadways

At the present time only one existing roadway segment; Redwood Road, is under the jurisdiction of the Utah Department of Transportation (UDOT) within Herriman City. Salt Lake County controls and maintains the arterial road U-111, which is downgraded to a Herriman City collector street (Main Street) within Herriman City.

All other roadways within Herriman City are under Herriman City's sole jurisdiction, or are shared with adjacent jurisdictions including South Jordan and Riverton. The specific roadways with shared jurisdiction include:

11800 South between U-111 and 4800 West (shared with South Jordan)
12600 South between 5100 West and the east Herriman City limit – (shared with Riverton City)
13400 South between 5200 West and the east Herriman City limit (shared with Riverton City)

On shared roadways, Herriman anticipates that each City will pay for half of the maintenance costs including asphalt maintenance, signal and striping, and associated construction costs.

A field inventory of major existing road features was conducted. Streets were inventoried or information was provided by Herriman City staff to identify completed improvements, and determine which elements remain to be completed (Figure 3.1, Existing Roadways). Remaining elements can include the following: curb and gutter, sidewalk, landscaping or park strip, and street lighting. As growth continues, these remaining elements would need to be improved to meet roadway standards.

11800 South Half Width (South Half)
11800 South marks the city boundary between Herriman City and South Jordan City. Herriman City is responsible for the southern half of this road. Thirty four additional feet of asphalt are needed to meet the roadway Major Arterial roadway classification (120-feet right of way). No roadway elements such as curb, gutter, sidewalk, and park strip exist between 5000 West to 7200 West. The portion of 11800 South from the East Herriman City Boundary to 5000 West provides all roadway elements. In measuring the exiting asphalt width, it was determined that it contains an overall width of 48 feet, with a half width of 24 feet to the centerline.

12600 South/Main Street
Currently 12600 South/Main Street is classified as Major Collector. As it proceeds west into Herriman City from Riverton City it curves to the South and becomes Main Street (13100 South). Two segments of this road are currently being improved; the first between 5600 West and 6400 West, and the second between 5600 West and 5200 West. The segment between

5600 West and 5200 West is being realigned to the south as part of the Herriman Towne Center development. Once completed, the roadway will contain curb, gutter, sidewalk, and park strip. It will also contain a roadway pavement width of 66-feet with an overall right of way width of 106-feet. The remaining portion of unimproved roadway is between 6400 West and 6600 West (City Limits). The 13100 South Roadway continues west and provides connectivity with U-111.

13400 South
Currently 13400 South begins at 4800 West and extends to the west to 6800 West. Similar to 11800 South, the roadway shares City boundary's between Herriman City and Riverton City, the north Herriman City and the south Riverton City. The south portion of the roadway contains all roadway elements between 4800 West to 5600 West. The area between 4800 West and 5500 West does not contain roadside elements along the north half of the roadway. This is currently undeveloped agricultural property. The north side section from 5500 West to 5600 West contains all roadside elements. The area between 5600 West and 6400 West along the south side provides most roadside elements except for the last 800 feet. This area does not provide sidewalk, curb, gutter and sidewalk, street lighting or park strip. Between 6000 West and 6400 West all roadside features are non-existent. The segment between 6400 West and 6800 West is a narrow residential street that is lacking all roadside features.

14200 South
Currently 14200 South begins at 6800 West and proceeds east and southeast to Emmeline Dr. The segment between 6400 West and Emmeline Dr. provides all improvements and the desired amount of asphalt to meet the recommended 80-foot roadway cross section. The portion of 14200 South between 6400 West and 6800 West is developed at a 66-foot roadway cross section.

Juniper Crest
Currently Juniper crest is constructed between 4800 West and Emmeline Dr and provides all roadway elements. Juniper Crest will serve as a primary corridor for residents in the southwest and east Herriman area. Juniper Crest is an identified Mountain View Corridor Interchange location. For this reason, it is recommended that a 120-foot wide right-of-way section be provided to accommodate a seven-lane roadway cross section between South Hills Blvd. and Rosecrest Road.

6400 West
Currently 6400 West exists between Main Street and 14200 South. Beginning at Main Street and moving south until it crosses 13400 South, this roadway section lacks all roadside improvements, curb & gutter, sidewalk, landscaping and street lighting. The remaining portion from 13400 South to 14200 South lacks sidewalk and landscaping on the east side from 13400 South to 13900 South and on the west side from 13900 South to 14200 South.

6000 West/Pioneer Street
Currently 6000 West (also known as Pioneer Street) is the only north-south access from 11800 South into Herriman City. From the 11800 South intersection to Herriman Parkway no roadside improvements exist. The roadway is asphalt with dirt shoulders and no curb & gutter, sidewalk, landscaping, or street lighting are present. The section from Herriman Parkway to 13100 South has all roadside features along the subdivision from Herriman Parkway to 12600 South, along the west side of the roadway. Also the section from 12500 South to 12950 South, and the roadside directly in front of Herriman City offices have all roadside improvements.

From 13100 to 13200 South this roadway contains no roadside features. From 13200 South to 13400 South, all improvements are shown as required in this section. Along this same stretch of street on the east side, no roadside features exist until the subdivision that is roughly located at 13350 South after which all improvements are in place. The remaining roadway starting at 13400 South meanders south until it connects with 14200 South. Along this stretch the roadway contains the required asphalt and roadside elements. At the southeast corner of the intersection with 13200 South there is a parcel of property that may be affected by the widening of 6000 West.

5600 West

Currently 5600 West runs from Main Street (13100 S) to 14200 South at which point it turns to the east and becomes Rosecrest Road. On the portion from Main Street to 13400 South, sidewalk, curb & gutter, landscaping, and street lighting can all be found on the east side of the roadway. Roadside improvements have been added to the west side by recent commercial developments. The portion from 13400 South to approximately 14200 South has one segment which does not contain all roadway elements such as sidewalk, park strip, and street lighting. This section is located between 13680 South and 13765 South, on the east side of roadway.

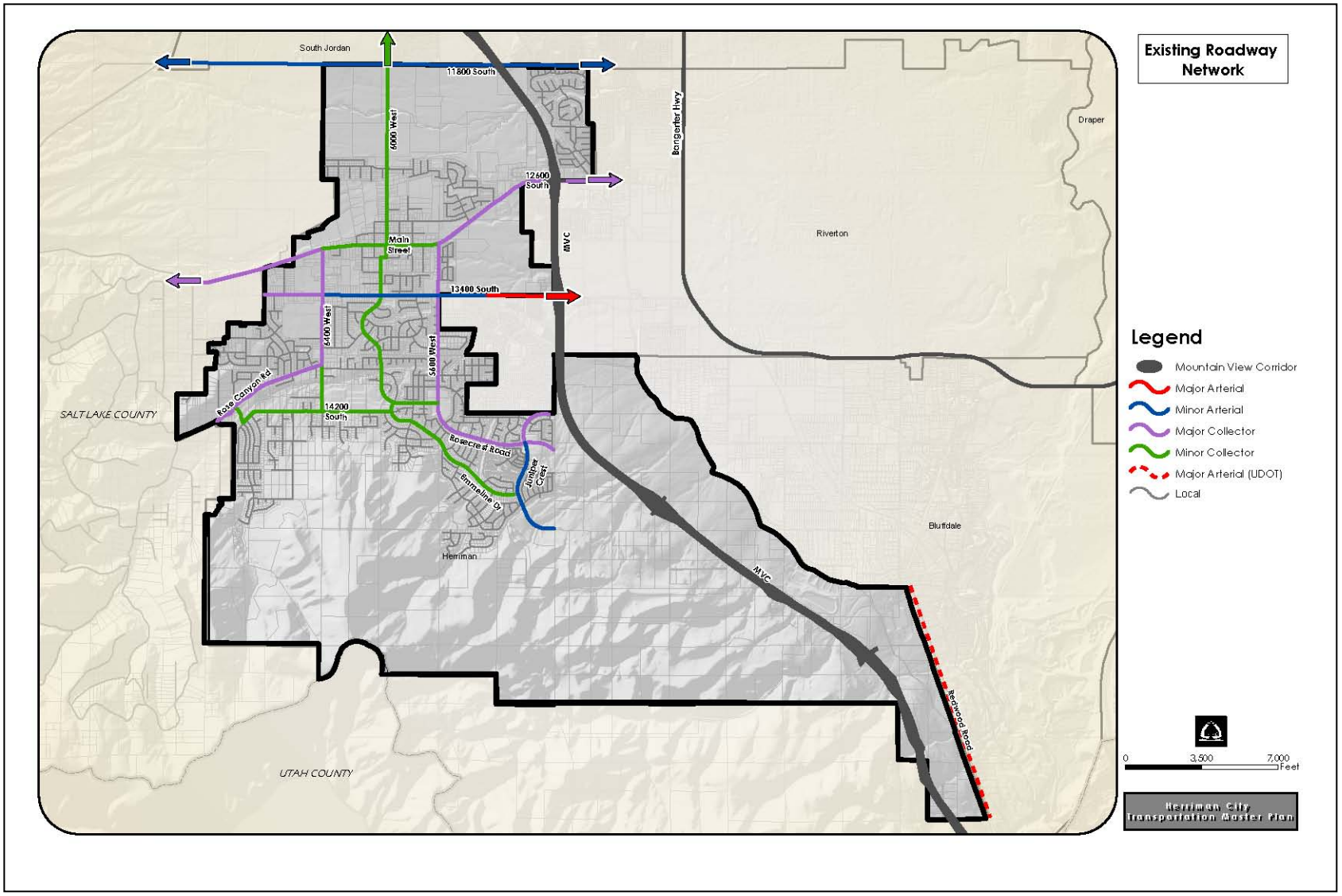


Figure 3-1 Existing Roadways

3.2 Existing Level of Service

Regional forecasts and plans assist with the development of the Transportation Master Plan Update. A Travel Demand Model was used to identify how many vehicles will use current and future roads based on the growth forecasts of Herriman City and its neighboring Cities. The Model was also used to predict how well the street network performed and to predict traffic volumes which are used to estimate the roadway Level of Service (LOS). The comparison between current and future traffic is used in this study because congestion is not just dependent on the number of vehicles using a road. The number of lanes, the capacity, speed and number of intersections and driveways are all factors affecting the LOS experienced by motorists.

3.2.1 Roadways

Existing traffic volumes were provided by Herriman City or collected from recent planning documents. In addition, traffic volumes were collected on 12600 South (at two locations), 13400 South, and 5600 West to determine how much traffic volumes changed from counts obtained in 2006.

While a LOS of "A" or "B" is always desirable, achieving this is not always possible due to roadway width limitations. Therefore, often a LOS "C" or even "D" is acceptable for most arterial and/or collector roadways especially in urban areas. The Wasatch Front Regional Council has adopted LOS "D" as an acceptable standard. Additionally, this LOS of "D" is typically experienced during either AM or PM Peak travel for a short duration and would not be worth the capital expense to improve a roadway experiencing a LOS "D" for less than one hour. Figure 3-2 shows the existing Average Daily Traffic (ADT) and Figure 3-3 shows the LOS for the existing roadway network.

Urban roadways are typically constrained by the operation of intersections, so much of the analysis focuses on intersection operation. Where intersections are present, they generally dictate the capacity of an urban roadway section. LOS is determined by the traffic operation performance at major intersections.

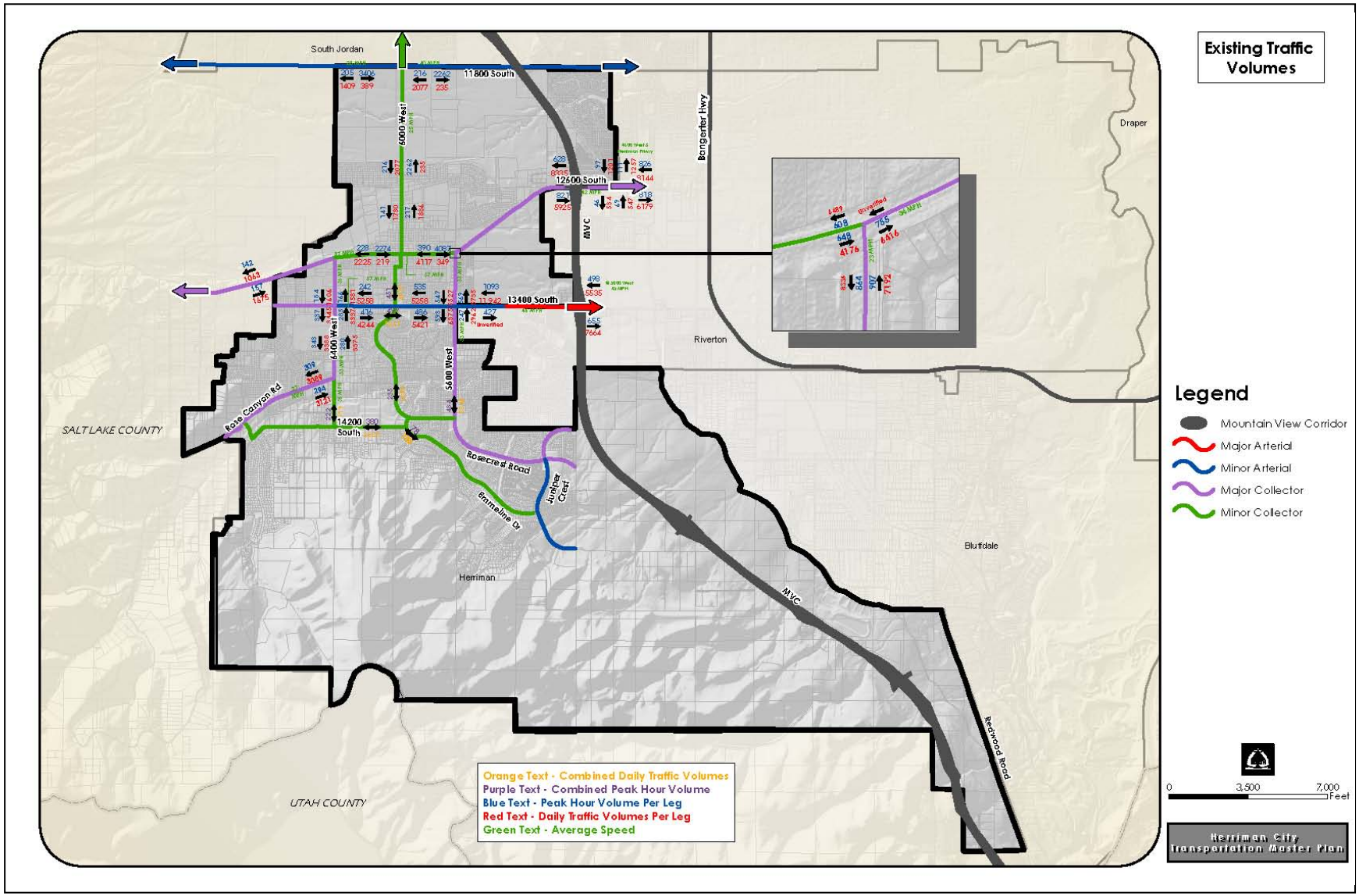


Figure 3-2 Existing Average Daily Traffic

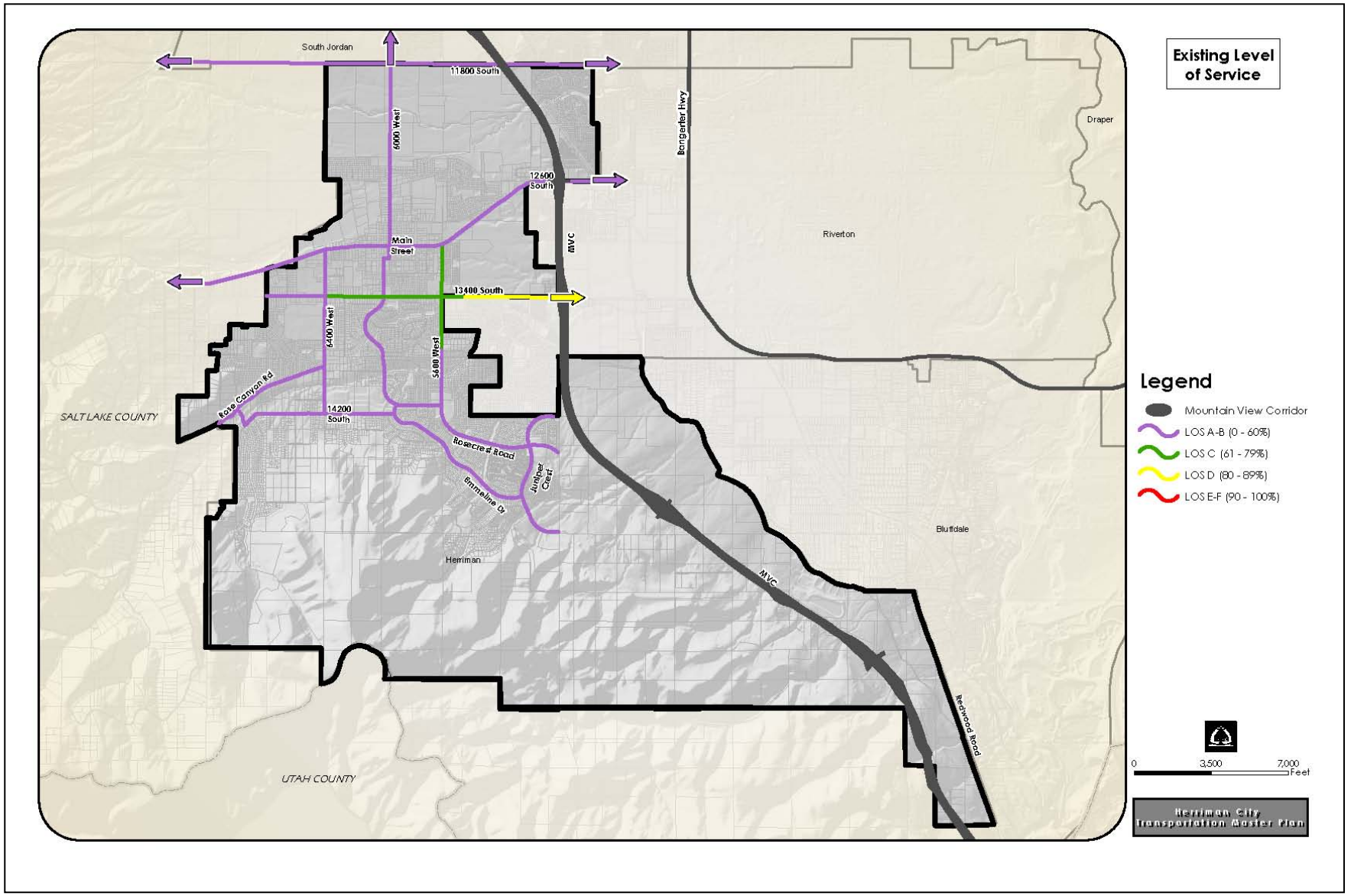


Figure 3-3 Existing Level of Service

3.2.2 Intersections

Intersections are usually analyzed by collecting turning movement volumes data, and then conducting a highway capacity analysis using the Highway Capacity Manual (HCM) method. This is done for short-range planning purposes when specific turning movement volumes can be obtained. Intersections are evaluated according to the Average Control Delay per vehicle and the corresponding LOS. The HCM LOS criteria for signalized and unsignalized intersections are summarized in Table 3-1.

Table 3-1 Level of Service (LOS) Criteria for Intersections

Level of Service (LOS)	Average Control Delay (seconds/vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	<=10	<=10
B	>10 - < 20	>10 - < 15
C	>20 - < 35	>15 - < 25
D	>35 - < 55	>25 - < 35
E	>55 - < 80	>35 - < 50
F	>80	>50
Source: Highway Capacity Manual 2000, Transportation Research Board, National Research Council, Washington, D.C., 2000.		

The HCM method calculates delay based on the roadway capacity available to service the various movements at an intersection. For signalized intersections, capacity is based on the amount of green-light time provided for each movement and the impacts of any conflicting movements. For unsignalized intersections, delay is based on the availability of gaps in the major street to allow minor street movements to occur. Delay results in driver frustration and anxiety, loss of time and increased fuel consumption.

Generally accepted standards for unsignalized intersections indicate that intersection approaches must operate at better than LOS "F" for the minor approaches. For unsignalized intersections, approaches can operate at LOS "E" or better unless a secondary access is available.

For a signalized intersection, an intersection LOS of "D" is acceptable. A key component to improve the intersection LOS is to assure that intersection and timing of signals are adequately timed for the amount of traffic volumes for each approach.

Traffic control devices are an essential element to the operation of each intersection. Within Herriman City, two intersections are signalized, while others are controlled by stop or yield signs. The existing signalized intersections were selected for evaluation; turning movement counts were collected; traffic control devices; and posted speeds, adjacent parking, and so on were noted. The signalized intersections are located at 5600 West/Main Street and 5600 West/13400 South. For existing conditions, all signalized intersections are operating at acceptable LOS with the worst vehicle wait time between 35 and 55 seconds or a LOS of D.

3.3 Existing Functional Classification

The assignment of functional classifications of transportation facilities is the process in which roads, streets and highways are categorized into a hierarchical arrangement. The classification of an individual road may change over time as the capacity and function of the road is improved to serve different land uses, transportation facilities and trip generators. As an area becomes more developed, roads that have previously been classified as one category may need to be improved and reclassified to a higher category to allow for greater mobility. For motorized travel local streets and highways address two distinct and very different functions: mobility and accessibility. Mobility is the ability to efficiently move between two points. Accessibility is the number of activities at a particular point. The two functions are mutually dependent and inversely related. That is, one comes at the cost of the other. As Figure 3-3 Relationship of Service illustrates, the larger the facility, the greater the mobility allowed by a given road classification. Similarly, the smaller the facility, the greater the accessibility achieved by a road. Coincidentally, the larger the facility, and the greater the mobility, the less pedestrian friendly a street becomes, and vice versa.

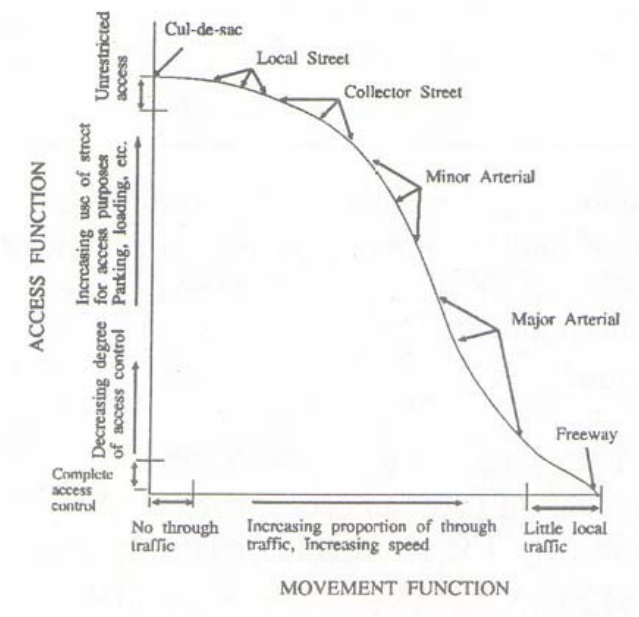


Figure 3.4 – Relationship of Service

Both mobility and accessibility are vital to motorized travel, and no trip is made without both. The type of road selected is based on the desired outcome. Road classifications are generally divided into four primary classifications, some of which are frequently further split into subcategories. The four main categories can be defined in Table 3.2 Roadway Functional Classification. Characteristics of roadways are further explained in Table 3-3.

Table 3-2 Roadway Functional Classification

Roadway Classification	Description	Example
Interstates	Promote rapid movement of large volumes of traffic between regions and across metropolitan areas. Direct access to abutting property is not an intended function of these facilities, and is accordingly limited. Design characteristics support the function of traffic movement by providing multiple travel lanes, a high degree of access control, and few or no intersections at grade. The posted speed on freeways ranges from 55 mph to 75 mph.	Interstate 15, Interstate 215, Interstate 80
Principal Arterial Streets	Provide for traffic movement in urban or interurban areas. They contain the greatest proportion of through or long-distance travel. Access to abutting properties from arterials is secondary, and access points are spaced accordingly. Larger, major arterials typically serve as connections between major traffic generators and land use concentrations, and facilitate large volumes of through traffic traveling across the community. Posted speeds on arterials generally range between 35 and 45 mph. For this study these facilities consist of 120 feet of right-of-way with 7 total lanes that are principally utilized near connections to freeway segments, where traffic volumes are particularly high.	13400 South, Redwood Road,
Minor Arterial Streets	Minor arterials serve as connectors between principal arterials and collector streets. Minor arterials often serve as boundaries to neighborhoods. Posted speed limits along minor arterials are usually in the 35 to 40 mph range. For this study, these facilities are sized at 106 feet of right-of-way with 5 total lanes. Both arterial classifications anticipate the use of access control practices to reduce conflict points along these important corridors.	11800 South, 13400 South
Collector Streets	Collectors are intended to assemble and concentrate residential and rural traffic and direct it to the arterial system. Collectors usually have the capacity to carry 2 to 3 lanes of traffic, and have curb, gutter and sidewalk along both sides. For long through-trips, collectors are usually inefficient. However, collectors are frequently used for shorter through movements associated with the distribution and collection portion of a trip between origin/destination points and arterials. Posted speeds are generally between 25 and 35 mph.	12600 South, 5600 West, Rosecrest Road, Emmeline Drive
Local Streets	Local streets primarily serve land-access functions and access to the higher order road systems. Their design and control facilitates the movement of vehicles onto and off the street system from adjacent land parcels, usually residential or very small commercial parcels. Through-traffic movement is difficult and is discouraged by both the design and control of the facility. Lane configurations on local streets typically involve two travel lanes. Posted speeds on local streets are usually between 20 and 25 mph.	Most neighborhood streets

Table 3.3 – Roadway Classification Standards

Characteristics	Interstates	Principal Arterials	Minor Arterials	Collectors	Local Streets
Function	Traffic movement	Traffic movement, limited land access	Traffic movement, limited land access	Collect and distribute traffic between streets and arterials, land access	Land access
Typical % of Surface Street System Mileage	Not applicable	5-10%	15-25%	5-10%	65-80%
Continuity	Continuous	Continuous	Continuous	Not necessarily continuous	None
Spacing	4 miles+	1-2 miles	1/2 -1 miles	1/2 mile or less	As needed
Typical % of Surface Street System Vehicle-Miles Carried	Not applicable	40-65%	10-20%	5-15%	10-25%
Direct Land Access	None	Limited: Major generators only	Restricted: Some movements prohibited	Safety controls access; limited regulation	Safety controls access
Minimum Roadway Intersection Spacing	1 mile	½ mile	¼ mile	300 feet	300 feet
Speed Limit	55-75 mph	35-45 mph in urban areas	30-40 mph in urban areas	25-35 mph	25 mph
Parking	Prohibited	Prohibited	Generally prohibited	Limited	Permitted
Pedestrian Compatibility	Only in case of emergency	Permitted but not ideal	Permitted but not ideal	Favorable	Favorable
Bicyclist Access	In rural areas only if no alternative exists	Permitted but not ideal	Acceptable	Favorable	Favorable
Comments	Supplements capacity of arterial street system and provides high-speed mobility	Commonly 7 lane configuration	Generally 5 lane configuration	Generally 3 lane configuration	Through traffic should be discouraged

3.4 Existing Alternative Travel Modes

3.4.1 Bicycle and Pedestrian Facilities

Bicycling and walking are often the only modes available to the young and elderly. As Herriman City continues to grow, many of its once-quiet streets will carry large volumes of high-speed traffic without the benefit of an environment that is conducive to walking or biking.

A pedestrian and bicycle network allows shorter distance trips, such as children's trips to school, to be taken off of the street network and moved to the pedestrian network. In addition, bicycle and pedestrian facilities offer a wide range of recreational opportunities and often add to the quality of life.

3.4.2 Transit

Currently, the only form of mass transit available to Herriman City is provided by the Utah Transit Authority (UTA). UTA provides transit service in the form of a daily commuter bus, Route 347, which runs during commuting hours to Herriman City along 13400 South to Rosecrest Road area. It then provides direct service to downtown Salt Lake City via I-15.

3.5 Existing Truck Routes

Herriman City has designated roadways along commercial corridors designated as truck routes to allow for access to businesses. The purpose is to concentrate all heavy truck traffic on specified roadways to minimize congestion, delay, and improve safety. Roadways designated as truck routes can be designed and constructed to handle the weighted loads, which will prolong the life of other roadways throughout Herriman City. The designation by signage will be handled by Herriman City. The following roadways are currently identified as truck routes for Herriman City:

12600 South/13100 South from Eastern Herriman City boundary to Western Herriman City Boundary
13400 South from Eastern Herriman City boundary to 5600 West 5600 West from 12600 South to 13400 South Redwood Road, 6000 West Main to 11800 South, and 11800 South, east/west direction.

Figure 3-5 identifies the existing truck routes within Herriman City

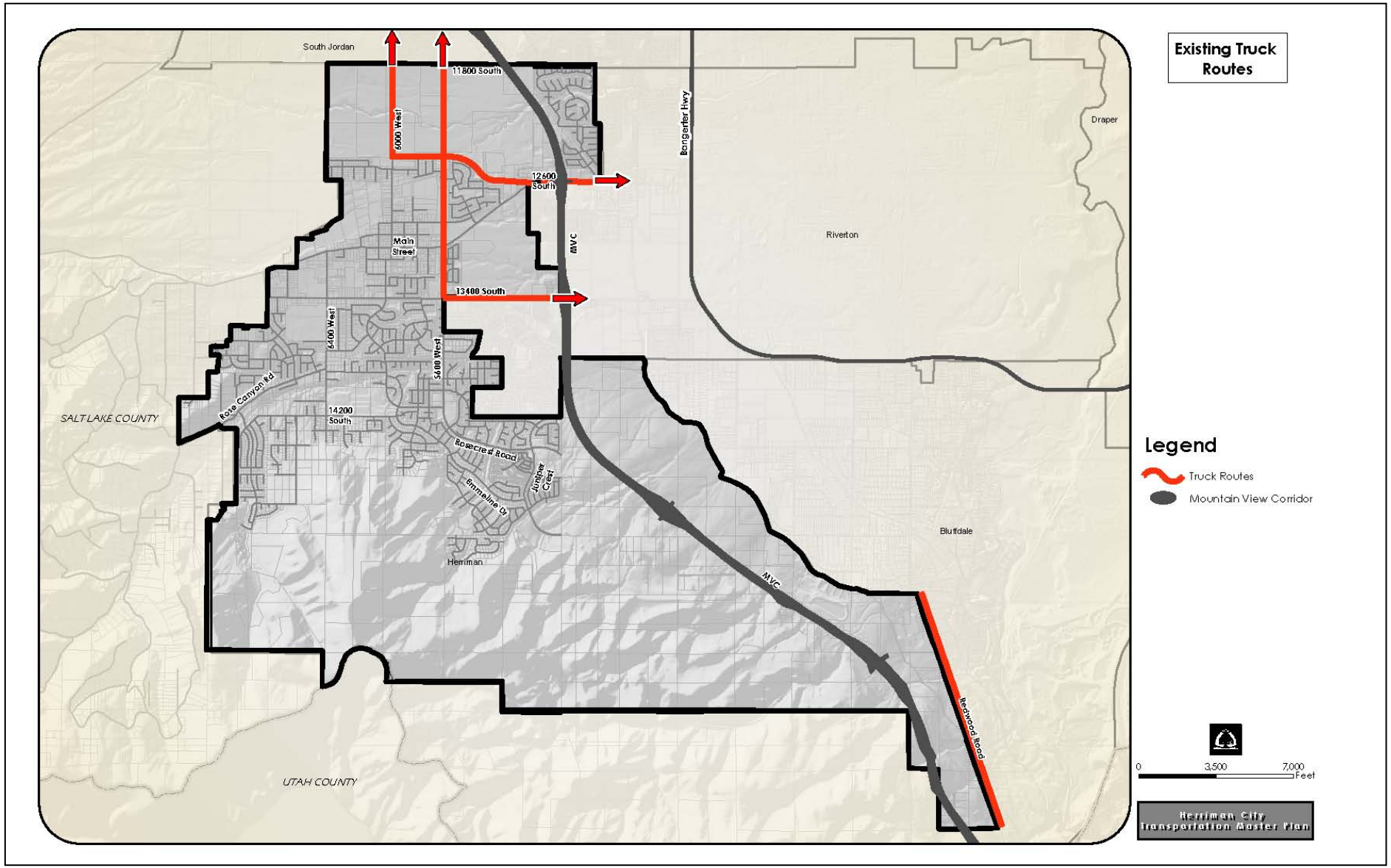


Figure 3-5 Existing Truck Routes

4 Future Needs Assessment

The purpose of this section is to examine conditions used as inputs to the area travel demand model. Demographic variables discussed in this section include Herriman's population and employment. Through analysis of these variables and development of forecasts, future transportation needs are identified and evaluated. This section discusses basic demographic information for Herriman City and the proposed and possible future annexations.

4.1 Population Growth and Trends Affecting Travel

The existing TMP used a population projection prepared by the Wasatch Front Regional Council (WFRC). The WFRC projection was prepared using on a build-out scenario for Herriman City, and then determined population based on expected population density for that area. The WFRC build-out scenario depended on the 2005 city limits. The WFRC estimate placed the build-out population at 37,000 to 42,000 people. The existing TMP used a 20-year population projection but included the newly annexed areas west of Herriman resulting in a build-out population estimate of 100,000 in 2040.

Since the development of the existing TMP, Herriman City has provided new 20-year projections for its population. The recent projection implies that Herriman City will be approaching or reach build-out conditions by 2040. A build-out scenario and 20-year population projections are both appropriate for use in transportation planning.

WFRC small area socioeconomic projections estimate that employment in 2005 was approximately 444 jobs and will continue to grow significantly to exceed 10,000 jobs in 2030. Even with this large number of jobs, the ratio of people to jobs is around 6.0 which is much higher than the regional average of 2.2. If this relationship continues, Herriman City will likely maintain a residential character. By the Year 2030, the population of Salt Lake County is expected to grow by 500,000, reaching nearly 1.5 million. Approximately 3 percent of this total will be attributed to Herriman City (WFRC, 2007).

Herriman City forecasts that 70% of all residential land will be low density (1.8 units per acre, roughly ½ acre lots). The WFRC 2030 travel model includes a 10% safety factor to allow for potentially higher densities. Historically, growth in total travel has increased faster than population. This is due to higher automobile ownership per household, more multi-income families, more dispersed development and more leisure travel. These trends are expected to moderate in the future as more jobs become available near Herriman City. Therefore, for modeling purposes, a total safety factor of 20% was used when sizing rights-of-way to expected volumes.

4.2 Traffic Demands from New Development

The southwest portion of the Salt Lake Valley, including Herriman City, continues to experience unprecedented and rapid growth. This growth continues to place significant demands on Herriman City infrastructure, including the transportation system. Of particular concern is the operational capacity of east-west roadways. Roadways of particular interest include 11800 South, 12600 South and 13400 South. As Herriman grows, it is anticipated that these roadways will continue to experience significant demand. Regionally, some of the pressure on these roadways is expected to be relieved with the construction of the Mountain View Corridor and the furthering of alternatives such as mass transit, pedestrian and bicycle facilities.

4.3 Regional Travel Model

Two transportation system scenarios were modeled based on data from the Wasatch Front Regional Council travel demand model and data from various transportation plans and field collection. This data serves as a foundational element for this Capital Facilities Plan (CFP). The two scenarios evaluated a "No Build", where no roadway improvements were identified and a "Build" which assumed numerous roadway improvements. These two scenarios were used to gain a better understanding of the transportation system's current and future needs.

4.3.1 Analysis

The WFRC travel model provides the most comprehensive gauge of the overall demand and capacity of the transportation network under the jurisdiction of WFRC. This would include not only Herriman City but the adjacent jurisdictions whose trip generation impact Herriman City.

Trip generation forecasts for the 2020 planning horizon year were developed using the QRSII travel demand model. While the WFRC model is seen as a reliable tool to forecast the travel demand at the regional level, the QRSII model is regarded as an appropriate planning tool at the micro-level. Regional travel demand models provide a macro-level tool to forecast future travel demand on the roadway network. While a regional travel demand model is an invaluable tool for understanding high-level travel demands throughout the Wasatch Front, it is limited in its sensitivity to detailed traffic operations, such as at individual intersections.

In the QRSII model, the land use and socioeconomic data that dictate travel demand and trip decisions within the model are defined over a discrete area, known as a Traffic Analysis Zone (TAZ). The trips produced within or attracted to the TAZ are then distributed onto the roadway network via links known as centroid connectors, which generally represent the local roadway system and driveways not explicitly included in the model. In general, the more detailed the TAZ structure and centroid connections are, the more accurate a forecast becomes. The model was then run for the year 2020, based on the future land use information provided from Herriman City Staff.

Travel models predict the trips made by households within the region. The Institute of Transportation Engineers (ITE) Trip Generation Manual, 7th Edition (ITE 7th Ed.), is typically used for predicting the future travel demand from land uses. This is the industry standard when estimating the number of vehicle trip ends to be generated during the AM peak hour, PM peak hour, on normal weekdays. Therefore, it should be recommended that for all local traffic studies associated with future development in Herriman, the ITE Trip generation rates should be used to assure consistency in future projections.

ITE collects and publishes data from throughout the United States regarding the number of vehicle trips that a particular land use generates. To estimate the travel demand from residential areas, 9.65 daily trips per housing unit (ITE 7th Ed. - Single Family House) is applied for each housing unit in each TAZ. These trips were divided into two trip-purpose categories: Out of the City – trips having at least one trip end outside the city. This was estimated by examining the traffic data collected early on in the study process. It is assumed that one household in Herriman City will generate 4.4 trips daily to points outside the City. Internal Trips defined as all other trips, presumably with destinations to commercial, school, park and recreations; is assumed that 50% of these internal trips, within the mixed-used area and town center, will use transportation modes other than vehicles.

The total projected trip generation for general land uses is identified in Appendix A, Trip Generation Table, contains detailed trip generation, and the acreage and estimated density for each land use. The trips generated for each land use was then assigned to the 2020 roadway network, to determine roadway capacity in terms of LOS. Once the model knows what a household needs to make a work trip, it begins looking for likely places of employment in the Herriman City area as well as regionally. It recognizes that while there may be 100 jobs in a certain locale, there are thousands of other people who also must find a place to work.

LOS levels can be compared to the capacity percentages listed in Tables 4.1. In general, the standard of the study is to develop arterial grade roadways that operate at LOS D at the time of build out and collector grade roadways that operate at LOS C or above. Some isolated sections are anticipated to operate at lesser operational conditions.

Table 4.1 – Level of Service for Roadways

Level of Service (LOS)	Average Control Delay (seconds/vehicle)	
	Percent of Capacity	Description
A-B	0%-60%	Free flow without congestion
C	61%-79%	Acceptable flow. No intersection delay, but road is "busy"
D	80%-89%	Roadway is full at peak hours, but traffic flows with well-timed signals
E	90%-99%	Roadway is congested 15-30 minutes per day. Most cars get through signal after one cycle.
F	100%+	Roadway is congested. Many cars require two or more signal cycles per intersection.
Source: Highway Capacity Manual 2000, Transportation Research Board, National Research Council, Washington, D.C., 2000.		

The LOS conditions as well as the potential vehicular demand expected for Herriman City's transportation system can be derived from the following results. The demand presented in Table 4.2 is the result of the planned developments surrounding Herriman City, including development on lands owned by Kennecott Land, in South Jordan, Riverton and Bluffdale. Table 4.2 with corresponding Figure 4.1, displays the modeling results evaluated for the year 2020. Section 5 discusses the projected improvements for the year 2020 based on the results of the analysis.

Table 4.2-2020 Roadway Average Daily Trips (ADT) and Recommended Class

Road Name	Segment ID	2010 ADT Generated From Herriman City Only	2015 ADT Generated From Herriman City Only	2020 ADT Generated From Herriman City Only	2020 ADT Generated With Surrounding Cities	2020 Road Functional Class	ROW (ft.)	Length (ft.)
						E-W		
11800 S. (Shared with Day Break)	1a	3,196	4,521	7,796	20,500	MJA5	106	3,432
	1b	4,308	8,511	10,508	20,500	MJA7	120	2,798
	1c	5,160	10,195	12,587	20,500	MJA7	120	2,429
	1e	9,277	13,123	22,628	40,000	MJA7	120	2,640
Herriman Parkway	3a	10,319	20,387	25,170	27,170	MJA5	106	3,643
	3b	14,190	28,034	34,611	36,611	MJA7	120	2,798
	3c	13,778	31,271	38,607	40,607	MJA7	120	2,376
	3d	18,396	36,344	44,870	46,870	MJA7	120	3,696
Parkway/ 12600 S. (Shared With Riverton City)	3e	22,850	45,142	55,732	57,732	MJA7	120	1,584
12600 S/Main St.	5a	4,054	8,010	9,889	9,889	MC	80	4,752
	5b	2,000	3,951	4,879	4,879	MC	81	2,693
	5c	2,925	5,779	7,135	7,135	MC	82	2,270
	5d	4,597	9,082	11,213	11,213	MJA5	106	4,594
13400 S	7a	6,182	12,214	15,080	15,080	MJA5	106	2,693
	7b	8,091	15,985	19,735	19,735	MJA5	106	2,640
13400 S. (Shared With Riverton City)	7c	12,327	24,353	30,066	30,066	MJA7	120	4,330
13400 S. (Riverton	7d	3,280	6,480	8,000	25,000	MJA7	120	--

Road Name	Segment ID	2010 ADT Generated From Herriman City Only	2015 ADT Generated From Herriman City Only	2020 ADT Generated From Herriman City Only	2020 ADT Generated With Surrounding Cities	2020 Road Functional Class	ROW (ft.)	Length (ft.)
City)								
14200 S (Butterfield Parkway)	9a	2,606	5,212	6,358	6,358	MINC	66	3,590
	9b	3,025	6,050	7,380	7,380	MC	80	2,640
	9c	2,127	4,254	5,188	5,188	MINC	66	1,901
	9d	1,785	3,590	4,355	4,355	LOCAL	60	5,808
	9e	444	880	1,083	1,083	LOCAL	60	3,907
	9f	1,633	3,266	3,984	3,984	LOCAL	60	5,808
Juniper Crest RD/15000 S	11a	12,300	24,600	30,000	30,000	MJA5	106	7,200
	11b	18,900	37,339	46,098	61,098	MJA7	120	1,800
	11c	--	30,748	37,961	52,961	MJA7	120	1,800
14000 S (Riverton City)	11e	7,676	15,352	18,722	28,722	MJA5	106	5,400
15800 S.	13a	--	6,560	8,000	8,000	MINC	60	5,400
4000 W.	13b	--	16,627	20,277	20,277	MJA5	106	6,300
3600 W.	13c	--	3,280	4,000	4,000	MC	80	2,700
	13d	--	7,079	8,633	8,633	MC	80	3,600
	13e	--	--	500	8,500	MINC	66	1,000
16000 S.	15a	--	9,020	11,000	11,000	MJA5	106	6,300
	15b	--	16,200	20,000	20,000	MJA7	120	1,000
	15c	--	22,832	27,845	47,845	MJA7	120	1,000
	15d	--	11,480	14,000	34,000	MJA7	120	2,340
							N-S	
6400 W.	2a	2,202	4,352	5,373	7,373	MC	80	4,382
	2b	3,245	6,411	7,915	9,915	MC	80	4,118
	2c	3,351	6,619	8,175	10,175	MC	80	1,109
	2d	5,349	10,699	13,048	13,048	MC	80	3,010
	2e	2,211	4,423	5,394	5,394	MC	80	2,006
	2f	1,127	2,255	2,751	2,751	LOCAL	60	5,016

Road Name	Segment ID	2010 ADT Generated From Herriman City Only	2015 ADT Generated From Herriman City Only	2020 ADT Generated From Herriman City Only	2020 ADT Generated With Surrounding Cities	2020 Road Functional Class	ROW (ft.)	Length (ft.)
6000 W.	4a	2,266	4,532	5,528	7,528	MC	80	3,062
	4b	2,099	2,199	2,682	4,682	MC	80	3,432
	4c	410	820	1,000	3,000	MC	80	2,376
	4d	2,553	5,106	6,227	6,227	MINC	66	5,808
	4e	5,666	11,195	13,821	13,821	MINC	66	6,970
5600 W.	6a	6,808	13,616	16,605	21,605	MJA5	106	3,643
	6b	3,683	7,366	8,984	13,984	MC	80	3,643
	6c	6,779	13,599	16,582	16,582	MJA5	106	2,270
	6e	5,479	10,958	13,364	13,364	MJA5	106	792
	6f	5,041	9,959	12,296	12,296	MC	80	4,013
Rosecrest Rd.	6g	4,213	8,325	10,278	10,278	MC	80	5,280
	6h	5,728	11,318	13,973	13,973	MC	80	2,270
South Hill Blvd.	8a	--	22,384	27,635	27,635	MJA5	106	2,340
	8b	--	8,111	10,014	10,014	MJA5	106	8,100
	8c	--	14,599	18,019	18,019	MJA5	106	3,600
2000 W.	8d	--	17,354	21,425	21,425	MJA5	106	8,100
5000 W.	10a	--	2,430	3,000	4,000	LOCAL	60	3,802
East Herriman Rd	10b	--	2,210	2,729	3,729	LOCAL	60	1,795
	10c	--	20,365	25,141	26,141	MJA5	106	1,056
	10e	--	15,701	19,385	27,385	MJA5	106	2,112

MJA7 = Major Arterial 7 lanes
MJA5 = Major Arterial 5 lanes
MC = Major Collector 3 lanes
MIN = Minor Collector lanes

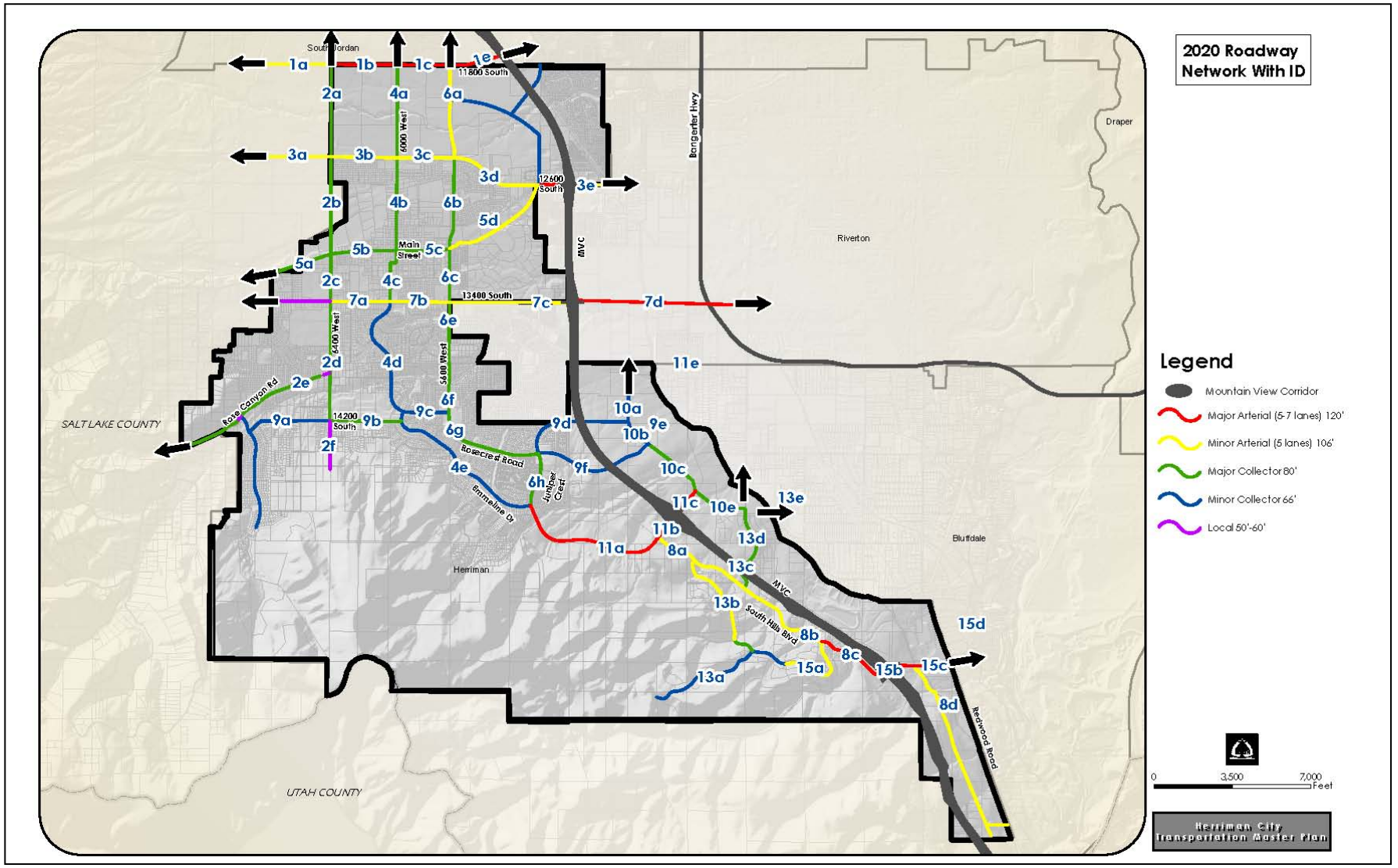


Figure 4.1 – 2020 Average Daily Traffic

5 Addressing Future Demands

Land located west of Herriman City, which will ultimately use Herriman City roads, will likely experience a high rate of growth consistent with the surrounding communities by 2020 and beyond. The recommended roadway widths are based upon predicted volumes and consideration of existing right of way conditions for the roadways analyzed. Travel demand on respective roadways should grow generally in proportion with population growth of the area the roadway serves. At present, the southern portion of Herriman City is growing the most, while the northern portion has grown at a slower rate.

The TMP discusses roadways that may potentially be constructed in Herriman City as demand warrants their construction. The analysis of future demands has identified the need for new roadways as well as improvements to existing facilities to accommodate the future growth. While the analysis identifies the need for future roads and deficiencies in the existing network, improvements to existing facilities cannot be constructed with impact fees.

The following is a description of recommended improvements to the transportation system. Figure 5-1 identifies the corresponding roadway improvement.

11800 South
Recommended roadway improvements would include a slight realignment to accommodate the Mountain View Corridor (MVC) alignment. It is also recommended that the roadway be classified as a major arterial, accommodating a seven lane roadway cross section between the MVC and 6000 West. Because this location will be the only crossing of MVC between 11400 South and 12600 South Interchanges, it is projected to carry a great deal of east-west traffic that will be distributed onto north-south roads providing access to the MVC interchanges. It is suggested that a 120 foot ROW section will be necessary to accommodate this demand.

12600 South/Herriman Parkway
The 12600 roadway currently provides access to and from Herriman with access to Bangerter Highway and easterly destinations. Herriman Parkway is currently being constructed in phases as it is proposed to connect into 12600 South at approximately 5000 West. The 12600 roadway is designated as a MVC Interchange location. Therefore, it is recommended that a 120-foot wide right-of-way section be provided to accommodate a seven lane roadway cross section. Accessibility onto this arterial corridor should be limited to collector roadways that will likely be controlled by future traffic signals.

13400 South
Along with 12600 South, the 13400 South corridor will serve as the primary arterial east-west route traversing Herriman City. Additionally, 13400 South is designated as a MVC Interchange location. Therefore, it is recommended that a 120-foot wide right-of-way section be provided to accommodate a seven lane cross section between the MVC Interchange and 5600 West. Between 5600 and 6400 West it is recommended that a 106-foot wide right of way section be provided to accommodate a five lane roadway cross section. A connection is ultimately recommended with 7300 West with the alignment to be determined thru ongoing coordination efforts by Herriman City and the property owner. Traffic signals are recommended to be installed at the major intersection crossings of 13400 South as warranted.

14200 South (Butterfield Parkway)
It is anticipated that Butterfield Parkway will serve as a primary corridor for residents in the west area of Herriman providing access to 13400 South via 6400 West, 6000 West and 5600 West. This roadway is recommended to provide a right of way of 80-foot to accommodate a three lane roadway cross section between Emmeline Drive and 7000 West. Between 7000 West and 6400 West, only a 66-foot wide right of way section is recommended. This will still accommodate a three lane roadway cross section. Future traffic signal is recommended when warranted at the intersection where these roads split.

Juniper Crest
Juniper Crest will serve as a primary corridor for residents in the central and east Herriman areas. Juniper Crest is an identified MVC Interchange location. For this reason, it is recommended that a 120-foot wide right of way section is provided to accommodate a seven lane roadway cross section between South Hills Blvd and Rosecrest Road. Additionally, this road will provide access to a proposed MVC Interchange. Traffic signals are recommended as warranted, to be installed at the major intersection as warranted.

South Hills Blvd.
South Hills Blvd. is classified as a 106 foot wide minor arterial roadway that will provide connectivity to the southeast bench area of Herriman City. Herriman City emphasizes that sensitivity to hillside and terrain be incorporated to the roadway design as appropriate for vehicular and pedestrian safety.

16000 South (approximately)
The proposed roadway at approximately 16000 South is designated as a MVC Interchange location. Therefore, it is recommended that a 120-foot wide right-of-way section be provided to accommodate a seven lane cross section between the MVC Interchange and east Herriman/Bluffdale boundary and between the MVC Interchange and South Hills Blvd. This road is also recommended to assure connectivity with Bluffdale's Porter Rockwell Blvd. which is identified to provide connectivity to the MVC Interchange. Traffic signals are recommended as warranted.

6400 West
The 6400 West roadway is recommended as an 80-foot wide major collector roadway accommodating a three lane roadway cross section. The road currently exists from 14200 South to Main Street but will require some widening to implement a proposed five-lane roadway width. The section from Main Street to 11800 South will be a new roadway segment at the recommended right of way width of 80 feet to accommodate five lanes.

6000 West
6000 West is classified to be a 66-foot wide minor collector roadway that will provide connectivity through the center portion of Herriman City and from the adjoining major east-west corridors. The roadway is largely already constructed but will require a new connection between Herriman Parkway and 11800 South.

5600 West

5600 West will serve a primary function for north-south traffic particularly north of Main Street. This road will be the principal connector to the proposed 11400 South interchange on MVC. As such, this road should be sized to a 106-foot wide right of way to accommodate a five lane facility north of Herriman Parkway in order to accommodate the anticipated traffic volumes. Between Main Street and Herriman Parkway this roadway segment is recommended to remain at five lanes within a narrower 80-foot right-of-way width. South of Main Street the 80-foot width, the five-lane configuration should continue to 14200 South.

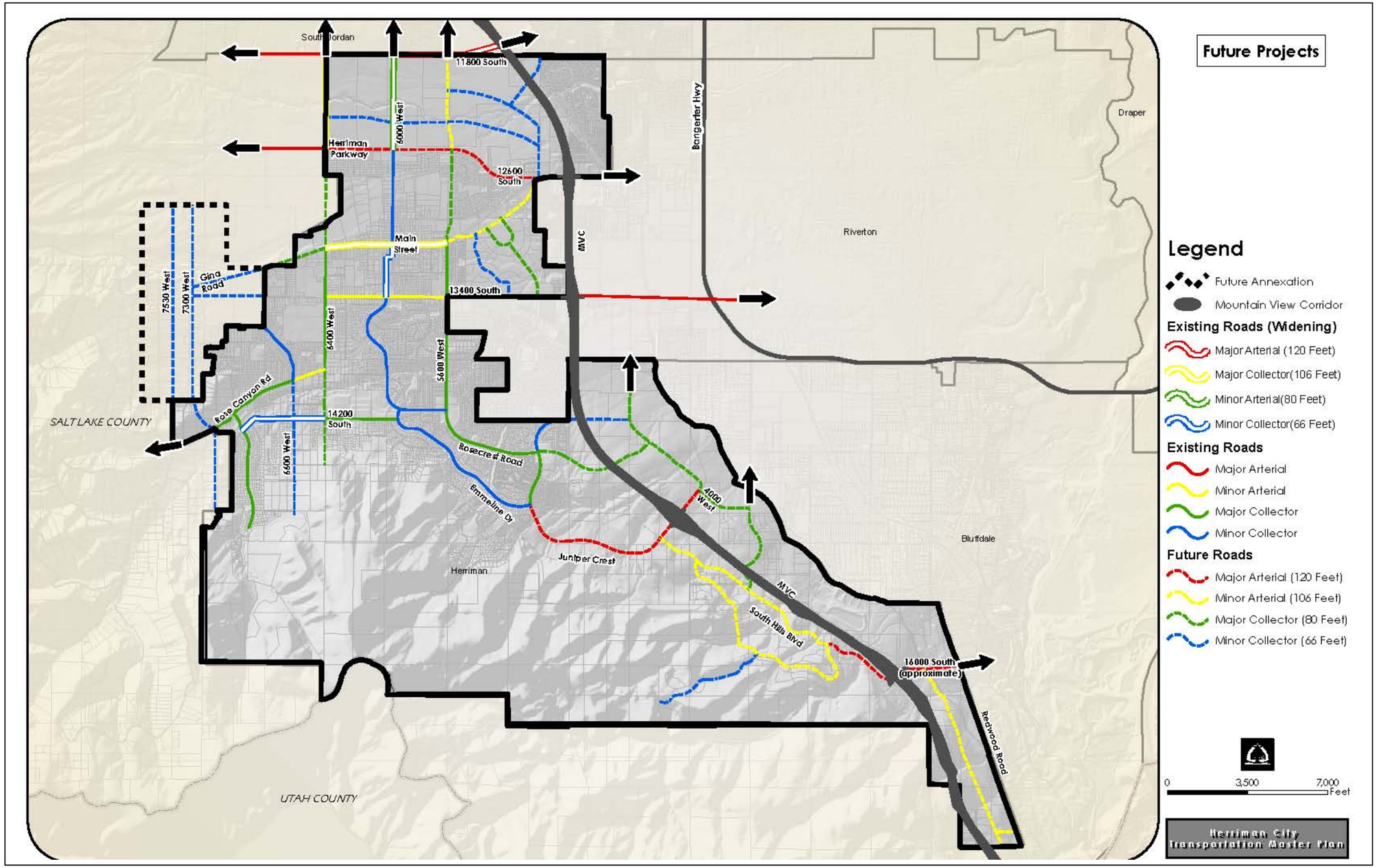


Figure 5.1 – Transportation Improvements

6 Cost Analyses

Impact fees can fund only system improvements. Generally system improvements are determined based upon size and function within the roadway system. From a sizing perspective, system improvements are considered to be 1) collectors, 2) minor arterials and 3) primary arterial roadways that facilitate the movement of traffic throughout Herriman City

The primary challenge associated with the development of this Capital Facilities Plan is to develop an appropriate strategy to accurately and equitably allocate the cost of proposed improvements. The proposed improvements include various categories of infrastructure improvements for minor collector grade roads and larger that range from new installations to reconstruction of existing roads.

New roadways were identified as part of the TMP and are shown on Figure 5.1 of this CFP. New road facilities as defined within this study consist of roadway segments that have no roadway currently developed. Much of the road network in the north and southeast portions of Herriman City remains to be constructed.

Evaluation of the remaining infrastructure needed was performed and used as the basis for cost estimating. Reconstruction of the associated existing asphalt was identified within these widening costs due to the anticipated difficulty in matching existing roadway crown and grade conditions when installing the widened sections.

Roadways currently meeting full width standards and having full roadside improvements were not quantified for future reconstruction. By definition, improvements within these areas would not be eligible for impact fee assessment.

Additionally, multi-use pathways were shown in the TMP but are not included within this Capital Facility Plan as they are intended to be covered under a separate Parks and Recreation related Capital Facility Study and impact fee update to be completed independent of this document.

Roadside improvements on new or existing roads including curb and gutter, sidewalk, landscaped planter areas and lighting were identified as roadway elements that were needed to meet future LOS conditions and were therefore impact fee eligible. These facilities provide functionality and LOS benefits to not only vehicular traffic but pedestrian and bicyclists.

6.1 Cost Estimating Breakdown

As part of this Capital Facility Plan, cost estimates for planned future improvements were prepared for each of the values gathered and subsequent cost estimates were divided into three separate categories:

New or Existing Roadways
New roadway is defined as a segment of roadway within Herriman City that currently does not exist, but is planned to be built before 2020. New roadways are identified in Table 6.1. Existing roadways are roadway which currently exist but do not meet the projected future conditions and therefore require operational or functional improvements. Roadside improvements such as curb, sidewalk and lighting features were included with associated

roadway widening improvements. The development of these roadside improvements provides a LOS benefit for both vehicular and pedestrian traffic. These include all or portions of the following roadways: 5100 West, 5200 West, 5400 West, 5600 West, 6000 West, 6400 West, 6800 West, 7300 West, 11800 South, Midas Creek Drive, Copper Gulch Drive, Herriman Parkway/12600 South, Main Street, and 14200 South.

The TMP examined future roadways within the current Herriman City boundary. The mapping associated with the TMP and CFP details the future roadways inside the Herriman City boundary. Roadways that are outside the Herriman City boundary are only shown at an anticipated location. These roadways have no definitive alignment, but were a necessary part of the master planning process. These roadways will provide an essential future component to the regional connectivity into and out of Herriman City.

In determining cost estimates for new roadways that will be borne by Herriman City and by new development, this CFP considered the standard practice/procedures of Herriman City, along with an analysis of what existing proportion of master planned roads are currently built. As part of on-going development it is practice for the development to provide a minimum level roadway facility sufficient to provide system connectivity between the development and Herriman City transportation system. The type of road necessary to service traffic from the development is certainly dependant upon the traffic generated therein and generally consists of the requirement to construct sufficient roadway width to convey the development associated traffic to a connection with the Herriman City system. Typical practice is to consider a residential or local type road sufficient to address most inter-development related traffic.

Widening Existing Roadways

Throughout the City of Herriman, there are various sections of existing roadways that need to be widened to meet master planned widths. Roadways that needed to be widened were determined by using Aerial Imagery, GIS data verification, and site verification. Using these tools each roadway was evaluated to determine areas where widening was needed and to quantify the amount of widening. These areas were in both developed and undeveloped portions of Herriman City. Widening estimates considered the costs for additional asphalt as well as associated curb and gutter, sidewalk, landscaping, and lighting features. Existing roadways determined to be widened to meet future demand are identified in Table 6.1

Reconstruction of Existing Roadways

It is generally expected that the existing roadways within the areas of planned widening will require reconstruction to make necessary adjustments in roadway grade and cross slope conditions. Therefore reconstruction is expected to be included within these segments as widening occurs. Reconstruction of fully developed roads may be necessary prior to full build out conditions in 2040 but were not quantified for impact fee evaluations as part of this study. Reconstruction of existing roadways identified to meet future demand are shown in Table 6.1

Table 6.1 Roadway Categories

Type of improvement	From	To	Estimated Roadway cost	Impact Fee Eligible	Estimated Cost to the City (?%)
New Roadway/Reconstruct					
3600 West	East Herriman Rd	South Hills Blvd	989,646	Yes	
4400 West	14200 South	City Boundary	3,127,426	Yes	
5100 West	12600 South	5600 West	8,352763	Yes	
5150 West	11800 South	5600 West	2,159,292	Yes	
5200 West[2]	13400 South	Main Street	19,181,387	Yes	
5600 West	Main Street	11800 South	15,686,583	Yes	
6000 West[1]	11800 South	Midas Creek Dr	3,228,746	Yes	
6400 West	Main Street	11800 South	5,045,903	Yes	
7300 West	Rose Canyon Rd	City Boundary	1,308,487	Yes	
14200 South	4800 West	4500 West	311,982	Yes	
Fort Herriman Blvd[2]	13400 South	Towne Center Circle	1,804,262	Yes	
Towne Center Circle[2]	Main Street	Main Street	1,207,975	Yes	
Main Street[2]	12600 South	5500 West	4,055,097	Yes	
Herriman Parkway[2]	East City Boundary	6000 West	26,442037	Yes	
Midas Creek Dr (12100 South)	5100 West	6400 West	10,883,850	Yes	
Rosecrest Rd[2]	4800 West	4000 West	264,582	Yes	
Elementary Drive[2]	Main Street	12300 South (approximate)	190,618	Yes	
South Hills Blvd[2]	Juniper Crest	City Boundary (Bluffdale)	808,647	Yes	
Upper Loop Canyon Rd (15800 South approximate)	South Hills Circle	17800 South (approximate)	1,051,360	Yes	
Widening Existing Roadway					
6000 West	Midas Creek Dr	Main Street	3,377,626	Yes	

Type of improvement	From	To	Estimated Roadway cost	Impact Fee Eligible	Estimated Cost to the City (?%)
6400 West	Rose Canyon Rd	14200 South	1,875,015	Yes	
6600 West	Rose Canyon Rd	14200 South	2,057,968	Yes	
11800 South[1]	MVC	6400 West	13,177,476	Yes	
13400 South[1]	East City Bndry	6800 West	22,701,566	Yes	
14200 South (Butterfield Parkway)	Emmeline Dr	7000 West	3,842,271	Yes	
1 Costs were used from the 2008 Capital Facilities Plan 2 Costs were used from the Towne Center Development					

Cost Estimating and Pricing
Unit price costs for each of the items quantified were determined using engineering experience in the immediate area on past and current roadway projects similar to those being proposed. Comparisons of these past projects provided costs on a per item basis were reasonable and that they would provide a substantiated basis for developing impact fee related evaluations. As part of the formulation of unit prices the recent substantial increases seen along the Wasatch Front have been integrated into the cost analyses. Cost inflation on concrete, steel and asphalt prices have been particularly significant and have been addressed herein to provide a basis for establishment of present day values for construction. These valuations were also provided to Herriman City staff for review. Contingency percentages of 20 percent for general construction and 12 percent for engineering and legal costs were used which are well within the norm for facility studies of this type. The following describes some elements that were used in estimating roadway costs.

Road Surfacing
One of the most significant costs associated with roadway development and improvement is the cost of surfacing materials. Asphalt pavement is the traditional surface used for roads throughout Herriman and therefore was used as the material expected for construction as part of future improvements. To determine the amount of road material to use for a new roadway, reconstruction of existing roadway or a section of roadway that needs to be widened, past experience was utilized from previous projects involving similar roadway and traffic constraints.

Each roadway was classified within the TMP as an arterial or major/minor collector based upon expected traffic loads. Each roadway class was then assigned a planned depth for each of the materials needed to build the roadway as follows:

Arterial Roads	Collectors
Asphalt – 5 inches	Asphalt – 3 inches
Base Coarse – 8 inches	Base Coarse – 8 inches
Granular Borrow – 12 inches	Granular Borrow – 8 inches

The above pavement sections are estimates and are expected to require further refinement as specific projects are developed and designed. Based upon review of recent development geotechnical submissions it appears that in many cases assumed and generalized CBR values are being utilized to develop sub-base pavement designs.

Roadside Improvements
Roadside improvements include the following items: sidewalk, curb & gutter, landscaping and street lighting. Aerial data was utilized to determine the areas that required sidewalk, curb and gutter, and landscaping to support new development. These areas were then measured to obtain a linear distance in feet. Based upon master planned cross sections, each of these improvements has been analyzed to support cost estimate preparation.

Street Lighting
Herriman City has decided to establish a consistent standard for their street light installation. This standard relates to the type, size and configuration of current and future lights. Currently Herriman City has 2 different lighting types. Arterial lighting is placed on roadways of 80 feet and above.

The arterial lighting facilities shown within Herriman City Standard details were quantified based upon 125-foot spacing and pricing as provided by Herriman City. Residential lighting is provided on all roadways, including collectors, less than 80-feet in width and is based upon 150-foot spacing.

Traffic Signals
The 2 existing traffic signals were analyzed to determine if they need to be replaced in order to meet the future roadway widths or standard equipment requirements. Because traffic signals involve extensive interconnected electrical facilities it is expected that the removal of a portion of the signal to accommodate widening will almost assuredly require adjustment to signal facilities outside the widened area. Therefore, new signals are planned in these areas and costs are assigned to the roadway being constructed first into the intersection area.

Canal Crossings
Quantification of necessary canal structure improvements were made by determining the existing width of the canal crossing and the new width needed. The length of the necessary canal improvements was then determined along with a cross section width for new concrete box culvert improvements. Cost locations were

Variable Message Signs
As part of an intelligent transportation system (ITS), potential locations for variable message signs (VMS) were identified in discussions with Herriman City. The 12600 South Roadway near the Herriman/Riverton boundary was determined for a possible location. The proposed location was selected based on traffic volumes, MVC, and the ability to benefit traffic movements.

Miscellaneous Items
Miscellaneous construction items such as traffic control, clearing and grubbing and erosion control were addressed by taking a percentage of the cost of all other items needed to construct, widen or reconstruct and adding that back into the original total. This was done on a road-by road basis, based on previous experience with these item costs on similar urban projects.

7 Appendix

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 2/12/2009

Herriman 7300 West (new road, 80' ROW)

PROJECT DESCRIPTION:

Rose Canyon Road to 14400 South (Length: 900')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$51,000.00	$51,000.00
013150010	Public Information Services	1	LS	$3,000.00	$3,000.00
015540005	Traffic Control	1	LS	$25,500.00	$25,500.00
001720010	Survey	1	LS	$10,200.00	$10,200.00
020560005	Borrow (Plan Quantity)	50	CY	$25.00	$1,250.00
020560015	Granular Borrow (Plan Quantity)	2200	CY	$22.50	$49,500.00
022310020	Clearing and Grubbing (Plan Quantity)	2	ACRE	$5,500.00	$11,000.00
023160020	Roadway Excavation (Plan Quantity)	5000	CY	$15.00	$75,000.00
027210020	Untreated Base Course (Plan Quantity)	1250	CY	$30.00	$37,500.00
027410060	HMA - 3/4"	2100	TON	$100.00	$210,000.00
027650060	Pavement Marking Paint	3600	LF	$0.25	$900.00
027710025	Concrete Curb & Gutter Type B1	1800	LF	$17.50	$31,500.00
027710059	Pedestrian Access Ramp	4	EA	$2,500.00	$10,000.00
027760010	Concrete Sidewalk	9000	SF	$7.50	$67,500.00
029220060	Turf Sod	7200	SF	$1.00	$7,200.00
029120010	Contractor Furnished Topsoil	800	SY	$6.50	$5,200.00
				SUBTOTAL	$596,250.00
RIGHT OF WAY					
	Right of Way	72000	SF	$4.60	$331,200.00
				SUBTOTAL	$331,200.00
				Contingency (20%)	$119,250.00
				Preliminary Engineering (12%)	$71,550.00
				Construction Engineering (15%)	$89,437.50
				TOTAL	**$1,207,687.50**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 2/12/2009

Herriman 6600 West (new road, 66' ROW)

PROJECT DESCRIPTION:

Rose Canyon Road to 15000 South (Length: 7100')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$317,200.00	$317,200.00
013150010	Public Information Services	1	LS	$3,000.00	$3,000.00
015540005	Traffic Control	1	LS	$158,600.00	$158,600.00
001720010	Survey	1	LS	$63,400.00	$63,400.00
020560005	Borrow (Plan Quantity)	400	CY	$25.00	$10,000.00
020560015	Granular Borrow (Plan Quantity)	13000	CY	$22.50	$292,500.00
022310020	Clearing and Grubbing (Plan Quantity)	11	ACRE	$5,500.00	$60,500.00
023160020	Roadway Excavation (Plan Quantity)	30200	CY	$15.00	$453,000.00
027210020	Untreated Base Course (Plan Quantity)	7450	CY	$30.00	$223,500.00
027410060	HMA - 3/4"	12300	TON	$100.00	$1,230,000.00
027650060	Pavement Marking Paint	28400	LF	$0.25	$7,100.00
027710025	Concrete Curb & Gutter Type B1	14200	LF	$17.50	$248,500.00
027710059	Pedestrian Access Ramp	15	EA	$2,500.00	$37,500.00
027760010	Concrete Sidewalk	71000	SF	$7.50	$532,500.00
029220060	Turf Sod	42600	SF	$1.00	$42,600.00
029120010	Contractor Furnished Topsoil	4800	SY	$6.50	$31,200.00
				SUBTOTAL	$3,711,100.00
RIGHT OF WAY					
	Right of Way	468600	SF	$4.60	$2,155,560.00
				SUBTOTAL	$2,155,560.00
				Contingency (20%)	$742,220.00
				Preliminary Engineering (12%)	$445,332.00
				Construction Engineering (15%)	$556,665.00
				TOTAL	**$7,610,877.00**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 2/12/2009

Herriman 6600 West (new road, 66' ROW)

PROJECT DESCRIPTION:

Rose Canyon Road to Butterfield Parkway (Length: 5280')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$79,400.00	$79,400.00
013150010	Public Information Services	1	LS	$3,000.00	$3,000.00
015540005	Traffic Control	1	LS	$39,700.00	$39,700.00
001720010	Survey	1	LS	$15,900.00	$15,900.00
020560005	Borrow (Plan Quantity)	90	CY	$25.00	$2,250.00
020560015	Granular Borrow (Plan Quantity)	3200	CY	$22.50	$72,000.00
022310020	Clearing and Grubbing (Plan Quantity)	3	ACRE	$5,500.00	$16,500.00
023160020	Roadway Excavation (Plan Quantity)	7450	CY	$15.00	$111,750.00
027210020	Untreated Base Course (Plan Quantity)	1850	CY	$30.00	$55,500.00
027410060	HMA - 3/4"	3050	TON	$100.00	$305,000.00
027650060	Pavement Marking Paint	7000	LF	$0.25	$1,750.00
027710025	Concrete Curb & Gutter Type B1	3500	LF	$17.50	$61,250.00
027710059	Pedestrian Access Ramp	6	EA	$2,500.00	$15,000.00
027760010	Concrete Sidewalk	17500	SF	$7.50	$131,250.00
029220060	Turf Sod	10500	SF	$1.00	$10,500.00
029120010	Contractor Furnished Topsoil	1200	SY	$6.50	$7,800.00
				SUBTOTAL	$928,550.00
RIGHT OF WAY					
	Right of Way	115500	SF	$4.60	$531,300.00
				SUBTOTAL	$531,300.00
				Contingency (20%)	$185,710.00
				Preliminary Engineering (12%)	$111,426.00
				Construction Engineering (15%)	$139,282.50
				TOTAL	**$1,896,268.50**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 2/12/2009

Herriman 6400 West (new road, 80' ROW - half width improvement)

PROJECT DESCRIPTION:

11800 South to 12900 South (Length: 5280')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$289,000.00	$289,000.00
013150010	Public Information Services	1	LS	$3,000.00	$3,000.00
015540005	Traffic Control	1	LS	$144,500.00	$144,500.00
001720010	Survey	1	LS	$57,800.00	$57,800.00
020560005	Borrow (Plan Quantity)	275	CY	$25.00	$6,875.00
020560015	Granular Borrow (Plan Quantity)	12800	CY	$22.50	$288,000.00
022310020	Clearing and Grubbing (Plan Quantity)	10	ACRE	$5,500.00	$55,000.00
023160020	Roadway Excavation (Plan Quantity)	28950	CY	$15.00	$434,250.00
027210020	Untreated Base Course (Plan Quantity)	7150	CY	$30.00	$214,500.00
027410060	HMA - 3/4"	12200	TON	$100.00	$1,220,000.00
027650060	Pavement Marking Paint	21120	LF	$0.25	$5,280.00
027710025	Concrete Curb & Gutter Type B1	10560	LF	$17.50	$184,800.00
027710059	Pedestrian Access Ramp	4	EA	$2,500.00	$10,000.00
027760010	Concrete Sidewalk	52800	SF	$7.50	$396,000.00
029220060	Turf Sod	42240	SF	$1.00	$42,240.00
029120010	Contractor Furnished Topsoil	4700	SY	$6.50	$30,550.00
				SUBTOTAL	$3,381,795.00
RIGHT OF WAY					
	Right of Way	422400	SF	$4.60	$1,943,040.00
				SUBTOTAL	$1,943,040.00
				Contingency (20%)	$676,359.00
				Preliminary Engineering (12%)	$405,815.40
				Construction Engineering (15%)	$507,269.25
				TOTAL	**$3,457,139.33**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 2/12/2009

Herriman 6400 West (widening, 80' ROW)

PROJECT DESCRIPTION:

Main Street to 13400 South (Length: 1780')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$61,800.00	$61,800.00
013150010	Public Information Services	1	LS	$5,000.00	$5,000.00
015540005	Traffic Control	1	LS	$30,900.00	$30,900.00
001720010	Survey	1	LS	$12,400.00	$12,400.00
020560005	Borrow (Plan Quantity)	95	CY	$25.00	$2,375.00
020560015	Granular Borrow (Plan Quantity)	1500	CY	$22.50	$33,750.00
022310020	Clearing and Grubbing (Plan Quantity)	1	ACRE	$5,500.00	$5,500.00
023160020	Roadway Excavation (Plan Quantity)	3300	CY	$15.00	$49,500.00
027210020	Untreated Base Course (Plan Quantity)	1000	CY	$30.00	$30,000.00
027410060	HMA - 3/4"	2600	TON	$100.00	$260,000.00
027650060	Pavement Marking Paint	7120	LF	$0.25	$1,780.00
027710025	Concrete Curb & Gutter Type B1	3560	LF	$17.50	$62,300.00
027710059	Pedestrian Access Ramp	4	EA	$2,500.00	$10,000.00
027760010	Concrete Sidewalk	17800	SF	$7.50	$133,500.00
029220060	Turf Sod	14240	SF	$1.00	$14,240.00
029120010	Contractor Furnished Topsoil	1600	SY	$6.50	$10,400.00
				SUBTOTAL	$723,445.00
RIGHT OF WAY					
	Right of Way	38270	SF	$4.60	$176,042.00
				SUBTOTAL	$176,042.00
				Contingency (20%)	$144,689.00
				Preliminary Engineering (12%)	$86,813.40
				Construction Engineering (15%)	$108,516.75
				TOTAL	**$1,239,506.15**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 2/24/2009

Herriman 6000 West (new road, 66' ROW)

PROJECT DESCRIPTION:

11800 South to Midas Creek Road (Length = 1830')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$82,500.00	$82,500.00
013150010	Public Information Services	1	LS	$3,000.00	$3,000.00
015540005	Traffic Control	1	LS	$41,200.00	$41,200.00
001720010	Survey	1	LS	$16,500.00	$16,500.00
020560005	Borrow (Plan Quantity)	95	CY	$25.00	$2,375.00
020560015	Granular Borrow (Plan Quantity)	3350	CY	$22.50	$75,375.00
022310020	Clearing and Grubbing (Plan Quantity)	3	ACRE	$5,500.00	$16,500.00
023160020	Roadway Excavation (Plan Quantity)	7800	CY	$15.00	$117,000.00
027210020	Untreated Base Course (Plan Quantity)	1950	CY	$30.00	$58,500.00
027410060	HMA - 3/4"	3200	TON	$100.00	$320,000.00
027650060	Pavement Marking Paint	7320	LF	$0.25	$1,830.00
027710025	Concrete Curb & Gutter Type B1	3660	LF	$17.50	$64,050.00
027710059	Pedestrian Access Ramp	4	EA	$2,500.00	$10,000.00
027760010	Concrete Sidewalk	18300	SF	$7.50	$137,250.00
029220060	Turf Sod	10980	SF	$1.00	$10,980.00
029120010	Contractor Furnished Topsoil	1220	SY	$6.50	$7,930.00
				SUBTOTAL	$964,990.00
RIGHT OF WAY					
	Right of Way	120780	SF	$4.60	$555,588.00
				SUBTOTAL	$555,588.00
				Contingency (20%)	$192,998.00
				Preliminary Engineering (12%)	$115,798.80
				Construction Engineering (15%)	$144,748.50
				TOTAL	**$1,974,123.30**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 2/24/2009

Herriman 6000 West (widening/reconstruction, 66' ROW)

PROJECT DESCRIPTION:

Midas Creek Road to Herriman Parkway (Length = 1885')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$58,900.00	$58,900.00
013150010	Public Information Services	1	LS	$3,000.00	$3,000.00
015540005	Traffic Control	1	LS	$29,500.00	$29,500.00
001720010	Survey	1	LS	$11,800.00	$11,800.00
020560005	Borrow (Plan Quantity)	100	CY	$25.00	$2,500.00
020560015	Granular Borrow (Plan Quantity)	1400	CY	$22.50	$31,500.00
022310020	Clearing and Grubbing (Plan Quantity)	1	ACRE	$5,500.00	$5,500.00
023160020	Roadway Excavation (Plan Quantity)	3200	CY	$15.00	$48,000.00
027210020	Untreated Base Course (Plan Quantity)	1000	CY	$30.00	$30,000.00
027410060	HMA - 3/4"	2300	TON	$100.00	$230,000.00
027650060	Pavement Marking Paint	7540	LF	$0.25	$1,885.00
027710025	Concrete Curb & Gutter Type B1	3770	LF	$17.50	$65,975.00
027710059	Pedestrian Access Ramp	4	EA	$2,500.00	$10,000.00
027760010	Concrete Sidewalk	18850	SF	$7.50	$141,375.00
029220060	Turf Sod	11310	SF	$1.00	$11,310.00
029120010	Contractor Furnished Topsoil	1300	SY	$6.50	$8,450.00
				SUBTOTAL	$689,695.00
RIGHT OF WAY					
	Right of Way	36760	SF	$4.60	$169,096.00
				SUBTOTAL	$169,096.00
				Contingency (20%)	$137,939.00
				Preliminary Engineering (12%)	$82,763.40
				Construction Engineering (15%)	$103,454.25
				TOTAL	**$1,182,947.65**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 2/24/2009

Herriman 5600 West (new roadway, 106' ROW)

PROJECT DESCRIPTION:

11800 South to Herriman Parkway (Length = 4213')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$310,200.00	$310,200.00
013150010	Public Information Services	1	LS	$3,000.00	$3,000.00
015540005	Traffic Control	1	LS	$155,100.00	$155,100.00
001720010	Survey	1	LS	$62,000.00	$62,000.00
020560005	Borrow (Plan Quantity)	250	CY	$25.00	$6,250.00
020560015	Granular Borrow (Plan Quantity)	15000	CY	$22.50	$337,500.00
022310020	Clearing and Grubbing (Plan Quantity)	11	ACRE	$5,500.00	$60,500.00
023160020	Roadway Excavation (Plan Quantity)	33000	CY	$15.00	$495,000.00
027210020	Untreated Base Course (Plan Quantity)	8050	CY	$30.00	$241,500.00
027410060	HMA - 3/4"	14200	TON	$100.00	$1,420,000.00
027650060	Pavement Marking Paint	25300	LF	$0.25	$6,325.00
027710025	Concrete Curb & Gutter Type B1	8450	LF	$17.50	$147,875.00
027710059	Pedestrian Access Ramp	4	EA	$2,500.00	$10,000.00
027760010	Concrete Sidewalk	42130	SF	$7.50	$315,975.00
029220060	Turf Sod	33750	SF	$1.00	$33,750.00
029120010	Contractor Furnished Topsoil	3750	SY	$6.50	$24,375.00
				SUBTOTAL	$3,629,350.00
RIGHT OF WAY					
	Right of Way	446600	SF	$4.60	$2,054,360.00
				SUBTOTAL	$2,054,360.00
				Contingency (20%)	$725,870.00
				Preliminary Engineering (12%)	$435,522.00
				Construction Engineering (15%)	$544,402.50
				TOTAL	**$7,389,504.50**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 2/24/2009

Herriman 5600 West (new roadway, 106' ROW)

PROJECT DESCRIPTION:

Herriman Parkway to 13100 South (Length = 4030')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$297,000.00	$297,000.00
013150010	Public Information Services	1	LS	$5,000.00	$5,000.00
015540005	Traffic Control	1	LS	$148,500.00	$148,500.00
001720010	Survey	1	LS	$59,400.00	$59,400.00
020560005	Borrow (Plan Quantity)	225	CY	$25.00	$5,625.00
020560015	Granular Borrow (Plan Quantity)	14500	CY	$22.50	$326,250.00
022310020	Clearing and Grubbing (Plan Quantity)	10	ACRE	$5,500.00	$55,000.00
023160020	Roadway Excavation (Plan Quantity)	31500	CY	$15.00	$472,500.00
027210020	Untreated Base Course (Plan Quantity)	7700	CY	$30.00	$231,000.00
027410060	HMA - 3/4"	13600	TON	$100.00	$1,360,000.00
027650060	Pavement Marking Paint	24200	LF	$0.25	$6,050.00
027710025	Concrete Curb & Gutter Type B1	8060	LF	$17.50	$141,050.00
027710059	Pedestrian Access Ramp	4	EA	$2,500.00	$10,000.00
027760010	Concrete Sidewalk	40300	SF	$7.50	$302,250.00
029220060	Turf Sod	32240	SF	$1.00	$32,240.00
029120010	Contractor Furnished Topsoil	3600	SY	$6.50	$23,400.00
				SUBTOTAL	$3,475,265.00
RIGHT OF WAY					
	Right of Way	427200	SF	$4.60	$1,965,120.00
				SUBTOTAL	$1,965,120.00
				Contingency (20%)	$695,053.00
				Preliminary Engineering (12%)	$417,031.80
				Construction Engineering (15%)	$521,289.75
				TOTAL	**$7,073,759.55**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 2/24/2009

Herriman 5400 West (new roadway, 66' ROW)

PROJECT DESCRIPTION:

11800 South to Herriman Parkway (Length = 4030')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$180,000.00	$180,000.00
013150010	Public Information Services	1	LS	$3,000.00	$3,000.00
015540005	Traffic Control	1	LS	$90,000.00	$90,000.00
001720010	Survey	1	LS	$36,000.00	$36,000.00
020560005	Borrow (Plan Quantity)	225	CY	$25.00	$5,625.00
020560015	Granular Borrow (Plan Quantity)	7500	CY	$22.50	$168,750.00
022310020	Clearing and Grubbing (Plan Quantity)	7	ACRE	$5,500.00	$38,500.00
023160020	Roadway Excavation (Plan Quantity)	17150	CY	$15.00	$257,250.00
027210020	Untreated Base Course (Plan Quantity)	4250	CY	$30.00	$127,500.00
027410060	HMA - 3/4"	7000	TON	$100.00	$700,000.00
027650060	Pavement Marking Paint	16120	LF	$0.25	$4,030.00
027710025	Concrete Curb & Gutter Type B1	8060	LF	$17.50	$141,050.00
027710059	Pedestrian Access Ramp	4	EA	$2,500.00	$10,000.00
027760010	Concrete Sidewalk	40300	SF	$7.50	$302,250.00
029220060	Turf Sod	24180	SF	$1.00	$24,180.00
029120010	Contractor Furnished Topsoil	2700	SY	$6.50	$17,550.00
				SUBTOTAL	$2,105,685.00
RIGHT OF WAY					
	Right of Way	265980	SF	$4.60	$1,223,508.00
				SUBTOTAL	$1,223,508.00
				Contingency (20%)	$421,137.00
				Preliminary Engineering (12%)	$252,682.20
				Construction Engineering (15%)	$315,852.75
				TOTAL	**$4,318,864.95**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 2/24/2009

Herriman 5200 West (new roadway, 80' ROW)

PROJECT DESCRIPTION:

11800 South to 12600 South (Length = 5267')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$288,300.00	$288,300.00
013150010	Public Information Services	1	LS	$3,000.00	$3,000.00
015540005	Traffic Control	1	LS	$144,100.00	$144,100.00
001720010	Survey	1	LS	$57,700.00	$57,700.00
020560005	Borrow (Plan Quantity)	275	CY	$25.00	$6,875.00
020560015	Granular Borrow (Plan Quantity)	12800	CY	$22.50	$288,000.00
022310020	Clearing and Grubbing (Plan Quantity)	10	ACRE	$5,500.00	$55,000.00
023160020	Roadway Excavation (Plan Quantity)	28850	CY	$15.00	$432,750.00
027210020	Untreated Base Course (Plan Quantity)	7150	CY	$30.00	$214,500.00
027410060	HMA - 3/4"	12150	TON	$100.00	$1,215,000.00
027650060	Pavement Marking Paint	21070	LF	$0.25	$5,267.50
027710025	Concrete Curb & Gutter Type B1	10550	LF	$17.50	$184,625.00
027710059	Pedestrian Access Ramp	4	EA	$2,500.00	$10,000.00
027760010	Concrete Sidewalk	52670	SF	$7.50	$395,025.00
029220060	Turf Sod	42140	SF	$1.00	$42,140.00
029120010	Contractor Furnished Topsoil	4700	SY	$6.50	$30,550.00
				SUBTOTAL	$3,372,832.50
RIGHT OF WAY					
	Right of Way	421360	SF	$4.60	$1,938,256.00
				SUBTOTAL	$1,938,256.00
				Contingency (20%)	$674,566.50
				Preliminary Engineering (12%)	$404,739.90
				Construction Engineering (15%)	$505,924.88
				TOTAL	**$6,896,319.78**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 2/24/2009

Herriman 11800 South (widening/reconstruction, 120' ROW)

PROJECT DESCRIPTION:

4800 West to 5600 West (Length = 2162')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$400.00	$400.00
013150010	Public Information Services	1	LS	$4,000.00	$4,000.00
015540005	Traffic Control	1	LS	$200.00	$200.00
001720010	Survey	1	LS	$100.00	$100.00
020560005	Borrow (Plan Quantity)		CY	$25.00	$0.00
020560015	Granular Borrow (Plan Quantity)		CY	$22.50	$0.00
022310020	Clearing and Grubbing (Plan Quantity)		ACRE	$5,500.00	$0.00
023160020	Roadway Excavation (Plan Quantity)		CY	$15.00	$0.00
027210020	Untreated Base Course (Plan Quantity)		CY	$30.00	$0.00
027410060	HMA - 3/4"		TON	$100.00	$0.00
027650060	Pavement Marking Paint		LF	$0.25	$0.00
027710025	Concrete Curb & Gutter Type B1		LF	$17.50	$0.00
027710059	Pedestrian Access Ramp		EA	$2,500.00	$0.00
027760010	Concrete Sidewalk		SF	$7.50	$0.00
029220060	Turf Sod		SF	$1.00	$0.00
029120010	Contractor Furnished Topsoil		SY	$6.50	$0.00
				SUBTOTAL	$4,700.00
RIGHT OF WAY					
	Right of Way		SF	$4.60	$0.00
				SUBTOTAL	$0.00
				Contingency (20%)	$940.00
				Preliminary Engineering (12%)	$564.00
				Construction Engineering (15%)	$705.00
				TOTAL	**$6,909.00**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 2/24/2009

Herriman 11800 South (widening/reconstruction, 120' ROW)

PROJECT DESCRIPTION:

5600 West to 6400 West (Length = 13250')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$400.00	$400.00
013150010	Public Information Services	1	LS	$4,000.00	$4,000.00
015540005	Traffic Control	1	LS	$200.00	$200.00
001720010	Survey	1	LS	$100.00	$100.00
020560005	Borrow (Plan Quantity)		CY	$25.00	$0.00
020560015	Granular Borrow (Plan Quantity)		CY	$22.50	$0.00
022310020	Clearing and Grubbing (Plan Quantity)		ACRE	$5,500.00	$0.00
023160020	Roadway Excavation (Plan Quantity)		CY	$15.00	$0.00
027210020	Untreated Base Course (Plan Quantity)		CY	$30.00	$0.00
027410060	HMA - 3/4"		TON	$100.00	$0.00
027650060	Pavement Marking Paint		LF	$0.25	$0.00
027710025	Concrete Curb & Gutter Type B1		LF	$17.50	$0.00
027710059	Pedestrian Access Ramp		EA	$2,500.00	$0.00
027760010	Concrete Sidewalk		SF	$7.50	$0.00
029220060	Turf Sod		SF	$1.00	$0.00
029120010	Contractor Furnished Topsoil		SY	$6.50	$0.00
				SUBTOTAL	$4,700.00
RIGHT OF WAY					
	Right of Way		SF	$4.60	$0.00
				SUBTOTAL	$0.00
				Contingency (20%)	$940.00
				Preliminary Engineering (12%)	$564.00
				Construction Engineering (15%)	$705.00
				TOTAL	**$6,909.00**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 4/30/2009

Herriman 4400 West (new road, 66' ROW)

PROJECT DESCRIPTION:

14200 South to City Boundary (Length: 2680')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$117,600.00	$117,600.00
013150010	Public Information Services	1	LS	$3,000.00	$3,000.00
015540005	Traffic Control	1	LS	$58,800.00	$58,800.00
001720010	Survey	1	LS	$23,500.00	$23,500.00
020560005	Borrow (Plan Quantity)	140	CY	$25.00	$3,500.00
020560015	Granular Borrow (Plan Quantity)	4900	CY	$25.00	$122,500.00
022310020	Clearing and Grubbing (Plan Quantity)	5	ACRE	$6,000.00	$30,000.00
023160020	Roadway Excavation (Plan Quantity)	11400	CY	$15.00	$171,000.00
027210020	Untreated Base Course (Plan Quantity)	2850	CY	$30.00	$85,500.00
027410060	HMA - 3/4"	4650	TON	$100.00	$465,000.00
027650060	Pavement Marking Paint	10720	LF	$0.25	$2,680.00
027710025	Concrete Curb & Gutter Type B1	5360	LF	$17.50	$93,800.00
027710059	Pedestrian Access Ramp	4	EA	$2,500.00	$10,000.00
027760010	Concrete Sidewalk	26800	SF	$6.00	$160,800.00
029220060	Turf Sod	16080	SF	$1.00	$16,080.00
029120010	Contractor Furnished Topsoil	1800	SY	$6.50	$11,700.00
				SUBTOTAL	$1,375,460.00
RIGHT OF WAY					
	Right of Way	176880	SF	$4.60	$813,648.00
				SUBTOTAL	$813,648.00
				Contingency (20%)	$275,092.00
				Preliminary Engineering (12%)	$165,055.20
				Construction Engineering (15%)	$206,319.00
				TOTAL	**$2,835,574.20**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 4/30/2009

Herriman 5100 West (new road, 66' ROW)

PROJECT DESCRIPTION:

12600 South to 5600 West (Length: 7190')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$313,200.00	$313,200.00
013150010	Public Information Services	1	LS	$3,000.00	$3,000.00
015540005	Traffic Control	1	LS	$156,600.00	$156,600.00
001720010	Survey	1	LS	$62,600.00	$62,600.00
020560005	Borrow (Plan Quantity)	370	CY	$25.00	$9,250.00
020560015	Granular Borrow (Plan Quantity)	13050	CY	$25.00	$326,250.00
022310020	Clearing and Grubbing (Plan Quantity)	11	ACRE	$6,000.00	$66,000.00
023160020	Roadway Excavation (Plan Quantity)	30600	CY	$15.00	$459,000.00
027210020	Untreated Base Course (Plan Quantity)	7550	CY	$30.00	$226,500.00
027410060	HMA - 3/4"	12450	TON	$100.00	$1,245,000.00
027650060	Pavement Marking Paint	28760	LF	$0.25	$7,190.00
027710025	Concrete Curb & Gutter Type B1	14380	LF	$17.50	$251,650.00
027710059	Pedestrian Access Ramp	10	EA	$2,500.00	$25,000.00
027760010	Concrete Sidewalk	71900	SF	$6.00	$431,400.00
029220060	Turf Sod	47460	SF	$1.00	$47,460.00
029120010	Contractor Furnished Topsoil	5300	SY	$6.50	$34,450.00
				SUBTOTAL	$3,664,550.00
RIGHT OF WAY					
	Right of Way	474540	SF	$4.60	$2,182,884.00
				SUBTOTAL	$2,182,884.00
				Contingency (20%)	$732,910.00
				Preliminary Engineering (12%)	$439,746.00
				Construction Engineering (15%)	$549,682.50
				TOTAL	**$7,569,772.50**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 4/30/2009

Herriman 5150 West (new road, 66' ROW)

PROJECT DESCRIPTION:

11800 South to 5600 West (Length: 1840')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$81,400.00	$81,400.00
013150010	Public Information Services	1	LS	$3,000.00	$3,000.00
015540005	Traffic Control	1	LS	$40,700.00	$40,700.00
001720010	Survey	1	LS	$16,300.00	$16,300.00
020560005	Borrow (Plan Quantity)	95	CY	$25.00	$2,375.00
020560015	Granular Borrow (Plan Quantity)	3350	CY	$25.00	$83,750.00
022310020	Clearing and Grubbing (Plan Quantity)	3	ACRE	$6,000.00	$18,000.00
023160020	Roadway Excavation (Plan Quantity)	7850	CY	$15.00	$117,750.00
027210020	Untreated Base Course (Plan Quantity)	1950	CY	$30.00	$58,500.00
027410060	HMA - 3/4"	3200	TON	$100.00	$320,000.00
027650060	Pavement Marking Paint	7360	LF	$0.25	$1,840.00
027710025	Concrete Curb & Gutter Type B1	3680	LF	$17.50	$64,400.00
027710059	Pedestrian Access Ramp	6	EA	$2,500.00	$15,000.00
027760010	Concrete Sidewalk	18400	SF	$6.00	$110,400.00
029220060	Turf Sod	11040	SF	$1.00	$11,040.00
029120010	Contractor Furnished Topsoil	1250	SY	$6.50	$8,125.00
				SUBTOTAL	$952,580.00
RIGHT OF WAY					
	Right of Way	121440	SF	$4.60	$558,624.00
				SUBTOTAL	$558,624.00
				Contingency (20%)	$190,516.00
				Preliminary Engineering (12%)	$114,309.60
				Construction Engineering (15%)	$142,887.00
				TOTAL	**$1,958,916.60**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 4/30/2009

Herriman Midas Creek Dr. (new road, 66' ROW)

PROJECT DESCRIPTION:

5100 West to 6400 West (Length: 9400')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$407,400.00	$407,400.00
013150010	Public Information Services	1	LS	$4,000.00	$4,000.00
015540005	Traffic Control	1	LS	$203,700.00	$203,700.00
001720010	Survey	1	LS	$81,500.00	$81,500.00
020560005	Borrow (Plan Quantity)	475	CY	$25.00	$11,875.00
020560015	Granular Borrow (Plan Quantity)	17100	CY	$25.00	$427,500.00
022310020	Clearing and Grubbing (Plan Quantity)	15	ACRE	$6,000.00	$90,000.00
023160020	Roadway Excavation (Plan Quantity)	40000	CY	$15.00	$600,000.00
027210020	Untreated Base Course (Plan Quantity)	9850	CY	$30.00	$295,500.00
027410060	HMA - 3/4"	16250	TON	$100.00	$1,625,000.00
027650060	Pavement Marking Paint	37600	LF	$0.25	$9,400.00
027710025	Concrete Curb & Gutter Type B1	18800	LF	$17.50	$329,000.00
027710059	Pedestrian Access Ramp	8	EA	$2,500.00	$20,000.00
027760010	Concrete Sidewalk	94000	SF	$6.00	$564,000.00
029220060	Turf Sod	56400	SF	$1.00	$56,400.00
029120010	Contractor Furnished Topsoil	6300	SY	$6.50	$40,950.00
				SUBTOTAL	$4,766,225.00
RIGHT OF WAY					
	Right of Way	620400	SF	$4.60	$2,853,840.00
				SUBTOTAL	$2,853,840.00
				Contingency (20%)	$953,245.00
				Preliminary Engineering (12%)	$571,947.00
				Construction Engineering (15%)	$714,933.75
				TOTAL	**$9,860,190.75**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 4/30/2009

Herriman 6400 West (widening, 80' ROW)

PROJECT DESCRIPTION:

Rose Canyon Rd. to 14200 South (Length: 2160')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$87,400.00	$87,400.00
013150010	Public Information Services	1	LS	$5,000.00	$5,000.00
015540005	Traffic Control	1	LS	$43,700.00	$43,700.00
001720010	Survey	1	LS	$17,500.00	$17,500.00
020560005	Borrow (Plan Quantity)	110	CY	$25.00	$2,750.00
020560015	Granular Borrow (Plan Quantity)	2900	CY	$25.00	$72,500.00
022310020	Clearing and Grubbing (Plan Quantity)	2	ACRE	$6,000.00	$12,000.00
023160020	Roadway Excavation (Plan Quantity)	6000	CY	$15.00	$90,000.00
027210020	Untreated Base Course (Plan Quantity)	1750	CY	$30.00	$52,500.00
027410060	HMA - 3/4"	3750	TON	$100.00	$375,000.00
027650060	Pavement Marking Paint	8640	LF	$0.25	$2,160.00
027710025	Concrete Curb & Gutter Type B1	4320	LF	$17.50	$75,600.00
027710059	Pedestrian Access Ramp	11	EA	$2,500.00	$27,500.00
027760010	Concrete Sidewalk	21600	SF	$6.00	$129,600.00
029220060	Turf Sod	17280	SF	$1.00	$17,280.00
029120010	Contractor Furnished Topsoil	1920	SY	$6.50	$12,480.00
				SUBTOTAL	$1,022,970.00
RIGHT OF WAY					
	Right of Way	59400	SF	$4.60	$273,240.00
				SUBTOTAL	$273,240.00
				Contingency (20%)	$204,594.00
				Preliminary Engineering (12%)	$122,756.40
				Construction Engineering (15%)	$153,445.50
				TOTAL	**$1,777,005.90**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 4/30/2009

Herriman 14200 South (widening, 106' ROW)

PROJECT DESCRIPTION:

Emmeline Dr. to 7000 West (Length: 5970')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
	ROADWAY				
012850010	Mobilization	1	LS	$149,100.00	$149,100.00
013150010	Public Information Services	1	LS	$5,000.00	$5,000.00
015540005	Traffic Control	1	LS	$74,500.00	$74,500.00
001720010	Survey	1	LS	$29,800.00	$29,800.00
020560005	Borrow (Plan Quantity)	155	CY	$25.00	$3,875.00
020560015	Granular Borrow (Plan Quantity)	5750	CY	$25.00	$143,750.00
022310020	Clearing and Grubbing (Plan Quantity)	5	ACRE	$6,000.00	$30,000.00
023160020	Roadway Excavation (Plan Quantity)	11450	CY	$15.00	$171,750.00
027210020	Untreated Base Course (Plan Quantity)	3350	CY	$30.00	$100,500.00
027410060	HMA - 3/4"	6050	TON	$100.00	$605,000.00
027650030	Remove Pavement Markings	29660	LF	$0.75	$22,245.00
027650060	Pavement Marking Paint	35820	LF	$0.25	$8,955.00
027710025	Concrete Curb & Gutter Type B1	5970	LF	$17.50	$104,475.00
027710059	Pedestrian Access Ramp	30	EA	$2,500.00	$75,000.00
027760010	Concrete Sidewalk	29850	SF	$6.00	$179,100.00
029220060	Turf Sod	23880	SF	$1.00	$23,880.00
029120010	Contractor Furnished Topsoil	2675	SY	$6.50	$17,387.50
				SUBTOTAL	$1,744,317.50
	RIGHT OF WAY				
	Right of Way	204500	SF	$4.60	$940,700.00
				SUBTOTAL	$940,700.00
				Contingency (20%)	$348,863.50
				Preliminary Engineering (12%)	$209,318.10
				Construction Engineering (15%)	$261,647.63
				TOTAL	**$3,504,846.73**

J-U-B ENGINEERS, INC.

2875 S. Decker Lake Drive, Suite 201, Salt Lake City, Utah 84119

ENGINEER'S OPINION OF PROBABLE COST

ENGINEERS, Inc.

PROJECT NAME: **DATE:** 4/30/2009

Herriman 6400 West (reconstruct, 66' ROW)

PROJECT DESCRIPTION:

14400 South to 14800 South (Length: 1400')

CLIENT:

Herriman

CLIENT PROJ. NO.: J-U-B PROJ. NO.: 83-08-011

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY					
012850010	Mobilization	1	LS	$62,800.00	$62,800.00
013150010	Public Information Services	1	LS	$5,000.00	$5,000.00
015540005	Traffic Control	1	LS	$31,400.00	$31,400.00
001720010	Survey	1	LS	$12,600.00	$12,600.00
020560005	Borrow (Plan Quantity)	75	CY	$25.00	$1,875.00
020560015	Granular Borrow (Plan Quantity)	2550	CY	$25.00	$63,750.00
022310020	Clearing and Grubbing (Plan Quantity)	3	ACRE	$6,000.00	$18,000.00
023160020	Roadway Excavation (Plan Quantity)	6000	CY	$15.00	$90,000.00
027210020	Untreated Base Course (Plan Quantity)	1500	CY	$30.00	$45,000.00
027410060	HMA - 3/4"	2450	TON	$100.00	$245,000.00
027650060	Pavement Marking Paint	5600	LF	$0.25	$1,400.00
027710025	Concrete Curb & Gutter Type B1	2800	LF	$17.50	$49,000.00
027710059	Pedestrian Access Ramp	4	EA	$2,500.00	$10,000.00
027760010	Concrete Sidewalk	14000	SF	$6.00	$84,000.00
029220060	Turf Sod	8400	SF	$1.00	$8,400.00
029120010	Contractor Furnished Topsoil	950	SY	$6.50	$6,175.00
				SUBTOTAL	$734,400.00
RIGHT OF WAY					
	Right of Way	92400	SF	$4.60	$425,040.00
				SUBTOTAL	$425,040.00
				Contingency (20%)	$146,880.00
				Preliminary Engineering (12%)	$88,128.00
				Construction Engineering (15%)	$110,160.00
				TOTAL	**$1,504,608.00**

J-U-B ENGINEERS, INC.

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