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87

SYSTEMS PLANNING HISTORY

RTD Rapid Transit Planning History

RTD

December 1995



Table Of Contents

| Maps and Descriptions | Page |
|---|-------------|
| Table of Contents | i |
| Introduction | ii |
| 1973: Public Transportation Plan | 1 |
| 1976: North-South Rapid Transit Study | 3 |
| 1978: Commuter Railroad Feasibility | 5 |
| 1980: Light Rail and Bus Transit Study | 7 |
| 1982: Public Transportation Plan Update | 9 |
| 1984: Regional Transit Systems Plan | 11 |
| 1986: Technical Analysis and Technology Assessment Study | 13 |
| 1987: HB 1249, Fastrack Program | 15 |
| 1989: SE/SW Transit Threshold Analysis | 17 |
| 1989: Downtown Express | 19 |
| 1990: Northeast Corridor Alternative Alignment Study | 21 |
| 1990: Systems Plan Update | 23 |
| 1991: Metro Area Connection (Central Corridor) | 25 |
| 1992: Metro Area Connection South Extension (Central Corridor) | 27 |
| 1992/1993: Commuter Rail Implementation Study Phase 1 and 2 | 29 |
| 1994: Southwest Corridor Alternatives Analysis/Major Investment Study | 31 |
| 1995: Southwest PE/EIS | 33 |
| 1995: Gold Line Commuter Rail Study | 35 |
| 1995: East, West and Southeast Major Investment Studies | 37 |
| 1993: DRCOG 2015 Interim Regional Transportation Plan | 39 |

Rapid Transit Planning History

Introduction

The Regional Transportation District (RTD) has a long history of rapid transit planning for the Denver metropolitan region. The agency's first effort, the Public Transportation Plan (1973), provided the first glimpse of a regional rapid transit system. Through the years, RTD has refined its original vision for rapid transit development by conducting numerous other studies that reflect changes in the region's land use, growth of population and locations of employment centers. These studies have examined different alignments, technologies, and financing possibilities. The benefits associated with rapid transit such as increased mobility, reduced air pollution, and less congestion have been examined and documented thoroughly in each study.

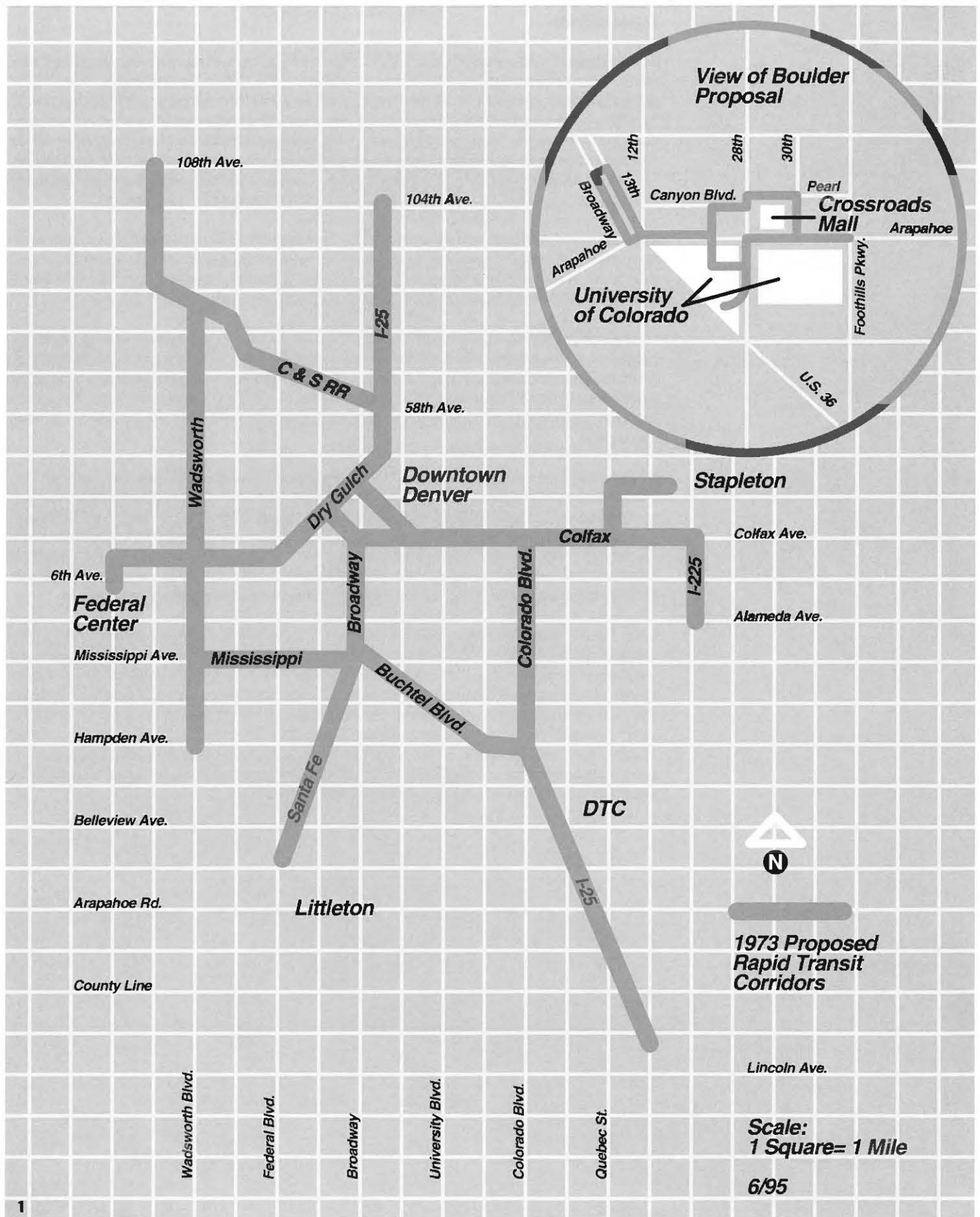
This report provides a history of rapid transit planning at RTD from its inception in 1969 to the current studies now underway. Each major RTD rapid transit planning study is summarized in this report. A description of alternatives analyzed, projections of cost and ridership, RTD Board actions, and other significant aspects of each study are included.

RTD's study of rapid transit corridors, modes, and financing options has resulted in significant progress. In September 1994, the Downtown Express/High Occupancy Vehicle (HOV) lanes were opened to buses and to car pools a year later. In October 1994, RTD opened the Central Corridor Light Rail System--the region's first experience with light rail technology. These projects are first steps by RTD to provide quick and reliable rapid transit alternatives to its many customers.

RTD's work to develop a regional rapid transit system for the metropolitan area is continuing. The Southwest Corridor Alternatives Analysis/Major Investment Study was completed in July 1994 with the selection of LRT as the locally preferred alternative. The next step, the Preliminary Engineering and the Environmental Impact Statement, are scheduled for completion in December 1995. The last step before actual construction, final design, was recently approved by the RTD Board in September 1995. The \$3.9 million effort will be completed primarily with RTD in house resources. This innovative approach will result in a \$1.6 million savings.

Finally, the RTD is currently involved in three concurrent Major Investment Studies (MIS). Over the next eighteen months, the RTD along with the Colorado Department of Transportation and the Denver Regional Council of Governments will explore a variety of transportation options for three major corridors in the metropolitan area. This collaborative effort represents an important milestone in interagency cooperation. At the conclusion of these studies, a locally preferred alternative will be selected in each corridor. The three agencies' policy boards will then select which of the three corridors will proceed forward for eventual implementation as the region's next priority corridor. These efforts will position RTD to offer viable alternatives to the automobile as the public's primary mode of transportation.

1973: Public Transportation Plan



Alternatives Studied

- Personal Rapid Transit (PRT) - Defined below
- All Bus System
- Bus/Conventional Rapid Transit
- All Rapid Transit System

Alternative Selected

Personal Rapid Transit (PRT)

System Description

- Six major routes, downtown Denver, a Central Circulator, and a Boulder component comprising 98 miles of aerial track were recommended. Specific alignments were not studied.
- PRT was defined as a fixed guideway system with 800 vehicles, each capable of carrying 12 passengers. It would have non-stop, demand responsive service at all times. The system would require no on-board operators, with personnel located at the stations for assistance, if needed.
- Maximum operating speed would be 40 mph.
- The system was anticipated to operate at a deficit through 1983, then at a surplus through 2000.

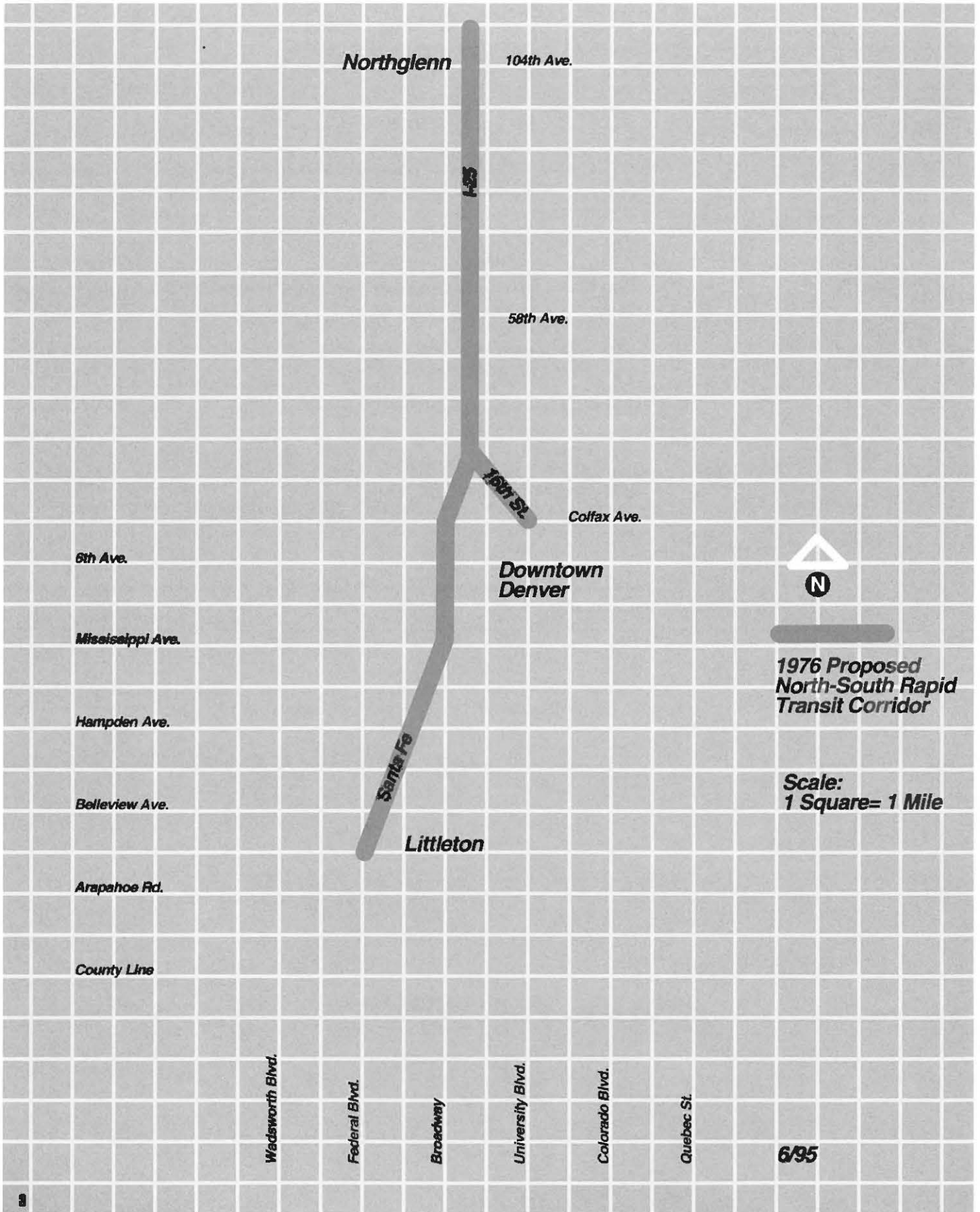
Projections

- Capital cost, 1973 dollars \$1.059 Billion
- Completion Date 1983
- Year 2000 Daily Ridership (PRT) 461,000
- Year 2000 Daily Ridership (Bus) 702,000

Board Action

This study formed the basis for the Public Transportation Plan that was adopted by the Board. The Board adopted a policy that no rapid transit development would commence until federal funding was assured.

1976: North-South Rapid Transit Study



1976 Proposed
North-South Rapid
Transit Corridor

Scale:
1 Square= 1 Mile

1976: North-South Rapid Transit Study

Alternatives Studied

- Advanced Bus (using exclusive bus lanes and guideways)
- Conventional Light Rail
- Conventional Rail Rapid Transit (similar to BART)
- Automated Rapid Transit (ART) - Defined below
- Personal Rapid Transit (PRT), same as in the 1973 plan

Alternative Selected

Automated Rapid Transit (ART)

System Description

- System included 80 miles of two-way guideway.
- ART was defined as a fixed guideway system with vehicles capable of carrying 12-20 passengers. It would have scheduled rush hour service, with demand-responsive service at other times. The system would require no on-board operators, with personnel located at stations for assistance, if necessary.
- RTD conducted an Alternatives Analysis for a 22-mile North-South corridor from Northglenn to Littleton, with segments to be built in the following order:
 1. Littleton to Denver
 2. Northglenn to Denver
 3. CBD Connector
- Significant portions of the system would be grade separated, with elevated right-of-way.

Projections

- Capital cost, though 2000 \$1.769 Billion
- Year 2000 daily patronage (transit system) 471,000
- Year 2000 daily patronage (ART) 252,000

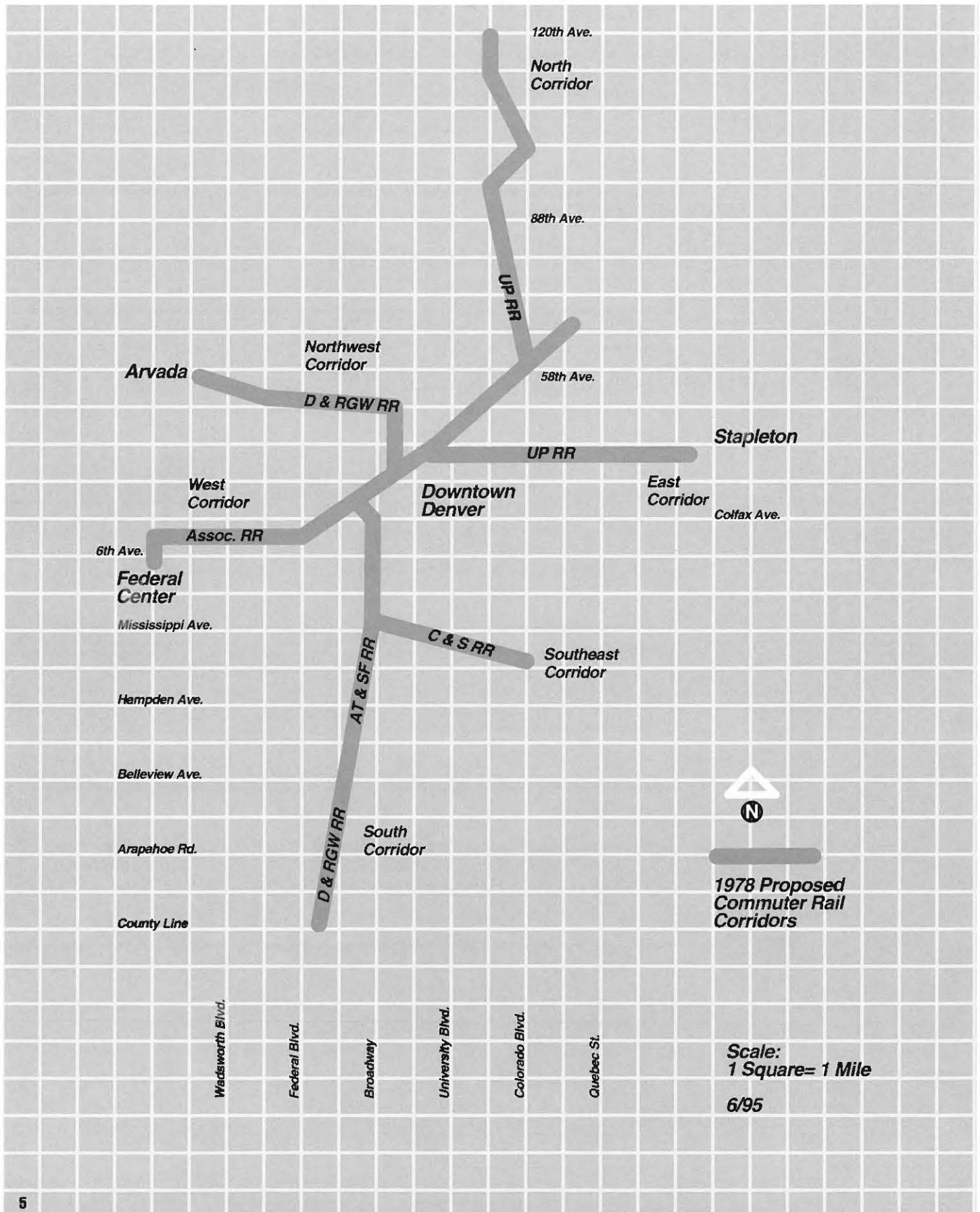
Board Action

The Board readopted the revised Public Transportation Plan for the Year 2000 in June 1975. The Plan was neutral with respect to rapid transit technology. The Alternatives Analysis for the Northglenn to Littleton corridor was submitted to UMTA for grant funding in May 1976.

Response

UMTA rejected the application for federal funding in June 1976.

1978: Commuter Railroad Feasibility



1978: Commuter Railroad Feasibility

Alternatives Studied

Commuter Rail

Alternative Selected

None

System Description

- Commuter Rail was defined as conventional rail service over existing rail lines in six corridors with an average speed of 35 mph. The system was to have two peak directional trips in each corridor in the morning and evening periods.
 - Six railroad corridors were evaluated:
 1. North
 2. Northwest
 3. East
 4. West
 5. Southeast
 6. South
 - The report concluded that "The economics of providing such service will require substantial public subsidies." Extreme complexity in implementing service was cited. Two of the three railroads contacted were opposed as a matter of policy. The third railroad stated that it would not be feasible.
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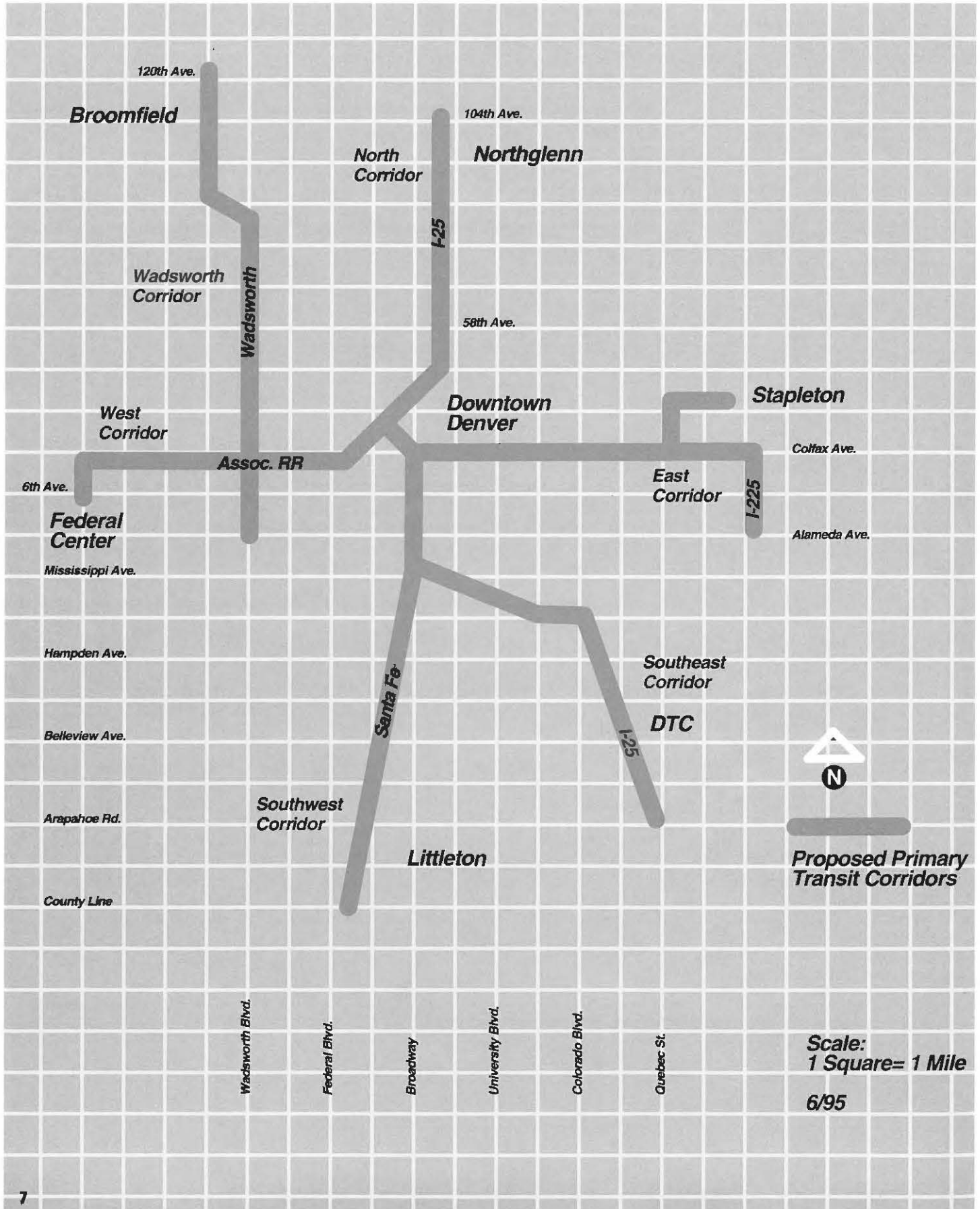
Projections

- Total "Demonstration Costs," or capital plus first year operating costs, ranged from \$1.617 million (Northwest corridor) to \$3.631 million (South corridor in) 1978 dollars.
 - 1978 daily ridership ranged from 1,060 (Northwest corridor) to 2,820 (North corridor).
 - 1978 daily ridership for all corridors: 11,300.
-

Board Action

The RTD Board's Development Committee reported that the Commuter Rail study was completed and that commuter rail was not feasible.

1980: Light Rail and Bus Transit Study



1980: Light Rail and Bus Transit Study

Alternatives Studied

- Baseline Bus
- Expanded Bus
- Corridor Bus (operating in the designated rapid transit corridors)
- Light Rail (operating in the designated rapid transit corridors)

Alternative Selected

Light Rail

System Description

- A 73-mile rapid transit network was defined for the Corridor Bus and Light Rail alternatives.
- Light Rail was projected to have the highest capital costs of the alternatives studied, but the lowest O&M costs.
- A 15-mile segment in the Southeast corridor from I-25 near Arapahoe Road to the CBD was identified as the initial segment for construction.

Projections

- Capital cost, 1980 dollars \$860-\$930 Million
- O&M savings in year 2000 \$19.3 Million a year
(savings of Light Rail over Corridor Bus)
- Year 2000 daily ridership (transit system) 500,000
- Year 2000 daily ridership (light rail) 265,000

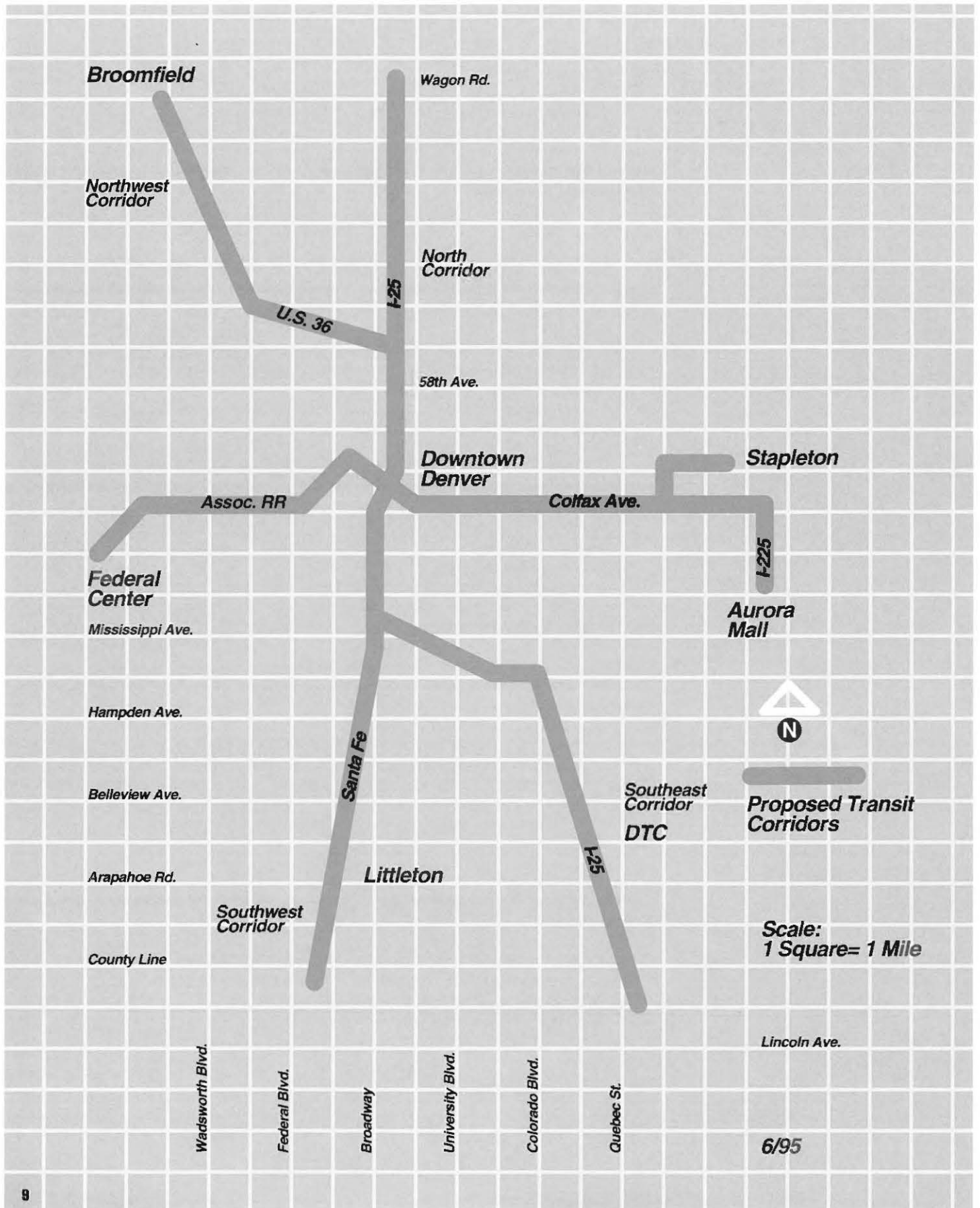
Board Action

In November 1979 the Board adopted Light Rail Transit as the appropriate rapid transit technology for the Denver region in an update of the Public Transportation Plan. In July 1980 the Board approved the Southeast corridor as the initial segment in the Implementation Plan. The Board adopted a resolution in August 1980 placing a Light Rail funding proposal on the 1980 ballot. The proposal was for full local funding of the rapid transit system through a 0.75% sales tax for 14 years.

Response

On November 4, 1980 the region's voters defeated the funding proposal 54% to 46%. A post-election survey indicated that 31% of those who voted "NO" supported Light Rail for the region, although they opposed the financial plan. At the same time, voters also approved a ballot initiative to establish an elected Board for the RTD.

1982: Public Transportation Plan Update



1982: Public Transportation Plan Update

Alternatives Studied

- Advanced Bus
- Light Rail Transit
- Conventional Rapid Transit
- Automated Rapid Transit (ART)

Alternative Selected

None

System Description

- "The (rapid transit) network will consist of the most cost effective and appropriate transit technology available at the time each stage is constructed" (The Public Transportation Plan Update, RTD, April 22, 1982).
- System defined as 77-miles of rapid transit corridors and a total of 85 stations.
- The CBD network was defined to utilize either subways under California and 16th Streets or an at-grade alternative.

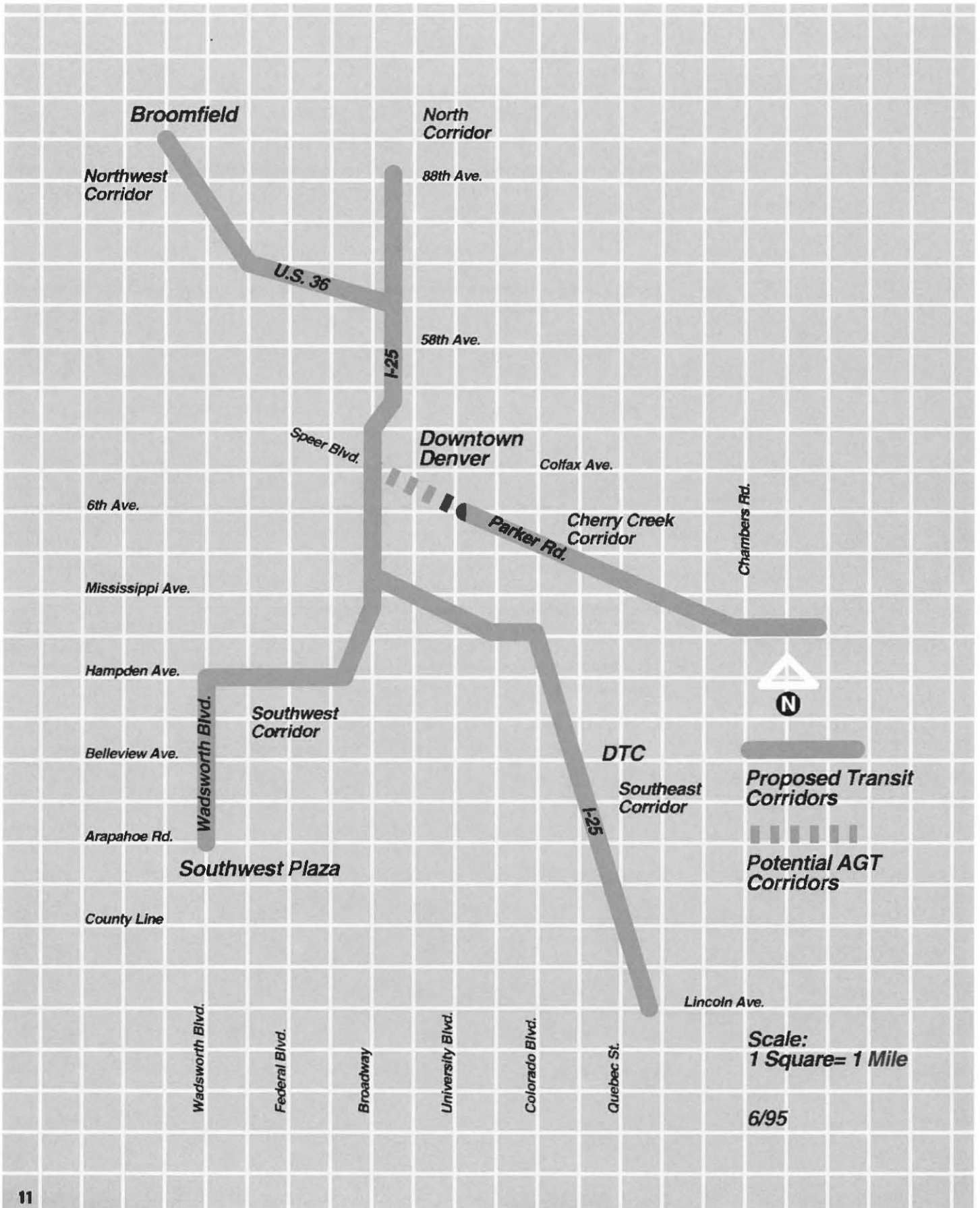
Projections

- Capital costs, 1981 dollars \$1.379-\$2.569 Billion
(dependent on technology(ies) implemented)
- Year 2000 daily ridership (rapid transit system) 480,000

Board Action

In April 1982 the Board adopted the revised rapid transit network in an amendment to the Public Transportation Plan.

1984: Regional Transit Systems Plan



Regional Transit Systems Plan

Alternatives Studied

- Base Bus
- Light Rail
- Busways or High Occupancy Vehicle (HOV) network
- Automated Guideway Transit (AGT)
- Commuter Rail
- Rail Rapid Transit (Heavy Rail)

Alternative Selected

Busway/HOV network

System Description

- Five major corridors comprising a 58-mile network were recommended as the most cost-effective rapid transit option for the region.
- The North corridor from 120th Avenue to the CBD along I-25 was proposed as the corridor for initial development.
- The potential need for an AGT system serving the CBD, Cherry Creek and Colorado Boulevard areas in central Denver also was identified.

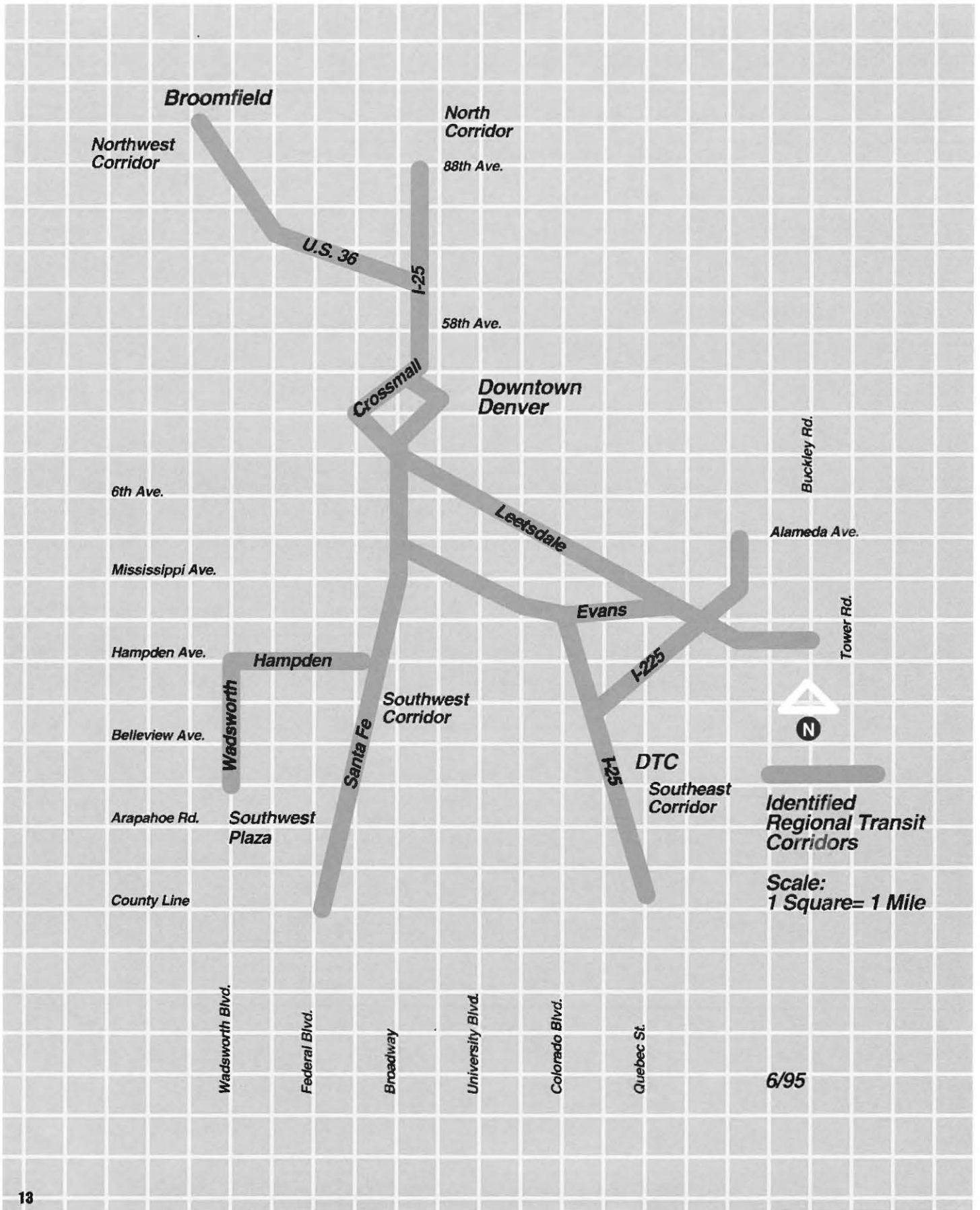
Projections

- Capital costs, 1984 dollars \$1.006 Billion
(for the Busway/AGT option)
- Year 2000 operating costs, 1984 dollars \$206.2 Million
- Year 2000 boardings (Busway portion) 159,000
- Year 2000 boardings (AGT portion) 161,000

Board Action

The Board preliminarily adopted the final report for the busway system with additional consideration to the possibility of an AGT and potential additions to the busway system, particularly in Jefferson County. This replaced the 77-mile rapid transit system in the Regional Transportation Plan. The North Central corridor was designated as the priority corridor.

1986: Technical Analysis and Technology Assessment Study



1986: Technical Analysis and Technology Assessment Study

Alternatives Studied

- Expanded Surface Bus System
- Busway
- Light Rail

Alternative Selected

None

System Description

- Five radial transit corridors and a CBD distribution system were evaluated.
- Study examined nine potential technology/corridor alignment alternatives.
- Suggested that a "crossmall" utilizing buses or Light Rail on California Street would be appropriate for the CBD.
- Study suggested priority for transit investments should be:
 1. Southeast
 2. Southwest
 3. Northwest

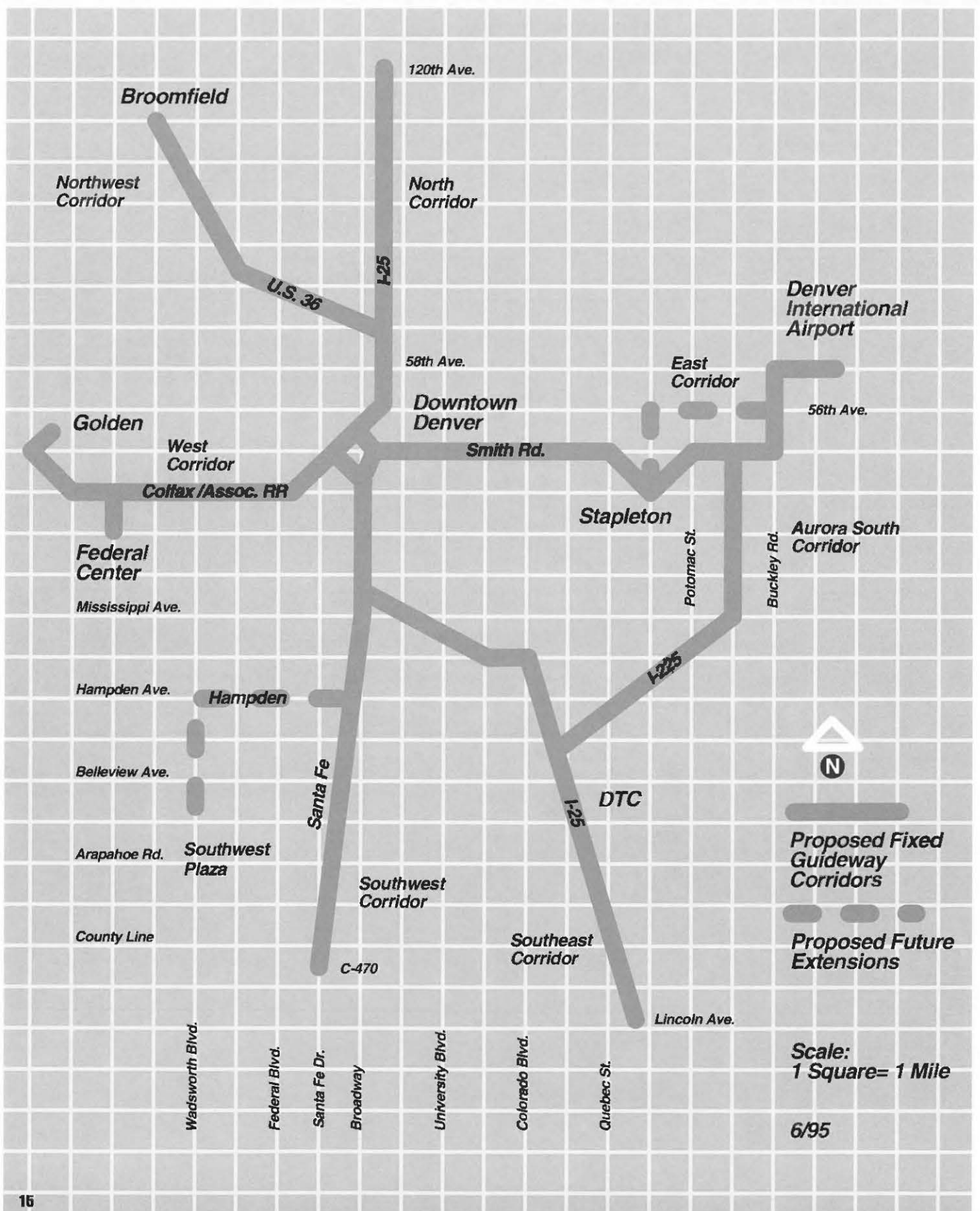
Projections

- Year 2000 capital costs, 1985 dollars \$365-\$845 Million
(dependent on corridors and technologies selected)
- Year 2000 annual operating costs, full system, 1985 dollars \$260-\$281 Million
- Year 2000 daily ridership 328,000-365,000
(transit system, dependent on corridors and technologies selected)

Board Action

The Board received the Technical Analysis and Technology Assessment with minor modifications.

1987: HB 1249, Fastrack Program



1987: HB 1249, Fastrack Program

In May 1987 the Colorado General Assembly passed HB 1249 which directed RTD to develop plans for rapid transit in seven corridors in the Denver area. The legislation also created the Transit Construction Authority to develop an eighth (Southeast) corridor. The Fastrack Program Report was the result of the RTD effort.

Alternatives Studies

- Busway
- Guided Bus
- Light Rail
- Automated Guideway Transit (AGT)

Alternative Selected

The mode recommended for each corridor was based on costs, ridership, technical feasibility and local preference.

System Description

- Over 60 miles of rapid transit corridors were to be built by RTD in the first phase of construction. The proposal excluded the Southeast corridor that was to be developed by the Transit Construction Authority.
- The financial plan included a recommendation for an additional sales tax of up to 0.4% plus 0.1% from the existing RTD sales tax to be used for construction and operation of the rapid transit system. Private sector participation was proposed to finance at least 15% of construction costs in each corridor.
- The plan also recommended that a demonstration AGT project be developed.

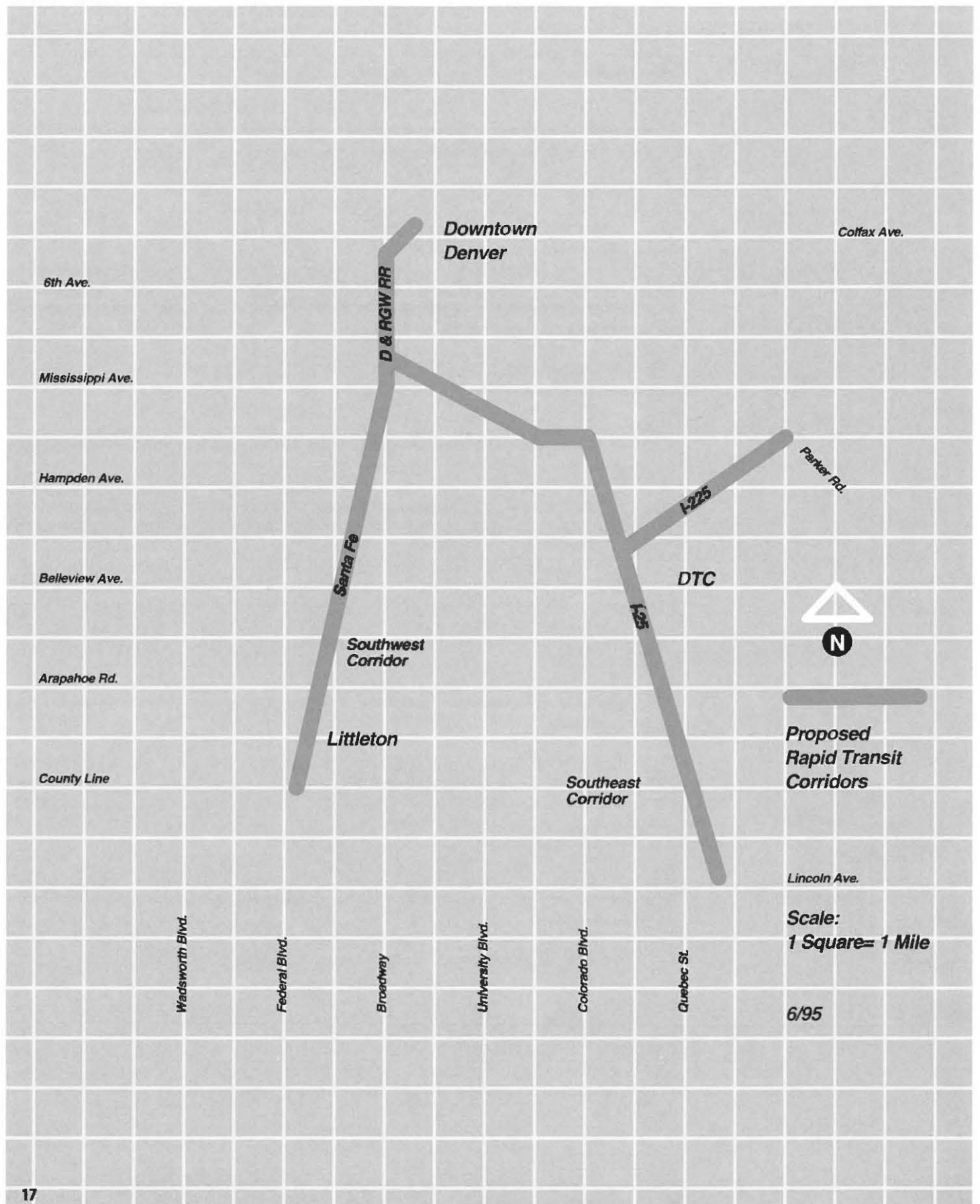
Projections

- Capital costs through the year 2000 \$1,611.77 Million
- Capital costs from 2001 through 2010 \$703.06 Million
- Operating costs for rapid transit for the year 2000 \$37.14 Million
- Year 2000 daily system ridership 356,000 to 475,000
(dependent on technologies implemented)

Board Action

Adopted the final report prepared for the legislature as required by House Bill 1249.

1989: SE/SW Transit Threshold Analysis



1989: SE/SW Transit Threshold Analysis

Alternatives Studied (in both corridors)

- Base Transportation System Management (TSM) Scenario
- Busway
- Light Rail System

System Description

- UMTA approved funding for this analysis in July 1988 at the request of RTD, DRCOG and the Transit Construction Authority (TCA). The study was to determine the priority corridor for transit investment.
- The proposed Southeast and Southwest corridors were included in the study. The Southeast corridor was defined as a 17.9 mile segment from the Denver CBD to Arapahoe Road, while the Southwest corridor was defined as a 13 mile segment from the Denver CBD to C-470.
- The study concluded that both corridors appeared to be eligible for an UMTA Alternatives Analysis because all alternatives had cost-effectiveness indices of less than \$10 per new rider.
- The Southwest corridor was found to be the most cost-effective of the two corridors.
- The study suggested that light rail continue to be considered in an Alternatives Analysis because of clean air impacts and the ability of light rail to minimize the impact of buses downtown.

Projections

- Construction Costs: (1988 dollars)

| | |
|---------------------|-----------------|
| SE Busway | \$157.6 Million |
| SE Light Rail | \$236.6 Million |
| SW Busway | \$106.3 Million |
| SW Light Rail | \$175.6 Million |
- Daily Ridership: (2010)

| | |
|---------------------|--------|
| SE Busway | 26,900 |
| SE Light Rail | 23,900 |
| SW Busway | 19,200 |
| SW Light Rail | 18,100 |

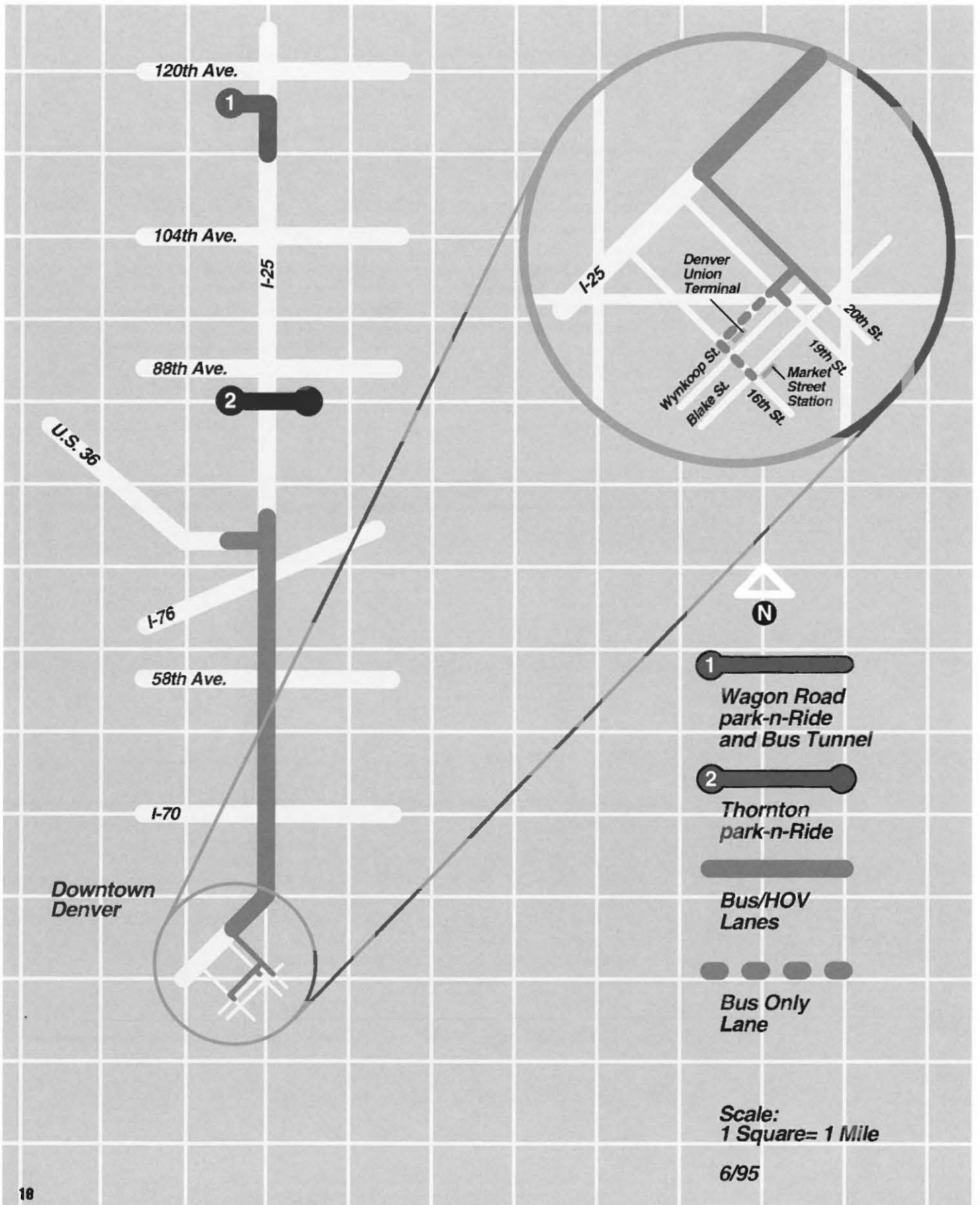
Board Action

- In February 1987 the Board authorized the General Manager to proceed with the application to the Urban Mass Transit Administration (UMTA) for a grant to fund an Alternatives Analysis in the Southwest Corridor. UMTA required this study.
- In November 1989 the Board accepted the SE/SW Transit Threshold Analysis report as written.
- In December 1989 the Board directed staff to request federal funding from UMTA for an Alternatives Analysis in the Southwest Corridor.

Response

UMTA approved funding for the Southwest Corridor Alternatives Analysis in August 1991.

1989: Downtown Express



Alternatives Studied (in the North Corridor)

- Do-Nothing
- Transportation System Management (TSM)
- Bus/High Occupancy Vehicle (HOV) Lane: 58th Avenue to CBD
- Bus/High Occupancy Vehicle (HOV) Lane: US 36 to CBD
- Bus/High Occupancy Vehicle (HOV) Lane: 120th Avenue to CBD

Alternative Selected

Bus/High Occupancy Vehicle (HOV) Lane US 36 to CBD

System Description

- System is comprised of two 5.5 mile long Bus/HOV lanes running down the middle of I-25 north of the Denver CBD to US 36, and 1.1 mile of a Bus/HOV lane across the Central Platte Valley from the CBD to I-25.
- The lanes are reversible, allowing buses, car pools, and van pools to travel south to the CBD in the morning, and north toward the suburbs in the evening.
- The project includes the expansion of the Thornton and Wagon Road park-n-Rides by over 1,200 spaces.
- The project was jointly funded by the RTD, the Colorado Department of Transportation, the City and County of Denver, Federal Highway Administration and the Federal Transit Administration.
- Commuters utilizing the Downtown Express have been saving 7-8 minutes of travel time in each direction on an average day. During inclement conditions travel time savings will be in excess of 20 minutes.

Projections

- Capital Cost \$222 Million
- Year 2000 Operation and Maintenance costs, 1985 dollars \$4.97 Million
- Year 2000 daily busway transit ridership 31,000

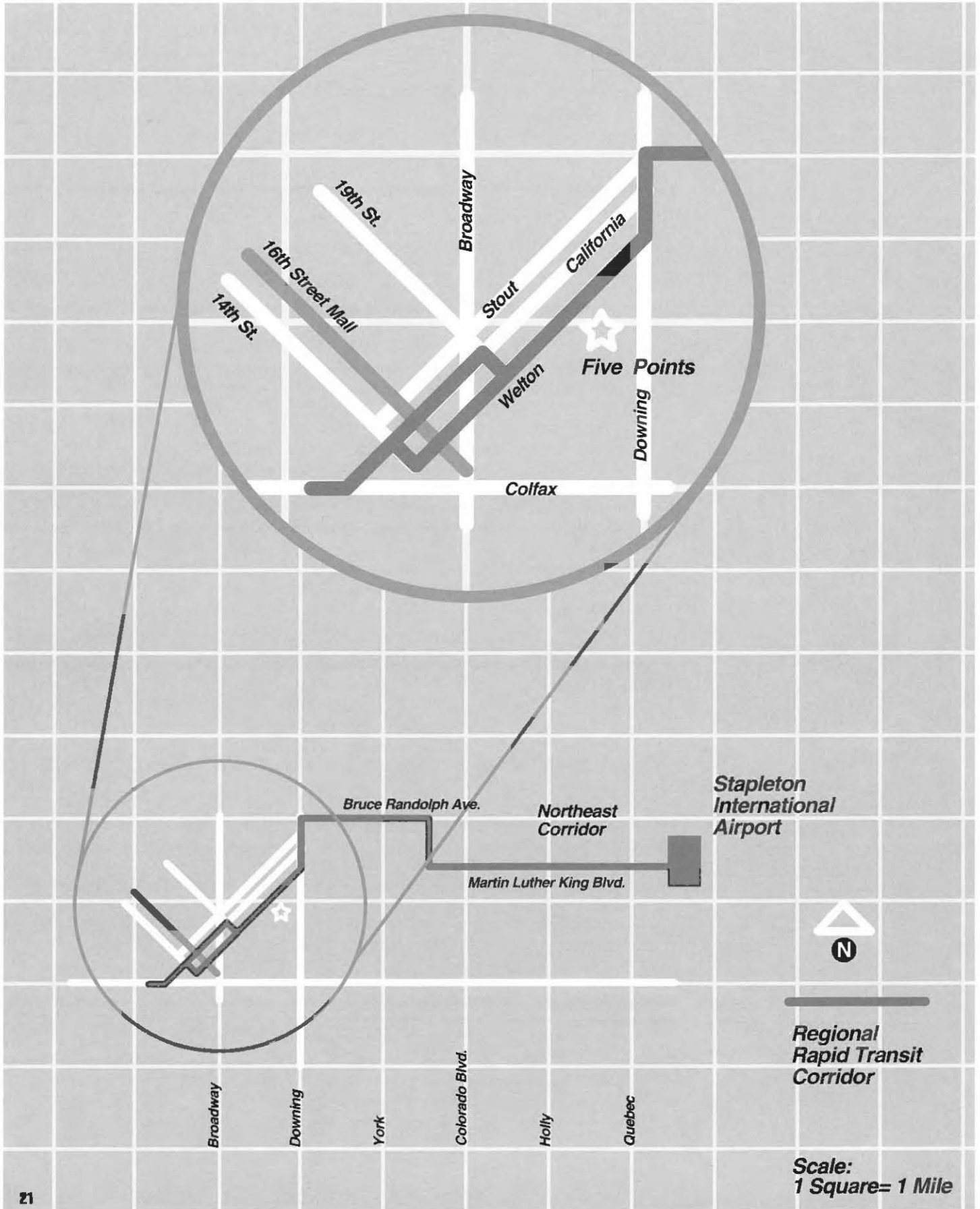
Board Action

- The Board approved the Full Funding Grant Agreement for the North I-25 (Downtown Express) Project in July 1989 and signed the completed contract in December 1989.
- A Supplemental Environmental Assessment was prepared in 1991 and the Amended Full Funding Agreement signed in September 1991.

Response

The Downtown Express opened on September 7, 1994 to buses only. It opened on September 29, 1995 to car pools too.

1990: Northeast Corridor Alternative Alignment Study



1990: Northeast Corridor Alternative Alignment Study

Alternatives Studied

- Smith Road alignment
- Bruce Randolph/35th Avenue alignment
- Martin Luther King Boulevard alignment
- Bruce Randolph/Martin Luther King Boulevard alignment

Alternative Selected

Bruce Randolph/Martin Luther King Boulevard Light Rail Transit (LRT)

System Description

- The LRT system was planned to connect downtown Denver to Stapleton Airport, with 10 minute peak headways, and 20 minute off-peak headways.
- Four potential LRT alignment alternatives were considered, with significant public input (in the form of a Community Advisory Committee) contributing to the choice of a primary alternative.
- The alignment utilizing a combination of Bruce Randolph and Martin Luther King Boulevard was selected as the preferred alternative. This alignment was 7.5 miles long and would result in a run time of 25 minutes from downtown to Stapleton.
- The ridership projections assumed that Stapleton Airport would be closed by the start of revenue service.

Projections

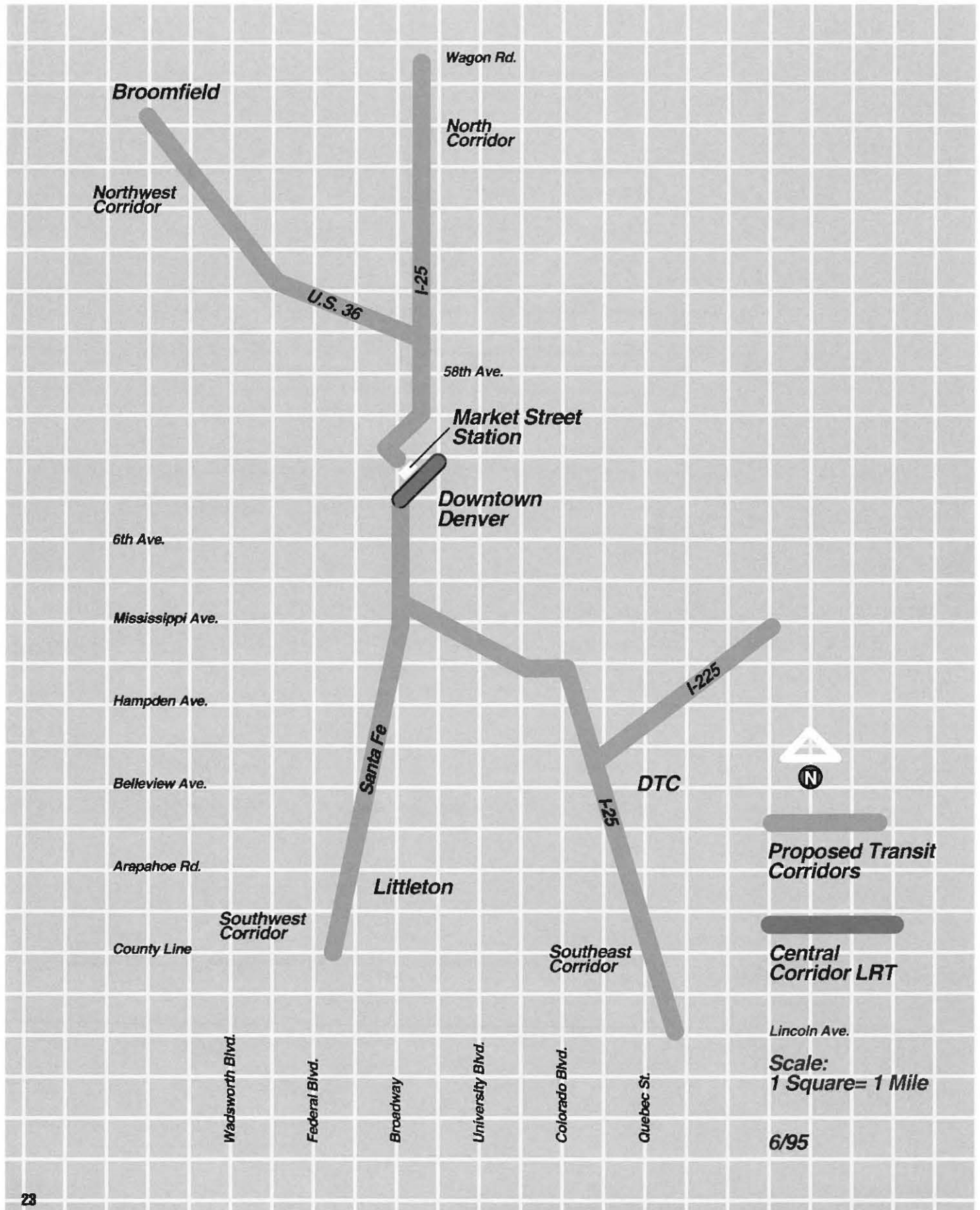
- Capital Cost, 1990 dollars \$125.63 Million
- Annual Operating and Maintenance costs, 1990 dollars \$3.23 Million
- Opening Day, 1993 daily ridership..... 5,500-6,500

Board Action

- June 1989: the Board directed that a separate account be established to receive all funds due RTD from the imposition of the Use Tax, and that all revenues in this fund be set aside for construction of rapid transit. By this action the Board also appropriated money for planning and preliminary engineering for the Northeast Corridor.
- September 1990: the Board voted to select the Bruce Randolph/Martin Luther King Boulevard alignment for the corridor and to continue study of the system.

Response

As a result of input from the community in the Northeast Corridor, the project was cut back from its terminus at Stapleton Airport to 30th Avenue and Downing. This effort resulted in the development of the Central Corridor LRT project.



Alternatives Studied

- Transportation Systems Management (TSM)
- Reversible Busway/High Occupancy Vehicle Lanes (HOV)
- Light Rail Transit (LRT)
- Automated Guideway Transit (AGT)
- Two-Way Busway

System Description

- The 1991 Systems Plan Update was an update of the 1984 Regional Transit Systems Plan.
- The study analyzed a base Transportation Systems Management scenario which included the North I-25 busway, and three rapid transit alternatives.
- The plan proposed the implementation of two-way busways in the southeast and southwest corridors, and reversible Busway/HOV lanes in the north and northwest corridors.
- The plan also assumed construction of the Metro Area Connection (MAC) light rail system.
- The three rapid transit alternatives analyzed varied in their downtown passenger distribution functions. One alternative included an AGT system in the Central Platte Valley. A second alternative suggested increased MAC light rail frequencies. The third alternative proposed bus routing similar to the route structure at that time.

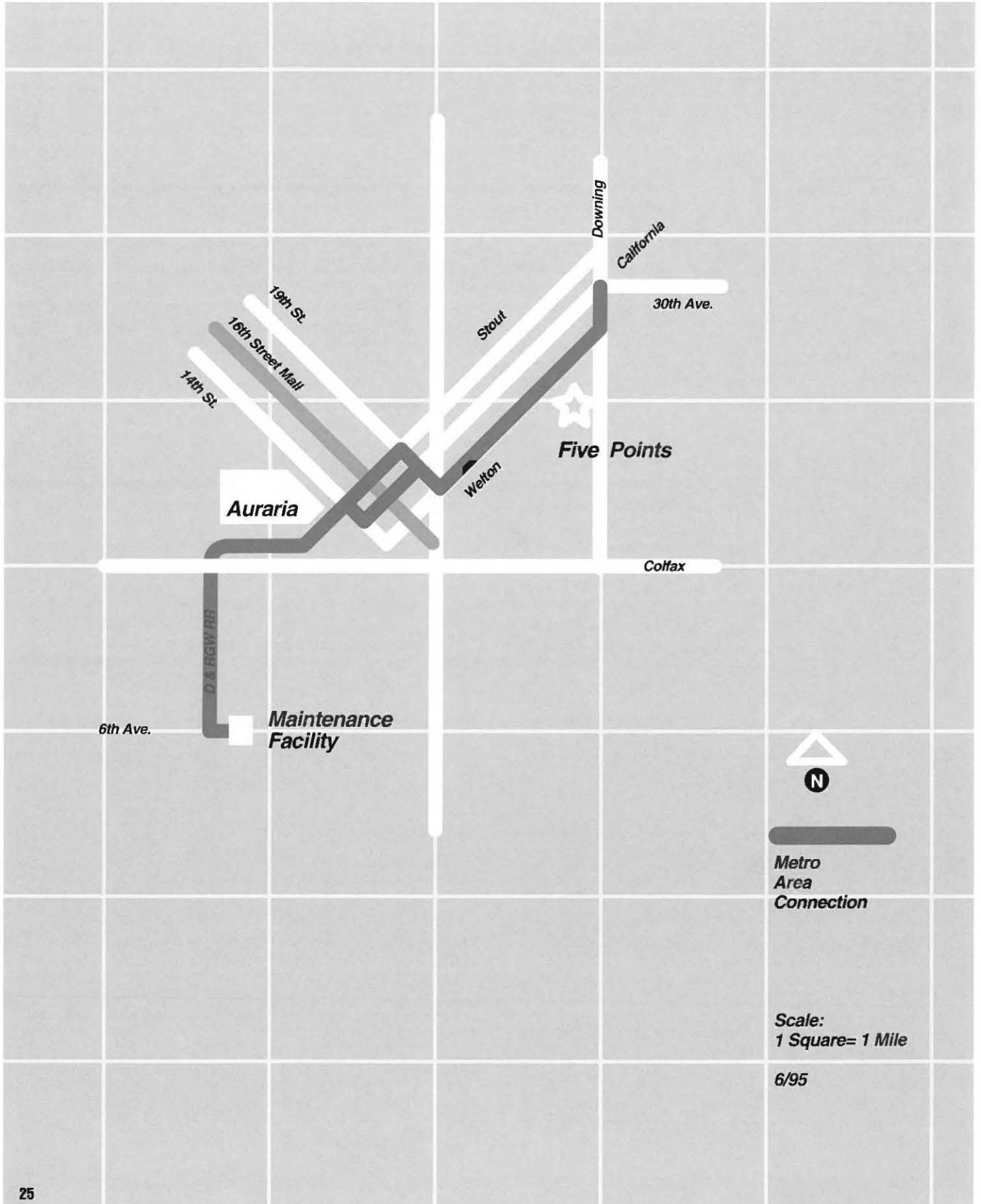
Projections

- Daily Ridership (2010)
 - TSM Alternative 138,000
 - Rapid Transit alternatives 161,000-163,000
- Capital Costs, 1990 dollars (Incremental, over the TSM alternative)
 - Rapid transit alternatives \$431.2-\$526.9 Million
- Annual Operating Costs, 1991 dollars (Incremental, over the TSM alternative)
 - Rapid Transit alternatives \$12.1-\$14.5 Million

Board Action

None

1991: Metro Area Connection (Central Corridor)



1991: Metro Area Connection (Central Corridor)

Alternative Routes Studied

- Auraria to 30th and Downing with one way crosssmall loop on Stout and California.
- Numerous Central Business District (CBD) cross street alternatives.

Alternative Technology Selected

Light Rail Transit (LRT)

System Description

- The Central Corridor LRT was planned to be a 3 mile Light Rail System running through downtown Denver from near 6th Avenue and Mariposa to 30th Avenue and Downing.
- The Central Corridor LRT operates at grade and is double tracked through Downtown between the south end and 24th and Welton, and single tracked from this point to the end of the line at 30th and Downing.
- The project was planned to operate at 5 minute headways in the peak hours and 10 minute headways in the off-peak hours.
- The project includes a bus transfer station and a small park-n-Ride at the north-eastern end of the line.
- The system was funded entirely by RTD through an existing Use Tax that was earmarked by the RTD Board for rapid transit implementation in the region.
- The Central Corridor LRT was designed to function in the future as a downtown collection and distribution system for the regional rapid transit system.
- The Central Corridor LRT provides the region's first demonstration of Light Rail Transit.
- Initially known as the Metro Area Connection (MAC), the name has been changed to the Central Corridor LRT to represent the project's role in a larger, regional system.

Projections

- Capital Cost, 1990 dollars \$67-\$70 Million
- Operation and Maintenance costs, 1990 dollars \$2.44 Million/year
(stand-alone system)
- Opening day (1993) ridership (stand-alone system) 4,600
- Year 2010 ridership (stand-alone system) 9,900
- Year 2010 ridership (with full build-out of regional transit system) 73,300

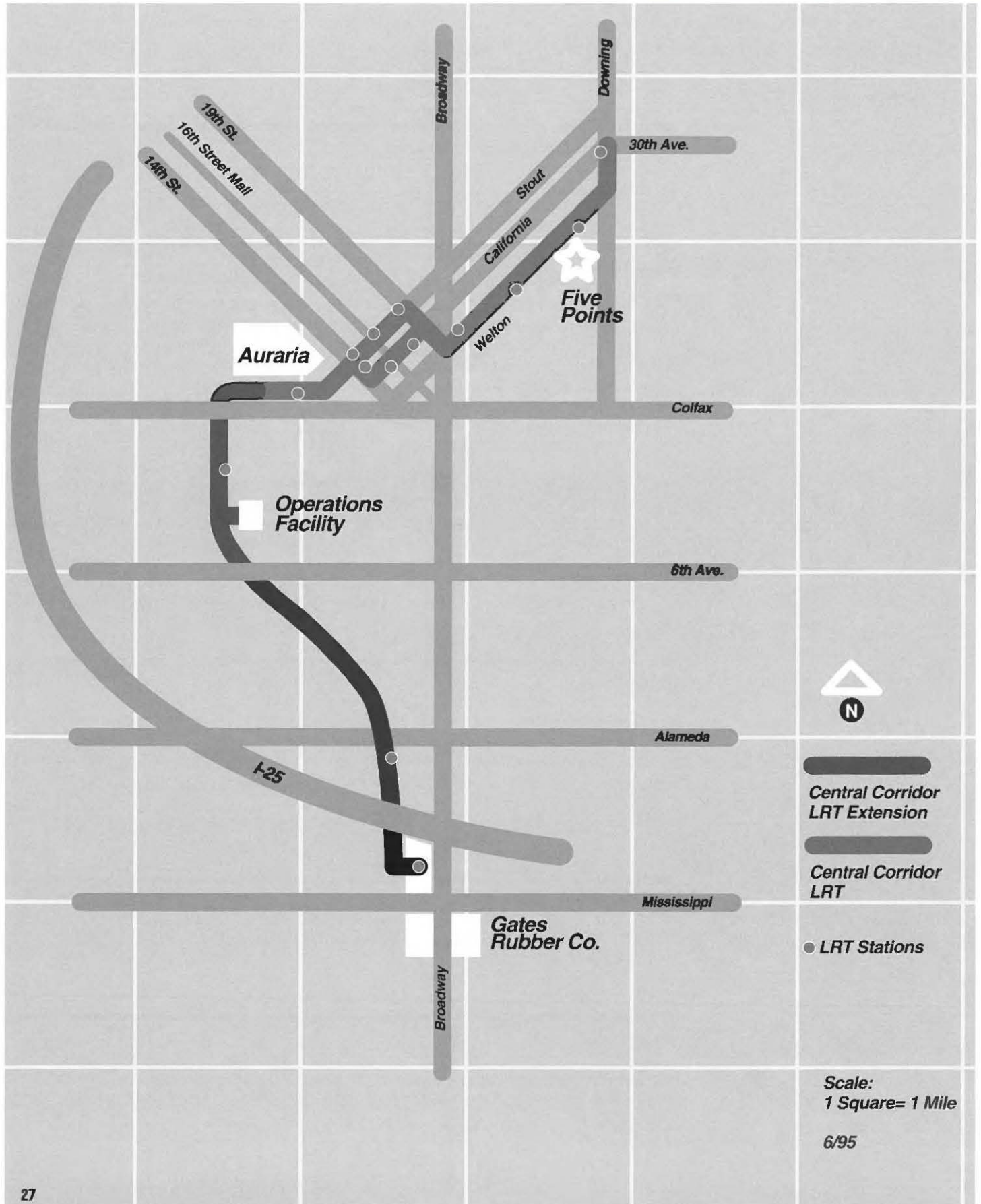
Board Action

In February 1991 the Board adopted a resolution that earmarked \$40 million from the unrestricted funds of the RTD's investment portfolio for the Central Corridor LRT project.

Response

The Denver Regional Council of Governments approved the project in July 1991 as required by Senate Bill 208. The project opened in conjunction with the south LRT extension on October 7, 1994.

1992: MAC South Extension (Central Corridor)



1992: MAC South Extension (Central Corridor)

Alternative Routes Studied

Auraria Station (approximately Colfax and 10th Street) to I-25/Broadway

Alternative Technology Selected

Light Rail Transit (LRT)

System Description

- The Central Corridor extension is a 3.2 mile extension of light rail passenger service from Auraria Campus to the I-25/Broadway station.
- Stations are located at 10th and Osage, Alameda (Broadway Marketplace), and I-25/Broadway.
- The extension operates on an exclusive right-of-way for the entire length from Auraria to I-25/Broadway.
- The service was projected to operate at 5 minute headways in the peak period and 10 minute headways in the off-peak hours.
- The I-25/Broadway station functions as a major bus transfer facility and park-n-Ride.
- The Central Corridor extension removes approximately 500 daily bus trips from downtown streets and reduces RTD's peak bus fleet requirement by 26 buses.
- The bus savings in this corridor translates to approximately \$2.3 million per year in bus operating and maintenance costs, and \$0.76 million per year in annualized bus capital costs.
- The complete 5.3 mile system uses eleven LRT vehicles. With the approval of the RTD Board in late 1994, six additional vehicles were ordered to meet excessive peak hour demand. At a cost of about \$11.7 million, the LRT vehicles will be delivered in 1996 for immediate use.

Projections

- Capital costs, 1992 dollars \$32.1 million
- Operation and Maintenance costs, 1991 dollars \$1.2 million/year
(stand-alone system)
- Opening day (1995) ridership (stand-alone system) 8,400
- Year 2010 ridership (stand-alone system) 11,700
- Year 2010 ridership (as part of the regional system) 68,500

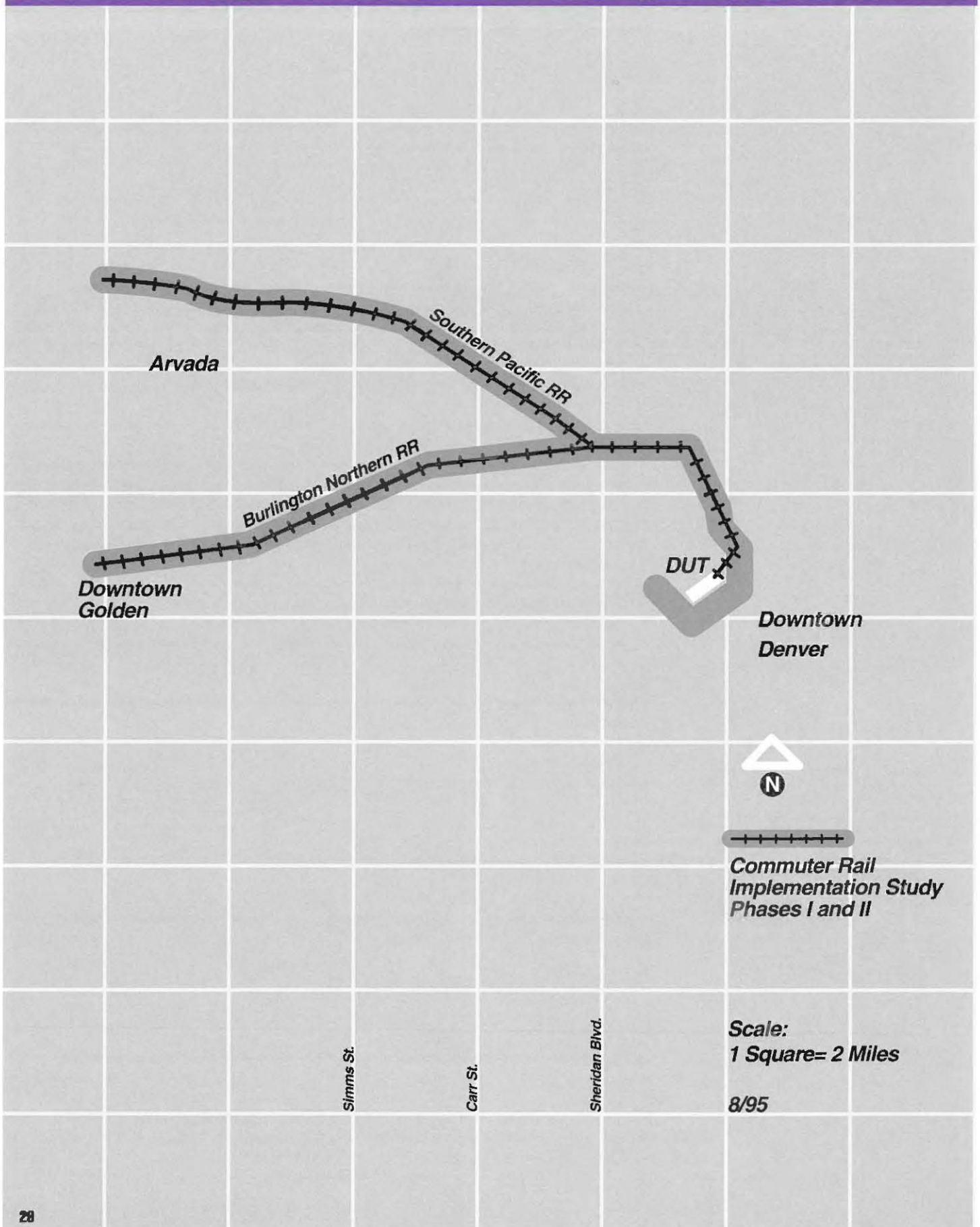
Board Action

April 1992: the Board approved extending the Central Corridor south to the Burkhardt property and initiating the S.B. 208 process for DRCOG approval.

Response

The Denver Regional Council of Governments approved the south extension in October 1992 as required by S.B. 208. This project opened in conjunction with the Central Corridor Light Rail on October 7, 1994.

1992/1993: Commuter Rail Implementation Study Phase I and II



1992/1993: Commuter Rail Implementation Study Phase I and II

Alternative Routes Studied

- D&RGW Arvada line
- Burlington Northern line to Golden (Gold Line)

Alternative Selected

Burlington Northern alignment to Golden (Gold Line)

System Description

- Phase I of the Commuter Rail Implementation Study explored whether the two railroads were amenable to operating commuter rail service. The operation of commuter rail into downtown Denver would involve running over both the BN and D&RGW alignments. Therefore, the Phase I Study sought to obtain a Memorandum of Understanding from each of the railroads to further explore future rail implementation.
- Phase II of the Commuter Rail Implementation Study developed preliminary operating plans; estimated operating, maintenance, and capital costs; developed ridership forecasts; assessed environmental impacts, and also examined potential financing options.
- The selected alternative was the BN alignment to Golden. The study recommended that any further study of the D&RGW Arvada line be discontinued. This consensus was developed from community groups in Jefferson County, Arvada, and Golden.
- The Phase II study also recommended the integration of the Denver Air Train proposal for service to DIA with RTD commuter rail service to Golden in order to reduce costs and increase overall ridership.

Projections

- Capital Costs were \$42,630,900 (Golden Line) and \$26,838,100 (Arvada Line) in 1992 dollars.
- Annual Operating and Maintenance costs were \$1,350,771 (Golden Line) and \$1,059,086 (Arvada Line) in 1992 dollars.
- Opening day (1996) daily ridership was 1,275 (Golden Line) to 1,000 (Arvada Line).
- Year 2010 daily ridership was 1,935 (Golden Line) to 1,560 (Arvada Line).

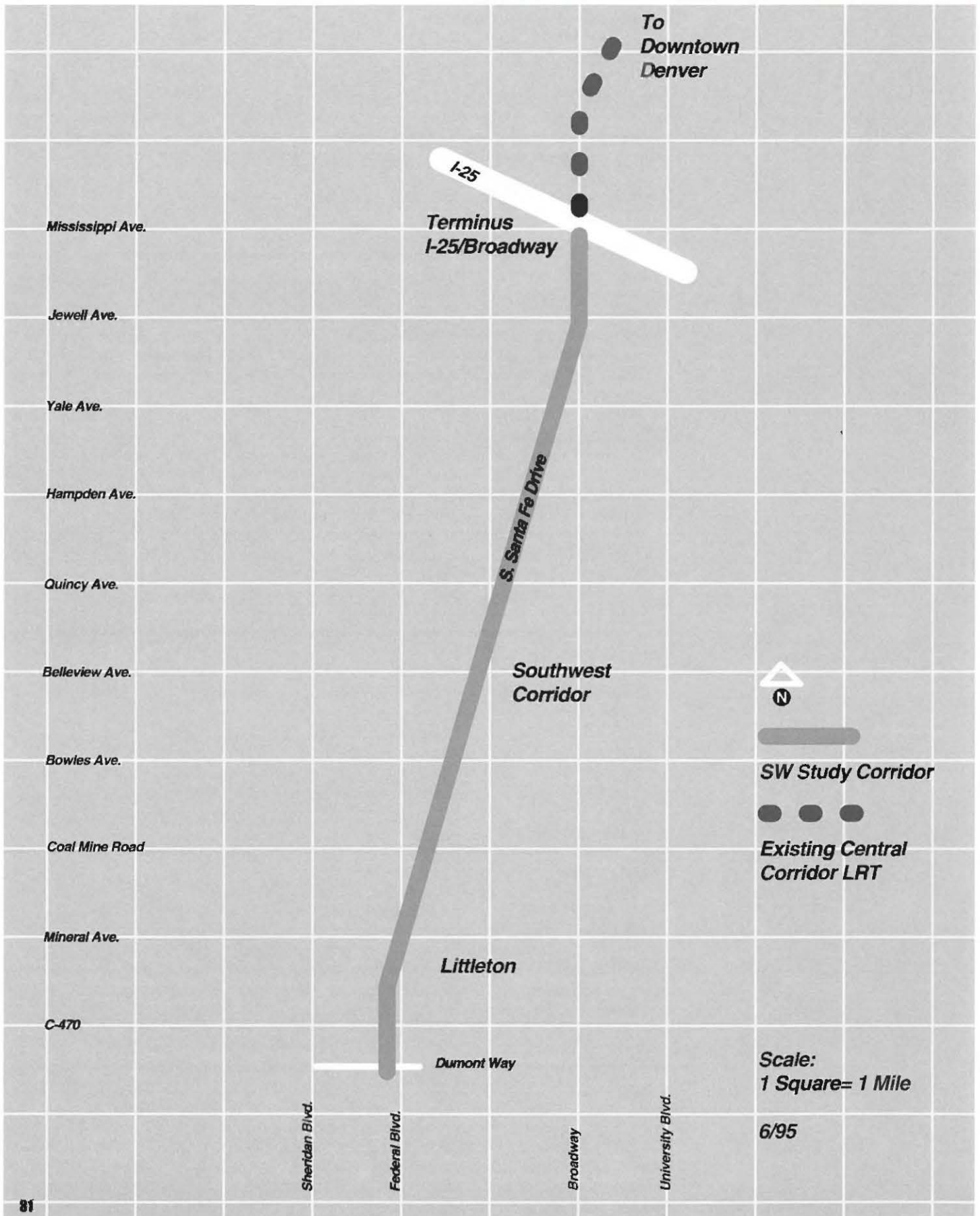
Board Action

- April 1991: the RTD Board authorized the General Manager to proceed with Phase I of the Study.
- May 1992: based on the Memorandum of Understanding signed with Burlington Northern railroad and the indication that the Denver and Rio Grande Western railroad would sign a similar agreement, the Board issued a Notice to Proceed to complete Phase II of the Implementation Study.

Response

Instead of proceeding to Phase III as originally planned, the Board accepted an offer by BN Railroad to conduct an internal study looking at operating and capital costs of operating commuter service. BN concluded the operating costs would be almost twice as high as those projected in the Phase II Study, while the capital cost would be slightly lower. No further Board action was taken.

1994: Southwest Corridor Alternatives Analysis/ Major Investment Study





1994: Southwest Corridor Alternatives Analysis/ Major Investment Study

Alternatives Studied

- Busway
- Transportation System Management (TSM)
- Commuter Rail
- Light Rail Transit (LRT)

Alternative Selected

Light Rail Transit

System Description

- Originally, the Southwest Corridor study began under the guidelines of the Federal Transit Administration's (FTA) Alternatives Analysis planning process. During the study, the FTA and the Federal Highway Administration (FHWA) issued new planning regulations changing this planning process into the Major Investment Study. These new guidelines required a variety of transportation options (transit and highways) be examined in order to select the locally preferred alternative to receive federal funding.
- The 8.7 mile alignment begins at the Central Corridor LRT terminus at I-25 and Broadway and travels south on the east side of the freight railroad alignment (along Santa Fe) to just north of Belleview, where the LRT alignment crosses over the railroad tracks ending at Mineral Avenue in Littleton.
- The Southwest LRT will operate in a separate right-of-way at 10 minute headways in the peak hours and 20 minute headways in the off-peak hours. By 2015, service north of the Evans Station will operate at 5 minute headways in the peak period.
- There will be five stations built, including stations at Evans Ave, Hampden Ave, Oxford Ave, downtown Littleton, and Mineral Ave.
- Express bus routes currently serving the study area will be changed to feeder service with transfers between LRT and buses occurring at the stations. New bus routes will be added to supplement the feeder service.

Projections

- Capital Cost (1992 dollars) \$127.5 million
- Year 2015 Operation and Maintenance costs, 1992 dollars \$4.3 million
- Opening Day, 1999 daily ridership 9,100
- Year 2015 ridership (stand-alone system) 20,300

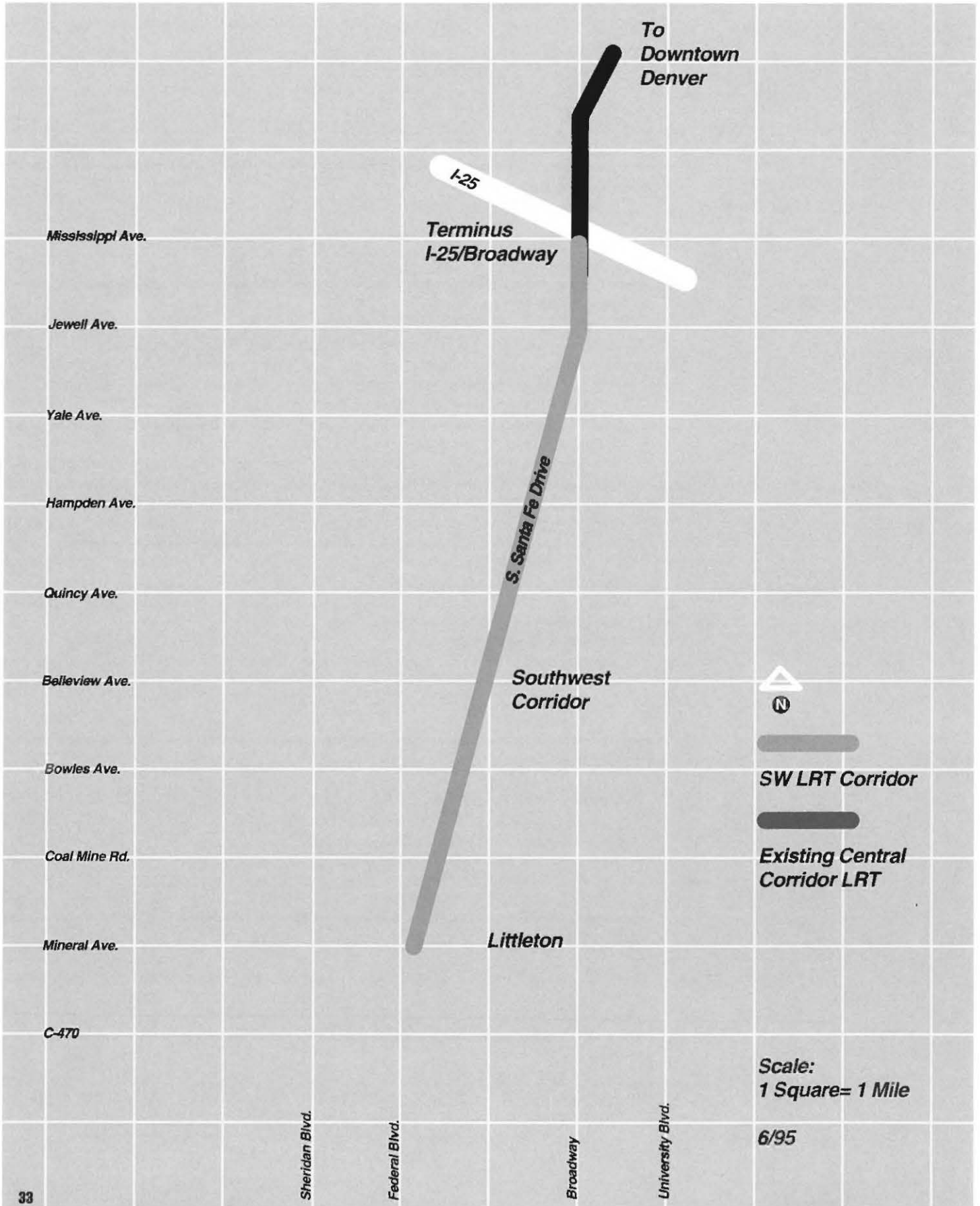
Board Action

The RTD Board adopted Light Rail Transit as the locally preferred alternative in March 1994.

Response

In response to the SB 208 process, the DRCOG Board approved both light rail technology and the proposed method of financing for the Southwest Corridor LRT project in July 1994.

1995: Southwest Corridor Preliminary Engineering/Environmental Impact Statement





1995: Southwest Corridor Preliminary Engineering/Environmental Impact Statement

Alternatives Studied

- Locally preferred alternative (LRT)
- No-Build

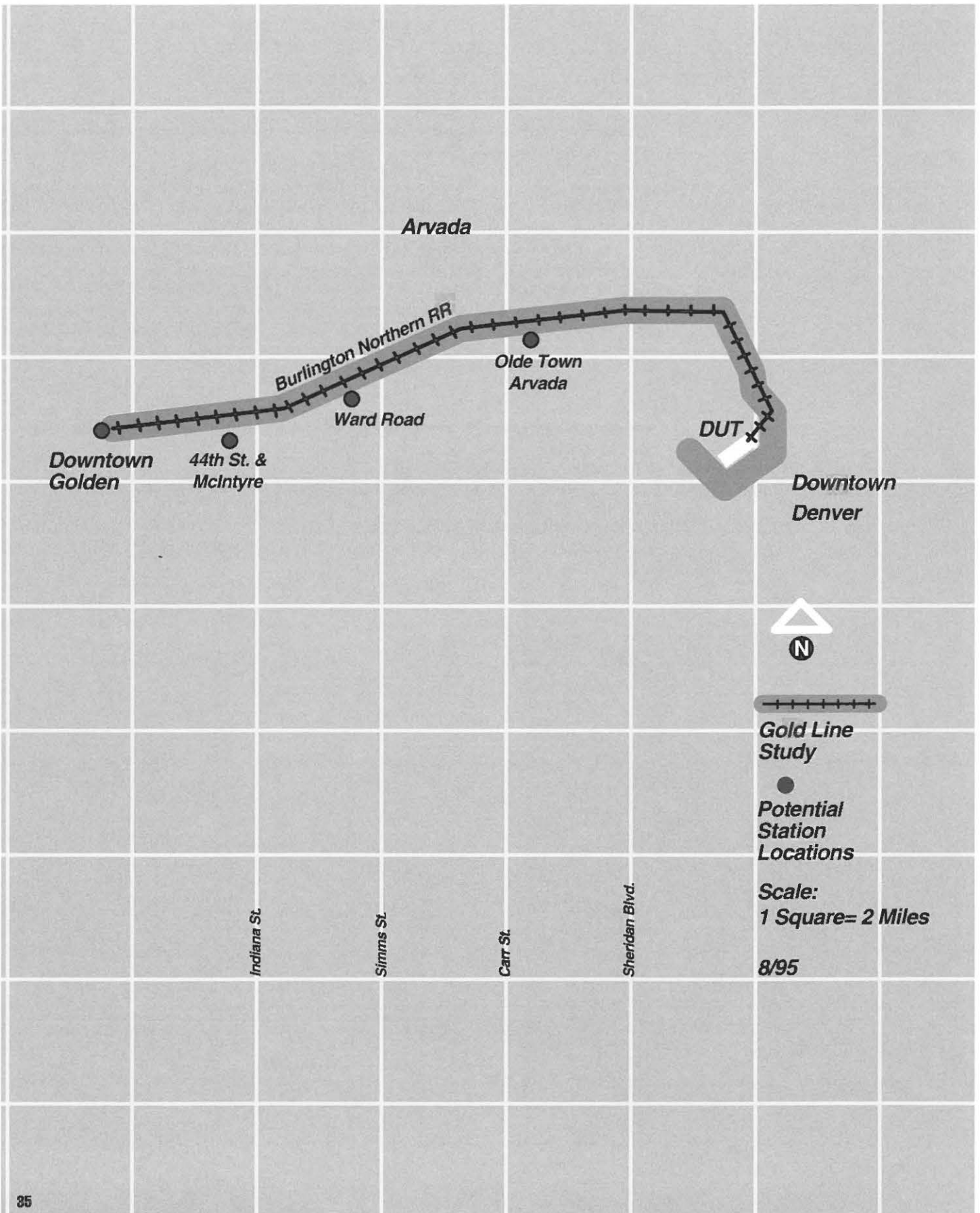
System Description

- The Environmental Impact Statement (EIS) assesses the wide range of impacts associated with implementing LRT compared with the No-Build alternative, as required by federal legislation.
- The EIS divides impacts into two broad categories: 1) traffic impacts and mitigation; 2) environmental consequences and mitigation.
- The Preliminary Engineering (PE) work will complete 30% of design. Issues examined include the vertical and horizontal alignment of the light rail and relocated freight railroad tracks, structure selection, cost estimates, land acquisition, utility location, geotechnical analysis, and preliminary specifications.
- Both efforts are expected to be completed in December 1995.

Board Action

- July 1994: the Board approved the preliminary engineering work for the Southwest Corridor. This work will be completed in two different efforts--engineering design and freight rail relocation.
- August 1994: the Board approved the contract for completion of the EIS for the Southwest Corridor.
- September 1995: the Board approved expenditures of \$3.9 million to complete final design pending a Record -of-Decision for the EIS from the Federal Transit Administration.

1995: Gold Line Commuter Rail Study



1995: Major Investment Studies (MIS)

Alternatives Studied

- Commuter Rail
- Light Rail Transit (LRT)
- Busway/HOV
- Highway Improvements
- Transportation System Management (TSM)
- Automated Guideway Transit (AGT)
- Additional transportation alternatives as suggested through public input

Alternative Selected

None, studies currently underway

System Description

- In 1994, the Federal Transit Administration (FTA) along with the Federal Highway Administration (FHWA) issued new planning regulations changing the FTA required Alternatives Analysis to the Major Investment Study process. The new federal regulations require studies to examine multi-modal solutions which are fiscally constrained.
- There are three concurrent Major Investment Studies (MIS) in progress. The eighteen month studies will be completed in late 1996 and will be a cooperative regional planning effort.
- The Colorado Department of Transportation (CDOT) is leading the study in the Southeast Corridor MIS. The study area is the south I-25 corridor beginning at 6th Avenue on the north and Lincoln Ave on the south. The I-225 corridor is also included from I-25 to the Parker Road interchange.
- The Regional Transportation District (RTD) is the lead agency for the West Corridor MIS. The study corridor generally parallels US-6 and extends from downtown Denver to Golden.
- The East Corridor MIS, led by the Denver Regional Council of Governments (DRCOG), focuses on the I-70 corridor from downtown Denver to the Denver International Airport.

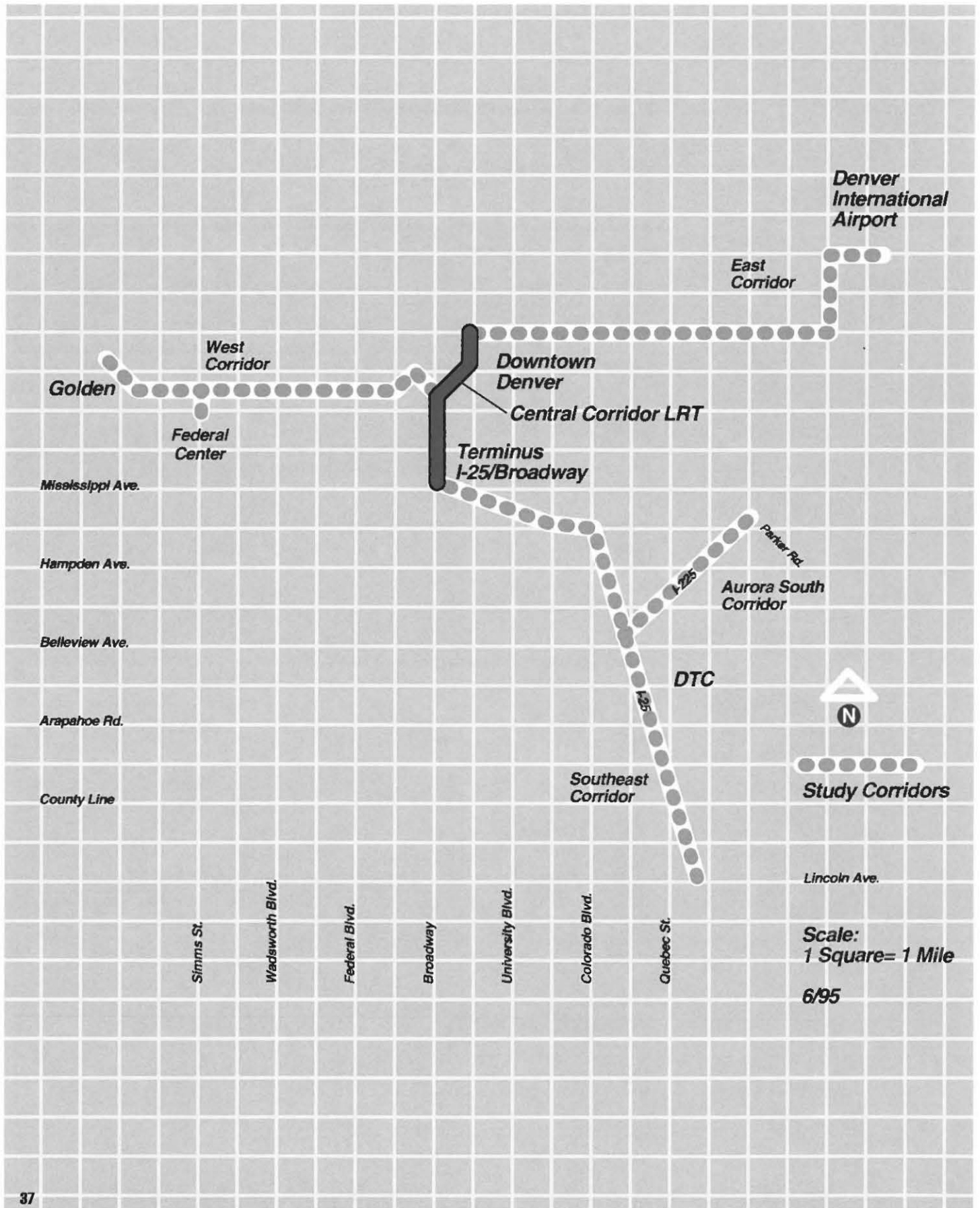
Projections

Ridership data, operation and maintenance, and capital cost projections will be available at the completion of the study in 1996.

Board Action

In December 1994, the Board authorized the General Manager to negotiate a contract with the consultant for planning work on the West Corridor MIS.

1995: Major Investment Studies (MIS)



1995: Major Investment Studies (MIS)

Alternatives Studied

- Commuter Rail
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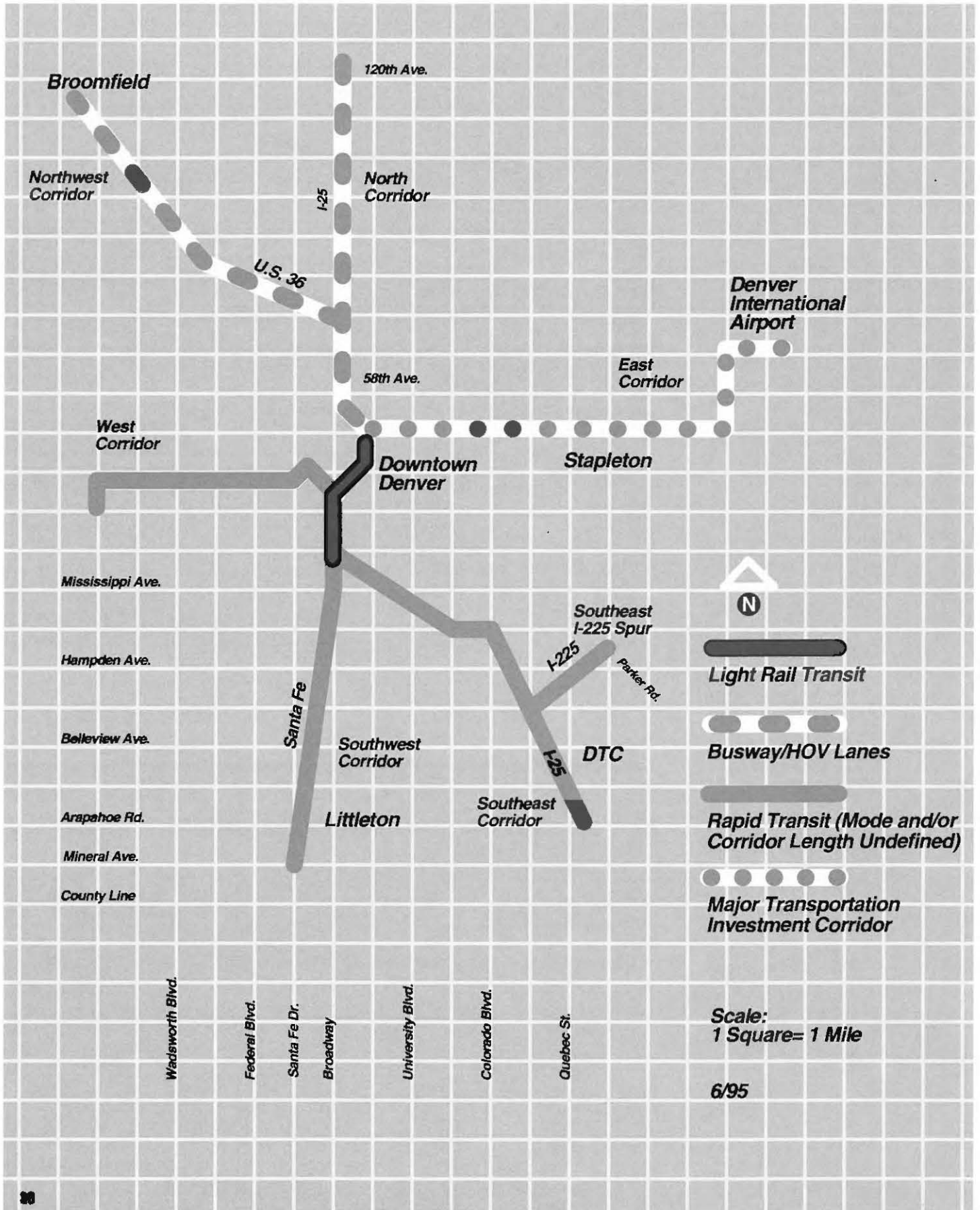
Projections

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Board Action

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1993: DRCOG 2015 Interim Regional Transportation Plan



1993: DRCOG 2015 Interim Regional Transportation Plan

System Description

- The fiscally constrained 2015 Interim Regional Transportation Plan (RTP) is the master transportation plan for the Denver region as approved by the Denver Regional Council of Governments (DRCOG).
- Regionally significant projects must be included on the plan before construction.
- Sixty miles of assumed rapid transit corridors, supplemented by a large background bus system, comprise the planned 2015 transit system.
- The projected transit portion of the capital cost includes the completion of HOV facilities in the identified corridors, assumed LRT in the Southwest, Southeast, I-225, and West Corridors, and a major transportation investment (technology undefined) in the corridor to Denver International Airport.

Projections

- Year 2015 daily transit patronage 230,000
- Capital Cost (transit portion), 1992 dollars \$1,343 million

Board Action

The DRCOG Board originally adopted the 2015 Interim Regional Transportation Plan on October 13, 1993, with a subsequent amendment in September 1995.