

STREETS DESIGN GUIDE

for

Subdivisions and Local Improvements

City of Phoenix, Arizona

Engineering Department

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## STREETS - DESIGN GUIDE

### FOR SUBDIVISIONS AND LOCAL IMPROVEMENTS

#### I INTRODUCTION

The design criteria as presented in this manual is intended as a guide for engineers designing street paving in conjunction with subdivision, planned area and local developments. It is not intended as a guide for the design of major city streets, except for the very limited case in which a developer is required to improve a portion of a major street as a part of his development.

In general, the dominant variables in street design will be based upon zoning and the type of street under consideration (i.e., major, collector, or residential street). Other parameters, such as storm drainage considerations or geological characteristics of the land, may in some locations influence or dictate street grades, proper street alignment, right-of-way requirements, etc.

The design guidelines presented in this manual are, in part, an expansion on the street design criteria as given in the Subdivision Ordinance under Sections 32-39 and 32-41, and in part an expansion on Administrative Procedures, Standard Details, and Standard Specifications directed at paving plan development and street construction.

Detailed design criteria for storm drainage runoff calculations, storm drain design, and flood protection will be covered in a separate manual.

#### II STREET LOCATION AND RIGHT OF WAY REQUIREMENTS

##### A) Major Streets

Major street location and right-of-way requirements are established by the City of Phoenix Minimum Right-of-Way Standards Map. Major streets are normally located along section lines. For exceptional cases where alignment must depart from the normal section-line location for reasons of terrain or obstructions of a "man-made" nature, the City Engineer is responsible for fixing the location and alignment. In these cases, the City Engineer may require that the subdivider or developer furnish an accurate topographic map to aid in establishing such location and alignment.

B) Collector Streets

As in the case of major streets, collector street locations and right-of-way requirements are established by the City of Phoenix Minimum Right-of-Way Standards Map. Collector streets are usually located along mid-section lines. For those cases where the location of alignment is not established by official maps of the City, the location and alignment is set by the Subdivision Committee in connection with the review of proposed new developments.

C) Local Streets

The location and alignment of local streets are established by City Council approval of subdivision plats. Where subdivision plats are not required under the Subdivision Ordinance, and property owners are desirous of dedicating right of way for local streets, the proposed alignment is submitted to the Planning Department for review and approval.

The right-of-way requirements for the various street classifications are functions of the desired street width. Street intersections, merge lanes, right-turn lanes, cul-de-sacs, median islands and other special cases will demand varying right-of-way requirements. In all cases the minimum right-of-way widths will be dictated by current City standards. Table I below lists the minimum required right-of-way widths for the general case in which the desired roadway width is uniform.

TABLE I

Class of Street	Street Width*	Minimum Right-of-Way Width
MAJOR	64	80
	68	84
	84	100
	64-68 + Frontage Roads	130
	Parkway	Varies**
COLLECTOR	64	80
	50	66
	40-50	60
LOCAL	32-36	50
	40	66

\* Measured Face-to-Face of Curb

\*\* To be determined prior to preliminary design

### III STREET GEOMETRICS

#### A) Typical Cross-Section Dimensions

Except for special parkway sections, street cross sections may be determined using Standard Details 183-185 as follows:

MAJOR STREETS	Det. 183
COLLECTOR STREETS	Det. 184
RESIDENTIAL STREETS	Det. 185

The above Standard Details are included in Appendix A of this manual.

#### B) Alignment of Street Intersections

All streets shall intersect major streets or collector streets at a ninety degree (90°) angle.

Curvilinear segments of local streets which intersect a major street or a collector street shall require a tangent Section of centerline at least one hundred (100) feet in length, measured from the adjacent right-of-way line of the major or collector street, except when the centerline radius is greater than four hundred (400) feet, with the curve center located on the above described major or collector street right-of-way line.

Local street intersections shall not vary from ninety degrees (90°) by more than fifteen degrees (15°).

Street jogs at intersections with centerline offsets of less than one hundred twenty-five (125) feet shall be avoided. Where warranted for special circumstances, the City Engineer may recommend to the City Council that this requirement be modified.

#### C) Horizontal Curves

##### 1. Major Streets

Noticeable deflections in the centerline alignment of major streets shall be connected by a curve. The amount of deflection requiring a curve and the radius of the curve shall be determined by the City Engineer. The design engineer is referred to the AASHO design standards for urban areas and should consult with the City Traffic Engineer when determining centerline curves for major streets.

2. Collector Streets

Deflections in the centerline alignment of collector streets of more than ten degrees ( $10^{\circ}$ ) shall be connected by a curve with a minimum centerline radius of five hundred (500) feet. Between reverse curves there shall be a tangent section of not less than one hundred (100) feet.

3. Local Streets

Deflections in the centerline alignment of local streets of more than ten degrees ( $10^{\circ}$ ) shall be connected by a curve with a minimum centerline radius of one hundred (100) feet. Between reverse curves a tangent section of not less than one hundred (100) feet is required. When warranted for "hillside" subdivisions or in areas of irregular terrain, the City Engineer may recommend to the City Council that the required length of tangent section be modified or waived.

IV STREET GRADES

The Subdivision Ordinance under Sections 32-39 and 32-44, establishes certain minimum and maximum grades for the various street classifications. Unusual circumstances of grade or drainage conditions may, however, necessitate some divergence from the requirements as set forth in the Ordinance.

It is desired that street design be accomplished in such a manner that the street profile closely adheres to the natural characteristics of the land. In certain rather extensive areas of the City, the general slope of the land is very flat and in some extreme cases the maximum general slope approximates one foot per thousand feet (0.10% grade). In these areas it is obvious that the street grades cannot be in excess of the general slope of the lands, unless there are existing storm drain lines or other storm drain facilities to accept street drainage and which would allow for increased street grades. In these very flat areas, careful consideration should be given, at the tentative plat stage, to the orientation of streets as well as the spacing of streets to achieve the best possible street grades, and to minimize the necessity of installing fill material for those streets more or less at a right angle to the direction of maximum land slope.

In areas subject to serious flooding, it may occasionally be necessary to provide additional street capacity to handle floodwater runoff by means of an inverted street cross section. Such street design shall be held to a minimum and is intended only for residential and collector streets. Where conditions warrant and provision must be

made to provide inverted crown streets, such design will be approved by the City Engineer only as far as necessary to carry storm water to logical points of discharge into natural washes, channels, or storm drainage facilities.

A) Maximum Longitudinal Grade

1. Major streets: 6 percent (6%)
2. Collector streets: 7 percent (7%)
3. Local streets: 15 percent (15%)
4. Alleys and refuse collection easements: 15 percent (15%)  
(Local street grades exceeding 12 percent (12%) shall have a maximum length of six hundred (600) feet.)
5. Cul-de-sac turning area: 8 percent (8%)
6. Exceptions: There will be exceptional circumstances where the City Engineer may be warranted in approving grades in excess of the above maximums, but every effort should be made to hold grades within the maximum specified.

B) Minimum Longitudinal Grades

1. Normal Crown Streets

Desirable: 0.35 percent (0.35%)  
Minimum: 0.10 percent (0.10%)

Grades less than 0.25 percent (0.25%) will only be approved when warranted for unusual circumstances, such as areas where the general gradient of the land is less than 0.25 percent (0.25%).

2. Inverted Crown Streets and Alleys: 0.10 percent (0.10%)

Where a minimum grade of 0.50 percent (0.50%) cannot be established or maintained, a 3-foot wide Portland Cement valley gutter (Det. 165) will be required, but in no event will grades of less than 0.10 percent (0.10%) be approved by the City Engineer.

C) Vertical Curves

1. General Requirements

Vertical curves shall be of the simple parabolic type. Design considerations should include safety, riding comfort, and drainage. Minimum stopping sight distance is the prime factor in the design of crest vertical curves, while sag vertical curves require limiting the rate of change of grade for riding comfort.

Vertical curves shall be required as follows:

- a) Major streets - when grade change exceeds  $1\frac{1}{2}$  percent ( $1\frac{1}{2}\%$ ).
- b) Collector streets - when grade change exceeds 2 percent (2%).
- c) Local streets - when grade change exceeds 3 percent (3%).

## 2. Design Factors

Design criteria for vertical curves shall be based on the AASHO publication, A Policy on Arterial Highways in Urban Areas. The formula for computing the minimum horizontal length of a vertical curve, as taken from the AASHO publication, is  $L=KA$ , where (L) equals the minimum horizontal length of curve, (K) is constant for a given design speed, and (A) is the algebraic difference in grade expressed as a percent.<sup>1</sup> The design speed is defined as the established, or "posted" speed limit plus ten (10) miles per hour.

For preliminary design considerations, the minimum length of a vertical curve may be approximated as equal to three (3) times the design speed ( $L=3V$ ), where the design speed (V) is expressed as miles per hour (mph).

Tables II and III present a partial listing of the (K) value for various design speeds.

TABLE II<sup>2</sup>  
CREST VERTICAL CURVES

Design Speed (mph)	Constant K
30	28
40	55
50	85
60	160

TABLE III<sup>3</sup>  
SAG VERTICAL CURVES

Design Speed (mph)	Constant K
30	35
40	55
50	75
60	105

<sup>1</sup> American Association of State Highway Officials, A Policy on Arterial Highways in Urban Areas, (1957), pp. 150-152.

<sup>2</sup> Ibid, p. 151.

<sup>3</sup> Ibid, p. 151.



Example:

A grade of -3.0% intersects a grade of +2.5% on the proposed route of a collector street. The posted speed limit is to be 30 mph.

Determine the minimum horizontal length of the vertical sag curve required.

Solution:

The algebraic difference in grade is 5.5%, and the design speed is  $(30+10) = 40$  mph. From Table III,  $K = 55$  and, using the formula  $L = KA$ , the minimum length of the curve (L) is computed as 302.5 feet. For practical purposes this figure may be rounded off to the nearest twenty-five (25) feet; thus, the minimum horizontal length of curve for the above problem is 300 feet.

V

PAVEMENT PROFILE

A) Definition of Terms

1. "Cross-fall"-the difference in elevation of the ends of a chord drawn normal to the roadway centerline between opposite gutter flow-lines.

Its gradient is determined by dividing the difference in the above gutter elevations by the horizontal distance between them, expressed as a percentage.

The preceding definition assumes the gutter lines are adjacent to the pavement edges, as in the case of standard concrete curb and gutter. In the absence of a gutter adjacent to the pavement, the chord is defined as being drawn between the opposite edges of the paved surface.

2. "Crown-line" - the highest longitudinal profile line of the street pavement (except in the case of inverted crown streets for which it is the lowest).
3. "Crown" - the cross slope or difference in elevation between the crown-line and the gutter line, adjacent to the pavement edge, for any given cross section. Where gutters do not exist adjacent to the pavement edge, crown is defined as the difference in elevation between the crown-line and the pavement edge. Crown is normally expressed as a percentage.
4. "Valley Gutter" - an open channel for surface drainage formed by projecting a flow-line, such as gutter line, transversely across a street surface. Valley

gutters are generally, but not always formed at street intersections by depressing the surface of one or more of the intersecting streets to meet the gutter grade of the other.

B) Allowable Crown

1. Major Streets

Minimum Crown: 1.0 percent (1.0%)

Maximum Crown: 3.0 percent (3.0%)

The desirable crown should be in the range of 1.5 percent (1.5%) to 2.5 percent (2.5%).

2. Collector Streets

Minimum Crown: Where street grade exceeds 0.25 percent - minimum of 1.5 percent (1.5%)

Where street grade is less than 0.25 percent (0.25%) - minimum of 2.0 percent (2.0%).

Maximum Crown: 4.0 percent (4.0%)

3. Local Streets

Minimum Crown: Where the street grade exceeds 0.25 percent (0.25%) - minimum of 2.0 percent (2.0%).

Where the street grade is less than 0.25 percent (0.25%) - minimum of 2.5 percent (2.5%).

Maximum Crown: 4.5 percent (4.5%).

4. Inverted Crown Streets and Alleys

Minimum Crown: 3.0 percent (3.0%)

Maximum Crown: 5.0 percent (5.0%)

C) Crown Line

The desired location of the crown line is usually along the centerline of the proposed street. Where half-street widths are constructed, as in the typical case along a subdivision boundary, the crown line should be located at what will ultimately be the centerline of the street.

Where cross-fall is at or near the maximum, it may be desirable or necessary to offset the crown line to obtain a more balanced cross-slope.

The slope of the crown line should equal or closely approximate the slope of the adjacent gutters and/or edge of pavement.

Intersecting crown lines of major and collector streets shall be depressed as necessary to provide an intersecting crown of not more than 1.5 percent (1.5%) throughout the intersection. The crown line transitions shall begin two hundred fifty (250) feet from the street intersection.

Exceptions to the above will be made when the necessity of matching existing street grades dictate the proposed grades.

D) Cross-fall and Off-set Crown Line

The maximum cross-fall gradient, other than superelevation, shall not exceed 4 percent (4%).

An off-set crown line in a street with cross-fall shall be no closer than eight (8) feet to the edge of the pavement. An exception will be made for the special case in which it is necessary to sheet drain water across a street. This exception applies only to residential streets.

E) Valley Gutters

Valley gutters as defined herein are not desired across major streets. If it is necessary to construct a valley gutter section across a major street, the crown line transition shall be a minimum of 100' in each direction from the valley gutter location.

The use of valley gutters across collector streets at their intersection with a major street will be discouraged and should be considered only after all other feasible drainage patterns have been studied and found to be impractical.

A valley gutter across a street intersection shall be designed in accordance with Standard Detail No. 171 and shall require a modified curb return as defined below:

1. Valley gutter grade greater than or equal to 0.50 percent (0.50%) - Standard Detail No. 167.
2. Valley gutter grade less than 0.50 percent (0.50%) - Standard Detail No. 165.

Valley gutters across streets at locations other than street intersection shall be restricted to residential streets and shall require a crown line transition for a minimum of fifty (50) feet in each direction from the valley gutter location.

## VI PAVEMENT SECTION

The type of pavement section discussed herein will be restricted to flexible pavement consisting of asphalt concrete over a mineral aggregate base. For other types of pavement section such as full depth asphalt, cement treated base, and soil cement for subbase stabilization, the design engineer is encouraged to contact the City of Phoenix Engineering Department's Materials Section for assistance in establishing design criteria.

The pavement section shall normally consist of a 2-inch thick asphalt concrete pavement placed over a base of varying thickness for all types of streets. There will be occasional exceptions which will require a thicker asphalt concrete pavement, such as matching recently reconstructed major streets or when required by the City Engineer for areas of extremely high traffic volume and/or loading.

### A) Asphalt Concrete

Asphalt concrete shall conform to Standard Specification No. 558. The asphalt concrete shall be a dense graded mix having an asphalt content and an aggregate gradation conforming to the following mix designations:

1. Single course pavement: C-3/4
2. Multi-course pavement: B-1 base course, and an E-3/8 surface course.

The use of multi-course pavement without the 3/8" fine surface course may be permitted in some cases. For these exceptional cases, the multicourse pavement shall have an aggregate gradation conforming to C-3/4.

The minimum in-place compacted thickness for asphalt concrete shall be as follows:

1. Single course: 2 inches
2. Multi-course:
  - a) Base course (each lift) - 1½"
  - b) Surface course - 3/4" \*

\* applies to 3/8" material only.

The total thickness of multi-course pavement shall be determined by the City Engineer.

The type of asphalt concrete and the minimum compacted thickness is to be clearly specified on all plans and may be appropriately abbreviated.

Example:

2" A.C. (C-3/4) - indicates a 2" compacted thickness of asphalt concrete having a mix designation conforming to C-3/4.

B) Mineral Aggregate Base

The mineral aggregate base shall consist of aggregate base course (A.B.C.) and select material conforming to Standard Specifications No. 556 and 557, respectively.

The thickness of the mineral aggregate base shall be determined as described under part C of this section, except for special cases such as matching recently reconstructed major streets.

C) Design Criteria

The thickness of the base material shall be based upon subgrade soil analysis of the areas to be paved. The analysis shall consist of determining the plastic index (P.I.) and the percent of material passing the No. 200 sieve (-200). The analysis shall be performed in accordance with ASTM standards.<sup>4</sup>

Soil samples for analysis shall be taken at uniform intervals, or where soil conditions change, along the route of the proposed street(s). The number of samples taken shall be such that there is at least one sample per 3500 square yards of new pavement.

Upon completion of the soils analysis, the aggregate base thickness may be determined by the use of the charts given on Standard Details No. 100, 101, and 102. Chart selection is dictated by zoning and the type of street under consideration. Generally speaking, Detail No. 100 applies to residential streets, Detail No. 101 to collector streets, and Detail No. 102 is for major streets; however, industrial areas or other heavy

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<sup>4</sup>American Society for Testing and Materials, Bituminous Materials; Soils; Skid Resistance (Part II), Test Specifications D 424-59 and D 1140-54.

traffic use areas may influence chart selection. For questionable areas the proper street classification may be determined by contacting the City of Phoenix Traffic Engineering Department.

It should be noted at this point that minimum base thicknesses are specified for the various types of streets. These minimums are graphed as the lowest line on the respective Standard Detail charts. For charts 100 and 101, the minimum value is 6 inches, while the minimum for chart 102 is given as 9 inches. Base thickness for paved alleys shall be as defined by Standard Detail No. 125. Standard Details No. 100, 101, 102, and 125 are included in Appendix A.

The preceding discussion has been directed at the design of totally new pavement sections where existing pavement, if any, has not been considered in the design of the street; however, where existing "strip-paved" streets are contained within the improvement limits of a subdivision or other development, it shall be the responsibility of the developer to investigate and determine whether the existing pavement meets the requirements of current City Standards for structural strength and thickness of asphalt concrete. If the existing pavement is below the requirements of such standards, it shall be the responsibility of the developer to remove and replace the pavement or to submit a design to "up-grade" the pavement to the necessary thickness and strength for the City Engineer's approval.

Example:

A developer desires to improve a tract of land fronting on a collector street and embracing two segments of residential streets as shown in Figure I. The area is zoned R1-6.

The collector street is strip paved to a width of 20 feet, and the pavement is located symmetrically about the monument line. The ultimate width of the collector street is to be 40 feet (measured face-to-face of curb).

The residential streets will require full improvements and are to be 33-feet wide (measured back-to-back of curb).

Preliminary investigation reveals that the existing strip pavement on the collector street consists of a 1-inch thick bituminous mix over a 4-inch thick aggregate base, which is well below current City Standards. In addition, the necessity of matching the existing grades at the project boundaries prohibit overlaying the existing pavement; therefore, it will be necessary to remove and replace the existing pavement to the monument line of the collector street.

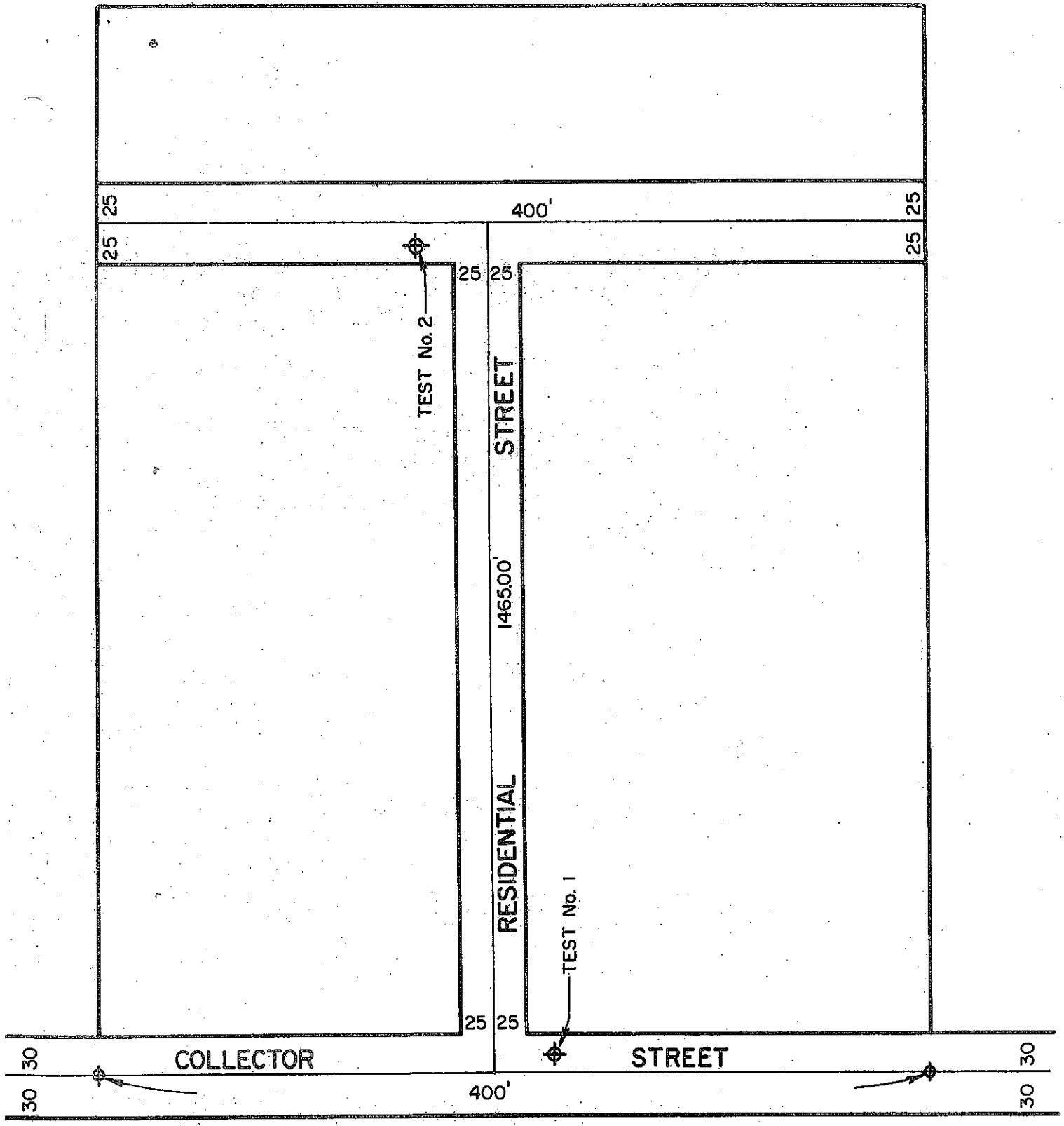


FIGURE I

Computing the total square yards of new pavement yields  
 $\frac{400' \times 18.5'}{9} = 822 \text{ S.Y.}$  for the collector street and  $\frac{1800' \times 29'}{9} =$

5800 S.Y. for the residential streets, thus, the number of soil tests required are  $\frac{6622 \text{ S.Y.}}{3500 \text{ S.Y./ Test}}$  or 2 tests. Also,

preliminary street grade design indicates that the finished surfaces will be approximately 0.5' to 1.0' below natural ground, and the estimated thickness of the pavement section is judged to be 8 inches; therefore, sampling of the subgrade should be made at depths exceeding 20 inches. The required soil samples are taken at the locations shown in Figure I, and the test results are summarized as follows:

<u>Test Location</u>	<u>Depth</u>	<u>P.I.</u>	<u>-200 (%)</u>
No. 1	20" - 24"	4	22
No. 2	22" - 26"	23	76

A look at the test results indicates that a definite changed soil condition exists between test location No. 1 and 2. The City Engineer may require additional tests to determine where the soil conditions change or accept only the results of test No. 2. However, in this case we shall assume that test No. 1 is adequate for the design of the collector street and test No. 2 is representative of the subgrade soil under the proposed residential streets.

Finally, utilizing the soil test results and the charts from Standard Details No. 100 and 101, the base thickness for the residential streets is found to be 8 inches, and the base thickness for the collector street is established at 6 inches.

## VII PAVING PLAN DEVELOPMENT AND SUBMITTAL REQUIREMENTS

Preceding sections of this chapter have dealt with basics of City of Phoenix policy on street design for subdivisions and local improvements. This section will present the minimum requirements for plan layout, preparation, and submittal for the above-described types of projects.

The requirements and guidelines as presented herein do not relieve the design engineer of his responsibility of providing the necessary information for the development of a complete and accurate set of plans. The City of Phoenix reviews plans for general compliance with current standards and project stipulations only and not for detailed checking of grades, dimensions, etc.; however, spot checking of grades and dimensions will be a standard part of the Plan Review Procedure.



Plans that are found to contain numerous errors in grade, dimensioning, etc., and plans that do not meet the minimum requirements as established herein, will not be accepted for review.

A) Plan Layout<sup>5</sup>

Standard sheet size, standard symbols, and standard dimensioning for paving plans shall be as defined by Standard Specifications No. 10, 15 and 17, respectively (see Appendix A).

1. Scale

- a) Vertical: 1" = 2' or 1" = 4'
- b) Horizontal: 1" = 20' or 1" = 40'\*

\* The use of 1" = 40' shall be limited to layout in undeveloped areas, such as the interior streets of a new subdivision.

2. Stationing

Plan stationing shall increase linearly from west to east and/or from south to north along the monument line or construction centerline of the street.

The use of stationing equations will be discouraged and should not be considered except in special cases.

Plan stationing shall be tied to some known point, such as the monument line of an intersecting street or a section or quarter section corner.

3. Orientation

Plan layout shall be oriented in such a manner that north is toward the top or toward the right-hand side of the plan sheet.

4. Nomenclature

The following points are to be identified on the plans by name and station as they appear below:

a) Horizontal and vertical curves:

- Point of curve - P.C.
- Point of intersection - P.I.
- Point of tangent - P.T.

- b) Grade Break - G.B.
- c) Curb return - curb return (north, south, etc.)
- d) Angle point - ~~∠~~ Pt.

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<sup>5</sup>An expansion of City of Phoenix Engineering Department's Administrative Procedure No. 14 (November, 1968).

5) Slope and Grade Identification

The slope of the curb lines and the pavement crown line shall be given on the plans, and the limits of a given slope shall be defined. Slope may be expressed as a percentage (%) or as the rate of change per foot(ft./ft.).

Example: S = 0.60% or S = 0.006 (ft./ft.).

6) Control Elevations

Curb, gutter, and pavement elevations shall be called out at all curb returns grade breaks, points of curve, and at 25-foot intervals along vertical curves—including the mid-point. In addition, pavement grades shall be called out at fifty (50) foot intervals along pavement match lines.

7) Match Lines

All match lines shall be identified by sheet number and station.

8) Monument Lines and Construction Centerlines

Monument lines shall be identified and the bearing of the line shall be shown for all linear segments.

Construction centerlines shall be identified and their location and alignment shown.

9) Plan Sheets

A complete set of plans shall normally consist of a cover sheet and the necessary plan view sheet(s). These sheets shall include the following:

- a) Cover sheet:
  - Project title
  - Index map
  - General notes
  - Signature column
  - Project quantities
  - Typical section(s)
  - Bench mark(s)
- b) Plan sheet(s) - Plan and profile view of street(s) to be paved.
- c) Detail sheets - May be necessary if a large number of special details are required. Details may also appear on the cover sheet and/or the paving plan sheets.

Example:

Examples of typical paving plans are included in Appendix B of this manual.

B) Plan Preparation<sup>6</sup>

1. General Requirements

- a) Plans shall show both a plan and profile view of all streets to be paved.

The profile view shall include the curb and gutter line(s) and the crown line, and each of the above shall be plotted on separate datum planes. In addition, the profile of the existing ground, at or near the gutter line and the crown line, shall be shown and shall extend beyond the project limits as necessary to show grading limits.

- b) Plans shall show existing and/or proposed locations of all utilities (sanitary sewer, water, storm sewer, irrigation, power poles and telephone poles).
- c) Show all man-made and natural ditches and channels to the extent of their effect on the particular project.
- d) Show the natural and surface drainage entering and leaving the project, including elevations for a minimum distance of 300 feet outside the project to show that water will drain satisfactorily.
- e) Provisions shall be made to keep water from ponding on the streets, as well as from concentrating water onto private property.
- f) Use City of Phoenix elevation datum only. For the larger project, establish a minimum of two construction bench marks per project. At least one bench mark must be verified as on record with the City of Phoenix Engineering Department.
- g) There shall be a key map for general site location on the cover sheet of the plans. The key map shall be indexed to show the respective sheet number on

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<sup>6</sup> Phoenix, Administrative Procedure No. 14.

which a given street or segment of a street may be found.

- h) A typical section (cross-section) shall be included for all streets to be paved and shall include all related dimensions and standard details (i.e., pavement thickness, right-of-way location, monument line location, standard detail for curb and gutter, roadway width, etc.).
- i) Show any special details that are to be used. Examples of this situation would include irrigation ditches or structures, drainage channels, etc.

2. General Notes

A list of general notes or stipulations covering work to be performed is to appear on the plans. The list is to be titled "General Notes." A listing of the required general notes is included in Appendix A.

3. Signature Column

All plans must provide a space for the City Engineer's signature. Plans for street improvement other than subdivision paving must also provide a space for the City Traffic Engineer's signature. In addition, all plans that include refuse collection easements must be signed by the Director of Sanitation.

Space for the above signatures shall be provided on the cover sheet of the plans.

The desired form is illustrated by the following example:

Submitted by:	_____	_____
	Registered Engineer	Date
Approved by:	_____	_____
	City Engineer	Date
Approved by:	_____	_____
	City Traffic Engineer	Date

4. Coordination with Adjacent Projects

The design engineer shall make every reasonable effort to coordinate the design and development of his project with existing or proposed adjacent projects.

The prime concern for coordination is normally the matching of street grades and drainage patterns, as well as the location of underground utility and storm drain lines.

The City of Phoenix keeps records of completed projects in the form of "as-built" plans. The design engineer may obtain copies of available "as-built" plans at the City Engineer's office.

5. Compliance with Project Stipulations

As a general rule all subdivisions, planned area developments, sub-lot developments, and projects related to zoning changes and lot divisions are accompanied by an individual set of project stipulations dictated by the City Council or the Subdivision Committee. These stipulations become a part of the project and must be met by the developer.

It shall be the responsibility of the design engineer to determine if said stipulations exist for his project and, where applicable, develop his paving plans in accordance with these stipulations. Where conflict exists between the policies established in this manual and the project stipulations, the project stipulations shall govern.

6. Driveways

Driveway grades should not exceed 8% within the right-of-way area. The change in grade should not exceed 12% within any 10 feet of distance and for downward-sloping driveways; car "bottoming" on the crest can be avoided by the use of an 8% maximum change per 10 feet.

For detailed data as to proper driveway grade design, reference is made to City Standard Detail No. 164.

Location and use of the various standard types of driveways are specified by Ordinance G-780, and are shown schematically in Appendix A.

7. Temporary Pavement Taper

Local widening of existing pavements result in a differential between the original and the new edge of pavement at the terminal of the widening. Such conditions require

a pavement taper to transition from the new to the original edge of pavement. The length of taper required is based on a ratio of the posted speed limit to one foot of differential.

Example:

Local widening of a street results in a differential of four (4) feet between the original and the new edge of pavement. The posted speed limit is 35 mph.

Find the length of taper required.

The ratio is 35:1; thus, the length of taper required is  $35 \times 4 = 140$  feet.

Requirements for temporary pavement tapers may be waived or modified at the discretion of the City Traffic Engineer.

8. Survey Monuments

Survey monuments shall conform to Standard Detail No. 193, except at section and quarter section corners. Monuments at these latter locations shall conform to Standard Detail No. 195.

Survey monuments shall be installed on street monument lines and are required at the following locations:

- a) Street intersections
- b) Angle points (~~X~~ Pt.)
- c) Points of curve (P.C. and P.T.)\*
- d) Intersection of subdivision boundaries

\*Points of curve may be omitted if the P.I. (Point of Intersection) falls within the pavement. In which case, the P.I. shall be monumented.

9. Sidewalks

Sidewalks shall conform to Standard Detail No. 180. The minimum width of sidewalk required shall be as follows:

- a) Major streets: 5'
- b) All other street classifications: 4'

10. Curb Returns

Curb returns shall conform to Standard Detail No. 146, except that the height of the curb may be modified to match the height of the adjacent curbs.

The radius of the curb return is defined as being to the face of curb. The length of radius required shall be as follows:

- a) Intersections of major streets or collector streets with major street: 25'
- b) Industrial street with any other street: 30'
- c) All other street intersections: 20'

Exceptions to the above shall be as determined by the City Traffic Engineer.

11. Concrete Curb and Gutter

Curb and gutter shall conform to Standard Detail No. 146, except for local streets in areas zoned single-family residence for which Standard Detail No. 147 is satisfactory.

Where sidewalks are required, Standard Detail No. 151 may be substituted for Details No. 147 and 180.

c) Plan Approval

All paving plans for work within the City right of way shall be submitted to the City of Phoenix Engineering Department for review and approval.

Plan copies shall be submitted in duplicate for most projects, and each project submitted shall include a separate soils report and a separate cost estimate.

Drainage calculations, when required in conjunction with street design, shall be a part of the plan submittal.

Plans submitted for review shall be essentially a complete set of plans embracing the limits of the proposed project. For multi-unit projects, the project limits shall be defined as the individual unit boundary.

1. Plan Submittal and Review Procedure

Plans shall be submitted in duplicate to the City of Phoenix Engineering Department Subdivision and Local Improvement Section. It is desired that a letter of transmittal accompany the plan submittal. The letter need not be a formal one; a form letter or a typewritten note is satisfactory. The transmittal letter should include the following:

- a) Project name and location
- b) Design Engineer's name and phone number
- c) Description of items submitted (i.e., preliminary paving plans, soils report, estimate, etc.)

Normally no more than two submittals are necessary for a given project. The first or preliminary submittal will be reviewed by the City Engineering and Traffic Engineering Departments for compliance with general City policies, project stipulations, and design criteria.

The second submittal is processed as a check to see if any and all desired corrections have been made and all comments or questions answered satisfactorily. If no further discrepancies or errors are noted, the design engineer will be asked to submit the plan tracings for approval.

It is important to note at this point that incomplete plans, design changes, or plan revisions between submittals may require additional submittals for review and may increase review time and delay plan approval.

2. Plan Approval Procedure

Plans are approved by the City Engineer or his authorized representative.

Reproducible copies of approved plans are kept on file and are used for project inspection.

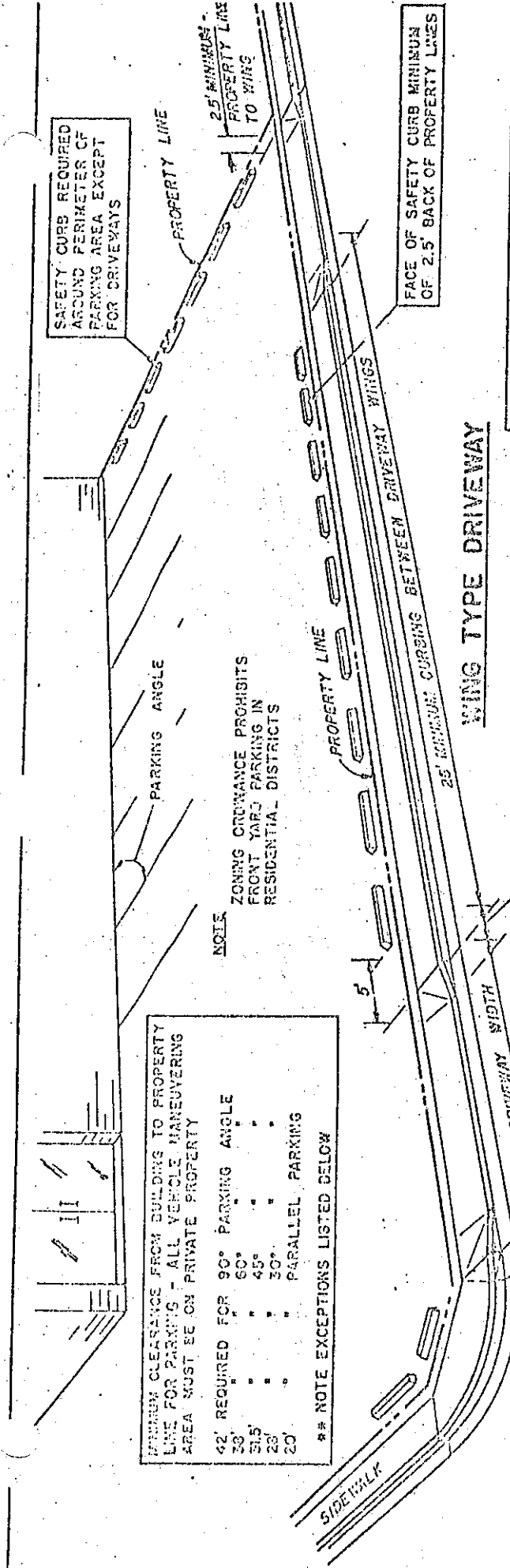
Desired revisions of approved plans require resubmittal for review and approval of the proposed revisions.



#### REFERENCES

1. City of Phoenix, Engineering Department, Standard Details and Specifications, March 1973.
2. City of Phoenix, Engineering Department, Administrative Procedure No. 14, November 1968.
3. American Society for Testing and Materials, Bituminous Materials; Soils; Skid Resistance (Part II), Test Specifications D 424-59 and D 1140-54.
4. American Association of State Highway Officials, A Policy on Arterial Highways in Urban Areas, (1957), pp. 150-152.

Appendix A



MINIMUM CLEARANCE FROM BUILDING TO PROPERTY LINE FOR PARKING - ALL VEHICLE MANEUVERING AREA MUST BE ON PRIVATE PROPERTY

MINIMUM CLEARANCE	90° PARKING ANGLE
33'	60°
31.5'	45°
28'	30°
20'	PARALLEL PARKING

\*\* NOTE EXCEPTIONS LISTED BELOW

NOTE  
ZONING CROWDANCE PROHIBITS FRONT YARD PARKING IN RESIDENTIAL DISTRICTS

SAFETY CURB REQUIRED AROUND PERIMETER OF PARKING AREA EXCEPT FOR DRIVEWAYS

FACE OF SAFETY CURB MINIMUM OF 2.5' BACK OF PROPERTY LINES

DRIVEWAY WINGS - 4' TO 5' - MAY VARY IF CURB HEIGHT EXCEEDS 6"

5' ENCROACHMENT (SHOWN AS DOTTED LINE) WILL BE ALLOWED ONLY IF CURB RADIUS IS 20' OR GREATER

### WING TYPE DRIVEWAY

DRIVEWAY WIDTHS	MINIMUM	MAXIMUM
COMMERCIAL ZONING	16'	40'
INDUSTRIAL ZONING	16'	40'
RESIDENTIAL ZONING	16'	30'
MAJOR STREET	12'	30'
COLLECTOR STREET	12'	30'
LOCAL STREET	12'	30'

\* 16' DESTRUCTURE

EXEMPTIONS	ANGLE OF PARKING PARALLEL TO ALLEY	TOTAL DEPTH OF PARKING AND MANEUVERING AREA	MINIMUM DEPTH OF PRIVATE PROPERTY	ALLEY WIDTH CREDITABLE TO MANEUVERING AREA
SINGLE FAMILY DWELLINGS ARE EXEMPTED FROM THESE MANEUVERING AREA REQUIREMENTS. MULTIPLE FAMILY DWELLINGS AND TOWNHOUSES MAY USE ALLEYS FOR MANEUVERING TO GAIN ACCESS TO PARKING AREAS CREATING A PORTION OF THE ALLEY WIDTH TOWARD MANEUVERING AREA AS SHOWN IN TABLE AT RIGHT -	45°	20'	10'	10'
	60°	31.5'	10.5'	13'
	90°	33'	20'	18'
		42'	22'	20'

INGRESS AND EGRESS FROM ALLEYS TO COMMERCIAL USES SHALL NOT BE ALLOWED EXCEPT FOR SERVICE VEHICLES, UNLESS ALL PROPERTIES ON BOTH SIDES OF THE ALLEY ARE COMMERCIALY USED OR COMMERCIALY ZONED.

### NOTE

ALL DIMENSIONS ARE HORIZONTAL AND ARE NOT TO SCALE

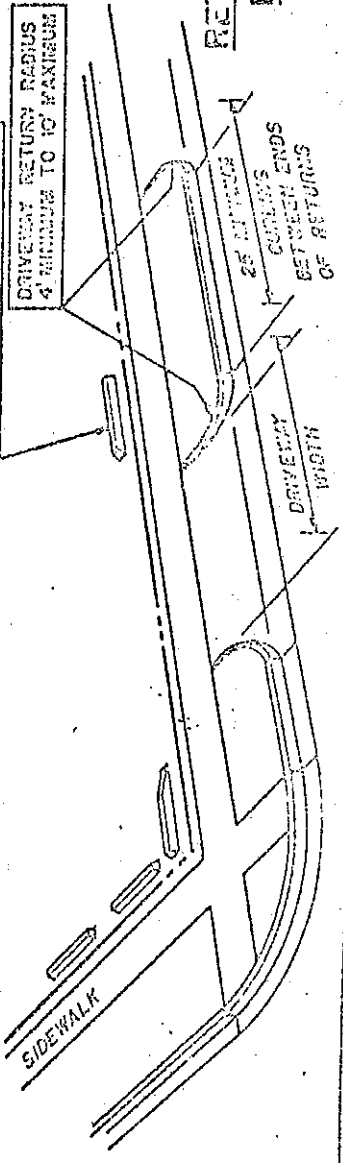


APPROVED: *Shirley B. Hahn*  
CITY TRAFFIC ENGINEER

ADOPTED BY ORDINANCE 9-1022 ON FEBRUARY 7, 1967  
AMENDED AUGUST 5, 1968

DIVISION OF TRAFFIC ENGINEERING  
PUBLIC WORKS DEPARTMENT  
CITY OF PHOENIX, ARIZONA

### DRIVEWAY REQUIREMENTS



SAFETY CURB REQUIREMENTS IDENTICAL TO WING TYPE DRIVEWAY

DRIVEWAY RETURN RADIUS 4' MINIMUM TO 10' MAXIMUM

### RETURN TYPE DRIVEWAY

REVISED JUNE 13, 1969

DATE JAN 9, 1967

FILE NO. D-KO-492

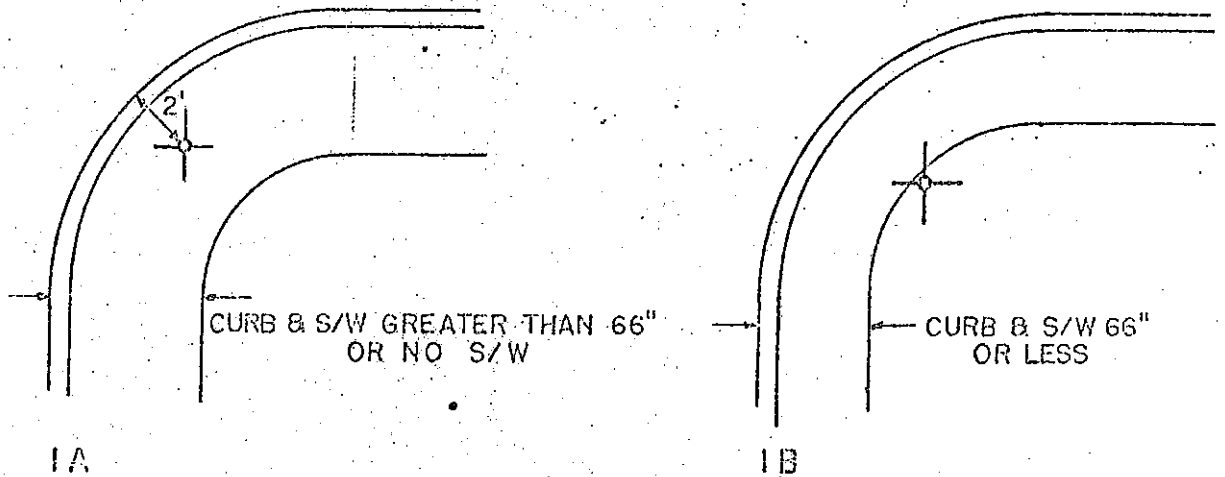
DIVISION OF TRAFFIC ENGINEERING  
PUBLIC WORKS DEPARTMENT  
CITY OF PHOENIX, ARIZONA

CITY TRAFFIC ENGINEER

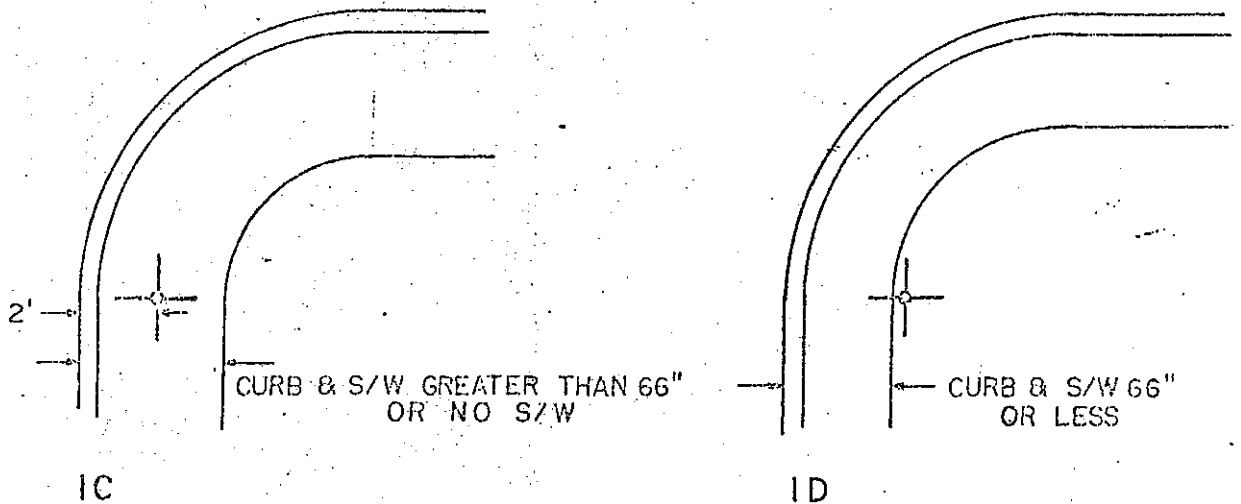
DATE

DETAIL 190 LOCATION

UNCONTROLLED INTERSECTION



INTERSECTIONS TO BE CONTROLLED BY STOP SIGNS



SUBDIVISION AND LOCAL IMPROVEMENT PLANS

- 1) All construction is to conform to the latest City of Phoenix Standard Details and the Maricopa Association of Governments Uniform Standard Specifications for Public Works Construction.
- 2) Approval by the City Engineer means for general layout in right of way only.
- 3) Approval is for six months' time only. If construction work is not started within six months, the plans shall be resubmitted for approval.
- 4) The City Engineer shall be notified 24 hours prior to any construction work.
- 5) Acceptance of the completed right of way improvements will not be given until:
  - a) Reproducible "as-built" plans have been submitted by a Registered Professional Engineer and approved by the City Engineer. When the City Engineer provides inspection, the Subdivider's or the Developer's Registered Engineer shall seal the plans and shall certify that staking was performed under his supervision and that the "as-built" elevations and dimensions shown on the plans are correct.
  - b) The Subdivider's or the Developer's Registered Engineer shall have certified in writing as to the location and accuracy of all survey monuments.
- 6) All obstruction in right of way shall be removed before any construction is permitted.
- 7) Exact point of matching termination and overlay, if necessary, shall be determined in the field by the City Engineer.
- 8) All frames, covers, valve boxes and manholes shall be adjusted to finished grade upon completion of paving or related construction. Adjustment of existing "Type A" or "Type B" water valve boxes in parkway shall be considered incidental to Parkway Grading. Existing "Type B" water valve boxes in pavement shall be replaced with "Type A" water valve boxes.
- 9) Any quantities shown on plans are not verified by the City Engineer.
- 10) No construction shall start until conflicting underground utility construction is completed and until service stubs to all platted lots have been extended.
- 11) Approval by the City Engineer is subject to minimum right of way widths in accordance with Ordinance No. G-437 to be either dedicated by property owner, purchased or condemned by the City of Phoenix.
- 12) It shall be the responsibility of the permittee to arrange for the relocation and relocation costs of all utilities, and submit a utility relocation schedule prior to the issuance of a construction permit. Relocation of City fire hydrants, water meters, etc., shall be done by the Water Distribution Division upon receipt of a purchase order or deposit from the permittee.
- 13) All underground tanks require a permit from the Division of Fire Prevention prior to removal.
- 14) Trees and shrubbery in the right of way, which conflict with the improvements proposed herein are not to be removed or relocated without prior approval of the City of Phoenix. The permittee shall be responsible for obtaining the necessary authorization to remove and/or relocate said trees or shrubbery. Call the Forestry Supervisor, at 262-6861, for authorization to relocate.
- 15) The second paragraph on Page 94 of M.A.G. Section 321.6 shall be superseded by the following:

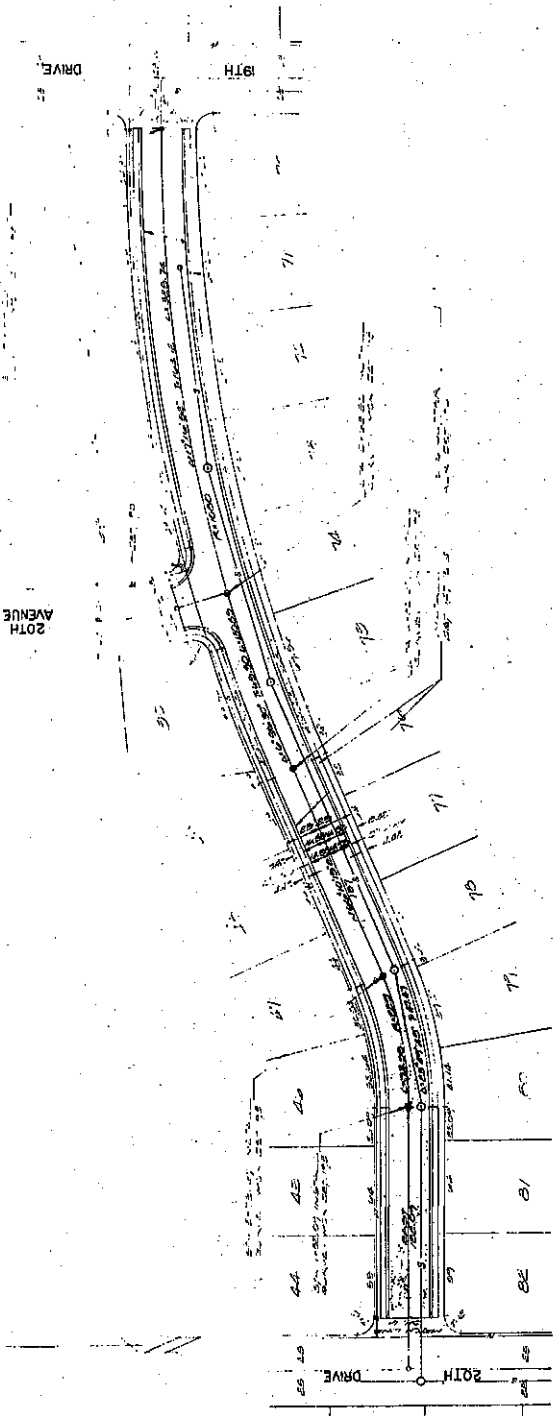
When the deviation is 2% to 5% points, inclusive, the Contractor shall place a standard precoated chip seal complying with Section 331 over the area involved, but for not less

Appendix B

20TH AVENUE

DRIVE

19TH



LYNNE LANE

STATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
10000	10001	10002	10003	10004	10005	10006	10007	10008	10009	10010	10011	10012	10013	10014	10015	10016	10017	10018	10019	10020	10021	10022	10023	10024	10025	10026	10027	10028	10029	10030	10031	10032	10033	10034	10035	10036	10037	10038	10039	10040	10041	10042	10043	10044	10045	10046	10047	10048	10049	10050	10051	10052	10053	10054	10055	10056	10057	10058	10059	10060	10061	10062	10063	10064	10065	10066	10067	10068	10069	10070	10071	10072	10073	10074	10075	10076	10077	10078	10079	10080	10081	10082	10083	10084	10085	10086	10087	10088	10089	10090	10091	10092	10093	10094	10095	10096	10097	10098	10099	10100

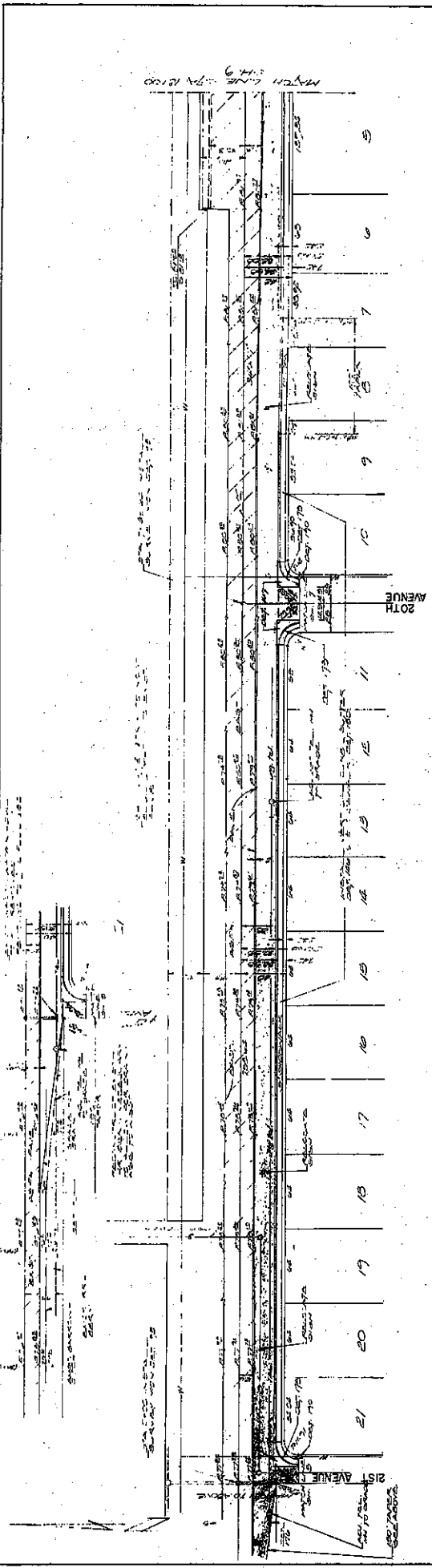
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ENGINEERS	VISTA GRANDE ENGINEERING, INC.
UNIT	UNIT FIVE
DATE	10/20/2010
SCALE	AS SHOWN
PROJECT	LYNNE LANE
NO.	10
TOTAL	10

DATE	10/20/2010
BY	...
CHECKED	...
APPROVED	...

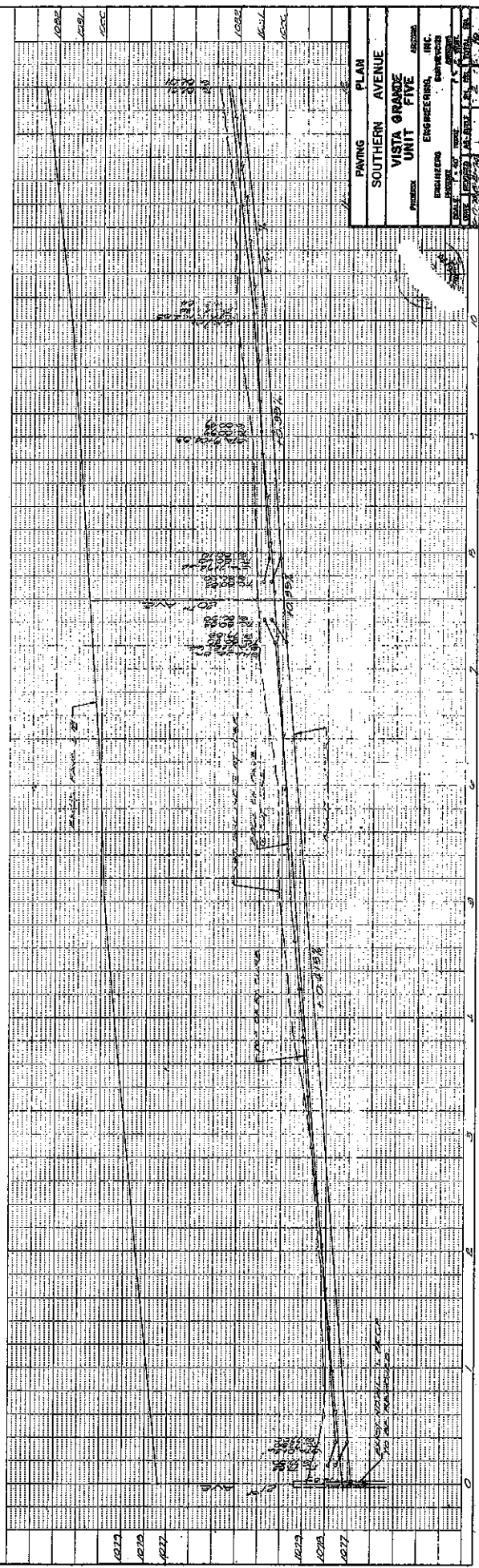
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APPROVED	...







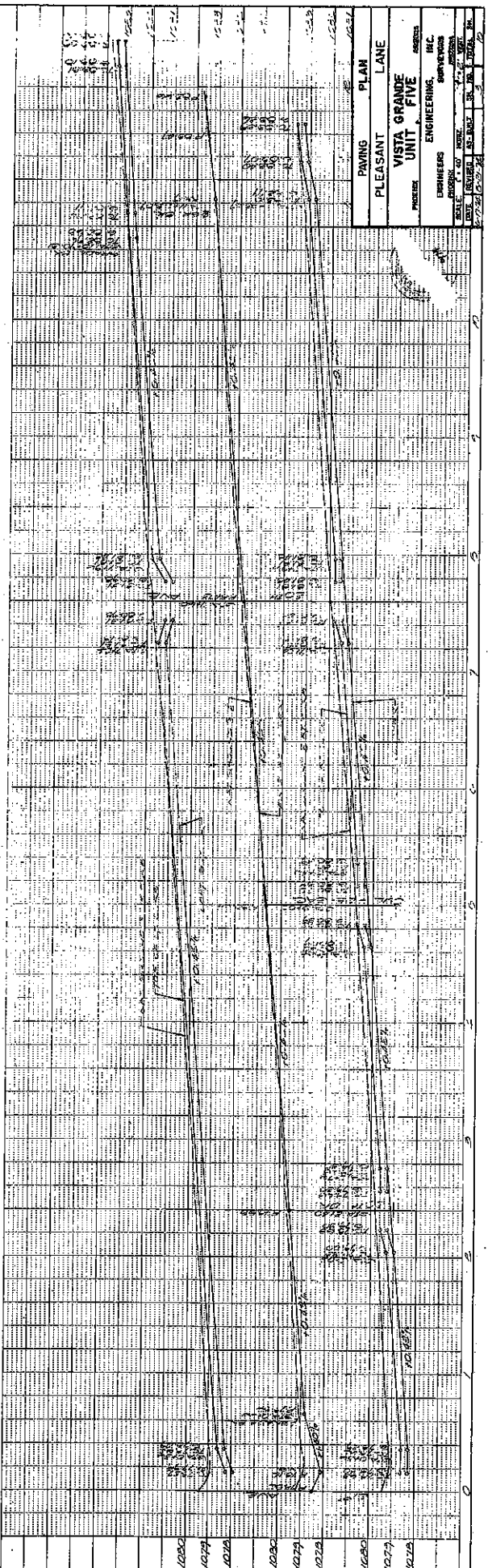
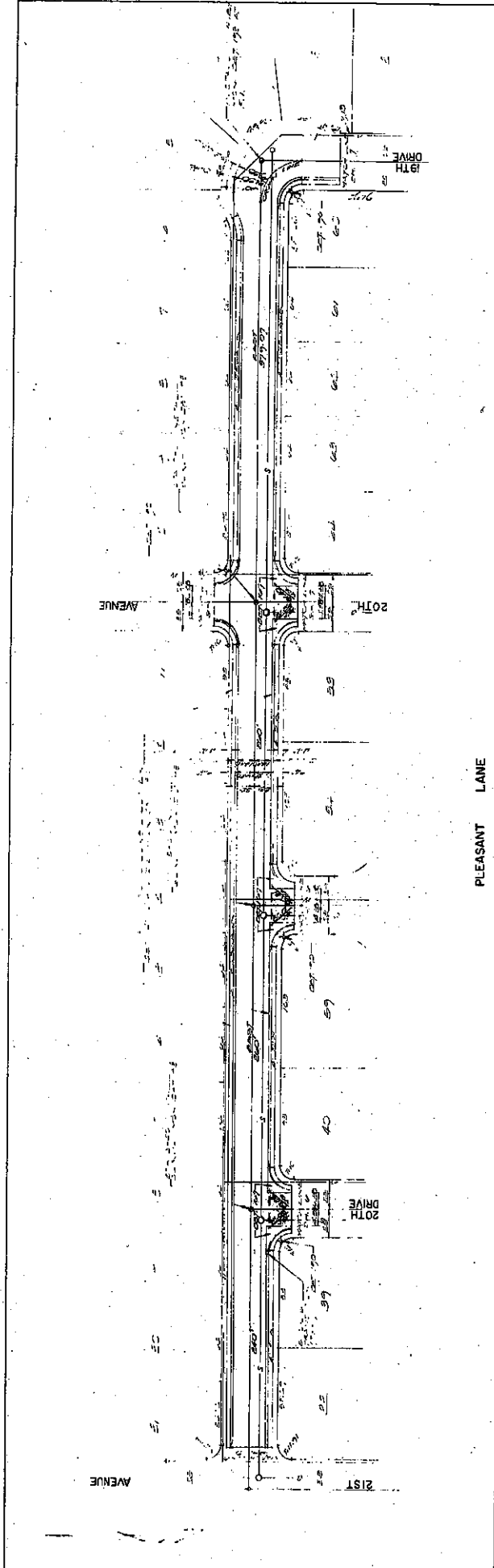
SOUTHERN AVENUE



PLAN  
 SOUTHERN AVENUE  
 VISTA GRANDE  
 UNIT FIVE  
 ENGINEERS ENGINEERING, INC.  
 REGISTERED PROFESSIONAL ENGINEERS  
 LICENSE NO. 21,877  
 DATE: 10/20/01

PLAN	
DATE	DESCRIPTION

PROFILE	
DATE	DESCRIPTION



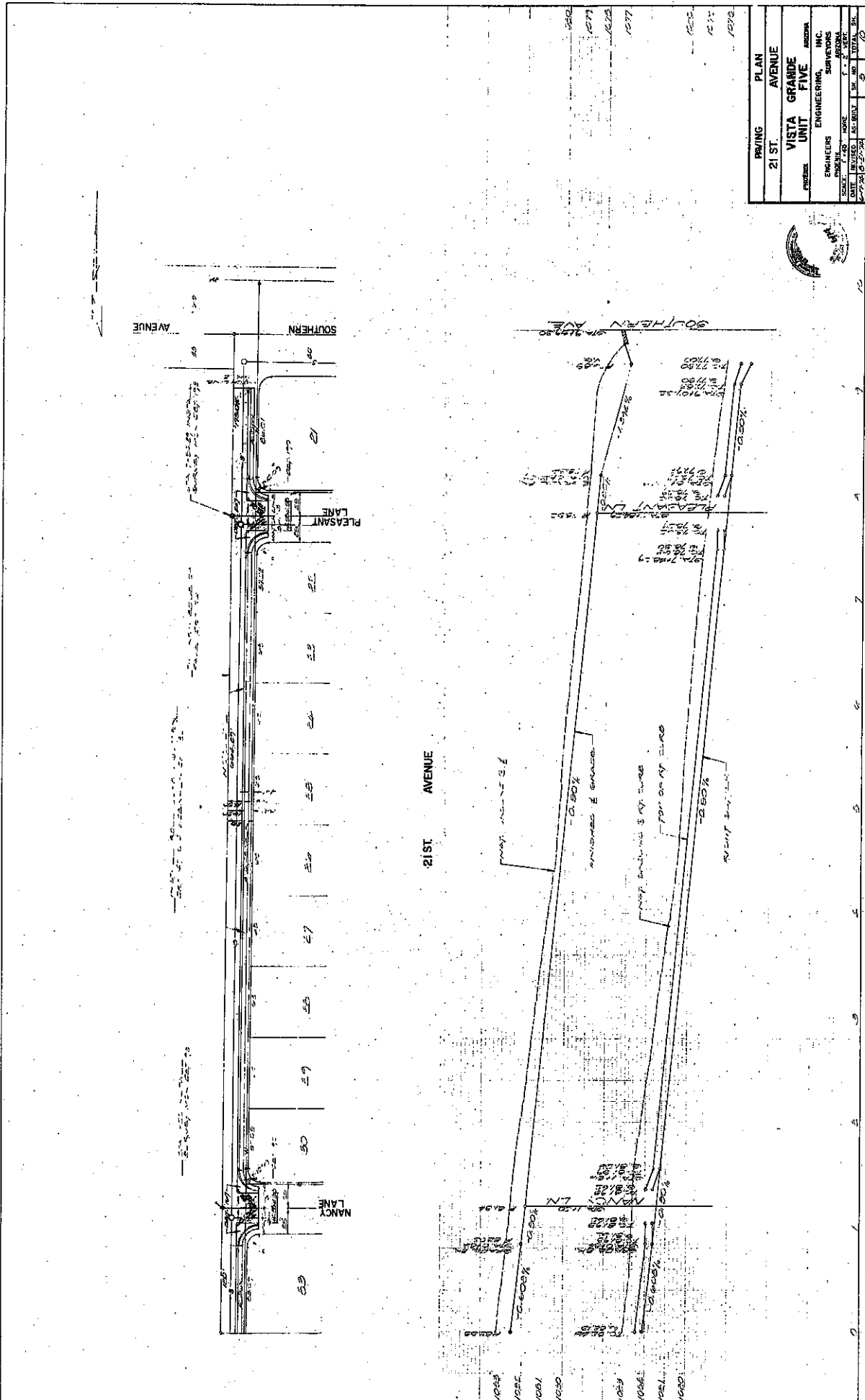
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PLEASANT LANE	
VISTA GRANDE UNIT FIVE	
PROJECT	ENGINEERS
DATE	12/28/2012
SCALE	AS SHOWN
BY	12/28/2012
CHECKED	12/28/2012
APPROVED	12/28/2012
TOTAL	12

DATE	12/28/2012
BY	12/28/2012
CHECKED	12/28/2012
APPROVED	12/28/2012

DATE	12/28/2012
BY	12/28/2012
CHECKED	12/28/2012
APPROVED	12/28/2012

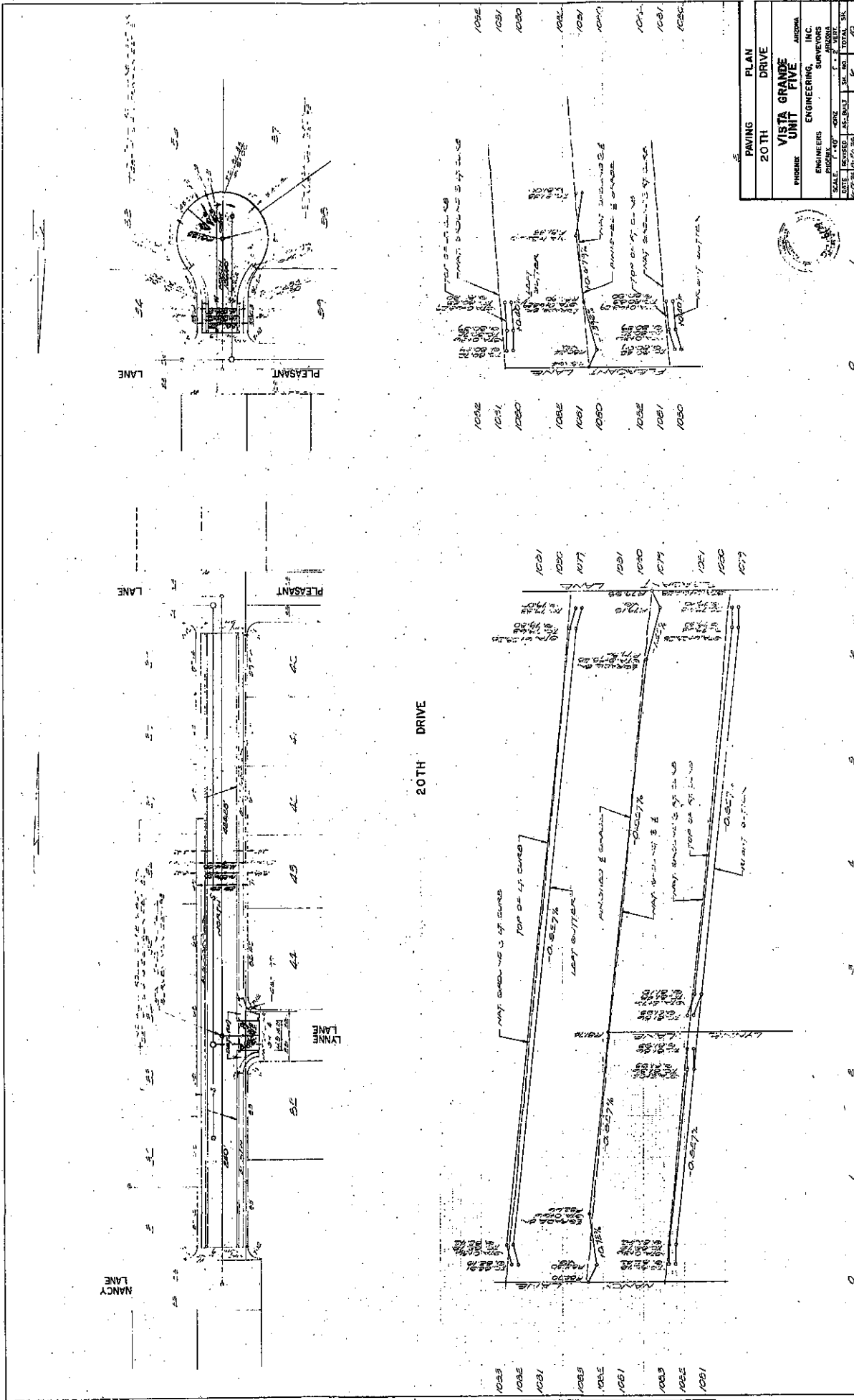
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3	...	...	...
4	...	...	...
5	...	...	...

NO.	DATE	BY	DESCRIPTION
1	12/12/12	J. G. ...	...
2	...	...	...
3	...	...	...
4	...	...	...
5	...	...	...



PROJECT	21ST AVENUE
ENGINEERS	VISTA GRANDE UNIT FIVE
ENGINEERING, INC.	...
SURVEYORS	...
SCALE	AS SHOWN
DATE	12/12/12
REVISED	...
AS-BUILT	...
SHEET NO.	5
TOTAL SHEETS	10



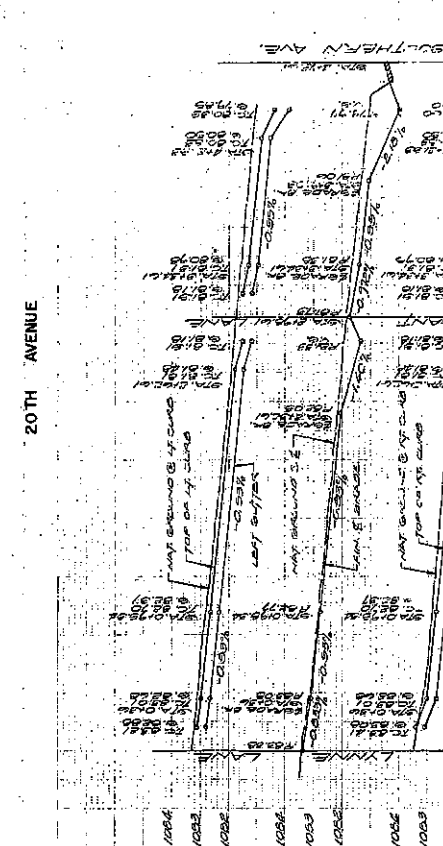
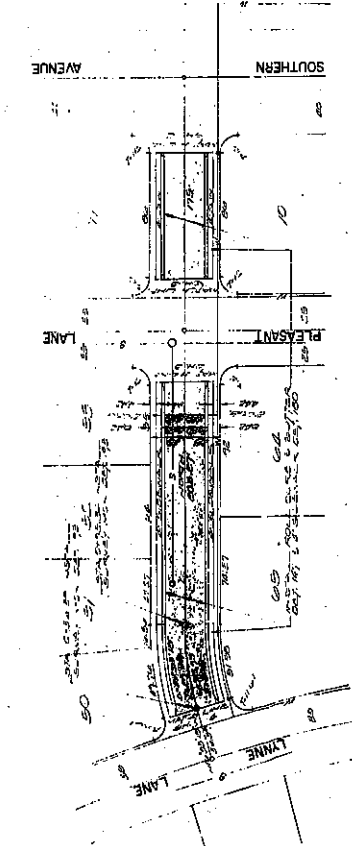
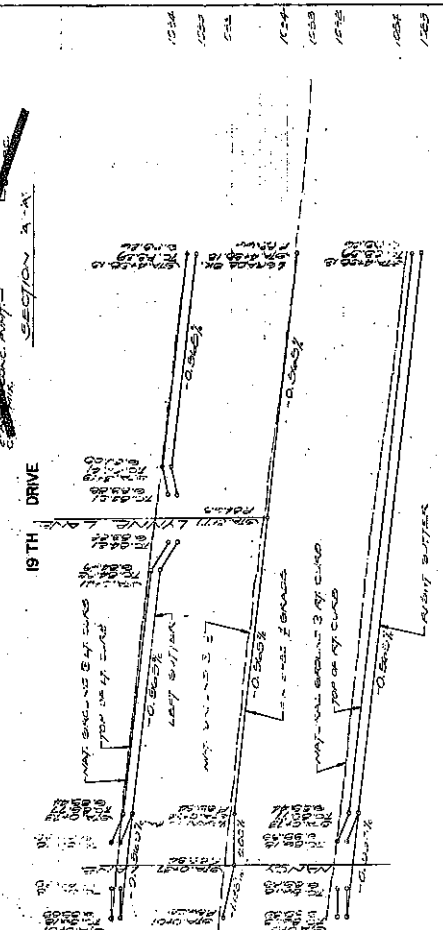
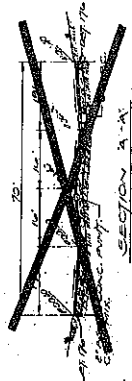
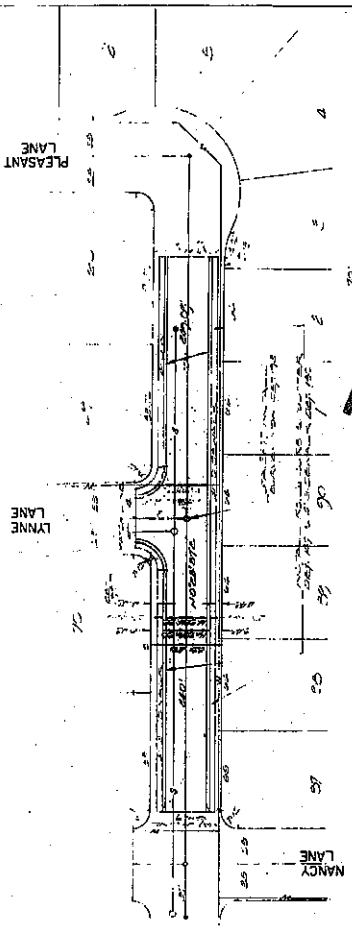


PAVING PLAN		20TH DRIVE	
<b>VISTA GRANDE UNIT</b>			
ENGINEERS		SURVEYORS	
VISTA GRANDE ENGINEERING, INC.			
SCALE	1" = 40'	C.S. NO.	10000
DATE	REVISED 12-21-83	SHEET NO.	10
		TOTAL SHEETS	10



DATE	12/21/83
BY	W. J. HARRIS
CHECKED	W. J. HARRIS
APPROVED	W. J. HARRIS

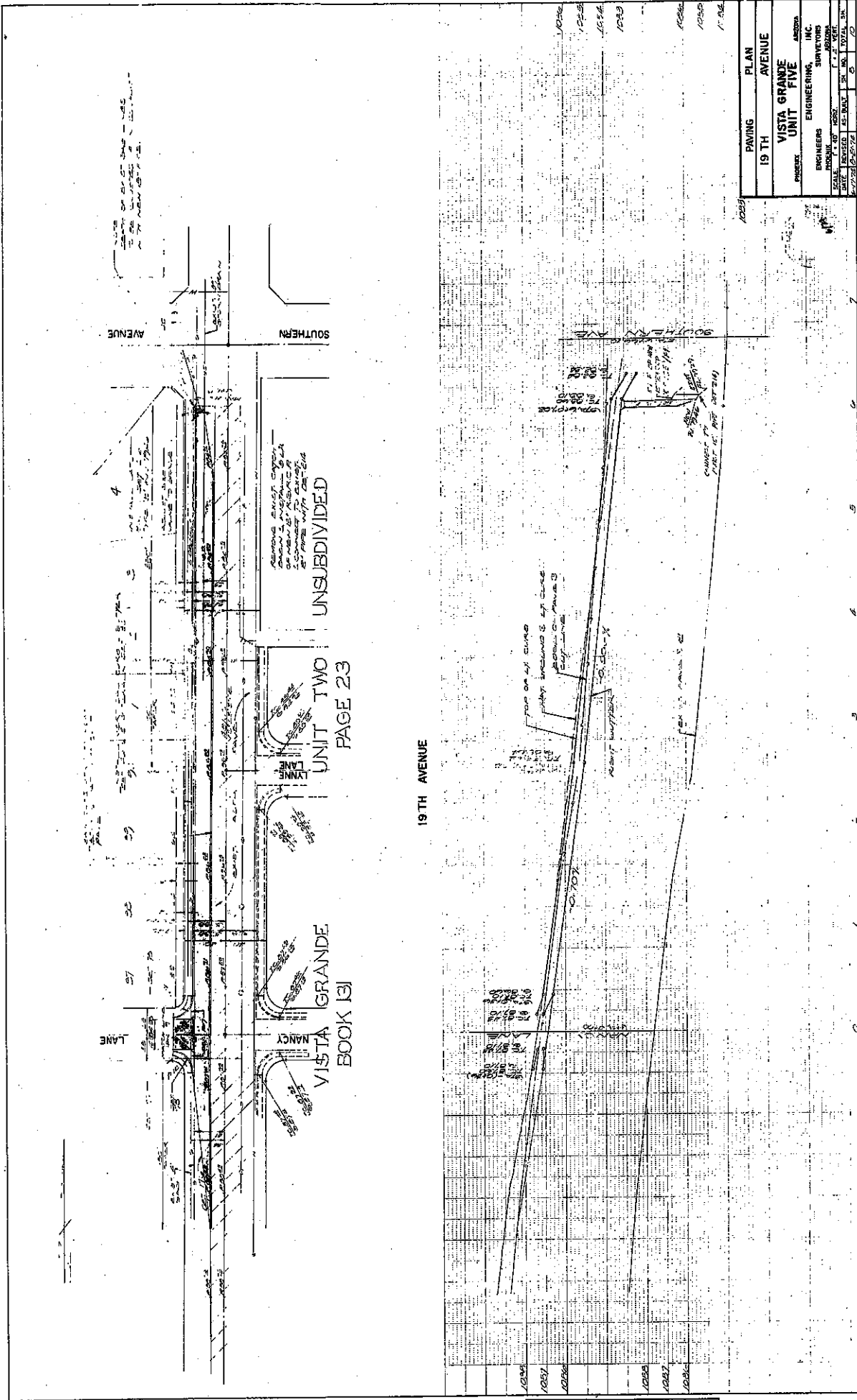
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BY	W. J. HARRIS
CHECKED	W. J. HARRIS
APPROVED	W. J. HARRIS



PAVING PLAN	
20TH AVENUE	19TH DRIVE
VISTA GRANDE UNIT	
ENGINEERS	INC.
ENGINEERS	SURVEYORS
ARIZONA	ARIZONA
REGISTERED	REGISTERED
NO. 12345	NO. 67890
DATE 1/15/50	DATE 2/1/50
BY J. D. SMITH	BY W. H. JONES
SCALE 1" = 40'	SCALE 1" = 40'

DATE	BY	REVISION
1/15/50	J. D. SMITH	1. INITIAL DESIGN
2/1/50	W. H. JONES	2. REVISED DESIGN

DATE	BY	REVISION
1/15/50	J. D. SMITH	1. INITIAL DESIGN
2/1/50	W. H. JONES	2. REVISED DESIGN



PLAN	
NO.	1
DATE	12/10/10
BY	J.L.
CHECKED	
APPROVED	
SCALE	AS SHOWN

PROFILE	
NO.	1
DATE	12/10/10
BY	J.L.
CHECKED	
APPROVED	
SCALE	AS SHOWN

PAVING PLAN		19 TH AVENUE	
PROJECT		VISTA GRANDE UNIT FIVE	
DESIGNER		VISTA GRANDE ENGINEERING, INC.	
CONTRACT NO.		10256	
DATE		12/10/10	
SCALE		AS SHOWN	
DATE REVISED		12/10/10	
BY		J.L.	
CHECKED			
APPROVED			
SCALE		AS SHOWN	
DATE		12/10/10	
BY		J.L.	
CHECKED			
APPROVED			

UNSUBDIVIDED UNIT TWO PAGE 23

VISTA GRANDE BOOK 131

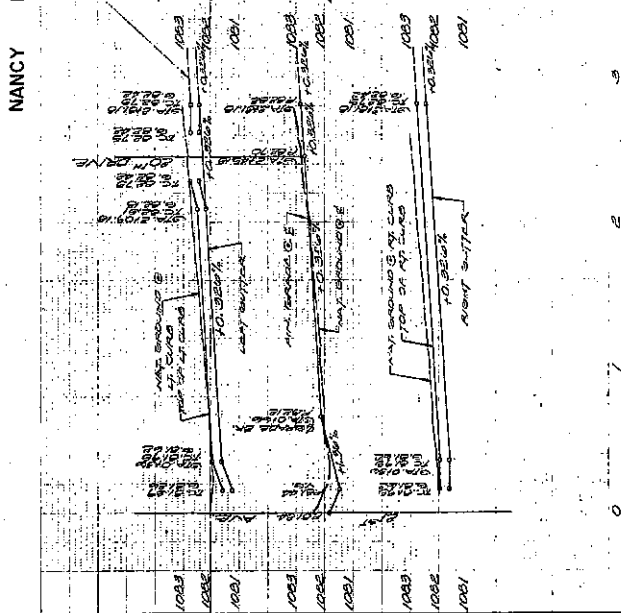
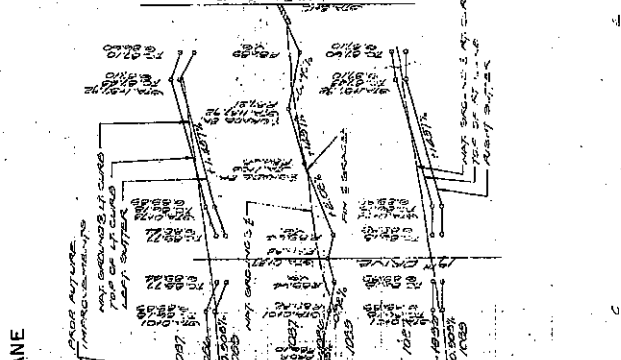
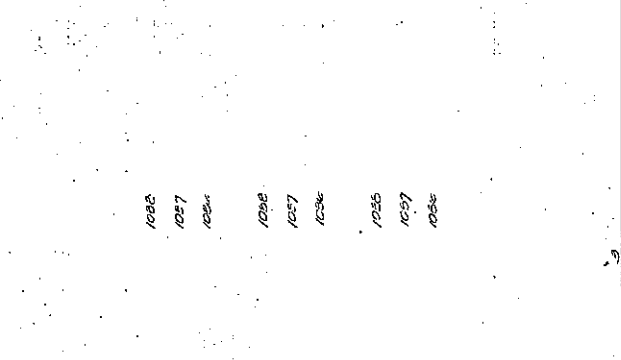
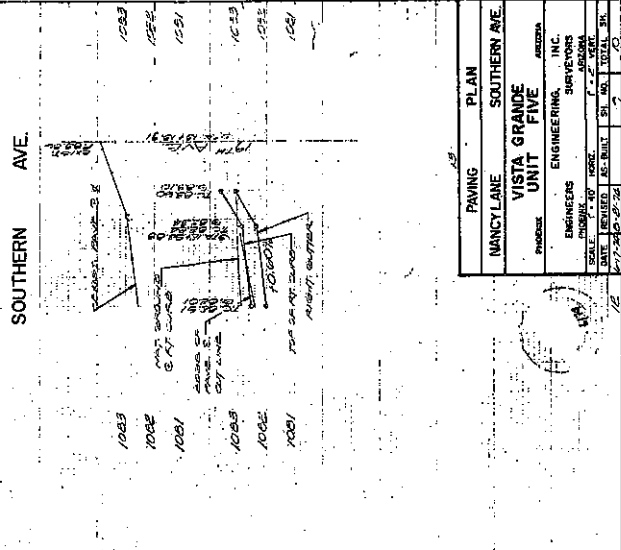
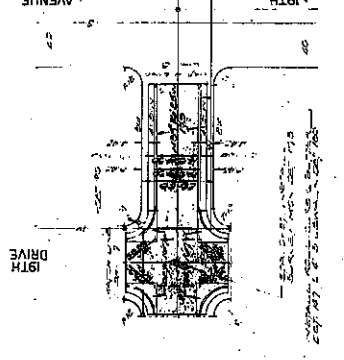
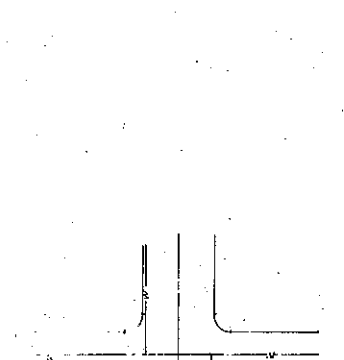
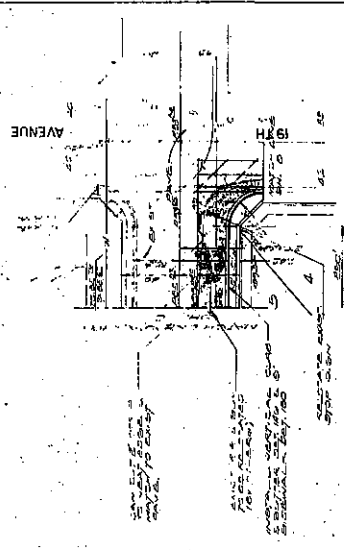
19 TH AVENUE

SOUTHERN AVENUE

LANE

10256  
10257  
10258  
10259  
10260  
10261  
10262  
10263  
10264  
10265  
10266  
10267

10256  
10257  
10258  
10259  
10260  
10261  
10262  
10263  
10264  
10265  
10266  
10267



PAVING PLAN	
NANCY LANE	SOUTHERN AVE.
VISTA GRANDE UNIT FIVE	
PHOENIX	ARIZONA
ENGINEERS	ENGINEERING, INC.
SURVEYORS	ARIZONA
DATE	REVISION NO. SHEET NO. TOTAL SHEETS
11/27/80	5 21

NO.	DATE	BY	DESCRIPTION
1	11/27/80	...	...

NO.	DATE	BY	DESCRIPTION
1	11/27/80	...	...

**NOTES**

ALL EXISTING SIGNAL EQUIPMENT TO REMAIN IN PLACE AND IN OPERATION UNTIL NEW POLE BASES ARE POURED AND CURED AND CONDUIT IS INSTALLED.

THE CONTRACTOR IS TO INSTALL CONDUIT AND CONSTRUCT FOUNDATIONS WHERE SHOWN.

THE CITY ELECTRICAL MAINTENANCE DIVISION WILL FURNISH TEMPLATES AND BOLTS FOR FOUNDATIONS, AND WILL MAKE CONNECTIONS TO EXISTING CONDUIT.

ALL CONDUIT IS TO BE RVC. EXCEPT AS NOTED, AND SHALL BE BETWEEN 24 AND 36 INCHES BELOW FINISHED PAVEMENT. BURNED OR FLATTENED CONDUIT SHALL BE REPLACED.

THE CONTRACTOR IS TO NOTIFY ELECTRICAL MAINTENANCE ONE WEEK PRIOR TO ANY CONSTRUCTION IN THE INTERSECTION (PHONE 262-6731)

**LEGEND**

PROPOSED EXISTING

D □ NO. 3 1/2 JUNCTION BOX

B □ NO. 5 JUNCTION BOX

\* PEDESTRIAN POLE FOUNDATION

● TYPE A POLE FOUNDATION

○ TYPE B POLE FOUNDATION

⊖ TYPE C POLE FOUNDATION

⊗ SPECIAL FOUNDATION (TYPE D)

⊠ CONTROLLER FOUNDATION

① 2 INCH PVC.

② 1 1/2 INCH PVC.

③ 1 1/4 INCH PVC.

④ 1 INCH PVC.

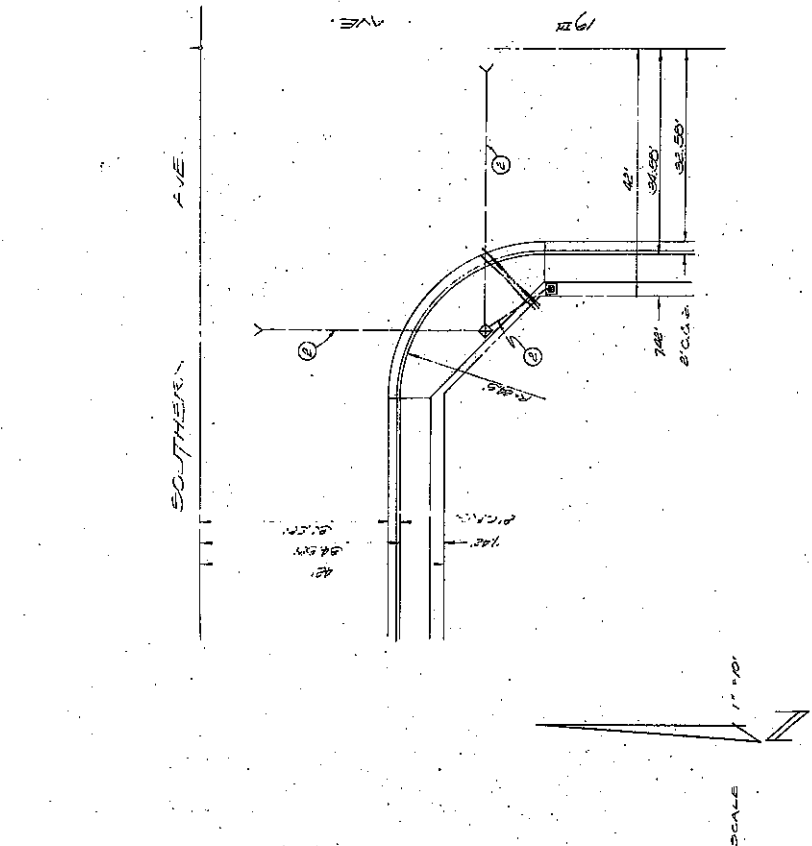
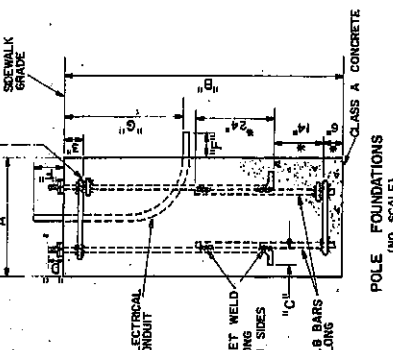
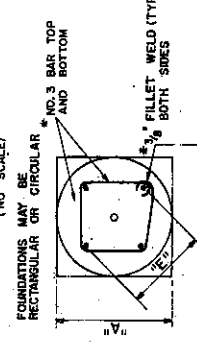
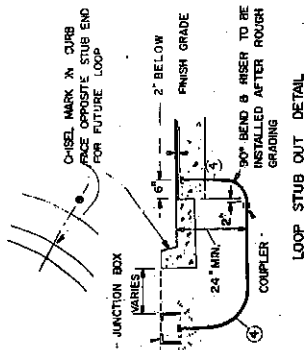
⑤ DIRECT BURIAL CABLE

⑥ 3 INCH TRANSITE

⑦ CONDUIT OR CABLE RUN

⑧ CONDUIT STUB OUT

⑨ LOOP STUB OUT



TRAFFIC SIGNAL

FOUNDATION B POLE TYPE	POLE DETAIL (FT) POLE HEIGHT	DIMENSION SCHEDULE						CONDUIT DETAIL (IN) DIA. OF CONDUIT	CONDUIT DETAIL (IN) CLEARANCE		
		"A" PLAN LENGTH	"B" DEPTH	"C" REBAR METER	"D" OVERALL HOOK	"E" TOP CLEAR	"F" BOLT CIRCLE				
PEDESTRIAN	4	18	18	N/A	1/2	15	3	2	5 1/2	6	14
TYPE A POLE TOP STANDARD	10	18	36	N/A	1	40	4	4	10 1/2	6	21
TYPE B STANDARD	20	24	48	N/A	1 1/2	44	4	4	10 1/2	6	24
TYPE C STANDARD	30	24	48	N/A	1 1/2	44	4	4	10 1/2	6	24
TYPE D SPECIAL	30	24	66	YES	1 1/4	54	4	4	12 1/2	6	24

\* TYPE D FOUNDATION ONLY



RAVING PLAN

VISTA GRANDE UNIT AVE PHOENIX ARIZONA

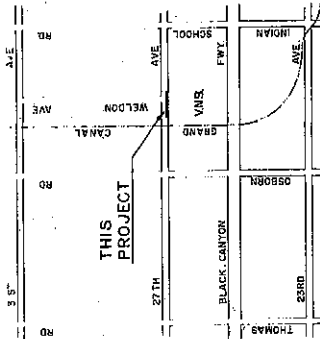
ENGINEERING INC. SURVEYORS ARIZONA

JOB NO. 191008

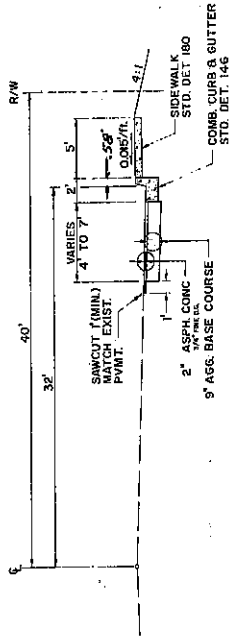
DATE 11-12-74



# VALLEY NATIONAL BANK OPERATIONS CENTER OFFSITE STREET IMPROVEMENTS 27TH AVENUE GRAND CANAL TO WELDON AVE.



VICINITY MAP



TYPICAL SECTION

### QUANTITY SUMMARY

- 434 LF CURB & GUTTER
- 1718 SF SIDEWALK
- 300 SQ. ASPH. CONC.
- 400 SQ. DRIVEWAY ENT.
- 205 LF 18" R.C.P.
- 1 EA. CATCH BASIN
- 1 EA. S.D. MANHOLE

### APPLICABLE CITY OF PHOENIX STANDARD DETAILS AND SPECIFICATIONS

- |                          |                            |
|--------------------------|----------------------------|
| DETAILS                  | SPECIFICATIONS             |
| 146 CURB & GUTTER        | 834 GRADING UNDER PAVEMENT |
| 158 DRIVEWAY ENT.        | 556 1/2" AGG. BASE COURSE  |
| 180 SIDEWALK             | 538 ADAPTALITY CONCRETE    |
| 200 M.H. GRADE ADJUST.   | 560 COMB. CURB & GUTTER    |
| 213 S.D. LAT. PIPE CONN. | 562 CONCRETE SIDEWALK      |
| 216 TYPE A CATCH BASIN   | 751 DRAINAGE STRUCTURES    |
| 260 S.D. MANHOLE SHAFT   | 800 PORTLAND CEMENT CONC.  |
| 263 S.D. MANHOLE BASE    | 563 PAVEMENT REPLACEMENT   |
| 175 PAVEMENT REPLACEMENT |                            |

### NOTES

1. ALL CONSTRUCTION IS TO CONFORM TO THE LATEST CITY OF PHOENIX STANDARD DETAILS AND SPECIFICATIONS - *M.A.G. Specs.*
2. APPROVAL BY THE CITY ENGINEER MEANS FOR GENERAL LAYOUT IN RIGHT OF WAY ONLY. APPROVAL IS FOR SIX MONTHS TIME ONLY. IF CONSTRUCTION IS NOT STARTED WITHIN SIX MONTHS, THE PLANS SHALL BE RESUBMITTED FOR APPROVAL.
3. THE CITY ENGINEER SHALL BE NOTIFIED 24 HOURS PRIOR TO ANY CONSTRUCTION WORK.
4. ACCEPTANCE OF THE COMPLETED RIGHT OF WAY IMPROVEMENTS WILL NOT BE GIVEN UNTIL:
  - (A) PROPOSED "AS BUILT" PLANS HAVE BEEN SUBMITTED BY A REGISTERED PROFESSIONAL ENGINEER AND APPROVED BY THE CITY ENGINEER, WHEN THE REGISTERED PROFESSIONAL ENGINEER SHALL SEAL THE PLANS AND SHALL CERTIFY THAT STAKING WAS PERFORMED UNDER HIS SUPERVISION AND THAT THE "AS BUILT" ELEVATIONS AND DIMENSIONS SHOWN ON THE PLANS ARE CORRECT.
  - (B) THE SPREADSHEETS AND DEVELOPMENT OF THE SUBSURFACE UTILITIES HAVE BEEN SUBMITTED AS TO THE LOCATION AND DEPTH OF ALL SURVEY MONUMENTS.
5. ALL OBSTRUCTIONS IN RIGHT OF WAY SHALL BE REMOVED BEFORE ANY CONSTRUCTION IS PERMITTED.
6. EXACT POINT OF MATCHING TERMINATION AND OVERLAY, IF NECESSARY, SHALL BE DETERMINED IN THE FIELD BY THE CITY ENGINEER.
7. ALL FRAMES, COVERS, VALVE BOXES AND MANHOLES SHALL BE ADJUSTED TO MATCH EXISTING TYPE "A" OR TYPE "B" WATER VALVE BOXES IN PARKWAY SHALL BE CONSIDERED UNDERGROUND. ALL OTHER TYPES OF WATER VALVE BOXES IN PAVEMENT SHALL BE REASSEMBLED WITH TYPE "A" WATER VALVE BOXES.
8. ALL QUANTITIES SHOWN ON PLANS ARE NOT VERIFIED BY THE CITY ENGINEER.
9. ALL UTILITIES SHOWN ON PLANS SHALL BE PROTECTED BY THE CITY ENGINEER UNTIL SERVICE STUBS TO ALL PLATTED LOTS HAVE BEEN EXTENDED.
10. APPROVAL BY THE CITY ENGINEER IS SUBJECT TO MINIMUM RIGHT OF WAY WIDTHS IN ACCORDANCE WITH ORDINANCE NO. 9-437, TO BE EITHER DEDICATED BY PROPERTY OWNER, PURCHASED OR CONDEMNED BY THE CITY OF PHOENIX.
11. IT SHALL BE THE RESPONSIBILITY OF THE PERMITTEE TO ARRANGE FOR THE RELOCATION AND RELOCATION OF ALL UTILITIES IN THE PROJECT AREA. THE PERMITTEE SHALL BE RESPONSIBLE TO THE ISSUANCE OF A CONSTRUCTION PERMIT. RELOCATION OF CITY FIRE HYDRANTS, WATER METER, CURB OR MISCOT FROM THE PERMITTED AREA SHALL BE THE RESPONSIBILITY OF THE PERMITTEE.
12. ALL UNDERGROUND TANKS REQUIRE A PERMIT FROM THE DIVISION OF FIRE PREVENTION PRIOR TO REMOVAL.

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UTILITY	RESPONSIBLE AGENCY
WATER	CITY OF PHOENIX
SEWER	CITY OF PHOENIX
Gas	ARIZ. PUBLIC SERVICE
ELECTRIC	SALT RIVER POWER DIST.
TELEPHONE	MOUNTAIN BELL

NOTE:  
CONSTRUCTION PERMIT SHALL BE ISSUED UNTIL PERMITS FOR ALL UNDERGROUND UTILITIES HAVE BEEN ISSUED.

