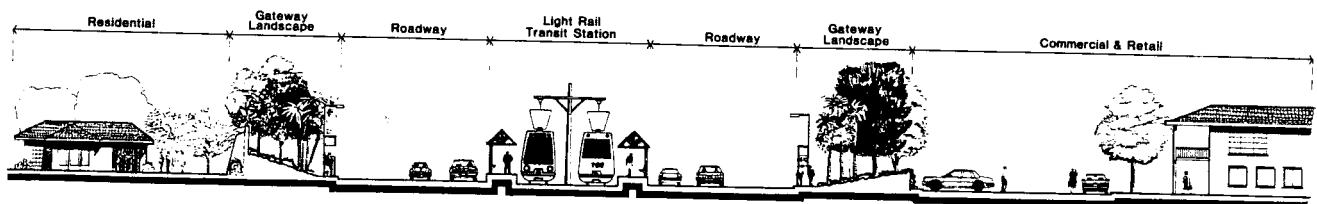


# ORACLE- SOUTH SIXTH CORRIDOR STUDY

## EXECUTIVE SUMMARY



The City of Tucson  
Department  
of Transportation

September 1991

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## **1.0 INTRODUCTION**

### **1.1 Background**

During the Spring of 1989, as the Broadway Corridor Study-Phase II (Transitional Corridor Analysis) and the BAJA Study project were in progress, it became apparent to the Mayor and Council of the City of Tucson that the concept of a community-wide transit capital investment should be studied in more detail. As the Broadway Corridor Study-Phase II provided the City with technical tools to investigate various transit technologies in other high priority corridors, a work program was approved by the Mayor and Council in May 1989 that would investigate various busway (buses operating on exclusive rights-of-way) and light rail transit (LRT) (operating mainly on exclusive rights-of-way) alternatives between the Tucson Mall and the Tucson International Airport (referred to as the Oracle Road/South Sixth Avenue Corridor).

In addition, alternatives would be tested that would combine the Oracle Road/South Sixth Avenue Corridor alternatives with compatible Broadway Corridor busway and LRT alternatives studied in the Broadway Corridor Study-Phase II. During this same time period, the City began a major Downtown Land Use and Circulation Study (DLUCS), and it was agreed that the Oracle Road/South Sixth Avenue Corridor Study would only analyze alternative alignments north and south of the downtown. Alignment assumptions within the Central Business District (CBD) were made on a generic basis to estimate the ridership and costs of the alternatives developed in the study.

### **1.2 Project Description**

The Oracle Road/South Sixth Avenue Corridor Study work program defined the corridor as approximately one-mile wide.

The study work program stated that four alternative concepts would be developed and analyzed for transit ridership estimates. These were:

- Oracle Road and South Sixth Avenue combined for LRT,
- Oracle Road, South Sixth Avenue, and Broadway Boulevard combined for LRT,
- Oracle Road and South Sixth Avenue combined for a busway,
- Oracle Road, South Sixth Avenue, and Broadway Boulevard combined for a busway.

The study also included the analysis of three physical alignments north of the downtown to Tucson Mall including Oracle Road, 10th Avenue, and Stone Avenue. South of downtown to the Tucson International Airport (TIA), the Southern Pacific Railroad Drill Track alignment, South Sixth Avenue, and 12th Avenue were studied. South of the Laos Transit Center the route to the airport used Nogales Highway, Drexel, Kino-Campbell, Valencia, and Tucson Boulevard.

## **2.0 COMMUNITY PARTICIPATION**

A citizen participation program, developed to ensure coordination with known interested and affected community groups, was established for the Oracle Road/South Sixth Avenue Corridor Study. The program consisted of a Community Coordination Forum and public open house, which provided the citizens with opportunities to review and comment on the findings of the study.

Representatives of 11 agencies were on the Community Coordination Forum which met three times during the study process, and the open house for the general public attracted 150 citizens.

### **3.0 SUMMARY OF ALTERNATIVES**

The initial process of developing alternatives for the Oracle Road and South Sixth Avenue primarily consisted of two steps. First, the alignments were laid out by the citizens advisory committee; second, technical feasibility was determined. This process, coupled with existing population, employment, and transit usage figures set the framework for the development of the alternatives studied.

A summary description of the four transit alternatives analyzed for patronage forecasting are given below. Although patronage would vary only slightly by moving the alignment within the mile corridor, costs could vary substantially. Therefore, for costing purposes, three alignment options were analyzed. Figures A and B display these alignments. Alignment 1 follows Oracle Road in the north and 10th/12th Avenue to Irvington to Nogales Highway to Drexel to Campbell to Valencia to Tucson Boulevard in the south. Alignment 2 follows Stone Avenue in the north and Sixth Avenue to Nogales Highway to Drexel to Campbell to Valencia to Tucson Boulevard in the south. Alignment 3 follows 10th Avenue in the north and Sixth Avenue to Drexel to Campbell to Valencia to Tucson Boulevard in the south. The "Do Nothing" alternative for this study assumed implementation of the Short Range Transit Plan (SRTP).

The background bus network or Best Bus/TSM alternative was developed as part of the Broadway Corridor Study Phase II. It represents the best transit ridership and level of service that can be achieved without a major transit capital investment. This bus system was the starting point for each alternative and then modified to optimize the service needs applicable to each alternative, which are described below. The highway portion of each alternative remains constant throughout all four alternatives.

#### **Alternative A - LRT - Tucson International Airport to the Tucson Mall**

Alternative A (Figure C) provides for an at-grade, two-way, double-tracked LRT system between the Tucson International Airport and the Tucson Mall. The LRT would operate two-car trains at five minute headways in the peak periods and ten minute headways in the off-peak periods. This service would require 24 rail vehicles in the peak period. Seventeen stations would be constructed along the route, providing access approximately every mile. Figure C displays this alternative with station locations and pertinent features along the corridor.

The background bus network was modified to optimize the feeder bus service to the LRT line and applicable express bus services were eliminated where the LRT served those areas. This service required 664 buses.

#### **Alternative B - LRT - The Tucson "T"- Broadway and Oracle/South Sixth**

Alternative B (Figure D) is a combination of Alternative A (above) and Alternative 5 from the Broadway Corridor Study-Phase II. It has the same alignment and cross section configuration, station locations, and operating headways as Alternative A. It also provides a LRT system on Broadway Boulevard between Pantano and the CBD, with five minute headways in the peak and 10 minute headways in the off-peak. The entire LRT service

would require 40 rail vehicles in the peak period. Nine stations would be constructed along Broadway. This alternative would have a total of 26 stations including three in the CBD.

The background bus service was modified to feed the LRT system, and applicable express service was eliminated. A shuttle bus on Highland or Cherry would provide service to and from the University of Arizona's main campus. This bus service would require 605 buses.

#### Alternative C - Busway - Tucson International Airport to Tucson Mall

Alternative C (Figure C) provides for a two-way busway in the median from the Tucson International Airport to the Tucson Mall. Several streets are utilized for the busway, beginning on Tucson Boulevard at the airport, then jogging over to South Sixth Avenue continuing to the downtown where the buses then operate in mixed flow through the CBD, return into the busway on Stone Avenue, and continue up to the Tucson Mall. The buses can enter the busway at approximately every mile with express stops at locations similar to the stations identified in Alternative A. Major transfer locations include the Laos Transit Center, the Ronstadt Transit Center, and the Tucson Mall. The background bus system was modified to include additional express service and neighborhood circulators to utilize the busway. The frequency in the busway is under five minutes. This service will require 820 buses.

#### Alternative D - Busway - The Tucson "T" - Broadway and Oracle/South Sixth

Alternative D (Figure D) is a combination of Alternative C (above) and Alternative 3 from the Broadway Corridor Study-Phase II. In addition to the busway as described above, a busway is also included in the median of Broadway Boulevard from Pantano to the CBD. Again, access to the busway could occur approximately every mile. Local bus service is also maintained on Broadway Boulevard and a shuttle bus to the U of A is included. Frequency on the Broadway portion of the busway is approximately two minutes. This service will require 842 buses.

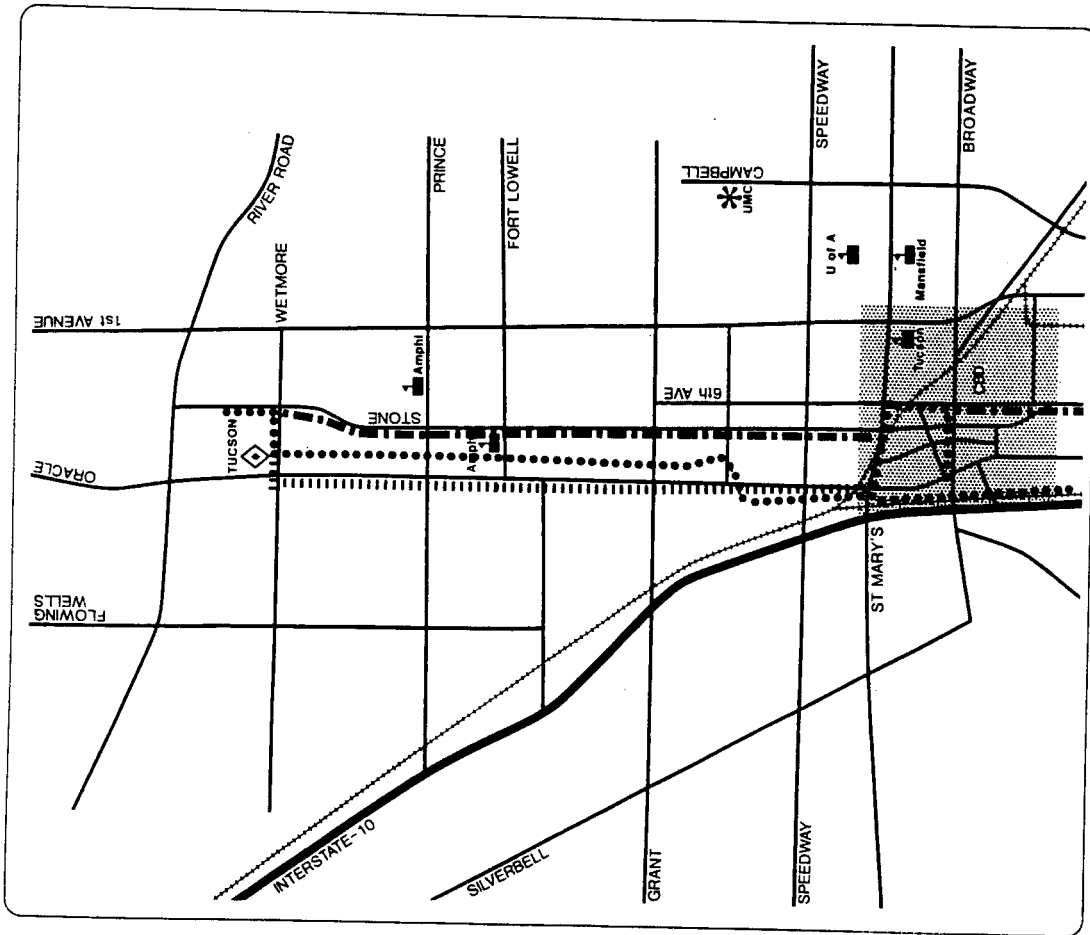
## **4.0 RIGHT-OF-WAY ANALYSIS**

As part of this study, an analysis was conducted to determine the potential right-of-way costs and impacts associated with candidate LRT or busway alignments linking the Tucson Mall with the Tucson International Airport. Six alignments were analyzed; three from the CBD north to the Tucson Mall, and three from the CBD south to the airport. The assumptions, methodology, and results of the right-of-way analysis are described in detail in the final report.

Tables 4.1 and 4.2 display the estimated assessed valuation, estimated right-of-way costs, estimated fair market costs, and the number of full takes for the six alignments. The total assessed value cost ranges from \$5.8 million in the South Sixth Corridor to \$15.9 million on the Stone Avenue alignment in the Oracle Road Corridor. The fair market value was calculated to be approximately 1.5 to 2.0 times the assessed value.

It should also be noted that an additional \$2.0 million will be required for the South Yard Drill Track alignments to acquire the rail rights now serving the existing businesses north of 22nd Street.

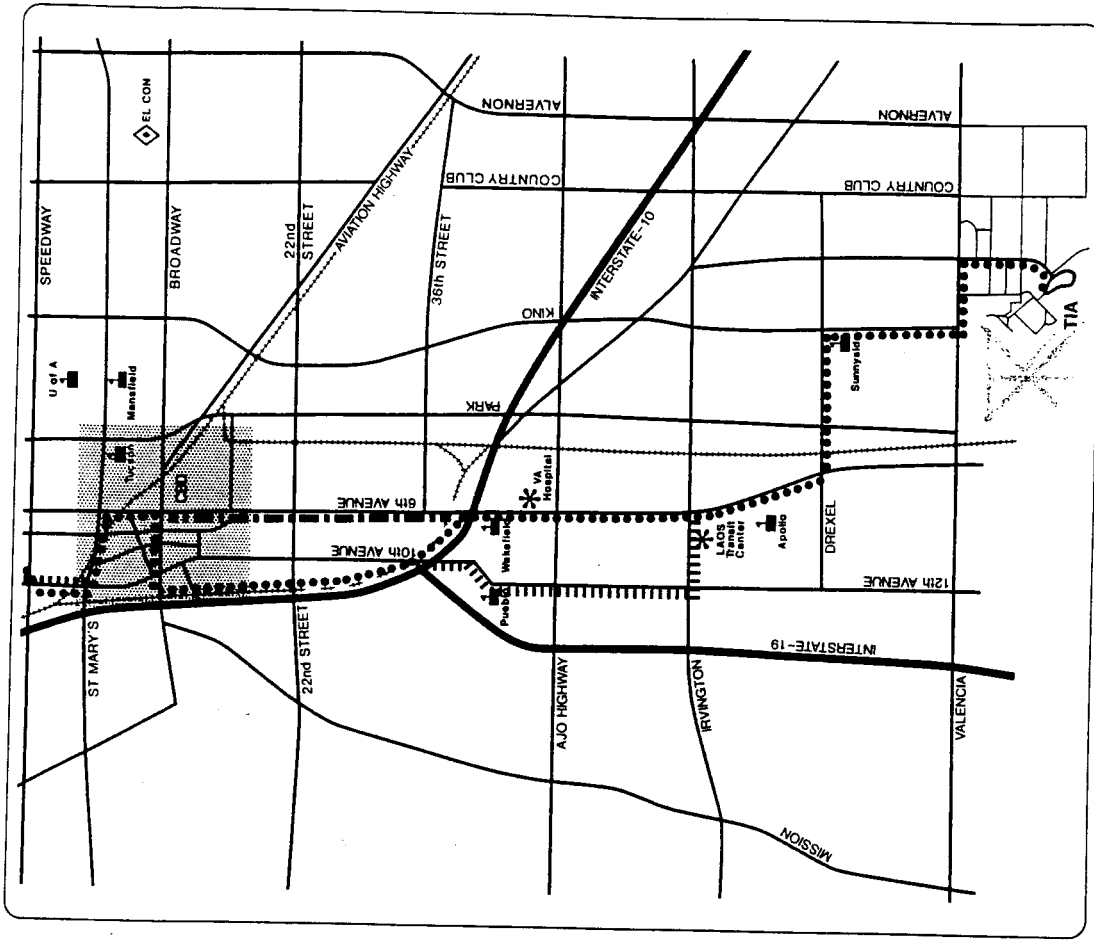
Actual right-of-way costs for each alternative are probably higher than estimated, and cost savings could be realized through the sell back of excess right-of-way. However, the data presented is of sufficient detail to be used for comparison and order-of-magnitude definition of costs. A more detailed study of property values and an assessment of fair market pricing should be completed before programming of funds occurs.



**ORACLE CORRIDOR ALIGNMENT CONCEPTS**

- Alignment ONE
- Alignment TWO
- Alignment THREE
- Central Business District

City of Tucson  
 12345  
 Robert L. Johnson  
 Robert L. Johnson






**SOUTH SIXTH CORRIDOR ALIGNMENT CONCEPTS**

- Alignment ONE
- Alignment TWO
- Alignment THREE
- Central Business District

City of Tucson  
 12345  
 Robert L. Johnson  
 Robert L. Johnson



**ALIGNMENT FOR ALTERNATIVE A: LIGHT RAIL TRANSIT AND ALTERNATIVE C: BUSWAY TO TUCSON MALL AND TUCSON INTERNATIONAL AIRPORT**

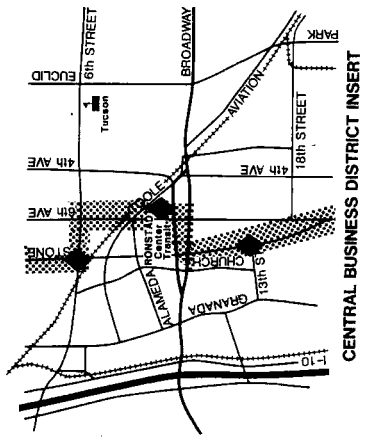
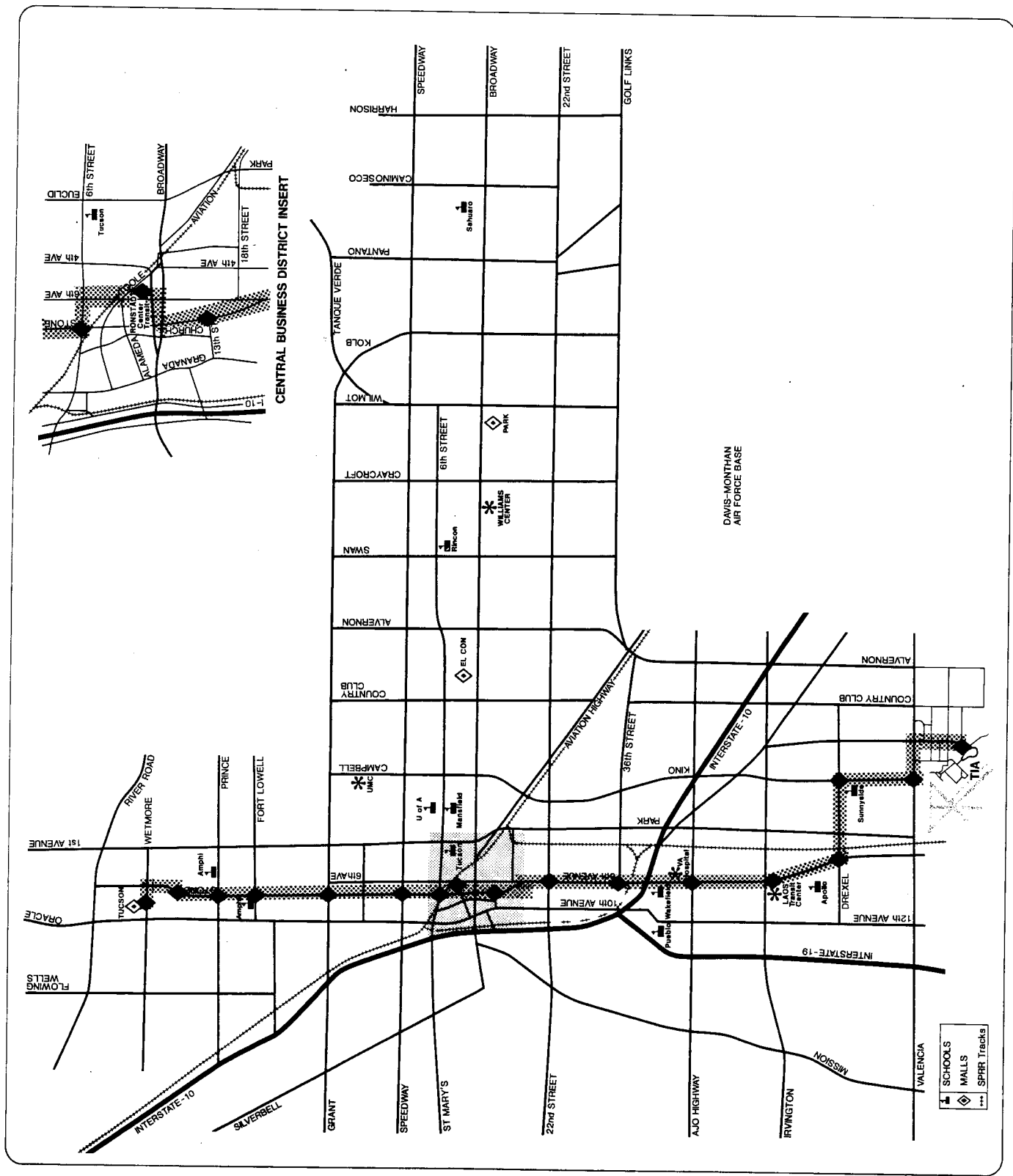
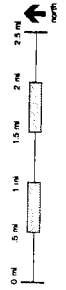
-  Light Rail Transit/Busway
-  Station Stop
-  Central Business District

**ORACLE-SOUTH SIXTH CORRIDOR STUDY**



City of Tucson

Prepared by  
 RILIBO CONSULTING GROUP  
 Rogers, Gladwin & Rothman

**C** figure



**SYSTEM ALIGNMENT FOR  
ALTERNATIVE B:  
LIGHT RAIL TRANSIT  
AND ALTERNATIVE D:  
BUSWAY**

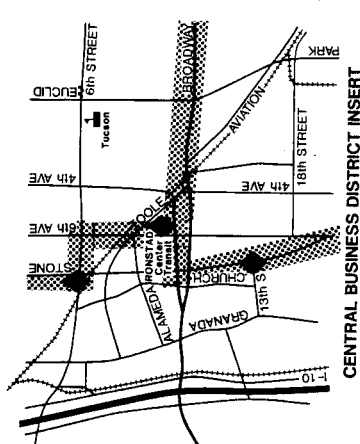
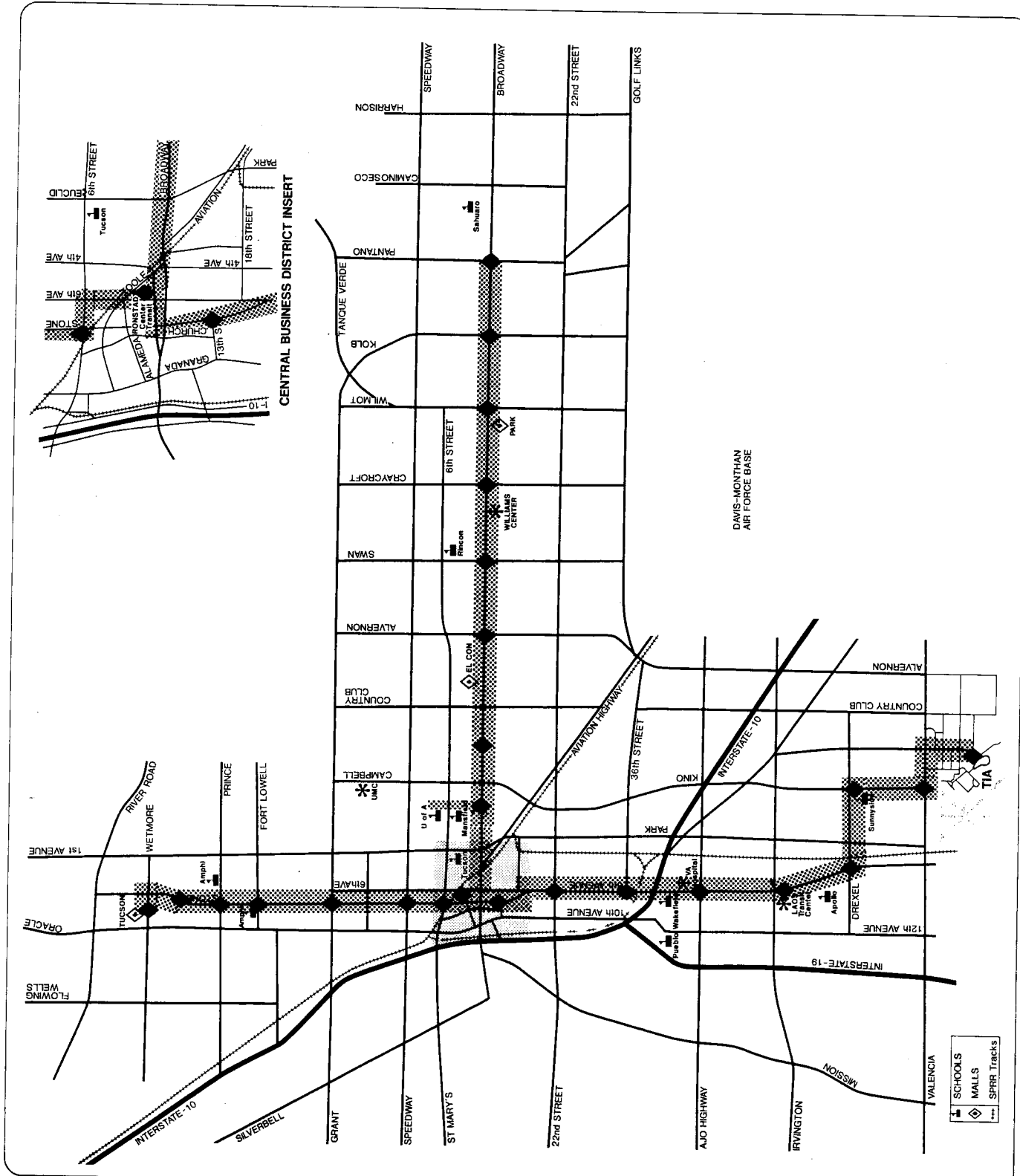
-  Light Rail Transit/Busway
-  Station Stop
-  Central Business District

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**D**  
figure



**TABLE 4.1**  
**Oracle Corridors (CBD to Tucson Mall)**

<i>Alignment</i>	<i>Assessed Value</i>	<i>Assessed Value Cost (\$ millions)</i>	<i>Est. Fair Market Cost (\$ millions)</i>	<i>Full Takes</i>
Oracle Road	Land = \$12/sf Land & Bldg. = \$15/sf	\$10.2	\$15.3- \$20.4	8 Residential 21 Business
Neighborhood Alignment	Land & Bldg. = \$15/sf	\$ 8.8	\$13.2- \$17.6	22 Residential 1 Business
Stone Avenue	Land = \$5/sf Land & Bldg. = \$12/sf	\$15.9	\$23.9- \$31.8	37 Residential 58 Business

**TABLE 4.2**  
**South Sixth Corridor (CBD to TIA)**

<i>Alignment</i>	<i>Assessed Value</i>	<i>Assessed Value Cost (\$ millions)</i>	<i>Est. Fair Market Cost (\$ millions)</i>	<i>Full Takes</i>
South Yard Drill Track to 10th/12th to Irvington to Nogales Hwy. to Drexel to Campbell to Valencia to Tucson Blvd.	SPRR = \$2/sf 12th Ave. Land = \$1.50/sf Land & Bldg. = \$3.50/sf	\$ 5.8	\$ 8.7- \$11.6	72 Residential 39 Business
South Yard Drill Track to 6th Ave. to Drexel to Campbell to Valencia to Tucson Blvd.	SPRR = \$2/sf 6th Ave. Land = \$3/sf Land & Bldg. = \$7/sf	\$ 7.2	\$10.8- \$14.4	14 Residential 43 Business
6th Ave. to Nogales Hwy. to Drexel to Campbell to Valencia to Tucson Blvd.	6th Ave. Land = \$3/sf Land & Bldg. = \$7/sf	\$ 9.3	\$14.0- \$18.6	14 Residential 80 Business