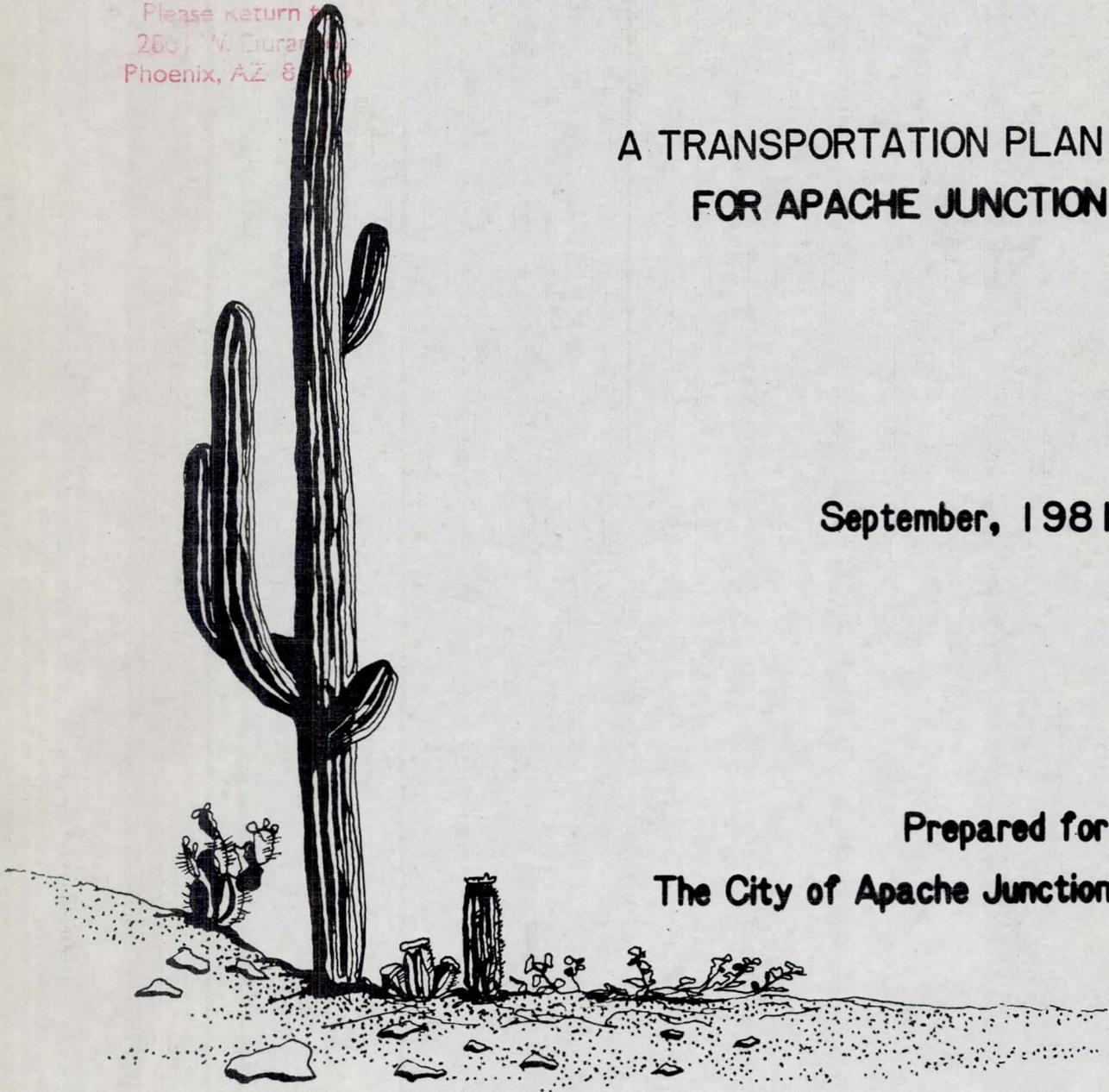


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A TRANSPORTATION PLAN FOR APACHE JUNCTION

September, 1981

Prepared for
The City of Apache Junction



prc
A Planning Research Company

PRC VOORHEES
10960 Wilshire Boulevard
Los Angeles, California 90024

A303.910

TRANSPORTATION PLAN
FOR
APACHE JUNCTION, ARIZONA

APACHE JUNCTION PROJECT NO. PL-80-1 (IN PART)

SEPTEMBER 1981

PREPARED FOR
THE CITY OF APACHE JUNCTION

PREPARED BY
PRC VOORHEES
10960 Wilshire Boulevard
Los Angeles, California 90024
(213) 477-2051

(This report was funded in part by grant FCRC No. 101-811-082-2 awarded to the City of Apache Junction, Arizona, by the Four Corners Regional Commission, Albuquerque, New Mexico.)

Contributing Professional Engineers (Transportation):

Dick S. Kaku, Registration No. TR 494, Signature: *Dick S. Kaku* Date: 10/3/81

Richard D. Garland, Registration No. TR 1384, Signature: *RD Garland* Date: 10/30/81

TRANSPORATTION PLAN
FOR
APACHE JUNCTION, ARIZONA

AUTHORIZING CITY COUNCIL

Virginia Seeman
(Mayor)

John Granillo
(Vice-Mayor)

Jerry Burgess

Thomas Damiano

Jimmy Eidson

Norman Hill

Marie Shanks

G. Ray Lee
City Manager

Joseph Gero
Director of Planning
(Project Manager)

Richard Broman
Director of Public Works

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I. INTRODUCTION

HISTORY OF PROJECT

Apache Junction is a rapidly growing community located slightly over thirty miles east of downtown Phoenix, Arizona, as shown in Figure 1. It is situated principally in Pinal County; however, a 1980 annexation added a small area in Maricopa County. The permanent population in 1980 is approximately 10,500 persons. It is estimated that winter visitors to Apache Junction raise the population to over 30,000 persons.

The City of Apache Junction was incorporated in November, 1978. Since that time, the need to establish staff and procedures has dominated the program agenda of the City. City officials are desirous of establishing a General Plan for the Apache Junction service area, defined in Figure 2. With this goal in mind, the City applied for and on June 1, 1980, received a grant from the Four Corners Regional Commission to assist in the development of a general plan. The areas specifically addressed in the terms of the grant included the following:

- 1) Sewer Needs Determination
- 2) Water Systems Evaluation
- 3) Transportation Facilities Plan
- 4) Municipal Complex Development
- 5) Land Use Plan

AUTHORIZATION

Upon receipt of the planning grant, the City was authorized by the Four Corners Regional Commission to proceed with the selection of a consultant to perform those parts of the scope of work set forth in "Bid Specifications for Apache Junction General Plan of Selected Elements, Project No. PL-80-1". Through a competitive bid process, PRC Toups was

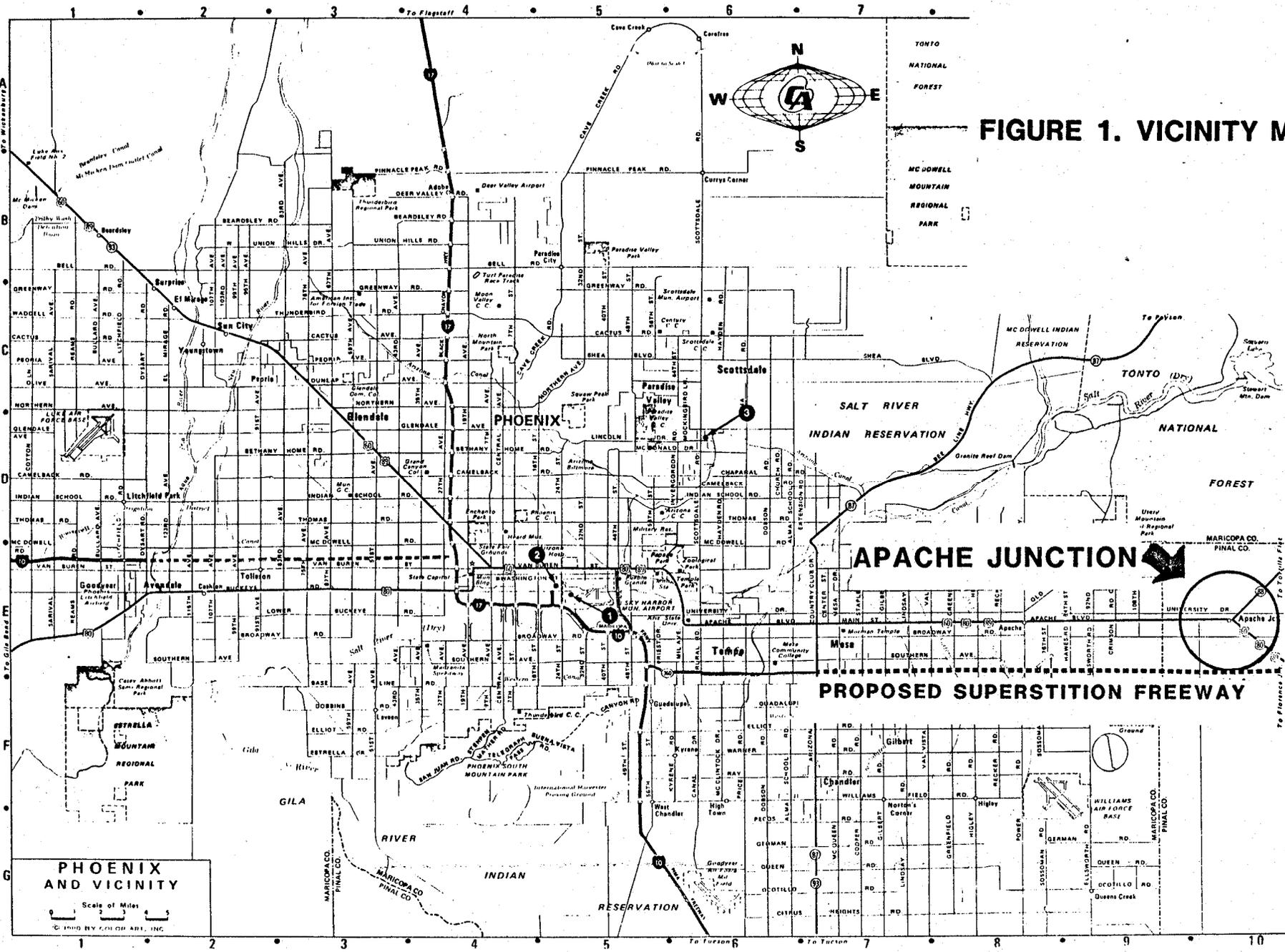


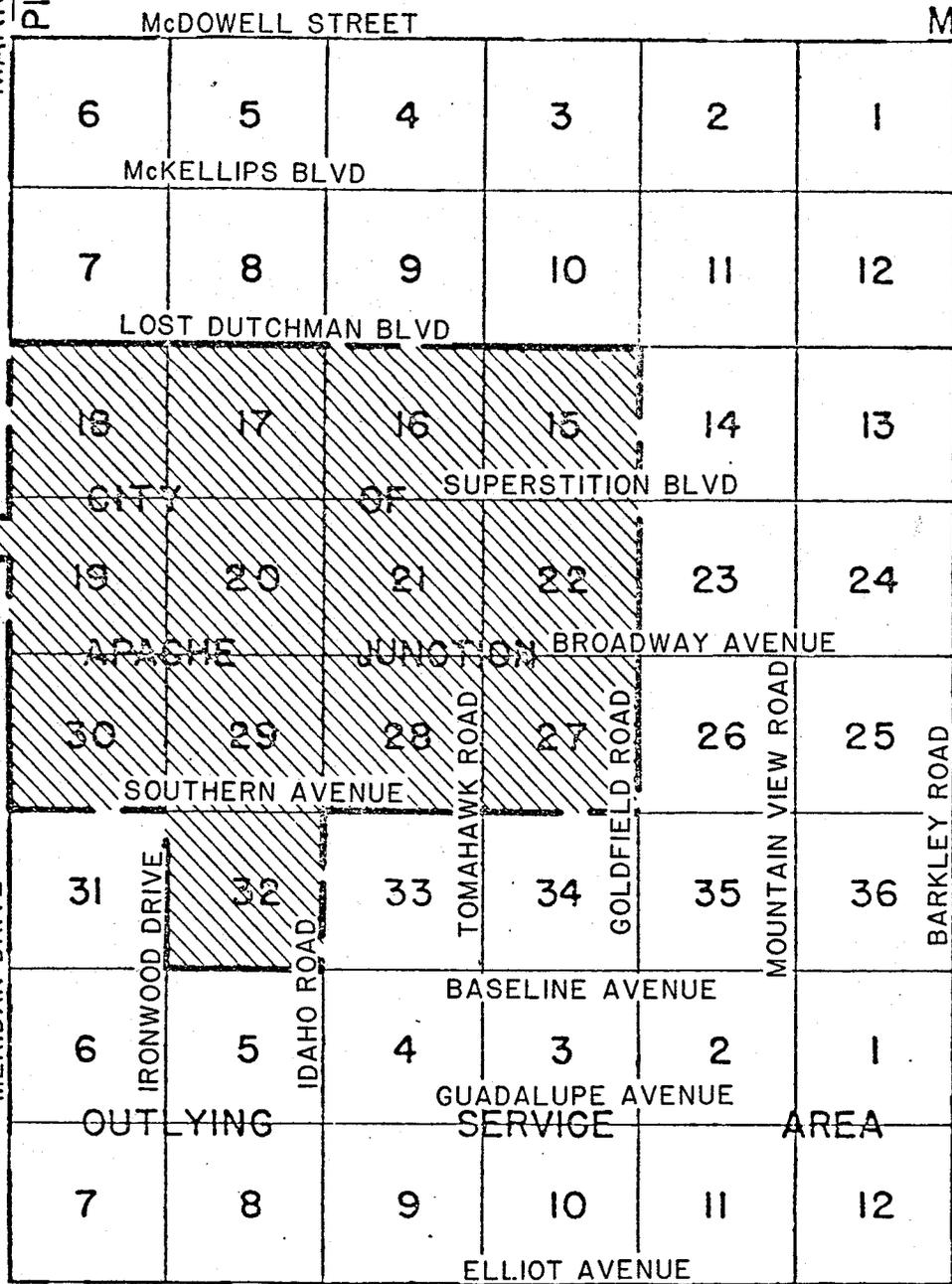
FIGURE 1. VICINITY MAP

PHOENIX AND VICINITY
 Scale of Miles
 © 1990 BY COLSON ART, INC

MARICOPA CO.
PINAL CO.

NATIONAL FOREST

MARICOPA CO.
PINAL CO.



NATIONAL FOREST

TIN TIS

TIN TIS

R7E
R8E

R8E
R9E

TOTAL SERVICE AREA BOUNDARY



FIGURE 2. APACHE JUNCTION SERVICE AREA

PRC Voorhees

chosen to perform all of the items listed in the scope of work. The term and effective date of the contract with PRC Toups was from October 29, 1980, through September 30, 1981. PRC Voorhees, a sister subsidiary of PRC, was asked to conduct the Transportation Facilities Plan portion of the study.

PURPOSE AND SCOPE OF STUDY

The purpose of this particular report is to address the third of the above listed topics, namely, 3) Transportation Facilities Plan. The transportation system for Apache Junction is incomplete and is still being developed. There are many unpaved streets and there are many dirt trails which are used as access as they wind their way among cacti, rocks, washes, and desert plants. The purpose of this study is to develop such a transportation system into a form which can meet the needs of this growing community, yet maintain the uniqueness and attractiveness of the desert appeal.

Topics covered in this report include the following:

- Existing System
- Existing Conditions
- Future Needs
- Transportation Plan

This report is an independent analysis by the consulting engineering firm of PRC Voorhees. Conclusions and recommendations contained herein are those made only by the consultant after consideration of all the data, and do not represent individual views of the staff of the City of Apache Junction.

II. EXISTING CONDITIONS

POPULATION

The population of the City of Apache Junction according to the preliminary counts of the 1980 census is 9,935. This represents a 77 percent increase over the 1975 counts which was approximately 5,600 residents.

The population as determined by the census count does not, however, accurately reflect the number of people which should be considered in developing a transportation plan. Apache Junction is unique in that there is a very large seasonal variation in population. According to a recent population study ^{1/}, these seasonal (winter) residents include 17,648 people, some of which reside on individual lots and some of which reside in mobile home or trailer parks. Regardless of whether these people are classified as permanent residents by the Census Bureau definition, they make use of the transportation facilities and should, therefore, be considered in the planning process.

The official population plus the seasonal residents, plus the people who reside outside the corporate boundary yet within the City's service area (approximately 2,200) indicate a present maximum effective population of 29,783.

LAND USE

A transportation plan must take into consideration the types of land use that will be served. Information regarding land use has been provided by the City of Apache Junction including a map designating existing land use categories and a listing of major traffic generators with the location of each. The land use map depicts the following categories:

- RESIDENTIAL
 - Single Family
 - Multi-Family
 - Mobile Home & Travel Trailer Park

^{1/} PRC Toups, "Population Analysis for the City of Apache Junction, Arizona," October, 1980.

- COMMERCIAL
- PUBLIC, QUASI-PUBLIC

This map indicates that the commercial areas lie primarily along W. Apache Trail with the heaviest concentration located at the intersection of U.S. 60 and State Route 88. Residential areas are scattered throughout the City. As indicated on a residential densities map provided by the City, the southwest side of town contains the most densely populated areas, while the northeast area is relatively sparse.

A list of major traffic generators is shown below. Figure 3 indicates the location of each. The numerical order is not indicative of the relative importance of the generators.

- 1) Apache Greyhound Park
 - Races - April thru June
 - Park 'N' Swap - winter
- 2) Strip commercial
- 3) Two large churches
- 4) Superstition Plaza
- 5) Travel trailer park (727 spaces)
- 6) Bayless Plaza (shopping center)
- 7) Apache Junction Post Office
- 8) Superstition Inn and Grand Old Cars Museum
- 9) City Hall
- 10) Travel Trailer Park (681 spaces)
- 11) Junior and Senior High School
- 12) Moose Lodge
- 13) Recreational areas
- 14) Superstition Elementary School
- 15) Four Peaks Elementary School
- 16) Fire Station/County Complex
- 17) County dump

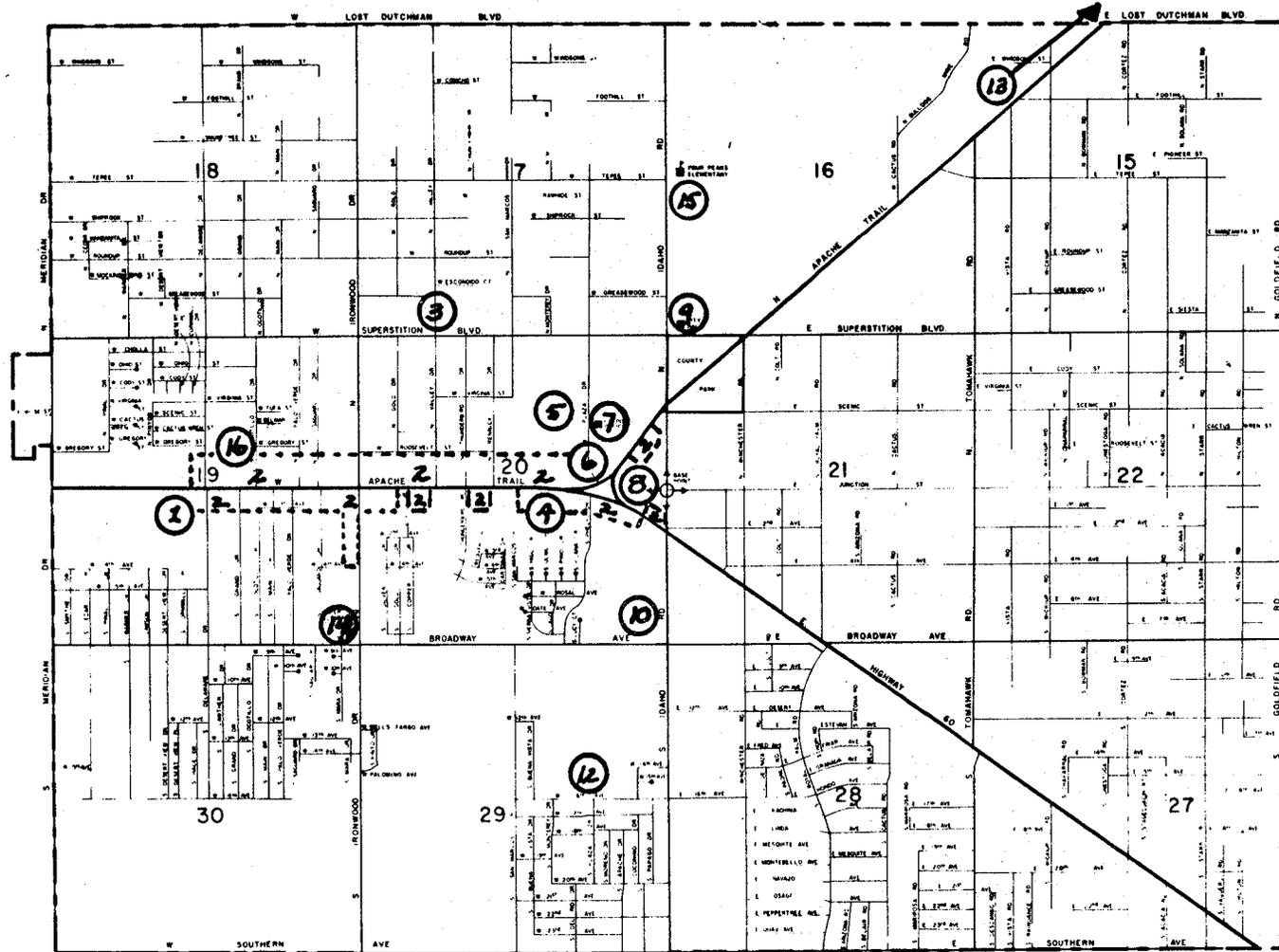


FIGURE 3. MAJOR TRAFFIC GENERATORS

**OFFICIAL
STREET NAMING MAP
APACHE JUNCTION,
ARIZONA**

17
↓

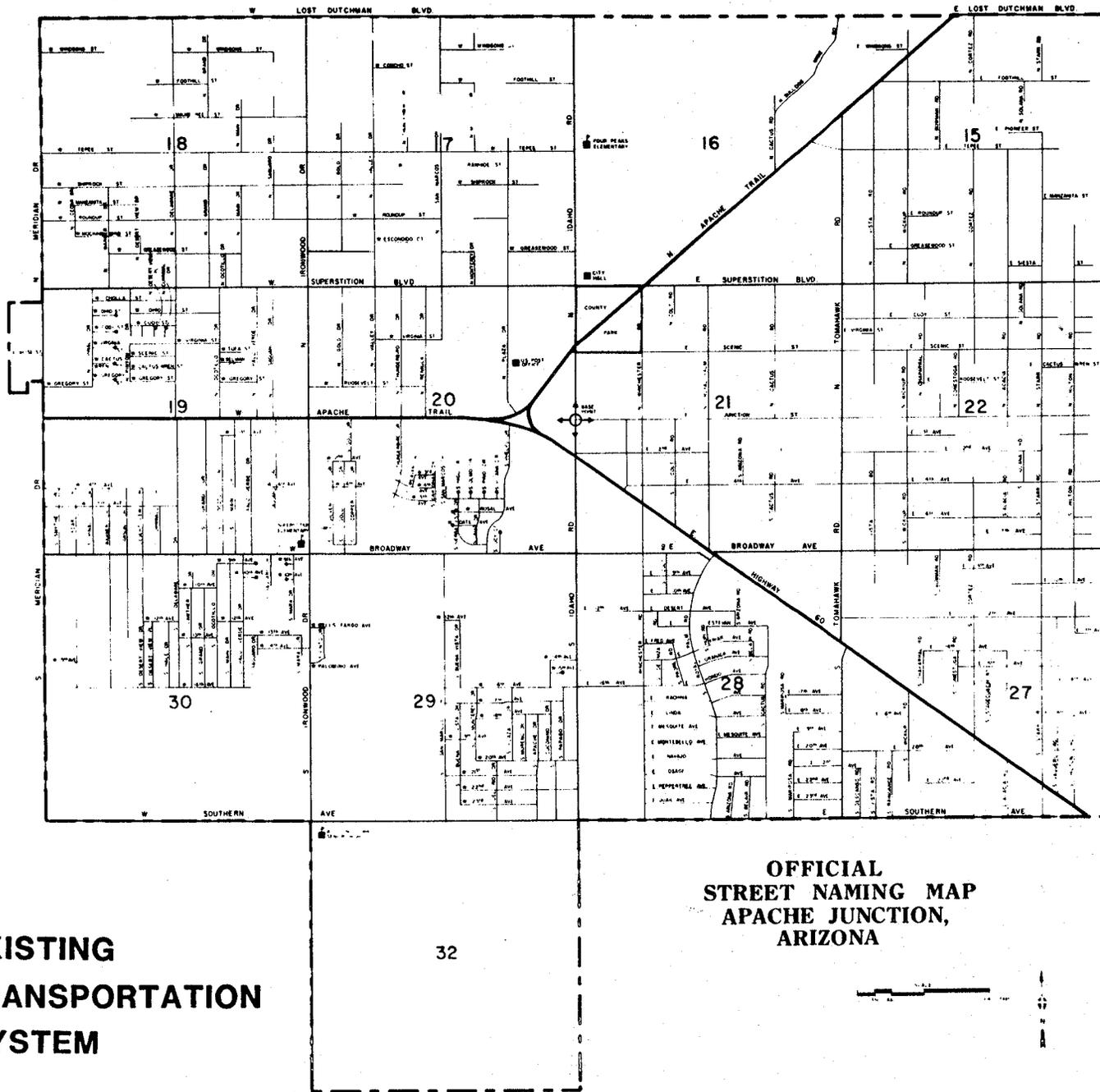
EXISTING TRANSPORTATION SYSTEM

The City streets and roads in Apache Junction are arranged basically in a grid pattern, as shown on Figure 4. The regional highways of U.S. 60/89 and State Route 88 cut diagonally through the grid. The facilities in each of these classifications are discussed in the paragraphs below, followed by a discussion of traffic control devices.

Regional Highways

A major regional highway which passes through Apache Junction is U.S. Highway 60/89, part of which is called Apache Trail. The highway is divided with periodic median crossovers and left turn deceleration lanes. It approaches from the west, connecting Apache Junction to Phoenix and points west of Phoenix. As shown on Figure 4, this highway is oriented in a east-west direction until it reaches the intersection with State Route 88 in the heart of Apache Junction, at which point it heads southeast connecting Apache Junction with Globe (via U.S. 60) and Tucson (via U.S. 89). U.S. Highway 60/89 has six lanes west of Ironwood Drive, five lanes east of Ironwood Drive (two lanes eastbound), and two eastbound and two westbound lanes east of the intersection with State Route 88 (North Apache Trail). Access to Apache Junction from Phoenix is limited to three through routes: Superstition Boulevard, Apache Trail, and Broadway Avenue. Although there are other east-west routes in the city, they terminate at, or west of, the city limits. For example, Brown terminates at the City limits, Baseline at Ellsworth, and Southern at Power Road.

State Route 88 (continuation of the Apache Trail) begins at the intersection with U.S. 60 and continues northeasterly through Apache Junction. It provides a route to the recreational areas of Apache, Canyon, and Roosevelt Lakes. State Route 88 is two lanes wide.



**OFFICIAL
STREET NAMING MAP
APACHE JUNCTION,
ARIZONA**

**FIGURE 4. EXISTING
TRANSPORTATION
SYSTEM**

The intersection of these two highways is at the center of the present Apache Junction business district. It is a major unsignalized "Y" intersection with extensive channelization. Within the intersection there are a possible fifty-seven legal driver decisions and other improper driver decisions including lane changes, crossover, turns, etc. The complexity of this intersection is compounded by the presence of adjacent commercial development which has access onto the highways at several locations near the intersection.

Local Streets and Roads

The City streets and roads in Apache Junction are arranged in a grid pattern oriented north to south and east to west. The pattern is not complete as there are many undeveloped land parcels.

According to a City inventory, there are approximately 109 miles of City streets of which 64 miles are paved and 45 miles are dirt. A map of these streets is shown on Figure 4. A list of all the streets with the corresponding mileage of paved and dirt sections is given in the Appendix.

The current major north-south streets in the City are Meridian Drive, Tomahawk Road, Ironwood Drive, Idaho Road, and Plaza Drive north of U.S. Highway 60. The major east-west streets, other than the regional highways, are Superstition Boulevard and Broadway Avenue.

Traffic Control Devices

As part of this study an inventory of traffic control signs has been conducted. The results of this inventory have been submitted as a separate document. Recorded information includes the type of sign, locations, pole type, condition, and whether the sign is standard or non-standard.

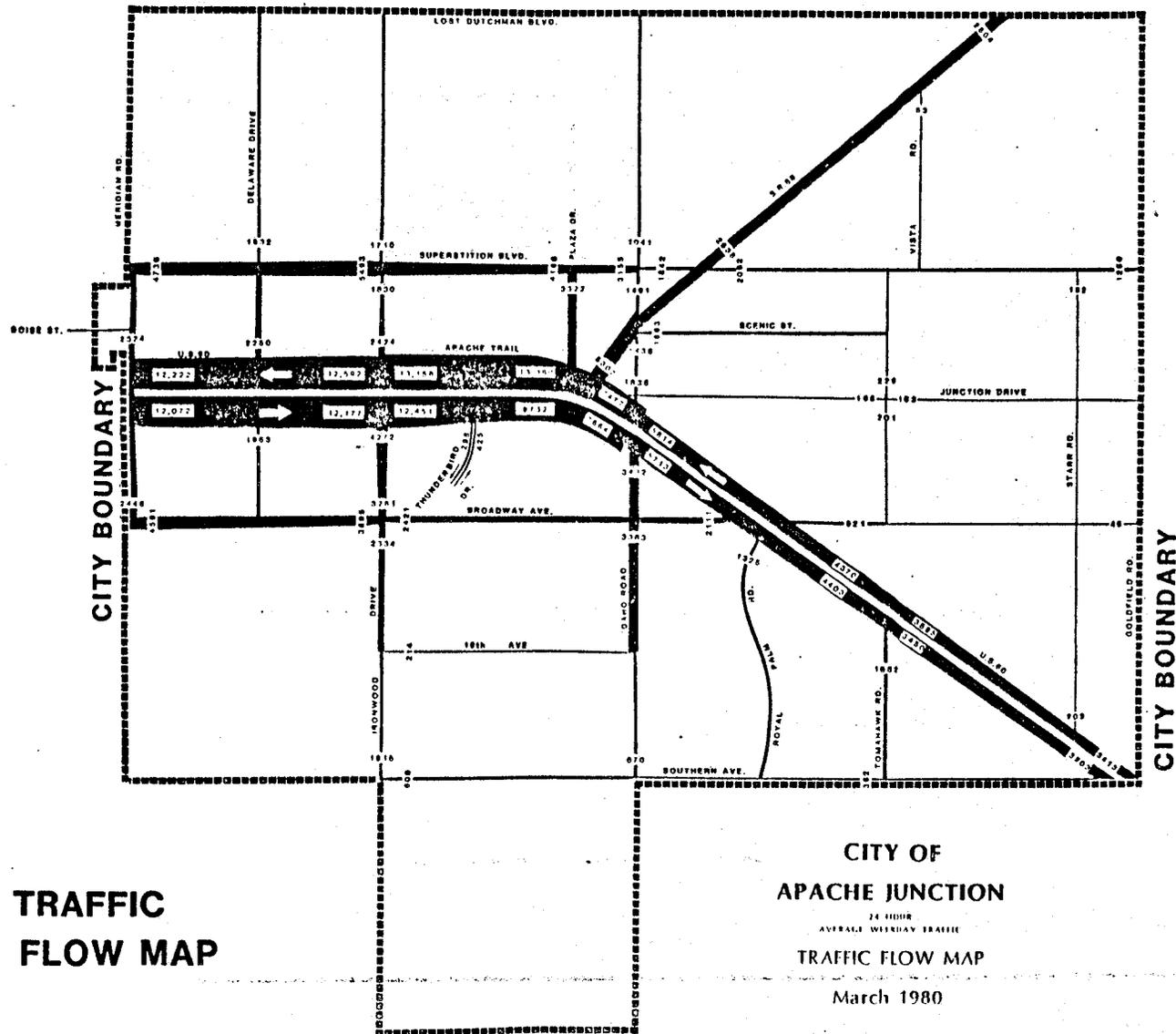
Included in the inventory is a listing of all street name signs which have recently been erected by the City of Apache Junction.

There are presently two traffic signals operating within the City. Both are on U.S. Highway 60/89: one at the intersection of Ironwood Drive and the other at the entrance to the Greyhound Race Track west of Delaware Drive.

Traffic Volumes

A traffic flow map obtained from the City of Apache Junction and based on machine counts conducted in March, 1980, by the Arizona Department of Transportation is shown in Figure 5. The 1980 average daily traffic volumes for key facilities are as follows:

| <u>Facility:</u> | <u>ADT</u> |
|--|------------|
| <u>W. Apache Trail (U.S. Highway 60)</u> | |
| - east of Meridian Dr. | 24,300 |
| - east of Ironwood Dr. | 25,600 |
| - west of S.R. 88 | 23,100 |
| - east of S.R. 88 | 15,100 |
| <u>Highway 60</u> | |
| - east of Idaho Rd. | 11,500 |
| - west of Tomahawk Rd. | 8,800 |
| - west of Goldfield Rd. | 6,600 |
| <u>N. Apache Trail (State Route 88)</u> | |
| - north of Highway 60 | 5,300 |
| - north of Superstition Blvd. | 2,900 |
| <u>Superstition Blvd.</u> | |
| - east of Meridian Dr. | 4,700 |
| - west of Ironwood Dr. | 5,500 |
| - west of Idaho Rd. | 3,200 |
| - east of N. Apache Trail | 2,100 |



Note: The thickness of the lines denote various degrees of traffic volumes.
The thicker the line the more traffic is being accommodated.

Broadway Ave.

| | |
|------------------------|-------|
| - east of Meridian Dr. | 4,600 |
| - east of Ironwood Dr. | 2,400 |
| - west of U.S. 60 | 2,100 |

Meridian Rd.

| | |
|-------------------------|-------|
| - north of Broadway | 2,400 |
| - north of Apache Trail | 2,300 |

Delaware Dr.

| | |
|-------------------------|-------|
| - south of Apache Trail | 2,000 |
| - north of Apache Trail | 2,300 |

Ironwood Dr.

| | |
|--------------------------|-------|
| - south of Broadway Ave. | 2,300 |
| - south of Apache Trail | 4,300 |
| - north of Apache Trail | 2,400 |

Plaza Dr.

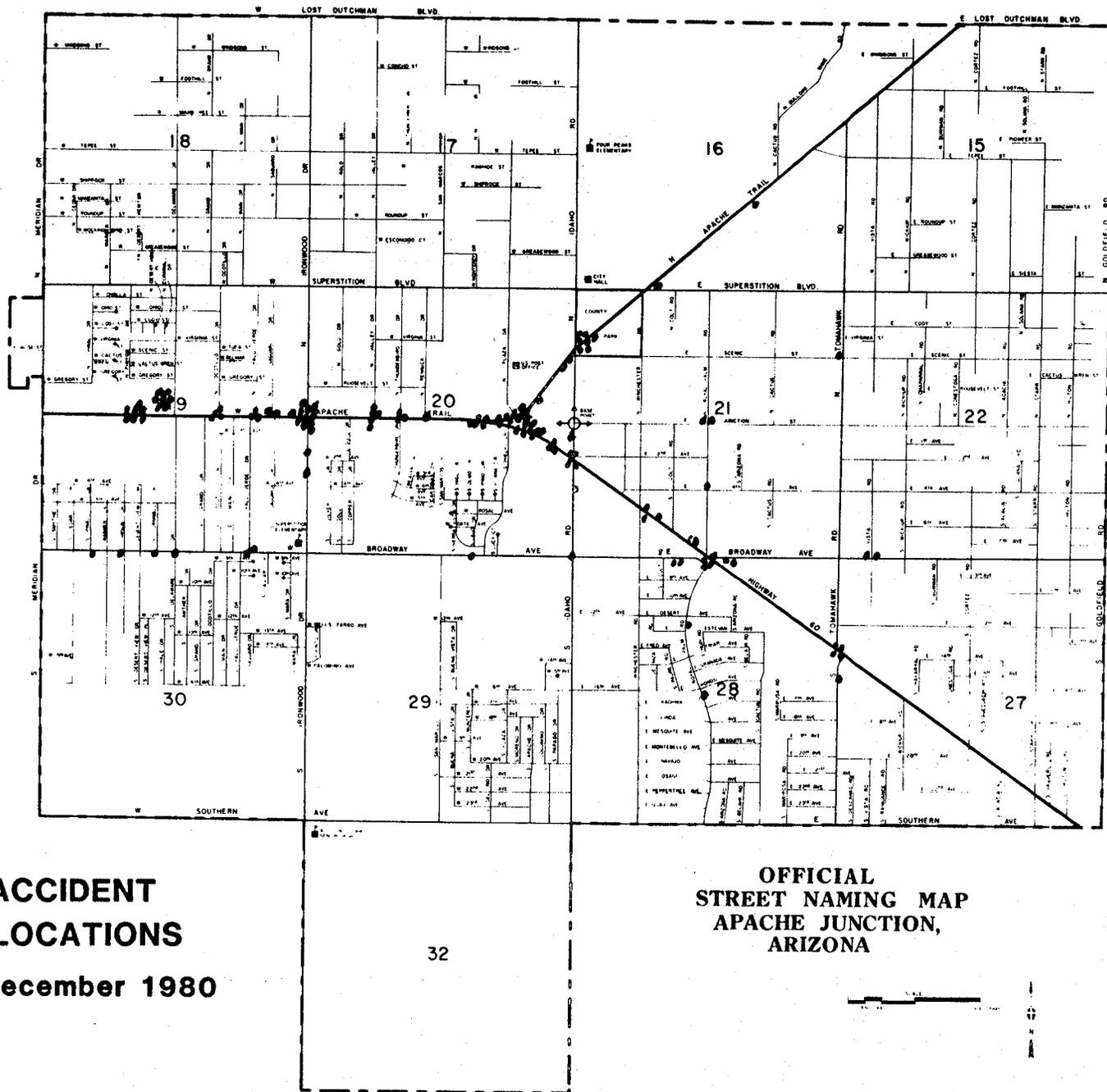
| | |
|------------------------------|-------|
| - south of Supersition Blvd. | 3,300 |
|------------------------------|-------|

Idaho Rd.

| | |
|-----------------------|-------|
| - south of Highway 60 | 3,400 |
|-----------------------|-------|

Accidents

A spot map has been developed based on accident data provided by the Arizona Department of Transportation. Figure 6 is an illustration of this map, with each dot representing the location of a traffic accident which occurred in 1980.



**FIGURE 6. ACCIDENT
LOCATIONS**

January - December 1980

**OFFICIAL
STREET NAMING MAP
APACHE JUNCTION,
ARIZONA**

As can be seen, the largest number of accidents is along U.S. Highway 60, with the heaviest concentrations at the intersections of State Route 88, Ironwood Drive, Delaware Drive, and the entrance to the dog racing track. There is also a concentration of accidents at the intersection of State Route 88 and Idaho Road.

III. PRESENT TRANSPORTATION CONDITIONS

This section discusses the needs and deficiencies of the Apache Junction transportation system as it exists today. Future transportation needs, as determined by projected changes in population, land use, transportation facilities, and travel patterns, is dealt with in Section IV.

REGIONAL HIGHWAYS

The primary function of a regional highway is to accommodate long distance travel, although those sections which are in the vicinity of a community also serve local trips which are much shorter in duration. The two regional highways passing through Apache Junction, U.S. Highway 60/89 and State Route 88, must serve this dual purpose. This results in a situation in which there are two separate sets of objectives for serving the two types of traffic, and often a treatment which is beneficial for through traffic may be a hindrance to local travellers, and vice versa. As an example, an objective for regional traffic is to minimize travel time which implies maximizing speed. A tactic which would help meet this objective would be to reduce the amount of interference from other traffic by incorporating such measures as access control, elimination of left turns, and restriction to cross street traffic. These treatments would, however, be detrimental to local travellers because they have different objectives; among them are convenient access from either direction to the development which is adjacent to the roadway and ease of travel across a highway. This dichotomy cannot feasibly be avoided and must be recognized in the development of needs for regional highways.

Intersection of U.S. 60/89 and State Route 88

The most obvious need with regard to regional highways is the improvement or modification to the intersection of U.S. Highway 60/89 and State Route 88. The intersection is designed not only to provide for all movements related

to the three highway approaches, but to also provide access to Phelps Drive, Plaza Drive, and the commercial development which surrounds the intersection. The extensive channelization serves all the movements without the use of a traffic signal, but results in numerous driver decisions, which is undesirable with respect to safety. This complex intersection is the result of an attempt to serve the needs of both the through and local traveller. A sketch of this intersection is shown on Figure 7.

Recreational Traffic

One of the needs regarding regional highways is to adequately serve the recreational traffic which is generated by the lakes northeast of Apache Junction. Virtually the only route between these lakes and the people of metropolitan Phoenix is State Route 88 through Apache Junction. The last major access to SR 88 is on Superstition Boulevard.

Access to and from Local Streets

Another issue is the treatment of intersections between the regional highways and local streets. The streets of Apache Junction are oriented in an east-west and north-south grid pattern while the highways east of the junction have an alignment which cuts diagonally across the grid. This results either in skewed intersections, which are undesirable for safety reasons, or curved alignments of the local street approaches, which uses more land and is more costly to construct.

Access to and from Adjacent Property

Along much of their length, the regional highways operate in such a manner as to allow unrestricted access from adjacent land. There are many locations at which drivers have created unauthorized access points for convenience. Also, there are several locations at which roadside vendors set up stands on or near the shoulder of the highway.

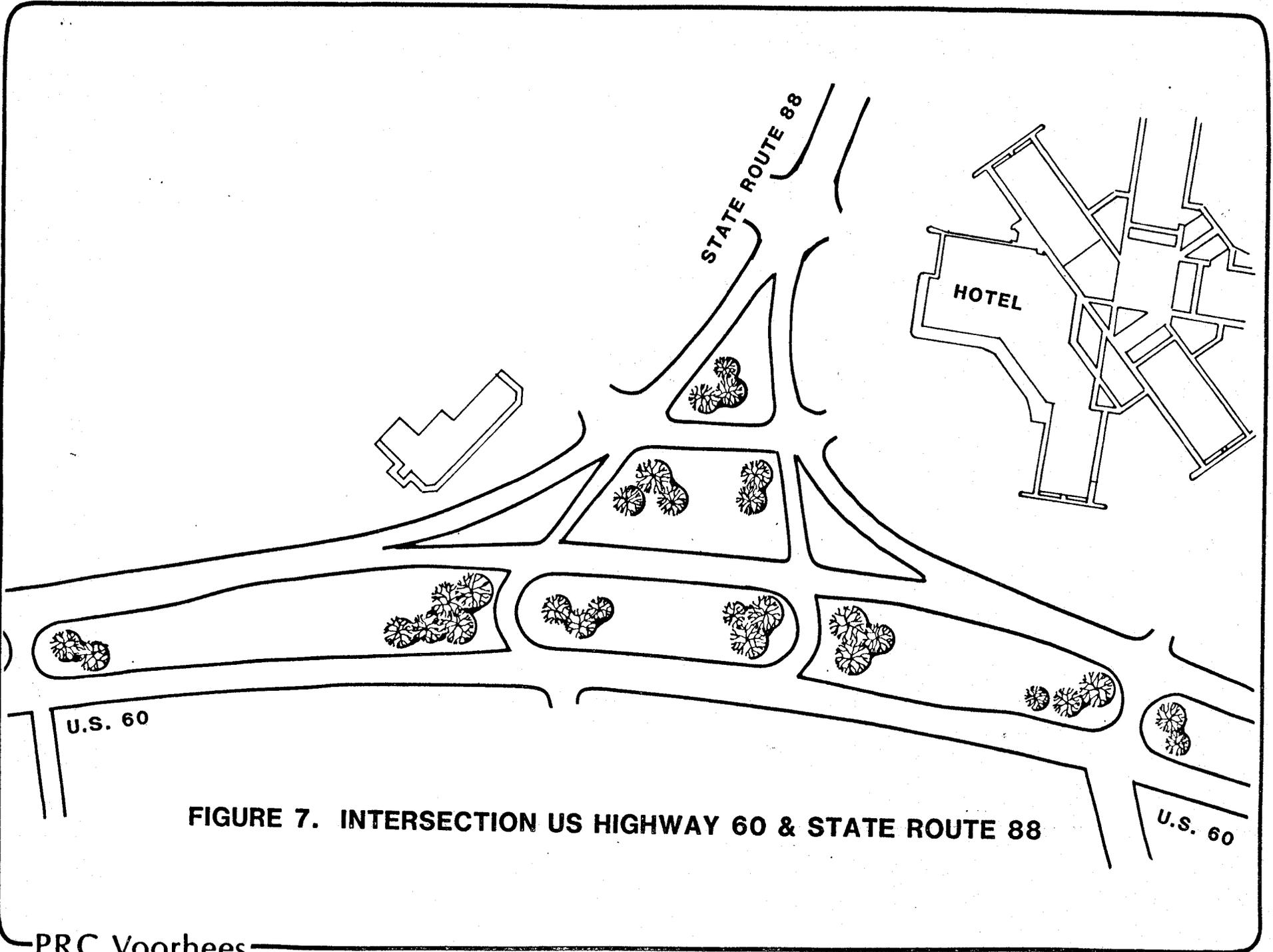


FIGURE 7. INTERSECTION US HIGHWAY 60 & STATE ROUTE 88

Vertical Alignment

Some sections of U.S. Highway 60 have been constructed such that the east-bound lanes are at a different elevation than the westbound lanes. At some locations along the median crossover, this results in steep grades and poor visibility, both affecting safety.

Sight Distance

On U.S. Highway 60, which is divided, there are several locations at which visibility is obstructed by the presence of dirt mounds or brush in the median and beside the road. These conditions create a potential hazard for turning traffic, crossover traffic, and traffic accessing the highway from adjacent property.

LOCAL STREETS AND ROADS

The primary function of local streets and roads is to provide for traffic circulation within a community and to provide access to the adjacent land. The paragraphs which follow discuss the needs of the Apache Junction street and road network.

Functional Classification

A desirable characteristic of a traffic circulation system is to have each street classified in a hierarchy according to function. There are four basic categories under which the streets would be classified: arterials, major collectors, collectors and locals. A description of the function of each type of street can be seen on page 40. Additionally, each of these classifications should have performance standards for future development of roads.

Traffic patterns in Apache Junction have arbitrarily developed because of the absence of a transportation plan. For example, certain streets are being used as arterials simply because they are continuous or have pavement. Another example is a particular route being used as a collector street

although it is actually lacking a roadway easement. This type of street development for traffic circulation is not desirable and could lead to problems, especially as traffic volumes increase.

Uniformity of Geometrics

As the streets of Apache Junction have developed over the years, various geometric standards have been applied in determining such features as pavement width, curb placement, pavement design, etc. This has resulted in a lack of uniformity as the streets were constructed. In several instances, the inconsistencies occur along a single street segment. There are several causes for this lack of uniformity, among them the absence of a classification system, the lack of development performance standards, the various jurisdictions previously involved, and the developers involved.

Right-of-Way

There are several issues regarding street right-of-way which need to be cited. First, as with geometrics, there are inconsistencies in the right-of-way widths, again resulting from the lack of a uniform street classification system, the lack of development performance standards, the various jurisdictions and developers involved, and the federally patented lands.

Second, there are several locations where a private structure is located within the public right-of-way.

Third, there are some instances where a developer of land adjacent to a planned street has not been required to dedicate the strip of property or easement for future public right-of-way.

Fourth, development of roads through state trust properties must be done by developers who in turn may dedicate such lands for public right-of-way purposes. The Arizona State Constitution forbids the State Land Department from dedicating land even for right-of-way without being reimbursed at fair market value for the land.

Sight Distance

Much of the terrain in and around Apache Junction is undulating, having many dips, mounds, washes, etc. The streets often follow the contour of the land regardless of the irregularity. This results in numerous locations at which there is inadequate vertical sight distance for safe operation. This is especially hazardous at intersections. There are also some intersections which have obstructions preventing the clear view of oncoming cross street traffic.

TRAFFIC CONTROL DEVICES

Signs

A traffic sign inventory which was conducted as part of this study pointed out signs which are in need of maintenance or replacement, usually due to old age, poor conditions or vandalism. There are also many signs which are nonstandard or unwarranted as determined by the "Manual on Uniform Traffic Control Devices." For details regarding these findings refer to the inventory results which are on record with the City Engineer at the Department of Public Works.

Signals

There are two signalized intersections in Apache Junction: U.S. 60/89 at Ironwood Road and U.S. 60/89 at the entrance to the Greyhound Race Track. Both are the responsibility of the Arizona Department of Transportation. The signal system at U.S. Highway 60/89 and Ironwood Road needs to be analyzed and re-worked. Because of the wide median on U.S. 60/89, the signal placement and phasing creates situations which are sometimes confusing to drivers. A more detailed traffic operational analysis is required to develop a modification to the signal design.

SAFETY

The best measure of safety or lack of safety with a transportation system is past performance, which is determined by accident records. The traffic accidents in Apache Junction for the year 1980, as discussed in Section II and indicated in Figure 5, reveal that the only concentration of accidents occurs along the regional highways. There are five locations at which accidents repeatedly occur -- all at intersections. The most significant of these is the intersection of U.S. Highway 60/89 and State Route 88. The second is the intersection of U.S. 60/89 and Ironwood Drive. Third is State Route 88 at Idaho Road. The other two are the adjacent intersections of U.S. 60/89 at Delaware Street and at the entrance to the greyhound race track. There are, of course, other reasons for the safety problems, including high speeds, failing to yield, etc.

DRAINAGE

Contours in many of the local streets create gullies in the drainage system. During the rainy season, many of these streets become filled with water and are impassable. These streets become part of the drainage system indicating a need for better off-road channelization of rain runoff.

IV. FUTURE NEEDS

LAND USE AND POPULATION

The population of Apache Junction is expected to continue its upward growth over the next twenty years. It is also expected that the general characteristics of the inhabitants of Apache Junction will remain similar to those of today; i.e., that there will be a substantial seasonal variation in the number of people who reside in Apache Junction. According to the population study conducted by PRC Toups, the population of Apache Junction for the year 2000 is estimated to be 22,970 people. This reflects an increase of 131% over 1980 figures. Table 1 shows the population figures for 1980 and 2000 broken down into city, service area, and seasonal residents. As can be seen, the maximum effective population is projected to be approximately 68,430 people, an increase of 130% over 1980.

Land use projections in Apache Junction indicate that residential and commercial development is expected to continue much in the same pattern as it exists today. In order to accommodate growth, currently vacant land will be developed into subdivisions, mobile home parks, and other types of dwelling units. The basic trends, however, will most likely remain unchanged, with the northeast area having low density single family dwelling units and the southwest area having higher density residential development. Commercial land use will continue to be concentrated along Apache Trail, especially in the area of the intersection of U.S. 60/89 and State Route 88 and along the future Superstition Freeway corridor. Industrial development including warehousing is expected to increase in the southern corridor south of the freeway. It should be recognized if an airport is built in Apache Junction, it may serve to change the land-use pattern in the City. The tentative location for a proposed airport is six miles south of Apache Junction.

Table 1

POPULATION INCREASES

| Category of Residents | Population by Year | | % Increase |
|-----------------------|--------------------|--------|------------|
| | 1980 | 2000 | |
| In City | 9,935 | 22,970 | 131% |
| In service area | 2,200 | 4,940 | 125% |
| Seasonal | 17,648 | 40,520 | 130% |
| TOTAL | 29,783 | 68,430 | 130% |

Sources: 1) PRC Toups, "Population Analysis for the City of Apache Junction, Arizona," October, 1980.

2) U.S. Bureau of the Census, 1980 Census Count.

FUTURE TRAVEL PATTERNS

Projections for future travel patterns and traffic volumes are based on various criteria which affect the demand for travel such as population, land-use patterns, location of traffic generators, and employment statistics. Also taken into consideration are such factors as the physical transportation network, the availability of alternative transportation modes, driver habits and preferences, and the cost and availability of gasoline.

The discussion of future traffic patterns in Apache Junction is divided into two categories, regional highways and local facilities. These are treated separately because of the differences in function, traffic characteristics, and needs.

Regional Highways

Future travel on the regional highways, which include U.S. Highway 60/89, State Route 88, and the proposed extension of the Superstition Freeway can be treated as two possible scenarios. One is with the complete extension of the Superstition Freeway from its present terminus to an intersection with U.S. 60/89 southeast of the current city limits of Apache Junction. As shown in Figure 1, the alignment for this proposed facility is south of Apache Junction in the vicinity of the mid-section line between Southern Avenue and Baseline Avenue, extending in an east-west direction. The second scenario is without the completion of this freeway link.

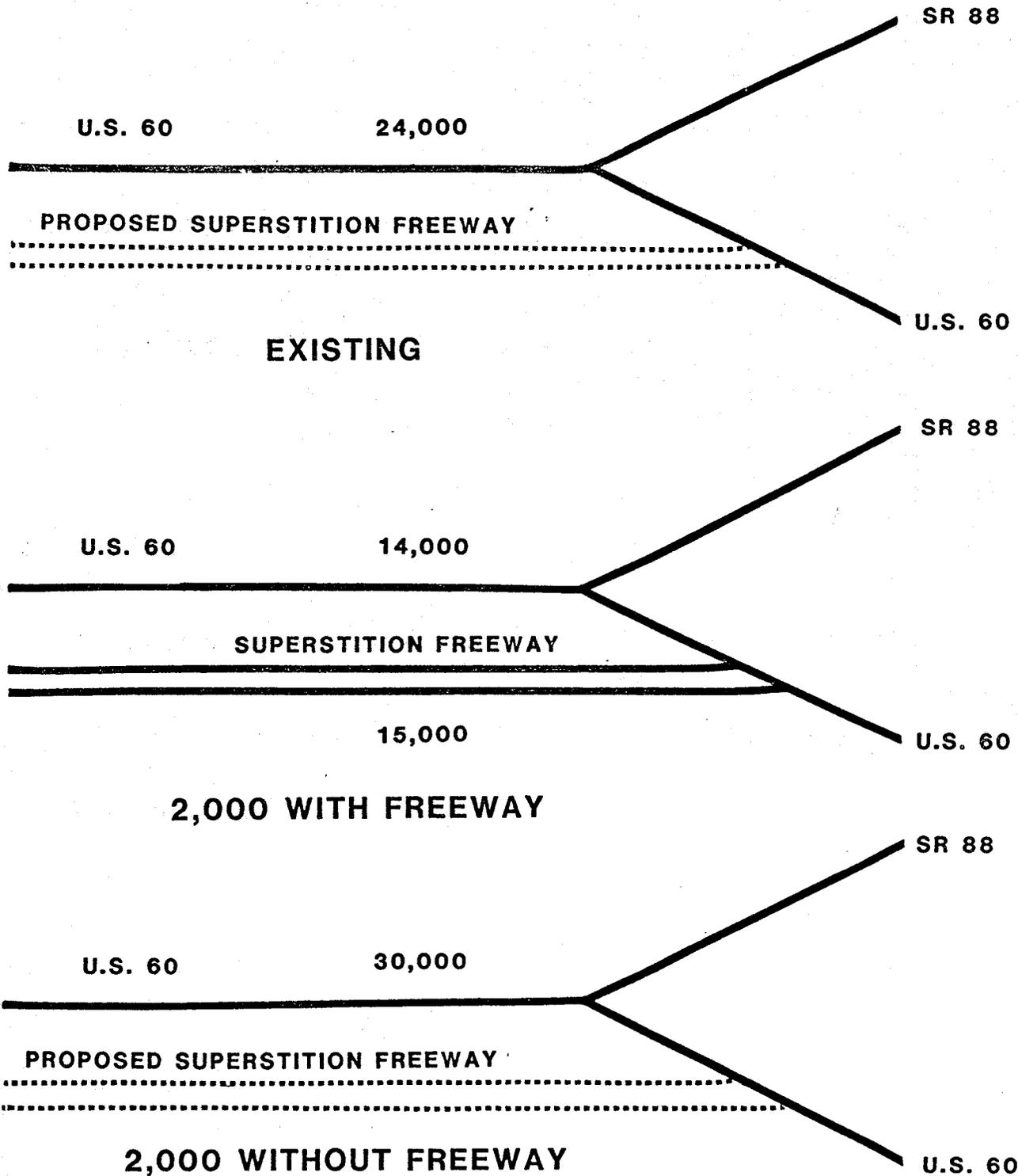
If the Superstition Freeway were extended as proposed, it would attract most of the through east-west traffic which otherwise would use U.S. 60/89 through Apache Junction. In the vicinity of Apache Junction, the year 2000

average daily traffic volume on this freeway is projected to be 15,000 vehicles ^{1/}. The corresponding traffic volumes on U.S. 60/89 in Apache Junction are projected to be 14,000 vehicles per day. If the freeway were not extended, traffic which has been assigned to it would seek an alternate east-west route, the most probable being U.S. 60/89. With this scenario, traffic volumes on U.S. 60/89 would approach 30,000 vehicles per day. Figure 8 shows the year 2000 traffic volumes for each of these scenarios.

Another issue regarding regional travel patterns is the traffic generated by the lakes and recreational areas northeast of Apache Junction. These facilities will continue to generate traffic on State Route 88, especially in the summer months. If the Superstition Freeway were complete, most of this recreational traffic would use it and State Route 88 for access. The primary concern with regard to Apache Junction would be the route choice of travellers between the Freeway and State Route 88. If this route were along a north-south arterial west of the junction of U.S. 60/89 and S.R. 88, the recreational traffic would be added to Apache Trail and to the intersection. If the route were east of the junction, this traffic may avoid some of the congested areas of Apache Junction. For the scenario of the freeway not having been completed, this recreational traffic would be using U.S. 60/89 and State Route 88, as it presently does.

A final issue regarding the Superstition Freeway is the access route from the freeway to the city of Apache Junction. The arterial streets which will have an interchange with the freeway will experience increased traffic volumes because they will be the link between Apache Junction and the freeway. Current plans by the Arizona Department of Transportation indicate that interchanges are proposed for Ironwood Drive and Tomahawk Road.

^{1/} Source for traffic volume projections is the Maricopa Association of Governments (MAG).



**FIGURE 8. REGIONAL HIGHWAYS
AVERAGE DAILY TRAFFIC VOLUMES**

Local Facilities

Local streets in Apache Junction primarily accommodate traffic with origins and/or destinations within the City. Travel patterns on these facilities are, therefore, determined by such things as population, employment, and major traffic generators. As Apache Junction develops between now and the year 2000, the basic land uses will most likely remain as they are today and open areas will be developed. The density of development will increase, however, as indicated by a doubling in population. The economy of Apache Junction will most likely continue to be retail and service based, unless industrial development is attracted to the area south of the proposed city limits.

The resulting traffic patterns will be similar to those of today, except that traffic volumes will increase twofold, as it is related directly to population. The automobile will continue to be the primary mode of transportation, although there will be increased emphasis on public transit and the use of bicycles. Today many persons can be seen bicycling for recreation and for travel to commercial areas. Traffic volumes will experience seasonal variations relative to population fluctuations, with the winter months experiencing up to three times the volume of traffic as that of summer.

FUTURE TRANSPORTATION NEEDS

In general, the transportation system for Apache Junction in the year 2000 must provide sufficient roadway capacity to serve the greatly increased population. It must also provide for a more complete network of arterial, major collector and collector streets on which automobile traffic can smoothly travel from point to point. The transportation needs for the year 2000 are basically similar to those of today except that the volume demand for travel will be increased. The issues, therefore, are the same as discussed in Section III with the addition of the following items.

Completeness of Network

In order to serve the increased traffic volumes, the network of streets and roads must be more complete. Arterial and collector streets must be continuous in all developed areas in order to provide for traffic circulation in an east-west as well as a north-south direction. This will necessitate that the additional lanes currently undeveloped be developed according to city standards, except that certain areas north and east of the study area may not need full expansion due to lesser traffic volumes. Section line roads such as Lost Dutchman Boulevard, Baseline Avenue, McKellips Boulevard and other arterials will have to be extended.

Through Traffic

Because of the increased volume of through traffic, it must be ensured that sufficient capacity be provided in an east-west direction through or around Apache Junction. If completed, the Superstition Freeway will serve through traffic.

Access to Apache Junction from the Superstition Freeway

Assuming the completion of the proposed Superstition Freeway south of Apache Junction, access must be provided for traffic using this facility with an origin or destination in Apache Junction. The arterials selected to have an interchange with the freeway will provide this route and will, therefore, experience increased traffic volumes. Such arterials need to be capable of handling the traffic flow and must be compatible with the adjacent land use. Such existing arterial roads will have to be expanded to the full width at least to Superstition Boulevard in order to carry the additional traffic volumes.

Recreational Traffic

The issue of traffic to and from the recreational areas northeast of Apache Junction has been discussed on page 17, however, that discussion did not

consider the impact of the Superstition Freeway. Assuming the freeway is operating, there is a need for accommodating traffic which uses the freeway and State Route 88 via the streets of Apache Junction. It is desirable that this through recreational traffic have minimal adverse impacts on local Apache Junction traffic. Expansion of arterial routes and State Route 88 to their full width will be necessary.

V. TRANSPORTATION PLAN

This section of the report presents the recommended actions based on an analysis of the present transportation conditions as well as those anticipated for the future. The approach taken is to treat each issue separately, first discussing the proposed alternatives for improvements, then recommending a plan of action. The discussion will be broken down into the following categories, although it is recognized that the issues are interrelated.

- Regional highways
- Local streets and highways
- Traffic control devices
- Other modes
- Other issues

These recommendations are based primarily on an evaluation of how they would improve the transportation system of Apache Junction, but such other criteria as political approval, public acceptance, and financial feasibility were also considered.

REGIONAL HIGHWAYS

This section presents several alternatives for improving the regional highway system as it relates to the City of Apache Junction. The advantages and disadvantages of each alternative are discussed and evaluated, then recommendations are presented.

U.S. Highway 60/89

There are several issues regarding U.S. Highway 60/89 as it relates to Apache Junction. First is the intersection with State Route 88, which is discussed below as a separate issue. Second is the difference in roadway

levels along the divided highway, which is discussed below. The other two issues, which apply to both U.S. 60 and State Route 88, are the treatment of access to local facilities and access to adjacent property.

Different Roadway Elevations. There are three basic methods of dealing with this situation. One is to reconstruct the road so that the two divided roadways are on the same vertical alignment. Second is to prohibit movement through the median. This measure may help in increasing safety but would have an adverse effect on traffic circulation by eliminating left-turns from U.S. 60 onto the cross streets and from the cross streets onto U.S. 60. It would also eliminate the crossing of traffic over U.S. 60. The third strategy would be to allow median crossovers at selected locations, ensuring that these intersections include measures to increase safety. This is essentially a compromise solution. It is recommended that this third strategy be adopted at locations where there is presently, or may be, a median crossover for section line, mid-section line and collector roads. These locations should be designed with adequate left-turn storage lanes in the median of U.S. 60/89 and, where possible, deceleration lanes for right turns off of the highway. In locations having visual obstructions, the obstructions should be removed to the degree that the safety hazard is eliminated.

Private Access Onto U.S. 60. Access onto U.S. 60 from abutting property should be prohibited except where a permit has been issued by ADOT and approved by the City. In areas of urban-type design with curb and gutters, access can be controlled through curb cut regulation. At sections without curbs, access can be controlled by paved turnouts.

Access Onto City Streets. There are two issues regarding the intersections between U.S. 60 and the City streets. One is the intersection spacing; the other is the design. With regard to spacing there are trade-offs in determining the optimum spacing between intersections. Traffic on U.S. 60 operates more smoothly if the spacing is kept at a maximum; however, the requirements of local traffic circulation are

better served with shorter spacing. For U.S. Highway 60, the recommended spacing for full intersections is 1/4 mile; i.e., at section line roads, mid-section line roads, and collector roads. This does not include the intersections which would occur at the U.S. 60/Route 88 junction. There are some locations where additional intersections are presently needed because of the lack of a complete local circulation network, such as the intersections of Grand Drive and Saguaro Drive with U.S. 60. These locations should allow for turn-in and right turn-out only for the interim period, then should be eliminated when a complete grid of collectors and arterials and quarter section streets becomes operational in the area.

The other issue is the design of the intersections. For the intersections at 1/4 mile intervals all turning movements must be provided for, which implies the use of median crossovers where U.S. 60 is divided.

For the section of U.S. 60 east of the junction, which is aligned diagonally through the Apache Junction street grid, there are alternative methods for designing the intersections. One is to have perpendicular intersections, which requires curved alignments of the cross streets. This is more costly and uses more land. The other alternative is to maintain a straight alignment for the cross streets, which results in skewed intersections. This is potentially a less safe situation.

The recommended strategy is to accept the use of skewed intersections and to allow for crossing of the U.S. 60 median. These improvements are designed to increase driver and pedestrian safety by providing proper sight distances, reduction of grades, and improved alignments of streets across U.S. 60. A typical sketch of this type of intersection is shown in Figure 9. This schematic diagram is for Tomahawk Road at U.S. 60, but is applicable to all such intersections.

U.S. 60

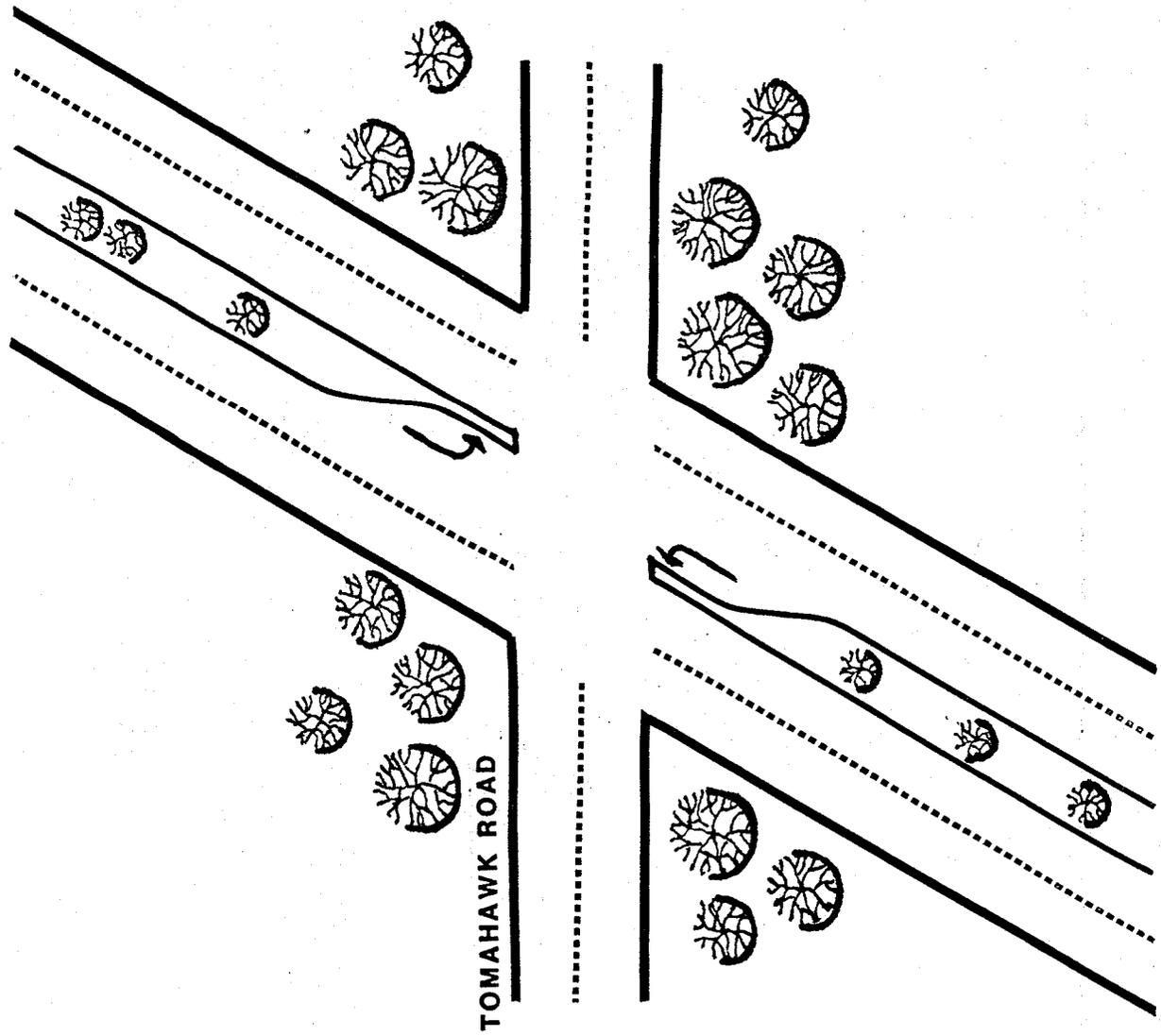


FIGURE 9. SKEWED INTERSECTION

State Route 88

Issues regarding State Route 88 are similar to those of U.S. Highway 60. The intersection with U.S. 60 is discussed in the next section while recommendations for access to and from local facilities and abutting land are exactly the same as discussed for U.S. 60. Recreational traffic has been discussed under "Regional Highways - Superstition Freeway." The other major issue regarding Route 88 is discussed as follows.

Rerouting of State Route 88. An idea which has been presented as an alternative for improving the traffic conditions at the intersection of U.S. Highway 60 and State Route 88 is to reroute the segment of State Route 88 from its present location between Idaho Road and U.S. 60 to a new alignment which follows Idaho Road. The new segment would begin at the intersection of State Route 88 at Idaho Road, continuing to U.S. Highway 60 at Idaho Road. This realignment would improve the situation at the existing junction by eliminating the volume of traffic making turns from U.S. 60 onto State Route 88. Utilizing the current design, the change would have a negative impact on the intersection of Idaho Road at U.S. 60 due to increased traffic volumes and higher accident potential. Another disadvantage is that it increases the travel distance for vehicles moving between U.S. 60 (west approach) and State Route 88. In order to be effective in changing travel patterns, the movements between U.S. 60 and State Route 88 must be restrained. A possible long-range advantage of changing the route of State Route 88 is that if an interchange with the Superstition Freeway were constructed at Idaho Road, as discussed under "Regional Highways - Superstition Freeway," State Route 88 would be continued to the Freeway along existing Idaho Road. This arterial would become an important transportation corridor and the new alignment of State Route 88 along Idaho Road would be more consistent with regional travel demand. The abandoned segment and the junction would then have a diminished degree of importance, and could be modified to be more responsive to local needs. For instance, access from Plaza Drive onto existing State Route 88 could be eliminated and changed to a cul-de-sac. Local access to this commercial area would then be from the north, possibly aided by the extension of Scenic Street between Plaza Drive and State Route 88.

An alternative corridor for the realignment of State Route 88 is along the right-of-way for the transmission lines located east of the City Boundary. With this alignment, State Route 88 would terminate at the location where the Superstition Freeway is proposed to connect with U.S. Highway 60. This alternative would require the construction of approximately four miles of new roadway. If implemented, it would divert numerous through vehicles from the business and commercial areas of Apache Junction.

Because of the long-term and regional benefits, it is recommended that State Route 88 be relocated onto Idaho Road and abandoned along its present alignment west of Idaho Road. This improvement could lead to greater separation of internal city traffic and external through traffic. This would improve the flow, safety and circulation of both. Other safety issues can be reduced or resolved by a redesign of the current intersection.

Intersection of U.S. 60 and State Route 88

There are several possible alternatives for dealing with the intersection of U.S. Highway 60/89 and State Route 88. One is to reroute State Route 88 onto Idaho Road as discussed above, providing new access to local commercial areas, and eliminating the intersection. Another is to allow the intersection to operate as it currently does but to reduce interference by eliminating access to adjacent property such as the Superstition Inn and to local streets such as Plaza Drive. This would improve the operation of the intersection for through traffic but would be highly objectionable to the local travellers and to the owners and users of the nearby establishments.

Another alternative is to construct a grade separation to eliminate the conflict between left turning vehicles and opposing through traffic. This would greatly increase the capacity of the junction, but has the disadvantages of encouraging higher speeds, using important commercial area land, and being expensive. It would also alter the local commercial/retail character of the area.

Another alternative is to reconstruct the intersection into a form which would increase safety, simplify operation, and maintain capacity. The design for such a reconstruction could be a "T" intersection or a variation thereof. The intersection could be signalized as warranted by traffic volumes. Access to adjacent land could be maintained.

The last alternative is to allow the intersection to remain unchanged. This alternative is, of course, the easiest and least costly, but it would result in a less desirable situation than exists today as traffic volumes would increase through the years.

Although the ultimate decision on this particular location should be tied to other regional issues (e.g., the Superstition Freeway), it is recommended that State Route 88 be rerouted onto Idaho Road and the present junction eliminated. This improvement would be most consistent with a decision to construct freeway ramps onto Idaho Road, but would increase safety within the city regardless of that decision.

Superstition Freeway

Plans by the Arizona Department of Transportation call for the eventual extension of the Superstition Freeway from its present terminus in Mesa to a future intersection with U.S. Highway 60/89 southeast of Apache Junction. For the purposes of this report, this proposed project is considered as "given". It will be constructed in stages, as determined by the availability of funding, and the exact year of completion has not yet been programmed, however, it is supposed to be fully operational before year 2000. The freeway as currently planned will have two lanes in each direction and access ramps located no closer than one mile apart. In the vicinity of Apache Junction, the ramps are expected to be less frequent.

Access Routes to Apache Junction. The major issue with regard to Apache Junction is the choice of which arterials are to be provided with an interchange. The routes onto which freeway access is provided will become important links between the freeway and Apache Junction.

There are two scenarios which are under consideration, as shown on Figure 10. The first one, which has already been designed by the Arizona Department of Transportation is to have interchanges at Ironwood Drive and Tomahawk Road. The second alternative is to have interchanges at Tomahawk Road and Idaho Road. The first scenario is better suited to widespread regional transportation needs and, therefore, has already been designed and approved by ADOT. Interchanges at these two locations are apparently more desirable in serving the area of Pinal County south of the proposed freeway. A disadvantage is that increased traffic volumes would be placed on Ironwood Drive, a facility which has the Superstition Mountain Elementary School and the Apache Junction Junior and Senior High Schools along that corridor.

Favoring the second alternative is the fact that traffic which travels between the freeway and State Route 88, such as the recreational traffic, would not be an added burden to Apache Trail and to the intersection of U.S. 60 and State Route 88. It would instead traverse Idaho Road between the freeway and State Route 88. Another advantage of the second alternative is the fact that there are a number of encroachments into the ultimate right-of-way along Ironwood Drive whereas there are no such encroachments along Idaho Road. Since the particular route connecting with the freeway would undoubtedly have a more critical need for full build out, it would be less disruptive to adjacent development to use Idaho Road instead of Ironwood Drive.

Based on the above discussion, it has been determined that traffic flow in Apache Junction would benefit most by the construction of freeway interchanges at Idaho Road and Tomahawk Road. There is a possibility,

however, that this cannot be implemented due to reasons external to the needs of Apache Junction, primarily related to regional access to the freeway from other areas in Pinal County. However, if the changes to the U.S. 60/S.R. 88 intersection are made as described above, the alignment of S.R. 88 onto Idaho Road would make this an attractive route for access onto the freeway. If S.R. 88 is not realigned, the use of Tomahawk and Ironwood would remain as more attractive routes. However, the expansion of both roads to full capacity would have to be accomplished.

LOCAL STREETS

This section presents recommendations as they apply to characteristics of the local street network in Apache Junction.

Functional Classification

It is recommended that every street and road in Apache Junction be classified in a hierarchy according to function. The four major functional classifications are arterials, major collectors, collectors, and locals, which are described below:

- Arterials - provide for through traffic movement between areas and across the city with some direct access to abutting property. They are subject to required control of entrances, exits, and curb use.
- Major Collectors - Provide for traffic movement between arterials and collector streets.
- Collectors - provide for traffic movement from local to major collector streets.
- Locals - Local streets provide for direct access to abutting land and for local traffic movement.

These classifications are consistent with the Street Classification Plan which has been adopted by the City of Apache Junction. The relationship between the two is as follows:

| <u>Functional Classification</u> | <u>City Street Plan</u> |
|----------------------------------|-------------------------|
| Arterial | Section line |
| Major Collector | Mid-section Line |
| Collector | 1/4 - 1/4 line |
| Local | All other streets |

A map showing all the City streets according to functional classification can be seen on Figure 11. As shown, the pattern is fairly consistent with the typical section having arterials on the section line and major collectors on the mid-section line. There are deviations in Sections 19 and 20 as a result of U.S. Highway 60/89 being located on the mid-section line. A meandering alignment such as Royal Palm Road in Section 28 is also acceptable.

The pattern of arterials and major collectors should be continued in a similar manner for the sections of the service area outside the City.

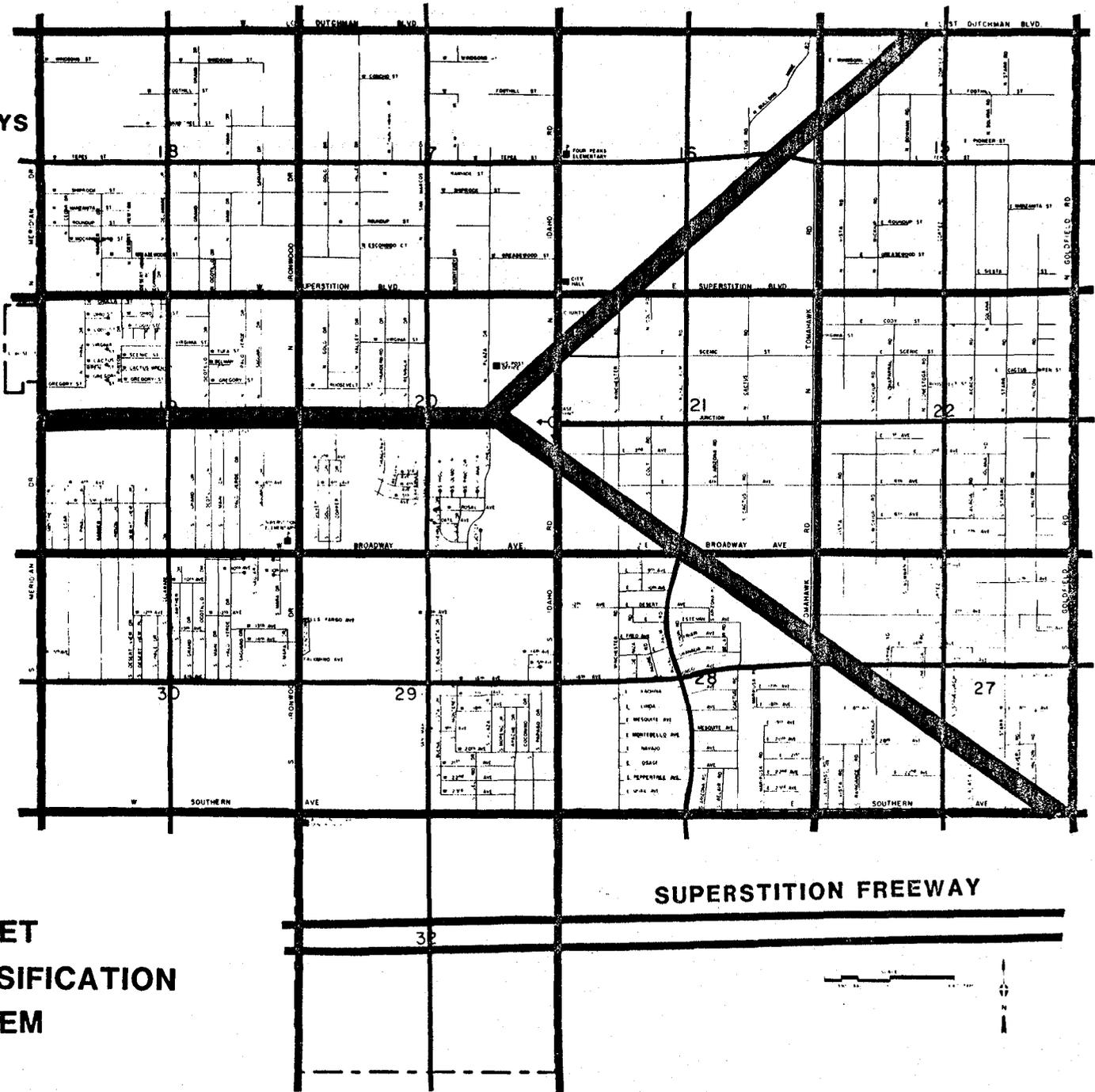
Geometrics and Right-of-Way

The standards for pavement width and right-of-way width adopted by the City are acceptable for serving the needs of each type of street. A listing of these standards is as follows:

| <u>Classification</u> | <u>Right-of-Way (Width in Feet)</u> | <u>Street Section - Back of Curb to Back of Curb (Width in Feet)</u> |
|-----------------------|---|--|
| Arterial | 100 | 64 |
| Major Collector | 80 | 50 |
| Collector | 60 | 42 |
| Local | 50 | 32 |

LEGEND

-  REGIONAL HIGHWAYS
-  ARTERIALS
-  MAJOR COLLECTORS



SUPERSTITION FREEWAY

FIGURE 11. STREET CLASSIFICATION SYSTEM

These standards are applicable to ultimate build out for each facility and should be implemented in stages as development occurs.

An exception to maximum pavement width for arterials should be considered between the Salt River Project KV lines and the area north and east of said lines where the roads terminate at national forest boundaries. If such areas are determined to remain at low density then road capacity requirements may not justify full development. Assuming such is determined, then the extra width should be allocated for equestrian trails connecting trails along the power lines with the forest service area.

Intersection

Intersections of City streets should be treated in such a manner as to ensure safe, smooth traffic operation. For an intersection of two streets having different functional classifications, the one with the higher classification must be given priority as determined by the type of traffic control device. Adequate sight distance should be provided for safe movement into the intersection.

Intersections of arterials and local streets other than those on quarter section lines should be avoided if a feasible alternate access route is available. Examples of this are at the intersections of Rennick Drive @ Superstition Boulevard, Colt Road @ Broadway Avenue, and 22nd Avenue @ Idaho Road. With low traffic volumes on the arterials there is little immediate problem, but as volumes grow and the arterials become more important for traffic flow, operation could be hindered by such local street access points.

Access Control

Access onto the City streets from abutting property should be controlled by statute, by which the City permits only a limited number of access points onto a street or by control by curb cut regulations.

Control of access from abutting property is most applicable to arterial streets where access to the land is secondary to traffic flow.

TRAFFIC CONTROL DEVICES

Signs

The inventory of traffic control signs in the City of Apache Junction, which was conducted as part of this study, should be kept up-to-date at all times. It is recommended that a filing system for the traffic control device inventory be implemented. The "edge-notched" card (ENC) system is a relatively simple and inexpensive method which may be appropriate for Apache Junction. It is further recommended that all non-standard signs be replaced or removed and all signs in bad condition be replaced. All of those falling into these categories are identified in the Traffic Control Sign Inventory.

With regard to intersection, stop signs or yield signs should be used to assign right-of-way, if warranted by the "Manual on Uniform Traffic Control Devices," (MUTCD).

At the intersection of two streets with different functional classifications, the less important street should normally have the stop or yield sign. For intersections of two streets of the same classification, the one with less traffic volumes should ordinarily be controlled with a sign. If the traffic volumes are approximately equal, the use of a four-way stop may be warranted. The recommendations of the MUTCD should be used for all sign installations.

Signals

A traffic signal warrant analysis conducted by ADOT indicates that the intersection of U.S. 60 and Idaho Road does warrant a signal installation. Signals are not warranted at any other locations at this time. However, as volumes increase, needs will change. Analysis of the need for traffic

signals in the future should be done according to the methods outlined in the MUTCD. There are eight warrants which should be investigated:

- Warrant 1 - Minimum vehicle volume
- Warrant 2 - Interruption of continuous traffic
- Warrant 3 - Minimum pedestrian volume
- Warrant 4 - School crossings
- Warrant 5 - Progressive movement
- Warrant 6 - Accident experience
- Warrant 7 - Systems
- Warrant 8 - Combination of Warrants

A detailed discussion of each of these begins on page 236 of the MUTCD.

GUIDELINES FOR OTHER MODES OF TRANSPORTATION

In order to encourage the use of modes of transportation other than the automobile, provision for them must be incorporated into the Apache Junction transportation system. This section contains a very brief discussion of general guidelines to follow in planning for these modes.

Bicycle

Use of the bicycle is popular in Apache Junction both for recreational purposes and as a means of transportation, so it is desirable that bike-ways be provided. A bikeway should be separated from vehicular traffic wherever possible, but if not, they should be located on streets of low traffic volume. Fixed bicycle racks or lockers should be provided at points of destination, such as at Bayless Plaza, the Post Office, Superstition Plaza, City Hall, the schools, and the churches.

Bike routes through residential areas could easily be established on streets and roads, where paved. Facilities for parking and storage of bicycles in residential areas would not be a significant issue because of the nature of these areas.

In commercial/retail areas the most significant issue is safety and bicycle parking. It is recommended that bicycle storage racks be placed at locations where significant bicycle use is anticipated. The key street planning issue to be considered is to ensure that bicycle-pedestrian and bicycle-vehicle conflicts are minimized. Both are important considerations.

Pedestrian

Provision for pedestrian flow is essential in nearly all developed areas of Apache Junction. In areas of low density and low traffic volumes, the shoulder of the road should be adequate. It is recognized that during the rainy season these are not usable but very little pedestrian activity normally occurs under these conditions. Also, the shoulders are sometimes too steep or too close to brush along the side of the road. Although these are potential problems, it is not suggested that any special facilities be constructed in these low density areas. However, in densely populated areas, in the commercial/retail areas, and along streets equipped with curbs, a concrete sidewalk is necessary. The width of these sidewalks should be 4 to 6 feet. They should be set back at least 10 feet from the curb or edge of pavement along arterials and major collectors, and at least 6 feet from collectors and local streets. Intersections in these areas should be marked with a pedestrian crosswalk.

Horse Trails

Because of the popularity of recreational horseback riding in Apache Junction, it should be a policy that certain areas or strips of land be set aside to preserve horse trails as development occurs. Good examples of potential land are along the various arterials which would lead to the various parks which are currently being discussed

in areas north of the City. Equine trails which run adjacent to and along these arterials would be most easily accomplished by preserving these lands now.

Public Transportation

To serve the needs of the transit dependent population and to provide an alternative to the automobile, public transit should be incorporated into the Apache Junction transportation scheme. The population and employment densities of Apache Junction may not justify a regularly scheduled, fixed route system. However, because of the type of population, especially the high percentage of elderly persons, it is ideally suited for special transit services such as a demand-responsive system or subscription service. A demand-responsive system, such as dial-a-ride, has vehicles which are on-call to provide door-to-door service for its patrons. This is particularly desirable for the elderly and handicapped. Subscription service is intended to serve specific activity centers on a regular basis, such as picking up a group of people who live near each other and taking them to a prescribed destination. This service could be used for regular trips from a residential area to the downtown area, for example.

Air Transportation

A study is currently being conducted for a master plan and site selection for a proposed Apache Junction Airport. A need has been determined and a preferred site has been selected by the consultant, which is approximately seven miles southeast of the center of Apache Junction, on the south side of U.S. Highway 60. However, no official action has been taken by the airport commission or the City Council to accept or approve the study, as it is incomplete at this time.

OTHER ISSUES

Preferential Routing

For administrative, planning, and design purposes it is desirable that traffic volumes on arterials, major collectors, collectors and locals be consistent with the functional classification. To encourage travelers to use arterials and major collectors for longer trips and to discourage the use of collectors and locals for such trips, preferential treatment should be applied to arterial streets over collectors, and collectors over locals. This can be accomplished by several methods. Because of the lack of pavement on many of the streets in Apache Junction, when a decision is to be made as to priorities for paving, an arterial street should take priority over a major collector if other criteria are similar. As travellers generally prefer to use paved facilities, this will encourage the desired travel patterns. Traffic can also be encouraged to use arterials by using signing strategies which make the arterials more appealing.

Right-of-Way Infringement

For those street corridors in which private structures are located within the ultimate right-of-way strip the recommended strategy is as follows. If the facility is not being operated at the volume required for expansion and if the infringement is not causing problems, then let it stand. However, at the point in time at which transportation demand dictates improvement of the facility, all infringements must be removed or condemned. As future development occurs, further right-of-way infringements should be eliminated by requiring setbacks to or from future right of way lines. This is especially true in the outlying areas where arterials need to have their right-of-way preserved or at least designated to prevent future infringement.

County Coordination

Where streets lie on the City-County Line, the County should require the development of their side of the street to City standards. This is of much greater significance to the City since many of these streets become important parts of the City's circulation system. Lost Dutchman Boulevard is a good example where a section of road is not being developed on the County side but would be on the City side.

It would be advantageous if the County institutes a requirement for dedication of right-of-way according to county standards as appears in the Pinal County subdivision ordinance for all developments. Further for these dedicated streets performance standards should be developed which determine time tables for requiring development and development standards for improvements.

APPENDIX

APPENDIX

Road Mileage

Apache Junction, Arizona

| <u>Street Name</u> | <u>Total Miles</u> | <u>Paved</u> | <u>Unpaved</u> |
|--------------------|--------------------|--------------|----------------|
| Acacia Rd. | .84 | 0 | .84 |
| Apache Dr. | .42 | .23 | .19 |
| Arizona Rd. | .30 | .30 | 0 |
| Belair Rd. | .35 | .20 | .15 |
| Belmar Ct. | .06 | .06 | 0 |
| Bowman Rd. | .75 | 0 | .75 |
| Broadway Ave. | 4.00 | 3.00 | 1.00 |
| Buena Vista Dr. | .39 | .39 | 0 |
| Bulldog Mine Rd. | .39 | 0 | .39 |
| Cactus Rd. | 1.69 | .72 | .97 |
| Cardinal Dr. | .13 | .13 | 0 |
| Cactus Wren St. | .52 | .39 | .13 |
| Cedar Dr. | .94 | .81 | .13 |
| Cholla St. | .31 | .31 | 0 |
| Coconino Dr. | .53 | .23 | .30 |
| Cody St. | .67 | .17 | .50 |
| Colt Rd. | .37 | .37 | 0 |
| Concho St. | .13 | 0 | .13 |
| Copper Dr. | .35 | .35 | 0 |
| Cornwall St. | .19 | .19 | 0 |
| Cortez Rd. | 2.25 | .25 | 2.00 |
| Datil Ave. | .13 | .13 | 0 |
| Delaware Dr. | 2.50 | 2.18 | .32 |
| Del Rio St. | .25 | .25 | 0 |
| Deniza Rd. | .21 | .21 | 0 |
| Descanso Rd. | .19 | .19 | 0 |
| Desert View Dr. | .81 | .81 | 0 |
| Desert View Pl. | .25 | .25 | 0 |
| 18th Ave. | 1.01 | .76 | .25 |
| Escondido St. | .06 | 0 | .06 |
| 5th Ave. | .89 | .89 | 0 |
| 15th Ave. | .54 | .29 | .25 |
| 1st Ave. | .10 | .10 | 0 |
| Foothill St. | 1.03 | 0 | 1.03 |
| 4th Ave. | 2.24 | .44 | 1.80 |
| 14th Ave. | .50 | .50 | 0 |
| Fred Ave. | .13 | .13 | 0 |
| Gold Dr. | 1.25 | .87 | .38 |
| Goldfield Rd. | 1.61 | 0 | 1.61 |
| Grand Dr. | 1.20 | 1.07 | .13 |
| Greasewood St. | 1.19 | .25 | .94 |
| Gregory St. | .41 | .41 | 0 |
| Hale Dr. | .50 | .50 | 0 |
| Higo Cr. | .04 | .04 | 0 |
| Hilton Rd. | 1.45 | 0 | 1.45 |

| <u>Street Name</u> | <u>Total Miles</u> | <u>Paved</u> | <u>Unpaved</u> |
|---------------------|--------------------|--------------|----------------|
| Idaho Rd. | 3.00 | 2.75 | .25 |
| Ironwood Dr. | 3.00 | 2.68 | .32 |
| Junction Dr. | 2.00 | 0 | 2.00 |
| Lago Dr. | .17 | .17 | 0 |
| Lawson Dr. | .50 | .50 | 0 |
| Lawther Dr. | .66 | .60 | .06 |
| Lost Dutchman Blvd. | .81 | 0 | .81 |
| Lucy Court | .11 | .11 | 0 |
| Main Dr. | 1.00 | .75 | .25 |
| Manzanita St. | .51 | 0 | .51 |
| Mara Dr. | .69 | .69 | 0 |
| Mariposa Rd. | .33 | .08 | .25 |
| Meridian Dr. | 3.00 | 1.80 | 1.20 |
| Mockingbird St. | .25 | 0 | .25 |
| Montebello Ave. | .28 | .28 | 0 |
| Monterey Dr. | .35 | .29 | .06 |
| Moreno St. | .23 | .23 | 0 |
| 9th Ave. | .43 | .43 | 0 |
| 19th Ave. | .69 | .52 | .17 |
| Ocotillo Dr. | 1.53 | 1.53 | 0 |
| Ohio St. | .45 | .45 | 0 |
| Olmo Cr. | .04 | .04 | 0 |
| Padre Rd. | .17 | .17 | 0 |
| Palomino Ave. | .07 | 0 | .07 |
| Palo Verde Dr. | 1.13 | 1.13 | 0 |
| Papago Dr. | .23 | 0 | .23 |
| Phelps Dr. | .52 | .52 | 0 |
| Picana Cr. | .04 | .04 | 0 |
| Pinal Dr. | .63 | .63 | 0 |
| Pino Cr. | .04 | .04 | 0 |
| Pinto Dr. | .13 | 0 | .13 |
| Pinyon Dr. | .35 | .35 | 0 |
| Plaza Dr. | 1.34 | 1.34 | 0 |
| Rawhide St. | .19 | 0 | .19 |
| Rennick Dr. | .50 | .50 | 0 |
| Roosevelt St. | .66 | .66 | 0 |
| Rosal Ave. | .20 | .20 | 0 |
| Roundup St. | 1.45 | 0 | 1.45 |
| Royal Palm Blvd. | 2.02 | 1.10 | .92 |
| Sahuaro Dr. | 1.19 | 1.13 | .06 |
| San Marcos Dr. | 2.19 | 1.32 | .87 |
| Scenic St. | 2.19 | .75 | 1.44 |
| 2nd Ave. | 1.33 | .08 | 1.25 |
| 17th Ave. | 1.12 | .93 | .19 |
| Ship Rock St. | 1.38 | 0 | 1.38 |
| Sierna Vista Rd. | .31 | .31 | 0 |
| Siesta St. | .19 | 0 | .19 |
| Silver Dr. | .35 | .35 | 0 |

| <u>Street Name</u> | <u>Total Miles</u> | <u>Paved</u> | <u>Unpaved</u> |
|--------------------|--------------------|--------------|----------------|
| 6th Ave. | .31 | 0 | .31 |
| 16th Ave. | 1.34 | .71 | .63 |
| Smoketree St. | .56 | 0 | .56 |
| Smythe Dr. | .25 | .25 | 0 |
| Solana Rd. | .12 | 0 | .12 |
| Southern Ave. | 3.00 | 1.87 | 1.13 |
| Stagecoach Rd. | .03 | 0 | .03 |
| Starr Rd. | 2.50 | 0 | 2.50 |
| Superstition Blvd. | 4.00 | 4.00 | 0 |
| Tamarisk St. | .39 | .39 | 0 |
| 10th Ave. | .64 | .36 | .28 |
| Tepee St. | 2.86 | .69 | 2.17 |
| 3rd Ave. | .08 | .08 | 0 |
| 13th Ave. | .63 | .44 | .19 |
| Thunderbird Dr. | .83 | .83 | 0 |
| Tomahawk Rd. | 2.00 | .68 | 1.32 |
| 12th Ave. | 1.93 | .99 | .94 |
| 20th Ave. | 1.45 | 1.03 | .42 |
| 21st Ave. | 1.14 | .97 | .17 |
| 22nd Ave. | 1.00 | .83 | .17 |
| 23rd Ave. | .71 | .54 | .17 |
| Valley Dr. | 1.38 | 1.00 | .38 |
| Vaquero Rd. | .25 | 0 | .25 |
| Virginia St. | .62 | .62 | 0 |
| Vista Rd. | 1.77 | .21 | 1.56 |
| Warner Dr. | 1.07 | 1.07 | 0 |
| Weaver Dr. | .04 | .04 | 0 |
| Wells Fargo Ave. | .06 | 0 | .06 |
| Wickiup Rd. | 1.75 | 0 | 1.75 |
| Winchester Rd. | 1.53 | 1.53 | 0 |
| M.H.P. | .60 | .60 | 0 |
| GRAND TOTAL | 108.86 | 63.55 | 45.31 |