City of Evans Transportation Plan

March 2004

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

City of Evans COLORADO

City of Evans
Transportation Plan

Prepared for:

City of Evans
1100 37th Street
Evans, Colorado 80620

Prepared by:

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

Project Manager: Christopher R. Sheffer, P.E.

FHU Reference No. 02-240
March 2004

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

I. INTRODUCTION

As a prominent community in Weld County, Colorado, the City of Evans has experienced significant growth in a county that is already considered one of the fastest growing counties in Colorado. The recent economic vitality of the area also affects Evans by continuing to exert pressures to develop. The City of Evans is linked to larger neighboring communities such as Greeley, and is affected by the growth of these communities as well. As a smaller community of approximately 15,000, Evans provides a unique opportunity for a smaller town lifestyle. It is this character that draws many residents to Evans.

A. Purpose and Approach of the Plan

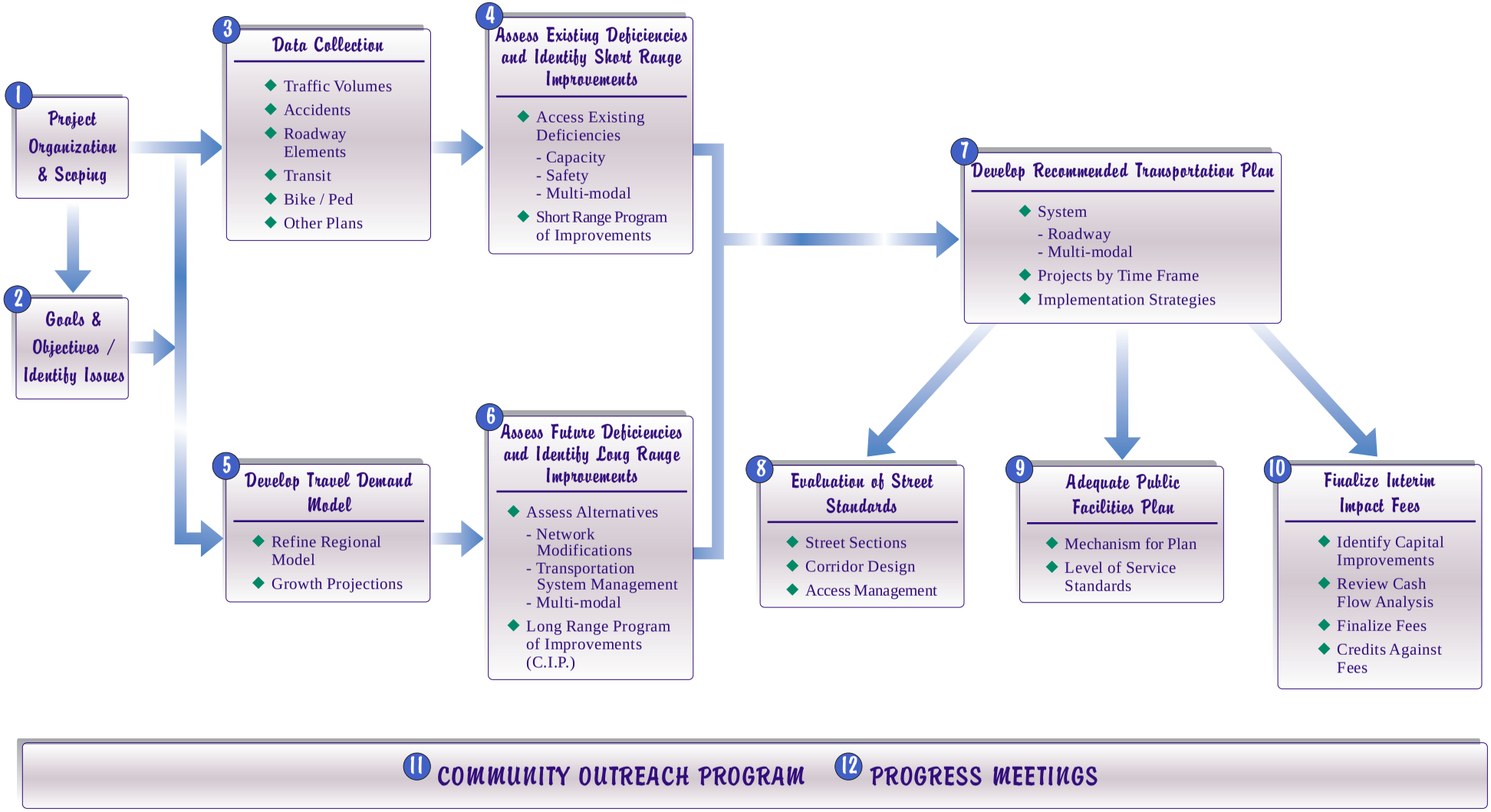
Transportation is a major component of community planning, and in response to the recent growth in the area, the City has chosen to update its Transportation Plan. This plan contains recommendations and guidelines for various areas of transportation planning. It contains a multi-modal network plan that is intended to accommodate projected growth through the year 2030, and it includes a list of projects that would be necessary to realize the plan. It also contains guidelines that would assist staff and policy makers in reviewing development and transportation improvements. It is also intended that this plan be flexible enough to accommodate future revisions and adjustments as conditions dictate.

The study for the Transportation Plan covers various elements of transportation including:

- Inventory of Existing Transportation Facilities
- Bicycle and Pedestrian Facilities
- Street Network and Street Typical Sections
- Access Management and Traffic Calming Guidelines
- Travel Demand for the Year 2030
- Adequate Public Facilities Plan (APFP)
- Traffic Impact Fees (separate report)

Figure 1 depicts a flow chart of the sequence of the major work items comprising the project approach.

CITY OF EVANS



02-240 9/29/03

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Figure 1

PROJECT APPROACH

B. Transportation Goals

Work sessions with staff, City Council, Planning Commission and the consultant were held to build and refine a set of transportation goals for this plan. Considerable thought and effort were put into developing the following Mission Statement and goals that accentuate the direction of this plan

Mission Statement: *Evans will have an efficient, safe transportation system that addresses current and future mobility needs, and balances dependency on the automobile with other means of travel, including transit, bicycle use and walking.*

City of Evans Transportation Plan Goals

1. **To Ensure that Adequate Transportation Facilities will Serve New Development by:**

    - Developing policies and guidelines for an Enhanced Adequate Public Facilities Plan
    - Developing a permanent Street Impact Fee Ordinance

2. **To Support a Variety of Transportation Choices by:**

    - Strengthening connectivity standards for sidewalks and bicycle lanes
    - Providing Traffic Calming guidelines
    - Establishing a Level of Service standard for pedestrian facilities
    - Continuing to provide transit service in Evans, focusing on efforts to provide regional transit

3. **To Develop a Network of Continuous and Direct Streets, Walkways, and Bicycle Lanes by:**

    - Evaluating Street Standards, and updating where applicable
    - Planning for a crossing of the South Platte River along 35th Avenue
    - Supporting 37th Street (CR 54) and Two Rivers Parkway as regional transportation corridors
    - Reserving right-of-way necessary for a planned continuous transportation system

4. **To Coordinate Long Range Land Use and Transportation Decisions by:**

   - Establishing a long term Transportation Improvements Program
   - Developing Access Management criteria for Arterials, Collectors and Local streets
   - Aggressively seeking appropriate sources of funding for transportation projects

C. Community Outreach Program

An essential part of the Transportation Plan has been public participation. The community outreach program solicited pubic input via various means. Two public open houses were held in conjunction with Business After Hours. Approximately 50 to 75 people were in attendance and had an opportunity to review Transportation Plan materials, ask questions, and make comments.

A booth with various exhibits was established during Evans Day at City Park. Along with the materials, the public was encouraged to fill out a short informal survey relating to transportation in the Evans area. Approximately 50 responses were received from a diverse cross section of residents. The following are some of the results of this survey:

Summary of Survey Results

How is Evans Traffic Congestion?

- Low congestion – 13 responses
- Medium congestion – 31 responses
- High congestion – 4 responses

Rating of the Importance of Transportation Modes in Evans

1. Automobile
2. Transit
3. Pedestrian
4. Bicycle

Important Evans Transportation Issues

Transit

- Bus stop at Ashcroft Heights
- Better bus service
- Bus service is needed in Evans until 10 p.m.
- Public transportation/bus routes

Traffic Signals

- "Timing" of traffic signals
- Traffic signals on US 85
- More traffic signals needed
- Traffic signal needed at 23rd Avenue/Anchor (34th Street)

Bicycles

- Bike lanes needed on streets
- More bike paths needed
- Roadway surfaces need improvement

Roadways

- Roadways with no shoulders

Pedestrians

- More walking trails needed
- More sidewalks

US 85

- Concerns about access
- More turn lanes needed
- Traffic signal operations at 31st and 37th Streets

In addition to public involvement, staff from neighboring communities were invited to specific progress meetings. Materials from work accomplished on the plan were distributed, with a focus on discussion of common transportation goals.

II. INVENTORY OF EXISTING CONDITIONS

In order to understand how transportation is provided to Evans residents, an inventory of the existing transportation system was conducted. This is an important part of the planning process since it becomes the starting point in identifying areas in need of improvement. Most of the data collected was provided by the City of Evans; however, supplemental traffic counts were recorded in areas such as those that have experienced high growth and areas that would be developed in the future.

Similar to other comparable cities, the Evans area transportation system is primarily focused on the automobile and, thus, the roadway system. Although the roadway system will be studied in detail, other transportation modes will be examined as an important part of a diversified transportation system. The following section includes data on these various modes of transportation.

A. Trails and Pedestrian Facilities

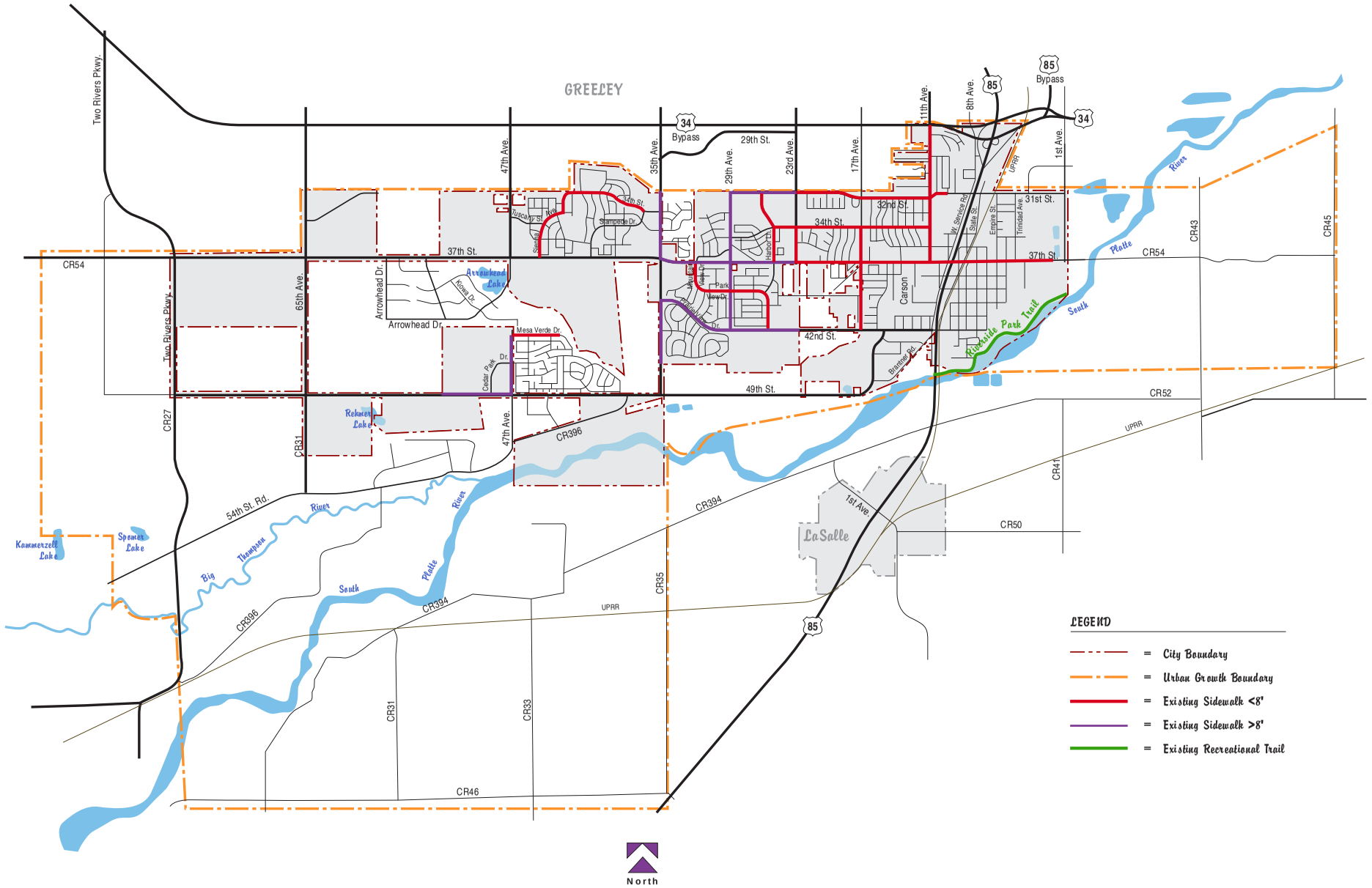
Both the City of Evans 2002 Comprehensive Plan and the Parks, Trails and Recreation Master Plan call for the development of a greenbelt system to create a recreational and commuting spine for the city that will also connect to regional trail systems. Today this envisioned trail system consists only of a segment in Riverside Park that runs southwest from the city limits to an underpass at US 85. Other planned trails include the following:

- The Evans Ditch trail which would run southwesterly from 31st Street to the Big Thompson River and west to connect to the future South Platte River Trail (American Discovery Trail).
- The Ashcroft Draw trail which would run south from 37th Street along the Ashcroft Draw to connect to the Evans Ditch trail.

In addition to existing and future trail systems, the City has been implementing a system of multi-use facilities for bicycle and pedestrian traffic. Multi-use facilities are detached sidewalks that are at least ten feet wide. With new development, the City has been requiring the construction of multi-use facilities along major arterials to accommodate both bicycle and pedestrian traffic. Figure 2 depicts the locations of multi-use facilities (10-foot sidewalks) and other sidewalks. In addition to the multi-use facilities, the city has a system of sidewalks that are generally attached and vary in width. These sidewalks generally exist in the older areas of Evans. Most arterial streets have this smaller width sidewalk. If this sidewalk system is to supplement the existing and future city trail systems, some of these sidewalks may need to be widened in order to effectively accommodate both bicycle and pedestrian traffic.

Generally in the older developed areas and in the rural areas of Evans sidewalks do not exist. Figure 3 illustrates areas and corridors where, in general, sidewalks do not exist or are not continuous. Sidewalk deficiencies can be found in the existing neighborhoods just east and west of US 85 and along the 37th and 49th Street corridors. It is possible that some of the sidewalk deficiencies, such as along the 37th and 49th Street corridors, could gradually be addressed as new development is constructed.

CITY OF EVANS



02-240 1/6/04

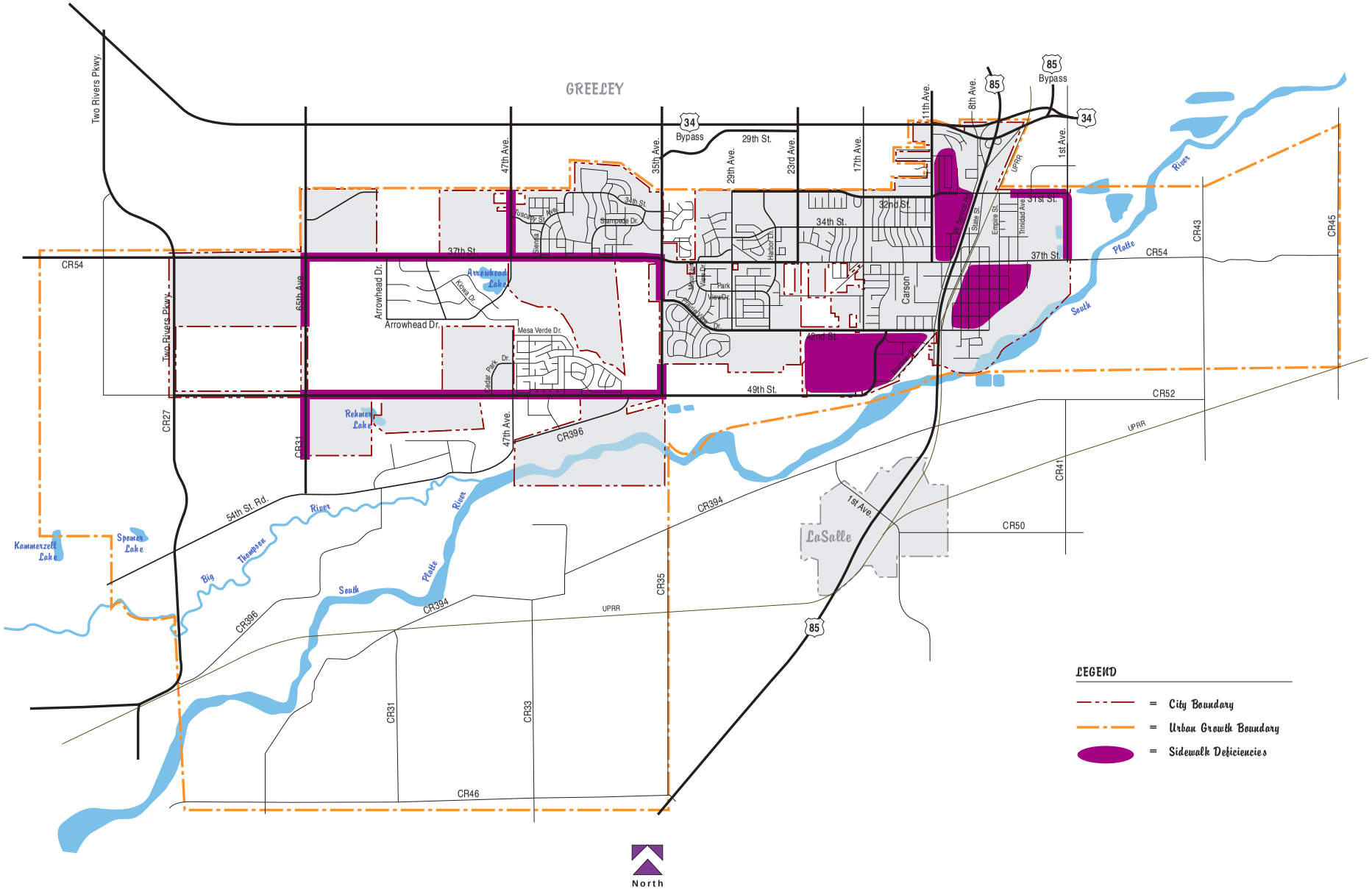
FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Figure 2

EXISTING SIDEWALKS

CITY OF EVANS



02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Figure 3

AREAS OF SIDEWALK DEFICIENCIES

B. Transit

Public Providers

Fixed route public transit is provided to Evans residents by The Bus. The Bus, which is based in Greeley, provides service on six routes; three of which provide service within the Evans city limits. Routes 2, 4 and 5 provide service to and from Evans to local destinations within the Evans/Greeley area from 6:45 a.m. to 6:45 p.m. on weekdays, and from 9:45 a.m. to 5:45 p.m. on Saturdays. The fixed route service is not available on Sundays or on seven national holidays. Demand response hours are Monday through Thursday 6:45 p.m. to 8:00 p.m.; Friday 6:45 p.m. to 9:00 p.m.; Saturday 5:45 p.m. to 9:00 p.m. Figure 4 depicts these routes through the Evans area.

The Bus operates on variable fares and also offers passes on a monthly and tri-monthly basis. The fare schedule is shown in Table 1. In the year 2001, approximately 83 percent of the operating budget for The Bus came from either the federal government or from the Greeley General Fund. The remaining 17 percent was obtained from the fares and from the City of Evans.

Table 1. The Bus Fare Schedule

Types	Fares (dollars)
Adult (19 years and over)	$1.00
Senior (60 years and over)	$0.50
Disabled	$0.50
Medicare Card Holders	$0.50
Youth (5 to 18 years)	$0.50
Children (4 years and under)	free
Transfers	free
Paratransit (individual)	$1.50

The bus maintains a fleet of 22 vehicles, of which 14 are buses and 8 are vans. Many of these buses are small to mid-size with seating capacities of 21 to 30 passengers

ParaTransit

The Bus provides paratransit services to ADA eligible special needs riders within ¾ of a mile of fixed routes.

Specialized Transportation Providers

Specialized transportation providers serve the needs of the elderly, people with disabilities, the developmentally disabled, nursing homes and social service agencies. Many of these also provide service to Evans/Greeley and include Centennial Developmental Services, and Bonnell Good Samaritan Center.

CITY OF EVANS

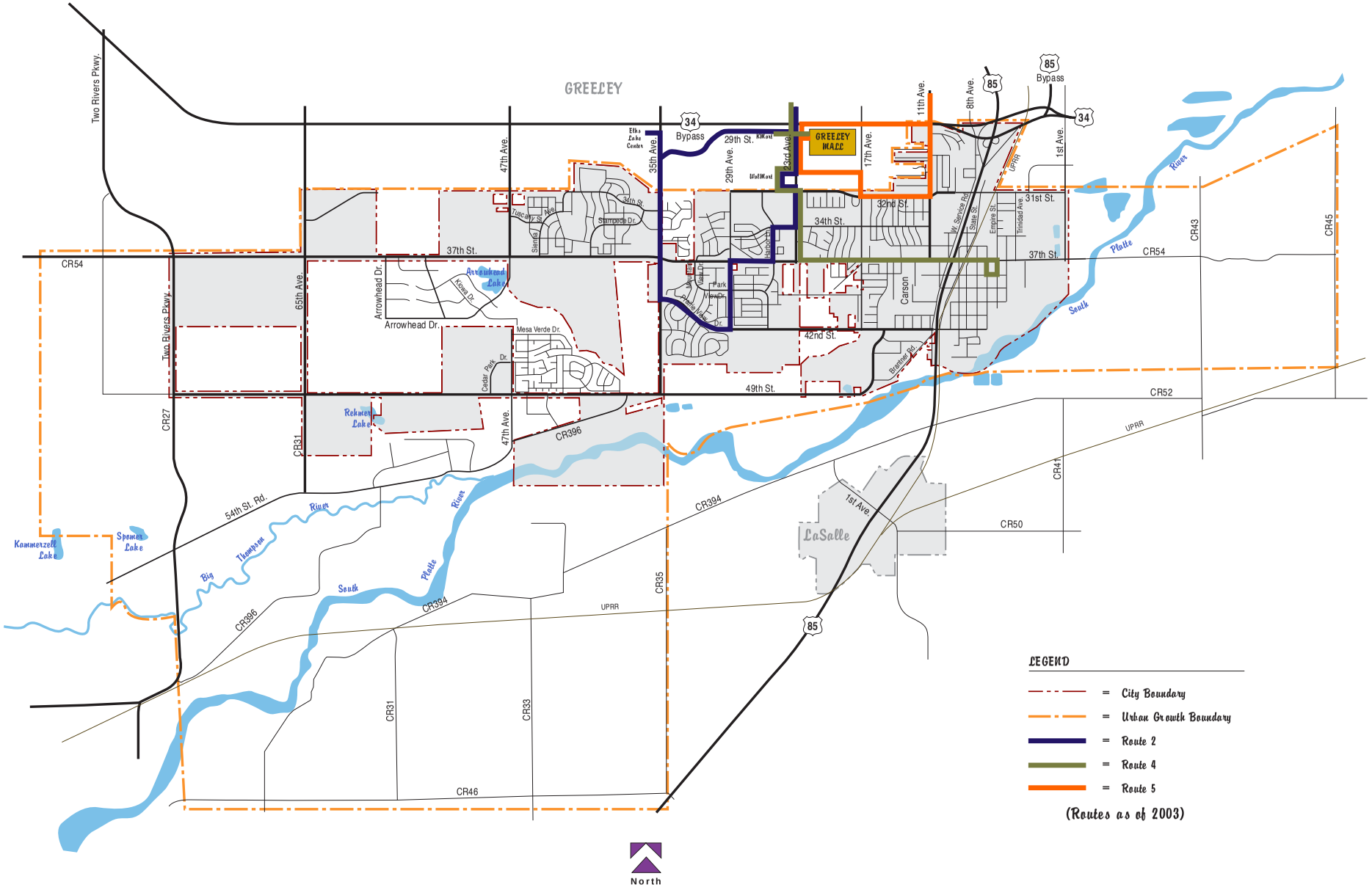


Figure 4

EXISTING TRANSIT ROUTES (THE BUS)

02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Commercial Transit

These providers are privately owned companies that provide chartered or fixed route service and include:

- Rocky Mountain Shuttle – service to and from DIA
- Shamrock Yellow Cab – taxi cab service
- Medi-Van – service for medical appointments (Medicaid trips)

VanGo

This is a service offered by SMARTTrips, an organization supported by the North Front Range Transportation and Air Quality Planning Council that promotes alternative transportation in northern Colorado. These vans provide regional service to communities in the North Front Range area as well as to Denver. Presently, two vans operate between Evans/Greeley and Fort Collins and five vans operate between Evans/Greeley and Denver.

C. Roadway Network

The following sections describe the physical characteristics and the use patterns of the roadway system. This inventory is based on information provided by the City of Evans, field work and traffic counts provided by All Traffic Data, Inc.

Functional Classification

Table 2 below provides a brief overview of the features and physical characteristics of each classification. The roadway functional types are more thoroughly described, in order of their ability to provide mobility, as follows:

Table 2. Functional Classification

Roadway Classification	Function	General Features	Examples
Expressway	Mobility over long distances	Multi-lane	US 85 US 34 Bypass
Arterial	Primary – Intercommunity and intracity traffic movement Secondary – Land access	Two to four lanes	37th Street 23rd Avenue
Collector	Balances traffic movement with land access. Provides connections to neighborhood centers	Two to four lanes	34th Street Arrowhead Drive Harbor Lane
Local Roads	Property access	Two or three lanes	Neighborhood streets

Expressways

Expressways primarily serve long distance travel between major communities. Expressways provide the greatest mobility, with strictly controlled access allowed only at interchanges and major intersections.

Arterials

Major and minor arterials carry longer-distance major traffic flows between important activity centers. The primary difference between expressways and major arterials is access; expressways generally have at-grade accesses spaced at one-mile intervals with interchanges at major intersections, while arterials usually include at-grade intersections spaced at intervals of less than one mile.

Arterials usually consist of four lanes, tend to carry significant traffic volumes (typically greater than 10,000 vehicles per day) at higher speeds for longer distances and are seldom spaced closer than at 1-mile intervals. Minor arterials augment the major arterial system. These roadways place a high emphasis on access, instead of mobility, distributing travel to smaller destinations with moderate trip lengths.

Collectors

Collector roadways link local streets with the arterial street system. Both mobility and access take equal precedence on these roadways. Travel speeds and volumes are moderate and distances traveled are short to medium; these streets provide for intercommunity, intercity, and intracity traffic movements, such as connections between city centers, schools, and neighborhoods.

The collector system provides both property access and traffic circulation within residential areas and commercial and industrial areas. They are usually two to four lanes wide and carry 5,000 to 10,000 vehicles per day.

Local Roadways

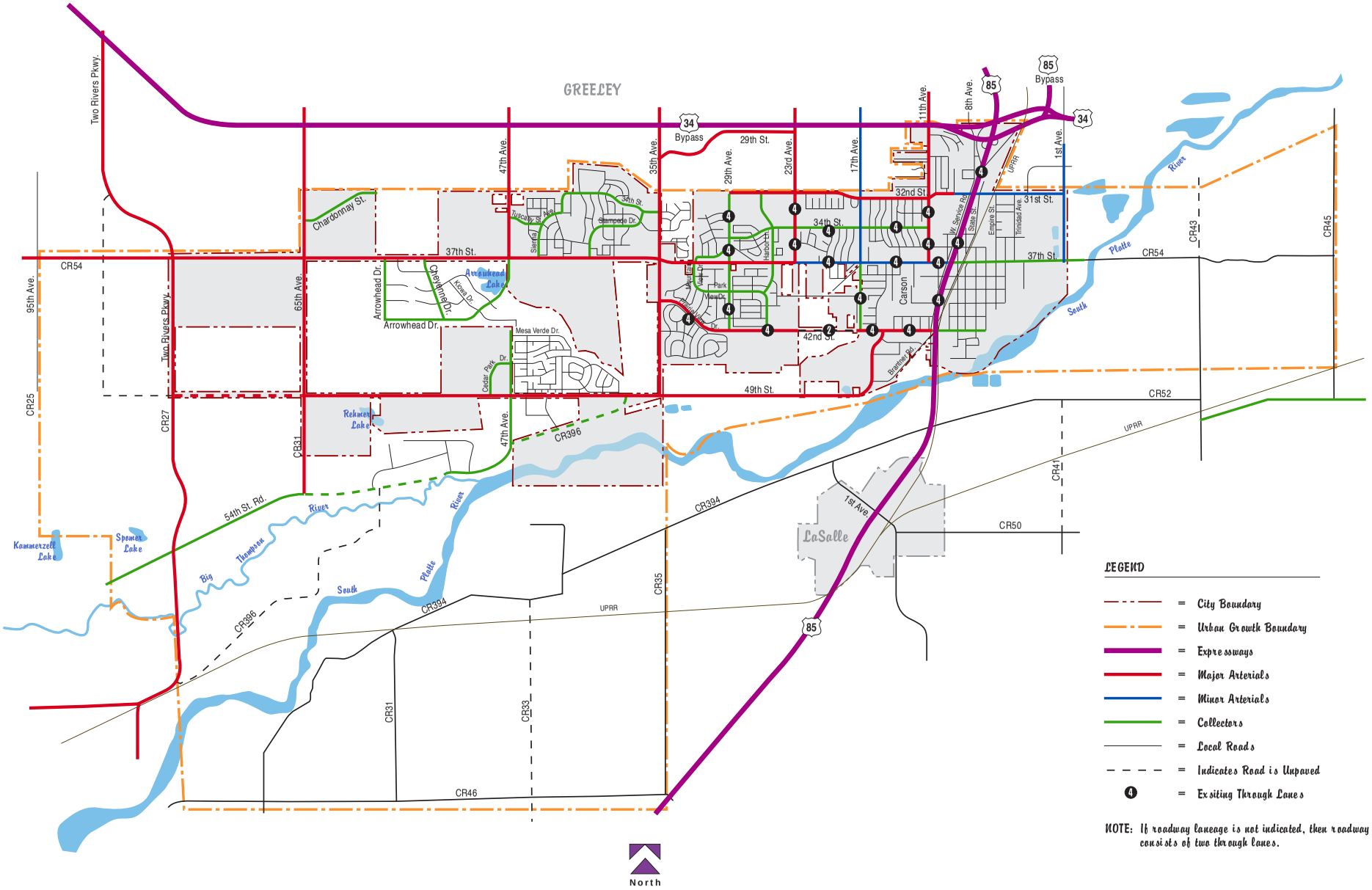
The primary function of local roads is to provide access to adjacent land uses, whether it be residences, businesses, or community facilities, in both urban and rural areas. They are typically low speed, closely spaced, two lanes wide, and carry relatively low traffic volumes.

As shown in Figure 5, the two expressways in the Evans area are US 85 running in a north-south direction and a small segment of US 34 Bypass running in the east-west direction between 11th Avenue and the interchange with US 85. Arterials in the east-west direction include 31st Street, 32nd Street, 37th Street, 42nd Street and 49th Street. North-south arterials include 11th Avenue, 17th Avenue, 23rd Avenue, 35th Avenue, 47th Avenue, 65th Avenue and Two Rivers Parkway. In Evans north-south arterials are generally just a few miles in length because of the Platte River along Evans' south city boundary.

Traffic Volumes

As part of this study, traffic counts were obtained from the City of Evans and Weld County, and supplemental counts were recorded by All Traffic Data, Inc. at various locations throughout the city and the county. Figures 6 and 7 depict daily and peak hour traffic volumes. Most traffic counts collected are along the arterial street system and at arterial-arterial intersections. Not surprisingly, the heaviest traffic volumes exist on US 85 and US 34 Bypass, which carry nearly 23,000 vehicles per day (vpd) and 40,000 vpd, respectively. In the east-west direction, 37th Street east of 35th Avenue carries between 12,000 and 16,000 vpd which is more than double the volume carried by any other east-west arterial. Only 37th and 49th Streets extend west of 35th Avenue where traffic volumes drop significantly ranging between 3,000 and 7,000 vpd. In the north-south direction, 11th and 23rd Avenues carry up to 14,000 vpd, 35th Avenue carries up to 10,000 vpd near 37th Street and 17th Avenue carries approximately 5,500 vpd. West of Evans, 65th Avenue carries nearly 5,500 vpd just south of 49th Street.

CITY OF EVANS



LEGEND

- = City Boundary
- = Urban Growth Boundary
- = Expressways
- = Major Arterials
- = Minor Arterials
- = Collectors
- = Local Roads
- = Indicates Road is Unpaved
- 4 = Existing Through Lanes

NOTE: If roadway laneage is not indicated, then roadway consists of two through lanes.

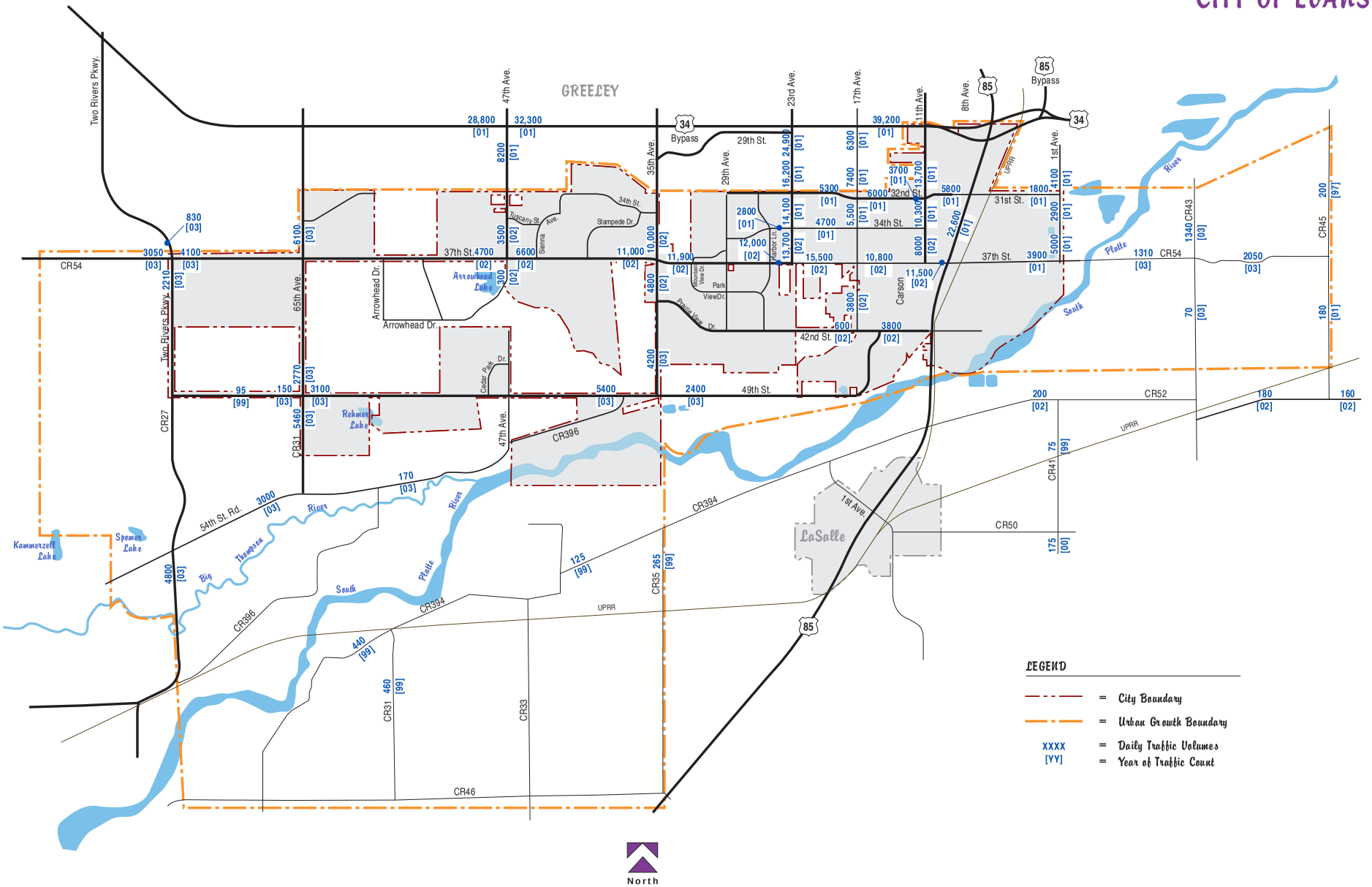
02-240 1/6/04

FELSBURG HOLT & ULLEVIG
engineering paths to transportation solutions

Figure 5

EXISTING ROADWAY FUNCTIONAL CLASSIFICATION

CITY OF EVANS



02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Figure 6

DAILY TRAFFIC VOLUMES

CITY OF EVANS

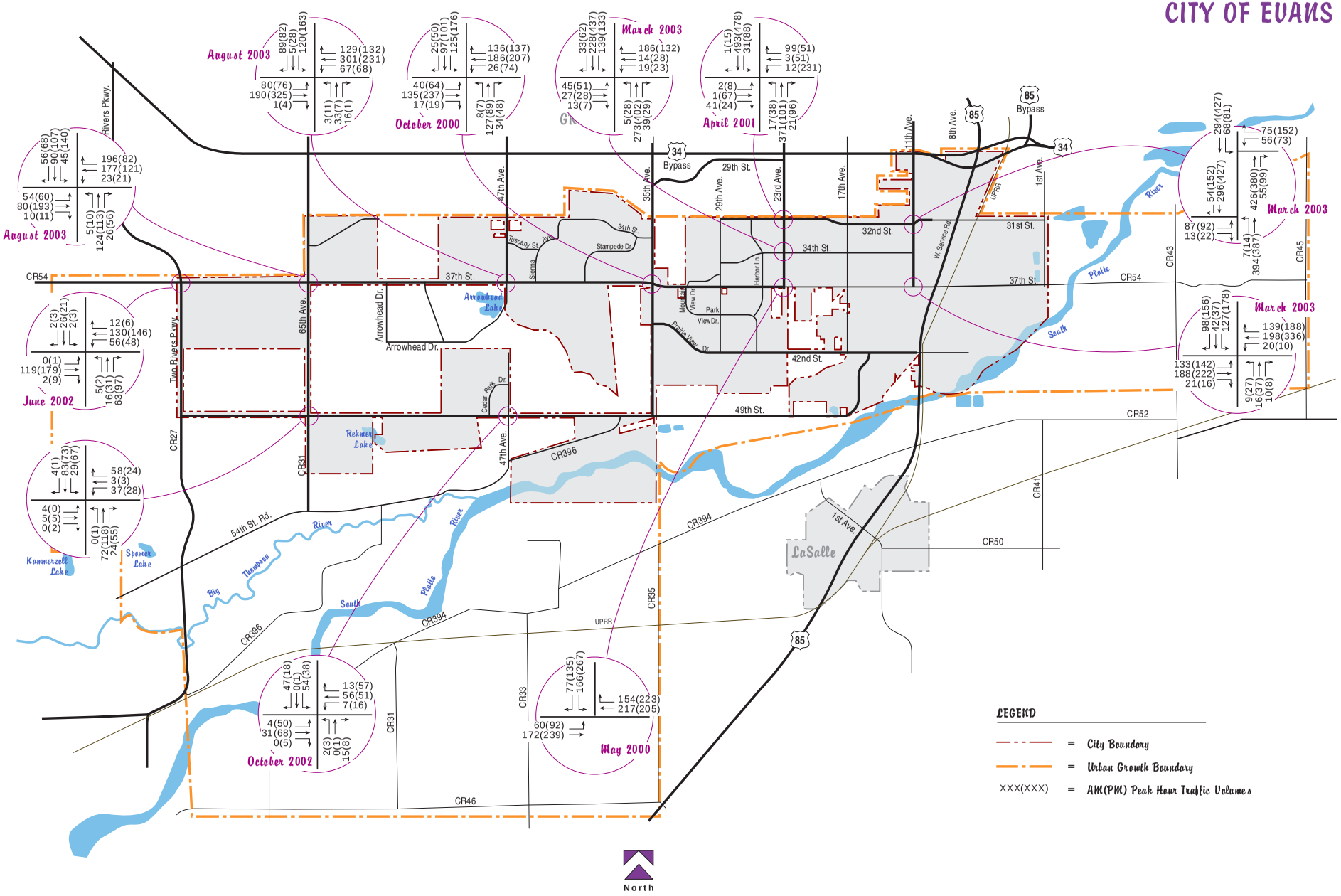


Figure 7

PEAK HOUR TRAFFIC COUNTS

02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Daily Volume to Capacity

The degree of congestion on a roadway depends upon the capacity of that roadway and the demand placed on it by vehicles. Volume to capacity (v/c) ratios can be used on a planning level to get a comparative idea of how a roadway is performing. A planning level capacity of a roadway can be determined by a roadway's facility type, laneage, and traffic control conditions. The following capacity thresholds were estimated for Evans streets:

Table 3. Roadway Capacities

Facility Type	Daily Traffic Volume Threshold (Capacity)
Expressway	11,000 / Lane
Major Arterial	8,000 / Lane
Minor Arterial	6,000 / Lane
Collector	5,000 / Lane

The v/c ratio is also a good planning tool as it is a quick way to judge how much more traffic a certain roadway can handle. Furthermore, a comparison can be made between these ratios and the level of congestion experienced by the roadway. Table 4 presents relative congestion levels based on the v/c ratios, however, it should be noted that the v/c ratios are based on daily link traffic volumes and, thus, are not related to peak hour operations. For example, it is possible for a roadway to have a low v/c ratio but have an intersection operating at a much higher v/c ratio during the a.m. and p.m. peak hours.

Table 4. Congestion and V/C Ratios

V/C Ratio	Congestion Level
< 0.45	Good Traffic Flow
0.45 – 0.65	Moderately Congested Roadways
0.65 – 0.90	Increasingly Congested Roadways

The v/c ratios of selected streets within Evans are graphically depicted in Figure 8. As shown in the figure, most of the City of Evans roadways fall into the good traffic flow and moderately congested categories. The only roadways that fall within the "increasingly congested" category are 37th Street between 23rd Avenue and US 85, 35th Avenue north of 37th Street and the portion of the US 34 Bypass located within the city. Although 47th Avenue is moderately congested north of 37th Street, this arterial becomes increasingly congested as it approaches US 34 Bypass.

CITY OF EVANS

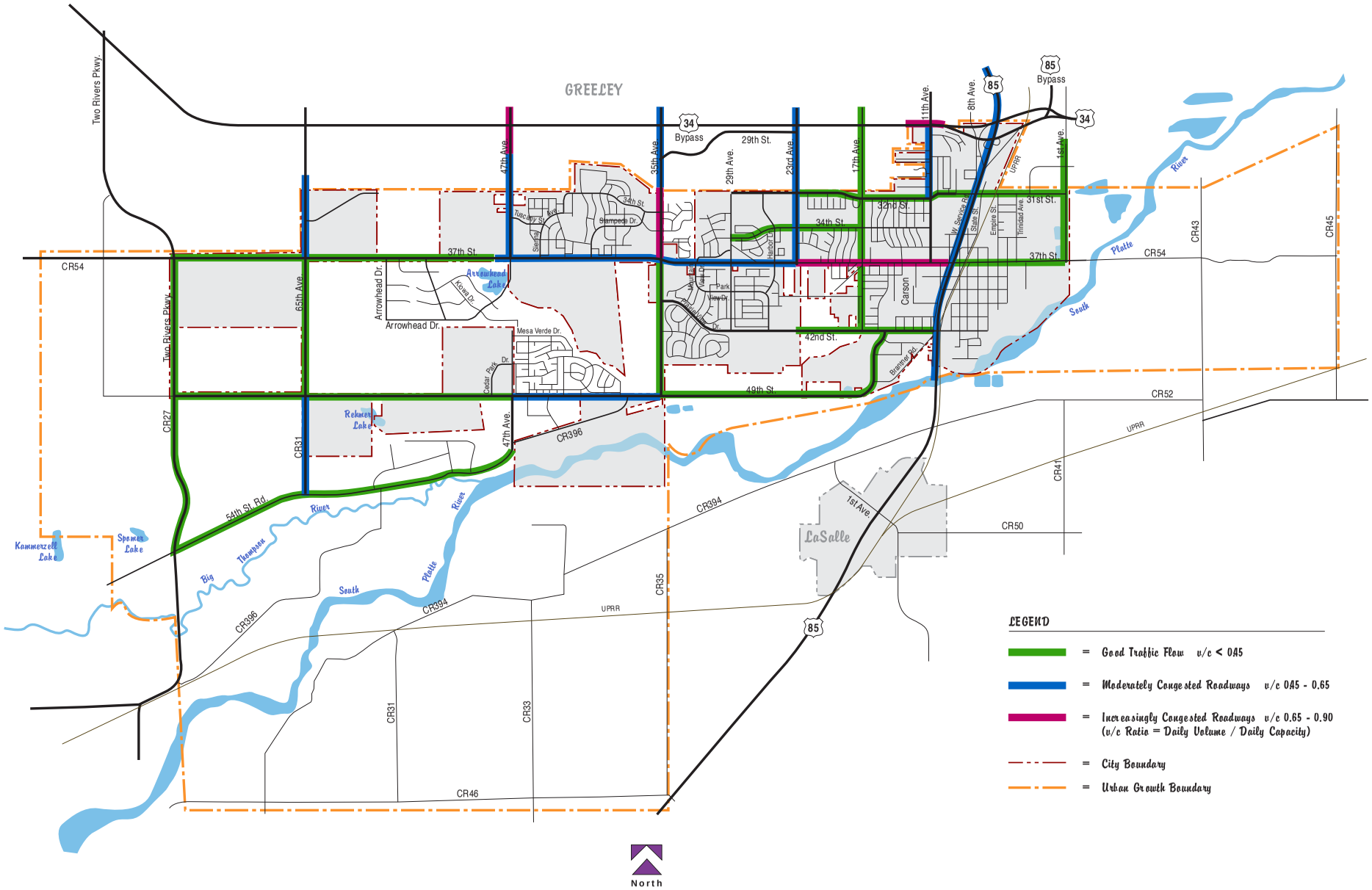


Figure 8

EXISTING ROADWAY USAGE

02-240 10/29/03

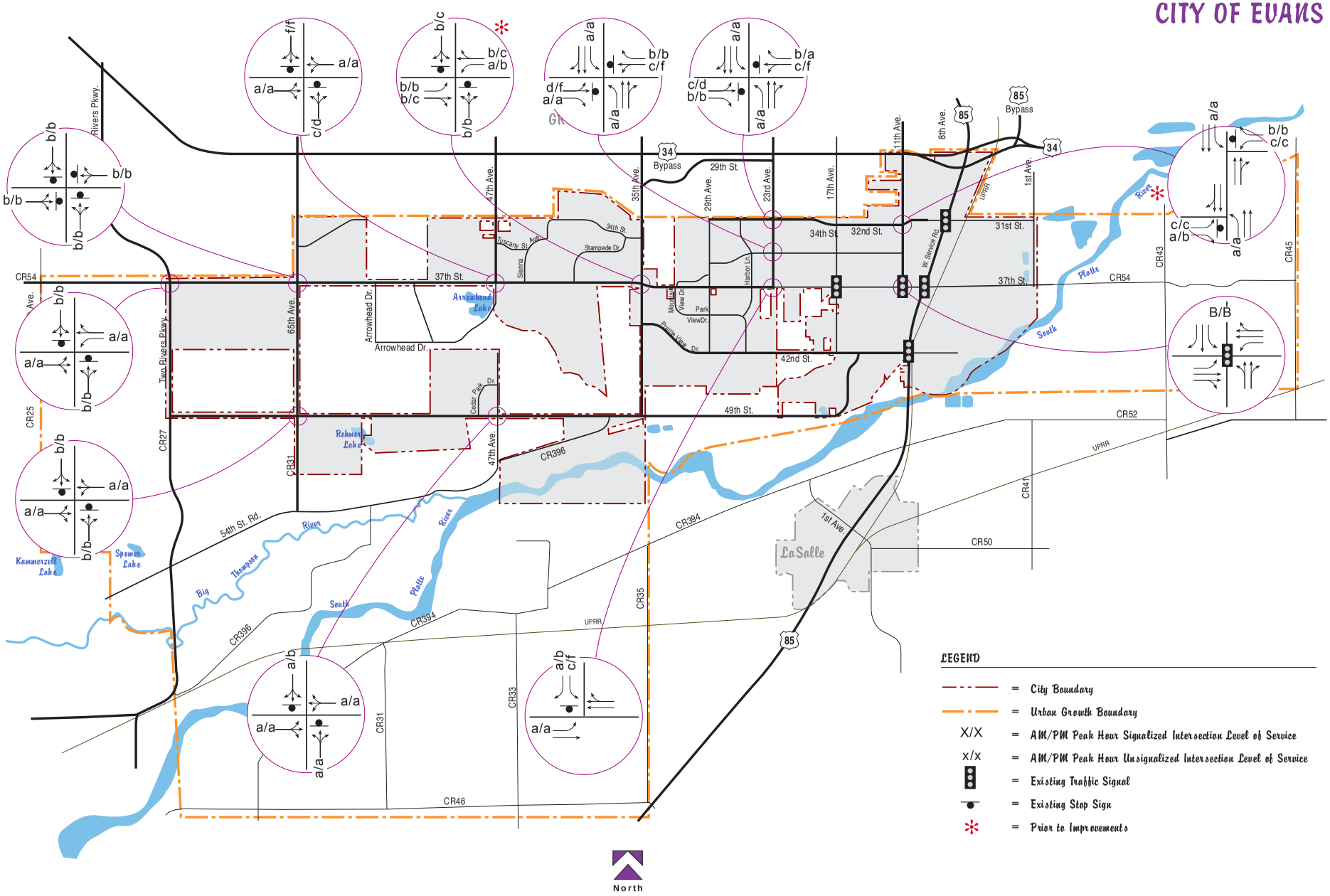
FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Peak Hour Level of Service

Based on the peak hour volume data, peak hour levels of service were evaluated at key intersections using the procedures in the Highway Capacity Manual (HCM) 2000. Level of service (LOS) is described by a letter designation ranging from A to F, with A representing very little delay and F representing congested conditions. The peak hour levels of service are graphically depicted in Figure 9. As shown, most turn movements at major intersections currently operate at LOS D or better during the peak hours. The only area in Evans where turn movements experience LOS F conditions is along 23rd Avenue. For example, left turning movements to 23rd Avenue and movements across 23rd Avenue at 32nd and 34th Avenues currently operate at LOS F. The only other turn movement experiencing LOS F conditions is the southbound left turn movement from 23rd Avenue to 37th Street.

CITY OF EVANS



FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Figure 9

PEAK HOUR LEVEL OF SERVICE

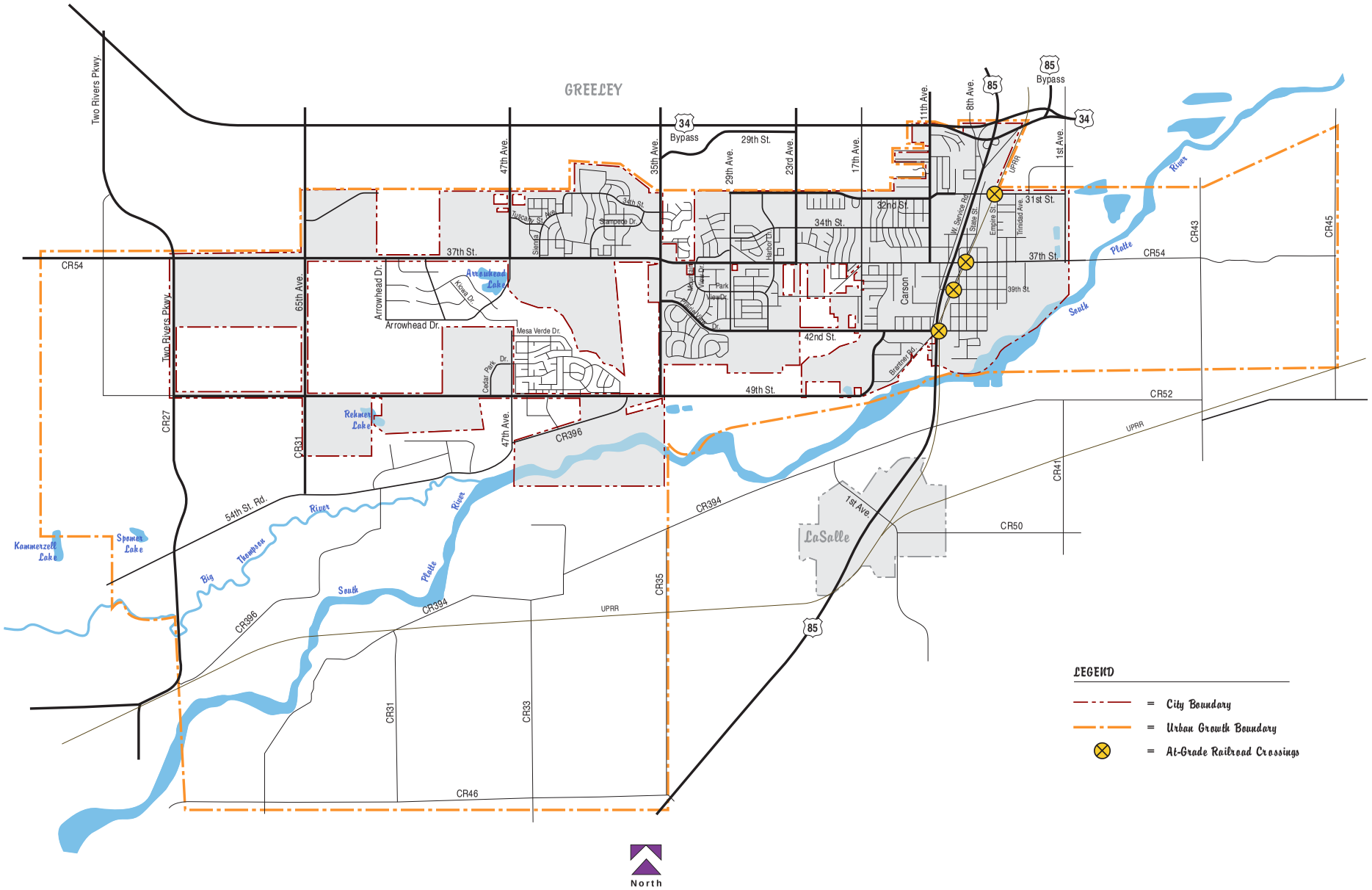
D. Railroad Crossings

The City of Evans currently has four railroad/street at-grade crossings with the Union Pacific Railroad (UPRR). These crossing locations, shown in Figure 10, are all east of US 85 on 31st, 37th, 39th and 42nd Street. The crossing on 42nd Street is close to US 85 and requires the preemption of the traffic signal on US 85. In addition to creating delay to vehicular travel during train crossings, the railroad itself creates a barrier to travel from east to west.

Table 5. Railroad Crossings

Location	Average Daily Vehicular Traffic	Average Daily Train Traffic	Traffic Control
31st St. and UPRR	1800	20 per day	Crossing Gates
37th St. and UPRR	3900	20 per day	Crossing Gates
39th St. and UPRR	500	20 per day	Lights/Signal
42nd St. and UPRR	3800	20 per day	Crossing Gates

CITY OF EVANS



02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Figure 10

EXISTING RAILROAD CROSSINGS

E. Accident History

City of Evans accident data by intersection were obtained for the period between 1999 and 2002. These data were compiled by the total number of accidents at each intersection, but the data do not provide any information on the types of accidents or the direction of travel. A summary of these accident data for the top ten locations based on accidents rates is provided in Figure 11. Excluding US 85, the highest accident location within the City of Evans is along 11th Avenue where 31st and 32nd Streets intersect 11th Avenue in close proximity to each other. The City improved this intersection in 2003. The intersection of 11th Avenue and 37th Street was recently signalized. It is important to note that the top ten accident rate locations may not have higher-than-average accident rates when compared with other cities with similar streets.

CITY OF EVANS

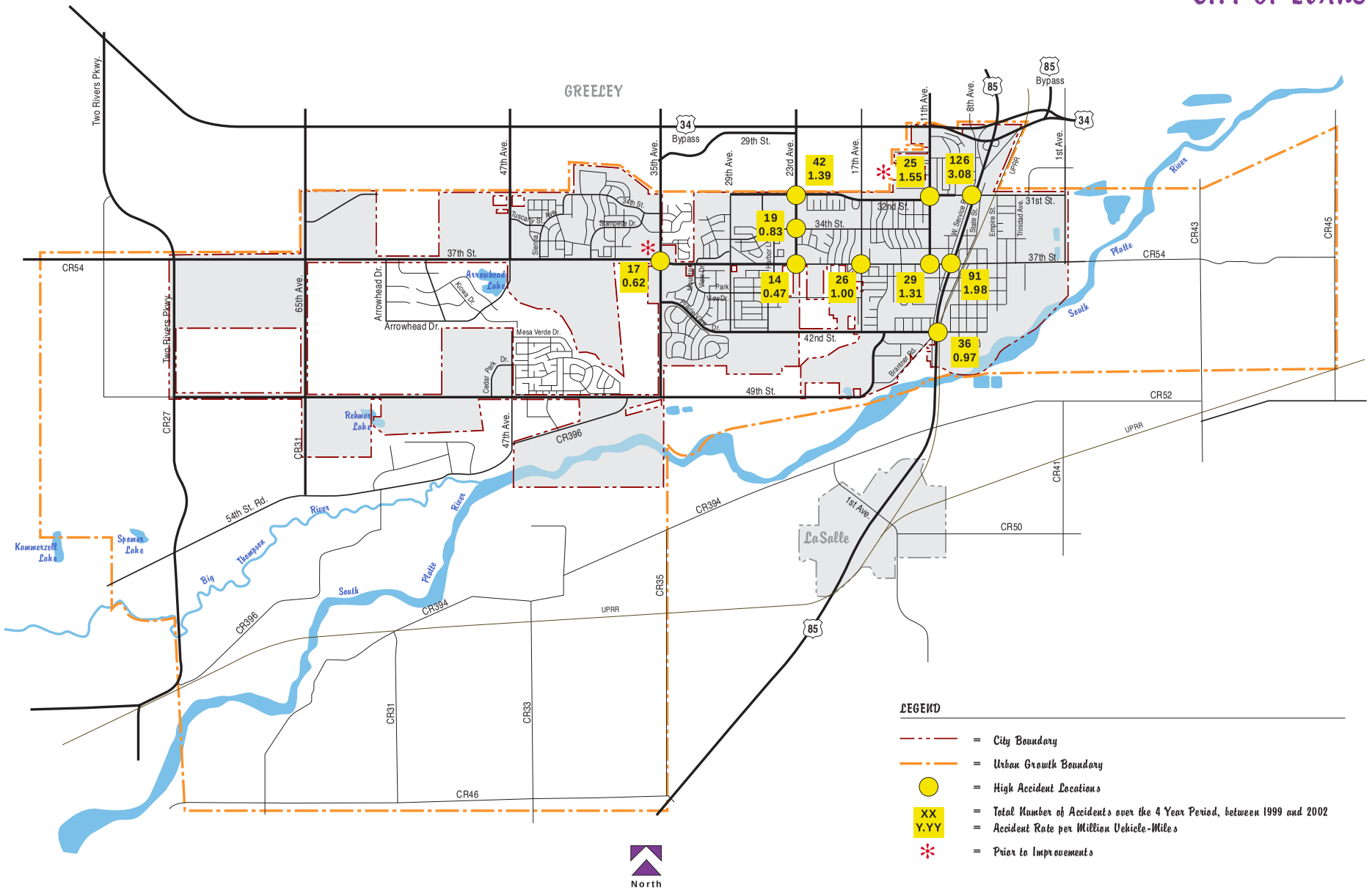


Figure 11

HIGH ACCIDENT LOCATIONS (1999 - 2002)

02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

III. FORECASTED GROWTH

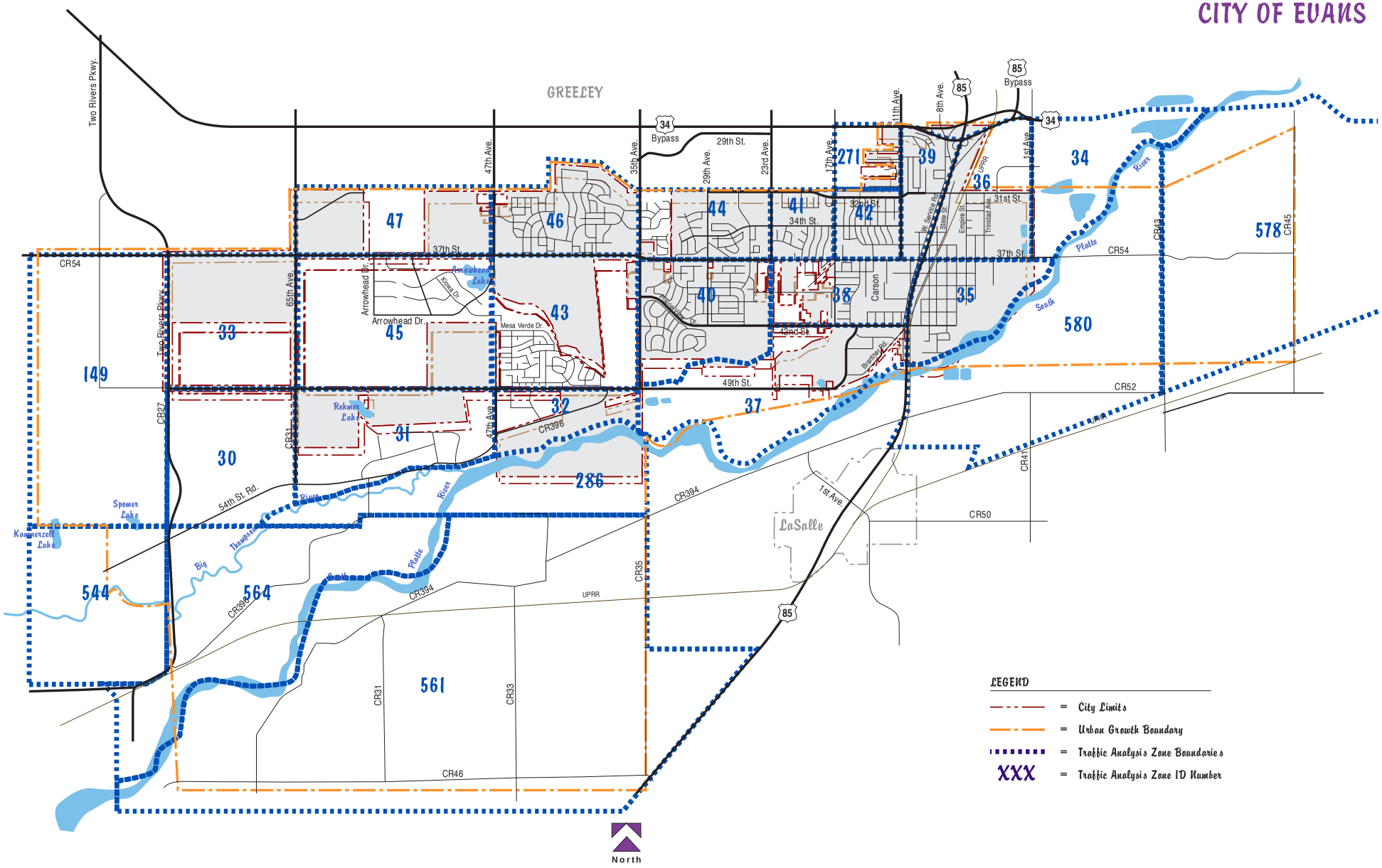
In order to properly identify potential improvement projects for the transportation system in Evans, it is important to first understand the nature and volume of traffic in the study area in the future. It is also useful to understand existing traffic flow patterns, as presented in the previous chapter. The analysis of future traffic volumes for the Evans study area is based on the 2030 regional transportation model developed by the North Front Range Metropolitan Planning Organization (NFR MPO). This computerized model includes the entire North Front Range region. The model area extends from SH 66 to the south to Larimer County Road 88 to the north, and from east of Greeley to west of Fort Collins. It was used as a basis for Evans forecasts because it provides the context of Evans in relation to the rest of northern Colorado including Greeley, Fort Collins, and Loveland.

A. Land Use Forecasts

Demographic data sets, including household and employment estimates and forecasts associated with a system of transportation analysis zones (TAZs), form the basis for travel demand forecasting. The TAZ system in the Evans area is shown on Figure 12. NFR regional household and employment estimates for 1998 and forecasts for 2030 were used as an initial basis. The regional data were then refined in the Evans Urban Growth Area based on the City's Comprehensive Master Plan and anticipated development in the city. The land use estimates for the Evans area are significantly higher than those included in the North Front Range model. The Evans forecasts include significant development along the Two Rivers Parkway, consistent with the City's Comprehensive Master Plan, as well as development south of the South Platte River that is anticipated to occur if 35th Avenue is extended across the river, providing an additional north-south connection. Based upon previous trends, as well as regional growth patterns identified with the NFR regional demand forecasting, it was determined that the forecasting horizon for this growth scenario was closer to the 2030 horizon. For transportation planning purposes, the 2030 horizon was used in determining the long range transportation needs.

The traffic modeling process assigns different trip generation characteristics to employment in the retail and non-retail sectors. Table 6 provides a summary of the 1998 and projected 2030 residential and employment data within the Evans Urban Growth Area.

CITY OF EVANS



02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Figure 12

TRAFFIC ANALYSIS ZONES

Table 6. Existing and Projected Household and Employment Data

	1998	2030	% Annual Growth (1998 to 2030)
Households	**4,361**	**21,205**	**5.1%**
Retail Employment	849	3,670	4.7%
Non-Retail Employment	2,674	8,945	3.9%
Total Employment	**3,521**	**12,615**	**4.12%**

The 2030 household and employment forecasts have been allocated to the Evans TAZ network as shown in Table 7.

Table 7. 2030 Household and Employment Forecasts by TAZ

TAZ	Households	Retail Employment	Non-Retail Employment	Total Employment
30	1,280	25	1	26
31	701	243	655	10
32	450	31	25	56
33	1,028	500	1500	2000
34	514	101	467	568
35	417	89	412	502
36	470	85	393	478
37	1,242	114	52	166
38	554	51	184	235
39	1,000	150	1073	1223
40	1,727	83	184	267
41	1,316	200	250	450
42	708	25	513	538
43	864	34	41	75
44	537	507	617	1124
45	1,049	56	23	79
46	1,040	150	200	350
47	472	193	0	193
149	1,920	500	1500	2000
271	792	44	474	518
286	15	0	0	0
544	42	0	52	52
561	2500	0	12	12
564	20	0	25	25
578	167	0	171	171
580	43	0	76	76
TOTAL	**21205**	**3670**	**8945**	**12615**

The relative increases in household growth from 1998 to 2030 are illustrated on Figure 13. The highest concentration of household growth is expected to occur primarily through the central portion of the city along the 37th and 49th Street corridors, as well as in the southern portion of the Urban Growth Area. Figure 14 shows the relative increases in total employment from 1998 to 2030. The highest concentrations of employment growth are expected to occur along the 37th Street corridor and along the Two Rivers Parkway corridor.

B. 2030 Traffic Forecasts

The future travel demand patterns in the Evans area and the North Front Range region are primarily a function of the population and employment opportunities in the area. The household and employment data outlined in the preceding section were used as input in the NFR travel demand model. The model provided traffic forecasts on the various street networks that were used to assess improvement needs. These forecasted volumes could then be used to identify deficiencies in the roadway network and to evaluate the effectiveness of alternative improvements.

C. Travel Patterns

The future travel demand patterns in the Evans area and the other communities in the North Front Range are shown on Figure 15. Internal trip making is expected to comprise only 11 percent of the total daily trips which have either an origin or a destination in Evans. The majority of the Evans trips (66%) are projected to be made between Evans and Greeley. Additional outside trips include 2.3 percent to other areas such as Loveland, Fort Collins, Denver, etc.

D. Screenline Analysis

A simple method of creating “screenlines” was used to compare the projected traffic volumes with the existing traffic volumes and to compare these volumes with the design capacities of the roadways. A screenline is a straight line drawn across a number of streets providing travel in the same direction. All traffic volumes traveling across that particular screenline added together provide an understanding of the travel patterns and deficiencies in the network along a specific orientation (i.e. north-south or east-west).

The results of the two screenline analyses in the Evans area are shown on Figure 16. Bar graphs of the existing volumes and the projected year 2030 volumes with the extension of 35th Avenue across the South Platte River are shown next to each screenline. The design capacity is also shown on each graph.

Screenline 1 includes 37th Street, 49th Street and 54th Street Road between Two Rivers Parkway and 65th Avenue. The existing volume along the screenline is well below the existing design capacity of 34,000 vehicles per day (vpd). The 2030 forecasted daily volumes are forecasted to be in the range of 45,700 vpd, indicating the need for additional capacity in the east-west direction.

CITY OF EVANS

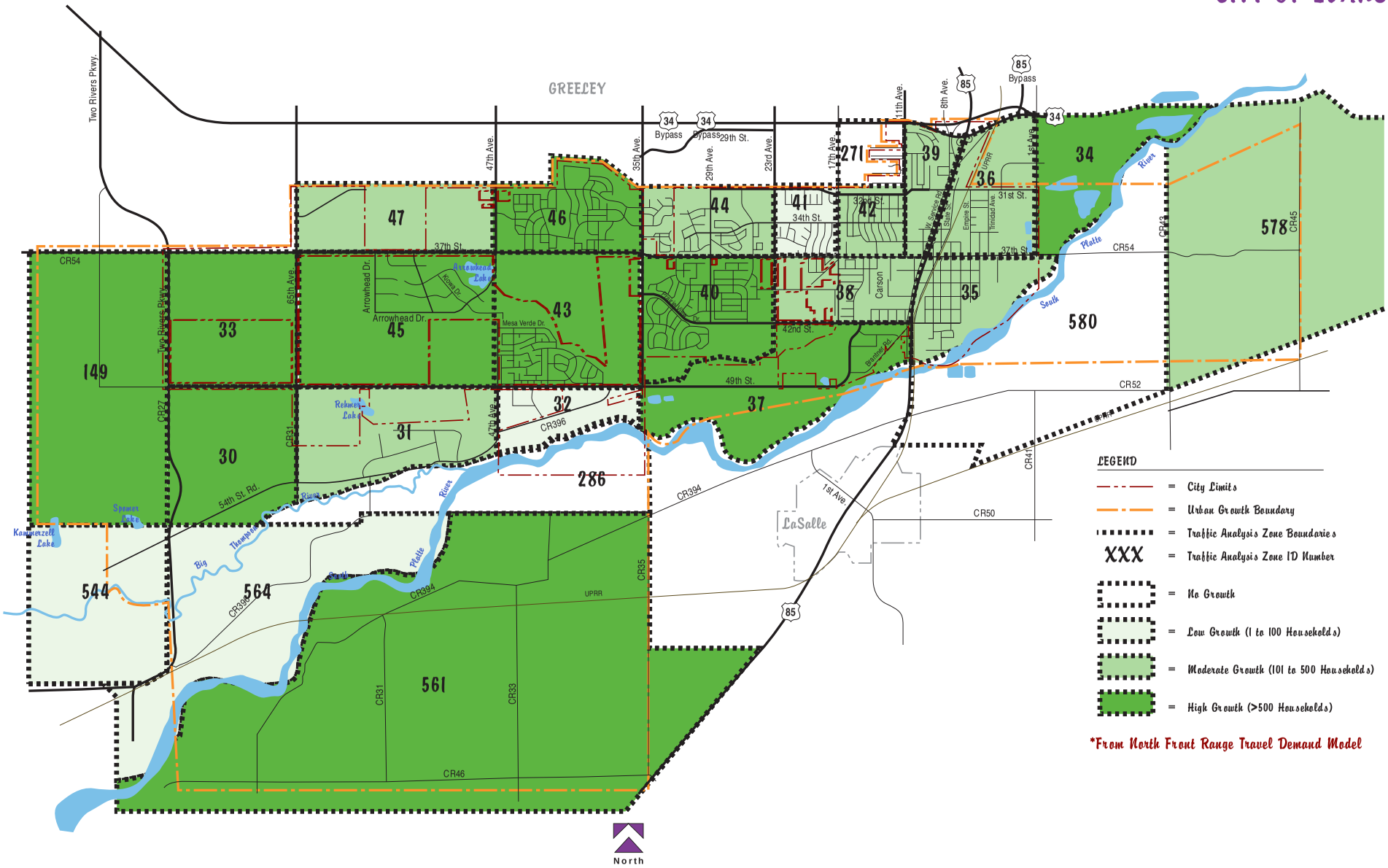


Figure 13

HOUSEHOLD GROWTH (1998 - 2030)

02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

CITY OF EVANS

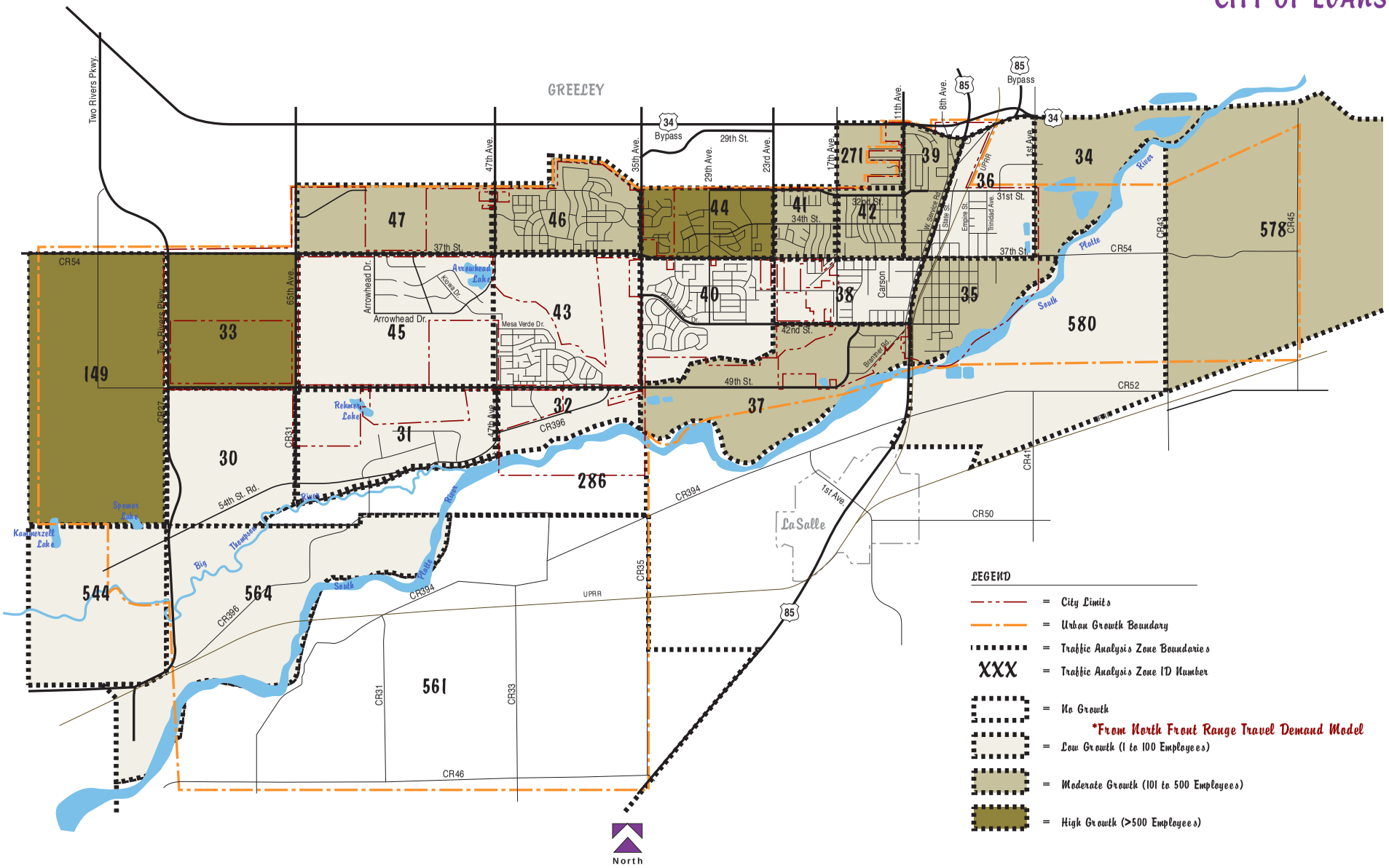


Figure 14

EMPLOYMENT GROWTH (1998 - 2030)

02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

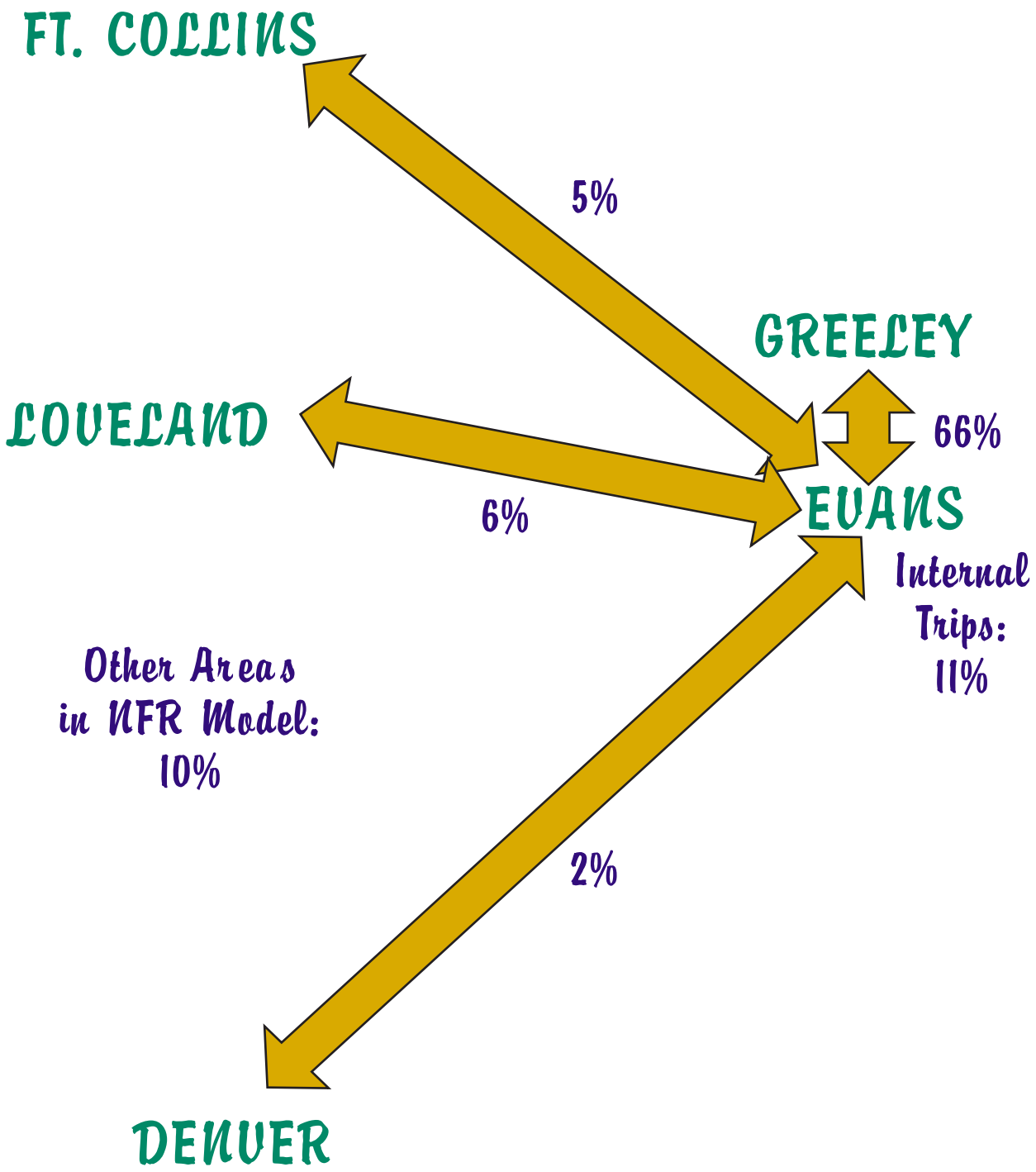


Figure 15
2030 DAILY
TRIP DISTRIBUTION

CITY OF EVANS

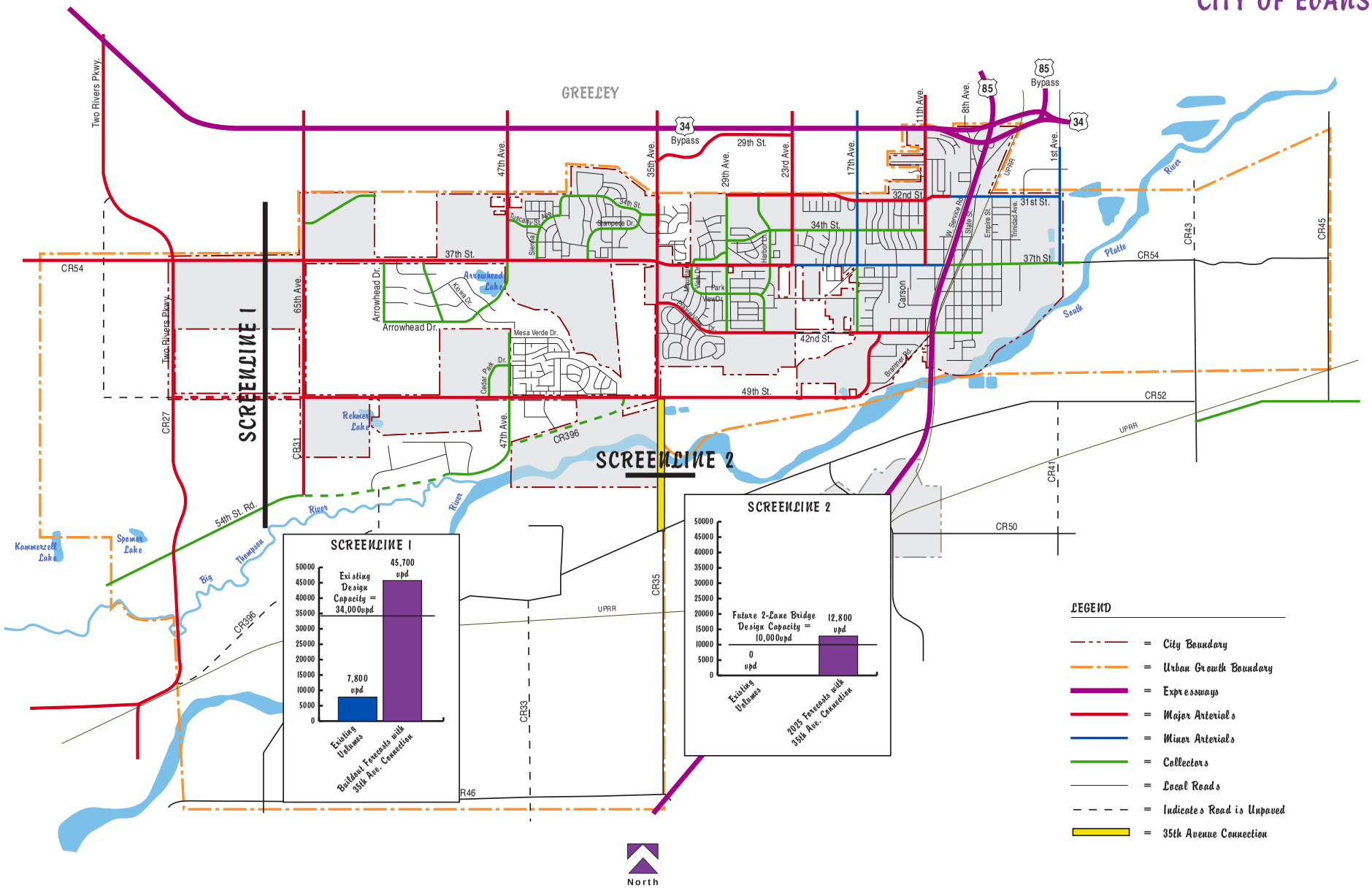


Figure 16

SCREENLINE DAILY TRAFFIC VOLUMES

02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Screenline 2 was done specifically to address the need for the 35th Avenue connection across the South Platte River. Since there is no bridge existing today, the existing traffic volume along the screenline is zero. With the addition of a two-lane bridge, the forecasted 2030 daily volume is forecasted in the range of 12,800 vpd, which is above the design capacity of 10,000 vpd. This indicates that there may be sufficient demand on the future bridge to necessitate four lanes at or beyond 2030.

E. Projected Traffic Demand

With the general trends observed in the screenline analyses in mind, the initial model run involved assigning 2030 volumes to the base case roadway network. The base case network includes 37th Street/CR 54 as four lanes to I-25 and US 34 as six lanes to I-25, both of which are regional improvements which are anticipated to be complete by 2030. Additionally, the 23rd Avenue extension to 42nd Street is included in the base case network because it is planned for completion in the next three years by the City of Evans. The forecasted 2030 volumes on the base case network are shown on Figure 17. This assignment was used to identify specific roadways on which significant congestion could be expected in the future if no improvements were made beyond the base case network. Figure 16 also identifies those roadway segments that are expected to have moderate and high levels of growth. Moderate levels include up to two times existing volume, while high growth is considered to be greater than doubling of the existing volume.

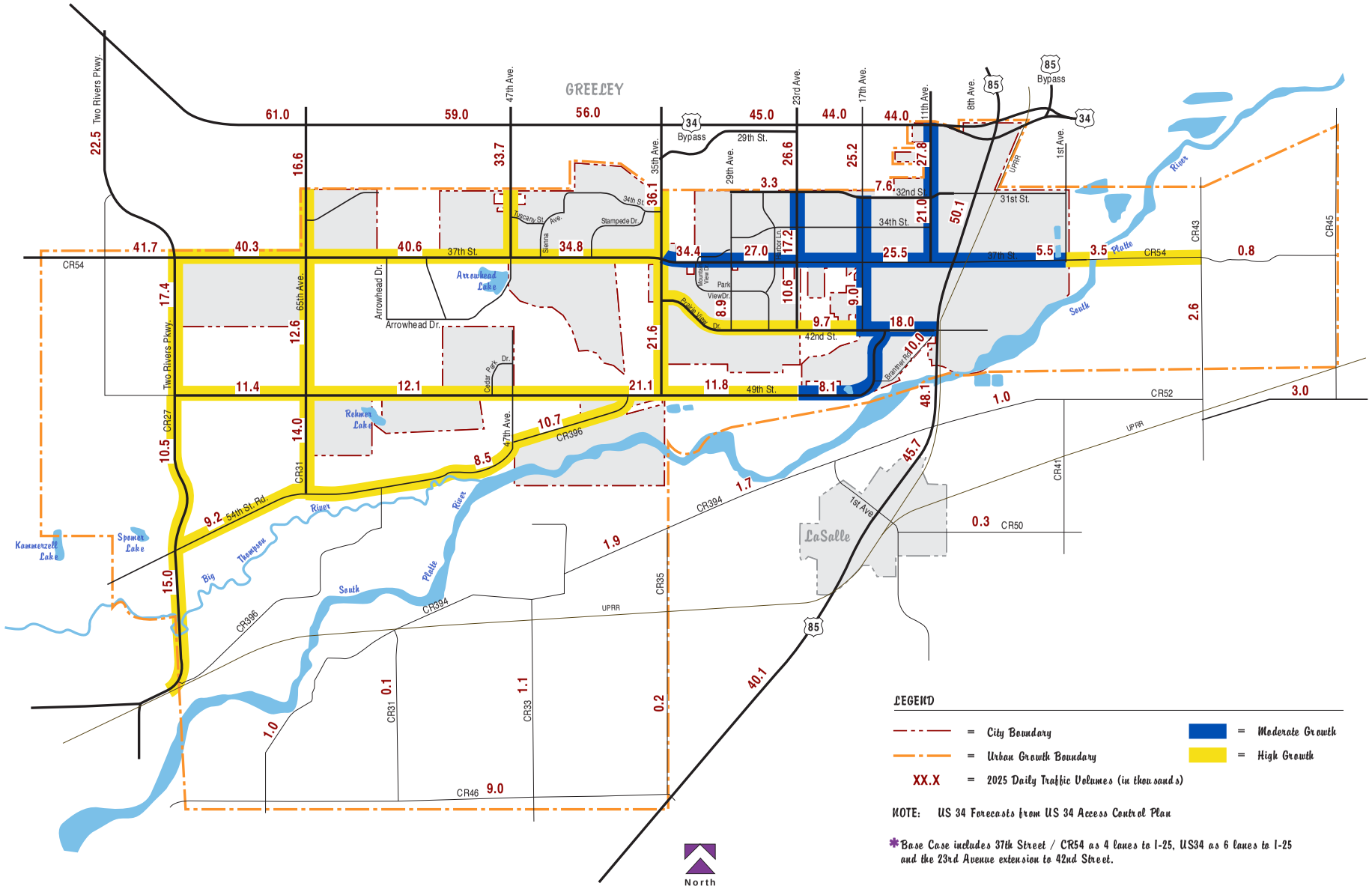
F. Improvement Alternatives

The results of the screenline and capacity deficiency analyses, along with input from the public, were used to identify potential roadway improvement alternatives. Each alternative was incorporated into the travel demand model, and separate model runs were conducted to evaluate the effects of the individual improvements. The following roadway improvement alternatives were considered:

- 23rd Avenue extension from 42nd Street to 49th Street
- Prairie View Drive/47th Avenue Connection
- 35th Avenue Bridge over South Platte River
- 32nd Street extension – Two Rivers Parkway to 29th Avenue
- 49th Street widening to four lanes – Two Rivers Parkway to Brantner
- 54th Street Road widening to four lanes – Two Rivers Parkway to 49th Street
- Two Rivers Parkway widening to four lanes – US 34 Bypass to south of 54th Street Road
- 65th Avenue widening to four lanes – US 34 to 54th Street Road

The impact of each improvement alternative on the surrounding roadway network was evaluated. Those improvements which are expected to provide significant relief to the system and/or provide continuity in the roadway network were selected for further consideration. Several improvement alternatives were eliminated because of right-of-way constraints or negligible benefit to the overall network. The following is a discussion of the alternatives which are expected to provide significant benefit to the system and are included in the Master Streets Plan.

CITY OF EVANS



LEGEND

- = City Boundary
- = Urban Growth Boundary
- XX.X = 2025 Daily Traffic Volumes (in thousands)
- = Moderate Growth
- = High Growth

NOTE: US 34 Forecasts from US 34 Access Control Plan

*Base Case includes 37th Street / CR54 as 4 lanes to I-25, US34 as 6 lanes to I-25 and the 23rd Avenue extension to 42nd Street.

Figure 17

2030 FORECASTS on BASE CASE NETWORK*

02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

35th Avenue Bridge over South Platte River – This connection over the South Platte River will provide additional north-south connectivity between the current city limits and the southern area included in the Long Range Growth boundary. The bridge would also provide an alternate route for both Evans and Greeley traffic to access US 85 to the south.

Two Rivers Parkway Widening – This corridor is expected to be a primary route for north-south travel through Weld County in the future. In order to accommodate the potential growth along the corridor, Two Rivers Parkway will need to be four lanes.

23rd Avenue Extension – Connecting 23rd Avenue from its current terminus to 49th Street will complete the grid system in this area of Evans, providing an alternative route for travel and relieving congestion on 35th Avenue.

Prairie View/47th Avenue Connection – This connection would provide continuity in the roadway network and would provide some relief to the 37th Street corridor. Drainage and property acquisition are some of the challenges to implementation.

49th Street Widening – Widening 49th Street through Evans would provide for improved local movement through the city, while relieving the 37th Street corridor by providing alternate east/west route through Evans.

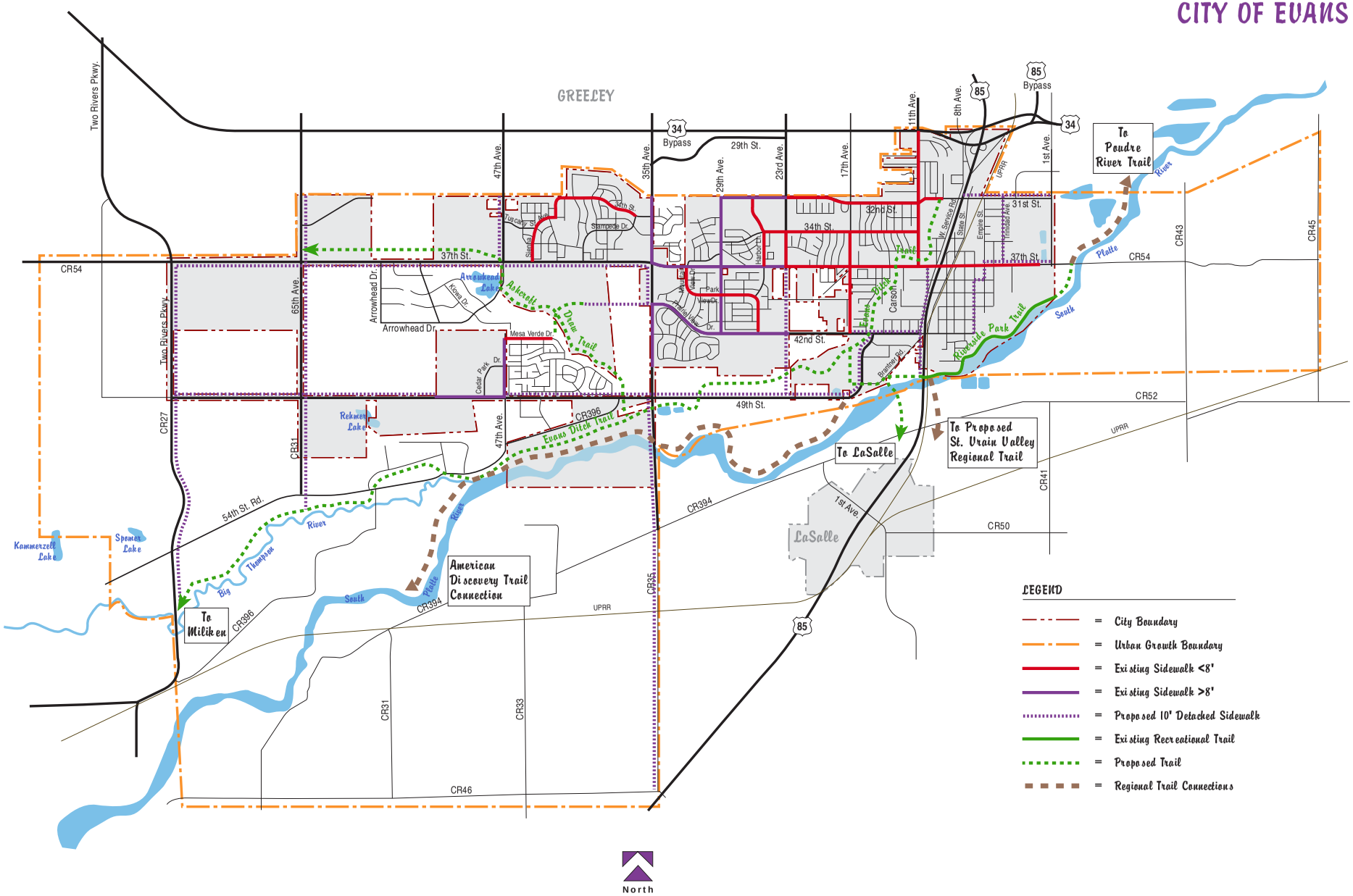
IV. 2030 TRANSPORTATION PLAN

The 2030 Transportation Plan was developed from a number of elements including existing conditions, projected growth, public outreach and the overall goals listed in the introduction. This plan provides an outline of projects, timing and order of magnitude cost of recommended projects. Multi-modal plans for pedestrian, bicycle and transit are also included to provide a balanced plan that offers alternatives to the automobile. These transportation network plans are intended to be schematic representations of improvements and would be used in conjunction with the Adequate Public Facilities Plan and the Traffic Impact Fees.

A. Trails

The trails plan shown in Figure 18 includes trails from the Parks, Trails and Recreation Master Plan, as well as some additional recommended trail improvements. The additional recommendations are a result of new recommended street improvements that could also provide additional trail connectivity. The plan includes an emphasis on connections to regional trails such as the American Discovery Trail and the St. Vrain Valley regional trail. It is the intent that these trails would accommodate both pedestrian and bicycle traffic.

CITY OF EVANS



02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

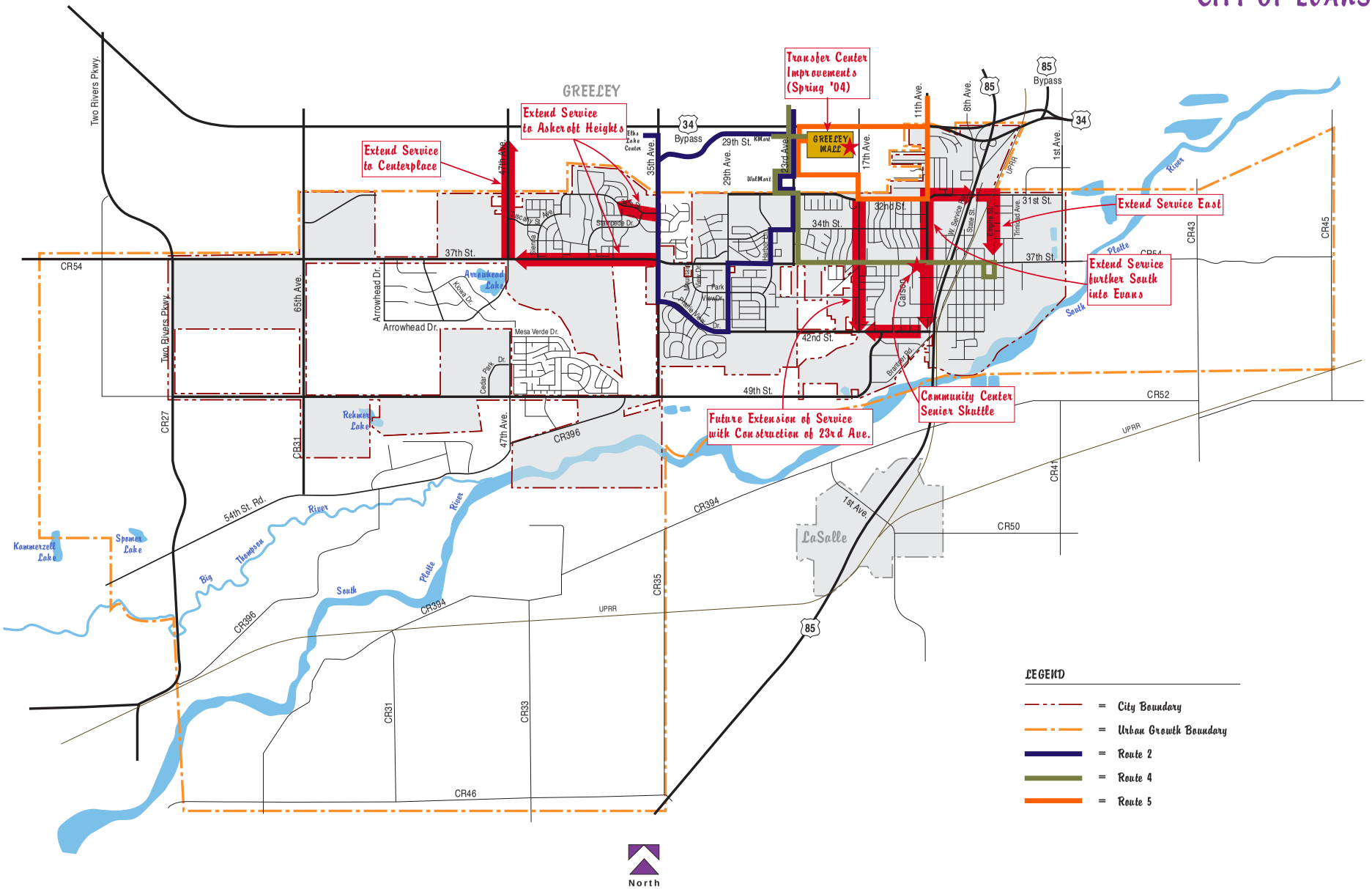
Figure 18

TRAILS and MULTI-USE PLAN

B. Transit

Since public transit services are provided by Greeley's The BUS, a dialogue with Greeley staff occurred about which areas could be expanded to provide more service to Evans. Figure 19 summarizes the short term service improvements that are being considered at this time. The plan focuses on extensions of service both south and west to growing neighborhoods. With new bus parking improvements at the Greeley Mall scheduled for completion within the next couple of years, the mall transfer station will continue to provide Evans with a transfer hub. In addition, at the time of this writing, the bus is planning to extend Route 2 to Center Place Avenue near 47th Avenue and US 34 Bypass.

CITY OF EVANS



02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Figure 19

TRANSIT IMPROVEMENT PLAN

C. Master Streets Plan

Existing streets in Evans generally operate fairly well with spot areas of congestion during the peak hours. The Master Streets Plan focuses on providing a well planned system of streets for the future. The Master Streets Plan shown in Figure 20 was developed to accommodate 2030 traffic demand as well as to provide continuity and access to developing lands. The plan depicts existing streets, street widening, and new street connections. The arterial streets shown are typically located on one-mile separations with collector street spacing being on the half mile. Topographic constraints were also a consideration in the location of these facilities. Most of the collector streets are designated as two-lane facilities under the year 2030 traffic conditions. Right-of-way for a four-lane major collector should be preserved for future expansion.

Since the City of Evans extends farther east and west than north and south, providing good continuous routes east and west is crucial to this plan. Thirty Seventh Street (WCR 54) will continue to be a major east/west link for the Evans area. Widening to four lanes in this corridor is part of the plan both within the Urban Growth Boundary as well outside of it. Outside the Urban Growth Boundary, improvements could be implemented with a potential IGA between Evans, Weld County and Greeley. Locally, an improved 49th Street would provide relief to 37th Street by serving as an alternate east-west route.

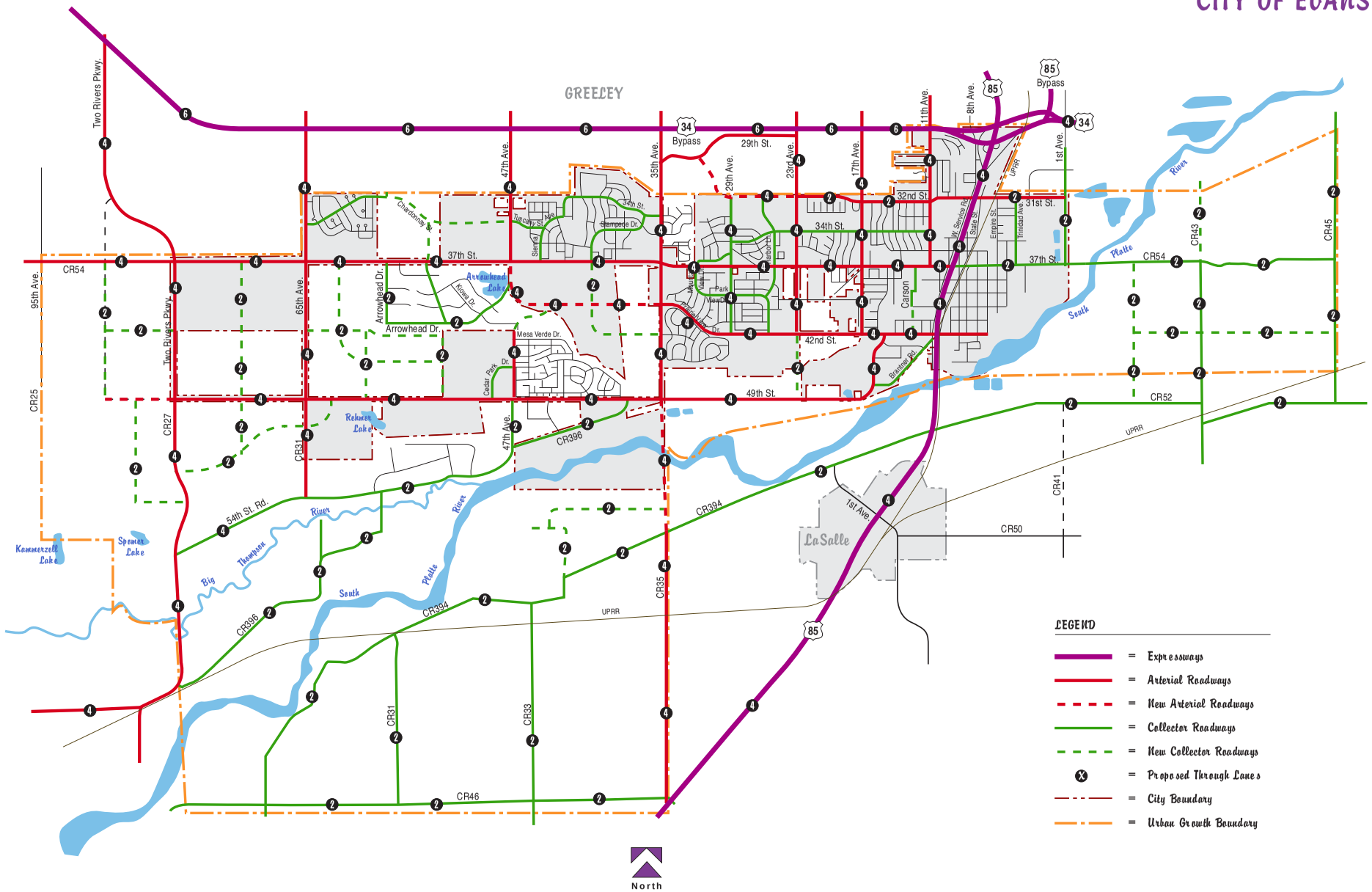
Two Rivers Parkway would also continue to service both regional and local traffic. This plan reinforces the commitment to improving Two Rivers Parkway to four lanes and providing capacity for future employment centers and community commercial centers identified in the City's Comprehensive Plan.

The arterial streets shown in this plan are also streets that qualify for funding through impact fees. While the collector streets are shown on the Master Streets Plan, it is also likely that developments may fund or build some of these streets.

D. 2030 Traffic on the Master Streets Plan

Figure 21 depicts the projected 2030 traffic on the Master Streets Plan. The areas bound between Two Rivers Parkway, 35th Avenue, 37th Street, and 49th Street are projected to have the highest percentage of traffic growth projected. With the exception of segments of 37th Street from 29th Avenue to east of Two Rivers Parkway, all streets would operate under design capacity. Assuming a daily capacity of approximately 32,000 vehicles per day, 37th Street would operate at slightly above capacity for a four-lane arterial street.

CITY OF EVANS



02-240 1/6/04

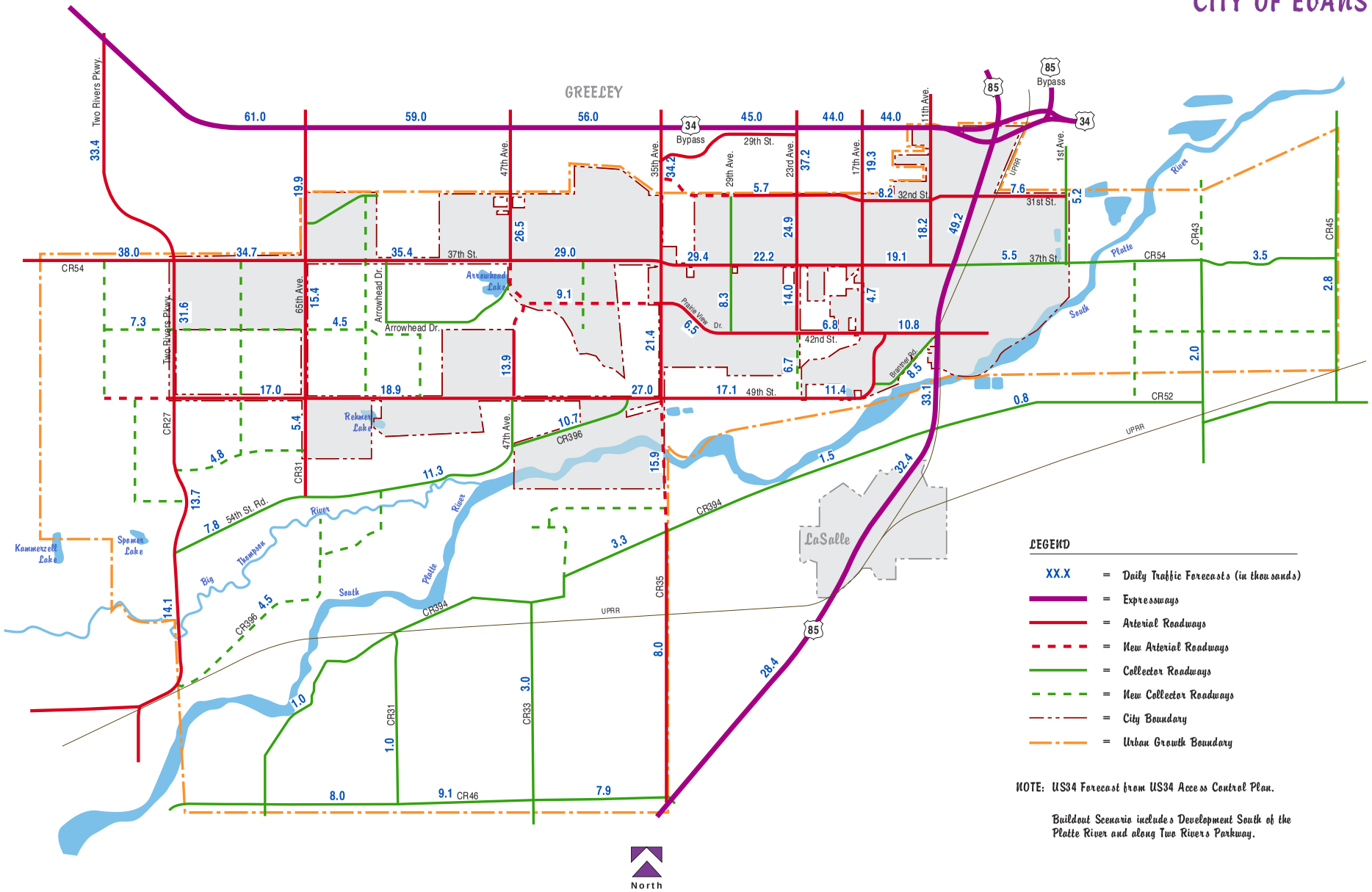
FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Figure 20

MASTER STREETS PLAN

CITY OF EVANS



LEGEND

XX.X	= Daily Traffic Forecasts (in thousands)
	= Expressways
	= Arterial Roadways
	= New Arterial Roadways
	= Collector Roadways
	= New Collector Roadways
	= City Boundary
	= Urban Growth Boundary

NOTE: US34 Forecast from US34 Access Control Plan.

Buildout Scenario includes Development South of the Platte River and along Two Rivers Parkway.

Figure 21

MASTER STREETS PLAN WITH 2030 TRAFFIC

02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

V. PLAN IMPLEMENTATION

A. Pedestrian

The implementation of pedestrian improvements includes three major components, one of which is included in the Adequate Public Facilities Plan. The three major components are:

- The Trails Plan
- Traffic Calming
- Level of Service Criteria for Adequate Public Facilities (Addressed in Appendix A)

The implementation of the plan includes not only the trails plan itself, but criteria for encouraging development to build pedestrian friendly projects through the APFP level of service criteria. In addition, a tool box of traffic calming options is listed that would allow for better vehicle/pedestrian interaction in pedestrian areas.

Trails

Much of the implementation of the Trails Plan is outlined in the City of Evans Parks, Trails and Recreation Master Plan. For the purposes of completeness of this plan, some of that information is summarized as part of the Transportation Plan.

The City should continue to pursue funding for the trails plan through applications to the North Front Range MPO as well as through federal programs. Funding for matching funds and certain local trails may be acquired through park impact fees, local taxes, or bonds. Additional funding options include Colorado State Trails Grants.

The following priorities for implementation are identified in the City of Evans Parks, Trails and Recreation Master Plan.

- Construction of trails with new development
- Recognition of American Discovery trail as a major regional trail
- Highway 85 trail underpass
- Construction of the Evans Ditch trail

Traffic Calming

Few communities are immune to the issues relating to neighborhood traffic. Minimizing both traffic speed and traffic volume in residential areas creates safety benefits to local residents. Various methods can be used to slow down or “calm” traffic; however, not all are appropriate for every situation. Table 8 includes a tool box of traffic calming options as well as information on how to use them.

Table 8. Traffic Calming Toolbox

Device	Definition	Volume Reduction	Speed Reduction	Change in % Trucks	Safety			Emergency/ Service Vehicle Access/Delay	Type/Classification of Street			Use on Bus Route	Use with Driveways on Street
									Collector	Local Streets			
					Vehicle Conflicts	Pedestrian	Bicyclist		Commercial	Neighborhood Collector	Local Access		
Crosswalks	Painted pedestrian crossing areas mid-block or at intersections.	No	No	No	No change	No change	No change	No effect	Yes	Yes	Yes	Yes	Yes
Curb Extension (Entry, Exit Mid-Block)	Extension of the curb into the roadway to create a narrower travel lane to protect parking strip or shorten pedestrian crossing distances.	No	Slight	No	No effect	Improved	Plan with care	No problems	Yes	Yes	Yes	No	Yes
Diagonal Diverters	Barrier placed diagonally across an intersection to force drivers to make a sharp turn but not allow other movements.	Yes	Likely	Yes	Improved	Varies	Varies	Minor constraint	No	Avoid	Yes	Plan with care	Yes
Median Entry/Exit Islands	Traffic islands used to create narrower roadway at entry/exit point.	Possible	No	Possible	Improved	Improved	Varies	Minor constraints	Yes	Yes	Yes	No	Yes
Median Mid-Block Islands	Traffic islands between intersections to create a narrower roadway or provide refuge for crossing pedestrians.	No	Slight	Slight	Improved	Improved	Varies	Minor constraints	Yes	Yes	Yes	Possible	Plan with care

Table 8. Traffic Calming Toolbox

Device	Definition	Volume Reduction	Speed Reduction	Change in % Trucks	Safety			Emergency/ Service Vehicle Access/Delay	Type/Classification of Street			Use on Bus Route	Use with Driveways on Street
					Vehicle Conflicts	Pedestrian	Bicyclist		Collector	Local Streets			
									Commercial	Neighborhood Collector	Local Access		
Mid-Block Slow Points, Chicanes	Curbed islands or curbed extensions protruding into the roadway, leaving a single-lane or narrow two-lane gap, often at an angle to the centerline.	Yes	Yes	Likely	Improved	Improved	Questionable	Minor constraint	Yes	Yes	Yes	Yes	Avoid near driveways
One-Way Entry/Exit Chokers, Half-Closures, Semi-Diverters	A barrier to traffic in one direction of a street which permits traffic in the opposite direction to pass through.	Possible	Yes	Not Likely	Improved	Improved	Improved	Minor constraint	Avoid	Avoid	Yes	Plan with care	Yes
Parking Variants Class I (Zones, Signs, Striping, timed, resident restricted)	Parking areas create narrower roadways and increased activity leading to increased attention by drivers.	Possible	Likely	Likely	Possible Improvement	Possible Improvement	No effect	No effect	Yes	Yes	Yes	Yes	Yes
Pavement Treatment, Class II (Texture/ Composition, Patterns, Color)	Special pavement compositions and markings to alert drivers of special conditions.	Not Likely	Possible	Possible	—	Possible Improvement	Varies	No constraint	Yes	Yes	Yes	Yes	Yes
Raised Crosswalks	Crosswalks raised transversely across the pavement.	Possible	Yes	Not Likely	—	Improved	Plan with care	Minor constraint	Plan with care	Yes	Yes	Plan with care	Yes
Speed Alert w/Warning	Residents use radar to clock speeds, record license plate numbers, police send notice to drivers.	No	Varies	Not Likely	—	Slight temporary improvement	No change	—	Yes	Yes	Yes	Yes	Yes

Table 8. Traffic Calming Toolbox

Device	Definition	Volume Reduction	Speed Reduction	Change in % Trucks	Safety			Emergency/ Service Vehicle Access/Delay	Type/Classification of Street			Use on Bus Route	Use with Driveways on Street
									Collector	Local Streets			
					Vehicle Conflicts	Pedestrian	Bicyclist		Commercial	Neighborhood Collector	Local Access		
Speed Bumps	Short strips of raised pavement, avoid using on public streets.	Possible	Varies	Yes	Safety problem	Improved	Plan with care	Significant problems	Plan with care	No	No	No	—
Traffic Circles	These geometric design features force traffic at intersections into circular maneuvers.	Possible	Yes, near circle	Yes	Improved	Varies	Varies	Minor constraint	Plan with care	Yes	Yes	Plan with care	Yes

Source: A Guidebook for Residential Traffic Management by Washington State Department of Transportation

B. Transit

Local Transit

At this time the implementation of public local transit in the Evans area is dependent upon The BUS. Federal funding from the FTA is prorated by population since the Greeley/Evans area is not considered a major metropolitan area. Continued dialogue with representatives of The BUS regarding local Evans needs will be important to maintaining or improving the level of service of transit.

Regional Transit

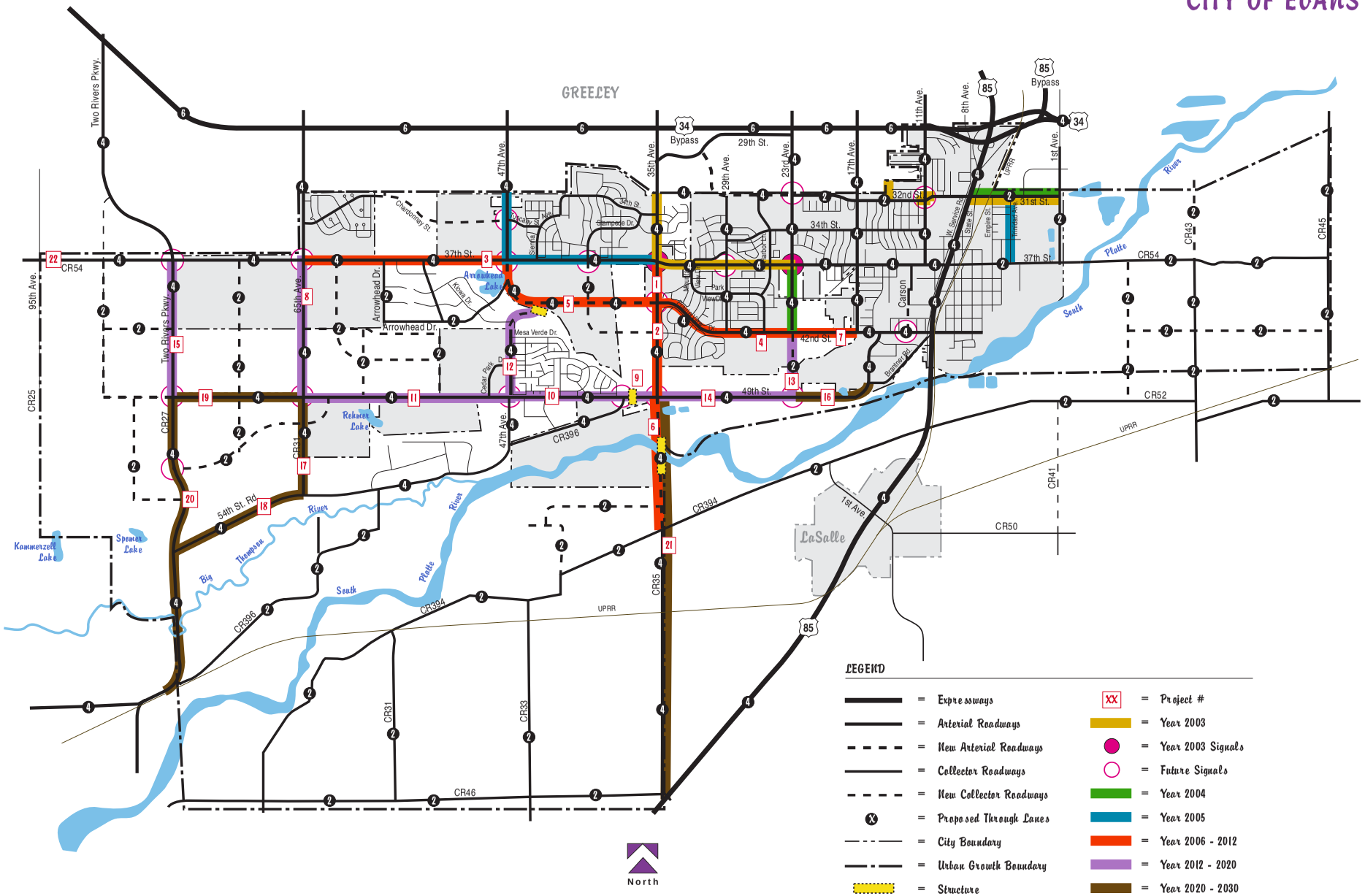
At the time of this writing, a separate study for the regional transit framework of the North Front Range area is under way. The results of this study should be available late 2003 or early 2004. This study will identify regional transit markets as well as plans for park-n-ride connections.

C. Streets Phasing Plan

The Streets Phasing Plan was developed from the Master Streets Plan and shows a general outline of timing of implementation of street projects. The phasing plan shows projects that are funded for the years 2004 and 2005 as well as projects that are proposed for three periods up to 2030. Most of the projects shown on Figure 22 are at this time unfunded. The Streets Phasing Plan contains proposed arterial streets as well as proposed signals since they could also be included in the Traffic Impact Fees.

Concept level cost estimates were included for the sole purpose of funding allocation. These costs represent a “broad brush” look at funding so that planning of Impact Fees and other funding sources can be procured. Tables 9 through 11 contain summaries of projects and planning costs. The current CIP which includes projects from 2002 to 2007 includes a range of funding for street improvement projects of between $2.8M and $1.3M for later CIP years. Average yearly costs for each time period of the Street Phasing Plan range between $2.6M to $2.9M per year. These yearly averages exclude cost for the 35th Avenue extension across the South Platte River.

CITY OF EVANS



02-240 1/6/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Figure 22

STREET PHASING PLAN

Table 9. Short Range Projects (2004 to 2012)

		Length (ft)	Unit Cost $M/Mile	Total Cost	Type of Improvement	Cost Sharing
2004–?	US 85 Access Control Plan Implementation			$2,050,000	Intersection Improvements	Possible CDOT/MPO
2004	23rd Ave. Widening (37th to 42nd)	2,625		*$290,000	Widen 2 to 4 Lanes	Developer
2004	42nd St. Improvements (17th to 23rd) – Phase II			$750,000	Paving Improvements	
2005	31st St. Reconstruction (1st to US 85)			$120,000	Pavement Rehabilitation	
2005	37th St. Widening (35th to 47th)	6,000		$600,000	Widen 2 to 4 Lanes	
2005	47th Ave. Widening (32nd to 37th)	2,625		$600,000	Widen 2 to 4 Lanes	
2005	Trinidad St. (31st to 37th)	3,200		$450,000	Pave Street	
1	35th Ave. – 37th St. to Prairie View	1,400	$2.5	$663,000	Widen Arterial 2 to 4 Lanes	
2	35th Ave. – Prairie View to 49th St.	3,600	$2.5	$1,705,000	Widen Arterial 2 to 4 Lanes	
3	37th St. – 47th Ave. to 65th Ave.	8,000	$2.5	$3,220,000	Widen Arterial 2 to 4 Lanes	
4	Prairie View Dr. Improvements (23rd to 35th)	6,200		$620,000	Various Improvements	Possible Developer?
5	Prairie View Dr. – 35th Ave. to 47th Ave.	7,000	$4.0	$5,300,000	New 4 Lane	Possible Developer?
6	35th Ave. – 49th St. to 54th Street Road	5,600	$10.0	$10,606,000	New 2 Lane (1,400' 4 Lane Br)	
7	42nd St. – 17th Ave. to 23rd Ave.	3,500	$2.1	$1,410,000	Widen 2 to 4 Lanes	
*	City cost					
	Total			$29,384,000		
	Cost per Year			$3,673,000		
	Cost Per Year w/o 35th Ave. Extension			$2,347,000		

Table 10. Mid Range Projects (2012 to 2020)

		Length (ft)	Unit Cost $M/Mile	Total Cost	Type of Improvement	Cost Sharing
8	65th Ave. – 37th St. to 49th St.	5,300	$2.5	$2,509,000	Widen Arterial 2 to 4 Lanes	
9	49th St. – CR 396 to 35th Ave.	1,200	$2.5	$568,000	Widen Arterial 2 to 4 Lanes	
10	49th St. – 47th Ave. to CR 396	4,700	$2.5	$2,225,000	Widen Arterial 2 to 4 Lanes	
11	49th St. – 47th Ave. to 65th Ave.	8,000	$2.5	$3,788,000	Widen 2 to 4 Lanes	
12	47th Ave. – Prairie View to 49th St.	4,200	$5.5	$4,375,000	Widen 2 to 4 Lanes (500' Br)	
13	23rd Ave. – 42nd St. to 49th St.	2,500	$2.5	$1,184,000	New 2 Lane	
14	49th St. – 35th Ave. to 23rd Ave.	5,280	$2.5	$2,500,000	Widen 2 to 4 Lanes	
15	Two Rivers Pkwy. – 37th St. to 49th St.	5,280	$2.5	$2,500,000	Widen 2 to 4 Lanes	Possible w/IGA
	Total			$19,650,000		
	Cost per Year			$2,456,000		

Table 11. Long Range Projects (2020 to 2030)

		Length (ft)	Unit Cost $M/Mile	Total Cost	Type of Improvement	Cost Sharing
16	49th St. – 23rd Ave. to Brantner	4,900	$2.5	$2,320,000	Widen 2 to 4 Lanes	
17	65th Ave. – 54th St. Rd. to 49th St.	4,000	$2.5	$1,894,000	Widen 2 to 4 Lanes	
18	54th St. Rd. – Two Rivers Pkwy. to 65th Ave.	5,600	$2.5	$2,652,000	Widen 2 to 4 Lanes	
19	49th St. Rd. – Two Rivers Pkwy. to 65th Ave.	5,280	$2.5	$2,500,000	New 2 Lane	
20	Two Rivers Pkwy. – 49th St. to 54th St. Rd.	12,300	$2.5	$5,824,000	Widen 2 to 4 Lanes	Possible w/IGA
21	35th Ave. – 49th St. to US 85	15,800	$2.5	$7,481,000	Widen 2 to 4 Lanes	
	Total Cost per Year			$22,670,000 $2,267,000		
	Projects Outside Growth Boundary					
22	CR 54 Widening – Two Rivers Pkwy. to I-25	9.5 Miles	$19.5		Widen 2 to 4 Lanes	IGA with Weld Co./ Greeley

D. Intersection Improvements

In addition to the designation of widening and new streets on the Master Streets Plan, various intersection improvements are recommended. Figure 23 shows the locations of such improvements. The following is a brief description of the recommended improvements at each of the intersections:

US 34/11th Avenue Intersection

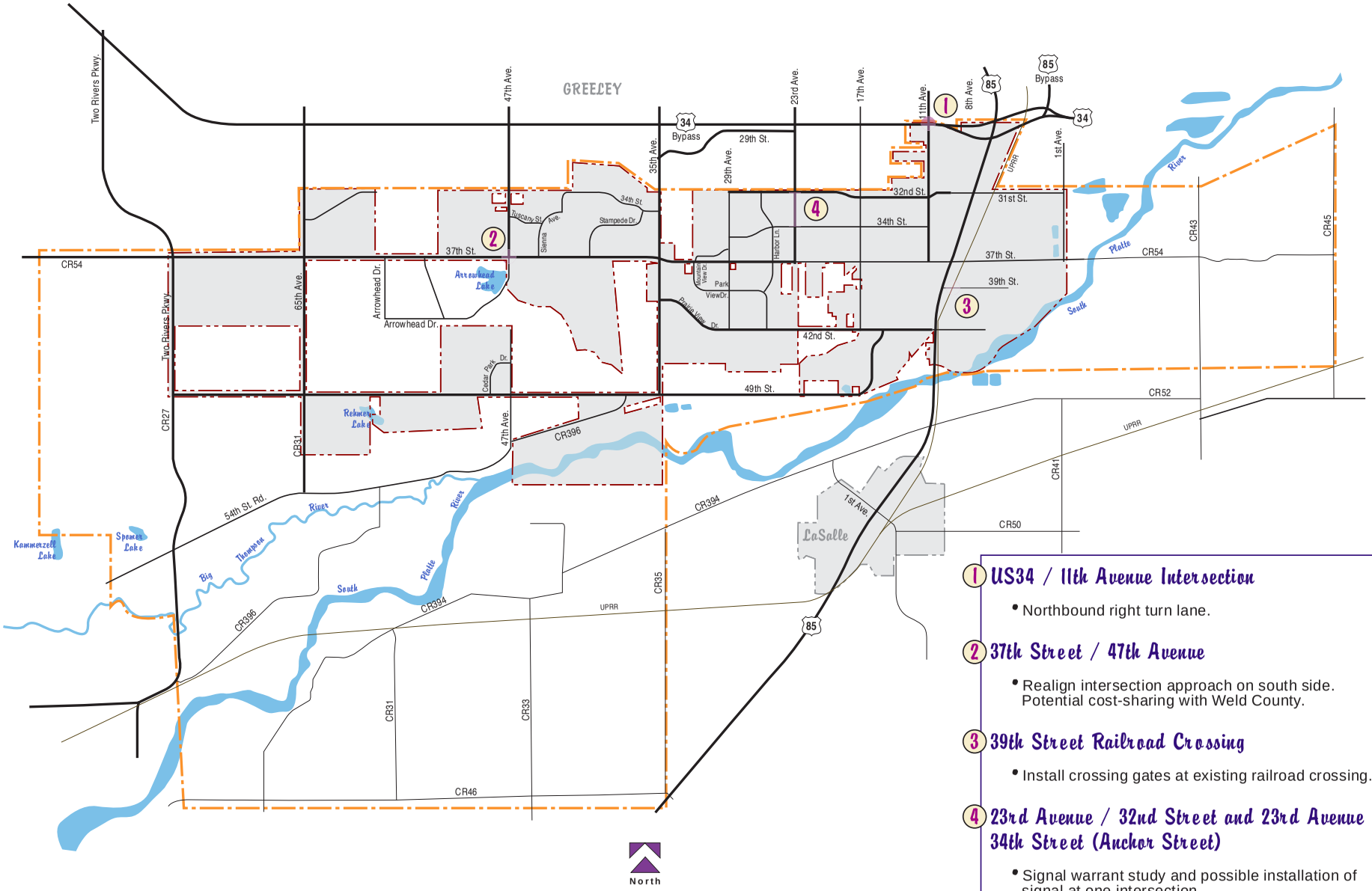
Capacity analyses and traffic volumes suggest the need for turn lane improvements at this intersection. The recommended improvement includes a northbound right turn lane.

37th Street/47th Avenue

The south approach does not align with the north approach and there are no turn lanes. Potential short-term improvements before the widening of 37th Street could include eliminating the offset approaches and providing westbound and eastbound left turn lanes. There is the potential for cost-sharing these improvements with Weld County.

Additional turn laneage on the north approach would significantly improve operations.

CITY OF EVANS



1 US34 / 11th Avenue Intersection

- Northbound right turn lane.

2 37th Street / 47th Avenue

- Realign intersection approach on south side. Potential cost-sharing with Weld County.

3 39th Street Railroad Crossing

- Install crossing gates at existing railroad crossing.

4 23rd Avenue / 32nd Street and 23rd Avenue / 34th Street (Anchor Street)

- Signal warrant study and possible installation of signal at one intersection.

02-240 1/6/04

FELSBURG HOLT & ULLEVIG
engineering paths to transportation solutions

Figure 23

SAFETY & INTERSECTION PROJECTS

39th Street Railroad Crossing

Install crossing gates at this existing railroad crossing.

23rd Avenue/32nd Street

This intersection is a high accident location and was identified as a congested intersection by the public. A signal warrant analysis is recommended at this intersection.

23rd Avenue/34th Street (Anchor Street)

This intersection is a high accident location and was identified as a congested intersection by the informal survey. A signal warrant analysis is recommended at this intersection. The warrant study would also include the 23rd Avenue/32nd Street intersection due to its close proximity and since both intersections probably wouldn't be signalized.

US 85 Access Improvements

US 85 is an important high speed regional connection for Evans. The close proximity of frontage roads to US 85 causes confusion and safety problems at intersections within Evans. The following concept improvements have been recommended previously in the US 85 Access Control Plan in 1999. Some elements of these improvements have already been done or are underway. In light of recent growth, the remaining projects continue to be a priority for Evans. Improvements at each of the four crossings of US 85 focus on relocating the frontage roads to create more space between intersections while maintaining reasonable access to adjacent properties. Design details such as specific access location and actual street alignment would be determined closer to the time each project is implemented. The following is a more detailed listing of improvements by intersection with US 85:

1. ***31st Street improvements***
   - Cul-de-sac and re-align existing west frontage road, or realign access through parking lot. (This could be done with redevelopment)
   - Construct US 85 accel / decel lanes
   - Cul-de-sac and re-align east frontage road (State St)

2. ***37th Street improvements***
   - Cul-de-sac and realign west frontage road in southwest quadrant 37th Street intersection

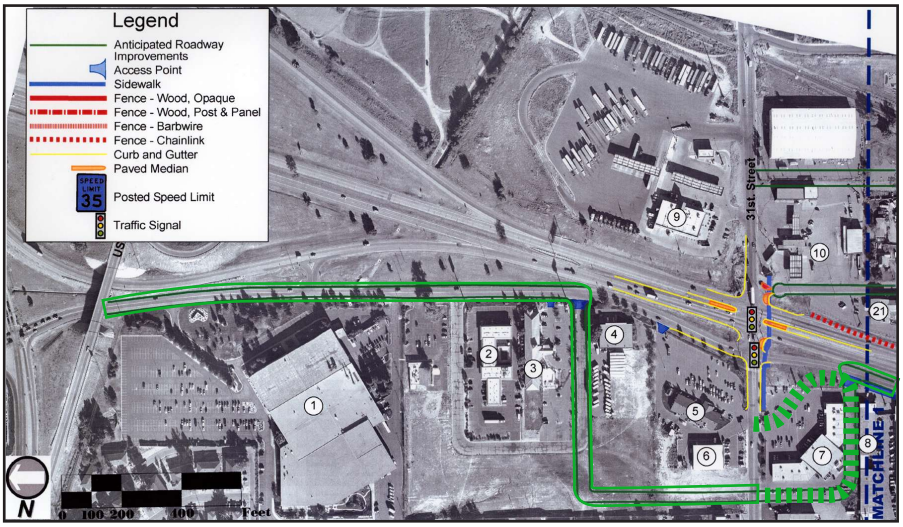
- Cul-de-sac and re-align west frontage road northwest quadrant 37th Street intersection
- US 85 median improvements

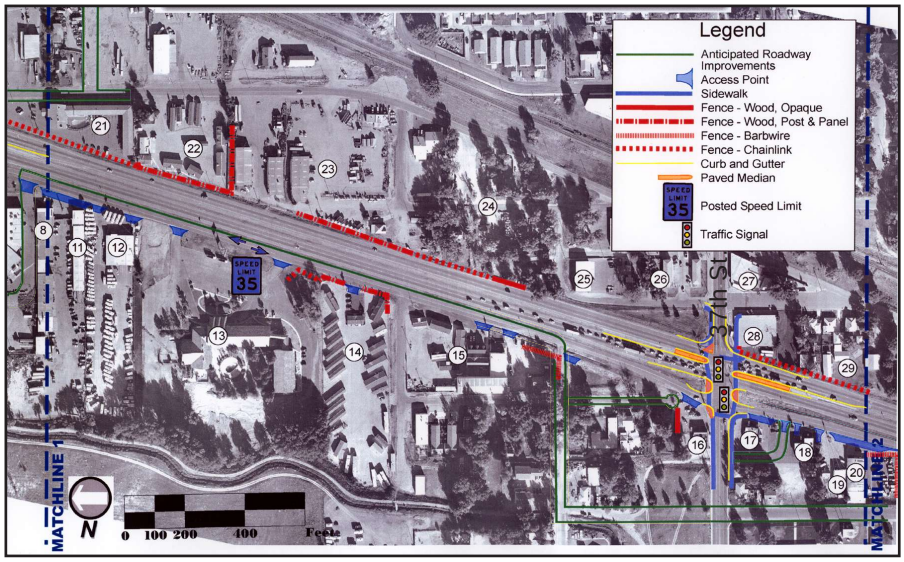
3. ***39th Street improvements***
   - US 85 median improvements to restrict east side to right in / right out (recently completed)
   - Realign and close west side access to US 85.

4. ***42nd Street improvements***
   - Realignment of west frontage road. Northwest corner of 42nd Street (southwest corner currently underway)
   - US 85 Median improvements
   - Signalization of intersection (recently completed)

The above conceptual improvements, graphically depicted in Figure 24, have been included to illustrate a conceptual implementation phasing that is logical based upon current development plans and funding structure.

CITY OF EVANS



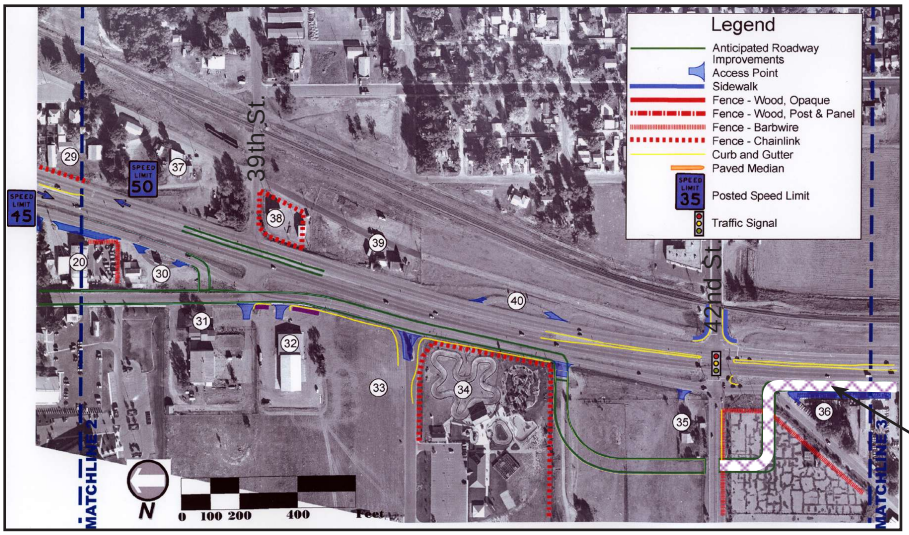


LEGEND

= Early 2004 - 2012

= Mid 2004 - 2012

= Late 2004 - 2012



Currently Underway

SOURCE: US85 Corridor Master Plan, Carter Burgess

02-240 1/8/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

Figure 24

US 85 ACCESS IMPROVEMENTS

APPENDIX A ADEQUATE PUBLIC FACILITIES

ADEQUATE PUBLIC FACILITIES PLAN

The Adequate Public Facilities Plan (APFP) provides a framework of regulations that link the timing of new growth to the ability for the infrastructure to handle this growth. If development impacts exceed the available infrastructure capacity, new development cannot be approved until the necessary improvements or a funded plan for the improvements are in place. Generally, a developer has the option to pay for the infrastructure costs or to wait until the additional infrastructure capacity is built. An option for paying back or crediting a developer that provides the up front improvements would also be part of the APFP. In essence, these regulations provide a means of linking good transportation planning with growth.

APFPs have been successfully used on both the state and local levels in many communities nationwide. Florida is a leader in the use of APFPs and has state legislation that sets up the framework for these regulations. Many local governments in Colorado, such as Douglas County, Loveland and Fort Collins, have implemented APFPs. Counties such as Larimer County have implemented Impact Fees in conjunction with APFPs. These fees allow a broader funding stream for transportation improvements, so that the burden of new facilities is distributed evenly.

The purpose of this narrative is to define the components related to transportation that should be included in an APFP. This memorandum does not specifically outline an ordinance for the APFP but identifies the framework of the APFP. The recommended steps for designing an APFP are the following:

- Identify infrastructure and services that will be covered by the APFP and document existing service levels.
- Adopt preferred LOS standards.
- Determine at what point in the development process LOS standards will be applied.
- Assess the impact of a specific development.
- Prepare a Capital Improvements Plan (CIP) that identifies funded and unfunded projects.
- Monitor the impact of new and already approved development for adequacy of the CIP.

Infrastructure and Services Covered

The transportation facilities that apply are all facilities currently in place or that would be in place prior to the issuance of a building permit.

Preferred LOS Standards

The preferred LOS for transportation facilities could be multi-modal in nature and apply to Pedestrian, Bicycle, and Motor Vehicle modes. Exceptions could be made in areas that are appropriate. But, as a general rule, the preferred LOS should be set at LOS D for motor vehicle modes and C for all others.

Determination of When LOS Standards Will be Applied

The timing of when the LOS standards are applied can affect the determination of adequacy of the facilities. The development process time frame can vary substantially. It is recommended that the determination of LOS be at the subdivision plan stage and be adjusted at the building permit stage if substantial changes have been made to the development plan.

Assessment of the Impact of a Specific Development

This represents the stage when adequacy is determined. A Traffic Impact Analysis (TIA) would identify the impacts of a development per the LOS criteria identified below. The process for determining adequacy of facilities is tied to the capacity of the existing facilities and the addition of new development impacts. If the LOS with the proposed development is determined to be at or better than the preferred LOS, then the applicable transportation facilities are deemed adequate.

If these impacts result in LOS that is worse than the preferred LOS, the applicant would have the following choices:

- Defer development until adequate facilities are in place that would improve the LOS to the preferred LOS.
- Construct the facilities that would improve the LOS to the preferred LOS. A development agreement could be written to allow for a payback for "oversizing" facilities to meet adequacy within the defined area limits. No improvements should be undertaken unless the improvement is a planned improvement identified in the City's CIP or determined by City Council to advance the goals and policies of the City of Evans.
- Reduce density of the development so that the impacts would not degrade the LOS below the preferred

If the existing LOS without the development is already below the preferred LOS, the developer would have the option to "over size" facilities to bring the facilities to the preferred LOS. The city could then reimburse the developer or partner with the developer in constructing its share of the improvements, providing that these improvements are identified in the City's CIP

Prepare a Fiscally Constrained CIP

The City of Evans has a CIP which it currently uses for funding and programming of public works projects. The updated plan would cover an 8 year period from 2004 to 2012 and include a prioritized listing of transportation projects. These identified priority projects would be projects that can be reasonably funded based upon historic funding streams and anticipated future funding. Additional transportation projects would be identified as unfunded.

Monitor the Impact of New and Vested Development

The continuous review of development impacts should be done to monitor the remaining capacity of transportation facilities. Given the increase in growth and annexations in the Evans area, a review of Evans' existing capacity should be done every 2 years. To protect against legal challenges, the City should also review the LOS standards periodically.

LOS Criteria

Pedestrian

The Pedestrian LOS would be evaluated according to prevailing or forecasted conditions within a 1/4 mile or 1,320 foot sphere of influence. This is measured along a straight line radius in all directions from the edges of a proposed development site. Destinations within this area where the existing LOS applies include:

- Recreational sites.
- Residential areas with concentrations of at least 20 dwelling units within 5 acres.
- Institutional sites.
- Office buildings greater than 25,000 square feet.
- Commercial sites greater than 15,000 square feet.
- Industrial sites greater than 50,000 square feet.

Existing LOS would be based upon the pedestrian facility type and criteria listed on the following pages.

The sole *Pedestrian District* would be located in the US 85 area between 31st Street and 42nd Street. The area is further defined as a corridor of approximately 1200 feet centered on US 85. Areas that are on the fringe of this area would be defined by City staff on a case by case basis.

Activity Centers are defined as locations identified in the Future Land Use plan of the Evans Comprehensive Plan as future Commercial and

Employment Center uses. Exceptions are within the designated Pedestrian District.

School Walking Areas and Recreational Areas are defined by the "Safe School Routes" within:

1.25 miles of an Elementary School
1.5 miles of a Middle School
2.25 miles of a High School

Transit Corridors are defined as areas within one quarter mile of existing and planned transit routes.

In cases where these facility types overlap, the stricter criteria would apply.

Target Levels of Service by Pedestrian Facility Type

Facility Type	Directness	Continuity	Street Crossings
Pedestrian Districts (US 85)	A	A	B
Activity Centers	B	B	C
School Walking Areas/Recreational Areas	B	A	B
Transit Corridors	B	C	C
Other Areas within Evans	C	C	C

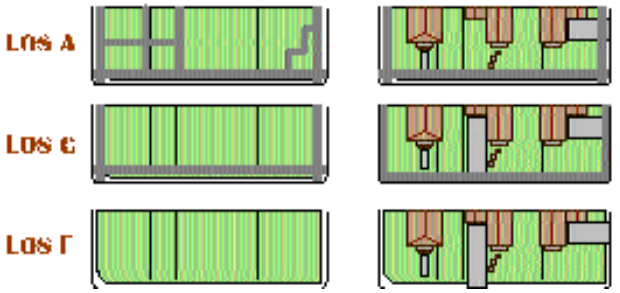
Pedestrian LOS Criteria Definitions

	A	B	C	D	E	F
Directness	Excellent and direct connectivity through full utilization of urban space, streets, transit, activity centers with clear linear visual statements. (A/M Ratio <1.2)*	Good and direct connectivity with clear linear and visual connection to transit facilities, streets, and activities. (A/M Ratio 1.2 to 1.6)*	Minimum acceptable directness and connectivity standard. Perceptions and urban space become less coherent with the beginning of discomfort with visual clarity and lack of linearity. (A/M Ratio 1.6 to 2.0)*	Increase lack of directness, connectivity and linearity with incoherent and confusing direction and visual connection to pedestrian destinations. (A/M Ratio 2.0 to 2.4)*	Poor directness and connectivity. Pedestrians perception of a linear connection to desired destination falters and serves only the person with no other choice. (A/M Ratio 2.4 to 3.0)*	No directness or connectivity. Total pedestrian disorientation, no linearity and confusing. (AM Ratio > 3.0)*
Continuity	Pedestrian sidewalk appears as a single entity with a major activity area or public open space.	Continuous stretches of sidewalks which are physically separated by a landscaped parkway.	Continuous stretches of sidewalks which may have variable widths, with and without landscaped parkways.	Pedestrian corridors are not well connected with several breaches in the pedestrian network.	Significant breaks in continuity.	Complete breakdown in pedestrian traffic flow as each pedestrian selects a different route as no pedestrian network exists.

* A/M Ratio: Actual distance between pedestrian origin/destination divided by minimum distance defined by a firth angle grid system.
** A signalized intersection LOS will go up one level of service with a dedicated pedestrian signal phase and/or a colored or textured crosswalk.
*** Unsignalized crossing at intersection of major street (minor arterial to major arterial) and minor street (local, connector, and collector).

A = Actual Distance to Walk
M = Measured Distance to Walk
X = Destination

Examples of Directness LOS Measure



Examples of Continuity LOS Measure

Pedestrian Street Crossing Criteria

Each feature is valued at 10 points:

- 3 or fewer lanes to cross
- 4 or fewer lanes to cross
- 6 or fewer lanes to cross
- Raised median at least 6' wide with low planting features or curb bulb outs
- Well marked crosswalks
- Good lighting levels
- Standard curb ramps
- Pedestrian signal
- Amenities, signing, sidewalk, and roadway character strongly suggest the presence of pedestrian crossing
  Drivers and pedestrians have unobstructed views of each other

Total possible points = 100

LOS A	90 or higher
LOS B	80 - 89
LOS C	70 - 79
LOS D	60 - 69
LOS E	40 - 59
LOS F	less than40

Motor Vehicle

Daily

The level of service standards for motor vehicles should be based upon the following capacities:

Peak Hour

In addition to maintaining a daily LOS D, peak hour levels of service should also not fall below LOS D at intersections within the area under consideration. These levels of service would be calculated and documented in the TIA report for the particular development. Levels of Service for Intersections are based upon peak hour traffic and are calculated using the methods outlined in the Highway Capacity Manual.

In some cases, maintaining a LOS D for certain movements may not be feasible during peak hours. Lower LOS would be acceptable for a particular movement if the overall intersection peak hour LOS is an LOS D or better.

Motor Vehicle LOS

Facility Type	No. of Lanes	LOS D Daily Capacity
Arterial	4	28,000
	2	12,200
Major Collector	4	17,800
	2	8,900

Unimproved Roadways

A threshold of 200 vehicles per day should be set for the capacity of a gravel or unimproved roadway. If a development's impacts would force traffic volumes above this threshold, the developer would have to pave the road.

The TIA would also be the means of determining the area of impacts of a particular development. For example, in determining the range of

impact, a criterion could be set that includes areas where site related traffic to adjacent intersections is greater than 50 peak hour trips.Street segments that are in the vicinity of Greeley or other municipalities with stricter LOS criteria, could be improved to allow for greater capacity than what would be required by Evans. In such cases, the City should coordinate with adjacent jurisdictions to implement designs that would smoothly transition between street sections.

Motor Vehicle LOS Intersections

Intersection component	Major Intersection	Minor Intersection	Unsignalized Intersection
Overall	LOS D	LOS D	N/A
Any Movement	LOS D	LOS D	left turn onto major street LOS E* All other movements LOS C

* If turn lane improvements will not reduce LOS to E, and intersection does not meet warrants for signalization, LOS F may be considered.

Major intersections include Arterial/Arterial and Arterial/Major Collector
Minor intersections include all other signalized intersections

APPENDIX B STREET TYPICAL SECTIONS

The street typical sections illustrated in the following pages are intended to be incorporated into the City of Evans design standards. These sections show recommendations for some of the current street sections as well as some new sections. The focus of the recommendations are tied to the planning aspects such as laneage, street right-of-way, sidewalk width, landscaping width and parking. Threshold daily traffic is given for each street type as a guideline for when a particular section should be used.

Two new street sections were added to the current street typical sections:

1. The Gateway Arterial section includes wider right-of-way to allow for aesthetic landscaping of streetscaping that would provide a gateway feature to the community. It is proposed that this particular section would be used for short segments (200 to 800 feet) of the following streets:

    - 65th Avenue
    - 35th Avenue
    - Two Rivers Parkway
    - 37th Street west of US 85

    The specific length of these segments would vary depending upon location physical constraints.

2. A Commercial Collector section would be used in shopping center areas or activity centers. The purpose of this section is to allow shorter sections of streets that would not normally have collector classifications to be built to allow greater capacity at major intersections. Parking would be allowed and wider sidewalks would facilitate the vehicular/pedestrian interface.

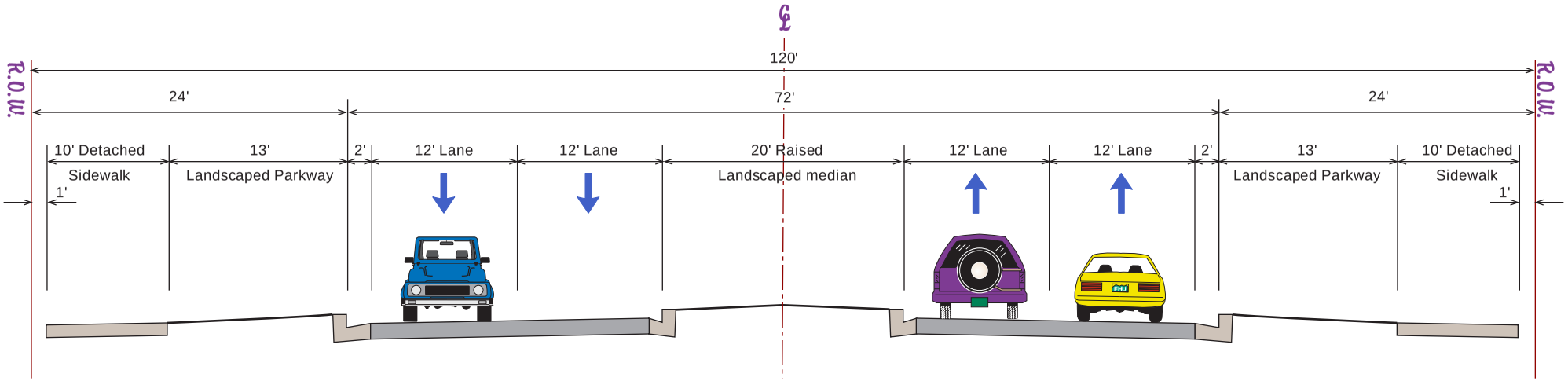
Other updates to the typical street sections include:

- A wider median to allow for a raised median for the arterial street
- Designation of the boulevard collector as an optional street section
- Turn lanes at major intersections for the minor collector
- Wider sidewalk for the minor collector

Areas east of US 85 encompass a unique area. It is intended that the existing character of these older areas of the City be maintained and that typical street sections be determined on a case by case basis.

City of Evans Transportation Plan

GATEWAY ARTERIAL



NOTES:

- ADT 16,000 to 32,000

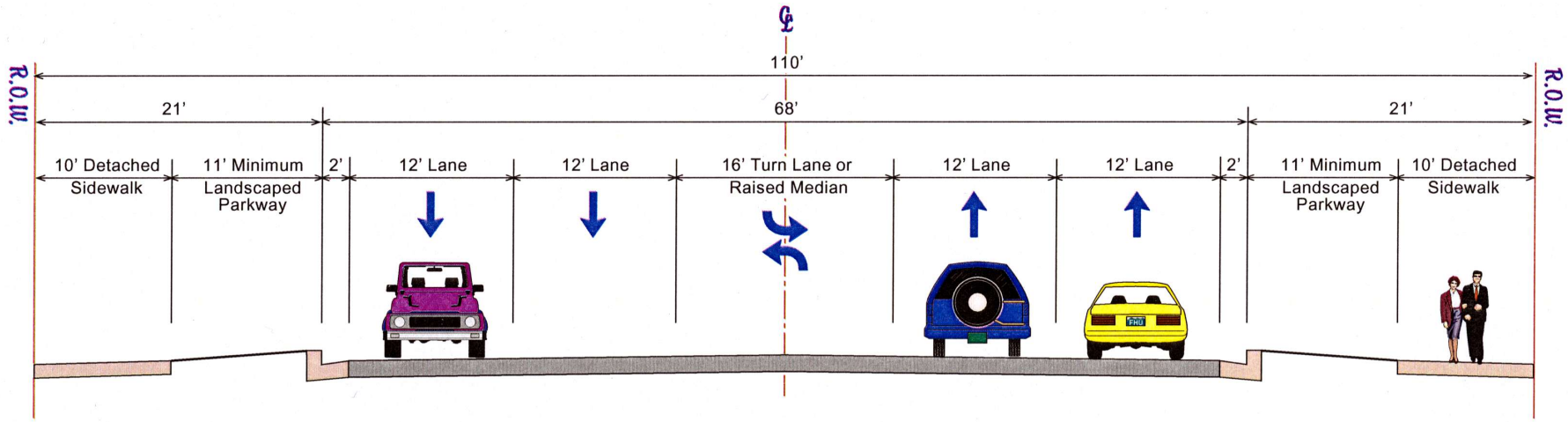
02-240 8/27/03

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

City of Evans Transportation Plan

ARTERIAL



NOTES:

- ADT 16,000 to 32,000

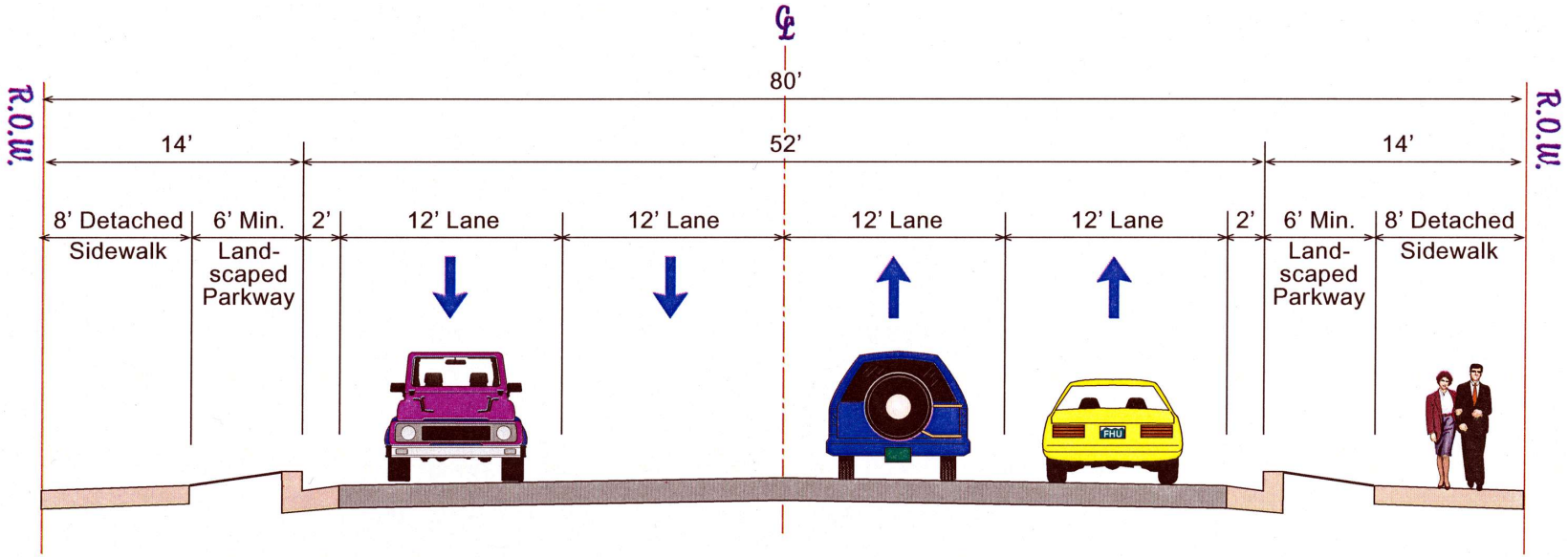
02-240 8/27/03

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

City of Evans Transportation Plan

MAJOR COLLECTOR



NOTES:

- ADT 7,000 to 16,000

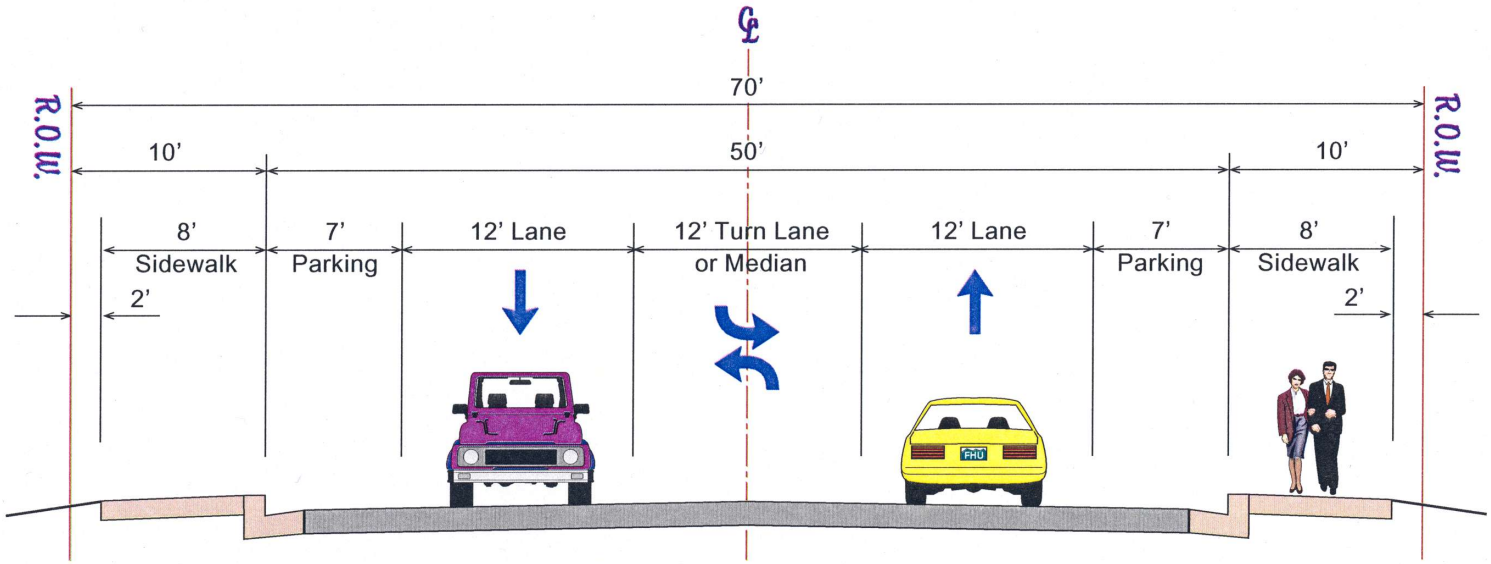
02-240 8/27/03

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

City of Evans Transportation Plan

COMMERCIAL COLLECTOR



NOTES:

- ADT 4,000 to 7,000

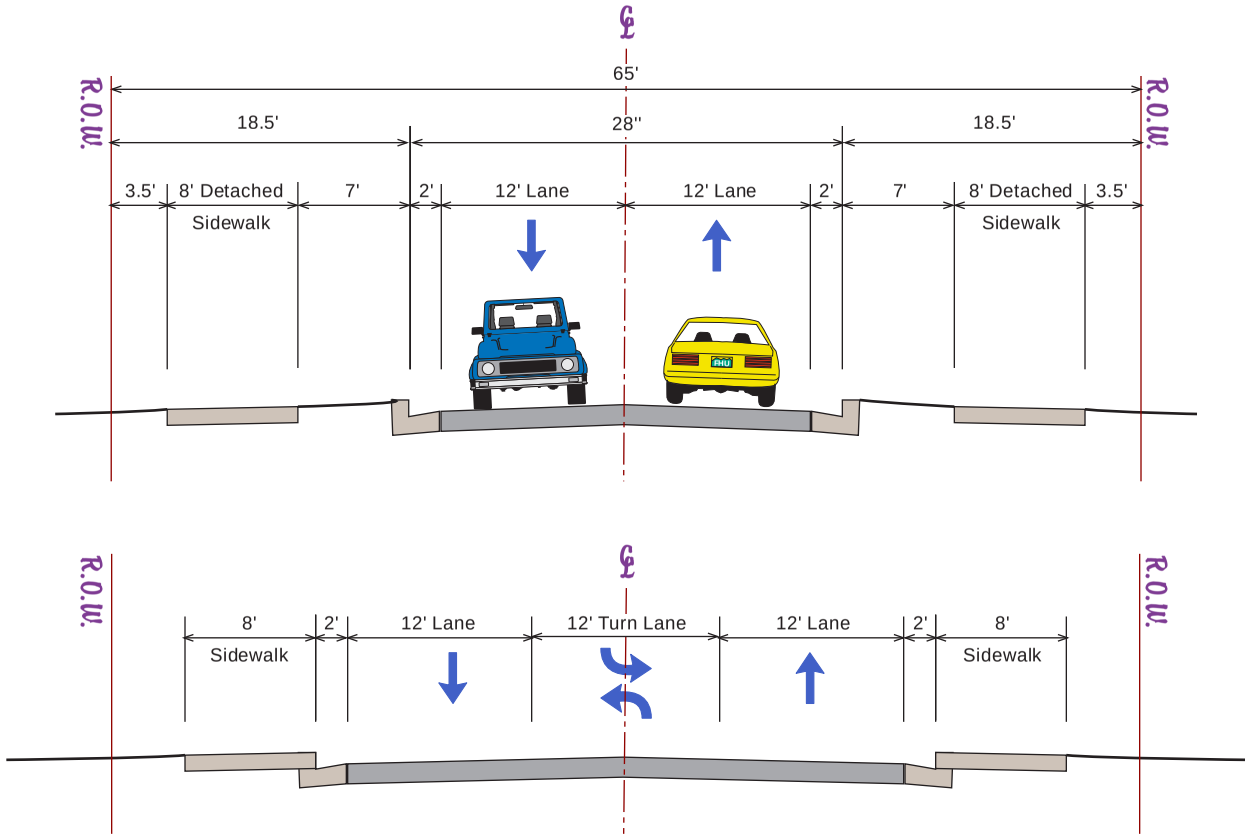
02-240 8/27/03

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

City of Evans Transportation Plan

MINOR COLLECTOR



NOTES:

- ADT 1,500 to 4,000

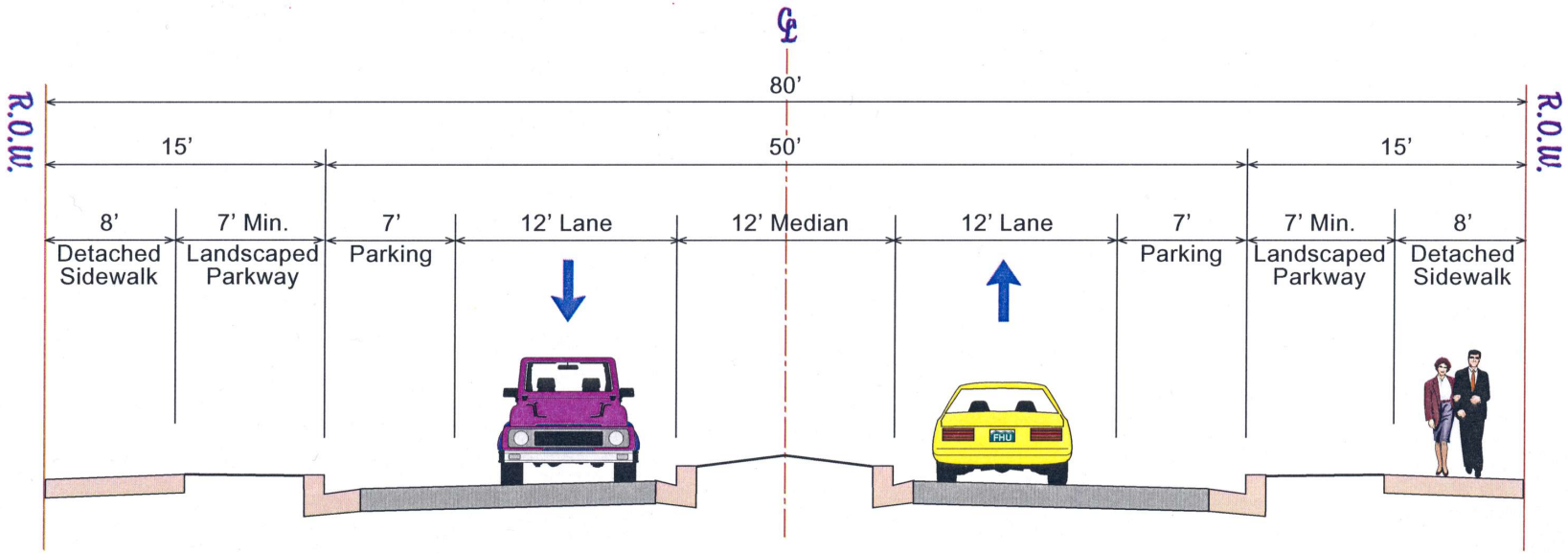
02-240 8/27/03

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

City of Evans Transportation Plan

BOULEVARD COLLECTOR
(Optional Section)



NOTES:

- ADT 1,500 to 4,000

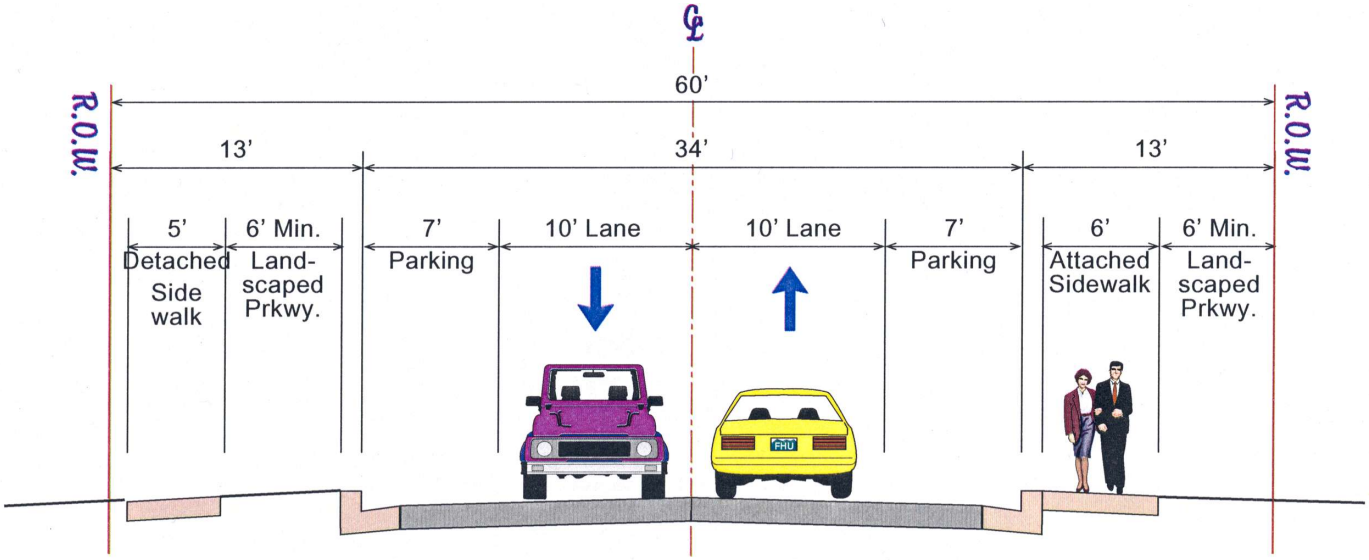
02-240 8/27/03

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

City of Evans Transportation Plan

LOCAL #1



NOTES:

- ADT < 1,500

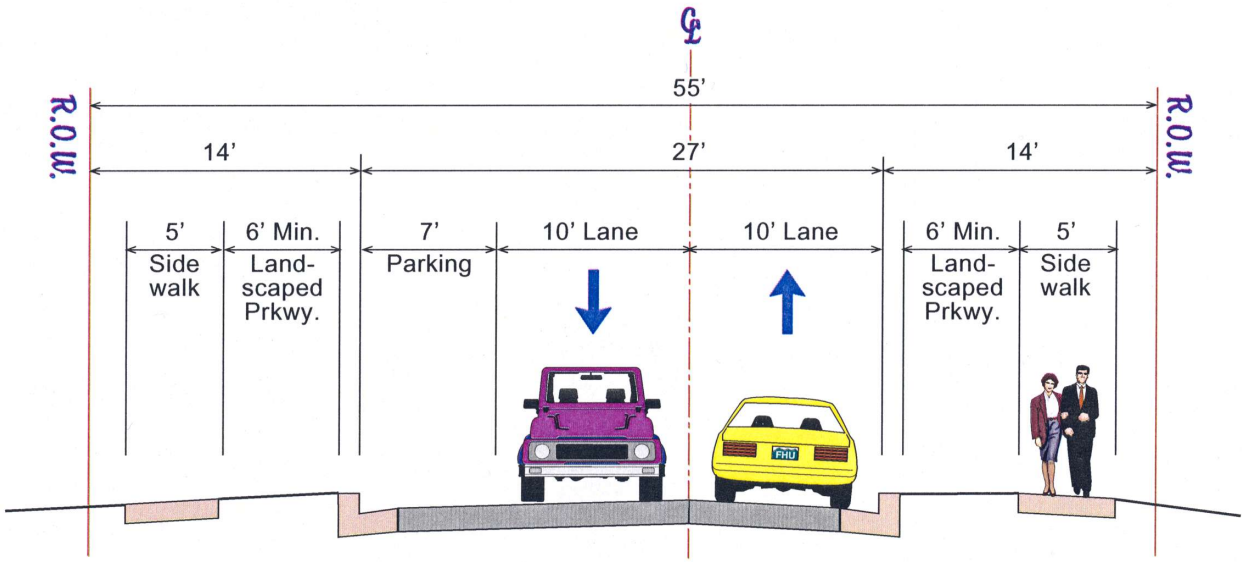
02-240 8/27/03

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

City of Evans Transportation Plan

LOCAL #2



NOTES:

- ADT < 1,500

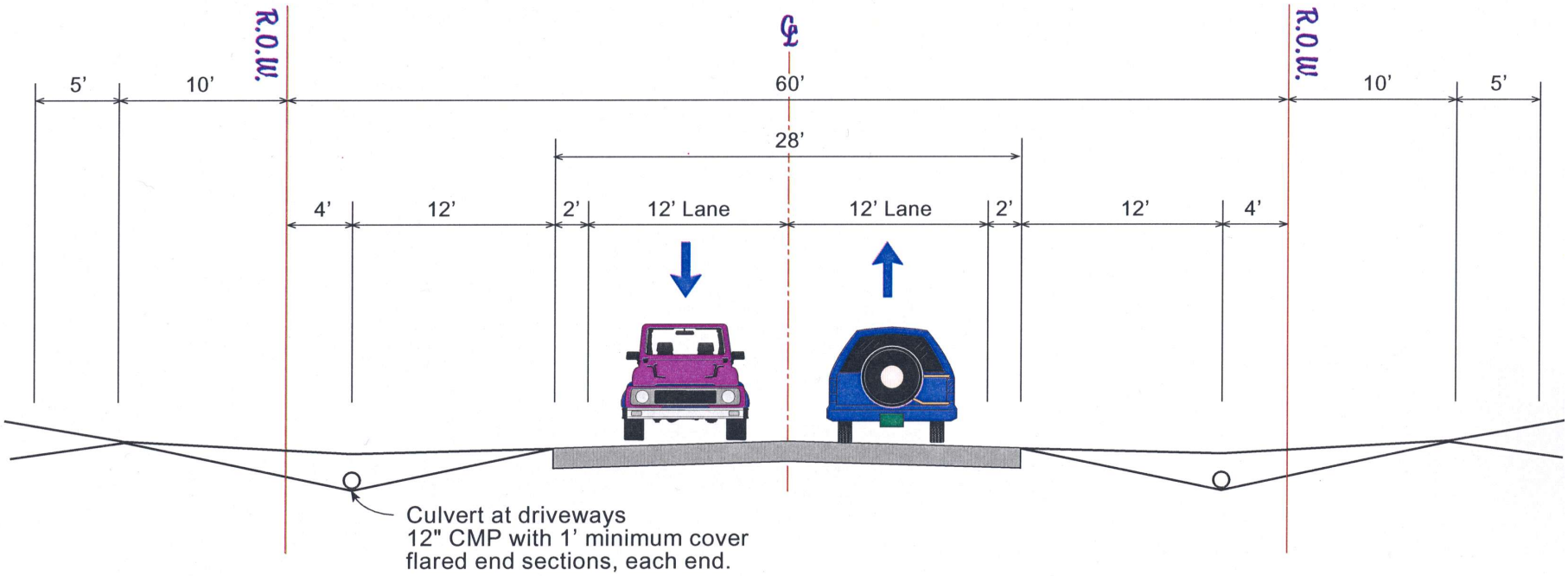
02-240 8/27/03

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

City of Evans Transportation Plan

RURAL LOCAL



NOTES:

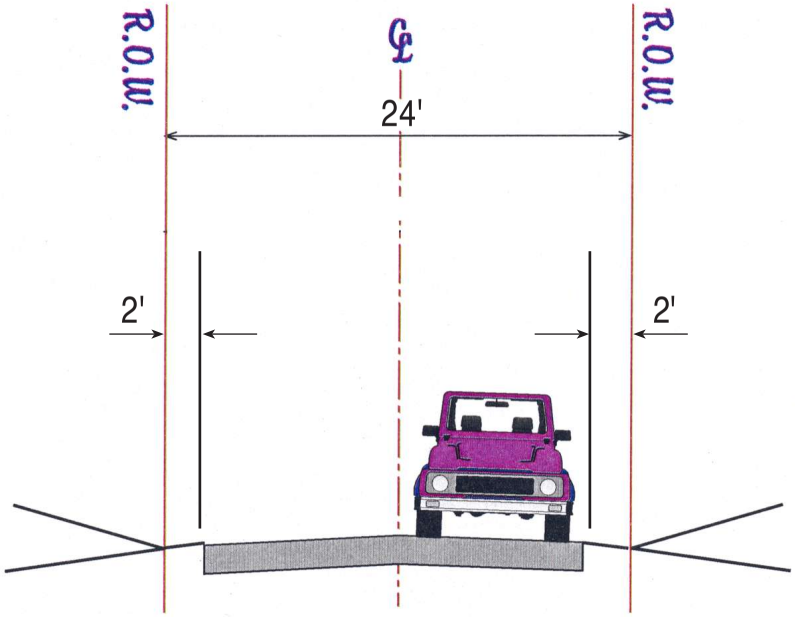
- ADT < 1,000

02-240 4/28/04

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

ALLEY



APPENDIX C ACCESS MANAGEMENT GUIDELINES

Good access management requires the balance of providing mobility and safety and providing convenient access to properties. In essence, the functional classification of streets is established to allow varying degrees of mobility and access. Greater mobility is expected on arterial streets and less access, and greater access and less mobility is expected on local streets. Given this concept of access, the following graphics provide driveway and intersection spacing and access guidelines for the various street classifications.

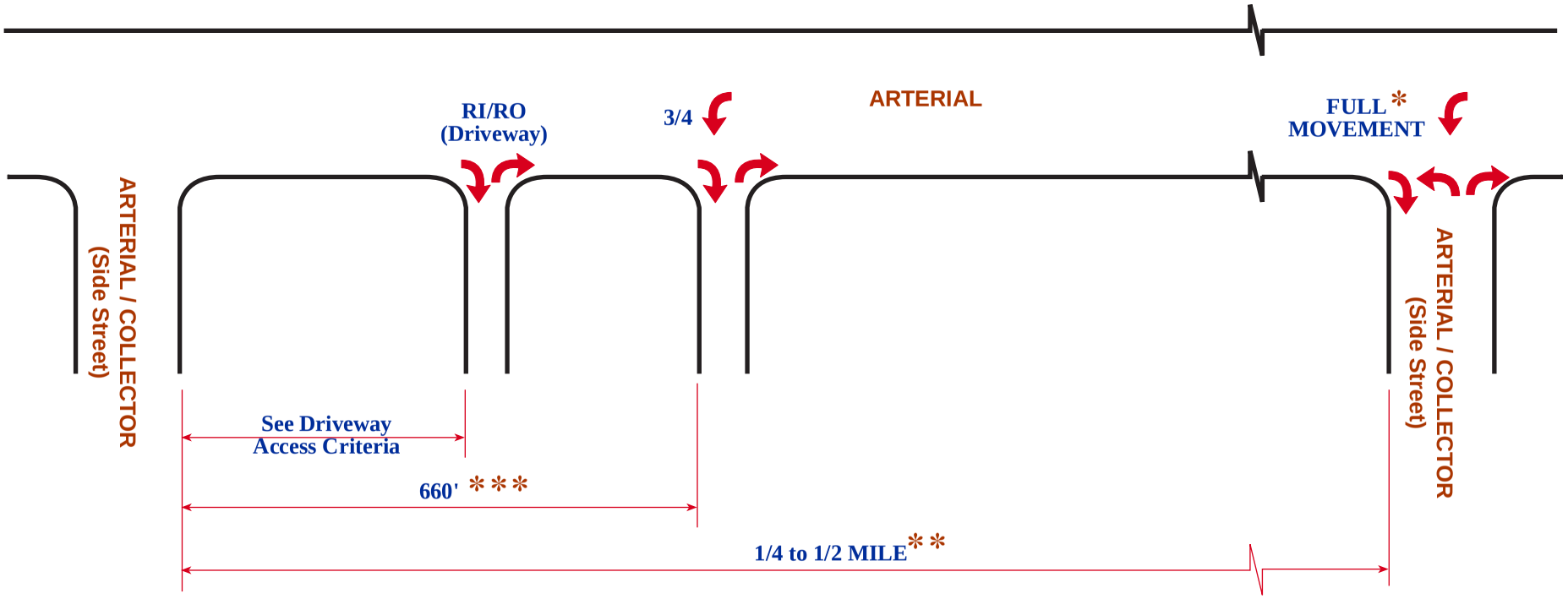
In cases where full movement access would be considered, it is important to evaluate the potential for a signalized intersection. A signal progression study should evaluate how a potential signal could affect traffic flow between other adjacent signals. Green bandwidth is a measure of signal progression and in this case, becomes a means of evaluating the location of a new signal. The minimum green bandwidth would be higher for arterial streets to allow for better mobility and less delay.

A table of design elements includes such items as volume thresholds for deceleration lanes, left-turn lane guidelines, sight distance, and driveway configurations.

* Full movement accesses.

** Signalization of full movement intersections shall be based on spacing criteria and bandwidth criteria of 35%. If the existing bandwidth is less than 35%, it shall not be degraded by more than 2% in each analysis period.

*** A 3/4 movement access may be granted a minimum of 660' from an arterial or collector side street subject to findings of a Traffic Impact Analysis.

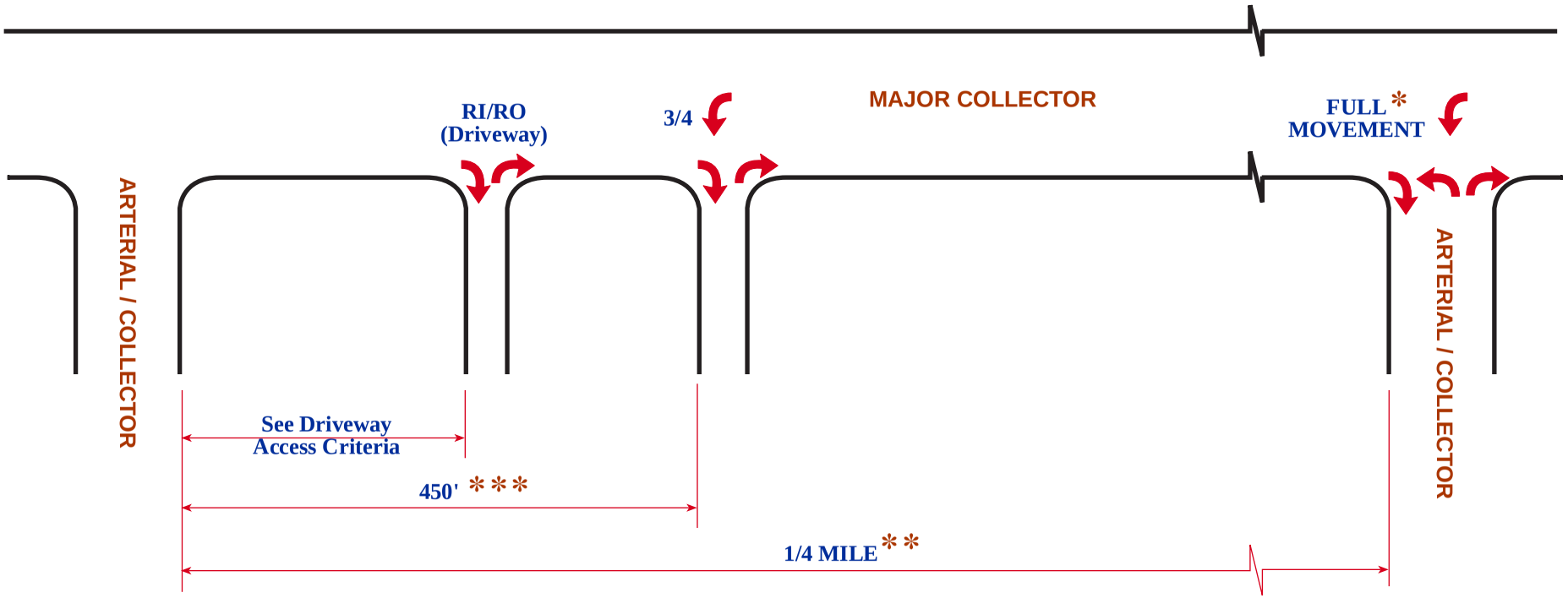


ARTERIAL ACCESS CRITERIA
(45 MPH)

* Full movement accesses may be granted a minimum of 660' from an arterial / collector intersection for shopping centers subject to findings of a Traffic Impact Analysis.

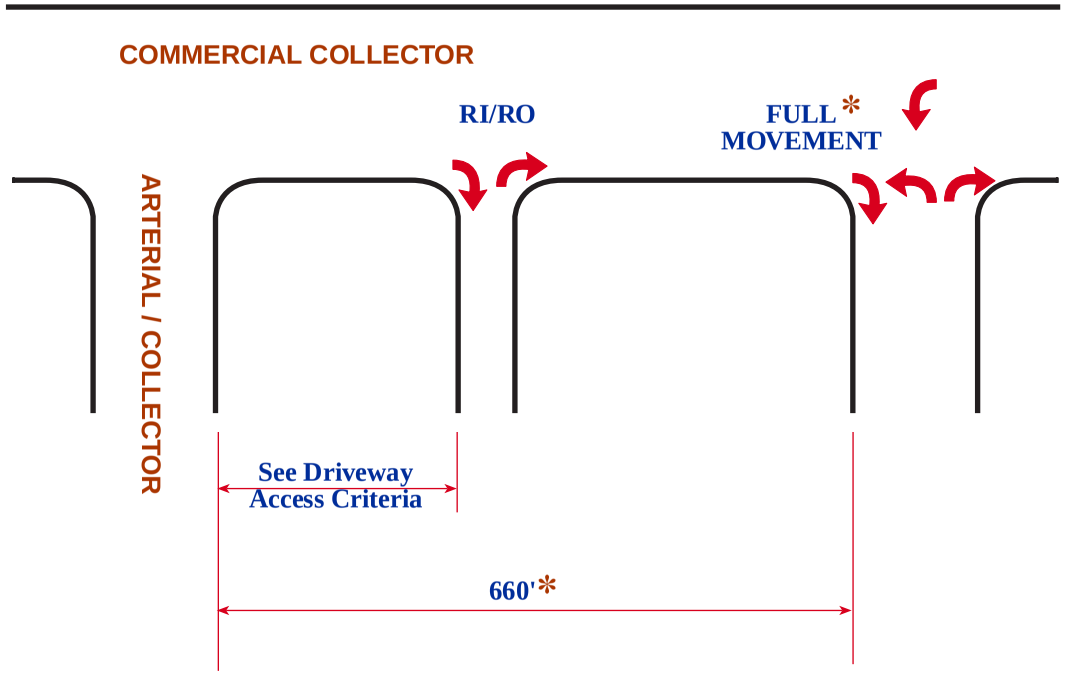
** Signalization of full movement intersections shall be based on spacing criteria and bandwidth criteria of 30%. If the existing bandwidth is less than 30%, it shall not be degraded by more than 2% in each analysis period.

*** A 3/4 movement access may be granted a minimum of 450' from an arterial or collector intersection subject to the findings of a Traffic Impact Analysis.



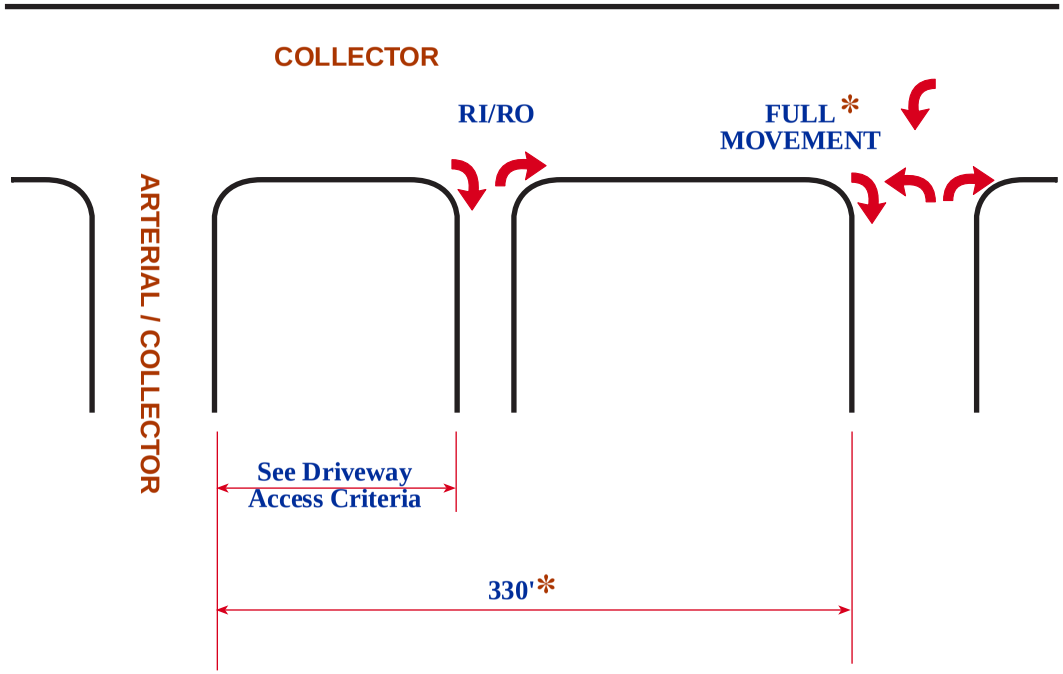
MAJOR COLLECTOR ACCESS CRITERIA (40 MPH)

* Full movement accesses may be granted at distances less than 660' from an arterial / collector intersection based on findings of a Traffic Impact Analysis.



COMMERCIAL COLLECTOR ACCESS CRITERIA (35 MPH)

* Full movement accesses may be granted at distances less than 330' from an arterial / collector intersection based on findings of a Traffic Impact Analysis.



MINOR and BOULEVARD COLLECTOR ACCESS CRITERIA (35 MPH)

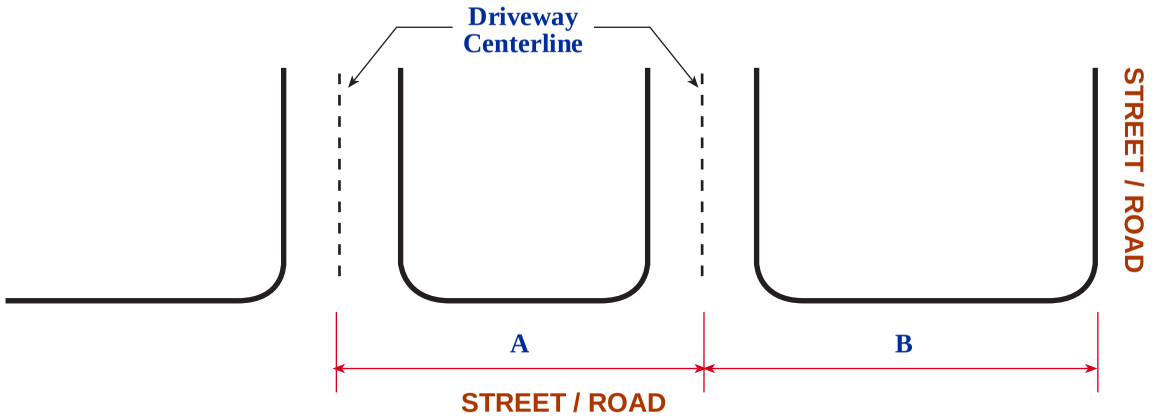


	Figure Reference	Distance
Non-Residential Driveways on Arterials		
From The Side Street (Right-in/right-out only)1	B	330’
Distance Between Driveways (Right-in/right-out only)	A	330’
Non-Residential Driveways on Major Collector		
From The Side Street (Right-in/right-out only)	B	300’
Distance Between Driveways (Right-in/right-out only)	A	275’
Non-Residential Driveways and Local Streets on Other Collectors		
From The Side Street		
Commercial Collector (Right-in/Right-out Only)	B	250’
Boulevard Collector (Right-in/Right-out Only)2	B	200’
Minor Collector (Right-in/Right-out Only)2	B	200’
Distance Between Driveways		
Commercial Collector (Right-in/Right-out Only)	A	200’
Boulevard Collector (Right-in/Right-out Only) 2	A	150’
Minor Collector (Right-in/Right-out Only) 2	A	150’
Residential Driveways on Local Streets		
From the Side Street	B	20’
Distance Between Driveways	A	15’

1 Approval of access contingent on the findings of a Traffic Impact Study.
2 Additional turn movements may be allowed per the findings of a Traffic Impact Study.

DRIVEWAY ACCESS MINIMUM SPACING CRITERIA

Street Standards/Design Elements

Street Standards/Design Elements	Arterial/ Gateway Arterial	Collector				Rural		
		Major	Commercial	Boulevard	Minor	#1	#2	Rural
Maximum Posted Speed (MPH)	45	40	35	35	35	30	30	30
Design Speed	55	45	40	40	40	35	35	35
Travel Lanes	4	4	2	2	2	2	2	2
Parking Lane Width	None	None	7' Both Sides	None	None	7' Both Sides	7' Both Sides	None
Traffic Volume ADT	16,000 to 32,000	7,000 to 16,000	4,000 to 7,000	1,500 to 4,000	1,500 to 4,000	<1,500	<1,500	<500
Minimum Sight Distance at Intersections and Driveways	610'	500'	445'	390'	390'	335'	335'	335'
Driveway Configuration	Radial Curb Return	Radial Curb Return	Curb Cut or Radial	Curb Cut or Radial	Curb Cut or Radial	Curb Cut	Curb Cut	Radial No Curb
Auxiliary Lanes – Left-Turn Lane	Required at all intersections with left turns	Required at all intersections with left turns	Required at all intersections	Required at all intersections	Required at all intersections	Not Required	No Required	Not Required
Auxiliary Lanes – Right-Turn Deceleration Lane	Required when > 50 veh./hr.	Required when > 50 veh./hr.	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required

FELSBURG
HOLT &
ULLEVIG

engineering paths to transportation solutions

6300 South Syracuse Way, Suite 600
Centennial, CO 80111
303.721.1440
www.fhueng.com