

Crossroads Area

Transportation Study

Prepared for:

North Front Range MPO

January 2003

Prepared By:

AECOM CONSULT

A Division of DMJM+HARRIS

*2950 Professional Place, Suite 200
Colorado Springs, CO 80904
Phone: (719) 386-8300*

In Association With:



PARSONS TRANSPORTATION GROUP

TABLE OF CONTENTS

1.0	INTRODUCTION.....	9
1.1	STUDY LOCATION.....	9
1.2	STUDY OBJECTIVES AND INITIATION	9
1.3	STUDY PROCESS.....	12
1.3.1	STEERING COMMITTEE	12
1.3.2	STAKEHOLDERS GROUP	13
1.3.3	OPEN HOUSES	13
1.3.4	PERSONAL CONTACTS	14
2.0	EXISTING CONDITIONS.....	17
2.1	ENVIRONMENTAL REVIEW	17
2.2	TRANSPORTATION INVENTORY	19
2.2.1	HIGHWAYS.....	19
	Interstate 25	19
	US Highway 34.....	19
	State Highway 392	19
2.2.2	COUNTY AND MUNICIPAL ROADS	19
	Boyd Lake Avenue (County Road 9).....	19
	Crossroads Boulevard (County Road 26)	21
	County Road 3	21
	County Road 30	21
	Others.....	21
2.2.3	EXISTING INTERCHANGES.....	22
	I-25 and State Highway 392	22
	I-25 and Crossroads Boulevard	23
	I-25 and US34	23
2.2.4	EXISTING FACILITIES FOR ALTERNATIVE MODES OF TRANSPORTATION	23
2.2.5	EXISTING TRANSPORTATION OPERATIONS.....	24
	Volume Analysis.....	24
	Levels of Service Analysis	27
2.2.6	CONGESTED TURNING MOVEMENTS OR LANES AT PROBLEMATIC INTERSECTIONS	
	28	
	West Frontage Road and Southbound Exit Ramp at County Road 32.....	28
	Northbound Off-Ramp and Westgate Road at State Highway 392—Approach with Stop Control.....	30
	County Road 3 and State Highway 392—Approach with Stop Control.....	30
	Rocky Mountain Boulevard and US34—Signalized	30
	County Road 3 and US Highway 34—Approach with Stop Control	30
2.2.7	ACCIDENT ANALYSIS	30
2.3	LAND USE CONDITIONS.....	31
2.3.1	EXISTING LAND USES	31
2.3.2	COMMUNITY TRANSPORTATION PLANS	31
2.3.3	PROPOSED ROADWAYS.....	31
	City of Loveland.....	31
	Town of Windsor	34
2.3.4	PROPOSED PEDESTRIAN FACILITIES.....	34
2.3.5	PROPOSED BICYCLE FACILITIES	34
2.3.6	PROPOSED RAIL FACILITIES.....	34
2.3.7	PROPOSED TRANSIT SERVICES	34
3.0	FUTURE CONDITIONS	38
3.1	MAJOR DEVELOPMENT PROPOSALS/OPPORTUNITIES.....	38
3.2	LAND USE FORECASTS	40
3.2.1	“BASELINE” SOCIO-ECONOMIC FORECAST	40
3.2.2	SOCIO-ECONOMIC FORECAST METHODOLOGY	41

Housing	41
Retail/Service	42
Office/Flex	42
3.2.3 "MARKET-DRIVEN" SOCIO-ECONOMIC FORECAST	45
3.3 TRAFFIC FORECASTS	46
3.3.1 DEVELOPMENT OF REGIONAL MODEL	46
3.3.2 ROADWAY NETWORK MODIFICATIONS	46
3.3.3 TRIP GENERATION MODIFICATIONS	46
4.0 RECOMMENDATIONS	48
4.1 FUTURE ROADWAY NETWORK	48
4.1.1 GOALS FOR THE NETWORK	48
4.1.2 METHODS	49
Compatibility with Local and Regional Plans	49
Developer Plans	49
Evaluation of Existing and Future Traffic and Operations	49
Public and Stakeholder Consultation	49
4.1.3 MAJOR ELEMENTS OF NETWORK ALTERNATIVES	49
4.1.4 RECOMMENDED ROADWAY NETWORK	50
Significant Features of the Recommended Roadway Network	50
Future Traffic Volumes and Levels of Service on the Recommended Roadway Network	52
4.2 FUTURE INTERCHANGE CONFIGURATIONS	55
4.2.1 ALTERNATIVE SCREENING PROCESSES	55
4.2.2 I-25 AND STATE HIGHWAY 392	55
Goals for the New Interchange	56
Concept Alternatives and Recommendation	56
4.2.3 I-25 AND CROSSROADS BOULEVARD	56
Goals for the New Interchange	59
Concept Alternatives and Recommendation	59
4.2.4 I-25 AND US HIGHWAY 34	59
Goals for the New Interchange	59
Concept Alternative and Recommendation	60
Potential Short-term Safety Improvements	60
4.3 ALTERNATIVE MODE IMPROVEMENTS	63
4.3.1 FUTURE PASSENGER RAIL	63
4.3.2 BICYCLE AND PEDESTRIAN FACILITIES	63
4.3.3 TRANSIT	63
4.3.4 INTERMODAL TRANSFER STATION	66
5.0 IMPLEMENTATION OF RECOMMENDED IMPROVEMENTS	67
5.1 PHASING IMPROVEMENTS	67
5.2 ESTIMATING AND PHASING IMPROVEMENT COSTS	69
5.3 IMPROVEMENT PROJECT CATEGORIES AND EXISTING FUNDING	69
5.4 FUNDING ALTERNATIVES	72
5.4.1 FUNDING ALTERNATIVES FOR "AREA" IMPROVEMENTS	73
5.4.2 FUNDING ALTERNATIVES FOR "REGIONAL" IMPROVEMENT	73
5.4.3 FUNDING ALTERNATIVES SUMMARY	76
5.5 RECOMMENDED ACTION STEPS	76

TABLE OF FIGURES

Figure 1: Existing & Recommended Transportation Network	7
Figure 2: Boundaries Of The Study Area	10
Figure 3: Property Owner Contact Information	15

Figure 4: Existing Environmental Conditions	18
Figure 5: Existing Road Network.....	20
Figure 6: Existing Alternative Modes of Transportation	25
Figure 7: Existing Traffic Volumes	26
Figure 8: Existing Level of Service.....	29
Figure 9: Existing Developments & Corporate Limits.....	32
Figure 10: Proposed Roadway Network, City of Loveland.....	33
Figure 11: Proposed Roadway Network, Town of Windsor.....	35
Figure 12: Existing / Proposed Bikeway & Multi-Use Path System, City of Loveland	36
Figure 13: Existing / Proposed Transit System, City of Loveland	37
Figure 14: Existing/Proposed Roads & Parcels	39
Figure 15: Proposed Roadway Network.	51
Figure 16: 2020 Design Hour Traffic Volumes	53
Figure 17: 2020 Design Hour Level of Service	54
Figure 18: SH 392 Single Point Urban Interchange.....	57
Figure 19: Crossroads Diamond Interchange	58
Figure 20: US 34 Full Directional Interchange.....	61
Figure 21: US 34 Existing Interchange, Conceptual Safety Improvements	62
Figure 22: US 34 Full Directional Interchange, Potential Commuter Rail Alignment	64
Figure 23: Existing/Proposed Alternative Modes of Transportation	65
Figure 24: Proposed Roadway Network & Construction Phasing.....	68

INDEX OF TABLES

Table 1: Cost/Revenue Summary	8
Table 2: Property Owner Contact Information.....	16
Table 3: Characteristics of Existing Roadways	21
Table 4: Definitions for Level of Service for Signalized Intersections.....	27

Table 5: Turning Movements & Lanes with LOS D or less	28
Table 6: Baseline Socioeconomic Forecasts	41
Table 7: Specific Development Opportunity Area Characteristics	42
Table 8: “Market-Driven” Socioeconomic forecasts	45
Table 9: Project Funding Sources and Cost Estimates	70
Table 10: Local network Cost Summary	72
Table 10: Local Network Cost Summary	72
Table 11: Local Revenue Forecast Summary.....	74
Table 12: Potential RTA Revenues	75

Study Summary

The Crossroads Area Transportation Study is the result of a cooperative transportation planning effort sponsored by the following entities: the City of Loveland, Town of Windsor, Larimer County, the North Front Range Metropolitan Planning Organization (MPO), and the Colorado Department of Transportation (CDOT). Funds for the study came from these project sponsors and from McWhinney Enterprises, a major landowner and developer in the study area. The Study was conducted by DMJM+HARRIS in association with Parsons Transportation Group between June 2000 and April 2001.

A six-mile long segment of I-25 is the north-south axis for the study area, which extends one and one-half miles to the east and west of the interstate, creating an eighteen square mile rectangle. The area includes three interchanges on I-25 at US Highway 34, Crossroads Boulevard, and State Highway 392. These interchanges provide direct access from the interstate to the City of Loveland and the Town of Windsor, and are major gateways to the Cities of Greeley and Fort Collins. Because of its strategic location, the Crossroads Area is now entering what is anticipated to be a period of steady, if not rapid, growth, including significant retail and office/industrial development. The Fort Collins/Loveland Airport and the Prime Outlet Stores already exist within the Loveland portion of the study area, and a number of large projects including McWhinney Enterprises' Centerra development and the Larimer County Fairgrounds & Events Center are in the planning stage. Several large residential developments are already approved and under construction in the Windsor portion of the study area, and additional residential developments are being planned there.

Because of the significance of the Crossroads Area as a transportation hub for the region and because of growing development pressure in the area, the project sponsors believed there was an urgent need to develop a comprehensive, multi-jurisdictional and multi-modal transportation plan. There are examples of earlier land use decisions by individual jurisdictions in the area that have created obstacles for the development of an effective transportation system. The sponsors believed that failure to identify and implement a comprehensive transportation plan would result in future transportation improvements that would be less effective and considerably more expensive.

The results of the Crossroads Area Transportation Study include the following:

- Inventory of existing conditions in the study area with respect to land use, environmental conditions, transportation infrastructure, and traffic operations.
- Division of the transportation infrastructure into several broad categories: Local improvements, primarily serving the immediately adjacent land uses; Area improvements serving land uses throughout the study area; and Regional improvements providing benefits beyond the boundaries of the study area.
- Projections of residential, retail, and office/industrial development within the study area over the next twenty years.
- Identification of multi-modal transportation infrastructure for the area necessary to adequately serve projected residential, retail, and office/industrial development, together with projected timeframes for the construction of Area and Regional improvements serving the development. The study provides a "blueprint" for cooperating jurisdictions to use in reviewing and approving future development proposals.

- Identification of alternative strategies for funding Area and Regional transportation infrastructure over the twenty year planning period. These alternative strategies are based on cooperative partnerships between the public and private sectors.

Figure 1, on the following page, illustrates the first four results. The existing and recommended transportation network is overlaid on an aerial photograph of the study area. Area and Regional transportation improvements are shown in color. These Area and Regional improvements are color coded to depict the projected timeframes for construction over the twenty-year planning period.

Table 1 presents a summary of the costs of Area and Regional improvements. Total costs, in today's dollars, are estimated to exceed \$308 million. Beneath these costs, the table identifies revenues that could be generated from a variety of existing and proposed sources, including impact fees on new development, additional property taxes or development fees, sales and use tax sharing, a rural transportation authority (RTA), and state and federal funds.

The evaluation of potential funding sources for transportation improvements in the Crossroads Area suggests that the projected development activity in the area over the next twenty years could provide funds sufficient to construct all of the improvements. Landowners and developers would be directly responsible for the construction of local improvements as part of the normal land development process. Area improvements could be funded by a combination of existing funding mechanisms, property taxes, developer fees and sales tax revenue generated within the study area. These funding alternatives would require cooperation between area landowners/developers and the local jurisdictions. The construction of the regional transportation improvements recommended by the report may be funded eventually with traditional state and federal funds, but the creation of a Rural Transportation Authority (RTA) could accelerate that process.

The process for developing these results and the results themselves are described in more detail in the remainder of this report. Much of the technical information developed during the course of the study is included in the Technical Appendices.

Figure 1: Existing & Recommended Transportation Network

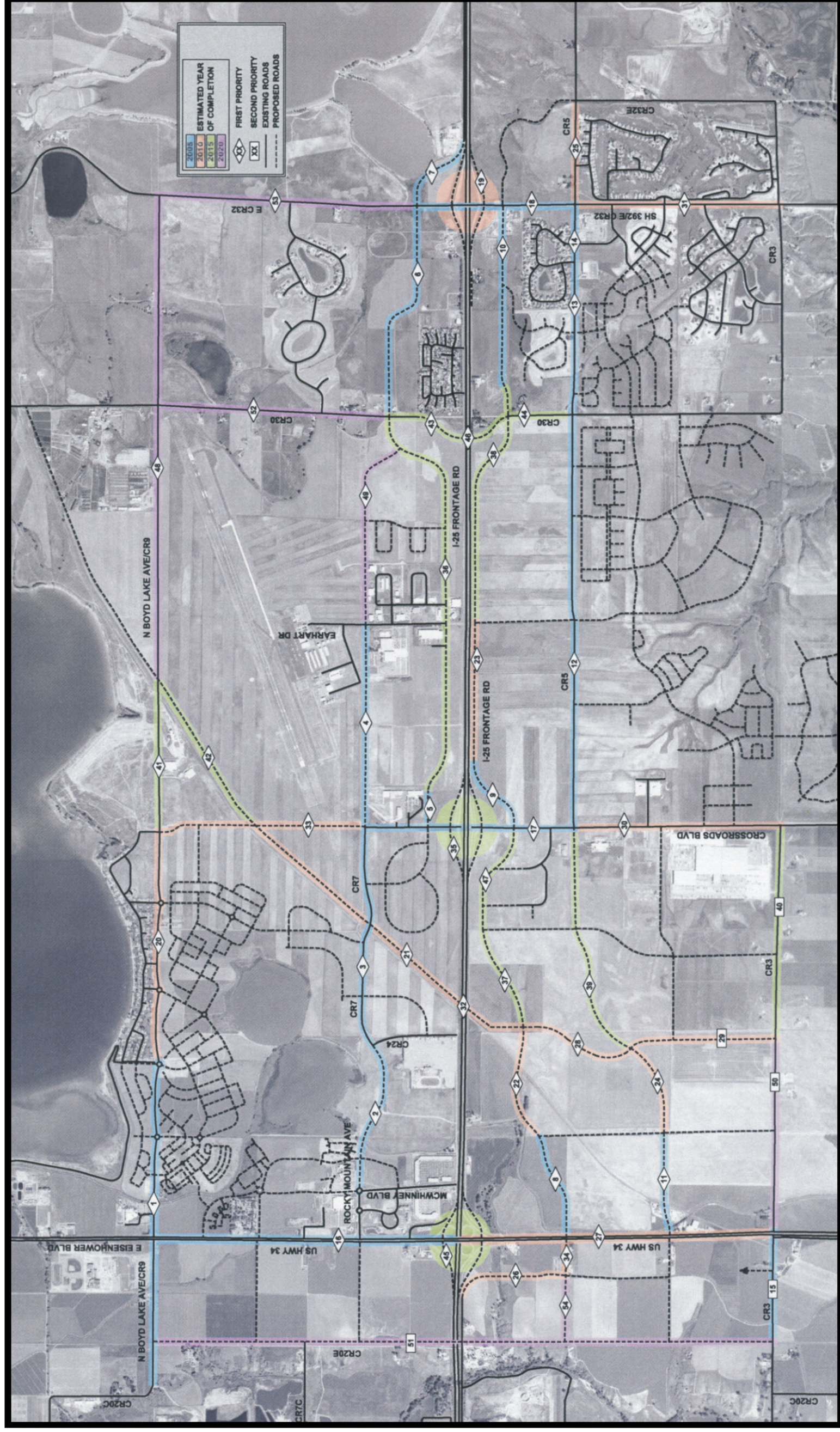


Table 1: Cost/Revenue Summary

	2000-2005	2005-2010	2010-2015	2015-2020	Total
Costs (Includes ROW Estimates)					
Improvements Total	\$63.4	\$73.6	\$113.0	\$58.0	\$308.0
Funded Projects Total	\$34.7	\$30.2	\$18.3	\$16.9	\$100.1
Funding Shortfall	\$28.7	\$43.5	\$94.7	\$41.1	\$207.9
Revenue Needed					
Area Improvement Projects	\$2.0	\$3.1	\$13.4	\$17.1	\$35.6
Regional Improvement Projects	\$26.7	\$40.4	\$81.3	\$23.9	\$172.3
	2000-2005	2005-2010	2010-2015	2015-2020	Total
Potential Revenue Sources					
For Area Improvements					
25 Mill Property Tax (GID/SID)	\$4.7	\$15.2	\$24.5	\$32.9	\$77.3
Sales/Use Tax Sharing (25%)	\$2.8	\$5.3	\$7.6	\$9.5	\$25.2
Developer Fee (\$1.00/SF)	\$3.3	\$2.4	\$2.8	\$1.7	\$10.2
			Potential Funding Available:		\$112.7
For Regional Improvements:					
Potential Rural Transportation Authority (RTA)					
RTA* Sales Tax (0.50%)	\$3.8	\$22.6	\$29.0	\$36.3	\$91.7
RTA* License Plate Fee (\$7.50)	\$0.4	\$2.4	\$3.0	\$3.5	\$9.4
RTA* Visitor Benefit Tax (1%)	\$0.2	\$1.4	\$1.7	\$1.8	\$5.2
			Potential Funding Available:		\$106.2**
**Could be used to match State/Federal funds that might be available					
Definitions:					
Funded Projects: Projects already in government capital improvement projects (CIPs).					
Area Improvement Projects: Funded through impact fees imposed on new development.					
Regional Improvement Projects: Funded through combination of CIP \$ and matching state/federal funds.					
*Based on estimated share of RTA influenced by Crossroads Subarea Transportation Plan.					
All figures in millions of dollars.					

Source: DMJM+HARRIS and Leland Consulting Group

1.0 INTRODUCTION

1.1 STUDY LOCATION

The boundaries of the Crossroads Study Area are County Road 20E on the south, County Road 9 (North Boyd Lake Avenue) on the west, County Road 32E on the north, and County Road 3 on the east. Interstate 25 runs through the center of the study area on a north/south axis. The east and west boundaries are one and one-half miles on either side of the interstate, making the study area three miles wide. US Highway 34 runs east/west near the south end of the study area, and State Highway 392 (which becomes County Road 32 on the west side of I-25) runs east/west near the north end. The north and south boundaries are one-half mile south and north of these highways, making the length of the study area six miles. The area enclosed by these boundaries totals eighteen square miles, or 11,520 acres.

Portions of the study area are within the city and town limits of Loveland and Windsor, with the remainder in unincorporated Larimer County. Figure 2, illustrates the boundaries of the study area and the city and town limits of Loveland and Windsor.

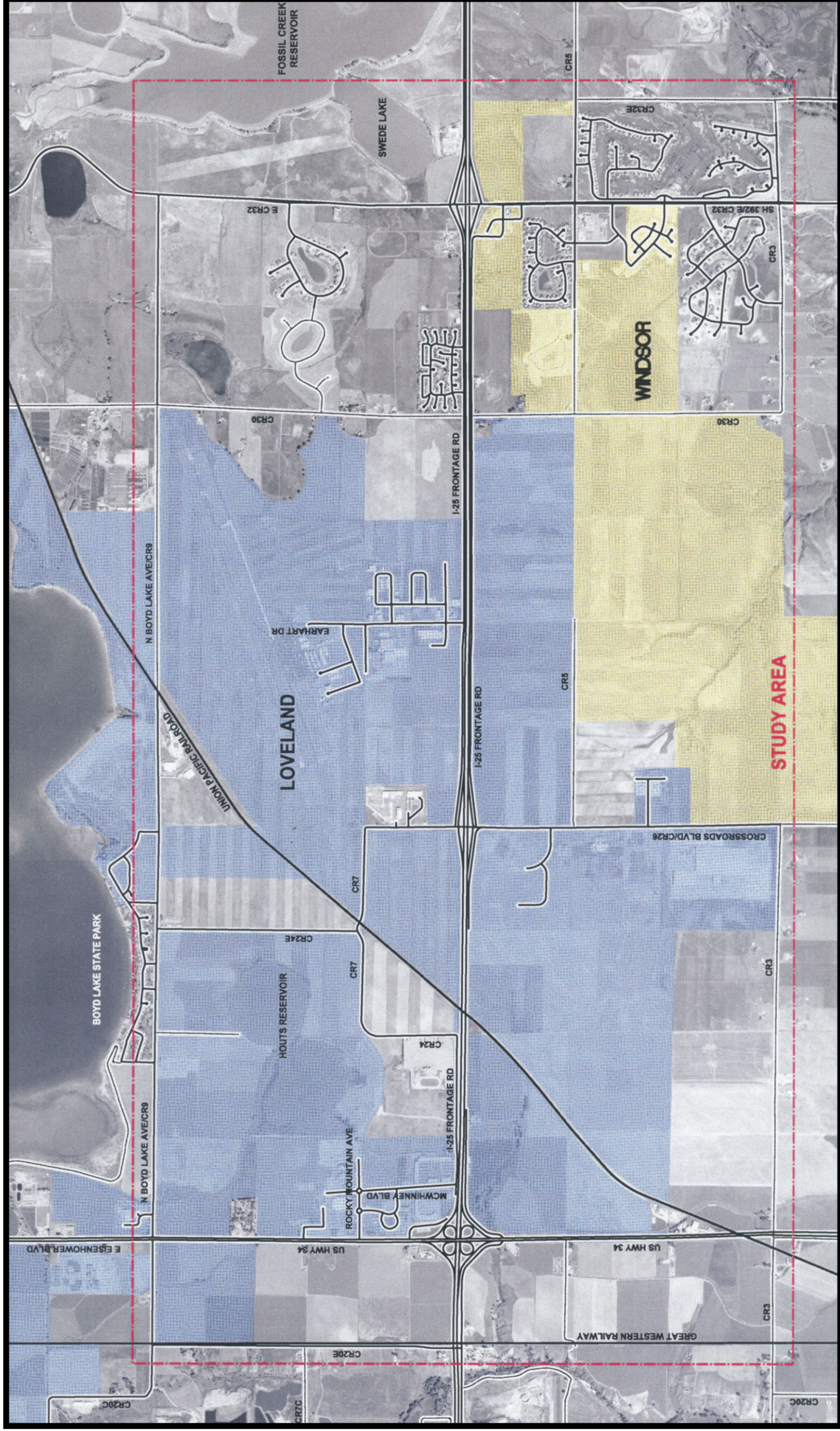
1.2 STUDY OBJECTIVES AND INITIATION

While the communities of Loveland and Windsor have been growing rapidly for several years, the Crossroads Area has seen relatively little development activity. On the north end of the study area, there are a number of residential developments in unincorporated Larimer County including County Meadows, Highland Hills, Mountain Range Shadows, Ptarmigan and Eagle Ranch Estates. Toward the south, there are several office/industrial uses near the Fort Collins/Loveland Airport and the Wal-Mart Distribution Center on Crossroads Boulevard east of the interstate. However, at the time of this report, the majority of the study area is still undeveloped.

The development of the Prime Outlet Stores in the northwest quadrant of the I-25/US34 interchange brought into the focus the potential for significant retail and commercial development. McWhinney Enterprises, the developer of the Prime Outlet stores and a major landowner/developer on the south end of the study area, is planning a retail and employment center in the City of Loveland on approximately four square miles of the eighteen square mile study area.

In the Town of Windsor, retail and commercial developments are underway in the northeast and southeast quadrants of the I-25/SH392 interchange. Plans have been submitted for residential development on the majority of the Windsor portion of the study area, continuing the pattern of residential development begun by the county developments along the SH392 corridor.

Figure 2: Boundaries Of The Study Area



Larimer County has acquired approximately 140 acres in the northeast quadrant of the I-25/Crossroads Boulevard interchange for the new Larimer County Fairground & Events Center.

This interest along I-25 between US34 and SH392 prompted Loveland, Windsor, and Larimer County to discuss a cooperative transportation planning effort for the area. The Colorado Department of Transportation (CDOT) and the North Front Range MPO (NFRMPO) were involved in this initial discussion because of the potential impacts on state and federal highways and on the regional transportation system. The five entities agreed to sponsor a Crossroads Area Transportation Study to address the following issues:

- The need to expand the capacity and improve the safety of the transportation network in the study area, but to reduce travel demand on the state highway system. This could require development of parallel roadways and the provision of multi-modal opportunities in an effort to limit impacts on the state highway system.
- The need to coordinate development with the timing of transportation improvements, particularly the timing of major investments in interchanges and other major state highway improvements.
- The need to develop mechanisms to fund transportation improvements in a way that apportions the costs fairly and equitably amongst all those who benefit.
- The need to develop a multi-jurisdictional transportation plan that is consistent with the goals, plans and policies of the participating jurisdictions and surrounding communities.

A Request for Proposals (RFP) was drafted to solicit consulting services for the study. The RFP described the desired results of the study as follows:

- Evaluation of existing transportation issues in the Crossroads Area.
- Identification of future transportation issues associated with continuing development.
- Development of an “ultimate” plan of improvements, including modifications of the state highway system and improvements to municipal and county roads and transit systems.
- Scenarios for interim or phased improvements to address the impacts of short-range development.
- Options for financing interim or phased improvements as well as ultimate improvements.
- Recommendations for implementation of the plan of improvements and financing plan.

Based on the RFP, the cost of the study was estimated to be \$200,000 to \$250,000. Recognizing the benefits of the study for area developers and landowners in the area, the project sought contributions from these interests for the study. The majority of the funding for the study came from seven sources:

The City of Loveland	\$50,000
Larimer County	\$58,700
McWhinney Enterprises	\$50,000
North Front Range MPO	\$40,000
Colorado Department of Transportation	\$21,800
Town of Windsor	\$10,000
City of Fort Collins	\$10,000
Total	\$240,500

After written proposals and interviews by qualified consultants, the firm of DMJM+HARRIS was selected to complete the study. The NFRMPO was the contracting agency for the study.

1.3 STUDY PROCESS

The consulting team, headed by DMJM+HARRIS, began work on the study in June 2000. The study was substantially completed in February 2001, and the consultants provided a first draft of the final report in April 2001. The final draft of the report was completed in June 2001.

The language contained within the RFP directed the consultants to use a process that would insure a cooperative effort between the sponsoring agencies and the developers and landowners within the study area. Specifically, the RFP stated: "Responsibility for overseeing the study will rest with a project management team which includes representatives from the participating local governments, CDOT, and the North Front Range transportation planning region. The consultant should propose a plan to include the project management team, participating developers and landowners, and other affected interests in the planning process using an advisory committee or other mechanism."

The RFP also directed the consultants to provide opportunities for the general public to review information during the course of the study and provide comments: "The Consultant should propose a detailed plan for public participation aimed at coordinating this study with other planning efforts, (and) soliciting input from affected communities and interests at appropriate points in the study..."

In response to these requirements, the study process included four major participation elements:

- Steering Committee
- Stakeholders Group
- Open Houses
- Personal Contacts

1.3.1 Steering Committee

The Steering Committee was comprised of representatives from the five sponsoring government entities: City of Loveland, Town of Windsor, Larimer County, NFR MPO, and CDOT. The Steering

Committee met frequently with the Consultants during the course of the study to review the work of the Consultants and provide direction. Agendas and minutes from the Steering Committee meetings may be found in Appendix A, The Crossroads Area Transportation Study Process.

1.3.2 Stakeholders Group

The Stakeholders Group was formed early in the study process and included invited representatives from key interest groups. Stakeholders Group members included representatives from other government entities (the cities of Fort Collins and Greeley, the Town of Johnstown, and Weld County), landowners and developers in the study area, and homeowners associations from existing residential developments in the study area.

During the course of the study, three milestone meetings were held with the Stakeholders Group to present significant finding, solicit comments and suggestions, and search for consensus on preferred alternatives and recommendations. A fourth Stakeholders Group meeting was held to present information on improvement costs and alternative financing strategies. Agendas and meeting minutes from the four Stakeholders Group meetings are included in Appendix A.

The Stakeholders Group meetings were extremely helpful in developing transportation network alternatives that were compatible with multiple development proposals in the study area, and in identifying opportunities for cooperative planning and implementation strategies on individual elements of the network. The meetings also served to build support for an effective partnership between the public and private sectors in funding the preferred improvements.

1.3.3 Open Houses

Three Open Houses for the general public were held on August 14 and October 20, 2000 and January 22, 2001. The first Open House was intended to acquaint the public with objectives, scope, and schedule for the study. The second Open House presented alternatives for the transportation network in the study area and for configurations of reconstructed interchanges along I-25. This Open House sought to gauge public support for the various alternatives and to determine if there were issues or problems with the alternatives that had been overlooked. The final Open House presented the preferred alternatives for the transportation network and interchange configurations and provided information about possible financing strategies for the improvements.

Each Open House provided opportunities for the public to submit written comments about the information presented, and copies of the comments received are included in Appendix A. In general, most of the Open House participants seemed to understand the purpose of the study, and many recognized the need for specific improvements such as modification or reconstruction of the interchange at I-25 and SH392. Existing residents in the study area expressed considerable concern about proposed improvements that were perceived as having negative impacts on their properties, such as the widening of County Road 5 adjacent to County Meadows or the relocation of the frontage road adjacent to Mountain Range Shadows. Existing residents also expressed concern about the extent, intensity, and timing of projected development in the study area. There was general recognition of the need to limit traffic congestion on I-25, although some participants favored additional lanes on the interstate over parallel road improvements. Public comments tended to favor single point urban configurations for interchanges because they were perceived as having fewer traffic signals and therefore fewer delays than multi-signal configurations. Some participants expressed concern that the proposed improvements would primarily serve automobile traffic rather than promoting alternative modes of transportation. Others were concerned that a

strategy to fund the transportation improvements would have the effect of inducing more intense or accelerated growth in the study area.

1.3.4 Personal Contacts

During the course of the study, a member of the DMJM+HARRIS team attempted to contact key landowners and developers in the study area individually to gain a better understanding of these individuals' plans for their properties, which was information that may not have been readily shared in larger group meetings. Figure 3 and Table 2, identify those property owners/developers who were contacted, indicates whether or not they were part of the Stakeholders Group for the study, and notes the status of the development plans for the subject property at the time of the study.

Figure 3: Property Owner Contact Information

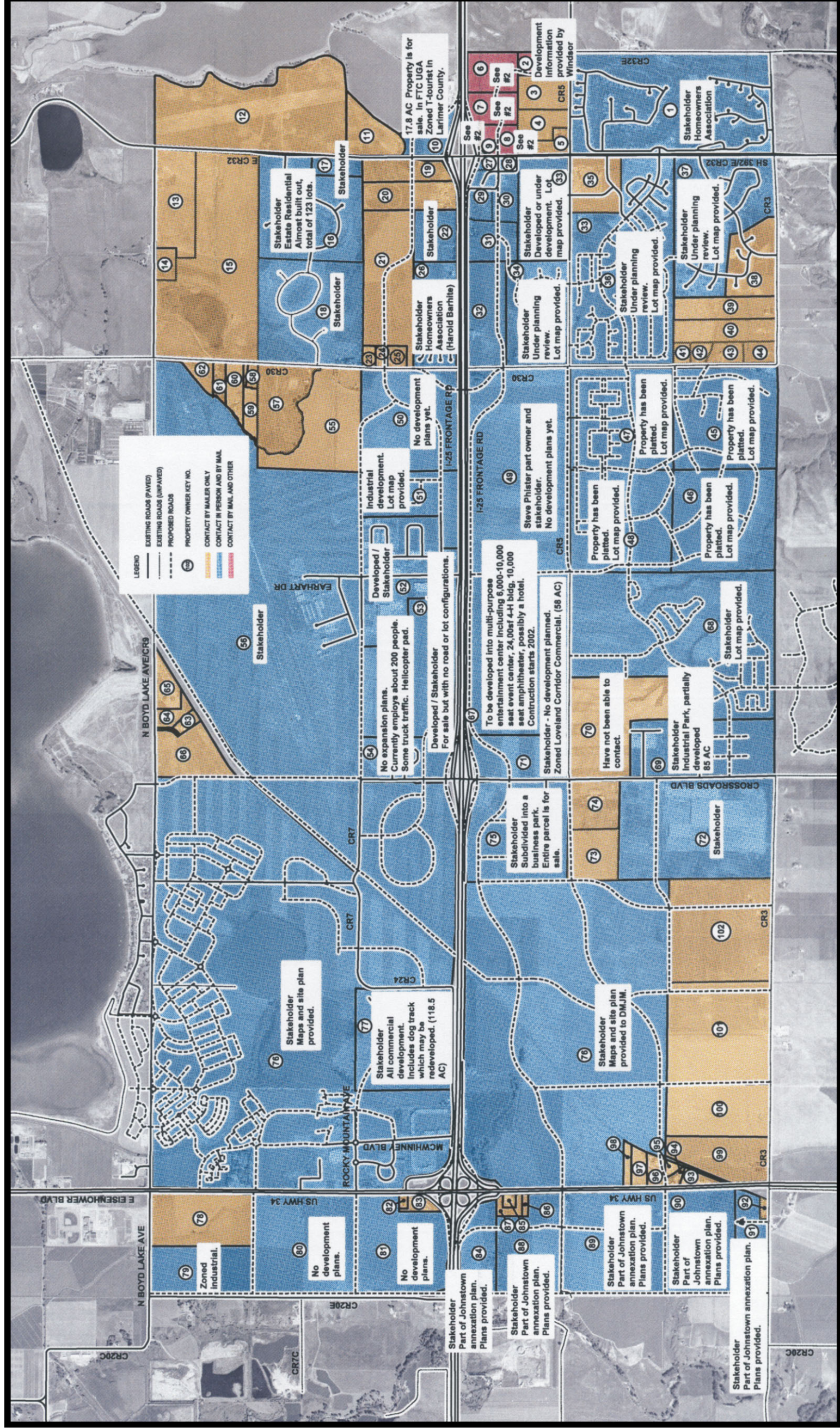


Table 2: Property Owner Contact Information

No.	Owner	No.	Owner	No.	Owner
1	Ptarmigan	35	Pouder Valley REA	69	Dick Schmidt
2	Windsor Investments Ltd.	36	Highland Hills (Jon Turner)	70	Buckeye LLC
3	Lutheran Church	37	Highland Hills	71	Schoenfelder Family
4		38	William C./Linda A. Miller	72	WalMart
5	Victor E./Nancy L. Yeager	39	Todd/Lisa Neiberger	73	
6	Windsor Investments Ltd.	40	Dan T. Stinchcomb, Judith A Boyle	74	Resurrection Fellowship
7	Windsor Investments Ltd.	41	Larry/Teri Hankammer	75	Martin Lind
8	Windsor Investments Ltd.	42	Ronald/Jennifer Henrichsen	76	McWhinney Ent.
9	Windsor Investments Ltd.	43	Richard/Anne/Carla Anne Keller	77	Cloverleaf Development Corp.
10	GNS Corporation	44	Sebastian/Kellie Zito	78	Chilson Family Trust
11	Willowood Corporation	45	Christopher Frye	79	Bill Wyatt, Gary Nordic
12	State Of Colorado	46	Christopher Frye	80	James McDonough
13	South FTC Sanitation Dist.	47	Christopher Frye	81	Schmer Family Farms
14	Geo/Beverly Schuelke	48	Christopher Frye	82	Loveland Country Store
15	Jeffrey Donaldson	49	Thornton-Ham	83	Coach House Resort
16	Eagle Ranch Estates	50	Thayer Family Partnership	84	Sam/Esther Arndt
17	Eagle Ranch Estates	51	Tom Beshore	85	Total Petroleum
18	Eagle Ranch Estates	52	Airport Industrial Park	86	James Gansen
19	Peter J. Prato	53	East Loveland Industrial Addition	87	James Gansen
20	Peter J. Prato	54	Western Area Power Administration	88	Thompson Ranch
21	Roberta Lemaster, Sandra K. Wortley, Shelley L. Skogen	55	Investment Systems	89	Thompson Ranch
22	Terry/Marry Van Cleave	56	Airport	90	Gary M./Mary E. Gerrard
23	Roberta A. Lemaster	57	Sampson Partnership	91	Gary M./Mary E. Gerrard
24	Benjamin B./Roberta A. Lemaster	58	Terry L./Chrystal Corman	92	
25	Roberta A. Lemaster	59	W.F./Ethell Bates	93	Stout Wall Research
26	Mountain Range Shadows	60	W.F./Ethell Bates	94	Sage Enterprises
27	Everett Companies	61	Gene/Sanna Williams	95	DRL Leasing Co.
28	Everett Companies	62	Cities Of Fort Collins and Loveland	96	Cordon Elevator Prop.
29	Poudre Valley Hospital	63	Genesis innovation	97	Cordon Elevator Prop.
30	Poudre Valley Hospital	64	Landmark Bldrs	98	Cordon Elevator Prop.
31	March Family	65	Ripsam Steel Co.	99	Yahyah/Roseanne Hariri
32	Thayer Family Partnership	66	L&C Properties, Inc.	100	Zimmerman Brothers
33	Country Meadows (Jon Turner)	67	Larimer County Fairgrounds	101	Elven Spreng
34	Country Farms LLC (Jon Turner)	68	Fossil Ridge	102	

2.0 EXISTING CONDITIONS

Analyses of existing conditions in the study area were conducted in three major areas: (1) environmental conditions, (2) transportation, and (3) land use. An environmental review was performed primarily to identify existing resources or features that might constrain plans for future transportation improvements. Transportation conditions were analyzed to provide an inventory of existing infrastructure, to assess current operations, levels of service and safety, and to identify needs for improvement. The land use analysis provided the basis for making projections about future development activity in the study area.

2.1 ENVIRONMENTAL REVIEW

The environmental review revealed that there are few existing resources or features that will constrain the development of additional transportation infrastructure in the study area. Figure 4, provides a graphic overview of the environmental review, which is discussed in more detail in Appendix B, Environmental Constraints.

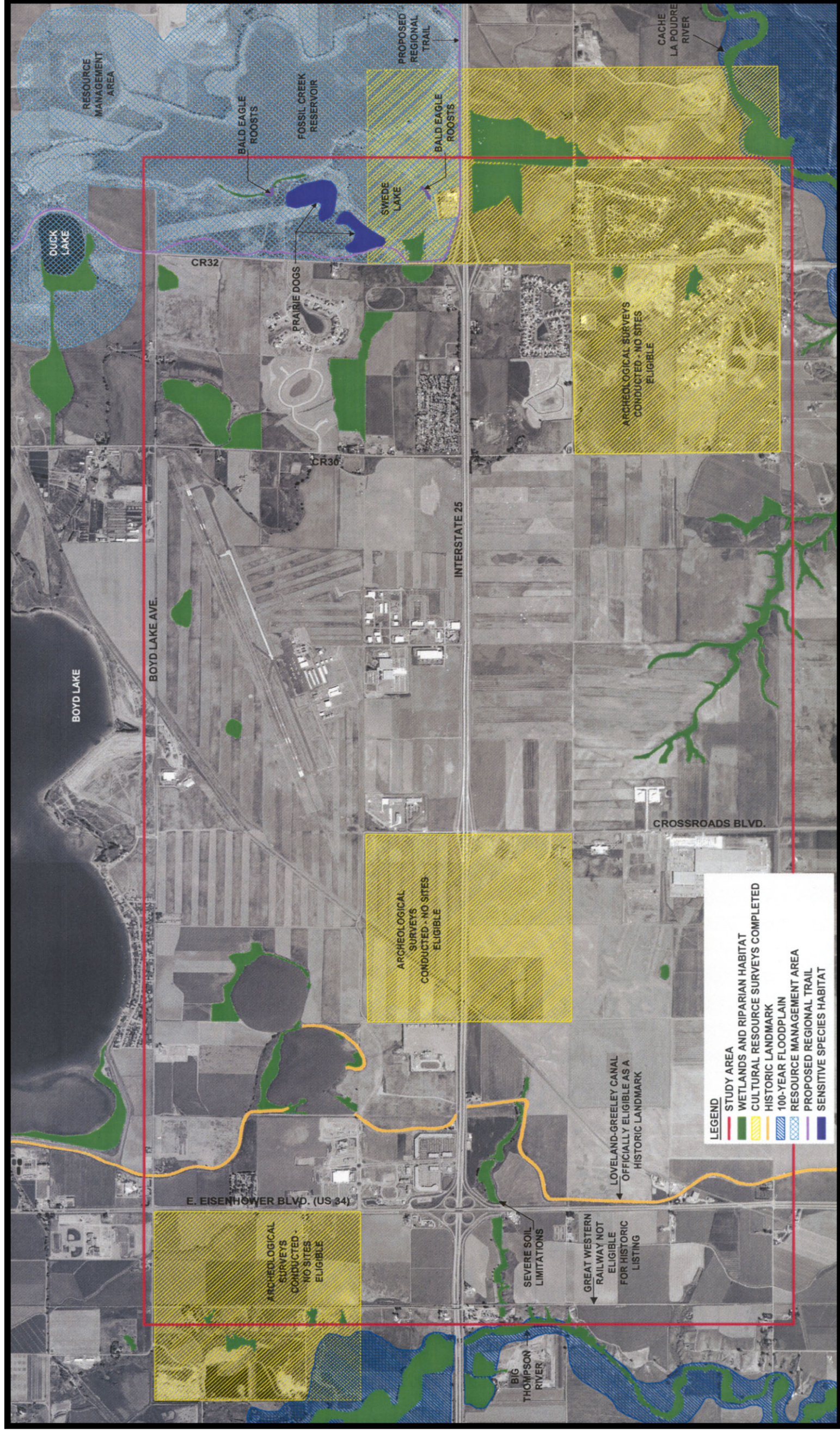
The floodplains for the Cache La Poudre and Big Thompson rivers exist just beyond the north and south boundaries of the study area, but do not appear to have any effect on existing or future transportation features.

Pockets of wetlands and riparian habitat are scattered through the study area, especially near the reservoirs and lakes. Small portions of some of these wetlands could be affected by the widening of existing roads. Minor filling of wetlands is not necessarily a fatal flaw for future transportation plans, as there are opportunities to provide for mitigation of disturbed wetlands elsewhere in the study area. Two areas, however, offer more serious constraints. Wetlands, steep slopes and soil limitations in the northeast corner of the interchange at I-25 and US34 may constrain the configuration of a new interchange at this location. Riparian habitat and severe terrain in the drainages on the east side of the study area between Crossroads Boulevard and County Road 30 probably preclude the extension of County Road 3 in this area.

Most of the undeveloped area is currently under cultivation, so wildlife in the study area consists primarily of species that can tolerate human activity. Fossil Creek Reservoir and the adjacent lands represent the study area's more important wildlife habitats, but most of this area has been acquired by Larimer County and the City of Fort Collins and is planned as a resource management area.

Archeological surveys conducted on portions of the study area have not resulted in the identification of significant historic or prehistoric sites; however, more detailed surveys should be conducted in conjunction with specific transportation improvement projects.

Figure 4: Existing Environmental Conditions



2.2 TRANSPORTATION INVENTORY

A detailed inventory of the interchanges and roadways in the Crossroads Area was conducted in July and August 2000. The inventory was completed using aerial photographs, state and locally produced road maps, and extensive visual inspection. Detailed notes were made concerning the function, configuration and composition of each roadway. This information served as a baseline for discussions with local officials, private developers, and the public on existing and proposed transportation improvements.

Figure 5, illustrates the existing road network in the study area. The area is served by three highways and a number of county and municipal roads. More detailed information can be found in Appendix C, Existing Conditions.

2.2.1 Highways

Interstate 25

Interstate 25 (I-25), a four-lane freeway, runs north/south the entire six-mile length of the study area. The three interchanges at US34, Crossroads Boulevard, and SH392 are described in Section 2.2.2 below. Parallel, two-lane frontage roads exist on the east and west sides of the interstate between Crossroads Boulevard and SH392, but neither frontage road is continuous between Crossroads Boulevard and US34 to the south.

US Highway 34

US34 is a four-lane principal arterial running east/west and is one of the primary connections between Larimer and Weld counties. In addition to the interchange at I-25, there are two signalized intersections at Rocky Mountain Avenue and Boyd Lake Avenue west of the interstate. There is also an at-grade railroad crossing just west of County Road 3. This section of US34 is slated to become a six-lane facility.

State Highway 392

SH392, running east/west on the north end of the study area, loses its state highway designation and becomes County Road 32 west of the interstate. The roadway is currently a two-lane facility on either side of I-25, but is programmed to become a four-lane facility in the future.

2.2.2 County and Municipal Roads

Boyd Lake Avenue (County Road 9)

Boyd Lake Avenue is the west boundary of the study area and is a continuous two-lane roadway between US34 and County Road 32. Right and left turn lanes are provided at some cross-street intersections and entrances to subdivisions. There are two at-grade railroad crossings. The roadway is slated to become a four-lane facility in the future.

Figure 5: Existing Road Network



Crossroads Boulevard (County Road 26)

Crossroads Boulevard is a two-lane east/west roadway. West of I-25, it is known as Airport Road and connects with Boyd Lake Avenue on the west boundary of the study area via County Roads 7 and 24E. In this area, the road serves as a major route to the Fort Collins/Loveland Airport and the airport business park. East of I-25, the road is a major truck route for existing commercial and industrial businesses, including the Wal-Mart Distribution Center. Crossroads Boulevard is programmed to become a four-lane facility

County Road 3

County Road 3 is the east boundary of the study area. It is a two-lane road running north/south from the south boundary of the study area to Crossroads Boulevard and from County Road 30 to the north boundary of the study area. Several drainage ways located between Crossroads Boulevard and County Road 30 probably preclude the possibility of making County Road 3 a continuous roadway in this area.

County Road 30

County Road 30 runs east/west across the study area, but does not connect across I-25, terminating instead at the frontage roads on either side of the interstate. The two-lane segment west of I-25 is paved and eventually connects with US Highway 287 west of the study area. The two-lane segment to the east is unpaved, and because of problems with terrain, it is unlikely this road could be extended east of County Road 3.

Others

Several other road segments in the study area serve existing developments. Rocky Mountain Avenue is a four-lane road providing primary access to the Loveland Prime Outlet stores, an apartment complex and a number of other businesses. It is possible to connect this road with existing segments of County Road 7 to form a more continuous roadway network. It is less likely that Earhart Drive, a two-lane road serving the Fort Collins/Loveland Airport and business park, could be extended because of the location of the airport runways at its west end.

Table 3, provides additional information about the characteristics of the existing roadways in the study area. A more detailed inventory of roadway conditions is included in Appendix C, which contains the visual inspection conducted for each existing roadway with digital photographs and annotations.

Table 3: Characteristics of Existing Roadways							
Roadway Name	General Location	Functional Classification	Surface Type	Speed Limit	Number of Lanes	Signalized Intersections	Notes and Comments
Highways							
Interstate 25	CR 20 E to CR 32 E	Interstate Freeway	Concrete/ Asphalt	75 MPH	4	N/A	
U.S. 34	CR 3 to CR 9/Boyd Lake Avenue	Principal Arterial	Asphalt Pavement	45 - 55 MPH	4 + turn lanes	2	RR Crossing near Cordon Grain
CR32/ SH 392	CR 9/Boyd Lake Avenue to CR 3	East of I-25 - Rural Minor Arterial West of I-25 - rural major collector	Asphalt Pavement	No Posted Speed	2 + center turn lane	2	Frontage Road Access now at Westgate Drive
County Roadways							

Table 3: Characteristics of Existing Roadways

Roadway Name	General Location	Functional Classification	Surface Type	Speed Limit	Number of Lanes	Signalized Intersections	Notes and Comments
CR 26/Crossroads Blvd	CR 3 to CR 7	East of I-25 - Urban Local Road West of I-25 - Urban Collector	Asphalt Pavement	35 - 45 MPH	2	0	
CR 9/Boyd Lake Avenue	CR 20E to CR 32	Urban Collector	Asphalt Pavement	40 - 45 MPH	2 + turn lanes	1	
CR 3	CR 32E to CR 30; CR26 to CR 20C	Rural Local Road	Dirt/Gravel	No Posted Speed	2	0	2 RR Crossings south of U.S. 34, Frontage Road begins
CR 5	CR 32E to CR 30	Rural Local Road	Primarily Asphalt one segment. Dirt/Gravel	No Posted Speed	2 + turn lanes	1	
CR 30	CR 3 to East Frontage Road; West Frontage Road to CR 9	East of I-25 - Urban Local Road west of I-25 - Urban Collector	Asphalt Pavement	30 - 50 MPH	2	0	
CR 7	CR 26/Crossroads to CR 24E CR 24E to CR 24	Urban Collector Local Road	Asphalt Pavement	No Posted Speed	2	0	
CR 24E	CR 7 to CR 9/Boyd Lake Avenue	Urban Collector	Asphalt Pavement	No Posted Speed	2	0	
CR 24	CR 7 to West Frontage Road	Local Road	Asphalt Pavement	35 MPH	2	0	
Local Roadways							
East Frontage Road	Westgate Drive to CR 26; ___ Property to CR 20 E	N/A	Asphalt Pavement	55 MPH	2	0	
West Frontage Road	CR 32 to CR 26/Crossroads Blvd; CR 24 to McWhinney Blvd	N/A	Asphalt Pavement	55 MPH	2	1	Intersection with SH 392 now at Westgate Drive
Rocky Mountain Avenue	US 34 north to Hahns Peak Drive	Urban Local Road	Asphalt Pavement	No Posted Speed	4 - reduces to 2	1	Entrance to Prime Outlets; 2 two-lane roundabouts located along roadway
Earhart Drive	West Frontage Road to Loveland Airport	Urban Local Road	Asphalt Pavement	35 MPH	2 + center turn lane	0	

2.2.3 Existing Interchanges

I-25 and State Highway 392

State Highway 392 (SH392) is a major connection between the rapidly growing areas of west Windsor and southeast Fort Collins. The existing interchange at I-25 and SH392 is a diamond

configuration with conventional, two-way frontage roads in the northwest, southwest, and southeast quadrants. SH392 crosses over the interstate with a two-lane bridge, dropping its state highway designation and becoming County Road 32 west of the interstate. All ramps are currently one-lane configurations, with ramp intersections spaced approximately 600 feet apart along SH392.

Only 100 to 150 feet separate the west ramp and frontage road intersections, which are currently signalized. Because of their close proximity, the two signals function as one and traffic movements through this portion of the interchange are awkward and inefficient.

On the east side of the interchange, the spacing between the east ramps and southeast frontage road has been increased to approximately 600 feet with the recent development, Westgate Commercial Center in Windsor. The east ramp and east frontage road intersections with SH392 are signalized.

I-25 and Crossroads Boulevard

The existing intersection at I-25 and Crossroads Boulevard (also known as Airport Road or County Road 26) is a diamond configuration with conventional, two-way frontage roads in the northeast and northwest quadrants. This interchange has a significant amount of truck traffic due to the Wal-Mart distribution facility at the southwest corner of Crossroads Boulevard and County Road 3.

I-25 crosses over Crossroads Boulevard with two separate three-span structures for northbound and southbound interstate traffic. The elevation of northbound I-25 is approximately eight feet higher than southbound I-25 at the crossing.

Crossroads Boulevard is a two-lane roadway east and west of the interchange. The crossing under I-25 is very narrow and offers no ability to accommodate additional lanes without reconstructing the existing bridges for the interstate.

The existing ramp intersections are spaced approximately 380 feet apart along Crossroads Boulevard with the frontage road intersections approximately 80 feet east and west of the ramp intersections. Such spacings will not be adequate for higher volumes of traffic in the future. All four of the intersections with Crossroads Boulevard are currently stop sign controlled.

I-25 and US34

The interchange at I-25 and US34 is a major gateway for the Cities of Loveland and Greeley, both of which are experiencing growth directed toward this location. Johnstown has also recently annexed property in the southeast quadrant of the interchange.

The existing interchange is a full cloverleaf with conventional, two-way frontage roads in the southeast and northeast quadrants. The east frontage road intersects US34 200 to 300 feet east of the free-flow ramp merge points. US34 crosses over I-25 with two separate four-span structures and is a four-lane roadway approaching the interstate from the east and west.

The existing loop ramps were constructed with a radius of approximately 170 feet and design speed of 25 miles per hour, forcing very low speed access to and from a very high speed interstate. The relative high volume of ramp traffic using these low speed loops impedes the through traffic along I-25 and makes merging hazardous.

2.2.4 Existing Facilities for Alternative Modes of Transportation

Figure 6, illustrates existing rail, bicycle, pedestrian, and transit facilities within the study area.

Two railways, operated by Union Pacific (UP) and Great Western Railway (GWR) run through the study area. The UP tracks run from Kelim and travels past the west side of the Fort Collins/Loveland Airport to Fort Collins. The GWR tracks run from Kelim to the City of Loveland. Both railways serve the freight hauling needs of the local agricultural communities.

There are three existing bikeways in the study area, all running along arterial roads. One of the bikeways is located along US34 (Eisenhower Boulevard) and connects to the bikeway system in Rocky Mountain Village Shopping Center. A second bikeway starts on the east side of I-25 on Crossroads Boulevard (County Road 26) and travels east to County Road 3. The third bikeway runs along Boyd Lake Avenue from the entrance to Waterfront Estates to the UP railroad tracks approximately one and one-half miles to the north.

Because most of the land in the study area is undeveloped, few sidewalks currently exist within it. The scattered segments of sidewalk that do exist are located in developed areas within the corporate limits of Loveland and Windsor.

While there are currently no transit facilities in the study area, there is one existing transit route. Jitterbus is the transit operation connecting Rocky Mountain Village Shopping Center with the City of Loveland.

2.2.5 Existing Transportation Operations

Traffic volumes on the existing roadway network were used to identify existing problems and to analyze the impact of proposed improvements. Existing traffic volumes and turning movements were counted by DMJM+HARRIS during August 2000. Peak hour volumes for the AM and PM were calculated from these counts. These peak hour volumes are shown on Figure 7.

Volume Analysis

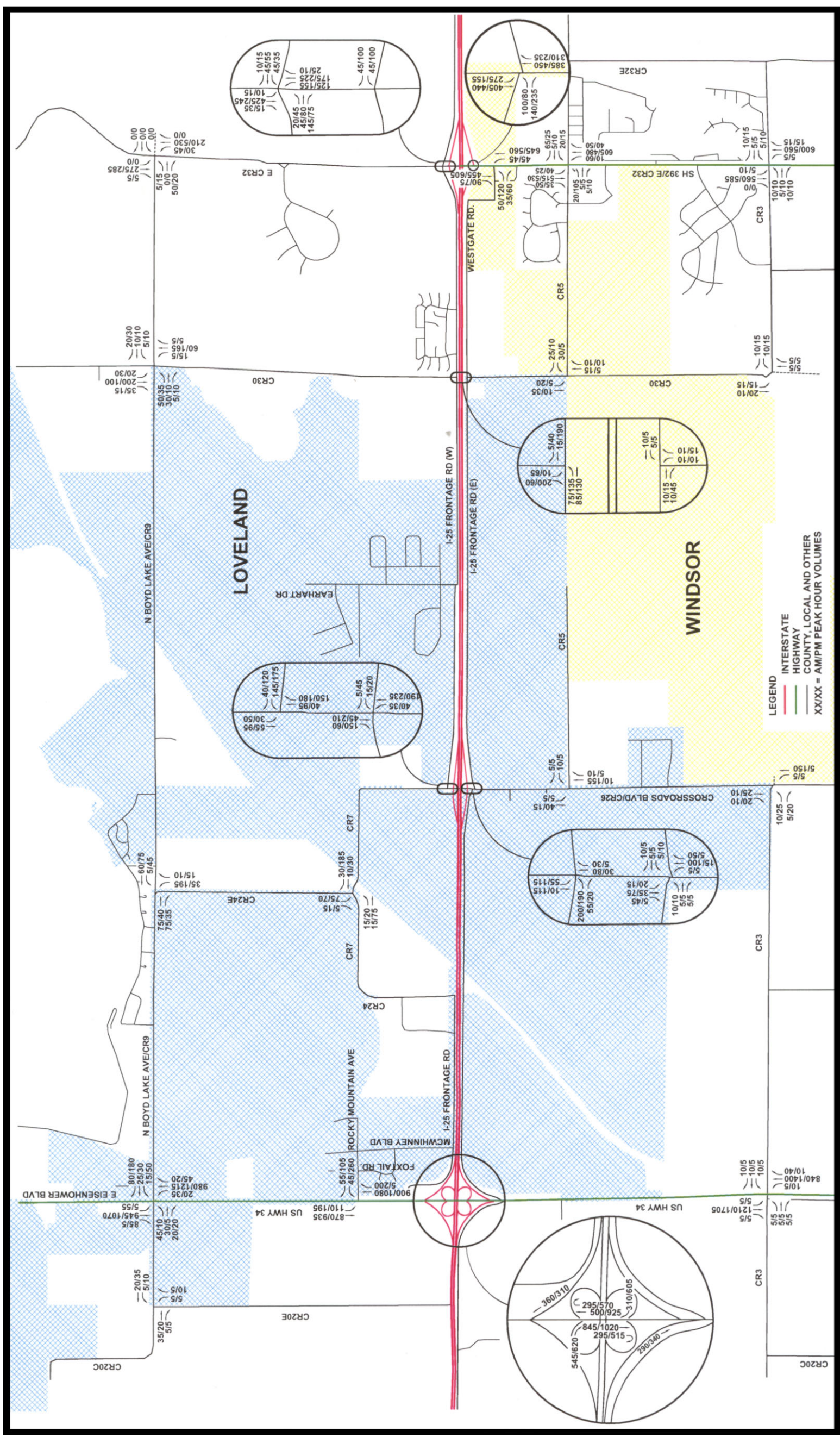
Traffic volumes on I-25 exceed 4250 vehicles per hour during the AM and PM peak hours. Except for I-25, US34 currently carries the largest volume of traffic in the study area. The volume at all three US34 intersections exceeded 2000 vehicles per hour during the AM and PM peaks, and the PM peak volume at US34 and County Road 3 exceeded 3000 vehicles per hour. Traffic volumes on SH392 are approximately half as great as the volumes on US34. Traffic volumes on SH392 at County Roads 3 and 5 exceeded 1000 vehicles per hour during both peaks.

Moderate volumes were recorded at a number of intersections along Crossroads Boulevard and Boyd Lake Avenue. Lower volumes, typically between 50 and 100 vehicles per hour during the peak hours, were recorded at the remaining intersections in the study area.

Figure 6: Existing Alternative Modes of Transportation



Figure 7: Existing Traffic Volumes



Levels of Service Analysis

The operating conditions of an intersection can be described in terms of levels of service (LOS). Level of service for signalized intersections is defined in terms of delay. This is measured by lost travel time, driver discomfort, frustration, and fuel consumption. The delay experienced by a motorist is made up of a number of factors that relate to traffic control, geometrics, traffic volumes and incidents. Delay is the difference between the travel time actually experienced and the reference travel time that would be experienced under ideal conditions.

Levels of Service (LOS) are described by letter designations A through F, with LOS A representing the best condition and LOS F representing the worst. Table 4, provides descriptions for levels of service for signalized intersections. The Crossroads study area is in transition from a rural to an urban land use character and is expected to become entirely urban by 2025. The lowest generally accepted standard for intersection level of service in rural areas is LOS C, while LOS D may be acceptable in urban areas.

Table 4: Definitions for Level of Service for Signalized Intersections		
Level of Service	Interpretation	Control Delay (sec/veh)
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may contribute to low delay.	≤ 10
B	Good progression, short cycle lengths, or both. More vehicles stop than with LOS A.	> 10 and ≤ 20
C	Fair progression, longer cycle lengths, or both. The number of vehicles stopping is significant, though many still pass through without stopping.	> 20 and ≤ 35
D	Longer delays result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop.	> 35 and ≤ 55
E	High delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.	> 55 and ≤ 80
F	This level often occurs with over saturation when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may be major contributing factors to such delay levels.	> 80

* Highway Capacity Manual Update 1998 pg. 9-7

For each intersection in the study area, the overall intersection level of service was determined given the existing AM and PM peak hour turning movement counts. Under existing conditions, all intersections operate at level of service (LOS) C or better during both the AM and PM peak hours.

Levels of service were also calculated for individual turning movements and lanes at each intersection. While the overall intersection levels of services were LOS C or better, some of the individual turning movements and lanes experience levels of service lower than LOS C. Individual turning movements or lanes with LOS D or below are listed in Table 5.

Table 5: Turning Movements & Lanes with LOS D or Less

INTERSECTION	PEAK HOUR	APPROACH DIRECTION	MOVEMENT	LOS
W FRONTAGE RD/EXIT SB OFF-RAMP & CR 32	AM	SB	LEFT	D
		EB	RIGHT	D
		NB	THRU	D
		OFFRAMP	LEFT	D
	PM	OFFRAMP	THRU	D
		SB	LEFT	D
		NB	LEFT	D
		OFFRAMP	LEFT	D
NB OFF RAMP & SH 392/ CR 32	AM	NB	LEFT	E
	PM	NB	LEFT	F
WESTGATE ROAD & SH 392/ CR 32	AM	NB	LEFT	E
	PM	NB	LEFT	F
CR3 & SH 392/ CR 32	AM	NB	LEFT	D
		NB	THRU	D
		SB	LEFT	D
	PM	NB	LEFT	D
		NB	THRU	D
		SB	LEFT	E
ROCKY MOUNTAIN BLVD & US 34	PM	EB	LEFT	D
CR 3 & US 34	AM	NB	LEFT	F
			THRU	E
	PM	NB	THRU	E
			LEFT	F
		SB	THRU	F
			RIGHT	F

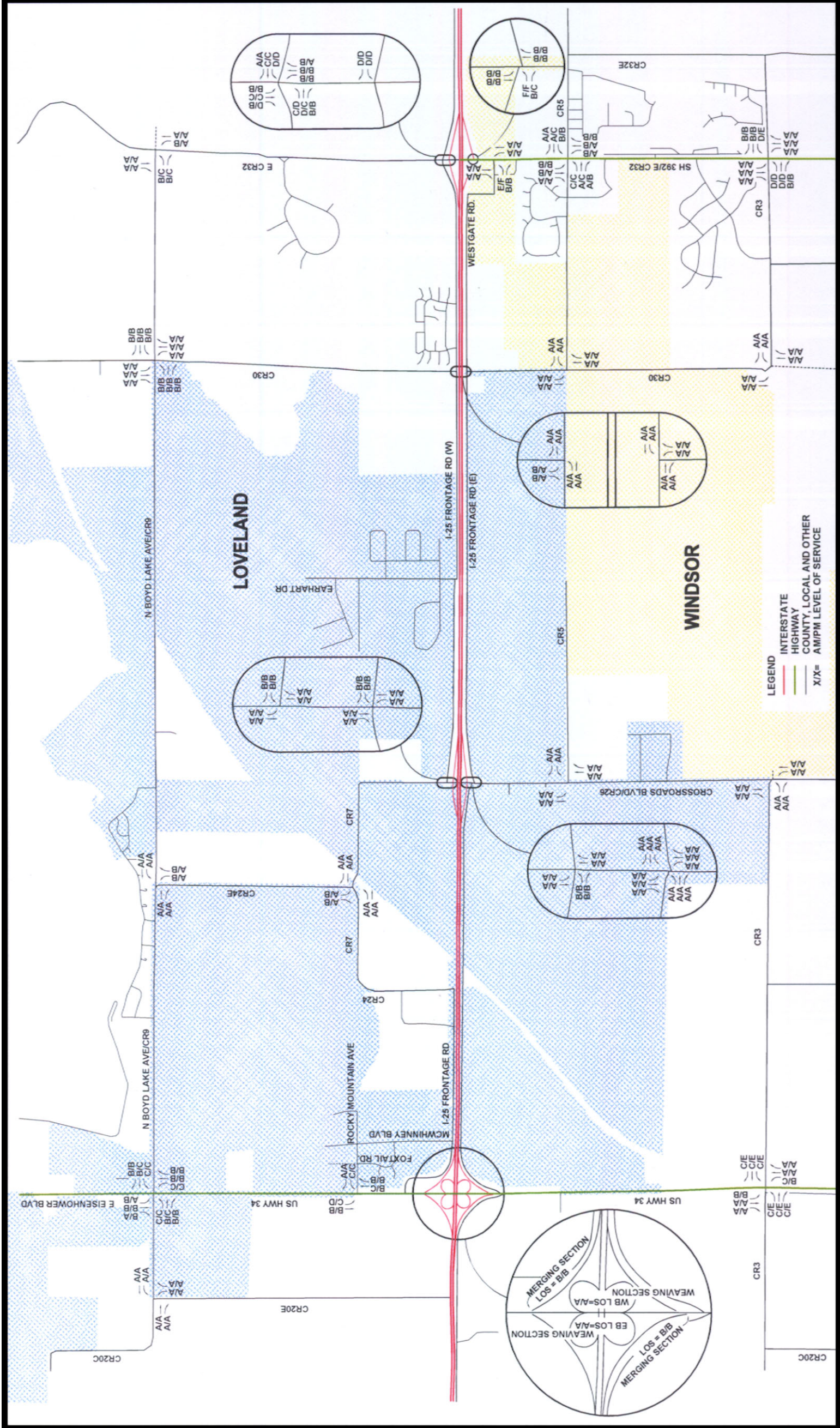
Individual turning movements or lanes with LOS D are shown in Figure 8, and are further described in Section 2.2.3 below.

2.2.6 Congested Turning Movements or Lanes at Problematic Intersections

West Frontage Road and Southbound Exit Ramp at County Road 32

At this location, the proximity of the intersections for the frontage roads, the ramps, and the two signals acting as one result in several awkward and inefficient movements. During the AM peak hour, vehicles making left turns have significant delay on the southbound Frontage Road, lowering the LOS to D. During the PM peak hour, vehicles traveling northbound and southbound making left turn movements experience levels of service below D. In addition, during both the AM and PM peak hours, the LOS on the southbound off-ramp is D.

Figure 8: Existing Level of Service



In each case, simultaneous green phases of the traffic signals require the northbound and southbound vehicles making left turns to be delayed while waiting for sufficient gaps in traffic to complete the turning movements. The simultaneous green phases exist to promote eastbound and westbound flows on the heavier volume roadway, County Road 32.

Northbound Off-Ramp and Westgate Road at State Highway 392—Approach with Stop Control

During both the AM and PM peak hours, vehicles turning left from the northbound off-ramp and from Westgate Road (the east frontage road) encounter significant delays. Resulting LOS is E during the AM peak hour and F during the PM peak hour. This is primarily due to heavy volumes on SH392 providing inadequate gaps for these left-turning vehicles.

County Road 3 and State Highway 392—Approach with Stop Control

The high volume of eastbound and westbound traffic on SH392 contributes to poor LOS for vehicles turning left from County Road 3 during the AM and PM peak hours. Levels of service for these left-turning movements are D and E.

Rocky Mountain Boulevard and US34—Signalized

During the PM peak hour, vehicles turning left from US34 onto Rocky Mountain Boulevard have a 38.2 second delay per vehicle, lowering the LOS to D. The eastbound left turn queue fails to clear all vehicles during all signal cycles. This is due to a short (15 seconds) left turn green phase which creates a heavy volume of vehicles that conflict with the vehicles traveling westbound with a through movement (1079 vehicles during the hour).

County Road 3 and US Highway 34—Approach with Stop Control

The high volume of eastbound and westbound traffic on US34 contributes to failing LOS for vehicles on County Road 3 during the PM peak hour. While the individual delays for northbound and southbound vehicles indicate failing LOS, the overall intersection LOS operates at LOS A during the PM peak because of the much larger volumes on US34.

2.2.7 Accident Analysis

A three-year accident history analysis was conducted as part of this study using data provided by the Colorado Department of Transportation (CDOT) for state-owned and operated facilities in the study area. Accident data for local roads in the study area was not available.

A total of 420 accidents were reported during the three-year period from 1997 through 1999. Of these, 287 occurred on I-25, 123 on US34, and 10 on SH392. In general, the number of accidents was directly related to the volumes of traffic on these highways, at a rate of roughly one accident per million vehicle miles traveled (VMT). However, a disproportionately large number of accidents, a total of 43, were reported on US34 near Rocky Mountain Boulevard.

Five fatalities occurred in the study area during the three-year period, all of them on I-25. Two of these fatalities were the result of head-on collisions during icy or wet conditions. The other three were the result of alcohol, a rear end collision, and a rollover, respectively.

The Federal Highway Administration has developed a method of calculating the “cost” of accidents. Using this method, the total cost of accidents in I-25 during the three-year period was \$18.7 million, resulting from the five fatalities and 86 injuries. The total cost of accidents on US34 was \$4.7 million, based on 54 injuries. The total cost of accidents on SH392 was \$350,000.

Additional information concerning the accident analysis may be found in Appendix C.

2.3 LAND USE CONDITIONS

2.3.1 Existing Land Uses

Larimer County, the Town of Windsor, and the City of Loveland each have jurisdiction over land use in portions of the study area. The Crossroads Area has seen relatively little development activity over the past ten to fifteen years compared to the surrounding communities. Existing developments have been concentrated along the major transportation corridors (I-25, US34, Crossroads Boulevard, and SH392) and near the Fort Collins/Loveland Airport.

Existing developments in the vicinity of the I-25/US34 interchange include the Prime Outlet stores, Target, restaurants and hotels in McWhinney Enterprises' Centerra project. The primary development along Crossroads Boulevard is the Wal-Mart distribution center at the southwest corner of Crossroads Boulevard and County Road 3. The southeast quadrant of the Crossroads interchange has been platted as the Crossroads Business Park, but remains largely vacant. Businesses near the airport include Gold Company International (215 employees), Hach Company (569 employees), and Western Area Power Authority (260 employees). Residential developments on the north end of the study area near SH392 include Eagle Ranch Estates, Mountain Range Shadows, County Meadows, Ptarmigan Estates and Golf Course, and Highland Hills. Existing developments and the corporate limits of Windsor and Loveland are shown on Figure 9.

Existing zoning allows for a mix of retail, service, office and residential uses in the southern one-third of the study area, industrial, office and service uses in the central one-third, and low to medium density residential uses in the northern one-third with retail and service uses along the major roadways. Additional information can be found in Appendix D, Adopted Plans and Programs.

2.3.2 Community Transportation Plans

The City of Loveland and the Town of Windsor have adopted master plans for their communities. Commercial, industrial and residential developments in the study area generally conform to these master plans.

In addition to the Master Plans, the City of Loveland and the Town of Windsor have adopted Transportation Plans for the jurisdictions to direct the planning and construction of transportation infrastructure. Larimer County has also adopted a Transportation Plan, but because the Crossroads Area is within the corporate limits or growth management areas of Loveland and Windsor, the Larimer County plan is silent with respect to the study area.

2.3.3 Proposed Roadways

City of Loveland

Figure 10, shows the City of Loveland's proposed roadway system for the study area. The system is based on a grid. The majority of the roadways within the study area are two-lane collectors. The exceptions include: Eisenhower Boulevard (US34), which is a six-lane arterial; Crossroads Boulevard from County Road 5 to Boyd Lake Avenue, which is a four-lane arterial; and County Roads 5 and 7, which are four-lane arterials.

Figure 9: Existing Developments & Corporate Limits

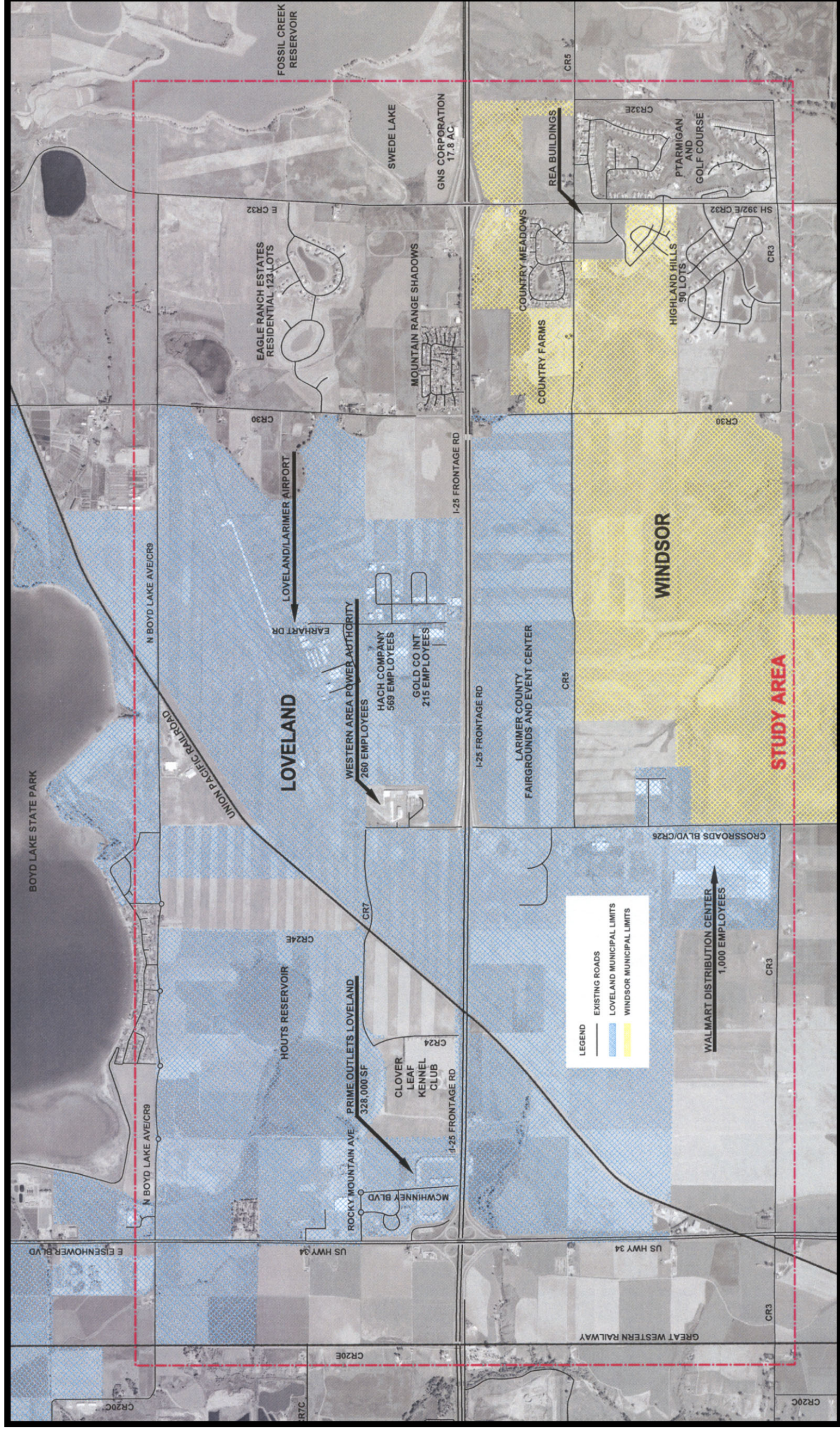
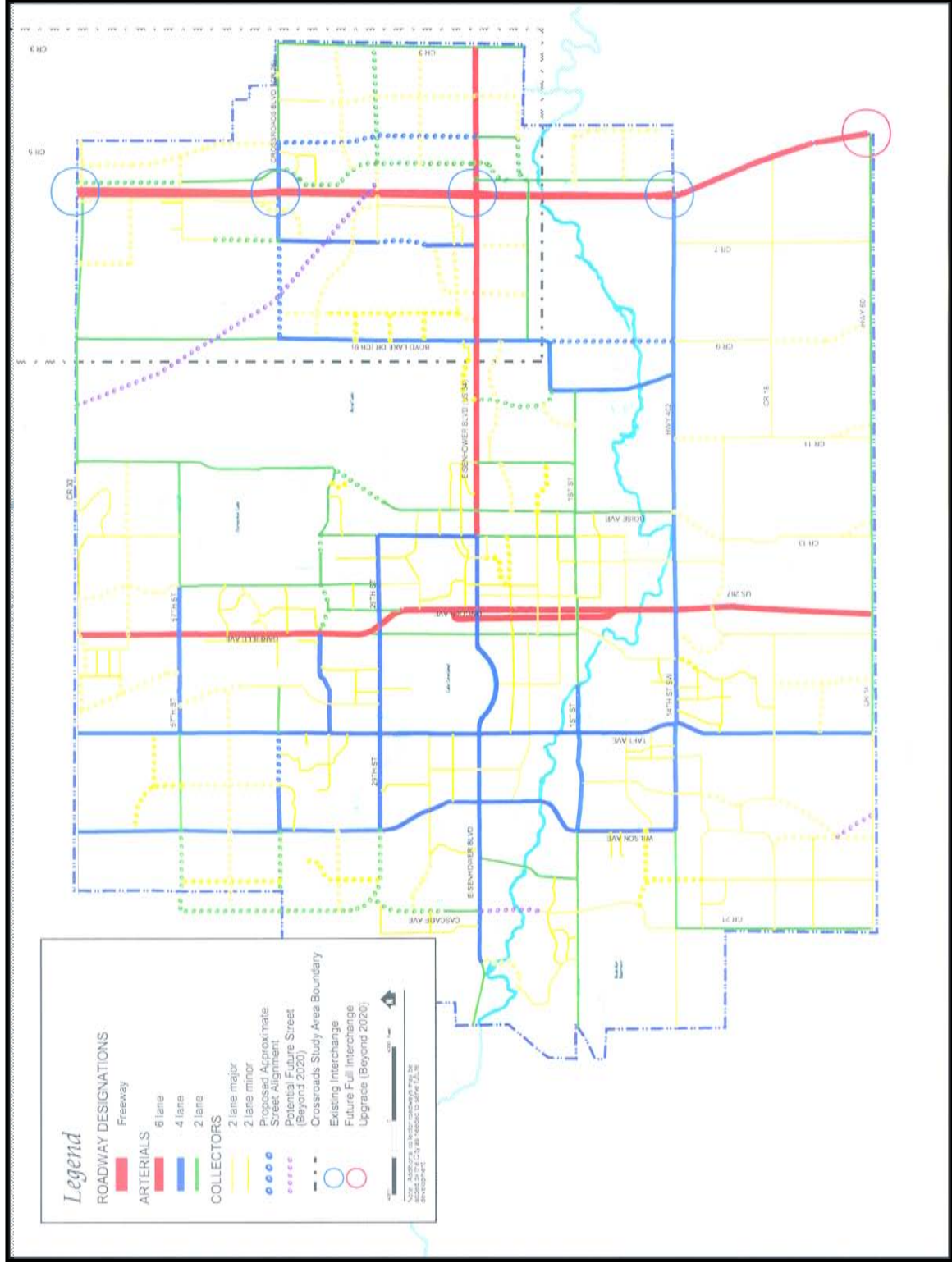


Figure 10: Proposed Roadway Network, City of Loveland



Town of Windsor

Figure 11, shows the proposed roadway network for the Town of Windsor. SH392 is the only four-lane rural major arterial in the study area. County Road 5 is proposed to be a two-lane road between SH392 and County Road 30. Highland Meadows Parkway, Steeplechase Drive and Haystack Drive are a series of two-lane collectors connecting SH392 and Crossroads Boulevard.

2.3.4 Proposed Pedestrian Facilities

Larimer County and the cities of Loveland and Fort Collins have recently developed urban area street standards. Those standards require sidewalks along streets. Using these standards and the street standards within Loveland and Windsor, it is likely that sidewalks will be provided along most, if not all, of the arterial roads in the study area.

2.3.5 Proposed Bicycle Facilities

Figure 12, illustrates the City of Loveland's proposed on-street bikeway and multi-use path system. On-street bikeways are proposed along County Road 3, Crossroads Boulevard, Rocky Mountain Avenue (County Road 7), County Road 24E, and Boyd Lake Avenue.

In addition to these on-street bikeways, the Transportation Plan proposes a multi-use path that meanders along the canals and lakes on the north side of US34 between Boyd Lake Avenue and County Road 3.

2.3.6 Proposed Rail Facilities

The North Front Range Transportation Alternatives Feasibility Study (TAFS) recommends the development of passenger rail facilities between the Denver Metro and the North Front Range, including facilities through the study area. The proposed rail line would enter the study area, running along the west side of I-25, passing under US34 between the west frontage road and the southbound lanes of the interstate. The line would continue north along this alignment to the Union Pacific railroad tracks. It would turn to the northwest along these tracks and exit the study area at Boyd Lake Avenue, continuing on to Fort Collins. A second line to Greeley would follow the Union Pacific railroad tracks in the southeast corner of the study area.

The NFRTAFS study recommended the location of one rail station within the Crossroads study area, although an exact location was not identified.

2.3.7 Proposed Transit Services

Figure 13, shows the existing and proposed transit system for the City of Loveland. Regional routes through the Crossroads Area are shown along I-25 and US34. A local route connects the Fort Collins/Loveland Airport with US34 along Earhart Drive, I-25, Crossroads Boulevard, Rocky Mountain Avenue (County Road 7), and Boyd Lake Avenue. A local route is also shown into Rocky Mountain Village on the north side of US34 and along County Roads 7, 20E, and 9 on the south side of US34. The existing Jitterbus route is shown along US34 into the Prime Outlet stores.

Figure 11: Proposed Roadway Network, Town of Windsor

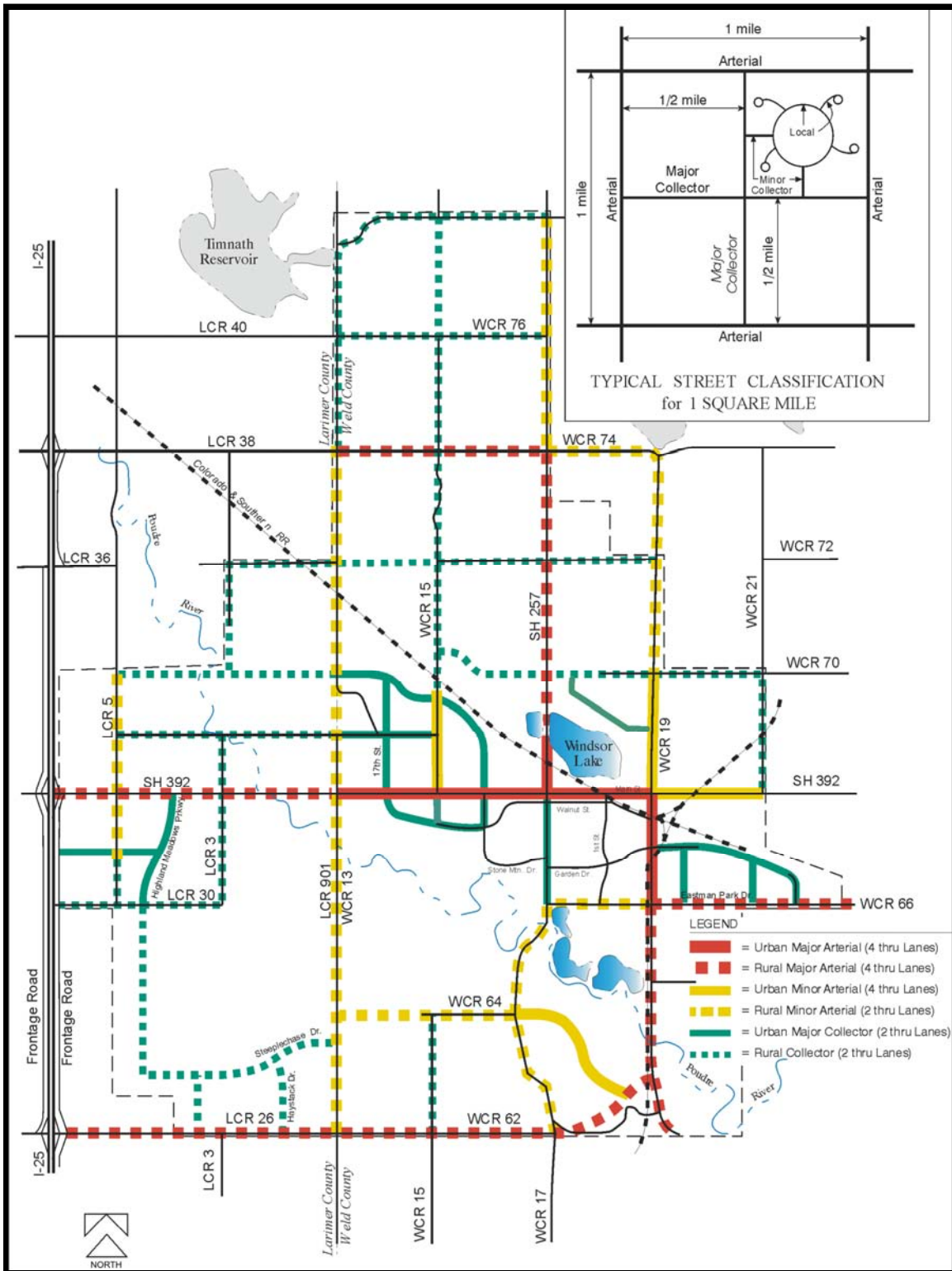


Figure 12: Existing / Proposed Bikeway & Multi-Use Path System, City of Loveland

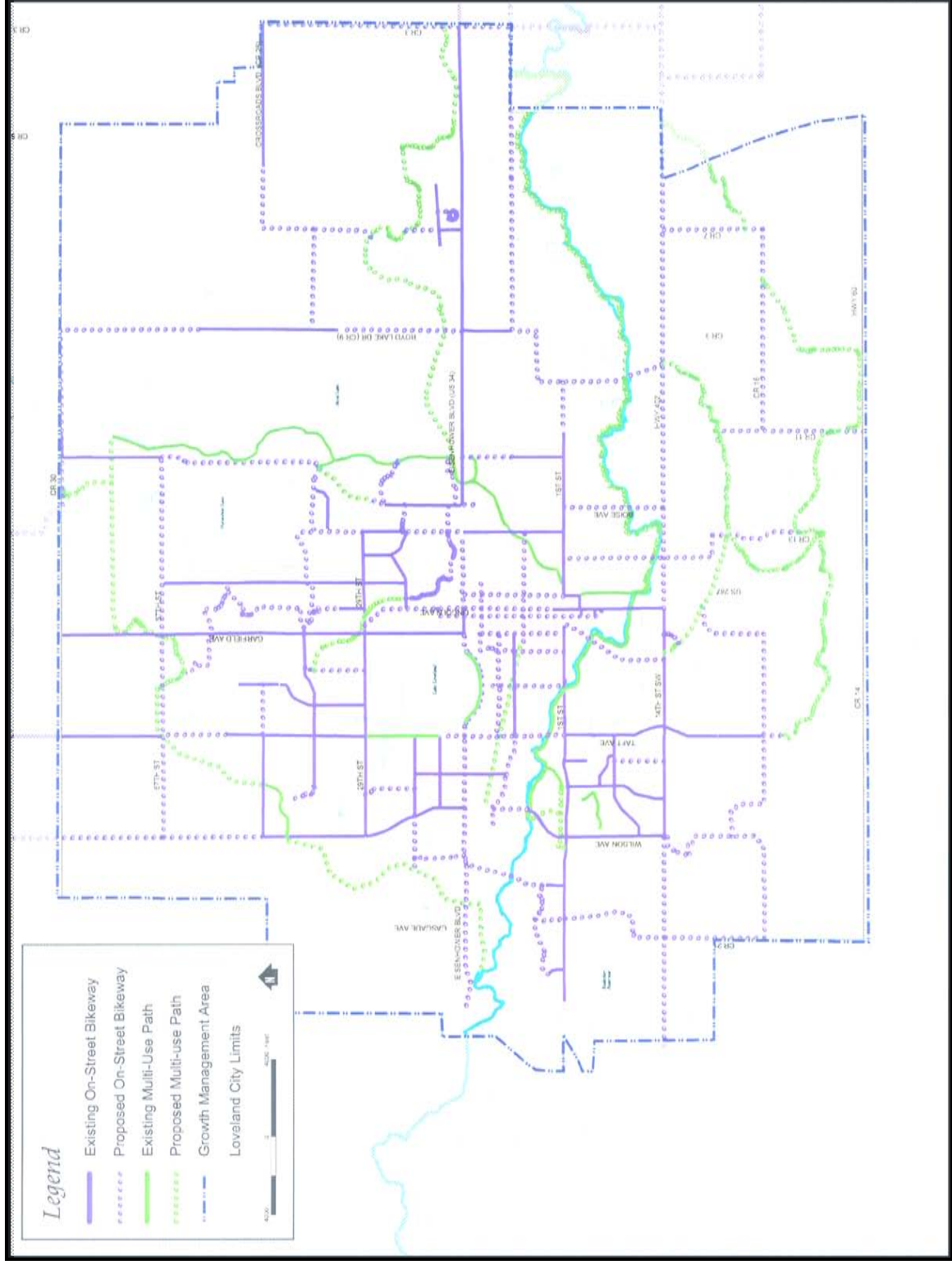
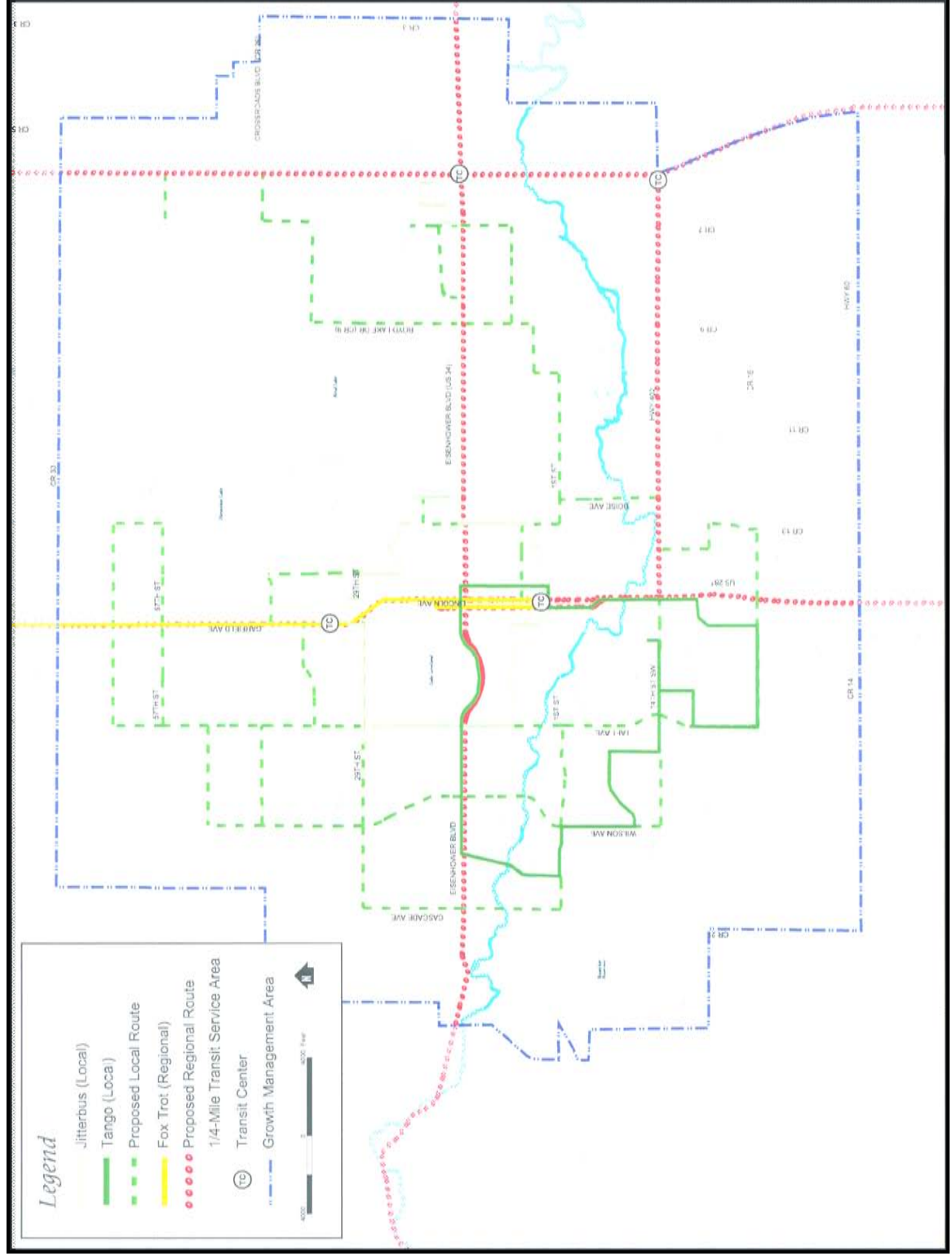


Figure 13: Existing / Proposed Transit System, City of Loveland



3.0 FUTURE CONDITIONS

With its location on I-25, ready access to regional economic centers (Loveland, Fort Collins, and Greeley), and developable property at key interchanges, the Crossroads Area has recently attracted considerable development interest and activity. During the months of July, August and September 2000, the Consultants undertook an extensive effort to contact landowners, developers, government officials, and other parties with an interest in the development of transportation infrastructure in the Crossroads Area. In addition to stakeholders with development projects already in the planning and approval process, stakeholders with conceptual development plans or with large vacant parcels of land were contacted in person. During the course of the study, other landowners and developers were added to the original group as they were identified. All available information was compiled and mapped to provide a better understanding of the relationship between future land use and transportation facilities in the study area.

Figure 14, shows the results of this outreach effort. It appears that the area is on the verge of entering what is anticipated to be a period of steady, if not rapid, development. Brief descriptions of the major development proposals identified during discussions with stakeholders appear in the following section.

3.1 MAJOR DEVELOPMENT PROPOSALS/OPPORTUNITIES

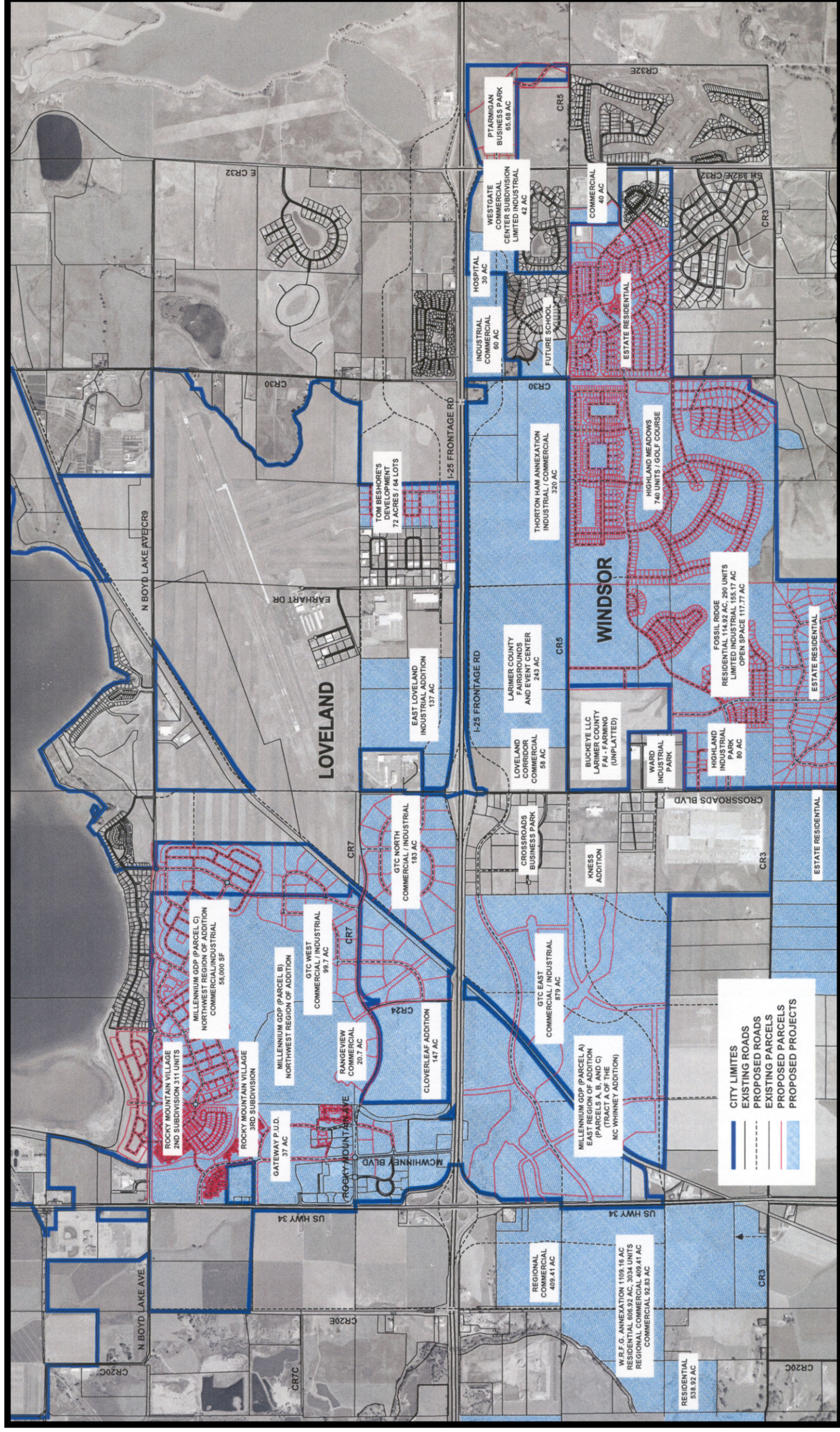
Development plans have been filed in the Town of Windsor for the Ptarmigan Business Park that includes nine platted lots in the current phase. The plat shows Westgate Drive extending northward and eastward to intersect with County Road 5.

Westgate Commercial Center is under development on the south side of SH392. The Center includes a gas station/convenience store (completed), an office building, and a hotel (currently under construction). Poudre Valley Hospital (PVH) owns the property south of the Westgate Commercial Center.

There are three large parcels on the north side of County Road 30 between the interstate and the west side of the existing Highland Hills development. The 60-acre parcel adjacent to the interstate is zoned commercial/industrial, but there are no development plans for the parcel at this time. The next parcel to the east is the site of the proposed 100-lot Country Farms residential planned unit development (PUD), which includes a school site. The easternmost of the three parcels will develop as the southern phases of the Highland Hills residential PUD.

There are no plans yet for the 320-acre parcel east of I-25 and south of County Road 30, but the owners of the parcel are actively considering their options for development. The one square mile section east of this parcel is platted with the 740-lot Highland Meadows residential development and 18-hole golf course.

Figure 14: Existing/Proposed Roads & Parcels



The new Larimer County fairgrounds and events center will be constructed on a 243-acre parcel at the northeast corner of the I-25/Crossroads Boulevard interchange. This project will include a 5000 to 7000 seat multi-purpose arena, an 80,000 square foot exhibition building, and a number of fairground related buildings. The site could also accommodate commercial uses compatible with the County's facilities.

Most of the one square mile section east of the fairgrounds site is committed to several uses. These uses include the 156-acre Fossil Ridge light industrial park and the 290-lot Fossil Ridge residential development. An 85-acre industrial park is also partially developed along the north side of Crossroads Boulevard.

At the southeast corner of the I-25/Crossroads Boulevard interchange, the Crossroads Business Park has been platted and some infrastructure improvements have been constructed. The business park is currently for sale.

McWhinney Enterprises has submitted development and annexation plans for approximately four and one-half square miles of land on both sides of the interstate north of US34 and south of Crossroads Boulevard. The development of 1,870 acres in four separate land use areas is expected to occur over the next 25 years. The proposed land uses include single and multi-family residential, industrial and commercial, and mixed uses with a strong focus on high technology.

The 118-acre parcel along I-25 just north of the Prime Outlet stores is currently used as the Cloverleaf Kennel Club. This site may eventually be redeveloped for other commercial uses. A 125-acre parcel that could be developed as an industrial park is currently for sale on the west side of I-25 between Crossroads Boulevard and Earhart Drive, east of the Fort Collins/Loveland Airport. There are currently no plans for a 125-acre parcel along the west side of I-25 south of County Road 30, nor are there plans for the four parcels north of County Road 30 and west of Mountain Range Shadows.

3.2 LAND USE FORECASTS

Based on the review of development projects under consideration at the time of the study and discussions with area stakeholders, it appears the Crossroads Area has the potential of capturing a greater share of the region's development activity than previously estimated. This section of the report describes how forecasts of development activity in the area have been revised.

3.2.1 "Baseline" Socio-economic Forecast

A review of previous forecasts of development activity for the study area revealed that the growth projections for the region prepared by the NFR MPO were the most current and comprehensive. This information became the "baseline" for comparison with revised growth projections. The baseline socio-economic forecasts are summarized in Table 6, below.

Table 6: Baseline Socioeconomic Forecasts

North Front Range Region and Crossroads Area (1998 to 2020)

	1998	2020
North Front Range Region* Totals		
Total Households	137,501	269,536
Total Employment		
Non-Retail Employment	106,646	239,908
Office/Industrial Development (SF)	21,300,000	48,000,000
Retail Employment	29,720	73,647
Retail Development (SF)	8,900,000	22,100,000
	1998	2020
Crossroad Area** Totals		
Total Households	310	1,608
% Regional Market Share	0.2%	0.6%
Total Employment		
Non-Retail Employment	506	10,762
Office/Industrial Development (SF)	101,000	2,200,000
Retail Employment	1,554	1,115
Retail Development (SF)	388,500	418,000
% Regional Market Share	5.2%	1.5%

Source: North Front Range MPO and Leland Consulting Group.

* Region includes North Front Range communities of Fort Collins, Loveland, Greeley, Windsor, Berthoud and Johnstown

** Crossroads Area is bounded approximately by:

- North: County Road 32E
- South: County Road 20E
- East: County Road 3
- West: County Road 9/Boyd Lake Avenue

3.2.2 Socio-economic Forecast Methodology

Factors considered during the revision of growth projections for the Crossroads Area included: the area’s location and competitive position relative to other potential development areas within the North Front Range region; anticipated national trends in residential and commercial development; and typical development patterns within interstate highway corridors. Experience both nationally and regionally has shown that development densities are significantly higher in transportation corridors.

Revised growth projections were based on a “market-driven” approach based on the following considerations:

Housing

The Crossroads Area provides opportunities for diversified housing choices and increased density along the I-25 corridor.

Changing demographics (i.e., smaller households, fewer children, more empty nesters, etc.) along the North Front Range support higher density housing, a decided departure from the large-lot suburban housing so prevalent in the western U.S. A transportation corridor, with the future potential for transit offering easy access to work, shop and play opportunities, provides the ideal location for this type of housing.

Retail/Service

The Crossroads Area also provides opportunities to capitalize on regional transportation proximity and access, creating the potential for building destination-oriented retail uses such as the Prime Outlet stores.

Regional access typically provides a retail establishment with a greater trade area draw, or access to customers outside the immediate area.

Office/Flex

The easy regional access and potential transit connections for the area are marketable amenities for office/flex space, making it attractive to employers and employees.

It is anticipated that the Crossroads Area will serve as a key employment center for the entire North Front Range, even attracting users from the northern edge of the Denver metropolitan area. The overall higher density anticipated in the area will also better address live/work opportunities. As experienced in other communities, these transportation corridor characteristics translate into lease rate premiums, higher occupancy rates and better economic returns for developers.

The “market-driven” approach to land use forecasts identified potential locations in the study area where development growth could be increased beyond that envisioned in the baseline forecast. These locations were considered to be potential “Specific Development Opportunity Areas”—areas where developable property, future proximity to an economic activity center, and/or changing development patterns represented an opportunity to capitalize on emerging market niches.

Specific Development Opportunity Areas are summarized in Table 7, below. Travel analysis zones (TAZs), established by the North Front Range MPO for traffic modeling purposes, were used to define the Development Areas. TAZ numbers are included to reference MPO data. Further descriptions of TAZs are in Section 3.3, Traffic Forecasts and in Appendix E, Crossroads Area Travel Forecasts.

Table 7: Specific Development Opportunity Area Characteristics					
Development Area: NEC I-25 & Hwy. 392					
Traffic Analysis Zone Affected: 116					
Land Use Mix:	Acres	Density +	SF/Units	Emp/HHs	
Office/Flex:	38	15.0%	248,292	828	NonRetail Emp
Retail:	7	20.0%	60,984	152	Retail Emp
Residential:	16	6	96	96	HHs (Med Income)

Table 7 (Continued)**Development Area: East/West Side I-25 Between Hwy. 392 & CR30****Traffic Analysis Zone Affected: 117**

Land Use Mix:	Acres	Density +	SF/Units	Emp/HHs	
Office/Flex:	132	15.0%	862,488	2,875	NonRetail Emp
Retail:	10	20.0%	87,120	218	Retail Emp
Residential:	150	1.5	225	225	HHs (Med Income)

Development Area: SWC I-25 & CR30**Traffic Analysis Zone Affected: 683**

Land Use Mix:	Acres	Density +	SF/Units	Emp/HHs	
Office/Flex:	0	15.0%	0	0	NonRetail Emp
Retail:	0	20.0%	0	0	Retail Emp
Residential:	0	0.9	0	0	HHs (Med Income)

Development Area: West Side I-25 Between CR30 & Earhart Drive**Traffic Analysis Zone Affected: 342**

Land Use Mix:	Acres	Density +	SF/Units	Emp/HHs	
Office/Flex:	72	15.0%	470,448	1,568	NonRetail Emp
Retail:	0	20.0%	0	0	Retail Emp
Residential:	0	0.9	0	0	HHs (Med Inc)

Development Area: NWC I-25 & Crossroads**Traffic Analysis Zone Affected: 685**

Land Use Mix:	Acres	Density +	SF/Units	Emp/HHs	
Office/Flex:	127	15.0%	829,818	2,766	NonRetail Emp
Retail:	10	20.0%	87,120	218	Retail Emp
Residential:	0	0.9	0	0	HHs (Med Income)

Development Area: SEC I-25 & CR30**Traffic Analysis Zone(s) Affected: 713,714,715**

Land Use Mix:	Acres	Density +	SF/Units	Emp/HHs	
Office/Flex:	290	15.0%	1,894,860	6,316	NonRetail Emp
Retail:	30	20.0%	261,360	653	Retail Emp
Residential:	320	2.3	740	740	HHs (Med Income)

Development Area: NEC & SEC I-25 & Crossroads**Traffic Analysis Zone(s) Affected: 710,711,712**

Land Use Mix:	Acres	Density +	SF/Units	Emp/HHs	
Office/Flex:	600	15.0%	3,920,400	13,068	NonRetail Emp
Retail:	70	20.0%	609,840	1,525	Retail Emp
Residential:	145	2.0	290	290	HHs (Med Income)

Table 7 (Continued)**Development Area: North Side Crossroads/West of Airport****Traffic Analysis Zone Affected: 684**

Land Use Mix:	Acres	Density +	SF/Units	Emp/HHs	
Office/Flex:	0	15.0%	0	0	NonRetail Emp
Retail:	0	20.0%	0	0	Retail Emp
Residential:	0	0.9	0	0	HHs (Med Income)

Development Area: NEC I-25 & US 34**Traffic Analysis Zone(s) Affected: 705,707**

Land Use Mix:	Acres	Density +	SF/Units	Emp/HHs	
Office/Flex:	879	19.0%	7,274,956	24,250	NonRetail Emp
Retail:	0	20.0%	0	0	Retail Emp
Residential:	500	2.0	1,000	1,000	HHs (Med Income)

Development Area: North Side US 34/East of Centerra**Traffic Analysis Zone(s) Affected: 724,726**

Land Use Mix:	Acres	Density +	SF/Units	Emp/HHs	
Office/Flex:	0	15.0%	0	0	NonRetail Emp
Retail:	0	20.0%	0	0	Retail Emp
Residential:	0	0.9	0	0	HHs (Med Income)

Development Area: South Side US 34/South of Centerra**Traffic Analysis Zone Affected: 383**

Land Use Mix:	Acres	Density +	SF/Units	Emp/HHs	
Office/Flex:	494	15.0%	3,227,796	10,759	NonRetail Emp
Retail:	0	20.0%	0	0	Retail Emp
Residential:	606	2.0	1,212	1,212	HHs (Med Income)

Development Area: West Side I-25/South of Crossroads**Traffic Analysis Zone Affected: 379**

Land Use Mix:	Acres	Density +	SF/Units	Emp/HHs	
Office/Flex:	120	15.0%	784,080	2,614	NonRetail Emp
Retail:	0	20.0%	0	0	Retail Emp
Residential:	0	2.0	0	0	HHs (Med Income)

Development Area: West Side I-25/South of Crossroads**Traffic Analysis Zone Affected: 380**

Land Use Mix:	Acres	Density +	SF/Units	Emp/HHs	
Office/Flex:	271	14.0%	1,652,666	5,509	NonRetail Emp
Retail:	0	20.0%	0	0	Retail Emp
Residential:	0	2.0	0	0	HHs (Med Income)

Source: The Robert Steiner Co.; DMJM+HARRIS; and Leland Consulting Group.

3.2.3 “Market-Driven” Socio-economic Forecast

The impacts of higher growth in the Specific Development Opportunity Areas were calculated for non-retail employment, retail employment, and households. These impacts were then phased into the future land use forecasts within the time period 2000 to 2020.

The impacts of this “market-driven” approach on Crossroads Area land use forecasts are summarized in the following Table 8.

Table 8: “ Market-Driven” Socioeconomic Forecasts					
North Front Range Region and Crossroads Area (1998 to 2020)					
Area	1998	2005	2010	2015	2020
Region					
Total Households	125,712	180,766	220,156	259,750	298,900
Employment					
Retail Employment	29,720	44,932	55,807	66,658	77,500
Retail Development (SF)	8,916,000	13,479,553	16,742,185	19,997,547	23,250,000
Non-Retail Employment	106,323	158,079	195,409	234,879	268,600
Office/Industrial Development (SF)	21,264,600	31,615,873	39,081,791	46,975,762	53,720,000
Crossroads Area					
Total Households	313	1,963	3,209	4,658	5,663
% Regional Market Share	0.2%	1.1%	1.5%	1.8%	1.9%
Employment					
Total Retail Employment	1,554	2,766	3,642	4,493	5,335
Retail Development (SF)	543,900	968,152	1,274,633	1,572,632	1,867,237
% Regional Market Share	6.1%	7.2%	7.6%	7.9%	8.0%
Total Non-Retail Employment	507	14,796	25,362	38,069	45,019
Office/Industrial Development (SF)	101,400	2,959,104	5,072,473	7,613,895	9,003,836
% Regional Market Share	0.5%	9.4%	13.0%	16.2%	16.8%

Source: North Front Range MPO and Leland Consulting Group.

The Crossroads Area currently contains approximately 300 households, or 0.2 percent of the Region’s total households. The market-driven land use forecasts indicate the potential for approximately 5300 new housing units, which is 3 percent of the Region’s housing growth over the next twenty years.

Currently, the Area contains approximately 1600 retail employees, or 5 percent of the Region’s total retail employment. It contains approximately 544,000 square feet of retail development, which is 6 percent of the Region’s total. The market-driven forecasts indicate the potential for approximately 3800 new retail employees and 1.3 million new square feet of retail development, which respectively are 8 percent and 9 percent of the Region’s total growth in these indicators.

The potential for the greatest capture of the Region’s future growth exists in the areas of non-retail employment and office/industrial development. The Crossroads Area currently contains

approximately 500 non-retail jobs and 101,400 square feet of office/industrial development, which represent 0.5 percent of the Region's totals. The market-driven forecasts indicate the potential for more than 45,000 non-retail jobs and 9 million square feet of office/industrial development in the area, which would represent approximately 27 percent of the new non-retail jobs and new office/industrial development in the Region over the next twenty years.

3.3 TRAFFIC FORECASTS

While a necessary and important element of the Crossroads Area Transportation Study, the process of developing forecasts of traffic volumes and conditions is assumed to be of interest to a relatively small group of traffic and transportation planning professionals. This section of the report will provide only a brief overview of that process. More detailed information concerning the development of traffic forecasts may be found in Appendix E, Crossroads Area Travel Forecasts.

3.3.1 Development of Regional Model

The existing Loveland Travel Demand Model was used to develop travel demand forecasts for the Crossroads Area Transportation Study. The Loveland Model, while similar to the North Front Range (NFR) Regional Travel Model, has a more detailed traffic analysis zone structure and roadway network.

For consistency with previous travel forecasting procedures, the model was run with the MINUTP Version 93A software package using the four-step structure: (1) trip generation; (2) trip distribution; (3) mode split; and (4) trip assignment. Trip generation is the process of estimating the numbers of person-trips produced by and attracted to each pre-assigned traffic analysis zone in the area. Trip distribution is the process of linking trip productions from one zone to trip attractions in the other zones. The mode split module assigns a certain portion of the total trips to alternative modes of transportation such as bicycle/pedestrian and transit. Trip assignment is the process of determining the best travel paths used by people traveling in vehicles.

3.3.2 Roadway Network Modifications

The network used in the travel forecasting process included future major roadway projects. The base future roadway network included all interchanges and capacity improvements identified in the North Front Range 2020 Regional Transportation Plan as well as the improvements in the City of Loveland's Transportation Master Plan.

Four alternative roadway networks, in addition to the base 2020 Regional Transportation Plan network, were developed for the analysis. These alternative networks included features such as the extension and connection of existing road segments or the development of new roadways in the study area. Modeling future travel on these alternative networks assisted in the eventual development of the preferred future roadway network described later in this report.

3.3.3 Trip Generation Modifications

Two alternative trip generation procedures were developed during the course of the study. The first procedure applied the trip generation module as originally specified in the Loveland Model. In effect, this procedure redistributed households and employment from other areas within the North Front Range region to the Crossroads Area.

The second trip generation alternative represents new households and employment in the Crossroads Area rather than a redistribution of previously forecast households and employment in the region. This alternative was based on the “market-driven” land use forecasts discussed earlier in this report, which indicate that growth projections for the Crossroads Area may be higher than previous land use forecasts envisioned.

A total of eleven model runs were completed for the study using various combinations of the alternative roadway networks and the alternative trip generation procedures.

4.0 RECOMMENDATIONS

Recommended transportation improvements in the Crossroads Area are divided into three major categories: (1) Future roadway network; (2) Interchange configurations; and (3) Alternative mode improvements.

4.1 FUTURE ROADWAY NETWORK

In this category, the recommendations focus on needed improvements to the Crossroads Area roadway network. The recommended improvements are necessary to accommodate future traffic volumes forecast earlier in the study and reduce the impacts of localized traffic on I-25 and the interchanges. Emphasis is placed on preserving capacity of local arterials through access control as well as through improving roadway system interconnectivity.

Although the focus of the proposed improvements in this category is on roadway elements, the study recognizes the importance of alternative modes and incorporates features and alignments that effectively interface with transit, commuter rail, and bicycle/pedestrian facilities

4.1.1 Goals for the Network

The development of a recommended future roadway network for the Crossroads Area was guided by the following goals:

- **Operations:** Provide a high level of service and convenience to roadway users.
- **Impact on Existing Development and Environmental Impacts:** Minimize disruption of existing developments and environmentally sensitive areas.
- **Access to Development:** Accommodate existing and proposed developments with appropriate and convenient access across the study area.
- **Encourage Local Traffic to use Local Roads:** Provide alternative routes that do not require local traffic to use I-25 and the existing interchanges to move through and about the study area.
- **Connectivity:** In addition to providing local connectivity within the study area, emphasize connections to regional transportation facilities.
- **Traffic Safety:** Make safety a priority in addressing measures of operation.
- **Transit Accommodation:** Consider the need for future transit facilities such as park-n-rides, bus stops, and transit centers.
- **Pedestrian/Bicycle Accommodation:** Encourage or be friendly toward pedestrians and bicycles. Provide the ability to manage inherent conflict among these modes and vehicles.

- Rights-of-Way: Consider the relative costs and impacts of right-of-way acquisition.
- Ability to Phase Improvements: Adaptability to construction in logical and financially feasible phases, or as the adjacent land is developed.
- Relative Construction Cost: Consider the relative costs of constructing the specific network improvements.

4.1.2 Methods

Alternative roadway networks were developed and evaluated from several different perspectives.

Compatibility with Local and Regional Plans

A thorough review of local and regional plans and programs identified the starting point for developing the future transportation network. A base network from the North Front Range MPO's 2020 Regional Transportation Plan was supplemented with network enhancements such as those proposed in the City of Loveland and Town of Windsor Transportation Plans. Efforts were made to ensure that the recommended network would be compatible with the I-25 Corridor Plan, which was being developed at the same time the Crossroads Area Transportation Study was underway.

The local and regional plan review also provided information on construction phasing and committed funding levels.

Developer Plans

One-on-one interaction with developers and landowners in the study area and with local planning departments added another dimension to the future network, identifying the major roadways critical to approved and proposed development plans. This was important from a funding perspective as well; it helped differentiate the elements of the roadway network that would likely be constructed solely by developers from the elements that had an area-wide or regional nature, which might be candidates for funding by a public/private partnership.

Evaluation of Existing and Future Traffic and Operations

The evaluation of the existing roadway network under future traffic conditions was analyzed using a "no-build" scenario. Under the "no-build" scenario, no improvements were made to accommodate future traffic volumes. Through analysis of the impact of forecast traffic volumes in the absence of significant roadway improvements, it was possible to identify existing and future system deficiencies and select alternatives that addressed these deficiencies.

Public and Stakeholder Consultation

Initial alternatives and their relative impacts were presented to stakeholders at one of their meetings and to the general public at one of the open houses. On several occasions, input from stakeholders and the public resulted in more detailed follow-up meetings to further explain and fine-tune alternatives. Meetings with stakeholders and the public were also helpful in developing consensus on a "preferred" alternative.

4.1.3 Major Elements of Network Alternatives

Using the method described above, four alternatives for the future roadway network were developed and analyzed. None of the alternatives were mutually exclusive, but presented different combinations of a number of major roadway elements including the following:

- Make County Road 3 a continuous roadway between US34 and SH392. This would involve crossing several drainage ways between Crossroads Boulevard and County Road 30.
- Make County Road 5 a continuous roadway between US34 and SH392.
- Make County Road 7 a continuous roadway between US34 and SH392. This alternative would use the proposed alignment of Rocky Mountain Avenue south of Crossroads Boulevard.
- Complete the missing segments of the frontage roads on the east and west sides of the interstate. The continuous frontage roads would be one-way–northbound on the east side of I-25 and southbound on the west side. “Texas turnarounds” would be constructed at major intersections to provide connections between the frontage roads.
- Pull the frontage roads away from the interstate to improve operations at the interchanges.
- Make County Road 30 a continuous roadway between Boyd Lake Avenue and County Road 3. This would require a new overpass over I-25.
- Make Earhart Drive a continuous roadway between new extensions of County Road 7 and County Road 5. This would require a new overpass over I-25.
- Create a new parkway along the Union Pacific railroad right-of-way using an underpass under I-25 to connect the east and west sides of the study area.

4.1.4 Recommended Roadway Network

The recommended roadway network that emerged from the evaluation of network alternatives is illustrated in Figure 15. This network includes a number of the major elements described above, providing consistency with local and regional transportation plans, and incorporating refinements based on input from area stakeholders and the public.

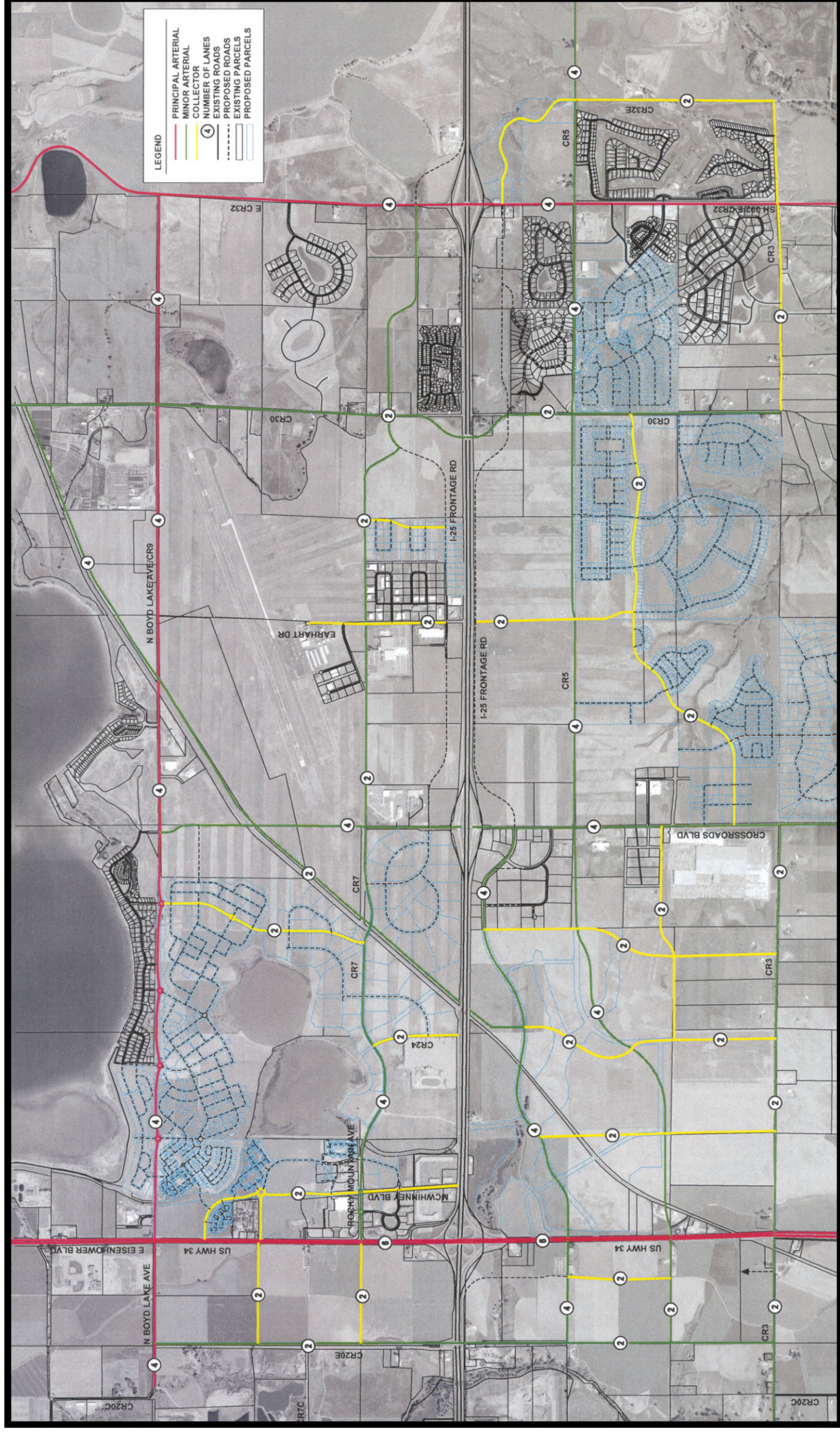
Significant Features of the Recommended Roadway Network

The significant features of the recommended roadway network are described below. It is important to note that the roadway elements shown in Figure 15 and described below are preliminary at this time and are not meant to be precise alignments. Detailed engineering designs must be developed to provide precise alignments. Those designs would take into account more detailed assessments of topography, environmental constraints, impacts on affected property owners, and right-of-way and construction costs.

North/South Connections

A number of alternatives for north/south travel through the study area are recommended to reduce the reliance on the interstate for north/south travel. On the west side of the interstate, Boyd Lake Avenue (County Road 9) and Rocky Mountain Avenue (County Road 7) would be continuous north/south arterials between US34 and County Road 32. Boyd Lake Avenue is recommended to be a four-lane roadway, and Rocky Mountain Avenue would be a four-lane roadway between US34 and Crossroads Boulevard. On the north end of the study area, County Road 7 and the realigned frontage road would be combined between County Roads 30 and 32.

Figure 15: Proposed Roadway Network.



On the east side of the interstate, County Road 5 would be the continuous north/south arterial between US34 and SH392. It is recommended that County Road 5 be a four-lane roadway.

County Road 3 would become a paved two-lane roadway between US34 and Crossroads Boulevard.

East/West Connections

Two additional crossings of I-25 would enhance east/west travel in the study area, offering alternatives to using the existing interchanges. A new overpass at County Road 30 is shown slightly to the south of the existing County Road 30 alignment to reduce the impacts to the existing Mountain Range Shadows development.

A new underpass (or modifications of the existing structure) would carry east west traffic on a new parkway developed along the Union Pacific railroad track alignment. The new parkway would connect Boyd Lake Avenue with US34, using a connection with a proposed roadway in McWhinney Enterprises' development northeast of the I-25/US34 interchange. It is recommended that US34 be a six-lane roadway and SH392 be a four-lane roadway. Crossroads Boulevard would also be a four-lane roadway across the study area. Along the south boundary of the study area, it is recommended that County Road 20E become a continuous east/west roadway between County Road 3 and Boyd Lake Avenue (County Road 9).

Frontage Road Realignments

The recommended alternative also shows a number of realignments of the frontage roads on I-25, primarily to improve operations at the existing interchanges. On the west side of the interstate, the frontage road would be one-quarter to one-third or a mile west of the interstate between County Roads 32 and 30. The frontage road would be less than one-eighth of a mile west of the interstate between County Road 30 and Crossroads Boulevard.

On the east side of the interstate, the recommendation is that the frontage road be slightly more than one-eighth of a mile east of the frontage road between SH392 and County Road 30. The frontage would retain its alignment close to I-25 between County Road 30 and Crossroads Boulevard. South of Crossroads Boulevard, the frontage road would become an arterial roadway through the proposed McWhinney Enterprises development.

Interchanges

The proposed network is compatible with recommendations for the future configurations of interchanges along I-25, which are discussed in Section 4.2, below.

Future Traffic Volumes and Levels of Service on the Recommended Roadway Network

The recommended roadway network adequately serves the travel volumes forecast earlier in the study. Using the CORSIM computer modeling tool, as was done for existing traffic volumes (Section 2.3, Existing Transportation Operations), detailed intersections operations were evaluated and levels of service were identified. The results were generally good. Selected movements, particularly on the US34 corridor, were observed to experience significant delays during the design hour, and therefore reported lower levels of service. However, because the through lane capacities on the main and cross streets are adequate, it should be assumed that intersection improvement measures would serve to significantly reduce the identified delays. Figures 16 and 17, illustrate the design hour traffic volumes and intersection levels of service for the recommended roadway network in the year 2020.

Figure 16: 2020 Design Hour Traffic Volumes

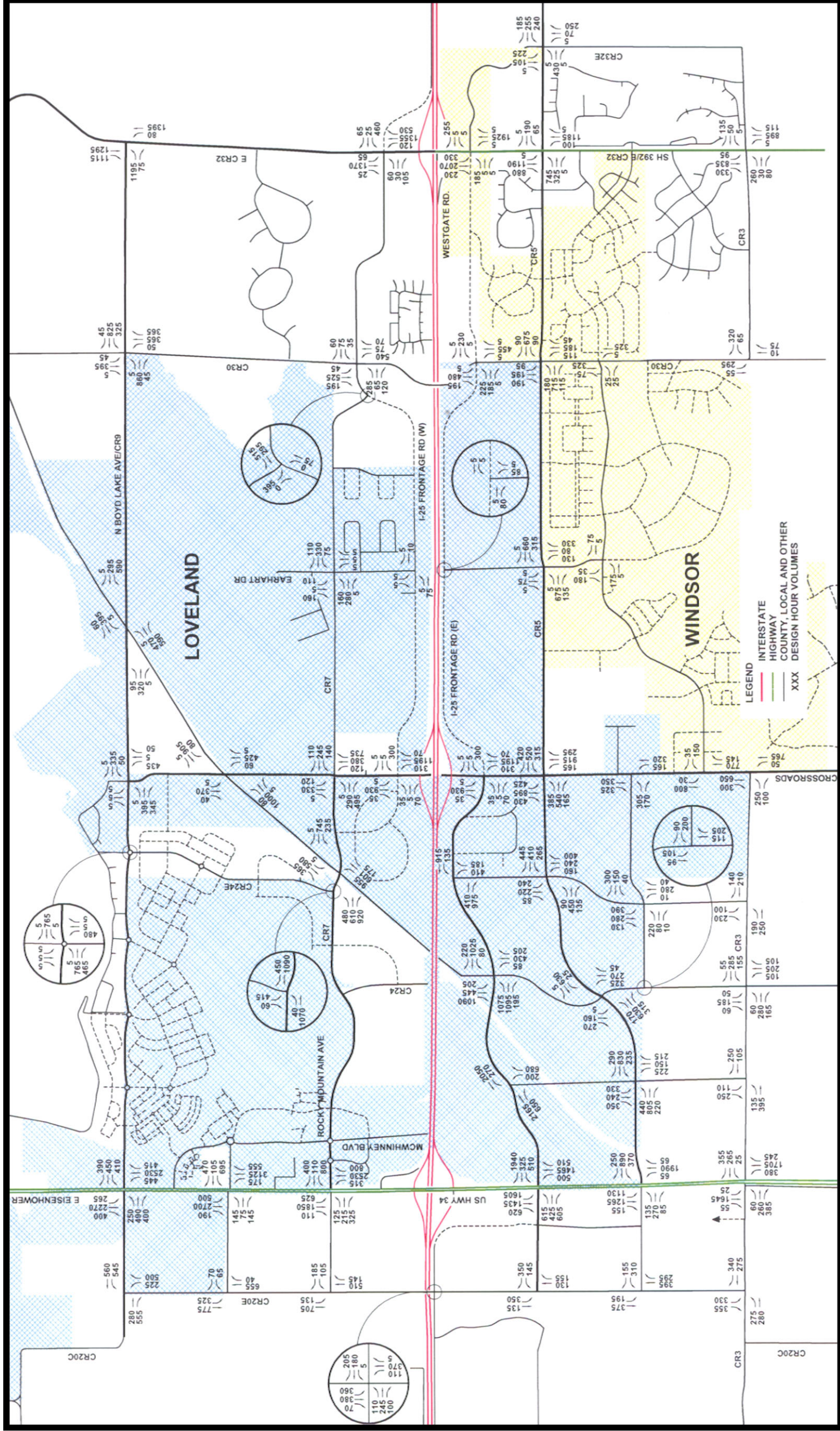
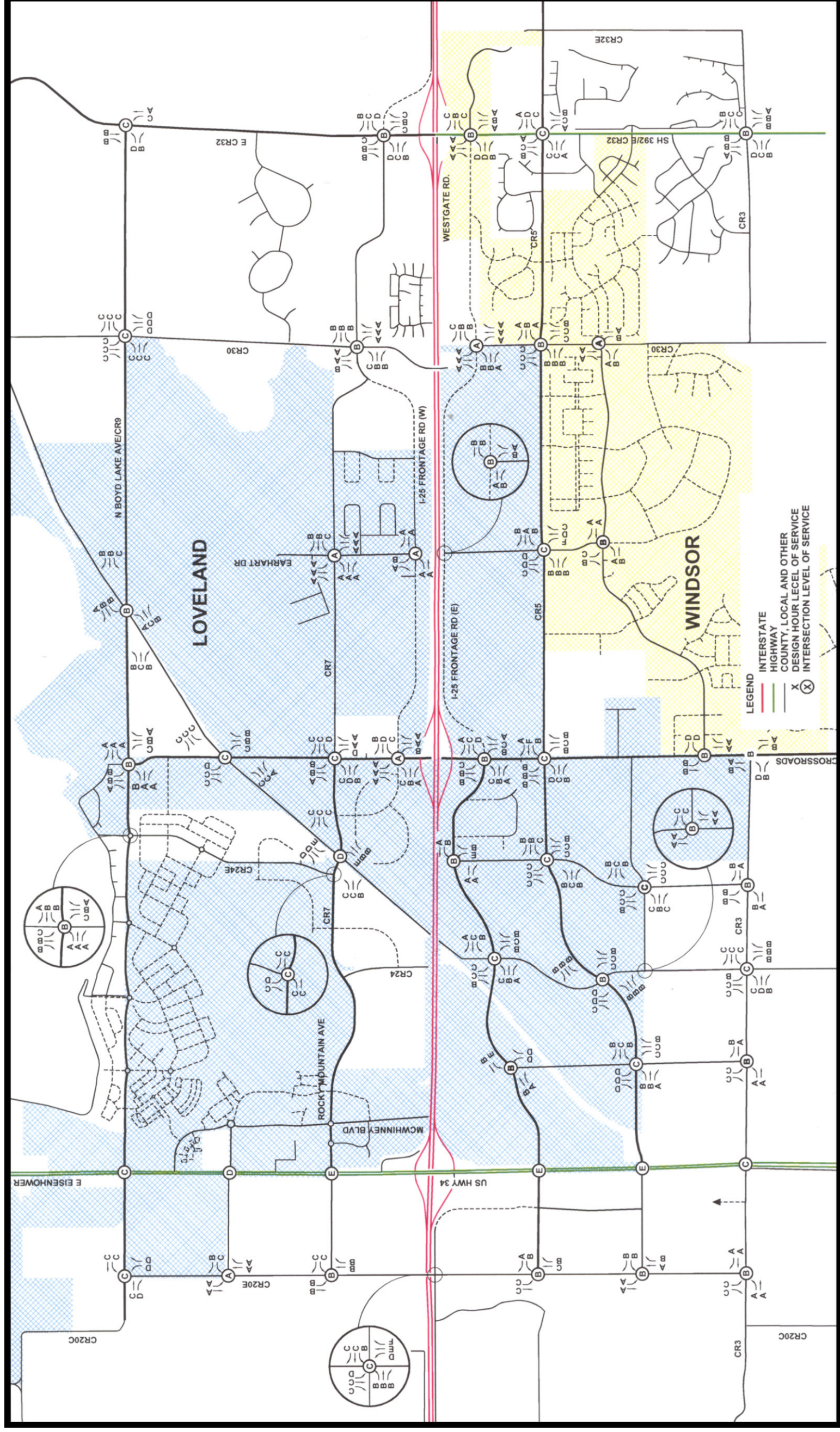


Figure 17: 2020 Design Hour Level of Service



4.2 FUTURE INTERCHANGE CONFIGURATIONS

The interchanges on I-25 at SH392, Crossroads Boulevard, and US34 are currently experiencing problems due to the current configurations and traffic volumes. These problems will become significantly worse as more development occurs in the Crossroads Area and elsewhere in the region. The interchanges will need to be reconfigured and improved. CDOT has established a detailed process for analyzing modifications to interchanges. This process is set forth in CDOT Policy Directive 1601. The analysis and recommendations of the Crossroads Area Transportation Study should be considered only the first step toward satisfying the requirements of Policy Directive 1601. More rigorous and detailed analyses must be completed for each of the interchanges before a final determination could be made about future configurations and improvements.

While the full Policy Directive 1601 process was beyond the scope of the Crossroads Area Transportation Study, the objective of this portion of the study is to identify the most likely configurations for these future interchanges based on the best information available at the time. Local jurisdictions in the study area can use these configurations to preserve the necessary rights-of-way and possibly phase some of the interchange improvements in conjunction with development projects adjacent to the interchanges.

The following sections provide brief descriptions of the interchange analyses and a description of the most likely future interchange configurations. A more detailed discussion of this process can be found in Appendix F, Alternatives Analyses.

4.2.1 Alternative Screening Processes

At least three alternatives were developed for each of the three interchanges. These alternatives were initially compared to criteria in four categories to select a short list of alternatives for more detailed analysis. The four initial screening categories were: (1) operating characteristics; (2) impacts on property and the environment; (3) the ability to phase construction and the complexity of construction; and (4) relative construction costs.

Alternatives that were retained after the initial screening were analyzed in greater detail in similar areas: operational criteria; construction phasing and traffic control; socio-economic and environmental criteria; and comparative conceptual costs. Sensitivity analyses were conducted to evaluate the alternatives' ability to provide adequate levels of service beyond the twenty-year planning period. Alternatives for the US34 interchange were also analyzed for compatibility with future rail facilities in the area and compatibility with potential short-term safety modifications.

4.2.2 I-25 and State Highway 392

The existing SH392 interchange is a diamond interchange with conventional, two-way frontage roads in the northwest, southwest, and southeast quadrants. SH392 crosses over I-25 with a two-lane bridge, allowing one lane of travel in each direction. The intersections of the existing one-lane ramps are spaced approximately 600 feet apart along SH392. The west frontage road intersection is less than 150 feet west of the ramp intersection. The west ramp and frontage road intersections are currently signalized, with the signals functioning as one signal because of their proximity. A recent development in the Town of Windsor, Westgate Commercial Center, has relocated the east frontage road to Westgate Drive, approximately 600 feet east of the ramp intersection. The east ramp intersection is currently signal controlled, and the east frontage road intersection is stop sign controlled.

Goals for the New Interchange

The proximity of the west frontage and ramp intersections presents problems in terms of both safety and capacity. One goal for this interchange is to provide much greater intersection spacing between the west frontage road and ramp intersections. A second goal is to provide more capacity and dedicated left and right turning lanes for vehicles accessing the interstate from SH392.

Concept Alternatives and Recommendation

Three alternatives were initially considered for the I-25/SH392 interchange: (1) a compressed diamond; (2) a tight diamond; and (3) a single-point urban configuration.

The recommended alternative is a single-point urban configuration, as shown in Figure 18. This recommended configuration includes the following features:

- East frontage road intersection at existing location—Westgate Drive
- West frontage roads relocated to a point approximately 1150 west of the interstate
- Two through lanes on SH392 over the interstate
- Single right-turn lanes 200 feet in length for eastbound and westbound traffic
- Double left-turn lanes 250 feet in length for eastbound and westbound traffic
- Two-lane off-ramps and two-lane on-ramps tapering to one-lane entrances
- Three protected signal phases:
 - Northbound and southbound off-ramp lefts
 - Westbound through
 - Eastbound through

4.2.3 I-25 and Crossroads Boulevard

The existing interchange at I-25 and Crossroads Boulevard is a diamond interchange with conventional, two-way frontage roads in the northeast and northwest quadrants. I-25 crosses over Crossroads Boulevard with two separate, three-span structures for northbound and southbound I-25, with the elevation of the northbound lanes approximately eight feet higher than the southbound lanes. Crossroads Boulevard is a two-lane roadway and there is no possibility of adding additional lanes without reconstructing the existing bridges. The existing ramp intersections are spaced approximately 380 feet apart along Crossroads Boulevard, and the frontage road intersections are 80 feet east and west of the ramps. All of the ramp and frontage intersections are currently stop sign controlled. This interchange receives a high percentage of truck traffic because the Wal-Mart distribution facility is located at the southwest corner of Crossroads Boulevard and County Road 3. The recommended alternative is a compressed diamond configuration, as shown in Figure 19.

Figure 18: SH 392 Single Point Urban Interchange

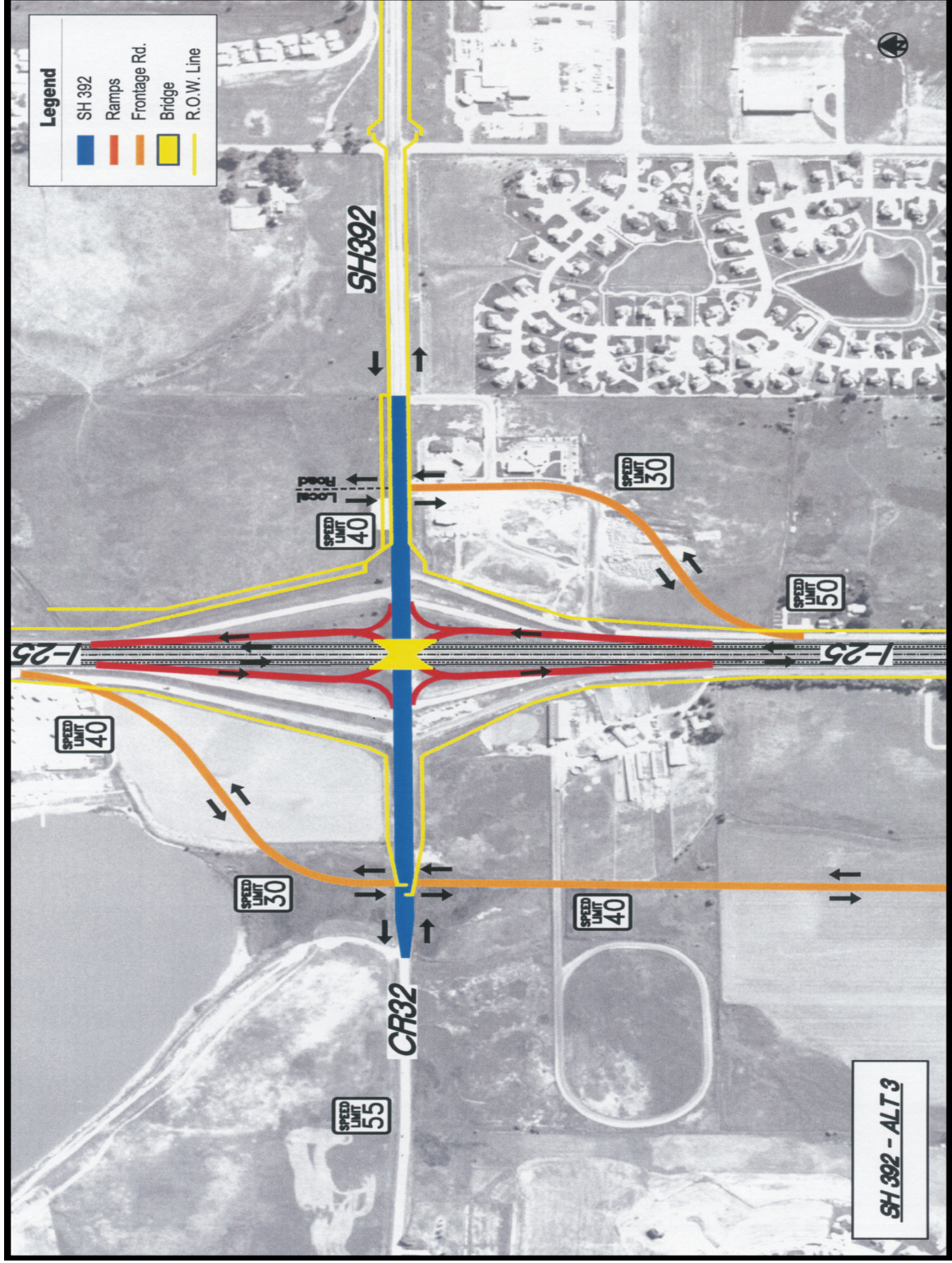
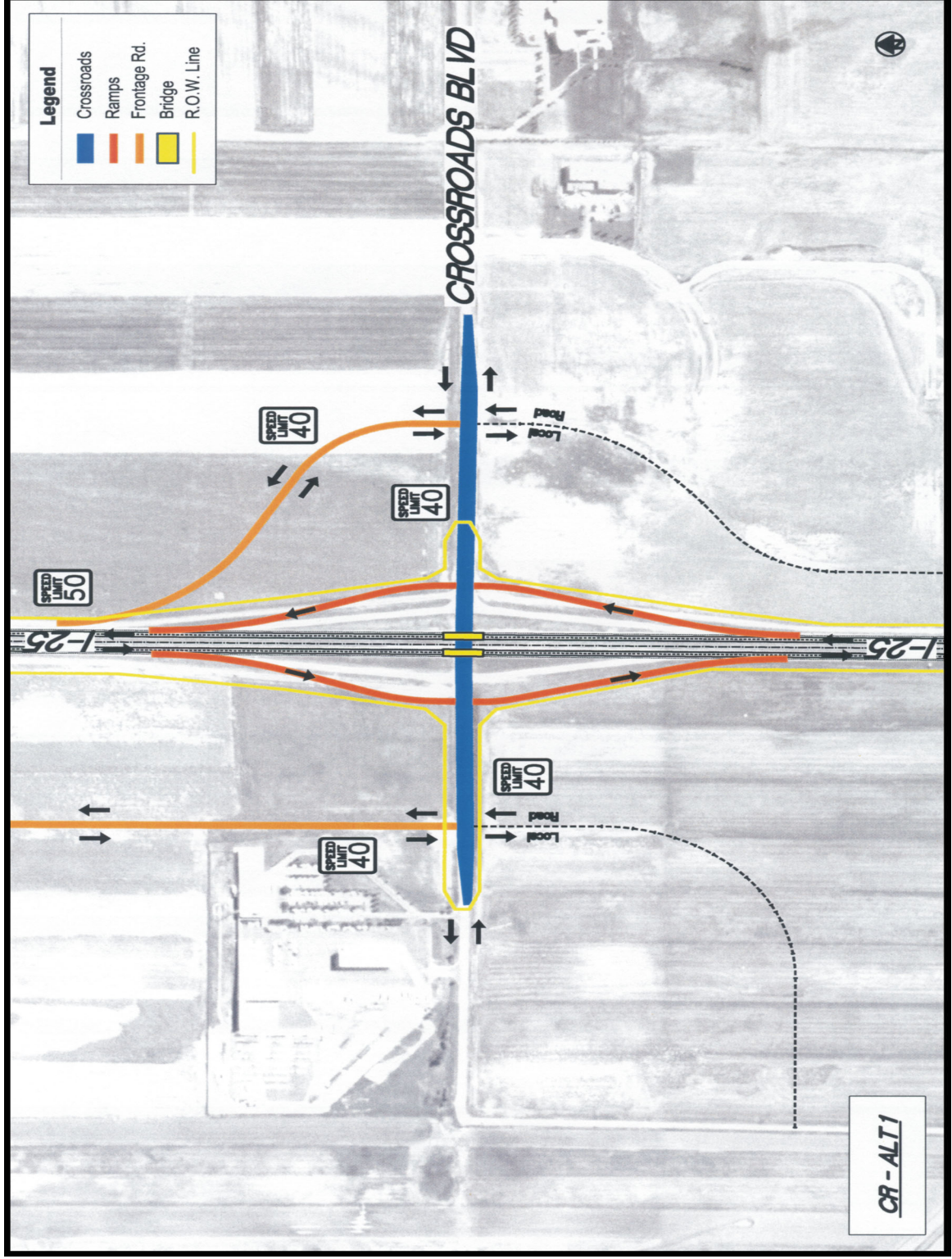


Figure 19': Crossroads Diamond Interchange



Goals for the New Interchange

The Larimer County Fairgrounds & Events Center is soon to be constructed in the northeast quadrant of the interchange, and residential and commercial development pressure in the vicinity of the interchange will soon increase traffic volumes through this interchange. Goals for the new interchange include providing better spacing between the ramp and frontage road intersections to improve operations and providing additional capacity along Crossroads Boulevard to and from I-25 to accommodate future traffic volumes.

Concept Alternatives and Recommendation

Three alternatives were initially considered for the I-25/Crossroads Boulevard interchange: (1) a compressed diamond; (2) a tight diamond; and (3) a single-point urban interchange. This recommended configuration includes the following features:

- A diamond interchange with ramp interchanges separated by 630 feet
- West frontage road relocated to approximately 610 feet west of the interstate
- East frontage road relocated to approximately 890 feet east of the interstate
- Two through lanes on Crossroads Boulevard
- Single right-turn lanes 200 feet in length for eastbound and westbound traffic
- Double left-turn lanes 250 feet in length for eastbound and westbound traffic
- Acceleration lanes for right-turning off-ramp movements 300 feet in length
- Two-lane off-ramps and two-lane on-ramps tapering to one-lane entrances
- Traffic signals with protected left-turn phases

4.2.4 I-25 and US Highway 34

The existing I-25/US34 interchange is a full cloverleaf with conventional, two-way frontage roads in the southeast and northeast quadrants. US34 crosses over I-25 with two separate four-span structures and is a four-lane roadway.

The existing loop ramps were constructed with a radius of approximately 170 feet and design speed of 25 miles per hour, forcing very low speed access to and from a very high speed interstate. The relatively high volume of ramp traffic using these low speed loops impedes the through traffic along I-25 and makes merging hazardous.

The east frontage road intersects US34 less than 300 feet east of the ramp merge points at a north/south stop sign controlled intersection.

Goals for the New Interchange

The low speed loop ramps to and from I-25 and the proximity of the east frontage road intersection create hazardous driving conditions in this high volume interchange. Goals for the new interchange are to replace the low speed loops with ramps that are safer and have greater capacity to access the interstate and US34, and to provide better spacing between the interchange and the east frontage road.

Concept Alternative and Recommendation

Nine alternatives were considered for the interchange at I-25 and US34: a cloverleaf with one-way continuous frontage roads; a cloverleaf with dedicated collector-distributor roads; three diamond configurations; a full cloverleaf; a partial cloverleaf with directional fly-over ramps; a fully directional interchange; and a single-point urban interchange.

The recommended alternative is a fully directional interchange, as shown in Figure 20. The recommended configuration includes the following features:

- All ramp movements are directional, non-signalized movements
- The interchange is four levels
- Fly-over ramps are designed for 40 miles per hour
- The east frontage road intersection is located 2400 feet east of the interstate

Potential Short-term Safety Improvements

The design team investigated interim safety improvements for the I-25/US34 interchange. The engineering analysis was purely conceptual with the intent of addressing the hazardous weaving condition that now exists between the loop vehicles and the interstate traffic.

The weave movements, both northbound and southbound, must take place within a very short length of auxiliary lane (approximately 400 feet) between the 25 mile per hour loops. Off-ramp vehicles accessing the loops must brake sharply within this auxiliary lane and may enter the loop at speeds above the design speed. The short auxiliary lane also forces many of these vehicles to begin decelerating while still on the outside through travel lane of I-25, impeding the flow of interstate traffic. On-ramp vehicles accessing I-25 from a loop ramp are forced at low speed to find a gap with vehicles in the auxiliary lane leaving the interstate at higher speeds. Once a gap is obtained, no recovery/acceleration lanes exists beyond the short auxiliary lane between loops, so these vehicles typically merge with interstate traffic at speeds well below the speeds of vehicles they are attempting to merge with. This again impedes the flow of interstate traffic. The combination of these movements creates hazardous driving conditions for vehicles using the ramps as well as for through traffic on the interstate.

The concept investigated, illustrated in Figure 21, involves lengthening the distance along the interstate between the north and south ramps, creating in effect a longer lane for vehicles exiting the interstate at a loop to decelerate and for vehicles merging with interstate traffic from a loop to accelerate. This would reduce the differences in speeds for vehicles between the loop ramps, allowing vehicles to find gaps and merge at lower speeds. In theory, this would also reduce the impedance of through traffic on the interstate.

Figure 20: US 34 Full Directional Interchange

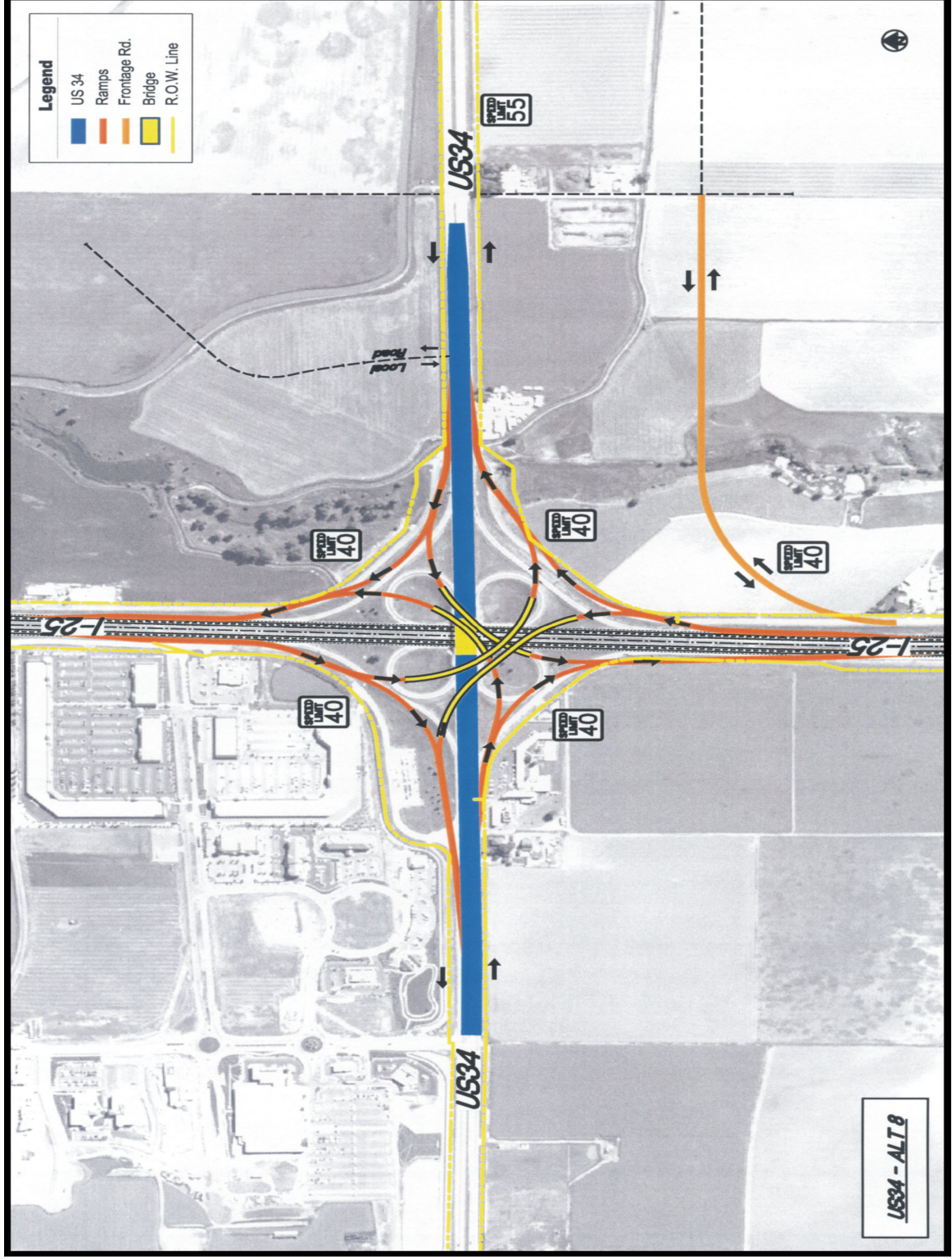
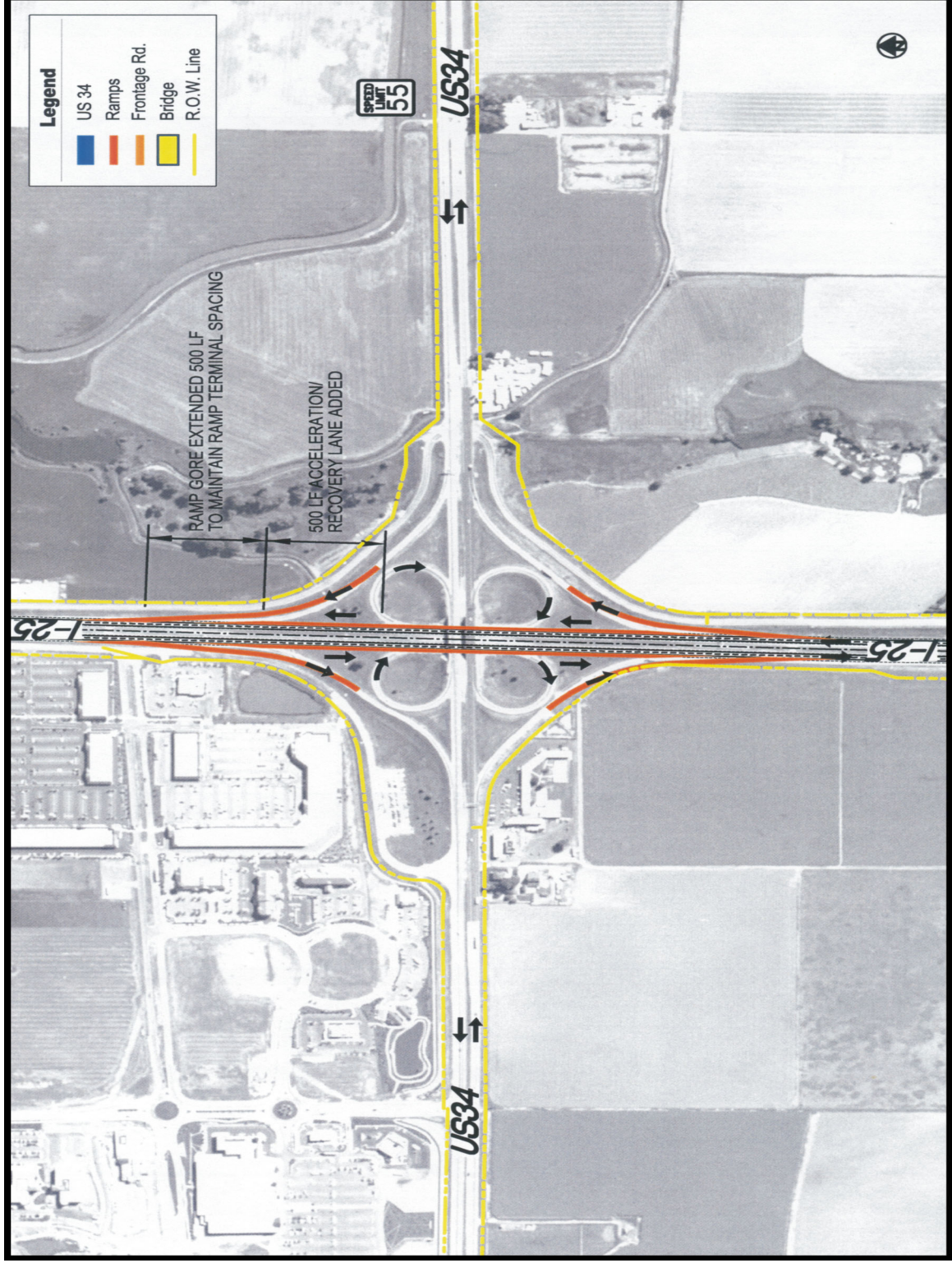


Figure 21: US 34 Existing Interchange, Conceptual Safety Improvements



4.3 ALTERNATIVE MODE IMPROVEMENTS

With the emphasis on a future road network and interchange configurations, it may appear that the study is aimed only at accommodating the demands of automobiles. In fact, the recommendations of the study are aimed at providing a complete transportation system that accommodates alternative modes of transportation as well. Within the proposed system, illustrated in Figures 22 and 23, opportunities are created for all modes of transportation to be complementary and interconnected.

4.3.1 Future Passenger Rail

The development of passenger rail facilities between the Denver Metro area and the North Front Range is recommended in The North Front Range Transportation Alternatives Feasibility Study (TAFS), including facilities through the study area. The proposed rail line would enter the study area, running along the west side of I-25, passing under US34 between the west frontage road and the southbound lanes of the interstate. The line would continue north along this alignment to the Union Pacific railroad tracks. It would turn to the northwest along these tracks and exit the study area at Boyd Lake Avenue, continuing on to Fort Collins. A second line to Greeley would follow the Union Pacific railroad tracks in the southeast corner of the study area.

The proposed transportation system is planned to function effectively without this rail component initially, but to function even more effectively once the rail component is in place. One of the criteria used to evaluate alternatives for the interchange at I-25 and US34 was how well the alternative accommodated the future rail facilities. A key element of the proposed roadway network—the development of a roadway parallel to the Union Pacific railroad tracks, and therefore parallel to the future passenger rail line—provides opportunities to connect all of the modes of transportation at an intermodal transfer station, discussed in Section 4.3.4 below.

4.3.2 Bicycle and Pedestrian Facilities

The roads in the proposed roadway network should be developed as multi-modal facilities, with adequate provisions for bicyclists and pedestrians in the form of on-street bicycle lanes and sidewalks. The recommendation for a grid roadway network in the study area is intended to allow bicycles and pedestrians to move freely between residential, retail, employment, and recreational sites within the study area. The provision of two new connections across I-25 at County Road 30 and the parkway along the Union Pacific railroad tracks, together with the reconstruction of the Crossroads Boulevard interchange, will allow bicycles and pedestrians to move east and west freely without having to use the higher speed, higher volumes highways (US34 and SH392).

4.3.3 Transit

The proposed network of multiple north/south and east/west roadways in the study area provides opportunities for the design of transit routes within the study area that do not rely on the busier highways. The network also provides opportunities to create transit routes connecting the surrounding communities with the proposed employment and retail centers in the study area. The parkway along the Union Pacific railroad tracks, if continued west of Boyd Lake Avenue, would provide a strong connection to the City of Fort Collins' major transportation corridor along Timberline Road. County Road 5 and Crossroads Boulevard provide connections to the Town of Windsor and western Weld County. US34, Boyd Lake Avenue, Crossroads Boulevard and the diagonal parkway all provide connections with the City of Loveland.

Figure 22: US 34 Full Directional Interchange, Potential Commuter Rail Alignment

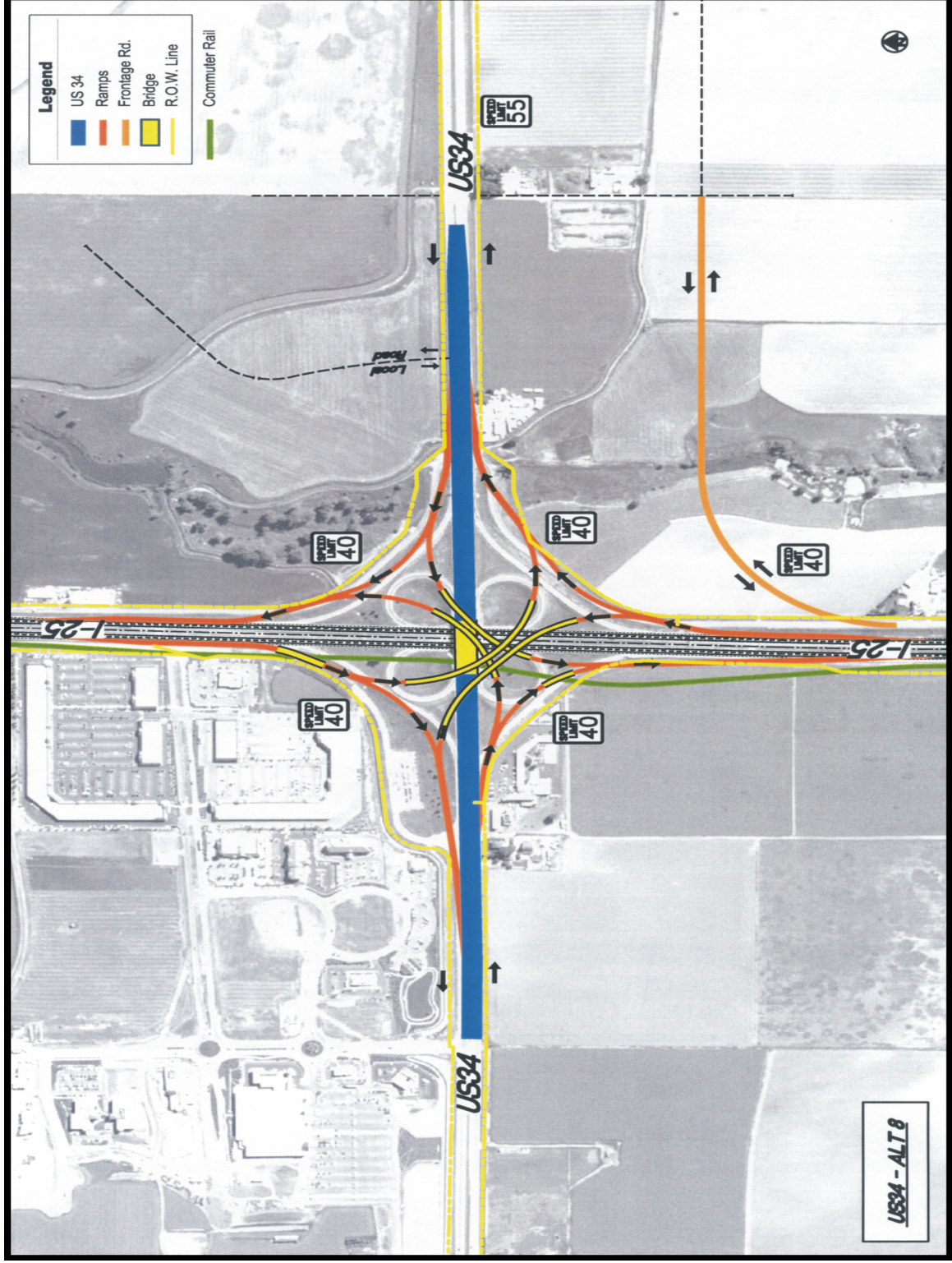
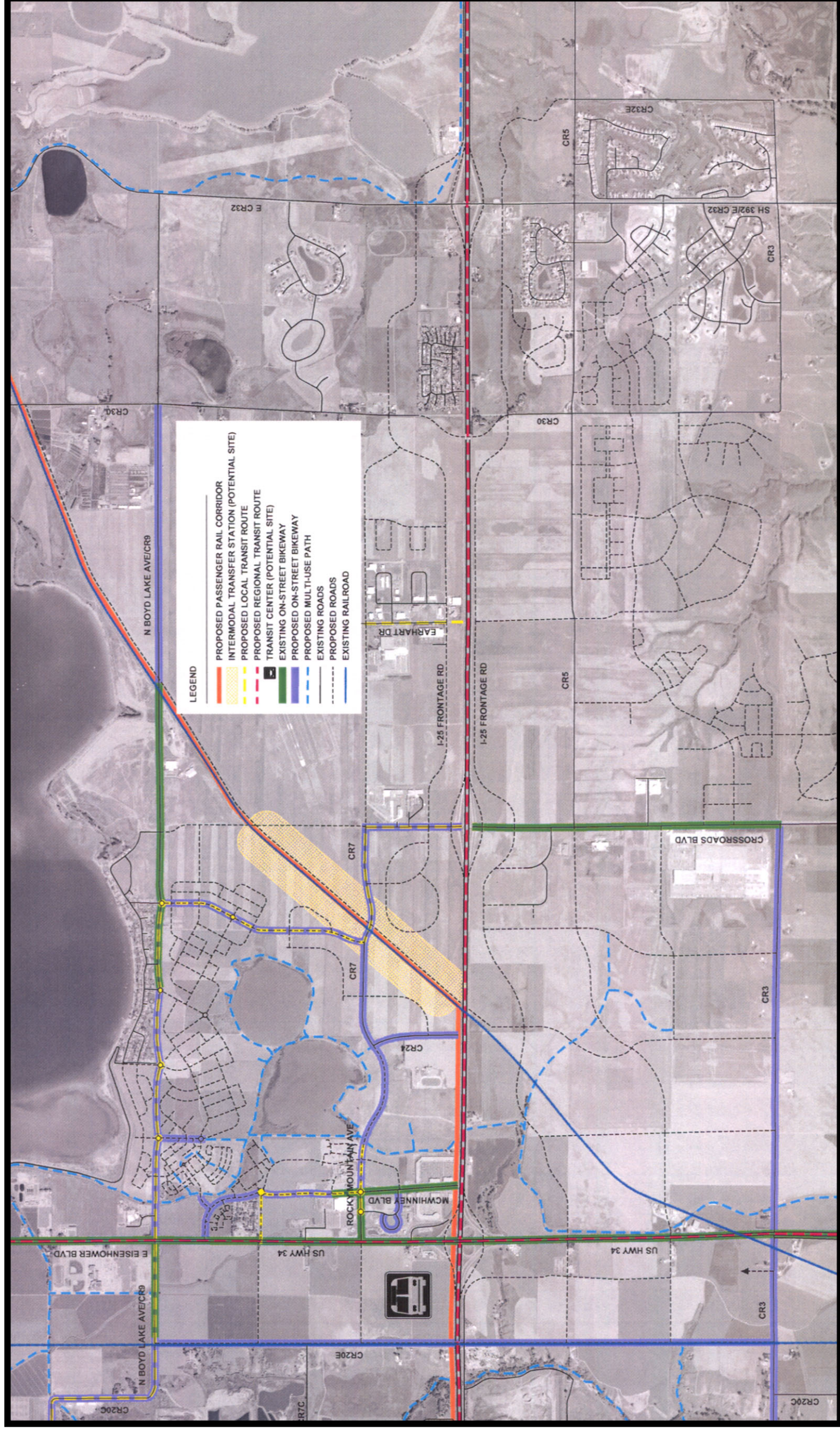


Figure 23: Existing/Proposed Alternative Modes of Transportation



4.3.4 Intermodal Transfer Station

One of the most important recommendations in the study, in terms of alternative mode improvements, is to plan for an intermodal transfer station along the new diagonal parkway/passenger rail line between I-25 and Boyd Lake Avenue as shown in Figure 23. The Crossroads Area presents a unique opportunity for the multi-modal transportation systems of three communities to converge. The grid roadway network, the rail line, and the adjacent airport allow trains, planes, automobiles, buses, bicycles, and pedestrians to interface at a single point, allowing for transfers between modes and between local transportation systems.

5.0 IMPLEMENTATION OF RECOMMENDED IMPROVEMENTS

CDOT and the city, town, and county governments in the North Front Range region have collectively identified hundreds of millions of dollars worth of transportation improvements needed to address existing transportation problems. Furthermore, they have identified hundreds of millions of dollars worth of transportation improvements that will be needed in the future to meet the transportation demands of additional development. Each of these governments is struggling with the question of how to fund these current and future transportation needs with limited existing resources and with existing funding mechanisms.

The recommendations of this study—the proposed roadway network, the future interchanges, and the alternative mode improvements—represent additional hundreds of millions of dollars worth of future transportation improvements. One of the goals of the study was to investigate ways to fund those improvements rather than simply adding to the region’s transportation funding dilemma.

5.1 PHASING IMPROVEMENTS

The first step in investigating ways to fund the transportation improvements proposed in the study area is to estimate how those improvements might be phased over time. Information about the possible phasing of improvements came from three sources. First, the “market driven” socio-economic forecasts described above in Section 3.2.3 offered some insights into the rate at which the area might develop in five year increments over the next twenty years. Discussions with developers and landowners in the study area provided additional information about which projects or phases of development might be constructed in a relatively short time, and which ones might not be constructed for a number of years. Finally, discussions with the local government representatives on the project Steering Committee added one more perspective on potential phasing. Using this information, a construction phasing scenario was developed.

Figure 24, illustrates the construction phasing scenario for the proposed roadway network and interchange modifications. Phasing is depicted by colored shading and is limited to “Area” and “Regional” category roads as defined in section 5.3. These roadways function beyond providing adjacent land access, serving as conduits for either area or regional interconnectivity. “Local” roadway improvements are shown as unshaded dashed lines. The shaded phasing scenario identifies the improvements, in five-year increments, that might be constructed over the next twenty years, i.e., the improvements that might be constructed by 2005, by 2010, by 2015, and by 2020.

Figure 24: Proposed Roadway Network & Construction Phasing



5.2 ESTIMATING AND PHASING IMPROVEMENT COSTS

The construction-phasing scenario divides the proposed roadway network and interchange improvements into segments related to the five-year construction increments. Included in Figure 24 is a project number for each identified improvement. The cost for each project was calculated by using the length of the segment, the proposed number of lanes or roadway width, and the estimated cost per linear foot. Costs were estimated for construction and for right-of-way acquisition for each project. These project cost estimates are shown in Table 9. The total construction costs for all projects is estimated to be \$255.6 million. The total right-of-way cost for all projects is estimated to be \$52.4 million, resulting in total project costs of \$308 million. A more detailed discussion of the funding process can be found in Appendix G, Implementation Phasing and Funding.

5.3 IMPROVEMENT PROJECT CATEGORIES AND EXISTING FUNDING

On the left side of Table 9, the various transportation projects are divided into two broad categories: “Area” improvements and “Regional” improvements, which are defined below. These categories are based on who benefits from the improvements—information that will be used later in this report to identify different ways to fund the improvements. Figure 24 identifies improvements in broad categories, differentiating between Local improvements and the Area and Regional improvements. These categories are defined as follows:

- Local improvements are those roadways and transportation elements that primarily serve the immediately adjacent land uses. The internal roads and cul-de-sacs in the proposed and existing residential areas are examples of Local improvements. The roads that provide access to parking lots and connect retail and commercial areas in the Prime Outlet stores are also examples of Local improvements.
- Because the benefits of Local improvements accrue primarily to the immediately adjacent land uses, the full cost of the improvements should be borne entirely by the owners or developers of the property.
- Area improvements are those roadways and transportation elements that serve not only the immediately adjacent land use, but also other land uses within the Crossroads Area. Most of the roadways that make up the proposed roadway network are Area improvements. For example, County Road 5 provides benefits to the immediately adjacent land uses such as the proposed Larimer County Fairgrounds & Events Center. But County Road 5 also carries traffic between the residential areas of Windsor and the employment and retail centers in Loveland that are not immediately adjacent to the roadway.

Because the benefits of Area improvements accrue to more than just the immediately adjacent land uses, the mechanisms for funding Area improvements should allow the costs to be distributed equitably among all of the landowners and developers in the Crossroads Area.

Table 9: Project Funding Sources and Cost Estimates

Map Key	Regional Projects	Area Projects	Programmed (CIP) Projects	Jurisdiction	Name	Project Description		Segment Length In Feet	Existing		Proposed Number of Lanes	Estimated Cost per Lineal Foot	Order of Mag. Estimated Construction Cost	Order of Mag. ROW Cost Estimate	Combined Order of Mag. Construction and ROW Cost Estimates	
						From	To		Surface Type	No. Of Lanes						
1				Loveland	Boyd Lake Ave	CR 20E	Frank Rd	8200	Paved	2	4	\$ 600	\$ 4,920,000	\$ 61,500	\$ 4,981,500	
2				Loveland	New Road - Rocky Mtn. Extended North	McWhinney Blvd	CR 24	4100	N/A	N/A	4	\$ 800	\$ 3,280,000	\$ 338,250	\$ 3,618,250	
3				Loveland	CR 7-Realignment	CR 24	Crossroads Blvd/E CR 26	5400	Paved	2	4	\$ 600	\$ 3,240,000	\$ 27,000	\$ 3,267,000	
4				Loveland	New Road-CR 7 Extended	Crossroads Blvd/E CR 26	E 57th Street/Earhart Dr	5200	N/A	N/A	2	\$ 600	\$ 3,120,000	\$ 1,040,000	\$ 4,160,000	
5				Loveland	I-25 W Frontage Rd-Realignment	Crossroads Blvd/E CR 26	To existing frontage road	1100	N/A	N/A	2	\$ 600	\$ 660,000	\$ 275,000	\$ 935,000	
6				Larimer County	I-25 W Frontage Rd-Realignment	E CR 30	E CR 32	5400	N/A	N/A	2	\$ 600	\$ 3,240,000	\$ 1,350,000	\$ 4,590,000	
7				Larimer County	I-25 W Frontage Rd-Realignment	E CR 32	I-25 W Frontage-North End	2275	N/A	N/A	2	\$ 600	\$ 1,365,000	\$ 568,750	\$ 1,933,750	
8				Loveland	New Road - Frontage road replacement	CR 20E-Extended/Realigned	New Road	2850	N/A	N/A	4	\$ 800	\$ 2,280,000	\$ -	\$ 2,280,000	
9				Loveland	I-25 E Frontage Rd-Realignment	Crossroads Blvd/E CR 26	To existing frontage road	2100	N/A	N/A	2	\$ 600	\$ 1,260,000	\$ 525,000	\$ 1,785,000	
10				Windsor	I-25 E Frontage Rd-Realignment	To The South	SH 392/E CR 32	1950	N/A	N/A	2	\$ 600	\$ 1,170,000	\$ 487,500	\$ 1,657,500	
11				Loveland	New Road-CR 5 Extended	E US Hwy 34	New Road	2650	N/A	N/A	4	\$ 800	\$ 2,120,000	\$ 795,000	\$ 2,915,000	
12				Loveland	CR 5	Crossroads Blvd/E CR 26	E CR 30	10650	Bladed	2	4	\$ 600	\$ 6,390,000	\$ 2,103,375	\$ 8,493,375	
13				Windsor	CR 5	CR 30	S Hathaway Ln	3950	Paved	2	4	\$ 600	\$ 2,370,000	\$ 316,000	\$ 2,686,000	
14				Larimer County	CR 5	S Hathaway Ln	SH 392/E CR 32	1500	Paved	2	4	\$ 600	\$ 900,000	\$ 146,250	\$ 1,046,250	
15				Johnstown/Larimer County	CR 3	CR 20E-Extended/Realigned	E US Hwy 34	2750	Gravel	2	2	\$ 600	\$ 1,650,000	\$ 330,000	\$ 1,980,000	
16				Loveland	E US Hwy 34	Boyd Lake Ave	I-25	7850	Paved	4	6	\$ 1,100	\$ 8,635,000	\$ -	\$ 8,635,000	
17				Loveland	Crossroads Blvd/E CR 26	CR 7	CR 5	5400	Paved	2	4	\$ 600	\$ 3,240,000	\$ 675,000	\$ 3,915,000	
18				CDOT/Windsor	E CR 392	I-25 W Frontage Rd-Realignment	CR 5	4100	Paved	2	4	\$ 800	\$ 3,280,000	\$ 1,230,000	\$ 4,510,000	
													Year 2005 Sub Total	\$ 53,120,000	\$ 10,268,625	\$ 63,388,625
19				CDOT/Windsor	Interchange Improvements	I-25 @ SH 392/E CR 32		N/A	N/A	N/A	N/A	N/A	\$ 23,000,000	\$ -	\$ 23,000,000	
20				Loveland	Boyd Lake Ave	Frank Rd	Valley Oak Dr	6000	Paved	2	4	\$ 600	\$ 3,600,000	\$ 420,000	\$ 4,020,000	
21				Loveland/Larimer County	New Road	New Road	Crossroads Blvd-Extended	8800	N/A	N/A	2	\$ 600	\$ 5,280,000	\$ 1,760,000	\$ 7,040,000	
22				Loveland	New Road	New Road	New Road	3000	N/A	N/A	4	\$ 800	\$ 2,400,000	\$ -	\$ 2,400,000	
23				Loveland	I-25 E Frontage Rd-Realignment	To The South	E 57th Street/Earhart Dr-Extended	3550	N/A	N/A	2	\$ 600	\$ 2,130,000	\$ -	\$ 2,130,000	
24				Loveland	New Road-CR 5 Extended	New Road	New Road	2400	N/A	N/A	4	\$ 600	\$ 1,440,000	\$ 600,000	\$ 2,040,000	
25				Windsor	CR 5	SH 392/E CR 32	E CR 32E	2650	Paved	2	4	\$ 600	\$ 1,590,000	\$ 662,500	\$ 2,252,500	
26				Loveland	New Road - Frontage road replacement	I-25 E Frontage Rd-South End	New Road	2900	N/A	N/A	2	\$ 600	\$ 1,740,000	\$ 580,000	\$ 2,320,000	
27				Loveland	E US Hwy 34	I-25	CR 3	8150	Paved	4	6	\$ 1,100	\$ 8,965,000	\$ -	\$ 8,965,000	
28				Loveland	New Road	New Road	New Road-CR 5 Extended	2900	N/A	N/A	2	\$ 600	\$ 1,740,000	\$ 580,000	\$ 2,320,000	
29				Loveland	New Road	New Road-CR 5 Extended	CR 3	3800	N/A	N/A	2	\$ 600	\$ 2,280,000	\$ 855,000	\$ 3,135,000	
30				Loveland	Crossroads Blvd/E CR 26	CR 5	CR 3	5300	Paved	2	4	\$ 600	\$ 3,180,000	\$ (503,500)	\$ 2,676,500	
31				CDOT	SH 392/E CR 32	CR 5	CR 3	5250	Paved	2	4	\$ 800	\$ 4,200,000	\$ 564,375	\$ 4,764,375	
32				Loveland/CDOT/UPRR	Underpass	I-25 @ New Road/UPRR		N/A	N/A	N/A	N/A	N/A	\$ 0	May not be required		
33				Loveland	Crossroads Blvd-Extended	Boyd Lake Ave	CR 7-Realignment	5350	N/A	N/A	4	\$ 800	\$ 4,280,000	\$ 1,337,500	\$ 5,617,500	
34				Johnstown	New road	New road	E US Hwy 34	950	N/A	N/A	4	\$ 800	\$ 760,000	\$ 237,500	\$ 997,500	
													Year 2010 Sub Total	\$ 66,585,000	\$ 7,093,375	\$ 73,678,375

Table 9 (Continued)

Map Key	Regional Projects	Area Projects	Programmed (CIP) Projects	Jurisdiction	Name	Project Description		Segment Length In Feet	Existing		Proposed Number of Lanes	Estimated Cost per Lineal Foot	Order of Mag. Estimated Construction Cost	Order of Mag. ROW Cost Estimate	Combined Order of Mag. Construction and ROW Cost Estimates
						From	To		Surface Type	No. Of Lanes					
35	✓			Loveland/CDOT	Interchange Improvements	I-25 @ Crossroads Blvd	Year 2015	N/A	N/A	N/A	N/A	\$ 17,000,000	\$	\$	17,000,000
36	✓			Loveland	I-25 W Frontage Rd-Realignment	To The South (in front of WAPA)	E CR 30	9850	N/A	N/A	2	\$ 600	\$ 5,910,000	\$ 2,462,500	\$ 8,372,500
37	✓		✓	Loveland	New Road	New Road	New Road	2800	N/A	N/A	4	\$ 800	\$ 2,240,000	\$	\$ 2,240,000
38	✓			Loveland/Larimer County	I-25 E Frontage Rd-Realignment	New Road	To The North - Past CR 30	9700	N/A	N/A	2	\$ 600	\$ 5,820,000	\$ 2,425,000	\$ 8,245,000
39	✓		✓	Loveland	New Road-CR 5 Extended	New Road	Crossroads Blvd/E CR 26	6100	N/A	N/A	4	\$ 800	\$ 4,880,000	\$ 1,525,000	\$ 6,405,000
40	✓	✓	✓	Loveland	CR 3	New Road	Crossroads Blvd/E CR 26	5500	Gravel	2	2	\$ 600	\$ 3,300,000	\$ 412,500	\$ 3,712,500
41	✓	✓	✓	Loveland	Boyd Lake Ave	Valley Oak Dr	New Road	3950	Paved	2	4	\$ 600	\$ 2,370,000	\$ 622,125	\$ 2,992,125
42	✓			Loveland	New Road	Crossroads Blvd-Extended	Boyd Lake Ave	4550	N/A	N/A	2	\$ 600	\$ 2,730,000	\$ 910,000	\$ 3,640,000
43	✓	✓		Loveland/Larimer County	E CR 30-Realignment	I-25 W Frontage Rd-Realignment	I-25 E Frontage Rd-Realignment	2600	N/A	N/A	2	\$ 600	\$ 1,560,000	\$ 520,000	\$ 2,080,000
44	✓	✓		Loveland/Windsor	E CR 30	I-25 E Frontage Rd-Realignment	CR 5	1700	Paved	2	2	\$ 600	\$ 1,020,000	\$ 340,000	\$ 1,360,000
45	✓			Loveland/CDOT	Interchange Improvements	I-25 @ E US Hwy 34		N/A	N/A	N/A	N/A	N/A	\$ 44,000,000	\$	\$ 44,000,000
46	✓	✓		Larimer County	Overpass	I-25 @ E CR 30-Realignment		N/A	N/A	N/A	N/A	N/A	\$ 10,000,000	\$	\$ 10,000,000
47	✓		✓	Loveland	New Road	New Road	Crossroads Blvd/E CR 26	2800	N/A	N/A	4	\$ 800	\$ 2,240,000	\$ 700,000	\$ 2,940,000
							Year 2020					Year 2015 Sub Total	\$ 103,070,000	\$ 9,917,125	\$ 112,987,125
48	✓	✓	✓	Loveland/Larimer County	Boyd Lake Ave	New Road	E CR 32	12400	Paved	2	4	\$ 600	\$ 7,440,000	\$ 1,147,000	\$ 8,587,000
49	✓	✓		Loveland/Larimer County	New Road-CR 7 Extended	E 57th Street/Earhart Dr	E CR 32	10750	N/A	N/A	2	\$ 600	\$ 6,450,000	\$ 2,150,000	\$ 8,600,000
50	✓	✓	✓	Loveland	CR 3	E US Hwy 34	New Road	5000	Gravel	2	2	\$ 600	\$ 3,000,000	\$ 425,000	\$ 3,425,000
51a	✓	✓		Johnstown	CR 20E-Extended/Realigned	I-25	CR 3	8000	N/A	N/A	2	\$ 600	\$ 4,800,000	\$ 134,400	\$ 4,934,400
51b	✓	✓	✓	Loveland	CR 20E-Extended/Realigned	Boyd Lake Ave	I-25	8000	N/A	N/A	2	\$ 600	\$ 4,800,000	\$ 134,400	\$ 4,934,400
52	✓	✓	✓	Larimer County	E CR 30	Boyd Lake Ave	I-25 W Frontage Rd-Realignment	6675	Paved	2	2	\$ 35	\$ 233,625	\$ 567,375	\$ 801,000
53	✓	✓		Larimer County/FT Collins	E CR 32	Boyd Lake Ave	I-25 W Frontage Rd-Realignment	6650	Paved	2	4	\$ 600	\$ 3,990,000	\$ 19,950,000	\$ 23,940,000
54	✓	✓		Johnstown	New Road	CR 20 E Extended/Realigned	E US Hwy 34	2650	N/A	N/A	4	\$ 800	\$ 2,120,000	\$ 662,500	\$ 2,782,500
							Year 2020 Sub Total					Year 2015 Sub Total	\$ 32,833,625	\$ 25,170,675	\$ 58,004,300
							Grand Total					Grand Total	\$ 255,608,625	\$ 52,449,800	\$ 308,058,425

Source: DMJM, NFRT&AQPC, Larimer County, CDOT-R4, Town of Windsor, City of Loveland

Note: Some projects may appear in two columns so the grand total will not match a sum of the individual elements.

Regional improvements are those roadways and transportation elements that serve not only the Crossroads Area, but provide benefits for residents, businesses and property owners well beyond the limits of the study area. The state highways and interchanges are examples of Regional improvements. The reconstruction of the I-25/US34 interchange would provide benefits for citizens in large parts of Larimer and Weld counties, even if no additional development occurred in the Crossroads Area.

Funding mechanisms for Regional improvements may need to distribute the costs over an area of the North Front Range region larger than just the Crossroads Area.

Some of the Area and Regional improvements are already funded by existing transportation funding mechanisms such as road impact fees or capital improvement programs (CIP's) in the local jurisdictions. On the left side of Table 9, the improvements that already have an approved funding source are noted.

Table 10 shows a summary of the cost and revenue information for the Area and Regional improvements in the Crossroads Area in five-year increments.

Table 10: Local Network Cost Summary					
Category Costs (Includes ROW Estimates)	2000-2005	2005-2010	2010-2015	2015-2020	Total
Funded Projects	\$34.7	\$30.2	\$18.3	\$16.9	\$100.1
Area Projects	\$2.0	\$3.1	\$13.4	\$17.1	\$35.6
Regional Projects	\$26.7	\$40.4	\$81.3	\$23.9	\$172.3
Total Transportation Costs:					\$308.0

As shown in the Table 10, of the total project costs of \$308 million, only \$100 million of the project costs are covered by existing funding mechanisms, or 32.5 percent of the total. This results in a funding shortfall of \$208 million. Of this amount, \$35.6 million is needed for Area improvements and \$172.3 million is needed for Regional improvements.

5.4 FUNDING ALTERNATIVES

As noted in the preceding section, the funding alternatives for Area improvements should allow the unfunded project costs to be distributed equitably among all of the landowners and developers in the Crossroads Area. The funding alternatives for Regional improvements may need to include distribution of the unfunded project costs over an area of the North Front Range region larger than just the Crossroads Area.

5.4.1 Funding Alternatives for “Area” Improvements

Three potential revenue sources were identified for funding Area improvement projects.

- **General Improvement District (GID):** a 25 mill levy on all new commercial development
- **Sales/Use Tax Sharing:** 25 percent of sales/use tax revenues from new retail development
- **Developer Fee:** \$1.00 per square foot for all new commercial development

Table 11, presents a summary of development absorption and tax revenue estimates for the Crossroads Area utilizing the assumptions outlined above. As shown, over the twenty-year period from 2001 to 2020, a total of \$77.3 million in property tax revenue would be generated by the GID. The sales and use tax sharing agreement would generate \$25.2 million, and \$10.2 million would be generated by developer fees. In total, these three sources would generate in excess of \$112 million, which exceeds the shortfall of \$35.6 million identified for Area improvements. A more detailed summary is presented in Appendix G.

Each of these funding alternatives represents a partnership between the public and private sectors. In each case, the funds would come from the private sector—the landowners, developers, and new businesses within the Crossroads Area. Two of the alternatives, the GID and the developer fees, would be “new” revenue—revenue the local jurisdictions would not have received if the landowners, developers and new businesses had not voluntarily agreed to increase their taxes or fees above the levels the local jurisdictions would otherwise collect.

In the case of the sales and use tax sharing agreements, a portion (25 percent) of the taxes that the local jurisdictions would normally have received from the new retail development would be invested in the transportation infrastructure for the area. One could argue that such an agreement reduces the revenue available to local jurisdictions to fund other growth-related costs—police, libraries, street maintenance, etc. On the other hand, without investing in the transportation infrastructure, it is possible the full potential for new retail development might not be realized in the area, and the full sales and use tax revenues for the reduced development might be less than the 75 percent of revenues the jurisdictions would receive with the sales and use tax sharing agreements.

5.4.2 Funding Alternatives for “Regional” Improvement

The Regional improvements in the Crossroads Area are associated with the state and federal highway system. The traditional funding method for these types of improvements has been to work with the CDOT and the North Front Range MPO or transportation planning region (TPR) for the area. The Crossroads Area is wholly within the boundaries of the North Front Range MPO.

The cost of unfunded Regional improvements in the Crossroads Area is estimated to be \$172 million. Within the North Front Range MPO, the 2025 Transportation Plan has identified transportation needs totaling \$2.3 billion over the next twenty years. During the same period, the funds available to meet those needs are expected to be only \$330.2 million.

Regardless of how important the Regional improvements in the Crossroads Area are, with so many other pressing needs and the very limited funds available, relying on the traditional approach to funding probably means that the construction of the highway-related improvements in the study area will lag far behind the actual need.

Recognizing that it may be necessary to develop new sources of funds for highway improvements to construct those improvements in a more timely manner, communities in the North Front Range are beginning to consider alternatives to the traditional approach to funding. One of the alternatives, and the one that has garnered the most attention in the North Front Range over the past year, is a Rural Transportation Authority, or RTA. The North Front Range MPO has commissioned the Regional Transportation Services and Funding Feasibility Study. One of the elements of this study is an analysis of the revenue that could be available to an RTA through a sales tax, fees on license plated, and a visitor benefit or lodging tax.

To determine how effective an RTA might be in accelerating the construction of Regional improvements identified by the Crossroads Transportation Study, an estimate was made of the revenues that the projected new development within the Crossroads Area would contribute to an RTA over the next twenty.

An estimate, presented in Table 12 below, assumes that funding sources for an RTA would consist of a one-half cent (0.5%) sales tax, a license plate fee of \$7.50, and a visitor benefit tax of one percent (1%) on hotel and motel rooms.

Table 12: Potential RTA Revenues				
Sales Tax (0.50%)				
	Total RTA	Crossroads	Crossroads	
Period	Retail Sales	%*	Sales Tax Revenue	
2005	\$25,500,000	15%	\$3,825,000	
2010	\$150,500,000	15%	\$22,575,000	
2015	\$193,200,000	15%	\$28,980,000	
2020	\$242,100,000	15%	\$36,315,000	
Total			\$91,695,000	
* Based on % Share of New Retail Space in Region.				
Vehicle Registration Fee (\$7.50)				
	Total RTA	Crossroads	Crossroads	
Period	Lic. Plate Fees	%*	Total Lic. Plate Fees	
2005	\$2,900,000	15%	\$435,000	
2010	\$16,300,000	15%	\$2,445,000	
2015	\$19,800,000	15%	\$2,970,000	
2020	\$23,400,000	15%	\$3,510,000	
Total			\$9,360,000	
* Based on % Share of New Motor Vehicles in Region.				
Visitor Benefit Tax (1.00%)				
	Total RTA	Crossroads	Crossroads Total	Crossroads
Period	Lodging Rooms	%*	Lodging Revenue	Benefit Tax Revenue
2005	4,000	30%	\$24,528,000	\$245,280
2010	4,500	30%	\$27,594,000	\$1,379,700
2015	5,500	30%	\$33,726,000	\$1,686,300
2020	6,000	30%	\$36,792,000	\$1,839,600
Total				\$5,150,880

* Based on % Share of New Lodging Rooms in Region

Source: Leland Consulting Group

As shown in the preceding table, new development within the Crossroads Area over the next twenty years would generate \$91.7 million in sales tax revenue, \$9.4 million in vehicle registration fees, and \$5.2 million in visitor benefit taxes for a total of \$106.3 million. This amount is \$66 million less than the projected \$172 million in unfunded Regional improvements for the Crossroads Area.

If matching funds from the traditional state and federal sources were available in a ratio of 80 percent “local” funds to 20 percent state/federal funds, the total amount available for Regional improvements would be \$133 million over twenty years. It should be noted that this assumes a complete reversal of the typical current ratio of 20 percent local funds to 80 percent state/federal funds.

5.4.3 Funding Alternatives Summary

The evaluation of potential funding sources for transportation improvements in the Crossroads Area suggests that the projected development activity in the area over the next twenty years could provide funds sufficient to construct all of the recommended improvements. Landowners and developers would be directly responsible for the construction of Local improvements as part of the normal land development process. Area improvements could be funded by some combination of existing funding mechanisms, property taxes, developer fees and sales tax revenue generated within the study area. These funding alternatives would require cooperation between area landowners/developers and the local jurisdictions. The construction of the Regional transportation improvements recommended in the report could eventually be funded with traditional state and federal funds, but the creation of an RTA could significantly accelerate that process. The projected development within the Crossroads Area alone could provide sufficient funds through an RTA for the construction of the recommended Regional transportation improvements.

5.5 RECOMMENDED ACTION STEPS

- Revise locally adopted Transportation Plans to reflect the proposed roadway network, interchange configurations, and alternative mode improvements.
- Enter into intergovernmental agreements (IGA’s) to cooperate on the planning and implementation of funding strategies for Area and Regional transportation improvements.
- Work with local landowners and developers to plan and implement a funding strategy for Area improvements.
- Work with the North Front Range MPO to plan and implement a funding strategy for Regional improvements.
- Identify a location and develop a conceptual plan for an intermodal transfer station along the Union Pacific railroad corridor between I-25 and Boyd Lake Avenue.

Crossroads Area Transportation Study

AECOM CONSULT

A Division of DMJM HARRIS

*2950 Professional Place
Colorado Springs, CO 80904
Phone: (719) 471-9866*