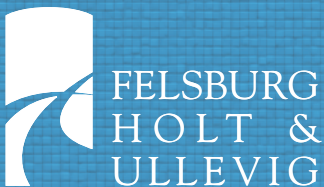




LARIMER COUNTY ROAD CAPITAL EXPANSION FEE STUDY

September 2006



Clarion Associates

LARIMER COUNTY

ROAD CAPITAL EXPANSION FEE STUDY

Prepared for:

Larimer County
PO Box 1190
200 W. Oak Street
Fort Collins, CO 80522

Prepared by:

Felsburg Holt & Ullevig
6300 South Syracuse Way, Suite 600
Centennial, CO 80111
303/721-1440

In association with:

Clarion Associates
1700 Broadway
Denver, Colorado 80290

FHU Reference No. 04-101
September 2006



Road Capital Expansion Fee Study

TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY -----	i
INTRODUCTION -----	1
Larimer County’s Road Capital Expansion Fee Program -----	1
Colorado’s Impact Fee Statute -----	2
Update of Larimer County’s Road Capital Expansion Fee Program -----	3
SERVICE AREAS -----	4
Assessment Districts -----	4
Benefit Districts -----	5
ROADWAY SYSTEMS -----	7
Regional Road System -----	7
Non-Regional Road System-----	11
SERVICE UNITS -----	14
TRAFFIC VOLUMES AND FORECASTS -----	15
METHOD FOR CALCULATING ROAD IMPACT FEES -----	20
ROADWAY CAPACITY -----	21
Unpaved Roads -----	21
Multi-Lane Roads -----	22
CAPACITY ANALYSIS -----	23
ROAD IMPROVEMENT NEEDS -----	24
Unit Cost Estimates-----	24
Improvement Cost Estimates -----	27
COST PER SERVICE UNIT -----	29
NET COST PER SERVICE UNIT -----	30
TRAVEL DEMAND FACTORS -----	33
Primary Trips -----	33
Trip Lengths -----	35
Vehicle Miles of Travel-----	37
FEES -----	38
 APPENDIX A ROADWAY INVENTORY	
APPENDIX B NEW ROADS	

TABLE OF FIGURES

	<u>Page</u>
Figure 1. Benefit Districts -----	6
Figure 2A. Roadway Functional Classification -----	8
Figure 2B. Roadway Functional Classification -----	9
Figure 3. Regional Roads-----	10
Figure 4A. Non-Regional Major Roads -----	12
Figure 4B. Non-Regional Major Roads -----	13
Figure 5A. Existing Traffic Volumes -----	16
Figure 5B. Existing Traffic Volumes -----	17
Figure 6A. 2030 Traffic Volume Forecasts -----	18
Figure 6B. 2030 Traffic Volume Forecasts -----	19
Figure 7A. Roadway Improvement Needs-----	25
Figure 7B. Roadway Improvement Needs-----	26

TABLE OF TABLES

Table 1. Origin/Destination Patterns – County Roads -----	4
Table 2. Origin/Destination Patterns – Regional Roads-----	5
Table 3. Capacity Assumption for Unpaved Roads -----	21
Table 4. Daily Capacities of Paved Two-Lane Roads -----	22
Table 5. Daily Design Capacities for Multi-lane Roadways -----	22
Table 6. Capacity Deficiencies on County’s Major Road System -----	23
Table 7. Unit Cost Estimates (Per Mile)-----	27
Table 8. Regional Road Improvement Needs -----	27
Table 9. Non-Regional Major Road Improvement Needs-----	28
Table 10. Cost Per New Service Unit-----	29
Table 11. System-Wide Capacity/Demand Ratios -----	30
Table 12. Deficiency Credit -----	31
Table 13. Local Funding Credit Per VMC -----	31
Table 14. Net Cost per Service Unit -----	32
Table 15. Primary Trips by Land Use Type -----	34
Table 16. Average Trip Length on Larimer County Major Road System Across All Land Uses-----	36
Table 17. Trip Length Variation by Land Use Type -----	37
Table 18. Net Cost by Land Use Type Regional Roads -----	39
Table 19. Net Cost by Land Use Type Non-Regional Roads-----	40

EXECUTIVE SUMMARY

Larimer County's current roadway impact fee program was adopted in October, 1998, after preparation of the *Larimer County Transportation Plan* in that same year. The program includes a Regional Transportation Capital Expansion Fee and a County Transportation Capital Expansion Fee. The maintenance of an equitable and effective Road Capital Expansion Fee (CEF) program requires periodic updating of the roadway improvement plan. In 2005, the County initiated an update effort, consisting of an update to the *Larimer County Roadway Plan*, followed by an update to the Road CEF program. This *Road Capital Expansion Fee Study* provides the analysis, technical support, and recommendations for updating the CEF for the Regional and County (Non-Regional)¹ road systems.

Key Findings

The general conclusions from the 2006 update of the *Larimer County Transportation Plan* and this *Road Capital Expansion Fee Study* are:

- ▶ There will be a substantial amount of new growth and development in Larimer County between 2006 and 2030.
- ▶ This new growth and development will generate a significant demand for the construction of capital improvements to the Regional Road System and the County Road System if the desired level of service is to be maintained.
- ▶ The 2006 Larimer County Transportation Plan indicates a need for approximately \$303 million in capital roadway improvements by 2030, of which approximately \$55 million are on the Regional Road system and \$248 million are on the County Road System.
- ▶ The county's fiscal structure cannot adequately fund the road capital improvements needed to accommodate the expected growth and development without an increase in the CEF for the Regional Road System and the County Road System.

The Study demonstrates that the road impact fees the county could exact on a new single-family residential unit are \$258 for the Regional Road Fee and \$2,655 for the County Road fee. The fee amounts for other land use types are also shown in **Tables 18 and 19**. The County could adopt these fees or some percentage of the fees calculated in the Study.

¹ The term "County Road System" is used in this study to designate the part of the County's major road system that does not include Regional Roads.

INTRODUCTION

Capital expansion fees, often called impact fees, are a form of development exactions. They are regulatory devices used by local governments to impose charges on new development to generate revenues for capital funding for off-site road capital facility expansion necessitated by that new development. A road impact fee is a land use regulatory device because part of its purpose is to provide local governments the ability to encourage the orderly development of land by ensuring that adequate capital road facilities are available to service new growth and development, and to coordinate the provision of those capital facilities. Road impact fees have been adopted by many local governments throughout the country, including a number of county and municipal governments in Colorado.

There are several essential elements that distinguish impact fees from simple revenue-raising devices, such as a tax or special assessment. First, the fees can be imposed only upon new growth and development and only for capital facilities. Second, impact fees are fees imposed for the purpose of constructing off-site capital facility expansion; therefore, they can be planned for and implemented as part of a jurisdiction-wide capital facility program. Third, the impact fee exacted upon development can be no more than the costs incurred by the local government to accommodate that new growth and development. This is recognized as the "fair share" or "proportionate share" approach. Finally, and to ensure that new development receives a sufficient benefit from the fee, local governments are required to establish a trust account so that the impact fees are earmarked and accounted for, are spent on capital facilities that the fee payer will generally use, and are spent within a reasonable period of time.

Road impact fees are one-time, up-front charges, with the payment usually being made at the time of building permit issuance. Essentially, road impact fees require that each new residential or commercial project pay its pro-rata share of the cost of new infrastructure facilities required to serve that development.

It should be recognized, however, that road impact fees and other forms of developer exactions are not the sole answer to local government's capital funding needs. They do not address the costs of maintenance, rehabilitation or replacement of existing facilities, nor can they be used to fund capital improvements required to remedy existing capacity deficiencies or safety problems. Rather than being the sole solution to a community's capital funding needs, road impact fees should be viewed as a supplemental financing mechanism to be used in concert with more traditional funding sources.

Larimer County's Road Capital Expansion Fee Program

Larimer County's current roadway impact fee program was adopted in October, 1998, after preparation of the *Larimer County Transportation Plan* in that same year. The program includes a Regional Transportation Capital Expansion Fee and a County Transportation Capital Expansion Fee. The parameters and details of the program were considered and developed by county officials over a two-year period, beginning in 1996, as the Larimer County Transportation Plan was being prepared. The program was developed primarily in response to the rapid rate of growth expected to occur in the county between 1998 and 2020, coupled with the fact that the

county's fiscal structure existing at the time would not be adequate to fund the road capital improvements needed to accommodate this expected growth and development at the county's desired quality of service (level of service standard). The program was categorized into two components - a County Road System and a Regional Road System – due to the nature of development patterns, political jurisdictions, and travel demand characteristics in the county.

The County Road component established a system for the imposition of transportation fees on new development in the unincorporated county to assist in funding the shortfall of new capital road improvements on county-maintained arterial and collector roads. The traffic analysis used to support the program demonstrated that the demand or need to expand these county roads in the future would come primarily from new growth and development in the unincorporated county.

The Regional Road component recognized that, in addition to the demand placed on the County Road System by new growth and development in the unincorporated county area, there were five County Roads that would be impacted by new growth and development throughout the county, that is by the county's municipalities as well as unincorporated areas. The program was designed for full participation among Larimer County, Fort Collins, Loveland, and other municipalities throughout the county. To date, only the county and Fort Collins have participated in the program.

With respect to both programs, the fees were structured to ensure that new development is only asked to contribute its "proportionate share" of the cost the county will incur in providing the needed road capital improvements on the county-maintained arterial and collector road system. Neither component included the cost of right-of-way for necessary expansions of capacity; acquisition or dedication of right-of-way has been handled outside the Capital Expansion Fee (CEF) program.

Colorado's Impact Fee Statute

In 2001, the Colorado General Assembly enacted Senate Bill 15, which gives Colorado counties explicit authority to collect and administer development impact fees for a wide variety of facilities, including roads. When the county's transportation Capital Expansion Fees were adopted in 1998, there was no express enabling legislation. Senate Bill 15 includes several requirements for counties that choose to exercise these powers, including the following:

- ▶ Impact fees must be legislatively adopted and apply to a broad class of properties;
- ▶ Impact fees must be directly related to the impacts of the proposed development;
- ▶ Impact fees may only be used to fund capital facilities, meaning facilities with a useful life of five years or longer, that are required by local ordinance or policy;
- ▶ Impact fees may only be used to fund existing and future capital improvements;
- ▶ Developers may not be charged impact fees to fund facilities to which they have already contributed fees through another mechanism (unless a credit is given for any duplicate costs);

- ▶ The accounting for impact fees must be the same as for all other development charges (i.e., they must comply with the requirements of C.R.S. 29-1-801 through 804);
- ▶ Impact fees may be waived for affordable housing or employee housing developments; and
- ▶ Any impact fee program that existed prior to Senate Bill 15 can continue in effect so long as its provisions are not contrary to any of the provisions set out in Senate Bill 15.

It is important that the provisions of Senate Bill 15 are reflected in the updated Larimer County transportation impact fee program.

Update of Larimer County's Road Capital Expansion Fee Program

The maintenance of an equitable and effective Road Capital Expansion Fee program requires periodic updating of the roadway improvement plan. In 2005, the county initiated this effort through an update of the Larimer County Roadway Plan, then an update of the Road Capital Expansion Fee Study. The *Larimer County Transportation Plan* was prepared in April, 2006. The plan incorporated updates to land use and travel demand forecasts, roadway construction cost estimates, county roadway classifications, identification of regionally significant roads, and identification of roadway improvement needs. It demonstrates that:

- ▶ There will be a substantial amount of new growth and development in Larimer County between 2006 and 2030.
- ▶ This new growth and development will generate a significant demand for the construction of capital improvements to the Regional Road System and the County Road System if the desired level of service is to be maintained.
- ▶ The 2006 Larimer County Roadway Plan indicates a need for more than \$302 million in capital roadway improvements on the County's Major Road System by 2030, of which approximately \$55 million are on the Regional Road system and \$248 million are on the County Road System.

This updated Road Impact Fee Study incorporates the results of the 2006 *Larimer County Transportation Plan* (including capital improvement needs, road construction costs, and travel demand characteristics), along with refinements to the fee calculation factors and methodology adopted as part of the original program in 1996. Refinements reflect new local and national data sources, the county's experience with the program, and state and national legal and regulatory changes in impact fee "best practices".

SERVICE AREAS

In a road impact fee system, it is important to clearly define the geographic area within which road impact fees will be exacted and spent. This area is called the service area. There are generally two types of service areas in a road impact fee system: assessment districts and benefit districts. Each serves a different function. Assessment districts define the area within which a set of common capital facilities provide service, and for which a fee schedule based on average costs within that district is calculated. Benefit districts, on the other hand, represent an area within which the fees collected must be spent. They ensure that the capital road improvements funded with impact fees are constructed within reasonable proximity of the feepaying development, as a means of helping to ensure that feepayers receive sufficient benefit from fees paid in the form of capacity enhancing capital road improvements that provide adequate service levels for the road system.

Although assessment districts and benefit districts are coterminous in many road impact fee systems, this is not always the case. For many impact fee systems, the entire jurisdiction serves as the single assessment district for the purpose of calculating a uniform, jurisdiction-wide fee schedule, while the jurisdiction is divided into multiple benefit districts. That is the approach used for Larimer County.

Assessment Districts

The assessment district for the County Road fee is unincorporated Larimer County because the majority of travel demand on the County Road system comes from development within the unincorporated county. Data developed using the North Front Range regional traffic forecasting model demonstrates this, as shown in **Table 1**. The model was used to identify the location of the origins and destinations of trips using several of the County Road segments. It was determined that nearly 99% of trips on a sampling of county roads begin and/or end in unincorporated Larimer County, with the remaining 1% being pass-through trips. A majority of trips on the County Roads (89%) begin or end in the unincorporated county and have the other trip end elsewhere.

Table 1. Origin/Destination Patterns – County Roads

Trip Origin/Destination	County Roads % of Trips
County / County	10%
County / External	89%
External / External (Pass-Through Traffic)	1%
Total	
<i>Note: "County" refers to unincorporated Larimer County; "External" refers to all locations other than unincorporated Larimer County.</i>	

Road Capital Expansion Fee Study

The assessment district for the Regional Road fees is unincorporated Larimer County and Fort Collins, because a significant portion of the travel demand on these roads comes from new growth and development in Fort Collins as well as the unincorporated county. Fort Collins is the only municipality in the county that currently participates in the Regional Road fee. If other municipalities choose to participate in the Regional Road fee, the fee structure could be adjusted accordingly.

The NFR traffic forecasting model was used to identify the location of the origins and destinations of trips using Regional Roads, and results are summarized in **Table 2**. These data show that either the origin or the destination of 72% (15% County/Fort Collins trips and 57% Fort Collins/External trips) of trips on Regional Roads is in Fort Collins. This finding supports the inclusion of Fort Collins in the Regional Road Capital Expansion Fee.

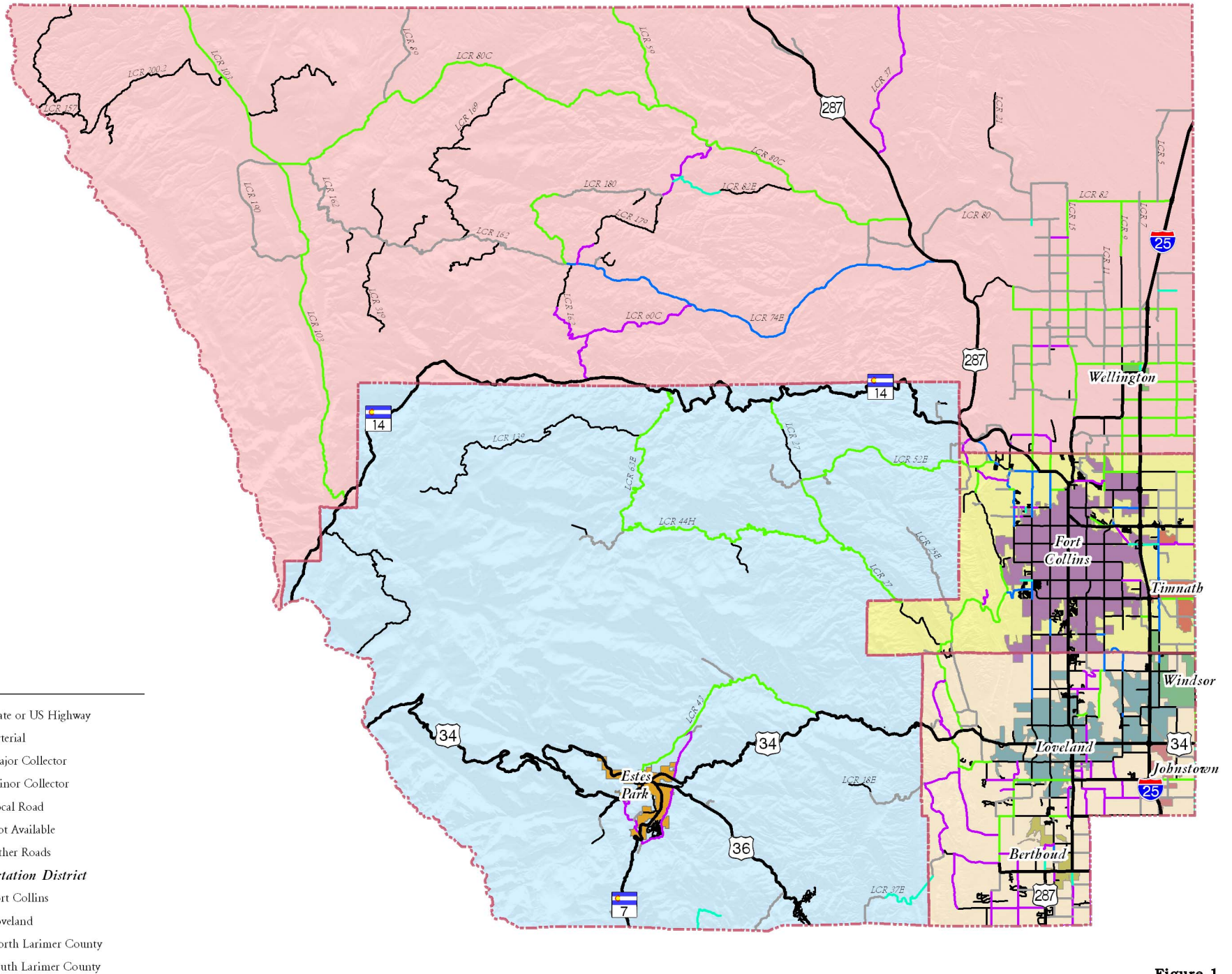
Table 2. Origin/Destination Patterns – Regional Roads

Trip Origin/Destination	Regional Roads % of Trips
County / County	2%
County / Fort Collins	15%
County / External	14%
Fort Collins / External	57%
External / External (Pass-Through Traffic)	12%
Total	100%
<i>Note: "County" refers to unincorporated Larimer County; "External" refers to all locations other than unincorporated Larimer County or Fort Collins.</i>	

Benefit Districts

The existing CEF for the County Road System divides the county into four benefit districts: Fort Collins, Loveland, North Larimer County and South Larimer County. The CEF districts are shown on **Figure 1**. The Fort Collins district includes the unincorporated parts of the county surrounding Fort Collins and the Loveland district includes unincorporated parts of the county surrounding Loveland, Berthoud, and Windsor. The North Larimer County and South Larimer County districts incorporate the remainder of the non-urbanized portions of the County and are generally divided by State Highway 14.

For the Regional Road System fee, there is a single benefit district encompassing the entire unincorporated county.



Legend

- State or US Highway
- Arterial
- Major Collector
- Minor Collector
- Local Road
- Not Available
- Other Roads

Transportation District

- Fort Collins
- Loveland
- North Larimer County
- South Larimer County



North

Figure 1
Benefit Districts

ROADWAY SYSTEMS

A road impact fee system should include a clear definition of the roadway system to be funded with the impact fees. This definition clarifies the roads that may be improved with impact fee funds, as well as the roads that can be improved by fee payers/developers in return for credit against the road impact fees.

Figures 2A and 2B show the functional classifications for Larimer County's roadway system. The major county roadway system has been defined as the county roads that are classified as arterial or collector roads. Thus, the major county roadway system upon which the county's Capital Expansion Fees are based excludes two categories of roads. State and US Highways are not included, since the state has responsibility for improving and maintaining those roads. Local Roads do not fit the definition of major roads and are also not part of the major county roadway system, since they generally serve an access function for a single development and have limited length and continuity.

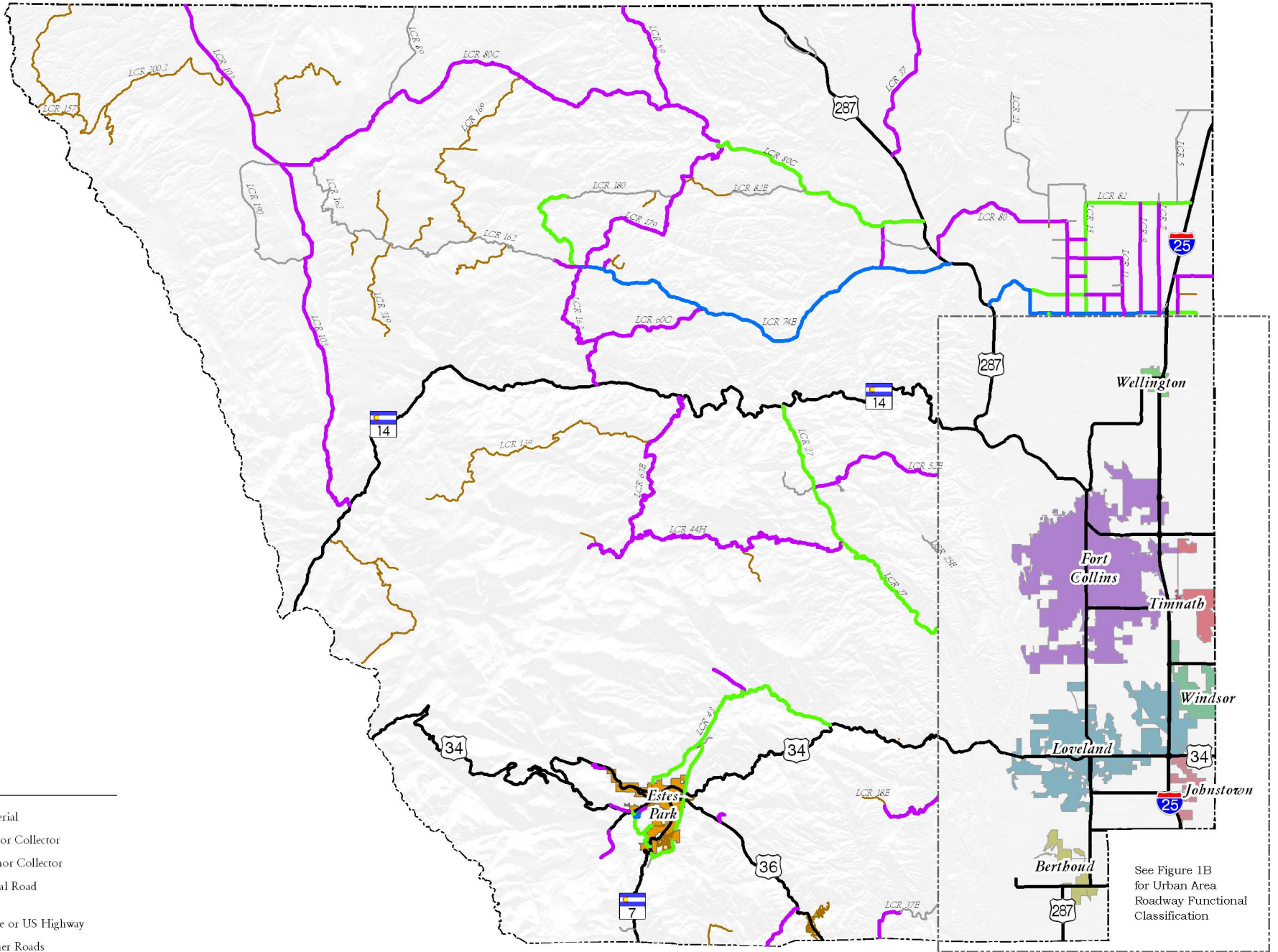
This major county roadway system is divided into two categories for the two Capital Expansion Fees, per the following descriptions.

Regional Road System

County roads that have a primarily regional function, as opposed to primarily serving travel demands generated by the unincorporated county, form the basis for the Regional Road Capital Expansion Fee. Roads that fulfill a predominantly regional function have been preliminarily identified by members of the North Front Range and Upper Front Range planning organizations to be the subject of a planned Regional Transportation Authority ballot question. Those roads that are also Larimer County roads will form the Regional Road System that will be the focus of the Regional Road Capital Expansion Fee. The Regional Road System includes segments of:

- ▶ Prospect Road/Larimer County Road (CR) 44;
- ▶ CR 38 (the eastern extension of Harmony Road/SH 68);
- ▶ CR 32/Carpenter Road (the western extension of SH 392);
- ▶ CR 30;
- ▶ Crossroads Boulevard/CR 26;
- ▶ CR 18 (the eastern extension of SH 402);
- ▶ CR 19/Taft Hill Road/Wilson Road;
- ▶ CR 17 / Shields Street /Taft Road;
- ▶ CR 11C/CR 11/Timberline Road;
- ▶ CR 9/Boyd Road; and
- ▶ CR 5.

The Regional Road System is shown on **Figure 3**.



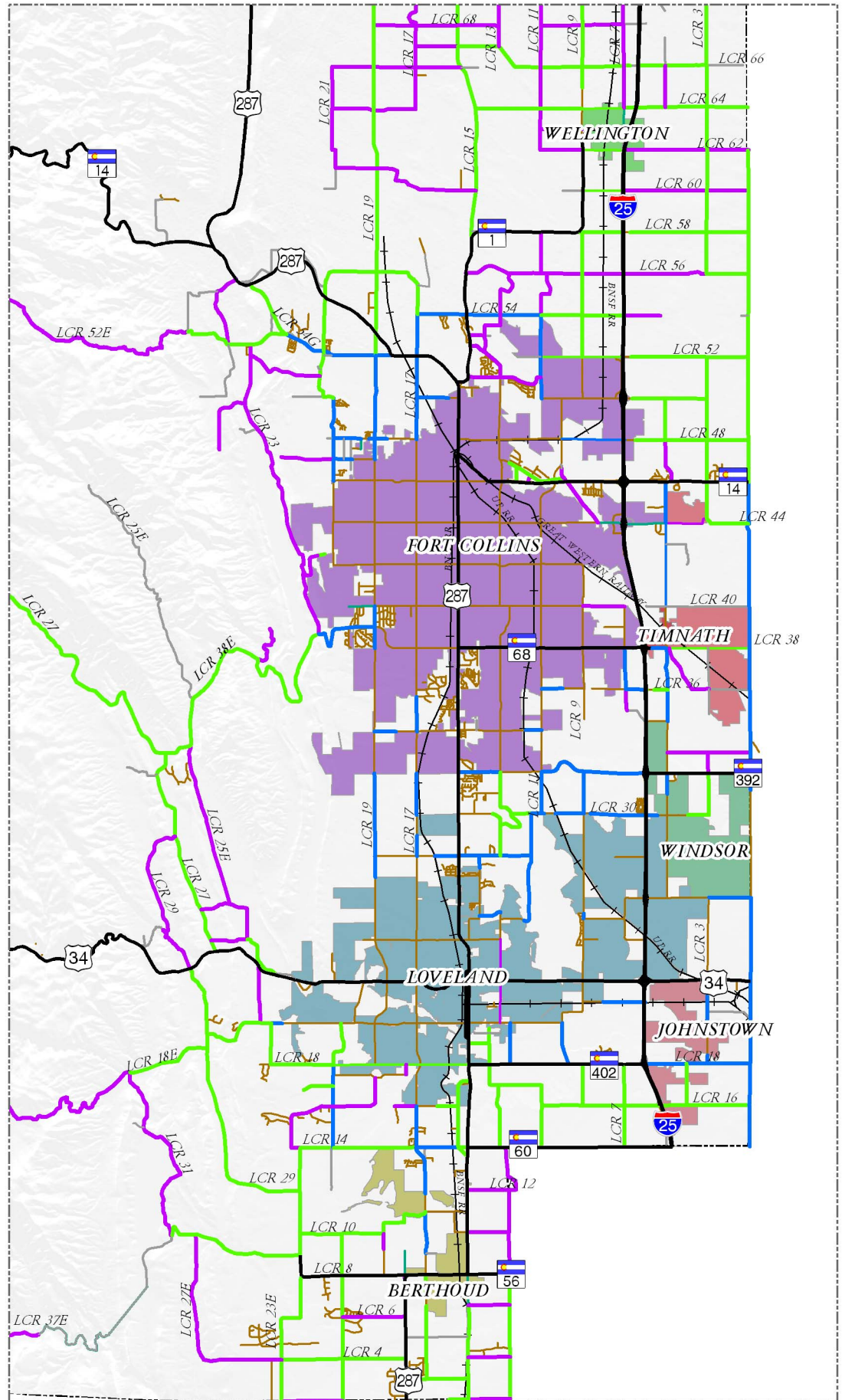
Legend

- Arterial
- Major Collector
- Minor Collector
- Local Road
- State or US Highway
- Other Roads
- Larimer County



North

Figure 2A
Roadway Functional Classification



Legend

- State or US Highway
- Arterial
- Major Collector
- Minor Collector
- Local Road
- Other Roads

Figure 2B

Roadway Functional Classification



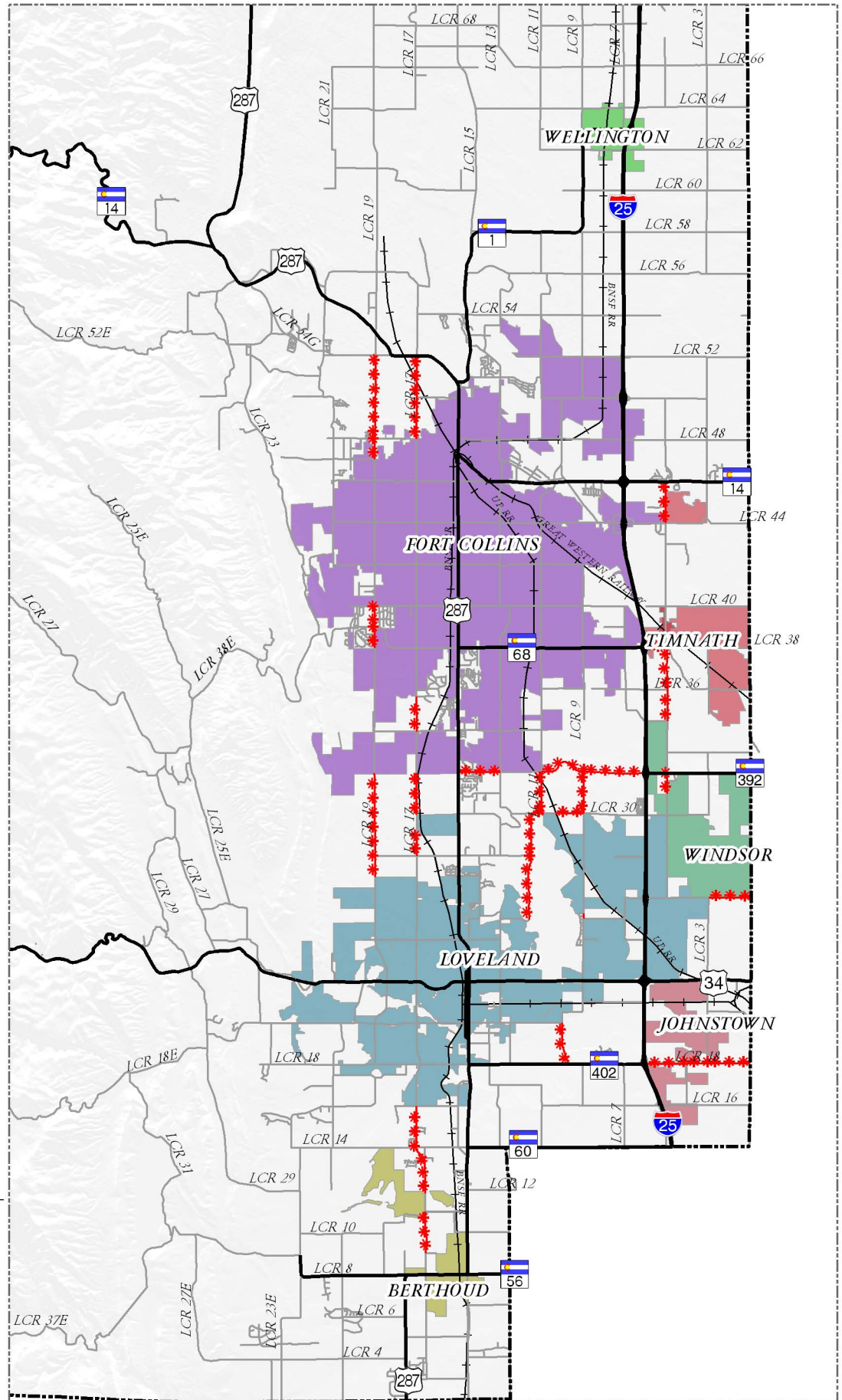


Figure 3

Regional Roads



Non-Regional Road System

The Non-Regional Road System consists of all of the Major County Roads that are not defined as Regional Roads. The Non-Regional Major Road System is shown on **Figures 4A and 4B**.

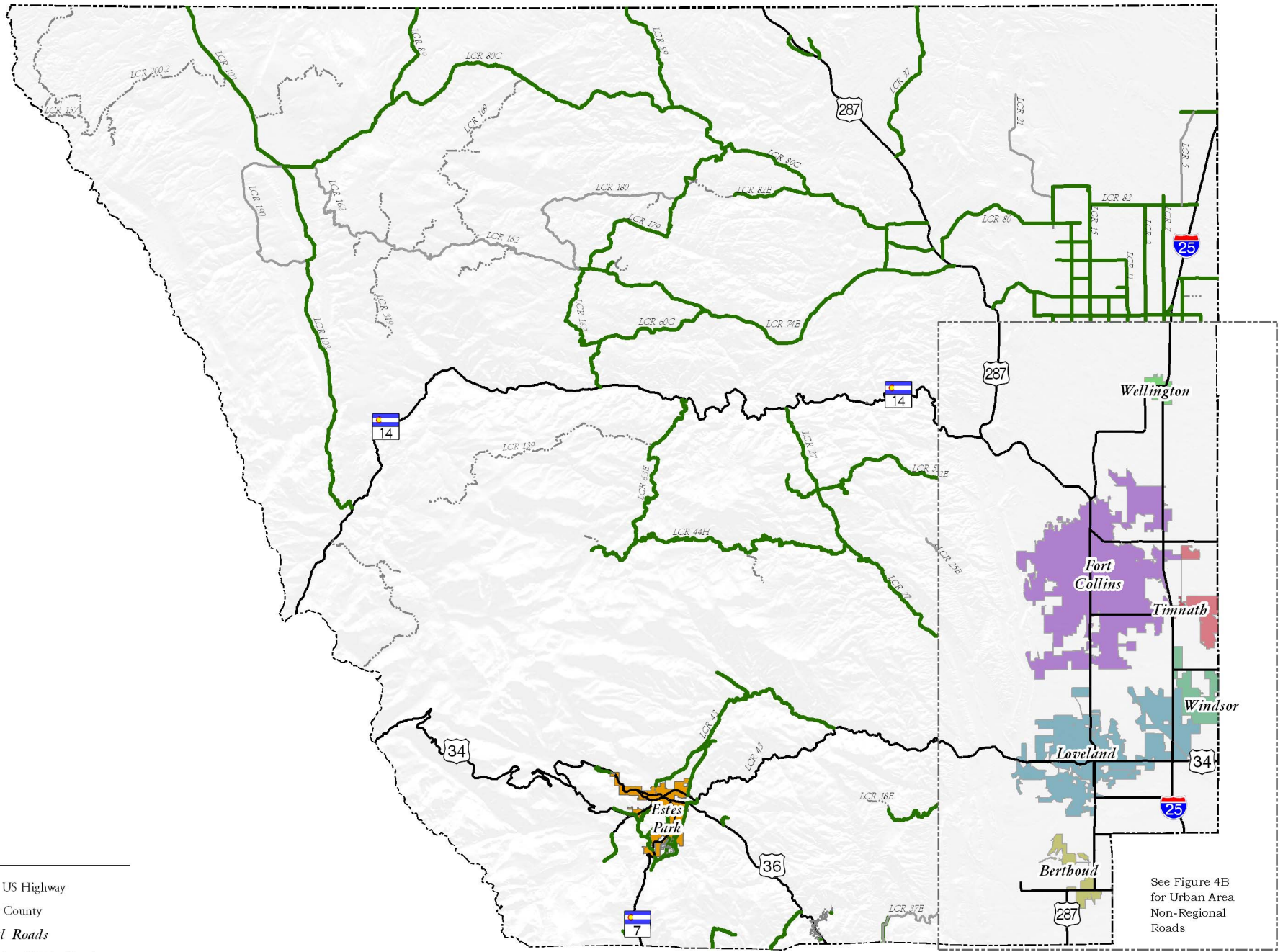
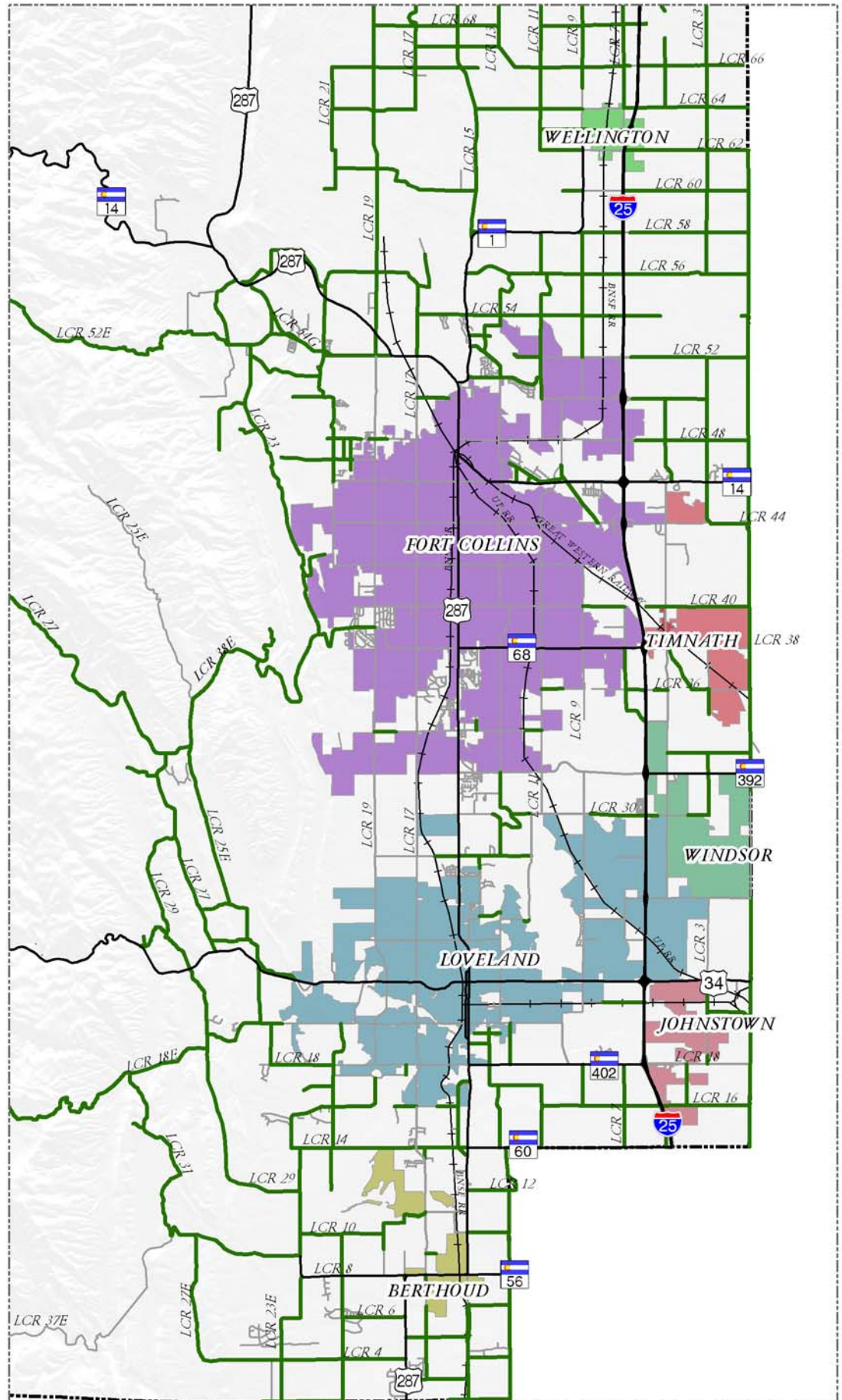


Figure 4A
Non-Regional Major Roads





Legend

- State or US Highway
- Non-Regional Major Roads
- Other Roads
- ▭ Larimer County

Figure 4B

Non-Regional Major Roads



North

SERVICE UNITS

Service units create the link between supply (roadway capacity) and demand (traffic generated by new development). An appropriate service unit basis for transportation impact fees is vehicle-miles of travel (VMT). Vehicle-miles are a combination of the number of vehicles traveling during a given time period and the distance (in miles) that these vehicles travel. Available traffic counts and projected volumes and roadway capacities are expressed in terms of vehicles per 24-hour period. Consequently, average daily VMT is the service unit used for Larimer County's Capital Expansion Fees.

Travel demand for an individual unit of development (e.g., a single family unit, a multiple family unit, 1,000 square feet of office development, 1,000 square feet of retail development, etc.) is measured using three factors: (1) average daily trip (ADT) generation rates; (2) the percent of these that are primary trips; and (3) average trip length.² To determine the number of VMT generated for the individual unit of development, the trip generation rate is multiplied by the percent of primary trips and the average trip length.

For the County's Major Roadway System as a whole, VMT is determined by multiplying the length of each road segment by the average daily traffic count and aggregating the results for all road segments.

The capacity of a roadway segment is the maximum number of vehicles per day that can be accommodated at a desired level-of-service. In order to be aggregated for the County's Major Roadway System as a whole, however, capacities of individual road segments must be converted into vehicle-miles of capacity (VMC). This is accomplished by multiplying the capacity of each segment by the length of each segment in miles.

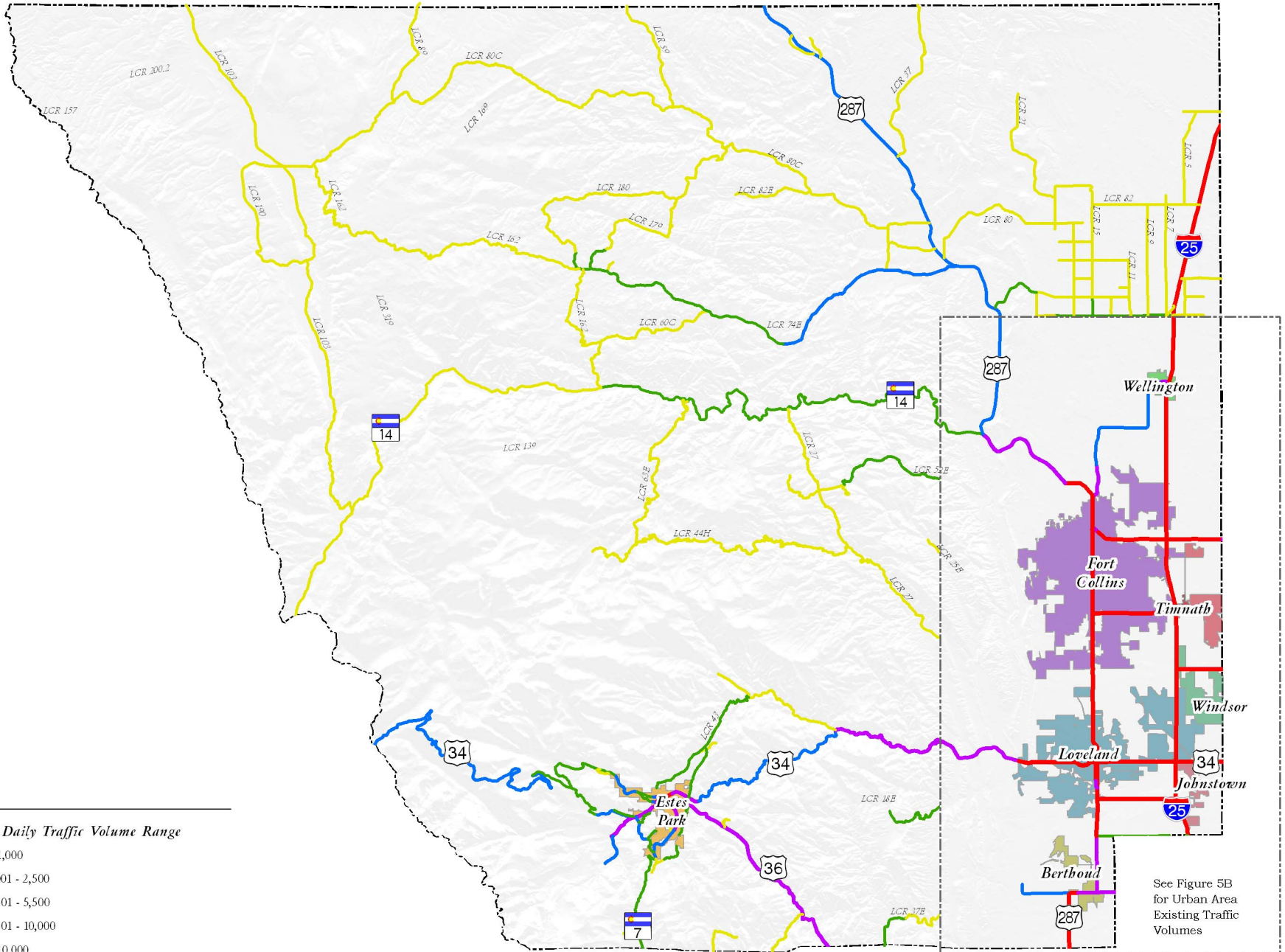
² For a more complete discussion of the travel demand characteristics of the individual unit of development, see the section on Travel Demand Factors.

TRAFFIC VOLUMES AND FORECASTS

As part of this Road Impact Fee Study, traffic count information available from Larimer County, CDOT, and other sources was compiled. The resulting traffic volume data is provided in the Roadway Inventory in **Appendix A**. This data is depicted in **Figures 5A and 5B**. Most volume data reflect counts taken over the past three years, although older counts are included in some cases. Counts were not available on all road segments, but in those cases where data was unavailable, reasonable traffic volume estimates were made based on data for nearby road segments.

Traffic volume forecasts are required in order to identify roadway improvement needs on the County's Major Roadway System. Year 2030 traffic forecasts were derived using a combination of the North Front Range travel forecasting model and population and employment growth projections. These forecasts are depicted in **Figures 6A and 6B** and shown for each road segment in **Appendix A**. More detailed information on the forecasting process is provided in the *Larimer County Transportation Plan*.

The total vehicle miles of travel (VMT) on the County's Major Roadway System is projected to increase from approximately 848,000 VMT per day currently to 1,656,000 VMT in 2030, representing nearly a doubling of traffic flow. This projected growth in travel demand leads to the need for extensive capital road improvements throughout the system.



Legend

Existing Daily Traffic Volume Range

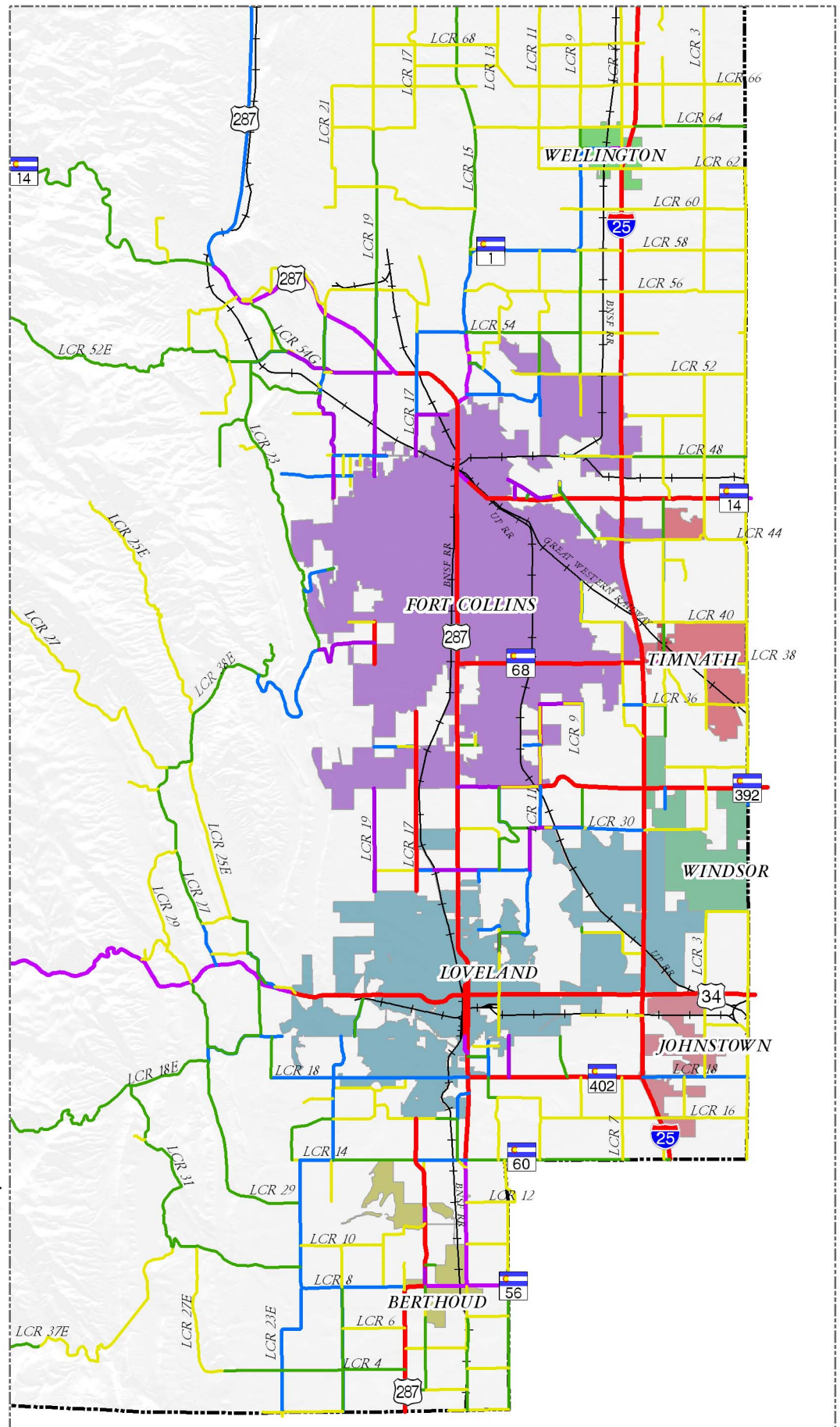
- ≤ 1,000
- 1,001 - 2,500
- 2,501 - 5,500
- 5,501 - 10,000
- > 10,000

▭ Larimer County



See Figure 5B
for Urban Area
Existing Traffic
Volumes

Figure 5A
Existing Traffic Volumes



Legend

Existing Daily Traffic Volume Range

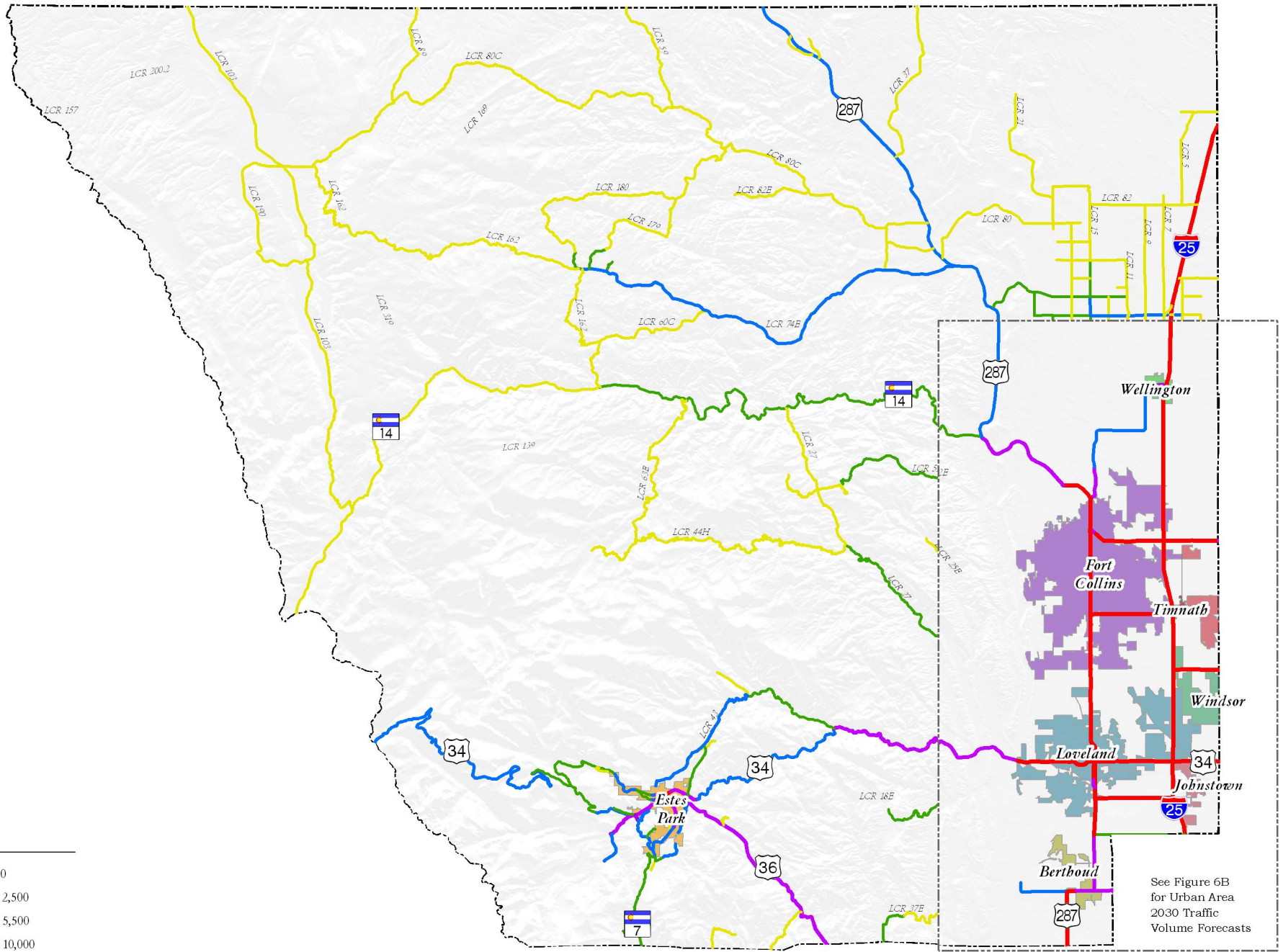
- < 1,000
- 1,001 - 2,500
- 2,501 - 5,500
- 5,501 - 10,000
- > 10,000

Larimer County

Figure 5B

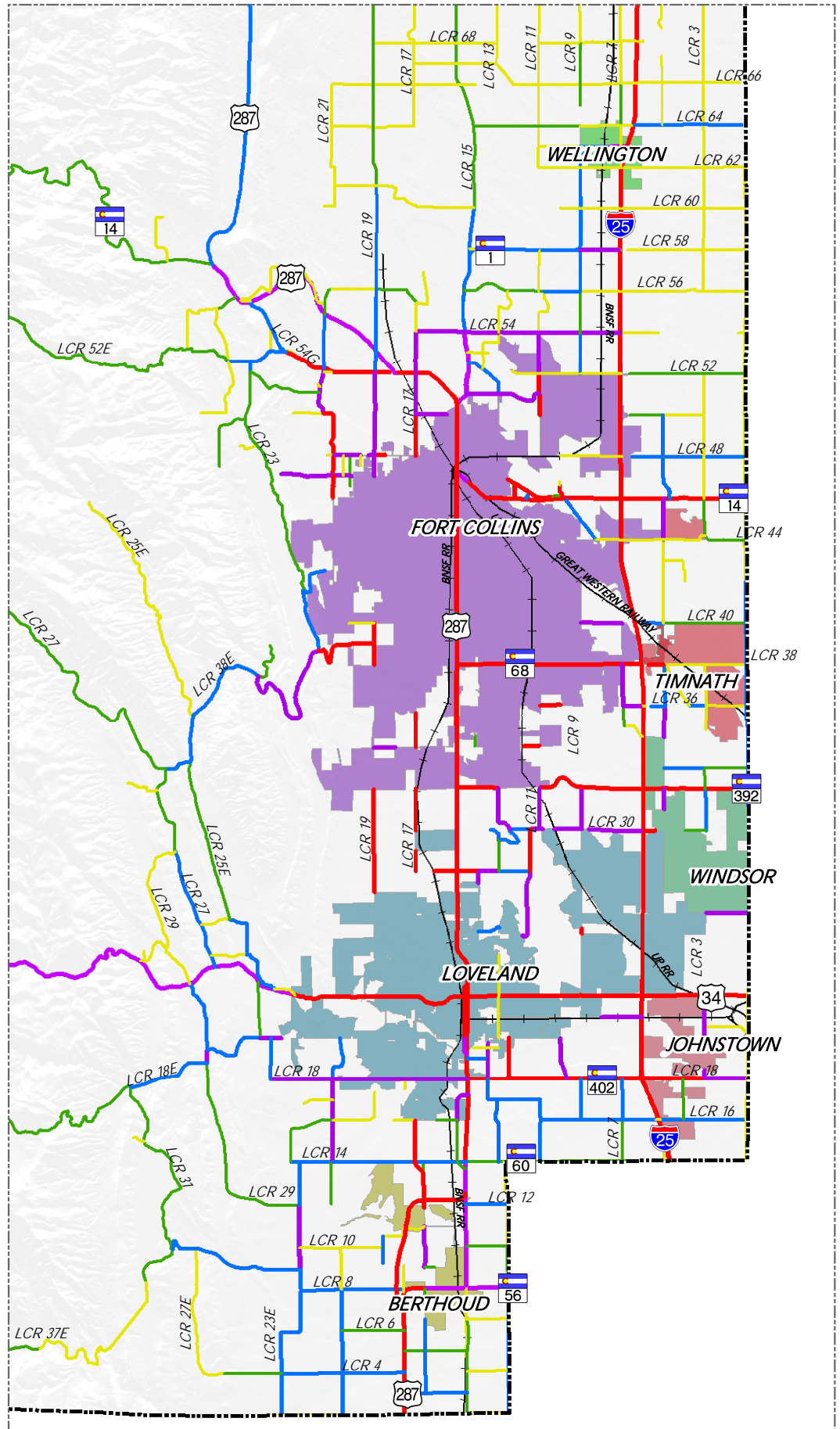
Existing Traffic Volumes





See Figure 6B
for Urban Area
2030 Traffic
Volume Forecasts

Figure 6A
2030 Traffic Volume Forecasts



Legend

2030 Volume Forecasts

- < 1,000
- 1,001 - 2,500
- 2,501 - 5,500
- 5,501 - 10,000
- > 10,000

Larimer County

Figure 6B

2030 Traffic Volume Forecasts



METHOD FOR CALCULATING ROAD IMPACT FEES

The proposed road impact fee methodology is based on a "demand-driven" model that basically charges a unit of new development the cost of providing the road capacity that it consumes on the County's Major Road System. That is, for every service unit of traffic generated by a new unit of development, the road impact fee charges the net cost to construct an additional service unit of capacity. Since travel is never evenly distributed throughout a road system, actual roadway systems require more than one VMC for every VMT in order to maintain the system-wide ratio of capacity to demand. In this system, the cost per VMC is multiplied by the system-wide ratio of VMC/VMT to determine cost per VMT. This is the approach used for Larimer County.

The formula for Larimer County's road impact fees is outlined below:

$$\begin{aligned} \text{FEE} &= \text{VMT} \times \text{NET COST/VMT} \\ \text{VMT} &= \text{TRIPS} \times \% \text{ NEW} \times \text{LENGTH}/2 \\ \text{NETCOST/VMT} &= \text{COST/VMT} - \text{CREDIT/VMT} \\ \text{COST/VMT} &= \text{COST/VMC} * \text{VMC/VMT} \\ \text{CREDIT/VMT} &= \text{DEFICIENCY CREDIT} + \text{REVENUE CREDIT} \\ \text{DEFICIENCY} &= \text{EXCESS VMT/TOTAL VMT} \times \text{COST/VMT} \end{aligned}$$

Where:

VMT = Vehicle-miles of travel placed on County's Roadway System during an average weekday.

TRIPS = Average daily trip ends

% NEW = Percent of trips that are primary trips, as opposed to pass-by or diverted-link trips.

LENGTH = Average length of a trip on County's Roadway System.

/2 = Avoids double-counting trips for origin and destination.

COST/VMC = Average cost to create a new vehicle-mile of capacity (VMC) based on planned improvements to County's Roadway System.

VMC/VMT = The system-wide ratio of capacity to demand in the major roadway system, which is the lower of the existing ratio or the ratio of new VMC to new VMT provided in the Roadway Plan.

REVENUE = Revenue credit per VMT, based on state/federal and local funding anticipated to be available for capacity-expanding improvements to County's Roadway System.

EXCESS VMT = The sum of existing VMT on individual segments of the County's Roadway System that is in excess of existing capacity.

ROADWAY CAPACITY

A roadway's capacity is the maximum traffic volume that can be accommodated at desired levels of service. Capacity is defined differently for different roadway types, as described in the following sections. The Larimer County Roadway Plan provides additional detail on the assumptions used to develop these capacity thresholds.

Unpaved Roads

The Colorado Department of Public Health and Environment requires that any unpaved road carrying more than 200 vehicles per day be paved or treated for dust abatement. Larimer County's land use regulations require that gravel and chip-sealed roads with more than 400 vehicles per day be paved to a standard asphalt surface. Table 3 shows the effective roadway capacities for unpaved roads based on these requirements.

Table 3. Capacity Assumption for Unpaved Roads

	Capacity (Vehicles Per Day)
Unpaved – native ¹	200
Unpaved – treated gravel ²	400
Chip Seal ²	400
¹ Source: Colorado Air Quality Control Commission, Colorado Department of Public Health and Environment ² Source: Larimer County Land Use Regulations	

Paved Two-Lane Roads

Level of service (LOS) is commonly used to define the quality of traffic flow on various roadway types based on a comparison of traffic volumes with roadway characteristics. A LOS scale ranging from A to F is used to define the quality of flow, with LOS A representing an essentially free-flow situation and LOS F representing the highest levels of congestion, with traffic volumes exceeding the intended capacity of the roadway. Larimer County has established LOS guidelines for county roads, which are LOS D or better in urban areas and LOS C or better in rural areas.

The nationally accepted source for highway capacity evaluations, the Highway Capacity Manual (Transportation Research Board, 2000), along with typical traffic flow characteristics, have been used to approximate the maximum daily traffic volumes for two-lane roads to achieve the County's criteria of LOS D in urban areas and LOS C in rural areas. The Larimer County Roadway Plan provides additional detail about the assumptions and methods used for LOS analyses. Table 4 provides the resulting daily capacities for two-lane paved roads based on lane and shoulder widths.

Table 4. Daily Capacities of Paved Two-Lane Roads

	Useable Shoulder Width (feet)	12-Foot Lanes	11-Foot Lanes	10-Foot Lanes	9-Foot Lanes
Urban	6	15,300	14,700		
	4	13,100	12,300		
	2	10,700	10,000	7,700	
	0	7,700	6,600	4,600	3,700
Rural	6	10,000	9,500		
	4	8,500	8,000		
	2	7,000	6,400	5,000	
	0	5,000	4,200	3,000	2,400
Mountainous	6	8,300	7,600		
	4	7,100	6,400		
	2	5,800	5,100	4,100	
	0	4,100	3,400	2,400	1,900

Source: Highway Capacity Manual, 2000 for all urban level capacities as well as initial rural and mountainous values. Hand balancing was completed for segments with similar geometrics, and to reflect lower capacities for narrower shoulders in rural and mountainous areas.

Multi-Lane Roads

Capacities of roads with four lanes were estimated based on typical traffic flow characteristics and capacities per hour per lane that have been developed as part of the North Front Range travel demand model.

A three lane road is a road where the third lane serves as a continuous shared left-turn lane. This type of roadway improves traffic flow over a typical two-lane road by allowing turning vehicles to wait in dedicated turn lanes, out of the way of through traffic. **Table 5** shows the daily capacities for multi-lane roads.

Table 5. Daily Design Capacities for Multi-lane Roadways

Lanes	Urban (LOS D) ¹	Rural (LOS C)
3	23,000 ADT	15,400 ADT
4	32,000 ADT	24,500 ADT

Source: North Front Range Regional Travel Model, converted to daily assuming 9% of daily traffic in peak hour.
¹ Modified from NFR Regional Travel Model to reflect LOS D

Based on these techniques and the roadway inventory data, the capacity of each roadway segment is defined for the major roadway system in **Appendix A**.

CAPACITY ANALYSIS

Existing traffic volumes were compared with existing roadway capacities for each segment of the County’s Major Road System in order to identify over-capacity segments. For each over-capacity segment, the volume in excess of capacity was multiplied by the length of the segment to determine excess vehicle miles of travel (VMT). These were summed to determine excess VMT on a system-wide basis. As is summarized in **Table 6**, the excess travel demand is currently 4.9% on the Regional Road System and 4.2% on the Non-Regional Major Road System.

Table 6. Capacity Deficiencies on County’s Major Road System

	Regional Roads	Non-Regional Roads
Excess VMT	10,700	25,806
Total VMT	216,500	620,850
Percent Deficiency	4.9%	4.2%

To ensure that new development is not held to a higher standard than existing development, the impact fee calculation will be reduced by the system-wide deficiency percentages.

ROAD IMPROVEMENT NEEDS

The existing capacity for each roadway segment on the County's Major Road System was compared with forecasted traffic volumes to determine what improvements would be needed by the year 2030. The needed improvements to existing roads include the treating of native roads, paving of gravel roads, land and shoulder widening of two-lane roads, and additional lanes. See the Roadway Inventory in **Appendix A** for additional detail on the specific locations, types, timing, and improved capacity for these needed improvements. Relative to timing, roadway improvement needs are listed in the Roadway Inventory as being short-range or long-range needs, depending on whether the trigger for the improvement is based on current traffic levels or 2030 traffic forecasts.

In addition, city, town, county sub-area, and corridor transportation plans were reviewed to identify new roads that are planned in unincorporated parts of the county and whose needs are directly related to anticipated Larimer County development. Seven new roads were identified and are detailed in **Appendix B**.

The locations of these needed improvements, including both improvements to existing roads and new roads, are illustrated in **Figures 7A and 7B**.

Unit Cost Estimates

Generalized 2005 unit costs were developed for the different roadway improvement types identified in the plan. Urban roadway sections used to calculate quantities (per mile basis) were those shown in the *Larimer County Urban Area Street Standards*, adopted by Larimer County, Fort Collins and Loveland in 2002. Engineering design and construction management, mobilization and traffic control were included in each estimate. They were calculated based on a percentage of the estimated construction costs.

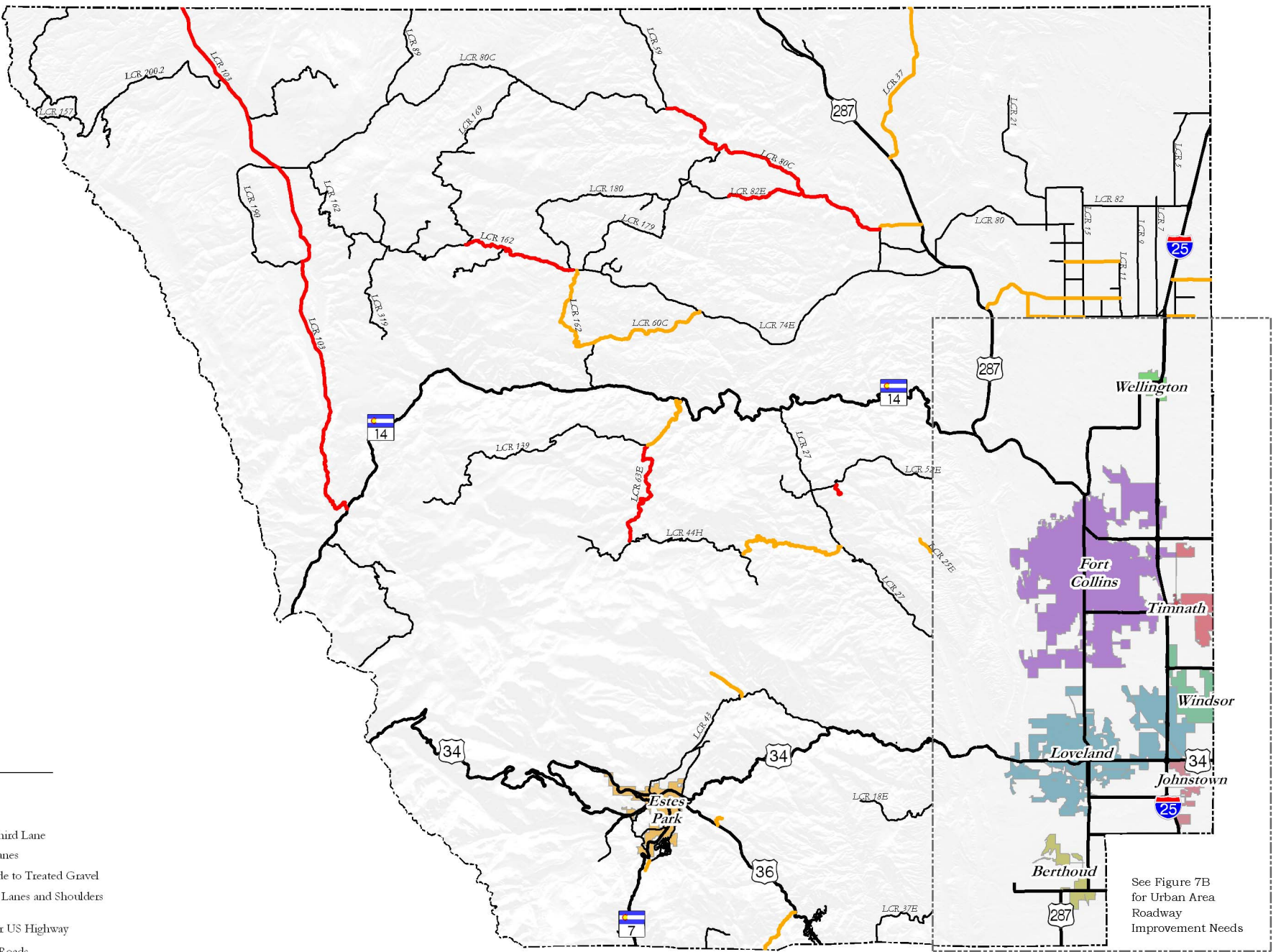
Unit costs were developed using recent bid tabulations in the Larimer County area. Validation of the unit costs was made by comparison with CDOT Average Unit Bid Prices (2004). Where no unit costs for items were included in the Larimer County values, CDOT Average Unit Bid Prices were used. Costs do not include right-of-way, landscaping or aesthetic upgrades, or major utility additions or relocation. All unit costs represent typical unit costs; actual construction costs will differ for specific roadways depending on topography, required structures, number of access points, and other roadway characteristics. The generalized unit cost estimates are summarized in **Table 7**.

Legend

- Pave
- Widen
- Add Third Lane
- Add Lanes
- Upgrade to Treated Gravel
- Widen Lanes and Shoulders
- State or US Highway
- Other Roads
- Larimer County



North



See Figure 7B
for Urban Area
Roadway
Improvement Needs

Figure 7A
2030 Roadway Improvement Needs

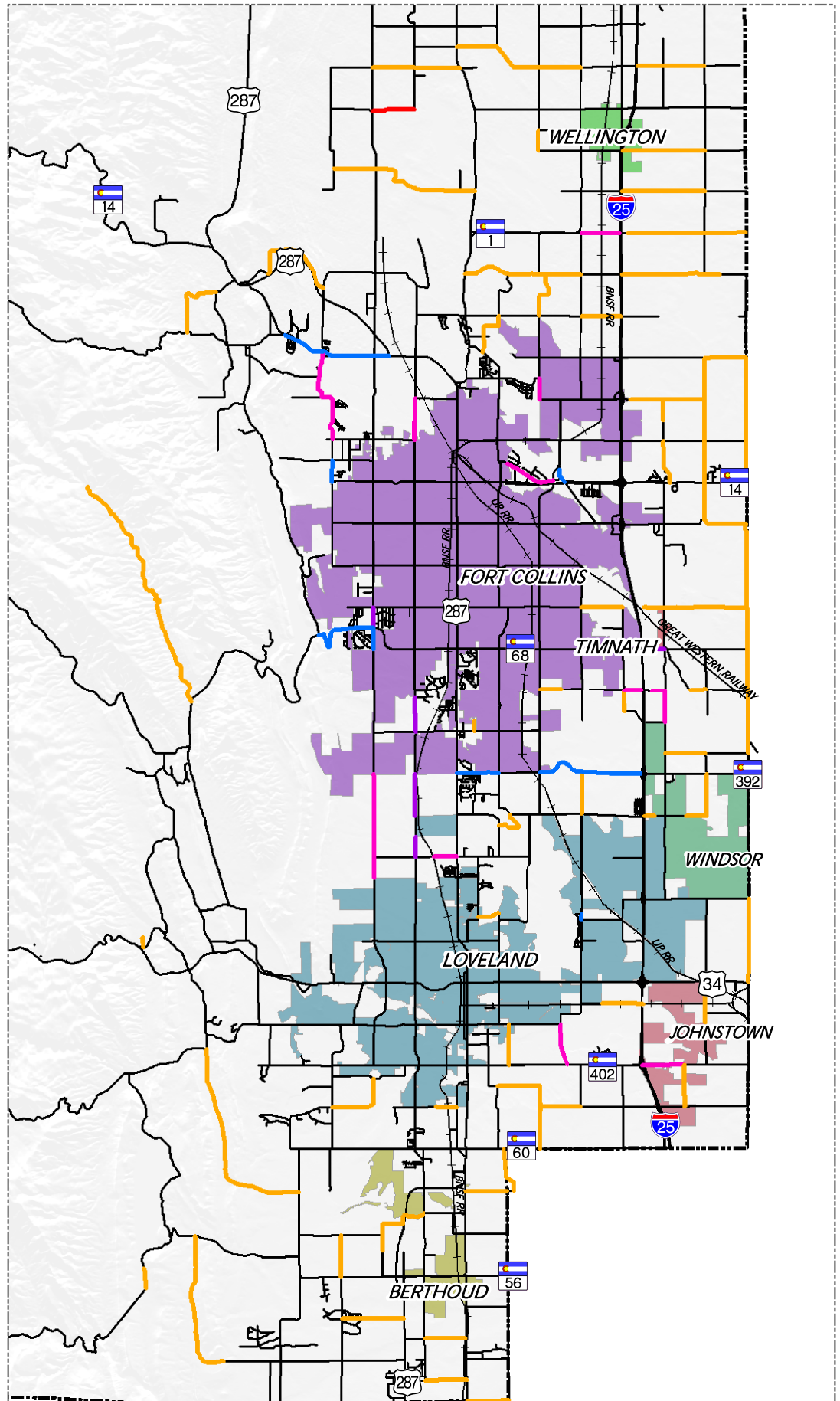


Figure 7B

2030 Roadway Improvement Needs



North

Table 7. Unit Cost Estimates (Per Mile)

Improvement Category	Area Type		
	Mountainous	Rural	Urban
Native to Treated Gravel	\$500,000	\$500,000	n/a
Lane and Shoulder Widening *	\$1,550,000	\$1,000,000	\$1,450,000
Pave Gravel Road	\$1,550,000	\$1,000,000	\$1,450,000
Construct New 2-Lane Road	\$2,350,000	\$1,850,000	n/a
Widening of 2-Lane to 3-Lane (semi-Urban) **	n/a	\$2,850,000	\$2,850,000
Upgrade to 4-Lane Urban Arterial **	n/a	n/a	\$5,100,000
* Applies to Widening of Existing 2-Lane Paved Roads ** Includes Typical Numbers of Traffic Signals COSTS EXCLUDE ALLOWANCE FOR: Right-of-Way Costs Landscaping/Aesthetic Upgrades Utility Addition/Relocation			

Improvement Cost Estimates

Applying unit costs listed in **Table 7** to road improvement needs specified in the Roadway Inventory and to new roads yielded estimated costs to improve the County's Major Roadway System. Improvement projects that are on the Regional Road System were identified and the remainder of improvements were identified as being on the Non-Regional Major Roadway System. **Table 8** provides a summary of the Regional Road Improvement Needs for the 24-year planning period to 2030, totaling \$55,399,000. **Table 9** provides a summary of the Non-Regional Major Road Improvement Needs, totaling \$247,530,000 for the 24-year planning horizon.

Table 8. Regional Road Improvement Needs

Improvement Type	# Of Projects	Project Mileage	Estimated Cost
Major Roads			
Paving (Current & Planned Major Roads)	1	1.0	\$1,006,000
Widen Lanes & Shoulder	10	11.2	\$14,919,000
Additional Lanes	12	9.5	\$39,474,000
Total	23	21.7	\$55,399,000

Table 9. Non-Regional Major Road Improvement Needs

Improvement Type	# Of Projects	Project Mileage	Estimated Cost
Major Roads			
Upgrade to Treated Gravel	13	64.8	\$32,382,000
Paving (Current & Planned Major Roads)	108	152.5	\$171,274,000
Widen Lanes & Shoulder	15	7.9	\$7,476,000
Additional Lanes	9	6.1	\$17,248,000
New Roads	7	10.4	\$19,150,000
Total	152	241.7	\$247,530,000

COST PER SERVICE UNIT

The average cost per vehicle-mile of capacity (VMC) is calculated by dividing the total cost of the identified capacity-expanding improvements by the additional roadway capacity created by the improvements. Dividing the total cost of all of the identified capacity-expanding improvements by the additional roadway capacity created by the improvements results in an average cost of \$300 per VMC for Regional Roads and \$159 for Non-Regional Roads (see **Table 10**).

Table 10. Cost Per New Service Unit

	Regional Roads	Non-Regional Roads
Total Road Improvement Cost, 2006-2030	\$55,399,000	\$247,530,000
New Vehicle Miles of Capacity (VMC)	184,900	1,554,643
Cost Per New VMC or VMT	\$300	\$159
Source: Major Roadway Inventory, Appendix A		

NET COST PER SERVICE UNIT

In order to determine the net cost per VMT for the road impact fee, it is necessary to consider three factors.

First, the cost per unit of new capacity must be multiplied by the system-wide ratio of capacity to demand to derive the cost per unit of additional demand. The system-wide ratios of VMC/VMT are presented in **Table 11** for both the existing ratios and the ratio for new capacity and new demand per the 2006 *Larimer County Transportation Plan*.

For Regional Roads, the new VMC/VMT ratio of 1.09 is the lower of the two ratios. It is also lower than the ratio calculated in the 1998 study, so it is the recommended ratio for the Regional Road CEF.

For the County Road System, the ratios for current capacity and demand and for 2006 to 2030 growth are 3.84 and 2.44, respectively. Since the 1.64 ratio that was calculated in the 1998 study, and that is currently being using in the County CEF, is lower than the newly calculated factors, it is recommended that the lower 1.64 factor continue to be used for the Non-Regional Road System.

Table 11. System-Wide Capacity/Demand Ratios

	Regional Roads	Non-Regional Roads
New VMC (per 1998 study)	310,070	771,406
New VMT (per 1998 study)	195,179	469,435
New VMC/VMT (per 1998 study)	1.59	1.64
2006 VMC	322,500	2,425,219
2006 VMT	216,518	631,064
2006 VMC/VMT	1.49	3.84
New VMC, 2006-2030	184,857	1,554,643
New VMT, 2006-2030	170,175	638,336
New VMC/New VMT	1.09	2.44
Recommended Ratios	1.09	1.64

Next, the unit cost per VMC or VMT is reduced by the percent of current excess VMT, to eliminate from the fee calculations the portion of improvement costs that can be attributed to existing deficiencies. This adjustment is required by Colorado law. The resulting deficiency credits are shown in **Table 12**.

Table 12. Deficiency Credit

	Regional Roads	Non-Regional Roads
Cost per VMT	\$300	\$159
Percent Existing Deficiencies	4.9%	\$4.2%
Source: Cost Per VMT from Table 10 . Percent Deficiencies from Table 6 .		

For the final adjustment factor, the cost per VMC is reduced by the appropriate revenue credits to determine the net cost per VMT. Revenue credits are appropriate if there is outstanding debt for past road improvements, or if there are dedicated or historical local sources of capital funding for road improvements, or if outside funding can reasonably be anticipated for such improvements. Revenue credits are necessary to ensure that the CEF does not charge for the portion of road improvement costs that the county has historically funded, and can be anticipated to continue to fund, from other sources.

State and federal funding of roadway improvements in Larimer County has historically been limited to the state and U.S. highway systems and this is not anticipated to change, so no credit for outside funding of county road improvements is appropriate.

Larimer County's policy has been to allocate approximately \$2 million annually of the County Road and Bridge Fund to capacity enhancing improvements to the County's Major Roadway System, with the remainder going to fund maintenance of the existing system. The \$2 million annual spending is anticipated to continue in the future and a credit for this spending should be applied to the capital expansion fees to avoid double charging of development. As shown in **Table 13**, this annual spending amounts to \$0.73 annual spending per VMC. Calculating the net present value of this spending over the 24 year planning horizon between 2006 and 2030 yields a net present value of \$11/VMC for this local funding credit.

Table 13. Local Funding Credit Per VMC

Annual County Road and Bridge Fund Spending for Road Capacity Expansion	\$2,000,000
Daily VMC (Regional and Non-Regional County Major Road System)	2,747,719
Annual County Road and Bridge Fund Spending per VMC	\$0.73
County Road and Bridge Fund Credit/VMC (Net Present Value factor, 24 years @ 4.5%)	\$11
Sources: Larimer County policy to allocate approximately \$2,000,000 annually of Road and Bridge Fund to road capacity expansion projects; VMC per Roadway Inventory.	

Road Capital Expansion Fee Study

The net cost calculations are summarized in **Table 14**. The costs per VMT are reduced by the amount of credits per VMT for deficiencies and local funding of capacity expansion. The resulting net costs per VMT are the net costs per service unit for the Regional Road and Non-Regional Road Systems.

Table 14. Net Cost per Service Unit

	Regional Roads	Non-Regional Roads
Cost per VMC	\$300	\$159
VMC/VMT Ratio	1.09	1.64
Cost per VMT	\$327	\$261
Deficiency Percent	(4.9%)	(4.2%)
Deficiency Credit	(\$16)	(\$11)
Local Funding Credit Per VMT	(\$11)	(\$11)
Net Cost Per VMT	\$300	\$239
Source: Costs per VMT from Table 10 . Deficiency credit from Table 12 . Local funding credit from Table 13 .		

TRAVEL DEMAND FACTORS

The travel demand generated by specific land use types is a product of three factors: (1) trip generation rates; (2) the percent of primary trips generated and 3) trip length. The first two factors (trip generation rates and the percent of primary trips), which are characterized in this Study as “primary trips,” are well documented in the professional literature and the trip generation characteristics identified in studies of communities around the nation. Data from these sources can be used and are reasonably representative of “primary trips” in Larimer County. In contrast, trip lengths are much more likely to vary between communities, depending on the geographic size and shape of the community and its road system, and its location in relation to other cities and towns in a metropolitan area. Additionally, the transportation literature generally recognizes variation in trip length between residential and nonresidential uses, and between some types of nonresidential uses.

Primary Trips

As is discussed above, primary trips consist of trip generation rates and the percent of primary trips generated by the land use. The trip generation rates by specific land use types used in this Study are based on the best available trip generation rate data, information published in the most recent edition of the *Institute of Transportation Engineers' Trip Generation Manual (7th edition 2003)*. Trip generation rates represent trip ends, or driveway crossings at the site of a land use. Thus, a one-way trip from home to work counts as one trip end for the residence and one trip end for the work place. Consequently, to avoid over-counting in the road impact fee calculation, all trip rates are divided by two. This eliminates double-charging for any particular trip.

Trip rates also need to be adjusted by a "percent primary trips" factor to exclude pass-by and diverted trips. Pass-by trips are trips that are already on a particular route for a different purpose and simply stop along the route at a specific land use. For example, a person's stop at a convenience store on the way home from the office is a pass-by trip for the convenience store. A diverted trip is similar to a pass-by trip, but a diversion is made from the regular route to make an interim stop (For example, a person's decision to divert the trip home from work by an extra mile to stop at a shopping center). The “percent primary trips” factor, or adjustment, is intended to reduce the possibility of over-counting pass-by and diverted trips by only including primary trips generated by a land use type. The reduction for pass-by and diverted trips was drawn from the ITE *Trip Generation* manual and other relevant published information from across the country.

The primary trips generated by each land use type in Larimer County are presented in **Table 15**. Primary trips are based on trip generation rates and primary trip percentages.

Table 15. Primary Trips by Land Use Type

Land Use Type	Unit	Daily Trips	Percent Primary	Primary Trips
Residential				
Single-Family Detached	Dwelling	4.79	100%	4.79
Multi-Family	Dwelling	3.36	100%	3.36
Mobile Home Park	Site	2.5	100%	2.5
Hotel/Motel	Room	4.46	100%	4.46
Retail/Commercial				
Shop Ctr/Gen Retail < 100,000 sf	1000 sq. ft.	33.96	61%	20.72
Shop Ctr/Gen Retail < 500,000 sf	1000 sq. ft.	19.33	76%	14.69
Shop Ctr/Gen Retail < 1 million sf+	1000 sq. ft.	15.17	80%	12.14
Shop Ctr/Gen Retail 1 million sf+	1000 sq. ft.	11.9	82%	9.76
Auto Sales	1000 sq. ft.	21.14	49%	10.36
Auto Service/Repair/Tire Store	1000 sq. ft.	12.44	51%	6.34
Bank	1000 sq. ft.	123.2	27%	33.26
Bldg Materials/Hardware/Nursery	1000 sq. ft.	16.06	90%	14.45
Convenience Store	1000 sq. ft.	369	23%	84.87
Discount Store	1000 sq. ft.	20.9	50%	10.45
Furniture Store	1000 sq. ft.	2.53	90%	2.28
Movie Theater	1000 sq. ft.	39.03	90%	35.13
Restaurant, Fast Food	1000 sq. ft.	248.06	20%	49.61
Restaurant, Sit-Down	1000 sq. ft.	44.98	38%	17.09
Office/Institutional				
Office, General < 100,000 sf	1000 sq. ft.	6.67	100%	6.67
Office, General < 200,000 sf	1000 sq. ft.	5.69	100%	5.69
Office, General < 200,000 sf +	1000 sq. ft.	5.18	100%	5.18
Office, Medical	1000 sq. ft.	18.07	100%	18.07
Hospital	1000 sq. ft.	8.79	100%	8.79
Nursing Home	1000 sq. ft.	3.1	100%	3.10
Church/Synagogue	1000 sq. ft.	4.56	100%	4.56
Day Care Center	1000 sq. ft.	39.63	24%	9.51
Elementary/Secondary School	1000 sq. ft.	7.25	50%	3.63
Industrial				
Industrial Park	1000 sq. ft.	3.48	100%	3.48
Warehouse	1000 sq. ft.	2.48	100%	2.48
Mini-Warehouse	1000 sq. ft.	1.25	100%	1.25
Source: "Daily trips" is ½ trip ends during a weekday. ITE, <i>Trip Generation</i> , 7 th ed., 2003; shopping center and general office rates based on upper end of range; percent primary trips for shopping centers, banks, restaurants and convenience stores from ITE, <i>Trip Generation Handbook</i> , 2004; percentage for day care center from paper by Hitchens, 1990 ITE Compendium; percentages for auto uses from O&D studies in Orange County, Florida; percentages for other land uses assumed.				

Trip Lengths

Measuring average trip length on the County's Major Roadway Systems is the most challenging travel demand factor to determine, since it is based on local data and excludes travel on all roadways that are not part of either system. The approach used to estimate trip length for Larimer County includes the following estimates.

First, the existing VMTs on the County's Regional and Non-Regional Major Roadway Systems were tabulated based on information contained in the Road Inventory. These figures are shown in **Table 16**.

Traffic that is passing through an assessment area without an origin or destination in the area should not be counted in determining average trip length, so the second step is to estimate the proportion of the VMT that can be attributed to pass-through traffic. Estimates were made by performing "select link analyses" using the North Front Range travel forecasting model. Select link analysis is a tool that provides information on the location of the origin and destination of trips in the model.

A segment of each of the Regional Roads was selected to determine the proportion of trips that have neither an origin nor a destination in the Regional Road benefit district, which includes unincorporated Larimer County and Fort Collins. This analysis showed that, on average, 12% of trips on Regional Roads are pass-through trips and 88% have an origin and/or a destination in the benefit district. Thus 88% is the percent non-pass-through estimate used in **Table 16** for Regional Roads.

For Non-Regional Roads, the benefit district is only unincorporated Larimer County. Select link analyses were performed on a sampling of the Non-Regional Roads in the North Front Range modeling area. This analysis showed that only one percent of Non-Regional Road traffic is pass-through and 99% have an origin and/or destination in the unincorporated part of the County.

The final elements to the trip length calculations are the numbers of trips. Numbers of trips were taken from the 2005 North Front Range regional model daily trip generation estimates for the assessment areas, again consisting of the unincorporated County and Fort Collins for the Regional Roads and only the unincorporated County for the Non-Regional Roads.

Finally, the VMT is divided by the number of trips to calculate the average trip lengths for the Regional Roads and Non-Regional Roads. Particularly in the case of Regional Roads, the average trip length estimate is very short. The short trip length of 0.18 miles is reasonable considering that it represents the average length of all trips in the unincorporated County and Fort Collins that occurs only on the eleven road segments that comprise the Regional Road system.

Table 16. Average Trip Length on Larimer County Major Road System Across All Land Uses

	Regional Roads	Non-Regional Roads
Existing Total Daily Vehicle Miles of Travel (VMT)	216,500	631,000
Percent Non-Pass-Through Traffic	88%	99%
Non-Pass Through VMT	190,520	624,690
Daily Trips from existing units in County Benefit Areas	1,079,103	274,993
Average Trip Length	0.18 miles	2.27 miles
Source: Existing VMT from Major Roadway Inventory, Appendix A . Percent pass-through traffic conservative estimates based on professional judgment of Felsburg Holt & Ullevig. Daily trips from existing units in Benefit Area from Major Roadway Inventory, Appendix A .		

The average trip lengths calculated in **Table 16** represent the average for all types of trips to and from all land use types. National and local survey data show, however, that trip lengths vary by purposes of trips. For example home-work commuting trips tend to be longer trips while shopping trips tend to be shorter. Data from the 2001 *North Front Range MPO Regional Household Travel Survey* provided a foundation for estimation of the variation of trip lengths generated by different land use types. The data provide average lengths, measured in travel time, for the six types of trips shown on the upper half of **Table 17**. An applicable mix of the different trip types was applied to each of the general land use categories for the fee schedule. The bottom half of **Table 17** shows the resulting variation in trip lengths generated by various land uses compared with the average trip times. These variations in trip times were assumed to roughly correspond to trip lengths measured in miles. The variations were then applied to the 0.18 mile and 2.27 mile average trip lengths to derive the land use-specific trip lengths used in **Table 18** and **Table 19** fee schedules.

Table 17. Trip Length Variation by Land Use Type

Trip Type	Mean Minutes per Trip	% of All Trips	
Home Based Work	23.06	19.3%	
Home Based Shopping	16.12	18.9%	
Home Based University	17.48	4.4%	
Home Based Other	18.53	36.7%	
Work Based Other	19.7	6.7%	
Other Based Other	15.88	14.0%	
All Trips	18.64	100.0%	

Source: North Front Range MPO Regional Household Travel Survey, 2001

Land Use	Applicable Trip Types	Weighted Average	% of Avg. Length (% of 18.64 minutes)
Residential	HBW,HBS, HBU, HBO	19.0	102%
Retail	HBS	16.1	86%
Office, Industrial	HBW, WBO	22.2	119%
Medical Office, Hospital, Nursing Home, Church, Day Care, School	HBO,WBO,OBO	18.0	97%

Vehicle Miles of Travel

The result of combining primary trip generation rates and average trip lengths is the daily vehicle-miles of travel (VMT) generated by various land use types per unit of development.

FEES

Based on average travel demand by land use and the net cost per service unit, the net costs to accommodate additional travel demand on Larimer County's Regional Road System and Non-Regional Road System at the existing level of service per unit of development are shown in **Tables 18** and **19**. The road impact fee regulation will contain a provision allowing the feepayer to conduct an independent fee determination study if the feepayer believes the feepayer's proposed development will have less impact on the need for road facilities than that indicated in the fee tables. The County could adopt road impact fees at any percent up to 100 percent of the full net cost calculated in this report

Table 18. Net Cost by Land Use Type Regional Roads

Land Use Type	Unit	Primary Trips	Avg. Trip Length	Daily VMT	Net Cost/VMT	Fee/Unit
Single-Family Detached	Dwelling	4.79	0.18	0.86	\$300	\$258
Multi-Family	Dwelling	3.36	0.18	0.6	\$300	\$180
Mobile Home Park	Site	2.5	0.18	0.45	\$300	\$135
Hotel/Motel	Room	4.46	0.18	0.8	\$300	\$240
Retail/Commercial						
Shop Ctr/Gen Retail <100,000 sf	1000 sq. ft.	20.72	0.15	3.11	\$300	\$933
Shop Ctr/Gen Retail <500,000 sf	1000 sq. ft.	14.69	0.15	2.2	\$300	\$660
Shop Ctr/Gen Retail <1 million sf	1000 sq. ft.	12.14	0.15	1.82	\$300	\$546
Shop Ctr/Gen Retail 1 million sf+	1000 sq. ft.	9.76	0.15	1.46	\$300	\$438
Auto Sales	1000 sq. ft.	10.36	0.15	1.55	\$300	\$465
Auto Service/Repair/Tire Store	1000 sq. ft.	6.34	0.15	0.95	\$300	\$285
Bank	1000 sq. ft.	33.26	0.15	4.99	\$300	\$1,497
Bldg Materials/Hardware/Nursery	1000 sq. ft.	14.45	0.15	2.17	\$300	\$651
Convenience Store	1000 sq. ft.	84.87	0.15	12.73	\$300	\$3,819
Discount Store	1000 sq. ft.	10.45	0.15	1.57	\$300	\$471
Furniture Store	1000 sq. ft.	2.28	0.15	0.34	\$300	\$102
Movie Theater	1000 sq. ft.	35.13	0.15	5.27	\$300	\$1,581
Restaurant, Fast Food	1000 sq. ft.	49.61	0.15	7.44	\$300	\$2,232
Restaurant, Sit-Down	1000 sq. ft.	17.09	0.15	2.56	\$300	\$768
Office/Institutional						
Office, General <100,000 sf	1000 sq. ft.	6.67	0.21	1.4	\$300	\$420
Office, General <200,000 sf	1000 sq. ft.	5.69	0.21	1.19	\$300	\$357
Office, General <200,000 sf+	1000 sq. ft.	5.18	0.21	1.09	\$300	\$327
Office, Medical	1000 sq. ft.	18.07	0.17	3.07	\$300	\$921
Hospital	1000 sq. ft.	8.79	0.17	1.49	\$300	\$447
Nursing Home	1000 sq. ft.	3.10	0.17	0.53	\$300	\$159
Church/Synagogue	1000 sq. ft.	4.56	0.17	0.78	\$300	\$234
Day Care Center	1000 sq. ft.	9.51	0.17	1.62	\$300	\$486
Elementary/Secondary School	1000 sq. ft.	3.63	0.17	0.62	\$300	\$186
Industrial						
General Light Industrial	1000 sq. ft.	3.48	0.21	0.73	\$300	\$219
Warehouse	1000 sq. ft.	2.48	0.21	0.52	\$300	\$156
Mini-Warehouse	1000 sq. ft.	1.25	0.21	0.26	\$300	\$78

Road Capital Expansion Fee Study

Table 19. Net Cost by Land Use Type Non-Regional Roads

Land Use Type	Unit	Primary Trips	Avg. Trip Length	Daily VMT	Net Cost/VMT	Fee/Unit
Single-Family Detached	Dwelling	4.79	2.32	11.11	\$239	\$2,655
Multi-Family	Dwelling	3.36	2.32	7.8	\$239	\$1,864
Mobile Home Park	Site	2.5	2.32	5.8	\$239	\$1,386
Hotel/Motel	Room	4.46	2.32	10.35	\$239	\$2,474
Retail/Commercial						
Shop Ctr/Gen Retail <100,000 sf	1000 sq. ft.	20.72	1.95	40.4	\$239	\$9,656
Shop Ctr/Gen Retail <500,000 sf	1000 sq. ft.	14.69	1.95	28.65	\$239	\$6,847
Shop Ctr/Gen Retail <1 million sf	1000 sq. ft.	12.14	1.95	23.67	\$239	\$5,657
Shop Ctr/Gen Retail 1 million sf+	1000 sq. ft.	9.76	1.95	19.03	\$239	\$4,548
Auto Sales	1000 sq. ft.	10.36	1.95	20.2	\$239	\$4,828
Auto Service/Repair/Tire Store	1000 sq. ft.	6.34	1.95	12.37	\$239	\$2,956
Bank	1000 sq. ft.	33.26	1.95	64.86	\$239	\$15,502
Bldg Materials/Hardware/Nursery	1000 sq. ft.	14.45	1.95	28.19	\$239	\$6,737
Convenience Store	1000 sq. ft.	84.87	1.95	165.5	\$239	\$39,555
Discount Store	1000 sq. ft.	10.45	1.95	20.38	\$239	\$4,871
Furniture Store	1000 sq. ft.	2.28	1.95	4.44	\$239	\$1,061
Movie Theater	1000 sq. ft.	35.13	1.95	68.5	\$239	\$16,372
Restaurant, Fast Food	1000 sq. ft.	49.61	1.95	96.74	\$239	\$23,121
Restaurant, Sit-Down	1000 sq. ft.	17.09	1.95	33.33	\$239	\$7,966
Office/Institutional						
Office, General <100,000 sf	1000 sq. ft.	6.67	2.7	18.01	\$239	\$4,304
Office, General <200,000 sf	1000 sq. ft.	5.69	2.7	15.36	\$239	\$3,671
Office, General <200,000 sf+	1000 sq. ft.	5.18	2.7	13.99	\$239	\$3,344
Office, Medical	1000 sq. ft.	18.07	2.2	39.75	\$239	\$9,500
Hospital	1000 sq. ft.	8.79	2.2	19.34	\$239	\$4,622
Nursing Home	1000 sq. ft.	3.1	2.2	6.82	\$239	\$1,630
Church/Synagogue	1000 sq. ft.	4.56	2.2	10.03	\$239	\$2,397
Day Care Center	1000 sq. ft.	9.5112	2.2	20.92	\$239	\$5,000
Elementary/Secondary School	1000 sq. ft.	3.625	2.2	7.98	\$239	\$1,907
Industrial						
General Light Industrial	1000 sq. ft.	3.48	2.7	9.4	\$239	\$2,247
Warehouse	1000 sq. ft.	2.48	2.7	6.7	\$239	\$1,601
Mini-Warehouse	1000 sq. ft.	1.25	2.7	3.38	\$239	\$808



Road Capital Expansion Fee Study

APPENDIX A ROADWAY INVENTORY

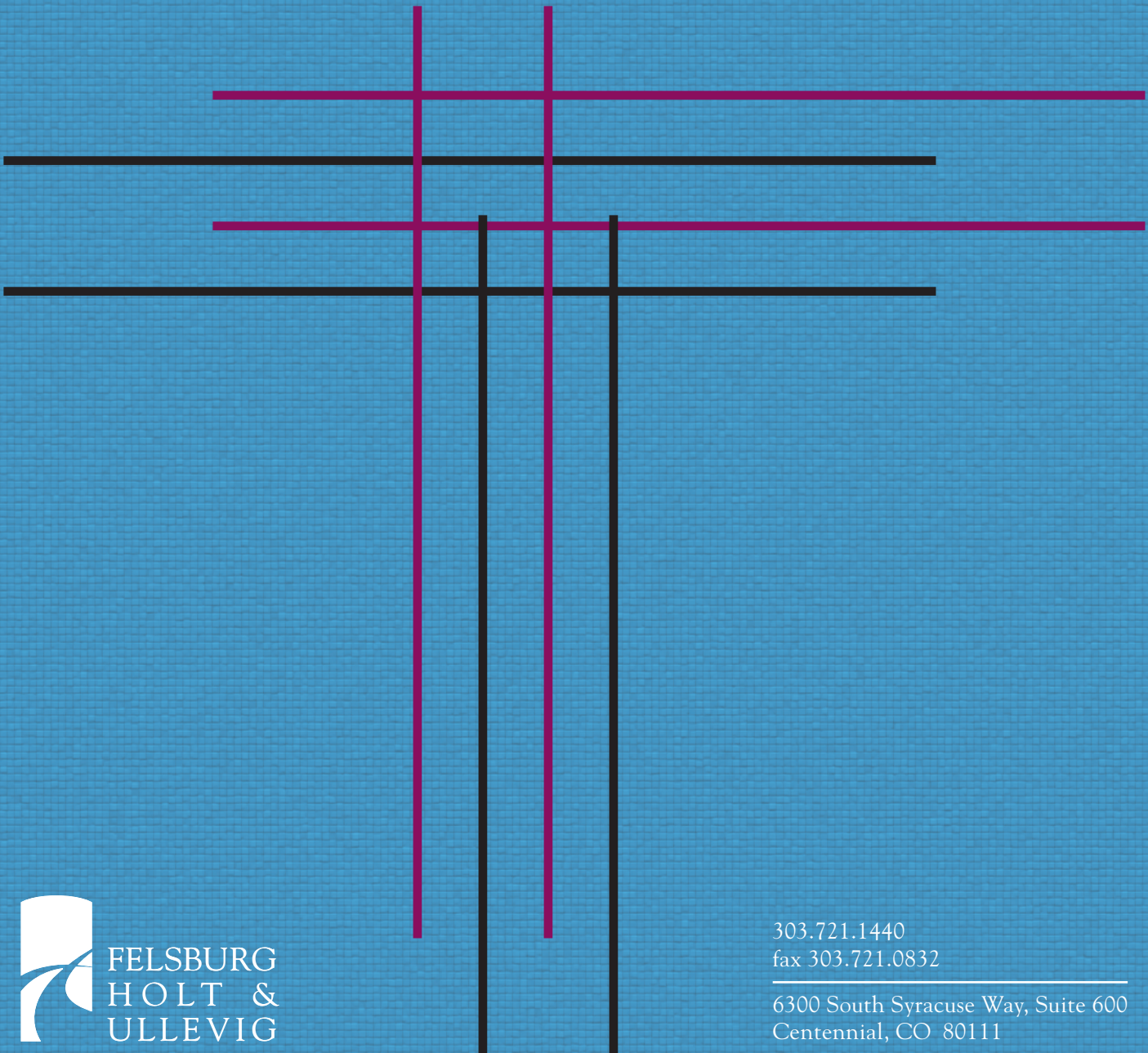
APPENDIX A - ROAD INVENTORY

Larimer County Road	Section	FROM	TO	Func Class	Juris.	UGA	Regional CR?	Area Type	ADT	Date	2030 ADT	Forecast Source	Length (MI)	Curr VMT	2030 VMT	Road Surface	Width (FT)	Lane QTY.	Shld Width	Capacity (VPD)	Current V/C	Short-Range Needs	Short Range Costs	Improved Capac (VPD)	2030 V/Existing Capacity	2030 V / C	2030 Needs	2030 Improved Capacity	Long Term Improvement Cost	
	901	US 34	CR 26	Minor Arterial	LCRB	NO	NO	R	602	2003	1,000	Growth Factor	2.01	1,209	1,984	Gravel	24	2	2	400	1.51	Pave	\$2,009,000	10,000	2.47	0.10		10,000		
	901	END CL	BEGIN CL	Minor Arterial	UN	NO	NO	R	2,915	2000	5,100	Growth Factor	0.75	2,186	3,789	Paved - High Type Bituminous	24	2	6	10,000	0.29			10,000	0.51	0.51		10,000		
	901	ABUT #1...	SH 392	Minor Arterial	WC	NO	NO	R	2,915	2000	5,100	Growth Factor	0.42	1,233	2,137	Paved - High Type Bituminous	24	2	4	8,500	0.34			8,500	0.59	0.59		8,500		
	901	SH 392	CR 32E / WCR 68 1/2	Minor Arterial	WC	NO	NO	R	229	2004	3,200	NFR Model	0.50	115	1,598	Paved - High Type Bituminous	24	2	4	8,500	0.03			8,500	0.38	0.38		8,500		
	901	CR 32E / WCR 68 1/2	WCR 78	Minor Arterial	WC	NO	NO	R	249	2005	3,200	NFR Model	4.51	1,123	14,256	Gravel	24	2	0	400	0.62			400	7.90	7.90	Pave	10,000	\$4,510,000	
	901	WELD C R 78	CR 44	Minor Arterial	LCRB	NO	NO	R	323	2003	550	Growth Factor	1.09	353	580	Paved - Low Type Bituminous	24	2	0	400	0.81			400	1.32	1.32	Pave	10,000	\$1,094,000	
	901	CR 44	SH 14	Minor Arterial	LCRB	NO	NO	R	288	2003	450	Growth Factor	1.01	290	475	Paved - High Type Bituminous	24	2	2	7,000	0.04			7,000	0.07	0.07		7,000		
	901	SH 14	CR 48	Major Collector	LCRB	NO	NO	R	359	2003	600	Growth Factor	1.01	361	592	Gravel	24	2	0	400	0.90			400	1.47	1.47	Pave	10,000	\$1,006,000	
	901	CR 48	CR 52	Major Collector	LCRB	NO	NO	R	292	2003	500	Growth Factor	2.01	588	965	Gravel	24	2	0	400	0.73			400	1.20	1.20	Pave	10,000	\$2,014,000	
	901	CR 52	CR 54	Major Collector	LCRB	NO	NO	R	208	2002	350	Growth Factor	1.00	207	346	Gravel	24	2	0	400	0.52			400	0.87	0.87		400		
	901	CR 54	CR 56	Major Collector	LCRB	NO	NO	R	118	2002	200	Growth Factor	1.00	118	198	Gravel	24	2	0	400	0.30			400	0.49	0.49		400		
	901	CR 56	CR 62	Major Collector	WC	NO	NO	R	40	2002	70	Growth Factor	3.00	120	200	Gravel	24	2	0	400	0.10			400	0.17	0.17		400		
LCR 904																														
	904	CR 905	CR 4	Major Collector	LCRB	NO	NO	R	1,909	2004	3,100	Growth Factor	1.00	1,909	3,075	Paved - High Type Bituminous	24	2	3	7,000	0.27			7,000	0.44	0.44		7,000		
	904	CR 4	CR 6C	Major Collector	LCRB	NO	NO	R	1,909	2004	3,100	Growth Factor	1.26	2,405	3,874	Paved - High Type Bituminous	24	2	3	7,000	0.27			7,000	0.44	0.44		7,000		
	904	CR 6C	SH 56	Major Collector	LCRB	NO	NO	R	2,030	2004	3,300	Growth Factor	0.74	1,502	2,419	Paved - High Type Bituminous	22	2	3	6,400	0.32			6,400	0.51	0.51		6,400		
	904	SH 56	CR 10	Minor Collector	LCRB	NO	NO	R	622	2004	1,000	Growth Factor	1.02	634	1,022	Paved - High Type Bituminous	22	2	3	6,400	0.10			6,400	0.16	0.16		6,400		
	904	CR 10	CR 12	Minor Collector	LCRB	NO	NO	R	215	2004	350	Growth Factor	1.01	217	350	Gravel	21	2	0	400	0.54			400	0.87	0.87		400		
	904	CR 12	SH 60	Minor Collector	LCRB	NO	NO	R	307	2004	500	Growth Factor	1.12	344	554	Gravel	22	2	0	400	0.77			400	1.24	1.24	Pave	10,000	\$1,120,000	
LCR 905																														
	905	GATE - BEGIN MAINT	CR 23E	Local Roads	LCRB	NO	NO	R			N/A		0.48			Gravel	22	2	0	400	0.00			400	0.00	0.00		400		
	905	CR 23E	CR 21	Minor Collector	LCRB	NO	NO	R	NA	0	N/A		1.53			Gravel	22	2	0											
	905	BOULDER C 145	CR 15	Major Collector	LCRB	NO	NO	R	303	2004	500	Growth Factor	0.48	145	234	Paved - High Type Bituminous	24	2	6	10,000	0.03			10,000	0.05	0.05		10,000		
	905	CR 15	CR 904	Minor Collector	LCRB	NO	NO	R	297	2004	500	Growth Factor	1.00	297	478	Gravel	24	2	0	400	0.74			400	1.20	1.20	Pave	10,000	\$1,000,000	
Larimer County Total													816.10	864,669	1,687,149															\$235,601,813 \$308,789,913

* = Represents 1/2 of Total Improvement Cost
 ** = Represents 3/4 of Total Improvement Cost

APPENDIX B NEW ROADS

Transportation Plan	Road	From/To	Length (Miles)	Road Type	Estimated Cost
Town of Wellington Transportation Master Street Plan	Ronald Reagan Ave.	0.25 miles west of CR 9 to 0.50 miles east of CR 9	0.75	Minor Collector	\$1,390,000
	Clinton Ave.	SH 1 to 0.50 miles east of CR 9	0.5	Minor Collector	\$925,000
1998 Larimer County Transportation Plan	CR 32	SH 287 to CR 19	2.0	Arterial	\$3,700,000
	CR 16	CR 15 to SH 287	0.1	Minor Collector	\$185,000
	CR 82	CR 15/82 to CR 80	1.5	Minor Collector	\$2,775,000
	CR 37E	CR 37E to CR 31	2.0	Minor Collector	\$3,700,000
North Front Range 2030 Regional Transportation Plan	CR 5	CR 20E to SH 60	3.5	Arterial	\$4,475,000
Total					\$19,150,000



FELSBURG
HOLT &
ULLEVIG

303.721.1440
fax 303.721.0832

6300 South Syracuse Way, Suite 600
Centennial, CO 80111