I-225 Major Investment Study
Parker Road to Interstate 70
Final Report
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EXECUTIVE SUMMARY

As part of RTD’s Guide the Ride initiative, the I-225 corridor was identified as one of the primary corridors to incorporate rail transit connecting the East and Southeast Corridors. After this initiative failed in November 1997, the RTD Board pursued a course of action that included the conduct of several major investment studies (MIS) throughout the Denver Metropolitan Area. One of these MIS’s included the investigation of the area between Interstate 70 and Parker Road along the I-225 corridor.

It was felt that a forum for public input was lacking in the previous Guide the Ride initiative and that the MIS process would provide a structured approach to gain public interest while identifying a locally preferred alternative to guide transportation investment in the corridor.

Specifically, the purpose of the I-225 MIS was to identify a mix of conceptual alternatives, screen those that would not satisfy certain evaluation criteria, perform a detailed analysis on a short-list of alternatives, and arrive at a locally preferred alternative (LPA). This process would balance various interests and impacts including mobility, cost, public support, environmental impacts, and community impacts. This is consistent with ISTE A and TEA-21, as well as the Federal Highway and Federal Transit Administration’s guidance regarding major transportation investments.

Study Area

The area of study for the I-225 MIS is bounded by 56th Avenue north of Montbello; Peoria Street to the west, Chambers Road to the east, and Parker Road to the south (see Figure E-1). Three jurisdictions are affected by this MIS including the City and County of Denver, the City of Aurora, and the City of Greenwood Village.

Planning Process for the MIS

The I-225 MIS followed a standardized set of procedures to arrive at the preferred set of transportation investments for the corridor. While each of the steps was distinct, several may have been in process at the same time as new information was developed and analyzed. Input from public and agency participants was ongoing throughout the process. The following are the primary tasks involved during the I-225 MIS process:

- Data Collection and Draft Problem Definition
- Define Criteria for a Two-Stage Evaluation Process
- Develop a Wide Range of Potential Solutions
- Preliminary Evaluation of Potential Solutions
- Detailed Evaluation of Potential Solutions
- Presentation of Study Results and Recommendations

Public Involvement Structure

The public involvement process for the I-225 MIS was designed to solicit input, review, and comment from diverse constituencies throughout the MIS process.
Figure E-1: Study Area Map
Advisory Committees

Three formal standing committees were established at the outset of the study and played a significant role in the I-225 MIS planning process. These three advisory committees are described below:

- **Technical Advisory Committee (TAC)** – Composed of agency representatives with technical knowledge who could offer input on technical corridor issues, and advise on the merits of particular investment strategies, including environmental impacts, cost effectiveness, etc.

- **Policy Advisory Committee (PAC)** – Composed of key elected or appointed agency and government representatives who were familiar with policy procedures and issues regarding transportation projects.

- **Citizen Consultation Group (CCG)** – Composed of volunteer individual members and representatives from interested community organizations, with an emphasis on representing neighborhoods and businesses in the study corridor.

Public Outreach Methods

The public involvement process for the I-225 MIS also included an active outreach program to publicize the detailed alternatives under consideration and to solicit the opinions and comments of area residents and businesses. The following public outreach efforts were included during the I-225 MIS:

- News Releases
- Media Advisories
- Postcards
- Flyers
- Advertising
- Newsletters
- Website
- Open House Meetings
- Presentations to Neighborhood and Business Organizations
- Intergovernmental Briefings
- Sample of News Clips, Media Coverage

Purpose and Need

The purpose of the I-225 Corridor MIS was to identify the issues and the transportation investments which will enable I-225 to be an effective element in the area's long-range transportation system.

The need for the study has been demonstrated by the initial corridor analysis. As the preliminary information indicates, I-225 clearly provides an essential link in the Denver metro area's long-range transportation plan. The corridor as it now exists does not have sufficient capacity or facilities to handle increased volumes from employment growth within the corridor,
or from the remainder of the metro transportation system. A regional transit system requires adequate linkages to be successful, and the absence of I-225 would severely inhibit the effectiveness of transit in the Southeast and East Transportation corridors and the eastern metro area.

Certain sections of the I-225 Corridor are already experiencing congestion during peak periods. Without transportation investments, I-225 is forecast to become congested to the point of immobility by the year 2020. Without corrective measures, the addition of thousands of new employees in the corridor will only compound this situation. Therefore, this MIS process is an opportunity to develop solutions for the I-225 Corridor before this situation occurs.

Development and Screening of Alternatives

Conceptual level screening for the I-225 Corridor is one step in the MIS process, and has been prepared to identify the criteria that were used to evaluate a broad range of alternatives that have been considered for the corridor. It also served as documentation of those alternatives that are to be advanced to the detailed evaluation phase of the MIS.

Transportation Technology Overview

An overview of the various transportation technologies was presented prior to the conduct of the screening phases. This activity was developed to describe the relative operational characteristics of each mode and assist in identifying those technologies most appropriate for the I-225 corridor. Attributes were defined using a standardized list of criteria and include:

- Person/vehicle capacity
- Guideway capacity
- Running surface
- Vehicle control
- Speed
- Power supply
- Propulsion
- Suspension
- Service type
- Capital cost per mile

Specific transportation technologies considered are listed below:

- Advanced (dual propulsion) bus
- Light rail transit
- Commuter rail
- Heavy rail
- People mover
- Automated guideway transit
- Magnetic levitation
- Personal rapid transit
- Monorail
• Automobile
• Bicycle

Pre-Screening and Screening Criteria

The I-225 Major Investment Study employed a two-step screening process using criteria defined by both RTD’s MIS Guidance Manual, which establishes a consistent basis of comparison for each MIS conducted, and corridor-specific criteria developed by the consultant team. A pre-screening analysis, sometimes referenced as a “fatal flaw analysis”, identified alternatives that did not meet pre-screening criteria. At the pre-screening level, potential alternatives with excessive costs or impacts were identified for elimination. Pre-screening criteria were expressed in such a way as to yield yes/no answers.

Those alternatives that advanced beyond the “yes-no” responses associated with the pre-screening process were then evaluated against screening criteria. The criteria used in this second step were also defined in RTD’s MIS Guidance Manual and had matching corridor-level criteria developed by the consultant team. Criteria were expressed in such a way as to identify the degree to which an alternative (or its options) addresses the criteria.

Alternatives Advanced to Detailed Evaluation

At the conclusion of the conceptual screening process, five alternatives were recommended for advancement to the detailed evaluation process. These recommendations were presented to the project’s Citizen Consultation Group (CCG), Technical Advisory Committee (TAC), and Policy Advisory Committee (PAC) for input, guidance, and direction. Furthermore, the RTD Board of Directors was briefed on the status of the project and the recommended alternatives to be advanced to the detailed evaluation of alternatives. All input received was favorable.

The five alternatives advanced to detailed evaluation include:

• No Action
• Transportation Management
• Freeway Lane Additions (8-lane)
• LRT in median
• Commuter Rail in median

Detailed Evaluation

The detailed evaluation phase provided additional definition for each of the alternatives, including more definitive alignments and generalized station locations. Cost estimates were developed to better differentiate between alternatives, as were the development of ridership forecasts. Information to address community and environmental impacts that would be associated with each of these detailed alternatives was also prepared.

These detailed evaluation efforts were presented to the project’s three advisory committees, the general public, and the RTD Board of Directors. At the conclusion of the detailed evaluation process, a recommendation was forwarded to the RTD Board of Directors for the selection of a locally preferred alternative.
As mentioned earlier, five alternatives were advanced to the Detailed Evaluation phase of the MIS. The first round of detailed evaluation, completed in June/July 1999, addressed each of these alternatives. At the conclusion of this review, the following action was taken:

- The Commuter Rail (DMU) alternative was eliminated from further consideration due to operational headway and vehicle incompatibilities with the East or Southeast Corridors.

Therefore, the alternatives that were carried into detailed evaluation included:

- No Action
- Transportation Management/Enhanced Bus
- Freeway Widening
- **Light Rail Transit (LRT)** - Four alternative alignments were considered to address design options that would potentially serve the Aurora City Center, the Fitzsimons/UCHSC campus, and the Gateway area. The base alignment (LRT 1) was modified during the first round of detailed evaluation (June/July 1999), eliminating the LRT alignment in the median of I-225 from Colfax to I-70. The subsequent base alignment was revised north of Colfax, passing through the Fitzsimons/UCHSC campus and along Peoria to Smith Road where it would intersect with the East Corridor commuter rail line.
  - LRT 1 (M-F)
    - Median of I-225 Parker to Colfax, thru Fitzsimons, along Peoria to Smith Road.
  - LRT 2 (M-F-G)
    - Median of I-225 Parker to Colfax with an extension north of I-70 along 40th through Gateway to 40th/Pena.
  - LRT 3 (M-CC-F)
    - Median of I-225 Parker to Exposition, thru Aurora City Center, thru Fitzsimons, along Peoria to Smith Road.
  - LRT 4 (M-CC-F-G)
    - Median of I-225 to Exposition, City Center, Fitzsimons, and Gateway.

**Evaluation Criteria**

A clear understanding of the criteria used to evaluate the alternatives is critical for a meaningful interpretation of the results. RTD's Guidance Manual provides the basis for developing the detailed evaluation criteria, which are categorized into four general areas:

- Cost Measures
- Effectiveness
- Cost-Effectiveness
- Community and Environmental Impacts

Each of these general categories and their supporting criteria were used in the detailed evaluation.
Locally Preferred Alternative

The results of the detailed evaluation were presented to the TAC, PAC, and CCG for comment and reaction. As mentioned previously in this report, detailed evaluation results were presented to the project advisory committees (and the public) on two occasions: first in June/July 1999 and second in September 2000. The latter results incorporated updated demographic data. This report only presents results from the latest evaluation effort which was the basis for all action taken by project stakeholders.

Of the four remaining alternatives, the following packages where configured from the best elements of each alternative:

- Package 1: No-Build
- Package 2: Transportation Management/Enhanced Bus Network
- Package 3: Eight-lane freeway widening
- Package 4: LRT Option 1 (Median-Fitzsimons)
- Package 5: LRT Option 2 (Median-Fitzsimons-Gateway)
- Package 6: LRT Option 3 (Median-City Center-Fitzsimons)
- Package 7: LRT Option 4 (Median-City Center-Fitzsimons-Gateway)
- Package 8: Freeway widening combined with LRT Option 3

Package 8 received the greatest level of support for the following reasons:

- The cost of providing an additional through lane per each direction is minimal ($28 M).
- It has received the most support from the TAC.
- Provides an additional 9,200 linked transit trips; 7,800 which use the LRT.
- It provides a reasonable cost per new rider of $17.
- Responds to community input.
- Meets project goals.

Summary Description of the LPA

The LPA (see Figure E-2) includes the expansion of an assumed 6-lane freeway to an eight-lane freeway between Interstate 70 and Parker Road; a distance of roughly 8 miles. The LRT portion of this LPA begins at Nine-Mile park-n-Ride at the intersection of Parker Road and I-225. This alignment continues northward in the median of I-225 to Exposition Avenue where it leaves the median and spans the northbound lanes eastward into the Aurora Mall property. It then follows the south circulator road within the Aurora Mall property and abuts the western edge of Sable Blvd. Continuing north, the LRT alignment is grade-separated over Alameda Avenue, returns to grade, and turns westward at Ellsworth Avenue. It maintains at-grade until spanning the northbound lanes again and returning to the median of I-225.

From the median, it continues northward toward Colfax Avenue where it flies over the southbound lanes of I-225 and parallels Tollgate Creek to a grade-separated structure at Colfax Avenue. The LRT alignment continues north, adjacent to the east side of Potomac Avenue (which is to become part of the Sand Creek Parkway). The Colfax Station will be located on the east side of the proposed Sand Creek Parkway between Colfax Avenue and 17th Place.
Figure E-2: Locally Preferred Alternative

- **LRT Improvements**
  - **Station Locations**
  - Parker Road
  - Iliff Avenue
  - Aurora Mall/Alameda
  - 4th Avenue/Abilene Street
  - Colfax Avenue
  - Fitzsimons/UCHSC
  - Smith Road/Peoria
  - **Service Frequency**
    - Peak: 8/hour/direction
    - Base: 4/hour/direction

- **Highway Widening**
  - Parker Road to I-70
  - Widened to 8 Lanes

- **Bus Service**
  - Reconfigured to Serve LRT Stations

- **TSM Improvements**
North of the Colfax Station, the LRT alignment then turns west just south of the Sand Creek Parkway/Montview Boulevard intersection with an at-grade crossing of Sand Creek Parkway. The tracks will proceed west on Montview Boulevard along the south side of the roadway to a point west of the Montview Boulevard/Ursula Street intersection. This general location is being planned to serve as the focus of the Fitzsimons Commons, where the Fitzsimons Station will be located.

From this point, the LRT will cross Montview Boulevard and parallel the north side of Montview Boulevard to the western boundary of the site. As the LRT approaches Peoria Street, it will turn northward, along the east side of Peoria Street, crossing Sand Creek and terminating at the Union Pacific Railroad near Smith Road.

The possible extension of LRT from Smith/Peoria Station through the Montbello community to 40th and Pena totals 3 miles and will be re-examined during the Preliminary Engineering/Environmental Impact Statement phase of the project.

**Costs**

The recommended corridor investment is estimated to have a total capital cost of $364.3 million, comprising of the following elements:

- $332.8 million for LRT and bus network
- $28.2 million for the 8-lane widening
- $3.3 million for TM improvements

The annual operating and maintenance cost is estimated at $12.9 million, including:

- $12.8 million for LRT and bus network ($6.7 million and $6.1 million respectively)
- $0.16 million for the 8-lane widening
- $0.016 million for TM improvements

**Benefits**

The combined LRT Option 3/Freeway Widening Alternative would provide a number of transportation benefits to the corridor in the Year 2020 including:

- Increasing linked transit trips by 9,200 per day
- Providing LRT service to an additional 7,800 patrons
- Reducing regional person-hours of delay by 1,500 per day
- Produces the lowest number of lane-mile hours with severe, pervasive congestion second to the freeway-only alternative.
- Provides competitive travel times to automobile between Lincoln Avenue and Gateway Park.
- Allows for the greatest opportunity to implement transit-oriented development within the Denver urbanized area.
- Connects major employment centers including the Aurora City Center, Downtown Denver, Denver International Airport, Denver Tech Center, and Fitzsimons with rail transit.
SECTION 1: INTRODUCTION

As part of RTD’s Guide the Ride initiative, the I-225 corridor was identified as one of the primary corridors to incorporate rail transit connecting the East and Southeast Corridors. After this initiative failed in November 1997, the RTD Board pursued a course of action that included the conduct of several major investment studies (MIS) throughout the Denver Metropolitan Area. One of these MIS’s included the investigation of the area between Interstate 70 and Parker Road along the I-225 corridor.

It was felt that a forum for public input was lacking in the previous Guide the Ride initiative and that the MIS process would provide a structured approach to gain public interest while identifying a locally preferred alternative to guide transportation investment in the corridor.

Specifically, the purpose of the I-225 MIS was to identify a mix of conceptual alternatives, screen those that would not satisfy certain evaluation criteria, perform a detailed analysis on a short-list of alternatives, and arrive at a locally preferred alternative (LPA). This process would balance various interests and impacts including mobility, cost, public support, environmental impacts, and community impacts. This is consistent with ISTEA and TEA-21, as well as the Federal Highway and Federal Transit Administration’s guidance regarding major transportation investments.

What is an MIS?

To achieve an equitable distribution of limited funds, resources have been re-directed toward identifying transportation corridors and multi-modal investments that provide the greatest potential for improved region-wide mobility. The MIS is the vehicle used to evaluate and select these investments, particularly for those projects that may use federal funds or are considered locally significant transportation investments. The MIS process requires the consideration of a wide range of transportation improvements for a corridor. Each potential improvement or mode is subjected to a standardized process to objectively evaluate and identify the key transportation improvements (e.g., freeway, transit, or a combination) that most effectively meet a corridor’s mobility needs and, thus, warrant expenditure of public funds. This process includes public and agency involvement, as well as technical research. Nationally, most MIS processes to date have resulted in recommendations for multi-modal corridor investments.

Following completion of the MIS process, the study’s recommendations regarding transportation improvements, along with approximate costs, are included in the region’s long-range plan, in this case MetroVision 2020 and the 2020 Regional Transportation Plan (RTP) developed by the Denver Regional Council of Governments (DRCOG).

It is important to note that the MIS process results in a relatively general definition of the scope of improvements which should be made. After MIS recommendations are adopted into the RTP, the identified transportation improvements must then undergo detailed planning studies and evaluation in accordance with State and Federal requirements, including preliminary engineering and National Environmental Policy Act (NEPA) documentation.
Study Area

The area of study for the I-225 MIS is bounded by 56th Avenue north of Montbello; Peoria Street to the west, Chambers Road to the east, and Parker Road to the south (see Figure 1-1). Three jurisdictions are affected by this MIS including the City and County of Denver, the City of Aurora, and the City of Greenwood Village.

For the most part, this portion of Aurora is considered fully developed west of I-225 between Parker Road and Interstate 70. Opportunities still exist for expansion of residential and commercial properties east of the corridor.

Major development within the study area is occurring within the Gateway Office Park near 40th and Pena Blvd., redevelopment of the Fitzsimons Army Base by the University of Colorado, and at the City of Aurora’s City Center complex near Alameda Avenue and Sable Blvd. The I-225 MIS study area is situated between two adjacent corridors that have been previously examined by the Colorado Department of Transportation, the Denver Regional Council of Governments, and RTD for major transportation investments. The East Corridor, extending from downtown Denver to Denver International Airport, is located along the Union Pacific Railroad right-of-way on the south side of I-70 and along Pena Boulevard. The East Corridor MIS was completed in 1997 and identified a commuter rail alternative using diesel multiple unit (DMU) vehicles on a single track with sidings (20-minute headways) as the locally preferred alternative. The Southeast Corridor MIS examined alternatives along I-25 south of Broadway. Completed in 1997, it identified a Light Rail Transit (LRT) alternative from Broadway to Lincoln Avenue (15-minute headways), including a branch line along I-225 to Parker Road. The Southeast Corridor EIS was completed in November 1999 and construction of the corridor improvements is scheduled to begin in late 2001.

Planning Process for the MIS

The I-225 MIS followed a standardized set of procedures to arrive at the preferred set of transportation investments for the corridor. While each of the steps was distinct, several may have been in process at the same time as new information was developed and analyzed. Input from public and agency participants was ongoing throughout the process. The following is a brief and general description of the primary tasks involved during the I-225 MIS process. More specific details are provided in subsequent sections of this report.

Data Collection and Draft Problem Definition

Data about current and future traffic conditions, land use, demographics, and travel patterns were among the information reviewed and analyzed to develop a clear picture of the transportation problem(s) in the I-225 Corridor in the Year 2020 that are to be addressed by the MIS process.

Information collected and the resulting corridor transportation problem definition were presented to the members of the Technical and Policy Advisory Committees (TAC and PAC), to the Citizens Consultation Group (CCG), and at initial public open houses for review and comment. The intent of this initial round of communications was for study participants and observers to understand the transportation conditions and issues that would be studied during the course of the MIS.
Figure 1-1: Study Area Map
Define Criteria for a Two-Stage Evaluation Process

Criteria developed by RTD, DRCOG and CDOT in previous MIS processes provided the basis for determining the effectiveness of proposed improvements, and were designed to address both regional-level and corridor-level concerns. The standardized criteria allowed equitable comparisons of suggested transportation improvements, including costs and operations, land use, environmental impact, and benefits.

The criteria to be used during the study were presented to the TAC and PAC members for review and comment. Corridor-specific criteria were added as a result of this session. Criteria were also reviewed with the CCG and at the initial public open houses. The intent of this series of presentations was for study participants and observers to understand how criteria would be applied in evaluating potential solutions.

Develop a Wide Range of Potential Solutions

During this phase, a variety of possible solutions were defined at a conceptual level. These solutions ranged from programmatic and operational improvements of current facilities to various kinds of freeway and transit improvements. A baseline of existing and currently approved projects was also identified, against which the benefits and impacts of proposals were compared.

An initial menu of possible solutions was presented to the TAC and PAC members, to the CCG, and at the initial public open house. Comments were sought from each group. During this period, two additional open house meetings were held in July 1998. The intent of these public meetings was to report on the initial development of evaluation criteria and seek comments on the potential recommendations.

Preliminary Evaluation of Potential Solutions

The range of possible solutions was then subjected to the pre-screening and level-one criteria to sort out those concepts that were least likely to address the corridor transportation problems. The pre-screening and screening process was documented and the results were presented for comment.

The results of pre-screening and screening, and the proposed short-list solutions, were presented to TAC and PAC members for review and comment. The information was also reviewed with the CCG and at a public workshop, and comments were sought. The intent of this cycle of communication was to demonstrate that any suggested solutions were incorporated into the screening process and to seek comments on the proposed short-list of solutions to be advanced to the next step.

Detailed Evaluation of Potential Solutions

Following the next round of public and agency comments, each of the short-list solutions were defined in greater detail, to maximize the potential performance of each solution. The short-listed solutions were then evaluated using detailed level-two criteria. The transportation investments that performed under this evaluation became the basis for the multi-modal recommendations.
Two rounds of detailed evaluation were conducted for the I-225 MIS. The first round was presented in June 1999 to the TAC, PAC, and CCG, followed by a series of open houses in July 1999. The conclusion of the 1999 detailed evaluation resulted in the elimination of the Commuter Rail-DMU Alternative due to operational headway and vehicle incompatibilities with the East or Southeast Corridors. The 1999 detailed evaluation also established the base LRT alignment through the Fitzsimons property to Peoria, thereby dropping the LRT alignment in the median of I-225 north of Colfax. Subsequent to these meetings, DRCOG and RTD decided to temporarily halt the I-225 MIS, and other MIS projects, so that DRCOG could update regional population and employment databases and projections.

The second round of detailed evaluation, using revised DRCOG regional data, was initiated in June 2000. Revised detailed evaluation results were presented to the advisory committees in September 2000. The results of the detailed evaluation process and potential multi-modal recommendations were reviewed with the TAC and PAC members. The potential recommendations were then presented to the CCG at a public workshop for further comment. The intent of this second cycle in September 2000 was to report on the updated results and seek comments on the potential recommendations.

The Detailed Evaluation process included two additional review cycles. A November 2000 series of meetings were conducted to facilitate further review of the detailed evaluation results and to identify a draft LPA for public review and comment. A third cycle of advisory committee meetings were held in February 2001 to review public comments and develop recommendations to the RTD Board of Directors regarding the project’s Locally Preferred Alternative.

**Presentation of Study Results and Recommendations**

The study process, results, and recommendations were summarized in draft report form and presentations were made to key policy boards and transportation committees. Comments and endorsements were solicited for inclusion into the final MIS Report, which will be submitted to DRCOG for inclusion in the Metro Vision Plan and for consideration in the Interim 2025 Regional Transportation Plan.

Presentations of the study process, results, and draft recommendations were made. A summary of comments received from PAC and TAC, CCG, public workshop participants, and website comments on the results and recommendations were included. Policy groups were asked to provide written comments and endorsements for incorporation into the final MIS Report.

**Public Involvement Structure**

The public involvement process for the I-225 MIS was designed to solicit input, review, and comment from diverse constituencies throughout the MIS process.

**Advisory Committees**

Three formal standing committees were established at the outset of the study and played a significant role in the I-225 MIS planning process. These three advisory committees are described below:
- **Technical Advisory Committee (TAC)** – Composed of agency representatives with technical knowledge who can offer input on technical corridor issues, and advise on the merits of particular investment strategies, including environmental impacts, cost effectiveness, etc.

- **Policy Advisory Committee (PAC)** – Composed of key elected or appointed agency and government representatives who are familiar with policy procedures and issues regarding transportation projects.

- **Citizen Consultation Group (CCG)** – Composed of volunteer individual members and representatives from interested community organizations, with an emphasis on representing neighborhoods and businesses in the study corridor.

**Public Outreach Methods**

The public involvement process for the I-225 MIS also included an active outreach program to publicize the detailed alternatives under consideration and to solicit the opinions and comments of area residents and businesses. The following public outreach efforts were undertaken during the I-225 MIS:

- News Releases
- Media Advisories
- Postcards
- Flyers
- Advertising
- Newsletters
- Website
- Open House Meetings
- Presentations to Neighborhood and Business Organizations
- Intergovernmental Briefings
- Sample of News Clips, Media Coverage

**I-225 MIS Report Organization**

Following this introduction, Section 2 describes the purpose and need of a major investment in the I-225 Corridor. Section 3 discusses the development and screening of alternatives while Section 4 provides a detailed description of alternatives and results of the detailed evaluation. Section 5 explains the public involvement process while Section 6 summarizes the development and refinement of the LPA.
SECTION 2: PURPOSE AND NEED

Purpose and Need is one step in the MIS process, and has been prepared to identify the issues and conditions that justify major transportation expenditures in the I-225 Corridor. This section also serves as documentation of the initial data collection and analysis for the I-225 Corridor, which were necessary to compile the information herein.

This section does the following:

- Describes the I-225 Corridor, including land use, population, current transportation and transit facilities, and environmental issues;
- Summarizes previous studies affecting the I-225 Corridor, and
- Describes the purpose and need for this project, or why improved mobility has been recommended for the I-225 Corridor.

Corridor Description

Land Use

The I-225 Corridor study area can generally be characterized as a mature, developed suburban area. Much of the property adjacent to the Corridor has been developed as either residential or commercial land uses. Figure 2-1 is a map of existing and planned land use within the corridor.

In addition to providing the access necessary to support existing development, I-225 serves a number of strategic development areas that are of particular importance to the City of Aurora. These strategic areas provide the greatest opportunities for economic growth in the City over the next several years. Each of the areas has unique issues associated with it related to either growth, redevelopment, or revitalization as discussed below:

The former Fitzsimons Army Hospital complex is poised to become one of the largest employment centers in the Aurora/Denver metropolitan area during the next 30 years, becoming the new campus for the University of Colorado Health Sciences Center. DRCOG projections estimate redevelopment will bring an 25,000 jobs to the site, more than four times the Army's work force before the 1995 closure decision. A $1.5 billion phased capital construction program will transform Fitzsimons’ tranquil 677 acres into an intensively active complex of laboratories, clinics, hospitals, classrooms and offices.

The Fitzsimons redevelopment plan links a 217-acre academic medical center campus and hospital with a 147-acre bioscience research park. This is the first project of its kind to be developed west of the Mississippi River, and is modeled after three similar projects successfully launched on the East Coast within the past 10 years in Massachusetts, Maryland and Virginia.

The completed development will have 7.3 million square feet of building area, and is expected to inspire new business investment and redevelopment along the East Colfax Avenue corridor. This new employment center is expected to boost the value of north Aurora neighborhoods, where market trends are already showing increases in home sales prices. The intense redevelopment planned for Fitzsimons also builds upon the site's attraction due to its proximity to Denver International Airport (DIA) and the related Gateway developments.
Figure 2-1: Existing and Proposed Land Use Within the I-225 Corridor
Aurora City Center is an area designated as a potential regional economic center, located south of 6th Avenue, north of Mississippi Avenue, east of I-225, and west of Tollgate Creek. Its primary arterial is East Alameda Avenue. An urban design plan, a land use plan with map, and corresponding zoning for City Center have been adopted by the City of Aurora.

The City Center area is 772 acres in size and is currently anchored by the Aurora Mall and by existing and proposed City of Aurora municipal buildings. Total commercial development in the City Center is planned to exceed 2 million square feet of retail and approximately 375,000 square feet of office space. As envisioned, the multi-use City Center is a potential candidate for designation as a regional economic center, as defined in the DRCOG MetroVision 2020 Plan. If transit expenditures are developed along the I-225 corridor, City Center is seen as a logical place for a transit center/station which would include a mix of uses, and have a pedestrian orientation.

The former Lowry Air Force Base, west of Havana, south of Colfax, east of Quebec, and north of Alameda, is located in both Denver and Aurora and is surrounded by primarily residential neighborhoods. The reuse plan currently in effect for the 1,866 acre site is the result of a coordinated, community-wide planning effort. Themes for the reuse plan incorporate a balance of business, training and educational activities, residential neighborhood, open space and recreational uses, and a town center. A redevelopment authority established by an intergovernmental agreement between Denver and Aurora is charged with managing development of the site. Denver is considering new land use classifications to enable mixed-use residential development at this site.

I-225/Abilene Corridor - Predominant uses along the I-225/Abilene Corridor (Abilene runs along the east side of I-225 from 4th Avenue south to Iliff) include office, regional retail, and medical facilities. Due in part to the accessibility and visibility provided by I-225, a power corridor of "big box" retailers is centered between Abilene and Mississippi. This area includes approximately one million square feet of big box retail, making it one of the five power retail locations in the metropolitan area. On the west side of I-225, the Fitzsimons redevelopment and the presence of Medical Center of Aurora's two hospitals will anchor the medical industry in this area. Future development opportunities exist in or adjoining the corridor, since a number of prominent parcels are still vacant. The potential transit investments are seen as a positive factor for the economic potential in this portion of the corridor.

Aurora's Airport Boulevard Gateway includes the I-70 corridor from Peoria Street east to the E-470 corridor, and the area north of I-70 to DIA and south to East Alameda Avenue. Aurora is benefiting from being adjacent to the Denver area's new airport and the vibrant, regional industrial corridor that is emerging. The Airport Gateway area is evolving as the region's third largest business hub, after downtown Denver and the southeastern metro area where the Denver Tech Center is located. Current and future uses in the Gateway include research and development, hotels and related hospitality facilities, manufacturing, distribution warehousing, and office uses. This area will also experience market demand for residential use, parks and open space.

An excellent transportation network is provided by I-70, Airport Boulevard, and the E-470 toll road. Available land with infrastructure, existing business parks, and strong real estate marketing contributes to potential employment growth in the Gateway.
Denver International Airport - Two potential strategic sub-areas within the DIA environs are the International Center and a proposed future air cargo hub at a new south entrance to DIA. The International Center concept involves a hotel, resort, and office complex which would be located in the vicinity of the first two E-470 interchanges south of DIA, at 64th and 56th Avenues. The proposed air cargo hub would be located east of the E-470 corridor. Although these sub-areas are outside the I-225 corridor, they could affect future travel demand in the corridor.

The I-70 Corridor has been a key location for Aurora’s industrial growth in the past, since it is a major east-west corridor for the region as well as for the state. In the future, because I-70 serves as the primary freeway access to DIA, it will become even more strategic for Aurora’s development. Uses in the past have been related to industrial, warehouse, and distribution activities. Recent development has included an office building and major hotel facilities which have helped create a quality image for the eastern portion of the corridor within Aurora.

Buckley Air National Guard Base, southeast of the I-225 corridor, is the home of the 140th Fighter Wing of the Colorado Air National Guard, the helicopter-equipped Second Battalion of the Army Reserve, part of the 35th Infantry Division, and other military units. Major activities associated with the development of space and missile systems, satellite tracking, data reception, and early warning radar (space command) are also located at the base. The airfield also provides services for government and military aircraft crossing the country. Adjacent to the base are a number of businesses which support base activities.

The total area of the Buckley base is 3,897 acres, including one active runway. In 1995, there were 1,295 active duty military personnel stationed at Buckley, along with 2,954 National Guard and Reserve personnel. In 1998, the number of personnel at the base is approximately 7,000, with projections for additional future growth.

The base is expanding its operations and is planning to make capital investments valued at 65 million dollars over the next seven years. These investments will include road improvements, demolition of all WWII era buildings, additional airfield ramps and taxiways, and new and renovated facilities.

Original Aurora, including its historic downtown, is the oldest part of the city. It is an irregular five square-mile area bounded by Yosemite Street and Denver's city limits on the west, Stapleton and Fitzsimons on the north, I-225 on the east, and 1st and 6th Avenues on the south. Colfax Avenue serves as the area’s primary arterial. Strategically located within an area of land surrounded by the redevelopment of Lowry, Fitzsimons, and Stapleton, original Aurora is a well-organized community that is successfully facing many of the challenges typically found in older urban areas. This area includes a number of multi-family housing units and many area residents are frequent users of transit. Regional Transportation District’s (RTD) Route 15 provides 24-hour service from this area to downtown Denver, and has the highest ridership in the metropolitan transit system.

Havana Street Corridor and Buckingham Square Mall - Havana Street is a major north/south arterial corridor near Aurora’s western city limit. It has developed with multiple commercial locations, dominated by auto access. There are potential redevelopment locations along the corridor, particularly north of Mississippi Avenue due to the age of existing land uses and infrastructure. Buckingham Square Mall, on Havana at Mississippi, is one of Aurora’s regional retail locations. Historically it has been a significant generator of sales tax revenue for the city.
Denver Technological Center (DTC) - The DTC is second only to downtown Denver in terms of employment within the region. DTC, located immediately south of Aurora, is located in both Greenwood Village and the City and County of Denver, and has excellent access to both I-25 and I-225. A new Greenwood Village Transportation Plan is nearing completion. During a series of public forums held in late 1997, residents, employees, and business representatives provided hundreds of comments concerning transportation problems and needed improvements. Greenwood Village staff have performed technical analyses of congestion and safety problems in the area and have evaluated a wide range of potential improvements.

Also in 1997, Greenwood Village worked with Arapahoe County and Aurora officials to develop a mediation agreement addressing transportation issues in the eastern part of the Village and surrounding areas of Arapahoe County. The City Council voted unanimously to adopt the mediation plan which includes joint efforts to secure funding for vital regional transportation projects, including light rail along the I-25 and I-225 corridors and improvements to regional freeway facilities such as I-25, I-225, Arapahoe Road and Parker Road. The agreement also includes measures to mitigate traffic impacts on local streets, including closure of Jordan Road through Cherry Creek State Park, and traffic calming and spot improvements on Union Avenue, Dayton Street, Bellevue Avenue, Orchard Road, Peoria Street, and Cherry Creek Drive.

Demographics

Aurora, founded in 1891, grew slowly over the decades until it experienced a commercial and residential growth surge in the 1970's and early 1980's. It is now the third largest city in Colorado, with an estimated 1995 population of 246,670 (City of Aurora Comprehensive Plan, 1998). This growth trend is expected to continue for the near future, due to recent job growth in Colorado which has created significant migration into the state and the metro region. Because of this influx and other key local events such as the opening of DIA, the construction of E-470, and the redevelopment of Fitzsimons, Lowry, and Gateway, Aurora is poised to gain a significant portion of this regional growth.

During the period between 1990 and 1995, Aurora’s population grew at an average annual rate of 1.8%. If this rate of population growth continues, the City of Aurora will gain almost 50,000 new residents in the next ten years. This has increased the demand for new housing in Aurora, and residential areas south and east of the I-225 corridor continue to expand at a rapid rate. In addition, approximately 1.5 million square feet of new commercial space was constructed in Aurora between 1990 and 1995. Most of this new space has been retail oriented.

Population and employment estimates for the Denver Metro area in years 1996 and 2020 were developed by DRCOG, using Traffic Analysis Zones (TAZ). Because much of the I-225 corridor is already developed, the corridor itself has limited population and housing growth potential. The DRCOG forecasts indicate that corridor population is expected to grow less than one half percent per year over the next twenty four years. Population growth will be concentrated in a few locations scattered throughout the corridor, primarily east of I-225 and at the Airport Gateway.

In contrast, the number of jobs within the I-225 Corridor is forecast to increase at a relatively rapid pace, due largely to the redevelopment of Fitzsimons, and growth at Gateway and the Aurora City Center. The 25,000 new jobs at Fitzsimons, when combined with job growth from other parts of the corridor, are forecast to result in an average annual growth rate for jobs in the corridor of approximately 1.75 percent per year.
Table 2-1 is a list of TAZ’s in the corridor, with the expected growth in population and households for each of the TAZ’s. (Note that minor decreases in population are generally a result of decreasing household size). Figure 2-2 contains the population estimates in the I-225 corridor study area, by TAZ, for 1996 and 2020. Figure 2-3 shows the 1996 and 2020 employment estimates. The maps in these figures indicate where most of the growth is expected to occur.

Table 2-1: Population and Employment Data

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<td>638</td>
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<td>3,473</td>
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<td>657</td>
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<td>1051</td>
<td>3,682</td>
<td>3,679</td>
<td>-3</td>
<td>1,370</td>
<td>1,499</td>
<td>+129</td>
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<tr>
<td>1071</td>
<td>265</td>
<td>263</td>
<td>-2</td>
<td>153</td>
<td>193</td>
<td>+40</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>74,365</strong></td>
<td><strong>79,543</strong></td>
<td><strong>+5,178</strong></td>
<td><strong>36,862</strong></td>
<td><strong>55,433</strong></td>
<td><strong>18,571</strong></td>
</tr>
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</table>

Physical Barriers and Features

The presence of three large-scale former military/public facilities in this area (Fitzsimons, Stapleton and Lowry), and one existing military facility (Buckley) have been the primary factors in limiting east-west access in East Denver and Aurora. These, and other physical barriers and features located within and adjacent to the I-225 corridor are identified on Figure 2-4. A brief discussion of each follows:

**Interstate 225** is a dominant barrier to east-west auto, pedestrian and bike travel. Grade-separated interchanges are spaced approximately one mile apart north of Mississippi Avenue. These crossings are at Mississippi Avenue, Alameda Avenue, 6th Avenue, Colfax Avenue, and I-70. South of Mississippi Avenue, interchanges are located at major arterials: Iliff Avenue, approximately 1.25 miles south of Mississippi; Yale Avenue approximately 0.5 mile south of Iliff; and Parker Road, approximately 1.0 mile south of Iliff. The nearest I-225 interchange south of Parker Road is at Yosemite, just over 2 miles away. There are two additional crossings of I-225 between Yosemite and I-25, spaced approximately 0.5 mile apart (DTC Blvd. and Ulster St.).

**Interstate 70** is a physical barrier to north-south traffic on the north end of the study area. Crossings exist at I-25, Chambers Road to the east, and Peoria Street to the west, each spaced approximately 1 mile apart.
Figure 2-2: Summary of Population by TAZ (1996 and 2020)

Summary of Population by TAZ (1996)

Summary of Population by TAZ (2020)

Legend:
- 0 - 1,000
- 1,000 - 2,500
- 2,500 - 5,000
- 5,000 - 15,000
- > 15,000
Figure 2-3: Summary of Employment by TAZ (1996 and 2000)
Figure 2-4: Physical Barriers and Features

Physical Barriers and Features

- Lakes
- Streams
- Park / Golf Course
- Major Military / Public Facilities

Map showing physical barriers and features.
The former **Fitzsimons Army Hospital** complex, soon to become the home to University of Colorado Health Sciences Center, comprises 577 acres in the northwest part of the corridor. The complex is a barrier to north/south travel between Smith Road and Colfax, and to east/west travel between Peoria Street and I-225.

The former **Stapleton Airport**, northwest of the I-225 Corridor, has been designated by the City and County of Denver for mixed-used redevelopment as residential, commercial and industrial properties. Although this area does not directly affect the I-225 corridor, it is a barrier to east-west traffic between Quebec Street and Peoria Street.

**Lowry Air Force Base/ Redevelopment Area** is located west of the study area and consists of 1,866 acres. Lowry is a significant barrier to north-south traffic between Quebec Street and Havana Street, and to east-west travel between Alameda and Colfax in the area. Sixth Avenue is discontinuous across this area.

**Buckley Air National Guard Base’s** 3,897 acres represent another significant barrier to both north-south and east-west travel east of the study area. The City of Aurora is planning to extend Jewell Avenue to the east to provide another east-west corridor in the area.

**Sand Creek** crosses under I-25 to the north of Fitzsimons; Tollgate Creek crosses under approximately 0.5 mile south of Colfax; and the Highline Canal crosses under approximately 0.5 mile south of 6th Avenue.

There are also a number of community parks and golf courses located throughout the corridor which restrict access in localized areas.

**Transportation Facilities and Service**

**Roadway Facilities**

Roadways are typically characterized by *functional classification* which describes the roadway's level of mobility. Interstate freeways offer the greatest mobility and have no direct access to adjacent properties. On the other end of the spectrum, local roadways have low mobility but a high level of access to adjacent properties. Arterials fall in between these two classifications and typically offer good mobility with a limited amount of property access.

I-225 is classified as an Interstate Freeway, indicating that its primary function is to provide a high level of mobility. Access to adjacent property is accomplished via grade-separated interchanges with major regional or principal arterials. All of the major arterial cross-streets, with the exception of Alameda Avenue, have interchanges with I-225. Design of a new interchange at Alameda Avenue is currently underway and construction is slated to begin in mid-1999.

I-225 extends approximately 12 miles from I-70 to I-25. This study addresses the 8 miles from Parker Road north to I-70. (The Southeast Corridor MIS previously addressed the segment of I-225 between Parker and I-25.) The segments south of Parker Road and north of 6th Avenue have recently been upgraded to six lanes. The segment between Parker Road and 6th Avenue is currently four lanes. However, it is likely that this segment will be widened to six lanes in the near future. The funding to widen I-225 at this location has not yet been secured although...
permitting and engineering work is in progress. The project’s Environmental Assessment was completed in 2000.

Because I-225 links to two other important transportation corridors (I-25 and I-70), it functions as a suburb-to-suburb linkage and a regional bypass, in addition to providing local mobility and circulation to activity centers along the corridor. Other important functions of I-225 are to access Denver International Airport (DIA) to the north, and the Denver Technological Center (DTC), the second largest employment center in the region, to the south. I-225 functions as a critical link between these regionally important facilities, and it provides regional access to Fitzsimons which will have a significant employment base with the redevelopment.

Other important north-south roadways within the I-225 study area include Peoria Street and Chambers Road. Both of these are designated as principal arterials. Peoria is generally an urban four-lane undivided roadway with turn lanes and signalized intersections at major cross streets. Primary land use along Peoria consists of commercial development intermixed with some residential areas. Chambers is a six-lane undivided roadway with turn lanes and signalized intersections, and land uses are primarily commercial and business.

Buckley Road, east of Chambers, is the nearest north-south roadway classified as a major regional arterial. The existing roadway network is displayed on Figure 2-5.

Roadway Utilization

Interstate 225 was originally constructed in the 1960s. Since its construction, Aurora has expanded significantly to the east and southeast, placing increased traffic demand on I-225 and its access points. According to traffic count data collected by the Colorado Department of Transportation (CDOT), the daily traffic on I-225 and I-70 increased by approximately 31 percent and 8 percent, respectively, from 1988 to 1993.

Current (1996) average weekday daily traffic (AWDT) for area roadways as well as roadway functional classifications are shown on Figure 2-6. The most heavily traveled section of I-225 is between Parker Road and Yosemite Street (DTC) with an AWDT of 129,000. Generally, AWDT along I-225 decreases as distance from the DTC increases.

Growth in the region’s population and employment will result in increased traffic levels. Based upon current DRCOG estimates, daily traffic will increase by approximately 75 percent on I-70 and 36 percent on I-225 between the years 1996 and 2020. Projected AWDT for the year 2020 are shown in Figure 2-7.

Figure 2-8 shows areas designated by DRCOG in the 2020 Regional Transportation Plan as “congested corridors”. DRCOG defines “severe congestion” as a volume/capacity (V/C) ratio which exceeds 0.95 per direction. “Severe, pervasive congestion” is defined as a V/C ratio which exceeds 0.95 for a least 3 hours per direction. These are locations where traffic demand is expected to exceed the capacity of the roadway by 2020. During peak traffic periods, these corridors will be characterized by significant delays to motorists, low speeds, increased fuel consumption and pollutant emissions, and increased accident potential. The “congested corridors” scenario also assumes that all existing and future committed projects have been implemented. As Figure 4-8 shows, the entire length of I-225 between I-25 and I-70, as well as the connecting Iliff Avenue, Colfax Avenue, 6th Avenue, Mississippi Avenue, and Parker Road, are forecast to be severely congested by 2020.
Figure 2-5: Existing Corridor Roadway Network

Existing Corridor Roadway Network (1998)

- 2 lanes
- 4 lanes
- 6 lanes

Legend:
- 2 lanes
- 4 lanes
- 6 lanes

Scale:
0.5 0 0.5 Miles

Direction:
North

Source:
Regional Transportation District, CSU Data, Regional Council of Governments, Traffic Demand Model

I-225 Major Investment Study
Figure 2-6: Average Weekday Daily Traffic Volumes, 1996

Average Weekday Daily Traffic Volumes (1996)

- 1-30,000
- 30,000 - 50,000
- 50,000 - 100,000
- 100,000 - 250,000
Figure 2-7: Average Weekday Daily Traffic Volumes, 2020
Figure 2-8: Projected Year 2020 Congestion Levels

Weekday SeverelyCongested Roadways

1996 Congestion
Additional Roadways
Congested in 2020
assuming existing plus
committed improvements
only

Notes: Provision near congestion is defined as volume-to-
capacity ratio over 0.95 for 3 hours or more in one direction.
Based on a roadway link analysis, additional congestion may
exist near freeway interchanges and at other intersections.
1996 based on CMS data.
2020 based on DRCOS travel model—D20

Figure: DRCOS
Accident History

To identify areas along the corridor where safety factors may be an issue, comparisons were made between accident rates which were observed along the I-225 Corridor and statewide average accident rates for similar facilities. The same comparisons were made for injury accident rates. The comparisons were made using CDOT data for calendar year 1996. The results of the comparison, by segment, are reported in Figure 2-9. The I-225 Accident Rate represents all reported property damage and injury accidents by segment. The Statewide Accident Rate represents an average of property damage and injury accidents for other urban interstates. The results show that the segments between 6th Avenue and Colfax, and between Parker Road and Mississippi, have higher than average accident rates.

A similar comparison can be made for accidents where an injury was reported. The graph shows that the same segments with higher than average accident rates also have higher than average injury accident rates. In addition, the segment between I-25 and Tamarac has an injury rate that is higher than the statewide average.

The MIS will address potential safety factors along the corridor with particular attention to those segments with higher than average rates.

There were no fatal accidents reported along I-225 in 1996. This is below the statewide average of 0.81 fatalities per million vehicle miles of travel.

Transit Service

This section provides an overview of existing RTD transit services in the I-225 corridor study area. The following paragraphs describe existing transit facilities in the corridor; existing RTD route characteristics (route alignments, service frequencies, and operating statistics); and a summary of corridor ridership characteristics.

I-225 Corridor Transit Facilities

Major transit facilities in the I-225 Corridor include five park-n-ride facilities and one transit center. Following is a brief description of these facilities. Table 2-2 summarizes several attributes for each facility including the number of parking spaces, utilization statistics, transit services and other characteristics.

Park-n-Ride Facilities

There are five park-n-ride facilities located in the I-225 Corridor:

- **Nine Mile park-n-Ride** is located in the southwest quadrant of the I-225/Parker Road interchange. This facility has 420 parking spaces and was 76 percent utilized in 1997. Three local, two express, one limited and one skyRide route serve this facility. The park-n-ride is being expanded to 800 spaces as part of the Southeast Corridor project.

- **Olympic park-n-Ride** is located on East Yale Avenue approximately two-tenths of a mile east of South Chambers Road. This facility has 152 parking spaces and was 31 percent utilized in 1997. Two express routes serve this facility.
Figure 2-9: Accident Rate Comparison
### Table 2-2: I-225 Corridor Transit Facilities

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Parking Spaces</th>
<th>Average Utilization</th>
<th>Utilization Rate</th>
<th>Bus Routes</th>
<th>Bicycle Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nine Mile</td>
<td>I-225 and Parker Road</td>
<td>420</td>
<td>318</td>
<td>75.7%</td>
<td>Local: 21, 53, 121, 83L&lt;br&gt;Express: 63X, 90X&lt;br&gt;Regional: AT</td>
<td>8 spaces 12 lockers</td>
</tr>
<tr>
<td>Olympic</td>
<td>East Yale Ave. and South Chambers Road</td>
<td>152</td>
<td>47</td>
<td>31.1%</td>
<td>Local: 53&lt;br&gt;Express: 63X, 90X&lt;br&gt;Regional: N/A</td>
<td>6 spaces</td>
</tr>
<tr>
<td>Aurora Mall</td>
<td>East Alameda Ave. at Aurora Mall</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Local: 3, 6, 11, 15, 21, 53, 169, 3L, 5L&lt;br&gt;Express: N/A&lt;br&gt;Regional: N/A</td>
<td>None</td>
</tr>
<tr>
<td>Fitzsimons</td>
<td>Potomac Street and East Colfax Ave.</td>
<td>129</td>
<td>108</td>
<td>84.1%</td>
<td>Local: 15, 15L&lt;br&gt;Express: N/A&lt;br&gt;Regional: AT</td>
<td>4 spaces</td>
</tr>
<tr>
<td>Smoky Hill Cutoff</td>
<td>East Alameda Ave. and South Havana Street</td>
<td>235</td>
<td>74</td>
<td>31.5%</td>
<td>Local: 3, 105, 3L&lt;br&gt;Express: N/A&lt;br&gt;Regional: N/A</td>
<td>2 spaces</td>
</tr>
<tr>
<td>Montebello</td>
<td>East Albrook Dr. and Peoria Street</td>
<td>84</td>
<td>32</td>
<td>36.3%</td>
<td>Local: 44, 45, 53, 54, 121&lt;br&gt;Express: 47X&lt;br&gt;Regional: N/A</td>
<td>None</td>
</tr>
</tbody>
</table>

**Notes:**
2. Bus route service and bicycle facility information obtained from RTD Facilities and Properties Reference Book.
- **Fitzsimons park-n-Ride** is located in the northwest quadrant of the Potomac Street/East Colfax Avenue intersection. This facility has 129 parking spaces and was 84 percent utilized in 1997. It will be expanded to 300 spaces in the future. One local, one limited and one skyRide route serve this facility.

- **Montbello park-n-Ride** is located north of I-70 on Albrook Drive just east of Peoria Street. This facility has 84 parking spaces and was 38% utilized in 1997. Five local and one express route service this facility.

**Transit Centers**

RTD operates two transit centers in the corridor, the Aurora Mall Transfer Station and the 48th and Chambers Road Transfer Station. These facilities are for transfer services only, and has no designated parking facilities. The Aurora Mall Transfer Station is located on the north side of the Aurora Mall along East Alameda Avenue. Routes that serve this facility are as follows:

- Local Routes - 3, 6, 11, 15, 21, 53, 169
- Limited Routes - 3L, 15L

The 48th and Chambers Road Transfer Station is located at the southwest corner of 48th Avenue and Chambers Road serving routes:

- Local Routes - 44, 53
- Limited Routes - AS

**I-225 Corridor Bus Routes**

RTD provides transit service in the I-225 study area through a network of regional, express and local bus routes. Following are brief descriptions of I-225 study area bus routes. The routes are shown on Figure 2-10. Table 2-3 lists bus routes, their service frequencies, and operating statistics. This table does include routes that operate in only a small portion of the corridor (e.g., Routes AB, AF, AS).

Local Routes 53 (Chambers Crosstown) and 121 (Peoria Crosstown) are the only routes that service the entire I-225 study area from Parker Road to I-70. The only route operating directly on I-225 at this time is skyRide Route AT, with only two stops in the corridor.

**Local Routes**

North-south local routes in the corridor vicinity include Chambers Crosstown (Route 53), Montbello Industrial (Route 54), Havana / Arapahoe Crosstown (Route 105), Peoria Crosstown (Route 121) and Buckley Road Crosstown (Route 169). Routes 53 and 169 provide service to the Aurora Mall Transfer Station. Routes 53, 105 and 121 operate on 30-minute peak and base service frequencies. Route 53 provides 60-minute service frequencies on both the Nine Mile and Chambers Way branches of the route. Route 54 operates 30-minute peak period and 60-minute off peak period service frequencies. Route 169 operates at 60-minute service frequencies all day.
### Table 2-3: Average Weekday Operating Statistics

<table>
<thead>
<tr>
<th>Route</th>
<th>Name</th>
<th>Service Freq.</th>
<th># of Trips</th>
<th>Bus Requirements</th>
<th>Platform Hours</th>
<th>Vehicle Miles</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Peak</td>
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</tr>
<tr>
<td>Local Routes</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Alameda Crosstown</td>
<td>60</td>
<td>60</td>
<td>115</td>
<td>7</td>
<td>8</td>
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<tr>
<td>6</td>
<td>East 6th Avenue/North Pecos</td>
<td>30</td>
<td>30</td>
<td>79</td>
<td>10</td>
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<tr>
<td>10</td>
<td>10th Avenue</td>
<td>30</td>
<td>30</td>
<td>133</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>Mississippi Crosstown</td>
<td>20</td>
<td>30</td>
<td>72</td>
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<td>Peoria Crosstown</td>
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<td>169</td>
<td>Buckley Road Crosstown</td>
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<td>2</td>
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<td>Limited Routes</td>
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<td>9</td>
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<td>83Ltd</td>
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<td>30</td>
<td>59</td>
<td>6</td>
<td>4</td>
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</table>
Table 2-3: Average Weekday Operating Statistics (continued)

<table>
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<tr>
<th>Route</th>
<th>Name</th>
<th>Service Freq.</th>
<th># of Trips</th>
<th>Bus Requirements</th>
<th>Platform Hours</th>
<th>Vehicle Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Peak</td>
<td>Base</td>
<td>Am</td>
<td>Mid</td>
<td>PM</td>
</tr>
<tr>
<td>Express Routes</td>
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<td></td>
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<td></td>
</tr>
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<td>6X</td>
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<tr>
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<td>63X</td>
<td>Martin/DTC/Nine Mile/Meadow</td>
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<td>169X</td>
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<td>30-60</td>
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<tr>
<td>AB</td>
<td>DIA/Boulder via US 36</td>
<td>60</td>
<td>60</td>
<td>37</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>AF</td>
<td>DIA/Downtown/Cold Spring</td>
<td>60</td>
<td>60</td>
<td>50</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>AS</td>
<td>DIA/Stapleton</td>
<td>30</td>
<td>60</td>
<td>62</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>AT</td>
<td>DIA/Littleton via DTC</td>
<td>60</td>
<td>60</td>
<td>43</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Corridor Totals</td>
<td></td>
<td></td>
<td></td>
<td>1,790</td>
<td>178</td>
<td>111</td>
</tr>
</tbody>
</table>

Notes:
1. * indicates this service is provided in peak direction only.
2. ** indicates this service provides some off-peak service, but is not consistent in frequency.
3. Headways shown in table reflect approximate service frequencies in the peak direction.
East-west local routes in the corridor include Alameda Crosstown (Route 3), East 6th Avenue/North Pecos (Route 6), 10th Avenue (Route 10), Mississippi Crosstown (Route 11), East Colfax (Route 15), 20th Avenue (Route 20), East Evans (Route 21), 44th Avenue (Route 44), and South Montbello (Route 45). Routes 15 and 21 operate on 15-minute service frequencies during both peak and base periods. Routes 6, 11, and 44 operate on 15-minute service frequencies in the peak periods and 30-minute service frequencies in the base periods. Route 20 has 15-minute service in the peak period with 20-minute frequency during the base period. Routes 10 and 45 operate 30-minute service frequencies in the peak and base periods, and Route 3 operates 60-minute service frequencies all day.

Express Routes

Express routes operate exclusively in the peak period with service only in the peak direction. Several express routes operate in the I-225 Corridor area. Routes 11X, 17X, 23X, and 39X are oriented towards downtown Denver, with service to the I-25/Broadway LRT Station. Routes 90X and 91X are also oriented towards the I-25/Broadway LRT Station. Service on these routes continues north of the LRT Station to the Civic Center Station.

Route 47X provides peak direction only express service to Green Valley Ranch and the Montbello park-n-Ride in route to downtown Denver. Route 63X provides peak direction only express service between Martin Waterton and Olympic park-n-Ride, serving three park-n-rides and two transfer centers, as well as the Denver Tech Center (DTC). Route 35X operates express service from the Heather Gardens area, along the Yale Avenue corridor with service along Hampden Avenue and Tamarac Drive, to the I-25/Broadway LRT Station. Route 6X provides express service from the Cold Springs park-n-Ride to DTC. Routes 63X and 90X are the only existing express routes within the I-225 corridor serving the Nine Mile park-n-Ride.

Route 169X provides peak period/peak direction only express service to DIA along the Buckley Road/Airport Boulevard corridor from the Smoky Hill Road area.

Limited Routes

There are three limited-stop routes in the corridor study area. Route 3L provides peak period service along the Alameda Avenue corridor to the Buckley Road area. Route 15L provides all-day service between the Aurora Mall and downtown Denver via East Colfax. Route 83L provides all-day service between Nine Mile park-n-Ride and downtown Denver via Parker Road and Leetsdale Drive.

skyRide Routes

RTD operates one skyRide route in the I-225 corridor, and three skyRide routes within the northern boundary of the study area. Route AT provides service from the Littleton park-n-Ride on Mineral Avenue to Denver International Airport (DIA), via I-225. This route operates at 60-minute service frequencies. Within the corridor, this route stops at the Nine Mile and Fitzsimons park-n-Rides. SkyRide Route AS provides operates 30-minute all-day service along I-70 and Pena Boulevard, providing a stop within the corridor at East 48th Avenue and Chambers Road. SkyRide Routes AB and AF also operate along I-70 and Pena Boulevard, but do not provide access within the I-225 corridor boundary area.
Bus Volumes and Ridership Characteristics

With the exception of Route AT, there is no service on I-225 north of the Nine Mile park-n-Ride. Route AT operates 60-minute service frequencies along I-225 between the Nine Mile park-n-Ride and I-70. Low ridership figures for this segment of I-225 contrast sharply with the larger bus volumes operated within the segment of I-225 southwest of the Nine Mile park-n-Ride, and along the I-25 corridor.

I-225 Corridor ridership characteristics were determined using RTD fare box data. Average daily ridership is presented by route in Table 2-4. This table also provides an indication of route productivity in terms of riders per bus trip and riders per service-hour.

Data provided by RTD was reviewed to evaluate existing ridership levels within the corridor. Figure 2-11 is a summary of park-n-ride utilization within the study area.

Figure 2-12 illustrates the directional distribution of passenger trips from corridor park-n-rides and the Aurora Mall on an average weekday. The greatest number of boardings occurs at the Aurora Mall, followed by Nine-Mile and Fitzsimons. As shown on the figure, the majority of passengers boarding at park-n-rides are destined for Denver and/or points west of I-225. A much smaller proportion of park-n-ride passengers are traveling within the I-225 Corridor.

Table 2-4: Average Weekly Ridership Data

<table>
<thead>
<tr>
<th>Route</th>
<th>Name</th>
<th>Average Daily Boardings</th>
<th>Average Riders per Bus Trip</th>
<th>Average Riders per Bus/Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Alameda Crosstown</td>
<td>4,354</td>
<td>37.9</td>
<td>37.9</td>
</tr>
<tr>
<td>6</td>
<td>East 6th Avenue/North Pecos</td>
<td>3,410</td>
<td>43.2</td>
<td>29.7</td>
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<tr>
<td>10</td>
<td>10th Avenue</td>
<td>4,495</td>
<td>33.8</td>
<td>30.3</td>
</tr>
<tr>
<td>11</td>
<td>Mississippi Crosstown</td>
<td>3,438</td>
<td>47.8</td>
<td>32.9</td>
</tr>
<tr>
<td>15</td>
<td>East Colfax</td>
<td>11,242</td>
<td>47.0</td>
<td>61.0</td>
</tr>
<tr>
<td>20</td>
<td>20th Avenue</td>
<td>3,395</td>
<td>29.5</td>
<td>32.0</td>
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<tr>
<td>21</td>
<td>East Evans</td>
<td>3,442</td>
<td>27.1</td>
<td>37.3</td>
</tr>
<tr>
<td>44</td>
<td>44th Avenue</td>
<td>4,085</td>
<td>48.6</td>
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<tr>
<td>45</td>
<td>South Montbello</td>
<td>70</td>
<td>0.9</td>
<td>5.7</td>
</tr>
<tr>
<td>53</td>
<td>Chambers Crosstown</td>
<td>1,898</td>
<td>25.6</td>
<td>29.4</td>
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<tr>
<td>54</td>
<td>Montbello Industrial</td>
<td>29</td>
<td>1.7</td>
<td>8.5</td>
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<tr>
<td>105</td>
<td>Havana/Arapahoe Crosstown</td>
<td>3,123</td>
<td>42.2</td>
<td>36.5</td>
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<tr>
<td>121</td>
<td>Peoria Crosstown</td>
<td>2,372</td>
<td>35.9</td>
<td>34.0</td>
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<tr>
<td>169</td>
<td>Buckley Road Crosstown</td>
<td>518</td>
<td>15.7</td>
<td>20.1</td>
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Table 2-4: Average Weekly Ridership Data (continued)

<table>
<thead>
<tr>
<th>Route</th>
<th>Name</th>
<th>Average Daily Boardings</th>
<th>Average Riders per Bus Trip</th>
<th>Average Riders per Bus/Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>3LTD</td>
<td>East Alameda</td>
<td>465</td>
<td>42.3</td>
<td>48.1</td>
</tr>
<tr>
<td>15LTD</td>
<td>East Colfax</td>
<td>7,182</td>
<td>61.9</td>
<td>69.8</td>
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<tr>
<td>83LTD</td>
<td>Cherry Creek/Parker Road</td>
<td>2,164</td>
<td>36.7</td>
<td>41.0</td>
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<td></td>
<td><strong>Express Routes</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6X</td>
<td>Ward Road/Cold Springs/DTC</td>
<td>145</td>
<td>18.1</td>
<td>25.0</td>
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<td>11X</td>
<td>East Mississippi</td>
<td>119</td>
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<td>17X</td>
<td>East Mexico</td>
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<td>30.0</td>
</tr>
<tr>
<td>23X</td>
<td>East Iliff/Seven Hills</td>
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<td>17.8</td>
<td>23.3</td>
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<td>39X</td>
<td>East Mansfield</td>
<td>182</td>
<td>22.8</td>
<td>28.0</td>
</tr>
<tr>
<td>47X</td>
<td>Green Valley Ranch/Montbello</td>
<td>202</td>
<td>28.9</td>
<td>31.9</td>
</tr>
<tr>
<td>63X</td>
<td>Martin/DTC/Nine Mile/Meadowood</td>
<td>106</td>
<td>17.7</td>
<td>14.9</td>
</tr>
<tr>
<td>90X</td>
<td>Meadowood</td>
<td>1,182</td>
<td>39.4</td>
<td>49.0</td>
</tr>
<tr>
<td>91X</td>
<td>Pheasant Run</td>
<td>240</td>
<td>30.0</td>
<td>29.3</td>
</tr>
<tr>
<td>169X</td>
<td>Buckley/Tower/DIA</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td><strong>skyRide</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>AB</td>
<td>DIA/Boulder via US 36</td>
<td>998</td>
<td>27.0</td>
<td>16.6</td>
</tr>
<tr>
<td>AF</td>
<td>DIA/Downtown/Cold Spring</td>
<td>1,083</td>
<td>21.7</td>
<td>19.3</td>
</tr>
<tr>
<td>AS</td>
<td>DIA/Stapleton</td>
<td>1,025</td>
<td>16.5</td>
<td>22.7</td>
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<tr>
<td>AT</td>
<td>DIA/Littleton via DTC</td>
<td>935</td>
<td>21.7</td>
<td>16.7</td>
</tr>
</tbody>
</table>

Source: 1997 RTD farebox data

Major Travel Markets

The DRCOG traffic forecasts for 2020 illustrate the diverse travel markets served by I-225. The majority of trips (61%) using I-225 either originate and/or are destined within the MIS study area. The remaining trips (39%) have neither an origin or destination within the study area. Approximately 20% of all trips are through trips (i.e., they do not get on or off at intermediate interchanges) that use all of the corridor from Parker Road to I-70.
Figure 2-11: Summary of park-n-Ride Utilization

Summary of park-n-Ride Utilization (1997)

park-n-Ride

Source: Regional Transportation District

I-225 Major Investment Study
Figure 2-12: Summary of Passenger Boardings at park-n-Rides

Summary of Passenger Boardings at park-n-Rides

- Directional Distribution of Boarding Passenger Destinations
- park-n-Ride
- Transit Center

Source: Regional Transportation District

I-225 Major Investment Study
The travel markets being served by I-225 include trips between the study area and Denver, intra-corridor trips (trips made entirely within the study area), trips between the study area and Adams County, and trips between the study area and the part of Arapahoe County between I-25 and the Jefferson County line. Another important travel market is to the Gateway development areas near the junction of Pena Boulevard and I-70.

By 2020, I-225 will serve approximately 17% of all regional trips to Denver International Airport (DIA). In contrast, E-470 will serve approximately 9% of all regional trips to DIA. On the north end of the corridor, at the junction of I-225 and I-70, 55% of I-225 trips are oriented to the west (Denver, Adams County via I-270, I-70 west) while the remaining 45% are oriented to the east (DIA, Gateway, I-70 east).

**Environmental Issues**

Environmental investigations at the MIS level are general in scope, with the purpose of identifying existing conditions and the areas where potential impacts may occur. This level of investigation relies on a search of existing databases, examination of previous studies, and field investigations. Following the conclusion of the MIS, an in-depth environmental study using National Environmental Policy Act (NEPA) guidelines will examine in detail each potential impact of the locally preferred alternative.

Preliminary field reviews of the corridor and initial data gathering have not revealed any major environmental concerns. **Table 2-5** is a list of data sources compiled for the corridor.
<table>
<thead>
<tr>
<th>Resource</th>
<th>Data Source</th>
<th>Status</th>
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<tbody>
<tr>
<td>General</td>
<td>Environmental Assessment: I-225/I-70 Interchange and I-225 Widening to Parker Road</td>
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<td></td>
<td>Final Environmental Impact Statement: Parker Road-Peoria Street to Hampden Avenue</td>
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<td></td>
<td>Draft Environmental Assessment: I-225/ Alameda Avenue</td>
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<td></td>
<td>City of Aurora Comprehensive Plan</td>
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<tr>
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<td>Aurora Center City Urban Design Guidelines</td>
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<td>Arapahoe County Comprehensive Plan</td>
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<td>Adams County Comprehensive Plan</td>
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<td></td>
<td>City of Greenwood Village Comprehensive Plan</td>
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<tr>
<td>Wetlands</td>
<td>NWI Maps</td>
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<td></td>
<td>USGS Maps</td>
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<tr>
<td></td>
<td>CDOW</td>
<td>contact made</td>
</tr>
<tr>
<td></td>
<td>Field inspection</td>
<td>next phase</td>
</tr>
<tr>
<td>Section 4(f) Parklands and Wildlife Refuges</td>
<td>Local land use plans and maps</td>
<td>on file</td>
</tr>
<tr>
<td></td>
<td>Fitzsimons Records</td>
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<td></td>
<td>CDOT reports</td>
<td>on file</td>
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<tr>
<td>Section 4(f)/ Section 106 Historic Properties</td>
<td>State Historic Preservation Officer records search</td>
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<tr>
<td></td>
<td>Local Plans/ maps</td>
<td>on file</td>
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<td></td>
<td>Fitzsimons records</td>
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<td>Threatened &amp; Endangered Species</td>
<td>US Fish &amp; Wildlife Service</td>
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<td>CDOW reports</td>
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<td>CO Natural Heritage Program</td>
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<td>Hazardous Materials</td>
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<tr>
<td></td>
<td>Aerial photos</td>
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</tr>
</tbody>
</table>
Summary of Previous Studies

Over the past 25 years, a number of plans and studies have recommended the I-225 Corridor as either a stand alone rapid transit corridor, or as an extension of, or connection to, other major rapid transit corridors. A brief summary of these plans follows.

Public Transportation Plan for the Year 2000, 1973, update 1975

This 1973 document, revised in 1975, was RTD’s first public transportation plan. These early studies concluded that the local bus system needed to be supplemented by express and regional bus service, and, by the year 2000, a comprehensive rapid transit system. The I-225 Corridor was first proposed as an RTD rapid transit corridor in the 1973 plan. This plan called for Personal Rapid Transit (PRT) along East Colfax to I-225, with a small extension along I-225 from Colfax to the Aurora Mall.

Light Rail Implementation Plan, 1980

In 1979, advances in light rail transit (LRT) technology led RTD to select it as the most appropriate technology to meet the region’s needs. In response, a Light Rail Implementation Plan was developed in 1980. Light rail was identified for the Southeast (I-25) and East (Colfax Avenue) Corridors. An LRT extension along I-225 from Colfax Avenue south to Parker Road was identified as a future addition to the primary transit corridors.

The Public Transportation Plan, 1982

RTD’s Public Transportation Plan was updated in 1982. Both bus and light rail technologies were evaluated for the I-225 Corridor. Improved bus service was recommended “in order to establish and reinforce the transit habit in areas which may be served by future rail transit.”

Regional Transit Systems Plan, 1984

Technical Analysis and Technology Assessment Study, 1986

The Regional Transit Systems Plan, adopted by the RTD Board in 1984, did not include a Colfax corridor or an I-225 extension to the Aurora Mall. Two years later, a Technical Analysis and Technology Assessment Study was directed by the RTD Board. This study examined nine potential technology/corridor alignment alternatives. In this study, the I-225 corridor from I-25 to Alameda Avenue was identified as a regional transit corridor. No specific technology was recommended for the I-225 corridor in the analysis.

House Bill 1249 (HB 1249), 1987

The General Assembly of the State of Colorado adopted House Bill 1249 (HB 1249) in 1987. HB 1249 determined that a rapid transit system “...is a matter of statewide concern; and such a system is necessary for economic development, commerce, and the reduction of air pollution.” The bill directed RTD to develop plans for rapid transit in eight corridors, including the I-225 corridor from I-25 to Smith Road using Automated Guideway Transit (AGT) technology. Since the time of HB 1249, the envisioned rapid transit system has changed very little. The current rapid transit system from Metro Vision 2020 is illustrated in Figure 1-1.
SE/SW Transit Threshold Analysis, 1988

In 1988, The Urban Mass Transit Authority (UMTA) approved funding for the SE/SW Transit Threshold Analysis. The study was to determine the priority corridor for transit investment. A Southeast Corridor spur running along I-225 from I-25 to Parker Road was recommended in this analysis. A transportation system management (TSM) system, busway system and light rail system were the three alternatives considered in this analysis. The LRT alternative was ultimately selected for the Southeast corridor. The final reports also recommended that the RTD Board apply for an UMTA grant to fund an Alternatives Analysis in the Southwest Corridor.

Major Investment Studies, 1997

In 1994, DRCOG, RTD, and CDOT agreed to initiate three Major Investment Studies in three high priority corridors in the Denver region.

- the East Corridor (along I-70 from Downtown Denver to DIA)
- the Southeast Corridor (I-25 from Downtown to Lincoln Avenue)
- the West Corridor (along U.S. 6/W. Colfax from Downtown to Golden)

The DRCOG Board approved the MIS recommendations for these three corridors in July of 1997. Figure 2-13 shows the investment recommendations for the East and Southeast corridors. Of the three corridors, the East and Southeast have the greatest impact on the I-225 Corridor MIS since they provide the points of connection at the north and south ends of the corridor.

East Corridor MIS

This MIS recommended construction of a single-track commuter rail line from Denver Union Station in lower downtown to Denver International Airport (DIA). The approximately 23-mile route would generally follow the Union Pacific Railroad alignment to east of Chambers Road, then turn north through the I-70/Pena Boulevard interchange, and then run along the median of Pena Boulevard to the south end of the DIA terminal. This corridor's recommendations featured a new single track operation with passing sidings. Vehicle technology for the commuter rail line would be FRA-compliant, self-propelled diesel cars operating as a single unit or in short train consists. Corridor recommendations also included an extension of the Central Corridor LRT from 30th Avenue and Downing Street to the intersection of 40th Avenue and 40th Street; enhanced RTD bus service oriented as a feeder service to the commuter rail line; and widening I-70 in each direction between I-225 and Pena Blvd.

One of the key issues of the I-225 MIS will be the interface between the I-225 corridor and the East Corridor. The East Corridor MIS concluded that "the investment must ensure connectivity with (future) rapid transit in the I-225 Corridor," and one of the major travel markets identified as being serviced by the East Corridor is the "inner beltway" trips between I-225 and I-270. To facilitate this interface, the East Corridor MIS commuter rail scenario included a future station near where the existing Union Pacific Railroad travels under I-225, and a new park-n-ride lot for the northwest quadrant of the Colfax/I-225 interchange.
Figure 2-13: Recommended Transit Investments

- **East Corridor** (Commuter Rail)
- **Southeast Corridor** (Light Rail)
- **Southwest LRT Corridor** (Under Construction)
- **Central LRT** (In Operation)
Southeast Corridor MIS

This MIS recommended 19.7 miles of new double-track light rail transit, running along I-25 for 15.2 miles from Broadway to Lincoln Avenue, with an extension along I-225 for the 4.5 miles from I-25 north to Parker Road. The EIS for this project was completed in late 1999. The light rail tracks would be placed adjacent to I-25 on the south and west sides, and in the median of I-225. The I-225 spur would originate just west of the current I-25/I-225 interchange. At this point, LRT would be in a short tunnel to traverse under the interchange. The tracks would then continue east in the median of I-225, with a termination point just west of Parker Road.

Other Southeast MIS recommendations included: adding outside shoulders along I-225 between I-25 and Parker Road, and improvements to the interchange at I-25/I-225. Initial LRT stations along I-225 would be at Parker Road (adjacent to Nine Mile park-n-Ride) and Dayton/Galleria. A pedestrian cross-over of I-225 was recommended at Nine Mile park-n-Ride.


The RTD Board of Directors adopted "Guide the Ride" to address serious problems affecting the rapidly growing Denver metropolitan area - problems such as urban sprawl and traffic congestion. The purpose of the "Guide the Ride" plan was to create a vision of how RTD and transit can combat these problems and better serve the Denver Metro area by 2020. Although the tax financing mechanism included in "Guide the Ride" did not meet voter approval in 1997, the planning scenarios outlined in the Plan remain valid.

The "Guide the Ride" plan committed that an MIS would be conducted prior to implementation of transit improvements along I-225 from I-25 to Smith Road. The Plan also stated that "residents of the corridor would be guaranteed a light rail corridor, but, based upon the results of the MIS, the I-225 Corridor communities could select another technology and apply the funds previously dedicated to light rail to the preferred technology."

Park-and-ride improvements are also called for in "Guide the Ride": Expansions to existing park-n-ride lots were identified at Colfax/I-225, Nine-Mile, and Southmoor. New park-n-rides were planned in conjunction with the transit improvements along I-225 at Smith, 6th Avenue, Alameda, Mississippi, and Iliff.

Although "Guide the Ride" financing was not approved by the voters, DRCOG, RTD, and CDOT agreed in 1996 to initiate four additional Major Investment Studies for important corridors in the Denver region:

- I-225 (Parker Road to I-70), [this study]
- I-25 N/NE corridor (I-25 from downtown Denver to the Adams/Weld County line, and I-76/US 85 from I-25 north)
- I-70 West Metro Corridor (Downtown Denver to Golden)

These four studies, funded and managed by RTD, are currently in progress.
Purpose and Need for Major Investment

The purpose of the I-225 Corridor MIS is to determine the appropriate transportation investments that should be made in the I-225 Corridor in order to maintain a reasonable level of mobility. The initial data collection and analysis, summarized in the previous chapters, revealed the following key indicators of transportation issues in the I-225 Corridor. These indicators define the need for major transportation investments.

Land-Use/Demographics

Although the population growth rate within the I-225 Corridor study area is expected to be slower than in the past (approximately 1 percent annually, less than that of the City of Aurora as a whole), employment growth in the corridor is expected to be substantial (approximately 1.75 percent annually).

The I-225 Corridor serves a number of areas that are strategic to Aurora's economic growth and vitality. Fitzsimons, Aurora City Center, the I-225/Abilene corridor, Airport Boulevard Gateway, and the Denver Tech Center are all areas with the potential for significant growth and/or redevelopment. To ensure the success of this economic growth, plans for these areas are dependent on an adequate and integrated transportation system.

Accessibility to Activity Centers

One key element of an adequate and integrated transportation system is providing reasonable access to the area's activity centers. There are currently two major activity centers in the corridor for which I-225 provides primary access:

- The Denver Tech Center (DTC) is one of the Denver metropolitan region's largest employment nodes, second only to downtown Denver. I-225 provides access from the north for Denver International Airport (DIA) traffic and residents of the eastern metropolitan area, primarily via an exit servicing Yosemite Street and DTC Boulevard. I-225 also connects with I-25, which provides access for the remainder of the metropolitan area and the entire eastern front range of Colorado.

- The Aurora Mall is the largest retail center in the corridor. Prior to the year 2000, there was no direct access between the mall and I-225, resulting in congestion at intersections north and south of the mall (6th Avenue and Mississippi Avenue) and arterials flanking the mall (Alameda Avenue, Abilene Street, Sable Street). A new interchange completed in 2000 at Alameda has improved access, but with proposed redevelopment of the mall and Aurora City Center east of the mall, access and congestion will likely continue to be issues.

Two additional major activity centers are currently in the development process:

- The planned redevelopment of the former Fitzsimons Army Medical Center into the University of Colorado Health Sciences Center and associated biotechnology center will result in an estimated employment node of at least 25,000 workers, as well as additional outpatient, in-patient, student and visitor traffic. The Colfax exit at I-225 provides the primary access to this site for travelers in the corridor and from other parts of the region.
• The Aurora and Denver Gateway areas are under development along I-70 just east of its intersection with I-225. I-225 provides access to this growth area from the southeastern metropolitan area, as well as to other development associated with DIA.

The ongoing growth of these and other activity centers will generate increased trip-generation in the corridor, with associated increases in congestion, travel time and accidents.

Congestion

As mentioned earlier in the report, I-225 was constructed in the 1960s as a north-south corridor to relieve congestion in the expanding eastern metropolitan area. Since then, the growth experienced in the study area, including that resulting from DIA, has been greater and much faster than anticipated. In addition, traffic growth in the Denver region has traditionally out-paced both population and employment growth. As a result, traffic volumes have increased significantly in and adjacent to the I-225 Corridor, and this trend is expected to continue. Average daily traffic on I-225 increased 31 percent between 1988 and 1993, and DRCOG’s travel projections forecast an additional 36 percent increase between 1996 and 2020. On I-70, average daily traffic grew by 8 percent between 1988 and 1993, and traffic in the segment between I-225 and Pena Boulevard is forecast to grow nearly 75 percent between 1996 and 2020.

According to DRCOG’s 2020 Regional Transportation Plan (RTP), the entire I-225 Corridor is projected to experience pervasive and severe congestion by year 2020. “Pervasive and severe” congestion is defined as volume-to-capacity ratios of 95 percent for 3 hours or more in one direction. In addition, most of the major crossing arterials are forecast to be congested in the vicinity of I-225. These arterials include Colfax Avenue, 6th Avenue, Mississippi Avenue, Iliff Avenue, and Parker Road. I-70 in the vicinity of I-225 is also forecast to be severely congested by 2020.

Accident Data

A review of CDOT’s accident data along the I-225 Corridor from Parker Road to I-70 for the year 1996 revealed that the segments of I-225 between Parker Road and Mississippi Avenue and between 6th Avenue and Colfax Avenue had higher than average accident rates, for both property damage and injury accidents. For instance, the segment between Iliff Avenue and Mississippi Avenue had a property damage rate that exceeded twice the state average for million vehicle miles, and an injury rate that was about 50 percent higher. These conditions are projected to continue as traffic increases on I-225.

Existing Transit Service

The I-225 study area is currently served by RTD bus transit. Only one north-south route, the “AT” skyRide to DIA, travels the entire I-225 Corridor from Parker Road to I-70. This AT skyRide route has stops at Nine-Mile as well as the Fitzsimons park-n-Ride lots. Other area bus routes are generally oriented in a radial fashion to and from downtown Denver. There are currently three east-west routes serving the corridor between Parker Road and I-70, which operate on a minimum of 30 minute headways during most time periods. The only 24-hour transit service in or adjacent to the corridor is the east-west Route 15 along Colfax, which is RTD’s highest volume bus route.
The existing park-n-ride facilities adjacent to the corridor (Fitzsimons, Nine-Mile, and the Aurora Mall transfer station) have excellent patronage and are primarily used to connect with downtown Denver transit routes.

Connections to Planned Transit Service

The I-225 Corridor is a significant connecting link in the proposed Denver regional transit system. I-225 intersects two of the previous MIS corridors, the Southeast and East corridors. The Southeast Corridor runs along I-25 and the East Corridor parallels I-70. I-225 is the logical (and existing) connector route between the two. Existing travel patterns show a strong desire for travelers in the I-225 Corridor to connect to either, or both, of these two adjoining corridors.

However, the two previous studies selected different preferred transit modes: the Southeast MIS selected light rail transit, while the East MIS chose commuter rail (DMU) technology. Therefore, a significant issue for the I-225 MIS is to determine which transit investments in the I-225 Corridor would interface most effectively with these two corridors and their selected technologies.

The two corridors, and their current status, are discussed below.

- The Southeast Corridor MIS, which connects with I-225 at Parker Road, recommended light rail transit service. This has been adopted in the 2020 RTP. State funding sources have been identified, and preliminary engineering and environmental impact investigations have been completed. The project has been awarded as a “design-build” project and construction will commence in Fall 2001.

- The East Corridor MIS, along I-70 at the northern terminus of I-225, recommended commuter rail service using diesel multiple unit (DMU) technology that is compliant with crash worthiness requirements of the Federal Railroad Administration (FRA). This has also been adopted in the 2020 RTP. No additional activities are in progress in the East Corridor at this time.

Changes in Travel Patterns

As the Denver region has grown over the past several decades, employment centers have developed in several nodes outside of the Denver central business district. Consequently, trip generation in the region is no longer focused on a single destination. Travel occurs between residential communities and employment centers during peak hours, and between employment centers in non-peak hours. The I-225 Corridor includes several major employment destinations, and is also a source and destination of residential traffic. It provides the only north-south freeway connection between I-25 and I-70 for the eastern metropolitan area, as well as being a primary access route to DIA for travelers from the southern part of the metro area. Ongoing residential growth in the south metro area, together with the planned development, redevelopment and employment growth in and adjoining the corridor, logically project that traffic growth will continue between these areas.
Conclusion

The purpose of the I-225 Corridor MIS is to identify the issues and the transportation investments which will enable I-225 to be an effective element in the area’s long-range transportation system.

The need for the study has been demonstrated by the initial corridor analysis. As the preliminary information indicates, I-225 clearly provides an essential link in the Denver metro area’s long-range transportation plan. The corridor as it now exists does not have sufficient capacity or facilities to handle increased volumes from employment growth within the corridor, or from the remainder of the metro transportation system. A regional transit system requires adequate linkages to be successful, and the absence of I-225 would severely inhibit the effectiveness of transit in the Southeast and East Transportation corridors and the eastern metro area.

Certain sections of the I-225 Corridor are already experiencing congestion during peak periods. Without transportation investments, I-225 is forecast to become congested to the point of immobility by the year 2020. Without corrective measures, the addition of thousands of new employees in the corridor will only compound this situation. Therefore, this MIS process is an opportunity to develop solutions for the I-225 Corridor before this situation occurs.
SECTION 3: DEVELOPMENT AND SCREENING OF ALTERNATIVES

Conceptual Screening

Conceptual level screening for the I-225 Corridor is one step in the MIS process, and has been prepared to identify the criteria that were used to evaluate a broad range of alternatives that have been considered for the corridor. This section also serves as documentation of those alternatives that are to be advanced to the detailed evaluation phase of the MIS.

Transportation Technology Overview

An overview of the various transportation technologies was presented to the TAC, PAC and CCG prior to the conduct of the screening phases. This activity was developed to educate the committee members on the relative operational characteristics of each mode and assist them on identifying those technologies most appropriate for the I-225 corridor. Attributes were defined using a standardized list of criteria and include:

- Person/vehicle capacity
- Guideway capacity
- Running surface
- Vehicle control
- Speed
- Power supply
- Propulsion
- Suspension
- Service type
- Capital cost per mile

Icons were developed for these attributes to assist the committee members when comparing and contrasting each technology. Figure 3-1 was presented to the advisory committees and the general public during the July 1998 advisory committee meetings and open houses.

Transit technology classifications were also developed to inform the PAC, TAC and CCG members how transit systems are classified into categories by their capacity (number of passengers carried) and typical operating speed. Figure 3-2 presents this information.

Service types were delineated to systematically present various types of services seen within the I-225 corridor. These service types included express or point-to-point service, local or limited service, and circulator/distributor services. Figure 3-3 presents these various services.

Specific transportation technologies considered are listed below and included in Figure 3-4 thru Figure 3-14:

- Advanced (dual propulsion) bus
- Light rail transit
- Commuter rail
- Heavy rail
- People mover
- Automated guideway transit
- Magnetic levitation
- Personal rapid transit
- Monorail
- Automobile
- Bicycle
Figure 3-1: Icon Terminology

TRANSPORTATION TECHNOLOGY OVERVIEW

Icon Terminology

**Person/Vehicle Capacity**

The maximum number of people who can fit within one unit (car) comfortably (passengers per hour or "pph"). In a train set, the maximum number of units that can be connected to the train (in trains per "cph").

**Guideway Capacity**

For transit, the maximum number of passengers (maximum person/vehicle capacity) who can be moved (pph), given a specific headway. Operating headway (given in seconds) is the minimum time separation between two trains at which the system can operate without bunching. An average headway is 90 seconds for all technologies. For roadways, assuming an average of 1.2 people per car and 1 person per bicycle, the number of vehicles that can safely occupy a given roadway cross section during a one hour period, based on number of lanes, measured as passengers per lane per hour (ppmph).

**Running Surface**

The type of guideway or base surface that the vehicle traverses, typically a steel rail, concrete channel, or an asphalt or concrete pavement for surface transportation technologies. The running surface may be used exclusively or shared.

**Control**

How the vehicle is operated (accelerated and braked), either automatically by a computer system, or manually by a human operator.

**Power Supply**

The energy source used to operate the propulsion system and the location of the power supply (on the guideway or in the vehicle). Typically, surface transportation technologies consume electricity, gasoline, or diesel fuel. Electrical power can come from a remote source (transmitted to the vehicle by a third "rail" in the tracks or from an overhead wire or from on-board battery banks.

**Propulsion**

The power generator that converts the power supply to mechanical energy that moves the vehicle. Electric motors generate high voltages and magnetic fields to create motion. Linear Induction and Direct Current Traction electric motors are designed for quicker acceleration and faster speeds, but are more costly to operate. Internal combustion engines are fueled by gasoline or diesel fuel.

**Suspension**

The type of wheel (steel wheel or rubber tire) on the vehicle and the surface on which it rides (rail, beam, or pavement).

**Service Type**

The basic characteristics of how transportation systems connect and function between various points.

**Capital Cost Per Mile**

The average cost to construct all elements of a particular transportation system for each mile of length.

**Speed**

Maximum: the upper limit pace, in miles per hour (mph), at which a vehicle can operate. Average: for transit, the typical operating pace most desired for rider comfort; for roadway, the posted speed limit, both in miles per hour (mph).
Figure 3-2: Transit Technology Classification

<table>
<thead>
<tr>
<th>Number of Passengers</th>
<th>1 to 6</th>
<th>7 to 24</th>
<th>25 to 220</th>
<th>221+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (mph)</td>
<td>less than 30</td>
<td>more than 30</td>
<td>more than 30</td>
<td>more than 30</td>
</tr>
<tr>
<td>Small Capacity - Low Speed (Small - LS)</td>
<td>example: PRT</td>
<td>per mile cost: $25-35 million</td>
<td>example: Houston Airport People Mover</td>
<td>per mile cost: $25-40 million</td>
</tr>
<tr>
<td>Small Capacity - High Speed (Small - HS)</td>
<td>example: University of WV &quot;Group&quot; Rapid Transit</td>
<td>per mile cost: $25-45 million</td>
<td>Intermediate Capacity - High Speed (INT - HS)</td>
<td>example: Advanced Bus, LRT, AGT, Monorail People Mover (PM)</td>
</tr>
</tbody>
</table>

Minimum unit size for the Large - HS technology classification is 2 cars.

*All other technology classifications have a minimum number of units of 1 car.

*Cost ranges are general estimates for typical construction, including vehicles and other system elements.
Figure 3-3: Service Types

TRANSPORTATION TECHNOLOGY OVERVIEW

Service Types

Point to Point or Express (Line Haul)
- Longer Distances
- Fewer Stops
- Inter-Regional Trips

Local or Limited (Line Haul)
- Shorter Distances
- More Stops
- Inter-Regional Trips

Circulator/Distributor
- Short Distances
- Many Stops
- Local Trips

Home Non-Stop Work

Home Intermediate Stops Work

Home Main Route Work

Activity Center

Activity Center

Skipped Stops for Limited Service
Figure 3-4: Advanced (Dual Propulsion) Bus Technology

TRANSPORTATION TECHNOLOGY OVERVIEW
Advanced (Dual Propulsion) Bus

Technology Characteristics:

- **Operating**: 3,645 pph @ 80 sec
- **Comparison**: 3,240 pph @ 90 sec

- **Mixed Traffic and Separate Right-of-Way**
- **Manual**
- **Maximum**: 40 mph
- **Average**: 32 mph

- **Diesel Fuel and Overhead Electric Wire**
- **Internal Combustion Engine and Electric Motor**

- **Rubber Tire on Pavement**

- **Line Haul or Circulator/Distributor**

- **$8-12 Million Per Mile**
Figure 3-5: Light Rail Transit Technology

TRANSPORTATION TECHNOLOGY OVERVIEW
Light Rail Transit (LRT)

Technology Characteristics:

- Operating: 26,560 pph @ 90 sec
- Comparison: 26,560 pph @ 90 sec
- Exclusive Right-of-Way or Mixed Traffic
- Manual
- Maximum: 55 mph
- Average: 40 mph
- Overhead Electric Wire or Electrified Third Rail
- Electric Motor
- Steel Wheel on Steel Rail
- Local or Express (Line Haul)
- $20-30 Million Per Mile

Central Corridor Light Rail
Denver, Colorado
INT - HS
**Figure 3-6: Commuter Rail Technology**

### TRANSPORTATION TECHNOLOGY OVERVIEW

**Commuter Rail**

<table>
<thead>
<tr>
<th>Technology Characteristics:</th>
<th>80-120 ppc</th>
<th>10 cpt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating</td>
<td>7,200 pph @ 600 sec</td>
<td></td>
</tr>
<tr>
<td>Comparison</td>
<td>1,080 pph @ 90 sec</td>
<td></td>
</tr>
<tr>
<td>Exclusive Right-of-Way</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual and Electronic Guideway Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>79 mph</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>50 mph</td>
<td></td>
</tr>
<tr>
<td>Diesel or Electric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel Engine or Electric Motor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steel Wheel on Steel Rail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point-to-Point (Line Haul)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$5-10 Million Per Mile

---

Thames Trains
Thames Valley, United Kingdom
Large - HS
Figure 3-7: Heavy Rail Technology

## TRANSPORTATION TECHNOLOGY OVERVIEW

### Heavy Rail

<table>
<thead>
<tr>
<th>Technology Characteristics:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>170 ppc</td>
<td></td>
</tr>
<tr>
<td>10 cpt</td>
<td></td>
</tr>
<tr>
<td>Operating:</td>
<td>27,200 pph @ 225 sec</td>
</tr>
<tr>
<td>Comparison:</td>
<td>68,000 pph @ 90 sec</td>
</tr>
<tr>
<td>Exclusive Fixed Guideway</td>
<td>(Elevated, At-Grade, or Subway)</td>
</tr>
<tr>
<td>Automatic</td>
<td></td>
</tr>
<tr>
<td>Maximum:</td>
<td>80 mph</td>
</tr>
<tr>
<td>Average:</td>
<td>72 mph</td>
</tr>
<tr>
<td>Electrified Third Rail</td>
<td></td>
</tr>
<tr>
<td>(AC or DC Traction Drive) Electric Motor</td>
<td></td>
</tr>
<tr>
<td>Steel Wheel on Steel Rail</td>
<td></td>
</tr>
<tr>
<td>Point-to-Point (Line Haul)</td>
<td></td>
</tr>
<tr>
<td>$50-80 Million Per Mile</td>
<td></td>
</tr>
</tbody>
</table>

Washington Metro
Washington, D.C.
Large - HS
**TRANSPORTATION TECHNOLOGY OVERVIEW**

**Automated Guideway Transit (AGT)**

<table>
<thead>
<tr>
<th>Technology Characteristics:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>80 ppc</td>
</tr>
<tr>
<td></td>
<td>6 cpt</td>
</tr>
<tr>
<td>Operating:</td>
<td>9,600 pph @ 180 sec</td>
</tr>
<tr>
<td>Comparison:</td>
<td>19,200 pph @ 90 sec</td>
</tr>
<tr>
<td>Exclusive Fixed Guideway</td>
<td></td>
</tr>
<tr>
<td>Automatic</td>
<td></td>
</tr>
<tr>
<td>Maximum:</td>
<td>62 mph</td>
</tr>
<tr>
<td>Average:</td>
<td>50 mph</td>
</tr>
<tr>
<td>Electrified Third Rail</td>
<td></td>
</tr>
<tr>
<td>Linear Induction Motor</td>
<td></td>
</tr>
<tr>
<td>Steel Wheel on Steel Rail</td>
<td></td>
</tr>
<tr>
<td>Point-to-Point (Line Haul)</td>
<td></td>
</tr>
<tr>
<td>$70-100 Million Per Mile</td>
<td></td>
</tr>
</tbody>
</table>

**BC Transit Sky Train**

Vancouver, British Columbia

INT - HS
Figure 3-10: Magnetic Levitation Technology

TRANSPORTATION TECHNOLOGY OVERVIEW
Magnetic Levitation (Mag Lev)

<table>
<thead>
<tr>
<th>Technology Characteristics:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>70 ppc 6 cpt</td>
<td></td>
</tr>
<tr>
<td>Operating: 25,200 pph @ 60 sec</td>
<td></td>
</tr>
<tr>
<td>Comparison: 16,800 pph @ 90 sec</td>
<td></td>
</tr>
<tr>
<td>Elevated Exclusive Fixed Guideway</td>
<td></td>
</tr>
<tr>
<td>Automatic</td>
<td></td>
</tr>
<tr>
<td>Maximum: 75 mph</td>
<td></td>
</tr>
<tr>
<td>Average: 55 mph</td>
<td></td>
</tr>
<tr>
<td>Electrified Third Rail</td>
<td></td>
</tr>
<tr>
<td>Electric Motor (Linear Induction)</td>
<td></td>
</tr>
<tr>
<td>Magnetic Levitation</td>
<td></td>
</tr>
<tr>
<td>Circulator/Distributor or Local Line Haul</td>
<td></td>
</tr>
<tr>
<td>$100+ Million Per Mile</td>
<td></td>
</tr>
</tbody>
</table>

Transrapid
Berlin to Hamburg, Germany
INT - HS

I-225 Major Investment Study
**Figure 3-11: Personal Rapid Transit Technology**

### Personal Rapid Transit

#### Technology Characteristics:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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<tbody>
<tr>
<td>1-12 ppc</td>
<td>1 cpt</td>
</tr>
<tr>
<td>Operating</td>
<td>3,600 pph @ 15 sec</td>
</tr>
<tr>
<td>Comparison</td>
<td>21,600 pph @ 90 sec</td>
</tr>
<tr>
<td>Exclusive Elevated Fixed Guideway</td>
<td></td>
</tr>
<tr>
<td>Automatic</td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>30 mph</td>
</tr>
<tr>
<td>Average</td>
<td>18 mph</td>
</tr>
<tr>
<td>Electrified Third Rail</td>
<td></td>
</tr>
<tr>
<td>Electric Motor</td>
<td></td>
</tr>
<tr>
<td>Rubber Tire on Beam</td>
<td></td>
</tr>
<tr>
<td>Circulator/Distributor</td>
<td></td>
</tr>
<tr>
<td>$25-35 Million Per Mile</td>
<td></td>
</tr>
</tbody>
</table>

*University of West Virginia*

*Group Rapid Transit (GRT)*

*Morgantown, West Virginia*

*Small - LS*
Figure 3-12: Monorail Technology

<table>
<thead>
<tr>
<th>Technology Characteristics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>55 ppc</td>
</tr>
<tr>
<td>6 cpt</td>
</tr>
<tr>
<td>Operating: 13,200 pph @ 90 sec</td>
</tr>
<tr>
<td>Comparison: 13,200 pph @ 90 sec</td>
</tr>
<tr>
<td>Elevated Beam</td>
</tr>
<tr>
<td>Manual or Automatic</td>
</tr>
<tr>
<td>Maximum: 55 mph</td>
</tr>
<tr>
<td>Average: 50 mph</td>
</tr>
<tr>
<td>Electrified Third Rail</td>
</tr>
<tr>
<td>Electric Motor (DC Traction Drive)</td>
</tr>
<tr>
<td>Rubber Tire on Single Beam</td>
</tr>
<tr>
<td>Circulator/Distributor or Local Line Haul</td>
</tr>
<tr>
<td>$70-100 Million Per Mile</td>
</tr>
</tbody>
</table>

Seattle Center Monorail
Seattle, Washington
INT - HS
**Figure 3-13: Automobile Technology**

**TRANSPORTATION TECHNOLOGY OVERVIEW**

**Automobile**

<table>
<thead>
<tr>
<th>Technology Characteristics:</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Average 1.2 ppc</td>
<td></td>
</tr>
<tr>
<td>1 Vehicle</td>
<td></td>
</tr>
<tr>
<td>Operating:</td>
<td>2,800 pplph</td>
</tr>
<tr>
<td>Mixed Traffic</td>
<td></td>
</tr>
<tr>
<td>Manual</td>
<td></td>
</tr>
<tr>
<td>Maximum:</td>
<td>75 mph</td>
</tr>
<tr>
<td>Average:</td>
<td>55 mph</td>
</tr>
<tr>
<td>Gasoline or Diesel</td>
<td></td>
</tr>
<tr>
<td>Internal Combustion Engine</td>
<td></td>
</tr>
<tr>
<td>Rubber Tire on Pavement</td>
<td></td>
</tr>
<tr>
<td>Point-to-Point (Line Haul)</td>
<td></td>
</tr>
<tr>
<td>Local Line Haul or Circulator/Distributor</td>
<td></td>
</tr>
<tr>
<td>$3-6 Million Per Mile</td>
<td></td>
</tr>
<tr>
<td>(Freeway Lanes)</td>
<td></td>
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</table>

*Gowanus Expressway*

*Brooklyn, New York*

*Small - HS*
<table>
<thead>
<tr>
<th>Technology Characteristics:</th>
<th>Operating: 1 ppv 1 Vehicle</th>
<th>1,700 pphpd (low)</th>
<th>2,550 pphpd (high)</th>
<th>Separate Route or Mixed Traffic</th>
<th>Manual</th>
<th>Maximum: 25 mph</th>
<th>Average: 8 mph</th>
<th>Self-Propelled</th>
<th>Self-Propelled</th>
<th>Rubber Tire on Pavement</th>
<th>Point-to-Point (Line Haul)</th>
<th>Local Line Haul or Circulator/Distributor</th>
<th>$25-50 Thousand Per Mile</th>
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</tr>
</tbody>
</table>

**Figure 3-14: Bicycle Technology**

**Transportation Technology Overview**

**Bicycle**

- Cherry Creek Recreation Trail
- Denver/Arapahoe County, Colorado
- Small - LS

**I-225 Major Investment Study**
Pre-Screening and Screening Criteria

The I-225 Major Investment Study employed a two-step screening process using criteria defined by both RTD's MIS Guidance Manual, which establishes a consistent basis of comparison for each MIS conducted, and corridor-specific criteria developed by the consultant team. A pre-screening analysis, sometimes referenced as a "fatal flaw analysis", identified alternatives that did not meet pre-screening criteria. At the pre-screening level, potential alternatives with excessive costs or impacts were identified for elimination. Pre-screening criteria are expressed in such a way as to yield yes/no answers.

Those alternatives that advanced beyond the "yes/no" response associated with the pre-screening process were then evaluated against screening criteria. The criteria used in this second step are also defined in RTD’s MIS Guidance Manual and have matching corridor-level criteria developed by the consultant team. Criteria are expressed in such a way as to identify the degree to which an alternative (or its options) addresses the criteria.

As previously stated, the screening criteria used in both the pre-screening and screening level analyses have two sources. The RTD MIS Guidance Manual established criteria to be used in each MIS to allow decision-makers the ability to compare between the different studies. These major criteria categories are presented in Figure 3-15. In addition to these common criteria, the I-225 MIS consultant team received input from the technical, policy, and citizen advisory committees regarding additional factors that should be considered in the evaluation of alternatives. This input resulted in the development of corridor specific criteria, presented in Figure 3-16. A rating scale was developed and applied as to the level of conformity to the Guidance Manual and Corridor criteria and is presented in Figure 3-17.

One criterion used in the pre-screening process, “affordability”, was split into two measures. Criterion “2-a” looked at affordability of alternatives based on a comparison of estimated per-mile costs to a corridor budget of $225 million for an 8-mile length (Parker Road to Smith Road). This corridor budget was based on previous planning, including work that was conducted for the Guide The Ride referendum (November 1997). Criterion “2-b” looked at affordability of alternatives based on a comparison of estimated per-mile costs to a corridor budget of $275 million, based on $25 million per mile for an 11-mile corridor. The 11-mile corridor, from Parker Road to the proposed East Corridor commuter rail station at 40th/Pena, was identified by the consultant team to include a more desirable northern terminus than Smith Road. The Smith Road terminus, while identified in the East Corridor MIS as the connection between the I-70 Corridor and the I-225 Corridor, does not serve an activity center or residential area. Rather than a terminus with no associated origin or destination, the consultant team recommended that the north end of the study area be extended to include the 40th/Pena (Gateway) area. This location would serve a growing activity center, is a likely destination for trips that use the I-225 corridor, and provides much greater accessibility to and from residential areas, such as Montbello.

Subsequent to the pre-screening efforts, discussions with RTD staff resulted in a revised corridor budget figure. A corridor budget of $300 million was established and utilized during the conceptual screening process.
Figure 3-15: Guidance Manual Criteria

SCREENING PROCESS EVALUATION CRITERIA
Guidance Manual

The MIS Guidance Manual prescribes criteria for the two steps of the Screening Process.

Consistency with Regional Goals and Policies

Intent: To eliminate an alternative that is clearly unacceptable because it violates a regional goal and/or policy.

Affordability

Intent: To eliminate an alternative that is clearly beyond the financial ability to implement.

Primary Environmental Impacts

Intent: To eliminate an alternative that clearly has irresolvable environmental impact.

Community or Agency Opposition

Intent: To eliminate an alternative that has substantial organized opposition from a significant segment of the community.

Community or Agency Support

Intent: To advance an alternative that has substantial organized support from a significant segment of the community.

Emerging or Proven Technology

Intent: To eliminate an alternative that, due to the undeveloped nature of the technology or its application, is considered to present an unacceptable risk of failure for cost and/or schedule for implementation.
Figure 3-16: Corridor Level Criteria

SCREENING PROCESS EVALUATION CRITERIA

**Corridor**

In addition to Guidance Manual criteria, corridor-level criteria were developed for the two steps of the Screening Process.

**Consistency with Corridor Goals and Policies**
- **Intent:** To measure the degree that an alternative meets a local goal and/or policy

**Impact to Critical Resources**
- **Intent:** To measure whether an alternative has major natural resource or community impact.

**Community Opposition**
- **Intent:** To measure if an alternative has substantial organized opposition from a significant segment of the local community.

**Service to Local or Regional Travel Markets**
- **Intent:** To measure how an alternative serves the identified transportation needs of corridor travelers.

**Connectivity to Distribution Markets/Sites**
- **Intent:** To measure whether an alternative provides connections to activity centers in the corridor.

**Linkage to Southeast & East Corridors**
- **Intent:** To measure how readily an alternative can be reasonably constructed (physical and/or cost constraints) to connect to current and future transportation systems for the Southeast and East corridors.
A rating system was developed to summarize the potential of alternatives to address corridor transportation problems. The Traveler Report Card ratings are used to rate each alternative system as each relates to the I-225 Corridor.

**Excellent**
Satisfies 10 to 12 of the Guidance Manual and Corridor criteria.

**Good**
Satisfies 8 to 9 of the Guidance Manual and Corridor criteria.

**Neutral**
Satisfies 5 to 7 of the Guidance Manual and Corridor criteria.

**Fair**
Satisfies 3 to 4 of the Guidance Manual and Corridor criteria.

**Poor**
Satisfies 0 to 2 of the Guidance Manual and Corridor criteria.
Pre-Screening Evaluation

The results of the pre-screening analysis are summarized as follows:

- Two alternatives (Automated Guideway Transit and Monorail) were not affordable. The estimated capital cost of these two alternatives is $70 million or more per mile (the 8 miles between Parker Road and Smith Road would thus be $560 million or more). See Figure 3-18 and Figure 3-19.

- Personal Rapid Transit (PRT) technology (see Figure 3-20) is currently in an advanced state of development and testing, but has not yet been placed in revenue service. Two locations in the United States - Rosemont, IL and the SeaTac Airport, WA - will begin construction of PRT systems in the near future. The consultant team considered the potential for PRT to operate in two ways in the corridor: (1) as a line-haul service, in order to provide the type of comparison to other modes being evaluated, and (2) as a circulator/distributor in activity centers.

- There is no hard evidence that PRT would have sufficient capacity to meet peak hour demand for regional trips.

- If PRT service were provided within the corridor in a manner similar to bus routes, yet being unscheduled (a feature of PRT's), transit terminals would be overwhelmed by the total volume of PRT vehicles theoretically generated to meet demand.

- The potential for regional or line-haul service is constrained by the lack of a PRT network to which PRT in the I-225 corridor could connect.

- Preliminary cost estimates of $25 to $35 million per mile, while based on the best available information, are not supported by real-world construction experience. In addition, no operating and maintenance data are available.

- PRT operates as an elevated system, which may have negative visual impacts.

- In consideration of the issues above, the consultant team did not recommend that PRT be advanced as a line-haul technology, but recommended further consideration as a circulator/distributor service.

- For consistency of analysis, the bike alternative (see Figure 3-21) was considered for both line-haul and circulator/distributor service. Due to lack of capacity and ability to serve long distance trips, the bike alternative in a line-haul context was dropped. The bicycle alternative also did not meet the needs of a large segment of the traveling public, nor did it respond well to changing weather conditions. The capabilities of bikes to provide access to and from transit stations (regardless of the transit mode) are well documented. The consultant team recommended that the bike mode as a means of access be incorporated into the Transportation Management alternative.
Figure 3-18: Automated Guideway Transit Alternative

TRANSPORTATION ALTERNATIVES
Automated Guideway Transit (AGT)

Which Criteria Does It Meet?

Guidance
- Manual
- Corridor

How Does It Stack Up?

Advantages
- Highly consistent with Regional and Corridor goals and policies
- Proven technology (limited applications)
- High degree of service to local and regional markets
- High degree of connectivity to distribution markets due to stations at all sites

Disadvantages
- Cost prohibitive
- Requires mode transfer to Southeast and East Corridors

Interim Recommendations:
- Do not advance for further consideration due to extremely high cost

Summary Rating for the I-225 Corridor: 

I-225 Major Investment Study
Figure 3-19: Monorail Alternative

TRANSPORTATION ALTERNATIVES
Monorail

Which Criteria Does It Meet?

Guidance Manual

Corridor

How Does It Stack Up?

Advantages

- Highly consistent with Regional and Corridor goals and policies
- Proven technology (limited applications)
- High degree of service to local and regional markets
- High degree of connectivity to distribution markets due to stations at all sites

Disadvantages

- Not affordable, cost prohibitive
- Potential community and visual impacts due to elevated guideway
- Requires mode change to connect to Southeast and East Corridors
- Difficult and costly transition from elevated system to at-grade system at Southeast and East Corridor nodes

Interim Recommendations:

- Do not advance for further consideration due to extremely high cost

Summary Rating for the I-225 Corridor: 〇
**Figure 3-20: Personal Rapid Transit Alternative**

**TRANSPORTATION ALTERNATIVES**

**Personal Rapid Transit (PRT)**

**Which Criteria Does It Meet?**
- **Guidance Manual**
- **Corridor**

**How Does It Stack Up?**

**Advantages**
- Moderate to highly consistent with Regional and Corridor goals and policies
- High service to local markets as a distributor service
- High connectivity to distribution markets

**Disadvantages**
- Not affordable as a line haul service
- Low likelihood to improve mobility as a line haul service
- Potential community and visual impacts due to elevated guideway
- As an emerging technology, not proven to serve large markets
- Distributor system does not serve regional markets
- Requires mode change to connect to Southeast and East Corridors
- Difficult and costly transition from elevated system to at-grade system at Southeast and East Corridor nodes

**Interim Recommendations:**
- Advance for further consideration as a distributor system

**Summary Rating for the I-225 Corridor:** ☐
Figure 3-21: Bicycle Alternative

TRANSPORTATION ALTERNATIVES
Bicycle

Which Criteria Does It Meet?

<table>
<thead>
<tr>
<th>Guidance</th>
<th>Manual</th>
<th>Corridor</th>
</tr>
</thead>
<tbody>
<tr>
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<td>![Image]</td>
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</table>

How Does It Stack Up?

Advantages
- Highly consistent with Regional and Corridor goals and policies for access
- Highly affordable
- Low degree of impact to critical resources
- Moderate to high potential to improve local trip mobility
- Proven technology
- High degree of service to local travel markets
- Moderate to high connectivity to distribution markets

Disadvantages
- Potential for traffic conflicts and other safety problems
- Low likelihood to improve line haul mobility
- Requires mode transfer at Southeast and East Corridors

Interim Recommendations:
- Advance for further consideration as part of the Transportation Management Program alternative

Summary Rating for the I-225 Corridor: ○
In summary, the pre-screening step indicated that seven alternatives are possible candidates to respond to the I-225 corridor needs and should be advanced to the screening step:

- No Action
- Transportation Management Program (including bike as circulator/distributor)
- Freeway Lane Additions
- Bus/HOV Lanes
- Light Rail Transit
- Commuter Rail
- Personal Rapid Transit (as circulator/distributor only)

Screening Evaluation

The seven alternatives that were advanced to the conceptual screening step were expanded to address various design options and were reviewed in light of their general capabilities. The purpose for defining options was to develop a range of potential service in the corridor that could be provided by each of the alternatives, so that the full capabilities of an alternative could be considered. The conceptual screening of alternatives and associated options are defined in Figure 3-22.

As noted earlier, the conceptual screening effort utilized an expanded budget of $300 million to test affordability for the various alternatives considered in this stage of the project. In addition, the consultant team reviewed the 24 alternatives/options listed in Figure 3-22 for major safety, operating, or construction issues and other areas of concern that would affect the viability of an alternative. The latter set of reviews are beyond the criteria specified in the RTD MIS Guidance Manual for this phase of the study, but were meant to identify critical technical matters of concern as soon as possible.

The screening process has been conducted, using criteria specified in the RTD MIS Guidance Manual and corridor-specific criteria developed by the consultant team. The screening assessment indicates the following results, grouped by modal families. Results include Year 2020 regional modeling data provided by DRCOG to the consultant team in August 1998.

No Action and Transportation Management Program

These options will be advanced throughout the study process to provide a baseline and a required basis for comparison. See Figure 3-23 and Figure 3-24.

Freeway Lane Addition Options

All freeway lane additions, beyond the six lanes currently authorized, would be inconsistent with regional and corridor policies. However, because additional lanes are often perceived as a reasonable solution by the public, four options were defined and assessed, with the following results (see Figure 3-25):

- The maximum build-out option would exceed the budget criteria and would be likely to have major environmental and community impacts. The consultant team recommended that this option be dropped.
### Figure 3-22: Alternatives Screened

#### TRANSPORTATION ALTERNATIVES

**Alternatives Screened**

Main alternatives were defined at the pre-screening step. Options were defined for those alternatives advanced to the Screening Step.

<table>
<thead>
<tr>
<th>Alternative Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No Action</strong></td>
<td>No new projects beyond those currently programmed in the Transportation Improvement Program (six-lane freeway, three lanes each direction)</td>
</tr>
<tr>
<td><strong>Transportation Management Program</strong></td>
<td>Combination of relatively inexpensive transportation improvements (for example, adding van pools, adjusting signal timing, and/or installing variable message signs to provide en-route traffic advisories) to enhance mobility and/or safety.</td>
</tr>
<tr>
<td><strong>Freeway Lane Additions/Other Highway Improvements</strong></td>
<td></td>
</tr>
<tr>
<td>Option A-1:</td>
<td>8 Lane Freeway</td>
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<td>Option A-2:</td>
<td>10 Lane Freeway</td>
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<tr>
<td>Option A-3:</td>
<td>Exclusive Bus Lane (Shoulder)</td>
</tr>
<tr>
<td>Option B:</td>
<td>Maximum Build Out Freeway (14 Lane assumed)</td>
</tr>
<tr>
<td><strong>Bus/HOV Lanes</strong></td>
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</tr>
<tr>
<td>Option 1-A:</td>
<td>Barrier Separated</td>
</tr>
<tr>
<td>Option 1-B:</td>
<td>Buffer Separated</td>
</tr>
<tr>
<td>Option B:</td>
<td>Continuous Access</td>
</tr>
<tr>
<td>Option C:</td>
<td>Reversible HOV Lanes</td>
</tr>
<tr>
<td>Option D:</td>
<td>HOV-Only Lane</td>
</tr>
<tr>
<td><strong>Light Rail Transit (LRT)</strong></td>
<td></td>
</tr>
<tr>
<td>Option A-1:</td>
<td>Median Alignment (Base)</td>
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<tr>
<td>Option A-2:</td>
<td>East Shoulder Alignment</td>
</tr>
<tr>
<td>Option A-3:</td>
<td>West Shoulder Alignment</td>
</tr>
<tr>
<td>Option B-1:</td>
<td>Median Alignment + &quot;Slide&quot; to Fitzsimons &amp; Aurora Mall</td>
</tr>
<tr>
<td>Option B-2:</td>
<td>East Shoulder Alignment + &quot;Slide&quot; to Fitzsimons</td>
</tr>
<tr>
<td>Option B-3:</td>
<td>West Shoulder Alignment + &quot;Slide&quot; to Aurora Mall</td>
</tr>
<tr>
<td>Option C:</td>
<td>Stable Alignment</td>
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<tr>
<td>Option D:</td>
<td>Peoria Alignment</td>
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<tr>
<td>Option E:</td>
<td>Potomac Alignment</td>
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<tr>
<td><strong>Commuter Rail (CR)</strong></td>
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<tr>
<td>Option A-1:</td>
<td>Median Alignment</td>
</tr>
<tr>
<td>Option A-2:</td>
<td>East Shoulder Alignment</td>
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<tr>
<td>Option A-3:</td>
<td>West Shoulder Alignment</td>
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<tr>
<td><strong>Personal Rapid Transit (PRT)</strong></td>
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<tr>
<td></td>
<td>In median or along shoulders or as a distributor</td>
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Figure 3-23: No Action Alternative

TRANSPORTATION ALTERNATIVES
No Action

Which Criteria Does It Meet?

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<td><img src="image10" alt="corridor5" /></td>
</tr>
</tbody>
</table>

How Does It Stack Up?

Advantages
- Adopted in Transportation improvement Program/Regional Transportation Plan
- Highly consistent with Corridor goals and policies (programmed improvements)
- Likelihood for mobility improvements is initially high
- No impact to critical resources
- High degree of service to local and regional travel markets
- Easy highway-to-highway connection to Southeast/East Corridors

Disadvantages
- Low consistency with Regional goals and policies for alternate mode emphasis
- Likelihood of mobility improvement may be temporary when demand outstrips new capacity
- Some localized opposition
- No direct connection to distribution markets and sites
- Requires mode change to access transit in Southeast and East Corridors

Interim Recommendations:
- Advance to detailed evaluation stage as required for comparison

Summary Rating for the I-225 Corridor: ○
Figure 3-24: Transportation Management Alternative

TRANSPORTATION ALTERNATIVES
Transportation Management Program

<table>
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<tr>
<th>Which Criteria Does It Meet?</th>
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<th>Corridor</th>
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How Does It Stack Up?

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Generally consistent with Regional goals and policies</td>
<td>- Mobility improvements are localized</td>
</tr>
<tr>
<td>- Highly affordable</td>
<td>- Low to moderate consistency with Corridor goals and policies</td>
</tr>
<tr>
<td>- No major environmental impacts</td>
<td>- Low to moderate degree of service to travel markets</td>
</tr>
<tr>
<td>- No impact to critical resources</td>
<td>- No direct connection to distribution markets</td>
</tr>
<tr>
<td>- No community opposition</td>
<td>- Requires mode change to access transit in Southeast/East Corridors</td>
</tr>
<tr>
<td>- High degree of service to local travel markets</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>- Easy highway-to-highway connection to Southeast/East Corridors</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>

Interim Recommendations:
- Advance to detailed evaluation stage as required for comparison

Summary Rating for the I-225 Corridor: ○
Figure 3-25: Freeway Lane Additions Alternative

TRANSPORTATION ALTERNATIVES
Freeway Lane Additions/Other Highway Improvements

Which Criteria Does It Meet?

<table>
<thead>
<tr>
<th>Guidance</th>
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<th>Corridor</th>
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</table>

How Does It Stack Up?

Advantages
- 8 Lane section and exclusive bus lane options are affordable
- Likelihood for mobility improvements is initially high
- Moderate to high degree of service to local and regional travel markets
- Easy highway-to-highway connection to Southeast/East Corridors

Disadvantages
- Low consistency with Corridor goals and policies
- Does not emphasize use of alternate modes
- 10 Lane and build-out options exceed budget and probably require additional rights-of-way
- Potential community, air quality, and noise impacts
- Exclusive bus lane option have conflicts at interchange ramps
- Likelihood of mobility improvement may be temporary when demand outstrips new capacity
- Community opposition to build-out option is likely to be high
- No direct connection to distribution markets and sites
- Requires mode change to access transit in Southeast/East Corridors

Interim Recommendations:
- Advance one or more options for further consideration to provide a basis of comparison.
- Further analysis, public comment, and PACITAC concurrence will determine if 8 Lane, 10 Lane, or exclusive bus lane options should be advanced to detailed evaluation stage.
- Build-out option (14 Lane) is not recommended for advancement.

Summary Rating for the I-225 Corridor: ⬜
A 10-lane freeway is likely to exceed the budget criteria and would likely have major environmental and community impacts.

- An 8-lane freeway could be built within the budget criteria, but would likely have some degree of environmental and community impacts. The consultant team recommended that this alternative be advanced to detailed evaluation as the most viable freeway lane addition option. The work-up for this alternative will permit consideration of flex lanes and auxiliary lanes.

- An identified concern was the potential that expanded freeway capacity could overwhelm the arterial network's capacity to handle traffic to and from the freeway.

- An exclusive bus lane, along the right-hand shoulder, would likely have very low usage levels and presents conflicts at entry/exit ramps. The consultant team recommended that this option be dropped as an exclusive alternative, but suggested that it be considered as a strategy in the transportation management alternative.

Despite these many negative indicators, a freeway lane addition alternative was advanced to the detailed evaluation phase in order to provide comparative information to address public questions. Also, freeway lane additions, in combination with other alternatives, would be investigated to determine if additional lanes would aid in the development of a multimodal solution to meet the I-225 corridor's needs.

**Bus/HOV Options**

The viability of Bus/HOV lanes in the I-225 corridor is influenced by the lack of current or planned HOV lanes in the I-70 East Corridor or I-25 Southeast Corridor to which potential I-225 lanes would be able to connect. In addition, there is currently only one RTD route that uses I-225 north of Parker Road - the skyRide to Denver International Airport (DIA). Although additional express routes that could traverse the entire I-225 length might be developed, the consultant team questioned whether there would be sufficient demand to warrant Bus/HOV lanes. Other key findings include the following (see Figure 3-26):

- All Bus/HOV Lane Alternatives/Options fall within the budget criteria.

- Three Bus/HOV options related to lane configuration were defined: barrier-separated, buffer-separated and continuous access. The consultant team recommended against consideration of continuous access Bus/HOV lanes because of major safety concerns due to the high accident levels that accompany this type of operation, and the limited mobility improvement potential associated with the short distance between ramp locations. The team recommended that further consideration of Bus/HOV lanes in the median be defined as including direct access ramps to improve mobility and to avoid the safety concerns associated with vehicles having to cross through lanes of moving traffic between right-hand side entry/exit ramps and median HOV lanes. Providing direct access ramps may require additional right-of-way, which could have localized community and environmental impacts.

- Consideration of a reversible Bus/HOV lane looked at the a.m./p.m. directional split of traffic in the corridor (1995). The directional split is about equal, so a reversible lane is not viable and was dropped from further consideration.
Figure 3-26: Bus/HOV Lane Alternative

TRANSPORTATION ALTERNATIVES
Bus/HOV Lanes

Which Criteria Does It Meet?

<table>
<thead>
<tr>
<th>Guidance Manual</th>
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</table>

How Does It Stack Up?

Advantages
- Generally consistent with Regional and Corridor goals and policies
- Generally affordable
- No known major environmental impacts
- Technology is proven
- No known community opposition
- Moderate degree of service to regional travel markets
- High degree of connectivity to distribution markets if ramps to/from sites are included
- Easy HOV-to-highway connection to Southeast/East Corridors

Disadvantages
- Impacts traffic and may require additional rights-of-way for local ramp connections
- Option B, Continuous Access, presents major safety concerns
- Improvement to mobility is limited due to lack of HOV connectivity with other corridors
- Low degree of service to local travel markets
- Requires a mode transfer to SE/East Corridors
- Option C, Reversible HOV Lanes, does not satisfy directional split requirements
- Option D, HOV-Only Lane, is too costly compared to potential use

Interim Recommendations:
- Do not advance for further consideration due to lack of connectivity in adjoining corridors.
- Further analysis, public comments, and PACTAC concurrence will determine if barrier and buffer-separated options should be advanced to detail evaluation stage.
- Continuous Access, Reversible HOV Lane, and HOV-Only Lane options are not recommended for advancement.

Summary Rating for the I-225 Corridor: O
An HOV-only lane was considered. Without connectivity to HOV lanes in other corridors (which are not currently planned), the likelihood of sufficient demand was deemed low by the consultant team. Cost-effectiveness is likely to be low. Despite its overall positive rating, the consultant team recommended this option be dropped from further consideration.

- All Bus/HOV options have significant weaknesses as there are no planned connections with similar facilities outside the defined I-225 Corridor. Discussions with the TAC, PAC, and CCG members supported the elimination of all HOV alternatives.

**Light Rail Transit Options**

All Light Rail Transit (LRT) options are consistent with regional and local policies. Six alignment options using the I-225 right-of-way were developed to identify whether significant benefits or impacts could be identified at the screening level. In addition, three street-running alignment options on arterials parallel to I-225 were identified. The following conclusions were drawn (see Figure 3-27):

- LRT alignment options that would be in the median or along the east or west shoulders of I-225 were compared. The median alignment would have the lowest cost. Alignments along either shoulder would be more costly because of the need to provide grade-separations at six sets of entry/exit ramps to avoid conflict with traffic. The added cost of shoulder alignments with these grade-separations is very likely to exceed the budget criteria. Shoulder alignments without grade separations at entry/exit ramps would present unacceptable risk. (Another possible scenario, using signals and crossing arms at the ramps to control traffic movements when trains are present, was deemed to have unacceptable impacts to traffic and was not supported by officials representing the Colorado Department of Transportation and the Federal Highway Administration). The consultant team’s recommendation is that shoulder alignments for the entire length of the corridor not be advanced for further consideration. Options that use shoulders for a portion of the alignment are discussed below. The consultant team recommended that a median LRT alignment be the baseline of comparison among any LRT alternatives that are advanced.

- LRT alignment options that would use either the median, east or west shoulders as the primary alignment, but with shifts to serve the Aurora Mall or Fitzsimons campus were reviewed. The shifts were included to see whether being closer to these key activity centers would raise any significant benefit or impact at the screening level of analysis. The issues of cost and ramp conflict identified above for shoulder alignments would also apply to this group of options. Either shoulder alignment would result in traffic conflicts at six interchanges. Even with the benefits of proximity to an activity center that a shoulder alignment would provide, the consultant team’s recommendation was to eliminate shoulder alignments from further consideration.

- A median alignment, with shifts to either Aurora Mall, Fitzsimons, or both, has the potential for higher patronage than a full-median alignment since it would decrease the walk distance from transit stations to origins/destinations at these activity centers, which is known to be a key factor in patronage forecasting. The consultant team recommended that this option be advanced for further study. It should be noted that this recommendation placed the median alternative and these alignment shifts as a single LRT alternative with various design options to be examined.
Figure 3-27: Light Rail Transit Alternative

<table>
<thead>
<tr>
<th>TRANSPORTATION ALTERNATIVES</th>
<th>Light Rail Transit (LRT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which Criteria Does It Meet?</td>
<td>Guidance Manual</td>
</tr>
<tr>
<td>Corridor</td>
<td></td>
</tr>
</tbody>
</table>

How Does It Stack Up?

**Advantages**
- Highly consistent with Regional and Corridor goals and policies
- All options are generally affordable
- No known major environmental or critical community impacts
- Strong agency support
- Technology is proven and in service in the area
- High degree of service to local and regional markets
- High connectivity to all distribution markets due to station locations at all sites
- Easy transit-to-transit connections

**Disadvantages**
- Requires mode transfer to East Corridor
- Shoulder alignments would create conflicts at highway ramps if costly grade separations not implemented
- Potentially high community opposition to arterial street alignments (Sable, Peoria, Potomac) due to neighborhood and traffic impacts and higher costs

Interim Recommendations:
- Advance median alignment for further consideration
- East and west shoulder options are problematic and should probably be dropped

Summary Rating for the I-225 Corridor: 〇
The cost of a median alignment with shifts would be higher than a full-median alignment, but was within acceptable corridor budget limits. Trade-off analyses between the costs of median stations versus shifting the alignment proximate to activity centers, compared to patronage impacts, and various other factors will be needed in the detailed evaluation phase of the study.

Three LRT alignments that used street rights-of-way (Sable, Peoria, and Potomac), instead of I-225 right-of-way were developed for testing purposes. The alignments were developed to permit an examination of a wide range of LRT service in the corridor. The estimated costs of at-grade service for these scenarios met the budget criteria, but the alignment would have significant traffic and community impacts. The inclusion of grade-separations to avoid traffic impacts at major arterial streets would increase the cost of these street alignment options, likely exceeding the budget criteria. These alternatives were dropped from further consideration.

Review of anticipated future trip-making in the corridor, focusing on planned development at Gateway and redevelopment at Aurora Mall and Fitzsimons, led the consultant team to consider the northern terminus of the corridor. A transit station at Smith Road was suggested by the *East Corridor MIS Report* as the interface point with planned commuter rail service in the I-70 corridor. The team suggested that a different northern terminus should be considered during the detailed evaluation phase to address this mode change, due in part to the following factors:

- The Smith Road terminal does not serve an activity center. It is more than a mile by roadway to Fitzsimons and more than 2 miles from Gateway.

- The Smith Road terminal does not serve residential areas. The majority of Morris Heights, south of Smith Road, is not readily accessible from Smith Road and would have long walk distances. Montbello, north of I-70, is effectively barricaded from the terminal by I-70. Patrons from Montbello would have to access the station via Chambers or Peoria.

- By comparison, if the northern terminus were established at the proposed station at 40th Street and Pena, it would serve a growing activity center. In addition, the Gateway area is a likely destination for trips that use the I-225 corridor. Providing service to this destination without a transfer (and change of mode and associated scheduling difference) at Smith Road may increase overall patronage. This potential increase for trips bound for Gateway would have to be evaluated against the effect on trips bound for downtown Denver via commuter rail, since the transfer point would move east by 2+ miles.

- Access to/from residential areas would be greater with a Gateway terminus than a Smith Road terminus for Montbello, Parkfield, Green Valley Ranch and new residential developments included in the Gateway projects. This improved accessibility (and lack of a forced transfer at Smith Road, and perhaps more frequent headways) is likely to increase patronage for trips between the residential areas and activity centers along I-225 (Fitzsimons, Aurora Mall/City Center/ DTC).
Commuter Rail Options

All Commuter Rail (CR) options are consistent with regional and local policies. Three alignment options using the I-225 right-of-way were developed to identify whether significant benefits or impacts could be identified as the screening level. Other findings are summarized below (see Figure 3-28):

- Commuter rail alignment options that would be in the median or along the east or west shoulders of I-225 (for the entire length of the corridor) were compared. The median alignment would have the lowest cost. Alignments along either shoulder would be more costly because of the need to provide grade-separations at six entry/exit ramp sets to avoid conflict with traffic. Because of limitations on grade changes for commuter rail operations and the short distances between interchanges, the net effect would be that shoulder alignments would have to be grade-separated for significant portions of the alignment, the costs of which would exceed the budget criterion. Shoulder alignments without grade separations at entry/exit ramps would present unacceptable risk. (Another possible scenario, using signals and crossing arms at the ramps to control traffic movements when trains are present, was deemed to have unacceptable impacts to traffic). The consultant team’s recommendation was that shoulder alignments for the entire length of the corridor not be advanced for further consideration. The consultant team recommended that a median commuter rail alignment (for the entire length of the corridor) be advanced.

- Issues related to the northern terminus at Smith Road are similar to those identified for LRT as related to service to activity centers and residential areas. Because commuter rail in I-225 would not require a mode change at its interface at Smith Road, I-225 CR routes could readily be inter-lined with Denver International Airport (DIA) to Denver Union Terminal (DUT) CR routes; this inter-lining would be likely to produce greater patronage than a route that requires a mode change. In addition, inter-lining of commuter rail service could have a significant impact on the definition of commuter rail for the East Corridor. Such increases in service could result in dual track service, rather than the single-track service proposed in the East Corridor MIS. Future detailed evaluation efforts will examine this issue.

- As noted in the LRT discussions, a northern terminus at Gateway provides a station in an activity center. However, it may be difficult to inter-line I-225 CR routes that are bound to/from DUT at a Gateway terminus. Providing a transfer point between the DIA to DUT routes and I-225 CR routes at Gateway must be weighed against the effect on trips bound for downtown Denver via commuter rail, since the transfer point would move east by 2+ miles and may present switching/operational challenges. These operational issues will be examined during the detailed evaluation phase.

- The potential interface between I-225 CR and the I-25 LRT spur at Parker Road was also reviewed. In combination with the planned interchange at Parker Road and I-225, freeway and arterial modifications in the area, the team was seriously concerned as to whether a station that accommodates both LRT and commuter rail can be constructed at this site. The ability to expand the limits of freeway right-of-way to accommodate a median alignment commuter rail station and a cross-platform transfer to a median alignment LRT spur are significantly constrained. It is also anticipated that there would be public opposition to additional widening at this location. Expanding R-O-W would affect parklands on either side of I-225 at this location, which are afforded Section 4(f) protection by the Department of
Figure 3-28: Commuter Rail Alternative

TRANSPORTATION ALTERNATIVES
Commuter Rail (CR)

Which Criteria Does It Meet?

Guidance

- Manual

Corridor

How Does It Stack Up?

Advantages
- Consistent with Regional and Corridor goals and policies
- All options are generally affordable
- Low impact to environmental resources
- Technology is proven
- High degree of service to regional markets
- Moderate to high connectivity all distribution markets (depending on station locations)
- Easy rail-to-rail connection at East Corridor

Disadvantages
- Potential community impacts at station areas
- Low degree of service to local markets (depends on station locations)
- Requires mode transfer at Southeast Corridor
- Potential conflicts at highway ramps for shoulder alignment options; grade separations at each interchange are not feasible
- Grade-separated option to avoid conflicts at highway ramps would not be affordable

Interim Recommendations:
- Advance Option A, median alignment, for further consideration
- Options B & C (shoulder alignments) are not recommended for advancement

Summary Rating for the I-225 Corridor: 🟢
Transportation Act of 1966. This protection allows the use of parkland only if there is no feasible and prudent alternative to the use. In this case, a feasible alternative is to relocate the station overlap area, perhaps to the Dayton site previously identified during the Southeast Corridor MIS. The consultant team recommends that the need for an alternate interface site be referred to the Southeast Corridor EIS team for detailed evaluation. Including this alternate interface site in EIS-level planning and evaluation will preclude a major future conflict if commuter rail is selected by the I-225 Corridor MIS process. The I-225 MIS team will also address this issue during the detailed evaluation phase.

Personal Rapid Transit (PRT)

PRT was reviewed for its potential as a circulator/distributor in the corridor (see Figure 3-29). Key findings are identified below.

- The two pending locations for construction of PRT in the United States will employ PRT in a circulator/distributor mode, which the consultant team feels is consistent with the foreseeable potential of this technology.

- Providing distributor/circulator systems at activity centers along the corridor, such as Gateway, Fitzsimons, Aurora Mall/Center, or the Denver Tech Center (DTC), is very likely to increase utilization of various transit modes (bus or rail) using the I-225 right-of-way.

Distributor/circulator systems at activity centers are important for both peak period trip-making and mid-day trips. Experience has shown that the need to make trips in the non-peak and (especially) mid-day periods are a key factor in the decision of whether to use transit. To the extent that such trips could be made or facilitated by distributor/circulator service, PRT is likely to enhance the potential for a transit mode choice by travelers.

Alternatives Advanced to Detailed Evaluation

At the conclusion of the conceptual screening process, five alternatives were recommended for advancement to the detailed evaluation process. These recommendations were presented to the project’s Citizen Consultation Group (CCG), Technical Advisory Committee (TAC), and Policy Advisory Committee (PAC) for input, guidance, and direction. Furthermore, the RTD Board of Directors was briefed on the status of the project and the recommended alternatives to be advanced to the detailed evaluation of alternatives. All input received was favorable.

The five alternatives to be advanced to detailed evaluation include:

- No Action
- Transportation Management
- Freeway Lane Additions (8-lane)
- LRT in median
- Commuter Rail in median
Figure 3-29: Personal Rapid Transit Alternative

TRANSPORTATION ALTERNATIVES
Personal Rapid Transit (PRT)

Which Criteria Does It Meet?

Guidance
- Manual
- Corridor

How Does It Stack Up?

Advantages
- Moderate to highly consistent with Regional and Corridor goals and policies
- High service to local markets as a distributor service
- High connectivity to distribution markets

Disadvantages
- Not affordable as a line haul service
- Low likelihood to improve mobility as a line haul service
- Potential community and visual impacts due to elevated guideway
- As an emerging technology, not proven to serve large markets
- Distributor system does not serve regional markets
- Requires mode change to connect to Southeast and East Corridors
- Difficult and costly transition from elevated system to at-grade system at Southeast and East Corridor nodes

Interim Recommendations:
- Advance for further consideration as a distributor system

Summary Rating for the I-225 Corridor: ✗
SECTION 4: DETAILED EVALUATION

The detailed evaluation phase provides additional definition for each of the alternatives, including more definitive alignments and generalized station locations. Cost estimates were developed to better differentiate between alternatives, as were the development of ridership forecasts. Information to address community and environmental impacts that may be associated with each of these detailed alternatives was also prepared.

These detailed evaluation efforts were presented to the project's three advisory committees, the general public, and the RTD Board of Directors. At the conclusion of the detailed evaluation process, a recommendation was forwarded to the RTD Board of Directors for the selection of a locally preferred alternative.

All detailed level alternatives were evaluated using criteria in RTD's MIS Guidance Manual. This manual provided the consultant teams with a consistent set of criteria to evaluate their respective MIS projects.

Description of Alternatives

The five I-225 alternatives carried forward into detailed evaluation include:

- No Action
- Transportation Management
- Freeway Lane Additions (8-lane)
- LRT in median
- Commuter Rail in median

The following pages contain a description of each alternative.
Alternative 1 - No Action

This option includes only those changes which would be made without this project. These are already in progress or approved.

Freeway Section: 6 lanes plus an auxiliary lane between the interchanges from Parker to Smith.

- Parker to 6th: A six-lane freeway widening project is currently under design. This section will have three 12' lanes, a 12' auxiliary lane, and 12' inside and outside shoulders on either side of a 60' median. As part of this project the bridges at Yale, Iliff, Alameda, 2nd and 6th will be replaced.
- 6th to Smith: A six-lane freeway section is currently in place.

Interchanges:

- Parker Road: An improved interchange has been designed, which adds several direct connector ramps and widens Parker Road through the interchange. Construction of phases I & II of this project has already begun. Phase III construction went to bid in December 1999.
- Iliff Avenue: An improved interchange has been approved. The new interchange relocates the northbound off-ramp and adds a new eastbound/northbound loop ramp. Preliminary design of this interchange began in 2000.
- Alameda Avenue: A new single point urban interchange offset (offset with traffic signals) to the east side of I-225 opened in 2000. This project relocated the Abilene/Alameda intersection to the east of its former location.

Other Improvements:

- Abilene Street: Construct southbound left turn lane from Jewell to Mississippi (completed 1999).
- Peoria Bridge at Sand Creek: Widen from 4 to 6 lanes (completed 2001).
- Potomac from Colfax to 17th: Add curb and gutter, sidewalk, widen and reconstruct pavement (completed 2000).
- Chambers Road from 40th to 56th: Widen from 2 to 4 lanes, add median left turn lane from 40th to 56th and add new traffic signals at 40th Avenue, 48th Avenue, and 56th Avenue (design phase in 1999).
Project Length: 8 Miles

Improvements:
- Parker to 6th-Six lane Widening
- Reconstruct or Upgrade Interchanges
  - Parker Road
  - Iliff Avenue
  - Alameda Avenue
  - 6th Avenue
- Auxiliary Lanes
- Utilize Existing ITS

Figure 4-1: No Action

Legend:
- Improvement Locations
- Lane Widening
- Interchange Improvements
Alternative 2 - Transportation Management / Enhanced Bus

New or Relocated park-n-Rides:

- Relocate Olympic park-n-Ride to I-225/Illiff Avenue.
- Relocate/expand Fitzsimons park-n-Ride.

Ramp metering and High-Occupancy Vehicle (HOV) queue by-pass lanes:

- Add ramp meters to unmonitored freeway ramps in the corridor.
- Add HOV queue by-pass lanes to all freeway ramps along I-225 to provide HOV with priority treatment.

Intelligent Transportation Systems (ITS):

- Advanced Transportation Management System (ATMS) – technologies to measure real time I-225 volumes and speed, and parking utilization of park-n-ride lots.
- Advanced Transportation Information Systems (ATIS) – variable message signs along I-225 (2 northbound and 2 southbound) which report traffic conditions and park-n-ride parking availability.

Expanded Transit Service:

- Enhanced existing transit service, including increased frequency of service and expanded hours of operation.
- New service – add new transit routes including new service to and between, Aurora Mall/City Center, Fitzsimons, Gateway Center, and DTC.

Transportation Management Organizations (TMOs):

TMOs are organizations to assist employers and employees in managing transportation demand. Locations include Aurora Mall/City Center, Fitzsimons, and Gateway Centers. Services include:

- Marketing
- Telecommute centers
- Ride-matching services
- Facilitate vanpools
- Subsidize transit passes and/or guaranteed ride home

Trails to Transit:

- Connections between bike trails and transit stops and park-n-ride transit centers.
Figure 4-2: Transportation Management / Enhanced Bus

- Project Length: 8 Miles
- Includes No Action Alternative Improvements
- HOV By-pass Lanes Added to Ramps
- ATMS: Measure Traffic Volume, Speed, & Parking Utilization
- Variable Message Signs (2 NB / 2 SB)
- Increased Bus Frequency/Hours of Service
- New Bus Service
- Develop Transportation Management Organization
- New Park-n-Rides at
  - Smith/Peoria
  - Iliff Avenue
- Cost: $42 million

LEGEND

Improvement Locations

Park-n-Ride Locations

North

I-225 Major Investment Study
Alternative 3 – Freeway Widening

Freeway Section: 8 lanes plus an auxiliary lane between the interchanges from Parker to Smith.

- Parker to 6th: The existing 6 lane section will be widened to 8 lanes by adding 12' of new pavement on either side of the median. The existing 12' shoulder will become the new lane and the new pavement will serve as the new inside shoulders.
- 6th to Smith: The existing 6 lane section will be widened to 8 lanes by converting the auxiliary lanes to through lanes, converting the outside shoulder to an auxiliary lane and adding a new 12' outside shoulder.

Structures:

- Parker Road: The proposed interchange will build structures for the six-lane section. The CH2M Hill design for this structure includes future expansion for four additional lanes inside the existing structure. In order to accommodate an eight lane section one additional lane will need to be constructed on each side of the existing structure.
- Yale, Iliff, Mississippi, Alameda, and 2nd: The six lane widening project will reconstruct these structures to accommodate an eight lane section. No additional adjustments will be necessary.
- 6th Avenue: CDOT will replace this structure with the six lane widening project should funding be available. If it is not replaced, it will need to be completely replaced for the eight lane section.
- Toll Gate Creek, 13th, Colfax: These structures will all need to be widened by 12' to the outside to accommodate the eight lane section. All three of these structures are cast-in-place concrete structures and can easily be widened.
- Sable Ditch: The existing box culvert will be sufficient for the eight lane section. No additional adjustments will be required.
- Sand Creek: The existing six lane structure was designed for expansion to ten lanes. In order to accommodate the eight lane section this structure will need to be widened by 12' to the outside of the existing structure.
- Smith Road: The existing structure has eight lanes. No additional adjustments will be required.
- Project Length: 8 Miles
- Includes No Action Alternative Improvements
- Parker to I-70: 6-lane Freeway Widened to 8 Lanes
- Widen Structures at:
  - Sand Creek
  - Toll Gate Creek
  - Colfax Avenue
  - 13th Avenue
- Cost: $28 million

Figure 4-3: Freeway Widening

LEGEND
- Improvement Locations
- Lane Widening
- Interchange Improvements

I-225 Major Investment Study
Alternative 4 - Light Rail Transit (LRT)

**Base Alignment:** LRT in I-225 median from Parker Road to Smith Road.

- This LRT alignment begins as a continuation of the Southeast Corridor LRT line at Parker Road/I-225.
- The LRT line continues in the median of I-225, passing under Yale and over Iliff to a median station located at Iliff.
- North of Iliff the LRT line continues in the median passing under Mississippi to a median station located near the Aurora Mall and Exposition.
- The LRT line continues north of the Aurora Mall passing under Alameda, over Highland Canal and continuing to a median station located at 4th.
- The LRT line continues in the median over 6th, over Toll Gate Creek and over Colfax to a median station located north of Colfax and near the existing park-n-ride facility at Colfax and Potomac.
- North of Colfax the LRT line continues in the median over Sand Creek to a terminal station located in the median of I-225 over Smith Road and the East Corridor Commuter Rail line.

**Option 1:** LRT slides to east side at Aurora City Center Station.

- North of Mississippi the LRT line passes over the northbound I-225 lanes to slide out of the median to the east side of I-225.
- Once out of the I-225 median the LRT line returns to at-grade and continues northeast around the east side of the Aurora Mall to a station near Alameda.
- North of Alameda the LRT line turns northwest, cutting back toward I-225 to a station located near Abilene and 4th.
- LRT line then passes over the northbound I-225 lanes and re-enters the median prior to 6th.

**Option 2:** LRT slides to west side at Colfax, crosses through Fitzsimons and ends at a terminal station at Smith Road and Peoria.

- South of Colfax the LRT line passes over southbound I-225 from the median to west side.
- The LRT line continues over Colfax to a station near the existing park-n-ride facility.
- North of the station the LRT line runs parallel to Toll Gate Creek and then turns to the west through Fitzsimons to a station located near the center of Fitzsimons.
- The LRT line continues through Fitzsimons to Peoria and turns to the north along the east side of Peoria to a station near the northwest corner of Fitzsimons.
- The LRT line continues along the east side of Peoria to a terminal station located south of Smith and east of Peoria.

**Option 3:** LRT continues north of Smith Road to 40th and Pena

- From either the Smith/Peoria or Smith/I-225 station the LRT line continues north to I-70.
- The LRT line crosses over I-70 and turns to the east, paralleling 40th to a station located near Montebello and the Gateway Park’s western end.
- The LRT line continues east to a terminal station at the proposed 40th and Pena East Corridor Commuter Rail station.
Figure 4-4: Light Rail Transit

- Project Length: 8-11 Miles
- Includes No Action Alternative Improvements
- Base Station Locations
  - Parker Road
  - Iliff Avenue
  - Exposition Avenue
  - 4th Avenue/Abilene
  - Colfax Avenue
  - Fitzsimons/UCHSC
  - Smith Road
- Optional Stations
  - Gateway Park
  - 40th Avenue/Pena Blvd.
  - Alameda Avenue (instead of Exposition)
    - Centerpoint Drive
    - Cedar Avenue
- Service Frequency
  - Peak: 8/hour/direction
  - Base: 4/hour/direction

LEGEND

- Improvement Locations
- Alternative Alignment
- LRT Stations

I-225 Major Investment Study
Alternative 5 - Commuter Rail (Diesel Multiple Unit – DMU)

The Commuter Rail alternative has been further defined as using Diesel Multiple Unit (DMU) technology; traditional push/pull operations with a locomotive are no longer being considered.

**Base Alignment:** DMU in I-225 median from Parker Road to Smith Road.

- This DMU alignment begins as a continuation of the Southeast Corridor LRT line at Parker Road/I-225.
- The DMU line continues in the median of I-225, passing under Yale and over Iliff to a median station located at Iliff.
- North of Iliff the DMU line continues in the median passing under Mississippi to a median station located near the Aurora Mall and Exposition.
- The DMU line continues north of the Aurora Mall passing under Alameda, over Highland Canal and continuing to a median station located at 4th.
- The DMU line continues in the median over 6th, over Toll Gate Creek and over Colfax to a median station located north of Colfax and near the existing park-n-ride facility at Colfax and Potomac.
- North of Colfax the DMU line continues in the median over Sand Creek to a terminal station located in the median of I-225 over Smith Road and the East Corridor Commuter Rail line.

**Option 1:** DMU slides to east side at Aurora City Center Station.

- North of Mississippi the DMU line passes over the northbound I-225 lanes to slide out of the median to the east side of I-225.
- Once out of the I-225 median the DMU line returns to grade level and continues northeast around the eastern side of the Aurora Mall to a station near Alameda.
- North of Alameda the DMU line turns northwest cutting back towards I-225 to a station located near Abilene and 4th.
- The DMU line then passes over the northbound I-225 lanes and re-enters the I-225 median prior to 6th.

**Option 2:** DMU slides to the western side at Colfax, crosses through Fitzsimons and ends at a terminal station at Smith Road and Peoria.

- South of Colfax the DMU line passes over southbound I-225 to slide out of the median to the west side.
- The DMU line continues over Colfax to a station near the existing park-n-ride facility.
- North of the station the DMU line runs parallel to Toll Gate Creek and then turns to the west through Fitzsimons to a station located near the center of Fitzsimons.
- The DMU line continues through Fitzsimons to Peoria and turns to the north along the eastern side of Peoria to a station near the northwest corner of Fitzsimons.
- The DMU line continues along the east side of Peoria to a terminal station located south of Smith and east of Peoria.

**Option 3:** DMU continues north of Smith Road to 40th and Pena

- From either the Smith/Peoria or Smith/I-225 station the DMU line continues north to I-70.
• The DMU line crosses over I-70 and turns to the east paralleling 40th, to a station located near Montebello and the western end of Gateway Park.
• The DMU line continues to the east to a terminal station at the proposed 40th and Pena East Corridor Commuter Rail station.

**Option 4:** Reduced set of DMU stations

• For any of the above options the line can operate like traditional commuter rail by increasing the station spacing. This would be accomplished by eliminating the station at Iliff and reducing the number of stations at Aurora City Center and Fitzsimons from three to one.
Figure 4-5: Commuter Rail (DMU)

- Project Length: 8 Miles
- Includes No Action Alternative Improvements
- Base Station Locations
  - Parker Road
  - Iliff Avenue
  - Exposition
  - 4th Avenue/Abilene Street
  - Colfax Avenue
  - Smith Road
- Optional Stations
  - Aurora Mall
  - Fitzsimons/UCHSC
- Service to be Interlined with Southeast & East Corridors
- Service Frequency
  - Peak: 4/hour/direction
  - Base: 2/hour/direction
Detailed Evaluation

The alternatives described in Section 2 were advanced to the Detailed Evaluation phase of the MIS. The first round of detailed evaluation, completed in June/July 1999, addressed each of these alternatives. At the conclusion of this review, the following action was taken:

- **The Commuter Rail (DMU) alternative was eliminated from further consideration.** The DMU alternative cost approximately the same as the LRT alternative but could transport only half as many passengers due to differing headway constraints imposed by the Southeast Corridor and East Corridor operations. The Southeast Corridor LRT line will operate with 7.5 minute headways in the peak hour, while the East Corridor DMU line will operate with 20 minute peak hour headways. Various alternatives were investigated in trying to arrive at a DMU operating plan in the I-225 Corridor that could "bridge" between the two adjoining corridors. No acceptable solution was identified that would satisfy all stakeholders. One possible solution that was identified was to adjust the East Corridor operation from a 20 minute headway to a 15 minute headway operation between Denver Union Terminal (DUT) and I-225, with alternate trains heading toward Denver International Airport (DIA) and south on I-225. However, this was not acceptable to the City of Denver representatives because it resulted in an effective 30 minute service frequency between DUT and DIA, eroding its planned 20 minute service. Therefore, the DMU alternative was dropped from further consideration in the I-225 MIS due to its negative operation impacts on the adjacent corridors, particularly the East Corridor.

The results presented in this report reflect the revised population and employment data that was used in the second cycle of detailed evaluation (September 2000). Therefore, the alternatives that were carried into detailed evaluation included:

- **No Action**
- **Transportation Management/Enhanced Bus**
- **Freeway Widening**
- **Light Rail Transit (LRT) -** Four alternative alignments were considered to address design options that would potentially serve the Aurora City Center, the Fitzsimons/UCHSC campus, and the Gateway area. The base alignment (LRT 1) was modified during the first round of detailed evaluation (June/July 1999), eliminating the LRT alignment in the median of I-225 from Colfax to I-70. The subsequent base alignment was revised north of Colfax, passing through the Fitzsimons/UCHSC campus and along Peoria to Smith Road where it would intersect with the East Corridor commuter rail line. This alignment was preferred due to the service opportunity associated with the Fitzsimons/UCHSC campus.

  - **LRT 1 (M-F)**
    - Median of I-225 Parker to Colfax, thru Fitzsimons, along Peoria to Smith Road.
  - **LRT 2 (M-F-G)**
    - Median of I-225 Parker to Colfax with an extension north of I-70 along 40th through Gateway to 40th/Pena.
LRT 3 (M-CC-F)
Median of I-225 Parker to Exposition, thru Aurora City Center, thru Fitzsimons, along Peoria to Smith Road.

LRT 4 (M-CC-F-G)
Median of I-225 to Exposition, City Center, Fitzsimons, and Gateway.

Evaluation Criteria

A clear understanding of the criteria used to evaluate the alternatives is critical for a meaningful interpretation of the results. RTD’s Guidance Manual provides the basis for developing the detailed evaluation criteria, which are categorized into four general areas:

- Cost Measures
- Effectiveness
- Cost-Effectiveness
- Community and Environmental Impacts

Each of these general categories, their supporting criteria, and the results of the criteria are defined in the following presentation of results.
Results of Detailed Evaluation
A summary of the results is given below for each of the criteria.

Cost Measures
Below are the six cost measures examined in the detailed evaluation.

- Capital Cost
- Operation and Maintenance Costs
- Total Annual Cost
- Construction Costs
- Right-of-Way Costs
- Vehicle Costs

Capital Cost
Capital cost is the amount of investment required to construct an alternative. Capital costs include elements such as excavation, new pavements, drainage, lighting, and signage for freeway alternatives and trackwork, signalization, electrification, communications systems, and vehicles for the rail alternatives. Capital cost estimates are based on the unit costs (prices for specific quantities of materials and labor) provided in the RTD Guidance manual. Table 4-1 displays the capital cost estimates for the build alternatives.

The total capital and annual capital costs for the TM and freeway alternatives are significantly less than the costs for the LRT alternatives. This occurs because the TM and freeway alternatives are making improvements to the existing transportation network. The capital costs for the LRT alternatives are much greater since they add new facilities to the network, such as track and stations.

Table 4-1: Total Capital Cost

<table>
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<th>2020 Model</th>
<th>Capital Costs (1997$)</th>
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<td>Total Capital Costs</td>
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<td>2020 RTP (No Action)</td>
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<td>LRT 4 (M-CC-F-G)</td>
<td>$469,831,634</td>
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</tbody>
</table>

* Capital costs for the freeway alternative do not include improvements to I-225/I-25 interchange area.

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Operation and Maintenance Cost

Operation and Maintenance (O&M) cost is the amount of investment needed to operate and maintain an alternative, including costs such as labor for operating vehicles, repair of pavements and guideways, and maintenance of landscapes. O&M is measured on a cost per year basis. The estimated O&M cost for the build alternatives is presented in Table 4-2.

Table 4-2: Operations and Maintenance Cost

<table>
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<th>2020 Model Run</th>
<th>Total O&amp;M Costs (1997$)</th>
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</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>$14,172,000</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>$12,781,000</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>$14,097,000</td>
</tr>
</tbody>
</table>

In general, the degree of cost for transit alternatives is driven proportionately by the level of service and convenience. The analysis shows the O&M cost to be lowest for the freeway alternative while higher for the TM alternative, due in part to the high operating costs for buses and the enforcement of HOV enhancements. The LRT alternatives have the highest O&M costs because of the high levels of service.

Total Annual Cost

Annual cost includes the annualized capital cost plus the annual operations and maintenance cost. The resulting cost represents the funding needed for the alternative to become a reality. Table 4-3 shows the total annual cost for the build alternatives.

Table 4-3: Total Annual Cost

<table>
<thead>
<tr>
<th>2020 Model Run</th>
<th>Total Annual Costs (1997$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 RTP (No Action)</td>
<td>$0</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>$11,052,711</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>$2,313,926</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>$37,149,089</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>$49,343,895</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>$39,762,217</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>$52,087,022</td>
</tr>
</tbody>
</table>
According to the analysis, the freeway widening alternative has the lowest total annual cost at just over $2 million while the TM alternative is $11 million. The total annual cost for the LRT alternatives ranges from just over $37 million to approximately $52 million.

**Construction Costs**

This criteria identifies the total and annual construction costs for each major investment. As shown in Table 4-4, the TM and freeway widening alternatives have a much lower total and annual construction cost than the LRT alternatives. This occurs because the TM and freeway alternatives are making improvements to the existing transportation network whereas the LRT alternatives are adding new facilities to the network, such as track and stations.

<table>
<thead>
<tr>
<th>2020 Model</th>
<th>Construction Costs (1997$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Construction Costs</td>
</tr>
<tr>
<td>2020 RTP (No Action)</td>
<td>$0</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>$37,975,446</td>
</tr>
<tr>
<td>Eight-Lane Freeway*</td>
<td>$28,566,983</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>$249,688,671</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>$348,688,144</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>$274,037,606</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>$373,037,079</td>
</tr>
</tbody>
</table>

Annualization Variables: Discount Rate - 7%, Economic Life – 30 Years.

* Capital costs for the freeway alternative do not include improvements to I-225/I-25 interchange area.

**Right-of-Way Costs**

This measure examines the total and annual right-of-way (ROW) costs for each alternative (see Table 4-5). There are no right-of-way costs associated with the freeway widening alternative because the investment fall within the existing ROW of I-225. The ROW costs for alternatives LRT 2 and LRT 4 are much greater than alternatives LRT 1 and LRT 3 because the alignment is extended north across Interstate 70.
Table 4-5: Right-of-Way Costs

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total ROW Costs</td>
<td>Annual ROW Costs</td>
</tr>
<tr>
<td>2020 RTP (No Action)</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>$11,741,530</td>
<td>$821,907</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>$28,699,355</td>
<td>$2,008,955</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>$17,236,730</td>
<td>$1,206,571</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>$34,394,555</td>
<td>$2,407,619</td>
</tr>
</tbody>
</table>

Annualization Variables: Discount Rate - 7%, Economic Life - 100 Years

**Total and Annual Vehicle Costs**

This analysis identifies the total and annual vehicle costs associated with each alternative (see Table 4-6). As shown below, minimal vehicle costs are associated with the TM alternative because of the enhanced bus. Similar to the other cost measures, the LRT 2 and LRT 4 have the highest vehicle cost because of the length of the Gateway extension.

Table 4-6: Vehicle Costs

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Vehicle Costs</td>
<td>Annual Vehicle Costs</td>
</tr>
<tr>
<td>2020 RTP (No Action)</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>$4,450,000</td>
<td>$382,700</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>$36,400,000</td>
<td>$3,130,400</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>$57,200,000</td>
<td>$4,919,200</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>$41,600,000</td>
<td>$3,577,600</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>$62,400,000</td>
<td>$5,366,400</td>
</tr>
</tbody>
</table>

Annualization Variables: Discount Rate - 7%, Economic Life - 25 years for rail, 12 years for bus
Effectiveness

Effectiveness criteria includes the mobility statistics evaluated during the detailed evaluation, which includes:

- Person Carrying Capacity
- Expandability of the Alternative
- Maximum Link Utilization
- Number of Users
- Regional System Utilization
- Corridor Congestion
- Travel Times
- Regional Congestion Delay
- Travel Time Reliability
- Impacts to Goods Movement
- Regional VMT

**Person Carrying Capacity**

Capacity is the ability of an alternative to carry people or freight. The units used for evaluation are defined as carrying capacity per one direction per hour. The performance of the alternatives is provided in Table 4-7, which shows freeway widening having a slightly higher carrying capacity than light rail under the proposed operating plan of 7.5 minute headways with 125 persons per car.

<table>
<thead>
<tr>
<th>2020 Model Run</th>
<th>Person Carrying Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 RTP (No Action)</td>
<td>N/A</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>N/A</td>
</tr>
<tr>
<td>Eight-Lane Freeway (Based on 1.4 Persons/Vehicle)</td>
<td>2,800</td>
</tr>
<tr>
<td>Light Rail (2-Articulated Car Consist)</td>
<td>2,000</td>
</tr>
</tbody>
</table>

**Expandability of the Alternative**

Expandability is the degree to which an alternative can be expanded or modified to meet future changes in travel demand. Three factors were considered when assessing expandability:

- Extendibility - the ability to extend the length of the transportation investment.
- Adequate Future ROW - the availability of future ROW to widen the transportation investment (i.e., additional freeway lanes or track).
Technology - the ability to upgrade the technology associated with the transportation investment.

Table 4-8 presents the expandability for each alternative.

<table>
<thead>
<tr>
<th>2020 Model Run</th>
<th>Expandability</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 RTP (No Action)</td>
<td>N/A</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>1</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>2</td>
</tr>
<tr>
<td>Light Rail</td>
<td>2</td>
</tr>
</tbody>
</table>

The TM alternative rated well for this criteria because of the relative ease with which improvements can be made. The expandability of light rail also rated well since future travel demand can be met with increased headways and additional vehicles. The freeway widening alternative had a rating of "fair" since additional lanes could be added in the corridor, although it should be noted that its expandability is dependent on adequate ROW.

**Maximum Link Utilization**

Maximum Link Utilization identifies the location of the maximum number of persons forecast to be traveling on the major investment during the peak-hour/peak-direction and the entire day. The freeway maximum link occurs between Alameda Avenue and 6th Avenue while the LRT maximum link occurs between Parker Road and Iliff Avenue. Table 4-9 describes the maximum link utilization for each alternative.

<table>
<thead>
<tr>
<th>2020 Model Run</th>
<th>Maximum Link Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Persons/hour in peak-hour/peak-direction</td>
</tr>
<tr>
<td>2020 RTP (No Action)</td>
<td>N/A</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>N/A</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>2,434</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>638</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>648</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>560</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>572</td>
</tr>
</tbody>
</table>
Maximum link utilization is much greater for the freeway widening alternative because the improvement is being made to an existing facility. Utilization for the LRT alternatives is much lower since the rail investments provide a new mode of travel in the corridor.

**Number of Users**

This measure identifies the number of total users on the major investment only; it does not measure all users in the corridor. As shown in Table 4-10, the number of users in 2020 is significantly higher for the eight-lane freeway alternative than for the LRT alternatives.

**Table 4-10: Number of Users**

<table>
<thead>
<tr>
<th>2020 Model Run</th>
<th>Number of Users Persons per day (2-way)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 RTP (No Action)</td>
<td>N/A</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>N/A</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>89,447</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>8,952</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>9,252</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>7,813</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>8,240</td>
</tr>
</tbody>
</table>

**Regional System Utilization**

This criteria measures the regional system utilization for each alternative by examining the daily linked transit trips, the change in daily link transit trips, and the daily auto person trips. Table 4-11 presents the results of this analysis.

**Table 4-11: Regional System Utilization**

<table>
<thead>
<tr>
<th>2020 Model Run</th>
<th>Regional System Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Daily linked transit trips</td>
</tr>
<tr>
<td>2020 RTP (No Action)</td>
<td>285,479</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>292,501</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>285,479</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>294,999</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>295,237</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>294,690</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>294,888</td>
</tr>
</tbody>
</table>
As shown above, the freeway widening alternative does not increase the number daily linked transit trips while the TM alternative increases the number by just over 7,000. The LRT alternatives represent a change in daily linked transit trips of approximately 9,500.

**Corridor Congestion**

Regional Congestion Delay is the level of congestion on major roadways in the corridor noting the number of lane-mile hours with severe congestion. This criteria calculates the number of freeway lane miles that are congested for three hours or more (severe congestion) during a typical workday. Severe congestion is defined as a volume/capacity (v/c) ratio of greater than 0.95. Table 4-12 summarizes the results of the congestion evaluation.

**Table 4-12: Corridor Congestion**

<table>
<thead>
<tr>
<th>2020 Model</th>
<th>Corridor Congestion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lane-Mile of Congestion*</td>
</tr>
<tr>
<td>2020 RTP (No Action)</td>
<td>33.1</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>31.8</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>27.2</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>32.8</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>33.4</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>33.8</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>33.2</td>
</tr>
</tbody>
</table>

*Congestion defined as v/c=0.95 > 3 hours

As shown above, the rail alternatives result in approximately 33 lane miles of congestion, similar to that of the no action alternative. The increase in lane-mile congestion from the no action to the LRT alternative is not a significant difference. The TM alternative results in slightly less congestion at 31 lane miles while the freeway alternative has the least congestion at 27 lane miles. The lower corridor congestion for the freeway alternative is a direct result of I-225 being widened from 6 to 8 lanes.

**Travel Times**

The travel time criteria measures the trip time between sample origins and destinations during the AM peak hour. This allows the travel time between freeway and transit alternatives to be compared. Table 4-13 presents the optional travel times from Southeast Aurora residential to Denver International Airport (DIA), Southeast Aurora Residential and the Denver central business district (CBD), and Lincoln Avenue to Gateway Center.
Table 4-13: Travel Times

<table>
<thead>
<tr>
<th>2020 Model</th>
<th>SE Aurora to DIA</th>
<th>SE Aurora to Denver CBD</th>
<th>Lincoln Ave to Gateway Center</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rail</td>
<td>Auto</td>
<td>Rail</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>76</td>
<td>60</td>
<td>64</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>74</td>
<td>59</td>
<td>57</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>78</td>
<td>60</td>
<td>48</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>79</td>
<td>58</td>
<td>48</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>84</td>
<td>58</td>
<td>50</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>84</td>
<td>59</td>
<td>50</td>
</tr>
</tbody>
</table>

Regional Congestion Delay
This criteria measures regional congestion delay and the change in person-hours per day. As shown in Table 4-14, the freeway widening alternative and the LRT 4 alternative provided the greatest reduction in congestion delay.

Table 4-14: Regional Congestion Delay

<table>
<thead>
<tr>
<th>2020 Model</th>
<th>Regional Congestion Delay*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Person-Hr/Day</td>
</tr>
<tr>
<td>2020 RTP (No Action)</td>
<td>533,516</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>531,706</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>531,336</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>531,900</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>531,920</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>531,834</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>530,848</td>
</tr>
</tbody>
</table>

*Non-recurring congestion such as accidents and weather was not considered

Travel Time Reliability
Travel time reliability is defined as the consistency with which a major investment provides service. As shown in Table 4-15, the LRT alternatives offer the best travel time reliability because they operate in their own right-of-way. While the Transportation Management alternative does contain and HOV component, the overall travel time reliability is not as great as the rail alternatives.
### Table 4-15: Travel Time Reliability

<table>
<thead>
<tr>
<th>2020 Model Run</th>
<th>Travel Time Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1=Good 2=Fair 3=Poor</td>
</tr>
<tr>
<td>2020 RTP (No Action)</td>
<td>3</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>2</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>2-3</td>
</tr>
<tr>
<td>Light Rail</td>
<td>1</td>
</tr>
</tbody>
</table>

### Impacts to Goods Movement

The purpose of this measure is to assess the impact of the alternatives on major regional commodity flows and local freight deliveries. **Table 4-16** displays the impacts of the major investments on goods movement. Because the freeway alternative increases freeway capacity, it is the best alternatives for commercial vehicles. The rail alternatives are ranked worse for commercial vehicles since they do not offer a freeway capacity increase for commercial vehicles.

### Table 4-16: Impacts to Goods Movement

<table>
<thead>
<tr>
<th>2020 Model Run</th>
<th>Travel Time Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1=Good 2=Fair 3=Poor</td>
</tr>
<tr>
<td>2020 RTP (No Action)</td>
<td>2</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>1-2</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>1-2</td>
</tr>
<tr>
<td>Light Rail</td>
<td>2</td>
</tr>
</tbody>
</table>

### Regional VMT

This criteria examines both the vehicle-miles traveled (VMT) in the region and the congested VMT in the corridor. As shown in **Table 4-17**, the freeway widening alternative increases the regional VMT while the TM and LRT alternatives each provide a reduction.

**Table 4-18** displays the percent of the VMT congested by each major investment. The freeway widening alternative, at 5.3 percent, is the lowest of the alternatives for percent VMT congested. The TM and LRT alternatives have a percent VMT congested of approximately 6.3 percent.
Table 4-17: Regional VMT

<table>
<thead>
<tr>
<th>2020 Model</th>
<th>Regional Vehicle-Miles Traveled</th>
<th>Change from RTP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vehicle-miles per day</td>
<td></td>
</tr>
<tr>
<td>2020 RTP (No Action)</td>
<td>90,052,112</td>
<td>N/A</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>89,995,110</td>
<td>-57,002</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>90,078,812</td>
<td>83,702</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>89,941,901</td>
<td>-110,211</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>89,964,790</td>
<td>-87,322</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>89,962,490</td>
<td>-89,622</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>89,960,694</td>
<td>-91,418</td>
</tr>
</tbody>
</table>

Table 4-18: Congested VMT

<table>
<thead>
<tr>
<th>2020 Model Run</th>
<th>Congested VMT in Corridor</th>
<th>Percent VMT Congested</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Congested VMT (v/c&gt;0.95, 3+hr)</td>
<td>Total Corridor VMT</td>
</tr>
<tr>
<td>2020 RTP (No Action)</td>
<td>252,769</td>
<td>4,000,536</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>245,659</td>
<td>3,995,422</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>215,018</td>
<td>4,071,938</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>249,492</td>
<td>3,982,441</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>250,995</td>
<td>3,988,901</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>255,065</td>
<td>3,985,122</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>249,775</td>
<td>3,983,713</td>
</tr>
</tbody>
</table>
Cost Effectiveness

The cost-effectiveness evaluation combines the capital and O&M cost results with the effectiveness information developed immediately above to define the financial performance of each alternative. These measures include:

- Cost per User
- Cost per New Linked Transit Trip
- Cost per Vehicle Mile of Travel Reduced
- Cost per Person-Hour of Delay Savings

Cost per User

The cost per user is calculated by dividing the total annual cost (annualized capital plus annual O&M) by the total number of annual users on the major investment. The cost per user is generally less for alternatives that generate a greater number of users. The results of the cost per user analysis are included in Table 4-19.

Table 4-19: Cost per User

<table>
<thead>
<tr>
<th>2020 Model Run</th>
<th>Cost per User (1997$/Person)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 RTP (No Action)</td>
<td>N/A</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>N/A</td>
</tr>
<tr>
<td>Eight-Lane Freeway*</td>
<td>$&lt;1 (0.08)</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>$13</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>$16</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>$16</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>$20</td>
</tr>
</tbody>
</table>

* Capital costs for the freeway alternative do not include Parker Road.

The best financial performance is realized with the Freeway Widening alternative, with cost per user of under $1. This alternative has a low user cost due to the fact that it represents improvements to a relatively small segment of a much larger interstate system. Thus, there are a large number of users with a minimal incremental cost. Alternative LRT 1, at $13, represents the lowest cost per user for the light rail alternatives while LRT 2 and LRT 3 have a cost per of $16. The cost per user of LRT 4 ($20) suggests a weak investment relative to the other alternatives.

Cost per New Linked Transit Trip

The cost per new linked transit trip indicates the number of new persons using transit on the major investment. The number of "total" users as measured above does not account for the fact that a new LRT system may be diverting trips from the existing bus system. The "new user" measure accounts for the fact that some persons may be diverted from one mode to another. The results of the cost per new linked transit trip is shown in Table 4-20.
Table 4-20: Cost per New Transit Trip

<table>
<thead>
<tr>
<th>2020 Model Run</th>
<th>Cost per New Linked Transit Trip (1997$/Trip)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 RTP (No Action)</td>
<td>N/A</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>$5</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>N/A</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>$13</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>$17</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>$14</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>$19</td>
</tr>
</tbody>
</table>

As indicated above, the cost per new transit trip ranges from a low of $5 for the Transportation Management alternative to a high of $19 for alternative LRT 4. The analysis indicates that the cost per new user varies somewhat proportionately to the cost of the alternative. For example, the low cost per new user for the TM alternative reflects the cost of the proposed enhanced bus system. The higher annual cost for the LRT alternatives results in a higher cost per new linked transit trip.

Cost per Vehicle Mile of Travel Reduced

Measurement of the cost per VMT removed is an indication of how effective an alternative may be at benefiting air quality. Table 4-21 displays the cost for each VMT removed by alternative. Because the transit alternative directs users from the freeway network, they are more effective at removing VMT. The freeway alternative results in a negative value because this alternative creates a net increase in VMT, whereas the other alternatives result in VMT reductions (refer to Table 4-17).

Table 4-21: Cost per VMT Reduced

<table>
<thead>
<tr>
<th>2020 Model Run</th>
<th>Cost per VMT Reduced (1997$/Vehicle-Miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 RTP (No Action)</td>
<td>N/A</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>$0.57</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>-$0.25</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>$0.99</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>$1.66</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>$1.30</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>$1.68</td>
</tr>
</tbody>
</table>
Cost per Person-Hour of Delay Savings

This evaluation measures the cost of each hour saved compared to an anticipated value of personal time. Table 4-22 presents the results of the cost of personal time savings. The analysis shows that the TM and freeway alternatives offer a cost per person-hour delay savings of $25 and $4, respectively. The light rail alternatives range from a low of $78 for LRT 4 and a high of $124 for LRT 2.

Table 4-22: Cost per Person-Hour of Delay Savings

<table>
<thead>
<tr>
<th>2020 Model Run</th>
<th>Cost per Person-Hour of Delay Savings (1997$/Hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 RTP (No Action)</td>
<td>N/A</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>$25</td>
</tr>
<tr>
<td>Eight-Lane Freeway</td>
<td>$4</td>
</tr>
<tr>
<td>LRT 1 (M-F)</td>
<td>$92</td>
</tr>
<tr>
<td>LRT 2 (M-F-G)</td>
<td>$124</td>
</tr>
<tr>
<td>LRT 3 (M-CC-F)</td>
<td>$95</td>
</tr>
<tr>
<td>LRT 4 (M-CC-F-G)</td>
<td>$78</td>
</tr>
</tbody>
</table>
Community and Environmental Impacts

The assessment of environmental and community impacts is provided to disclose the consequences of implementing any one of the major investments. The intent is not to conduct a full environmental assessment or impact statement, but rather to generally indicate significant differences in impacts among the alternatives.

The cursory assessment of environmental issues was conducted during the Screening Process to guide the consideration of the broadest number of alternatives. The same level of evaluation was conducted during the detailed evaluation process. When the LPA is advanced to a more detailed level of planning and preliminary engineering, a thorough assessment of potential environmental impacts will be conducted.

No irresolvable environmental impacts or fatal environmental flaws were identified as the result of this baseline environmental analysis. The I-225 right-of-way does not contain any known significant environmental resources, and most of the project alternatives are to be contained within this ROW. The analysis that follows includes discussion of the existing ROW as well as those areas that will require additional ROW based on the current alternative definitions. Potential environmental effects can usually be minimized or eliminated by avoidance of sensitive areas during project design.

The following environmental categories are evaluated in this section:

- Riparian and Wetlands
- Vegetation and Wildlife – Threatened and Endangered Species
- Section 4(f) Resources
- Environmental Contaminants
- Water Resources
- Noise
- Air Quality
- Land Use/Compatibility
- Displacements and Right-of-Way Impacts
- Economic Development Potential
- Safety/Emergency Access
- Public/Emergency Services
- Access Impacts/Road Closures
- Aesthetics/Visual Impacts

Riparian and Wetlands Areas

A wetlands survey was not conducted for the baseline environmental analysis. The existing database was searched and supplemented with field observations. Eight areas which may contain wetlands were identified: three riparian and five isolated wetlands.

The riparian areas are:

- Sand Creek: I-225 west to Peoria Street;
- Tollgate Creek: I-225 west and north to Sand Creek; and
- Highline Canal and vicinity: Abilene to Blackhawk, 4th to 6th.

The wetland areas are:

- Northwest quadrant I-225 and 6th Avenue;
- Southwest quadrant I-225 and 6th Avenue;
- Northeast quadrant I-225 and 6th Avenue;
- Jewell at I-225, both sides; and
- Parker Road: southeast side.

Table 4-23 shows the eight areas noted above by alternative and project segment. The construction of the TM alternative may affect wetlands, depending on the location of the park-n-Ride at Fitzsimons relative to Sand and Tollgate Creeks. Impact avoidance is possible. The eight-lane freeway alternative may create adverse impacts to wetlands at I-225 and Parker Road. It is unclear whether impact avoidance is possible. Neither the LRT or Commuter Rail mainline construction in the I-225 median are expected to adversely affect wetland areas.

<table>
<thead>
<tr>
<th>Project Segment</th>
<th>Wetlands in this segment</th>
<th>Transportation Management</th>
<th>Eight-Lane Freeway</th>
<th>LRT &amp; Commuter Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-225: I-70 to Colfax</td>
<td>1. Sand Creek</td>
<td>No Impact</td>
<td>Potential Effect</td>
<td>No Impact</td>
</tr>
<tr>
<td></td>
<td>2. Tollgate Creek</td>
<td>No Impact</td>
<td>Potential Effect</td>
<td>No Impact</td>
</tr>
<tr>
<td>I-225: Colfax to 6th</td>
<td>3. NE quad: I-225 at 6th</td>
<td>No Impact</td>
<td>Potential Effect</td>
<td>No Impact</td>
</tr>
<tr>
<td>I-225: 6th to Alameda</td>
<td>4. SW quad: I-225 at 6th</td>
<td>No Impact</td>
<td>Potential Effect</td>
<td>No Impact</td>
</tr>
<tr>
<td></td>
<td>5. SE quad: I-225 at 6th</td>
<td>No Impact</td>
<td>Potential Effect</td>
<td>No Impact</td>
</tr>
<tr>
<td></td>
<td>6. Highline Canal &amp; vicinity</td>
<td>No Impact</td>
<td>Potential Effect</td>
<td>No Impact</td>
</tr>
<tr>
<td>I-225: Alameda to Miss.</td>
<td>No Wetlands Observed</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>I-225: Miss. to Iliff</td>
<td>7. Wetlands at Jewell</td>
<td>No Impact</td>
<td>No Impact</td>
<td>No Impact</td>
</tr>
<tr>
<td>I-225: Iliff to Parker</td>
<td>8. Southeastern side Parker</td>
<td>No Impact</td>
<td>Potential Effect</td>
<td>No Impact</td>
</tr>
<tr>
<td>Aurora City Center Design Options</td>
<td>5. SE quad: I-225 at 6th</td>
<td>NA</td>
<td>NA</td>
<td>Potential Effect</td>
</tr>
<tr>
<td></td>
<td>6. Highline Canal &amp; vicinity</td>
<td>NA</td>
<td>No Impact</td>
<td>Potential Effect</td>
</tr>
<tr>
<td>Fitzsimons Design Options</td>
<td>1. Sand Creek</td>
<td>Potential Effect</td>
<td>NA</td>
<td>Potential Effect</td>
</tr>
<tr>
<td></td>
<td>2. Tollgate Creek</td>
<td>Potential Effect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peoria: Smith to I-70</td>
<td>No Wetlands Observed</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>I-70: Peoria to I-225</td>
<td>No Wetlands Observed</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>40th: I-225 to Pena</td>
<td>No Wetlands Observed</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>
Extension of the transit-way north along Peoria and east along I-70 and 40th Streets will not encounter any known wetlands, except for the crossing of Sand Creek and Sand Creek Park. Design of the crossing on structure can minimize adverse effects. A man-made or altered lake is located north of 40th Street, east of Chambers Road, although wetlands are not apparent in this area. The construction of a Fitzsimons design option may adversely effect portions of Tollgate Creek. The construction of an Aurora City Center design option may adversely effect wetlands near the Highline Canal but station designs which avoid these areas may be possible.

Vegetation and Wildlife - Threatened and Endangered Species

The I-225 MIS project is located within an area that has been highly disturbed and will have minimal impact on wildlife or native vegetation. Wildlife use of the project corridor is generally limited to species that are tolerant of human noise and activity. Contacts were made with both the Colorado Division of Wildlife and the U.S. Fish and Wildlife Service for general corridor information. Potentially sensitive areas for native vegetation and wildlife include prairie dog colonies, the riparian (stream) areas, and wetland areas.

The Transportation Management alternative is not expected to adversely affect any habitat areas unless the location of the Fitzsimons park-n-Ride intrudes into areas along Tollgate or Sand Creeks. The eight-lane freeway alternative may create additional adverse effects to wetlands habitats at I-225 and Parker Road. Impact avoidance may not be possible. LRT mainline construction in the I-225 median is not expected to adversely affect significant habitat areas.

Extension of the transit-way north along Peoria and east along I-70 and/or 40th Streets will encounter the following wetlands or wildlife habitats: a prairie dog colony at Peoria and 33rd, Sand Creek and Sand Creek Park, and a prairie dog colony south of Andrews Drive. Design of the creek and park crossing on structure can minimize adverse effects. The Gateway Station may also adversely affect the prairie dog colony.

The construction of the Fitzsimons Design Options may adversely effect portions of Tollgate Creek; avoidance is recommended. The construction of the Aurora City Center Design Options may adversely effect wetlands near the Highline Canal, although a station design that avoids these areas is possible. The Aurora City Center Design options and associated station locations may also adversely affect one or more prairie dog communities. Avoidance is recommended to areas that are expected to be maintained as wildlife habitats upon completion of area development.

Section 4(f) Resources

The purpose of Section 4(f) is to preserve parkland, recreation areas, refuges, and historic sites by limiting the conditions under which these lands can be used for transportation projects.

Park and Recreation Areas

Although the corridor contains a number of neighborhood parks, none of them are directly adjacent to I-225, the proposed design options or the extension of the project north of I-70. The only park which the project has the potential to adversely affect is Sand Creek Park. Sand Creek Park is a part of the Sand Creek Regional Greenway. The Greenway extends from Sand Creek's connection to the South Platte River at Confluence Park in Denver, east to Tower Road in Aurora. Sand Creek Park, is in the City of Aurora and extends between Peoria Street on the
west to I-225 on the east. The City has a Master Plan for the park. The City also owns park
land on the west side of Peoria Street. A trail connection between Sand Creek Park and
Tollgate Creek is planned at the proposed Tollgate Creek Trail. Further to the east, Sand Creek
Greenway trails will intersect the Highline Canal Trail. The I-225 corridor crosses the Highline
Canal at a different location. An historic water fowl preserve is located in the Fitzsimons
complex and will not be affected by any of the current design alternatives.

Historic Properties

A record search for historic properties was conducted for the project corridor in April 1998. The
following properties were identified: buildings and features within the Fitzsimons Army Medical
Center Complex, the Highline Canal, and three prehistoric sites that were considered ineligible
for nomination to the National Register of Historic Places.

The No Action alternative, TM, and eight-lane freeway alternatives are not expected to result in
the taking of any Section 4(f) lands. Widening of the Highline Canal structure, if necessary, for
any of the alternatives, can be done without sacrificing the integrity of the canal or trail. The
transitway alternatives can be designed to avoid Section 4(f) takes with the exception of the
crossing of Sand Creek Park.

Environmental Contaminants

Evaluation of environmental contaminants at the site of a proposed transportation project where
right-of-way is purchased or excavation occurs can avoid delays and increased cost during
construction. Environmental contaminants may include pesticides, herbicides, organic
compounds, heavy metals, or petroleum products, any of which may create a human health or
environmental hazard. The corridor contains many potential sources of environmental
contaminants, especially underground storage tanks associated with service stations, and small
quantity generators (as defined by the Resource Conservation Recovery Act) such as dry
cleaners, schools, or repair shops. Roadway spills are also a source for small levels of
contamination in the corridor.

The Environmental Protection Agency's Emergency Response Notification System (ERNS) lists
reported hazardous material spills and events. The list was reviewed on April 1, 1999 for the
project corridor. No significant project related spills or incidents were identified over the past
five years.

Previous studies have indicated the potential for environmental contaminants in several areas
along the I-225 corridor and the design option areas at Aurora City Center and Fitzsimons.
Additional analyses need to be conducted as a part of the forthcoming environmental
assessment process for the entire corridor, especially in the proposed alignment areas outside
of the current I-225 right-of-way. The following known sensitive areas have been identified for
further investigation:

- I-225 and Smith Road
- I-225 and Colfax
- I-225 and Alameda
- I-225 and Parker Road
- Fitzsimons Army Medical Center Complex

I-225 Major Investment Study 114
The current data do not suggest any major environmental contaminants in the project corridor. Minor problems from roadway related spills or leaking underground storage tanks will need to be mitigated on a case by case basis. Hazardous materials contamination may occur within the project corridor at any time. Updated studies are needed for the entire corridor as the project progresses. Areas for which existing data suggests contamination may be an issue have been outlined above. They include: I-225 at Smith Road, Colfax, Alameda, and Parker Road. The design option alignments for Fitzsimons and the Aurora City Center are also subject to additional examination. Any extension of the transitway beyond the I-225 right-of-way, including along Peoria Street and the I-70 to 40th Avenue corridor between Peoria and Pena Boulevard, should also receive additional investigation.

**Water Resources**

The potential effects of this project on surface water bodies and floodplains are considered in this analysis. This project is contained within two drainage basins: the Cherry Creek Drainage Basin and the Sand Creek Drainage Basin. The Cherry Creek Drainage Basin has an area of approximately 400 square miles. Cherry Creek Reservoir, constructed to control flood events, is located south of the project corridor and will not be affected by this project. Most of the project lies within the Sand Creek Drainage Basin, which extends over 100 square miles and includes much of Aurora, as well as parts of Denver and Commerce City.

The project corridor includes portions of Sand Creek, Tollgate Creek and the Highline Canal. The No Action projects and Transportation Management alternative will not affect these waterways. Existing I-225 crossings of the creeks and canal will need to be widened to accommodate the eight-lane freeway alternative. The construction of transitway alternatives in the I-225 median will not affect any of these waterways. Potential impacts to Sand Creek and Tollgate Creek are associated with the Fitzsimons design options. In addition, potential effects to wetlands associated with the Highline Canal are possible with the Aurora City Center design option.

FEMA maps were consulted to identify 100-year and 500-year flood plains. Any modifications made to structures over Tollgate Creek or Sand Creek must be designed to meet 100-year flood conditions. The existing structures meet those requirements. No floodplains have been identified in association with the Highline Canal.

Construction of improvements outside of the I-225 right-of-way in the vicinity of either Tollgate or Sand Creek will require designs to accommodate 100-year flood conditions. Station locations associated with Fitzsimons and the Smith Road area may be located in the 100 year flood plain. No flood plains have been identified in the vicinity of the Aurora City Center design options or proposed stations.

Impacts to water resources are minimal with any of the project alternatives. Crossings of Sand Creek, Tollgate Creek and the Highline Canal can be designed to minimize effects and to accommodate the 100-year flood conditions as needed.

**Noise**

For an MIS, noise impacts are defined at a very general level, usually consisting of identifying all residential properties within 300 feet of any potential alignment. A complete noise analysis is performed during the more-detailed environmental investigation of the corridor. However, substantial noise walls are already in place along much of the existing I-225 corridor, built during
previous projects. Therefore, for the I-225 corridor, the locations which currently have noise walls in place were identified, and the remaining residential properties within 300 feet which do not have noise wall protection were enumerated. The locations with existing noise walls, together with the composition of the noise wall, are:

- Parker Road to Iliff - masonry noise walls are in place on both the east and west sides of the corridor.
- Mississippi to Alameda - A wood noise wall is in place along the west side of I-225. This is less substantial than the other walls but atop an embankment. These walls are scheduled to be replaced with masonry walls during the I-225 six-lane widening project from Parker Road to 6th Avenue, as defined in the No Action alternative. The east side of this section is primarily business uses, and should not require a noise wall.
- Colfax to I-70 - Masonry noise walls are in place along both the east and west sides of the corridor.

Residential Properties within 300 feet are as follows:

**Base Alignment**

- An assisted living complex has been constructed on the west side of I-225 between Iliff and Mississippi.
- Several large multi-unit residential buildings are located on Richtofen Circle along the west side of I-225, south of 6th Avenue and east of Potomac.

**Rail Alignments/Options**

- Aurora City Center Option - Two existing residences in the northeast quadrant of I-225/Alameda will be removed during the Alameda Interchange construction. No other residential properties are located within 300 feet of this alignment. One residence approximately 500 feet east and north of the interchange will remain.
- Base Alignment to 40th/Pena Extension - The back yards of approximately 45 - 50 houses are adjacent to 40th Avenue to the west of Chambers; noise impacts will depend on track location. New multi-family housing complexes are under construction and/or recently completed along 40th Avenue east of Chambers. Existing hotels are not within 300 feet.
- Fitzsimons, Peoria to 40th/Pena Extension - This will have the same impacts as the base alignment extension.
- UCHSC/Fitzsimons Alignment Options - Noise impacts will depend on the location of the final alignment and placement of residential units. This will depend on the UCHSC and Fitzsimons final design, and will be addressed accordingly.

**Air Quality**

Air quality impacts will be determined by the Regional Air Quality Council after the locally preferred alternative is developed. The analysis will include only the base scenario and the locally preferred alternative, as predetermined by consensus of the four MIS corridors.
**Land Use/Compatibility**

Existing land use along the eight-mile I-225 corridor includes office, regional retail, medical facilities and residential. Much of the corridor is already developed, with the exception of the Fitzsimons and Aurora City Center redevelopment areas. As is typical along an urban interstate freeway, most of the interchanges have retail/service uses. The existing land uses are described below:

**Base Alignment**

- **Parker Road to Iliff -** The Parker Road/I-225 interchange (and north to Yale on the east side) has a mixture of hotel, office, restaurant and other business uses. Land use on both sides of the remainder of this corridor is primarily residential, with noise walls in place.
- **Iliff to Mississippi -** There are a few retail uses at the Iliff/I-225 interchange. Land use along the west side of this section includes residential, a hospital and a golf course. The east side of this section is primarily “big box” retail uses and large office buildings.
- **Mississippi to 6th Avenue -** The east side of this section is the western boundary of the Aurora City Center, and includes the recently completed Alameda interchange currently under construction. This area includes the Aurora Mall, numerous smaller commercial uses, and “big-box” retail. The west side is primarily residential from Mississippi to Alameda. Small retail and office uses predominate from Alameda to 6th Ave. I-225 crosses the Highline Canal between Alameda and 6th Ave.
- **6th Avenue to Colfax -** Land use along the west side of this section includes a hospital and multi-family housing units. The east side uses include office buildings and some currently vacant land. I-225 crosses Tollgate Creek midway through this section.
- **Colfax to I-70 -** Tollgate Creek is directly adjacent to the western interchange area at Colfax/I-225. Additional uses on the west side of the corridor include residential, commercial/service and light industrial. Land use on the east side is similar. Noise walls are in place along most of this section, both sides. I-225 crosses Sand Creek approximately one-half mile south of I-70.

**Rail Options**

- **Aurora City Center -** Within the boundaries of the City Center area are retail, office, municipal and residential uses. As discussed earlier, this area has been designated as a redevelopment area by the City of Aurora, anticipated for mixed uses.
- **UCHSC – Fitzsimons -** UCHSC is in the process of redeveloping the southern half of the former military hospital property to accommodate one or more hospitals and associated research uses. Some historic buildings will remain, including the eight-story main hospital building. Fitzsimons Redevelopment Authority will be developing the northern half as complementary market-driven medical uses. Some of the historic buildings will remain, according to the Master Plan. Rail service to this area will be designed to accommodate uses as defined in the fully-developed Master Plan(s).
- **Gateway -** For purposes of this study, Gateway is identified as the area from Smith Road north to 40th Avenue, and from Peoria east to Pena Boulevard. In addition to the I-70 corridor, this area has a wide variety of commercial, service, industrial and retail uses, with residential properties along the northern boundary.
The compatibility of each alternative with future land uses is described below:

**No Action, Transportation Management, Eight-Lane Freeway**

- Because this project is along the existing freeway in an already developed corridor, the existing uses are compatible with these three alternatives. Primary considerations for future land use decisions would be safety and noise.

- The Aurora City Center and UCHSC/Fitzsimons redevelopment projects are adjacent to the existing alignment, and these growth areas must be addressed in the Transportation Management and Eight-Lane Freeway alternatives.

**Rail Alternatives**

- Base Alignment - Because this project is along the existing freeway in an already developed corridor, the existing uses are compatible with the Base Rail Alignment. Primary considerations for future land use decisions would be safety and noise, particularly at station locations.

- The Aurora City Center and UCHSC/Fitzsimons redevelopment projects are adjacent to the existing alignment, and these growth areas must be addressed in the Base Rail Alignment.

- UCHSC Fitzsimons - The redevelopment area will be designed with a reserved transit corridor in place. Compatibility issues include safety near stations, at-grade crossings and pedestrian areas, and horn/signal noise in sensitive hospital zones.

- Aurora City Center - A rail alignment through this proposed mixed-use area will need to be sensitive to safety issues near retail and residential uses, especially at stations and at-grade crossings. Noise should be addressed in residential areas.

- Gateway - The proposed rail alignment will be directly adjacent to back yards of existing residences and parallel to residential, hotel and business uses along 40th Avenue. Safety and noise are again the primary compatibility issues.

**Displacements and Right-of-Way Impacts**

Displacements estimate the number of homes and/or businesses that would need to be acquired to build the alternative.

**No Action, Transportation Management, Freeway Alternatives**

- Because the alignment will remain within the existing corridor, no displacements or ROW impacts are expected for these three alternatives as a result of this project. Potential ROW acquisitions may be necessary for new park-n-ride facilities at Iliff, Alameda and Smith/Peoria.

**Rail Alternatives**

- **Base Alignment** - Because the Base Alignment is along the existing corridor, the only displacements or ROW impacts are at proposed park-n-ride lots, or where extra ROW is necessary to accommodate the median stations. The location and ROW to be acquired are listed. The first three are included in all rail options:
- Iliiff - 1.5 acres of vacant land to be acquired in the southeast corner of I-225 and Iliiff near the loop ramp for a proposed park-n-ride.
- 6th Avenue - 0.5 acres of vacant land near Abilene and 4th Avenue to be acquired for a proposed park-n-ride.
- Colfax - 4.8 acres of commercial land, currently with U-Haul and self-storage properties, to be acquired at the northwest corner of I-225 and Colfax for a new park-n-ride location.
- Smith/I-225 - 1.5 acres of commercial land, including two warehouses, at the southwest corner of I-225 and Smith Road, to be acquired for a station with park-n-ride.

- Montview Fitzsimons Alignment

Possible ROW and Property Impacts of Rail Alignments:

- One house/residential property to be acquired north of Colfax and west of I-225, between Potomac and Toll Gate Creek.
- A parking lot with business access to be acquired at the east end of Montview.
- A 35-foot rail easement to be acquired from all properties on the east side of Peoria between Montview and Smith Road including:
  - potential acquisition and relocation of the fire station on the northeast corner of Baranmoor/Peoria; however, the City of Aurora is currently planning to tear down and rebuild on-site the existing station, one of the oldest in the city. The new station is scheduled to be completed in 2002.
  - acquisition of vacant land between the fire station and Sand Creek;
  - acquisition of a business parking lot and relocation of business access at northeast corner of Baranmoor/Peoria.
- A 51-foot rail easement to be acquired from the following properties on the east side of Peoria between Montview and Smith Road, to accommodate a pocket track and station:
  - vacant land north of business;
  - acquisition of landscaped property with numerous trees between Peoria and parking lots;
  - business relocated, property acquired and parking lot impacts at corner of Peoria/Smith Road.

Possible ROW and Property Impacts for park-n-Rides

- Fitzsimons South - 4.8 acres of commercial land, U-Haul and self storage properties to be acquired at the northwest corner of I-225 and Colfax;
- Fitzsimons Central - no acquisitions or displacements are required;
- Smith/Peoria - 1.5 acres of currently vacant land on the southeast corner to be acquired for a park-n-ride.

Additional relocations will depend on the final design of the UCHSC - Fitzsimons properties, which will be developed with a rail easement in place. Historic buildings to remain in place may affect location of this easement.
• **Aurora City Center Alignment**

*Possible ROW and Property Impacts of Rail Alignments*

- Acquisition of property and parking lot on the southeast corner of Abilene/Exposition for elevated rail alignment
- The rear edge of a parking lot on the northeast corner of Abilene/Exposition; may include acquisition of an entire row of spaces for the rail alignment.
- Impacts to the Aurora Mall parking lot include:
  - rail alignments as proposed along the west side would relocate existing access roads and parking areas (one row of spaces);
  - acquisition of property for a transfer station in an area as yet to be determined;
- Proposed developments (Florence Gardens, etc.) north of Alameda to be developed with a designated rail easement; and
- Aerial structure approach ramps for Alameda may require relocation of business access.

*Possible ROW and Property Impacts for park-n-Rides*

- Aurora Mall - no acquisitions or displacements to be required; buses will use Abilene.
- North City Center - no acquisitions or displacements will be required; buses will use Abilene.

• **Base Alignment to 40th /Pena Extension**

*Possible ROW and Property Impacts of Rail Alignments*

- No ROW impacts for track alignment in median, except at station locations;
- Impacts to 25 feet of existing power line easement, potential impact to backyards along north edge of 40th Avenue in Montbello subdivision, west of Chambers Road (see noise impacts, also);
- 40th Avenue to be moved south approximately 12 feet to accommodate the rail line between the existing power line easement and the road west of Chambers;
- Recently installed sidewalks, landscaping, and business access along 40th Avenue east of Chambers Road to be acquired and relocated. This would include a 35 foot rail envelope plus an 8-foot wide sidewalk relocation.

*Possible ROW and Property Impacts for park-n-Rides*

- Montbello/Gateway - 2 acres of currently vacant land near the northwest corner of 40th Ave/Chambers to be acquired.
- 40th Ave/Pena Blvd. - ROW for a new park-n-ride to be provided by RTD, to the south and east of this intersection.
• Fitzsimons to 40th/Pena Extension

Possible ROW and Property Impacts of Rail Alignments

➢ Aerial ramp(s) over Smith and I-70 would impact businesses along Peoria, require access relocation and acquisition of easement.
➢ Approach ramps require business access relocation along Peoria, and east of Peoria/north of I-70
➢ One building to be acquired between 37th Ave. and 39th Ave.
➢ One building to be acquired on the corner of 39th Ave./Peoria
➢ Alignment would require partial acquisition of property on northwest corner of Peoria/I-70
➢ 42nd Avenue to be relocated 18 feet closer to existing warehouses, to fit the rail envelope between 42nd Ave. and I-70
  - may require relocation of truck access to warehouses
  - would impact retention ponds, parking lots, and access driveways in front of warehouses (south)
➢ Impacts to 25 feet of existing power line easement, potential impact to backyards along north edge of 40th Avenue in Montbello subdivision, west of Chambers Road (see noise impacts, also);
➢ 40th Avenue to be moved south approximately 12 feet to accommodate the rail line between the power line easement and the road west of Chambers;
➢ Recently installed sidewalks, landscaping, and business access to be acquired along the north side of 40th Ave. east of Chambers Road, to create a 35-foot rail envelope plus an 8-foot wide sidewalk relocation.
➢ Fifteen feet of widening to be required underneath the 40th Ave. overpass to accommodate the rail alignment and sidewalks.

Possible ROW and Property Impacts for park-n-Rides

➢ Montbello/Gateway - two acres of currently vacant land near the northwest corner of 40th Ave/Chambers to be acquired for a park-n-ride.
➢ 40th Ave/Pena Blvd. - ROW in the southeast quadrant of this intersection to be provided by RTD for a park-n-ride.

• Colfax Fitzsimons Alignment

Possible ROW and Property Impacts of Rail Alignments

➢ The UCHSC/Fitzsimons property along the north side of Colfax would require a 35-foot rail envelope plus a 5-foot sidewalk. The property to be developed with this rail easement in place.
➢ Alignment would cut through Sand Creek Park, and require a 35-foot rail easement.
➢ A 35-foot rail easement to be acquired from all properties on the east side of Peoria between Montview and Smith Road including:
  - potential acquisition and relocation of the fire station on the northeast corner of Baranmoor/Peoria; however, the City of Aurora is currently planning to tear down and rebuild on-site the existing station, one of the oldest in the city. The new station is scheduled to be completed in 2002.
- acquisition of vacant land between the fire station and Sand Creek;
- acquisition of a business parking lot and relocation of business access at northeast corner of Baranmoor/Peoria.

➤ A 51-foot rail easement to be acquired from the following properties on the east side of Peoria between Montview and Smith Road, to accommodate a pocket track and station:
- acquisition of vacant land north of business;
- acquisition of landscaped property with numerous trees between Peoria and parking lots;
- business relocated, property acquired and parking lot impacted at southeast corner of Peoria/Smith Road.

Possible ROW and Property Impacts for park-n-Rides

➤ Fitzsimons South - 4.8 acres of commercial land, U-Haul and self storage properties to be acquired at the northwest corner of I-225 and Colfax
➤ Fitzsimons Central - no acquisitions or displacements will be required
➤ Smith/Peoria - 1.5 acres of currently vacant land on the southwest corner to be acquired for a park-n-ride.

• Colfax/17th Ave. Fitzsimons Alignment

Possible ROW and Property Impacts of Rail Alignments

➤ The UCHSC/Fitzsimons property along the north side of Colfax would require a 35-foot rail envelope plus a 5-foot sidewalk. The property is to be developed with this rail easement in place.
➤ Alignment would cut through Sand Creek Park, and require a 35-foot rail easement.
➤ A 35-foot rail easement to be acquired from all properties on the east side of Peoria between Montview and Smith Road including:
- potential acquisition and relocation of the fire station on the northeast corner of Baranmoor/Peoria; however, the City of Aurora is currently planning to tear down and rebuild on-site the existing station, one of the oldest in the city. The new station is scheduled to be completed in 2002.
- acquisition of vacant land between the fire station and Sand Creek;
- acquisition of a business parking lot and relocation of business access at northeast corner of Baranmoor/Peoria.
➤ A 51-foot rail easement to be acquired from the following properties on the east side of Peoria south of Smith Road to accommodate a pocket track and station:
- acquisition of vacant land north of business;
- acquisition of landscaped property with numerous trees between Peoria and parking lots;
- business relocated, property acquired and parking lot impacted at southeast corner of Peoria/Smith Road.

Possible ROW and Property Impacts for park-n-Rides

➤ Fitzsimons South - 4.8 acres of commercial land, U-Haul and self storage properties to be acquired at the northwest corner of I-225 and Colfax
➤ Fitzsimons Central - no acquisitions or displacements will be required
Smith/Peoria - 1.5 acres of currently vacant land on the southwest corner to be acquired for a park-n-ride.

- Loop Road Fitzsimons Alignment

_Possible ROW and Property Impacts of Rail Alignment_

- Acquisition and relocation of small building north of existing park-n-ride
- Acquisition of parking lot of property west of existing park-n-ride
- Access relocation and parking lot impacts to day care center
- The USHSC/Fitzsimons property to be developed with the rail easement in place
- Alignment would cut through Sand Creek Park, and require a 35-foot rail easement
- A 35-foot rail easement to be required from all properties on the east side of Peoria between Montview and Smith Road including:
  - potential acquisition and relocation of the fire station on the northeast corner of Baranmoor/Peoria; however, the City of Aurora is currently planning to tear down and rebuild on-site the existing station, one of the oldest in the city. The new station is scheduled to be completed in 2002.
  - acquisition of vacant land between the fire station and Sand Creek;
  - acquisition of a business parking lot and relocation of business access at northeast corner of Baranmoor/Peoria.
- A 51-foot rail easement to be required from the following properties on the east side of Peoria to accommodate a pocket track and station:
  - acquisition of vacant land north of business;
  - acquisition of landscaped property with numerous trees between Peoria and parking lots;
  - business relocated, property acquired and parking lot impacted at southeast corner of Peoria/Smith Road.

_Possible ROW and Property Impacts for park-n-Rides_

- Fitzsimons South - 4.8 acres of commercial land, U-Haul and self storage properties to be acquired at the northwest corner of I-225 and Colfax
- Fitzsimons Central - no acquisitions or displacements will be required
- Smith/Peoria - 1.5 acres of currently vacant land on the southwest corner to be acquired for a park-n-ride.

**Economic Development Potential**

This project has the ability to create economic development through transit oriented development. A more efficient transportation corridor will contribute to the effectiveness of planned developments in the area, including the UCHSC/Fitzsimons redevelopment and the Aurora City Center proposals. Economic development on a regional basis may also be enhanced by a more effective route from the Tech Center/Southeast corridor to DIA.

**Safety/Emergency Access**

The No Action alternative would not create any new safety impacts. However, the Alameda interchange and six-lane widening projects identified in this scenario, recently completed, will improve the access capabilities for emergency vehicles near Alameda and the Aurora City Center, and south of 6th Avenue along the I-225 corridor. These improvements will occur
regardless of the alternative(s) chosen for this project. In addition, the redesign of
UCHSC/Fitzsimons creates an opportunity to improve safety and access throughout the
campus. As mentioned in other sections, the design process will include a rail easement.

The TM alternative creates the opportunity to manage emergency response along the corridor
by controlling signal lights at interchanges and on-ramps. Advanced Transportation
Management Systems would also allow emergency vehicles to monitor volumes and determine
the best response route to an incident.

Widening I-225 to eight lanes with an auxiliary lane between interchanges might initially improve
response time by offering additional lanes for emergency vehicles to access the freeway. The
long-term effect would depend on traffic volumes and development near the freeway.

Safety issues concerning rail alignments within the corridor would depend primarily on issues
resulting from operating a rail line in the center of a freeway: access for emergency vehicles,
conflicts at at-grade crossings, and transit stations located within the median.

Locating the rail line in the median of I-225 creates issues of how to access on-train or freeway
vehicle emergencies with minimal disruption to both freeway and rail traffic. The median track
would require that emergency vehicles respond in the direction of the accident whenever
possible, increasing the potential response time to some locations. In the event of a multi-
vehicle incident on both sides of the freeway, the rail line might be required to stop operations
temporarily, or might be used for additional emergency access.

Emergency access to stations located in the median of I-225 would most likely be from the
freeway, or with vertical access from park-n-rides. Station design could include an emergency
vehicle-only access lane in the median near the station. On-train emergencies would be routed
to station locations whenever possible.

Public/Emergency Services
Because I-225 is a federal freeway, the Colorado State Patrol has primary jurisdiction along this
corridor. The Aurora Police Department responds as well, and is the primary agency for the
other streets within the corridor. Within the project study area is a police station located at
Alameda Drive west of Chambers Road.

Fire stations in or responding to the project area are located at: Iliff/Blackhawk; Alameda Drive
east of Chambers Road; Mississippi/Quentin St.; and Peoria/Baranmoor.

Two full-service hospitals are located adjacent to the I-225 corridor. Health One South is
located at Florida Ave. and Potomac; Health One North is located at 6th and Potomac.

Access Impacts/Road Closures
No road closures will result directly from this project. Because the alignment will remain within
the existing corridor, no access impacts are expected for the No Action, TM, and Freeway
alternatives as a result of this project. New access to be acquired for new park-n-ride facilities
at Iliff, Alameda and Smith/Peoria.
Rail Alternatives

- **Base Alignment**
  - Because the Base Alignment is along the existing corridor, the only access impacts are at proposed park-n-ride lots, or where access is necessary to accommodate the median stations. Three of these locations are common to all rail alternatives: the southeast corner of I-115/I-225, vacant land near Abilene/4th, and a new p-n-Ride at Colfax/I-225. The Base Alignment includes a p-n-R at I-225/Smith Road.

- **Montview Fitzsimons Alignment**
  - A parking lot with business access to be acquired at the east end of Montview.
  - A 35-foot rail easement is to be acquired from all properties on the east side of Peoria, affecting access to all properties along this section of Peoria. However, a fire station, businesses and their respective access routes will be acquired/relocated as necessary.
  - A 51-foot rail easement is to be acquired from the following properties on the east side of Peoria between Montview and Smith Road, to accommodate a pocket track and station. One business will be relocated and access to adjoining properties will be removed.
  - Additional access closures or relocations will depend on the final design of the UCHSC - Fitzsimons properties, which will be developed with a rail easement in place. Historic buildings to remain in place may affect location of this easement.

- **Aurora City Center Alignment**
  - Access relocations will be required in the following areas:
  - The rear edge of a parking lot on the northeast corner of Abilene/Exposition; may include acquisition of an entire row of spaces for the rail alignment and require access relocation.
  - The Aurora Mall parking lot:
    - rail alignments as proposed along the west side would relocate existing access roads and parking areas (one row of spaces);
    - additional access may be required for a proposed transfer station in an area as yet to be determined;
  - Proposed developments (Florence Gardens, etc.) north of Alameda to be developed with a designated rail easement will have access issues including safety at at-grade crossings, etc.
  - Aerial structure approach ramps for Alameda may require relocation of business access.

- **Base Alignment to 40th/Pena Extension**
  - No ROW impacts for track alignment in median, except at station locations;
  - Access to the existing power line easement and back yards of several Montbello residences may result from location of a rail line along 40th Avenue west of Chambers. Issues may include safety at at-grade crossings.
Access to businesses and multi-family residences along 40th east of Chambers may be relocated, including safety issues at at-grade crossings.

**Fitzsimons to 40th/Pena Extension**

- Aerial ramp(s) over Smith and I-70 would require access relocation at businesses along Peoria and acquisition of easement.
- Approach ramps require business access relocation along Peoria, and east of Peoria/north of I-70.
- Alignment would require partial acquisition of property and potential access relocation on northwest corner of Peoria/I-70.
- 42nd Avenue is to be relocated 18 feet closer to existing warehouses, to fit the rail envelope between 42nd Ave. and I-70.
  - may require relocation of truck access to warehouses
  - would impact retention ponds, parking lots, and access driveways in front of warehouses (south)
- Access to the existing power line easement and back yards of several Montbello residences may result from location of a rail line along 40th Avenue west of Chambers. Issues may include safety at at-grade crossings.
- Access to businesses and multi-family residences along 40th east of Chambers may be relocated, including safety issues at at-grade crossings.

**Colfax Fitzsimons Alignment**

- The UCHSC/Fitzsimons property along the north side of Colfax would require a 35-foot rail envelope plus a 5-foot sidewalk. The property to be developed with this rail easement in place.
- A 35-foot rail easement is to be acquired from all properties on the east side of Peoria, affecting access to all properties along this section of Peoria. However, a fire station, businesses and their respective access routes will be acquired/relocated as necessary.
- A 51-foot rail easement is to be acquired from the following properties on the east side of Peoria between Montview and Smith Road, to accommodate a pocket track and station. One business will be relocated and access to adjoining properties will be removed.

**Colfax/17th Ave. Fitzsimons Alignment**

- The UCHSC/Fitzsimons property along the north side of Colfax would require a 35-foot rail envelope plus a 5-foot sidewalk. The property is to be developed with this rail easement in place.
- A 35-foot rail easement is to be acquired from all properties on the east side of Peoria, affecting access to all properties along this section of Peoria. However, a fire station, businesses and their respective access routes will be acquired/relocated as necessary.
- A 51-foot rail easement is to be acquired from the following properties on the east side of Peoria between Montview and Smith Road, to accommodate a pocket track and station. One business will be relocated and access to adjoining properties will be removed.
• Loop Road Fitzsimons Alignment
  ➢ The USHSC/Fitzsimons property to be developed with rail easement in place
  ➢ Acquisition of parking lot of property west of existing park-n-ride
  ➢ Access relocation and parking lot impacts to day care center
  ➢ A 35-foot rail easement is to be acquired from all properties on the east side of
  Peoria, affecting access to all properties along this section of Peoria. A fire station,
  businesses and their access routes will be acquired/relocated as necessary.
  ➢ A 51-foot rail easement is to be acquired from properties on the east side of Peoria
  between Montview and Smith Road, to accommodate a pocket track and station.
  One business will be relocated and access to adjoining properties removed.

Aesthetics/Visual Impacts

I-225 is an existing north-south interstate corridor located in the eastern section of the Denver
metro area, with few features to distinguish it from other interstate corridors. The most
prominent visual features along the corridor are the flyover ramps at the I-225/I-70 interchange.
Noise walls are in place or under construction along much of the corridor, obscuring mountain
views to the west.

No Action, Transportation Management, and Freeway Alternatives

• Because this project is located within an existing interstate freeway corridor, these three
alternatives would have few visual impacts. The eight-lane widening may result in
additional noise walls along the west side of I-225 between Iliff and Mississippi, which
would impact any existing view corridors.

Rail Alternatives

• Base Alignment - Locating the rail alternatives in the median of the freeway would result
in minor impacts from the rail lines themselves. LRT would need overhead catenary
wires which would be visible but less intrusive than overhead power lines along the east
side of I-225. At night, fences and or jersey-barrier type walls would lessen the impact
of headlights both from cars and rail vehicles. Stations located in the median would be
visible as well, and may create a temporary visual distraction when first installed.
Stations located outside the median would require fly-over ramps which would create
visual impacts for adjacent areas.

• Aurora City Center, Fitzsimons Alignments - Visual impacts for these design options
would result primarily from the addition of a new transit mode, and from safety features
designed to be visible in pedestrian and crossing areas. Catenary wires may again
interfere with existing view corridors.

• 40th/Pena Extension Alternatives - The flyover ramps which would be necessary to cross
Smith Road and I-70 would be above the existing freeway flyover ramps at the
interchange of I-225/I-70, and would be visible for some distance, as well as contributing
to a "spaghetti" effect when the ramps are viewed in entirety. Visual impacts would also
occur along 40th from catenary wires, relocation of power lines, and potential noise
walls/safety barriers along back yards.
Public Comment

The public open houses conducted in December 2000 were the primary forum for public comment during the detailed evaluation process. Many attendees at the open houses had been previous participants at other project activities, either attending other open houses or serving as advisory committee members.

The majority of comments received at the December 2000 open houses were supportive of the light rail alternatives, although there was some divergence of opinion regarding the most suitable alignment. The strongest opinions were supportive of the recommended draft LPA with light rail transit departing the median of I-225 to directly serve the Aurora City Center and the UCHSC/Fitzsimons campus. These diversions were considered as critical elements to the future success of any LRT project along I-225. LRT alternatives that did not directly serve both of these two growing activity centers were not supported.

The No Build Alternative was found to be unacceptable to the general public, despite the presence of a commitment to widen I-225 to a six-lane cross-section between I-70 and I-25. Most attendees voiced concern that freeway improvements alone would not significantly improve mobility in the corridor and the region. Alternative transit options were seen as necessary improvements.

The Transportation Management/Enhanced Bus Alternative had mild support. Most attendees were supportive of low-cost efforts to improve the efficient movements of traffic. However, the relatively low cost and perceived marginal effectiveness of these minimal efforts were not considered worthy of a stand-alone alternative. Common suggestions were to combine this with an alternative that will more effectively address the corridor's transportation needs.

The Freeway Widening Alternative was met with mixed reaction. Many attendees were receptive to additional freeway capacity; many commented on the delays they had experienced on I-225 the day or week of the open houses. The significantly lower cost for the freeway alternative was especially attractive to many attendees. However, a philosophical opposition to the freeway alternative was noted from a significant number of attendees. These participants felt that more freeway capacity merely meant that more congestion was inevitable, creating added pressures on the City of Aurora, local streets, and air quality. Many comments suggested that alternatives to freeway travel (e.g. Light Rail Transit) were needed more than added freeway capacity.

Suggestions about combining both the Freeway Widening Alternative with a LRT project were met with reasonably positive reaction. This suggestion seemed to provide all participants with a potential solution. Even when this suggestion was posed to those with a philosophical opposition to freeways, they were understanding of the benefit (and relatively low cost to achieve such a benefit) that may be derived by the freeway alternative, as long as it was combined with an alternative mode of transportation such as light rail.

Residents of the Montbello community, north of I-70, were supportive of the project’s findings, but requested re-examination of the design option that would serve their community when the project advances to the next phase (preliminary engineering and Environmental Impact Statement). This position was also stated at the RTD Board of Directors meeting on March 20, 2001. The Board action on the locally preferred alternative added this language to re-examine the Montbello design option in the future.
SECTION 5: LOCALLY PREFERRED ALTERNATIVE

Decision Process

The locally preferred alternative (LPA) evaluation and selection process was structured into six steps:

1. Presentation of the detailed evaluation results to the TAC, CCG, and PAC.
2. Develop packages of alternatives that incorporate the “best” elements of each alternative.
3. Perform additional evaluation of combined alternatives.
4. Present results of combined alternatives to the TAC, PAC, and CCG and select draft LPA. Elicit public comment through regulatory coordinating agencies, municipal presentations, and public open houses.
5. Incorporate all public comment and develop a final LPA recommendation with the TAC, PAC, and CCG.
6. Present final LPA recommendations to the RTD Board of Directors for their consideration and adoption.

Presentation of the Detailed Evaluation Results (Step 1)

The results of the detailed evaluation were presented to the TAC, PAC, and CCG for comment and reaction. As mentioned previously in this report, detailed evaluation results were presented to the project advisory committees (and the public) on two occasions: first in June/July 1999 and second in September 2000. The latter results incorporated updated demographic data. This report only presents results from the latest evaluation effort which was the basis for all action taken by project stakeholders.

The conclusion of the 1999 detailed evaluation resulted in the elimination of the Commuter Rail-DMU Alternative (Alternative 5) due to operational headway and vehicle incompatibilities with the East or Southeast Corridors. FRA-compliant DMU technology was incompatible with LRT and would require a forced transfer at Parker Road. Additionally, the East Corridor MIS recommended 20-minute operational headways which did not respond to the projected demand within the I-225 Corridor. A key issue in eliminating the Commuter Rail-DMU alternative was the inability to modify the East Corridor’s operating plan or vehicle type. All other alternatives were carried forward in the evaluation process.

The 1999 detailed evaluation efforts also identified the preliminary list of “packages” to be examined. This list was re-considered and confirmed in September 2000. The final alternative “packages” to be reviewed are presented in the following section.

Development of Packages (Step 2)

Of the four remaining alternatives, packages where configured from the best elements of each alternative. The following packages were presented to the TAC, PAC, and CCG for their reaction in September 2000:

- Package 1: No-Build
- Package 2: Transportation Management/Enhanced Bus Network
- Package 3: Eight-lane freeway widening
• Package 4: LRT Option 1 (Median-Fitzsimons)
• Package 5: LRT Option 2 (Median-Fitzsimons-Gateway)
• Package 6: LRT Option 3 (Median-City Center-Fitzsimons)
• Package 7: LRT Option 4 (Median-City Center-Fitzsimons-Gateway)
• Package 8: Freeway widening combined with LRT Option 3

Evaluation of Packages and Public Comment (Steps 3, 4, and 5)

Presented below in Table 5-1 is a summary of quantitative attributes for each of the packages:

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<th>Attributes</th>
<th>(2) TM/Bus</th>
<th>(3) HWY</th>
<th>(4) LRT 1</th>
<th>(5) LRT 2</th>
<th>(6) LRT 3</th>
<th>(7) LRT 4</th>
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From DRCOG model output

Technical Advisory Committee Actions

• Packages 5 and 7 (Gateway extensions) were almost immediately discarded due to their excessive costs over the $300 million budget ($434-469 million respectively) without significant increases in transit ridership. Any future extensions north of the East Corridor could be added later based upon funding availability and improved ridership.

• Package 3 was supported due to its minimal cost ($28 million). This low cost was predicated on the reconstruction of all bridges along I-225 between 6th Avenue and Parker Road during the 8-lane widening by CDOT. It was made clear that the $28 million cost did NOT include that portion of I-225 between Parker Road and Interstate 25. Conversations have occurred between CDOT and RTD to ensure that no bottleneck south of Parker Road would occur when transitioning between the 8-lane widening and the programmed 6-lane configuration. Further, CDOT will be required to examine the I-25/I-225 ramp configurations to ensure acceptable operations continue with an expanded 8-lane cross-section on I-225 between Parker Road and I-25.

• Significant debate was centered on the inclusion of the City Center diversion from the median. Many of the TAC participants were apprehensive with this option given the reduction in daily linked transit trips (-309) and increase in travel time (+5 min.). The City of Aurora was adamant regarding Package 6 (LRT Option 3) as a means to connect the huge
employment base at Fitzsimons with commercial and entertainment activities offered at the Aurora City Center. A majority of the participants stated they would consider Package 6 if the City of Aurora would commit to significantly increasing land use density in and around the City Center properties.

**Citizens Consultation Group Actions**
- Package 3 (Freeway-only) was not widely supported by the CCG. This negative reaction was primarily due to perceived freeway noise impacts to residents north of Colfax (Morris Heights).
- Packages 5 and 7 were also discarded by the CCG due to their minimal benefit to ridership as compared to its high costs.
- Overall, the CCG were least supportive of LRT Options 2 and 4 due to excessive cost. The CCG was most supportive of LRT Option 1 and somewhat less so of LRT Option 3. The reasoning given by the group was to minimize travel time.

**Policy Advisory Committee Actions**
- Very similar reactions were expressed by the PAC as those given by the TAC. Packages 5 and 7 were dropped due to cost while Package 3 was included as a viable alternative.
- Land use densification was again the central theme of discussion regarding the swing out of the median into the Aurora City Center. The PAC agreed to consider LRT Option 3 with the City Center alignment if the City of Aurora would pledge to higher density in the corridor.

**Selection of the Draft LPA**
- Package 8 was presented to the TAC, PAC, and CCG in November 2000. Model results for the combined 8-lane widening/LRT Option 3 scenario showed only a very slight reduction in LRT ridership in the corridor.
- In general, Package 8 has received the greatest level of support for the following reasons:
  - The cost of providing an additional through lane per each direction is minimal ($28 M).
  - It has received the most support from the TAC.
  - Provides an additional 9,200 linked transit trips; 7,800 which use the LRT.
  - It provides a reasonable cost per new rider of $17.
  - Responds to community input.
  - Meets project goals.

**General Public Input**
Two public open houses were conducted in December 2000. Attendees at the open houses had been previous participants at other project activities. The majority of comments were supportive of the LRT alternatives, although opinions were mixed regarding the alignment. Alignment diversions to both City Center and Fitzsimons were considered critical elements. LRT alternatives that did not directly serve both activity centers were not supported. The combined LRT and Freeway alternative was met with reasonably positive reaction.
In addition to the open houses, briefings were conducted with the following:

- DRCOG Technical Advisory Committee
- DRCOG Policy Advisory Committee
- CDOT Intermodal Committee
- CDOT Commission
- Aurora City Council

**Final LPA Recommendations and RTD Board Action (Step 6)**

After conducting open houses in December 2000, the consultant team developed final LPA recommendations to be considered by the TAC, CCG, and PAC in February 2001. After careful review of previous meeting questions and public input, the TAC and CCG presented their input to the PAC. The PAC formulated their recommendations to the RTA Board of Directors.

The RTD Board of Directors were presented with the final LPA recommendations on March 20, 2001. Public comments in support of the LPA recommendations were offered before the board’s discussion. Board members were supportive of the recommendations and adopted the LPA with one addition. The Board requested that the possible extension of LRT from Peoria to 40th and Pena be re-examined when the project is advanced to the Preliminary Engineering/Environmental Impact Statement phase of project development. This 3 mile extension was considered during the detailed evaluation phase of the MIS and was eliminated because of significant costs and minimal ridership.

**Summary Description of the LPA**

The LPA (see Figure 5-1) includes the expansion of an assumed 6-lane freeway to an eight-lane freeway between Interstate 70 and Parker Road; a distance of roughly 8 miles. The LRT portion of this LPA begins at Nine-Mile park-n-Ride at the intersection of Parker Road and I-225. This alignment continues northward in the median of I-225 to Exposition Avenue where it leaves the median and spans the northbound lanes eastward into the Aurora Mall property. It then follows the south circulator road within the Aurora Mall property and abuts the western edge of Sable Blvd. Continuing north, the LRT alignment is grade-separated over Alameda Avenue, returns to grade, and turns westward at Ellsworth Avenue. It maintains at-grade until spanning the northbound lanes again and returning to the median of I-225.

From the median, it continues northward toward Colfax Avenue where it flies over the southbound lanes of I-225 and parallels Tollgate Creek to a grade-separated structure at Colfax Avenue. The LRT alignment continues north, adjacent to the east side of Potomac Avenue (which is to become part of the Sand Creek Parkway). The Colfax Station will be located on the east side of the proposed Sand creek Parkway between Colfax Avenue and 17th Place.

North of the Colfax Station, the LRT alignment then turns west just south of the Sand Creek Parkway/Montview Boulevard intersection with an at-grade crossing of Sand Creek Parkway. The tracks will proceed west on Montview Boulevard along the south side of the roadway to a point west of the Montview Boulevard/Ursula Street intersection. This general location is being planned to serve as the focus of the Fitzsimons Commons, where the Fitzsimons Station will be located.
Figure 5-1: Locally Preferred Alternative

- **LRT Improvements**
  - Station Locations
    - Parker Road
    - Iliff Avenue
    - Aurora Mall/Alameda
    - 4th Avenue/Abilene Street
    - Colfax Avenue
    - Fitzsimons/UCHSC
    - Smith Road/Peoria
  - Service Frequency
    - Peak: 8/hour/direction
    - Base: 4/hour/direction

- **Highway Widening**
  - Parker Road to I-70
  - Widened to 8 Lanes

- **Bus Service**
  - Reconfigured to Serve LRT Stations

- **TSM Improvements**
From this point, the LRT will cross Montview Boulevard and parallel the north side of Montview Boulevard to the western boundary of the site. As the LRT approaches Peoria Street, it will turn northward, along the east side of Peoria Street, crossing Sand Creek and terminating at the Union Pacific Railroad near Smith Road.

The possible extension of LRT from Smith/Peoria Station through the Montbello community to 40th and Pena totals 3 miles and will be re-examined during the Preliminary Engineering/Environmental Impact Statement phase of the project.

Key Elements

Light Rail Transit

The operations plan assumes 7.5-minute peak headways in both directions and 15-minute service in the off-peak. Total travel time is estimated at approximately 27 minutes from Parker Road to its terminal station near Smith Road and Peoria Street. It is proposed that the LRT be interlined (linked) with LRT operations in the Southeast Corridor. The median-City Center-Fitzsimons LRT alignment would require 14 light rail vehicles (2 spares). This assumes a one-car consist operating within the Smith Road/Lincoln Avenue leg and two-car consists operating between Smith Road and Downtown Denver. Twelve consists will operate during peak periods. The operating plan results in 51,710 train (LRV) hours and 1,404,000 car (LRV) miles annually.

Stations

A total of six new stations are anticipated for the LPA including: Iliiff Avenue, Aurora City Center, 4th Avenue, Colfax Avenue, Fitzsimons, and Smith/Peoria. The Nine-Mile park-n-Ride Station will be constructed earlier as part of the Southeast Corridor LRT project. Table 5-2 lists the number of parking spaces by station.

Table 5-2: Number of Parking Spaces by Station

<table>
<thead>
<tr>
<th>Stations</th>
<th># Parking Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nine-Mile</td>
<td>1215</td>
</tr>
<tr>
<td>Iliiff</td>
<td>350</td>
</tr>
<tr>
<td>Aurora City Center</td>
<td>0</td>
</tr>
<tr>
<td>4th Avenue</td>
<td>0</td>
</tr>
<tr>
<td>Colfax</td>
<td>300</td>
</tr>
<tr>
<td>Fitzsimons</td>
<td>0</td>
</tr>
<tr>
<td>Smith/Peoria</td>
<td>300</td>
</tr>
</tbody>
</table>

LRT Maintenance Facility

Additional maintenance facilities were not required for the I-225 MIS locally preferred alternative. Existing and planned system-wide facilities are adequate to meet the incremental needs of the I-225 LRT line.
**Bus System Changes**

The LRT alignment requires modification to the bus operating plan in the I-225 Corridor. Service changes include:

- Four new circulator/feeder bus routes.
- Bus stops at LRT stations for routes that intersect with the rail alignment.
- Four express routes (11F, 23F, 479X and 480X) discontinued and replaced with LRT service.

Table 5-3 displays the route modifications associated with the LPA.

**Transportation Management Improvements**

Bicycle and pedestrian improvements will be incorporated into the design of the new park-n-ride facilities at Smith Road/Peoria Street, Fitzsimons, as well as at the new Iliff Avenue facility. Intelligent transportation system improvements are included as a lump sum item ($2.4 million) as well as ramp-metering ($0.16 million). A park-n-ride tracking system is also included ($0.66 million) in this estimate. A budget of $0.45 million has been allocated to develop three transportation management organizations (TMO) in the corridor (Gateway, Fitzsimons, and City Center).

**Costs**

The recommended corridor investment is estimated to have a total capital cost of $364.3 million, comprising of the following elements:

- $332.8 million for LRT and bus network
- $26.2 million for the 8-lane widening
- $3.3 million for TM improvements

The annual operating and maintenance cost is estimated at $12.9 million, including:

- $12.8 million for LRT and bus network ($6.7 million and $6.1 million respectively)
- $0.16 million for the 8-lane widening
- $0.016 million for TM improvements

**Benefits**

The combined LRT Option 3/Freeway Widening Alternative would provide a number of transportation benefits to the corridor in the Year 2020 including:

- Increasing linked transit trips by 9,200 per day
- Providing LRT service to an additional 7,800 patrons
- Reducing regional person-hours of delay by 1,500 per day
- Produces the lowest number of lane-mile hours with severe, pervasive congestion second to the freeway-only alternative.
- Provides competitive travel times to automobile between Lincoln Avenue and Gateway Park.
- Allows for the greatest opportunity to implement transit-oriented development within the Denver urbanized area.
Table 5-3: Bus Operating Plan for the LPA

<table>
<thead>
<tr>
<th>Route</th>
<th>Name</th>
<th>Peak</th>
<th>Off-Peak</th>
<th>Change in Bus Service</th>
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<tr>
<td></td>
<td><strong>Local Routes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Alameda Crosstown</td>
<td>30</td>
<td>30</td>
<td>Turn back route at Aurora City Center LRT station</td>
</tr>
<tr>
<td>6</td>
<td>East 6th Avenue/North Pecos</td>
<td>30</td>
<td>30</td>
<td>Stop added at 4th Ave LRT station</td>
</tr>
<tr>
<td>10</td>
<td>10th Avenue</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Mississippi Crosstown</td>
<td>30</td>
<td>30</td>
<td>Stop added at Aurora City Center LRT station</td>
</tr>
<tr>
<td>15</td>
<td>East Colfax</td>
<td>15</td>
<td>15</td>
<td>Stop added at Fitzsimons South LRT station</td>
</tr>
<tr>
<td>20</td>
<td>20th Avenue</td>
<td>15</td>
<td>15</td>
<td>Route modified to terminate at Fitz. Central LRT station</td>
</tr>
<tr>
<td>21</td>
<td>East Evans</td>
<td>7.5</td>
<td>15</td>
<td>Stop added at Iliff Ave LRT station on Iliff Ave branch</td>
</tr>
<tr>
<td>44</td>
<td>44th Avenue</td>
<td>15</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>South Montbello</td>
<td>15</td>
<td>30</td>
<td>Stop added at Smith Rd LRT station</td>
</tr>
<tr>
<td>53</td>
<td>Chambers Crosstown</td>
<td>30</td>
<td>30</td>
<td>Stop added at Aurora City Center LRT station</td>
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<tr>
<td>105</td>
<td>Havana/Arapahoe Crosstown</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>121</td>
<td>Peoria Crosstown</td>
<td>30</td>
<td>30</td>
<td>Stop added at Fitz. Central and Smith Rd LRT stations</td>
</tr>
<tr>
<td>169</td>
<td>Buckley Road Crosstown</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>185</td>
<td>Tower Road Crossroads</td>
<td>30</td>
<td>30</td>
<td>Stop added at Aurora City Center LRT station</td>
</tr>
<tr>
<td>256</td>
<td>56th Ave Crosstown</td>
<td>30</td>
<td>60</td>
<td>Stop added at Smith Rd LRT station</td>
</tr>
<tr>
<td>L 1/2</td>
<td>DIA/Commerce City via 56th Ave</td>
<td>60</td>
<td>60</td>
<td>Stop added at Smith Rd LRT station</td>
</tr>
<tr>
<td>L 3/4</td>
<td>Denver-Green Valley Ranch</td>
<td>30</td>
<td>30</td>
<td>Stop added at Smith Rd LRT station</td>
</tr>
<tr>
<td>475</td>
<td>Sable Blvd North</td>
<td>15</td>
<td>30</td>
<td>Route extended south to serve Iliff and Parker Rd LRT stations. Stop added at Aurora City Center LRT station.</td>
</tr>
<tr>
<td>476</td>
<td>South Abilene Street</td>
<td>15</td>
<td>30</td>
<td>Route turned back at Iliff Ave LRT station. Stop added at Aurora City Center LRT station.</td>
</tr>
<tr>
<td>477</td>
<td>Meadowood/Hutchinson Heights</td>
<td>30</td>
<td>30</td>
<td>Route turned back at Iliff Ave LRT station.</td>
</tr>
<tr>
<td>481</td>
<td>Heather Ridge</td>
<td>15</td>
<td>30</td>
<td>Route turned back at Iliff Ave LRT station, freq. improved</td>
</tr>
<tr>
<td>500</td>
<td>Aurora City Center Circulator #1</td>
<td>15</td>
<td>15</td>
<td>Stop added at Aurora City Center LRT station.</td>
</tr>
<tr>
<td>501</td>
<td>Aurora City Center Circulator #2</td>
<td>15</td>
<td>15</td>
<td>Stop added at Aurora City Center LRT station.</td>
</tr>
<tr>
<td></td>
<td><strong>Limited Routes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3LTD</td>
<td>East Alameda</td>
<td>15</td>
<td>N/A</td>
<td>Stop added at Aurora City Center LRT station</td>
</tr>
<tr>
<td>15LTD</td>
<td>East Colfax</td>
<td>15</td>
<td>15</td>
<td>Route turned back at Fitzsimons South LRT station</td>
</tr>
<tr>
<td>83LTD</td>
<td>Cherry Creek/Parker Road</td>
<td>15</td>
<td>30</td>
<td>Stop added at the Parker Rd LRT station</td>
</tr>
<tr>
<td>169 Ltd</td>
<td>Buckley Rd</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Express Routes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11F</td>
<td>East Mississippi</td>
<td>N/A</td>
<td>N/A</td>
<td>Route eliminated, replaced by extension of Route 11</td>
</tr>
<tr>
<td>17F</td>
<td>East Mexico</td>
<td>30</td>
<td>30</td>
<td>Route modified to serve Iliff Ave LRT station and area west</td>
</tr>
<tr>
<td>23F</td>
<td>East Iliff/Seven Hills</td>
<td>N/A</td>
<td>N/A</td>
<td>Route eliminated, replaced by extension of Route 21</td>
</tr>
<tr>
<td>39F</td>
<td>East Mansfield</td>
<td>30</td>
<td>30</td>
<td>Improve midday service from 60 to 30 minute frequency</td>
</tr>
<tr>
<td>47X</td>
<td>Green Valley Ranch/Montbello</td>
<td>30</td>
<td>N/A</td>
<td>4am period and 4pm period trips</td>
</tr>
<tr>
<td>91F</td>
<td>Phoeacant Run</td>
<td>15</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>479X</td>
<td>Aurora Mall</td>
<td>N/A</td>
<td>N/A</td>
<td>Route eliminated, covered by LRT service</td>
</tr>
<tr>
<td>480X</td>
<td>Nine Mile/Aurora Mall/Gateway</td>
<td>N/A</td>
<td>N/A</td>
<td>Route eliminated, covered by LRT service</td>
</tr>
<tr>
<td></td>
<td><strong>skyRide</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AT</td>
<td>DIA/Littleton via DTC</td>
<td>N/A</td>
<td>N/A</td>
<td>Route eliminated within I-225 Corridor</td>
</tr>
</tbody>
</table>
Connects major employment centers including the Aurora City Center, Downtown Denver, Denver International Airport, Denver Tech Center, and Fitzsimons with rail transit.

Community Impacts

The LPA does not result in any direct adverse impacts to the minority or low-income communities within the I-225 corridor. These alternatives may provide indirect benefits to these communities. Although there are several minority and/or low-income areas within the corridor, no neighborhoods will be bisected.

The creation of this project will be a benefit to minority and low-income populations within and adjacent to the project corridor. The availability of reliable, affordable, and rapid public transportation between residential, employment, and health care centers is a positive impact for these communities. Mobility enhancement resulting from the LRT alternative will benefit minority and low-income groups at the neighborhood and regional level.

The LPA identifies a general alignment for the light rail transit project. Additional design detail will be required to examine the specific alignment. At this time, several areas along the alignment could be affected. These areas are identified below:

Potential Businesses Affected:

- Big-box retail establishment at northeast corner of Exposition Avenue and Abilene Street.
- Retail establishment at southwest corner of Alameda Avenue and Sable Blvd.
- Church relocation along Peoria Street
- Fire house relocation along Peoria Street
- Several businesses along Peoria between Baramoor Parkway and Smith Road.

Potential Residences Affected:

- One house north of Colfax Avenue and east of Potomac Street.

Natural Resource Impacts

Vehicle-miles traveled (VMT) are used as a surrogate measure for air quality impacts in the DRCOG region. Individually, the implementation of the LRT would decrease regional VMT by 89,000 for Year 2020. However, the freeway-widening alternative increases regional VMT by 26,000 in 2020 if considered separately. Collectively, the LRT plus freeway LPA increases regional VMT by 38,000 for Year 2020. However, given that regional VMT is approximately 90 million, these figures only account for a change of less than 1 percent.

Freeway widening within the LPA may create additional adverse effects to wetlands habitats at I-225 and Parker Road. Impact avoidance may not be possible. The LRT mainline construction in the I-225 median is not expected to adversely affect significant habitat areas. Extension of the transit-way north along Peoria will encounter the following wetlands or wildlife habitats: a prairie dog colony at Peoria and 33rd, Sand Creek and Sand Creek Park, and a prairie dog colony south of Andrews Drive.
The LPA is not expected to result in the taking of any Section 4(f) lands. Widening of the Highline Canal structure, if necessary, for any of the alternatives, can be done without sacrificing the integrity of the canal or trail. The LRT alternative can be designed to avoid Section 4(f) takes with the exception of the crossing of Sand Creek Park.

Impacts to water resources are minimal with any of the project alternatives. Crossings of Sand Creek, Tollgate Creek and the Highline Canal can be designed to minimize effects and to accommodate the 100-year flood conditions as needed.
APPENDIX A – LIST OF PREPARERS

REGIONAL TRANSPORTATION DISTRICT (RTD)
- Chris Quinn - RTD Project Manager
- Bill van Meter
- Liz Rao
- Smith Myung*
- Andrea Garcia*
- Mark Thomson*

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- Phil Hoffman
- David Dillon
- Paul Nikolai
- Jeff Cumming
- Matt Brown
- Charlie Deweese
- Everett Bacon*
- Paul Brown*
- Stephanie Haddock*
- Ed Williams*
- Steve Brooks*
- Dave Hollis*

S. R. BEARD & ASSOCIATES, LLC - Project Management; Alternatives Analysis
- Kyle Keahey - Consultant Team Project Manager
- Steve Beard
- Matthew Taunton

BALLOFFET & ASSOCIATES, INC. - TSM Improvements
- Ray Moe*
- Darcie White*
- Everett Bacon*

CARTER-BURGESS, INC. - Conceptual Design and Cost Estimates
- Tom Bacus
- Randy Pioroc

JSC ASSOCIATES - Public Involvement
- James Caldwell
PROFILES IN DATA, INC. - Website Management

- Cathy Moyer
- Eric Price

MANUEL PADRON & ASSOCIATES - Bus and Rail Operations Analysis

- Jim Baker
- Tim Crobons

JOANNA MORSICATO & ASSOCIATES - Environmental Impact Evaluation

- Joanna Morsicato

OTAK - Conceptual Station Design

- Roger Millar

PRACO, LTD. - Media Outreach

- Eric Schickler
- Kristi Hayes

* No longer associated with the indicated company at the end of the study (August 2001)
# APPENDIX B – ADVISORY COMMITTEE MEMBERS

Policy Advisory Committee (PAC)

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART BALLAH</td>
<td></td>
<td>COLORADO MOTOR CARRIERS ASSOCIATION</td>
</tr>
<tr>
<td>LINDA CAPRA</td>
<td></td>
<td>SOUTHEAST BUSINESS PARTNERSHIP</td>
</tr>
<tr>
<td>LAURI CLAPP</td>
<td>REPRESENTATIVE</td>
<td>COLORADO HOUSE DIST. 37</td>
</tr>
<tr>
<td>ROGER CRACRAFT</td>
<td></td>
<td>COLORADO TRANSP. COMMISSION</td>
</tr>
<tr>
<td>CARL ERICKSON</td>
<td>BOARD MEMBER, TREASURER</td>
<td>RTD DISTRICT E</td>
</tr>
<tr>
<td>JOYCE FOSTER</td>
<td>COUNCIL MEMBER</td>
<td>DENVER CITY COUNCIL, DIST. 4</td>
</tr>
<tr>
<td>DANIEL GROSSMAN</td>
<td>REPRESENTATIVE</td>
<td>COLORADO HOUSE DIST. 6</td>
</tr>
<tr>
<td>HAPPY HAYNES</td>
<td>COUNCIL MEMBER</td>
<td>DENVER CITY COUNCIL, DIST. 11</td>
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<tr>
<td>GLORIA HOLLIDAY</td>
<td>BOARD MEMBER</td>
<td>RTD DISTRICT B</td>
</tr>
<tr>
<td>BOB LEGARE</td>
<td>COUNCIL MEMBER AT LARGE</td>
<td>CITY OF AURORA</td>
</tr>
<tr>
<td>GEORGE SCHEUERNSTUHL</td>
<td>DIRECTOR, TRANSP. SERVICES</td>
<td>DRCOG</td>
</tr>
<tr>
<td>LYNN MYERS</td>
<td></td>
<td>ARAPAHOE COUNTY</td>
</tr>
<tr>
<td>ROSEMARY PAOLILLO</td>
<td>BOARD MEMBER, SECRETARY</td>
<td>RTD DISTRICT F</td>
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<tr>
<td>DAVE PHIFER</td>
<td></td>
<td>GREENWOOD VILLAGE</td>
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<tr>
<td>O'NEIL P. QUINLAN</td>
<td>BOARD MEMBER</td>
<td>RTD DISTRICT G</td>
</tr>
<tr>
<td>ED TAUER</td>
<td>MAYOR</td>
<td>CITY OF AURORA</td>
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<tr>
<td>WALTER DURING</td>
<td></td>
<td>GREENWOOD VILLAGE</td>
</tr>
<tr>
<td>SUZANNE WILLIAMS</td>
<td>REPRESENTATIVE</td>
<td>COLORADO HOUSE DIST. 41</td>
</tr>
<tr>
<td>Executive Assistant to the Board</td>
<td></td>
<td>RTD BOARD MEMBERS</td>
</tr>
<tr>
<td>JODY FLEMMING</td>
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<td>COPIRG</td>
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<tr>
<td>LAUREN MARTENS</td>
<td></td>
<td>TRANSIT ALLIANCE</td>
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<tr>
<td>KEN LLOYD</td>
<td></td>
<td>REGIONAL AIR QUALITY COUNCIL</td>
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## Technical Advisory Committee (TAC)

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<thead>
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<tr>
<td>SUSAN ALTES</td>
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<td>RTD</td>
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<td>ROBIN SMITH</td>
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<td>FHWA</td>
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<td>JERRY BAUMGARDNER</td>
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<td>UCHSC</td>
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<tr>
<td>MAC CALLISON</td>
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<td>AURORA TRANSPORTATION PLANNING</td>
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<tr>
<td>LINDA CAPRA</td>
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<td>SOUTHEAST BUSINESS PARTNERSHIP</td>
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<tr>
<td>JAMES DILEO</td>
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<td>CO DEPT OF PUBLIC HEALTH - AIR POLLUTION CONTROL</td>
</tr>
<tr>
<td>STEVEN FENDER</td>
<td></td>
<td>FEDERAL RAILROAD ADMINISTRATION</td>
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<tr>
<td>GREG FULTON</td>
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<td>COLORADO MOTOR CARRIERS ASSOCIATION</td>
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<tr>
<td>c/o JOHN DOW</td>
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<td>FEDERAL TRANSIT ADMINISTRATION</td>
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<tr>
<td>KEN LLOYD</td>
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<td>REGIONAL AIR QUALITY COUNCIL</td>
</tr>
<tr>
<td>JANELL FLAIG</td>
<td></td>
<td>CITY &amp; COUNTY OF DENVER, PLANNING</td>
</tr>
<tr>
<td>JERRY MASHCHKHA</td>
<td></td>
<td>ARAPAHOE COUNTY</td>
</tr>
<tr>
<td>AARON WILLIS</td>
<td></td>
<td>ADAMS COUNTY</td>
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<tr>
<td>STEVE RUDY</td>
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<tr>
<td>GLORIA HOLLIDAY</td>
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Citizen Consultation Group (CCG)

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<thead>
<tr>
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<th>Organization</th>
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<tr>
<td>CARRIE AUSTIN</td>
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<td>JERRY BABCOCK</td>
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<tr>
<td>ROBERT Bernal</td>
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<td>c/o Frank Bernal</td>
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<tr>
<td>DAVE BISHOP</td>
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<td>CHRISTOPHER COLE</td>
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<td>RET. MAJ. DON COOK</td>
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<td>PHIL DIETRICH</td>
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<td>DAN WILLIAMS</td>
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<td>BLAKE PETERSON</td>
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Citizen Consultation Group (CCG) continued

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<td>VIRGIL THORNBURG</td>
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<td>NORMA AUTHIER</td>
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<td>PETER KRAUSE</td>
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<tr>
<td>BEN LEWIS</td>
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APPENDIX C – RTD BOARD APPROVAL OF LPA
Recommended Action:

It is recommended that the RTD Board of Directors adopt the Locally Preferred Alternatives (LPAs) for the I-225, US 36 and North Metro Major Investment Studies and forward them to the Denver Regional Council of Governments (DRCOG) for inclusion in the Metro Vision Plan. Additionally, it is recommended that the Board of Directors request that these LPAs and the I-70 Denver to Golden LPA (previously approved by the Board on February 15, 2000) be considered by DRCOG for inclusion into the 2025 fiscally constrained Regional Transportation Plan.

Background:

In 1998 RTD began four Major Investment Studies (MISs) for the following corridors and study areas:

- I-70 Denver to Golden Corridor
- I-225 Corridor
- US 36 Corridor
- North Metro Study Area

The purpose of these MISs was to identify a mix of conceptual alternatives, screen those that would not satisfy certain evaluation criteria, perform a detailed analysis on a short-list of alternatives, and arrive at an LPA. The process balanced various interests and impacts including mobility, cost, public and agency support, environmental impacts, and community impacts. The process was consistent with ISTEA and TEA-21, as well as the Federal Highway and Federal Transit Administration’s guidance regarding major transportation investments.

Each study received valuable guidance and input from policy, technical and citizen committees throughout the study process. Additionally, each of the studies provided many different avenues to receive input and direction from the general public through a proactive public involvement process.

In September 1999, all but the I-70 Denver to Golden studies were placed on hold pending the results of the revised DRCOG demographic projections. The I-70 Denver to Golden Study was continued because it was believed that the revised demographic projections would have little impact on that study’s conclusions. In February 2000, the RTD Board adopted the recommended LPA for I-70 Denver to Golden Corridor. The LPAs for the remaining studies are now completed, reflecting the updated demographic projections, and are prepared for Board adoption.
Discussion

Following is a summary of the LPAs for each MIS. For further details see the attached Executive Study for each MIS.

I-225

The following LPA recommendation is made for the I-225 MIS Corridor:

- Light rail in the median of I-225 beginning at the terminus of the Southeast Corridor at Parker Road, running in the median of I-225 with deviations from the median to serve the Aurora City Center and the redeveloping Fitzsimons/University of Colorado Health Sciences Center. From Fitzsimons, the alignment would run along Peoria Street, terminating at Smith Road and the East Corridor commuter rail line with a total of six stations;
- Highway widening from six to eight lanes on I-225 from Parker Road to I-70; and
- Transportation Management elements.

Total costs for the I-225 LPA break down as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Light Rail Transit</td>
<td>$332.8</td>
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<tr>
<td>Highway Widening</td>
<td>$28.2</td>
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<tr>
<td>Transportation Management</td>
<td>$3.3</td>
</tr>
<tr>
<td><strong>Total LPA</strong></td>
<td><strong>$364.3</strong></td>
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*In 1997 millions of dollars.

This recommendation has been forwarded by the I-225 Policy Advisory Committee to the RTD Board of Directors for adoption, with support from the study’s Technical Advisory Committee and Citizens Consultation Group.

US 36

The following LPA recommendation is made for the US 36 MIS Corridor:

- High Occupancy Vehicle/Bus Rapid Transit (BRT) lanes on US 36 from Boulder to Westminster with five BRT stations;
- Widen US 36 to six lanes from 96th Street (Interlocken) to I-25 and add a climbing lane eastbound on Davidson Mesa;
- 28 Miles of commuter rail service on existing track from 30th and Pearl in Boulder to Denver Union Terminal plus one new track shared with BNSF RR with five stations;
- ITS components; and
- Ten foot wide bike path from Boulder to Westminster.
Total costs for the US 36 LPA break down as follows:

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Commuter Rail</td>
<td>$172</td>
</tr>
<tr>
<td>Highway Widening and HOV Lanes</td>
<td>$364</td>
</tr>
<tr>
<td>BRT Stations</td>
<td>$50</td>
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<td>Bus Vehicles</td>
<td>$5</td>
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<td>Bikeway</td>
<td>$15</td>
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<td>Parking</td>
<td>$16</td>
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<td>ITS</td>
<td>$9</td>
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<tr>
<td><strong>Total LPA</strong></td>
<td>$631</td>
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</table>

*In 1999 millions of dollars.

This recommendation has been forwarded by the US 36 Policy Advisory Committee to the RTD Board of Directors for adoption, with support from the study’s Technical Advisory Committee and supportive input through the public process.

**North Metro**

The following LPA recommendation is made for the North Metro Study Area:

- Light Rail/Diesel Multiple Units (DMU) to run along the Union Pacific Railroad Boulder Branch from Denver Union Terminal to 124th Avenue with 8 stations;

- Bus/HOV on I-25:
  - From US-36 to 92nd Avenue; 1 lane (reversible) barrier separated;
  - From 92nd Avenue to 120th Avenue; 1 lane in each direction, buffer separated; and
  - From 120th Avenue to SH-7; 1 peak-hour HOV lane in each direction, buffer separated.

- Bus/HOV on I-76/SH-224:
  - On SH-224: from I-25 to I-76; bi-directional, buffer separated; and
  - On I-76: from SH-224 to US-85; 1 lane (reversible) barrier separated.

- General purpose widening on I-25 and I-76
  - On I-25: From US 36 to 120th Avenue, add 1 lane in each direction; and
  - On I-76 from I-270 to US-85 (Vasquez/Colorado Boulevard), add 1 lane in each direction.

- Improvements to roadways:
  - US-85;
  - SH-2;
  - SH-7, 96th Avenue;
  - 104th Avenue.

- Right-of-way acquisition/Corridor preservation for future rail service to Brighton; and
- Transportation Management Elements/ITS.
Total costs for the North Metro LPA break down as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost</th>
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<tr>
<td>Bus/ HOV</td>
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<tr>
<td>LRT/DMU and Corridor Preservation</td>
<td>$345</td>
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<td>Highway Widening</td>
<td>$210</td>
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<td>Transportation Management</td>
<td>$15</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$745</strong></td>
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*In 1997 millions of dollars.

This recommendation has been forwarded by the North Metro Policy and Technical Advisory Committees to the RTD Board of Directors for adoption, with support from the study’s Citizens Advisory Committee.

**Financial Impact:**

There are no financial impacts associated with the adoption of these LPAs. These are long range plans with no committed funding source. Adoption of these LPAs will place them in consideration for inclusion in the DRCOG Vision Plan and financially constrained Regional Transportation Plan (RTP). If included in the RTP, RTD would be eligible to proceed with the Environmental Impact Statements and Preliminary Engineering for these corridors and study areas.

**Alternatives:**

1. Adopt the Locally Preferred Alternatives (LPAs) for the I-225, US 36 and North Metro Major Investment Studies and forward them to the Denver Regional Council of Governments (DRCOG) for inclusion in the Metro Vision Plan. Additionally, request that these LPAs and the I-70 Denver to Golden LPA (previously approved by the Board on February 15, 2000) be considered by DRCOG for inclusion into the 2025 fiscally constrained Regional Transportation Plan.

2. Do not adopt the recommended action. This action is not recommended since it will further delay the long-anticipated results of these studies to which significant RTD staff, public and agency time has been dedicated. Furthermore, any future action in these corridors and study areas will be impeded until an LPA recommendation can be made for inclusion in the DRCOG plan.

Prepared by: Bill Van Meter, Senior Manager, Systems Planning
Regional Transportation District
1600 Blake Street
Denver, CO 80202-1399
303/299-2303

Board of Directors

Chairman – Mary Blue, District I
First Vice Chairman – Rick Garcia, District C
Second Vice Chairman – Dave Rose, District K
Secretary – Rosemary Paolillo, District F
Treasurer – Carl Erickson, District E
Bob Briggs, District J
Bill Elfenbein, District A
Gloria Holliday, District B
Richard McLean, District O
Steph C. Millard, District N
Wally Pulliam, District L
O’Neill P. Quinlan, District G
Dave Ruchman, District M
Robert L. Tonsing, District H
James Zavist, District D

ROSTER OF PARTICIPANTS
BOARD OF DIRECTORS MEETING
Tuesday, March 20, 2001

BOARD OF DIRECTORS PRESENT

Mary Blue, Chairman District I
Bob Briggs District J
Rick Garcia, First Vice Chairman District C
Gloria Holliday District B
Bill Elfenbein District A
Dick McLean District O
Stephen C. (Steph) Millard District N
Wallace (Wally) Pulliam District L
David Rose, Second Vice Chairman District K
Dave Ruchman District M
Jim Zavist District D
O’Neill P. Quinlan District G
Carl E. Erickson, Treasurer District E
Bob Tonsing District H

BOARD OF DIRECTORS NOT PRESENT

Rosemary Paolillo, Secretary District F

RTD STAFF PRESENT

John Shonsey Phil Washington Brenda Tierney
Amy Ford Jerry Nery Keith Hopkins
Jack Kennedy Susan Cohen Stan Szabelak
Henry Stoplescamp Manny Herrera David Krutsinger
Errol Stevens Judy Lehn Valerie Flores
Liz Rao Dean Shaklee Scott Weeks
Stephanie Garcia Bill Van Meter Marilee Utter
Chris Quinn Dave Shelley Bruce Abel
Martha Hecox Frank Strickland Cal Marsella
Sherry Ellebracht Amy Cook Larry Buter
Brian Iacono Rick Clarke Lisa Trujillo
Roger Harris Scott Reed
Board of Directors Regular Board Meeting
Tuesday, March 20, 2001

OTHERS PRESENT

Mayor Berens, City of Broomfield
Mayor Toor, City of Boulder
Councilman Mayer, City of Louisville
Trustee Hamilton, City of Superior
Charlie Skidmore
Debra Baskett
Sanjay Karanjkar
Hari Morisetti
Gene Putman
Burt Melcher
Lee Kaley
Cozetta Hammock-West
Mark Alsphaugh
Chandan Sawant
Bert Melder
Amy Aueller
Rick McNeal
George Schemurnstuhl
Heather Baler
Paul Szilagyi
Joseph Perone
Jody Flemming
Terry Ruiter
Bonnie Clarke
Phil Hoffman
Zafar Alikhan
John Valerio
Deepanlax Gupta
Jarrzit Kumar
Jennifer Heisler
Paul Brown
Lauren Martens
Glenn Scott, State Representative
Niraj Kumar Agarwal
Koshy P. Vaidyan
Kyle Kealey
Dave Downing
Venkat
Makhukar
Shanker
Minutes of the Regular Board of Directors Meeting  
Tuesday, March 20, 2001  

Regional Transportation District  

Memorandum

To: Board of Directors/RTD Staff
From: Brenda Tierney, Executive Assistant to the Board
Date: April 6, 2001
Subject: Minutes of the Regular Board of Directors meeting held on Tuesday, March 20, 2001, 7:00 p.m.

I. CALL TO ORDER

II. ROLL CALL - DETERMINATION OF QUORUM
14 present, 1 absent (Rosemary Paolillo)  
Chairman Blue determined a quorum was present.

III. EXECUTIVE SESSION

MOTION: Director Pulliam moved that the board adjourn to Executive Session to discuss Negotiations of Denver Union Terminal and a personnel matter.

Director Briggs seconded the motion.

Chairman Blue adjourned to Executive Session hearing no objections.

IV. PUBLIC PARTICIPATION

Mayor Berens, Broomfield, spoke to the board stating support for the US 36 Major Investment Study.

Mayor Toor, Boulder, spoke to the board stating support for the US 36 Major Investment Study.

Heather Balser, spoke on behalf of the City of Louisville stating support for the US 36 Major Investment Study.

Representative Glenn Scott, spoke to the board regarding the US 36 Major Investment Study and the problems associated with it.

Debra Baskett, US 36 TMO, spoke to the board stating support for the US 36 Major Investment Study.
Sanjay Karanjkar, Quest, spoke to the board regarding bus service to the Quest facility.

Hari Morisetti, Quest, spoke to the board regarding bus service to the Quest facility.

Gene Putman, Thornton, spoke to the board stating support for the US 36 Major Investment Study.

Jim Sutton, spoke to the board stating support for the I-225 Major Investment Study.

Charlie Skidmore, United Steel Workers of America, discussed the issue of RTD implementing a policy to deal with responsible contractors.

Bert Melcher, Sierra Club, discussed the Madden bill and expressed disappointment in its recent failure and thanked the board for their support.

Lee Kaley, discussed the I-225 MIS and asked for its extension into Montbello at 56th Avenue.

Cozetta Hammock, discussed the I-225 MIS and asked for its extension into Montbello at 56th Avenue.

Mac Callison, City of Aurora, stated support for the I-225 Major Investment Study.

Shelly Cook, City of Arvada, stated support for the US 36 Major Investment Study.

V. APPROVAL OF FEBRUARY 20, 2001 REGULAR BOARD MEETING MINUTES

MOTION: Director Ruchman moved for the adoption of the February 20, 2001 regular Board meeting minutes.

Director Pulliam seconded the motion.

VOICE VOTE ON THE MOTION: A voice vote was taken, and Chairman Blue declared the minutes UNANIMOUSLY ADOPTED.

VI. GENERAL MANAGER’S REPORT

1. Salt Lake City Olympic Committee
   The Salt Lake Transit Agency has asked RTD to loan them buses for the 2002 Olympic games the first two weeks in February. They want 20 – 40’ buses and they will take care of all transport and costs. The FTA is encouraging RTD to participate and the General Manager plans to proceed.

2. Update on OIG Visit
   The Southeast Corridor Project was visited by the Office of the Inspector General and the project was given high marks.
3. **APTA Bus Safety Audit**
   Last week RTD participated in a voluntary bus safety audit which looked at every element of the system. RTD received extremely high marks in every area. A written report will be provided and then a press release will be done.

4. **RFP's for Southeast Corridor**
   The Requests for Proposals for the Southeast Corridor Project are due Friday, March 23. The evaluation will begin (RTD and CDOT) and a recommendation will then follow.

5. **Update on Central Platte Valley**
   A tour of Denver Union Terminal was taken today and board members were able to see the tunnels and how the track-to-track transfers will work. Construction on the spur is a bit ahead of schedule.

6. **FTA Procurement System Review**
   At the request of a former board member a FTA procurement system review will take place starting this week.

VII. **UNANIMOUS CONSENT AGENDA**

Director Briggs removed the US 36 Major Investment Study portion of Item C (**Approval of Major Investment Study recommendations (I-225, North Metro and US 36)**). Director Holliday removed the I-225 Major Investment Study portion of Item C (**Approval of Major Investment Study recommendations (I-225, North Metro and US 36)**).

**MOTION:**
Director Erickson moved that the Board of Directors adopt the unanimous consent agenda, including Items A, B, the remainder of item C, D, E and F.

Director Garcia seconded the motion.

**VOTE ON THE MOTION:**
A roll call vote was taken with 14 votes in favor (Blue, Briggs, Elfenbein, Erickson, Garcia, Holliday, McLean, Millard, Pulliam, Quinlan, Rose, Ruchman, Tonsing and Zavist) and 0 votes against. Chairman Blue declared the following items **PASSED:**

Item A, Acceptance of vacation of Right-of-Way and dedication of Right-of-Way to the City and County of Denver—1205 – 1217 West 7th Avenue which recommends that the Board of Directors authorize the General Manager or his designee to execute all documents necessary to accept the vacation of an existing alleyway from the City and County of Denver adjacent to property acquired at
1205 W 7th Avenue for the expansion of the Light Rail Maintenance Facility and to dedicate vacant land on the north side of the property acquired at 1205 W. 7th Avenue for the replacement of the alleyway. RTD will acquire 4,398 square feet of land by accepting the vacation and will dedicate 2,531 square feet of vacant land for the replacement alley.

**Item B, 4B Request** which recommends that the Board of Directors authorize funding of the following 4B Reserve Fund Projects for Director Erickson (District E); $20,000 for a transit-related safety program for senior citizens through TRIAD, for Director Garcia (District C); $5,000 to assist other private contributors toward funding a redesign to improve and aesthetically enhance the pedestrian tunnel at Denver Union Terminal that will serve the Central Platte Valley rail spur station and for Director Pulliam (District L); $20,000 for a study for the development of an intermodal station at the Olde Town Arvada park-n-Ride.

**Item C, Approval of the North Metro Major Investment Study recommendations** which recommends that the RTD Board of Directors adopt the Locally Preferred Alternative (LPA) for the North Metro Major Investment Study and forward it to the Denver Regional Council of Governments for inclusion in the Metro Vision Plan. Additionally, it is recommended that the Board of Directors request that this LPA and the I-70 Denver to Golden LPA (previously approved by the Board on February 15, 2000) be considered by DRCOG for inclusion into the 2025 fiscally constrained Regional Transportation Plan.

**Item D, Award of the 16th Street Mall Granite Repairs/Replacement Contract** which recommends that the Board of Directors authorize the General Manager or his designee to execute all documents necessary to award a three year contract for the 16th Street Mall Granite Repairs/Replacement to Montoya Masonry in the amount of $968,292.50. Funding for the first year of the annual contract is $293,804.00 and is within the FY 2001 approved budget. Funding for the subsequent 2nd and 3rd
year exist within the 2002, and the 2003 TDP and shall be executed through an amendment by the General Manager as funding is approved by the Board of Directors through the annual budget process.

Item E, Award of Functional and Cognitive Assessment Contract which recommends that the Board of Directors authorize the General Manager to enter into a contract with Easter Seals Inc. for the provision of the ADA Paratransit eligibility assessments. Performance under the contract is for a three-year plus two one-year options beginning April 2, 2001. The estimated five-year contract value is as follows: Year 1-$235,508; Year 2 - $240,950; Year 3 - $246,467 and Option years 4 - $253,206 and 5- $259,200 for a total of $1,235,331.

Item F, Snow Removal Funding which recommends that the Board of Directors authorize the General Manager to transfer $100,000 of available capital project funds to the facilities contract maintenance line item to allow for continued snow removal service at the District’s park-n-Rides and other facilities.

VOTE ON THE MOTION:
A roll call vote was taken with 14 votes in favor (Blue, Briggs, Efflenbein, Erickson, Garcia, Holliday, McLean, Miliard, Pulliam, Quinlan, Rose, Ruchman, Tonsing and Zavist) and 0 votes against. Chairman Blue declared the motion PASSED.

C. Approval of Major Investment Study Recommendation for I-225

MOTION:
Director Holliday moved for the Approval of the I-225 Major Investment Study recommendations which recommends that the RTD Board of Directors adopt the Locally Preferred Alternative (LPA) for the I-225 Major Investment Study and forward it to the Denver Regional Council of Governments for inclusion in the Metro Vision Plan. Also that the LPA recommendation for the I-225 Major Investment Study shall include specific direction that the next phase of project
development reanalyze the potential for the extension of light rail transit from Smith and Peoria to the Montbello Community. This addition is as a result of possible changes in this area, including future growth, as exemplified in the 2000 Census results. Additionally, it is recommended that the Board of Directors request that this LPA be considered by DRCOG for inclusion into the 2025 fiscally constrained Regional Transportation Plan.

Director Garcia seconded the motion.

**VOTE ON THE AMENDMENT:** A roll call vote was taken with 10 votes in favor (Blue, Briggs, Erickson, Garcia, Holliday, Millard, Pulliam, Quinlan, Rose and Tonsing) and 4 votes against (Elfenbein, McLean, Ruchman and Zavist). Chairman Blue declared the amendment PASSED.

**VOTE ON THE MOTION:** A roll call vote was taken with 14 votes in favor (Blue, Briggs, Elfenbein, Erickson, Garcia, Holliday, McLean, Millard, Pulliam, Quinlan, Rose, Ruchman, Tonsing and Zavist) and 0 votes against. Chairman Blue declared the motion PASSED.

C. **Approval of Major Investment Study Recommendation for US 36**

**MOTION:** Director McLean moved for the Approval of the US 36 Major Investment Study recommendations which recommends that the RTD Board of Directors adopt the Locally Preferred Alternative (LPA) for the US 36 Major Investment Study and forward it to the Denver Regional Council of Governments for inclusion in the Metro Vision Plan. Additionally, it is recommended that the Board of Directors request that this LPA be considered by DRCOG for inclusion into the 2025 fiscally constrained Regional Transportation Plan.

Director Ruchman seconded the motion.
AMENDMENT TO THE MOTION: Director Briggs moved that the motion be amended to state, “The LPA recommendation for the US 36 Major Investment Study shall include specific direction that alternative rail technologies be reanalyzed in subsequent phases of project development, including, but not limited to the preparation of an Environmental Impact Statement. Further, that these analyses regarding alternative rail technologies shall include consideration of compatibility with the rail technologies in the East Corridor.”

There was concern by many directors over the compatibility requirement with the East Corridor. Director Briggs noted that it only states that the analysis shall “include consideration”.

VOTE ON AMENDMENT: A roll call vote was taken with 10 votes in favor (Blue, Briggs, Erickson, Garcia, Holliday, Millard, Pulliam, Quinlan, Rose and Tonsing) and 4 votes against (Elfenbein, McLean, Ruchman and Zavist). Director Pulliam was out of the room. Chairman Blue declared the amendment PASSED.

VOTE ON THE MOTION: A roll call vote was taken with 14 votes in favor (Blue, Briggs, Elfenbein, Erickson, Garcia, Holliday, McLean, Millard, Pulliam, Quinlan, Rose, Ruchman, Tonsing and Zavist) and 0 votes against. Chairman Blue declared the motion PASSED.

VIII. RECOMMENDED ACTIONS

G. Award of Contract for Fare Collection System Consulting Services

MOTION: Director Garcia moved that the Board of Directors authorize the General Manager to award a contract to the most qualified proposer, Booz-Allen and Hamilton, in the amount of $275,723 for Fare Collection System Consulting Services.

Director Tonsing seconded the motion.
Minutes of the Regular Board of Directors Meeting  
Tuesday, March 20, 2001

VOTE ON THE MOTION: A roll call vote was taken with 12 votes in favor (Blue, Briggs, Elfenbein, Erickson, Garcia, McLean, Millard, Quinlan, Rose, Ruchman, Tonsing and Zavist) and 0 votes against. Chairman Blue declared the motion PASSED. Directors Holliday and Pulliam were out of the room.

H. Call-n-Ride Services

MOTION: Director Rose moved that the Board of Directors authorize the General Manager to execute all documents necessary to enter into a contract with Special Transit of Boulder, Colorado to provide call-n-Ride services for Broomfield and Interlocken/Westmoor. The first year cost to provide these services is $311,738. There are four, one-year option periods available pending satisfactory performance of these call-n-Ride services. The second year option totals $327,344. The third year option totals $343,714. The fourth year option totals $360,850 and the fifth year option totals $378,904. The total cost over the five-year period would be $1,722,550.

Director Ruchman seconded the motion.

VOTE ON THE MOTION: A roll call vote was taken with 12 votes in favor (Blue, Briggs, Elfenbein, Erickson, Garcia, McLean, Millard, Quinlan, Rose, Ruchman, Tonsing and Zavist) and 0 votes against. Chairman Blue declared the motion PASSED. Directors Holliday and Pulliam were out of the room.

I. DBE Goal Reaffirmation

There were concerns about the internal changes in staff and some directors thought that they would gain more understanding if the DBE Reaffirmation item was moved to the April board meeting.

Other directors stated that if RTD were to go forward with reaffirmation there is no reason to wait the goal is already established and the reaffirmation should take place now.

MOTION: Director Erickson moved to table the DBE Reaffirmation item to the April Board Meeting.
Director Quinlan seconded the motion.

VOTE ON THE MOTION: A roll call vote was taken with 4 votes in favor (Blue, Elfenbein, Erickson, and Quinlan) and 9 votes against (Briggs, Garcia, Holliday, McLean, Millard, Rose, Ruchman, Tonsing and Zavist). Chairman Blue declared the motion FAILED. Director Pulliam left the meeting.

MOTION: Director Garcia moved that the Board of Directors direct the General Manager to immediately develop an intervention strategy and plan to correct and improve DBE contracting and procurement performance in 2001 in order to make an all out effort to either meet or exceed the agency’s 15% 2001 DBE goal already approved by the Federal Transit Administration. The improvement plan and effort will be presented to the Board’s DBE Committee no later than the end of April 2001 for evaluation and approval.

Director Rose seconded the motion.

VOTE ON THE MOTION: A roll call vote was taken with 11 votes in favor (Blue, Briggs, Elfenbein, Garcia, Holliday, McLean, Millard, Rose, Ruchman, Tonsing and Zavist) and 2 votes against (Erickson and Quinlan). Chairman Blue declared the motion PASSED.

J. Participation in Transit Alliance Survey

MOTION: Director Erickson moved that the Board of Directors authorize participation by the Regional Transportation District (RTD) in the design and funding of a transportation survey that will be conducted through the Transit Alliance.

Director Holliday seconded the motion.

VOTE ON THE MOTION: A roll call vote was taken with 13 votes in favor (Blue, Briggs, Elfenbein, Erickson, Garcia, Holliday, McLean, Millard, Quinlan, Rose, Ruchman, Tonsing and Zavist) 0 votes against. Chairman Blue declared the motion PASSED.
Minutes of the Regular Board of Directors Meeting
Tuesday, March 20, 2001

THE MOTION: A roll call vote was taken with 13 votes in favor (Blue, Briggs, Elfenbein, Erickson, Garcia, Holliday, McLean, Millard, Quinlan, Rose, Ruchman, Tonsing and Zavist) 0 votes against. Chairman Blue declared the motion PASSED.

IX. UNFINISHED BUSINESS

X. NEW BUSINESS

XI. DETERMINATION OF DATE, TIME AND LOCATION FOR NEXT BOARD MEETING
The next regular meeting of the Board of Directors of the Regional Transportation District for the month of April, 2001 is scheduled for Tuesday, April 17, with the Study Session commencing at 5:00 PM and the Board Meeting at 7:00 PM in the RTD Board Meeting Room, 1600 Blake Street, Denver, Colorado.

XII. ADJOURNMENT
Director Garcia moved for adjournment. Director Rose seconded the motion.

Hearing no objections, Chairman Blue declared the meeting ADJOURNED at 9:35 p.m.

Prepared and Transcribed by:

Brenda Tierney
Executive Assistant to the Board
APPENDIX D – LETTERS OF SUPPORT FOR LPA
February 5, 2001

Ms. Mary K. Blue
Chairman, RTD Board of Directors
Regional Transportation District
1600 Blake Street
Denver, Colorado 80202

Dear Ms. Blue:

RE: I-225 Major Investment Study - City Support of the Locally Preferred Alternative

The Aurora City Council received an I-225 Major Investment Study briefing by the project team at a study session on January 29, 2001. The City of Aurora wants to take this opportunity to articulate our strong support for the I-225 Major Investment Study Locally Preferred Alternative consisting of a Light Rail Transit (LRT) double track line that directly serves the Aurora City Center as well as the Fitzsimons Site, improvements to I-225, and transportation management enhancements throughout the Corridor.

The recommended Light Rail Transit line will begin at the Nine-Mile LRT station and continue northward in the median of I-225 to Exposition Avenue where it departs the freeway median and spans the northbound lanes of I-225 eastward into the Aurora Mall property. It then follows the south loop road within the Aurora Mall property and abuts the western edge of Sable Boulevard. Continuing north, the LRT alignment is grade separated over Alameda Avenue, returns to grade and turns westward at Ellsworth Avenue to transition into the median of I-225. From this point the LRT alignment continues north to a point south of Colfax Avenue where it flies over the southbound I-225 lanes and assumes a parallel alignment between I-225 and Potomac Street. The line will be grade separated as it crosses Colfax Avenue and continues north, adjacent to the east side of Potomac Street/Sandcreek Parkway. The rail line then shifts west and parallels Montview Avenue through the Fitzsimons site to the eastern edge of Peoria Street, then turns north to connect to the proposed East Corridor at approximately Smith Road.

In addition, the specified highway element of the Locally Preferred Alternative expands the I-225 freeway from 6 to 8 through lanes between I-70 and Parker Road. Lastly, the transportation management element consists of an expanded circulator/feeder bus system, intelligent transportation system features, bicycle and pedestrian improvements at new Park-n-Ride facilities, and the development of three transportation management organizations within the Corridor.
Ms. Mary K. Blue  
February 5, 2001  
Page 2

The citizens of Aurora together with those persons working and traveling throughout the Corridor will benefit from the improved access and mobility that this transportation improvement package will provide. The City of Aurora looks forward to continuing our coordinated and productive working relationship with RTD and CDOT to implement these corridor improvements in a timely fashion.

Sincerely,

[Signature]

Paul E. Tauer  
Mayor

c:  Aurora City Council Members  
Ron Miller, City Manager  
Frank Ragan, Deputy City Manager of Operations  
Mac Callison, Principal Transportation Planner  
RTD Board of Directors  
Cal Marsella, RTD General Manager  
Chris Quinn, RTD Project Manager  
Roger Cracraft, Colorado Transportation Commission  
John Muscatell, CDOT Region 6 Director  
George Scheuemstuhl, DRCOG Transportation Director
Mr. Chris Quinn  
Project Manager  
Systems Planning  
Regional Transportation District  
1600 Blake Street  
Denver, Colorado 80202

Dear Mr. Quinn:

**RE: Locally Preferred LRT Alignment at Fitzsimons**

The City of Aurora, the Fitzsimons Redevelopment Authority and the University of Colorado Health Sciences Center collectively support the I-225 Major Investment Study Locally Preferred Alternative consisting of a Light Rail Transit (LRT) double-track line that directly serves the Fitzsimons site with several LRT stations. In addition, all parties fully support the timely implementation of this LRT line and accompanying stations.

The above-mentioned major parties to redevelopment actions at Fitzsimons have identified a locally preferred LRT alignment through the redevelopment site that will maximize service to this major employment center. LRT station locations have also been identified that will be convenient to transit users. This has been done following the LRT design parameters provided by RTD staff. In addition, known and anticipated site features, such as existing and future roadways and underground utilities, primary roadway and parking structure driveway crossings, pedestrian routing, circulator bus/LRT station connections, and LRT station oriented development have been recognized as key elements influencing the location of the LRT track and associated stations.

The LRT line will be elevated above street level as it crosses Colfax Avenue and continues north, adjacent to the east side of Potomac Avenue (which is to become part of the Sand Creek Parkway). Additional engineering will need to
be performed in establishing the LRT line immediately east of the Parkway.

The Fitzsimons-East LRT station will be situated on the east side of the proposed Sand Creek Parkway between Colfax Avenue and 17th Place. Incorporating an elevated boarding platform at this location (to meet the elevated LRT tracks) will allow for an elevated concourse connection across Sand Creek Parkway to tie the platform directly into the lobby of a planned full-service conference hotel. The LRT tracks will remain elevated to a point north of the Sand Creek Parkway/17th Place intersection and then will transition to meet grade.

The LRT tracks then turn west just south of the Sand Creek Parkway/Montview Boulevard intersection (see attached graphics for alignment and cross section details), accomplishing an at-grade crossing of Sand Creek Parkway. The tracks will proceed west along Montview Boulevard along the south side of the roadway flowline to a point just west of the Montview Boulevard/Ursula Street intersection. This general location is being planned to serve as the focus of the Fitzsimons Commons, where a Fitzsimons-Commons LRT station will be situated. The station will be located on the south side of Montview Boulevard to the east of the historic Red Cross Building and will be designed to tie into the proposed Student Center being planned for this location to serve the UCHSC campus.

From this point, the LRT tracks will cross Montview Boulevard and parallel Montview Boulevard on the north side through the Fitzsimons site to the western boundary of the site. As the LRT tracks approach Peoria Street, they will turn northward, residing on the east side of Peoria and terminate as they intersect with the East Corridor Rail Line at a point proximate to Peoria Street and the Union Pacific Railroad.

We believe that additional meetings with City, University of Colorado Health Sciences Center, Fitzsimons Redevelopment Authority and RTD staff will facilitate confirmation of specific aspects of the LRT track and station locations. Specifics related to the realignment of Montview Boulevard to accommodate the LRT as part of the overall roadway cross-section, the location of future building lines, etc., will need to be refined.
Mr. Chris Quinn
May 9, 2001
Page 3

The common objective of all parties is the preservation of an LRT envelope for both future tracks and stations. The City of Aurora, Fitzsimons Redevelopment Authority and the UCHSC look forward to continuing our coordinated and productive working relationship with the RTD to implement this needed transportation improvement in a timely fashion.

Sincerely,

[Signature]
Frank Ragan
Deputy City Manager of Operations

[Signature]
Robert E. Olson
Executive Director
Fitzsimons Redevelopment Authority

[Signature]
Denise Brown
Chief Planning Officer
University of Colorado Health Sciences Center

Enclosure

c: Members of Aurora City Council
Ronald S. Miller, City Manager
Denise Brown, UCHSC
George Scheuernstuhl, DRCOG Transportation Director
Denise M. Balkas, Director of Planning
Comprehensive Planning Division
October 20, 2000

Mr. Tom Norton
Executive Director
Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222

Mr. Cal Marsella
General Manager
Regional Transportation District
1600 Blake Street #41
Denver, Colorado 80202

Dear Gentlemen:

Please let this letter serve as an indication of support by the City of Greenwood Village for the concept of having the I-225 Light Rail "loop" through the Aurora City Center, consistent with the desire of the City of Aurora. We believe there is merit to having light rail serve the Aurora City Center project.

Please let me know if I can provide additional information.

Sincerely,

David W. Phifer
Mayor

c: The Honorable Mayor Paul Tauer, City of Aurora
APPENDIX E – PUBLIC INVOLVEMENT SUMMARY REPORT

PRACO

The following is a summary report on the I-225 Major Investment Study Public Involvement Program, which was led by PRACO Ltd. Public Relations during 1998, 1999, 2000 and 2001.

I. Public Involvement Challenge

- To get and keep the public involved in and informed about the I-225 MIS process.
- To identify groups that must to be represented in the public involvement process, otherwise the end result (the Locally Preferred Alternative) will not be supported by these groups.
- Need to reach groups that don’t normally participate in the public process, don’t read newspapers, don’t regularly scan the media, etc.
- Need to help committee representatives get information back to the community.

II. Program Goals

- Provide forums for discussion of issues and solicitation of comments and advise about transportation needs in the corridor.
- Provide exchanges of information at milestones among participants and interested parties to enable timely advancement of the overall major investment process.
- Facilitate and organize communication among study participants and interested parties throughout the course of the study.
- Provide a range of communications strategies, techniques and tools that respond to various levels of participation and interest.
- Discuss and generally resolve matters of importance to the study process and future implementation, so that substantial agreement on a set of recommended transportation improvements can be achieved by decision-makers.

III. Program Structure – Tools and Tactics

A public involvement plan was developed at the outset of the I-225 MIS. The plan outlined the objectives and tools to facilitate effective public participation.

Strategic Communications Planning

The public involvement team’s work focused on developing a strategic public involvement plan, establishing communications protocols, identifying target audiences, developing key messages, then utilizing a variety of communications tools and tactics to implement the plan.
The team identified and trained designated spokespersons for all media relations activity. It also identified audiences, including I-225 corridor residents and commuters, government officials, technical planners from the participating agencies, and the media (which serve as a channel to all audiences).

Key Message of the I-225 MIS Project: “The process is designed to be fair, give outcomes, be inclusive, and provide maximum information to any individual who wants it.”

Project milestones that provided the core of the communications/public involvement program included:

- Project Start-up / Announcing the MIS and the MIS Process
- Open House Meetings to gain public input and communicate information
- Meetings of the Technical Advisory Committee, the Citizens Consultation Group and the Policy Advisory Committee

Creative Graphic Design Contributions

- Developed a project logo for all communications materials and tools.
- Designed collateral materials (newsletters, postcards, flyers, presentation materials, etc.)
- Created newsletter name

Media Relations

- Developed media contact lists
- Wrote and distributed news releases and media advisories
- Coordinate media relations before, during and after events and announcements

News Releases

- May 6, 1998 - “RTD Solicits Public Involvement in Highway Study”
- (Two public meetings: Aurora Senior Center on May 11, Aurora Mall on May 19)
- July 8, 1998 - “RTD To Host Open Houses For I-225 Study On July 22, 29.” Purpose is to gain public input for a Major Investment Study (MIS) of the I-225 corridor and relay results of the pre-screening element of the study.
- December 28, 1998 - “RTD to Hold Open Houses on Jan. 12, 13 to Discuss I-225 Corridor Alternatives” (Locations: Overland High School and Fitzsimons Army Garrison)
- June 28, 1999 - “I-225 Transportation Alternatives to be Displayed at RTD Open Houses”
- March 9, 2001 - “Community Representatives Designate Locally Preferred Alternative in I-225 Major Investment Study”

Media Advisories (Invitations To Reporters To Attend)

- May 19, 1998 -- “RTD To Host Open House For I-225 Study On May 19”
- July 17, 1998 -- “RTD Holds Open Houses on July 22, 29 for I-225 Study”
Postcards
- for January 12, 13 (1999) meetings - "It's Time Again To Rage About The Road"
- for July 7, 8 (1999) meetings - "Rage About the Road"

Flyers
- March 8, 2001 - Open House at DIA Holiday Inn - on Locally Preferred Alternative
- June 2001 - "RTD Mass Transit Revolution" Flyer – Summarized RTD’s progress on a number of RTD Projects, including the I-225 MIS.

Event Coordination and Support
Publicized, advertised, and assisted with event implementation (open houses, meetings, presentations, etc.)

Committees and Committee Meetings
Assisted with the design, set-up and execution, and attended meetings of the Technical Advisory Committee, Citizens Consultation Group and Policy Advisory Committee.

The advisory committees’ purpose was not to make decisions, but to make suggestions.

The Technical Advisory Committee
Charge: Advise on issues and concerns; Help shape recommendations at the conclusion of the study that can be supported by local and regional jurisdictions; Identify the elements that jurisdictions could support or implement to advance the overall recommendations.

Twelve (12) rounds of committee meetings were held on the following dates:
- 1998: May 11, June 24, July 29, September 16, and December 8
- 1999: March 24, June 23, and August 2
- 2000: June 29, September 20-21, and November 15
- 2001: February 6

Citizens Consultation Group
Charge: Provide comments on issues and concerns; As delegates, communicate interests of the groups they represent; Convey information to groups (materials provided); Advise on effectiveness of communication and education efforts.

Seven (7) rounds of CCG meetings were held on the following dates:
- 1998: November 19
- 1999: March 24, June 23, and August 2
- 2000: September 20 and November 15
- 2001: February 6
Policy Advisory Committee

Charge: Advise on issues and concerns; Advise on compatibility with local processes and conditions; Provide data; Assist in communication to policy committee and to the public.

Twelve rounds of committee meetings were held on the following dates:

- 1998: May 11, June 25, July 24, September 17, and December 9
- 1999: March 25, June 24, and August 4
- 2000: June 23, September 22, and November 17
- 2001: February 8

Open House Meetings

Five (5) rounds of public open house meetings (totaling 11 meetings) were conducted

- July 22, 1998 - Aurora Senior Center
  Purpose: To gain public input and relay the results of the pre-screening element of the I-225 MIS
- July 29, 1998 - Heather-Ridge Country Club
  Purpose: To gain public input and relay the results of the pre-screening element of the I-225 MIS
- January 12, 1999 – Overland High School
  Purpose: To show five transportation alternatives currently being evaluated for the I-225 corridor.
- January 13, 1999 – Fitzsimons Army Garrison
  Purpose: To show five transportation alternatives currently being evaluated for the I-225 corridor.
- July 7, 1999 at the Holiday Inn at I-225 and Parker Road
  Purpose: To display data on I-225 transportation alternatives and discuss the results of the detailed evaluation of those alternatives.
- July 8, 1999 in Building 500 at Fitzsimons Army Garrison
  Purpose: To display data on I-225 transportation alternatives and discuss the results of the detailed evaluation of those alternatives
- December 12, 2000 - Fitzsimons Campus /Gateway to Rockies Conference Ctr., Aurora
  Purpose: Explain the Locally Preferred Alternative
- December 13, 2000 - Heather Gardens - Aurora
  Purpose: Explain the Locally Preferred Alternative
- March 8, 2001 - Holiday Inn Dia
  Purpose: Explain the Locally Preferred Alternative

Advertising

- May 1998 – print ads seeking public input (printed in six weekly community newspapers),
title: “The Route Ahead”
Newsletters

Audience: list of approximately 2,900 residents, commuters, businesses, MIS planners, government officials, committee members, etc.

Several issues were conceived, written, designed, printed and mailed:

- Summer/Fall 1999 - RTD Conducts Major Investment Study for I-225. What is the purpose?
- Nov. 2000 – “Where Are We Now?” Results of the Detailed Evaluation (MIS process resumes after break to obtain new DRCOG population and employment figures; Four alternatives remain.)
- March 2001 - “Community Representatives Designate Locally Preferred Alternative in I-225 MIS”
- June 2001 - “RTD Board Approves Locally Preferred Alternative in I-225 MIS”

Web Site

Provided strategic counsel regarding development. Offered content as needed.

Sample of News Clips, Media Coverage

- “I-225 Less Than Inspiring? RTD Wants To Know” - Rocky Mountain News (May 18, 1998)
- “RTD Open House” - Aurora Sentinel (May 19, 1998)
- “RTD Hosts I-225 Open House” - Rocky Mountain News (July 18, 1998)
- “RTD Open Houses for I-225 Study” - Intermountain Jewish News (July 17, 1998)
- “Eight-lane I-225, Buses, Light Rail Possible for City” – by Frank Bell, Aurora Sentinel (Jan. 26, 1999)
- “RTD Looks at Future of I-225” – Aurora Sentinel (Life in Aurora) (July 7, 1999)
- “Search for I-225 Alternatives Stalls in Aurora” – by Tustin Amole, Rocky Mountain News (July 13, 1999)
- “In Your Neighborhood,” an Aurora community TV-8 cable show – a half-hour program with live interviews on the -225 MIS (Feb. 15, 2001)
- “Interstate 225 Focus of Expansion Study” -- by Frank Bell, Aurora Sentinel (March 15, 2001)
- “Alternatives Designated in I-225 Study” – Infrastructure News column in Colorado Construction magazine (May 2001)
- “Planners Outline Light Rail for I-225” – by Jeffrey Leib, Denver Post (Jan. 7, 2001)
- “City Offers Variation for Plans on I-225” – by Frank Bell, Aurora Sentinel (Feb. 1, 2001)