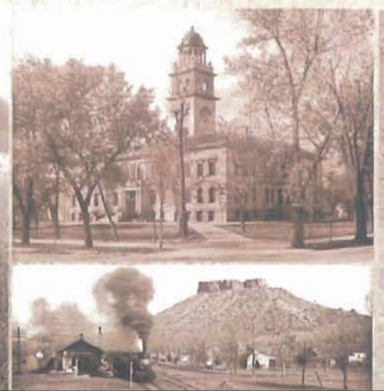
SH 83 - 86 Corridor Optimization Plan

September 2004





Colorado Department of Transportation

SH 83/86 Corridor Optimization Plan
September 2004

Prepared for:
Colorado Department of Transportation
Region 1
18500 East Colfax Avenue
Aurora, Colorado 80011

Prepared by:
Wilson & Company
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Denver, Colorado 80202
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In association with:
Ordonez and Vogelsang, LLC.
Economic and Planning Systems, Inc.
Reay Engineering, Inc.

SH 83-86 Corridor Optimization
Adoptions and Endorsements

The following agencies, having engaged in the preparation of this Corridor Optimization Plan for State Highways 83 and 86, hereby express their adoption or endorsement of this Plan, as defined in the subsequent correspondence.

Karen Y Grassaint
(name)
Town of Bennett

Susan Beckman
(name)
Arapahoe County

Jack P. Hurd
(name)
Town of Castle Rock

Melanie A. Worsley
(name)
Douglas County

Wendell C Wilson
(name)
Town of Elizabeth

Stephen T. Stutz
(name)
Elbert County

(name)
Town of Kiowa

Chuck Brown
(name)
El Paso County

(name) DAVID CASIANO MAYOR PRO TEM
Town of Parker

Jerald Thatcher
(name)
Eastern Transportation Planning Region

RESOLUTION NO. 241

A RESOLUTION SUPPORTING THE SH 83-86 CORRIDOR OPTIMIZATION PLAN

WHEREAS, there has been submitted to the Board of Trustees of the Town of Bennett a copy of the proposed SH 83-86 Corridor Optimization Plan;

WHEREAS, all materials submitted as part of the Plan have been reviewed by the Town Staff and the Board of Trustees of the Town of Bennett; and

WHEREAS, the contents of the Plan have been found to be consistent with the goals of the Town of Bennett.

NOW, THEREFORE, BE IT RESOLVED by the Board of Trustees of the Town of Bennett, Colorado, that

Section 1. The Board of Trustees does hereby support the SH 83-86 Corridor Optimization Plan.

INTRODUCED, READ, and ADOPTED this 27th day of April, 2004.

Karen Grossaint
Karen Grossaint, Mayor

TOWN OF BENNETT
ATTEST:
SEAL
COLORADO

Tam M. Intermill
Tam M. Intermill, Town Clerk

RESOLUTION NO. 2004-64

A RESOLUTION IN SUPPORT OF THE RECOMMENDATIONS CONTAINED WITHIN THE SH 83-86 CORRIOR OPTIMIZATION STUDY

WHEREAS, SH 86 is a major east-west regional highway starting in the Town of Castle Rock and extending east into Elbert County, and SH 83 is a major north-south regional highway extending from Denver into El Paso County;

WHEREAS, the Colorado Department of Transportation has undertaken a Corridor Optimization Study on both SH 86 and SH 83 to identify improvements and programs that could improve the operation and safety of each of these routes;

WHEREAS, the Town of Castle Rock actively participated in this study;

WHEREAS, the Town desires that the portion of SH 86, extending from Founders Parkway to Rock Street, be removed from the State Highway system and that Founders Parkway, extending from SH 86 to I-25, be added to the State Highway system and designated as SH 86;

WHEREAS, the Study supports the designation of Founder's Parkway as a State Highway;

NOW, THEREFORE BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF CASTLE ROCK AS FOLLOWS:

Section 1. **Approval.** The Town Council of the Town of Castle Rock supports the findings and recommendations of the SH 83-86 Corridor Optimization Study and recommends that it be adopted by the Transportation Commission of the Colorado Department of Transportation.

PASSED, APPROVED AND ADOPTED this 13th day of April, 2004, by the Town Council of the Town of Castle Rock, Colorado, on first and final reading by a vote of 7 for and 0 against.

ATTEST:

Sally A. Misare
Sally A. Misare Town Clerk

TOWN OF CASTLE ROCK

Millie S Bennett
Millie S Bennett, Mayor

Approved as to form:

Robert J. Slentz, Town Attorney

Approved as to content:

Bob Watts
Bob Watts, Director of Public Works

RESOLUTION NO. 04R12

A RESOLUTION IN SUPPORT OF THE RECOMMENDATIONS CONTAINED WITHIN THE SH 83-86 CORRIDOR OPTIMIZATION STUDY

WHEREAS, SH 86 is a major east-west regional highway starting in the Town of Castle Rock and extending east into Elbert County, and SH 83 is a major north-south regional highway extending from Denver into El Paso County;

WHEREAS, the Colorado Department of Transportation has undertaken a Corridor Optimization Study on both SH 86 and SH 83 to identify improvements and programs that could improve the operation and safety of each of these routes;

WHEREAS, the Town of Elizabeth actively participated in this study;

WHEREAS, the Town desires that the portion of SH 86, extending from Franktown east to Kiowa be widened to accommodate better traffic flows and to increase the current level of service "F" to a level of service "C" or better.

NOW, THEREFORE BE IT RESOLVED BY THE TOWN BOARD OF TRUSTEES OF THE TOWN OF ELIZABETH AS FOLLOWS:

Section 1. **Approval.** The Town Board of the Town of Elizabeth supports the findings and recommendations of the SH 83-86 Corridor Optimization Study and recommends that it be adopted by the Transportation Commission of the Colorado Department of Transportation.

PASSED, APPROVED AND ADPOTED this 11th, day of MAY, 2004, by the Town Board of the Town of Elizabeth, Colorado, on first and final reading by a vote of 7 for an 0 against.

TOWN OF ELIZABETH ACCEPTED AND APPROVED ELBERT COUNTY COLORADO SEPT. 21

ATTEST:

Sandra K. Tweedy, CMC
Town Clerk

TOWN OF ELIZABETH:

Wendell C. Wilson
Wendell C. Wilson, Mayor

Approved as to form:

Corey Y. Hoffmann, Town Attorney

RESOLUTION NO. 2004-03

A RESOLUTION SUPPORTING THE SH 83/86 CORRIDOR OPTIMIZATION PLAN

WHEREAS, there has been submitted to the Board of Trustees of the Town of Kiowa a copy of the proposed SH 83/86 Corridor Optimization Plan;

WHEREAS, all materials submitted as part of the Plan have been reviewed by the Town Staff and the Board of Trustees of Town of Kiowa; and

WHEREAS, the contents of the Plan have been found to be consistent with the goals of the Town of Kiowa.

NOW, THEREFORE, BE IT RESOLVED by the Board of Trustees of the Town of Kiowa, Colorado, that

Section 1. The Board of Trustees does hereby support the SH 83/86 Corridor Optimization Plan.

INTRODUCED, READ, and ADOPTED THIS 7TH day of June 2004.

Luke Bond, Mayor

Terry DuVall, Town Clerk

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1 of 2 R 0.00 D 0.00 Elbert County

STATE OF COLORADO }
}ss
COUNTY OF ELBERT }

At a regular meeting of the Board of County Commissioners for Elbert County, State of Colorado, held at the Courthouse in Kiowa on Wednesday, the 21st day of April A.D. 2004, there were present:

Stephen Stutz	Commissioner Chairman
John Metli	Commissioner Vice Chair
Geri Scheidt	Deputy, Clerk to the Board

When the following proceedings, among others, were had and done, to wit:

RESOLUTION 04-37
A RESOLUTION IN SUPPORT OF THE RECOMMENDATIONS CONTAINED WITHIN THE SH 83-86 CORRIDOR OPTIMIZATION STUDY

WHEREAS, State Highway 86 is a major east/west regional highway through Elbert County extending east into Lincoln County and extending west into Douglas County; and

WHEREAS, State Highway 83 is a major north/south regional highway extending from Denver into El Paso County; and

WHEREAS, the Colorado Department of Transportation has undertaken a Corridor Optimization Study on both State Highway 86 and State Highway 83 to identify improvements and programs that could improve the operation and safety of each of these routes; and

WHEREAS, Elbert County actively participated in this study.

BE IT THEREFORE RESOLVED, the Board of Elbert County Commissioners do hereby express adoption/endorsement of the State Highway 83/86 Corridor Optimization Study contingent upon the adoption of the plan by the Transportation Commission of the Colorado Department of Transportation.

Upon a motion duly made and seconded, the foregoing resolution was adopted by the following vote:

Stephen F. Stutz AYE
STEPHEN STUTZ, CHAIRMAN

John F. Metli AYE
JOHN METLI, VICE CHAIR

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History, Intent & Benefits of Corridor Optimization for State Highways 83 and 86

The Corridor Optimization process was created to develop specific corridor visions which are consistent and compatible with local plans and are supported by affected local governments and regional agencies. Officially adopted by the Colorado Department of Transportation (CDOT) in 2001, the Corridor Optimization Guidelines were developed to provide input to the regional transportation planning process by providing an assessment of how to best meet future travel demands in a given corridor. CDOT intended that the Guidelines be applied to corridors where opportunities for improvements might be lost in the absence of a plan of action addressing future travel demand. This potential loss of opportunity fueled by historic and anticipated growth resulted in the initiation of a Corridor Optimization Plan for State Highways (SH) 83 and 86.

The combination of proactive planning and local involvement envisioned by the Guidelines was intended to provide the Colorado Transportation Commission with comprehensive transportation system recommendations supported by a commitment to ongoing stakeholder involvement. Ultimate adoption of any Corridor Optimization Plan rests with the Commission. A corridor vision developed through this process is intended to provide valuable input to the statewide planning process.

Corridor Optimization as an Enhancement to Statewide Planning

Figure ES-1 in the next column shows how Corridor Optimization is intended to fit into the statewide transportation planning process. A Corridor Optimization Plan, while preceding the development of the Regional Transportation Plan (RTP), can be modified by the outcome of the RTP process. An RTP is a long range plan designed to meet the future mobility needs of each of the 15 Transportation Planning Regions (TPR) in Colorado and to help identify and prioritize projects that address those needs. Thus, it is imperative that the affected Metropolitan Planning Organizations (MPO's) and Transportation Planning Regions be involved in any Corridor Optimization process, as the intent is that their individual planning efforts be founded on a common preferred vision.

The Statewide Transportation Improvement Program (STIP) follows the development of Corridor Optimization and Regional Transportation Plans. The STIP is updated every other year, and contains at least 3 years of prioritized projects for the state. The STIP is based on a comprehensive and cooperative planning effort involving CDOT, MPO's, TPR's, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA) and City & County Governments.

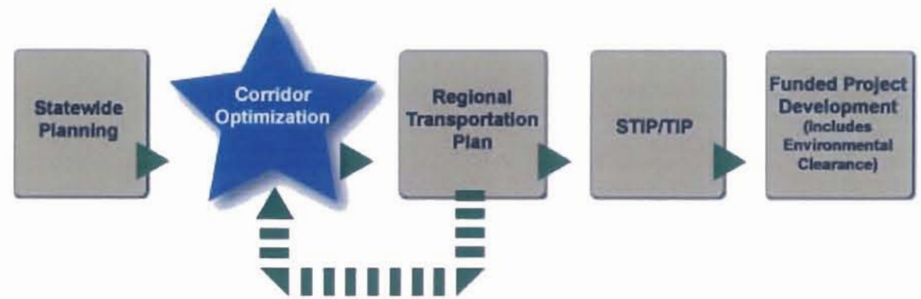


Figure ES-1—The Transportation Planning Process

Distinction from Subsequent Planning Processes

Corridor Optimization is distinct from subsequent planning and project development steps in several key respects. Although a final Corridor Optimization Plan includes an implementation strategy (a Business Plan) that identifies potential funding options, the final Corridor Optimization Plan is not fiscally constrained nor does it include funding commitments. While various corridor concepts are discussed, alignments are not finalized, nor are environmental clearances undertaken (although potential "fatal flaws" of the options are considered). Similarly, while land use implications and relationships

are explored, modifications to existing local land use plans are not a required part of the process.

Participants

Thirteen agencies were involved in the development of the SH 83-86 Corridor Optimization Plan. They include:

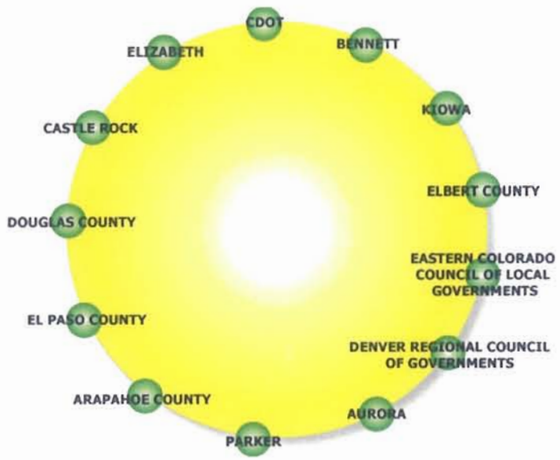


Figure ES-2--Participants

A Technical Advisory Committee (TAC) and Policy Advisory Committee (PAC), consisting respectively of staff and elected officials from each of these local agencies met frequently. The TAC met as a group six times, and multiple individual agency meetings occurred with each of the thirteen agencies. The PAC met three times, and multiple one-on-one meetings between project staff and PAC representatives were held during the development of the Plan. These committees assumed ownership of the project and had the shared roles of participating as a working group and focusing on solutions tailored to the problem. The PAC validated the direction of the TAC, and their joint involvement and commitment will contribute greatly to the continuity of the plan following its adoption.

Town councils and county boards were engaged throughout the Plan development. The Plan will provide the public and affected planning agencies with useful information and recommendations that can be considered and modified as appropriate during the conduct of the formal regional transportation planning and STIP processes. The Plan itself does not replace or override these processes—it is intended to complement them.

SH 83 and 86 Corridor Optimization Elements

The State Highway 83 & 86 Corridor Optimization Plan is founded on the relationships between three strategic elements: transportation, land use, and funding. The exploration and understanding of the interactions between these strategic elements form the basis for the development of an overall vision for the corridors. Land use intensity, type, and organization affect the number and length of vehicular trips and the resulting need for improved transportation facilities. The availability and viability of transportation facilities affects development decisions. The availability of funding in turn affects the timely improvement of transportation facilities and therefore the viability of development.

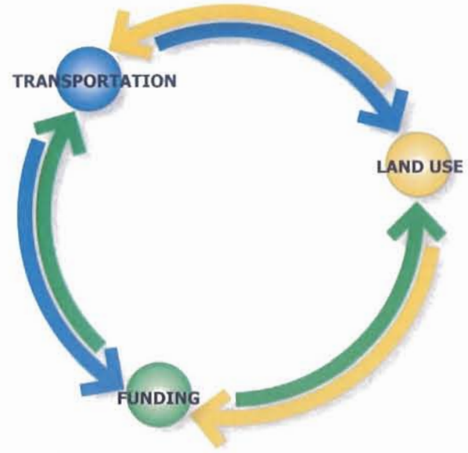


Figure ES-3—The Transportation-Land Use-Funding Relationship

Topics addressed in each of the elements included:

Transportation:

- Travel patterns and capacity relative to future demand
- Safety improvement recommendations as a result of accident analysis
- Access planning
- Potential alternatives and/or parallel routes
- A study area transportation master plan

Land Use:

- Land use patterns
- Potential growth
- Relationship between growth and the transportation system

Funding:

- Ability to leverage funding sources
- Potential funding options for transportation improvements
- Local commitments to supporting actions (such as right-of-way preservation and access management)

Project Location & Schedule

The Study was undertaken in February of 2003. It is anticipated that the Colorado Transportation Commission will consider adoption of the Plan in June of 2004. Because of continuity of travel patterns, the study limits along State Highways 83 and 86, respectively, were chosen to be from E-470 in Parker to SH 105 in El Paso County, and from Castle Rock to Kiowa.

Corridor Optimization Process & Document

The Corridor Optimization Guidelines define the following steps in the development of a Corridor Optimization Plan.

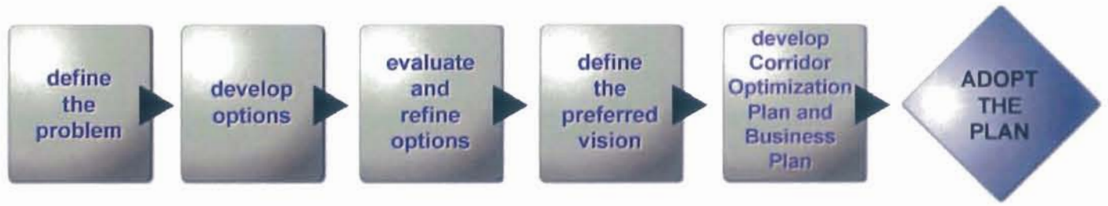


Figure ES-4—Steps in a Corridor Optimization Plan

These steps have been incorporated into the Plan Document through the following sections:

- Problem identification
- Development and evaluation of local and corridor options, and preferred visions, including short term safety projects
- Business plan, including local commitments to supporting actions and the need to develop an access plan for SH 83 and SH 86 that supports the preferred vision

Problem Definition

The interactions between three strategic elements - land use characteristics, transportation system attributes, and funding limitations - form the basis of the problems that need to be addressed by the SH 83 and 86 Corridor Optimization Plan. Specific issues include:

- Four key land use characteristics currently contribute to the problem, and this trend is expected to continue: the magnitude of both population and employment growth, the relatively greater increase of population in the study area as compared to employment, the dispersed residential pattern (such as 35 acre residential parcels), and the concentrated employment in areas just to the northwest and southwest of the study area segregated from the residential areas. Elbert and Douglas Counties doubled and tripled in population, respectively, from 1990-2000, but about 70% of all new jobs in the study area developed at its perimeters in south central Arapahoe and northern El Paso Counties. These patterns tend to create demand that focuses both commuter and commercial traffic on SH 83 and SH 86.

- The transportation system in the study area is characterized by a lack of options. The roadway network has substantial gaps at both the local and regional level, and there are few opportunities to use other modes of travel. In a study area approximately 25 miles wide east to west and 75 miles long north to south, State Highways 83 and 86 constitute the only major roadways. Filling the gaps in the roadway network has been complicated by the numerous drainage ways in the area, as well as by pockets of long-established development. The feasibility of other modes has been hindered by dispersed land uses and by the absence of pedestrian and cyclist facilities. Further, freight traffic is beginning to divert from the major roadways surrounding the study area to the few continuous corridors within the study area. These facilities are physically unsuited for freight movement and pass through the core of several communities. East of SH 83, only six continuous, paved connections exist across the boundaries of the four involved Counties within the Study area.

- Congestion is a growing problem. SH 86 operates near capacity from Castle Rock to Elizabeth, and is expected to experience demand exceeding capacity from Castle Rock to Kiowa by the year 2030, with similar conditions expected on SH 83 from E-470 to Franktown. Congestion is also expected on Hilltop Road, portions of the Kiowa-Bennett Road and others in that same time frame. The Kiowa-Bennett Road, and the Elbert Road and adjacent uses are burdened by increases in freight traffic.

- Primary safety issues include several "spot" locations, such as intersections and curves, as well as long segments of both local and State facilities with minimal or non-existent shoulders.

- Limited funding to improve transportation, while typical of current conditions in the State, is compounded to varying degrees by gaps in local funding sources. This is related to a lack of commercial development, low residential densities, and an absence of mechanisms in some communities to generate significant amounts of funding for local transportation improvements.

- These issues in combination will continue to adversely affect quality of life.

Evaluation Criteria

Four general areas of concern were identified by the TAC and employed as criteria to evaluate the viability of the recommended Plan - Effectiveness, Land Use Compatibility, Acceptability, and Funding Potential:

- Effectiveness of the corridor plan to enhance and maximize regional Level of Service and address known and anticipated safety issues;

- Compatibility between the corridor plan and local land use patterns, plans and related policies and the ability of each to adapt to the other;

- Acceptability of the corridor plan as it relates to local community visions and support for the regional vision; and

- Funding Potential, especially with regard to leveraging future funds with local commitment of funds, right of way, development contributions, and other sources.

Proposed elements of the Plan were compared against these criteria, both to evaluate their effectiveness in helping achieve the study's primary objectives and to explore opportunities to further the benefits of those elements. Assisted by the development and application of the evaluation criteria, the stakeholders arrived at a corridor plan that effectively addresses the future transportation needs of the region, is supported by local government planning and policies, is consistent with both local community and regional visions of the future, and affords multiple opportunities to assist in funding elements of the Plan.

Summary of Results

The recommended roadway plan is the sum of the stakeholders' plans to address travel demand within their respective jurisdictions as well as provide logical cross-jurisdictional connections. Figure ES-5 – the Recommended Roadway Plan – shows the proposed study area roadway system. Key example elements of the recommended system include:

- several new County road connections within the core of both Elbert and Arapahoe Counties, many of these relieving the traffic demands on SH 83 and SH 86, including new connections that cross jurisdictional boundary lines;

- multiple Town and Douglas County roadway extensions and widenings in and around Castle Rock, providing both relief and route choices in some of the most congested parts of the study area;

- preservation of options in Parker for either a one-way couplet or parallel parkways along Parker Road and Twenty-Mile Road;

- widening of SH 83 from Bayou Gulch to Russellville Road and SH 86 from Castle Rock to Kiowa to address current and anticipated capacity needs;

- preserving multiple east-west corridor alignment options in and near Elizabeth, providing for high demand in an already congested and constrained location;

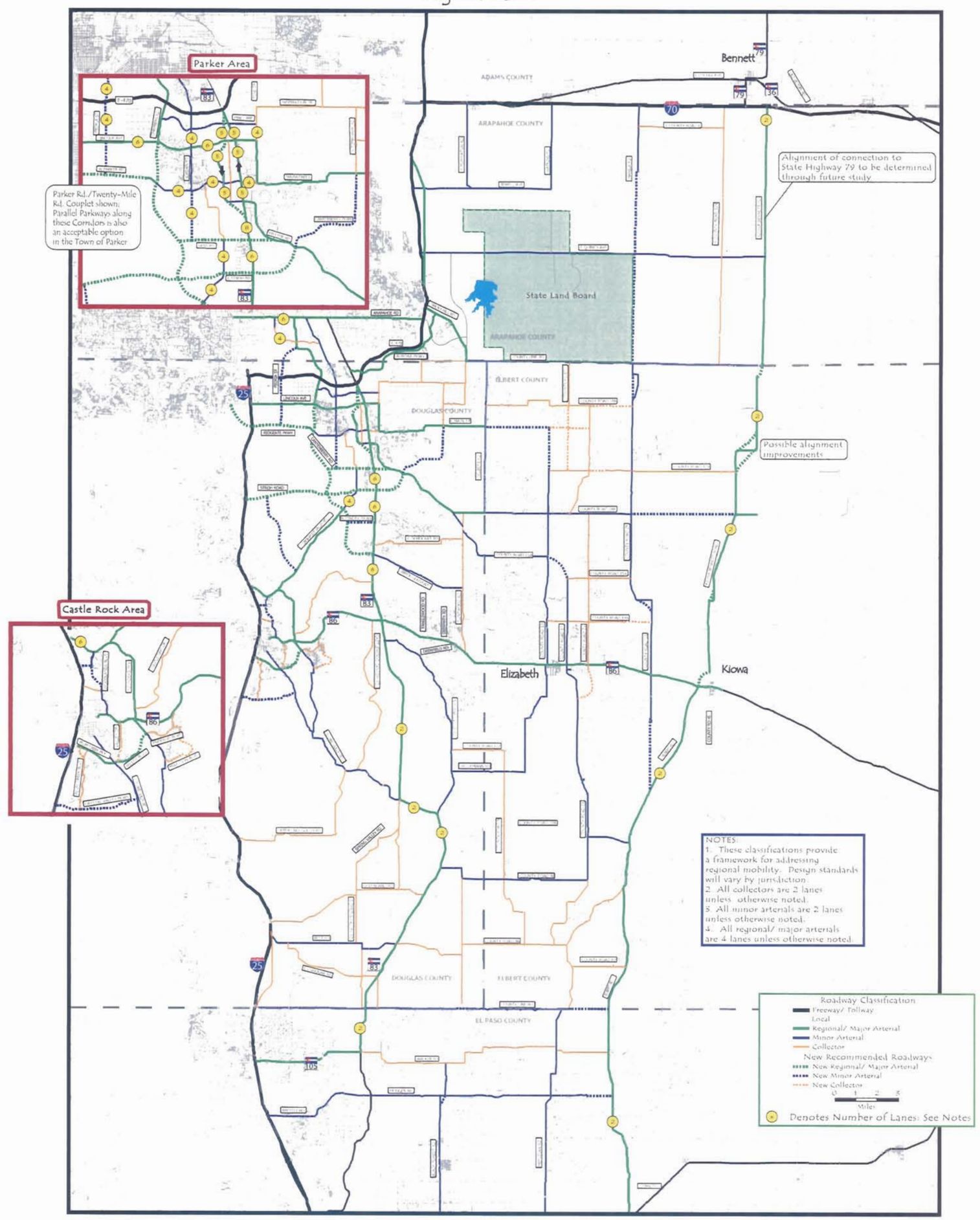
- surfacing improvements, applying appropriate access management measures, and upgrading to local standards to include shoulders, turn lanes and other operational and safety features along many relatively local roads;

- paving, upgrading and improving the alignment of the Kiowa-Bennett Road to provide a continuous, all-weather facility, connecting with the Elbert Road in El Paso County, along with new alignments near Kiowa and Bennett to SH 79 in Adams County (this revised roadway would fill in a large north-south gap in the regional system);

- safety-related improvements, including shoulder widening and additions, and intersection modifications along SH 83 and 86;

Among the three strategic elements – transportation, land use and funding considerations – forming the foundation of this Corridor Optimization Plan, the roadway element affords the most commonality for discussion and joint solutions among the stakeholders. The involved agencies have agreed to explore adoption of locally-appropriate land use policies and practices, as well as relevant funding mechanisms.

SH 83-86 Corridor Optimization Plan
Crossroads Co-Op Recommended Roadway Plan
Figure ES-5



No Scale

While the application of these policies, practices and mechanisms are agency-specific, acceptance of further consideration was universal. This Plan includes a land use and funding practices "tool box" for reference by all involved stakeholders. Some highlights of options to be considered include:

- Commitments to work to preserve right of way and manage access as development occurs for new and improved facilities, such as the east-west alignment alternatives in Elizabeth, and the Kiowa-Bennett to Elbert Road connection in Kiowa and Elbert County. This is a key link in the Elbert Road/Kiowa-Bennett Road/SH 79 corridor, which is supported broadly by Arapahoe and El Paso Counties and Bennett, in addition to Elbert County and the Town of Kiowa.

- Elbert County will explore development of a prioritized annual capital improvements program, as well as development of special districts and design guidelines to better plan for and organize future commercial growth.

- Kiowa will consider development and adoption of site design guidelines to improve vehicular and pedestrian connectivity between use

- Elizabeth will further refine and develop their pedestrian network, as included in this Plan.

- Elizabeth, Kiowa and Elbert County will explore the implementation of special districts and similar mechanisms to expand funding opportunities.

- All stakeholders expressed interest in exploring involvement in rural/metropolitan transportation authorities.

The Corridor Optimization Plan for State Highways 83 and 86 is unique in both content and process. The Plan is a living document, based upon long-term, ongoing local commitments to actions that support the development of a sustainable, safe and viable transportation network. These commitments create an effective, durable partnership with CDOT that provides a strong foundation for the continuous and consistent participation of the stakeholders through the local, regional and statewide planning processes. This holistic approach includes local plans to implement new and enhance existing corridors which will function in concert with the state highways as an effective transportation system within the Plan's area of consideration. These commitments also include local implementation strategies integrating land use planning and development of funding opportunities to help support the transportation components of the Plan. Right-of-way preservation and access planning commitments are key examples.

History, Intent & Benefits of Corridor Optimization for State Highways 83 and 86

The Corridor Optimization process was created to develop specific corridor visions which are consistent and compatible with local plans and are supported by affected local governments and regional agencies. Officially adopted by the Colorado Department of Transportation (CDOT) in 2001, the Corridor Optimization Guidelines were developed to assist with the regional transportation planning process by providing an assessment of how to best meet future travel demands in a given corridor. CDOT intended that the Guidelines be applied to corridors where future opportunities for improvements might be lost in the absence of a plan of action addressing future travel demand. This potential loss of opportunity fueled by historic and anticipated growth resulted in the initiation of a Corridor Optimization Plan for State Highways (SH) 83 and 86.

The combination of proactive planning and local involvement is intended to provide the Colorado Transportation Commission with comprehensive transportation system recommendations that are supported by a commitment to ongoing stakeholder involvement. The resulting corridor vision is intended to provide valuable input to the statewide transportation planning process.

The Corridor Optimization Plan is a long range vision for how the Colorado Department of Transportation and its local jurisdiction partners, including Arapahoe, Douglas, Elbert and El Paso Counties, and the Towns of Parker, Castle Rock, Elizabeth, Kiowa, and Bennett will develop an integrated transportation and land use plan for greater mobility and safety.

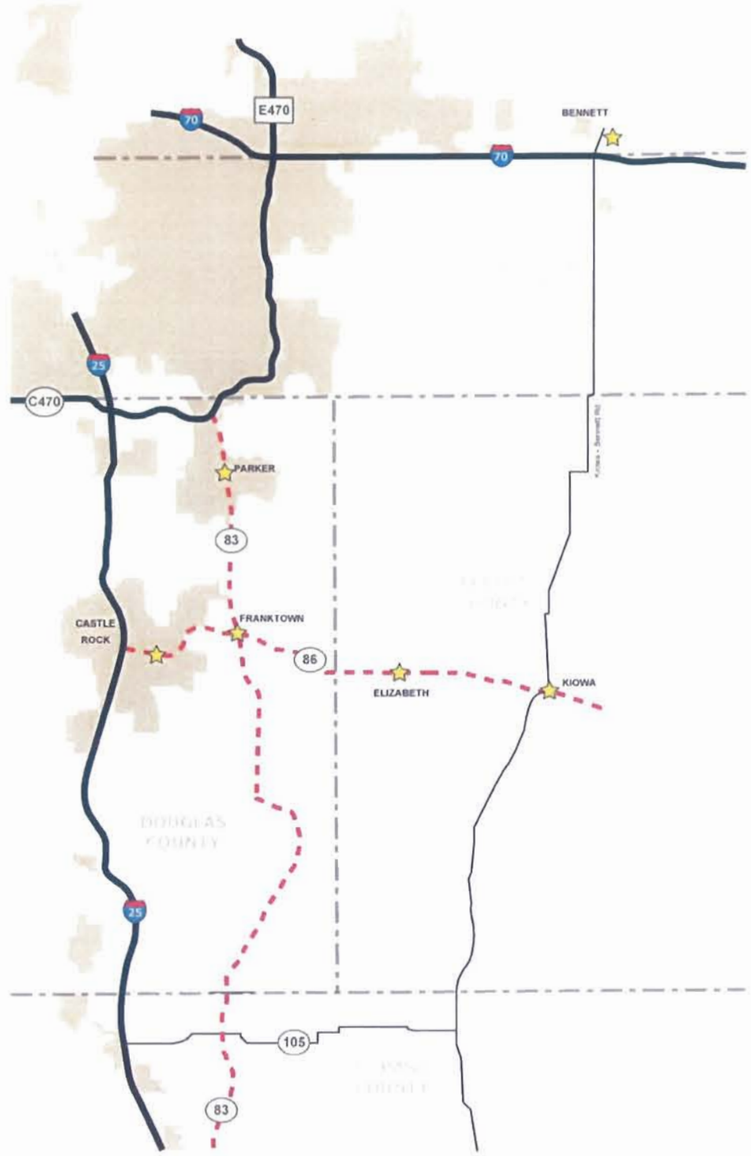


Figure 1-1—Project Location

Project Location

The study limits along State Highways 83 and 86, respectively, were chosen to be from E-470 in Parker to SH 105 in El Paso County, and from Castle Rock to Kiowa. This defined a study area generally reaching to I-25 on the west, E-470 and I-70 on the north, the Kiowa-Bennett Road on the east, and SH 105 on the south.

SH 83 and 86 Corridor Optimization Elements—Transportation, Land Use & Funding Integration

This Corridor Optimization Plan for State Highways 83 and 86 is founded on the relationship between three strategic elements: transportation, land use, and funding. The exploration and understanding of the interactions between these strategic elements form the basis for the development of an overall vision for the corridors.

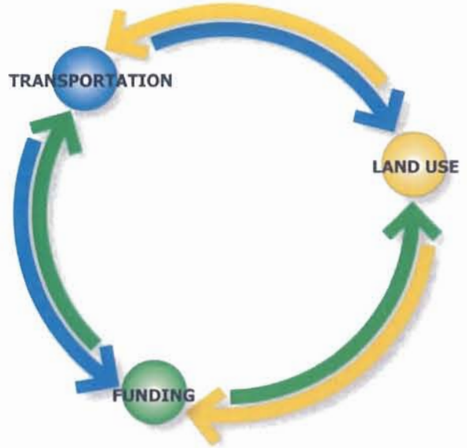


Figure 1-2—The Transportation-Land Use-Funding Relationship

The relationships among the three elements are strong. The types of land uses and the development patterns within a community directly affect the demand on the local and regional transportation networks. The development patterns and site design of those land uses in turn affect traffic flow and the ease of travel within and through the community. Therefore, managing future travel demand requires not only increasing roadway capacity, but finding ways to integrate local and statewide planning efforts to optimize transportation options and opportunities. An integrated approach to long-range transportation planning means a multi-jurisdictional effort to develop a regional transportation network, to implement land use practices and development patterns that improve the efficiency of that network and to pursue funding strategies that support these efforts.

Roadway capacity and safety are the fundamental transportation pieces. When adequately addressed, these transportation elements can help promote economic development, land use changes and growth. At the same time it is strategic funding practices coordinated with efficient land use development policies that often allow communities to fund, design and build an effective transportation infrastructure and travel network. Creating opportunities for economic growth and encouraging well-planned land use development can support implementation and enhancement of the transportation system.

The recommendations contained in this report are the product of the proactive planning efforts of all the affected local governments. These recommendations are further supported by local commitments to continuing involvement in the transportation planning process.

Participants

This regional planning effort required the involvement of multiple local agencies and CDOT. Local jurisdictions determine the appropriate amount of growth and mix of land uses, while CDOT has no direct land-use authority. However, since development often creates a need for new highways or increased highway capacity, this effort required extensive cooperation among these agencies to assess the transportation-land use-funding relationship.

Thirteen agencies were invited to participate in the development of the SH 83-86 Corridor Optimization Plan. They included:

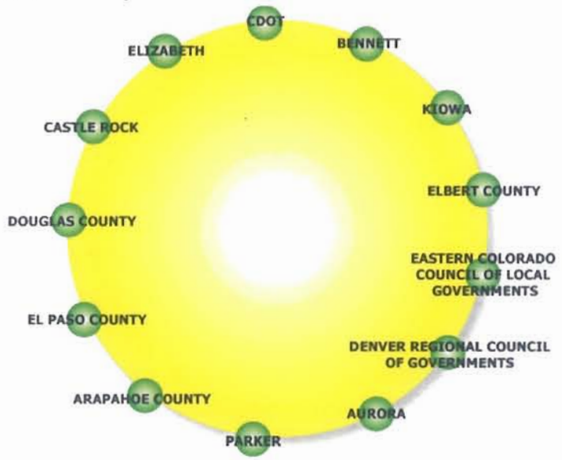


Figure 1-3—Participating Agencies

These agencies embarked on a process which examined how the actions of local governments affect the operating efficiency of the entire transportation network. They discussed how transportation planning tools and design methods can be coordinated with efficient land use planning practices and how the combination of those practices can result in a more effective transportation system. They discussed funding strategies supportive of land use growth and the implementation of needed transportation infrastructure. Cooperation was the first and most critical step in this process. Through the coordination of land use and transportation planning practices among these agencies, the jurisdictions within the study area have contributed in varying degrees to developing this Plan to better respond to the growing demands on the transportation network.

A Technical Advisory Committee (TAC) and Policy Advisory Committee (PAC) were formed at the initiation of the project to advise and direct the development of this Plan. The counties and towns typically contributed to the "grassroots" processes of problem definition and plan development - building a regional solution by assembling compatible, local elements. Aurora contributed to and stayed engaged through the problem definition steps, withdrawing when they determined that the proposed solutions had minimal bearing on their community. The Eastern Colorado Council of Local Governments and the Denver Regional Council of Governments worked with the counties and towns to integrate this Plan's recommendations into their regional transportation plans.

CDOT's Corridor Optimization process as applied to the SH 83/SH 86 study area has assessed projected growth and relevant local and regional travel demand to determine where roadway connections and capacity improvements are needed in relation to that projected growth. It has also allowed local jurisdictions to assess the impacts that their growth patterns have on the existing and future transportation network. Assessing the components of growth, development type, and infrastructure needs, simultaneously, was critical to the outcome of this regional planning effort.

Plan Elements

This document contains the following elements, paralleling the process outlined in the Corridor Optimization Guidelines:

- Definition of the Problem
- Options and the Preferred Vision
- Business Plan

Supporting information and materials are provided in appendices.

Overview

Defining the problem is a key step in the Corridor Optimization process. A clear definition is necessary to develop thoughtful solutions which respond directly to the problem, thereby focusing and expediting the development of the Plan.

The problem statement was developed not just through technical analysis but through individual and collective engagement of both the Technical Advisory Committee (TAC) and Policy Advisory Committee (PAC). Each involved agency was contacted individually to gain an understanding of their local plans and issues, and of how consideration of these local plans and issues might fit into and affect the broader regional viewpoint necessary for development of this Corridor Optimization Plan. These issues were then assembled and discussed with both advisory committees.

The following analysis details historic and projected growth in population and employment in the study area. It then draws a relationship to impacts on the roadway network in the study area. Safety issues are discussed in relationship to features of the roadways as well as the character of the study area.

Regional Growth

The study area is comprised of portions of Douglas, Arapahoe, Elbert and El Paso Counties. Growth in the Denver metro area has created pressure and demand for residential development within these counties. In turn, this has resulted in ever-increasing travel demand throughout the region. The transition from agricultural use to residential use has resulted in a region characterized by the following:

- Low density and dispersed development
- Limited infill development within existing communities
- Fringe area residential development or spot development
- Separation of land uses
- High dependence on the automobile for every trip within the community

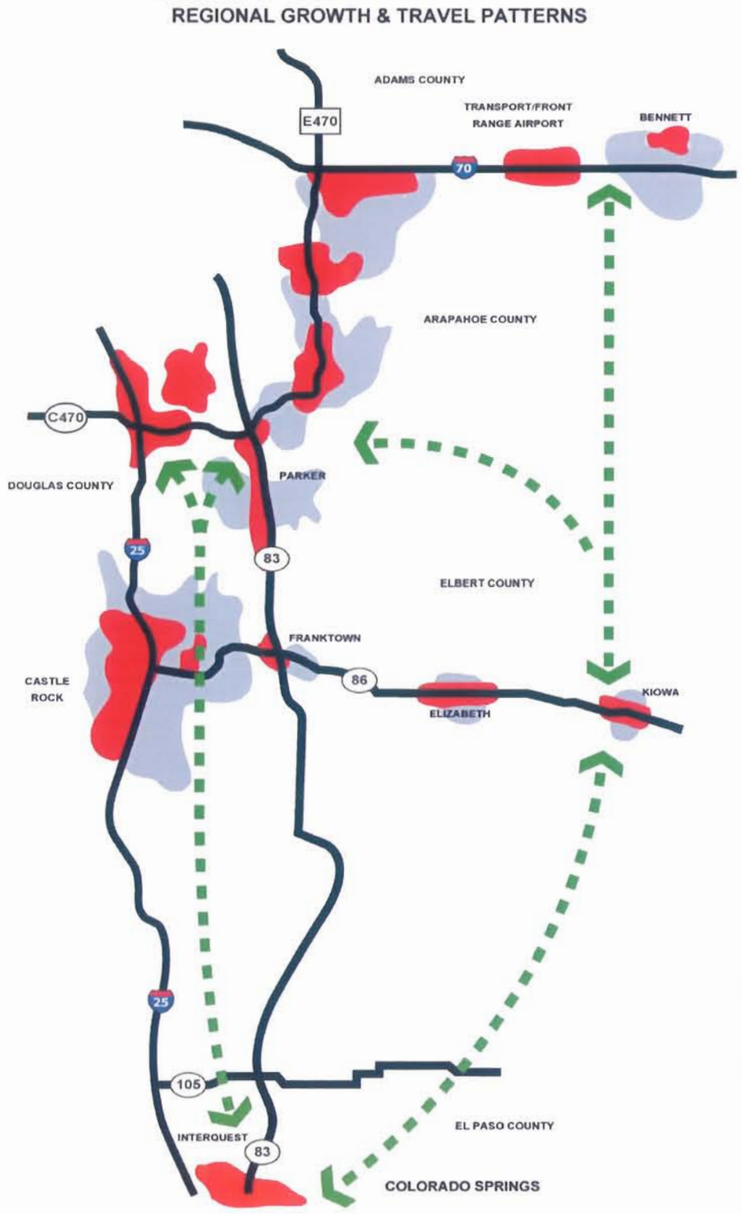


Figure 2-1

Understanding the nature and extent of future employment and development patterns affords a good indicator of the burden being placed on the transportation system to serve this growth. The region has experienced a significant increase in large lot residential homes that is anticipated to continue over the next ten to fifteen years. Historic agricultural land use continues to shift to more low-density suburban residential uses. Currently commercial support services are limited, especially in the eastern portion of the study area, but these types of services are expected to develop. Employment opportunities within these communities are anticipated to remain limited in the future because of the proximity of three major regional employment centers adjacent to the study area: the Colorado Springs Interquest area, the

Denver Tech Center, and the future Transport development on I-70 near Front Range Airport. Future projections indicate that the Denver Tech Center will support 150,000 jobs, the Interquest area east of the Air Force Academy in Colorado Springs nearly 30,000 jobs and the Transport development at least 10,000 jobs.

Future development patterns will dictate daily travel behavior originating from within the study area. These characteristics will likely result in an increase in the number of long distance commuter trips and trips from homes to schools, shopping, service providers, and to recreational facilities, placing an ever-increasing burden on a limited transportation network, especially onto the SH 83 and 86 regional corridors.

The communities in the study area - including the towns of Bennett, Castle Rock, Elizabeth, Kiowa, and Parker and the counties of Arapahoe, Douglas, Elbert, and El Paso - have been among the fastest growing communities in the State of Colorado in the past decade. The rate and type of growth that has taken place in the immediate past is a good indication of the type and rate of expected growth in the communities in the immediate future.

Population

Table 2-1 shows the population and growth between 1990 and 2000 in all the communities in the study area. The combined growth rate in the four counties has outpaced the state at a 3.4 percent annual growth rate compared to 2.7 percent statewide. The state population increased by over 1 million persons during the 1990-2000 time period. Growth in the four-county study area represented a significant amount of this growth at one-third of the total. The greatest population growth impacts were felt in Douglas County, especially in the town of Parker, which grew by over 300 percent with the addition of 18,000 persons during this time period. Many of the communities more than doubled in size.

Table 2-1
Population Trends, 1990-2000
Crossroads Co-op Study

Jurisdiction	1990	2000	1990-2000 Persons	1990-2000 Annual Growth Rate	1990-2000 Total % Growth
Arapahoe County	391,511	487,967	96,456	2.2%	25%
Bennett	1,757	2,021	264	1.4%	15%
Douglas County	60,391	175,766	115,375	11.3%	191%
Parker	5,450	23,558	18,108	15.8%	332%
Castle Rock	8,708	20,224	11,516	8.8%	132%
Elbert County	9,646	19,872	10,226	7.5%	106%
Elizabeth	844	1,434	590	5.4%	70%
Kiowa	281	581	300	7.5%	107%
El Paso County	397,014	516,929	119,915	2.7%	30%
County Total	**858,562**	**1,200,534**	**341,972**	**3.4%**	**40%**
State of Colorado	**3,294,394**	**4,301,261**	**1,006,867**	**2.7%**	**31%**

Source: EPS based on U.S. Census

Current Employment

Table 2-2 shows the growth in jobs between 1991 and 2001. Arapahoe County experienced the greatest growth with the addition of 125,000 jobs. Douglas County had the highest rate of growth at 15.3 percent per year, quadrupling in size, with the addition of nearly 60,000 jobs to the base of 19,000 jobs. El Paso County also added over 90,000 jobs during this time period. The four-county region represented a fairly significant portion of job growth in the state at over one-third of total growth. The regional job growth rate outpaced the regional population growth rate at 4.9 percent annual growth for jobs compared to 3.4 percent annual growth for population. This imbalance has contributed to increases in traffic, especially commuter traffic.

Table 2-2
Employment Trends, 1991-2001
Crossroads Co-Op Study

Jurisdiction	1991	2001	1991-2001 Jobs	1991-2001 Annual Growth Rate	Total % Growth
Arapahoe County	225,323	352,832	127,509	4.6%	56.6%
Douglas County	18,995	78,622	59,627	15.3%	313.9%
Elbert County	2,501	6,012	3,511	9.2%	140.4%
El Paso County	219,268	316,505	97,237	3.7%	44.3%
Total	**466,087**	**753,971**	**287,884**	**4.9%**	**61.8%**
State of Colorado	**1,932,966**	**2,762,118**	**829,152**	**3.6%**	**42.9%**

Source: EPS based on U.S. Census and Colorado Department of Local Affairs

Table 2-3 shows that the three largest growth sectors in terms of total number of jobs were services, retail trade and construction, while the largest job growth by annual rate was in the construction, transportation/communication/utilities, and agriculture sectors. A large portion of this job growth is related to residential growth.

Table 2-3
Employment Trends by Sector in Arapahoe, Douglas, Elbert and El Paso Counties, 1991-2001
Crossroads Co-op Study

Employment Sector	1991	2001	1991-2001 Jobs	1991-2001 Annual Growth Rate
Agriculture	6,702	13,077	6,375	6.9%
Mining & Extractive Industries	2,996	1,302	-1,694	-8.0%
Construction	21,428	60,958	39,530	11.0%
Manufacturing	36,822	46,321	9,499	2.3%
Transportation, Communications and Utilities	19,216	50,381	31,165	10.1%
Wholesale Trade	20,403	28,526	8,123	3.4%
Retail Trade	85,238	134,622	49,384	4.7%
Finance, Insurance, and Real Estate	43,128	68,466	25,338	4.7%
Services	139,526	240,494	100,968	5.6%
Government	90,626	109,826	19,200	1.9%
Total	**466,085**	**753,973**	**287,888**	**4.9%**

Source: EPS based on Colorado Department of Local Affairs

Future Population

Table 2-4 shows the projected growth in population between 2000 and 2030. County projections were founded on each jurisdiction's projections for future growth and based on their land use policies, projected development plans as well as policy level decisions regarding how much growth each jurisdiction should accommodate. [1]

Arapahoe and El Paso Counties are each projected to add over 200,000 persons to their populations in the next thirty years. Douglas County is projected to add over 250,000 to its current population base of approximately 175,000. The highest rate of growth will be felt in Elbert County which is projected to have an annual 3.9 percent average

1 Each county's projections were compared to the DRCOG and DOLA forecasts. Both agencies' projections for growth, which varied widely, concluded at the year 2025. Douglas and Arapahoe Counties are both within the DRCOG region, and growth projections took DRCOG projections for 2025 into consideration. Elbert County's growth projections primarily took DOLA projections into consideration.

growth rate and triple in size from its current estimated population of 20,000 to approximately 60,000 persons.

Table 2-4
Population Forecasts, 2000-2030
Crossroads Co-op Study

	2000	Projected 2030	2000-2030 Growth	Average Annual Growth Rate
Arapahoe County	487,967	695,000	207,033	1.2%
Bennett	2,021	14,000	11,979	6.7%
Douglas County	175,766	458,000	282,234	3.2%
Parker	23,558	80,000	56,442	4.2%
Castle Rock	20,224	90,000	69,776	5.1%
Elbert County	19,872	62,000	42,128	3.9%
Elizabeth	1,434	11,000	9,566	7.0%
Kiowa	581	4,500	3,919	7.1%
El Paso County	516,929	800,000	283,071	1.5%

Source: Town and County Plans, DRCOG, DOLA, EPS

All of the towns are expected to continue to grow at a relatively high rate from Parker at approximately 4 percent per year to Kiowa at an average 7 percent per year. The projected additions to the population in all of these towns are greater than their current population bases, suggesting a future continuation of related traffic growth.

Figure 2-2 shows the Regional Population and Employment Growth map, which provides a general indication of where the population growth is projected to take place. The map base is the Traffic Analysis Zone (TAZ) system from the Denver Regional Council of Governments' (DRCOG) traffic forecasting model, supplemented with additional zones outside of the DRCOG boundaries. The large sizes of some of the TAZs tend to understate the magnitude of any concentration of growth in such a zone, essentially averaging the population (or employment) density over the entire zone. The following trends can be discerned:

- Growth is concentrated along Highways 83 and 86. Within the towns, development immediately adjacent to both Highway 83 and 86 has already taken place. However, potential for development adjacent to currently developed areas or infill development will likely take place over the next thirty years. For example, much of the projected growth in Castle Rock is slated to take place between Highway 83 and I-25, with some additional development planned for areas west of I-25. Much of the development in Parker is expected to be infill. The towns of Elizabeth and Kiowa are also poised to continue to grow with much of the growth slated to take place in areas either within, or adjacent to current town boundaries. The Franktown area is also projected to grow, although much of that growth will be concentrated near the Highway 83 and 86 intersection.

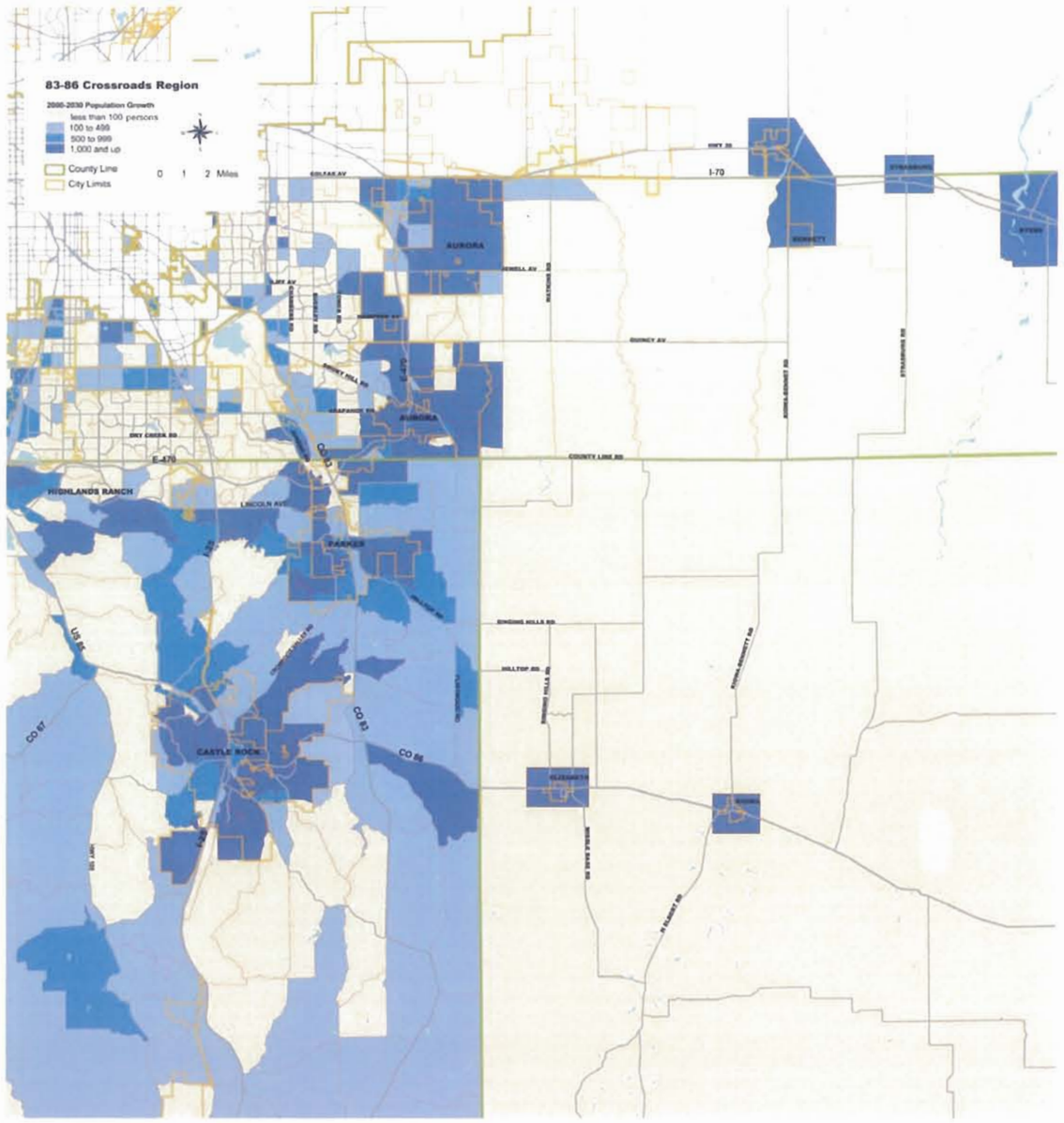
- Growth is also following the E-470 corridor. Although not technically within the study area, growth in the larger regional area will impact the transportation network within the study area.

El Paso County is in the process of finalizing similar information. The general trend shows significant population growth to the east of SH 83, about five miles south of the El Paso/Douglas County Line, extending towards Elbert Road.

Future Employment

El Paso County is projected to add the most jobs at over 195,000 over the next thirty years. Primary employment growth is expected in the northern portion of the County, especially in the Interquest area. Douglas County is projected to add over 110,000 jobs in the next thirty years. While much of the job growth is expected to take place in existing employment centers, job growth is also projected in the towns of Castle Rock and Parker as there will be increased demand for commercial services to serve the residential population. Most of the job growth within Elbert County is expected to take place within the towns of Elizabeth and Kiowa. Table 2-5 summarizes this information.

SH 83/86 CORRIDOR OPTIMIZATION PLAN
2000-2030 Regional Population & Employment Growth
Figure 2-2



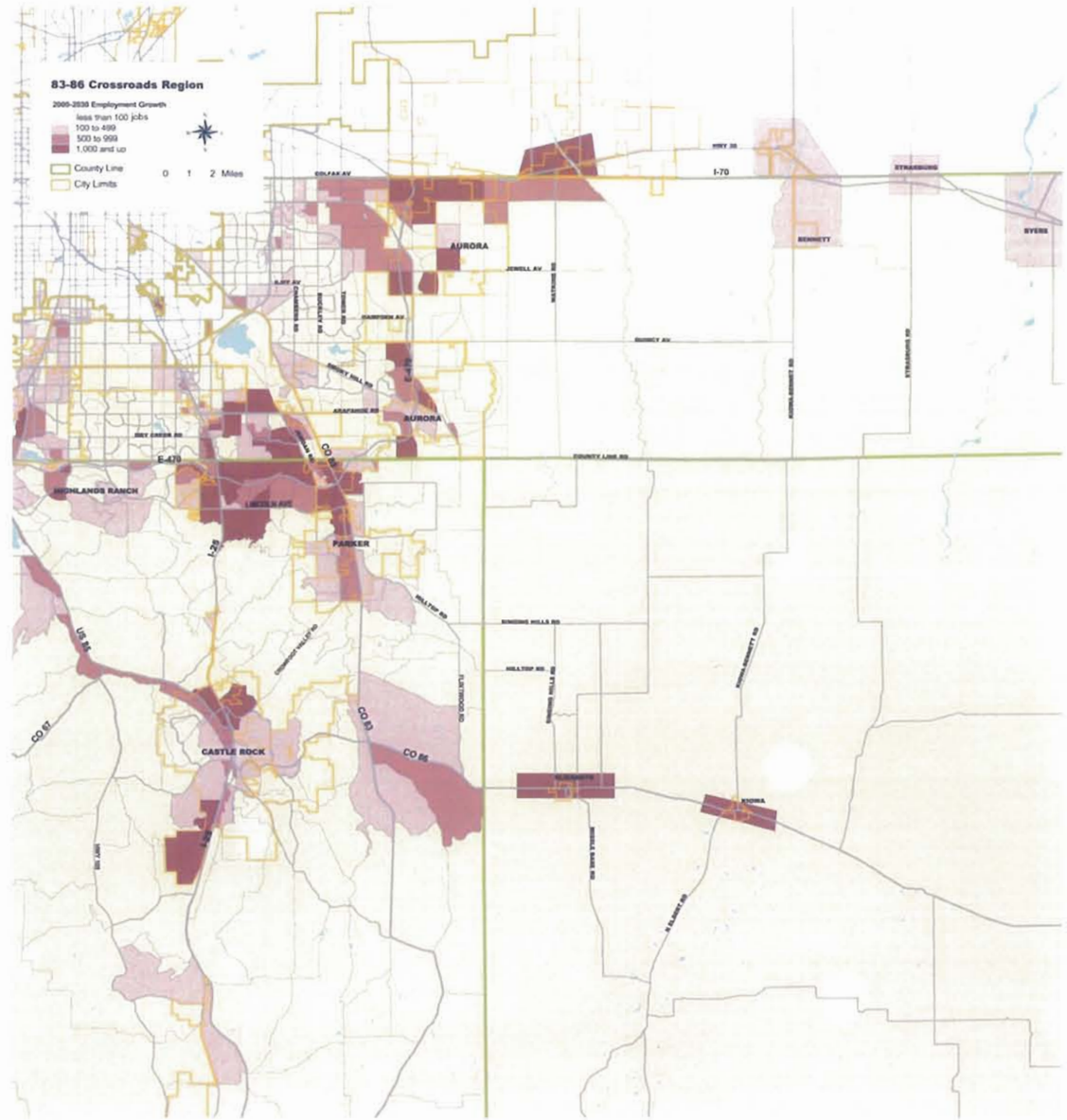


Table 2-5
Employment Forecasts
Crossroads Co-op Study

	2000	2030	2000-2030 Growth	Avg. Ann. Growth Rate
Arapahoe County	350,000	416,000	66,000	0.6%
Bennett	500	5,500	5,000	8.3%
Douglas County	70,000	182,000	112,000	3.2%
Castle Rock	12,300	28,300	16,000	2.8%
Parker	4,700	16,250	11,550	4.2%
Elbert County	5,600	12,300	6,700	2.7%
Elizabeth	1,900	5,000	3,100	3.3%
Kiowa	950	2,500	1,550	3.3%
El Paso County	315,000	511,800	196,800	1.6%

Source: Town and County Plans, DRCOG, DOLA, EPS

Figure 2-2 shows where much of this employment growth within the area is projected to take place. Economic development organizations within individual communities are striving to encourage business development within their communities. Local governments are beginning to recognize the need for more balance in their communities and are addressing these issues proactively:

- Communities such as Bennett and Kiowa are attempting to market and take advantage of their enterprise zone status to encourage business development.
- Castle Rock's primary employment development efforts are focused on the southern end of the community.
- Parker's recent efforts have been in the regional medical facility arena. In addition to retail/commercial development, the town also has areas designated for office/light industrial uses.

The primary employment center affecting traffic in the area has been along the south I-25 corridor from the Denver Tech Center on the north to Meridian Business Park on the south. With the completion of E-470, primary employment growth is expected to extend to the east. Job growth in this area has helped spur increased residential development in the surrounding region. Although local jurisdictions are undertaking economic development efforts to create local employment opportunities, the vast majority of job growth in the region will continue to be located in this major employment center. In addition to continued growth at the Tech Center, the Colorado Springs area and the TransPort development on I-70 between metro Denver and Bennett will also afford employment opportunities for residents of the study area.

- I-25 Corridor - Job growth in the area, which includes portions of Douglas and Arapahoe Counties, has been explosive. Some of the Denver metropolitan area's largest office and business complexes are located in this area including the Denver Tech Center, Inverness, Meridian, and the Highlands Ranch Business Park. Major telecommunications and financial employers include Qwest Communications, AT&T Broadband, EchoStar and J.D. Edwards, among others. Future growth in the area will be facilitated by the existence of the E-470 tollway which allows a direct link to Denver International Airport and I-70. The $1.7 billion T-Rex transportation project will add capacity to I-25 as well as light rail from Denver to Lincoln Avenue in Douglas County. Projections are for an additional 150,000 jobs in the next thirty years.

- TransPort - This is a proposed 6,000 acre master planned business community adjacent to the Front Range Airport along I-70. At full buildout, there could be over 50 million square feet of development with tens of thousands of jobs on approximately ten square miles of land. Union Pacific is planning to move their central intermodal facility to Front Range. Another proposal currently under review is the potential relocation of about two-thirds of the Union Pacific (UP) and Burlington Northern Santa Fe (BNSF) freight and coal rail traffic from central Denver to the Eastern Plains, potentially proximate to TransPort.

- Colorado Springs - El Paso County's similar forecasts are being finalized. However, general trends show the last few decades have seen high tech growth in the region which complements the area's historical military orientation. According to the Pikes Peak Area Council of Governments, employment is projected to double in the next thirty years with the addition of 250,000 jobs to the County's current base of approximately 250,000. Total projected employment in the Northern Colorado Springs area, most directly relevant to this study, is approximately 30,000.

- State Land Board Property—Located in central Arapahoe County, this area of approximately 50 square miles continues to be studied to establish policies for its development. For the purposes of preparing this Corridor Optimization Plan, it was assumed to contain essentially no development.

Traffic Impacts

In order to assess the long-term impacts of growth on the study area roadway network, year 2030 traffic forecasts were developed. The nature, magnitude and location of projected land uses were key considerations. Traffic projections were made for two different roadway networks: the Existing Network and a Future Network comprised of a compilation of the roadways listed in the long-range transportation plans of all the involved agencies. The Future Network is also commonly referred to as the "needs-based" transportation system, as it represents the anticipated needs of each agency independent of its ability to implement the system.

Figures 2-3 and 2-4 show the forecasted daily traffic volumes for both networks and the associated degree of congestion on the various roadway segments of each network as measured by Level of Service (LOS). This indicator "grades" the level of congestion on a scale of A through F, with A being the least congested condition and F being the most congested. These indicatiors recognize the differences in how congestion is experienced by drivers across the breadth of roadways under consideration: rural highways, urban streets, and variations in between.

By the Year 2030 the existing roadway system exhibits high levels of congestion on many of the major roadways, especially in the north, west and central parts of the study area, and including SH 83 and 86. This scenario might over-estimate the magnitude of congestion on any given segment, since some improvements to the system are likely by the year 2030. However, the needs-based system also indicates high congestion levels on some facilities. While the local agency plans propose roadway systems that accommodate future conditions, their current planning horizon is typically the year 2020 or 2025. Therefore it is not surprising that traffic forecasts for the year 2030 indicate that some sections of the needs-based system are expected to have traffic demands approaching or exceeding capacity. Congested roadways include SH 83 in north Parker; SH 86 from the Douglas County line to Kiowa; the local and county segments of Quincy Avenue, Watkins Road, and Powhatton Road; and portions of Mainstreet, Lincoln Avenue, Founders Parkway and Peoria Street in the northwest part of the study area.

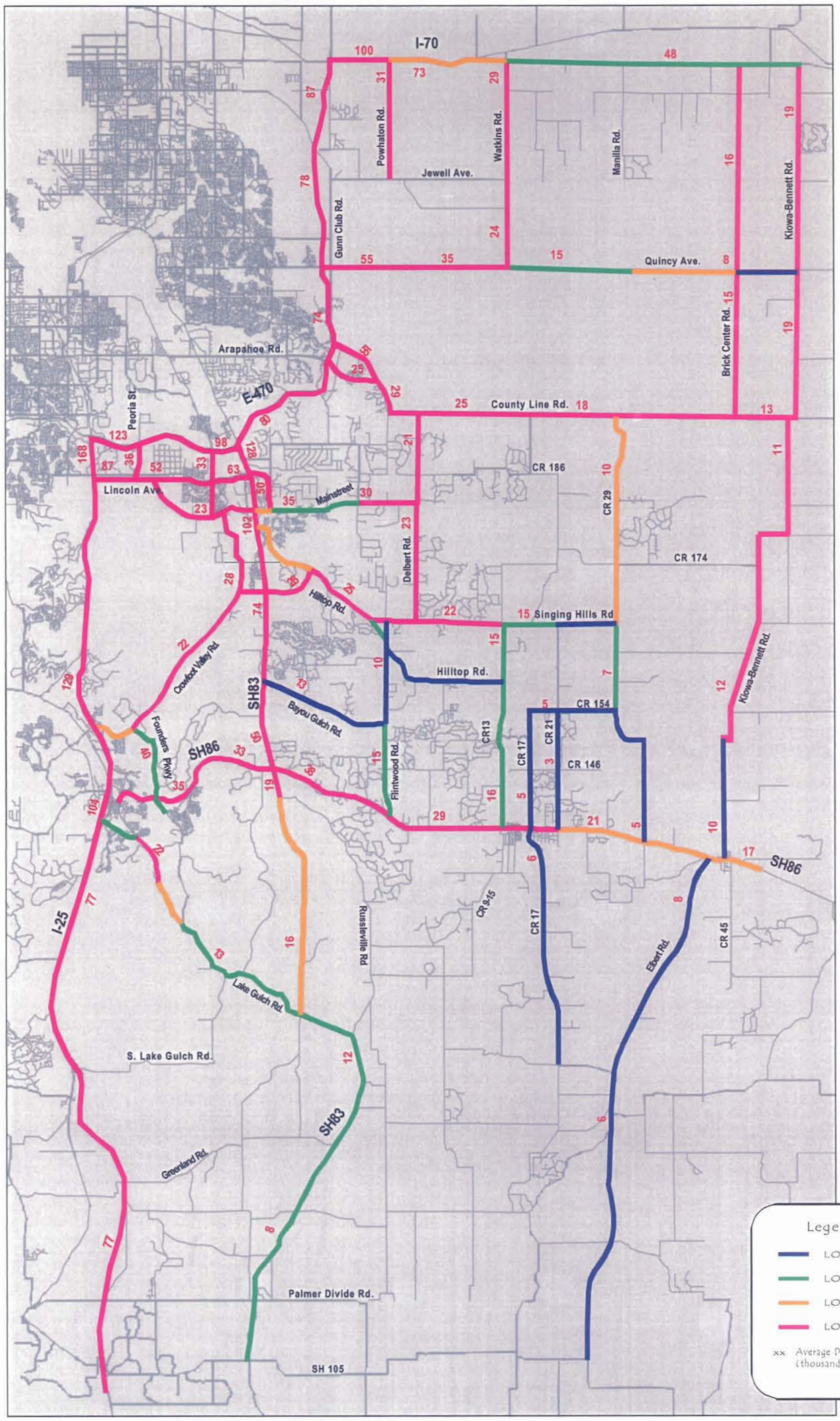
Safety and Operational Issues

The primary safety issues along SH 83 and 86 relate to segments that have sub-standard shoulder conditions, limited passing opportunities and a few intersections that are characterized by sight distance limitations, a lack of turn lanes, or exhibit other operational problems. These issues are relatively typical of older highways. SH 83 has both paved and unpaved shoulders up to four feet in width over a 24 mile-long segment from Castle Oaks Drive in Douglas County to SH 105 in El Paso. SH 86 has three foot shoulders over a 4.5 mile segment near the eastern edge of Castle Rock. (This segment also has significant grades.) The shoulders over the seven miles from Elizabeth to Kiowa are unpaved. Intersections having the previously-described characteristics include SH 83 at both the north and south Russellville Road junctions, and SH 86 at Deerfield Road, Elbert Road, and Elbert County Road 17.

While the older sections of SH 83 and 86 were built to the standards of their day, the designs tend to be "unforgiving", particularly given the current and forecasted traffic volumes. The physical conditions create potentially hazardous situations when drivers

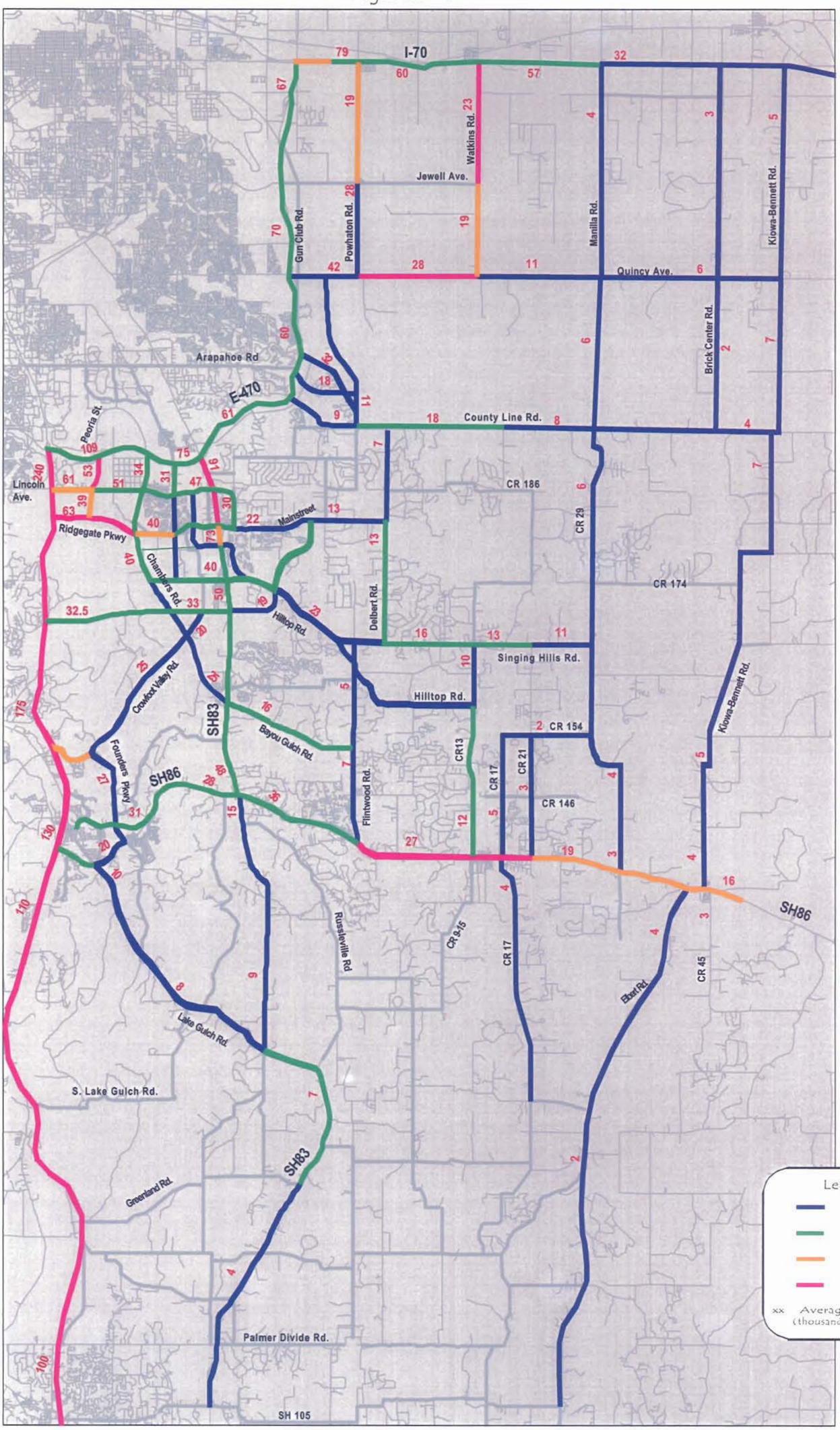
SH 83/86 Corridor Optimization Plan
2030 Average Daily Traffic (ADT) and Levels of Service (LOS) with Existing Network

Figure 2-3



SH 83/86 Corridor Optimization Plan
2030 Average Daily Traffic (ADT) and Levels of Service (LOS) with Needs Based Network

Figure 2-4



have difficulty recovering in run-off-the-road situations, when they face unexpected conflicts at intersections, become impatient and pass aggressively, or are unable to park completely off the roadway when their vehicle breaks down. The absence of substantial paved shoulders provides minimal area for cyclists to ride and does not allow for the installation of rumble strips to alert errant drivers. Combined with the urban/rural fringe area traffic speeds and volumes, the severity of collisions can be high where these conditions are contributing factors. These factors are suspected to have contributed to a number of severe accidents along these corridors within the last three years, including several fatal collisions.

Incident and Emergency Response

The isolated nature of development and location of emergency services in some parts of the study area, make SH 83 and 86 particularly important to those responding to incidents and emergencies. Developing a supporting roadway network that ensures the long term viability of these state highways while providing route redundancy will improve response times and route options in such situations, as well as enhance overall mobility.

Problem Statement

The advisory committees reviewed and analyzed the preceding information and crafted the following problem statement.

"The combination of transportation system limitations, growth, and funding availability will increase congestion, decrease quality of life, and potentially diminish safety unless solutions are developed that incorporate land use, transportation and funding elements to address the problem."

The subsequent sections of this Plan detail the development of these solutions. This process mimicked the development of the problem statement, engaging both the TAC and PAC individually and collectively to formulate physical and policy solution sets.

Forming the Regional Solution

"The combination of transportation system limitations, growth, and funding availability will increase congestion, decrease quality of life, and potentially diminish safety unless solutions are developed that incorporate land use, transportation and funding elements to address the problem."

The nature of this problem statement demands a systemic solution – systemic both within and among the elements of transportation, land use and funding considerations. To form this solution, a process was undertaken which first explored options within the towns and counties participating in the process, and then synthesized these options into a complete set of both physical and policy recommendations addressing all three of these elements while also addressing future regional travel demands.

The combination of proactive planning and local involvement provides CDOT with transportation system recommendations supported by commitments to ongoing stakeholder involvement.

To evaluate the viability of these recommendations, primary areas of concern were identified by the TAC and employed as criteria in achieving the objectives of this Corridor Optimization Plan – Effectiveness, Land Use Compatibility, Acceptability, and Funding Potential:

- Effectiveness of the corridor plan to enhance and maximize regional Level of Service and address known and anticipated safety issues;
- Compatibility between the corridor plan and local land use patterns, plans and related policies and the ability of each to adapt to the other;
- Acceptability of the corridor plan as it relates to local community visions and support of the regional vision; and
- Funding Potential, especially with regard to leveraging future funds with local commitment of funds, right of way, development contributions, and other sources.

The Regional Solution is founded on the relationships between transportation, land use, and funding.

Within each community, proposed options and policies were compared against these objectives, both to evaluate their effectiveness in helping achieve the Plan's primary objectives and to explore opportunities to further their benefits. Assisted by the development and application of the criteria, the stakeholders arrived at a corridor plan that effectively addresses future regional mobility needs, is supported by local government planning and policies, is consistent with both local community and regional visions of the future, and affords multiple opportunities to assist in funding elements of the Plan.

Options that were typically discussed through one-on-one sessions with local jurisdictions included:

- reviewing the guiding principles for managing and directing development within the communities
- assessing each community's planning achievements to date, building upon these to develop likely next steps in land use planning
- identifying land use policies, practices and specific regulatory tools integral to directing future growth

- investigating creative funding strategies for future improvements, especially those with leveraging potential
- defining community visions for the highway corridors and network, including potential alternative and/or parallel routes
- analyzing future travel patterns and capacity of those roadways relative to future demand, both individually and as a system
- integrating roadway alternatives into community visions
- exploring roadway safety improvement recommendations
- considering the availability of alternative modes of travel within the community, planning for future services or facilities where appropriate
- citing the need to plan access onto both state and local roadways
- identifying local commitments to actions supporting the Plan

This "grassroots" – building an overall Plan by assembling compatible elements from each of the stakeholders – approach was critical to the effectiveness and completeness of the outcome, as well as helping ensure the ongoing participation of the stakeholders in the execution of this Plan.

The roadway options defined in each community and the roadway elements of community master plans were compiled into a network that constitutes the vision for the transportation system within the region. SH 83 and 86 remain key regional elements of this system, complemented by many county and town roadways. A critical and novel characteristic of this network is that all elements are complementary to and supportive of the State Highways and of each other. This is a direct outcome of the community-based approach.

The subsequent community profile sections of this Plan describe the development of these localized solutions, demonstrate how these ultimately combine to form a recommended master roadway plan for the region, and specify implementation strategies associated with each community. These subsequent sections identify local actions, commitments and recommendations, which have a variety of emphasis and character, given the variety and scale of the communities considered and their associated issues. These sections are preceded by discussion that focus on SH 83 and SH 86 as the key intercommunity connections in the region. Sections follow focusing on the Towns, then the Counties.

"All elements" (of the recommended network) "are complementary to and supportive of the State Highways...this is a direct outcome of the community-based approach."

The SH 83 Intercommunity Corridor

SH 83 serves as the primary north-south route in the study area, connecting the Denver metro area, Parker, Franktown, semi-rural and rural portions of Douglas and El Paso Counties, and Colorado Springs. As congestion on I-25 has worsened, SH 83 has served increasingly as a reliever to the freeway, both during recurring and incident-related congestion. It has been designated formally by CDOT and other affected agencies as an incident management route to address situations on I-25, although it can be impacted significantly by the same adverse weather conditions that cause incidents along I-25, particularly south of SH 86.

Development in the region has caused remarkably high growth rates in traffic on the roadway, particularly north of SH 86. Sound access management practices in this segment have reduced the impact of traffic increases in this section. However, development pressure near the roadway is increasing, and one of the most pressured areas has been the segment from Bayou Gulch Road to SH 86. This segment has only two lanes, as compared to the four and six lane segments a short distance to the north. There is also an absence of paved shoulders in this segment adjacent to steep side slopes, which can be an important contributing factor to severity in the event of an incident.

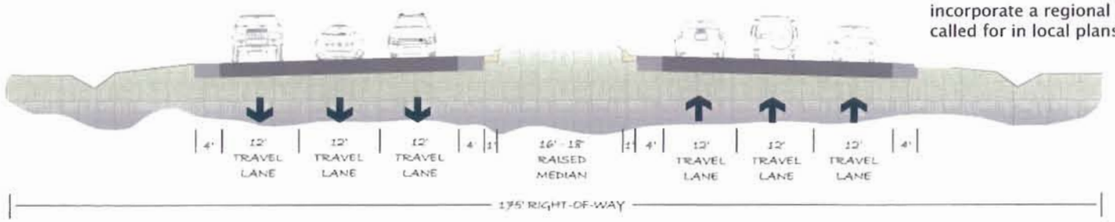
Neither the DRCOG nor the Pikes Peak Area Council of Governments long range plans currently recommend improvements to SH 83 in the study area. However, traffic forecasts show the need for additional lanes from the northern Russellville Road intersection through Parker, ranging from four lanes to ten lanes in total from the south to the north end of that segment. In fact, the highest, non-freeway traffic volumes in the study area are projected in north Parker at 100,000 vehicles daily in the year 2030. As a point of reference, this volume would exceed the highest current volume on any arterial street in the state by about 20%. Given these conditions the Town of Parker has been very proactive in developing local plans that mitigate the undesirable community impacts of a ten lane SH 83, while addressing the regional mobility needs that contribute to this situation. These plans include consideration of a one-way pair of streets or parkways along SH 83 and a parallel Town street, as detailed in their subsequent section.

Forecasts indicate that as many as ten lanes will be necessary to accommodate future demand. Clearly, this is unacceptable to CDOT and the Town of Parker. They must continue to work together to identify and plan for acceptable alternatives.

Figure 4-1--SH 83 in Southern Douglas County

The proposed typical sections below show the elements and associated dimensions for SH 83. Note that in the sections where three lanes could be provided currently along SH 83 by restriping auxiliary lanes, a speed reduction would need to be deemed feasible prior to restriping. A climbing lane will likely be needed with forecast general traffic and typical freight traffic increases through the steep grades near Castlewood Canyon State Park. Additional Intelligent Transportation System (ITS) devices are needed to supplement the existing devices to manage incidents related traffic from I-25, as well as to advise SH 83 drivers of inclement weather situations and associated road closures.

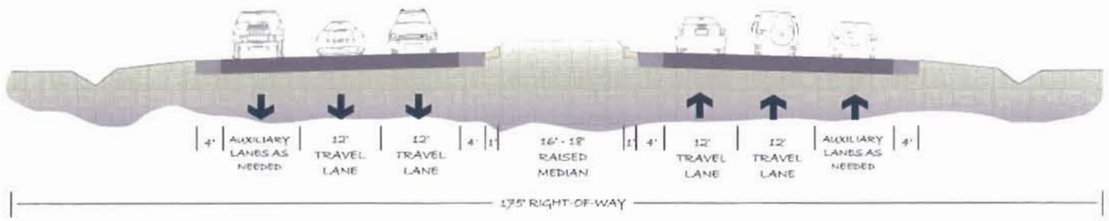
Note: Future planning and design of the ultimate configuration of this section will incorporate a regional trail system where called for in local plans.



SH 83 TYPICAL SECTION
NORTH OF BAYOU GULCH ROAD

Figure 4-2

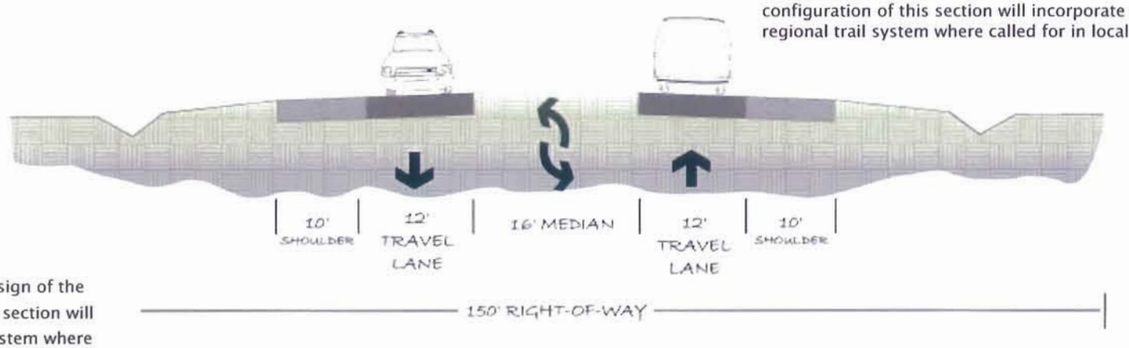
Note: Future planning and design of the ultimate configuration of this section will incorporate a regional trail system where called for in local plans.



SH 83 TYPICAL SECTION
BAYOU GULCH ROAD TO NORTHERN RUSSELLVILLE ROAD

Figure 4-3

Note: Future planning and design of the ultimate configuration of this section will incorporate a regional trail system where called for in local plans.



SH 83 TYPICAL SECTION
NORTHERN RUSSELLVILLE ROAD TO SH 105

Figure 4-4

Additionally, several series of interim improvements are recommended to respond to safety and operational concerns. These include elements such as turn lanes, widened shoulders, and sight distance and alignment improvements. Locations of these suggested improvements are detailed in the subsequent Business Plan section.

SH 83 serves significant regional, local, and commuter traffic—and provides the only viable alternative to I-25.

The SH 86 Intercommunity Corridor

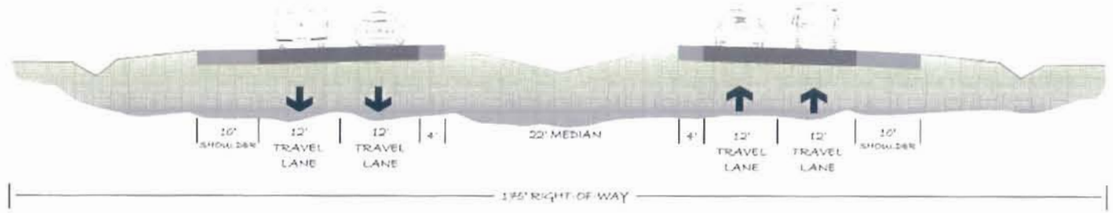
SH 86 functions as the primary east-west route in the study area, extending from Castle Rock through Franktown, Elizabeth, Kiowa, semi-rural and rural portions of Douglas and Elbert Counties, and on to its terminus at I-70 near Limon.

Growth combined with a nearly complete lack of alternate routes in the region has created unusual levels of congestion along SH 86 for such an apparently rural area. This is particularly true through and near Elizabeth, where the growth has been particularly intense, resulting in recurring peak-hour congestion at a magnitude typical of urban settings. Development in areas potentially impacting SH 86 is expected to continue at high rates. Paved shoulders are generally absent between Elizabeth and Kiowa.

Neither the DRCOG's nor the Eastern Transportation Planning Region's long range plans currently recommend improvements to SH 86 in this area. Traffic forecasts show the need for additional lanes, increasing the capacity from two to four lanes from Founders Parkway to Kiowa by the year 2030.

The proposed typical section in Figure 5-1 shows the elements and associated dimensions for SH 86. In the segment between Founders Parkway and Rock Street in Castle Rock, there is the need for climbing lanes and turn lanes at intersections. As discussed in the subsequent Town of Castle Rock report section, CDOT and the Town have agreed in principle to exchange ownership this section of roadway for Founders Parkway as a state highway to enhance regional mobility. Therefore, the Town will address safety, operation and capacity needs in this segment. SH 86 is recommended to be widened to provide four lanes from Founders Parkway to Kiowa. SH 86 has four lanes currently within Kiowa.

Note: Future planning and design of the ultimate configuration of this section will incorporate a regional trail system where called for in local plans.



SH 86 TYPICAL SECTION
FOUNDERS PARKWAY TO KIOWA
(EXCEPT WITHIN ELIZABETH)

Figure 5-1

Additionally, several series of interim improvements are recommended to respond to safety and operational concerns. These include elements such as turn lanes, widened shoulders, and sight distance and alignment improvements, to be detailed through further study. Locations are detailed in the subsequent Business Plan section.

Local commitments to help preserve right-of-way and manage access will help ensure that future opportunities to improve SH 86 are not lost.

The exception is within Elizabeth, where the community will work to preserve multiple options to provide the equivalent of four lanes to address the regional mobility need along SH 86.

SH 83-86 Corridor Optimization Plan
Forming the Regional Solution
Town of Bennett

HISTORIC & PROJECTED DATA

Population Data
Current: 2,021
Year 2020: 10,000
Year 2030: 14,000

Employment Data
Current: 500
Year 2020: 4,000
Year 2030: 6,000

Assessment & Problem Statement

Town of Bennett

The Town of Bennett is located at the junction of I-70, SH 79, and the Kiowa-Bennett Road. Bennett has experienced a growth in residential population that has increased local traffic and commuter travel.

Kiowa-Bennett Road Traffic Data

Existing		2030			
		Existing Network		Needs-Based Network	
ADT	LOS	ADT	LOS	ADT	LOS
1,300	A	19,000	F	5,000	B

State Highway 79 and US 36 currently traverse through the heart of the Bennett community. Given the current and projected traffic volumes, improved design standards and access management will be necessary to accommodate future travel demand. Numerous local existing and planned businesses are served by these roadways. Convenient and safe roadway access must be balanced with community needs to create connectivity between uses and retain local character.

There is a need to evaluate a north-south roadway alignment within the Bennett area that provides a more direct and efficient connection between the Kiowa-Bennett Road and SH 79 to the north. While the existing discontinuity between the Kiowa-Bennett Road at I-70 and SH 79 to the north of Town could be seen as a localized street network gap, the discontinuity becomes much more significant when the SH 79/Kiowa-Bennett Road/Elbert Road corridor is viewed as a North-South link within a 60-mile gap between SH 21 and SH 83. Further, growing freight travel between Colorado Springs and I-70 has resulted in an increasing volume of freight traffic along the Elbert Road and the Kiowa-Bennett Road. Future freight volumes are anticipated to increase the demand for a more direct alignment that is compatible with the community. Possible alignments are shown on the following Community Issues and Options map.

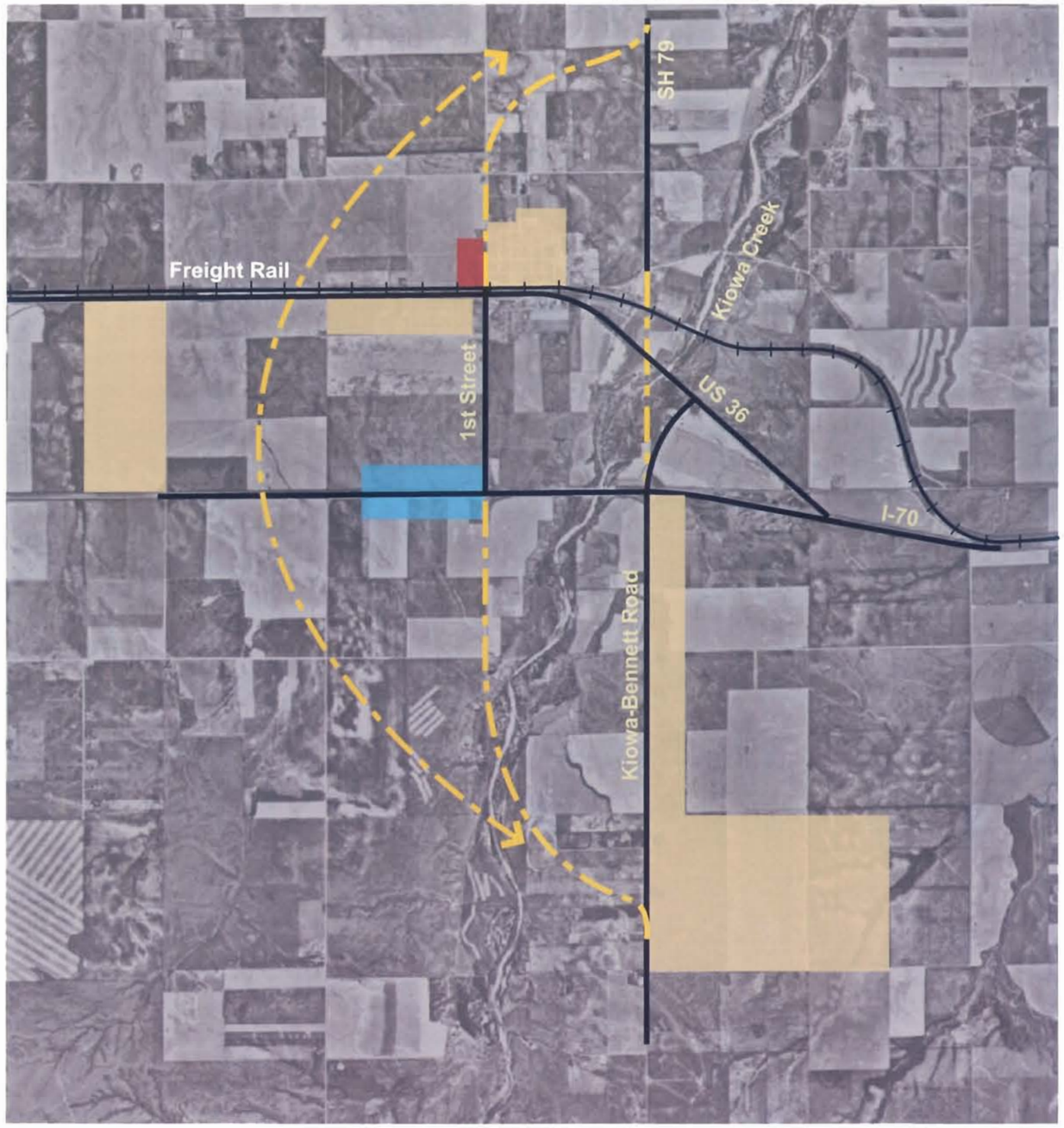
Local Actions, Commitments & Recommendations

Preserve Opportunities for a Kiowa-Bennett Road/SH 79 Connection

The Town has jointly considered with Arapahoe County a potential north-south connection between the Kiowa-Bennett Road and SH 79. This could involve realignment of the Kiowa-Bennett Road to the west at a location south of I-70. This current alignment would avoid the challenges of crossing I-70, the mainline railroad tracks, and the flood plain of Kiowa Creek and create a more efficient connection compatible with the future land use plans of the Town. In cooperation with Arapahoe County, the Town of Bennett intends to identify and maintain potential alignments and right-of-way in future policy documents and in negotiations with developers. The reserved right of way should be 100'-150' wide. Optimally, these efforts would be coordinated with similar activities among Arapahoe and Adams Counties, CDOT, and FHWA to establish the possible connections and alignments of the Kiowa-Bennett Road, SH 79, and any associated access to I-70.

In the face of ever-increasing growth pressures, the Town has been aggressive in ensuring that future development pay for its share of public improvements.

SH 83/86 CORRIDOR OPTIMIZATION PLAN
BENNETT COMMUNITY ISSUES & OPTIONS
FIGURE 6-1



No Scale

- Key Existing Roadways
- Possible Roadway Connection
- Proposed Roadway Connection
- Commercial
- Residential
- Industrial

Continue Managing Development & Access Along SH 79

Bennett is already contributing to improvements to the state highway system by requiring developers to contribute an additional 20 foot right of way along SH 79. Additionally, specific design guidelines have been created to manage future retail and services development along this road from I-70 into Town. These efforts specifically address site design, access and mobility issues associated with future development.

Improve Local Roadway Network

The Town of Bennett has worked extensively through a transportation planning process to identify local transportation network improvements that will be both compatible with the Community Vision and help ensure future mobility.

Update Comprehensive Plan

The Town is currently updating its Comprehensive Plan. The updated Plan will consider a variety of land use planning techniques that are intended to assist in reducing transportation impacts. One key technique is to create an optimum balance of 0.6 jobs per resident. This is intended to provide a balance between jobs and employees within the community and thereby reduce the number of regional commuter trips on the roadway network.

Planning efforts are also underway to manage future retail development in a way that encourages walking between retail uses, creates pedestrian connections and trail systems with existing and future neighborhoods, manages site access and limits congestion through the center of town. Bennett recognizes the effects that future development will create on its transportation network and is involved in a development review process that manages future connectivity and sustains local mobility options.

Fund Public Improvements

The Town has been aggressive in ensuring that future development pay for its share of public improvements. It recently passed impact fees for new residential and commercial developments. The Town also recently identified a priority list of transportation capital improvement projects it wishes to implement as impact fee revenue is received. Bennett is requesting that developers set aside an additional 20 foot right of way along the Highway 79 corridor through town, in anticipation of that corridor's future role as a principal arterial. Public Improvements in recent developments have been financed through metropolitan districts created by developers. In other areas, the Town has created general improvement districts to raise funds for special public improvements. While there is a sales tax, none of those revenues are currently allocated for transportation purposes.

Coordinate Efforts with Adams County Regarding the Kiowa-Bennett Road in Adams County

As residential and commercial growth continues through the Front Range, the Kiowa-Bennett Road will increasingly become a popular north-south alternative to I-25 and Highway 83. Coordination with Adams County and CDOT will be necessary to consider realignments of this road as it heads north through Town.

Coordinate with CDOT & the Federal Highway Administration Regarding Improvements/Modifications to the Kiowa-Bennett Road Interchange and/or Other I-70 Interchanges/Crossing Locations

This will be coordinated with the SH 79 and the Kiowa-Bennett alignment discussions with Arapahoe and Adams Counties.

Continue to Participate in Regional Discussions Regarding Transportation and Land Use Concerns

Bennett has been an active participant in the Corridor Optimization planning process and intends to continue to work with other jurisdictions at a policy and staff level on a regional basis to address issues of mutual concern. These discussions could include neighboring jurisdictions and other regional organizations to bring funding priority to the region's transportation system.

The Town recognizes the local and regional importance of an efficient SH 79/Kiowa-Bennett Road Connection.

SH 83-86 Corridor Optimization Plan
Forming the Regional Solution
Town of Castle Rock

HISTORIC & PROJECTED DATA

Population Data
Current:
20,200
Year 2020:
72,000
Year 2030:
90,000

Employment Data
Current:
12,300
Year 2020:
25,200
Year 2030:
28,300

Problem Assessment & Statement

From 1980 to 2000 Castle Rock annexed nearly 17,400 acres into the Town limits. There exists now 77,000 acres of undeveloped, residentially zoned land within the community poised for future development. There are 3,240 acres of non-residential land available for growth, as well.

While residential growth has been dominant the past decade, the Town has also started to experience significant retail development. Retail and mixed-use development has grown significantly at I-25 and Founders Parkway, thereby increasing congestion in the area. Traffic volumes along Founders Parkway east toward SH 86 continue to grow as well, with the increasing levels of retail and services along the roadway corridor.

SH 86 & Founders Parkway Traffic Data

Location	Existing		2030			
			Existing Network		Needs-Based Network	
	ADT	LOS	ADT	LOS	ADT	LOS
Rock St. to Founders	12,500	E	28,000	F	16,000	C
East of Founders	14,500	E	35,000	F	31,000	C
Founders Parkway	12,000	B	40,000	D	27,000	B

The significant residential base in Castle Rock translates to a high commuter travel pattern into and out of the area. Both I-25 and State Highway 83 carry residents from Castle Rock north to jobs in the Denver Tech Center and surrounding areas.

Enhancing regional mobility between SH 86 to the east of Castle Rock and I-25 was examined considering directness of alignment, capacity, safety and community context. Topography posed challenges in developing the current alignment of SH 86. As the Town has changed and developed since the construction of SH 86, SH 86 now feeds traffic into the downtown core. Since the construction of Founders Parkway provided a reasonable alternative to this route, particularly to the newer, northern portions of Town, the potential designation of Founders Parkway as SH 86 in place of the current routing of the highway into Castle Rock was examined as the primary means of enhancing regional mobility. In addition, a new, direct roadway alignment was considered between SH 86 and Founders Parkway east of the Town. However, this connection was found to be infeasible due to topography and conflicts with designated open space.

Castle Rock Town Vision
"A series of small communities preserving Castle Rock's character, identity and quality of life..... enhancing self-sufficiency and fostering a strong local economy."

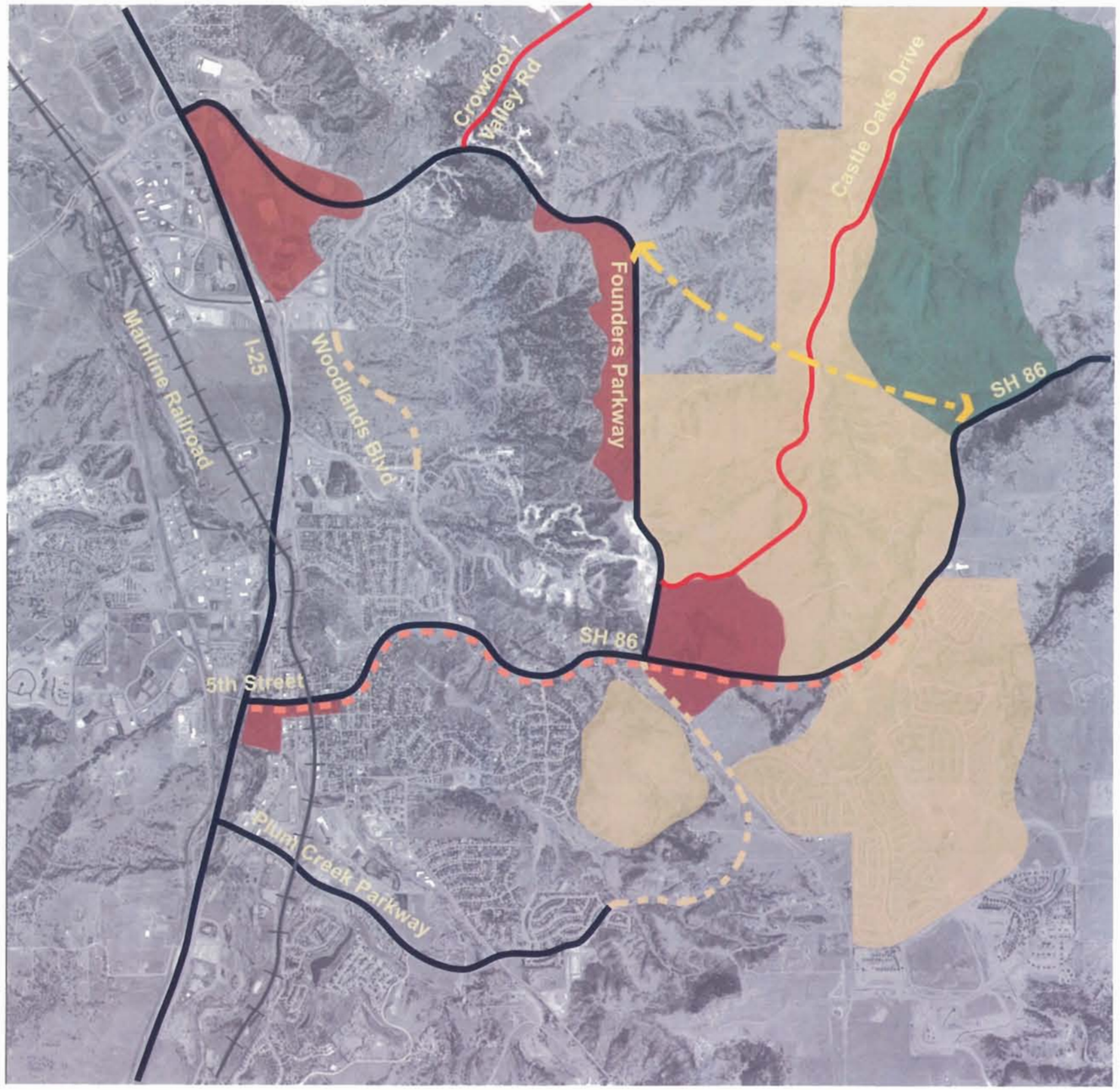
Founders Parkway has a distinctly more direct alignment traffic than SH 86 for both local and regional traffic desiring to travel between destinations north of Castle Rock along I-25 and US 85 and to the east and south of the Founders Parkway/SH 86 intersection. This travel is expected to increase over time relative to other travel patterns along Founders Parkway. Founders Parkway is expected to carry two to three times more traffic at an acceptable level of service by the year 2030 than SH 86.

Within Castle Rock, Founders Parkway provides a clearer and less intrusive route through the Town as compared to other possible routes between SH 86 to the east of Town and I-25 and US 85, and appropriate signing to facilitate wayfinding could be provided. Also, there are no at-grade railroad crossings along Founders Parkway, whereas most of the traffic traveling SH 86 west of Founders Parkway crosses the mainline freight tracks at Fifth Street. This directness, lesser degree of intrusiveness, clarity of route and the absence of railroad crossings are particularly important factors for unfamiliar drivers and truck traffic.

SH 83/86 CORRIDOR OPTIMIZATION PLAN

CASTLE ROCK COMMUNITY ISSUES & OPTIONS

FIGURE 7-1



No Scale

Several intersections and driveways along SH 86 have combinations of sight distance limitations, minimal turn lanes and steep grades that pose safety concerns. Some of these locations can be addressed with access consolidations and relocations, construction of turn lanes and other measures. Safety issues along Founders Parkway are distinctly lesser, and are generally correctable sight distance issues at intersections.

The exchange of Founders Parkway for existing SH 86 between Founders and Rock Street will benefit the Town, CDOT, and regional travelers.

Given these factors the Town and CDOT have initiated discussions regarding exchange Founders Parkway in its entirety for SH 86 between Founders Parkway and Rock Street, where the state highway designation currently ends. The conditions of this exchange are currently being negotiated.

Local Actions, Commitments & Recommendations

Continue Working with CDOT to Exchange SH 86 & Founders Parkway

CDOT and the Town are currently negotiating the details of this exchange, including reconstruction responsibilities, timing, right-of-way preservation and other issues.

Improve Town Street System

The planned Castle Rock street network improvements are an important element of the future transportation capacity within the area. The Town has committed to improving Crowfoot Valley Road, Plum Creek Parkway, Castle Oaks Drive and many other facilities to benefit SH 86 and SH 83.

Planned improvements to Town Streets will provide alternatives to travel on SH 83 and SH 86.

Continue Coordinating Land Use Planning & Transportation Development

The Town of Castle Rock has undergone an extensive planning process to produce a Master Comprehensive Plan and most recently a Transportation Plan. They will continue to coordinate land use development with transportation infrastructure, especially along Founders Parkway where retail development pressures create a demand for future access management. Site planning efforts in this area are important steps in managing growth patterns.

Continue to Create Pedestrian & Cyclist Connectivity

The Town is also working to create non-vehicular connectivity throughout the community, especially between residential and recreational uses. The Town has established an extensive trails network to accommodate bicycle and pedestrian movement. Future links include the development of multi-use facilities along State Highway 86 connecting to the Cherry Creek recreational corridor. Connections between residential uses north of State Highway 86 and across open space areas will also create significant links to the Cherry Creek system.

Continue Efforts to Provide Regional Bus Service

The Town has participated in significant joint jurisdictional efforts to establish regional commuter bus service between Denver and Colorado Springs. Castle Rock, Colorado Springs and Denver coordinated with CDOT and RTD on the CDOT Front Range Commuter Bus Feasibility Study. These agencies collectively pursued the Congestion Management and Air Quality grant of $4 million to fund three years of service beginning in September 2004. Future service would operate Monday through Friday during AM and PM commuter hours to downtown Colorado Springs, Woodmen Road Park and Ride lot, Monument Park and Ride lot, Castle Rock and Denver Union Station. This effort is a step forward in managing the commuter travel patterns in this region that burden the state highway system.

Continue to Finance Local Transportation Improvements

The Town has tools in place to finance and maintain transportation improvements. There are impact fees on residential and commercial development to help pay for transportation, as well as other public services such as police and fire, parks, recreation and municipal facilities. A bond issuance of approximately $9 million for transportation-related purposes is paid back by 1.75 percent of the sales tax dedicated to roadway improvements. Castle Rock also allots approximately $400,000 per year out of its budget to fund local transit service and approximately $500,000 annually for the creation and maintenance of paths and trails throughout the town.

Castle Rock has implemented a 1.75% sales tax to help fund local roadway improvements.

Continue to Participate in Regional Discussions Regarding Transportation and Land Use Concerns

The Town of Castle Rock has been an active participant in the Corridor Optimization planning process and intends to continue to work with other jurisdictions at a policy and staff level on a regional basis to address issues of mutual concern. These discussions could include neighboring jurisdictions and other regional organizations to bring funding priority to the region's transportation system.

HISTORIC & PROJECTED DATA

Population Data
Current: 1,500
Year 2020: 5,500
Year 2030: 11,000

Employment Data
Current: 1,900
Year 2020: 3,500
Year 2030: 5,000

Problem Assessment & Statement

Additional east-west capacity is needed along or near SH 86 to satisfy future regional mobility needs. Currently limited east-west alternatives within Elizabeth force local traffic onto SH 86. These travel limitations exist because of Running Creek, and extend throughout Elbert County to the north and south. The existing two lanes along SH 86 through the Town of Elizabeth provide insufficient capacity for today's travel volumes and pose severe congestion problems in the future. The peak hour congestion on SH 86 between County Roads 13 and 17 makes access from these cross streets onto the corridor very difficult. This congestion is at once worsened by and delays the numerous school buses turning onto and traveling along SH 86. The lack of marked pedestrian crossings is a safety concern, especially during peak hours. Because of the two-lane highway configuration, illegal passing occurs on the right and is a potential hazard not only to vehicular traffic but to pedestrian movement as well. SH 86 travels directly through the heart of downtown Elizabeth, a unique and historic part of the community. The growing traffic volumes, highway configuration, and pedestrian safety issues pose serious difficulties in ensuring a unique and viable downtown area in the future.

SH 86 Traffic Data

Existing		2030			
		Existing Network		Needs-Based Network	
ADT	LOS	ADT	LOS	ADT	LOS
11,000	E	30,000	F	25,000	F

Town Vision

"A community where quality of life is held in highest regard, small town rural value and agricultural western heritage are preserved, and a harmonious balance among agriculture, open space, recreation, commerce, industry and residential development is achieved.

There are over 80 acres of vacant land within the existing community limits which is available for future development. Approximately 50% of the recent growth in Elizabeth is residential. The majority of commercial development is occurring on the west side of town, but commercial development seems imminent on the east side of Town as well. The anticipated commercial and continued single family residential development brings with it increasing local traffic and high commuter travel patterns from the Elizabeth area north and west toward Douglas County. In Elizabeth, SH 86 is the backbone of both local circulation and regional travel needs.

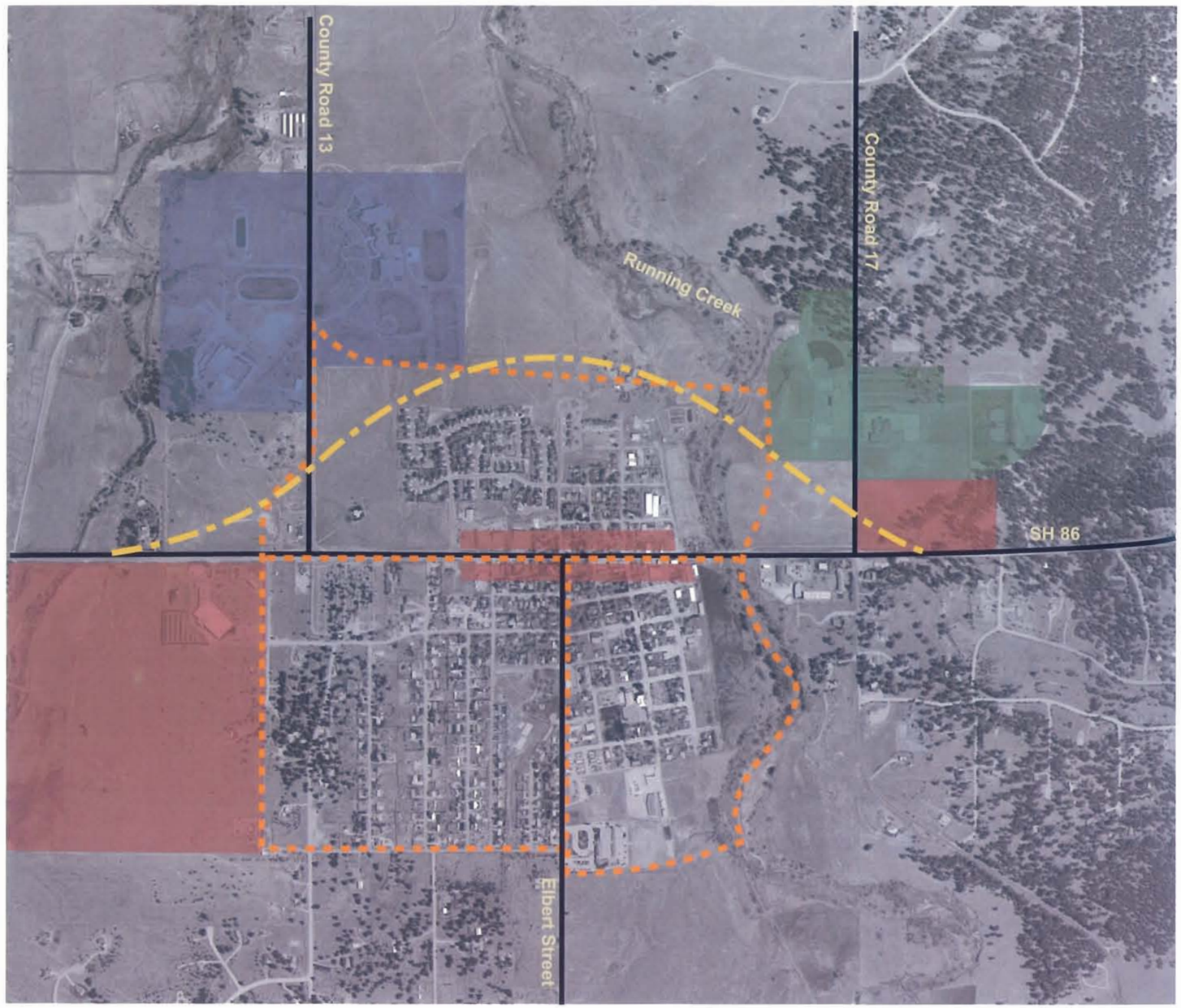
Throughout the Corridor Optimization process, several options were considered in an effort to address regional mobility needs and satisfy the community's objectives of creating opportunities for future development, retaining a unique downtown, preserving local character and enhancing pedestrian mobility within the community. No single option provided a solution to the community. It was determined that a combination of several of these options would be required at some point in the future to accommodate regional travel and local circulation needs. Further consideration will be given to all options as either the designated state highway or complementary local street additions. The community will work to preserve the ability to implement the combination of these roadway options in the future. Figure 8-1 depicts the options discussed below.

Widen State Highway 86
Widening the highway through downtown Elizabeth was examined as a means of improving regional mobility and enhancing the downtown core. In order to

SH 83/86 CORRIDOR OPTIMIZATION PLAN

ELIZABETH COMMUNITY ISSUES & OPTIONS

Figure 8-1



No Scale

accommodate the projected demand of 25,000-30,000 vehicles daily, SH 86 through town would be expanded to four travel lanes, a median and left turn lanes, 10-16' sidewalk/amenity area, and possibly on-street parking. This option would carry the projected level of traffic, increase exposure to local businesses, allow for sidewalk improvements and promote the economic vitality of downtown. However, the widening would also impact two historic structures and encroach on numerous other properties. This wider highway would bisect the community and perpetuate the barrier effect through the middle of town, in conflict with the historic small-town character envisioned by the community. This option is generally undesirable for the community.

Create a Bypass

Bypass options were examined both north and south of town. Each of these concepts was assumed to replace the existing SH 86 alignment as the primary east-west route, while providing an additional crossing of Running Creek. The existing highway corridor would serve as a two-lane local street through town.

Figure 8-2—Westbound Traffic on SH 86 in Elizabeth

Southern Bypass - The southern bypass would align with either Elbert County Road 132 or 136 and would traverse Running Creek south of SH 86 before it would rejoin the existing highway. A technical evaluation of connections on either end should be studied further. Travel demand modeling predicted that either southern alignment would carry 5,000-7,000 vehicles per day, roughly 20% of projected future demand on the corridor. The distance from the existing alignment and the circuitry of travel would make it difficult to attract sufficient traffic volumes to effectively address future regional mobility and reduce travel on the downtown corridor. The majority of regional traffic would attempt to travel the shortest distance by staying on the existing corridor alignment.

While the southern bypass does not meet the regional mobility needs of this study, it does address local travel needs. The development of either of these southern alignments by the Town and/or Elbert County would improve local circulation and create an alternative east-west route to SH 86. The southern bypass would provide an important link between the growing residential base on the south end of town, the commercial to the west and the school zone north of SH 86. Creating such a link would open up additional development opportunities to the south and west of town.

Northern Bypass - The northern bypass was predicted to carry between 20,000 and 25,000 vehicles per day, over 90% of the predicted future travel volumes. This option would meet regional mobility needs if constructed as a four-lane, minimal access facility. At least 110 feet of right-of-way should typically be preserved for this alignment. Potential development on the east and west sides of town could create conflict in connecting this alignment to existing SH 86, depending on the location of those connections. The town should preserve future potential connections of the northern bypass in relation to growing commercial development east and west of town. If connections are not preserved, future bypass opportunities will be lost. Conceptually, this alignment would pass between the Town and the middle/high school area, so a grade-separated pedestrian crossing would be desirable to provide safe access between the schools and core area of the Town.

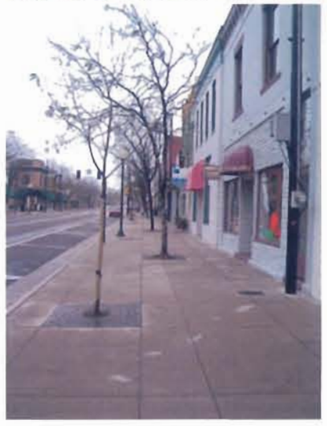
The northern bypass would be designed to divert traffic north of downtown and would consequently create development opportunities on the north side of town. The town should work with developers in the future to preserve this northern connection and ensure efficient traffic flow through limited access. This option would ease congestion through downtown, but it would also mean that regional traffic would bypass the downtown business district, potentially resulting in reduced economic activity. The town should consider pedestrian, community and/or cultural enhancements to the downtown over time in order to preserve it as a unique town amenity.

Figure 8-3—Forecast Daily Traffic Volumes on Various SH 86 Options

A One-Way Couplet

A one-way couplet was examined as a means of meeting regional mobility needs, retaining vehicle trips through town and fostering future economic opportunities downtown. The couplet would utilize the existing SH 86 for one-way eastbound traffic, while westbound traffic would travel Grant Street one block north of the highway. The existing 60' public right-of-way on both SH 86 and Grant Street would be sufficient to accommodate the potential cross section of two travel lanes, plus sidewalks and on-street parking. The couplet concept would satisfy regional mobility needs. It would also allow the continued use of the existing highway corridor in its current ROW, thereby preserving existing businesses and historic buildings. The existing ROW configuration on Grant Street would also sufficiently accommodate the couplet concept.

The traffic volumes of 12,000-15,000 vehicles on each half of the couplet would allow for the development of a "main street" atmosphere and an active and safe pedestrian environment. Long term plans might include a transition to additional retail, restaurant and/or office land uses not only along the existing corridor, but along Grant Street as well. The downtown couplet could be enhanced with streetscape amenities in order to create a vibrant and identifiable atmosphere that would redefine the historic core of Elizabeth. Future amenities might include:



10-12' sidewalks
Signage / Banners
Trees
Benches
Lighting
Public Art / Public Spaces

Figure 8-4—Incorporating Amenities into the Street Environment

The couplet and enhancements to downtown would still allow for the development of future retail, commercial and residential uses east or west of town.

Local Actions, Commitments & Recommendations

Preserve Opportunities to Achieve Regional Mobility Objectives on SH 86

This initial assessment indicates that a combination of roadway options will be needed to achieve regional mobility objectives and to satisfy the community's objectives of creating opportunities for future development, retaining a unique downtown, preserving local character and enhancing pedestrian mobility within the community. Specific direction regarding alignments and the ultimate disposition of the state highway will require extensive further study, formal environmental clearances and public process, along with considering a full range of reasonable and feasible options. In the meantime, the Town intends to preserve opportunities to implement both northern and southern bypass as well as an SH 86/Grant Street one-way couplet. Inclusion within the town's master plans and, over time, the preservation of right-of-way and other supporting actions would represent a significant local contribution to implementation of the highway option.

Create a Pedestrian Network

The pedestrian environment is an important complement to the local street network, highway design and mobility function in town. Pedestrian facilities through downtown would be the backbone of the town's future pedestrian network. Pedestrian crossings of SH 86 at Elbert Street, County Road 13 and Running Creek would be important aspects of a successful network. These crossings, combined with sidewalk improvements through the neighborhoods to the north and south of SH 86, would create pedestrian links to the town's recreational areas, schools and future retail development. Walking would become a viable transportation alternative within the community.

The Town will preserve opportunities that allow for the future implementation of a variety of roadway options that when combined satisfy regional and local travel demand, as well as community objectives for development, character, and pedestrian environment.

Seek Technical Assistance for Main Street / Downtown Revitalization

The town wishes to preserve its downtown historic small town identity. Organizations such as the Department of Local Affairs (DOLA) and the Colorado Community Revitalization Association are available to provide low-cost technical assistance on downtown revitalization issues to local communities. Elizabeth should seek additional assistance on steps it can take to enhance and strengthen its downtown.

Continue Negotiating with Developers to Help Address Transportation Infrastructure Issues

The town has been negotiating with a developer to realign and straighten CR 13 on the west side of town. As new development continues to occur in western Elizabeth, the town intends to continue to work with the private sector, particularly on priorities such as an alternative east-west connection through town for local traffic.

Pursue alternative sources of funding

The Town has been proactive in addressing needed public improvements. The residents recently approved a $7.5 million bond issuance to address the town's most pressing local street and infrastructure needs, particularly pavement reconstruction. The bond will be paid back through a 1.5 percent sales tax over the next twenty years.

The town makes use of impact fees on new development and of the Enhanced Sales Tax Incentive Program (ESTIP) to help pay for public improvements. Although the improvements help enhance overall sales tax receipts, the increasing use of this tool diverts potential sales tax revenue from other public uses. As the town grows, special district options should be examined for their applicability, including Title 32 Metropolitan Districts, General Improvement Districts or Special Improvement Districts. These districts rely on assessments, property taxes and other fees placed on future residents and businesses to pay back costs for infrastructure investments.

Continue to Participate in Regional Discussions Regarding Transportation and Land Use Concerns

Elizabeth has been an active participant in the Corridor Optimization planning process and intends to continue to work with other jurisdictions at a policy and staff level on a regional basis to address issues of mutual concern. These discussions could include neighboring jurisdictions, the Eastern TPR and other regional organizations to bring funding priority to the region's transportation system.

The Town has implemented a 1.5% sales tax for transportation improvements.

HISTORIC & PROJECTED DATA

Population Data
Current: 580
Year 2020: 2,300
Year 2030: 4,500

Employment Data
Current: 950
Year 2020: 1,800
Year 2030: 2,500

Problem Assessment & Statement

While State Highway 86 through Kiowa has sufficient capacity to accommodate both existing and future travel demand, several intersections will be impacted by traffic generated from future development. The existing four lane section with on-street parking has no left turn lanes. The community likes the on-street parking and would prefer to retain it without implementing left turn lanes. Growth on the north and south sides of town will result in more turning and crossing traffic especially at the Kiowa-Bennett Road and County Road 45. As traffic increases, these intersections will grow more congested, making movement across the highway difficult.

Location	Existing		2030			
			Existing Network		Needs-Based Network	
	ADT	LOS	ADT	LOS	ADT	LOS
In Town (4 lanes)	5,400	C-D	17,000	C	19,000	C
West of Town (2 lanes)			17,000	E	19,000	E

SH-86 Traffic Data

Pedestrian safety along the highway corridor is a key issue for Kiowa. On the west side of town the Kiowa Creek Bridge is used by many students to walk to town and school. This bridge is narrow and has no sidewalks or shoulders. Sidewalks along the highway through town are discontinuous making pedestrian movement uncomfortable and potentially hazardous. County Road 45 on the east side of town is the location of the town's high school, middle school and elementary school. The north and south legs of this intersection do not align well with each other. Sight distance is limited and the intersection is not signalized.

Kiowa Master Plan Vision
"Small town character with a successful balance of residential, services, jobs, recreation, and cultural amenities."

At a localized level, the north-south "jog" formed by Elbert Road, SH 86, and the Kiowa-Bennett Road creates only a minor discontinuity in the Town's street system. However, given the level of regional north-south mobility which Elbert Road and the Kiowa-Bennett Road provide from El Paso County to SH 79 in Adams County within a 60-plus mile gap, combined with expected general and freight traffic growth along this corridor, this localized discontinuity creates the potential for increased safety and noise issues in the community as well as a significant impediment to regional mobility.

Local Actions, Commitments & Recommendations

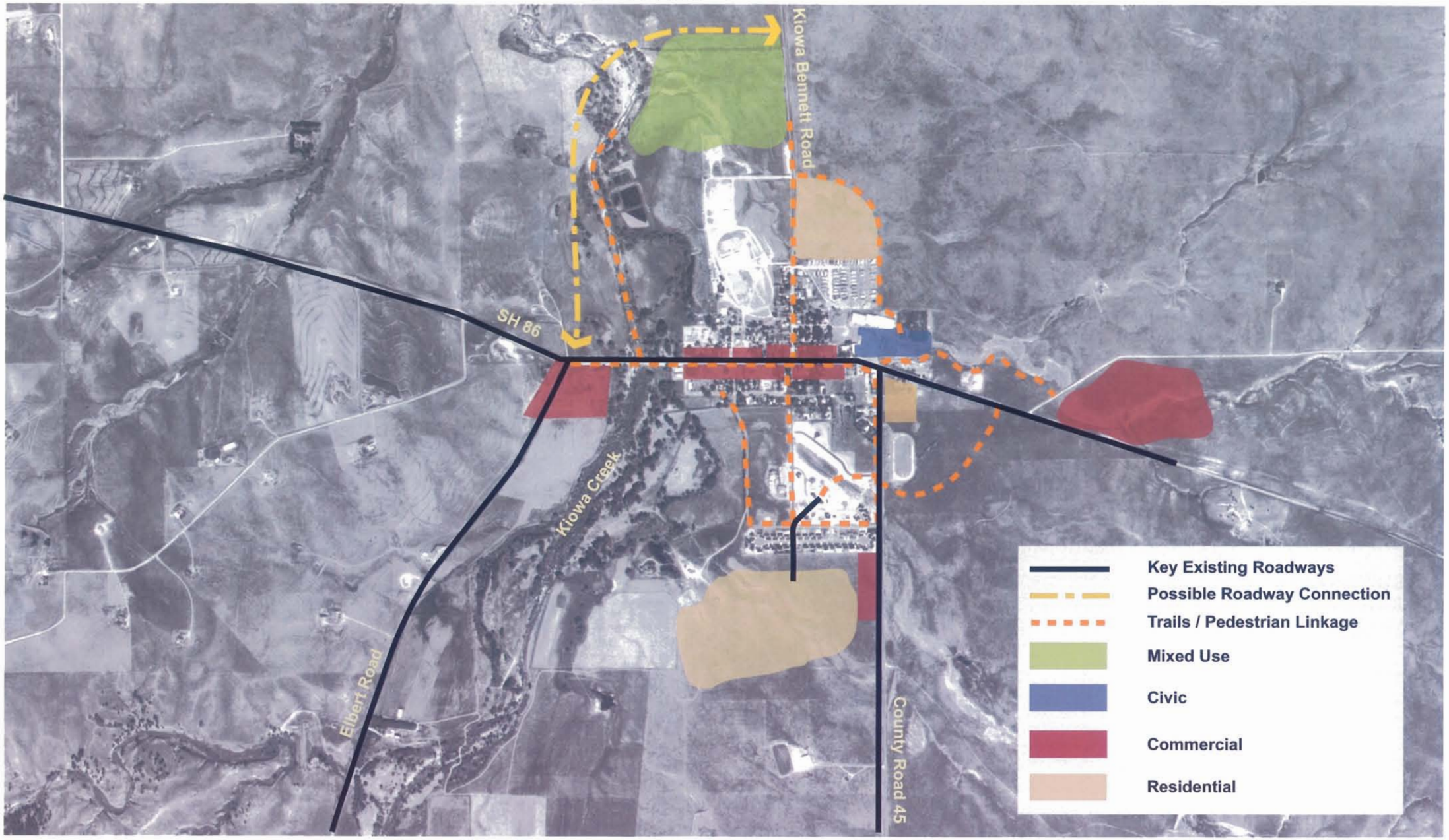
Support the Kiowa-Bennett Road/Elbert Road Connection

In its most recent master plan update, the Town adopted the realignment of the Kiowa-Bennett Road to connect directly to Elbert Road. Kiowa intends to work closely with Elbert County to designate a future alignment along the northwest perimeter of the Town and ensure that typically 100'-150' of right of way and access management are preserved as future development occurs in the area. This will reduce both general and truck traffic along SH 86 within the core of town. Associated noise, traffic conflicts, and safety issues will also be reduced. This would provide an improved pedestrian environment through the historic business area, in line with the town's economic development and master planning efforts.

SH 83/86 CORRIDOR OPTIMIZATION PLAN

KIOWA COMMUNITY ISSUES & OPTIONS

FIGURE 9-1



No Scale

This new roadway alignment also enhances the community's vision of opening up over 700 acres for mixed use development north of town, just west of the existing Kiowa-Bennett Road. It would create access to this future development area, serving not only regional travel needs, but also improving local access. It also complements the Town's vision by:

- Reducing future demand for left turns and the associated need for the left turn lanes along SH 86
- Allowing continuation of 4 lanes through downtown with minimal need for left turn lanes; which would require removal of on-street parking

Kiowa does not anticipate that this alternative alignment would significantly affect businesses in the downtown core along Highway 86. The two areas will provide different services, shopping experiences and job opportunities.

Improve the Highway Environment

The four lane configuration of Highway 86 through Kiowa is functional for today's traffic volumes. In the future, this same highway design will:

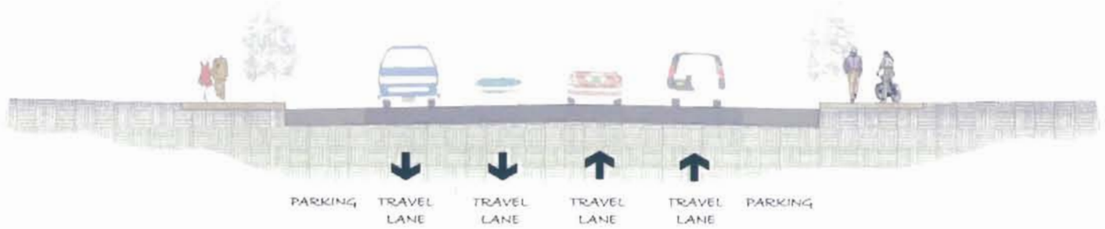
- Accommodate projected traffic volumes
- Allow for dedicated turn lanes if needed
- Allow for retaining on-street parking, except at locations where turn lanes or loading zones are needed

The Town's Policies and Design Guidelines call for an economically vibrant, unique historic street with a recognizable architectural identity. Streetscape amenities are an important part of defining this unique corridor. The following concepts were discussed:

10-12' sidewalks
Signage / Banners
Trees
Benches
Lighting
Public Art / Public Spaces

Gateways at either end of town will create a sense of arrival and departure from the core of historic Kiowa.

These features can readily fit within the existing 90' of right of way along SH 86. Sidewalk areas will likely vary in width relative to building faces.



TOWN OF KIOWA
SH 86 CROSS SECTION

Figure 9-2

In its most recent Master Plan update, the Town included a direct connection between the Elbert Road and the Kiowa-Bennett Road.

Work with CDOT to Improve the SH 86/Elbert County Road 45 Intersection

The presence of the school complex on the north side of SH 86 plus the potential expansion of school facilities to the south side, sight distance issues, and the rural/town transition character of this location combine to create potential safety issues. Improvements to this intersection could include improved alignment of the north and south legs, pedestrian crossing treatments, sight distance improvements, alignment modifications to SH 86, and adjacent school site circulation improvements and modifications to better direct auto, school bus and pedestrian traffic through the intersection. Recent school site modifications have accomplished some of these objectives.

The Town will work with CDOT to improve safety and mobility at the SH 86/Elbert County Road 45 intersection.

Develop a Pedestrian Network

Creating a pedestrian network within town will improve mobility/access to retail, schools and recreational areas and links to the pedestrian amenities on State Highway 86. In Kiowa, the potential network is comprised of improved pedestrian crossings at CR 45, improvements to the Kiowa Creek Bridge that enhance safe pedestrian travel, sidewalk development through the neighborhoods, trails linking schools and recreational sites and pedestrian improvements along State Highway 86. The Town is planning to pursue Greater Colorado Outdoors (GoCo) funds to help fund the pedestrian network.

Continue to Examine Sales Tax, Impact Fees and Other Funding Sources

Half of Kiowa's 1.5% sales tax is allotted to transportation capital improvements and maintenance. The Town recently adopted impact fees on new development, as is exploring the use of other land use and financing tools.

Develop Transportation / Street Plan and a Capital Improvements Program

As the town continues to grow and develop, a transportation plan along with a capital improvement program with an associated budget will be developed to address needed street and alley improvements, curb and sidewalk needs as well as ongoing maintenance.

Seek Technical Assistance for Main Street / Downtown Revitalization

Organizations such as the Department of Local Affairs (DOLA) and the Colorado Community Revitalization Association are available to provide local communities with low-cost technical assistance on downtown revitalization issues. As half of the sales tax generated in the town is allotted to ongoing capital improvements, e.g. paving, curb and gutter, as well as maintenance, bolstering sales tax revenue by increasing commercial activity in Kiowa's downtown area will help provide additional revenues to help maintain the local roadway network. The Kiowa Economic Development Board has an active program to attract commercial services to town.

Re-examine Special District Options to Finance New Public Improvements

One of the more popular tools used in other towns is a Title 32 Metropolitan District. Set up by a private developer, the district has the authority to install public improvements, issue bonds and institute property tax levies and other charges to pay for needed improvements.

Continue to Take Local Actions to Manage Growth and Reduce Travel Demand

Recent successes include a newly elected Economic Development Board, an adopted set of Design Guidelines, a recently updated Master Plan that includes policies on the compatibility of uses, and the mixing of land uses and development of pedestrian connectivity between uses.

Continue to Participate in Regional Discussions Regarding Transportation and Land Use Concerns

Kiowa has been an active participant in the Corridor Optimization planning process and intends to continue to work with other jurisdictions at a policy and staff level on a regional basis to address issues of mutual concern. These discussions could include neighboring jurisdictions, the Eastern TPR and other regional organizations to bring funding priority to the region's transportation system.

Half of Kiowa's 1.5% sales tax is dedicated to transportation improvements.

SH 83-86 Corridor Optimization Plan
Forming the Regional Solution
Town of Parker

HISTORIC & PROJECTED DATA

Population Data
Current: 32,000
Year 2020: 75,000
Year 2030: 80,000

Employment Data
Current: 4,700
Year 2020: 13,500
Year 2030: 16,250

Problem Assessment & Statement

The highest, non-freeway traffic volumes in the study area are projected along SH 83 in north Parker at 100,000 vehicles daily in the year 2030. As a point of reference, this volume would exceed the highest current volume on any arterial street in the state (80,000 vehicles daily on Colorado Boulevard north of I-25) by about 20%. Land adjacent to Parker Road is approximately only 1/3 built-out with over 2.2 million square feet of existing commercial development. High growth potential along the corridor would significantly contribute to increases in future traffic volumes. Given these conditions, the Town of Parker formally identified a number of issues and concerns related to State Highway 83 (Parker Road):

Parker Road Principles

- *"It should be a goal of local jurisdictions, counties and CDOT to establish alternative parallel routes to Parker Road/Highway 83 to allow options to commuters.*
- *It is not acceptable to the Town of Parker to have Parker Road/ Highway 83 developed as a limited access freeway.*
- *Parker Road today is too noisy. Alternatives in the Study should address noise with the goal of making the road a more quiet aspect of our town. One simple option would be to overlay the cement with smooth asphalt surface.*
- *The curb to curb dimensions (as built width) should not be expanded.*
- *The actual and permitted speeds should be lowered.*
- *The ability for pedestrians to cross the road and move parallel to the road should be improved.*
- *The road should look and function more as a "Town Road", the road should be framed (closely) by trees with a pedestrian sidewalk. Other amenities, such as Parker Lights, should be used.*
- *The proposed changes should be transit friendly and improve transit options along the corridor. This may include sidewalks with access to bus stops and designated bus pull offs, designated bus lanes, bus bypass lanes and signals at lights or other improvements as appropriate.*
- *The Town of Parker would like to take over responsibility for signal progression in the future."*

Town Vision
"Parker's vision is to be a full service community with a small town feel."

Location	Existing		2030 Existing Network		2030 Needs-Based Network	
	ADT	LOS	ADT	LOS	ADT	LOS
E-470 to Hilltop Rd	47,000-56,000	F	102,000-128,000	F	73,000-91,000	E-F
Hilltop Rd. to Bayou Gulch Rd.	23,000-35,000	C-D	81,000	F	50,000	C-D

SH-83 Traffic Data

The Town of Parker considered many options in their evaluation of a future highway facility that would meet regional mobility needs and be compatible with the community's vision of Parker. Feasible highway options should be consistent with the Town's objectives in providing for:

- Efficient emergency response capability
- Provision of pedestrian and bicycle facilities and crossings
- Enhancement of the East/West connections and community fabric

- A "transit friendly" environment
- Corridor appearance and visual environment
- Mitigation of traffic impacts on adjacent land uses
- Adjacent land use requirements
- Safe environment for motorists, pedestrians, and bicycles
- Local support for the design concepts

Three general concepts received particular attention.

Option 1 - Widen Parker Road

In order to accommodate projected traffic volumes in 2030, Parker Road would need to be widened from its existing six lane configuration to a ten lane facility between E-470 and Hilltop Road, and to eight lanes between Hilltop and Stroh Road. The adjacent drawing shows the intersection of Mainstreet and Parker Road with a widened highway facility. There is insufficient right of way at this location and at other points along SH 83 to accommodate such a facility.

Figure 10-1—Parker Rd. Road Streetscape Concept (source:EDAW)

While widening would address regional mobility needs, it aggravates the community issues associated with this transportation barrier through town. The Town of Parker does not find a widened highway facility compatible with the town's planning objectives.

Option 2 - One-Way Couplet

The Parker Road/Twenty Mile Road One-Way Couplet would create one-way northbound and southbound travel, respectively, on Parker Road and Twenty Mile Road with each five lane facility carrying approximately 40,000-50,000 vehicles daily (the following figures provided by EDAW show this concept, as well as Option 3). Analyses indicated that the strong directional bias in the northbound and southbound flows that currently occurs between the morning and evening peak periods will become much more balanced, such that this option would provide the capacity to meet regional mobility needs while fulfilling the town's vision for the corridor, even with such large volumes of traffic.

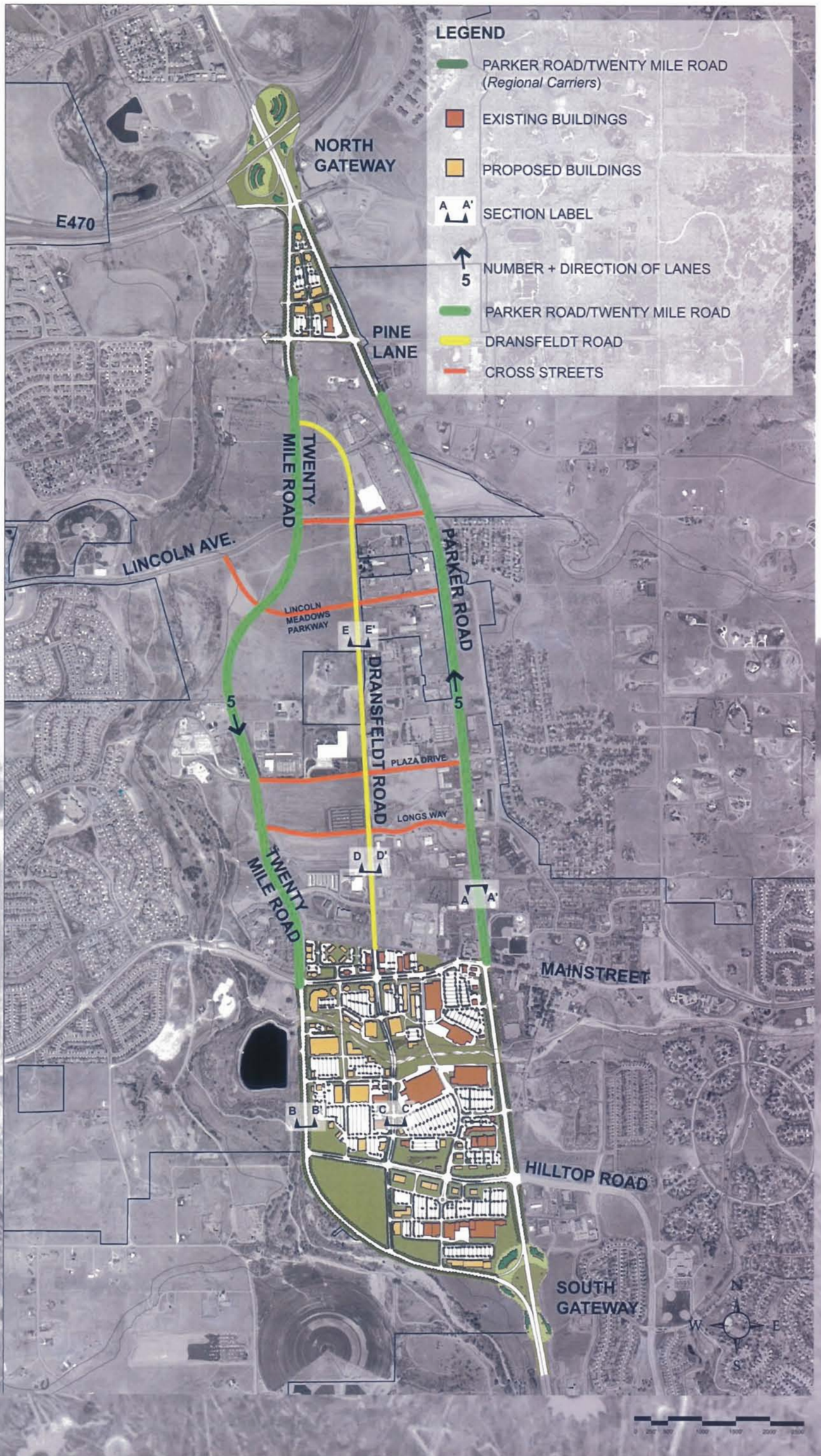
The couplet concept would potentially allow for a reduction in the scale of Parker Road consistent with the town's vision of a small town community character. It would create the opportunity to enhance the Town center through design improvements at Mainstreet and Parker Road.

By reducing the impact of the state highway, Parker can begin to implement plans along the corridor to modify land use design, improve the pedestrian environment, create a special identity with streetscape amenities and make room for alternative modes of access such as bikeway or transit facilities. The couplet emphasizes retail uses in the southern portion of the corridor and the enhancement of Dransfeldt Road as a future commercial boulevard functioning as the town's second "Main Street".

Option 3 - Parallel Parkways

The "Parallel Parkways" is a variation of Option 2, utilizing the same streets. Parker Road would have three lanes in each direction, and Twenty Mile Road would have two lanes in each direction. This concept would include high capacity connections at the north and south junctions of the two facilities-likely including a grade separation for northbound traffic from Parker Road to Twenty Mile Road-to make Twenty Mile Road attractive to traffic as an alternative to Parker Road. This option would also satisfy regional mobility needs and be compatible with the Town's corridor vision.

Parker will work with CDOT to refine transportation options that address regional mobility needs and support the community's vision for the future.



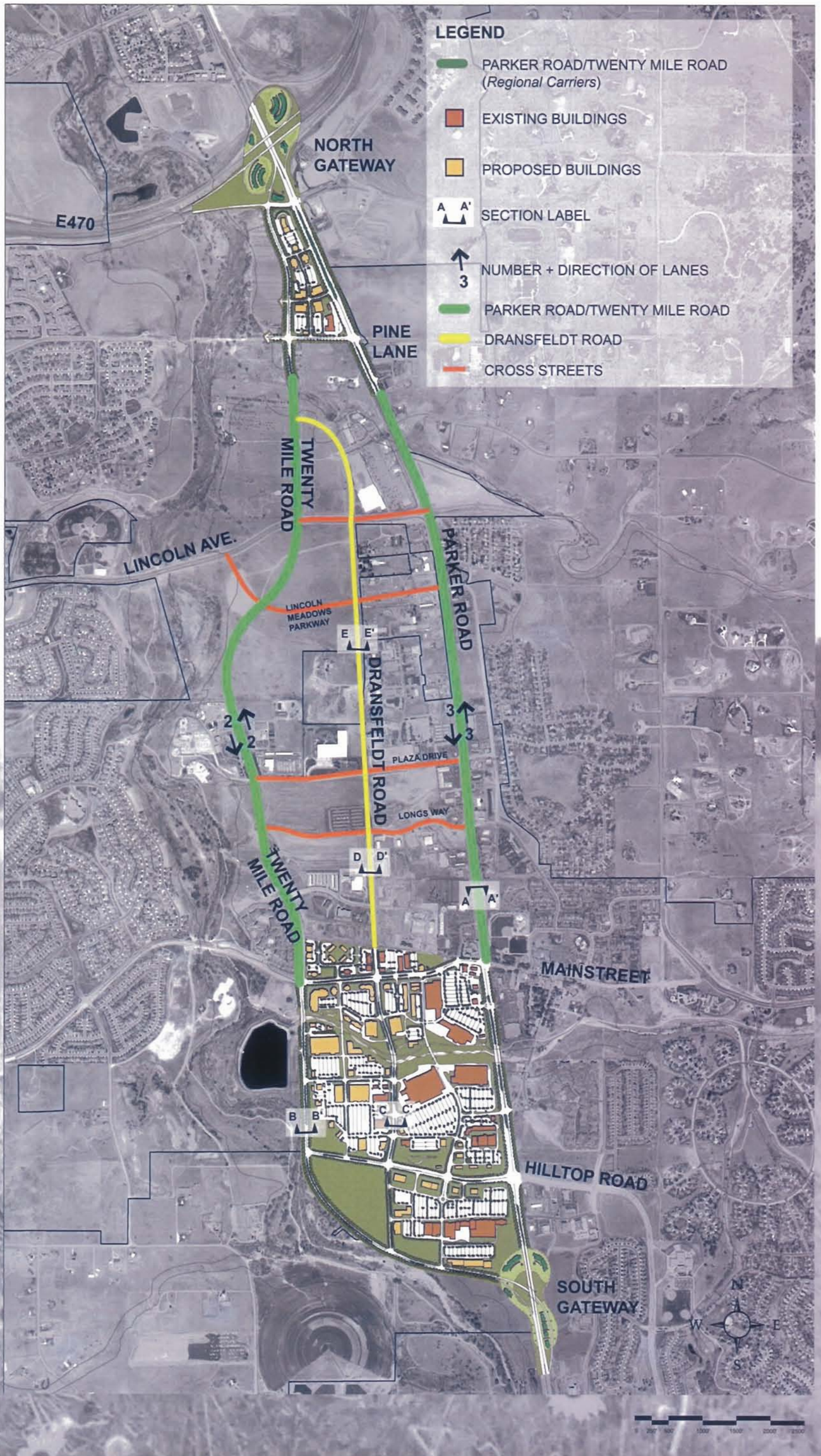
One-Way Couplet

Town of Parker Corridor Character Study

January 8, 2004

EDAW

Parker COLORADO



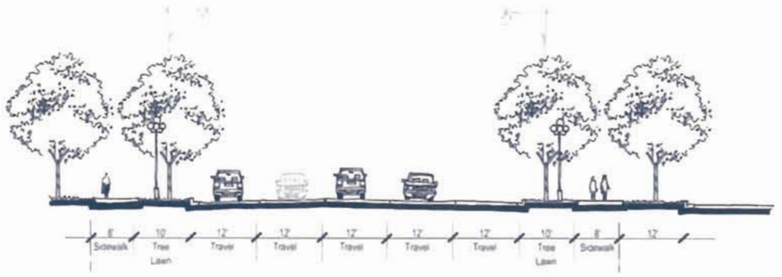
Parallel Parkways

Town of Parker Corridor Character Study

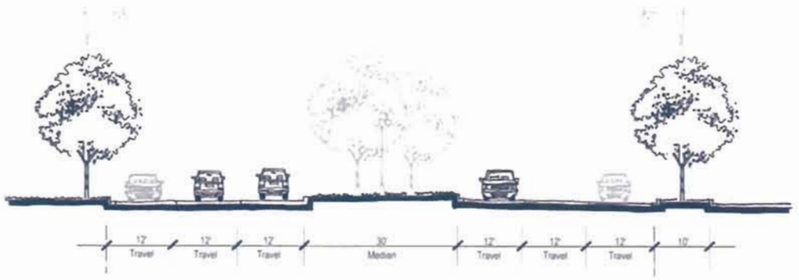
January 8, 2004

EDAW

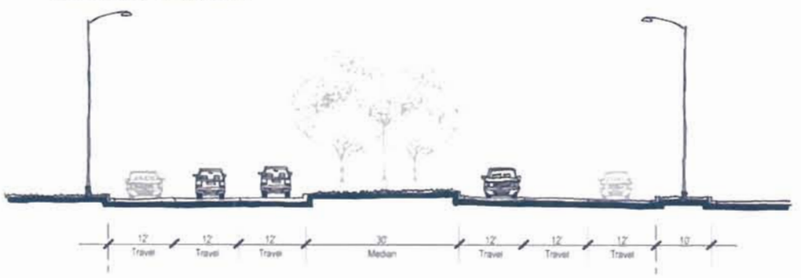
Town of Parker COLORADO



Proposed Section - One-Way Couplet



Proposed Section - Parallel Parkways



Existing Section

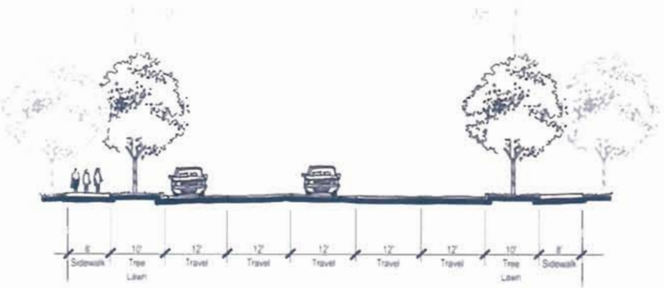
Parker Road Sections
Section A-A'

Town of Parker Corridor Character Study

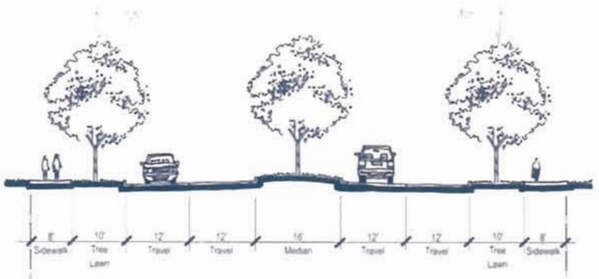
0 5 10 20

January 8, 2004

EDAW



Proposed Section - One-Way Couplet



Proposed Section - Parallel Parkways

Existing Section

Twenty Mile Road Sections
Section B-B'

Town of Parker Corridor Character Study

0 5 10 20

January 8, 2004

EDAW

Parker and Twenty Mile Sections

Town of Parker Corridor Character Study

January 8, 2004

EDAW

Town of Parker COLORADO

Vision of Mainstreet and Parker Road (source: EDAW)

Local Actions, Commitments and Recommendations

Preserve Opportunities to Achieve Regional Mobility Objectives on SH 83

Implementation of the couplet or parallel parkways would represent a significant contribution toward addressing the regional mobility issue along Highway 83 within the Town. The construction of the balance of Twenty Mile Road is anticipated to include potential involvement by the private development community as negotiated by the Town, so both of these concepts create a prime opportunity to leverage local and state funding sources in addressing this issue. The Town and CDOT will continue to explore the specifics of the overall implementation strategy for these concepts, including the funding aspects.

Both concepts will require significant further study, including public process and environmental clearances. Key considerations in these studies will include balancing access and regional mobility considerations. Because of the existing commercial development already along Parker Road, and the envisioned "main street" character of the roadway and its adjacent land uses, engaging the business community will be required as this vision moves forward to address concerns regarding issues such as access and circulation. The Town will have the primary responsibility of engaging the business community. Also, the affects of access associated with this type of development on the flow of traffic along the street will need to be examined in more depth.

Enhance the Local Street Network

The Town of Parker has worked extensively with Douglas County to develop a feasible future roadway network around Parker designed to relieve the traffic burden on SH 83. A major component of this network is Chambers Road which will parallel SH 83 from E-470 to the SH 83/Bayou Gulch intersection and create a local north-south connection from Douglas County north to Arapahoe County. Extension of Chambers north of E-470 was examined to connect to Parker Road north of the Town. However, this alignment has been precluded by existing and pending development. This network will also include the extension of Stroh Road and Mainstreet west to I-25, as well as many other connections. These network enhancements are critical in the creation of a system approach to managing travel demand through Parker. While Chambers Road and others will not reduce the projected approximately 100,000 vehicles daily on SH 83, they will be an important part of handling this demand over the next fifteen to twenty years.

Continue Integrating Land Use & Transportation Planning

The Town of Parker has taken great steps to adapt land use planning efforts to manage growth, guide development and reduce travel demand. The Town has worked with CDOT, RTD, surrounding counties and the Parker Economic Development Council among others to achieve the following:

- The City's Greater Downtown District Circulation Network Visionary Plan documents an improved downtown circulation plan that reduces congestion, improves connectivity between uses and creates opportunities for alternative transportation such as walking or transit.

- The Town of Parker's Greater Downtown District accommodates a broad mix of development types and encourages the clustering of uses in District development. The plan's policies acknowledge the need for connectivity between uses in order to reduce local vehicle trips and create a friendlier pedestrian environment.
- The city's Zoning Code and Land Use Development Code now reference Mixed Use Districts as a permittable development option.
- Future employment opportunities in regional commercial, services and light industrial jobs are part of an effort to create a stronger live-work environment in the area. These efforts are designed to minimize commuter travel to and from the Parker area.
- Parker's recently adopted Transit Feasibility Study identifies connections to the regional transit system, as well as commuter and local transit services, designed to reduce single occupancy vehicle travel on the highway and street network through town. Parker recognizes the need to link to these future regional transit services.
- The City's extensive trails and open space program is part of their effort to create a walkable community. Future pedestrian improvements along the highway corridor will link with this existing network, creating access between neighborhoods, retail and recreational destinations and providing transportation options.

Continue Local Financing of Roadway Infrastructure

Parker has a number of different tools that it uses to finance transportation infrastructure improvements. Three percent of their 7.7 percent sales tax is allocated to the Town for street maintenance, police services, parks, recreation and other public services. There are excise taxes placed on new residential and commercial development, a portion of which is allocated to transportation. Parker property taxes also include 2.602 mills for Town services. The Town negotiates with developers for public improvements and special districts are widely used tools for public improvements in growth areas. The following steps will provide a substantial contribution on the Town's part to addressing regional mobility issues as well as furthering the Town's own objectives.

Parker has prioritized a number of roads for improvement which not only contribute to increased mobility within the Town but help address regional concerns. Capital Improvement Priority Projects are based on the Town Master Plan and focus on developing parallel routes within the Town. Some of these improvements will be jointly funded with Douglas County as well as anticipated contributions from development agreements.

Actively Engage in Discussions with Elbert County and Douglas County Regarding Inter-county Connections

Many of the connections recommended in the subsequent sections for these counties will redistribute traffic on the Town's streets. These will positively impact regional as well as local mobility.

Actively Engage in the DRCOG Planning Process

The Town's vision for SH 83 should be incorporated into the Regional Transportation Plan.

Continue to Participate in Regional Discussions Regarding Transportation and Land Use Concerns

The Town of Parker has been an active participant in the Corridor Optimization planning process and intends to continue to work with other jurisdictions at a policy and staff level on a regional basis to address issues of mutual concern. These discussions could include neighboring jurisdictions, the Denver Regional Council of Governments and other regional organizations to bring funding priority to the region's transportation system.

Roadway Improvements under consideration can provide alternatives to travel on SH 83.

HISTORIC & PROJECTED DATA

Population Data
Current:
487,970
Year 2020:
635,000
Year 2030:
695,000

Employment Data
Current:
300,000
Year 2020:
400,000
Year 2030:
416,000

Problem Assessment & Statement

The key issue facing Arapahoe County in the western portion of the study area is the tremendous growth in regional traffic that is anticipated to occur over the next ten to fifteen years. Arapahoe County's future employment base in Meridian, the area surrounding Centennial Airport, and portions of the Denver Tech Center area is expected to grow by 120,000 jobs by 2030. The commuter travel into this area will correspondingly increase with the growth in jobs.

County Vision
"Arapahoe County will be a place that values its unique communities, businesses, neighborhoods and high quality of life...maintains a balance between growth and the natural environment..... maintains its rural heritage and character."

The Eastern two thirds of Arapahoe County are rural and are referred to as the Eastern Community Growth Area. This area is undergoing substantial change as small agricultural town's transition to suburban residential communities and commuter travel into the Denver Metro area increases.

The majority of these commuters will be coming from the high residential growth areas of Douglas and Elbert Counties. By the Year 2030, Highway 83 in the vicinity of E-470 is projected to carry over 100,000 vehicles per day. Not only will the State Highway carry an increased traffic volume, but the street network of Arapahoe County will experience increasing congestion levels as well.

Kiowa-Bennett Road & SH 83 Traffic Data

Location	Existing		2030			
			Existing Network		Needs-Based Network	
	ADT	LOS	ADT	LOS	ADT	LOS
Kiowa-Bennett north of Elbert County Line	400	A	19,000	F	7,000	A-B
Kiowa-Bennett south of I-70	1,300	A	19,000	F	5,000	A-B
SH 83 south of E470	47,000-56,000	F	102,000-128,000	F	73,000-91,000	E-F

The future Transport development, located in Adams County north of I-70 near the Front Range Airport, might contain over 50 million square feet of development on 6,000 acres with the potential of creating tens of thousands of jobs. The transportation infrastructure in eastern Arapahoe County will experience heavier commuter and freight volumes related to this development.

Freight volumes along the Kiowa-Bennett Road which links El Paso County to I-70 have increased over the last decade as well. The Kiowa-Bennett Road runs through Arapahoe County, Elbert County and El Paso County (as the Elbert Road). Given the forecasted traffic volumes within this corridor, existing and proposed surfacing treatments will not be sufficiently durable in the long term.

These issues are particularly important for north-south mobility on a scale that reaches beyond even the sizable study area considered in this plan. The Kiowa-Bennett Road/Elbert Road/SH 79 corridor functionally extends far north into Weld County and well south into El Paso County as the only continuous north-south facility between SH 83 and SH 71 passing through Limon (the closest major north-south corridors to the west and east, respectively) - a gap of approximately sixty miles.

Local Actions, Commitments & Recommendations

Continue to Improve the Street Network

In the western portion of Arapahoe County, the majority of the Urban Service Area is already developed and much of it incorporated into Metro Area cities. Within the unincorporated area, the County is making local street network improvements to create alternative routes to State Highway 83. Recent changes include the extension of Broncos Parkway to SH 83, improvements to Potomac Street and the extension of Easter Street to handle local travel needs and reduce demand on SH 83. These improvements become an integral part of the roadway network from Douglas County north through Parker and Arapahoe County. The County is making substantial improvements to the transportation infrastructure in this area including: the paving of Manila Road from I-70 south to the Arapahoe/Elbert county line, the paving of Quincy Avenue from E-470 east to the Kiowa-Bennett Road and the paving of the remainder of the Kiowa-Bennett Road up to the county line.

Planned improvements to the existing County Road System represent a significant contribution to regional mobility.

Work With Parker & RTD to Enhance & Expand Transit Service

The County, in conjunction with the Town of Parker and RTD, is also looking toward an increasing role for transit within the community. Future light rail service on I-25 will create opportunities for increased commuter bus service along SH 83, thereby relieving a portion of the future travel demand on the corridor.

Arapahoe County supports the idea of Metropolitan Transportation Authorities as a mechanism to address transportation system needs.

Continue Integrating Land Use, Planning & Transportation

Arapahoe County is encouraging mixed-use, clustered development patterns around infill growth areas, and employment zones to reduce local trip demand. The County has completed Sub-area planning efforts with eastern county communities to manage and guide future development and to help create local employment opportunities.

Continue to Explore Alternative Funding Mechanisms

Like other more urbanized jurisdictions within the study area, Arapahoe County has a number of tools it uses to fund transportation infrastructure and maintenance improvements. The County has a transportation plan as well as a Capital Improvements Program. Roadway capital improvements are funded by a 0.76 property tax mill levy while road and bridge maintenance is funded by a 0.888 mill levy. Impact fees are collected for improvements in specified areas. Special districts are in place, and the County negotiates with developers for specific improvements. Voters approved in November 2003 a ¼ % sales tax for open space acquisition.

Arapahoe County recently participated in regional efforts to create authorizing legislation for the establishment of Metropolitan Transportation Authorities. While this effort was not successful, jurisdictions remain interested in the ability to raise funds for transportation improvements through regional funding structures and organizations.

Establish & Coordinate Right-of-Way for Alternative Kiowa-Bennett Road Connections

This Corridor Optimization Plan has identified possible alternative alignments for the Kiowa-Bennett Road near the town of Bennett in eastern Arapahoe County. The Town of Bennett Community Issues and Options map depicts these. In cooperation with the Town of Bennett, Arapahoe County intends to identify and maintain potential alignments and right-of-way in future policy documents and in negotiations with developers. The reserved right of way should be 100'-150' wide. Optimally, these efforts would be coordinated with similar activities among Bennett, Arapahoe, and Adams Counties,

CDOT, and FHWA to establish the possible connections and alignments of the Kiowa-Bennett Road, SH 79, and any associated access to I-70.

Work with Elbert County Regarding Improvements to County Line Road

The two counties have initiated discussions to determine the nature of improvements to this corridor. As a key east-west route in the study area, this cooperation and the ultimate implementation of the selected improvements will be important to the regional mobility solution.

Arapahoe County will work with the Town of Bennett to maintain alternative alignment opportunities for the Kiowa-Bennett Road.

Continue to Examine Transportation Improvements Associated with Development of the State Land Board Property in Central Arapahoe County

The potential development of this 50 square mile property will require re-examination of the need for new corridors and improvements to existing corridors, such as Watkins Road, Quincy Avenue, Manilla Road, County Line Road, and others.

Continue to Participate in Regional Discussions Regarding Transportation and Land Use Concerns

Arapahoe County has been an active participant in the Corridor Optimization planning process and intends to continue to work with other jurisdictions at a policy and staff level on a regional basis to address issues of mutual concern. These discussions could include neighboring jurisdictions, the Denver Regional Council of Governments and other regional organizations to bring funding priority to the region's transportation system.

SH 83-86 Corridor Optimization Plan
Forming the Regional Solution
Douglas County

HISTORIC & PROJECTED DATA

Population Data
Current:
178,500
Year 2020:
390,000
Year 2030:
458,000

Employment Data
Current:
53,000
Year 2020:
155,000
Year 2030:
182,000

Douglas County Problem Assessment & Statement

Douglas County has experienced 190% growth over the decade from 1990 to 2000. Over 85% of the Douglas County population resides in the Urban Designated Areas of the County located primarily along the I-25 corridor. The majority of growth has been low-density, suburban residential development which means that the majority of residents commute to jobs located outside the County in the south Denver Metropolitan area. This auto-oriented development pattern places high travel demand on the local and regional transportation network.

Employment opportunities within Douglas County have historically been limited, although increasing retail, office and service development has contributed to the increase in jobs within the county over the past decade. The increase in retail development has also meant an increase in traffic coming into Douglas County from surrounding areas.

By 2030, traffic volumes on SH 86 are anticipated to nearly triple, due partially to future development in Elbert County and El Paso County. The limited, county-wide roadway system tends to contribute to concentrated traffic patterns. Significant congestion will appear along substantial portions of SH 83 over the same period for similar reasons. This is particularly true in the southern portion of Douglas County which consists of substantial conserved open space and low density residential development. An existing lack of east-west connections between Elbert and Douglas County places a burden on SH 86 as the primary connection between the two counties. The mix of local, through, commuter and freight traffic, combined with high travel speeds, poses safety issues on the state highways and county roads, given the general lack of shoulders, turn lanes and adequate side slopes on many of the roads.

Douglas County Vision

"Concern for unique natural surroundings... a balanced business/residential tax base... transportation, communication and cultural facilities integrated into the evolving planning process."

Franktown Vision

Separated from developing urban areas, a small and unique village that includes a mix of commercial, residential, and community uses, provides services to local residents and the traveling public, with places for residents of the Franktown community to come together."

SH 83 & SH 86 Traffic Data

Location	Existing		2030			
			Existing Network		Needs-Based Network	
	ADT	LOS	ADT	LOS	ADT	LOS
SH 86	12,000	E	35,000	E	28,000-36,000	C-D
SH 83 E-470 to Bayou Gulch Rd	23,000-56,000	D-F	74,000-128,000	F	50,000-91,000	C-F
SH 83 Bayou Gulch Rd to El Paso County	3,000-14,000	A-E	8,000-50,000	D-F	4,000-48,000	A-D

SH 83 and SH 86 both have characteristics within the County that pose potential safety issues. These include the absence of passing zones and paved shoulders combined with steep side slopes, along with several intersections lacking turn lanes and having sight distance issues. Steep roadway grades are also an issue in some locations.

The junction of Highways 83 and 86 lies within unincorporated Douglas County at Franktown. Much of the community of Franktown is affected by the increasing travel volumes through this intersection, resulting in a loss of community identity. While recent improvements at this location have improved operations and safety, these were not intended to address long term capacity needs. Given that the volumes of traffic are

projected to increase substantially over time at this intersection, this location will eventually require substantial improvements to accommodate that demand.

Local Action, Commitments & Recommendations

Network Enhancements

Douglas County has undertaken extensive coordination with surrounding communities to create local roadway connections and to accommodate the future traffic associated with this high growth area. In particular, Douglas County is planning to contribute to improvements to inter-county roadways such as Chambers Road, Stroh Road, Hilltop Road, Pine Road and Crowfoot Valley Road. These system enhancements are critical roadway alternatives from the residential areas of Douglas County and Parker, to the employment zones in Meridian and the Denver Tech Center. These facilities will complement the state highways and help alleviate the future traffic burden on SH 83 and SH 86.

Douglas County is working to create Intergovernmental Agreements (IGA's) with neighboring government entities to support cooperative relationships between the County and surrounding municipalities. IGA's are already in place with Parker and Castle Rock. One of the foundations of these agreements is the recognition of the effect of future land use development on the projected traffic volumes within the region.

Continue to Integrate Transportation & Land Use Planning Efforts

The Douglas County Comprehensive Master Plan identifies a number of key goals, objectives and policies which link the effects of land use development to the function of the roadway network in the area. The County has worked to direct development toward urbanized areas of the region and to limit isolated development. They are increasing the mix of land uses within the County, creating pedestrian-oriented activity centers and linking residential areas to other uses through a system of multi-use trails. It is important to the County that development patterns and densities support the use of a multi-modal transportation system designed to reduce individual automobile trips on the regional roadway network.

Douglas County is planning for additional roadway extensions and capacity improvements that will provide both relief and route choices in some of the most congested parts of the study area.

Apply County Policies in Franktown Planning Efforts

Planning efforts in Franktown, located at the junction of SH 83 and SH 86, have been extensive. County planners have worked with residents and businesses to envision a future for Franktown that accommodates future travel volumes on the intersecting highways and yet enhances the existing small town character. Key elements in attaining this village character include a small town development pattern and a mix of land uses, clustered in the southeast corner of State Highways 83 and 86. Overlay zoning and site plans will be part of the planning effort in Franktown to create connectivity between a mix of land uses.

Connectivity between future developed uses will be accomplished through coordinated architectural detail and area design, and the development of a safe pedestrian network of sidewalks and trails. This pedestrian system should work with future traffic control improvements at the highway intersection and provide safe access to the town core.

Future land use and transportation infrastructure projects should be coordinated to encourage a strong pedestrian orientation and village feel.

Franktown will remain a RTD park-n-Ride location for regional transit services. As transit services to the north increase regional transit connections, the Franktown park-n-Ride service will reduce single occupancy vehicle trips along the SH 83 corridor.

Continue to Use a Variety of Transportation Funding Methods

Due to the County's rapid growth, transportation infrastructure has been a high priority. The County devotes approximately 2.0 property tax mills for roadway capital improvements and 2.47 mills to roadway maintenance. Dedicated sales taxes for transportation are 0.4% of a 1.0% county sales tax. Special districts are used extensively, as are negotiations with developers for specific improvements.

Douglas County has also been instrumental in directly obtaining federal transportation funds. Funds include $5 million for a passing lane on I-25 at Surrey Ridge, and several million dollars for intersections along Santa Fe (SH 85). The County has also partnered with CDOT on state road projects where connecting roads benefit. Examples include the old Highway 85 connection at I-25 to Castle Court where Douglas County contributed $400,000. Another example is the I-25/Castle Pines Interchange reconstruction, which facilitates the Stroh Road connection into Parker, where the County is contributing $6 million and the State is contributing approximately $4 million.

Douglas County has implemented a 4/10% sales tax dedicated to transportation improvements.

Douglas County recently participated in regional efforts to create authorizing legislation for the establishment of Metropolitan Transportation Authorities. While this effort was not successful, jurisdictions remain interested in the ability to raise funds for transportation improvements through regional funding structures and organizations.

Douglas County has prioritized a number of roads for improvement, which helps address the regional roadway network and contribute to overall mobility. Often in cooperation with other governmental jurisdictions, Douglas County has prioritized a number of inter-county roadway connections for improvement.

Serve as a Role Model with Jurisdictions in the Study Area Wishing to Establish a Regional Framework for Future Cooperation

In addition to a recently established multi-jurisdictional housing authority, the County has established the Douglas County Partnership of Governments as a forum in which to discuss regional concerns. Each jurisdiction as well as the County has appointed two representatives to this partnership which meets on a regular, informal basis to address issues of mutual concern.

Continue Coordination with El Paso and Elbert Counties as Growth Continues in Those Areas

As roads are paved and connections made across jurisdictional boundaries, continued communication is necessary to ensure that transitions are smooth and coordinated.

Continue to Participate in Regional Discussions Regarding Transportation and Land Use Concerns

Douglas County has been an active participant in the Corridor Optimization planning process and intends to continue to work with other jurisdictions at a policy and staff level on a regional basis to address issues of mutual concern. These discussions could include neighboring jurisdictions, the Denver Regional Council of Governments and other regional organizations to bring funding priority to the region's transportation system.

HISTORIC & PROJECTED DATA

Population Data
Current:
19,000
Year 2020:
45,000
Year 2030:
62,000

Employment Data
Current: 5,600
Year 2020: 10,500
Year 2030: 12,300

Problem Assessment & Statement

Elbert County historic data indicates that the population increased 106% between 1990 and 2000, and the number of housing units increased by 78%. This trend in single family, low density residential development is expected to continue over the next 10 to 20 years especially within the designated High Growth Zone in the northwest portion of Elbert County extending as far east as Kiowa. This zone, located north of SH 86, is developing with rural residential subdivisions ranging from 2 acre units to 35+ acre units.

These strong residential growth patterns mean high future commuter volumes to and from the County. Although the number of jobs within the County is expected to increase by 120% before 2030, the projected 12,000 jobs is not representative of a strong employment base in support of the projected residential development. It is anticipated that the 80% or more of residents that currently commute to the south Denver metro employment area will continue to commute in the future, placing a continuing burden on SH 83 and SH 86.

SH 86 Traffic Data

Location	Existing		2030			
			Existing Network		Needs-Based Network	
	ADT	LOS	ADT	LOS	ADT	LOS
Through Elizabeth	11,000	E	26,000-31,000	F	25,000-30,000	F
Between Elizabeth & Kiowa	5,000-6,000	C-D	21,000	E	20,000	E
Through Kiowa	5,400	C-D	17,000	C	19,000	C

County Vision
"Where small town rural values and agricultural heritage are preserved... where new development pays its own way... where County and towns work in concert toward common goals... where quality of life is held in highest regard."

These issues are particularly important for north-south mobility on a scale that reaches beyond even the sizable study area considered in this plan. The Kiowa-Bennett Road/Elbert Road/SH 79 corridor functionally extends far north into Weld County and well south into El Paso County as the only continuous north-south facility between SH 83 and SH 71 passing through Limon (the closest major north-south corridors to the west and east, respectively) - a gap of approximately sixty miles.

SH 86 has characteristics within the County that pose potential safety issues. These include the absence of passing zones and paved shoulders combined with steep side slopes, along with several intersections lacking turn lanes and having sight distance issues. Steep roadway grades are also an issue in some locations.

Highway 86, the Kiowa-Bennett Road and the Elbert Road form the backbone of the County's roadway infrastructure. There are a limited number of east-west and north-south roadway connections, as well as nearly non-existent pedestrian and bicycle facilities. Without a strong local network, or alternative travel modes, local connectivity throughout the County will remain extremely limited.

Future traffic demand will intensify and compound the infrastructure and safety issues already existent on the County's roads.

Elbert County's limited roadway system carries local, through, commuter and freight traffic. This mix of traffic combined with high travel speeds poses safety issues on SH 86 given its lack of shoulders, pedestrian and vehicular conflicts within Kiowa and Elizabeth, and capacity deficiencies. This same mix of traffic traveling the unpaved

sections of the Kiowa-Bennett Road poses both safety and eventual roadway capacity issues.

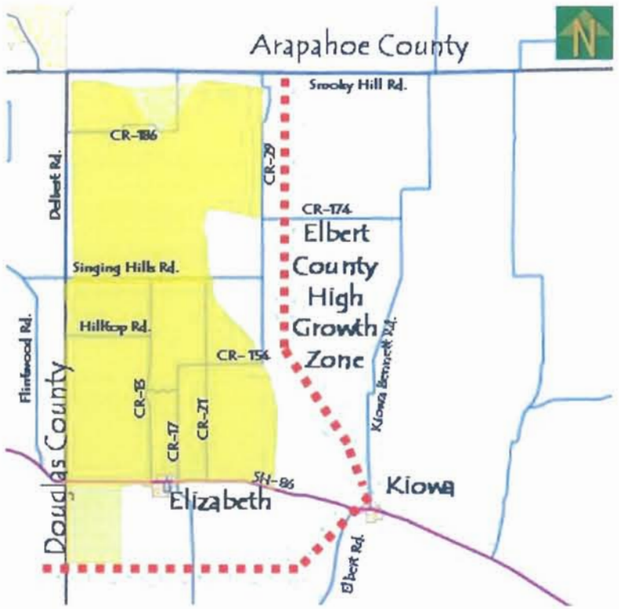


Figure 13-1—Elbert County High Growth Zone

Local Actions, Commitments & Recommendations

Complete Kiowa-Bennett Road and Elbert Road Improvements

The Kiowa-Bennett Road and the Elbert Road currently carry an increasing volume of freight traffic. With the growth in commercial and industrial uses along I-70, traffic volumes are projected to well exceed capacity. Elbert County is currently addressing safety considerations on the Kiowa-Bennett Road by paving portions of the road and straightening the alignment in two key locations in the northern part of the County. This will result in nearly half of the County's portion of the road being paved.

Figure 13-2—Recommended Elbert County Roadway Network

Because the Kiowa-Bennett Road/Elbert Road/SH 79 corridor serves a growing travel movement between El Paso County and I-70 and destinations north, it is recommended that the county work to preserve right-of-way and manage access along these roads, in addition to the planned surfacing and safety treatments, given these roadways' important role in improving inter-regional mobility. The improved roadway should include shoulders and turn lanes at key locations to maximize the safety and operation of this corridor. Typically, 100'-150' of right-of-way should be preserved along with adequate side-slopes.

Work with Arapahoe County Regarding Improvements to County Line Road

The two counties have initiated discussions to determine the nature of improvements to this corridor. As a key east-west route in the study area, this cooperation and the ultimate implementation of the selected improvements will be important to the regional mobility solution.

Construct County Roadway Network Improvements

As Elbert County grows, the need for a strong roadway network intensifies. By completing gaps in the existing county roadway system and paving several roads, Elbert County will contribute significantly to mobility and capacity in its own jurisdiction as well as the region. Elbert County will work with developers to create a network designed to address north-south and east-west travel movement. Highlights include:

- Alignment and surface improvements along County Road (C.R.) 29/33, and along County Line Road (adjacent to both El Paso and Arapahoe Counties)
- Extensions of C.R. 13, 17, 21, 146, 166, 174, 182, and 186. County Road 186 is particularly noteworthy as an Elbert/Douglas County connection.
- A connection between County Roads 17/154 and 158.
- Paving of multiple minor county roads

All roadways noted as a minor arterial in the subsequent Recommended Roadway Plan section should typically include shoulders, turn lanes at key locations, adequate side slopes, and 60'-100' right-of-way.

Elbert County will work with neighboring jurisdictions to implement roadway improvements that will provide alternatives for both north-south and east-west travel.

Consider Integrated Land Use/Transportation Management Policies & Guidelines

Elbert County adopted a Master Plan in 1996 that identified key growth areas. Recently, this document has been supplemented with a County Economic Development Plan that indicates areas of future retail or commercial services growth. As the County receives applications for this development, it acknowledges the need to manage this growth in a way that is compatible with adjacent development and future travel demand.

Elbert County is considering the adoption of policies regarding the mixing and clustering of future retail or community uses at certain locations in order to reduce local vehicle trips. They have discussed the need for connectivity between land uses via pedestrian facilities, especially between retail and residential land uses. Finally, the County is considering the adoption of design guidelines related to commercial or retail development sites as a way to better control site layout, access and connectivity issues of future development. Future land use development will serve local needs, thereby increasing local trips and potentially reducing trips on the regional facilities.

Figure 13-3--Kiowa-Bennett Road in Elbert County

Use this Corridor Optimization Plan to Assist with Future Development Proposals and Transportation Priorities

The recommended roadway network approaches transportation connectivity in Elbert County as part of a broader regional network and system. The plan can be used by the County as a tool to assess transportation priorities, both on a policy level and in actual developer negotiations.

Develop a Capital Improvement Priority List

In conjunction with this Plan, Elbert County is planning to develop a Capital Improvement Priority list with estimated costs and suggested revenue sources. This will be beneficial in identifying projects designed to promote north-south and east-west travel movement.

Pursue Alternative Sources of Funding

The Kiowa-Bennett Road runs through Elbert County, and plays an important role in the overall transportation plan. The County has been pursuing different sources of funding to complete the straightening and paving of the road and has committed to continue to search for funding to complete the paving.

The County will consider expanding its list of financing options, including taking a closer look at Public or Local Improvement Districts, among other tools. The County already makes extensive use of metropolitan districts. Increased commercial development in parts of the County leads to greater traffic impacts, as well as potential revenues from a sales tax for transportation. While a sales tax was pursued and defeated several years ago, traffic impacts are bound to become more severe in the near-term future, which could contribute to an argument and campaign for sales tax specifically for transportation purposes.

Continue to Participate in Regional Discussions Regarding Transportation and Land Use Concerns

Elbert County has been an active participant in the Corridor Optimization planning process and intends to continue to work with other jurisdictions at a policy and staff level on a regional basis to address issues of mutual concern. These discussions could include neighboring jurisdictions, the Eastern TPR and other regional organizations to bring funding priority to the region's transportation system.

Elbert County recognizes the local and regional importance of the Kiowa-Bennett Road.

HISTORIC & PROJECTED DATA

Population Data
Current:
515,000
Year 2020:
750,000
Year 2030:
800,000

Employment Data
Current:
315,000
Year 2020:
400,000
Year 2030:
500,000

Problem Assessment & Statement

El Paso County, like much of the study area, is experiencing tremendous growth in population. From 1990 to 2000, the area's population grew to over 500,000. By 2030, this figure is expected to reach 800,000.

Employment figures for El Paso County are forecast to reach 500,000 by 2030, representing growth of over 62% from current figures. The majority of this employment growth will occur in the northern portion of the County in an area called Interquest. This destination is expected to intensify commuter travel demand along SH 83 in the future.

Significant commercial and industrial development is slated for US 24 from Meridian Road east toward Elbert Road. Related freight traffic volumes are expected to increase on Elbert Road north toward Kiowa and the Kiowa-Bennett Road. Future capacity and access along US 24 and Elbert Road are concerns of the County.

SH 83 (North of SH 105) Traffic Data

Existing		2030			
		Existing Network		Needs-Based Network	
ADT	LOS	ADT	LOS	ADT	LOS
3,000	A	8,000	C	4,000	B

Residential growth is also increasing in the northern and northeastern portions of the county. This area is transitioning from 35 plus acre sites to 5 acre home sites. The surrounding high growth residential area is developing in a medium density, suburban pattern which is expected to result in growing traffic congestion on SH 83 and on the local street network in northern El Paso County.

County Vision
"A community with wide-open spaces, country living and hometown friendliness."

The area surrounding SH 83 near the Douglas County Line is primarily low density, rural residential in character. While local traffic generation is very minor, regional traffic presents a growing safety concern due to the two-lane configuration and lack of shoulders.

While additional capacity requirements on SH 83 are not anticipated by the year 2030, the highway should be upgraded to standard shoulder widths in the area between SH 105 and the Douglas/Elbert county line and to include turn lanes for the east leg of the SH83/105 intersection to provide an improved degree of safety.

Local Actions, Commitments and Recommendations

Continue to Upgrade & Complete the County Road System

El Paso County has committed to extensive improvements to the local street network in order to handle the traffic volumes projected in their 2030 Transportation Plan. Roadway improvements to Elbert Road, Powers Boulevard, Black Forest Road, Falcon Highway and other local streets are designed to accommodate future travel and provide an alternative network to the State Highway System.

The Elbert Road (with its connection to the Kiowa-Bennett Road) is becoming an increasingly popular alternative to SH 83.

El Paso County is working with Douglas County to address paving and alignment issues along County Line Road. Likewise, El Paso County has committed to working with Elbert County to address related issues along their boundary on the same roadway.

El Paso County also supports right of way preservation along SH 83 and will be working with future development to ensure the preservation of sufficient corridor ROW for future improvements.

Examine Policies & Practices Linking Land Use & Transportation Plans

The County has also been exploring ways in which to better link land use development policies and practices with transportation infrastructure. Through developer agreements, improvements such as construction of shoulders and street widening are being accomplished on the local network.

Consider Other Transportation Financing Sources

Like other rapidly growing areas, El Paso County has a number of tools to finance transportation improvements and is searching for funding sources outside of the traditional regional and statewide transportation planning processes. Current sources include property tax mill levies of 0.9 mills for roads and bridges. Special districts are used by new developments to finance necessary roadways and other infrastructure improvements, and the County negotiates with developers for specific improvement needs. While a sales tax is in place in the County, none of it is used to fund transportation.

The Baptist Road Rural Transportation Authority (BRRTA) coordinates and addresses needed transportation improvements as growth in the Monument area continues to require roadway and other transportation improvements is funded through impact fees and is potentially considering a sales and/or use tax for additional revenue. These tools have not been used in other areas of the County. As growth continues, potential revenue sources such as impact fees and sales taxes should be considered more broadly for their appropriateness in addressing needed transportation improvements.

Pave & Improve Roadway Connections to both Douglas and Elbert Counties

This commitment represents a significant contribution to regional mobility. Residential growth in northern El Paso County as well as primary employment growth in the Interquest area will contribute to the need for a more extensive inter-county roadway network to handle transportation needs. It is anticipated that primary employment growth in the northern portion of the County will increasingly attract commuters from the Denver metropolitan area.

Coordinate with Elbert & Douglas Counties Regarding Inter-county Connections

As roads are paved and connections made across jurisdictional boundaries, the jurisdictions involved should continue to communicate to ensure that transitions are smooth and coordinated.

Continue to Participate in Regional Discussions Regarding Transportation and Land Use Concerns

El Paso County has been an active participant in the Corridor Optimization planning process and intends to continue to work with other jurisdictions at a policy and staff level on a regional basis to address issues of mutual concern. These discussions could include neighboring jurisdictions, and other regional organizations to bring funding priority to the region's transportation system.

SH 83 serves as the alternate route for I-25 traffic during major traffic incidents between Monument and Castle Rock.

The Recommended Roadway Plan

The roadway options defined in each community and the roadway elements of community master plans were compiled into a network that constitutes the vision for the roadway network in the region. Figure 15-1 shows the Recommended Roadway Plan. Overall, this system includes a much greater degree of redundancy than the existing system, providing many new options and enhanced capacity. Key highlights of the recommended system include:

- Several new county road connections within the core of both Elbert and Arapahoe Counties, many of which will relieve the traffic demands on SH 83 and SH 86, including new connections that cross jurisdictional boundary lines. Key examples include Manilla Road and Elbert County Roads 13, 33, 146, 166, and 182.

- Multiple Town and Douglas County roadway extensions and widening in and around Parker and Castle Rock, which will provide both relief and route choices in some of the most congested parts of the study area. Key examples include Chambers Road, Stroh Road, Jordan Road, Crowfoot Valley Road, Plum Creek Parkway, and Castle Oaks Drive.

- Creation of a one-way couplet or parallel parkways along Parker Road and Twenty-Mile Road in Parker. Either option should be designed to have a "main street", human-scale character with appropriate streetscape and amenities.

- Preserve opportunities to establish multiple regional mobility options in Elizabeth, including north and south bypasses a one-way couplet using the existing alignment of SH 86 and a parallel city street, thus providing for high demand in an already congested and constrained location.

- Additional lanes along SH 83 to Russellville Road from the southern terminus of the one-way couplet or parallel parkways in Parker, transitioning from eight lanes down to the existing two lanes south of Russellville.

- Widening of SH 86 from two to four lanes from Founders Parkway in Castle Rock to Kiowa (except within Elizabeth) to address current and anticipated capacity needs.

- Surfacing upgrades, applying appropriate access management measures, and upgrading to local standards to include shoulders, turn lanes and other operational and safety features along many relatively local roads within the study area.

- Paving, upgrading and improving the alignment of the Kiowa-Bennett Road to provide a continuous, all-weather facility, connecting with the Elbert Road in El Paso County along new alignments near Kiowa and Bennett to SH 79 in Adams County. This revised roadway would fill in a large north-south gap in the regional system.

- Upgrading and designating Founders Parkway as SH 86 in place of the current segment of SH 86 from Founders Parkway into Castle Rock, thus providing for a more logical regional connection.

This network was tested similarly to the existing and "needs-based" networks as presented in the "Defining the Problem" section. The traffic anticipated to be generated by the projected growth in the year 2030 was assigned to the recommended network to assess its performance. Figure 15-2 shows almost exclusively very acceptable levels of service throughout the system. Arapahoe County is considering amending their long range transportation plan to include additional lanes on the congested segments of Watkins Road and Quincy Avenue. Douglas County is giving similar consideration for segments of Peoria Street, Lincoln Avenue, and Ridgegate Parkway.

Figure 15-1 shows recommended roadway classifications which are a framework for addressing regional mobility. These classifications are not intended to specify design standards, since the study area spans many jurisdictions with varying functional roadway classifications and associated design standards (as well as two transportation planning regions with distinct classification systems). However, some general recommendations can be made regarding roadway characteristics.

- In general, all roadways should be planned and designed in accordance with nationally recognized and accepted engineering practices, reasonably correlating design characteristics to roadway classification.

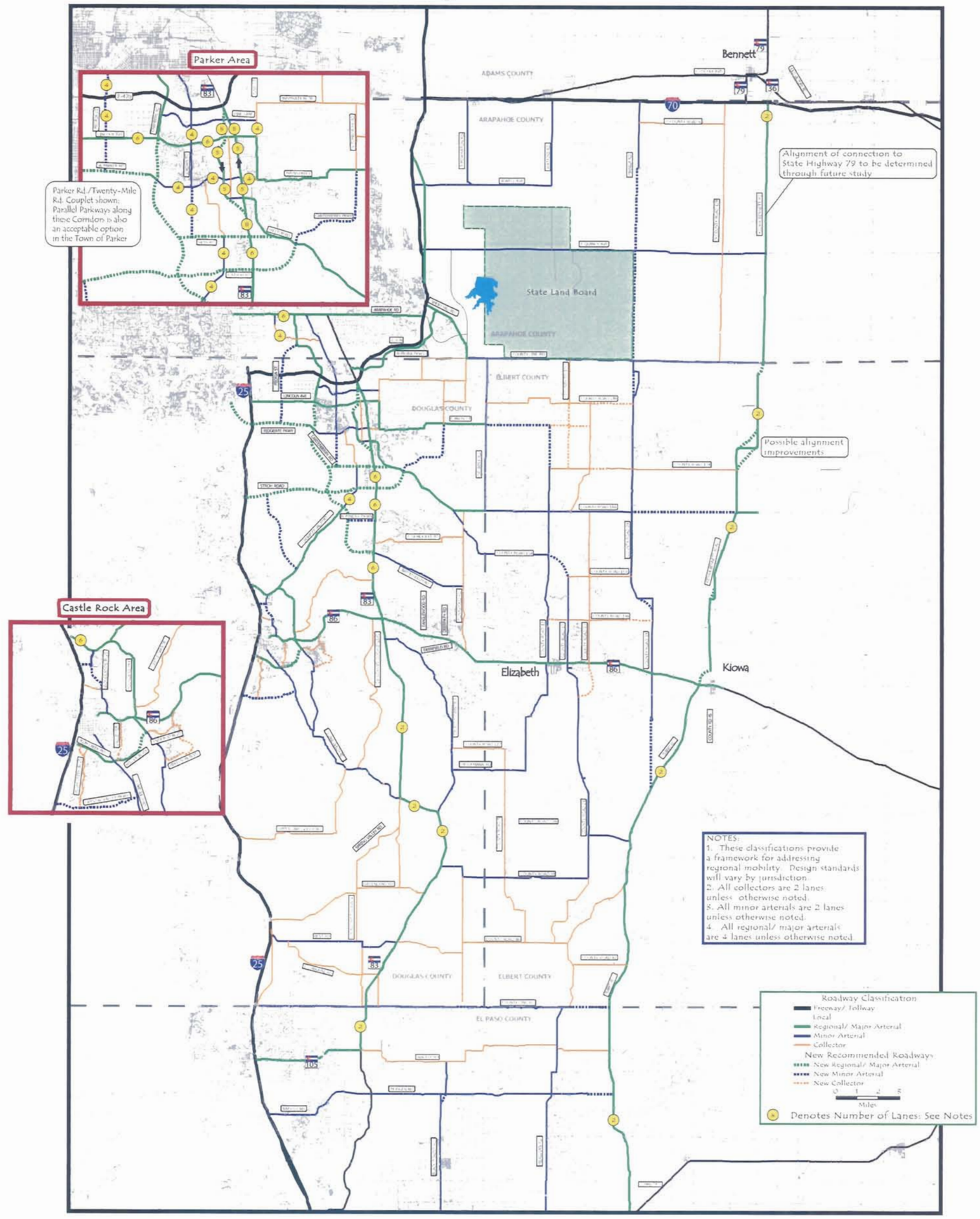
- Access management should be applied to all roadways classified as a collector or higher in Figure 15-1. This practice enhances both the safety and capacity of the facilities. Access management should be implemented by minimizing the number of accesses, by incorporating turn lanes at public streets, and by spacing accesses favorably to allow for future signalization where anticipated. Direct private access to these facilities should typically be minimized wherever possible. Medians should be incorporated to enhance safety and capacity, and to provide an access management feature on all multi-lane roadways.

- Shoulders should be provided on any roadways classified as a collector or higher, except where curb and gutter is deemed locally appropriate, to enhance safety and capacity, and to provide for cyclists where locally defined.

- Sidewalks and/or trails should be given strong consideration in all cases.

- Minimum preserved rights-of-way vary by classification. Two-lane collectors and minor arterials as specified in Figure 15-1 should typically have at least 60 feet of right-of-way, although topography might require substantially more as either public right-of-way or easement to accommodate side slopes. At least 100 feet of right-of-way should be preserved on approaches to primary intersections for a distance to be determined through engineering studies. Four-lane roadways should typically have at least 110 feet of right-of-way, with intersection specific accommodations as appropriate. All other roadways should have rights-of-way established through specific engineering investigations. Requirements for SH 83 and SH 86 are called out in the preceding sections for those corridors. The Kiowa-Bennett Road right-of-way should be established at 100'-150' because of its regional significance. In any case, established, local requirements should be respected where more conservative than these recommendations.

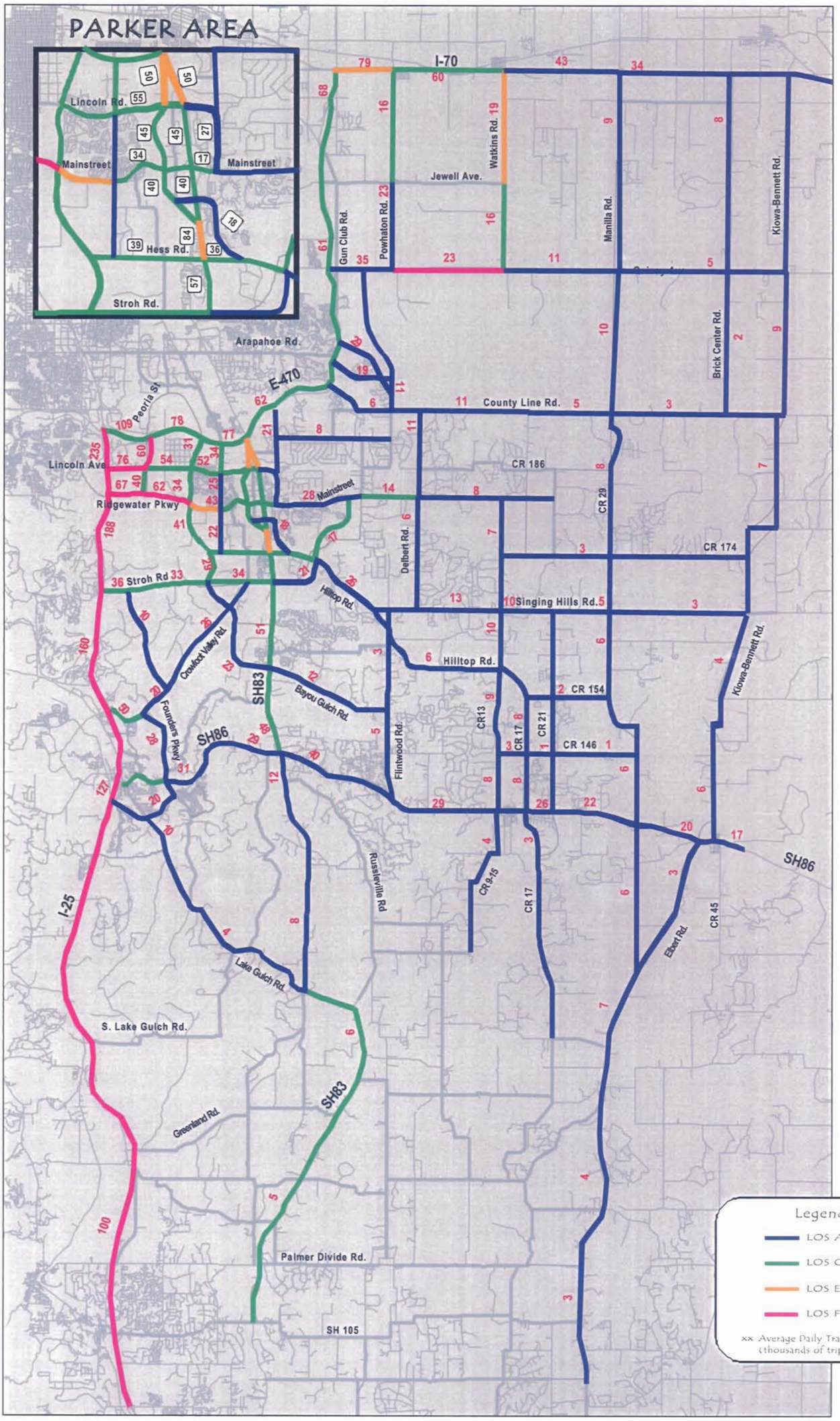
SH 83-86 Corridor Optimization Plan
Crossroads Co-Op Recommended Roadway Plan
Figure 15-1



No Scale

SH 83-86 Corridor Optimization Plan
2030 Average Daily Traffic (ADT) and Levels of Service (LOS) with Recommended Network

Figure 15-2



SH 83-86 Corridor Optimization Plan
Forming the Regional Solution
Business Plan

Overview

The Corridor Optimization Plan is a long range vision for how the Colorado Department of Transportation and its local jurisdiction partners, including Arapahoe, Douglas, Elbert and El Paso Counties, and the Towns of Parker, Castle Rock, Elizabeth, Kiowa, and Bennett will develop an integrated transportation and land use plan for greater mobility and safety.

The Business Plan is the implementation component of the Plan addressing policy, phasing, funding, and governance. The following components are included in this section of the plan:

- Principles of Common Understanding
- Sequence of SH 83 and SH 86 Improvements
- Access Management
- Right-of-Way Preservation
- Local Government Commitments
- Regional Strategy

Principles of Common Understanding

The Corridor Optimization process was created to develop a common corridor vision, consistent and compatible with local plans, and supported by local and regional agencies. A corridor vision developed through this process is intended to provide valuable input to the statewide planning process by identifying future transportation needs and building regional partnerships to help coordinate state and local investment efforts. It is also intended to consider and coordinate local land use development plans and needs with transportation demand in order to develop effective improvement plans and financing strategies.

The initiation of the Corridor Optimization Plan for State Highways 83 and 86 was partially fueled by historic and anticipated growth, and increasing urbanization along these two highway corridors in the southeast exurban portion of the Denver metropolitan area. The following precepts were agreed to by the jurisdictions during the course of the Corridor Optimization planning process.

- In the absence of a current, comprehensive plan of action, the towns and counties agree that the combination of growth, transportation system limitations and limited funding availability in this area will lead to increased congestion, decreased quality of life and potentially diminished safety.

- The towns and counties involved in the study acknowledge that Federal and State funding for transportation improvements is currently limited.

- The towns, counties, CDOT and other area planning and transportation agencies have worked collaboratively on the Corridor Optimization Plan. The comprehensive transportation system recommendations are supported by a commitment to ongoing stakeholder involvement.

- Each of the towns and counties is participating in the implementation of the Corridor Optimization plan by addressing respective land use, transportation and funding strategies on the local level. The jurisdictions acknowledge that their local contributions are very important in order to leverage future CDOT highway investments.

- The towns, counties and CDOT recognize that regional cooperation is vital in order to most effectively address issues of mutual concern. The towns and counties have agreed to participate in any regional forums which would contribute to inter-jurisdictional solutions and potential agreements in the areas of land use, transportation and funding in order to address regional mobility issues.

Sequence of SH 83 and SH 86 Improvements

CDOT is committed to work with local governments to pursue implementation of the improvements recommended in this Plan along SH 83 and SH 86. Because there are both immediate needs as well as improvements of a magnitude that require implementation over time, these improvements will be achieved incrementally through projects of varying scale. In cooperation with local governments, CDOT has been making strides in this regard over recent years, through projects such as safety improvements (intersection upgrades, guardrail installation, side slope flattening) along much of SH 86 through the study area. Continuing in this fashion, the following is a list of improvements on these highways and general timeframes for implementation. This list does not imply any specific prioritization; it suggests a general logical sequence to meet the safety and capacity issues addressed in this document.

Funded, early-action safety and operational improvements:

1. SH 83 and SH 86 safety and operations improvements - summer 2004: SH 83 at North and South Pinery Drives - dual left turn lanes southbound; SH 83 at Stroh Road - dual left turns northbound; climbing lane on SH 86 at Watson Hill (between Castle Rock and Franktown).
2. Sidewalk improvements along SH 86 in Elizabeth (Federal Enhancement funds) - summer, 2004
3. SH 86 safety and operations improvements - summer 2004: turn lanes and shoulder and alignment improvements at SH 86 at and near Elbert County Roads 25, 27 and 33

Recommended, early-action safety and operational improvements - this includes non-programmed, safety and operations improvements, such as turn lanes, widened shoulders and sight distance and alignment improvements:

1. SH 83/Lake Gulch Road
2. SH 83/north Russellville Road
3. SH 83/south Russellville Road
4. SH 86/Founders Parkway
5. SH 86/Deerpath Road
6. SH 86/Tanglewood Drive
7. SH 86/Deerfield Road
8. SH 86/Elbert County Road 21
9. SH 86/Elbert Road (potentially in combination with Kiowa Creek bridge reconstruction in 2007)
10. SH 86/Elbert County Road 45

These improvements have been referred to in CDOT Region 1's Safety/TSM Prioritization Study.

Intermediate-range capacity, safety and operational improvements - this includes non-programmed, safety, minor capacity and operations improvements, such as turn lanes, widened shoulders, pavement reconstruction, sight distance and alignment improvements, a climbing lane, and adding capacity by re-striping existing roadways. These improvements typically can be readily implemented in a staged manner:

1. Reconstruction of Founders Parkway
2. Shoulders along SH 86 from Castle Rock to Franktown
3. Climbing lane along SH 83 near Castlewood Canyon
4. Re-striping of SH 83 to six lanes from Hess Road to Bayou Gulch Road
5. Shoulders and turn lanes along SH 83 from north Russellville Road to SH 105; preserve 150' of ROW

Major projects - this includes major, capacity-oriented improvements:

1. Widen SH 83 to four lanes plus needed auxiliary lanes from Bayou Gulch Road to north Russellville Road; preserve 175' of ROW
2. Implementation of either the one-way couplet or parallel parkway along SH 83 in Parker
3. Widen SH 86 to four lanes plus needed auxiliary lanes from Founders Parkway to Kiowa, exclusive of the Town of Elizabeth; preserve 175' of ROW

4. Potential implementation of east-west corridor improvements in Elizabeth using preserved right-of-way to address regional mobility objectives along SH 86.

Access Planning

Development of access plans for SH 83 and SH 86 is an important first step in the implementation of this Plan. Managing access onto these facilities is crucial to maximizing mobility and safety. The development of these plans will require involvement of the local agencies involved in the development of this Corridor Optimization Plan through whose jurisdiction SH 83 and/or SH 86 pass. The stated commitment to involvement of these local agencies in the development of these access plans is significant, both to the management of the highway corridors and to the ongoing inter-agency coordination that will ultimately be needed for full implementation of the Corridor Optimization Plan. Applying the same access management principals to be used on SH 83 and SH 86 to local roads would also be an effective and significant commitment.

Right-of-Way Preservation

All agencies intend to preserve adequate right-of-way along roadways under their jurisdictions as well as along SH 83 and SH 86. Right-of-way requirements are defined in the Plan as well as in local policies and standards. This action is one of the single most vital commitments involved agencies can make towards the objectives of this Plan.

Local Government Commitments

Local governments are already taking or have committed to a number of actions that collectively represent the local contribution (to date) to the plan. These specific local commitments (in addition to the identification of State Highway transportation capital investments outlined elsewhere in this Business Plan) should help ensure that future, localized transportation projects are consistent, and work towards the long range corridor visions. Each of the communities has local land use policies, transportation and funding commitments in place in support of the Plan. The following descriptions summarize the actions the communities propose to undertake. Broader descriptions of these actions can be found in the preceding Town and County summary sections of the report.

Bennett

The Town of Bennett is working to develop its land use, transportation and funding policies and programs to accommodate anticipated future growth. The Town will continue to work cooperatively with Arapahoe County to identify potential alignments and right-of-ways along Kiowa-Bennett Road, an important north-south alternative roadway to SH 83. In addition, they will work with Adams County to consider a potential connection between the Kiowa-Bennett Road and SH 79, which would avoid current challenges and create an efficient connection compatible with future town land uses. The Town has also committed to the following actions in support of the Corridor Optimization Plan:

- Update its Comprehensive Plan to incorporate a variety of land use planning techniques to assist in reducing transportation impacts.
- Ensure that future development pay for its share of public improvements through local fees and assessments. (The Town has also recently passed impact fees and developed a priority list of transportation capital improvements projects it wishes to pursue.)
- Require developers to contribute an additional 20 foot right of way along SH 79, in anticipation of its future role as a principal arterial.
- Coordinate alignment studies of the Kiowa-Bennett Road involving Adams and Arapahoe Counties with studies of connection of that corridor to I-70 by involving CDOT and FHWA.

Castle Rock

The Town expects continued high growth in the next twenty years. Castle Rock's most significant contribution to the Optimization Plan is its continued efforts to improve Founders Parkway between SH 86 and I-25. This segment is expected to become SH 86 in exchange for existing Highway 86 between Rock Street and Founders Parkway. The exchange will help improve mobility in the areas east of Castle Rock where much of Castle Rock's future residential growth is expected to take place. The Town has also committed to the following actions in support of the Optimization Plan:

- Improve the local roadway network including Castle Oak Drive, Crowfoot Valley Road, Plum Creek Parkway, and other roadway improvements and extensions. These improvements are intended to provide local alternatives to Highway 86 and will diminish local travel use of the highway corridor.

- Work to create non-vehicular connectivity throughout the community through an extensive trails network to accommodate bicycle and pedestrian movement.

- Continue to work with Colorado Springs and RTD to develop regional commuter service between Denver and Colorado Springs. Local connections with regional service will enhance the viability of transit for local residents.

- Continue to finance local transportation improvements. (The Town exacts transportation impact fees ranging from $600 to $1,000 per residential unit and $0.15 to $0.45 per square foot on commercial development. There is a 1.75 percent sales tax to fund transportation capital improvement and maintenance.)

Elizabeth

The Town of Elizabeth's planning policies are intended to balance current and anticipated growth while maintaining a small town rural atmosphere. Elizabeth identified the maintenance and revitalization of the historic character of its downtown and small town pedestrian atmosphere as a priority. The Town considered several options for SH 86 to satisfy community objectives, at the same time addressing regional mobility needs. Options included widening of SH 86, northern or southern bypasses, or a one-way couplet. The Town has also committed to the following actions in support of the Plan.

- Preserve opportunities and associated right-of-way to implement multiple east-west corridor alignment options in and near the Town, thus providing additional routes and capacity in an already congested location.

- Create a pedestrian network including pedestrian crossings of SH 86 at key locations to allow for connections from residential areas to recreation, schools, and future retail development.

- Seek technical assistance for main street / downtown revitalization to support downtown development goals.

- Continue to negotiate with developers to help address transportation infrastructure issues.

- Examine additional sources of funding for transportation improvements. (The Town recently approved a $1.5 million bond issue (to be paid back through a 1.5 percent sales tax) to address local transportation capital improvements.)

- Continue to actively engage in discussions with Elbert County regarding cross-jurisdiction connections.

Kiowa

The Town of Kiowa has recently undertaken many actions locally to help manage anticipated growth and reduce travel demand. These include updating the *Town of Kiowa Master Plan* and adopting a set of design guidelines, as well as undertaking economic development activities to encourage employment growth within the Town. In its recent Master Plan update, the Town included a direct connection between Elbert

Road and the Kiowa-Bennett Road which is intended to reduce the traffic volume, noise and pedestrian conflicts through downtown Kiowa. The Town has also committed to the following actions in support of the Optimization Plan.

- Continue to work closely with Elbert County to support the development of a direct connection between the Elbert Road and the Kiowa-Bennett Road.
- Develop a Transportation / Street Plan and a Capital Improvements Program to prioritize local roadway and other transportation improvements.
- Develop a pedestrian network throughout town to improve local mobility.
- Seek technical assistance for main street / downtown revitalization. The Town recognizes the importance of the historic character of its downtown and active pedestrian environment.
- Examine and pursue alternative funding sources for public improvements. The Town has a sales tax of 1.5 percent allocated to transportation improvements and is considering the use of impact fees on new development.
- Continue to engage in discussions with Elbert County regarding cross-jurisdiction connections.

Parker

The Town of Parker has also taken steps to adapt land use planning efforts to manage growth, guide development, and reduce travel demand. The Town plans to improve Twenty Mile Road and implement either a one-way couplet or parallel parkways option with SH 83. Both options in the plan support CDOT's objectives for improving mobility on SH 83 as well as meet Parker's objectives of enhancing its downtown and supporting its small town character.

Parker has taken great steps to adapt land use planning efforts to manage growth, guide development and reduce travel demand. The Town has a Greater Downtown District and a Circulation Network Visionary Plan for the area which would create opportunities for alternative transportation. The Town recently adopted a Transit Feasibility Study as well as a strong pedestrian network. The Town has committed to the following additional actions in support of the Optimization Plan.

- Accept the primary responsibility for addressing and alleviating concerns of the business community along Parker Road (SH 83) as the implementation of the couplet or parkway move forward. The construction of the balance of Twenty Mile Road will represent an effort that is anticipated to include potential involvement by the private development community as negotiated by the Town. Significant further study is anticipated, including public process and environmental clearances.
- Work with Douglas and Arapahoe Counties to implement a feasible future roadway network around Parker to relieve a portion of the traffic burden on SH 83. A major component of this network is the Chambers Road extension which will parallel Highway 83 and create a local north-south connection from Douglas County north to Arapahoe County.
- Implement other system improvements to manage Parker's local travel demand.
- Continue to finance local roadway infrastructure using a range of local funding sources including an excise tax on new development, special districts, developer negotiations, and a general fund set-aside funded by sales tax revenues.
- Continue to actively engage in discussions with Elbert and Douglas Counties regarding cross-jurisdiction connections.

Arapahoe County

Arapahoe County's planned improvements to the existing County Road System represents a significant contribution to regional mobility. The County has experienced tremendous growth in regional traffic in its more urbanized western section. The Eastern two-thirds of the County are rural and are undergoing substantial change as small agricultural towns transition to suburban residential communities with increased commuter travel into the Denver Metro Area. The County has committed to the following actions in support of the Optimization Plan:

- Pave and improve roads including Manila from I-70 south to the County Line, Quincy from E-470 east to Kiowa Bennett Road and the unpaved portion of Kiowa-Bennett Road south to the Elbert County Line. These roadways are anticipated to carry future regional traffic and represent a significant contribution to regional mobility as growth to the south continues.

- Work with Douglas County and Parker to implement a feasible future roadway network around Parker to relieve a portion of the traffic burden from SH 83. A major component of this network is the Chambers Road extension which will parallel Highway 83 and create a local north-south connection from Douglas County north to Arapahoe County.

- Work with Bennett to identify potential alignment improvements and associated right of way needs for the Kiowa-Bennett Road.

- Encourage mixed-use, clustered development patterns around infill growth areas, and employment zones to reduce trip demand.

- Work with Elbert County regarding improvements to County Line Road.

Douglas County

Transportation infrastructure has been a high priority due to the County's rapid growth. Douglas County is planning to contribute to improvements such as Chambers Road, Stroh Road, Hilltop Road, Pine Road and Crowfoot Valley Road. These enhancements are critical roadway alternatives from the residential areas in Douglas County to the employment zones along I-25 and E-470. They will help alleviate the traffic burden on SH 83 and 86. The County has also committed to the following actions in support of the Optimization Plan:

- Direct development toward urbanized areas of the region and limit isolated development as reflected in the *Douglas County 2020 Comprehensive Master Plan.* In addition, County planning efforts in Franktown, located at the junction of SH 83 and 86, have envisioned a future for Franktown that accommodates future travel volumes and yet enhances the existing small town character.

- Work with Parker and Arapahoe County to implement a feasible future roadway network around Parker to relieve a portion of the traffic burden from SH 83. A major component of this network is the Chambers Road extension which will parallel Highway 83 and create a local north-south connection from Douglas County north to Arapahoe County.

- Continue to work with El Paso County as growth continues to ensure that roadway and other connections made across jurisdictional boundaries are smooth and coordinated.

- Continue to maximize a variety of transportation funding methods. Property taxes totaling 4.47 mills, dedicated sales taxes for transportation of 0.4%, special districts, and specific negotiations are among the tools that the County uses to provide local and regional transportation improvements.

- Serve as a resource for those jurisdictions in the study area wishing to establish a framework for future regional cooperation. For example, the County has established the Douglas County Partnership of Governments as a forum in which to discuss regional concerns.

- Continue to actively engage in discussions with Elbert County and Parker regarding cross-jurisdiction connections.

Elbert County

Elbert County is undertaking a number of actions in support of the Optimization Plan. The County is addressing safety considerations on the Kiowa-Bennett Road by paving and straightening the alignment in two key locations. This corridor will potentially serve a growing travel movement between El Paso County and I-70. The County will work to preserve right-of-way and manage access along this road. It will also work with neighboring jurisdictions as well as developers to create a network within the County designed to address north-south and east-west travel movement. The County has also committed to the following actions in support of the Optimization Plan:

- Use the Corridor Optimization Recommended Roadway Network Plan Plan to assist with future development proposals and transportation priorities within the County. Although the County has a Transportation Plan, the use of the Optimization Plan will enable policymakers to see how regional mobility through Elbert County can be affected by local land use decisions.

- Consider the adoption of policies regarding the mixing and clustering of future retail or community uses at certain locations and the adoption of design guidelines to better guide future development. The County's recently adopted *County Economic Development Plan* indicates areas of future retail or commercial services growth.

- Develop a Capital Improvement Program or a priority list of projects to be used in conjunction with the Optimization Plan.

- Work with Arapahoe County regarding improvements to County Line Road.

- Continue to examine and pursue other options for funding its transportation network. (The County recently updated its impact fee schedule. Other options include public or local improvement districts, as well as again potentially again considering a dedicated sales tax.)

- Continue to actively engage in discussions with Douglas County and Parker regarding cross-jurisdiction connections.

- Continue to actively engage in discussions with Kiowa and Elizabeth regarding cross-jurisdiction connections.

El Paso County

El Paso County has committed to extensive improvements to the local street network to handle traffic volumes projected in the *2030 Transportation Plan*. Roadway improvements to Elbert Road, Powers Boulevard, Black Forest Road, Falcon Highway and other local streets are designed to accommodate future travel and provide an alternative network to the State Highway system. The County has also committed to the following actions in support of the Optimization Plan.

- Continue to coordinate with Elbert and Douglas Counties regarding inter-county connections to ensure that transitions are smooth and coordinated.

- Continue to examine policies and practices linking land use and transportation infrastructure.

- Consider other sources of funding. (The County has tools to finance transportation improvements including property taxes of 9.4 mills for transportation, special districts and developer negotiations. The County's Baptist Road Rural Transportation Authority also has an impact fee to address needed transportation improvements. Impact fees in other areas, as well as sales taxes should be considered more broadly for their appropriateness in addressing needed transportation improvements.)

Regional Strategy

The local governments involved in the SH83/86 Corridor Optimization Study are taking action to improve local transportation facilities within their boundaries. Many of these improvements provide direct support for this Plan. In addition to actively participating in the creation of the Plan, the local governments have also informally agreed to meet regularly with CDOT staff to discuss regional issues of mutual concern; to coordinate future plans and actions; to examine the feasibility of regional funding structures and partnerships to help implement the proposed Plan and its elements; and to ensure the integrity and applicability of the Corridor Optimization Plan over time. Through continuing support for the Corridor Optimization Plan and its recommendations, the affected local governments acting together will be better able to achieve a high priority for corridor improvements as they work with CDOT to help develop the Statewide Transportation Improvement Plan, especially by stating priority for these improvements in the development of the DRCOG and Eastern TPR transportation plans.

Integrating Transportation and Land Use Planning

The concept and value of the integration of land use and transportation planning was discussed on a one-on-one basis with each local jurisdiction involved in the development of the Corridor Optimization Plan. Each of these agencies recognized the potential long-term effects of development on the surrounding transportation infrastructure. Also discussed were ways in which effective local land use policies, implementation tools and funding practices can positively affect the operating efficiency of the regional transportation network. Building support for this integrated approach to planning involves local jurisdictional participation in determining ways in which to effectively implement the policies that work within their individual communities.

The integration of transportation and land use planning means integrating street and land use form to enhance mobility within the community. Investment in transportation resources is only a component of the regional travel solution. Because land use development drives trips to the transportation infrastructure, coordinated land use planning must be part of the long-term solution. Congestion cannot be "fixed" solely through the expansion of the roadway infrastructure. There exists a direct correlation between the way a community develops and its level of mobility.

Managing and directing growth within the region requires the cooperation of all regional jurisdictions. It requires an understanding that not only the level of growth - but the way in which that growth is directed - have significant impacts on how well the transportation network can adequately serve future travel demand in the area. Directing future development within existing communities, infilling where possible and limiting spot development are ways in which to manage overall growth patterns in the region.

Transportation Components of Integration

Integrating planning efforts can produce a system that creates transportation options and manages future travel demand within a community. Elements of this relationship are explained below and were discussed throughout this planning process.

Street Network

The street network acts as the base framework for a community. It creates the primary access to and from most destinations and it works hand in hand with land use development patterns. The overall design of the street network ensures connectivity between uses and ease of vehicle travel. The way in which this network is set up, along with the land use development that it supports, drives the number of vehicle trips and the vehicle miles traveled within a community.

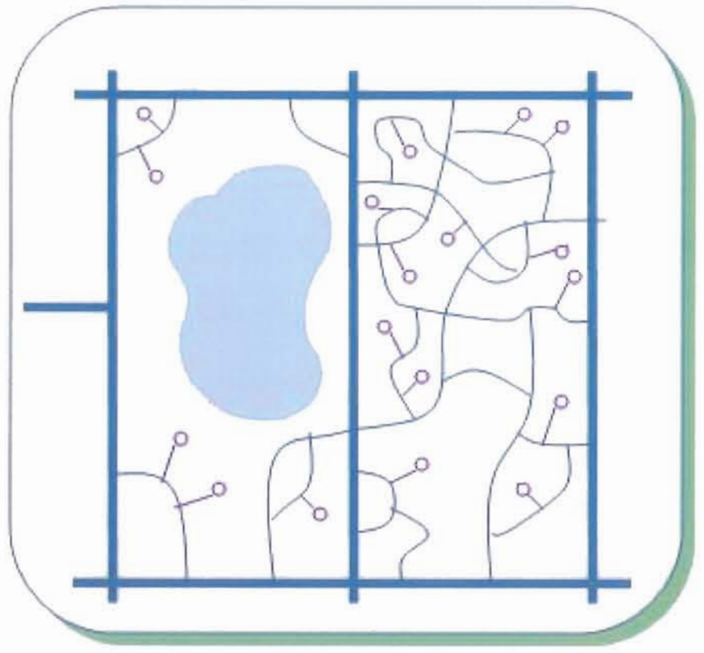


Figure AA-1--Curvilinear Street Pattern

A curvilinear street pattern, as is often found within suburban neighborhoods, usually produces a higher number of vehicle trips per household than if trips can be accommodated through walking or biking. It also tends to concentrate traffic onto a few streets. While a grid street pattern can often create more direct connections between uses, it is most meaningful if a mix of uses exists within the grid. The direct connections and shorter travel distances are conducive to alternative means of travel, such as walking or biking options, to access a mix of uses. This street pattern also tends to disperse traffic, creating fewer traffic-impacted locations.

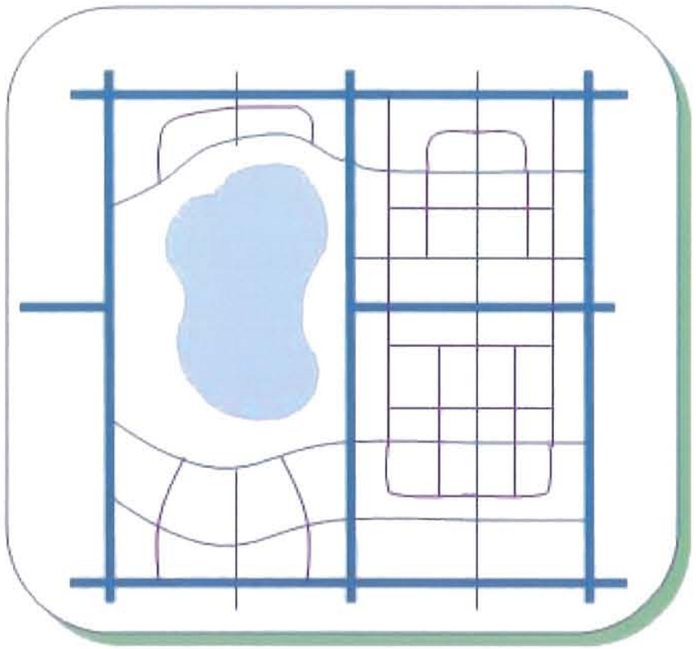


Figure AA-2--Grid Street Pattern

Roadway Access to Land Use

If each and every use along the arterial receives direct access, it translates to stop and go activity along the corridor throughout the day. This situation impedes traffic flow and aggravates congestion in typically already high volume traffic flows, and can decrease the overall safety of the facility. It is a common occurrence in towns which have developed parcel by parcel along a highway corridor. Typically, uses are separated just enough to require vehicle travel between uses and the development of individual access to each site. Concentrating land uses and grouping uses with singular access points can limit the effects of multiple driveway accesses, and thereby reduce the impacts to traffic flow and enhance the safety of the roadway.

Land Use Components of Integration

Land Use Planning Tools

In recognizing the economic need for growth and improvement, it is also important to recognize the tools available to local jurisdictions to guide that growth in a manner which supports their community's vision and makes efficient use of the transportation or roadway network. The following tools or actions are available to local jurisdictions to help guide local development.

Policy Adoption

The adoption of local policies is the first step in creating a framework toward implementation. This step is typically performed through a town planning process or the adoption of a comprehensive plan. Comprehensive or Master Plans are the ground work for best addressing growth and its related traffic implications. The review and update of comprehensive plans, currently being conducted by many jurisdictions within the study area, is the way in which improved policies recognizing the connections between growth management, land use and transportation can be integrated into daily planning efforts.

Throughout this Corridor Optimization process, communities discussed future growth and the principles that direct how and where they'd like to grow. Policies discussed with each community encourage future development patterns that reduce dependence on the automobile where feasible, encourage internal bike or pedestrian trips, group future land

uses to allow fewer individual auto trips and promote the development of mixed-use, clustered development where possible. The ability to initiate policy direction within each jurisdiction creates a long-term effect not only on community character, but travel demand and future congestion. The following land use policy areas were discussed by each community for individual consideration within their jurisdiction.

Policy 1 - Allow a Mix of Land Uses

- Much of the study area is developing in a conventional suburban manner with low-density, single family use development. The practice of separating uses has been applicable to standard development; however, avoiding a distinct separation of land uses and encouraging a more mixed-use approach helps to achieve synergies between uses. Allowing a mix of land uses has a greater positive impact on travel demand.

- A vital mix of uses promotes pedestrian movement and reduces not only the number of trips, but the vehicle miles traveled between uses. More often than not, multiple trips are generated between home and school, shops, recreational or community activities, and employment. More trips translates to greater congestion within the community, as well as the region. Concentrating land uses geographically and creating a mix between the uses produces fewer auto trips for each and every need. It diminishes the need to provide roadway infrastructure, driveway access and parking spaces when trips can be combined. Overall, this reduces demand on the regional and local street networks. The mixing of land uses also allows the better utilization of transit or other multi-modal options, such as biking or walking.

Policy 2 - Promote Clustering

- By concentrating or clustering land uses, towns can create opportunities to park once and walk between destinations. Pedestrian amenities are a crucial aspect of creating this walkable environment.

- Good design is an important part of clustering uses. A well-designed environment creates convenient access and manageable site circulation. Often it is not how dense the development is, but how well designed it is that makes it attractive to the community. Even in areas where low density development is prevalent, there are opportunities to cluster and mix uses at certain locations, thereby reducing the number of trips between uses.

Policy 3 - Create a Sense of Place

- The specific way in which land uses are designed and oriented in relation to the street is also important. By mixing and clustering uses, creating higher densities and orienting uses toward the street, where appropriate, a positive street environment can be created to identify the community. A friendly pedestrian infrastructure allows movement and activity and creates a vibrancy that is good for businesses and the community. It is important to reduce setbacks and locate buildings close enough to the street and to each other to visually enclose the streetscape and create a sense of place. This is typically achieved best in small-scale blocks or development areas where buildings have ground level activity.

Source: Urban Advantage

- This pedestrian environment is also dependent on the ability to park once, whether along the street or in a nearby parking lot, and walk safely to multiple destinations: commercial, recreational, entertainment or such. Parking can be located on-street or behind the buildings so that pedestrian movement between uses is not obstructed by extensive parking lots. Creating a pedestrian environment is dependent on the way in which uses are organized and oriented, and in the application of design elements to create a sense of place.

- Some or all of the following elements can be used along a downtown corridor or within a clustered development to create an identifiable environment within the community, promote pedestrian activity and reduce dependence on the automobile.

  - Wide sidewalks with street furniture
  - Continuous sidewalks and direct connections to buildings
  - Lighting
  - Storefront architectural elements
  - Landscaping and tree canopies
  - Raised and/or landscaped medians
  - Pedestrian markings and crossings
  - Signage identifying location
  - Vistas or Gateways
  - Street-level windows and active storefronts

Policy 4 - Create Connectivity between Uses

- Creating a walkable community relies on the proximity of land uses and the environment in which to walk. Dispersed development patterns and separated land uses, as are typically seen in rural or suburban settings, make walking between uses difficult. By mixing and concentrating land uses, and orienting those uses in a way that enhances the pedestrian environment, communities can consider walking a viable alternative.

- Sidewalks are the typical means of creating connectivity. In order to ensure functional and useable sidewalks, communities might consider the adoption of specific design standards for sidewalks. Standards might include required widths, landscaped buffers or edges to mark the pedestrian zone, or signage and lighting.

- Connections between uses require more than just the development of sidewalks. Numerous links are needed to create a safe pedestrian network within a community. Complementary elements of this network include safe and recognizable street crossings, traffic calming measures where appropriate, direct pedestrian facilities and proximity of residential uses to retail, office, recreational sites or schools.

- In ensuring connectivity, it is also important to develop street standards that provide flexibility in street design for pedestrian or bicycle accommodations. Flexible standards allow communities to address the "livability" demands of the roadway, as well as the primary function of moving vehicles. Facility design, in conjunction with land use, is an element of creating connectivity within the community.

- Specific efforts were made with each community to review existing pedestrian facilities, determine potential future facilities and create primary connections between uses throughout the community.

Policy 5 - Provide a Variety of Transportation Choices

- Creating transportation choices involves the coordination of land use and transportation planning, creating connections between transportation networks, and ensuring connectivity between multi-modal choices such as bicycling, walking and transit. Land use design and orientation go a long way in creating a pedestrian environment that makes the use of other travel modes feasible.

- Transit services and connections to regional transit are more effective where concentrated land use patterns and population densities can be supportive. Combining retail/activity centers, pedestrian facilities and transit centers can effectively reduce individual vehicle trips.

- Bicycling options are more effective with designated or marked facilities that link land uses throughout the community.

- Pedestrian facilities should be enhanced by specific markings, safe crossings or grade separated facilities and direct connections to varied locations within the community.

- Connections between travel modes, such as bike facilities to transit centers, are key to developing feasible transportation choices.

Specific Plans / Sub-Area Plans / Site Plans & Transportation Plans

Adoption of local policies is the first step. However, there are other more specific tools that can be used in implementation of the concepts represented in the jurisdiction's policies.

Specific plans, sub-area plans or even site plans are short-range planning documents that provide a more effective means of addressing phased development and making land use control decisions. They offer area or site specific recommendations and can more specifically guide development to distinctly meet the objectives identified in the broad-based comprehensive plan policies. Specific plans detail the development designated for a certain area and allow stronger design considerations and transportation efficient strategies to be implemented.

Community transportation plans - especially when coordinated closely with land use plans - complement and enhance the land use planning process. These can also take jurisdiction-wide or very localized form.

Design Standards / Design Guidelines

Design Guidelines are typically utilized by planners to control the characteristics and aesthetics of development in specific planning areas, corridors or development sites. Design guidelines might address building scale, setback, orientation and relation to street, architectural detail or decor, building materials, landscaping, parking location and orientation toward buildings, lighting features, sidewalk connections and particular amenities, and design and location of signage.

Communities may also use Design Review Boards to oversee the implementation of the design guidelines in development and ensure the community character desired.

Zoning and Development Codes

Zoning regulations are designed to implement the policies that typically restrict land division and density and separate land uses. Zoning codes typically regulate type and location of use, scale, standards and accessibility. However, innovative zoning tools can be used to encourage a mix of uses or a clustering of those uses in one site. These tools offer flexibility by site and are helpful in areas where uses are transitioning.

- Overlay Zones permit a special application of land use and building design standards in a targeted area. Often these overlay zones combine a mix of pedestrian amenities and orientation to mixed-use developments.

- Planned Unit Developments can be implemented with design guidelines for a specific development area allowing more control over nature and location of uses on the site.

- Density Bonuses may not be applicable in smaller communities but may be an option where infill development is occurring. Density bonuses allow a developer to build beyond the intensity allowed by the zoning in exchange for developing a public benefit such as a park.

- Enhance the policy framework by modifying development codes to allow "mixed-use" development. This can expedite the approval process.

Integrating transportation and land use form contribute to both the mobility and quality of life within a community. Local application of the concepts and policies presented in this toolbox will contribute to the success of this Plan.

Information Resources

The following agencies within and near the study area have extensive on-line information regarding local processes and plans, including references to Comprehensive Master Plans, Development Review Schedules, Zoning Resolutions (suburban, commercial and planned developments) and sub-areas:

- Castle Rock - www.crgov.com
- Douglas County - www.douglas.co.us
- Lone Tree - www.cityoflonetree.com
- Parker - www.parkeronline.org

Funding Concepts and Opportunities

Transportation development involves state, regional and local entities utilizing federal, state, and local revenue sources. The Colorado Department of Transportation (CDOT) built the state highways between communities, counties built the rural road system and municipalities built the local road systems within their borders. With funding falling far short of need at every level, CDOT and the affected jurisdictions are investigating alternative funding and financing approaches.

This section of the Corridor Optimization Plan discusses the transportation planning and budget process at CDOT and the resources that local communities have used or potentially can use in addressing transportation-related improvements. Application of these tools on an individualized basis is addressed in the individual community sections under "Forming the Regional Solution" as well as in the business plan.

Federal and State Planning and Prioritization

Through the statewide transportation planning process, communities have access to transportation funds for specific projects. The following section describes the CDOT budget and how the Corridor Optimization Plan fits into the overall process.

CDOT Revenue

In 2004, CDOT revenue sources are estimated at approximately $800 million. Primary sources of revenue for the state agency include the agency's share of the Highway Users Tax Fund (HUTF) at $420 million, or 53 percent of total revenues. Federal Highway Administration Funds are estimated at approximately $300 million or 38 percent of the total budget. The balance of the revenue sources is comprised of local match and reimbursements, funds from the Federal Transit Agency, the Federal Aeronautics Administration, and other sources. Other sources include funds from Senate Bill 1, however, as a result of budget shortfalls, no revenues are expected from this source until 2008.

- **Senate Bill 1** - Senate Bill 97-01 (SB-1) authorized the expenditure of up to 10 percent of state sales and use taxes for transportation improvements for the Strategic Corridor Investment Program (7th Pot). The 7th pot included 28 high priority projects of state-wide significance designated for this special funding, over and above funding to the State's six transportation regions. These funds are available only if there are sufficient tax resources after allowing for six percent appropriations growth, a four percent reserve and funding for Amendment 23 education funds. The initial SB-1 allocated $75 million per year in funding for the 7th Pot, but has been increased in subsequent bills. As a result of budget shortfalls, there are currently no funds and none expected through 2008.

- **Highway User Tax Fund (HUTF)** - HUTF consists of funds generated from motor fuel tax and motor vehicle registration. It is a state-collected, locally-shared revenue that is distributed monthly among the State, counties, and municipalities at a 65-26-9 split. The portion allocated to CDOT goes into its budget for a variety of purposes explained below. Jurisdictions within the study area typically use their allocations for ongoing operations and maintenance costs.

- **Federal Highway Administration** - TEA-21, which is currently up for reauthorization, is the federal legislation authorizing funds for the nation's highway, highway safety, transit, and other surface transportation programs. This legislation authorizes funds for the Federal Highway Administration and programs including the National Highway System (NHS), the Surface Transportation Program (STP), as well as the Congestion Mitigation and Air Quality Programs (CMAQ).

CDOT Expenditures

In 2004, CDOT's approximately $800 million budget is allocated as follows:

- 7th Pot (Strategic Corridor Projects) - $104.8 million
- Surface Treatment - $123.5 million
- Bridge - $38.5 million
- Rest Area - $2.8 million
- Noise Barrier - $0.0
- Safety - $29.3 million
- Maintenance - $187.3 million
- Operations - $94.7 million
- ITS - $3.4 million
- Small Urban - $1.1 million
- Regional Priority Programs - $133.2 million
- Other and Contingency - $74.0 million

The Transportation Commission's top budget priorities include the 7th Pot Strategic Corridor projects. These priorities include strategic corridor projects currently under construction such as T-Rex along I-25 in the Denver metro area. Its other priorities include ongoing maintenance and operations, and improvements to bring the statewide highway system up to current standards. The Regional Priority Programs category is the primary budget category under which future improvements identified in the Corridor Optimization Plan will be obtained. This program category receives the balance of the budget after the top priorities are met. Because this budget category covers statewide priorities, it tends to be very competitive. Due to overall budget shortfalls, there are no funds available within this category for the next three years. The Hazard Elimination Funding Program and the Off-System Bridge Replacement Program are other programs either funded or administered by CDOT available to local agencies.

Regional Planning Process

Colorado has been divided into fifteen Transportation Planning Regions (TPRs) to plan for, prioritize, and fund needed transportation improvements. Five of the regions include Metropolitan Planning Organizations (MPOs). TPRs and MPOs are responsible for identifying the range of transportation needs to meet the vision of their regions over a 20 year plus time frame. These regional visions are then incorporated into the Statewide Transportation Plan. Only projects contained in the regional transportation plans can be included in the statewide plan, which then makes them eligible for state and federal funding through the statewide process.

Elbert County, Elizabeth, and Kiowa are part of the Eastern Transportation Planning Region (Eastern TPR) which is responsible for that region's transportation planning efforts. In Douglas and Arapahoe Counties, including the towns of Castle Rock and Parker, the Denver Regional Council of Governments (DRCOG) is the MPO responsible for preparation of the Metro Vision Plan, the Regional Transportation Plan (RTP), and the Transportation Improvement Plan (TIP).

Federal and State Funds

The programs listed below are federal and state funds available to jurisdictions for improvements at the local level. DRCOG and the Eastern TPR are active within their jurisdictions. The CDOT regional offices are also heavily involved in program administration.

- **Congestion Mitigation and Air Quality Programs (CMAQ)** - CMAQ funds are federal highway gas tax dollars distributed to CDOT based on population and are available to air quality non-attainment areas. Because the program is targeted to actions that improve air quality in non-attainment areas, eligible jurisdictions tend to be in metropolitan areas. In the study area, these funds are allocated by DRCOG in the Transportation Improvement Program (TIP) process.

- **Enhancement Program** - Under TEA-21, CDOT allocates 10 percent of Surface Transportation Program (STP) funds for enhancement projects. Transportation

enhancement projects include facilities for bicycles and pedestrians, scenic or historic highway programs, landscaping, historic transportation building preservation, preservation of abandoned railway corridors, and others. In Douglas and Arapahoe Counties, these funds are distributed through DRCOG. The CDOT regional office is responsible for administration of this program in Elbert County.

- **Surface Transportation Program (STP) – Metro** – DRCOG administers funds from the Federal Highway Administration (FHWA) for five project types under this program: capacity access – new, capacity access – widening, roadway reconstruction / rehabilitation, highway operational improvements, and studies. Jurisdictions eligible for funding must be in metropolitan areas. The 2004 CDOT budget identified approximately $30 million for this program to cover ongoing as well as new projects.

- **Hazard Elimination Funding Program** – Under its Safety Program, CDOT Region 1 receives funding to address safety issues within the region. Approximately $700,000 to $800,000 is available annually for local jurisdictions to address both on and off system safety improvements. Projects funded must be able to prove that the proposed safety benefits are greater than the costs of the project. Funded projects in the past include traffic signals, turn lanes, ITS devices, signage and lighting. Local jurisdictions are notified annually of funding available through this program. The Traffic Operations Engineer for the CDOT Regional Offices is responsible for administration of the program.

- **Off-System Bridge Replacement Program** – CDOT, in conjunction with the Colorado Municipal League and Colorado Counties, Inc., administers funds for the rehabilitation and replacement of functionally obsolete or structurally deficient bridges owned by the state, counties or municipalities. The source of funding is the federal government. Grants are administered on a 80 percent grant and 20 percent local match basis. Approximately $5.5 million are available annually for bridges in the state. Notices to municipalities and counties are mailed out for bridge funds on an annual basis in the spring. Bridges funded must meet certain criteria in order to be eligible for rehabilitation and/or replacement.

- **State Infrastructure Bank** – CDOT operates the State Infrastructure Bank (SIB) which can make low interest loans or provide credit enhancements to both public and private entities for transportation improvements. Loan size ranges from $100,000 to $2.5 million. There must be an identified revenue stream available for repayment of the loan. The interest rate is based on the prime rate and is set on an annual basis by the Transportation Commission.

Local Planning and Prioritization

Transportation Plans

All of the larger towns and counties in the study area have transportation master plans addressing long range transportation needs and funding requirements. Smaller communities, such as Kiowa, have begun discussing the need for a transportation plan, especially as the community continues to grow. The plans are used in association with a capital improvements program budget that estimate when improvements take place, attach an estimated cost, and indicate the potential public or private funding source.

Transportation Budgets

While larger communities have a capital improvements priority program (or at least a priority list of projects), some of the smaller communities, like Bennett and Elizabeth, have recently begun putting together a list of their priority road and capital improvements projects. Both communities have a revenue source in which to begin addressing their transportation capital needs – Bennett recently adopted an impact fee and Elizabeth approved a bond issuance targeted toward transportation and other needed public improvements. In communities such as Parker, some of the transportation-related capital improvements and maintenance funds come out of the general fund, with some discretion on the town council's part as to how priorities are made and funds allocated.

Current Funding Sources

Communities use a variety of different tools to pay for transportation capital improvements and ongoing maintenance. All the jurisdictions receive allocations from the Highway Users Tax Fund (HUTF), as previously discussed. The majority of the jurisdictions within the study area have a transportation capital improvements program which lists their transportation priorities and potential funding sources. The communities also use general fund revenues to pay for operational expenses including salaries and maintenance.

Table AB-1 shows a list of other funding sources that jurisdictions use to address their funding shortfalls. Some of the jurisdictions are more familiar with the usage of these sources while others have just started or are considering using these tools.

Table AB-1
Current Funding Sources

	Property Tax	Sales/Use Tax	Developer Negotiations	Impact Fees/Excise Tax	Special Districts
Arapahoe County	✓		✓	✓	✓
Bennett			✓	✓	✓
Douglas County	✓	✓	✓		✓
Castle Rock		✓	✓	✓	✓
Parker		✓	✓	✓	✓
Elbert County	✓		✓	✓	✓
Kiowa		✓	✓		
Elizabeth		✓	✓		
El Paso County	✓		✓		✓

Source: Interviews with jurisdictions, EPS

- **Property Taxes** – Douglas and Arapahoe Counties have property tax mills dedicated to capital improvements for transportation projects as well as maintenance. Property taxes are used primarily for maintenance in Elbert County. Mill levies range from 0.76 in Arapahoe County to 13.00 mills in Elbert County.

- **Sales / Use Taxes** – Parker, Castle Rock, Douglas County, Elizabeth, and Kiowa have dedicated sales taxes for transportation range from 0.75% to 1.75%. Neither Arapahoe County nor Elbert County have sales taxes. While El Paso County has a sales tax, none of the funds are allocated to transportation related purposes.

  A variation on sales taxes used in Elizabeth and Parker is the Enhanced Sales Tax Incentive Program or ESTIP. Under this program, a private developer can apply to be reimbursed for future sales tax proceeds for developer-installed public improvements

- **Development Agreements** – A wide variety of improvements can and are negotiated during the development process, such as right of way dedications, and roadway construction and re-construction. As an example, the ESTIP mechanism might be used in negotiating with the developer and applying a negotiated portion of future sales taxes generated as a result of new businesses to help pay for the initial cost of the improvement.

- **Impact Fees / Excise Taxes** – Impact fees are a widely used tool. Communities have been successful in implementing these fees in areas suffering the consequences of rapid growth to pay for road improvements. Current residents, in particular, believe that new developments should "pay their own way" and are often supportive of this type of funding mechanism.

  Impact fees do not require a vote, but do require that a nexus or legal relationship be established between the benefits received and the fees imposed. Arapahoe County, Elbert County, and Castle Rock have this tool in place. Bennett recently passed impact fees for new development. In Parker, excise taxes, which resemble impact fees, are placed on development throughout the town. Voter approval is required for the implementation of excise taxes.

- **Special Districts** - A variety of special districts are available to jurisdictions to finance transportation improvements. Towns can use General Improvement Districts or Special Improvement Districts to finance and install improvements. Counties can use Public Improvement Districts or Local Improvement Districts. Generally, these districts have the authority to issue bonds to initiate improvements, and property tax revenues or assessments levied on property owners are used to pay back the cost of the improvements.

  The most widely used special district in the study area is the Title 32 Metro District. It is a quasi-governmental organization that private developers can use to address basic infrastructure needs in a community. Expenses are paid through the imposition of property tax mills, fees, charges, etc. on the residents and commercial users. This tool is popular particularly in areas where a development cannot be annexed into an existing municipal system. In Kiowa and Elizabeth, developers thus far have been encouraged to annex into the town and its services.

Grant monies from other non-transportation related organizations can sometimes be applied to roadway or related improvements. Elbert County and Bennett, have made use of Energy and Mineral Assistance Funds from the Colorado Department of Local Affairs (DOLA). Elbert County has been successful in using their allocation for roadway-related needs; they will be using their grant allocation to pave Kiowa-Bennett road.

Other Tools

The following tools and organizational structures have not been previously mentioned, but are additional methods oriented to transportation financing for communities in the study area.

Regional Organizations

Although not widely used, regional organizations have been set up to address transportation issues. While difficult to establish, they can be useful because of their revenue generating authority and broader array of potential funding sources.

- **Rural Transportation Authorities (RTA)** - RTAs are created by intergovernmental agreement between at least two jurisdictions, neither of which can be in a Regional Transportation District. It is a separate governmental entity which is empowered to finance, construct, operate and maintain a rural transportation systems. Funding tools include a motor vehicle registration fee, sales and use tax, visitor benefit tax. The creation of an RTA, the funding mechanism, and fee or tax structure must be separately approved by each participating jurisdiction in a public vote.

- **Public Highway Authorities** - Highway authorities have the ability to issue bonds and the impose tolls and charges for capital and maintenance costs. They are considered a separate subdivision of the State. They have been used in Colorado for E-470 and the Northwest Parkway for the building and maintenance of those highways.

There are a variety of other financing tools appropriate for communities in the study area. Although some of the following tools are not directly oriented to transportation purposes, they provide assistance to jurisdictions in addressing their economic development or land use needs which can directly affect transportation planning and the need for improvements.

Street Utility Fee Program

Enabling legislation which allows cities to operate municipal water and sewer programs with utility fees can also be applied to the potential creation of a road utility program. A road utility program is not used by any of the jurisdictions in the study area. Communities such as Loveland have a program in place where a street maintenance fee is assessed to defray the costs of the maintenance of the community's streets. The amount of the fee is based upon land use, the community's estimate of the relationship between traffic and the land use, the generation of vehicle traffic on the community's street system, and the community's estimate of the cost of maintenance of the street system as a result of the traffic.

Redevelopment Funding Tools

There were several locations within the study area where different types of tools related to business development or revitalization are appropriate. For example, the downtowns of Parker, Elizabeth, and Kiowa are located either on or in very close proximity to Highways 83 or 86. In addition to the special district mechanisms mentioned previously for specific improvements, downtown property owners can create business improvement districts to address needed improvements, as well as provide services such as managing, promoting, and marketing a downtown area. Other tools include Urban Renewal Authorities and Downtown Development Authorities which have the ability to use tax increment financing to address public improvements. Finally, the Main Street Program, run through the Colorado Community Revitalization Program offers technical assistance to communities wishing to improve their downtowns or central business districts.

Technical Assistance

Both the Department of Local Affairs (DOLA) and DRCOG provide technical assistance to communities to address a variety of public needs. DOLA provides assistance in areas such as planning, budgeting, neighborhood and community development, organizational development among a variety of areas. DRCOG also provides technical assistance to small communities within its jurisdictional boundaries. DRCOG specialists include: planners, economists, demographers, geographic information systems (GIS) specialists, environmental, water quality and transportation specialists, analysts, writers, and designers.

Grants

The Community Development Block Grant program has an infrastructure assistance program targeted toward economic development goals, for the development of businesses creating and retaining jobs for low to moderate income persons. The U.S. Department of Agriculture offers a community facilities grant and low-interest loan program for community facilities in rural areas. Additional detail is provided in **Table AB-2**.

Table AB-2 provides a list and more detail on the tools that communities use to address funding transportation improvements on a local level. The application of these tools on an individualized basis will be addressed in the sections on each of the individual communities. The Business Plan also addresses local funding, in addition to addressing other regional funding options.

Information Resources

The Colorado Municipal League and the Department of Local Affairs have resource information available on-line regarding the tools discussed in this section

Colorado Municipal League (CML)

http://www.cml/org

Applicable publications, which are available for purchase from the CML include:

Paying for Growth: Impact Fees under Senate Bill 15
Financing Public Improvements: A Guide to Borrowing Methods for Municipal Governments
Colorado Highway Funding: Then and Now
Special Improvement Districts
Development Charges in Colorado's Municipalities
Municipal Sales and Use Taxes

Department of Local Affairs (DOLA)

http://www.dola.state.co.us/

The Department of Local Affairs (DOLA) has a wide variety of information helpful to local governments. These can be found under the publications subdirectory on the website.

Grant and loan directory: http://www.dola.state.co.us/fs/grants.htm

Guide to developing a capital improvement program:
http://www.dola.state.co.us/LGS/TA/FinancialManagement/Documents/Developing-a-Capital-Improvement-Program.pdf -
Guide to Special Districts:
http://www.dola.state.co.us/LGS/TA/FinancialManagement/Documents/Districts-and-Alternate-Government-Financing-Mechanisms.pdf
Guide to Title 32 (Metropolitan) Districts:
http://www.dola.state.co.us/LGS/TA/SpecialDistircts/Documents/FORMATION&STATUTORYRESPONSIBILITIES.pdf

Table AB-2
Funding Sources Summary

Source	Description	Funding Considerations	Administrative Considerations
CDOT Programs			
Regional Priority Programs	Future improvements related to the implementation of the Optimization Plan are anticipated to be out of the Regional Priority Project category of the CDOT budget.	This program category is funded at $120 million in 2004 (estimated) and is completely allocated for the next three years.	Specific improvements administered out of the CDOT regional offices. The program covers all six CDOT regions and is very competitive.
Surface Transportation Program (STP) - Enhancement	Transportation enhancements include facilities for bicycles and pedestrians, scenic or historic highway programs, landscaping, historic transportation building preservation, preservation of abandoned railway corridors, etc.	This program category is funded at nearly $10 million in 2004.	DRCOG administers this program in the metropolitan area (Douglas and Arapahoe Counties within the study area.) The CDOT regional offices are responsible for administration of this program in Elbert County.
STP - Metro	Five project types are eligible for funding under program including: capacity access - new, capacity access - widening, roadway reconstruction / rehabilitation, highway operational improvements, and studies.	In 2004, the statewide allocation for STP-Metro is approximately $30 million.	Eligible jurisdictions must be within metropolitan areas. DRCOG administers the program within the study area.
Congestion Mitigation Air Quality (CMAQ) Funds	CMAQ funds are federal highway gas tax dollars distributed to CDOT based on population and allocated to programs that improve air quality. In the study area, they are allocated by DRCOG through the TIP process.	In 2004, the statewide allocation for CMAQ is estimated at $24 million. However, a portion of those funds are for earmarked projects with the remainder available for competitive projects.	Administered in the study area through the DRCOG TIP process. Air quality non-attainment areas are eligible. Through-lane capacity projects are ineligible.
Highway User Tax Fund (HUTF)	State-collected, locally-shared revenue that is distributed monthly among the State, counties, and municipalities. The fund is derived from motor fuel tax and various motor vehicle registration title, and license fees and taxes.	Each jurisdiction receives a share of the HUTF based on a formula that takes into account vehicles registered and miles of street within the jurisdiction. Overall state economic considerations impact revenues collected and thus amounts available for the various jurisdictions for transportation purposes.	HUTF is comprised of several funds. In general, governments can spend funds for a variety of different transportation-related purposes. There is a limit on administrative expenditures.
Hazard Elimination Funding Program	Funding available for local jurisdictions to address both on and off system safety improvements. Projects funded must be able to prove that the proposed safety benefits are greater than the costs of the project. Funded projects in the past include traffic signals, turn lanes, ITS devices, signage and lighting.	In the past approximately $700,000 to $800,000 available per year for projects. Current allocations have been made through FY 2007.	The CDOT Regional Offices - Traffic Operations Engineer is responsible for administration of the program
Off-System Bridge Replacement Program	Bridge improvement funds are available for the rehabilitation and replacement of functionally obsolete or structurally deficient bridges owned by the state, counties or municipalities.	Grants are administered on a 80 percent grant and 20 percent local match basis. Approximately $5.5 million are available annually in this program.	CDOT administers the funds in conjunction with the Colorado Municipal League and Colorado Counties, Inc. Notices to municipalities and counties are mailed out on an annual basis in the spring. Bridges funded must meet certain criteria in order to be eligible.

Table AB-2
Funding Sources Summary

Source	Description	Funding Considerations	Administrative Considerations
Taxes			
Property Taxes	A portion of the mills to the jurisdiction may be allocated to transportation capital improvements or maintenance on a jurisdiction-wide basis	In the study area, the mills dedicated to transportation vary widely depending on the jurisdiction.	Requires voter approval.
Sales /Use Taxes	Sales taxes generally consist of potentially three components: state, local (city or county), and special purpose. Some of the jurisdictions allot a portion of the sales tax collected for the jurisdiction for roadway improvements.	Jurisdiction can also issue bonds to raise money for needed improvements, and then can pay back these bonds through sales taxes.	Requires voter approval.
Enhanced Sales Tax Incentive Program (ESTIP)	Agreement where developer installs a public improvement and is then paid back a negotiated amount from future sales tax proceeds	The jurisdiction administers the program based on a negotiated agreement.	Jurisdictions are allowed to negotiated these agreements based on their home rule authority.
Impact Fees	Typically imposed upon new developments to help pay for needed improvements. There must be a "nexus" or clear legal relationship between the fees and improvements, i.e. the fees must be allocated to the improvements specified.	The builder typically pays the impact fee, which is usually passed on to the ultimate property owner.	There must a legal relationship between the benefit received and fee imposed. Typically does not finance 100% of costs. Typically more popular among existing residents / businesses. Impact fees do not require a vote, but legal and other costs to set up the fee are high.
Excise Taxes	Typically imposed upon new developments to help pay for needed improvements. They are similar to impact fees in structure and are typically collected when a building permit is issued.	The builder typically pays the excise tax, which is usually passed on to the ultimate property owner.	Excise taxes do not require the establishment of a nexus, but must be approved by the voters.
Employment (head) tax	Tax imposed on employees or employers who work in the jurisdiction. Denver, for example, imposes an employment tax on both the employer as well as the employee. A portion of these funds is allotted to capital improvement projections.	Technique to assess people who work in one jurisdiction and reside elsewhere to help pay for their impacts on jurisdictional services. Potential business and economic development consideration for communities, depending on the tax level and benefits received.	Requires voter approval. A tool available to home rule cities only. Other jurisdiction types need enabling legislation.
Motor Vehicle Tax	Tax imposed on motor vehicle ownership. Tax was also used in Arapahoe County to help finance the E-470 toll road.	Difficult to institute because of multi-jurisdictional issues.	Requires voter approval.

Table AB-2
Funding Sources Summary

Source	Description	Funding Considerations	Administrative Considerations
Street Utility Fee Program	Street maintenance fee which is billed to users like a utility (i.e. stormwater) assessed to defray the costs of the maintenance of the community's streets.	Fee is based upon land use, an estimate of the relationship between traffic and land use, the generation of vehicle traffic on the community's street system, and the community's estimate of the cost of maintenance of the street system.	Was challenged in the City of Fort Collins as a tax, although City's authority was upheld. However, proved to be politically unpopular in City, so program was rescinded. Loveland has program. Combined with stormwater bill.
Districts			
Metropolitan Districts (Title 32)	Metropolitan or Title 32 districts are formed by a petition of property owners within the proposed district. Because districts are often formed at the onset of the development, the majority owner may be the developer with a small number of owners. Districts are used to finance roads, water, sewer, open space, and other related improvements.	Properties within the district pay the metro district debt through property taxes, fees, etc. Popular tool used throughout the jurisdictions within the study area.	Metro Districts must submit their service plans to their local jurisdictions. Districts are considered separate political subdivisions of the state and and can sign IGAs. Because there have been financial problems with districts in the past, jurisdictions should scrutinize the service plan and the assumptions made in the plan very closely.
General Improvement Districts (GID) or Public Improvement Distircts (PID)	Initiated by petition from majority of property owners or local legislative authority. Cities create GIDs and counties create PIDs. Jurisdictions issue General Obligation or revenue bonds to initiate improvements. Property tax revenues, rates, tolls, charges used to pay back bonds. Often referrred to as "taxing districts." Have the power to condemn property. Are considered separate political subdivisions of the state.	Most useful in financing improvements for a specific designated area. Improvements are "public" in nature; i.e. roadway, water / sewer	Cities or Counties govern the GIDs or PIDs. Glenwood Springs uses a GID for parking in their downtown area. PIDs are used infrequently.
Special Improvement Districts (SID) or Local Improvement Districts (LID)	Initiated by petition of majority of property owners or local legislative authority. Cities create SIDs and Counties create LIDs. Jurisdiction issues special assessment or general obligation bonds. Special assessments are then imposed to pay for the costs, with formulas calculated to determine the rate; those who receive more benefit pay more. They're not considered separate political subsidivisions; the local jurisdictions are the governing authority.	Most useful in financing improvements where a substantial portion of the benefit enhances a designated area and can be attributable to properties along the improvement, ie. street lighting, streetscapes. LIDs in counties with populations greater than 100,000 can impose a sales tax of not more than 1/2 of 1 percent.	A SID is used in Cherry Creek North to pay for streetscape. Aurora uses it to finance new road or road upgrades. Counties can use this tool in a municipality with its consent. LIDs have been used in Manitou Springs, Greeley and Olde Town Arvada.

Table AB-2
Funding Sources Summary

Source	Description	Funding Considerations	Administrative Considerations
Grants			
Energy & Mineral Impact Assistance	Funds administered through DOLA for communities affected by the decline of energy and mineral industries. Funds come from the state severance tax on energy and mineral production and portion of the state's share of royalties paid to the federal government for mining and drilling of minerals and mineral fuels on federally owned land.	Eligible projects for grants and loans include road improvements, water and sewer infrastructure, public facilities, fire protection and local government planning. General maximum grant of $300K	DOLA is the administering agency. Jurisdiction must be able to document link between impact and energy and mineral industries.
Economic Development	The Community Development Block Grant program has an infrastructure assistance program which is designed to create new permanent jobs and retain existing jobs, for low and moderate income persons. The funds, which can be in the form of a grant or low-interest loan, are federal funds from the U.S. Department of Housing and Urban Development administered through the State Office of Economic Development and the Department of Local Affairs.	Funds may be provided for roadways, water and sewer, gas and electricity, railroad spurs, lighting, sidewalks and alternative energy sources. Awards are between $100,000 and $500,000. At least one full-time equivalent job must be created /retained for every $20,000 of CDBG assistance.	Eligible applicants are non-entitlement cities and counties. Businesses eligible for this grant must make application through their local jurisdiction. The contact office is the State Office of Economic Development, Finance and Business Development Programs.
USDA	Grant and low-interest loan program to help fund community facilities in rural areas.	Funds can not be used to help building roadways; however, public facilities in these areas such as bus or transit buildings or shelters may be eligible.	Funded through the local office of the U.S. Department of Agriculture, Rural Development program.
Regional Organizations			
Rural Transportation Authority	A separate governmental entity which is empowered to finance, construct, operate and maintain a rural transportation system, which can be any kind of transportation and/or transit improvement. Created by intergovernmental agreement between at least two jursdictions, neither of which can be in a RTD (regional transportation district.)	Funding mechanisms include a 1) motor vehicle registration not to exceed $10 on each motor vehicle in the authorities' jurisdiction; 2) sales and use taxes not to exceed 1 percent; 3) visitor benefit tax not to exceed 2 percent of the price of overnight accommodations. The motor vehicle registration can be imposed by the RTA's board of directors without a vote; the other funding sources must go to a vote. RTA's are eligible to receive federal and state funds.	Requires voter approval. Separate ballot imtems are required for creating the RTA and for establishing any funding sources. The boundaries are not limited by existing local government boundaries; they may encompass all or a portion of any jurisdiction and may overlap multiple counties or municipalities.
Public Highway Authority	Public highway authorities can be formed in the state to finance, construct, operate or maintain all or a portion of a beltway or other transportation improvements in a metropolitan region which cannot be feasibly handled by one jurisdiction alone.	A highway authority is considered a separate subdivision of the state. Used in Colorado for E-470 and the Northwest Parkway. Funds are raised through the authorities' bonding authority with revenues derived from its ability to impose tolls and charges.	Generally, the jurisdictions through which the highway runs are represented on the governing board of the authority.

Table AB-2
Funding Sources Summary

Source	Description	Funding Considerations	Administrative Considerations
Revolving Loans			
State Infrastructure Bank	The State Infrastructure Bank (SIB) can make low interest loans or provide credit enhancements to local and private entities for transportation improvements. Eligible phases of a project include: planning, preliminary engineering, design, right of way acquisition, capital acquisition, and construction.	A revenue stream must be available for repayment of the loan. Has been used throughout the state by public entities. No private entity, although eligible, has yet accessed the fund. There is currently $2 million available for loans. The average size of the loan is $100,000 to $2.5 million. The interest rate is based on the prime rate and set by the Transportation Commission on an annual fiscal year basis.	Operated through CDOT
Land Use Funding Sources (Downtown)			
Main Street Program	The Main Street Program was developed by the National Trust for Historic Preservation in 1980 to work with communities across the nation revitalize their historic or traditional commercial areas. The Main Street program is designed to improve all aspects of the downtown or central business district.	Technical assistance is provided in areas such as urban design, planning, transportation, economics and marketing. The program does not provide direct cash grants or loans, however, it does provide funding recommendations.	The Main Street program in Colorado is operated through the Colorado Community Revitalization Program. There is a cost involved and the program selects the communities in which it works. Elizabeth and Kiowa, for example, can apply to go through the program at the same time, which would help alleviate costs and be more competitive in the selection process.
Business Improvement Districts	Initiated by a petition from majority of property owners. Created for the purpose of constructing public improvements and supporting economic and business development within the district. Can only cover parcels of commercial property. Created to provide services that URAs and DDas are not authorized to perform, i.e. consulting on planning, managing development activities, promotion or marketing, business recruitment, management, and development.	Can levy and collect property taxes; impose tolls, fees or charges for services. Can also issue general obligation and revenue bonds.	Authorized by local legislative body and operated by district board of directors. A variety of communities have instituted BIDs including Cherry Creek North and Denver 16th Street Mall.
Urban Renewal Authorities	Quasi-municipal organization create to halt the spread of "blight" and redevelop deteriorating areas. Authority board appointed by the mayor governs these authorities. Has a broad array of powers including the use of eminent domain and tax increment financing.	Can receive grants, loans, and conributions, sell or lease property. Can issue general obligation and revenue bonds and tax increment financing (TIF). TIF can be used on a "pay as you go" basis or to support revenue bonds. All TIF bonds require a vote of the general electorate.	Initiated by a local agency or a petition from majority of property owners. Required a "blight" designation and approval of a development plan. Authorized by the local legislative body and operated by an authority board of directors. There are URAs in Denver, Arvada, and Edgwater, among others.

Table AB-2
Funding Sources Summary

Source	Description	Funding Considerations	Administrative Considerations
Downtown Development Authorities	Downtown Development Authorities are created to prevent, and correct deteriorated economic or physical conditions in downtown areas.	Can levy and collect property taxes; impose fees, charges for services and special assessments. Can issue revenue bonds and use TIF financing.	Initiated by a majority vote of electors residing or owning or leasing property in an area that must be within the "central business district." Requires "blight" designation. Authorized by the local legislative body and operated by an authority board of directors. Required to have a development plan. There are DDAs in Fort Collins and Loveland among others.
Rail (i.e. grade crossings)			
Federal Railroad Administration Grade Separation Funds	CDOT receives about $2 million annually from the Federal Railroad Administration for railroad grade separation projects.	Because funds allocated annually to this fund are relatively limited, CDOT builds up the program over several years so that it becomes a more significant amount.	Fund requirements mandate that funds be disbursed after 4 years. CDOT typically funds projects that are in the design state or where other funds have already been allocated.

Source: Economic & Planning Systems

SH 83-86 Corridor Optimization Plan
Appendix C
Right-of-Way Exchange
Founders Parkway and State Highway 86

Purpose of the Proposed Exchange

The Colorado Department of Transportation and the Town of Castle Rock are considering exchanging right-of-way ownership and maintenance responsibilities for Founders Parkway, from Interstate 25 to State Highway 86, and State Highway 86, from Founders Parkway to Rock Street. Both CDOT and the Town agree the ownership swap is a logical decision based on the following:

- Founders Parkway provides a logical link on the state highway system from State Highway 86 to Interstate 25/US 85.
- State Highway 86 has developed into a more local, community-based roadway in the section from Founders Parkway to Rock Street.
- The addition of regional roadway signing, directing traffic onto Founders Parkway to reach Interstate 25, will reduce intrusive traffic-especially trucks-currently entering the downtown retail area to reach I-25. This will also increase safety in the downtown area, especially at the 5th Street railroad crossing.

This sub-study was conducted, as part of the overall Corridor Optimization Plan, to address the feasibility and impacts associated with the exchange of right-of-way, so that each owner better understands short-term and long-term issues associated with the change in ownership.

Elements Investigated

Wilson & Company investigated the following elements as part of this study:

- Regional Travel Patterns
- Capacity and Operations
- Safety and Access
- Environmental Mitigation
- Slope Impacts and Stability
- Additional Right-of-Way
- Pavement structure and condition, remaining service life
- Life cycle costs
- Drainage
- Compliance to Standards
- Conceptual Cost Estimates

Regional Travel Patterns

1. Founders Parkway is expected to carry two to three times more traffic than SH 86 by the year 2030.
2. Founders has a distinctly more direct alignment for both local and regional traffic than SH 86 for traffic desiring to travel between destinations north of Castle Rock along I-25 and US 85 and to the east and south of the Founders/SH 86 intersection. This travel pattern is expected to increase over time relative to other travel patterns along Founders.
3. Founders provides a more clear and less intrusive route through Castle Rock as compared to other possible routes between SH 86 to the east of Town and I-25 and US 85, and could have appropriate signing to facilitate wayfinding.
4. There are no at-grade railroad crossings along Founders, whereas most of the traffic to and from SH 86 at its terminus at Rock Street crosses the mainline freight tracks at Fifth Street.
5. Directness, intrusiveness, clarity of route, and the absence of railroad crossings are particularly important factors for unfamiliar drivers and truck traffic.

Capacity and Operations

1. Founders Parkway is anticipated to accommodate the projected year 2030 traffic demands at acceptable levels of service, with the current lane configuration, supplemented by the implementation of six lanes along the northern part of the roadway by converting the auxiliary lanes to through lanes as proposed in the Town's transportation master plan. Construction of acceleration/deceleration

lanes per the Town's access management plan will optimize operations along the corridor.

2. SH 86 will require additional capacity to accommodate traffic in this same horizon through the implementation of turn lanes at key locations and completion of the eastbound climbing lane from Rock Street to Founders.

Safety and Access

CDOT accident data along SH 86 suggests no current safety problems. However, several intersections and driveways have combinations of sight distance limitations, minimal turn lanes, and steep grades that pose safety concerns. Some of these locations can be addressed with access consolidations and relocations, construction of turn lanes, and other measures.

1. The Woodlands Boulevard intersection might be a reasonable and needed signal location.
2. The proximity of the day care center access on the north side of SH 86 to the Valley Drive intersection is not sufficient to provide back-to-back left turn lanes, and its relocation seems infeasible due to grades. Side-by-side left turn lanes would widen SH 86 in addition to the proposed climbing lane and right turn lanes at a location where a substantial retaining wall would be needed to provide those features, and where little room exists for further widening without impacting the alignment of Valley Drive south of SH 86. One possible operational mitigation is to restrict the day care center access to right-in-right-out.
3. The church access between Valley Drive and Castle Crest Drive has limited sight distance. Slope modifications adjacent to the driveway and provision of a median acceleration lane are possible mitigations.

No accident data was available along Founders Parkway.

Environmental Mitigation

1. Improvements required to upgrade Founders to an acceptable condition to serve as a state highway appear to have no associated environmental issues.
2. Improvements to SH 86 might move the edge of the traveled way closer to a few residences between Founders and Castle Crest Drive.

Slope Impacts and Stability

Founders Parkway

1. Analysis of the as-constructed typical sections indicates substantial cut slopes will be necessary at the right (southern) edge of the roadway between Crowfoot Valley Road and Scott Road as part of widening and roadside grading/drainage improvements.
2. The existing cut slope on the left edge between Valley View Road and Castle Oaks Road includes several high voltage electric line towers perched above the roadway. Widening and roadside grading/drainage improvements will significantly encroach on these slopes.

State Highway 86

1. Shoulder improvements are recommended immediately east of Rock Street on the right of SH86. These improvements, with sufficient drainage/ditch improvements, will encroach onto existing slope backing up to existing development. A conceptual wall has been indicated on the concept plans to mitigate these slope impacts.
2. Miscellaneous grading easements and retaining walls will be required throughout on both edges of the roadway, upon widening from Woodlands Boulevard to Valley Drive.
3. A major retaining wall will be required along the right edge of SH86 between Valley Drive and the church entrance at station 80+00. This wall may approach 20' in height and will be a visual change for residential properties along Valley Drive

south of SH86. Flattening the existing SH86 curve and shifting the proposed edge of pavement north might feasibly reduce the height of this wall.

4. The addition of auxiliary, access lanes and climbing lanes east of Valley Drive will encroach onto existing rock slopes and will require significant retaining walls to mitigate grading impacts.

Additional Right-of-Way

The proposed right-of-way width shown on the concept plans for Founders Parkway was included on typical sections provided by CDOT. The urban (curbed) typical section indicates a minimum proposed right-of-way of 143'-8" between intersections and 148'-8" at intersections. The rural typical section indicates a constant proposed right-of-way of 138', although this analysis and the cost estimates have assumed additional right-of-way at intersections with auxiliary lanes. The analysis to date has not included additional permanent right-of-way acquisition for slope impacts, but assumes that temporary grading easements would be negotiated.

The concept plans do not identify specific right-of-way improvements to State Highway 86 on a typical section basis, as the Founders Parkway analysis has done. As a basis for potential cost implications of additional right-of-way, this analysis assumed the proposed right-of-way would be placed at the minimum clear zone requirement.

Pavement structure and condition, remaining service life

The existing concrete pavement along Founders Parkway has been assessed by CDOT, Region 1 Materials through a pavement rehabilitation study in summer, 2003. The study defined the distress levels for this pavement as low to high, dependent on specific location. A major factor in those areas defined as medium to high distress is the lack of sufficient roadside drainage. No specific analysis of remaining service life has been completed to date.

Specific studies have not been performed to assess the pavement condition of SH86 through this project. Field observations do not indicate any specific areas where the pavement condition would dictate complete replacement. As such the cost estimates have assumed the existing pavement may be rehabilitated via a typical mill and overlay, in combination with the widening improvements. No specific analysis of remaining service life has been completed to date.

Life cycle costs

The pavement rehabilitation study performed by CDOT provided four potential solutions to replace the defective pavement along Founders Parkway. The life cycle cost analysis assumed 20-year ESALS and a 30-year design life. Table AC-1 summarizes the proposed options:

Table AC-1

Option	Thickness within existing pavement	Thickness within widening areas	Initial Construction Cost	Life Cycle Cost
Remove and replace w/PCCP	8.75" PCCP	8.75" PCCP	$8,625,603	$9,150,147
Remove and replace w/ HBP	10.5" HBP	10.5" HBP	$6,034,810	$7,993,009
PCCP w/ HMA bond breaker	2" HMA 6.5" PCCP	8.75" PCCP	$8,747,938	$9,272,477
Rubblize concrete w/ HBP Overlay	6.5" HBP	10.5" HBP	$5,392,426	$7,350,625

The cost estimates developed for this analysis assumed the rubblized concrete with HBP overlay option.

No life cycle cost analysis has been performed for State Highway 86.

Drainage

As noted previously, the main contributor to pavement distress along Founders Parkway is a lack of sufficient roadside drainage. As part of the improvements, typical 6:1 slopes and roadside ditch grading should be implemented to better define roadside drainage. The conceptual earthwork quantities and cut/fill lines shown on the concept plans and cost estimates have assumed 6:1 side slopes for 12 feet.

The rubblized concrete and HBP overlay option also recommends including french drains at the lower edge of the proposed pavement. Costs for these have been included both in the life cycle costs for pavement improvements and the overall cost estimates developed for Founders Parkway.

No specific drainage problems are evident along SH86, but there does appear to be a lack of sufficient roadside drainage ditches through the narrow reaches. The retaining walls proposed in the concept plans will create a very confined roadway in areas east of Valley Drive. Significant drainage improvements, including multiple inlets and minor culverts, will likely be necessary to mitigate drainage concerns through this reach.

Compliance to Standards

The existing typical section along Founders Parkway does not provide paved shoulders. The proposed typical section will provide shoulders consistent with CDOT standards. The existing horizontal curves along Founders Parkway were analyzed based on AASHTO 2000 standards, applying a maximum superelevation of 4%. One curve from stations 193+00 to 198+00 meets a 45 mph design speed. All other curves along the roadway meet a 50 mph design speed or greater.

The existing roadway along SH86 will require shoulder improvements along with additional laneage. The conceptual plans have provided 8-foot shoulders adjacent to though travel lanes and 4-foot shoulders adjacent to auxiliary lanes. All existing curves along SH86 exceed a 50mph design speed based on a maximum superelevation of 4 percent.

Conceptual Cost Estimates and Concept Plans

Cost estimates have been developed that represent conceptual improvements to the roadway segments. Key assumptions regarding these estimates include:

Founders Parkway

1. The existing pavement condition warrants complete replacement of the pavement from Interstate 25 to State Highway 86. Consistent with the life cycle costs, a rubblized pavement section is included in the conceptual costs.
2. Improvements from Interstate 25 to Woodlands Boulevard assumed only pavement reconstruction.
3. Improvements from Woodlands Boulevard to State Highway 86 were developed for three scenarios:
   a. Initial Concept
      - Woodlands Boulevard to Beechnut Place - 35'-8" raised median with 4' inside shoulder, outside curb and gutter.
      - Beechnut Place to SH 86 - 30' raised median with 4' inside shoulder, 10' outside shoulder.
   b. Alternative A
      - Woodlands Boulevard to Beechnut Place - 20' raised median with 0' inside shoulder, outside curb and gutter.
      - Beechnut Place to SH 86 - 20' raised median with 0' inside shoulder, 10' outside shoulder.

c. Alternative B

- Woodlands Boulevard to SH 86 - 20' raised median with 0' inside shoulder, outside curb and gutter.

Alternative B is recommended as the proposed typical section.

State Highway 86

1. Improvements to State Highway 86 assume the existing pavement can be rehabilitated through a conventional mill and overlay, while widening where additional laneage requires. Where widening is required, the pavement section is assumed to be identical to the widened pavement section along Founders Parkway.
2. Auxiliary lanes have been depicted to improve access, and safety along State Highway 86.
3. The existing, eastbound climbing lane is extended from Valley Drive to Founders Parkway.

A separate technical memorandum has been prepared, including cost estimating documentations, typical sections, and conceptual plans that depict the improvements necessary for each section of roadway, along with design/impact issues that must be addressed at a future date.


DENVER
CLEAR CREEK
Byers
Deer Trail
Lowland
Agate
Kiowa
Cedar Point
Castle Rock
ELBERT
DOUGLAS
SOUTH PARK
Fair Play
Kenosha
Jefferson
Elizabeth
Elbert
Little Buttes
Fairy Glen
Swallows