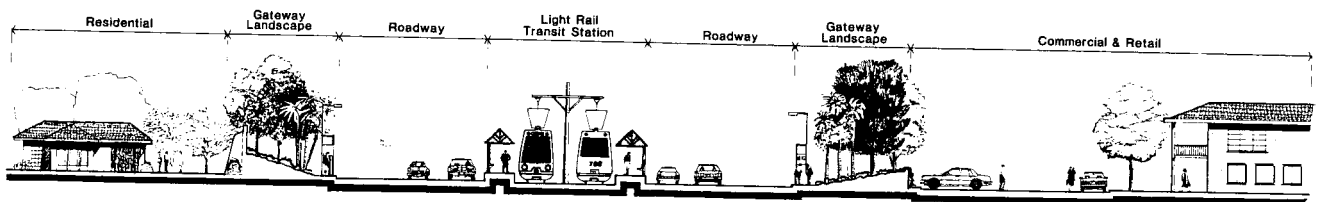


ORACLE- SOUTH SIXTH CORRIDOR STUDY

Final Report



The City of Tucson
Department
of Transportation

July 1991

prepared by

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ORACLE ROAD/SOUTH SIXTH AVENUE CORRIDOR STUDY

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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 developed and 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 corridor study area is shown in Figure 1.1 and includes the Broadway Corridor Study area, also.

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. The alternatives studied are described in more detail in Chapter 3.

The study estimated ridership, capital costs (including right-of-way), and operating and maintenance costs for each alternative.

In addition, the study included a community participation program (Chapter 2), a detailed right-of-way cost analysis (Chapter 4), and urban design concepts (Chapter 5).

Due to the somewhat technical nature of this report, a glossary of terms is included in Appendix A to aid the reader.

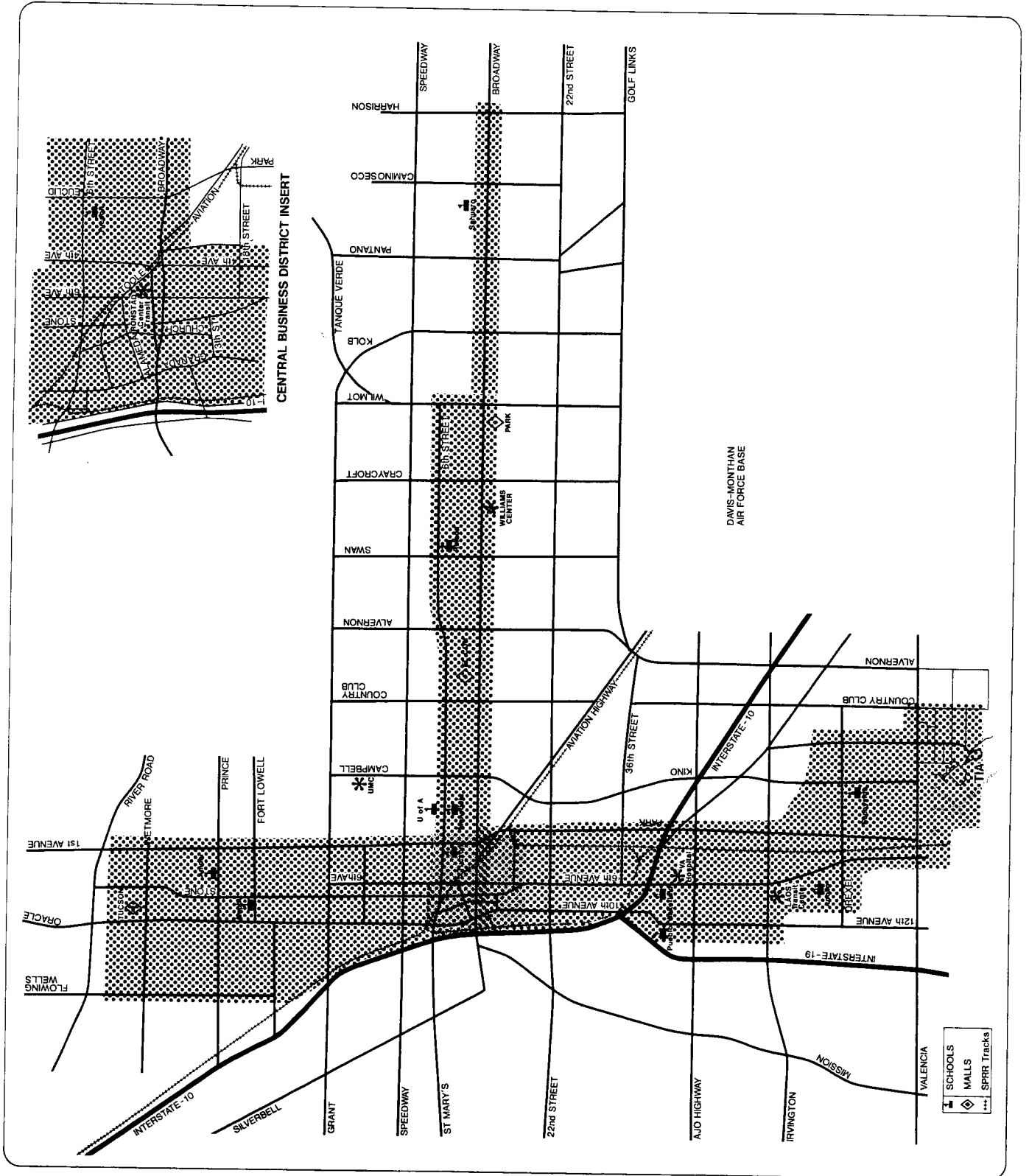
**ORACLE/SOUTH SIXTH
& BROADWAY CORRIDOR
STUDY AREAS**

**ORACLE-
SOUTH SIXTH
CORRIDOR
STUDY**

City of Tucson

Prepared by
Rullbo Consulting Group
Rogers, Gladwin & Rohman

1.1
figures



2.0 COMMUNITY PARTICIPATION

The citizens of Tucson are very active in community programs and play a key role in transportation planning. Because of the nature of this involvement, a citizen participation program was established for the Oracle Road/South Sixth Avenue Corridor Study. This program was developed to ensure coordination with known interested and affected community groups. The program consisted of a Community Coordination Forum and public meetings, which provided the citizens with opportunities to review and comment on the findings of the study.

2.1 Community Coordination Forum

Following responses from a mailed invitation to over seventy individuals representing neighborhoods, business and commercial establishments, and community-wide groups in the study areas, two community advisory panels were organized; one for Oracle Road and one for South Sixth Avenue. Table 2.1 lists the members of these Community Coordination Forums. The role of these forums was to provide input, review, and comment at various stages throughout the project. Forum members, representing designated community groups, received notices of meetings scheduled as shown below:

July 19, 1989	Oracle Road Forum
July 20, 1989	South Sixth Avenue Forum
September 12, 1989	Both Forums

The Community Coordination Forum meetings were conducted in a workshop format. Staff from the City of Tucson, Department of Transportation and the consultant team provided an overview of the study corridors along with their understanding of the opportunities and constraints associated with each. This overview was followed by an extensive question and answer and discussion period whereby maximum input from the community participants was provided.

Two key elements of the consultant presentation materials included a slide show and preliminary design concepts. A slide show which provided an introduction and overview of the various elements associated with light rail transit (LRT) and examples of other system components utilized in other western cities were presented. The slide show also identified key elements within each of the study corridors to provide the viewers with a point of reference and an understanding of how the LRT would fit within the existing Tucson neighborhoods.

The second key presentation element was a series of aerial photos and cross section designs developed by the consultant. The aerial photos (at a scale of 1" = 100') depicted in plan view the alternative alignments under consideration. Cross sections, which identified the existing rights-of-way and travelways in elevation view along with showing how the implementation of LRT would modify it, were also presented for points along each corridor. The combination of the plan and elevation views provided the community coordination forum with a firm understanding of how the LRT would function within the Tucson neighborhood fabric. To maximize neighborhood review, alternatives both north and south of the downtown were presented at each meeting.

General topics discussed at the Forum meetings included the following:

- Options for disabled access to LRT vehicles.
- Transporting bicycles on vehicles.
- Land use density as a factor in cities with successful transit.
- The size of the downtown, employment, and activity centers in Tucson.
- Chances for federal funding; constraints in the federal funding process.
- The advantages of time and money savings if local funding is used.
- Redevelopment opportunities associated with LRT systems.
- Operating speeds, hours, car capacity, and ticket costs for light rail.
- Capital costs, maintenance costs, and maintenance facility requirements.
- Park-and-Ride lots at station, integrating bus feeder lines.
- Right-of-way needed at signals and intersections.
- Ridership demand in Tucson.
- Cost comparison between "best bus" and LRT.
- Station locations.
- New transit centers.

Progress of the study was also reviewed at the Broadway Corridor-Phase II Forum meetings held on July 25, and September 13, 1989. This was done to ensure coordination with ongoing studies.

Minutes of the Forum meetings including comments and input to the study are on file at the City of Tucson's Department of Transportation (TDOT) offices.

TABLE 2.1

Community Coordination Forum Representation

Tucson Unified School District
Hughes Aircraft Company
San Ignacio Yaqui Council
SAHBA
Armory Park Neighborhood Association
City of South Tucson
Tucson Airport Authority
South Tucson Business Association
El Presidio Neighborhood Association
Blue Moon Neighborhood Association
Northwest Neighborhood Center

2.2 Public Meeting

General public involvement was solicited for a major presentation and open house held on October 25, 1989 at the Tucson Convention Center from 4:30 - 9:00 p.m. The purpose of this open house was to discuss alignment options for light rail and busway in the Oracle and South Sixth corridors. The Broadway Corridor preliminary findings were also presented at this open house. The University of Arizona College of Architecture provided models and a special video that illustrated urban design concepts associated with light rail transit. The open house gave citizens an opportunity to see how the two studies correlated and how urban design can be incorporated into transit projects.

One hundred and fifty citizens attended the presentations, and forty turned in completed comment forms. Highlights of the comment form results showed a majority (66 percent) in favor of the City conducting further studies on light rail transit, busways, and other mass transit alternatives. Another 20 percent indicated they were somewhat in favor of further studies. Cleaner air was what most respondents liked best about LRT or busways in Tucson. Individuals who submitted comments characterized as negative were skeptical about implementation or had questions about impacts, costs, and funding. Comments about the Oracle and South Sixth Corridor alignments were mixed; comments regarding the eastern alignment (Stone Avenue) was mostly positive, and comments concerning the middle alignment (10th Avenue) indicated more pros than cons, however, the results were not conclusive.

3.0 SUMMARY OF ALTERNATIVES

3.1 Development 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.

Population and employment densities have a significant impact on travel demand. Table 3.1 displays the 1987 population and employment for the region and a breakdown by major area. The Oracle Road and South Sixth Corridors account for nearly 14% of the City's population and 9% of the County's population. The South Sixth Avenue corridor includes some of the most densely populated areas in the region. The corridor's employment is approximately 11% or 30,000 of the 278,300 jobs within Pima County. Existing employment in each of the corridors is almost equal to that of the Central Business District. The South Sixth Avenue corridor includes the airport area, which contains some of the largest employers in the region.

Location and intensity of population and employment shape travel demand more than any other factor. Figures 3.1 and 3.2 show this location and intensity in relation to the corridors, by displaying the general land use in the corridors. Magnet uses or areas which attract trips regionally, such as the VA Hospital, are also included in the figures. Figure 3.1 shows both Oracle Road and Stone Avenue lined with commercial uses in the midst of residential units; the area west of Oracle Road includes several blocks of high density residential uses. Figure 3.2 shows the primary land use in the South Sixth Corridor as residential, with several pockets of high density dispersed throughout the corridor. South Sixth Avenue is lined with some commercial uses in the northern portion of the corridor. Industrial areas are located on the periphery of the corridor, including hundreds of acres in the vicinity of the airport.

Current transit conditions and existing ridership, which reflect where the current demand exists, were also considered in development of alternatives. SunTran operates 142 buses during the a.m. peak period along approximately 30 local routes and 5 express routes. The frequency of service (time between the arrival of buses) ranges from 15 to 60 minutes for local routes and 60 to 90 minutes for the express routes. Existing transit ridership is the best in the South Sixth Corridor. SunTran's Route 8, which runs from the Laos Transit Center to the CBD out Broadway Boulevard to Camino Seco, has the highest ridership in the system. Route 16 (Oracle, South 12th Avenue) is also one of SunTran's top four routes, serving both the Oracle and the South Sixth Corridors.

Based on the 1988 On-Board Survey, average daily boardings were approximately 42,000 system-wide. Boardings on Route 8 were approximately 9,200, and 3,200 on Route 16. These two routes accounted for 30 percent of SunTran's ridership, indicating a significant demand in the Oracle Road and South Sixth Corridors.

TABLE 3.1
1987 Population and Employment

	<i>Population</i>	<i>Employment</i>
City of Tucson	405,900	NA
Pima County	640,000	278,300
Oracle Corridor (excludes CBD)	22,400	13,800
South Sixth Corridor (excludes CBD)	32,500	16,100
Broadway Corridor	73,900	52,600
Central Business District	2,700	16,300
University of Arizona	9,400	16,400