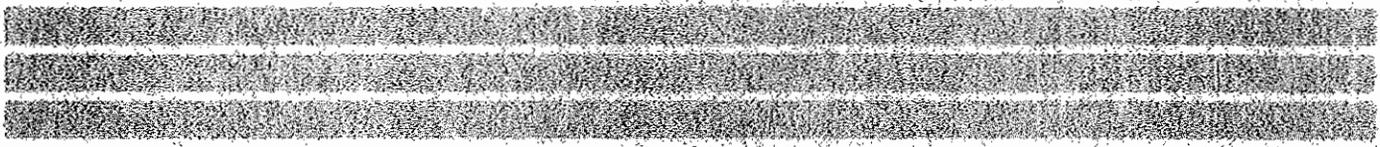


**PUBLIC
WORKS
STANDARDS**

FOR
YUMA
COUNTY
VOLUME I
CONSTRUCTION STANDARDS



**YUMA COUNTY
DEPARTMENT OF DEVELOPMENT SERVICES**



RESOLUTION NO. 88-28

Resolution by the Board of Supervisors amending existing Yuma County Construction Standards,

WHEREAS, Donald B. Fortney, Director of Public Works; filed with the Board of Supervisors of Yuma County, The Public Works Standards for Yuma County-Volume 1 and,

WHEREAS, such Public Works Standards consist of the following:

- Introduction
- Roadway Classifications
- Engineering Design Standards
- Monumentation
- Drainage and Utilities
- Structures
- Access Control
- Yuma County Construction Standards

and,

WHEREAS, the construction standards adopted in the Public Works Standards supersede and replace previous Yuma County Construction Standards and,

WHEREAS, The Director of Public Works has requested the Board of Supervisors adopt these Public Works Standards and,

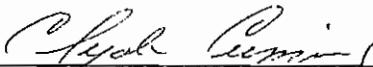
WHEREAS, there exists a need within Yuma County for orderly development and growth, and public safety and welfare and,

WHEREAS, it appears to the Board that the adoption of the said Public Works Standards are necessary in the orderly development of Yuma County and in providing public safety and welfare and,

NOW, THEREFORE BE IT RESOLVED that the herein above described Public Works Standards for Yuma County, Volume 1 are hereby adopted for use in Yuma County.

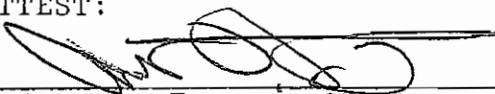
BE IT FURTHER RESOLVED, that the effective date of this resolution shall be the date approved.

Approved this 18th day of July, 1988.



Clyde Cuming, Chairman
Board of Supervisors
Yuma County, State of Arizona

ATTEST:



Andrew O. Torres, Clerk
Board of Supervisors

**PUBLIC WORKS STANDARDS
FOR
YUMA COUNTY**

**VOLUME I
CONSTRUCTION STANDARDS**

**June 1988
Latest Update August 1998**

Prepared for:
YUMA COUNTY

Prepared by:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC.

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1.0 INTRODUCTION

1.1 PURPOSE

The **Public Works Standards for Yuma County** are intended to provide a consistent policy for the orderly development of improvements within the County. This **Volume I** contains the following County standards:

- ▶ Plan Preparation Standards
- ▶ Roadway Classification Standards
- ▶ Engineering Design and Location Standards
- ▶ Monumentation Standards
- ▶ Drainage and Utility Standards
- ▶ Structures Standards
- ▶ Access Control Standards
- ▶ Guidelines for Traffic Studies
- ▶ Construction Standards

Companion documents, **Volume II**, contains standards specifications for Yuma County and **Volume III** contains standards for storm drainage facilities. Any deviations from these standards or specifications are subject to the approval of the Department of Development Services based on satisfactory evidence that the proposed variance will produce a compensating or comparable result every way adequate for Yuma County and Yuma County residence.

1.2 PLAN PREPARATION AND APPROVAL

Plans, profiles and specifications for street and drainage improvements shall be prepared in accordance with Yuma County Public Works Standards and submitted for approval to the Department of Development Services.

Approval of the Department of Development Services shall be obtained for plans, profiles and specifications, along with necessary permits, prior to commencing any construction.

Within these Public Works Standards are construction standards that include three specific standard drawings that address plan preparation. These standard drawings provide direction on submittals of plans for county review and approval. Construction Standard Number 1-010 shows acceptable standard tracing sizes, a sheet numbering system, location and contents of title blocks, direction of north arrow and cover sheet layout. Construction Standard Number 1-020 provides specific dimensions and line standards for title blocks. Construction Standard Number 1-030 gives the standard symbols to be used in preparing plans.

2.0 ROADWAY CLASSIFICATION SYSTEM

There are five basic classifications of roads applicable to roadways owned and maintained by Yuma County. These are: area service highways, arterial streets, major collector streets, residential collector streets, and local streets. The designation of the classification for each of the major roads in Yuma County is included in the **Master Plan for Yuma County Roads**.

2.1 AREA SERVICE HIGHWAYS

Area service highways provide regional continuity and are expected to carry large volumes of traffic as the county develops. These highways are arterial type routes with at least partial access control. They connect roads of equal or greater importance, serve two or more towns or communities, or act as primary access to large land areas. Area service highways generally are section line roads, are spaced two miles or more apart, and require 150 feet of right-of-way. The urban cross section is shown in Construction Standard Number 2-010.

2.2 ARTERIAL STREETS

Arterial streets allow traffic movement between area service highways and state routes, and roads of lesser importance. They serve as principal routes to retail, commercial, and industrial sites. These streets are typically located on section lines and require 100 feet of right-of-way width. The urban cross section is shown in Construction Standard Number 2-020.

2.3 MAJOR COLLECTOR STREETS

Major collector streets collect traffic from local access roads and channel it onto the arterial road network. These streets require 80 feet of right-of-way and are typically located on the half-section lines, or on section line roads that are three miles or less in length. The urban cross section for major collector streets is shown in Construction Standards 2-030.

2.4 RESIDENTIAL COLLECTOR STREETS

Residential collector streets collect traffic from residential streets and channel it onto the arterial road network. They are typically located on the quarter-mile section lines and require 60 feet of right-of-way. Exact location of residential collector streets are to be determined by the Development Services Department. The urban cross section for residential collector streets is shown in Construction Standard 2-040.

2.5 LOCAL STREETS

Local streets provide direct access to adjacent properties, short-distance intra-neighborhood traffic, and access to higher classification roads and streets. Local streets serving residential areas require 50 feet of right-of-way. Improvements for residential streets shall be made as defined in Construction Standard No. 2-050 and 2-060.

Included in local access roads are industrial streets, commercial streets, and frontage roads. Industrial streets and commercial streets provide access to industrial and commercial areas. Improvements for commercial and industrial streets, shall be made as defined by Construction Standard No. 2-070. Frontage roads are parallel to and adjacent to interstate highways, area service highways and arterials. Such roads intercept traffic on local roads and control access to roads of higher classification. Frontage roads are not allowed unless topography or other special considerations make such construction necessary or desirable. Frontage roads shall be constructed as defined in Construction Standard No. 2-080 and 2-090.

2.6 CLASSIFICATION SYSTEM AND SCHEMATIC STREET LAYOUT

Construction Standard No. 2-095 provides guidelines for the roadway classification system for a typical one square-mile section. Construction Standard No. 2-096 provides street classification guidelines for a typical subdivision.

2.7 TYPICAL PAVED ROAD SECTION

There are differences between roads to be built in urban and rural areas. Roads built in urban areas or where development is expected to occur shall typically have curb sections as shown in Construction Standards Numbers 2-010 through 2-090. Roads built in undeveloped rural areas shall correspond to the typical paved road section shown in Construction Standard Number 2-100. For purposes of these standards, the area of the County east of the Gila Mountains is considered rural. The exception to this is the area within the limits and within two miles outside of the town limits of Wellton.

2.8 MAJOR AND MINOR STREET DESIGNATION

Major and minor street designation is used herein and in the Construction Specifications and refer to the roadways owned and maintained by Yuma County as follows:

2.8.1 Major Streets

Major streets refer to the following road classifications:

- Area Service Highways
- Arterial Streets
- Major Collector Streets
- Interstate Frontage Road

2.8.2 Minor Streets

Minor streets refer to the following road classifications:

- Residential Street
- Residential Collector Street

- **Commercial and Industrial Street**
- **Frontage Street**
- **Restricted Local Street**

3.0 ENGINEERING DESIGN STANDARDS

3.1 POLICY ON USE OF NATIONAL, STATE AND LOCAL STANDARDS

The following publications with the **latest revisions** are approved references which may be used in conjunction with Public Works Standards. If there is a conflict between state and local standards and the Yuma County Public Works Standards, then county standards shall govern.

- "A Policy on Geometric Design and Highways and Streets - 1984". American Association of State Highway and Transportation Officials (AASHTO).
- "Manual on Uniform Traffic Control Devices for Streets and Highways - 1980". United States Department of Transportation, Federal Highways Administration, as periodically updated.
- "Uniform Standard Details and Specifications for Public Works Construction," that is sponsored and distributed by the Maricopa Association of Governments, herein referred to as "MAG Standards and Specifications".
- ADOT Standards and Specifications:
 - Standard Drawings:
 - Part (1) Construction Details, Plans Services, 1983
 - Part (2) Structures, Structures Section, 1983
 - Part (3) Traffic Signals and Lighting, Traffic Engineering, 1984
 - Part (4) Signing and Marking, Traffic Engineering, 1983
 - Roadway:
 - Roadway Guides for use in Field and Office (Design Standards), Plans Services, 1982
 - Drafting Guides for use in Office and Field, Plans Services, 1982
 - General Specifications for Traffic Signals, Traffic Engineering, 1973
 - Standard Specifications for Road and Bridge Construction, Contracts and Specifications, 1982 and Supplemental Specifications, 1985.
- "AASHTO Interim Guide for Design of Pavement Structures," American Association of State Highway and Transportation Officials, Washington, D.C., 1972.

- "Traffic Control Devices Handbook" (GPO 1983 0-409-573), Federal Highway Administration, Washing, D.C., 1983, vp.
- "Transportation and Traffic Engineering Handbook, " 2nd Edition, Institute of Traffic Engineers, Washington, D.C., 1982.

3.2 FLEXIBLE PAVEMENT DESIGN

3.2.1 Subgrade Preparation

Preparation of roadway subgrade shall be in accordance with the standard specifications entitled "Grading Roadway for Pavement". Preparation for subgrade on other than roadways shall be in accordance with Specification entitled "Subgrade Preparation".

3.2.2 Aggregate Base Course

Aggregate base course shall conform to standard specifications entitled "Untreated Bases" and "Base Materials". If one layer is placed, it will be "Aggregate Base Material" (ABC) in accordance with the standard specifications. If two layers are placed, the top layer shall be ABC and the bottom layer should be "Select Material" Type B in accordance with the table in the "Base Materials" section of the standard specifications.

3.2.3 Road -Mixed Surfacing

Road-mix surfacing shall conform with Standard Specification entitled "Road Mix Surfacing".

3.2.4 Asphalt Concrete Pavement

Asphalt Concrete Pavement shall conform to standard specification entitled "Asphalt Concrete Pavement".

3.2.5 Depth of Asphalt Concrete

The asphalt concrete portion of a flexible pavement shall have the minimum depth, number of courses, and mix design called for by street classification in Table 3.1. The mix design references are taken from the standard specifications. The mix design and course thickness are to be clearly indicated on paving plans for public right-of-way improvements.

TABLE 3.1
MINIMUM ASPHALT CONCRETE DEPTH REQUIREMENTS

<u>Street Classification</u>	<u>Depth (Inches)</u>	<u>Type of Mix</u>	
		<u>Asphalt Base Course</u>	<u>Asphalt Surface Course</u>
Major Streets:			
Area Service Highway	3	2" of B-1	1" of D-1/2
Arterial Streets	3	2" of B-1	1" of D-1/2
Major Collector Streets	3	2" of B-1	1" of D-1/2
Interstate Frontage Roads	3	2" of B-1	1" of D-1/2
Minor Streets:			
Residential Collector Streets	2	-	C-3/4
Residential Streets	2	-	C-3/4
Commercial & Industrial Streets	2	-	C-3/4
Frontage Streets	2	-	C-3/4

3.2.6 Soil Testing Requirements

There should be at least one sample taken at the depth of the planned subgrade every 800 lineal feet with at least one test per proposed street. There should be at least one sample of each type of soil used as a fill material on which a roadway is to be built. Samples should be taken in locations which the engineer responsible for pavement design believes would be an accurate representation of the subgrade that will lie beneath the pavement. Additional tests may be ordered by the Department of Public Works at apparent visible changes in soil types.

The following tests are required for the base course design procedures for streets:

1. Sieve analysis of each sample is to be performed to determine the percent passing #200 sieve openings in accordance with ASTM C136.
2. Atterberg-Limits tests is to be performed for each sample in order to establish the plasticity index in accordance with ASTM 4318.

Test are to be performed by and under the supervision of a licensed professional engineer and by a material testing laboratory approved by the Department of Public Works.

When R-value design is required, R-value determination shall be made for exudation pressure of 300 psi. Each pavement thickness design must be based on the R-values determined by the tests, and for each length of pavement to be constructed with a constant thickness design, the lowest R-value within that length of pavement will be used.

3.2.7 Base Course for Minor Streets

There are two design charts for the base course of minor streets. Yuma County Construction Standard Number 3-010 has a chart for the design of base courses for local residential streets and local restricted streets. Minimum thickness of ABC is four inches.

Yuma County Construction Standard Number 3-020 has a chart for the design of base courses for residential collector streets, commercial and light industrial streets, and frontage streets. Minimum thickness of ABC is four inches.

The base course depth is selected by finding a minimum base depth that is appropriate for the plasticity index and the percent passing the #200 sieve. For example: If a residential street is to be built on a subgrade solid having a plasticity index of 12 and 60 percent passing through a #200 sieve, then the base course depth would be 7 inches, according to Construction Standard Number 3-010. A residential collector street, if built on soil with identical characteristics, would require nine inches of base course, according to Construction Standard Number 3-020. (Note that the top four inches of each base course must be ABC.

3.2.8 Base Course for Major Streets

There are two design charts for the design of base course for major streets. Yuma County Construction Standard Number 3-025 is to be used for the design of Major Collector Streets. Yuma County Construction Standard Number 3-026 is to be used for the design of arterials, interstate frontage roads and area service highways.

Base course depths for major streets may be determined in accordance with "AASHTO Guide for Design of Pavement Structures" published in 1961 and revised in 1972.

ADOT has modified the AASHTO guidelines to meet the requirements of the State of Arizona. The modified procedures may be used provided that design coefficients are selected that are appropriate for Yuma County.

Both the AASHTO guidelines and the ADOT modified procedure use R-values to determine the thickness of flexible pavement. R-values may be required in the design of pavements for area service highways, arterials and major collector streets.

3.2.9 Seal Coats

A chip seal coat, consisting of penetration type emulsified asphalt shall apply to all road mix surfacing and be in accordance with standard specifications, entitled "Chip Seal Coats."

A preservative seal coat shall be applied to all new plant mix surfacing. Preservative seal coats shall be in accordance with Standard Specification, entitled "Preservative Seal for Asphalt Concrete" or "Fog Seal Coats".

3.3 STREET DESIGN

Requirements for street design are listed in the following paragraphs and correspond to the typical cross-sections for various roadway classifications and other details shown in Yuma County Construction Standards in Section 8.0 of this document.

3.3.1 Right-of-Way Widths

The right-of-way requirements for the width of a road is based on the space needed for the road when it is constructed to meet ultimate development requirements including width of paving, curbs, sidewalks, and utilities.

Additional right-of-way may be required at new major intersections for auxiliary lane requirements for turning movements, or where necessary to accommodate slopes, drainage structures, sight distance, bike lanes, and equestrian paths.

Utility locations should provide for the efficient and safe dual use of right-of-way and should not conflict with traffic control or information signs, fire hydrants and other public facilities.

When denial fences or walls are proposed adjacent to the right-of-way on major streets, additional right-of-way must be provided to insure adequate visibility on each side of intersecting roads.

Table 3.2 lists the minimum right-of-way requirement for the various road classifications.

TABLE 3.2
MINIMUM RIGHT-OF-WAY REQUIREMENTS

<u>Road Classification</u>	<u>Right-of-Way Requirement</u>
Area Service Highway	150'
Arterial Street	100'
Major Collector Street	80'
Residential Collector Street	60'
Local Residential Street	50'
Commercial and Industrial Streets	80'
Frontage Street	40'
Interstate Frontage Road	80'

3.3.2 Roadway Pavement Widths

The roadway pavement widths for the various road classifications shown in Table 3.3 are measured from face of curb to face of curb and include such width as required for medians.

**TABLE 3.3
ROADWAY PAVEMENT WIDTHS**

<u>Road Classification</u>	<u>Pavement Width</u>
Area Service Highway	100'
Arterial Street	68'
Major Collector Street	60'
Residential Collector Street	48'
Local Residential Street	38'
Commercial and Industrial Streets	48'
Frontage Street	30'
Interstate Frontage Road	40'

3.3.3 Alleys

Alleys function as secondary access to properties whose primary access is a local road or street. Alleys should not be constructed in new single-tenant residential developments unless the new development is in an area where an alley system already exists and alley construction would be a logical component of the development. Alleys may be designed and improved along rear lots for commercial or multiple dwelling use. Alleys shall be constructed as shown in Construction Standard Number 3-030.

- a. Right-of-way is 20 feet minimum.
- b. There shall be no intersecting alleys.
- c. Surfaced roadbed must be full width of right-of-way.

- d. Alley entrances shall be constructed in accordance with Yuma County Construction Standards shown in Section 8.0 of this document and the standard specifications.

3.3.4 Cul-de-Sacs and Knuckles

Cul-de-sacs are dead-end roads with turn-arounds and are only found on local roads. Construction Standard Numbers 3-080 and 3-090 provide design data for cul-de-sacs. Design data for a standard knuckle is provided in Construction Standard Number 3-100.

3.3.5 Medians

Raised medians may be required on roadways. All designs are subject to review and approval by the County. See Yuma County Construction Standard Number 3-110 for standard raised median options.

If 12 foot turn lanes are installed in the raised median, the median shall be not less than 16 feet wide, flowline to flowline.

Painted median with center turnway left turn lanes shall be 14 feet wide.

3.3.6 Curb and Gutter

Portland Cement Concrete curbs and gutters and cross gutters shall be constructed in accordance with the Yuma County Construction Standards and standard specifications entitled "Concrete Curb, Gutter, Sidewalk, Driveways and Alley Entrances and Pavement Border", "Portland Cement Concrete" and "Subgrade Preparation".

Portland Cement Concrete curbs and gutters are required for all urban streets, streets adjacent to and part of residential developments, all roads abutting land zoned for commercial, industrial and multiple residential uses or other similar developments.

3.3.7 Sidewalks

Sidewalks shall be constructed per Yuma County Construction Standards and standard specifications entitled "Subgrade Preparation", "Concrete Curb, Gutter, Sidewalk, Driveways, and Alley Entrances" and "Portland Cement Concrete".

Portland Cement concrete sidewalks shall be constructed in all areas zoned to permit commercial uses and all areas zoned to permit residential uses unless otherwise directed by the Department of Public Works.

All sidewalks shall be constructed adjacent to the curb unless otherwise directed by the Department of Public Works.

Minimum sidewalk widths, measured from the back of curb, shall be 4 feet on minor streets and 5 feet on major streets.

Sidewalk score marks, at least 1/2 inch deep, are required every 4 or every 5 feet matching the width of the sidewalk.

3.3.8 Expansion and Contraction Joints

Expansion joints, unless otherwise specified, shall be constructed in accordance with the Construction Standards of Yuma County, and in a straight line and vertical plane perpendicular to the longitudinal line of the sidewalk or curb and gutter, except in cases of curved alignment, when they will be constructed along the radial lines of the curve. They shall be constructed to the full depth and width of the concrete and shall match the joints in the adjacent pavement sidewalk or curb and gutter. Joints shall be constructed at all radius points, driveways, alley entrances, and at adjoining structures with a maximum interval of 50 feet between joints. Joint filler material shall conform with Yuma County Standard Specification entitled "Expansion Joint Filler".

Contraction joints, unless otherwise specified, shall be constructed in accordance with the Construction Standards of Yuma County, and in a straight line and vertical plane perpendicular to the longitudinal line of the sidewalk or curb and gutter, except in cases of curved alignment when they will be constructed along the radial lines of the curb. They shall be constructed in a depth of 1 1/2", and at 10' intervals on sidewalk widths of five feet and 8' intervals on sidewalks of 4' width.

3.3.9 Driveways

Driveway dimensions and details are shown in the Construction Standards. Specific guidelines for driveway location, spacing and where driveways are not permitted must be followed as defined in Section 7.0, Access Control Standards.

Where curb, gutters, and sidewalks are to be placed, driveways shall be constructed with Portland Cement Concrete. Where only curb and gutters are to be placed, or where no curb or gutters are to be placed, the driveway may be paved with the same materials used for the off-street surfacing on the property to be served. When the fronting property is unsurfaced, a surfaced driveway shall be provided between the edge of road and curb or sidewalk and the right-of-way line with one of the following:

- a. Four inch A.B.C., only if the county road is unpaved.
- b. Two inch asphalt pavement over four inch A.B.C.
- c. Four inch Portland Cement Concrete.

Drainage requirements for driveways shall be as follows:

- a. No surface drainage from driveways shall be allowed to flow onto county roads.
- b. For driveways crossing ditch sections, culverts shall be 12 inches in diameter or larger if so required to carry anticipated storm water flows. Culvert sizes shall be approved by the Department of Public Works.

Maintenance of driveway approaches, including drainage culverts, shall be the responsibility of the owner whose property they serve.

A minimum clearance from obstructions (such as public utility structures, traffic control devices, etc.) of two feet for residential driveways and four feet for commercial and industrial driveways is required.

3.3.10 Curb Returns at Intersections

The minimum curb return radii for various types of intersections are listed in Table 3.4. Larger radii may be required by the Department of Public Works. All curb return radii must be approved by the Department of Public Works prior to construction.

TABLE 3.4
MINIMUM CURB RETURN RADI

<u>Intersection Type</u>	<u>Minimum Curb Return Radius (feet)</u>
Local & Local	25
Local & Collector	25
Local & Arterial	30
Local & Area Service Highway	30
Collector & Arterial	30
Collector & Area Service Highway	40
Arterial & Area Service Highway	40
Area Service Highways	40

3.3.11 Bicycle Routes

Streets with designated bicycle routes shall have on-street parking prohibited and the curb lane shall have four feet of paved width as measured from the curb in addition to that required for traffic lanes.

3.3.12 Setback Requirements

In the **Yuma County Land Use Regulations** "setback" requirements are defined as the right-of-way limits for the roadway abutting the property. In addition to these setback (right-of-way) requirements for the roadway, "yard" setbacks are required by the regulations based on the zoning district. For any lot wherein a "yard" or additional

setback is required, the "yard" setback shall be measured from the setback (right-of-way) line. The following setback (right-of-way) lines as defined in the **Yuma County Land Use Regulations**, Article XI, Section 1104.00 are required:

1. Buildings or structures hereafter erected, altered or relocated shall not be placed within the established setback lines.
2. Area Service Highways: seventy-five (75) feet from and on both sides of the centerline of all existing or proposed Area Service Highways, State and Federal Highways.
3. Arterials: fifty (50) feet from and on both sides of the centerline of all existing or proposed arterials and section line roads not designated otherwise.
4. Major Collector Streets and Mid-Section Line Roads: Forty (40) feet from and on both sides of the centerline of all existing or proposed Major Collector Streets and mid-section line roads not designated otherwise.
5. Residential Collector Streets: thirty (30) feet from and on both sides of the centerline of all existing and proposed residential collector streets.
6. Residential Streets: Twenty-five (25) feet from and on both sides of the centerline of all existing or proposed residential streets, except that this requirement shall be increased to thirty (30) feet for local streets abutting properties in Multiple-Family Residential, and to forty (40) feet for street abutting Commercial and Industrial zoning districts.

3.3.13 Right-of-Way Fence

When required by the Yuma County Public Works Department, a right-of-way fence shall consist of a 6' chain link fence and gate as shown in Construction Standard Number 3-320 or a 6' concrete block wall fence as shown in the Yuma County Construction Standard Number 3-310.

3.4 GEOMETRIC DESIGN GUIDELINES

3.4.1 Design Speed

The design speed is the maximum speed for safe operation of a vehicle that can be maintained over a specific section of a street when conditions are so favorable that the design features of the street govern. Whenever possible or deemed necessary by the Department of Public Works, the design speed shall be 10 mph greater than the anticipated posted speed limit. The minimum design speeds for the various classification of roads for urban and rural areas shall be as follows:

**TABLE 3.5
MINIMUM DESIGN SPEED**

<u>Functional Classification</u>	<u>Urban Area</u>	<u>Rural Area</u>
Area Service Highway	55 mph	65 mph
Arterial Street	50 mph	60 mph
Major Collector Street	45 mph	55 mph
Residential Collector Street	40 mph	45 mph
Residential Street	35 mph	40 mph
Commercial and Industrial Streets	35 mph	40 mph
Frontage Street	35 mph	40 mph
Interstate Frontage Road	45 mph	55 mph

3.4.2 Passing Sight Distance

Passing sight distance is the distance a driver shall be able to see ahead, clear of traffic, to complete a passing maneuver without cutting off the passed vehicle in advance of an oncoming vehicle. The design values for passing sight distance on level roads taken from AASHTO are provided below. Appreciable positive up incline grades would increase the distance required for passing. The AASHTO policy on Geometric Design shall be consulted to determine the effect of grades on passing sight distances.

TABLE 3.6
PASSING SIGHT DISTANCE

<u>Design Speed (MPH)</u>	<u>Minimum Passing Sight Distance (Feet)</u>
20	800
25	950
30	1,100
35	1,300
40	1,500
45	1,650
50	1,800
55	1,950
60	2,100
65	2,300

3.4.3 Stopping Sight Distance

The minimum sight distance available on a roadway shall be sufficiently long to enable a motorist traveling at the design speed to observe, react, and bring the vehicle to a stop before reaching a stationary object in its path. Design values for stopping sight distance on county roads taken from AASHTO are provided below. The AASHTO policy on geometric design shall be consulted to determine the effect of grades on stopping sight distance.

TABLE 3.7
STOPPING SIGHT DISTANCE

<u>Design Speed</u>	<u>Stopping Sight Distance</u>
20	125
25	150
30	200
35	250
40	325
45	400
50	475
55	550
60	650
65	725

3.4.4 Intersection Sight Distance

The minimum sight distance at an intersection shall enable vehicles to:

- a. When turning left or right, accelerate to the operating speed of the street without causing approaching vehicles to reduce speed by more than 10 miles per hour.
- b. When turning left, clear the near half of the street without conflicting with vehicles approaching from the left.

The distance requirements shall be based on a 3.5 foot driver eye height and 4.25 foot object height for passenger cars, and a 6.0 foot driver eye height and 4.25 foot object height for semi-trailers.

The operating speed on each approach shall be assumed to be, in order of desirability: the 85th percentile speed; the speed limit if based on an engineering study; or in the case of a new facility, 80 percent of the design speed. When the criteria for sight distance cannot be met, the County will prohibit turns by exiting vehicles when appropriate or require additional speed change lane lengths.

The AASHTO Policy on Geometric Design shall be consulted to determine the effect of roadway geometrics on sight distance.

3.4.5 Horizontal Curvature

The minimum radii for horizontal curve at various design speeds are listed below. They are based on the safe allowable friction factors recommended by AASHTO for rural highways and high-speed urban streets. A superelevation rate of 0.04 ft./ft. for urban and 0.06 ft./ft. for rural is used to calculate the minimum radius. Additional tables are found in the AASHTO Policy on Geometric Design of Highways and Streets.

TABLE 3.9
HORIZONTAL CURVATURE

<u>Design Speed (MPH)</u>	<u>Minimum Radius (ft.)</u>	
	<u>Urban (1)</u>	<u>Rural (2)</u>
20	127	116
25	204	186
30	302	273
35	421	382
40	573	509
45	733	662
50	955	849
55	1192	1067
60	1528	1348
65	1887	1637

(1) Superelevation = .04 ft/ft

(2) Superelevation = .06 ft/ft

3.4.6 Vertical Curvature

Minimum lengths of crest and sag vertical curves are determined by sight distance requirements for the design speeds for the various functional definitions. Symetric, parabolic curves shall be used and shall be computed from the formula

$$L = K \times A$$

Where: L = The length of the vertical curve, in feet
 K = A constant for design
 A = The algebraic difference in grades, in percent.

The following K values shall be used for crest and sag curves:

**TABLE 3.10
VERTICAL CURVATURE**

<u>Design Speed</u>	<u>Crest Curve</u>		<u>Sag Curve</u>	
	<u>Minimum</u>	<u>Desirable</u>	<u>Minimum</u>	<u>Desirable</u>
25	20	20	30	30
30	30	30	40	40
35	40	50	50	50
40	60	80	60	70
45	80	120	70	90
50	110	160	90	110
55	150	220	100	130
60	190	310	120	160
65	230	400	130	180

3.4.7 Reverse Curves

Minimum standards for reverse curves are given in Construction Standard Number 3-330.

3.4.8 Angle of Intersections

Acceptable standards for angles of intersection are provided in Construction Standard Number 3-340.

3.4.9 Street Jogs

Design guidelines for street jogs are provided in Construction Standard Number 3-350.

3.5 SIGNS AND PAVEMENT MARKINGS

3.5.1 Design References

All traffic control signs and pavement markings shall be in accordance with latest revisions to the manual on Uniform Traffic Control Devices (MUTCD) prepared by the United States Department of Transportation, Federal Highway Administration, 1978.

3.5.2 Street Name Signs

Construction Standard Nos. 3-380 and 3-390 provide specific details for construction and placement of double-faced street signs with and without a stop sign.

3.5.3 Pavement Markings

The layout, color, and materials for pavement markings shall be in accordance with the Manual on Uniform Traffic Control Devices and ADOT Standard Drawing 4-M-LOI. The following criteria shall apply for County Roads.

Skip Center Line

A broken yellow line 4 inches wide. The broken or "skip" pattern shall be based on a 40-foot unit consisting of a 10-foot line and a 30-foot gap. Skip center strip is used as center line delineation on two-lane or three-lane, two-way highways.

Double Yellow Center Stripe

Two solid yellow lines, each 4 inches wide, separated by a 4-inch space. Double yellow center stripe is used as center line delineation on multi-lane, two-way highways and for channelization.

Edge Stripe

A solid line, 4 inches wide, shall be used on the edges of the travelled way. Edge stripes shall be white except that on roadways with one-way travel, the left edge stripe in the direction of travel shall be yellow.

Lane Stripe

A broken white line, 4 inches wide, shall be used to delineate adjacent lanes travelling in the same direction. The broken or "skip" pattern shall be based on a 40-foot unit consisting of a 10-foot line and a 30-foot gap.

No-Pass Stripe

A solid yellow line, 4 inches wide, shall be separated from a skip center stripe by a 4-inch space where passing is prohibited from the lane bounded by the no-pass stripe. Where passing is prohibited in both directions, no-pass stripes shall be two solid yellow lines, each 4 inches wide, separated by a 4-inch space.

Reversible Lane Stripe

Two broken yellow lines, each 4 inches wide, shall be separated by a 4-inch space. The broken or "skip" pattern shall be based on a 40-foot unit consisting of a 10-foot line and a 30-foot gap.

Two-Way Left Turn Stripe

A solid yellow line, 4 inches wide, with a broken yellow line, 4 inches wide, separated by a 4-inch space shall be used on each side of the two-way left turn lane. The broken or "skip" pattern will be based on a 40-foot unit consisting of a 10-foot line and a 30-foot space. The solid line shall be installed to the right of the broken line in the direction of travel.

Allowable Tolerances for Stripes:

Length of Stripe - The longitudinal accumulative error within a 40-foot length of skip stripe shall not exceed plus or minus one foot.

Width of Stripe - The width of stripe shall not vary more than plus or minus 1/4 inch.

Lane Width - The lane width, which is defined as the lateral width from the edge of pavement to the center of the lane line or between the centers of successive lane lines, shall not vary from the widths described above by more than plus or minus 4 inches.

Paint shall be applied at a rate of not less than 110 square feet per gallon (approximately 15 mills wet thickness).

A tolerance not to exceed minus 10 percent will be allowed for film thickness or yield in paint application.

Glass Reflectorized Beads

All paint markings and all hot extruded plastic markings shall be top dressed with beads. The application rate of beading on painted markings shall be 4 pounds of beads per gallon of paint. The bead application system shall provide a uniform bead distribution over the entire surface of the marking. Beads shall be applied to hot extruded plastic material while in the semi-liquid state on the roadway. Beads shall be applied to paint markings at the same time the paint is applied to the roadway.

3.5.4 Crosswalks and Other Crossings

Crosswalks and crosswalk lines shall conform to the Manual on Uniform Traffic Control Devices (M.U.T.C.D.) and shall be signed accordingly.

Highway Grade Crossings with Railroad

Highway/railroad grade crossings shall conform to the Manual on Uniform Traffic Control Devices.

Other Highway Crossings

All highway crossings shall conform to the Manual on Uniform Traffic Control Devices. As explained in the M.U.T.C.D., Advance crossing signs should be used to alert operators to unexpected entries into the roadway by pedestrians, trucks, bicyclists, animals and

other potential conflicts. Crossing signs may be used to supplement Advance Crossing signs as a means of assisting the vehicle operator in defining the specific point of crossing. Again, more detailed information regarding both Advance Crossing Signs and Crossing signs is provided in the M.U.T.C.D.

3.6 TRAFFIC SIGNALS AND LIGHTING

3.6.1 Design References

The following publications, with the latest revisions, are to be used when designing traffic signals and lighting in Yuma County:

- "Manual on Uniform Traffic Control Devices for Streets and Highways" - U.S. Department of Transportation, Federal Highway Administration.
- "General Specifications for Traffic Signals and Highway Lighting" - ADH, 1973.
- "Traffic Signals and Lighting" - Standard Drawings, ADOT, 1985.
- "Informational Guide for Roadway Lighting" - AASHTO, 1976.
- "Guide to Standardized Highway Lighting Pole Hardware" - AASHTO.
- "Standard Specifications for Road and Bridge Construction" - ADOT, 1982 and supplemental specifications, 1985 - ADOT.
- "Signing and Marking" - Standard Drawings, ADOT.
- "Traffic Control Manual for Highway Construction and Maintenance" -ADOT, 1981.
- "Manual of Signs Approved for Use on State Highway System" - ADOT.
- MAG "Uniform Standard Specifications for Public Works Construction".
- MAG "Uniform Standard Details for Public Works Construction".

3.6.2 Traffic Signals

The need for new traffic signals shall be based on warrants contained in the Manual on Uniform Traffic Control Devices.

The design of traffic signals shall correspond to guidelines and standards contained in the Manual on Uniform Traffic Devices and other standards listed in the design references of this section.

3.6.3 Lighting

The design of street illumination shall correspond to guidelines and standards listed in the design references of this section.

Plans for street illumination shall be approved by the County and the public utilities involved prior to construction.

4.0 MONUMENTATION

Except where Construction Standard 4-040 or 4-050 is specified, all street centerline intersections, street centerline angle points, and street centerline beginning and end of curve points shall be monumented by standard monument as required on Standard 4-020 using Standard 4-080.

All subdivision boundary corners not in pavement shall be monumented by a standard monument as shown on Standard 4-020 using Standard 4-030.

Any boundary or centerline monuments having characteristics other than as described and shown on Standard 4-020, may only be set upon written approval of the Department of Development Services.

In locations where a standard monument cannot be constructed, the survey location shall be referenced as shown in Standard 4-060 using Standard 4-070.

Upon completion of all required improvements, a licensed surveyor shall furnish the Department of Development Services a complete and accurate set of notes or sketches which will show clearly, ties of the sub-surface monument and surface monuments.

The surveyor shall comply with the requirement of Arizona Revised Statutes 33-103, Monuments at section and quarter corners; 33-105, Recording of certain land surveys and 33-106, corner record survey filing.

5.0 DRAINAGE AND UTILITIES

5.1 DRAINAGE

Guidelines and requirements for the design of storm drainage facilities are provided in the **Yuma County Floodplain Regulations** and the **Yuma County Public Works Standards Volume III, Standards For Storm Drainage Facilities**.

The **Standard** for catch basin construction is to be Construction Standards No. 5-270, Type F and Standard No. 5-290 with all grates being Standard No. 5-300 Plan II. For particular construction and hydrological cases other catch basin types are to be used as shown in Standards No. 5-225 through Standard No. 5-260. Manholes, manhole frame and covers and steps are to be constructed in accordance with Standard No. 5-030, through Standard No. 5-046. Scuppers are to be constructed in accordance with Standard No. 5-050.

5.1 Standard References for Use for Hydraulic Design

The following are standard references for hydraulic and hydrological design in Yuma County.

1. "Hydrologic and Hydraulic Training Session, October 6, 17, 18 - 1972" revised December 1973. Arizona Department of Transportation publication.
2. "Hydrologic Design for Highway Drainage in Arizona," revised March, 1969. Arizona Department of Transportation.
3. "Urban Hydrology for Small Watersheds, Technical Release No. 55," U.S. Department of Agriculture.
4. "Project Formulation Hydrology, Technical Release No. 20," May 1982, U.S. Department of Agriculture.
5. "Hydraulic Engineering Circular No. 1, Flood Hydraulic Package," January 1985, U.S. Army Corps of Engineers.

6. "Open-Channel Hydraulics" by Ven Te Chow, Ph.D., McGraw-Hill Book Company, 1959.
7. "Hydraulic Engineering Circular No. 15, Design of Stable Channels with Flexible Lining," October 1975. U.S. Department of Transportation publication.
8. "Handbook of Hydraulics" by Ernest F. Brater and Horace Williams King, McGraw-Hill Book Company, 1976.
9. "Hydraulic Engineers Circular No. 5, Hydraulic Charts for the Selection of Highway Culverts," April 1964. U.S. Department of Transportation publication.
10. "Hydraulic Engineering Circular No. 12, Drainage of Highway Pavements," March 1969, U.S. Department of Transportation publication.
11. "water-Resources Engineering," Third Edition, by Ray K. Linsley and Joseph B. Branzini, McGraw-Hill Book Company, 1979.
12. "SCS National Engineering Handbook, Section 4, Hydrology." U.S. Department of Agriculture publication.

5.1.2. Basis for Calculating Off-Site Drainage for Road Culverts

The following criteria is to be used as the basis for calculating off-site drainage:

- a. Rational method for watersheds less than 80 acres.
- b. HEC-1, Kinematic wave model for watersheds equal to or greater than 80 acres.

5.1.3 Storm Frequency for Road Design

The following storm frequency design criteria shall be used in drainage calculations:

	<u>Design Year</u>
Street Drainage	10
Cross Drainage	50
Bridges	100
Culverts	50
All Weather Crossings	100

On area service highways and arterials at least one lane in each direction shall be free of runoff from the 10 year frequency storm.

The maximum allowable depth over the roadway in a dip section is 0.5 feet with a maximum allowable velocity of 5 feet per second.

5.2 UTILITIES

Public Works Standards for Yuma County, Volume I and II shall be used for the location, design, and construction of sewer and water lines and storm drains and other utility appurtenances within Yuma County rights-of-way.

6.0 STRUCTURES

6.1 DESIGN REFERENCES

The design of bridges, culverts, walls, tunnels, and other structures shall be in accordance with the current AASHTO Standard Specifications for Highway Bridges.

6.2 BRIDGE CROSS SECTIONS

The dimensional design of structures shall be in accordance with the current AASHTO Policy on Geometric Design of Highways and Streets. The following roadway widths apply to roadways which are to be built to the ultimate cross-sections as described in Section 2.0.

ROADWAY WIDTHS FOR BRIDGES ON IMPROVED ROADWAYS

<u>Functional Classification</u>	<u>Min. Clearance Roadway Width of Bridge</u>	<u>Min. Walkway (Each Side)</u>	<u>Total Width</u>
Area Service Highway	100	5	110
Arterial Street	68	5	78
Major Collector Street	68	5	78
Residential Collector Street	48	4	56
Local Residential Street	36	4	44
Commercial and Industrial Streets	48	4	56
Frontage Street	30	4	38
Interstate Frontage Road	40	4	48

6.3 VERTICAL CLEARANCES

New structures shall provide 16-ft. vertical clearance over roadways plus up to 6 inches for possible future surfacing.

New structures should provide 23-foot clearance over railroads.

6.4. BRIDGE RAILING/PARAPETS

Bridge railings and parapets shall be designed, placed, and constructed in accordance with AASHTO's Policy on Geometric Design of Roads and Streets and AASHTO's Standard Specifications for Highway Bridges.

6.5 HEADWALLS

Headwalls for structures shall be designed and constructed in accordance with the Arizona Department of Transportation Construction Standard Drawings and AASHTO's Standard Specifications for Highway Bridges.

7.0 ACCESS CONTROL

7.1 GENERAL

Yuma County access control standards are intended to protect the public health, safety and welfare. They are designed to strike a balance between the mobility and local access needs of the county so that the county transportation system will function smoothly and meet the public and private transportation needs and interests.

7.1.1 Statutory Authority

1. The authority to control access on county roads is defined in A.R.S. Section 11-251, Powers of the Board of Supervisors, paragraph 4, which enables the County Board of Supervisors "to layout, maintain, control and manage public roads, ferries, bridges within the county and levy such tax, therefore, as may be authorized by law."
2. Paragraph 29 of the same section enables the Board of Supervisors to enter into agreements for acquiring rights-of-way, construction, reconstruction or maintenance of highways, including highways which pass through Indian reservations, with the United States Government, except that the governing body of any Indian tribe whose lands are affected must consent to the use of its land.
3. Paragraph 44 of the same section enables the Board of Supervisors to acquire land for roads, drainageways and other public purposes by exchange without public auction, except that notice shall be published thirty days before the exchange listing the property ownership and descriptions.
4. Paragraph 45 of the same section enables the Board of Supervisors to purchase real property for public purposes, provided that final payment shall be made not later than five years after the date of purchase.

5. A.R.S. Section 11-251.05 enables the Board of Supervisors to adopt, amend and repeal ordinances necessary or proper to carry into effect such powers vested in the Board of Supervisors by A.R.S. Section 11-251 that are applicable to the unincorporated areas of the county.
6. A.R.S. Sections 11-801 through 11-806 requires the Board of Supervisors to regulate the subdivision of all land within the county, except lands within corporate municipal limits.
7. A.R.S. Section 18-201 provides that the Board of Supervisors may establish, alter or abandon highways in the county and other legal subdivisions, and acquire real property for such purposes by purchase, donation, dedication, condemnation or other lawful means.
8. A.R.S. Section 18-206 enables the Board of Supervisors to exercise eminent domain to obtain right-of-way for federal-county highways.
9. A.R.S. Section 28-602 defines controlled-access highway as a highway, street, or roadway to which owners or occupants abutting land or other persons have no legal right of access to or from except at such points only and in the manner described by the public authority having jurisdiction over the highway, street, or roadway.

7.1.2 Background

1. The County Board of Supervisors has exercised its statutory authority with certain resolutions and ordinances which govern construction of county roads and control access to county roads from private property. These ordinances and resolutions include the following documents:
 - a. An Ordinance of Yuma County Regulating Subdivisions, adopted on June 2, 1975, revised June 20, 1977.
 - b. A Resolution of Yuma County for Permits to Work in Dedicated Yuma County Rights-of-way, adopted on June 1, 1981.

- c. A resolution of Yuma County to adopt Construction Standards for use in Field and Office, adopted June 3, 1972.
 - d. "Yuma County: Land Use Regulations 1985 Comprehensive Plan" adopted May 2, 1977. Revised.
 - e. Yuma County Floodplain Regulations, adopted on February 9, 1984.
2. Subdivision of land in Yuma County is regulated by subdivision regulations which have been adopted by the Board of Supervisors under the authority of A.R.S. Sections 11-801 through 806. These regulations include the creation of the Yuma County Planning Commission and subdivision committee, adoption of standards for subdivision design, requirements for plat map approval, dedication policies, county road improvement standards, provisions for enforcement and penalties, fee schedules, and standards for improvement of perimeter roads.
 3. The County Board of Supervisors has adopted a system of right-of-way use-permits as a device to control and manage the use of county rights-of-way by private citizens and organizations in a manner deemed best for the public safety and welfare.
 4. The County Board of Supervisors has adopted the Yuma County Construction Standards which contain improvement standards and schematic street layouts for new roadway construction.
 5. The County Board of Supervisors has adopted access control policies and design guidelines. These have now been collected together, revised, and new topics have been addressed and added in accordance with good engineering practice.
 6. The subsequent sections of this document provide updated access control guidelines for use on Yuma County public roads.

7.2 ACCESS CONTROL STANDARDS

7.2.1 General Policy

The County shall maintain a balanced transportation system which shall be achieved by use of appropriate access control guidelines that correspond to the functional classification of Yuma County roadways.

7.2.2 References

The guidelines contained in this document are based on engineering applications of the following standard engineering references used throughout the nation and by the Yuma County Department of Public Works. The references are revised from time to time. When appropriate, this document will also be revised to reflect changes in the standard references. These references are updated from time to time. The latest version should be used.

1. A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials, Washington, D.C. 1984.
2. Transportation and Traffic Engineering Handbook, Institute of Transportation Engineers, Washington, D.C., 1982.
3. Manual on Uniform Traffic Control Devices for Streets and Highways, (M.U.T.C.D.), U.S. Department of Transportation and the Federal Highway Administration, Washington, D.C., as amended.
4. Highway Capacity Manual, Special Report 209, Transportation Research Board, Washington, D.C. 1985.
5. Evaluation of Techniques for the Control of Direct Access to Arterial Highways, Report No. FHWA-RD-76-85, Federal Highway Administration, Washington, D.C. 1975.
6. Trip Generation, Fourth edition, Institute of Transportation Engineers, Washington, D.C. 1987. updated.

7.2.3 Degree of Access Control

The functional classification of roadways shall determine the emphasis placed on mobility, that is, the preference given to through traffic, versus local access needs. In general, the higher the functional class, the greater the emphasis on mobility which then requires a higher degree of access control. The following summarizes the degree of access control intended for each roadway classification. The degree of access control for each roadway classification is further defined in the succeeding paragraphs of this section.

<u>Functional Classification</u>	<u>Degree of Access Control</u>
Area Service Highways	Moderate to High
Arterial and Major Collector Streets	Moderate
Residential Collector Streets	Low to Moderate
Local Streets	Low

7.2.4 Area Service Highways

1. Area service highways shall be designed to provide a relatively high overall travel speed with minimum interference to through traffic movements. These routes are intended to achieve a posted speed limit of 45 mph in urban areas and 55 mph in rural areas.
2. To provide the desired level of service, direct private access shall be permitted only when the property in question has no other reasonable access to the general street system. If direct private access must be provided, then the following shall be considered:
 - a. Direct private access shall be permitted until such time that reasonable access to a lower functional class roadway is available and permitted.
 - b. No more than one access for an individual parcel or contiguous parcel under the same ownership unless additional access would benefit the safety and operation of the highway, or only one access would be determined as detrimental to public health, safety and welfare.

- c. Large area tracts may be permitted more than one access, according to driveway spacing listed in Section 7.2.8 of these standards.
 - d. Direct private access shall be limited to right turns only, unless:
 - (1) the access location has the potential to be signalized.
 - (2) left turns would not create congestion or lower the level of service.
 - (3) alternatives to left turns would cause unacceptable traffic operations and safety hazards.
 - e. Left turns may be permitted at direct private access points which have the potential for signalization if the spacing requirements are met for intersections and median openings, and the left turn movements will not interfere with the location, planning and operation of the county road system.
 - f. Driveways shall be so designed to provide vehicle ingress and egress without requiring vehicles to back out of the driveway.
3. Spacing of all intersections with public streets, roads and highways shall be on one-half mile intervals, plus or minus approximately 200 feet, and based on section lines whenever feasible and not limited by topographical constraints.
4. Traffic signal spacing shall be maintained at one-half mile intervals, whenever feasible, in order to achieve good speed, capacity and optimum signal progression.
5. Median openings shall be limited to one-quarter mile spacing.

7.2.5 Arterial and Major Collector Streets

1. Arterial and major collector streets shall be designed for moderate to high travel speeds and traffic volumes. It is intended that arterial streets achieve 40 mph in urban areas and 50 mph in rural areas. It is intended that major collector streets achieve 35 mph in urban areas and 45 mph in rural areas.
2. No more than one access point is permitted to individual parcels or to contiguous parcels of the same ownership, unless:
 - a. Additional access would not be detrimental to the operation and safety of the road and is necessary for the safe and efficient use of the property.
 - b. The additional access would not be detrimental to public health, safety and welfare.
 - c. Large acre tracts may be permitted at more than one access point, according to the driveway spacing listed in Section 7.2.8.
 - d. All turning movements, including left turns, shall be allowed provided that left turns would not create congestion or lower the level of service and that adequate safety and design standards are met.
3. Spacing of intersections at all public streets, roads and highways and other major access should be one-half or one-quarter mile plus or minus 200 feet and based on section lines where feasible and topographical features do not limit. The minimum spacing for traffic signals is one-quarter mile. In urban areas or where significant development is expected in the foreseeable future, public access should be carefully planned to ensure good signal progression.
4. The desired minimum spacing between median openings is one-eighth mile.

7.2.6 Residential Collector Streets

1. The primary purpose of collector streets is to collect traffic from local streets and distribute it to the arterial street system. Access roads are balanced with through traffic movements without compromising the public health, welfare or safety. It is intended that collector streets achieve 30 mph in urban areas and 35 mph in rural areas.
2. One direct access will be permitted to each individual parcel or to contiguous parcels under the same ownership or control.
3. Additional access may be permitted to a parcel when there will not be any significant safety or operational problems; when spacing meets the safe sight distance; and when additional access would not knowingly cause a hardship to an adjacent property.
4. All turning movements including left turns shall be allowed provided that adequate safety and design standards are met.
5. Minimum spacing between signals shall be that which is necessary for the safe operation and proper design of adjacent accesses.

7.2.7 Local Streets

1. The primary purpose of this classification of roadway is to provide safe and reasonable access to abutting property. Access needs take priority over through traffic movements without compromising the public health, welfare or safety.
2. One direct access will be provided to each individual parcel.
3. Additional access may be permitted to a parcel when there will not be any significant safety or operational problems; when spacing meets the safe sight distance; and when additional access would not knowingly cause a hardship to an adjacent property.

4. All turning movements including left turns shall be allowed provided that adequate safety and design standards are met.

7.2.8 Driveways/Curb Cuts

A driveway or curb cut is an access within a public right-of-way which connects a public road with an abutting property. Driveways serve residential, commercial and industrial land uses.

1. All new driveway accesses shall have a Yuma County permit to use county rights-of-way.
2. Residential driveways are shown on Yuma County Construction Standard 3-230.
 - a. Driveways serving single family units shall be S-1 type. Driveway width shall be as follows:
 - 12 feet minimum
 - 16 feet desirable
 - 30 feet maximum
 - b. Driveways serving multi-family units shall be M-1 type for developments serving more than two dwelling units. M-2 type driveways shall be for developments serving 50 or more dwelling units on major streets.
3. Commercial and industrial driveways are shown on Yuma County Construction Standard 3-240.
 - a. Commercial and industrial driveways accessing minor streets shall be CL-1 and CL-2 types.
 - b. Commercial driveways accessing major streets CH-1 and CH-2 types.
 - c. CL-1 and CL-2 driveways shall be used for sites with less than 10,000 S.F. of development.

- d. Selection of driveway types for sites greater than 10,000 S.F. of building shall be based on a traffic impact study.
4. The minimum length of a driveway should be 16 feet. Driveways accessing major collectors, arterials and area service highways shall provide turn arounds so that vehicles will always exit the driveway in a forward motion.
5. The minimum driveway spacing and driveway type for the indicated land uses is as follows:

<u>Land Use</u>	<u>Street Type</u>	<u>Driveway Type</u>	<u>Minimum Spacing, Feet</u>
Single Family	Minor	S-1	50
Multi Family > 2 Units	Minor	M-1	165
Multi Family > 50 Units	Minor	M-2	330
Commercial	Minor	CL-1	165
	Minor	CL-2	165
	Major	CH-1	330
	Major	CH-2	660
Industrial	Minor	CL-1	165
	Minor	CL-2	165

6. A new access driveway may not be permitted:
- a. Within the limits of a curb return at a street intersection.
- b. Within 50 feet of the intersecting property lines of a residential street.
- c. To a major collector, arterial, or area service highway, within 200 feet of a property line along an intersecting major collector, arterial or area service highway.
- d. Within 200 feet of a median opening unless access is directly opposite of the median opening.

- e. Within 25 feet of a guardrail ending.
 - f. Within 100 feet of a bridge structure.
 - g. Exceptions may be made by the Department of Public Works where application of these standards would create hardship on the abutting property owner.
7. Where obstructions (such as public utility structures, traffic control devices, etc.) occur, a minimum clearance of two feet for residential driveways and four feet for commercial and industrial driveways is required.
 8. Common driveways may be approved by the Department of Public Works, provided that a notarized agreement has been consummated between property owners for joint use of right-of-way.
 9. Every driveway must provide access to an off-street parking area or loading area located on private property.
 10. Drainage requirements for driveways shall be as follows:
 - a. No surface drainage from adjacent property shall be allowed to flow onto county roads.
 - b. For driveways crossing ditch sections, culverts shall be 12 inches in diameter or larger if so required to carry anticipated storm water flows. Culvert sizes shall be approved by the Department of Public Works.
 11. Maintenance of driveway approaches, including drainage culverts, shall be the responsibility of the owner whose property they serve.
 12. If sight distance problems are anticipated at the location of a proposed driveway, then only one driveway that provides the safest access to the public right-of-way shall be permitted.

7.2.9 All Weather Access

1. All weather access to subdivisions, manufactured home parks and recreational vehicle parks shall correspond to standards established in the **Yuma County Floodplain Regulations and Public Works Standards for Yuma County, Volume I** (Section 5.0) and shall include a paved roadway with a minimum 26-foot width.
2. Access within subdivisions, manufactured home parks and recreational vehicle parks shall be so designed so that all lots and structures within a development will be accessible from the boundary of that development by at least one route during the peak flow runoff from a 100-year frequency storm.

7.3 GUIDELINES FOR TRAFFIC STUDIES

1. A traffic impact study shall be required for rezoning applications or major developments that will contain:
 - a. 10,000 gross square feet or more of commercial or industrial useable space.
 - b. 50 or more dwelling units of residential, mobile home or trailer park uses or 50 or more hotel rooms.
 - c. A traffic study may be required for smaller developments or for any deviation from the county access control standards.
2. Depending on the particular proposal, the Department of Public Works may:
 - a. not require any traffic investigation.
 - b. require a small site traffic analysis in which certain aspects of a particular proposal are to be investigated.
 - c. require a complete traffic analysis, as outlined herein.

- 4/2
3. The Department of Public Works shall consider the following aspects of a proposal when deciding the level of traffic investigation outlined above:
 - a. The current street system in the vicinity of the site.
 - b. The interface between the on-site street system and the adjacent street system.
 - c. The location of the site within the County.
 - d. The intensity and character of the development.
 - e. A preliminary estimate of the daily traffic.
 4. For a small site traffic analysis; the traffic analysis shall include a site review, traffic generation, an analysis of access points, and the need for street improvements or driveway access control.
 5. A complete traffic impact study should address the following elements:
 - a. Current and design year traffic. A twenty-year horizon design year is generally acceptable, unless otherwise approved by the Department of Public Works.
 - b. Non-site traffic in the vicinity of the proposed site.
 - c. Site generated traffic as prescribed in the most recent publication of the ITE Trip Generation Manual.
 - d. Trip distribution and traffic assignment.
 - e. Design, operation and circulation element for the planned street system, access points, and driveway types.
 - f. Level of service analyses as prescribed in the Highway Capacity Manual, Special Report 209, Transportation Research Board, Washington, D.C. 1985.

- g. Warrant analyses for signalized traffic control of intersections as contained in the Manual on Uniform Traffic Control Devices.
6. The complete traffic impact study report shall contain the following information:
- a. A vicinity map revealing the location of the site relative to the Yuma County transportation system.
 - b. A summary table listing legend code, land use, unit number, daily trip rate, morning peak hourly trip rate, evening peak hourly trip rate, and trip generation.
 - c. A site plan revealing the location of each building according to the legend code listed in the summary table.
 - d. Trip distribution percentages.
 - e. Traffic volume graphics that depict the A.M. peak hour, the P.M. peak hour, and the day for site traffic, non-site traffic, and total traffic conditions for impacted intersections. This information shall be provided for both the current year and the design year.
 - f. Level of service tables that reveal the operation of impacted intersections during the peak hours and the peak period adjusted peak hour for non-site traffic and total traffic conditions. This information shall be provided for both the current year and the design year.
 - g. Sample calculations or sample computer output that reveal the methodologies utilized to determine levels of service.
 - h. Calculations that reveal the signalization and stop sign traffic control warrant analyses and results.
 - i. Intersection and driveway schematics that reveal existing and proposed lane configurations and existing and proposed intersection control. This information shall be provided for both the current year and the design year.

7. Traffic studies shall be prepared under the supervision of a licensed professional engineer.
8. The county will obtain the traffic study and the developer(s) shall pay all costs for the traffic study.



8.0 YUMA COUNTY CONSTRUCTION STANDARDS

**Construction Standards on the Following Pages
are Grouped into the Following Categories:**

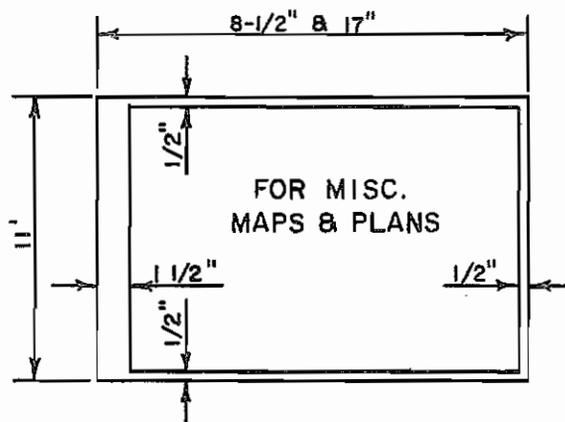
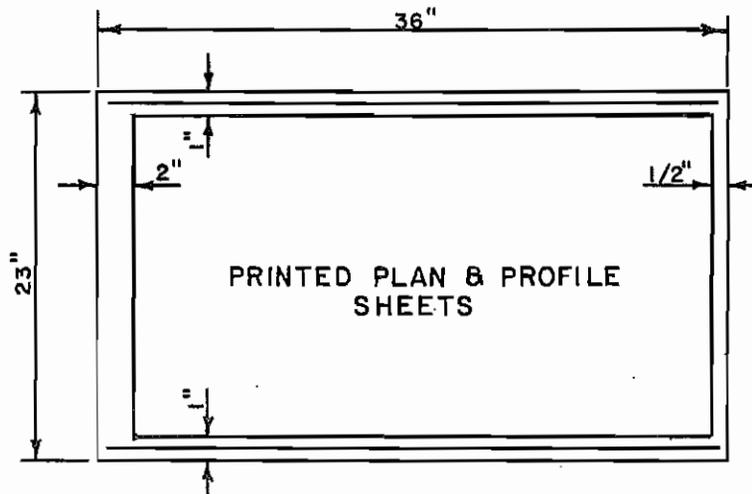
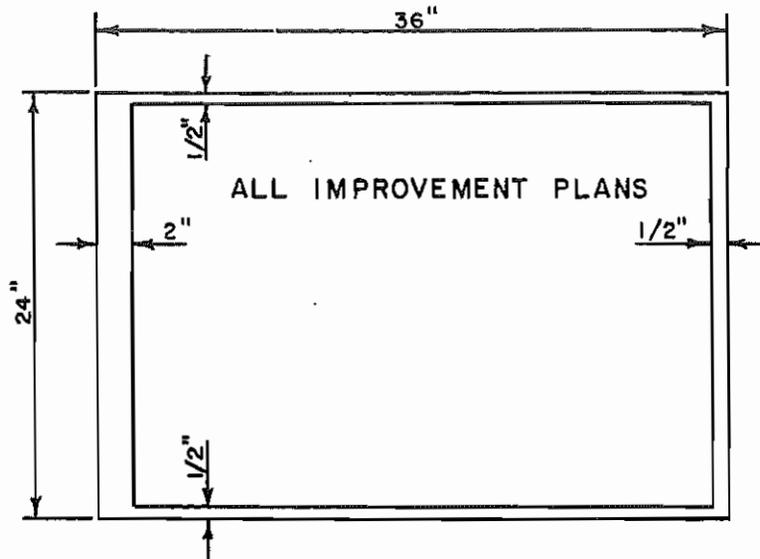
1-000 INTRODUCTION

2-000 ROADWAY CLASSIFICATION

3-000 ENGINEERING DESIGN STANDARDS

4-000 MONUMENTATION

5-000 DRAINAGE AND UTILITIES



DRAWING SHEETS FOR EACH SET OF PROJECT PLANS TO BE CONSECUTIVELY NUMBERED.

PROJECT NAME, DATE (MONTH-DAY-YEAR), SHEET TITLE AND SCALE ARE TO BE ON THE RIGHT HAND SIDE OF EACH SHEET.

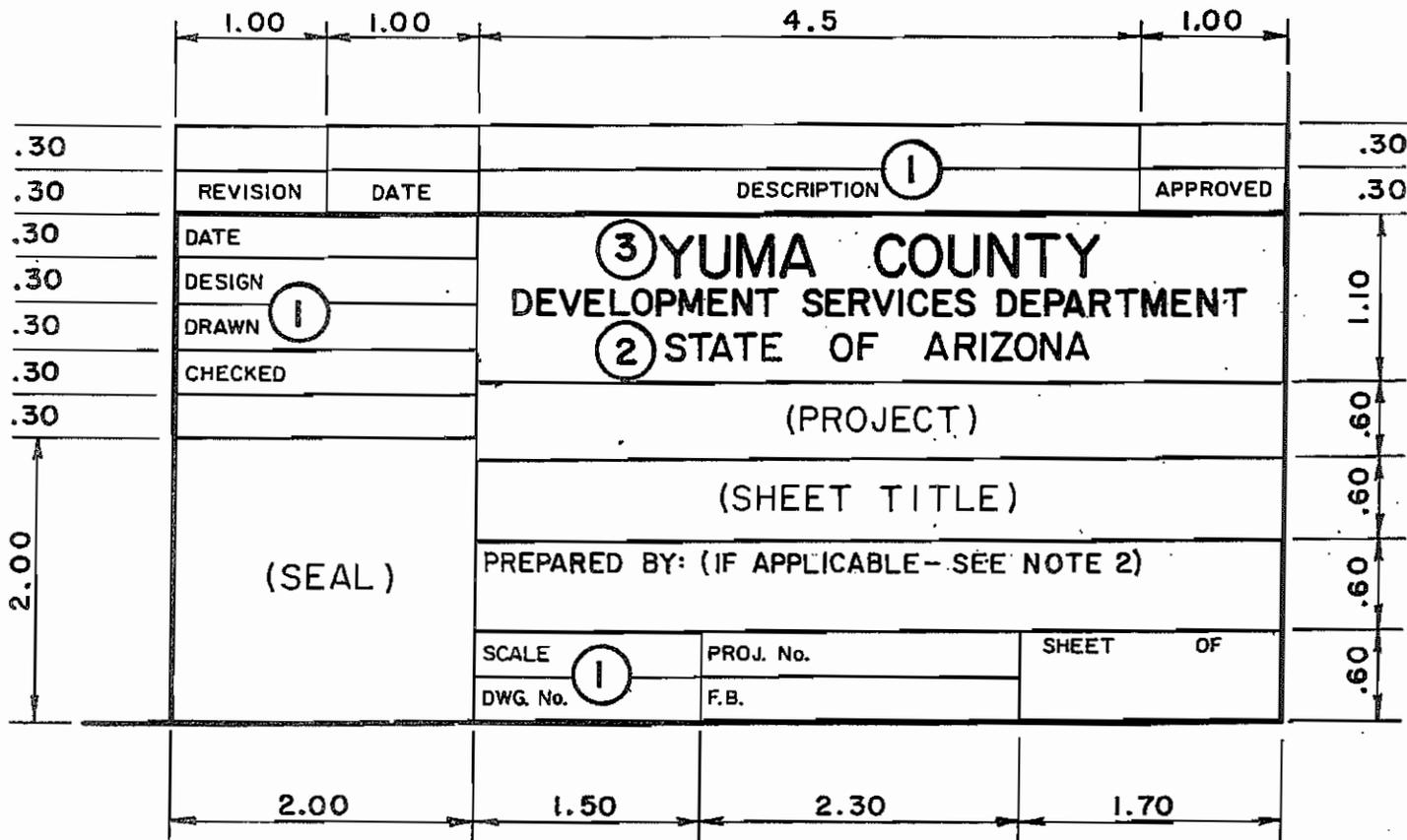
THE DIRECTION NORTH IS TO BE EITHER TO THE TOP OR TO THE RIGHT OF EACH SHEET. EXCEPT ON PLAN AND PROFILE SHEET.

THE COVER SHEET (FIRST SHEET) OF A SET OF PLANS IS TO HAVE A LOCATION AND VICINITY MAP.

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N^o... 1-010
STANDARD TRACING SIZES

APPROVED BY *P. B. Fortney* 5/88
 DIRECTOR OF PUBLIC WORKS



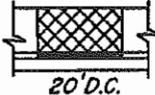
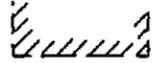
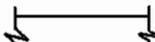
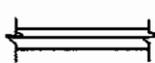
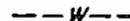
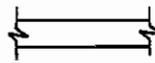
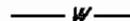
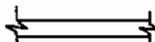
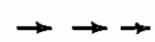
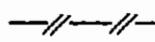
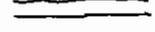
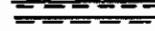
LETTERING GUIDE

- ① HT: .10" PEN WIDTH: .013"
- ② HT: .20" PEN WIDTH: .026"
- ③ HT: .29" PEN WIDTH: .043"

NOTE 1. DIMENSIONS SHOWN ARE IN DECIMAL INCHES.
DRAWING NOT TO SCALE.

NOTE 2. IF CONSULTANT IS PREPARING DRAWINGS, THIS IS THE ONLY PLACE WHERE HIS COMPANY NAME AND ADDRESS IS TO BE PLACED.

REVISED	7/94
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD No. 1-020 STANDARD TITLE BLOCK	
APPROVED BY <u>U. B. Fentress</u> 5/88 DIRECTOR OF PUBLIC WORKS	

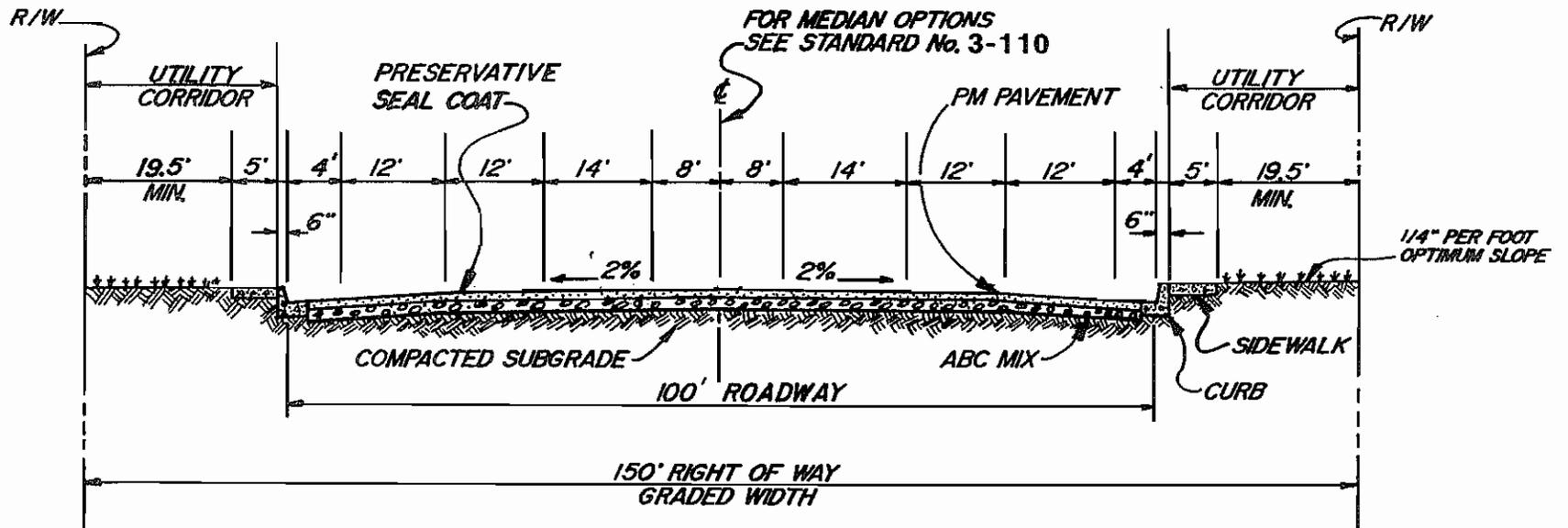
	Driveway Entrance with Depressed Curb 20'D.C.		Exist. Gas Line
	Exist. Structure		Pole Anchor
	Exist. Asphalt Pavement		Exist. Power Pole
	New Asphalt Pvmt. as noted <i>Shaded</i>		New Power Pole
	Exist. Const. to be removed		Exist. Telephone Pole
	New P.C. Conc. Walk as noted		New Telephone Pole
	New Vertical Type Curb & Gutter as Noted (V.T.C. & G.)		Exist. Water Line
	New Roll Type Curb & Gutter as Noted (R.T.C. & G.)		New Water Line
	New P.C. Conc. Valley Gutter		Exist. Fire Hydrant (F.H.)
	New Asph. Valley Gutter		New Fire Hydrant
	Gutter Catch Basin		Exist. Valve
	Flush Catch Basin		Exist. Valve to be brought to grade
	Property Line (R)		New Valve & Valve Box
	Center Line (C)		New Thrust Block
	Wood Fence		New Water Meter Box
	Wire Fence as Noted		Exist. Water Meter Box (W.M.)
	Chain Link Fence		Exist. W.M. Box to be relocated
	New Ditch as Noted		Exist. Traffic Sign
	Exist. Ditch as Noted		New Traffic Sign
	New Conc. Pipe as Noted		Exist. Street Sign
	New Conc. Pipe to be Encased		New Street Sign
	Exist. Conc. Pipe to be Encased		Exist. Street Light
	Exist. Irrigation Pipe		New Street Light
	New Irrigation Pipe		Barricade
	Exist. Stand Pipe		Guard Rail and Breakaway Cable Terminal
	New Stand Pipe		Rock Riprap
	Exist. Irrigation or Drainage Junction Box		Exist. Tree or Shrubs
	New Irrigation or Drainage Junction Box		Tree to be removed
	Exist. Sewer Pipe		Hedge (as Noted)
	New Sewer Pipe		Exist. Moll Box
	Exist. Manhole as Noted		Moll Box to be re-set
	Exist. Manhole to be brought to grade		
	New Manhole		
	Exist. Monument & Cover		
	Install Monument & Cover No. 4-040 OR 4-050		
	Exist. Monument Cover to be brought to grade		
	New Survey Monument No. 4-030		
	New Survey Manument No. 4-080		
	Bench Mark		

REVISED

COUNTY OF YUMA

CONSTRUCTION STANDARDS
STANDARD N^o ... 1-030;
STANDARD SYMBOLS

APPROVED BY G. B. Fortney 5/88
DIRECTOR OF PUBLIC WORKS



AREA SERVICE HIGHWAY

STRUCTURAL DESIGN OF COMBINED THICKNESS OF BASE AND SURFACE TO BE DETERMINED BY SOIL TEST, SEE SECTION 3.2 PUBLIC WORKS STANDARDS.

MINIMUM PAVING THICKNESS-3" FOR PLANT MIXED SURFACING.

SIDEWALK LOCATION - ADJACENT TO CURB OR AS AGREED BY PUBLIC WORKS.

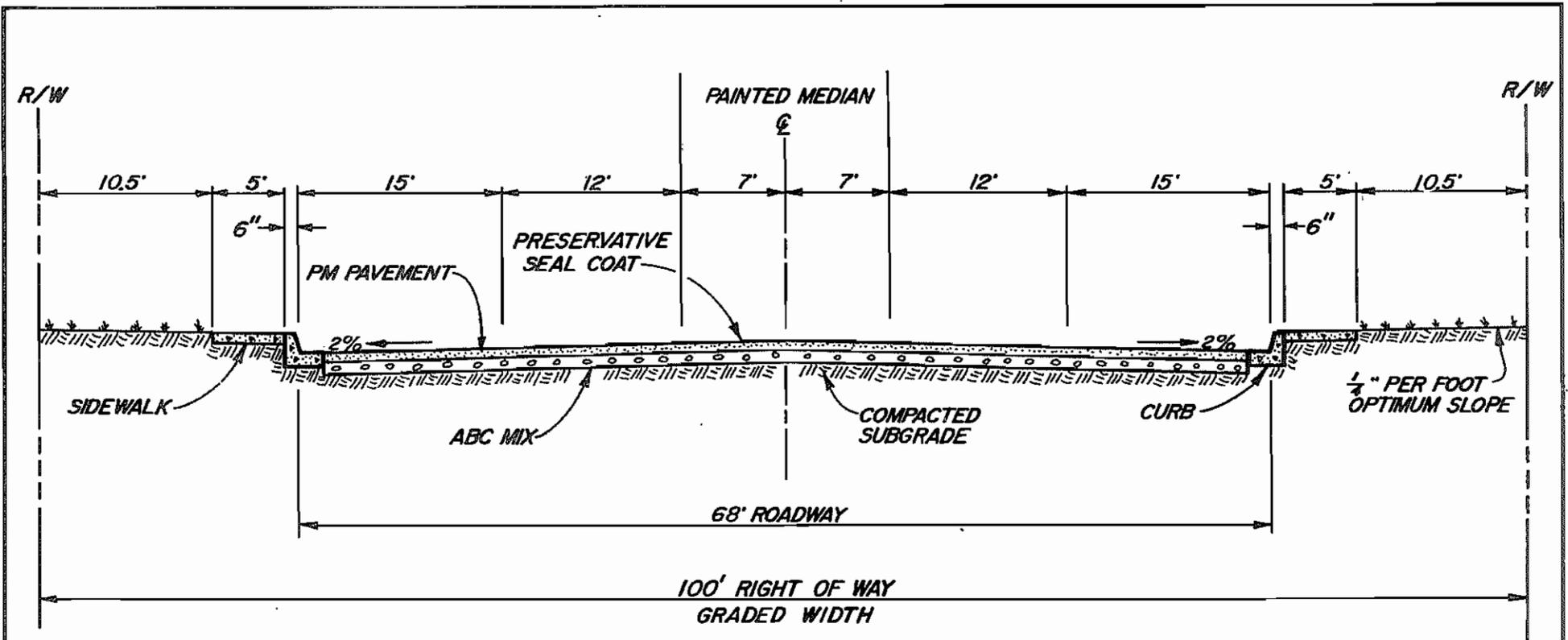
UTILITY LOCATIONS SHOWN IN STANDARD No. 5-160

SEAL COAT REQUIRED.

REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 2-010

AREA SERVICE HIGHWAY
APPROVED BY *D. B. Foster* 5/88
DIRECTOR OF PUBLIC WORKS



STRUCTURAL DESIGN OF COMBINED THICKNESS OF BASE AND SURFACE TO BE DETERMINED BY SOIL TEST. SEE SECTION 3.2 PUBLIC WORKS STANDARDS.

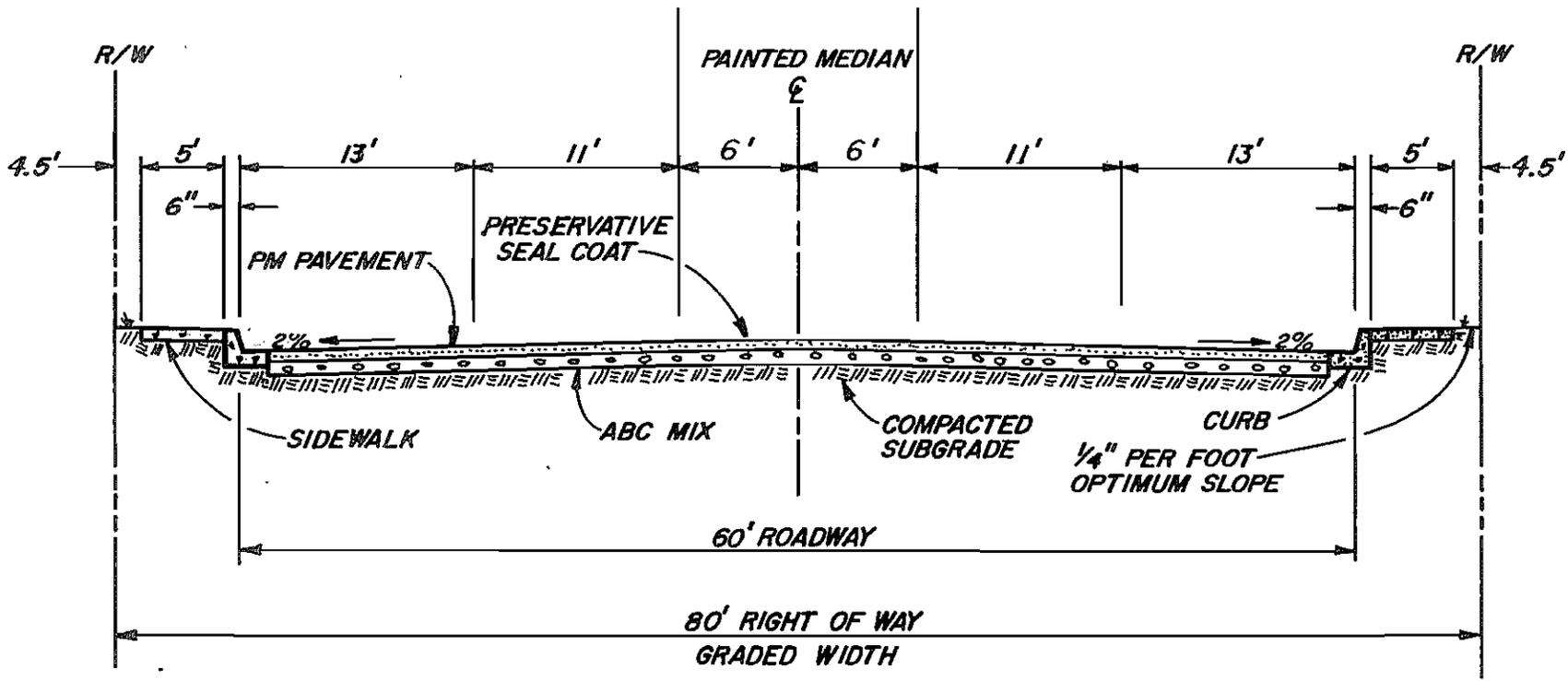
MINIMUM PAVING THICKNESS - 3" FOR PLANT MIXED SURFACING.

SIDEWALK LOCATION ADJACENT TO CURB OR AS AGREED BY PUBLIC WORKS.

SEAL COAT REQUIRED

ADDITIONAL PAVEMENT REQUIRED FOR BIKE LANES.

REVISED
COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 2-020
ARTERIAL STREET
APPROVED BY <i>U. B. Fritzel</i> 5/88
DIRECTOR OF PUBLIC WORKS



STRUCTURAL DESIGN OF COMBINED THICKNESS OF BASE AND SURFACE TO BE DETERMINED BY SOIL TEST. SEE SECTION 3.2 PUBLIC WORKS STANDARDS.

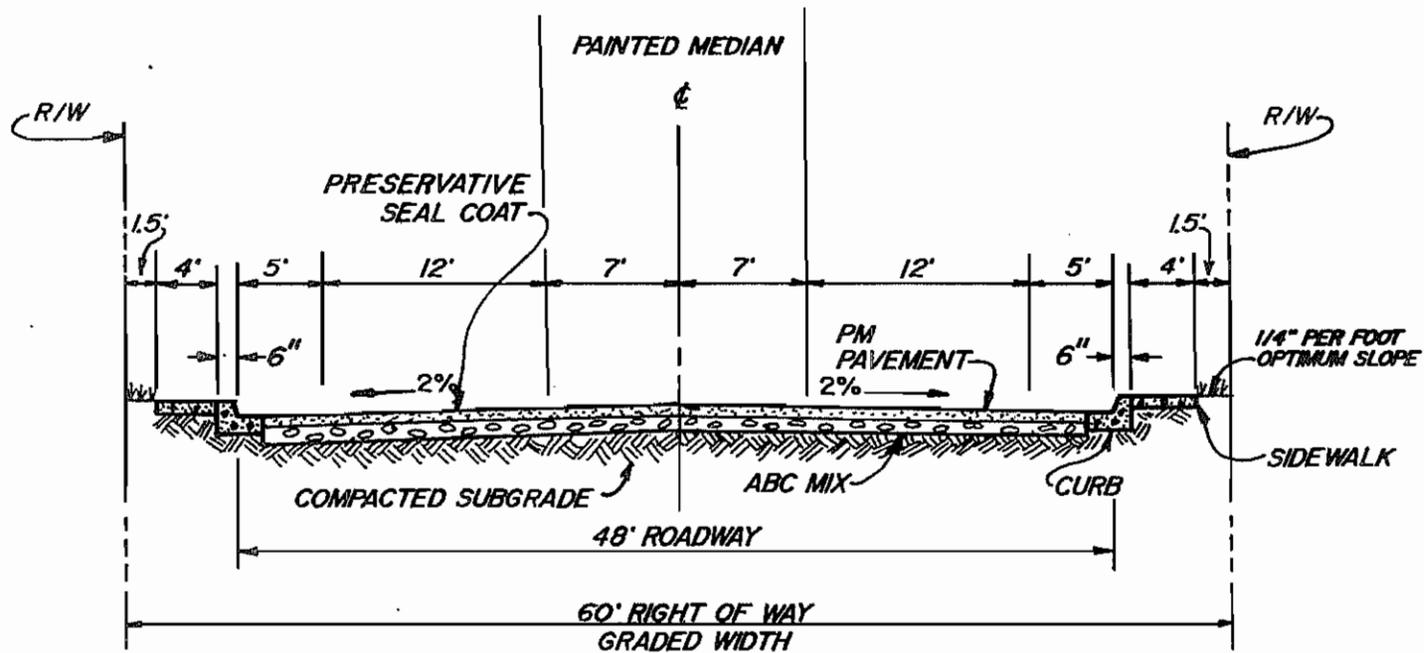
MINIMUM PAVING THICKNESS - 3" FOR PLANT MIXED SURFACING.

SIDEWALK LOCATION ADJACENT TO CURB OR AS AGREED BY PUBLIC WORKS.

SEAL COAT REQUIRED

ADDITIONAL PAVEMENT REQUIRED FOR BIKE LANES.

REVISED
COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 2-030
MAJOR COLLECTOR STREET
APPROVED BY <i>L. B. Fintley</i> 5/88
DIRECTOR OF PUBLIC WORKS



RESIDENTIAL COLLECTOR STREET

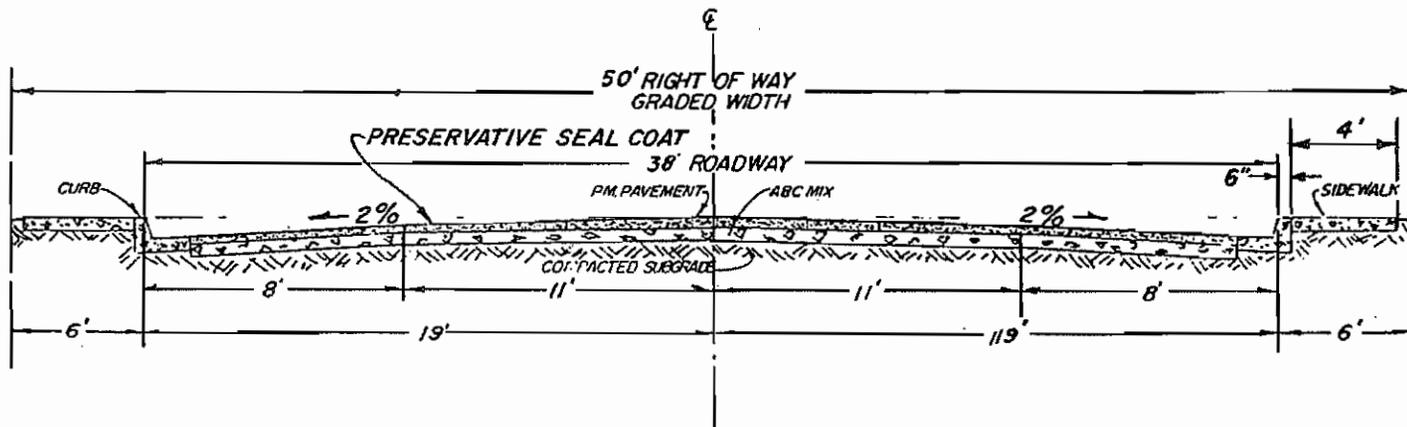
STRUCTURAL DESIGN OF COMBINED THICKNESS OF BASE AND SURFACE TO BE DETERMINED BY SOIL TEST. SEE SECTION 3.2 PUBLIC WORKS STANDARDS.

MINIMUM PAVING THICKNESS - 2" FOR PLANT MIXED SURFACING.

SIDEWALK LOCATION ADJACENT TO CURB OR AS AGREED BY PUBLIC WORKS

SEAL COAT REQUIRED.

REVISED
COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 2-040
RESIDENTIAL COLLECTOR STREET
APPROVED BY <i>D. B. Fortney</i> 5/88
DIRECTOR OF PUBLIC WORKS



RESIDENTIAL STREET

STRUCTURAL DESIGN OF COMBINED THICKNESS
OF BASE AND SURFACE TO BE DETERMINED BY
SOIL TEST: SEE SECTION 3.2 PUBLIC WORKS STANDARDS.

MINIMUM PAVING THICKNESS = 2" FOR PLANT MIXED
SURFACING.

SIDEWALK LOCATION - ADJACENT TO CURB OR AS
AGREED BY PUBLIC WORKS.

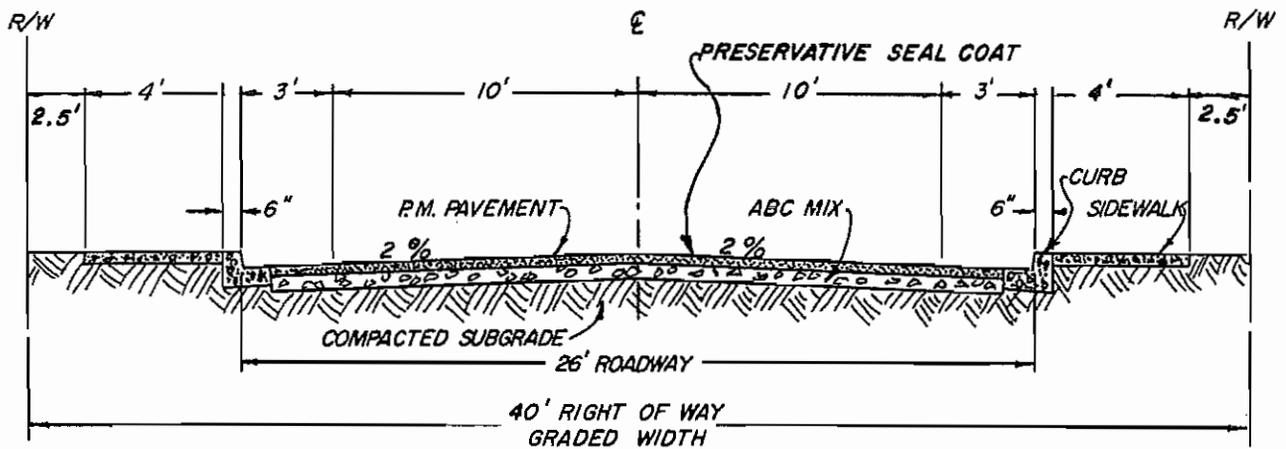
SEAL COAT REQUIRED

REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD N^o ... 2-050

LOCAL RESIDENTIAL STREETS

APPROVED BY D.B. Fortney 5/88
DIRECTOR OF PUBLIC WORKS



RESTRICTED PARKING

STRUCTURAL DESIGN OF COMBINED THICKNESS OF BASE AND SURFACE TO BE DETERMINED BY SOIL TEST.

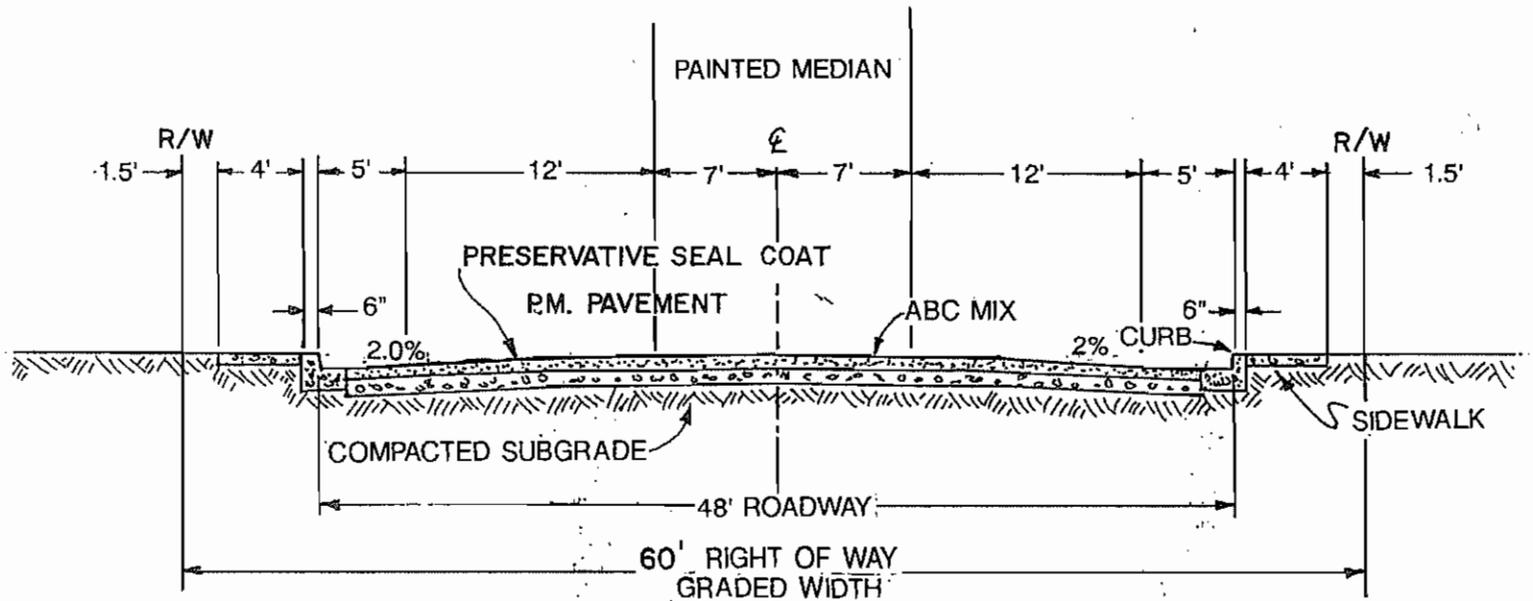
MINIMUM PAVING THICKNESS - 2" FOR PLANT MIXED SURFACING.

SIDEWALK LOCATION - ADJACENT TO CURB, OR AS AGREED BY PUBLIC WORKS.

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD № ... 2-060
RESTRICTED LOCAL STREET

APPROVED BY *D. B. Fortney* 5/88
 DIRECTOR OF PUBLIC WORKS



STRUCTURAL DESIGN OF COMBINED THICKNESS OF BASE AND SURFACE TO BE DETERMINED BY SOIL TEST. SEE SECTION 3.2 PUBLIC WORKS STANDARDS.

MINIMUM PAVING THICKNESS - 2" FOR PLANT MIXED SURFACING.

SIDEWALK LOCATION - ADJACENT TO CURB, OR AS AGREED BY PUBLIC WORKS

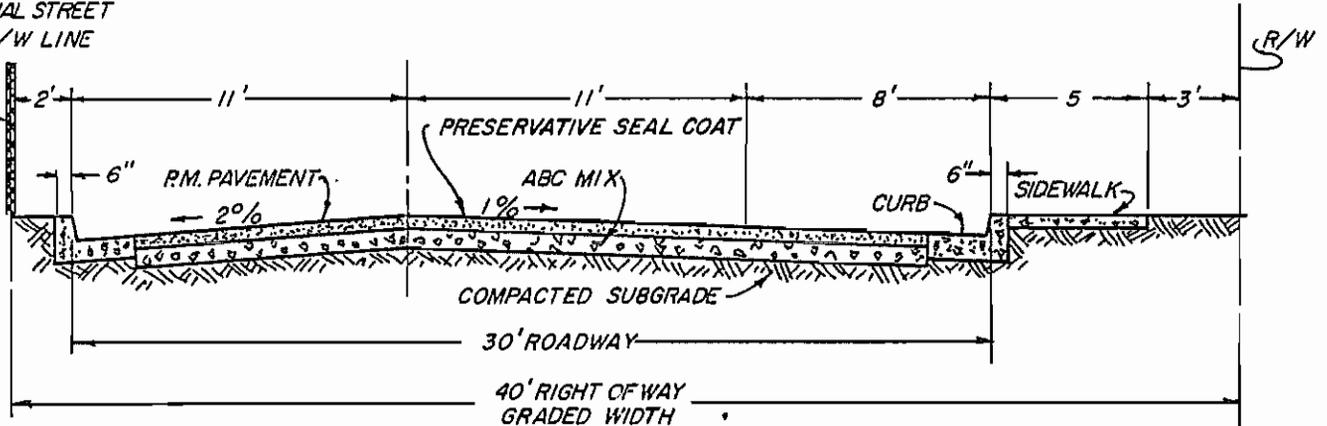
REVISED

7/94

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD № 2-070
 LOCAL COMMERCIAL, & LOCAL
 INDUSTRIAL STREETS

APPROVED BY *W. B. Fintley* 5/88
 DIRECTOR OF PUBLIC WORKS

5' HIGH CHAIN
LINK FENCE ON
ARTERIAL STREET
R/W LINE



NORMAL PARKING
ONE SIDE

STRUCTURAL DESIGN OF COMBINED THICKNESS
OF BASE AND SURFACE TO BE DETERMINED BY
SOIL TEST. SEE SECTION 3.2 PUBLIC WORKS STANDARDS.

MINIMUM PAVING THICKNESS - 2" FOR PLANT
MIXED SURFACING.

SIDEWALK LOCATION - ADJACENT TO CURB, OR
AS AGREED BY PUBLIC WORKS.

REVISED

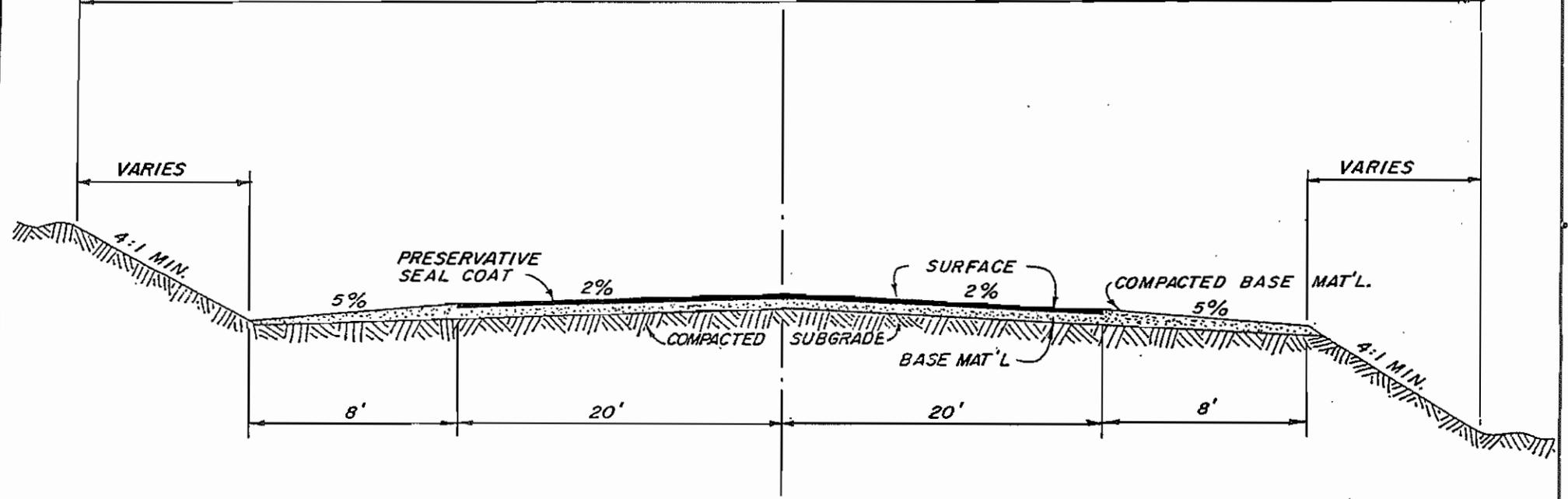
COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD N^o ... 2-080
FRONTAGE STREET

APPROVED BY D. B. Fentress 5/88
DIRECTOR OF PUBLIC WORKS

INTERSTATE
R/W

COUNTY
R/W

60' RIGHT-OF-WAY. MIN.

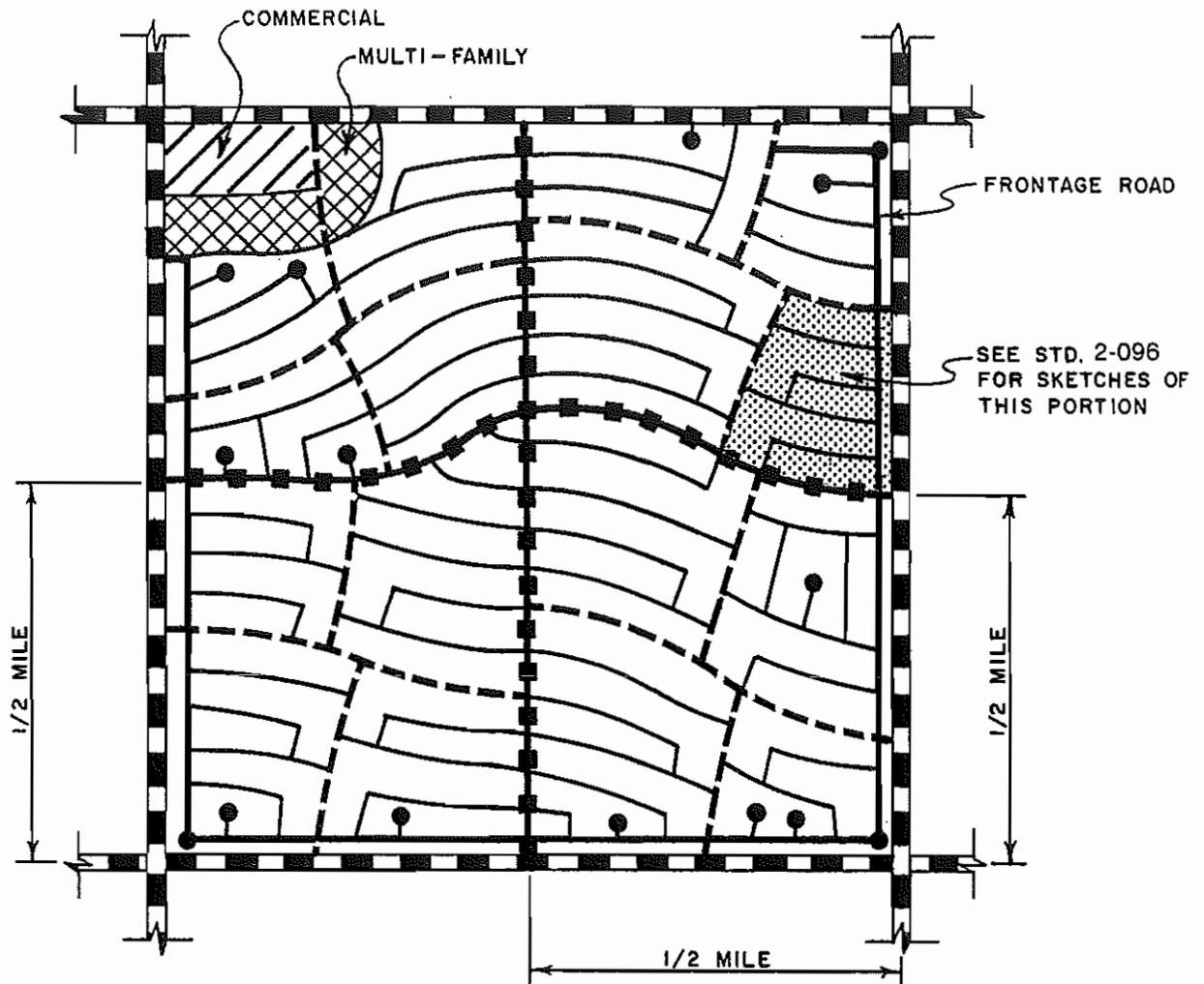


STRUCTURAL DESIGN OF COMBINED THICKNESS OF
BASE AND SURFACE TO BE DETERMINED BY SOIL TEST
SEE SECTION 3.2 PUBLIC WORKS STANDARDS.

MINIMUM PAVING THICKNESS 3" PLANT MIXED SURFACING

SEAL COAT REQUIRED

REVISED	7/94
COUNTY OF YUMA	
CONSTRUCTION STANDARDS	
STANDARD N° 2-090	
INTERSTATE FRONTAGE ROAD	
APPROVED BY <i>O.B. Furtney</i>	5/88
DIRECTOR OF PUBLIC WORKS	



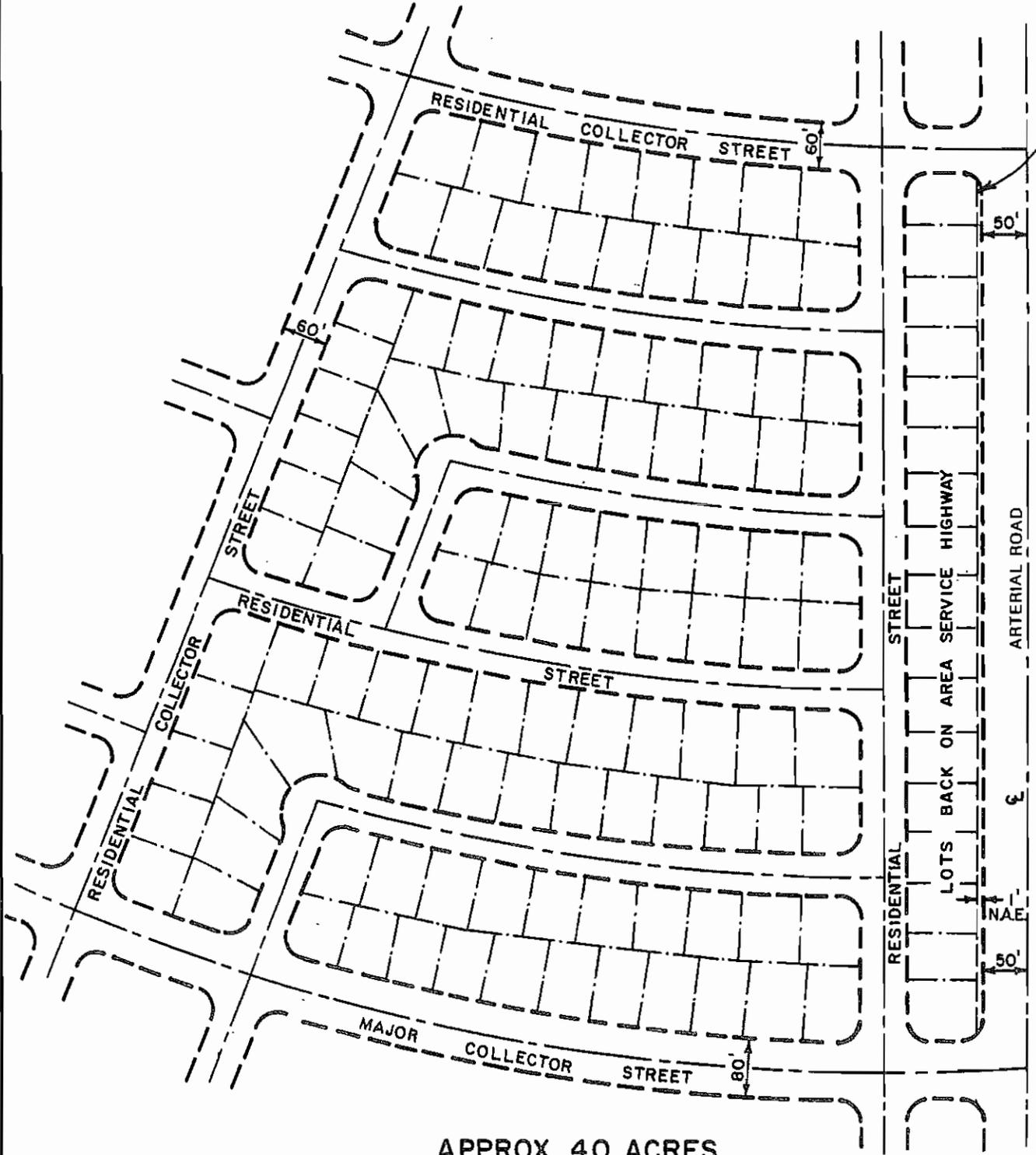
1 SQUARE MILE

- 
 AREA SERVICE HIGHWAYS REQUIRE A MINIMUM 150-FOOT RIGHT-OF-WAY. IMPROVEMENTS ARE TO BE AS PER CONSTRUCTION STANDARD NO. 2-010
- 
 SECTION LINE ROADS OTHER THAN AREA SERVICE HIGHWAYS, REQUIRE 100-FOOT WIDE MINIMUM RIGHT-OF-WAY AND ARE CLASSIFIED AS ARTERIALS. IMPROVEMENTS ARE TO BE AS PER CONSTRUCTION STANDARD NO. 2-020
- 
 MID-SECTION LINE ROADS REQUIRE 80-FOOT WIDE MINIMUM RIGHT-OF-WAY AND ARE CLASSIFIED AS HIGH VOLUME COLLECTORS (MAJOR COLLECTOR TYPE ROAD). IMPROVEMENTS ARE TO BE AS PER CONSTRUCTION STANDARD NO. 2-030
- 
 QUARTER-MILE LINE ROADS REQUIRE 60-FOOT WIDE MINIMUM RIGHT-OF-WAY AND ARE CLASSIFIED AS RESIDENTIAL COLLECTOR STREETS WITH EXACT LOCATIONS BEING DETERMINED BY THE HIGHWAY DEPARTMENT AS EACH PROJECT IS SUBMITTED. IMPROVEMENTS ARE TO BE AS PER CONSTRUCTION STANDARD NO. 2-040

LOCATION OF THE AREA SERVICE HIGHWAYS ARE AS SHOWN IN THE "MASTER PLAN FOR YUMA COUNTY ROADS"

REVISED
COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD N ^o ... 2-095
CLASSIFICATION SYSTEM (FUNCTIONAL)
& SCHEMATIC STREET LAYOUT
APPROVED BY <i>R. B. Zentgraf</i> 5/88
DIRECTOR OF PUBLIC WORKS

PROTECTIVE FENCE AND 1 FOOT NON-ACCESS EASEMENT (N.A.E.) PROTECT ADJACENT LOTS FROM STREET NOISE DUST AND PRESERVE THE TRAFFIC FUNCTION OF THE ARTERIAL ROUTE.



APPROX. 40 ACRES

LOTS BACKING ON
AREA SERVICE HIGHWAY
OR ARTERIAL ROAD

REVISED

COUNTY OF YUMA

CONSTRUCTION STANDARDS

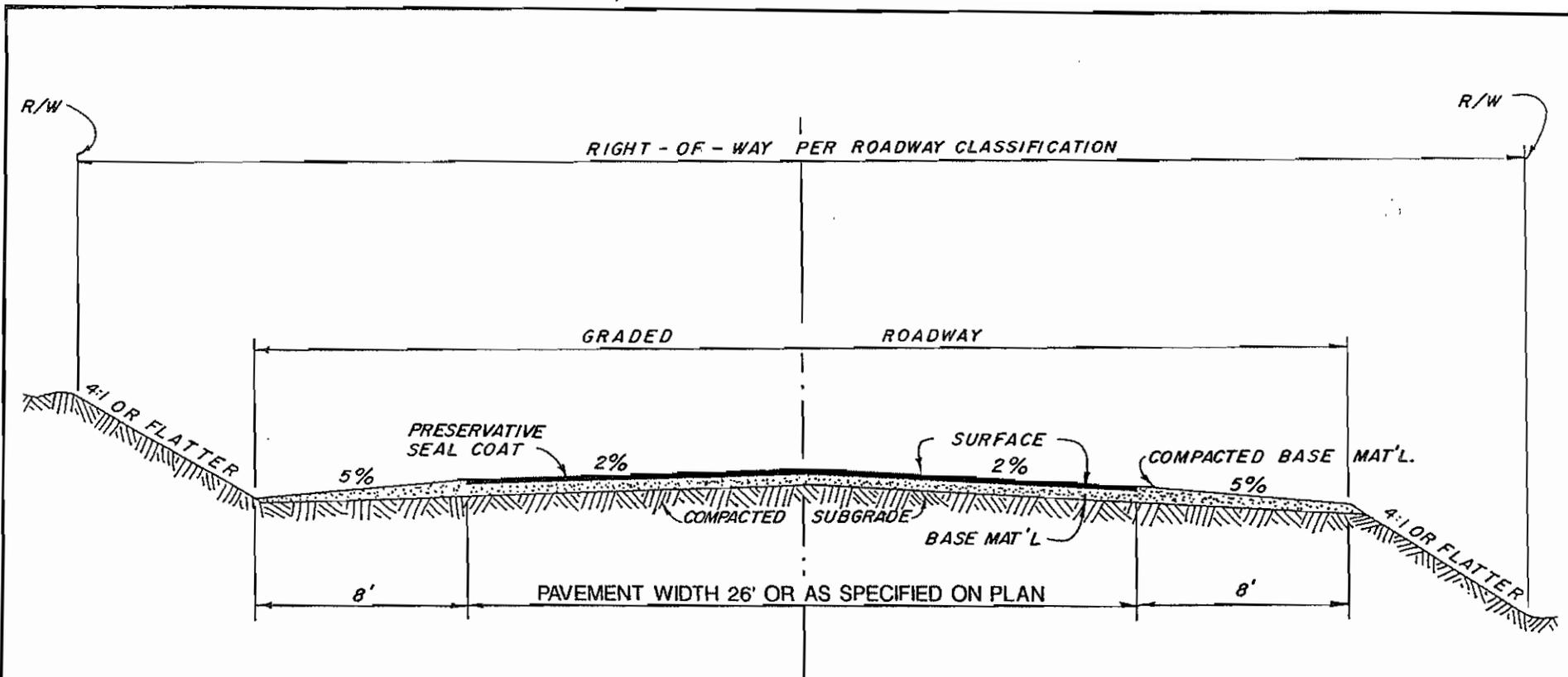
STANDARD N^o... 2-096

**SCHEMATIC STREET LAYOUT
REQUIREMENTS**

APPROVED BY *W.B. Fortney*

5/88

DIRECTOR OF PUBLIC WORKS



STRUCTURAL DESIGN OF COMBINED THICKNESS OF
BASE AND SURFACE TO BE DETERMINED BY SOIL TEST
SEE SECTION 3.2 PUBLIC WORKS STANDARDS.

MINIMUM PAVING THICKNESS 3" FOR ROAD MIXED
SURFACING AND 2" FOR PLANT MIXED SURFACING

SEAL COAT REQUIRED

ROAD MIXED SURFACING CLASS "B" SEAL COAT OR MAG EQUAL
PLANT MIXED SURFACING CLASS "C" SEAL COAT OR MAG EQUAL

REVISED

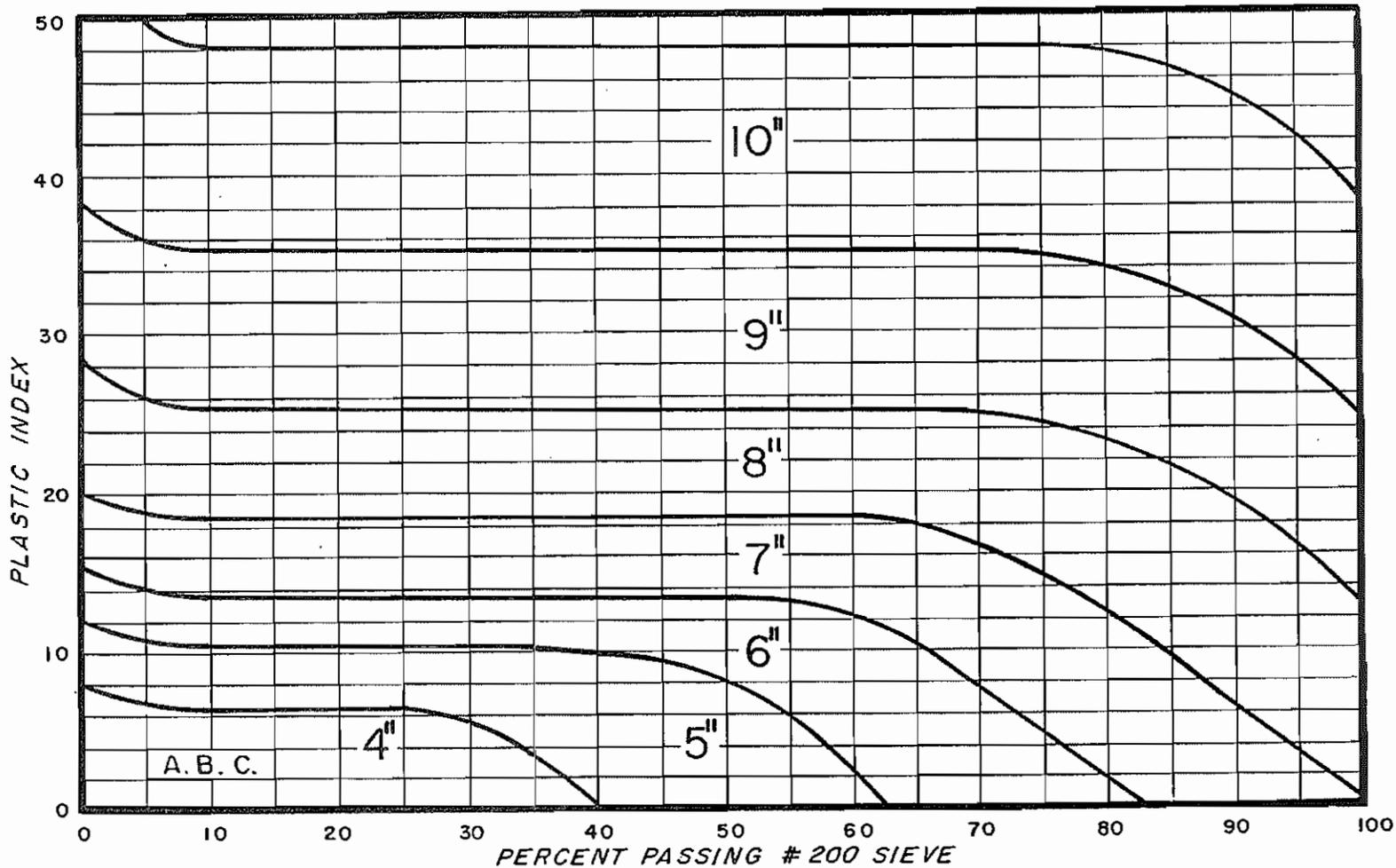
COUNTY OF YUMA

CONSTRUCTION STANDARDS

STANDARD N^o ... 2-100

TYPICAL RURAL PAVED ROAD SECTION

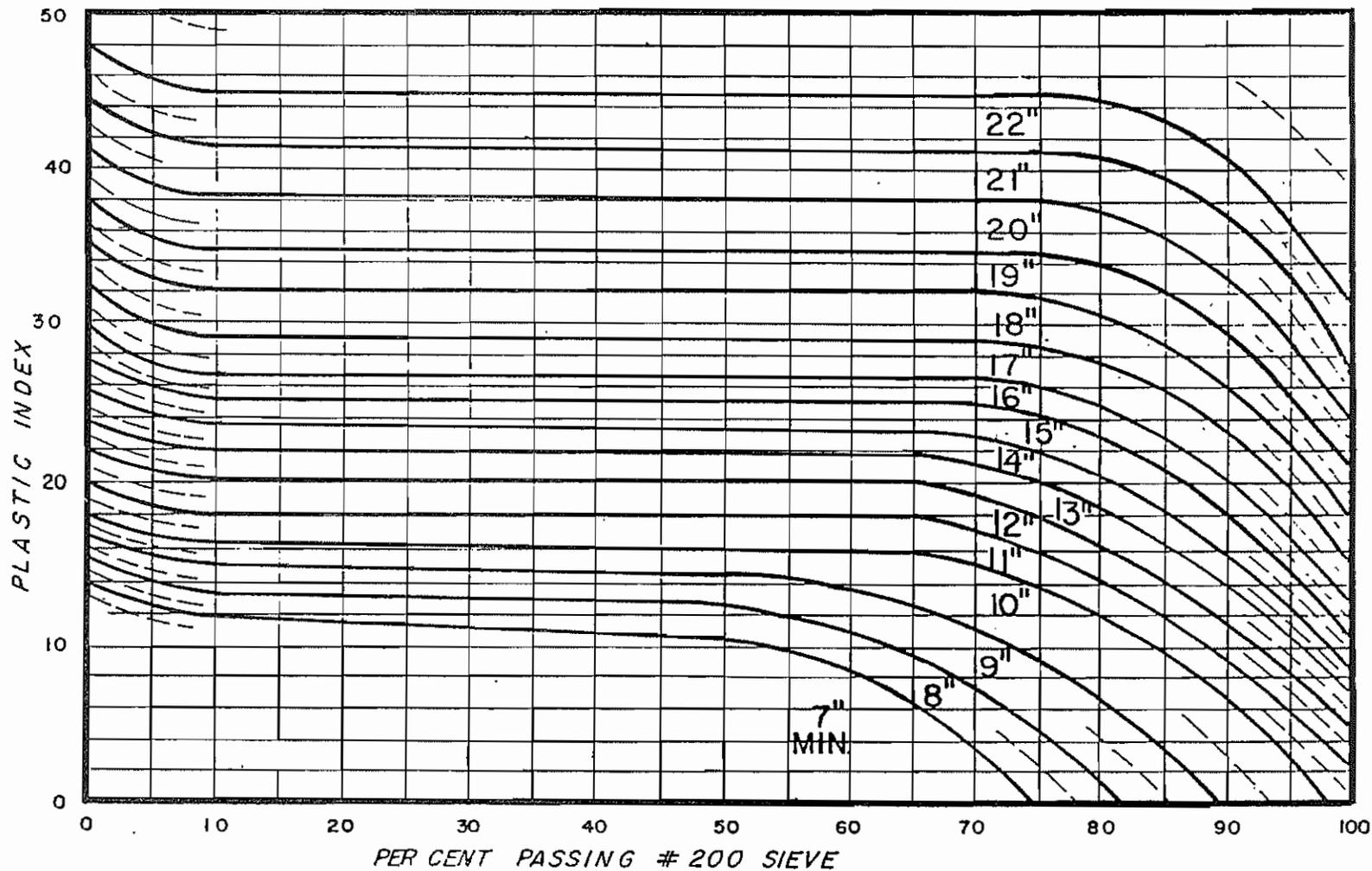
APPROVED BY U. B. Jolley 5/88
DIRECTOR OF PUBLIC WORKS



DEPTH OF FLEXIBLE BASE COURSE
 REQUIRED UNDER 2" (MIN.) BIT. SURF
 FOR RESIDENTIAL STS.

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD No. 3-010
 DEPTH OF FLEXIBLE BASE COURSE FOR
 LOCAL RESIDENTIAL, RESTRICTED &
 FRONTAGE STS.
 APPROVED BY *D.B. Fritzel* 5/88
 DIRECTOR OF PUBLIC WORKS



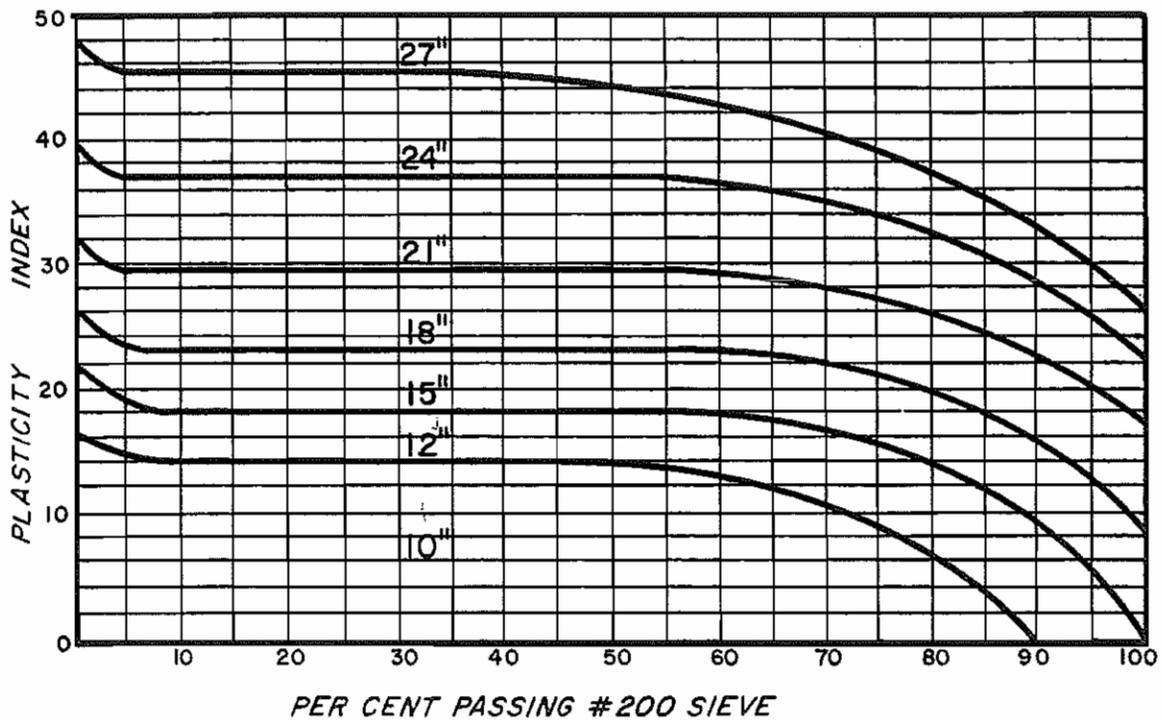
NOTE:

DEPTH OF FLEXIBLE BASE COURSE
 REQUIRED UNDER 2" (MIN.) ASPHALT CONCRETE
 TOP 4" OF BASE SHALL BE A.B.C.
 BALANCE SHALL BE A.B.C. OR SELECT MATERIAL.

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N^o ... 3-020
 DEPTH OF FLEXIBLE BASE COURSE
 FOR COMMERCIAL, INDUSTRIAL &
 RESIDENTIAL COLLECTOR STREETS.

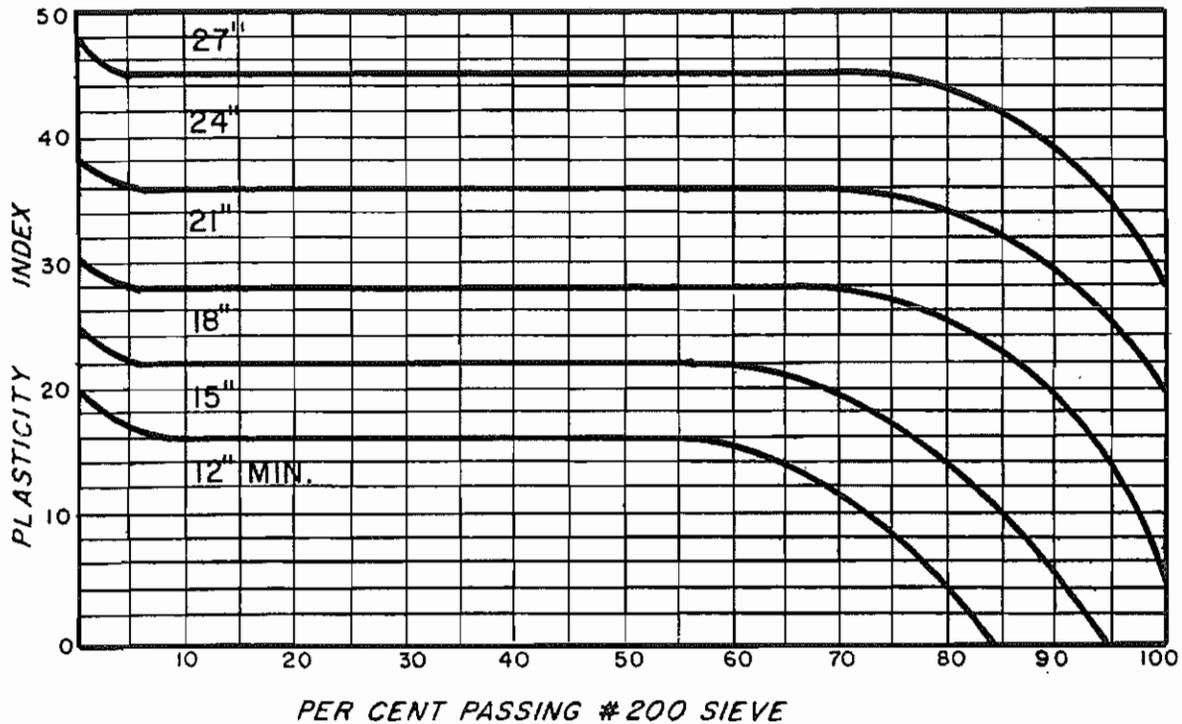
APPROVED BY D. B. Fortney 5/88
 DIRECTOR OF PUBLIC WORKS



NOTE:
 TOP 6" OF BASE SHALL BE A.B.C.
 BALANCE SHALL BE A.B.C. OR SELECT MATERIAL.
 MINIMUM-DEPTH OF FLEXIBLE BASE COURSE
 REQUIRED UNDER 2"(MIN.) ASPHALT CONCRETE.

REVISED

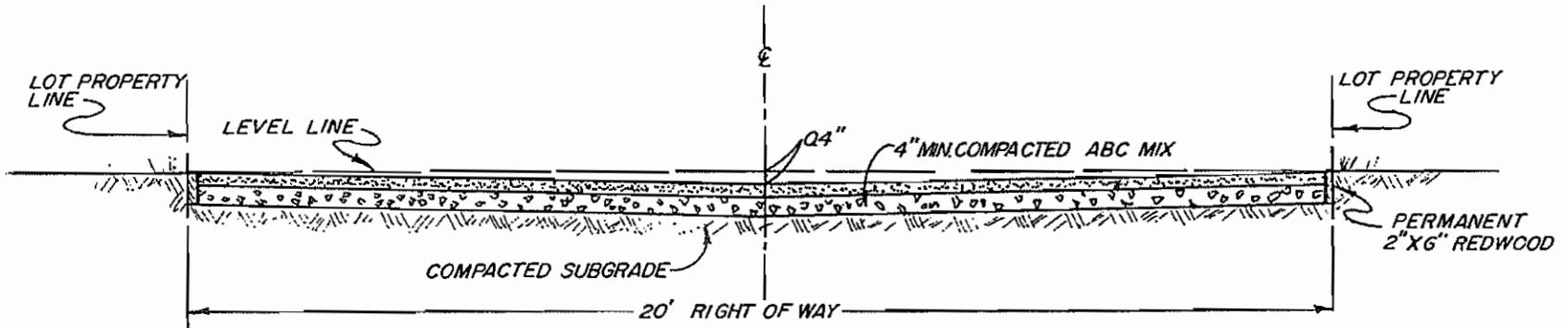
COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N^o... 3-025
 DEPTH OF FLEXIBLE BASE COURSE
 FOR MAJOR COLLECTOR STREETS
 APPROVED BY H. B. Fintley 5/88
 DIRECTOR OF PUBLIC WORKS



NOTE:
 DEPTH OF FLEXIBLE BASE COURSE REQUIRED UNDER 3"
 (MIN.) ASPHALT CONCRETE.
 TOP 6" OF BASE SHALL BE A.B.C.
 BALANCE SHALL BE A.B.C. OR SELECT.

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N^o ... 3-026
 DEPTH OF FLEXIBLE BASE COURSE FOR
 ARTERIALS, AREA SERVICE HIGHWAY
 AND INTERSTATE FRONTAGE ROADS
 APPROVED BY *P. B. Fother* 5/88
 DIRECTOR OF PUBLIC WORKS



STRUCTURAL DESIGN OF COMBINED THICKNESS OF
 BASE AND SURFACE TO BE DETERMINED BY SOIL TEST.
 SEE SECTION 3.2 PUBLIC WORKS STANDARDS.

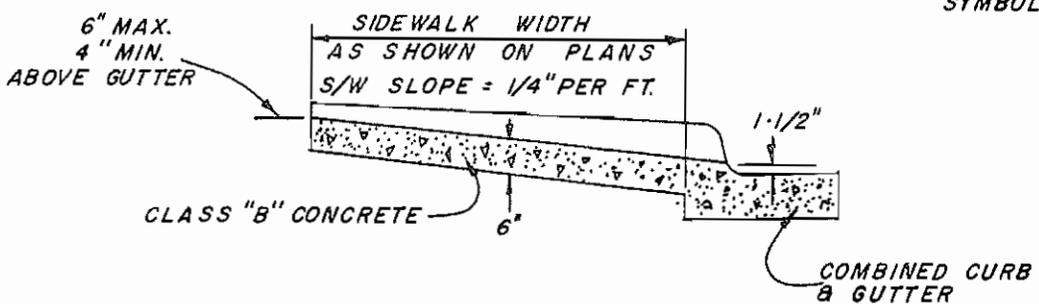
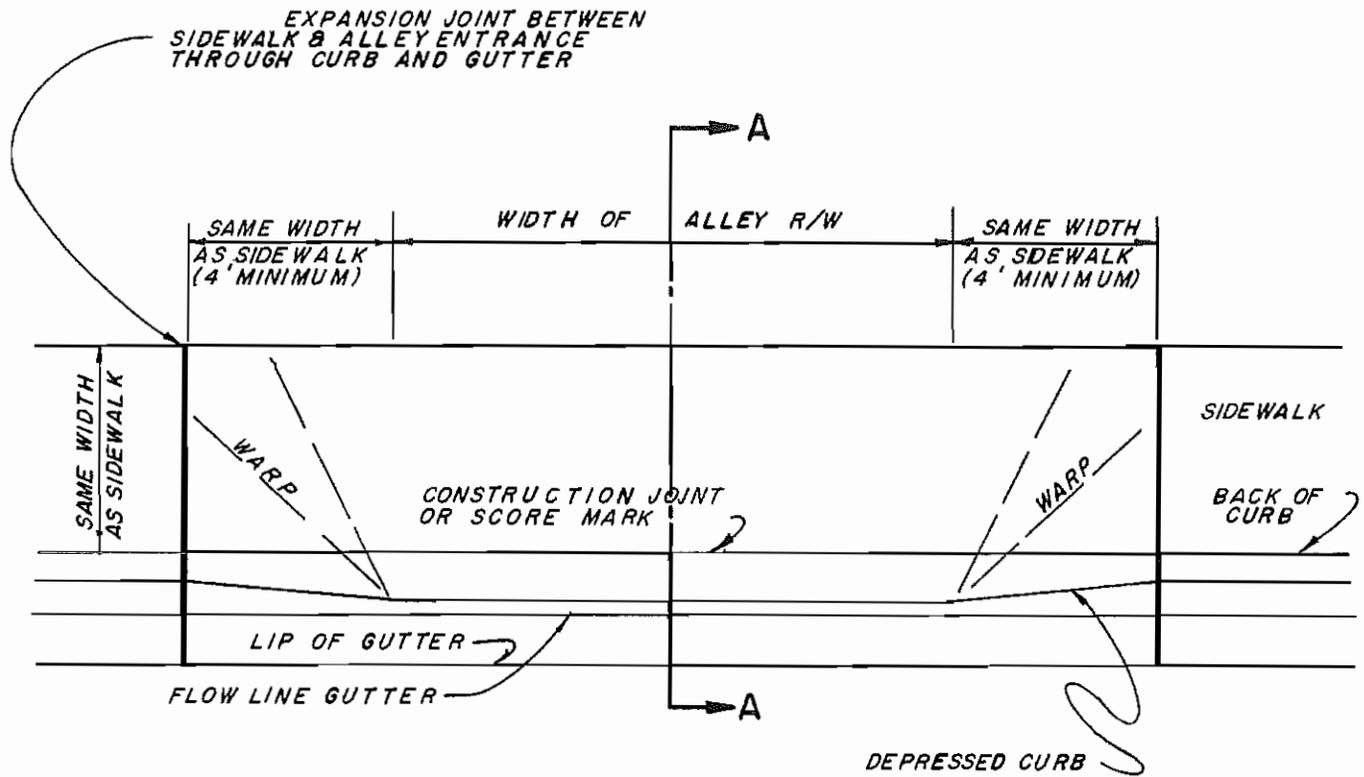
MINIMUM PAVING THICKNESS 3" FOR ROAD MIXED
 SURFACING AND 2" FOR PLANT MIXED SURFACING.

SEAL COAT REQUIRED

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N^o ... 3-030
 TYPICAL ALLEY

APPROVED BY *D.B. Jones* 5/88
 DIRECTOR OF PUBLIC WORKS

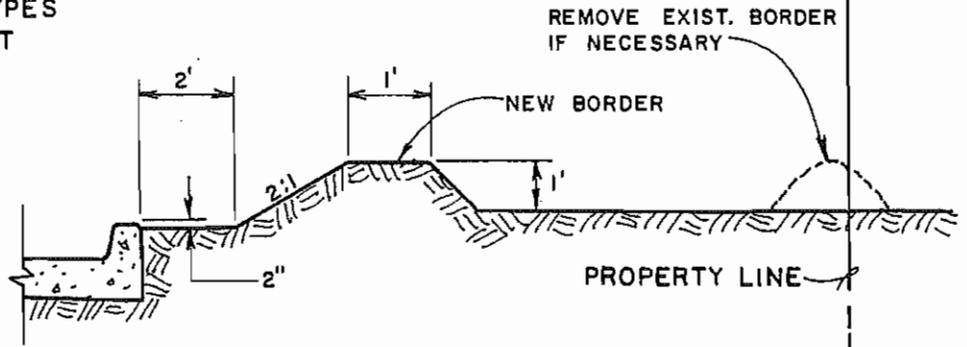


SECTION A-A

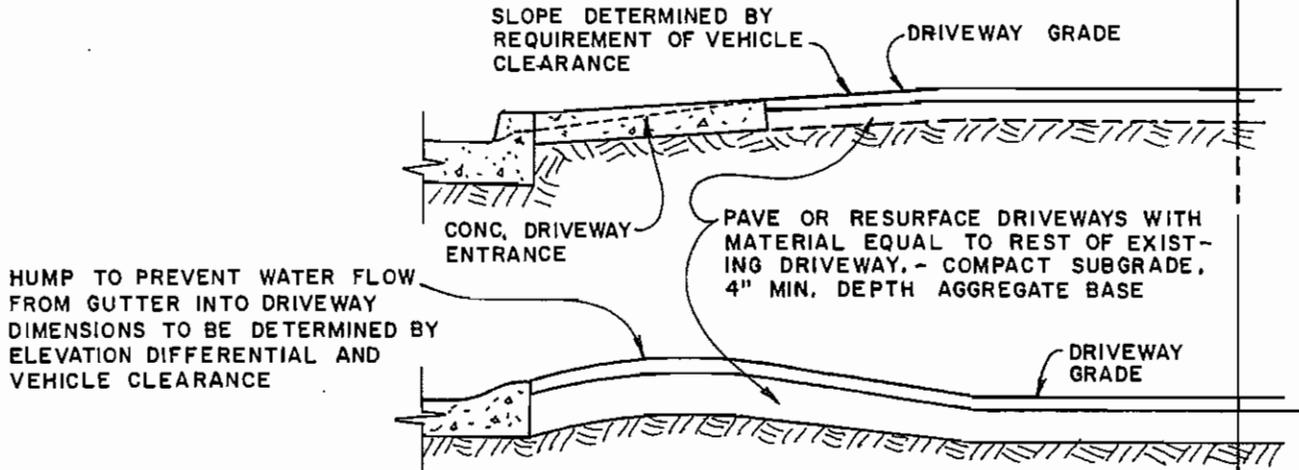
1. ABOVE CONDITION SHOWN WHEN SIDEWALKS ARE INSTALLED NEXT TO CURB.
2. SIDEWALKS IN ALL CASES SHALL BE CONSTRUCTED ACROSS ALLEY ENTRANCES.

REVISED
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD N ^o ... 3-050 ALLEY ENTRANCE
APPROVED BY <i>U. B. Fathall</i> 5/88 DIRECTOR OF PUBLIC WORKS

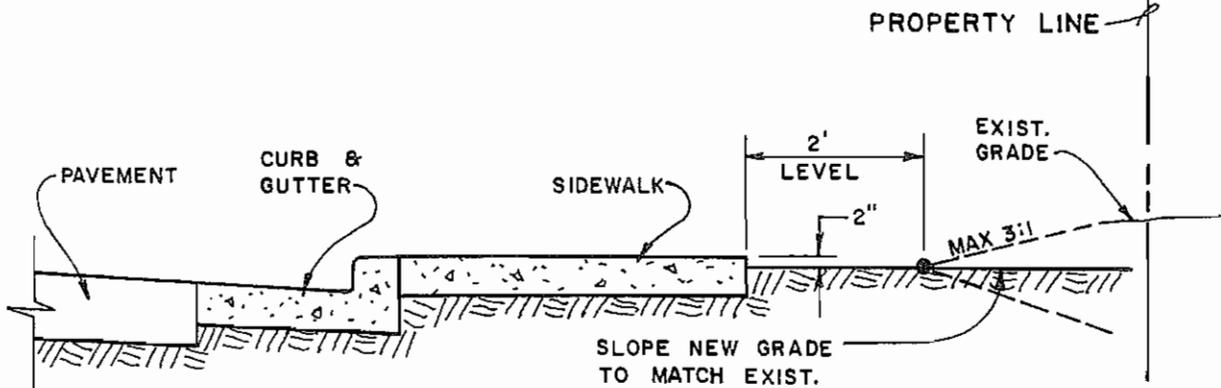
NOTE: THESE DETAILS APPLY TO ALL CURB TYPES WITH OR WITHOUT SIDEWALK



ROADWAY IMPROVEMENT ADJACENT TO IRRIGATED LAND



ROADWAY IMPROVEMENT ADJACENT TO EXISTING DRIVEWAY

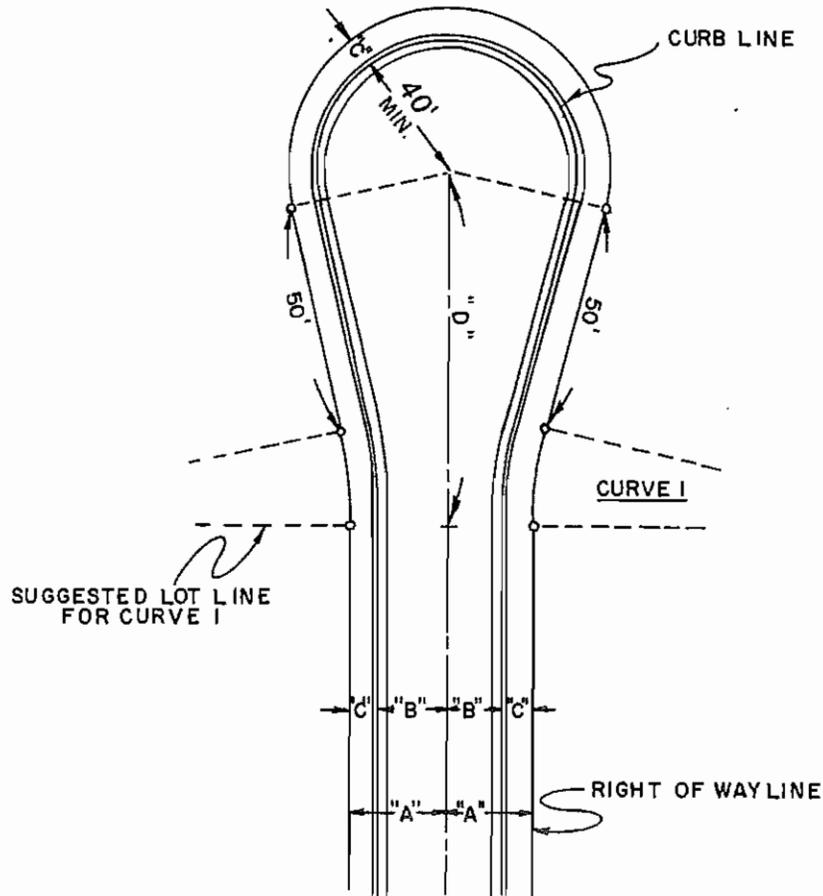


ROADWAY IMPROVEMENTS ADJACENT TO OPEN LAND

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No. 3-060
PARKWAY GRADING

APPROVED BY *D. B. Fortney* 5/88
DIRECTOR OF PUBLIC WORKS

CURVE 2



SEE STANDARD NO. 3-090
FOR CUL - DE - SAC DATA

REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD N° 3-080
CUL - DE - SAC

APPROVED BY *U.B. Fortney* 5/88
DIRECTOR OF PUBLIC WORKS

CUL - DE - SAC DATA

CUL-DE-SAC NO	PAVING WIDTH	R/W WIDTH	A	B	C	D
1	26'	40'	20'	13'	7'	96.60
2	26'	50'	25'	13'	12'	96.60
3	38'	50'	25'	19'	6'	89.10
4	40'	50'	25'	20'	5'	87.75
5	38'	60'	30'	19'	11'	89.10
6	40'	60'	30'	20'	10'	87.75

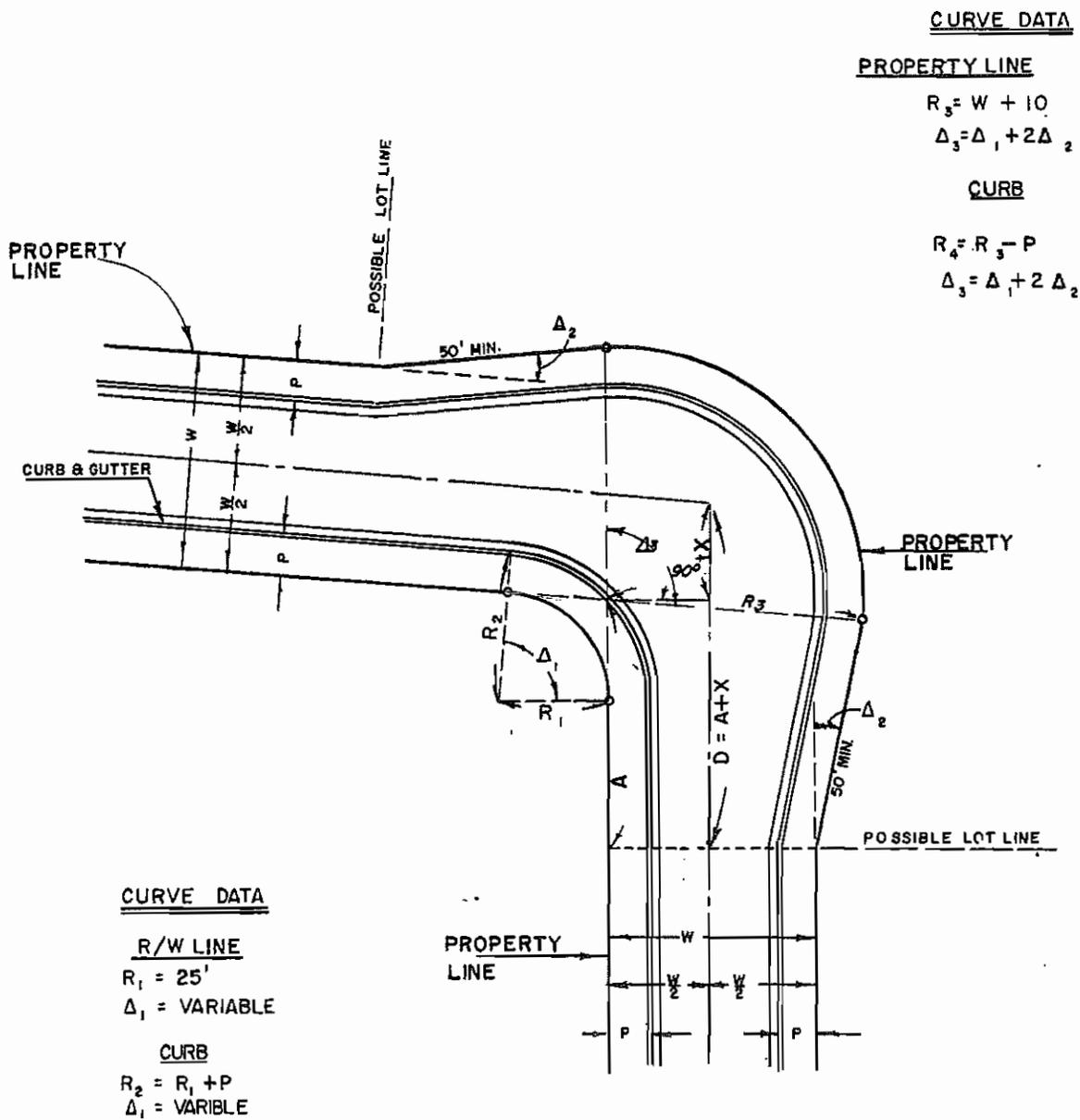
CUL-DE-SAC NO.		CURVE 1							
		AT CURB				AT RIGHT-OF-WAY LINE			
		R	ARC LENGTH	CHORD LENGTH	T	R	ARC LENGTH	CHORD LENGTH	T
1	20-52-17	100'	36.43	36.23	18.42	93'	33.88	33.69	17.13
2	20-52-17	100'	36.43	36.23	18.42	88'	32.06	31.88	16.21
3	17-10-14	100'	29.97	29.86	15.10	94'	28.17	28.06	14.19
4	16-31-20	100'	28.84	28.74	14.52	95'	27.39	27.30	13.79
5	17-10-14	100'	29.97	29.86	15.10	89'	26.67	26.57	13.44
6	16-31-20	100'	28.84	28.74	14.52	90'	25.95	25.86	13.07

CUL-DE-SAC NO.		CURVE 2					
		AT CURB			AT RIGHT-OF-WAY LINE		
		R	ARC LENGTH	CHORD LENGTH	R	ARC LENGTH	CHORD LENGTH
1	221-44-34	40	154.81	74.75	47	181.90	87.83
2	221-44-34	40	154.81	74.75	52	201.25	97.18
3	214-20-25	40	149.64	76.43	46	172.08	87.90
4	213-02-40	40	148.73	76.70	45	176.32	86.28
5	214-20-25	40	149.64	76.43	51	190.79	97.45
6	213-02-40	40	148.73	76.70	50	185.92	95.87

REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD N^o... 3-090
CUL - DE - SAC DATA

APPROVED BY *D. B. Foster* 5/88
DIRECTOR OF PUBLIC WORKS



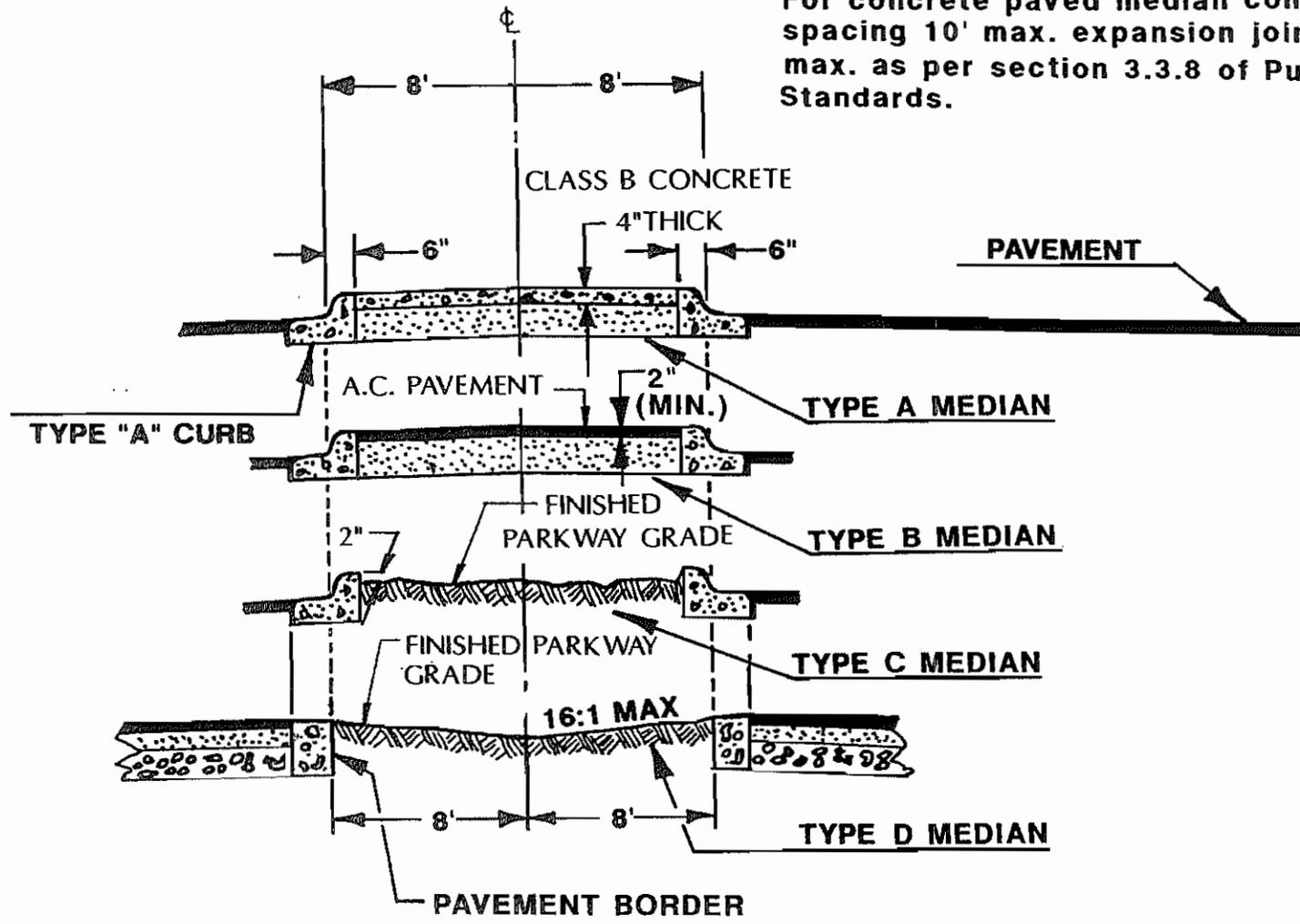
W	A	Δ_2
50'	60.00'	10° 23' 20"
60'	61.64'	10° 14' 11"

REVISED

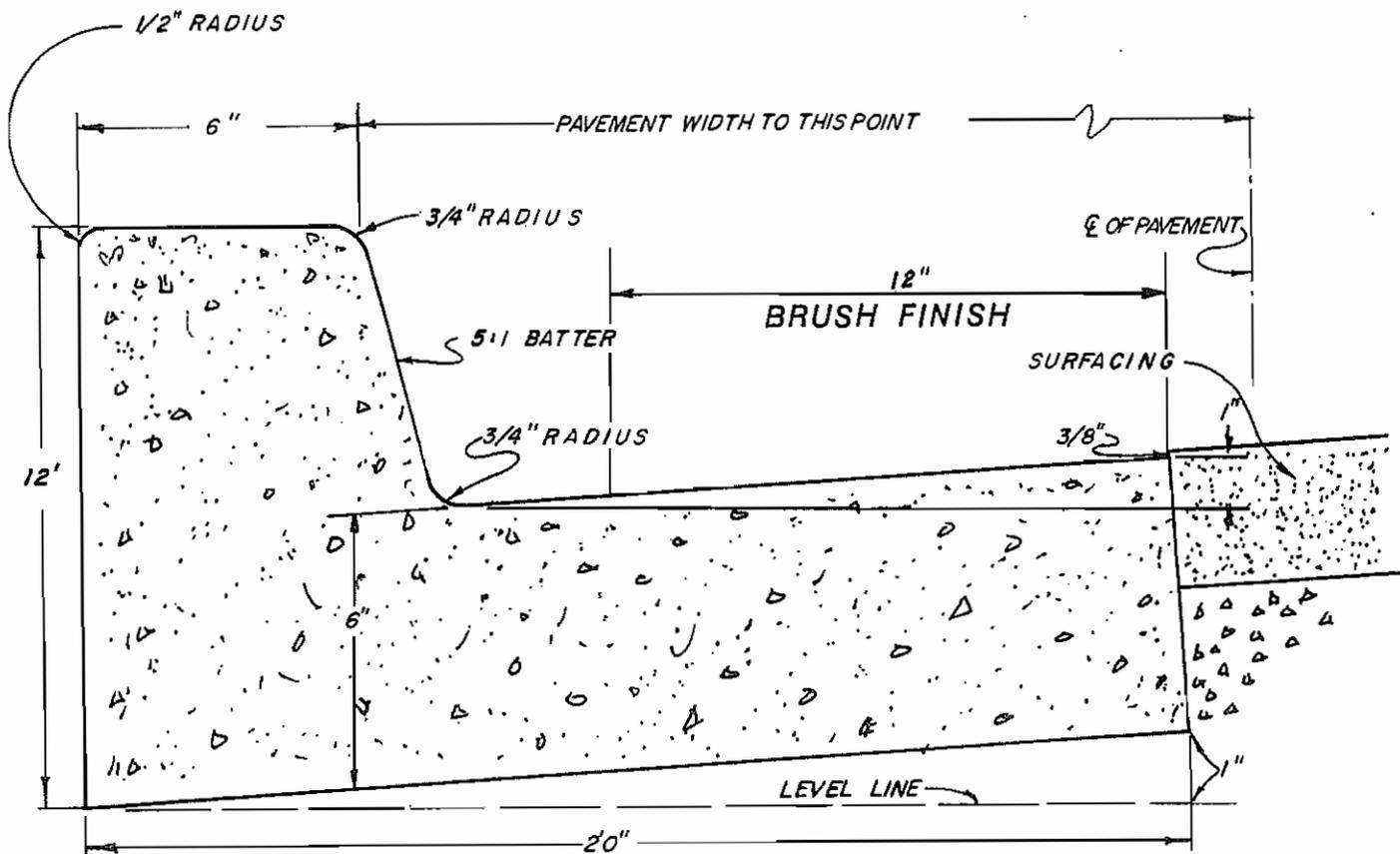
COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N° ... 3-100
STANDARD KNUCKLE

APPROVED BY *D. B. Frazier* 5/88
 DIRECTOR OF PUBLIC WORKS

For concrete paved median contraction joint spacing 10' max. expansion joint spacing 50' max. as per section 3.3.8 of Public Works Standards.



REVISED
 COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD No 3-110
 RAISED MEDIAN OPTIONS
 APPROVED BY *U. B. Fortney* 5/88
 DIRECTOR OF PUBLIC WORKS



SCALE 3" = 1'

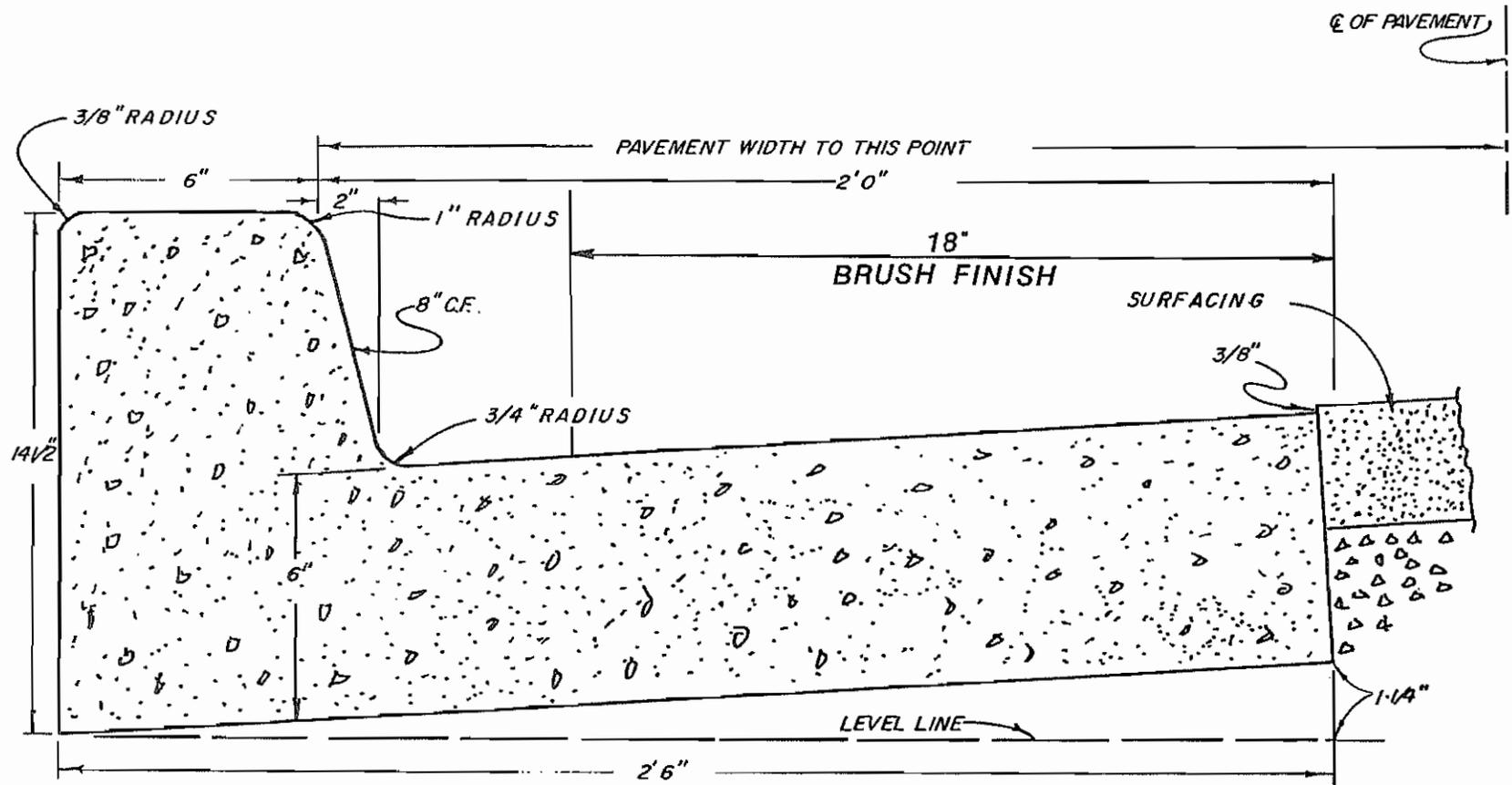
CLASS "B" CONCRETE
 1.27 CU. FT. / L. F.
 WT. 190.6 LBS/FT.

MINIMUM GRADE = 0.20%

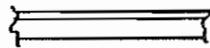
NOTES

1. ALL EXPOSED SURFACES SHALL BE TROWEL FINISHED EXCEPT AS SHOWN.
2. CONTRACTION JOINT SPACING AS PER SECTION 3.3.8 OF PUBLIC WORKS STANDARDS.
3. EXPANSION JOINT SPACING 50' MAX. AS PER SECTION 3.3.8 OF PUBLIC WORKS STANDARDS.

REVISED
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD N ^o ... 3-120 TYPE "A" CURB
5/88
APPROVED BY <i>el. S. Fortney</i> DIRECTOR OF PUBLIC WORKS



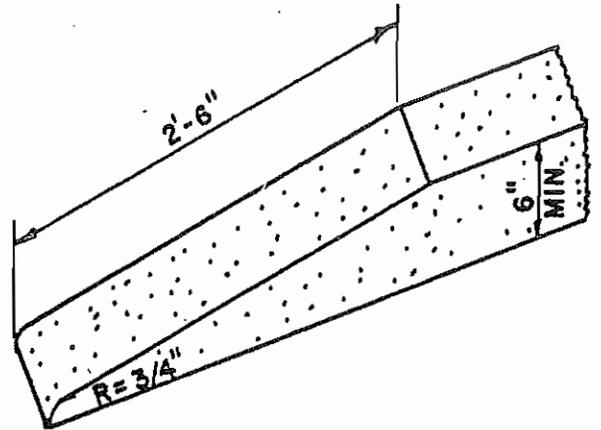
CLASS "B" CONCRETE
 1.52 CU. FT. /L.F.
 WT. = 227.8 LBS/FT

MINIMUM GRADE 0.20 %

 SYMBOL

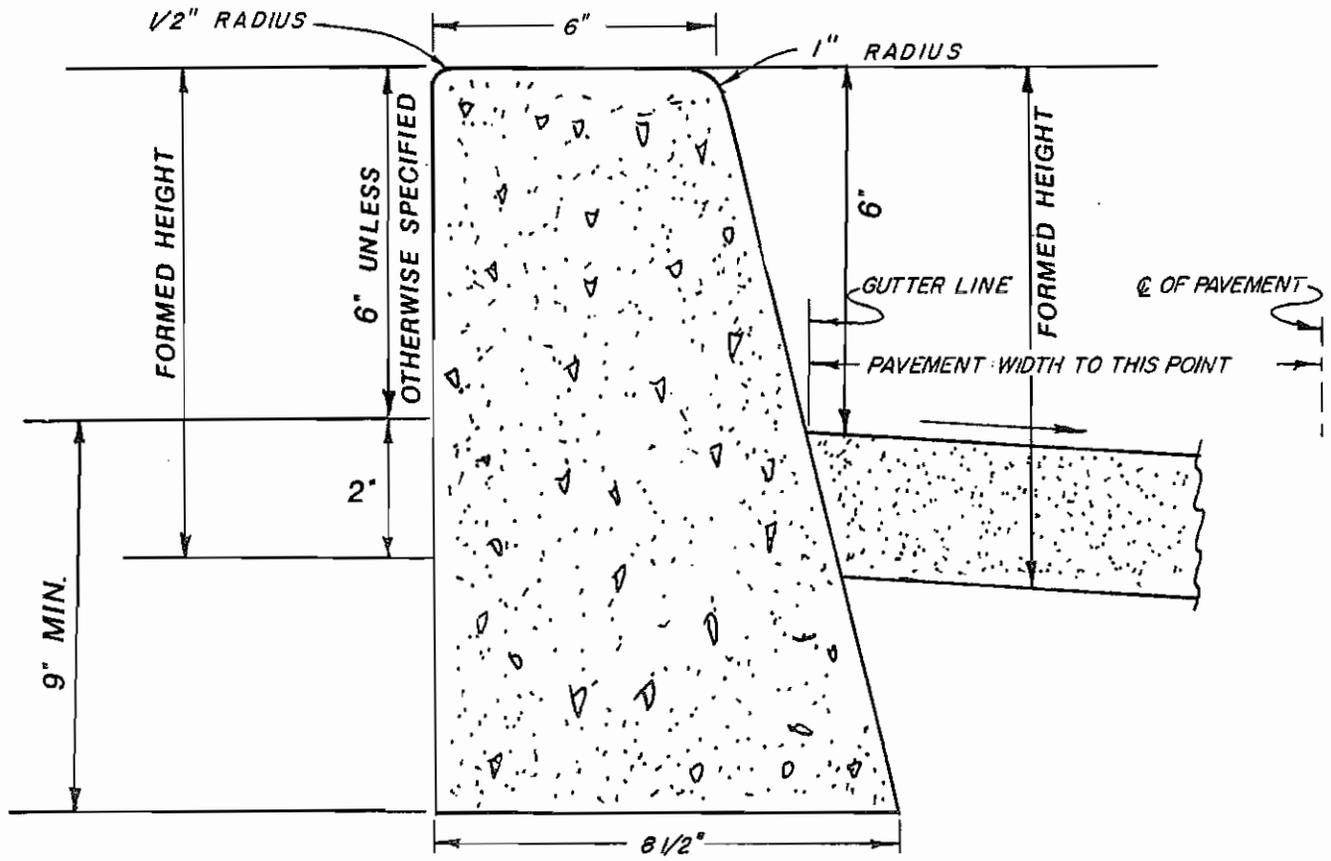
NOTES

1. ALL EXPOSED SURFACES SHALL BE TROWEL FINISHED EXCEPT AS SHOWN.
2. CONTRACTION JOINT SPACING AS PER SECTION 3.3.8 OF PUBLIC WORKS STANDARDS.
3. EXPANSION JOINT SPACING 50' MAX. AS PER SECTION 3.3.8 OF PUBLIC WORKS STANDARDS.

REVISED
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD N ^o ... 3-130 TYPE "B" CURB
APPROVED BY <i>Cl. B. Fortney</i> 5/88 DIRECTOR OF PUBLIC WORKS



TYPICAL CURB TERMINATION

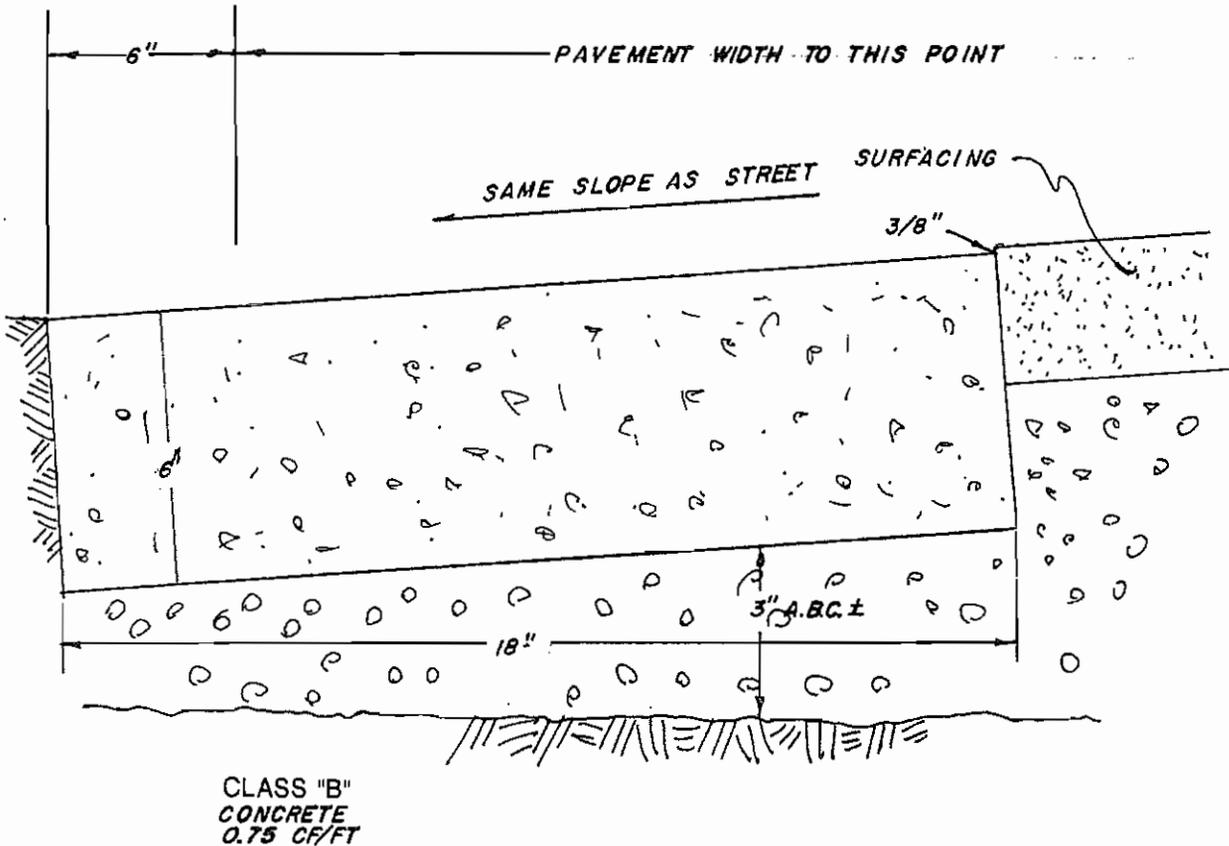


NOTES

1. ALL VERTICAL SURFACES TO BE FORMED.
2. VERTICAL SURFACES DOWN FROM 2" BELOW UNDISTURBED SOIL MAY BE PLACED AGAINST NEAT CUT IF APPROVED BY THE ENGINEER AND CONCRETE WILL NOT EXTEND MORE THAN 1" BEYOND THEORETICAL FACE.
3. ALL EXPOSED SURFACES TO BE STRIPPED GREEN AND TROWEL FINISHED.
4. EXPANSION JOINT AS PER SECTION 3.3.8 OF PUBLIC WORKS STANDARDS.
5. MAXIMUM SPACING OF CONTRACTION JOINTS IS 10'. AS PER SECTION 3.3.8 OF PUBLIC WORKS STANDARDS.
6. CONCRETE TO BE CLASS "B".

MINIMUM GRADE 0.20 %
 SYMBOL

REVISED
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD N ^o ... 3-150 TYPE "D" CURB & TYPICAL CURB TERMINATION
APPROVED BY <i>D. B. Fortney</i> 5/88 DIRECTOR OF PUBLIC WORKS



NOTES

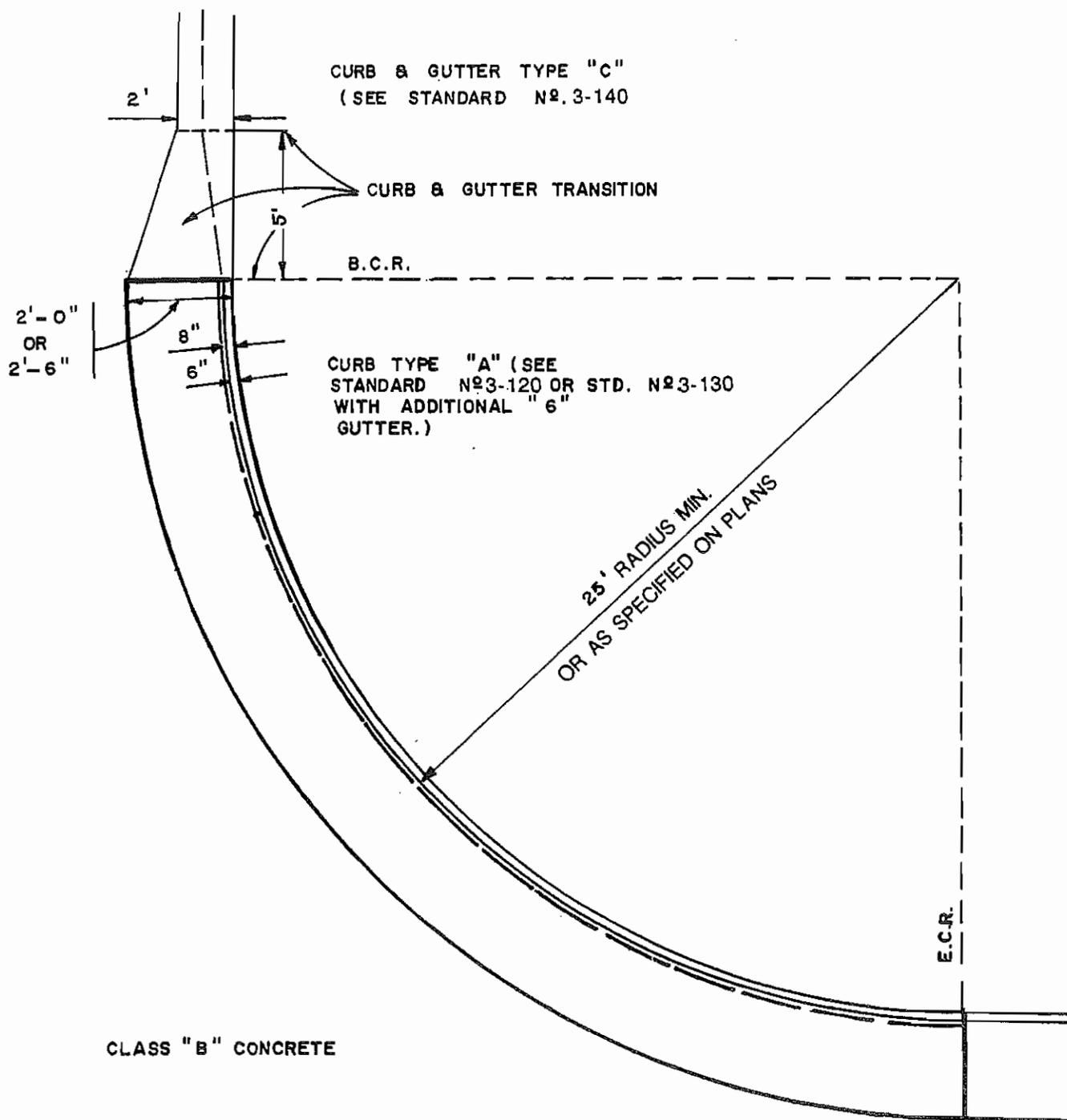
SCALE : 3" = 1'

1. IN GROUP A SOIL CONDITIONS 8" OF CONCRETE MAY BE SUBSTITUTED FOR 6" OF CONCRETE AND 3" A.B.C.
2. BROOM FINISH EXPOSED SURFACE.
3. CONTRACTION JOINT SPACING AS PER SECTION 3.3.8 OF PUBLIC WORKS STANDARDS.
4. EXPANSION JOINT SPACING 50' MAX. AS PER SECTION 3.3.8 OF PUBLIC WORKS STANDARDS.

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N^o ... 3-160
 PAVEMENT BORDER

APPROVED BY *D. B. Fortney* 5/88
 DIRECTOR OF PUBLIC WORKS



CURB & GUTTER TYPE "C"
 (SEE STANDARD N^o. 3-140)

CURB & GUTTER TRANSITION

B.C.R.

2'-0"
 OR
 2'-6"

8"
 6"

CURB TYPE "A" (SEE
 STANDARD N^o3-120 OR STD. N^o3-130
 WITH ADDITIONAL "6"
 GUTTER.)

25' RADIUS MIN.
 OR AS SPECIFIED ON PLANS

E.C.R.

CLASS "B" CONCRETE

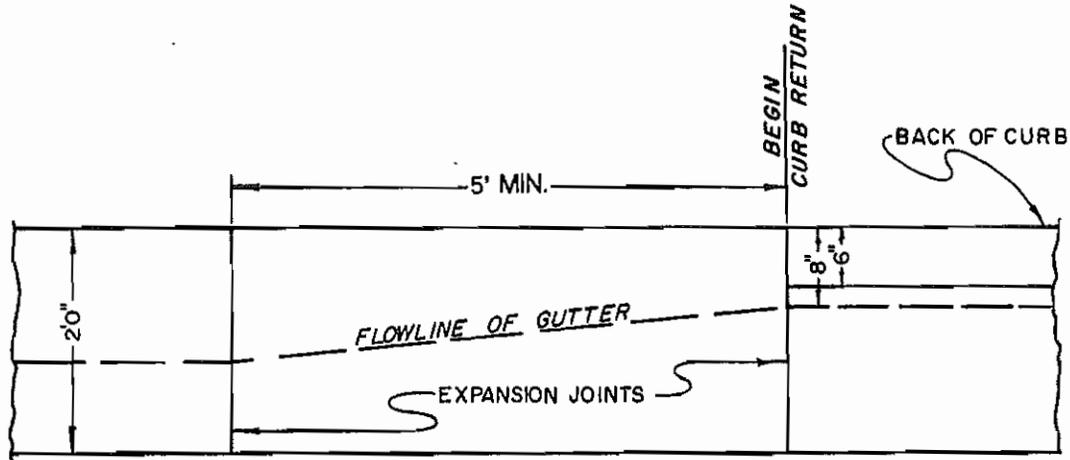
EXPANSION JOINTS SHOWN THUS
 SCALE: 1" = 6'



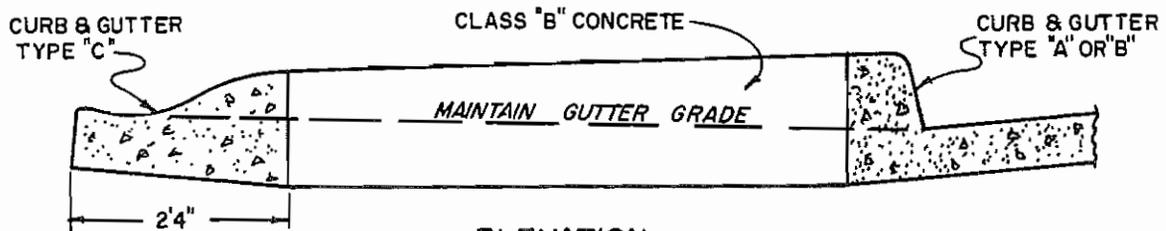
REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N^o... 3-190
 CURB & GUTTER TRANSITION

APPROVED BY *L. B. Fortney* 5/88
 DIRECTOR OF PUBLIC WORKS



PLAN



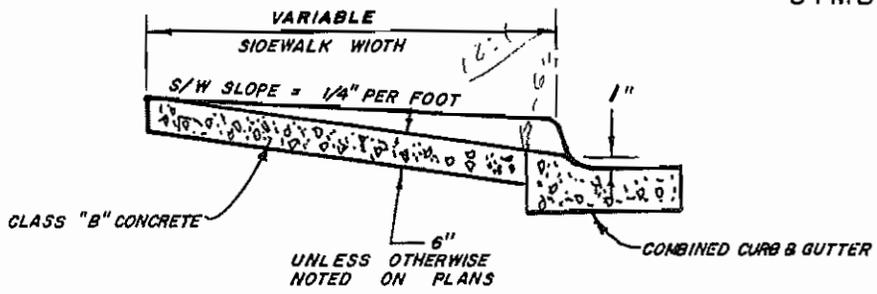
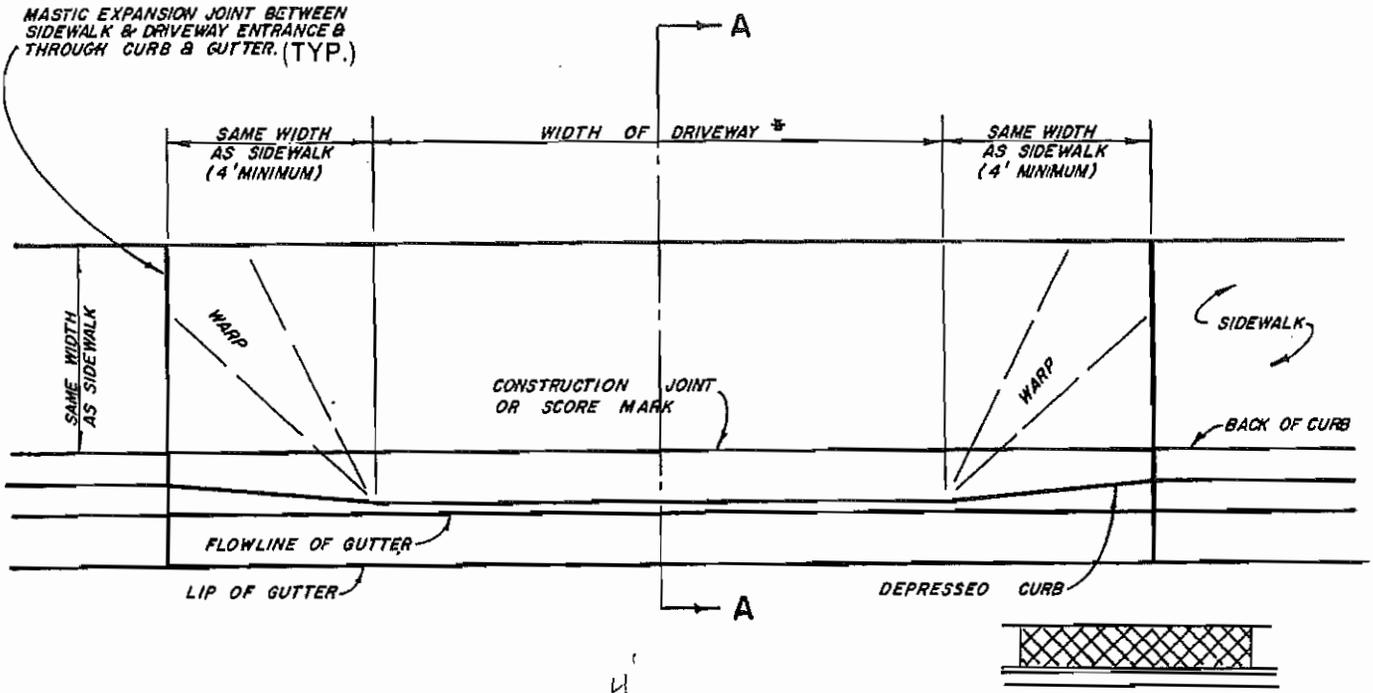
ELEVATION

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N^o ... 3-200
 CURB & GUTTER TRANSITION

APPROVED BY *W. B. Fontney* 5/88
 DIRECTOR OF PUBLIC WORKS

MASTIC EXPANSION JOINT BETWEEN SIDEWALK & DRIVEWAY ENTRANCE & THROUGH CURB & GUTTER. (TYP.)



SECTION A-A

Driveway Widths	Min.	Max.
Commercial	16'	40'
Industrial	16'	40'
Residential	12*	30'

* 16' Desirable

ANY EXCEPTIONS TO THE ABOVE DIMENSIONS MUST BE APPROVED BY THE DEPT. OF PUBLIC WORKS

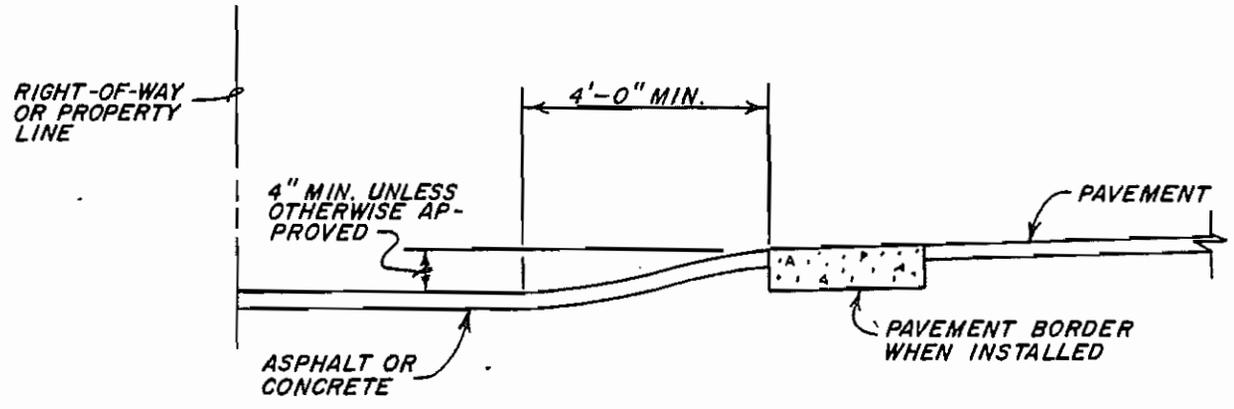
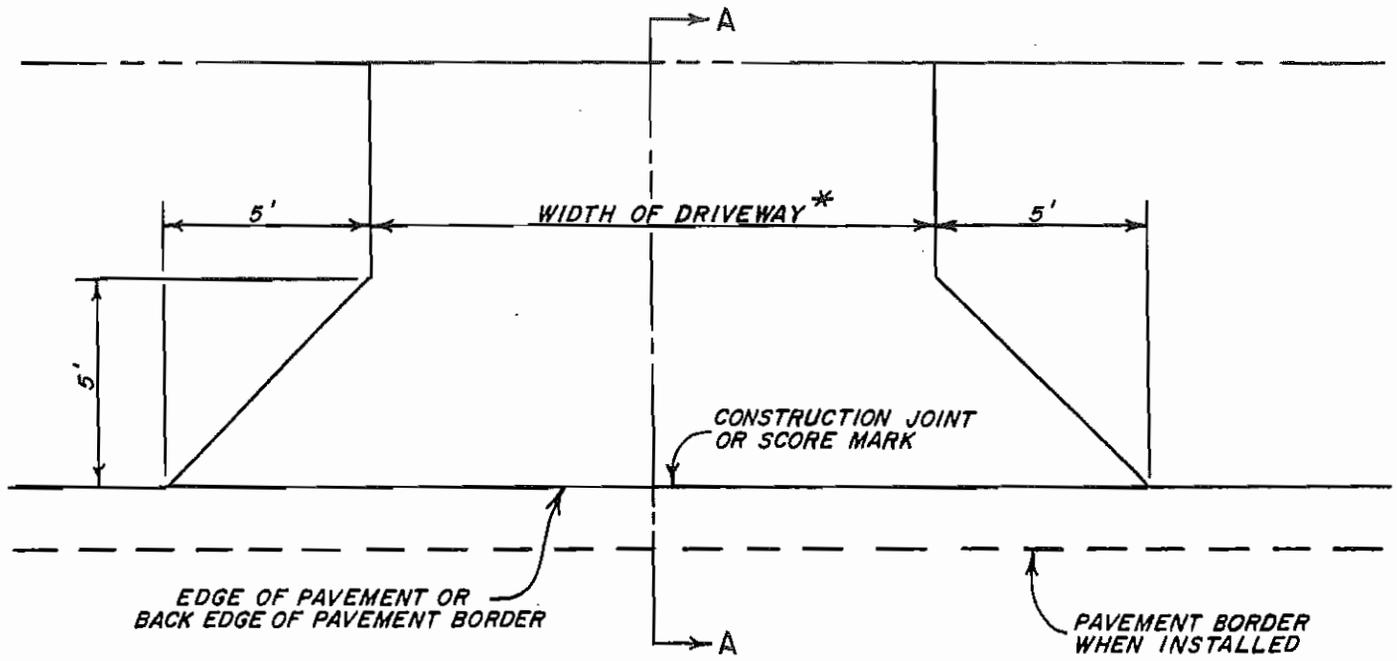
NOTES

1. SIDEWALKS IN ALL CASES SHALL BE CONSTRUCTED ACROSS DRIVEWAY ENTRANCES
2. CONTRACTION JOINT SPACING 10' MAX. AS PER SECTION 3.3.8 OF PUBLIC WORKS.
3. EXPANSION JOINTS AS PER SECTION 3.3.8 OF PUBLIC WORKS.

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD № 3-210
DRIVEWAY ENTRANCE

APPROVED BY U. B. Fortney 5/88
 DIRECTOR OF PUBLIC WORKS



SECTION A-A

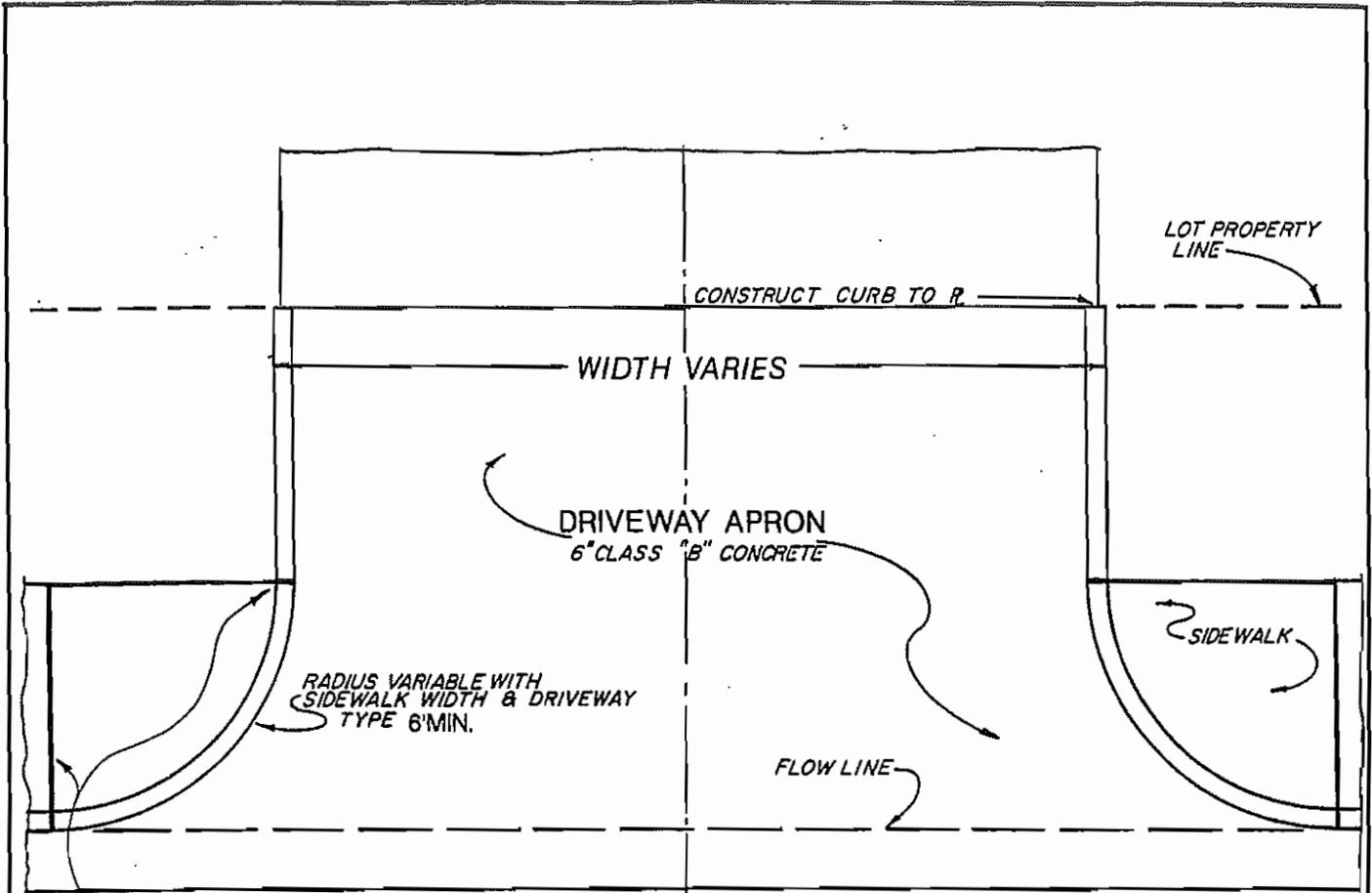
NOTE:
 A DRIVEWAY CULVERT PIPE OF 12" MIN. DIA. IS REQUIRED WHEN SLOPE OF ROADWAY IS OVER 2 PERCENT AND IN ALL CASES WHERE DRAINAGE IS APPARENT.

FINISHED GRADE OF DRIVEWAY WITHOUT FILL WHEN NOT OVER A DRIVEWAY CULVERT PIPE IS TO MATCH EXISTING GRADE OF THE AREA ADJACENT TO ROADWAY WITH A MINIMUM 4" DEPRESSION AS SHOWN.

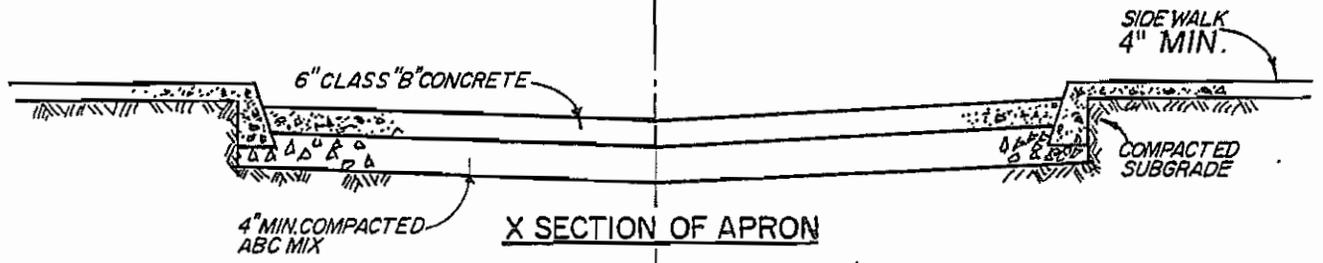
Driveway Widths	Min.	Max.
Commercial	16'	40'
Industrial	16'	40'
Residential	12'	30'
	*16' Desirable	

ANY EXCEPTIONS TO ABOVE DIMENSIONS MUST BE APPROVED BY THE DEPT. OF PUBLIC WORKS.

REVISED	
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD N ^o ... 3-220 DRIVEWAY ENTRANCE WITHOUT CURB	
APPROVED BY <i>U. B. Fortney</i>	5/88
DIRECTOR OF PUBLIC WORKS	

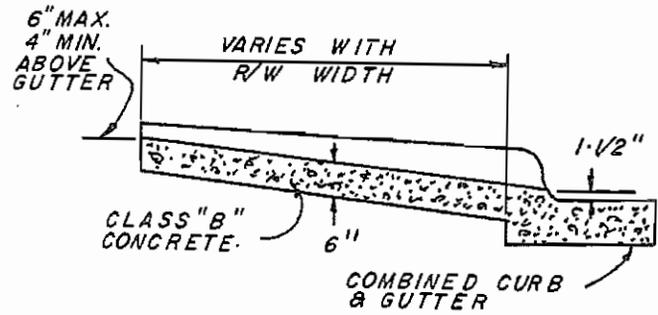


EXPANSION JOINT (TYP.) **PLAN**



NOTE:

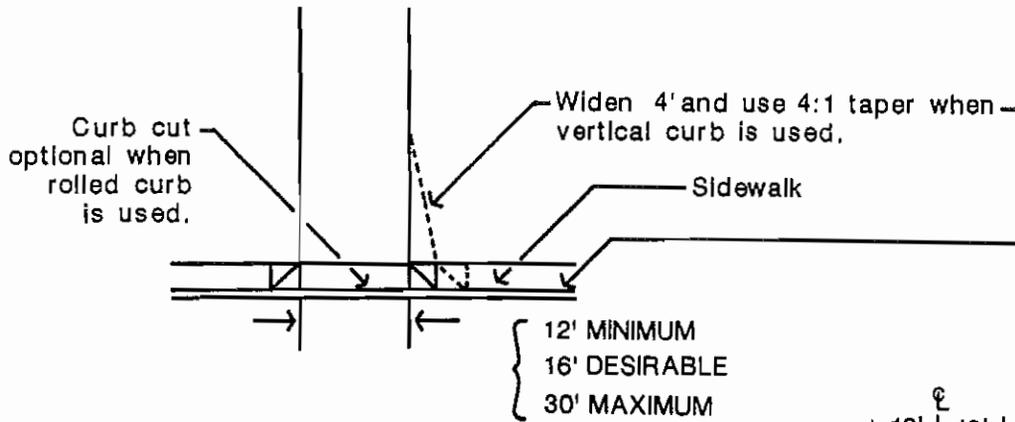
1. THIS STANDARD TO BE USED ONLY UPON APPROVAL OF PUBLIC WORKS.
2. SIDEWALK RAMPS REQUIRED, SEE STD. No. 3-280
3. CONTRACTION AND EXPANSION JOINTS AS PER SEC. 3.3.8 OF PUBLIC WORKS STD.



REVISED
COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 3-225
DRIVEWAY ENTRANCE
WITH CURB RETURNS
APPROVED BY <i>U. B. Johnson</i> 5/88
DIRECTOR OF PUBLIC WORKS

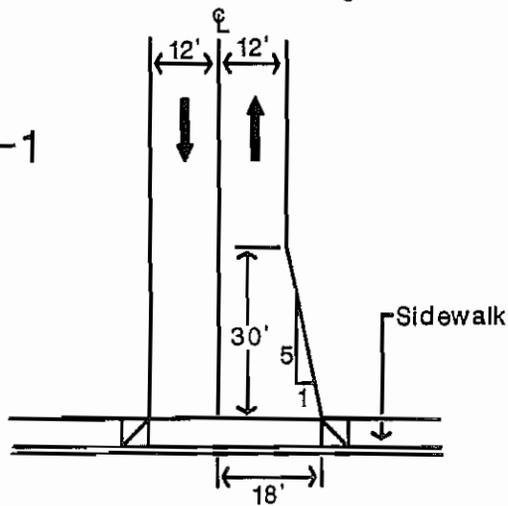
RESIDENTIAL DRIVEWAY TYPES

SINGLE FAMILY UNIT



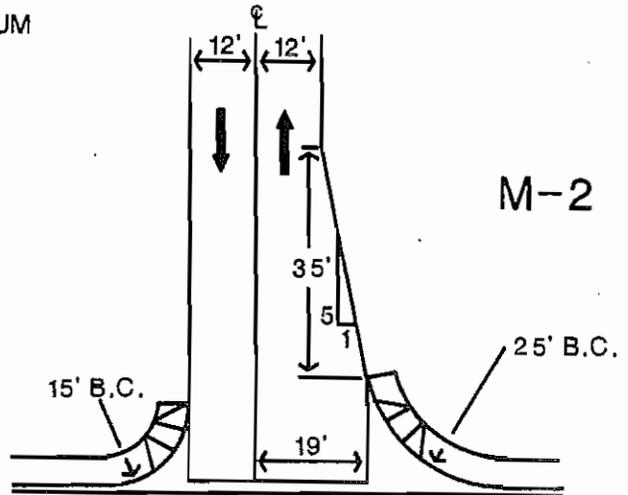
S-1

M-1



LOW VOLUME
MULTI FAMILY UNITS

M-2



HIGH VOLUME
MULTI FAMILY UNITS

REVISED

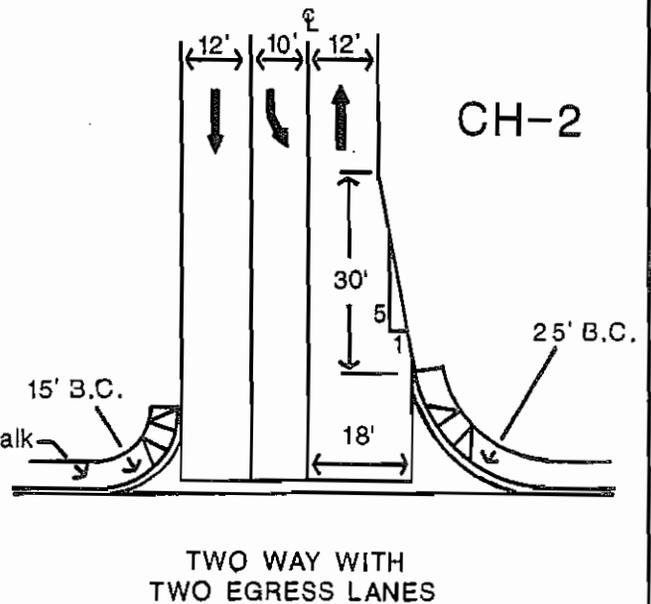
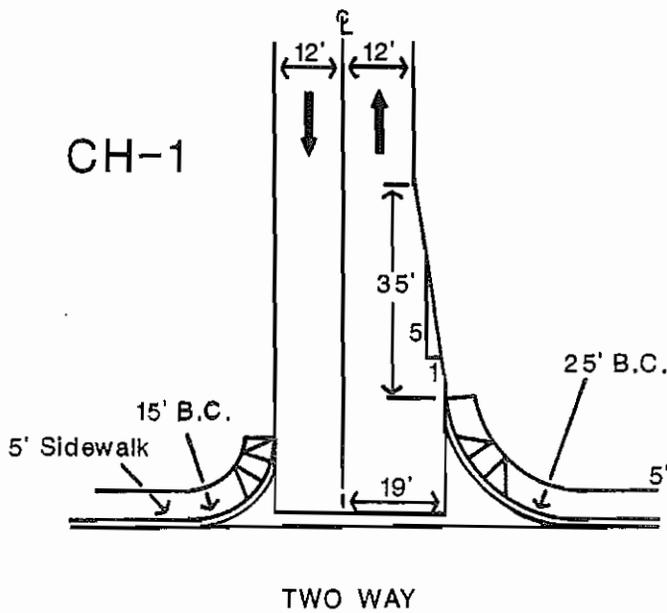
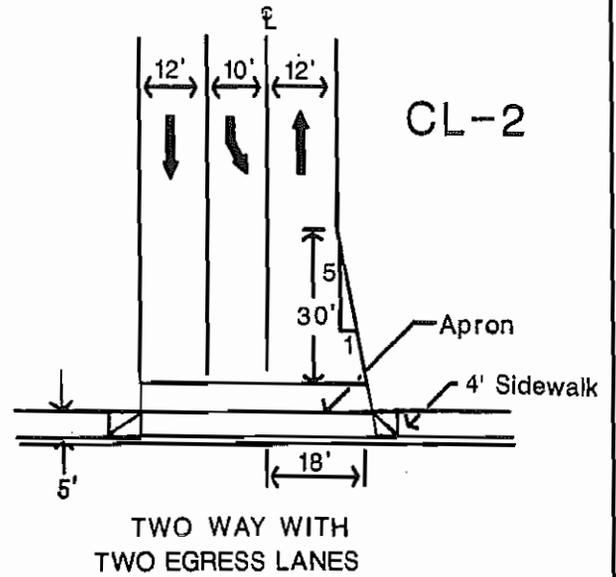
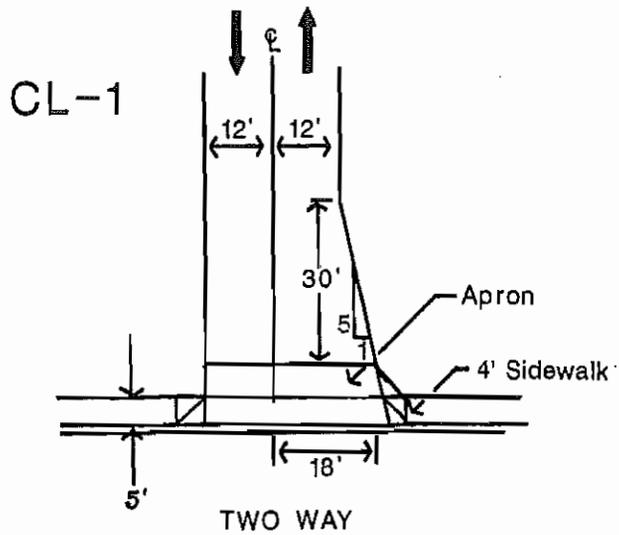
COUNTY OF YUMA
Construction Standards

Standard No. 3-230

RESIDENTIAL DRIVEWAY TYPES

Approved By: *U.B. Frazier* 5/88
Director of Public Works

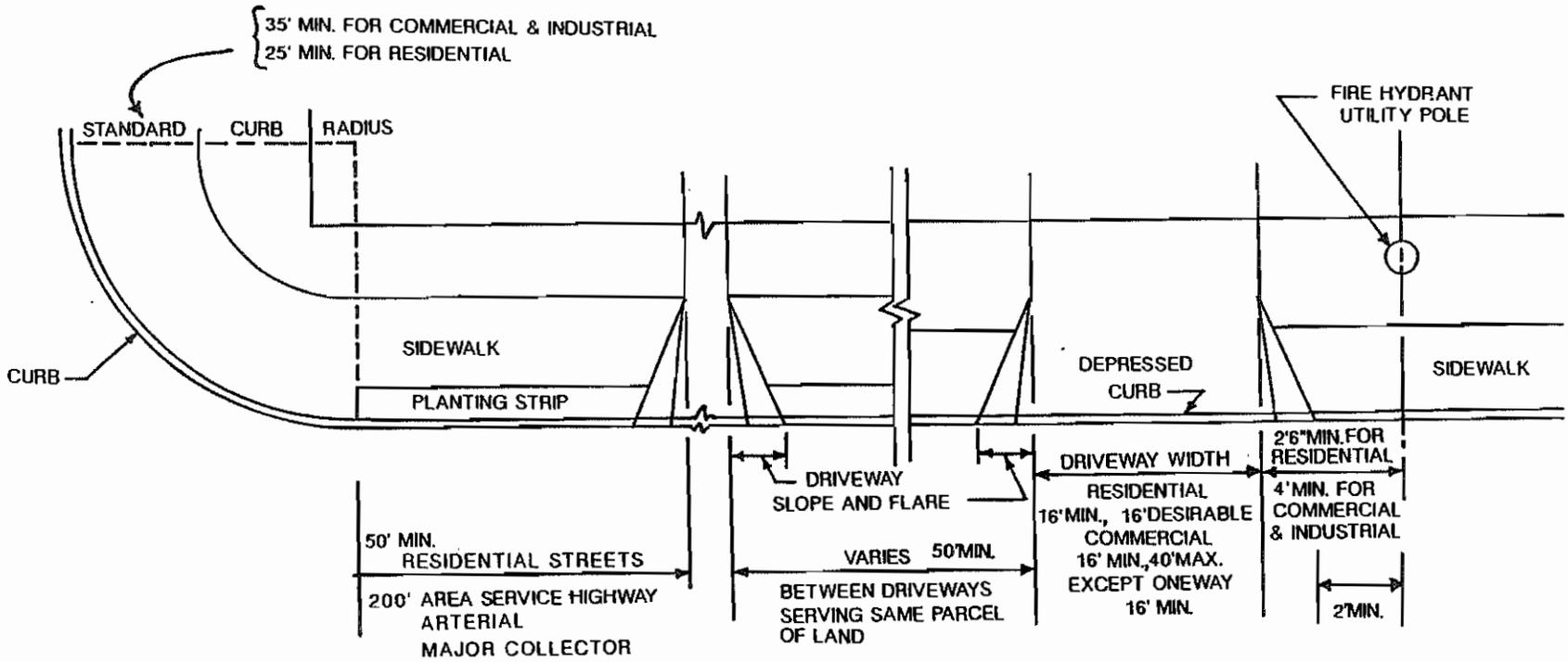
COMMERCIAL/INDUSTRIAL DRIVEWAY TYPES



REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD N^o...3-240
COMMERCIAL/INDUSTRIAL
DRIVEWAY TYPES

APPROVED BY *U.B. Fortney* 5/88
DIRECTOR OF PUBLIC WORKS



NOT TO SCALE

REVISED

COUNTY OF YUMA

CONSTRUCTION STANDARDS

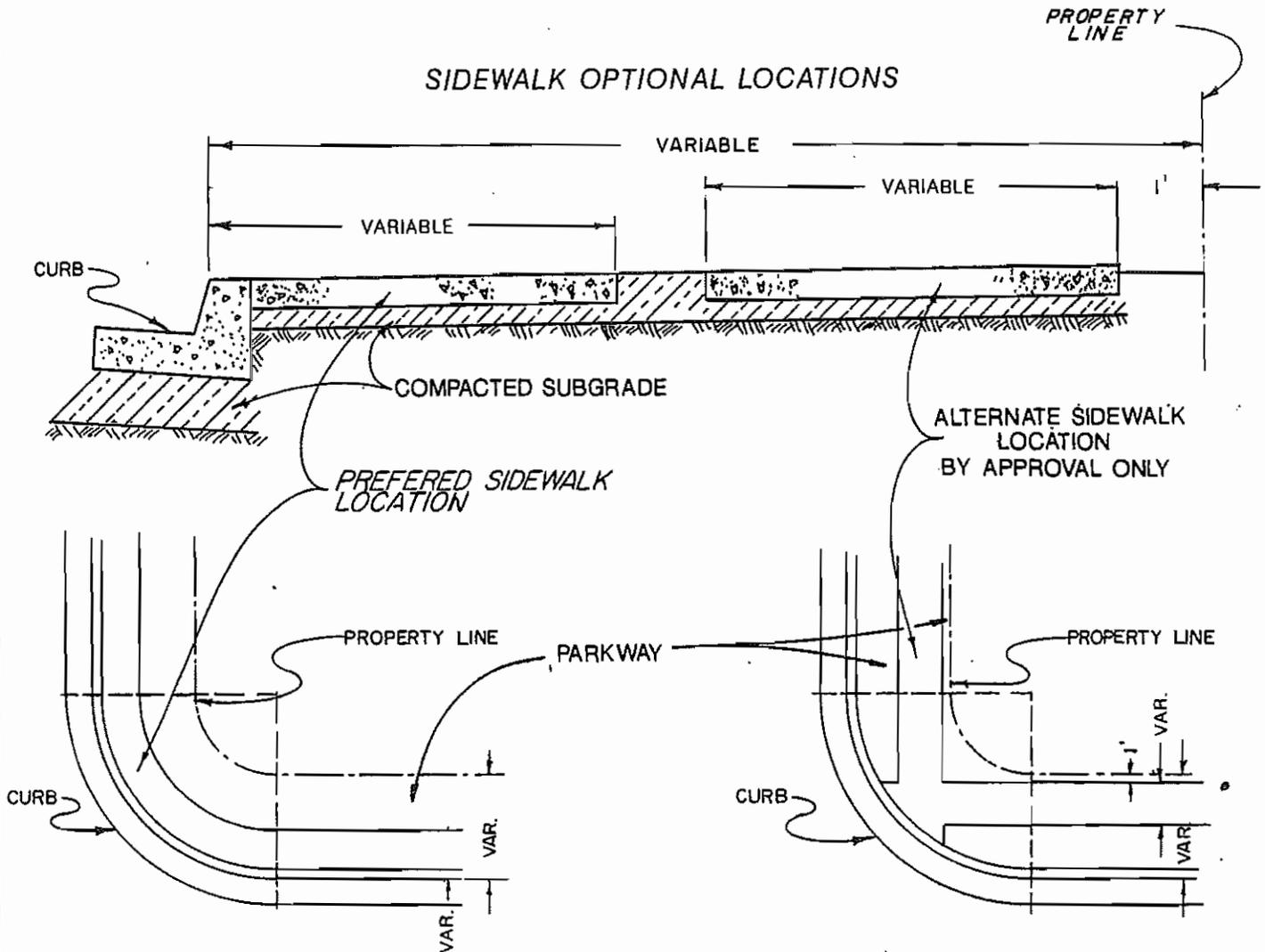
STANDARD No 3-250

DRIVEWAY ENTRANCE LOCATIONS

APPROVED BY *L.B. F. [Signature]* 5/88

DIRECTOR OF PUBLIC WORKS

SIDEWALK OPTIONAL LOCATIONS



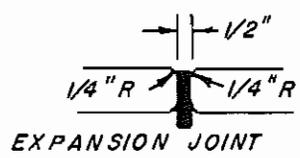
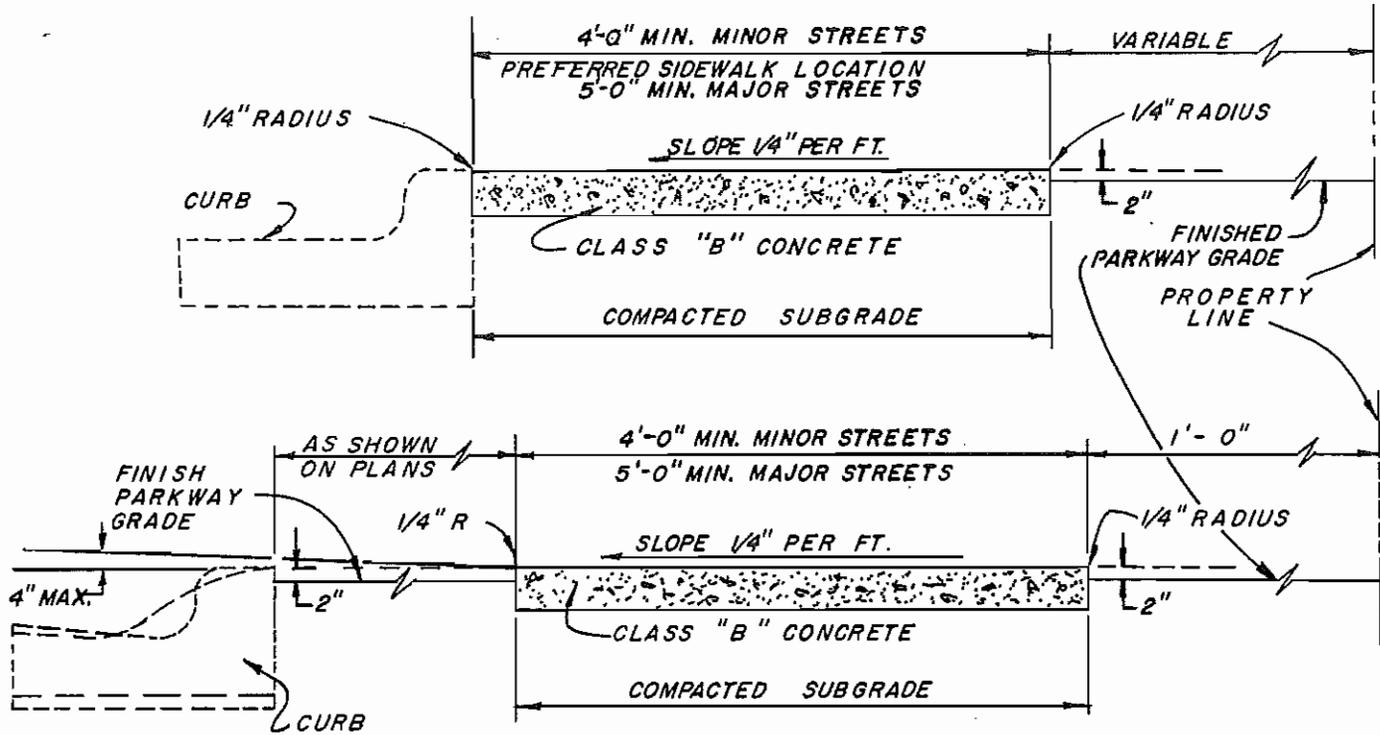
NOTES

1. 1/4" rise per foot for drainage from curb to property line
2. Sidewalk thickness to be not less than 4".
3. Variable distances shown on standard typical road sections
4. Sidewalks shall be clear of all obstructions such as, Power poles, Light standards, Mailboxes, etc.
5. Class "B" concrete to be used.
6. Spacing and positioning of tree wells to be determined by the DEPARTMENT OF PUBLIC WORKS

REVISED

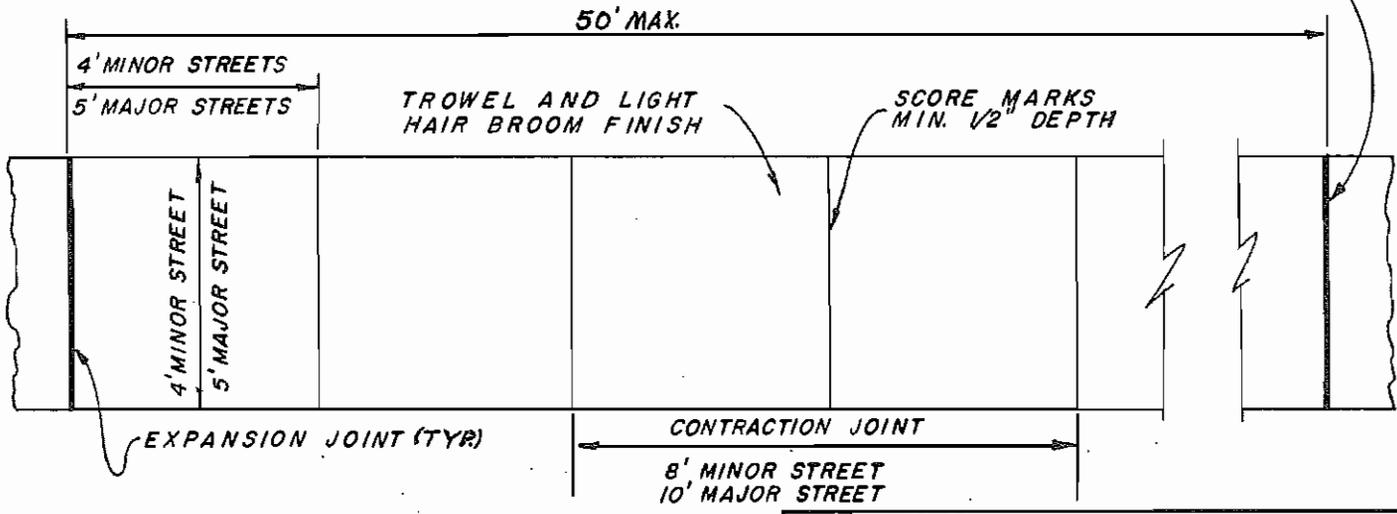
COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD No... 3-260
SIDEWALK & PARKWAY LOCATIONS

APPROVED BY *U.B. Farnes* 5/88
 DIRECTOR OF PUBLIC WORKS



LARGE AGGREGATE IN CONTRACTION JOINT SHALL BE SEPARATED TO A FINISH DEPTH OF 3/4".

EXPANSION JOINT FILLER TO BE 1/2" MASTIC BITUMINOUS TYPE PREFORMED EXPANSION JOINT FILLER A.S.T.M. D-1751.

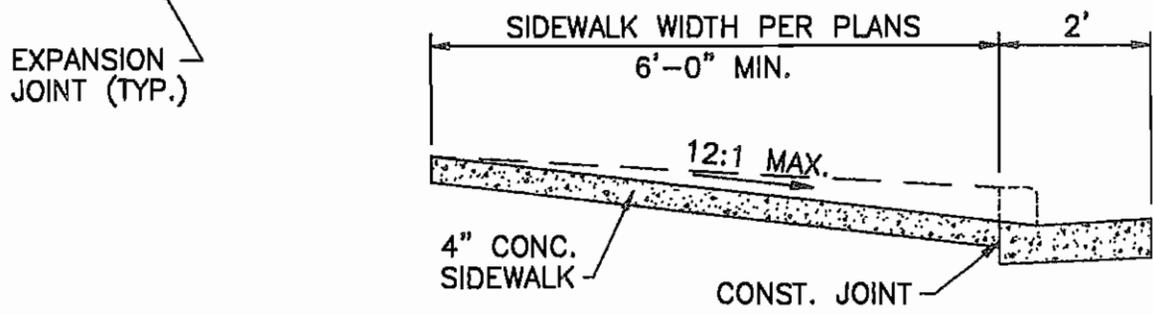
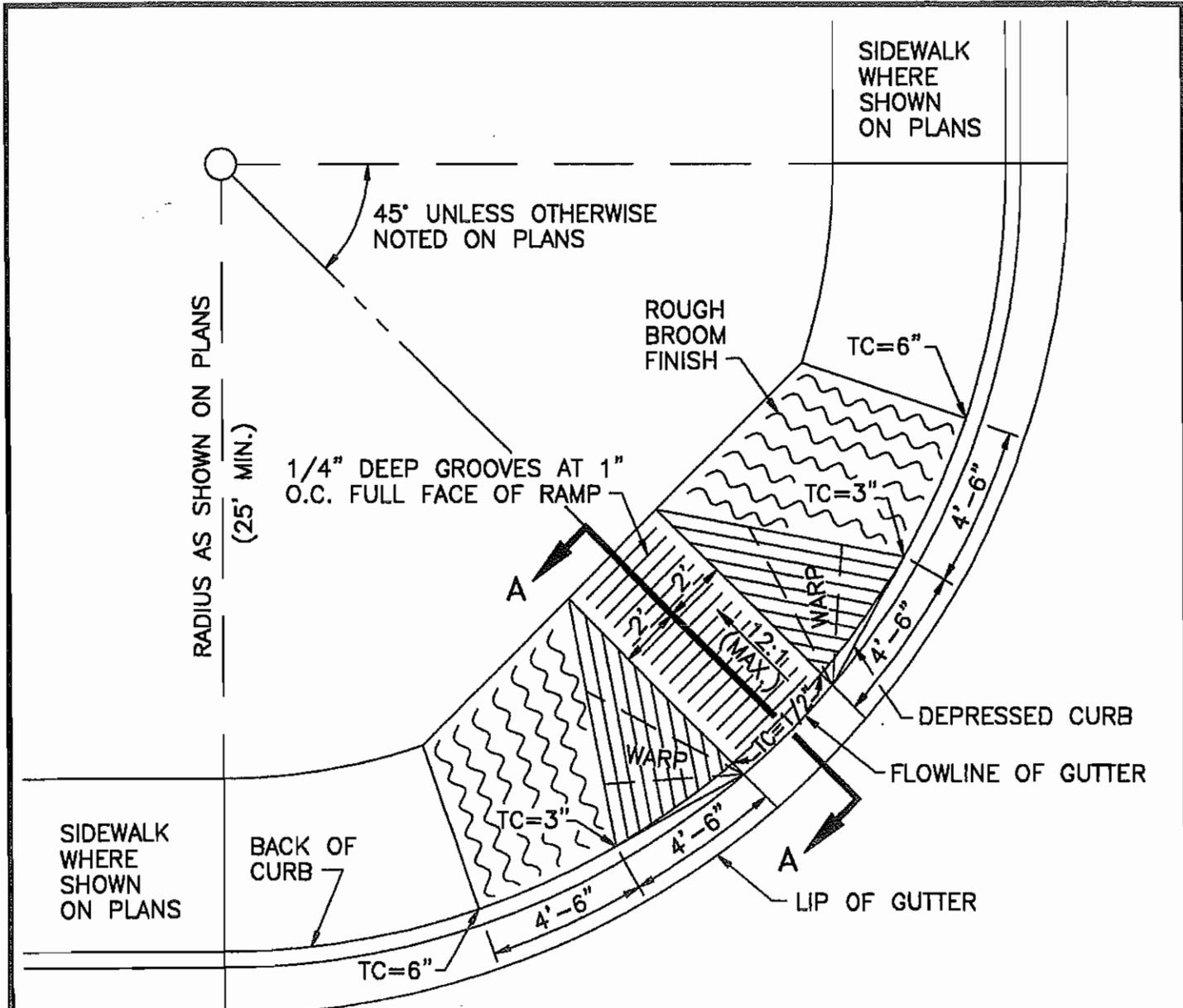


EXPANSION AND CONTRACTION JOINTS PER SECTIONS 3.3.8 OF PUBLIC WORKS STDS.

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N° ... 3-270
 SIDEWALKS

APPROVED BY *D. B. Fortney* 5/88
 DIRECTOR OF PUBLIC WORKS

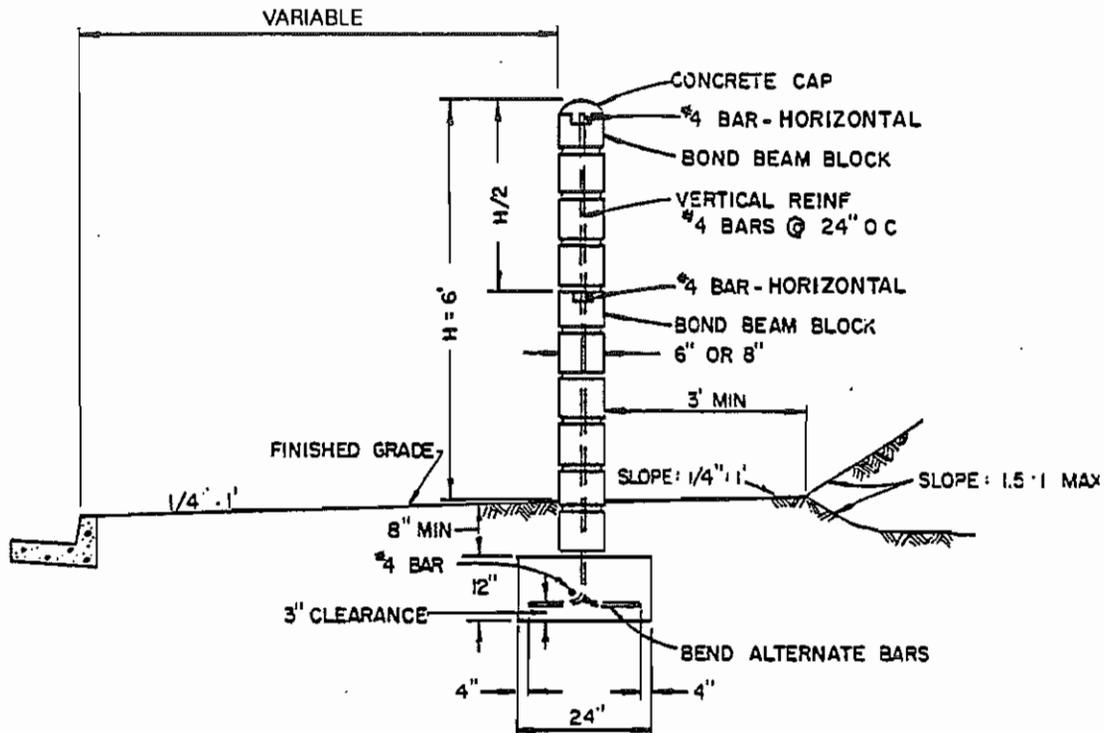


SECTION A-A

NOTES:

1. FOR MAJOR COLLECTORS, ARTERIALS AND AREA SERVICE HIGHWAYS PLACE RAMP AT EACH CROSSWALK LOCATION, IN ACCORDANCE WITH A.D.A. REQUIREMENTS.
2. CLASS B CONCRETE.

REVISED 8/18/98
COUNTY OF YUMA CONSTRUCTION STANDARDS
STANDARD NO. 3-280
SIDEWALK RAMP



1. ALL VERTICAL CELLS CONTAINING REINFORCING STEEL SHALL BE FILLED WITH GROUT. IN ADDITION, WHERE 6" BLOCKS ARE USED ALL CELLS WITHOUT VERTICAL REINFORCING STEEL SHALL BE FILLED WITH GROUT TO TOP OF BOND BEAM AT MIDHEIGHT OF WALL.
2. THE BLOCK WALL COURSES AND FOOTINGS MAY BE BUILT PARALLEL WITH THE STREET GRADE (7% MAX.) OR STEPPED.
3. ALL WALLS SHALL BE PLUMB.
4. BACKFILL SHALL BE COMPACTED TO A MINIMUM OF 90%.
5. FOOTING SHALL BE CLASS C CONCRETE.
6. CONCRETE BLOCK SHALL BE GRADE A UNITS, CONFORMING TO ASTM DESIGNATION NO. C90.
7. REINFORCING STEEL, GROUT MORTAR, AND CLASS B CONCRETE SHALL CONFORM TO THE STANDARD SPECIFICATIONS.
8. ELIMINATE MORTAR IN ALL VERTICAL JOINTS IN FIRST COURSE ABOVE FINISH GRADE.
9. 1/2" OPEN JOINTS EXTENDING THROUGH THE ENTIRE HEIGHT OF THE BLOCK WALL, SHALL BE SPACED AT A MAXIMUM OF 50'.
10. ELIMINATE MID-HEIGHT BOND BEAM IN WALLS WHERE H=4' OR LESS.

SOURCE: SAN BERNARDINO COUNTY
TRANSPORTATION DEPARTMENT

REVISED
COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 3-310
NON-RETAINING CONCRETE
BLOCK WALL
APPROVED BY <i>U. B. Zentgraf</i> 5/88
DIRECTOR OF PUBLIC WORKS

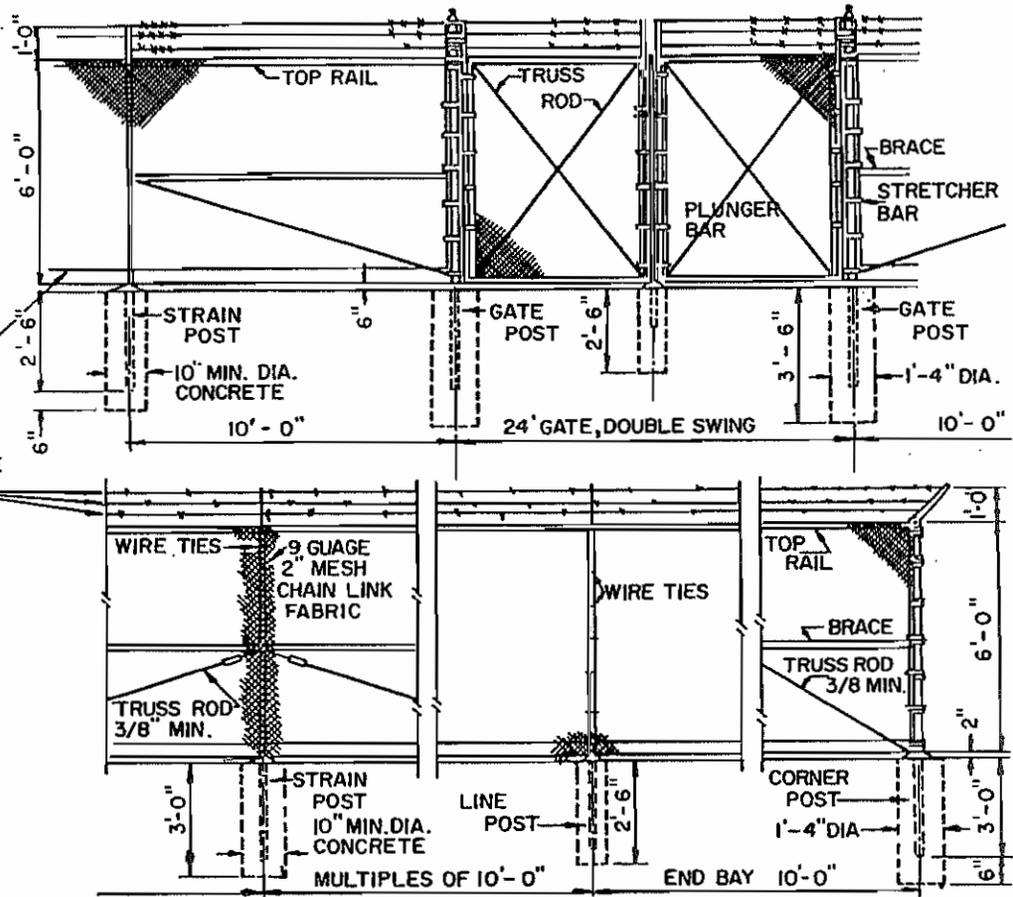
NOTES

1. ALL CONCRETE SHALL BE CLASS 'C' CONCRETE
2. FITTINGS NOT SPECIFICALLY DETAILED SHALL BE APPROVED HEAVY DUTY DESIGN.
3. STRAIN POSTS SHALL BE SPACED AT 500' MAXIMUM INTERVALS.
4. BOTH CORNER AND STRAIN POSTS SHALL HAVE STRAIN PANELS.
5. ALL POSTS SHALL BE CAPPED.

NO. 7 COILED SPRING REINFORCED WIRE TIE WITH 12 GAUGE WIRE OR HOG RING FASTENERS. 1-6" C TO C.

3 STRANDS - 4 POINT BARBED WIRE UNLESS OTHERWISE SPECIFIED.

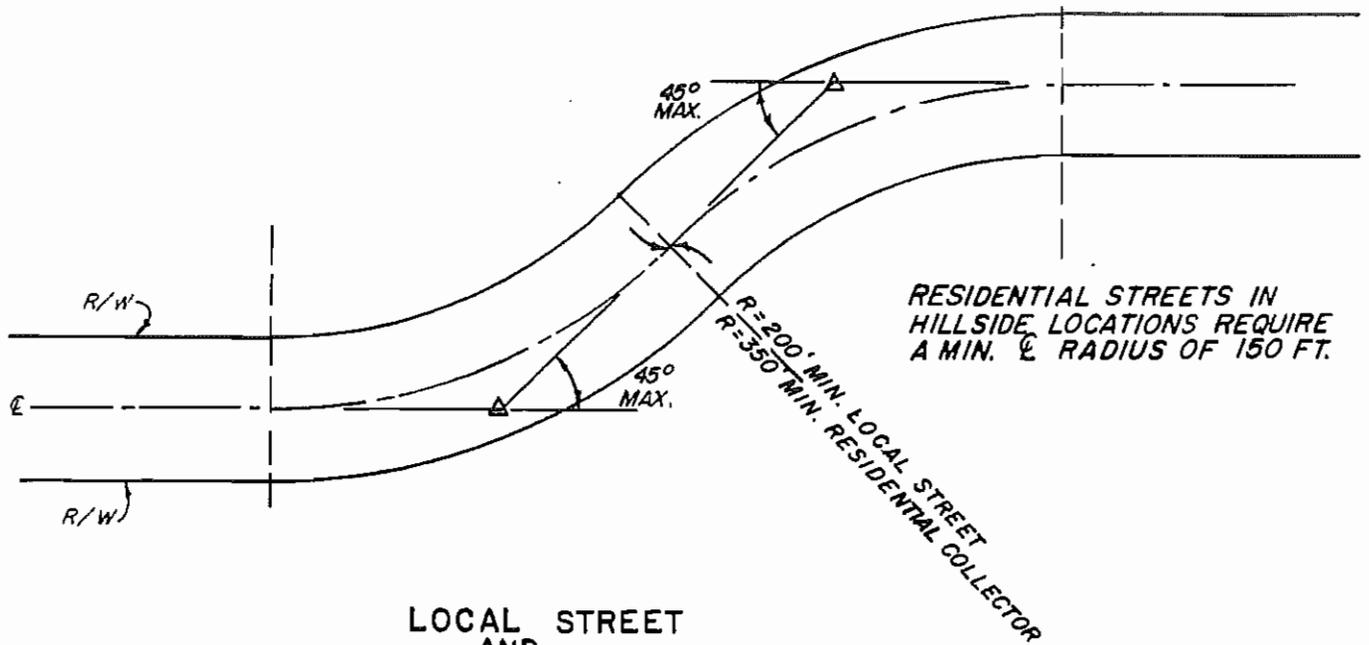
MEMBER	SIZE	WT. PER LF.
1. CORNER POST	2 1/2" I.D. STD. PIPE SCHEDULE 40	5.79
2. LINE POST	1 1/2" I.D. STD. PIPE SCHEDULE 40	2.72
3. STRAIN POST	2 1/2" I.D. STD. PIPE SCHEDULE 40	5.79
4. BRACE	1 1/4" I.D. STD. PIPE SCHEDULE 40	2.27
5. STRETCH BAR	1/4" X 3/4" FLAT	
6. GATE POST	3 1/2" I.D. STD. PIPE SCHEDULE 40	9.11
7. TOP RAIL	1 1/4" I.D. STD. PIPE SCHEDULE 40	2.27



REVISED

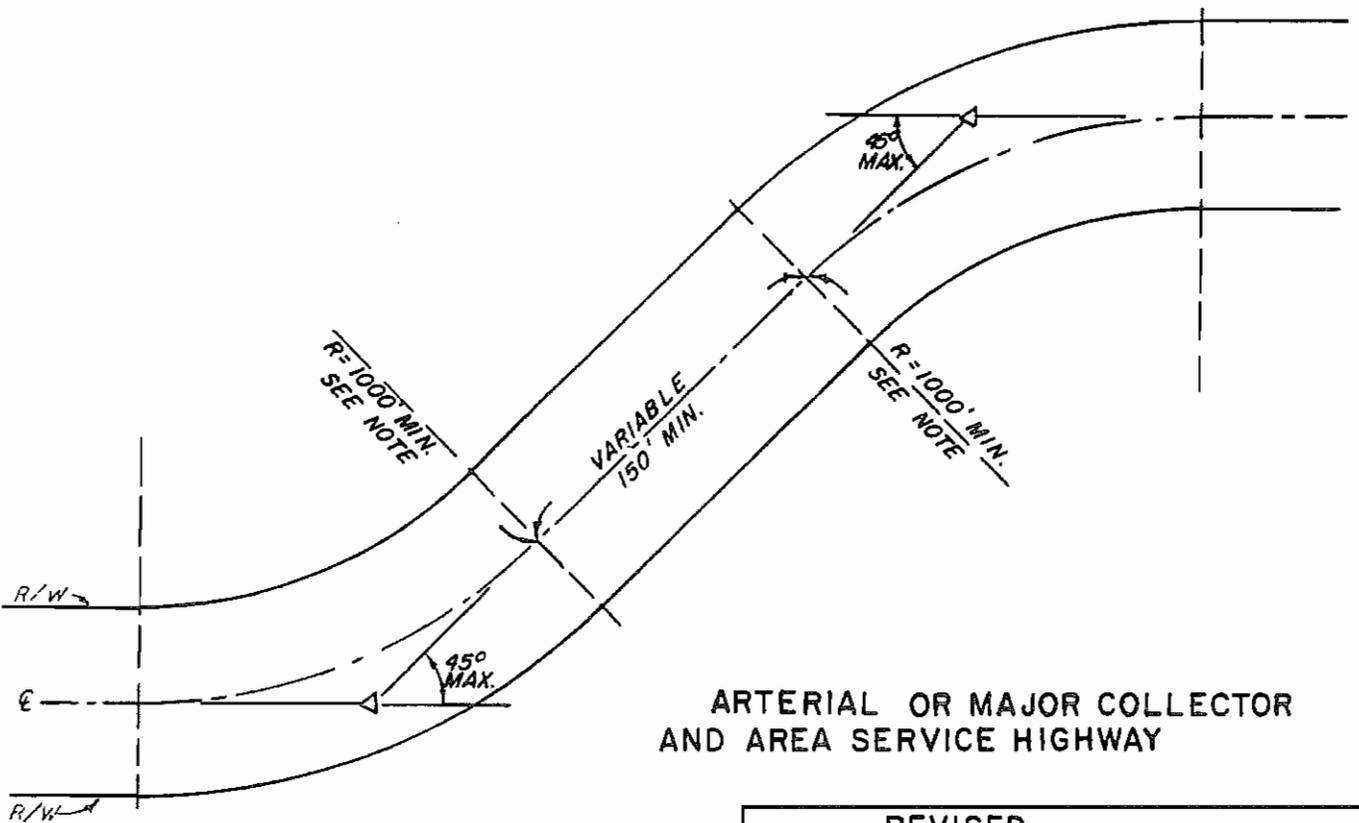
COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 3-320
6' CHAIN LINK FENCE & GATE

APPROVED BY *d. B. Fortney* 5/88
 DIRECTOR OF PUBLIC WORKS



RESIDENTIAL STREETS IN HILLSIDE LOCATIONS REQUIRE A MIN. ϵ RADIUS OF 150 FT.

LOCAL STREET AND RESIDENTIAL COLLECTOR



ARTERIAL OR MAJOR COLLECTOR AND AREA SERVICE HIGHWAY

NOTE:
 ARTERIAL OR MAJOR COLLECTOR STREETS SHALL HAVE A MINIMUM CENTERLINE RADIUS OF 1000 FEET UNTIL APPROVED OTHERWISE BY THE HIGHWAY DEPARTMENT.

REVISED	
COUNTY OF YUMA	
CONSTRUCTION STANDARDS	
STANDARD No. ... 3-330	
REVERSE CURVES	
APPROVED BY <u>O.B. Fentley</u>	5/88
DIRECTOR OF PUBLIC WORKS	

STREET INTERSECTIONS SHOULD BE CAREFULLY DESIGNED SO AS TO ELIMINATE DANGEROUS TRAFFIC MOVEMENTS AND ODD SHAPED LOTS.

SEE CONSTRUCTION STD. NO. 26 FOR MIN. RADIUS.

CANNOT VARY FROM 90° BY MORE THAN 10° MAX.

75' MINIMUM

RESIDENTIAL STREET OR COLLECTOR

RESIDENTIAL STREET
OR
RESIDENTIAL COLLECTOR

RESIDENTIAL STREETS

ALL INTERSECTIONS OF AREA SERVICE HIGHWAY AND ARTERIAL OR MAJOR COLLECTORS SHOULD BE AT RIGHT ANGLES.

100' MIN.

FRONTAGE STREET

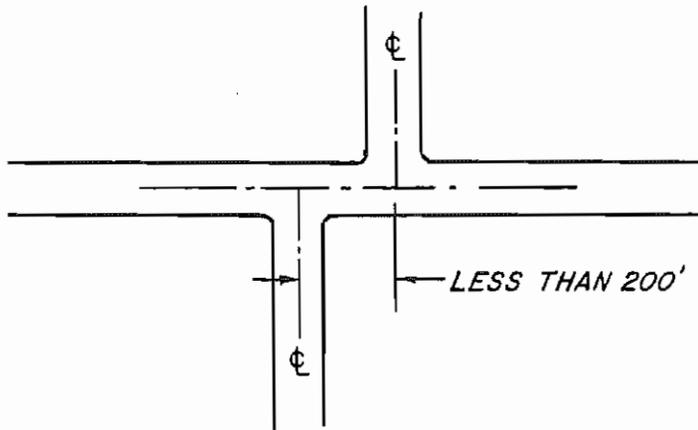
ARTERIAL OR MAJOR COLLECTOR
OR AREA SERVICE HIGHWAY

AREA SERVICE HIGHWAY OR
ARTERIAL OR MAJOR COLLECTOR

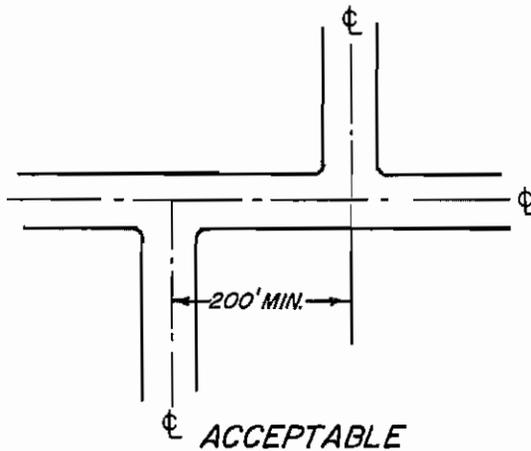
REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD N° ...3-340
ANGLE OF INTERSECTIONS

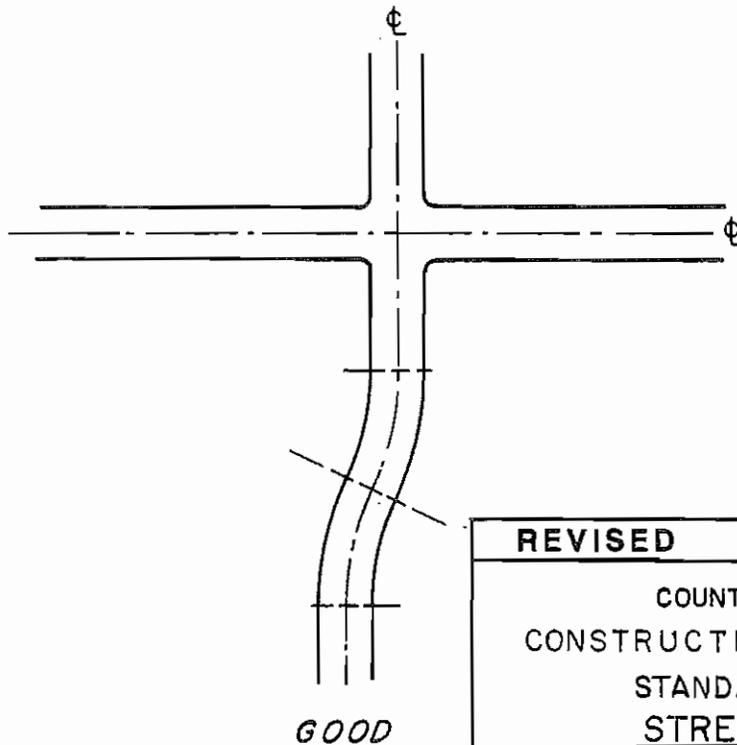
APPROVED BY D. B. Jantzen 5/88
DIRECTOR OF PUBLIC WORKS



NOT ACCEPTABLE



ACCEPTABLE

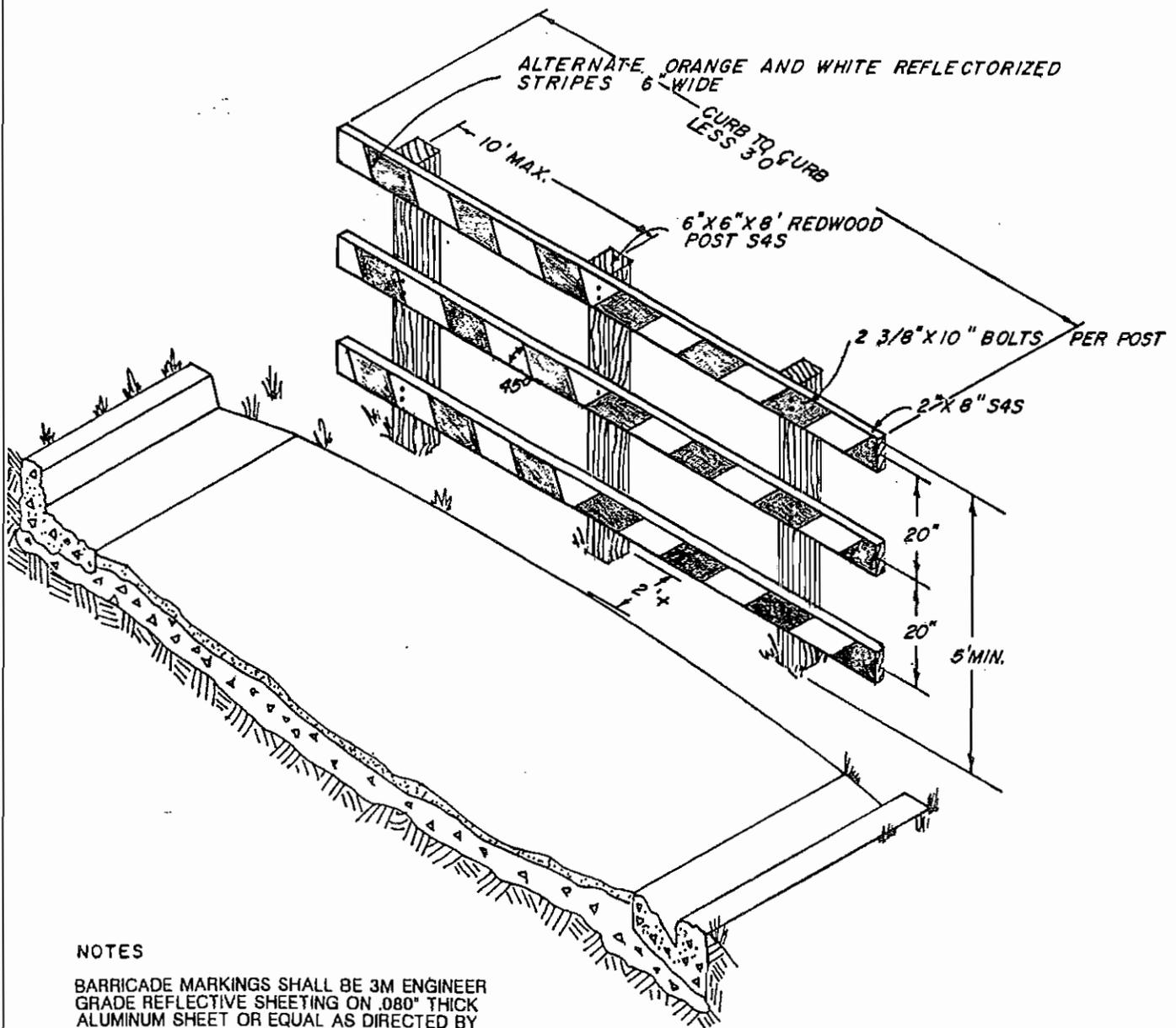


GOOD

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD № ...3-350
 STREET JOGS

APPROVED BY D. B. Finkel 5/88
 DIRECTOR OF PUBLIC WORKS



NOTES

BARRICADE MARKINGS SHALL BE 3M ENGINEER GRADE REFLECTIVE SHEETING ON .080" THICK ALUMINUM SHEET OR EQUAL AS DIRECTED BY PUBLIC WORKS.

RAIL TIMBER TO BE NO. 1 D.F. S4S AND TO RECEIVE 2 COATS OF OUTSIDE WHITE PAINT ON NON-REFLECTIVE SURFACES.

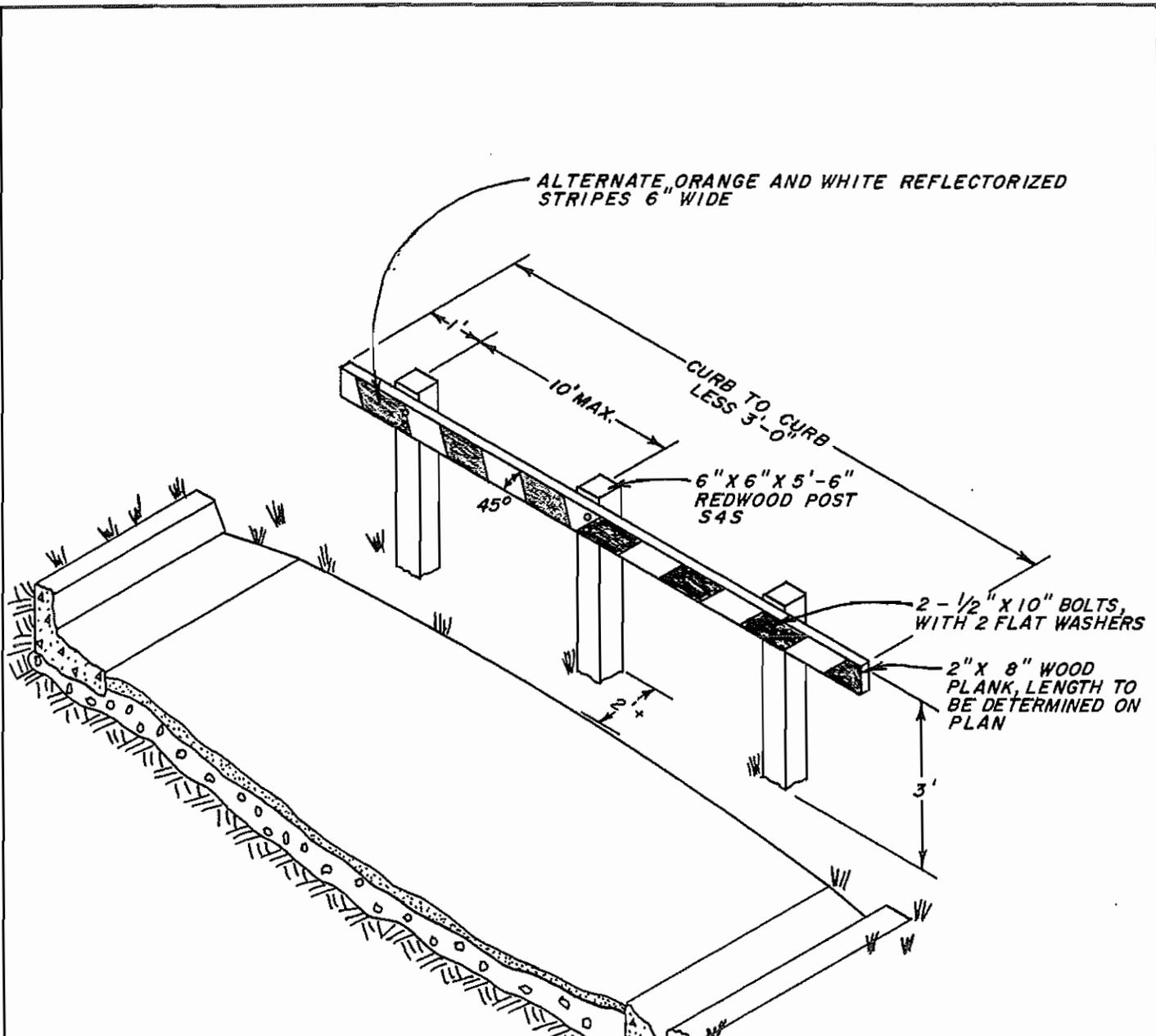
STRIPES SHALL SLOPE TOWARD THE CENTER OF THE PAVEMENT FROM BOTH SIDES, UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER.

STREET WIDTH	NO. OF POSTS
26' - 32'	4
38' - 44'	5
48'	6
68' - 72'	8

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N^o.... 3-360
TYPE III BARRICADE

APPROVED BY *R. B. Jantney* 5/88
 DIRECTOR OF PUBLIC WORKS



NOTES

BARRICADE MARKINGS SHALL BE 3M ENGINEER GRADE REFLECTIVE SHEETING ON .080" THICK ALUMINUM SHEET OR EQUAL AS DIRECTED BY PUBLIC WORKS.

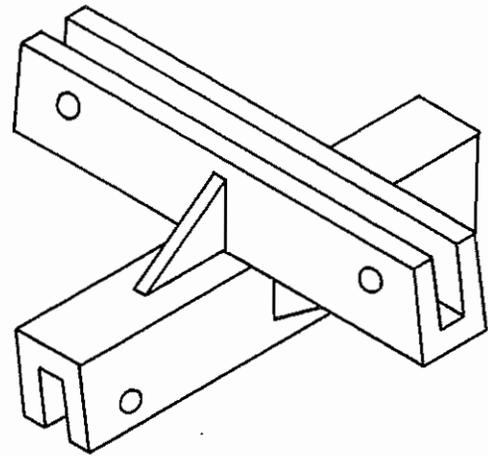
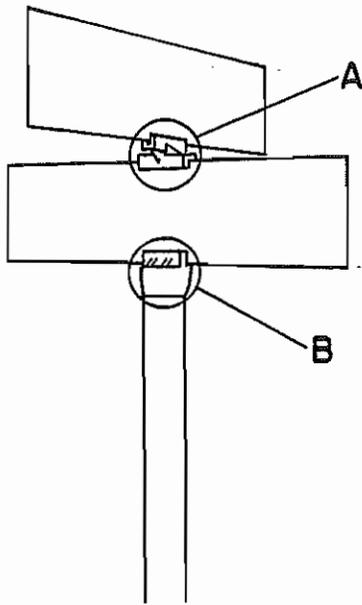
RAIL TIMBER TO BE NO. 1 D.F. S4S AND TO RECEIVE 2 COATS OF OUTSIDE WHITE PAINT ON NON-REFLECTIVE SURFACES.

STRIPES SHALL SLOPE TOWARD THE CENTER OF THE PAVEMENT FROM BOTH SIDES, UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER.

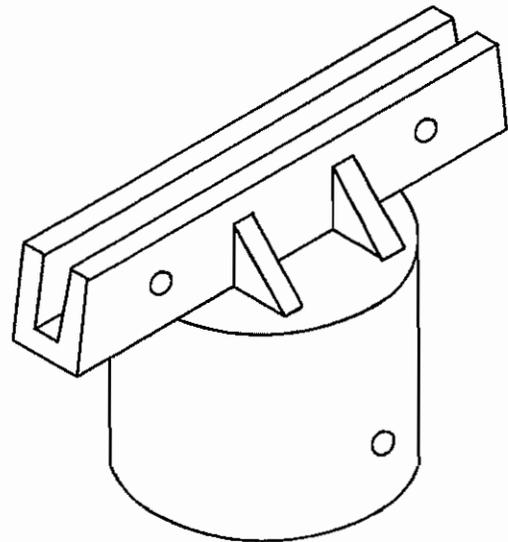
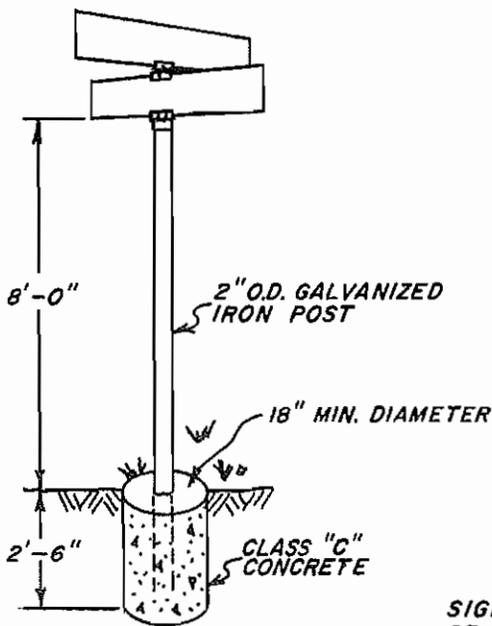
NOT TO BE USED ON ARTERIAL OR MAJOR COLLECTOR ROADS.

STREET WIDTH	NO. OF POSTS
26'-30'	6
32'	7
38'-40'	8
44'	9
48'	10
66'	14
72'	15

REVISED
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD N ^o ...3-370 TYPE I BARRICADE
APPROVED BY <i>U. B. Farley</i> 5/88 DIRECTOR OF PUBLIC WORKS



DETAIL A



DETAIL B

INDEPENDENT INSTALLATION

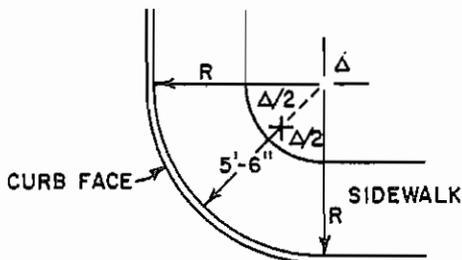
GENERAL NOTES

SIGN BRACKETS TO BE VULCAN MODEL VSS-1/VSS-1UC OR EQUIVALENT AS APPROVED BY THE COUNTY ENGINEER.

SIGN BRACKET SLOTS ARE TO BE SIZED FOR EXTRUDED ALUMINUM SIGN BLANKS.

SIGN BLANKS ARE TO BE 6" X 24" MIN. OF EXTRUDED ALUMINUM.

LETTERS ARE TO BE 4" HIGH OF ENGINEERS GRADE REFLECTIVE WHITE ON ENGINEERS GRADE REFLECTIVE GREEN BACKGROUND (BOTH SIDES).

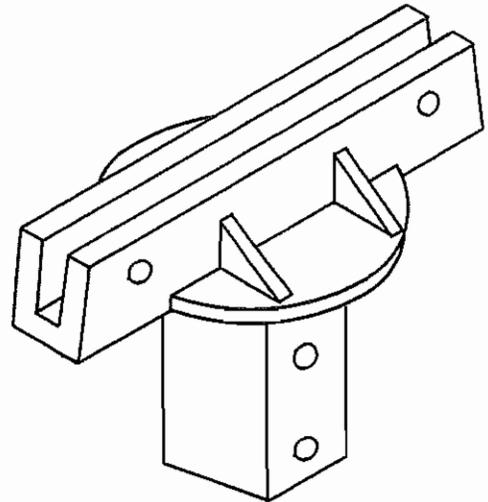
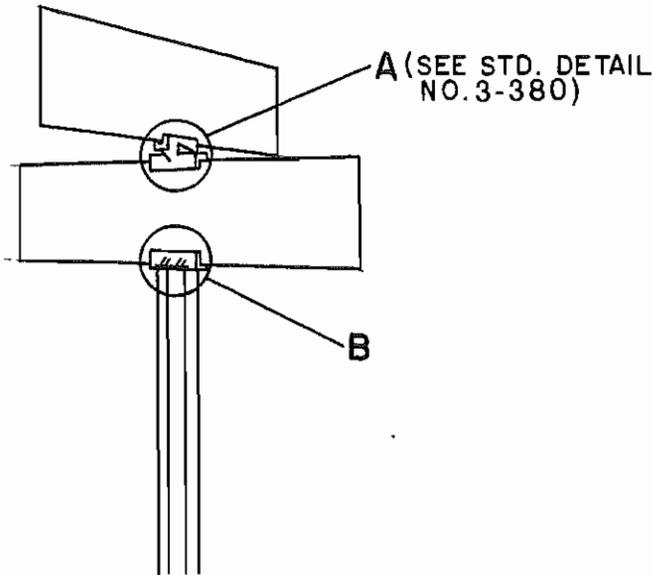


LOCATION
(INDEPENDENT INSTALLATION)

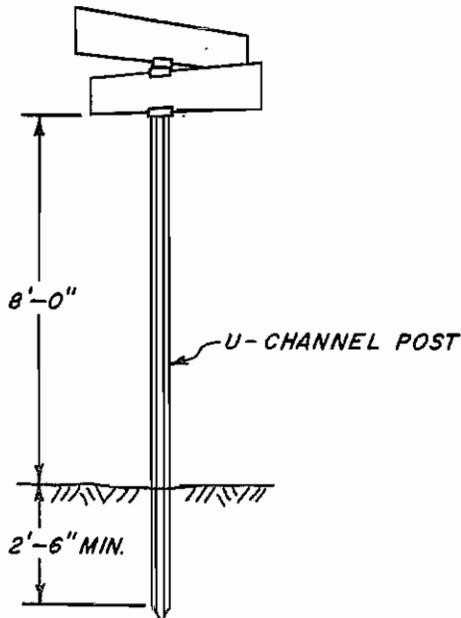
REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD N^o... 3-380
DOUBLE FACED STREET SIGN

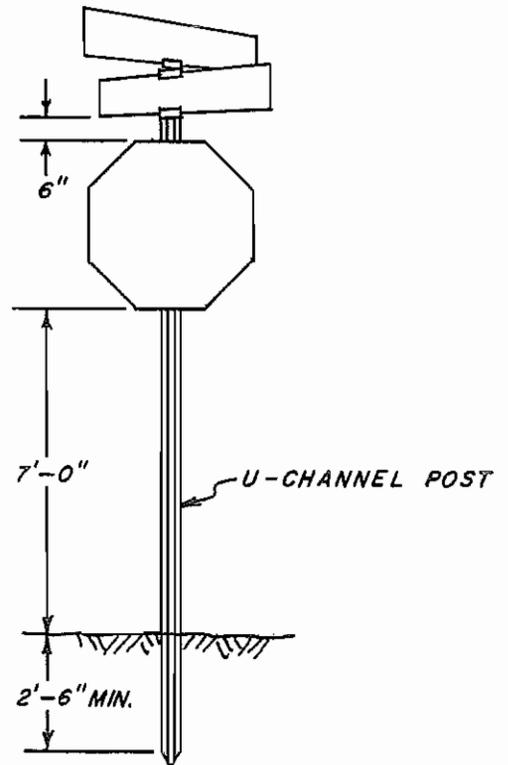
APPROVED BY U. B. Frazier 5/88
DIRECTOR OF PUBLIC WORKS



DETAIL B



INDEPENDENT INSTALLATION
SEE STD. NO. 23 FOR LOCATION



REGULATORY SIGN INSTALLATION
SEE NOTES FOR LOCATION

NOTES

U-CHANNEL POSTS SHALL BE FLANGED GALVANIZED AND A MINIMUM OF 2 LB. PER FOOT IN WEIGHT.

WHEN STREET NAME SIGNS ARE MOUNTED WITH A REGULATORY SIGN, THE LOCATION WILL BE AS PER THE M.U.T.C.D.

SEE GENERAL NOTES ON STD. DETAIL NO. 3-380

REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD N^o... 3-390
**DOUBLE FACED STREET SIGN-
STOP SIGN**

APPROVED BY *D.B. Fortney* 5/88
DIRECTOR OF PUBLIC WORKS

MONUMENTATION

Except where Standard 4-040 or 4-050 is specified, all street centerline intersections, street centerline angle points, and street centerline beginning and end of curve points shall be monumented by a standard monument as required on Standard 4-020 using Standard 4-080.

All subdivision boundary corners not in pavement shall be monumented by a standard monument as shown on Standard 4-020 using standard 4-030.

Any boundary or centerline monuments having characteristics other than as described and shown on Standard 4-020, may only be set upon written approval of the Department of Development Services.

In locations where a standard monument cannot be constructed, the survey location shall be referenced as shown in Standard 4-060 using Standard 4-070.

Upon completion of all required improvements, a licensed surveyor shall furnish the Department of Development Services a complete and accurate set of notes or sketches which will show clearly, ties of the sub-surface monument and surface monuments.

The surveyor shall comply with the requirement of Arizona Revised Statutes 33-103 Monuments at section and quarter corners, 33-105 Recording of certain land surveys and 33-106 Corner record survey filing.

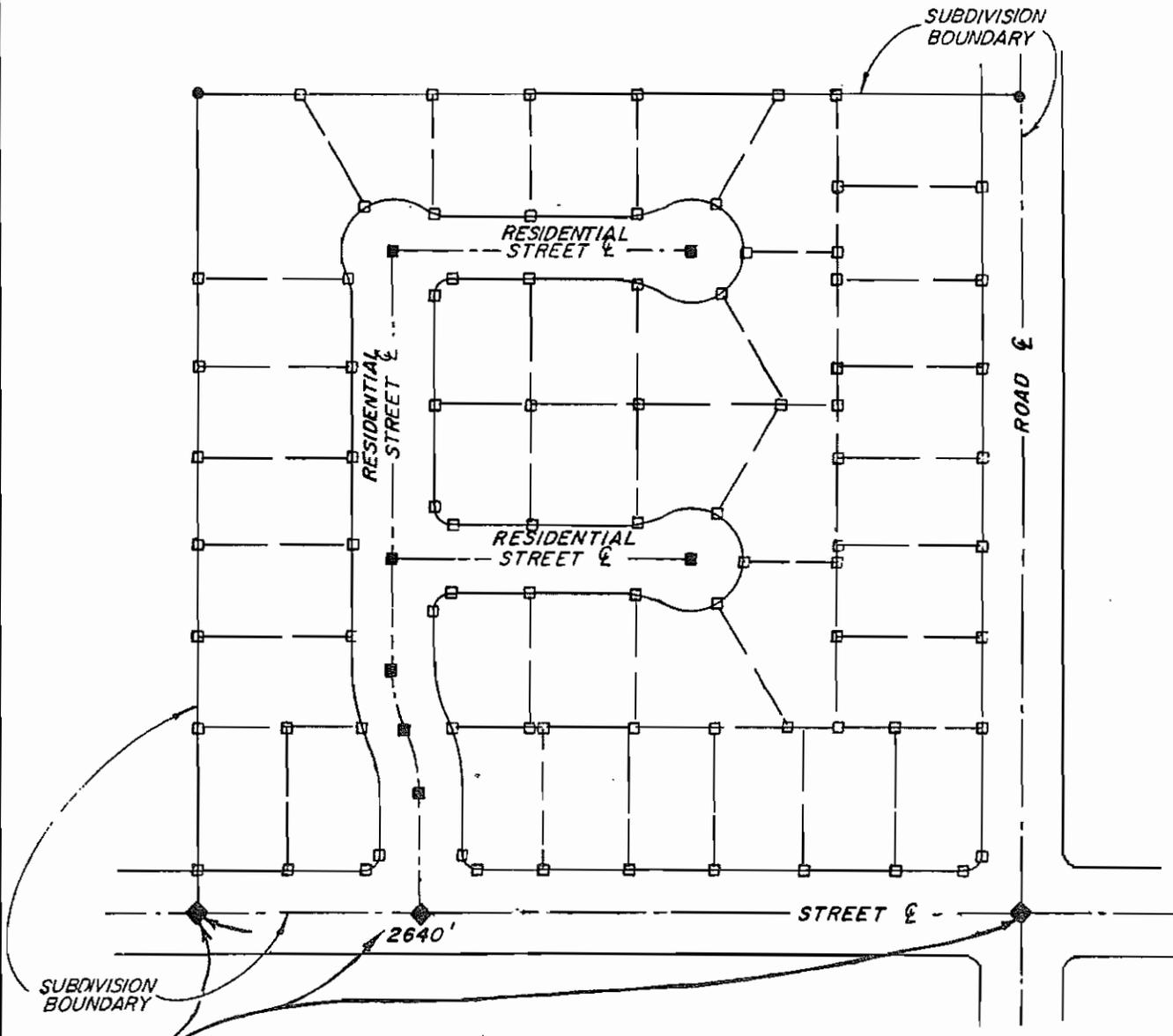
REVISED 8/18/98

COUNTY OF YUMA
CONSTRUCTION STANDARDS

STANDARD NO. 4-010

MONUMENT SPECIFICATION

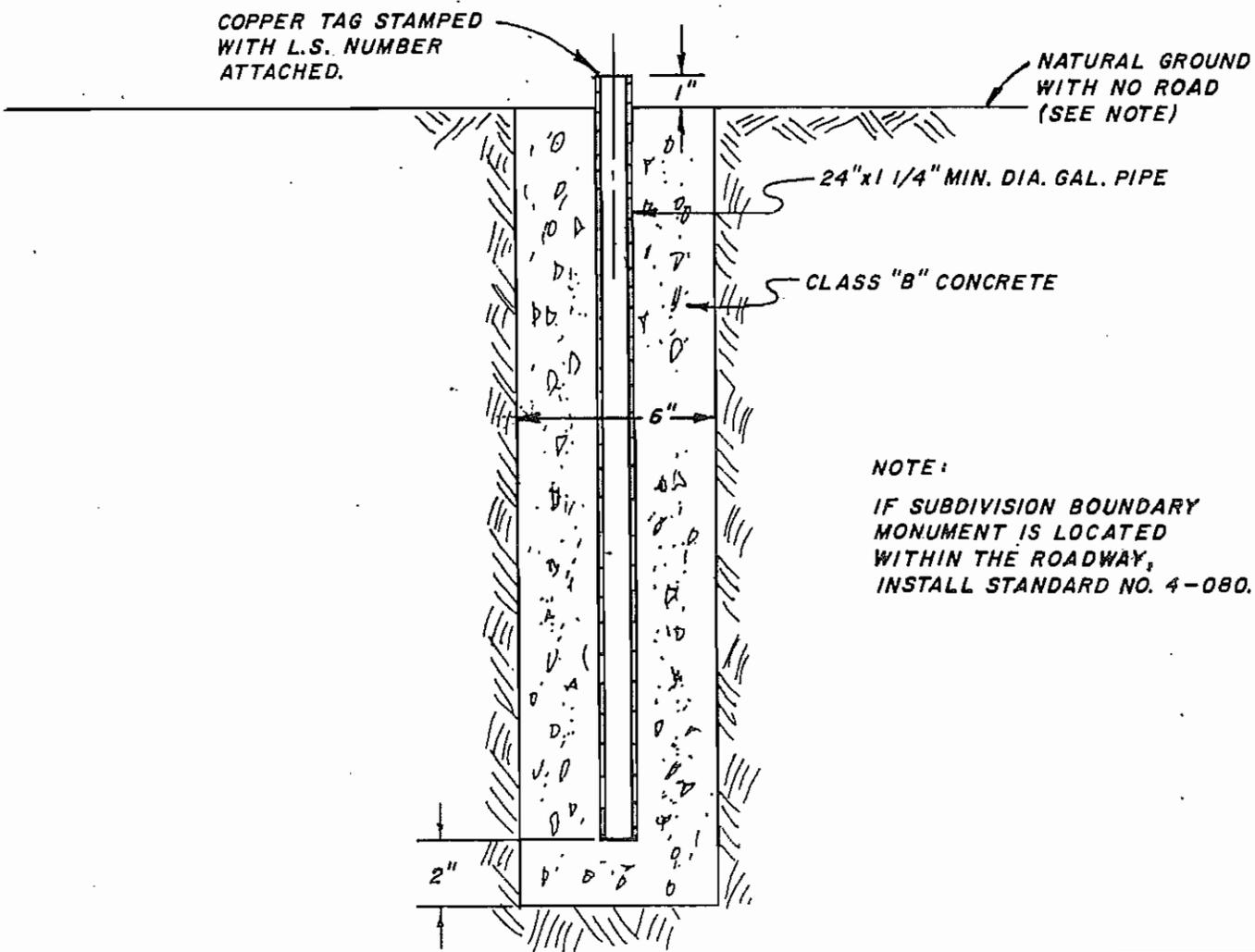
TYPICAL SUBDIVISION MONUMENTING BOUNDARY, STREET, & LOTS



INSTALL MONUMENT No.4-040 OR No. 4-050 AT ALL 1/4 AND SECTION CORNERS AND AT ALL MAJOR COLLECTOR, ARTERIAL STREETS, AND AREA SERVICE HIGHWAY INTERSECTIONS.

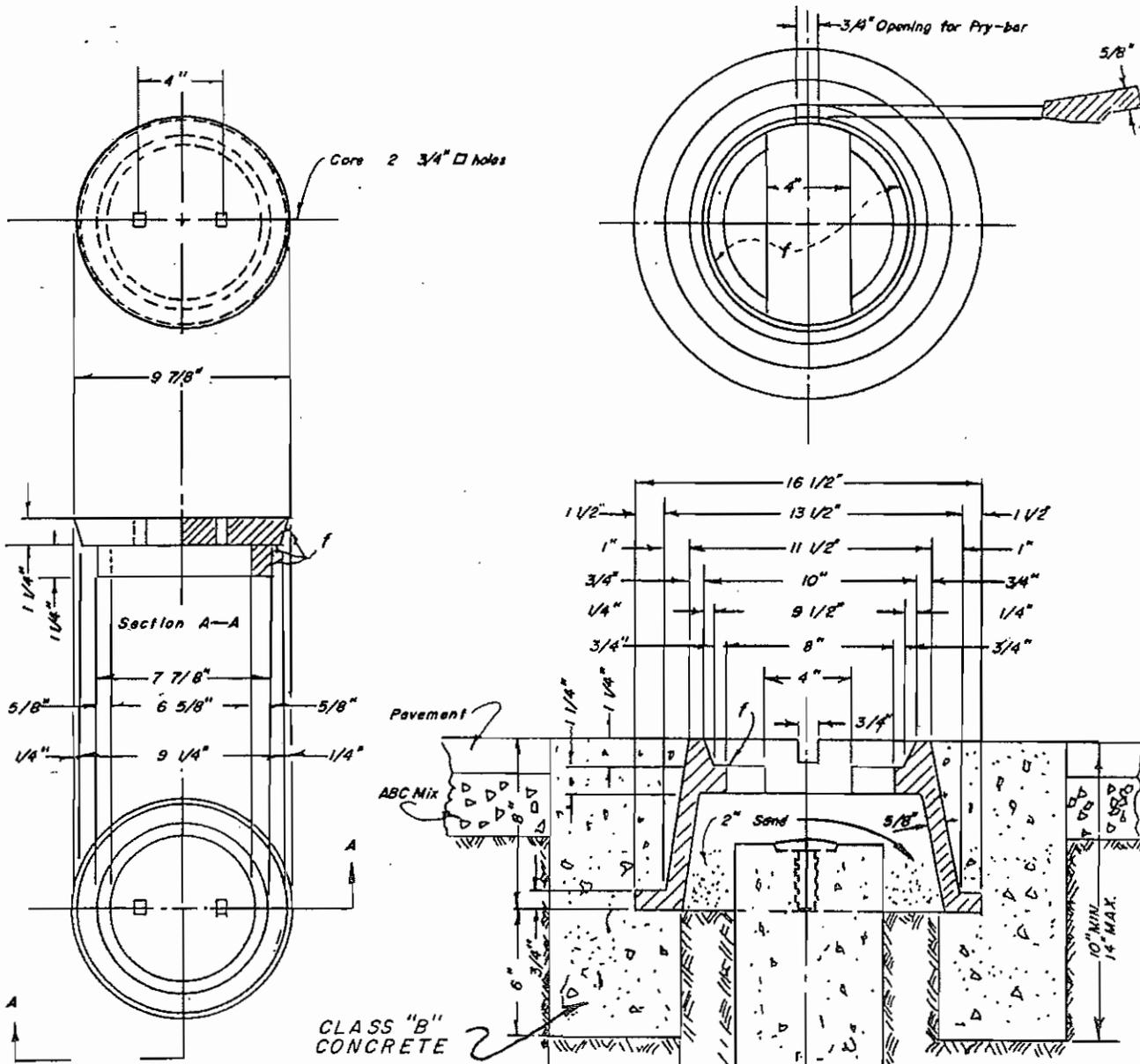
- INDICATES TAGGED PROPERTY CORNER STAKE
- ◆ INDICATES STANDARD STREET MONUMENT No.4-040 OR No. 4-050
- INDICATES STANDARD SUBDIVISION MONUMENT No.4-030
- INDICATES STANDARD STREET MONUMENT No.4-080

REVISED
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD No. 4-020 TYPICAL SUBDIVISION MONUMENTING
APPROVED BY <i>U.B. Fisher</i> 5/88 DIRECTOR OF PUBLIC WORKS



NOTE:
 IF SUBDIVISION BOUNDARY MONUMENT IS LOCATED WITHIN THE ROADWAY, INSTALL STANDARD NO. 4-080.

REVISED 8/19/98
COUNTY OF YUMA CONSTRUCTION STANDARDS
STANDARD NO. 4-030
BOUNDARY MONUMENT



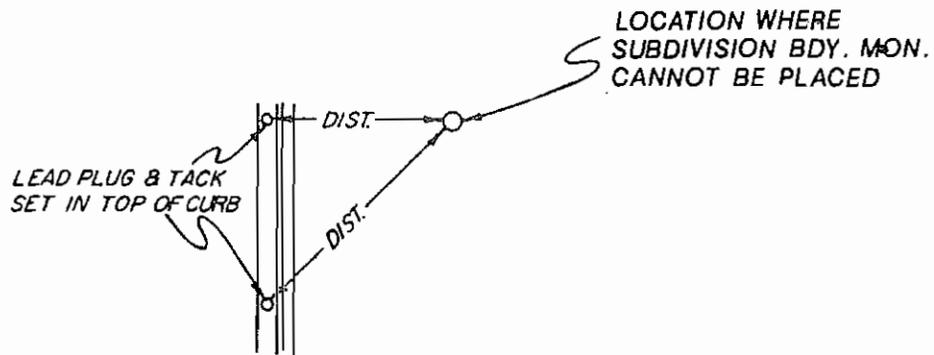
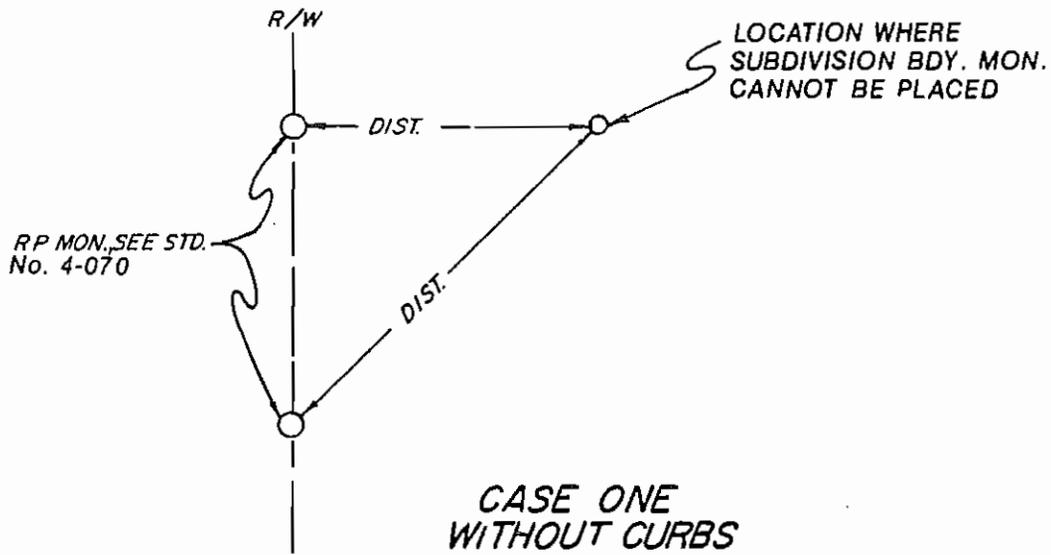
LID
MINIMUM WEIGHT 31 POUNDS

6" x 24" CONCRETE CYLINDER
WITH 3" BRASS OR BRONZE
DISK BEARING CORNER DATA
AND L.S. REG. NO. SET IN
COMPACTED SOIL AND PUNCHED. FRAME

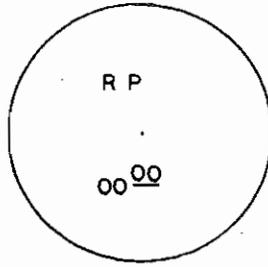
TOLERANCE FOR MACHINE FINISH
± 1/64"

f INDICATES ORDINARY MACHINING

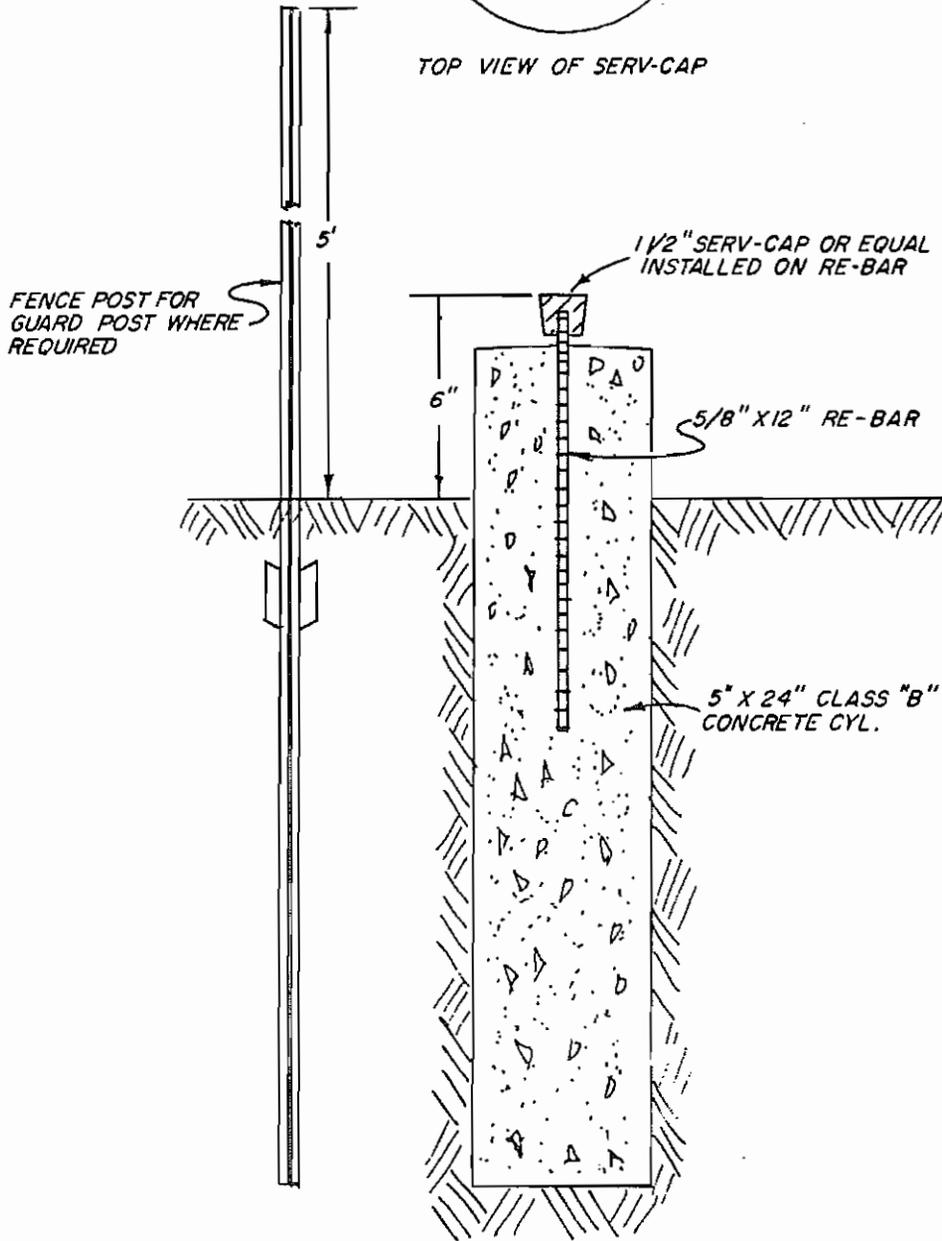
REVISED 8/20/98
COUNTY OF YUMA CONSTRUCTION STANDARDS
STANDARD NO. 4-040
SURVEY MONUMENT WITH FRAME & COVER - TYPE A



REVISED	
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD No. 4-060 MONUMENT REFERENCING STD.	
APPROVED BY <u><i>P. B. Fortney</i></u>	5/88
DIRECTOR OF PUBLIC WORKS	



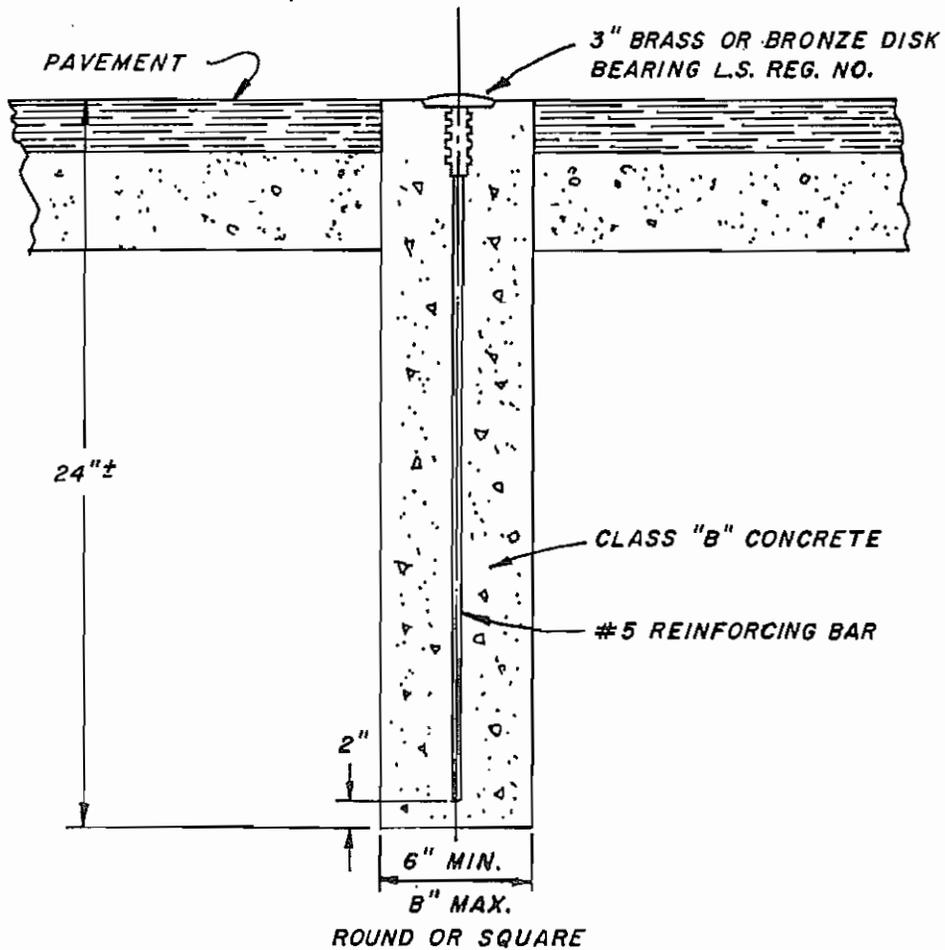
TOP VIEW OF SERV-CAP



REVISED

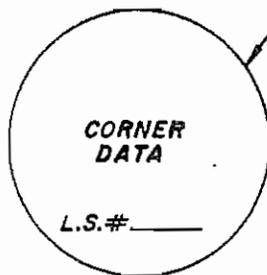
COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD N^o ... 4-070
R.P. MONUMENT

APPROVED BY *J. B. Fortney* 5/88
DIRECTOR OF PUBLIC WORKS



LETTERS TO BE NO LESS
THAN 5/16" HIGH

IMPRINT TO BE APPROX.
1/32" WIDE AND 1/32" DEEP



TOP OF DISK

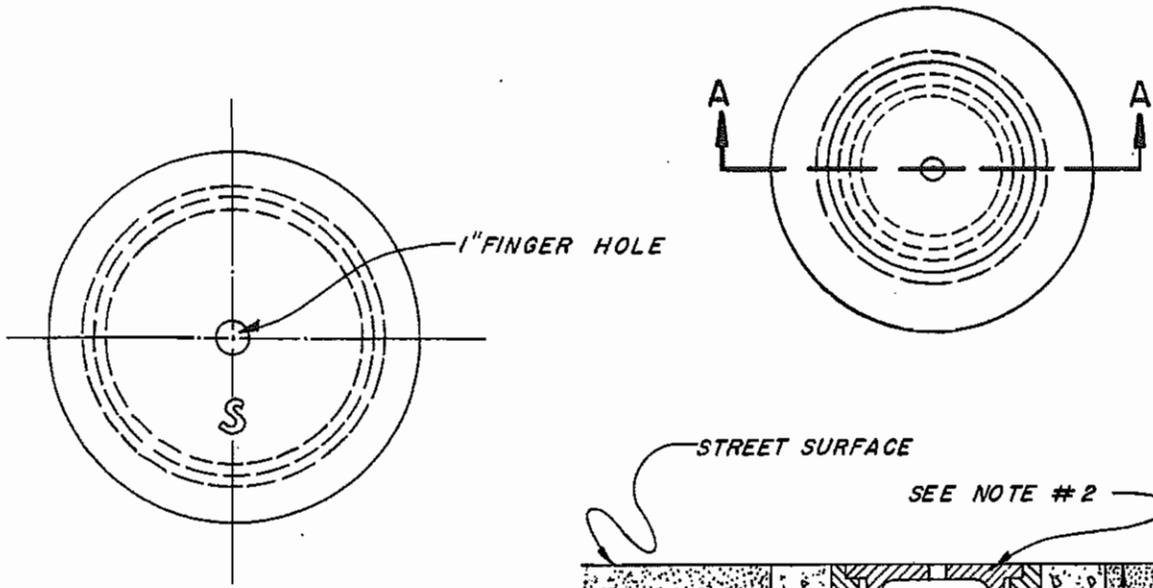
REVISED 8/19/98

COUNTY OF YUMA
CONSTRUCTION STANDARDS

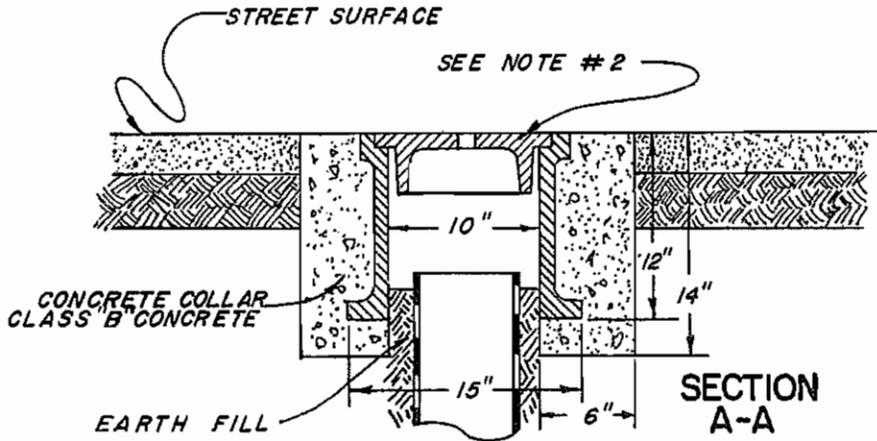
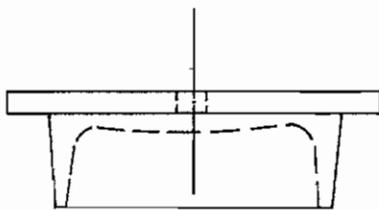
STANDARD NO. 4-080

STREET MONUMENT

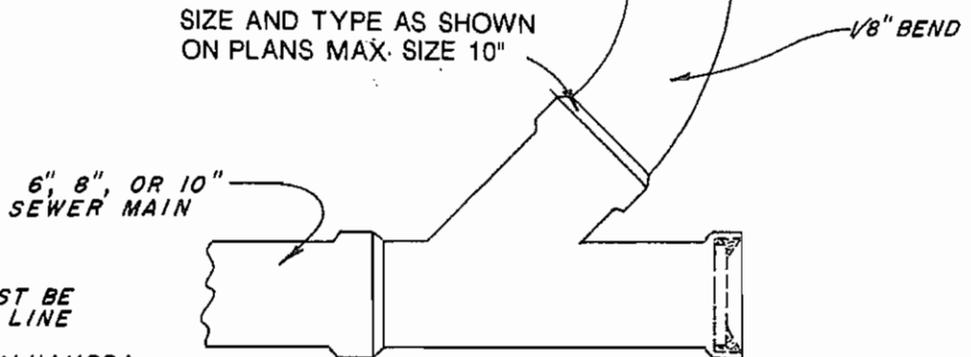
PLAN



COVER



ELEVATION



1. CLEAN-OUT PIPE MUST BE SAME DIA. AS MAIN LINE SEWER
2. CASTING SHALL BE ALHAMBRA FOUNDARY NO. A-1240 OR A-1241 OR EQUAL AS APPROVED BY THE ENGINEER.
3. COVER, FRAME, AND CONCRETE PAD ARE TYPICAL FOR 6", 8", AND 10" I.D. MAIN LINE SEWER.
4. USE CLASS "B" CONCRETE THRUOUT
5. PLUGS SHALL BE CEMENTED IN PLACE WITH CEMENT MORTAR.

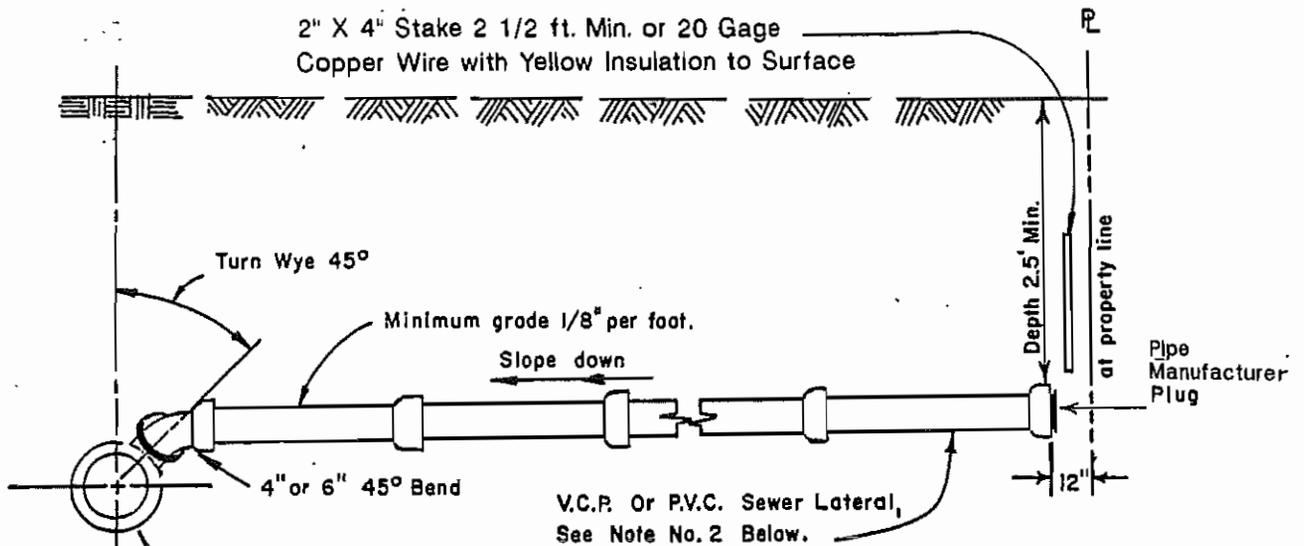
REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No. 5-010

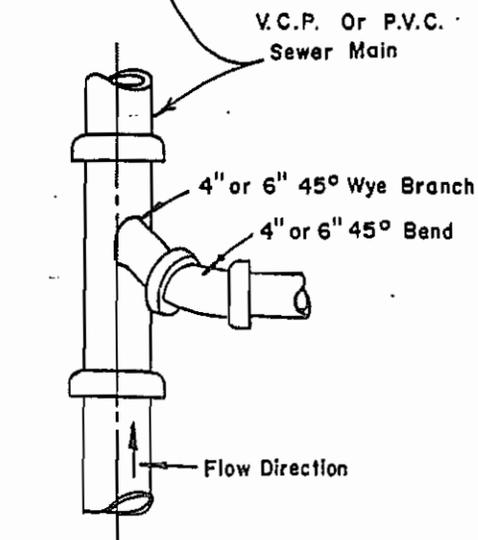
SEWER CLEANOUT

APPROVED BY D. B. Fortney 5/88
DIRECTOR OF PUBLIC WORKS

BACKFILL IN DITCH SHALL BE COMPACTED FROM 85% TO 95% OF THE MAX. DENSITY OF THE SOIL AS PER APPROVED PLANS, SEE STD. No. 5-080



SECTION VIEW



PLAN VIEW

(NOT TO SCALE)

NOTE :

1. WHERE CONDITION EXISTS THAT A LARGER LATERAL THAN 4" IS REQUIRED, THE SANITARY SEWER MAIN SHOULD BE CHECKED TO SEE IF IT HAS SUFFICIENT CAPACITY TO HANDLE THE ADDITIONAL FLOW FROM THE NEW SERVICE CONNECTION.
2. "AS BUILT" DRAWINGS SHALL BE SUBMITTED TO THE DEPARTMENT OF PUBLIC WORKS SHOWING EXACT LOCATIONS OF ALL HOUSE CONNECTIONS FROM THE NEAREST MANHOLE. TERMINATION POINT OF SEWER LATERAL SHALL BE ONE (1) FOOT OUTSIDE PROPERTY LINE UNLESS OTHERWISE NOTED ON APPROVED DRAWINGS.

(DRAWN : L. B. K.)

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD No ... 5-020
 STANDARD HOUSE CONNECTION

APPROVED BY *D. B. Fortney* 5/88
 DIRECTOR OF PUBLIC WORKS

CLASS "B" CONCRETE

NATURAL GROUND

CAST IRON MANHOLE FRAME & COVER PER STD. 5-040 SET TO FINISH GRADE

PAINT EXPOSED CONC. BLACK

STREET SURFACE

TOP STEP SHALL BE PLACED IMMEDIATELY BENEATH MANHOLE FRAME

ADJUSTING RINGS AS REQUIRED
MAX. = 24"
MIN. = 12"

MAX. = 30"
MIN. = 36"

NOTE: PLACE ECCENTRIC COVERS & STEPS UPSTREAM
STEPS SHALL BE PER "STD" 5-045. PLACED SYMMETRICAL OR OFFSET DESIGN WITH SPACING NOT TO EXCEED 17"

NOTE: CHANNELS OF MANHOLE BOTTOMS TO BE FORMED IN CONCRETE AND SIDE INLETS TO HAVE CHANNELS CURVED IN THE DIRECTION OF FLOW.

TONGUE & GROOVE, CONCRETE, PRECAST RINGS

DROP INLET

VARIABLE

1" MIN. COVER

SLOPE 1" : 12"

SLOPE 1" : 12"

1" GROUT

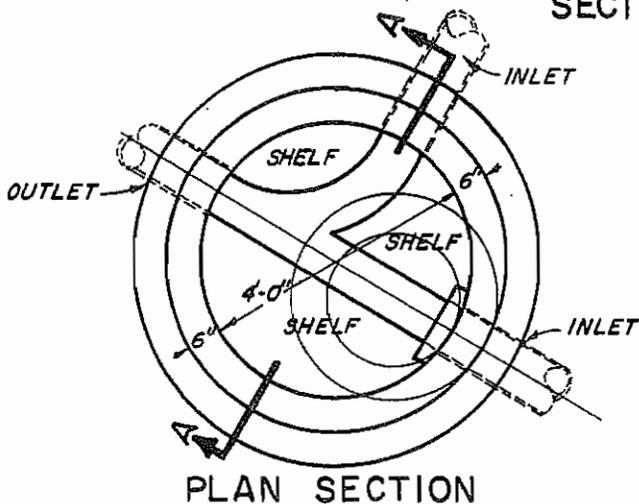
VARIABLE

CONCRETE ENCASEMENT

CLASS 'A' CONCRETE

6'-0" DIAM
SECTION A-A

NOTE:
PRE-CAST REINFORCED M.H. SECTIONS SHALL BE MANUFACTURED IN ACCORDANCE WITH A.S.T.M. C-478.



PLAN SECTION

REVISED

COUNTY OF YUMA

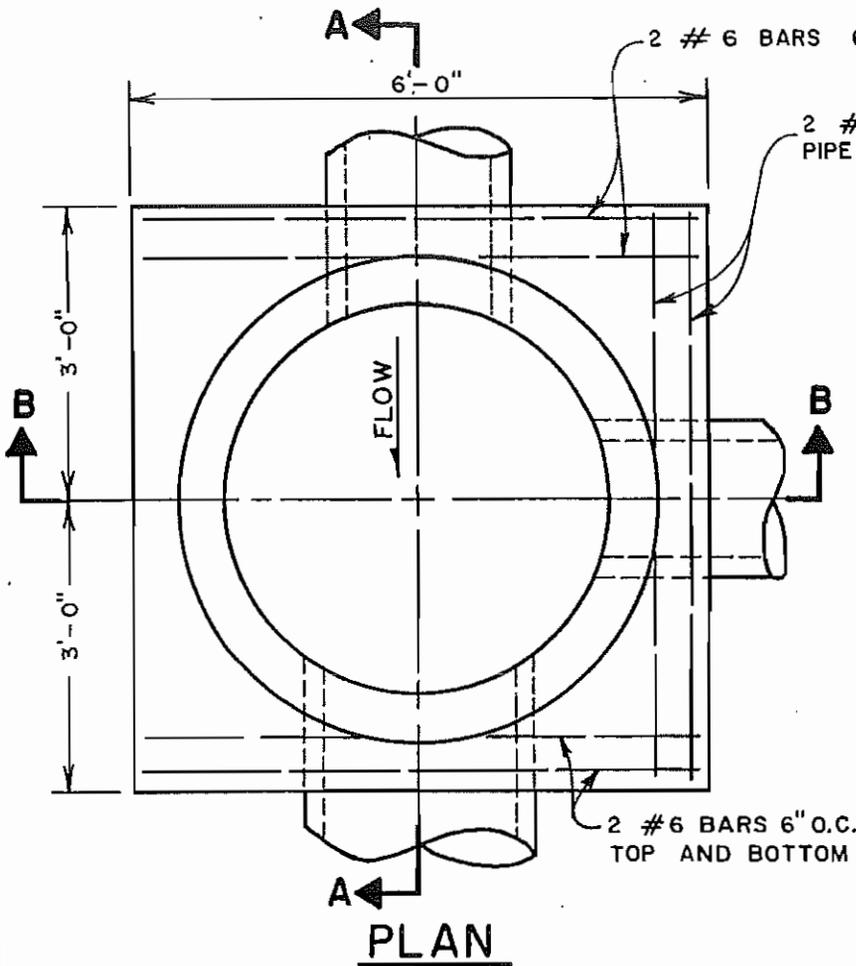
CONSTRUCTION STANDARDS

STANDARD N° ... 5-030

PRE - CAST CONCRETE MANHOLE

APPROVED BY U. B. Fortney 5/88
DIRECTOR OF PUBLIC WORKS

CONCRETE MANHOLE BASE No. 1 FOR 15" TO 48" DIA. PIPE

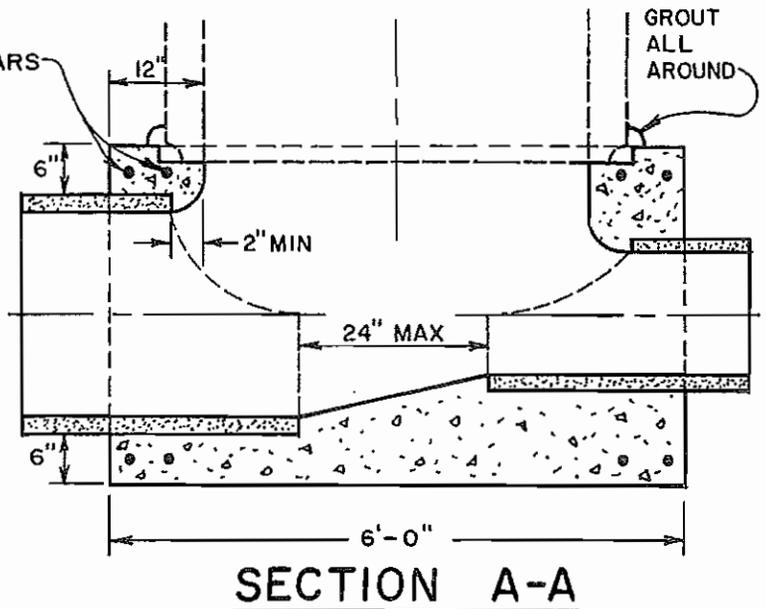
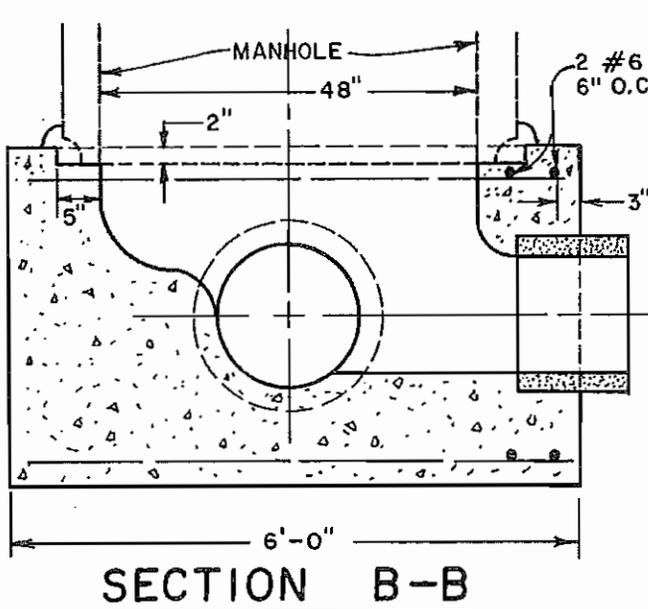


NOTES:

ALL CONCRETE CLASS 'A'

MATCH SPRING LINE OF PIPES ENTERING M.H. UNLESS OTHERWISE NOTED.

CUT PIPES TO ALLOW SETTING OF 4" DIA. CYLINDRICAL FORM FROM 6" ABOVE MAIN LINE PIPE TO SPRING LINE. CUT PIPE 2" LARGER THAN FORM TO ALLOW 2" CONCRETE OVER ENDS OF ALL CUT PIPE. INVERT AND BASE OF M.H. TO BE POURED AND INVERT TO BE SHAPED BY HAND TO MAKE SMOOTH TRANSITION FINISH WITH STEEL TROWEL. CENTER M.H. ON PIPE JOINT WHERE PIPE CHANGES SIZE, LEAVE GAP. 12" MIN., 24" MAX.

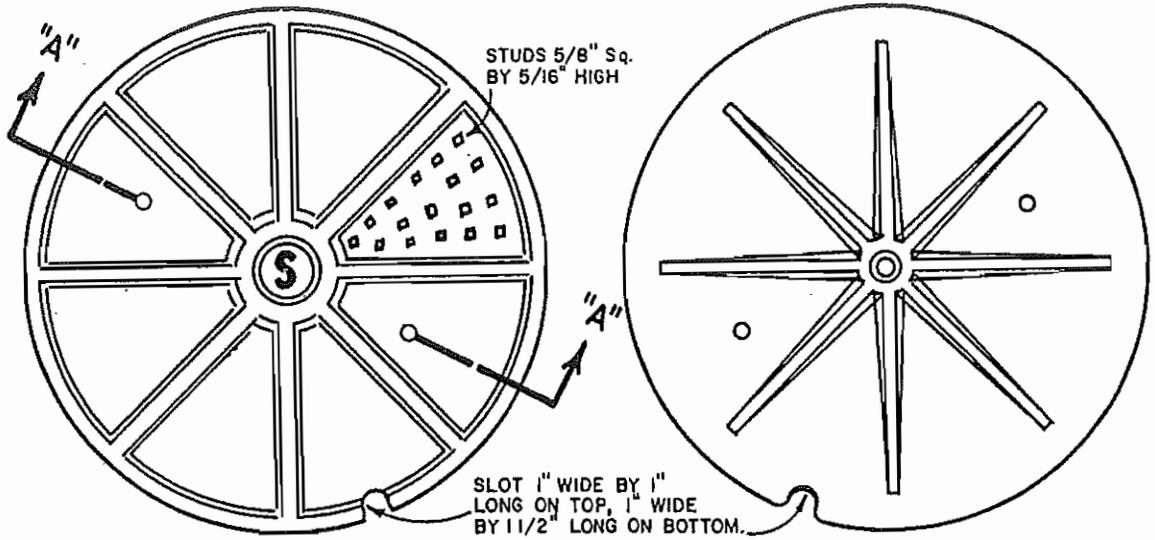


GROUT ALL AROUND

NOTES: (cont.)

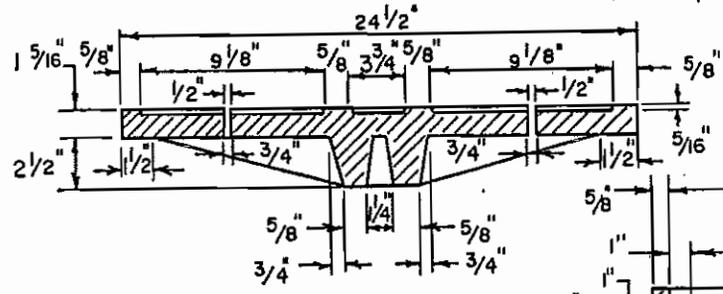
WHEN THE MANHOLE HAS A DROP INLET CONNECTION ON THE MAIN LINE, THE TOP OF THE CONCRETE BASE SHALL BE 6" ABOVE THE TOP OF THE DROP INLET PIPE.

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD No. 5-035
 CONC. MANHOLE BASE No. 1
 APPROVED BY *D. B. Fritsch* 7/88
 DIRECTOR OF PUBLIC WORKS

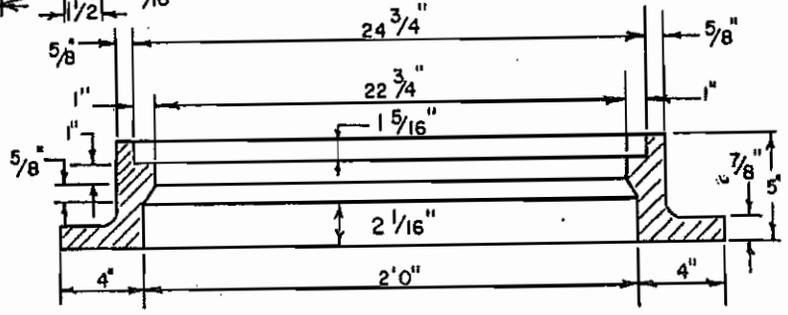


TOP VIEW

BOTTOM VIEW



SECTION "A-A"



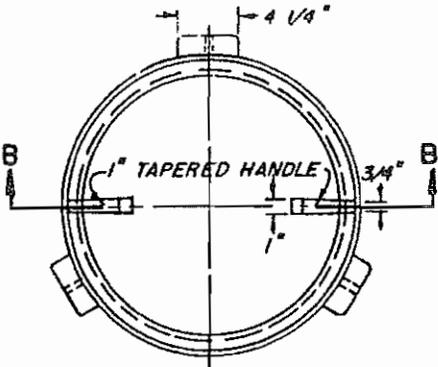
SECTION OF FRAME

NOTE:

The top of the cover and frame shall be flush, and there shall be 1/8" horizontal clearance all around between frame and cover. All covers to have the letter "S". Letters to be raised 5/16" and not less than 2 1/2" high. All the surface not occupied by ribs or letter to be studded with studs 5/16" high and 5/8" square. Cover shall have min. (2) 3/4" vent holes.

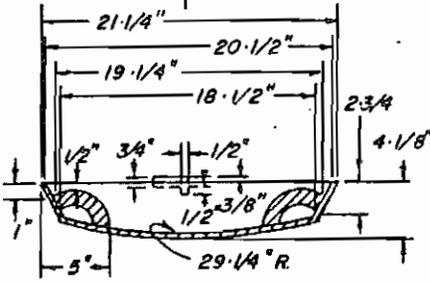
SOURCE: CITY OF YUMA STANDARD DETAILS

**DUST PAN
MINIMUM WEIGHT 50 POUNDS**



NOTE: DUST PAN SHOWN BUT WILL NOT BE REQUIRED UNLESS CALLED FOR IN PLANS.

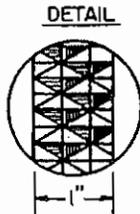
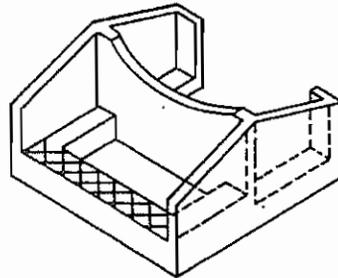
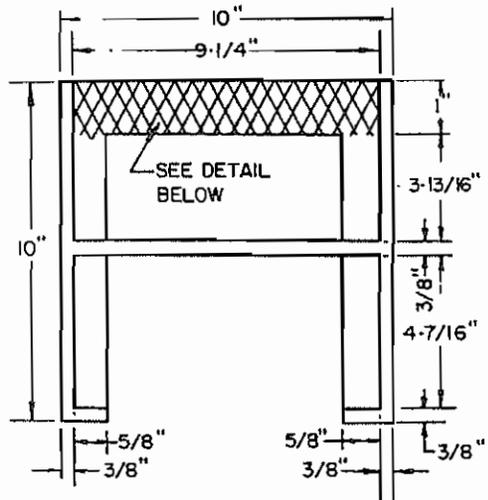
STANDARD MANHOLE COVERS SUCH AS NEENAH R-1642 OR EQUAL, CAN BE USED WITH APPROVAL.



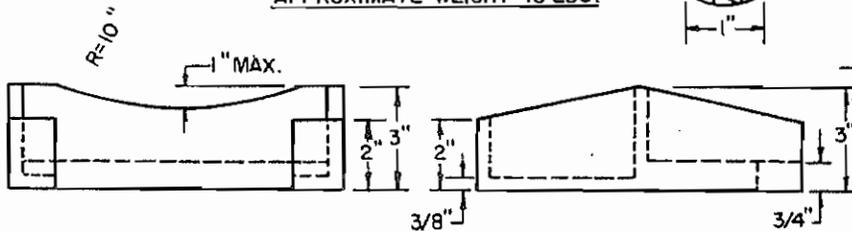
SECTION B-B

<p>REVISED</p> <p>COUNTY OF YUMA</p> <p>CONSTRUCTION STANDARDS</p> <p>STANDARD No 5-040</p> <p>STANDARD MANHOLE COVER</p> <p>APPROVED BY <i>U. B. Fortner</i> 5/88</p> <p>DIRECTOR OF PUBLIC WORKS</p>
--

CAST IRON MANHOLE STEP



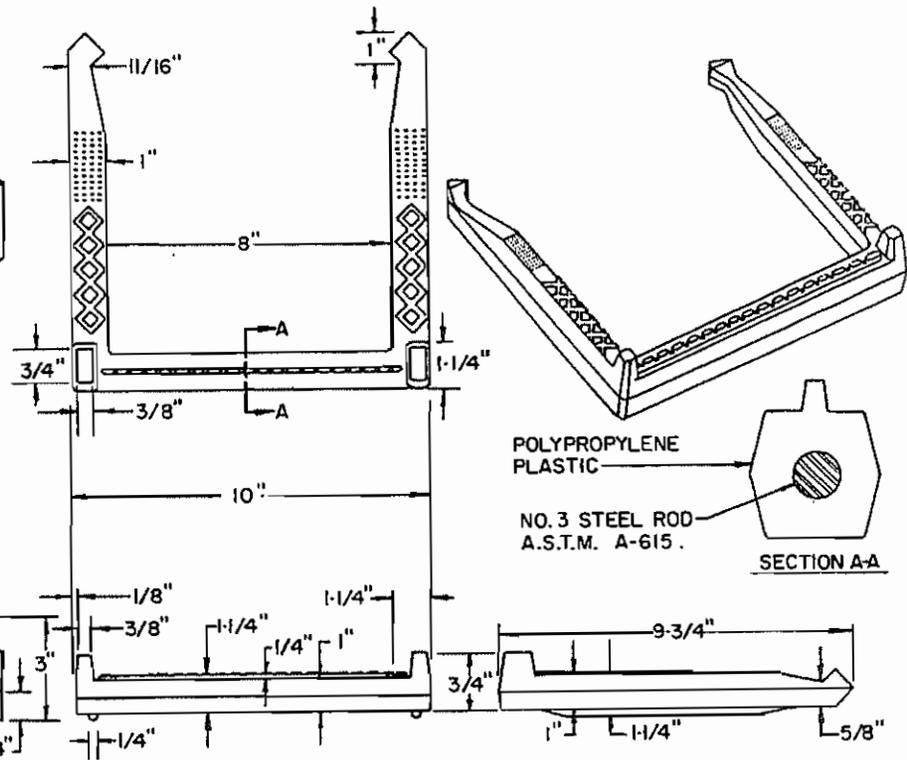
APPROXIMATE WEIGHT 10 LBS.



NOTES:

1. ALL DIMENSIONS ARE MINIMUM EXCEPT WHERE NOTED.

POLYPROPYLENE MANHOLE STEP



POLYPROPYLENE PLASTIC

NO. 3 STEEL ROD
A.S.T.M. A-615.

SECTION A-A

NOTES:

1. STEPS SHALL BE PLACED INTO WET CONCRETE WALL DURING MANUFACTURE OR MORTARED INTO HOLES AFTER CONCRETE HAS SET.
2. POLYPROPYLENE MUST MEET REQUIREMENTS OF A.S.T.M. 2146, TYPE II, GRADE 16906.

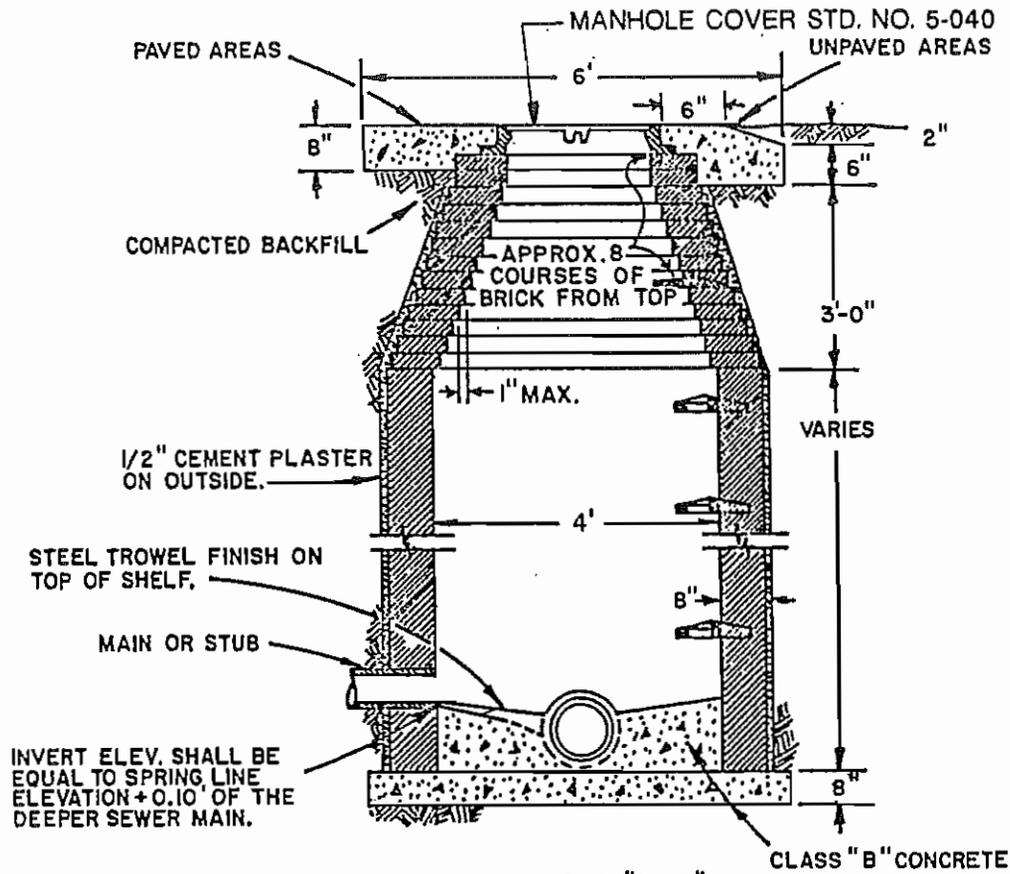
REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS

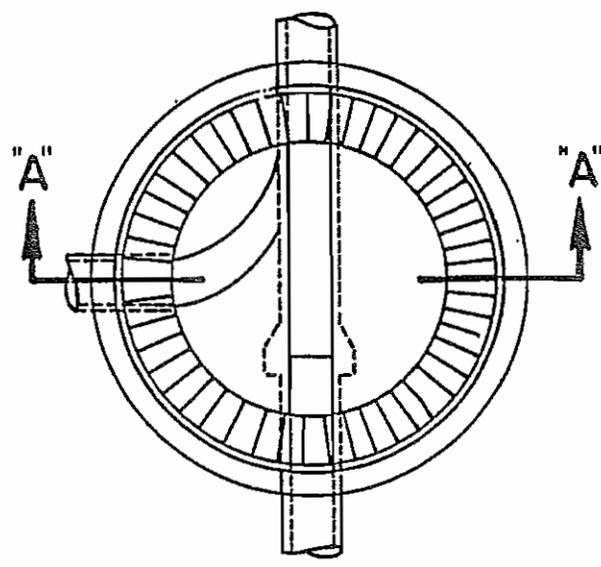
STANDARD No 5-045

MANHOLE STEPS

APPROVED BY *D.B. Fentley* 5/88
DIRECTOR OF PUBLIC WORKS

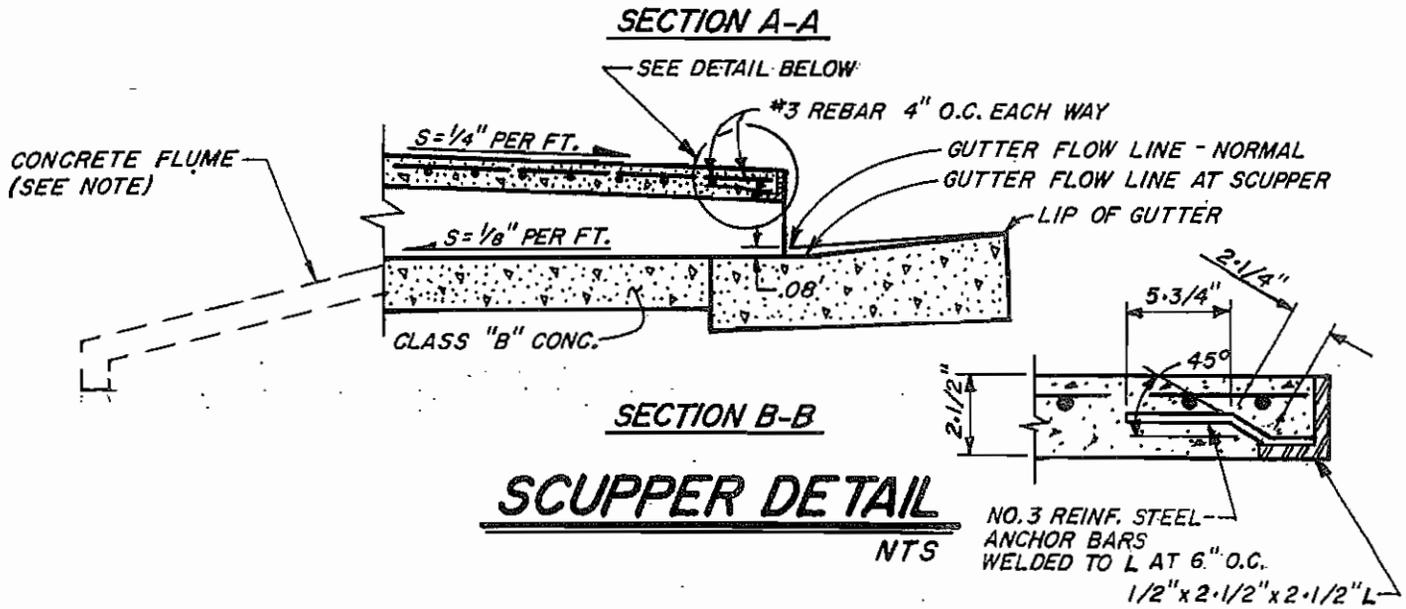
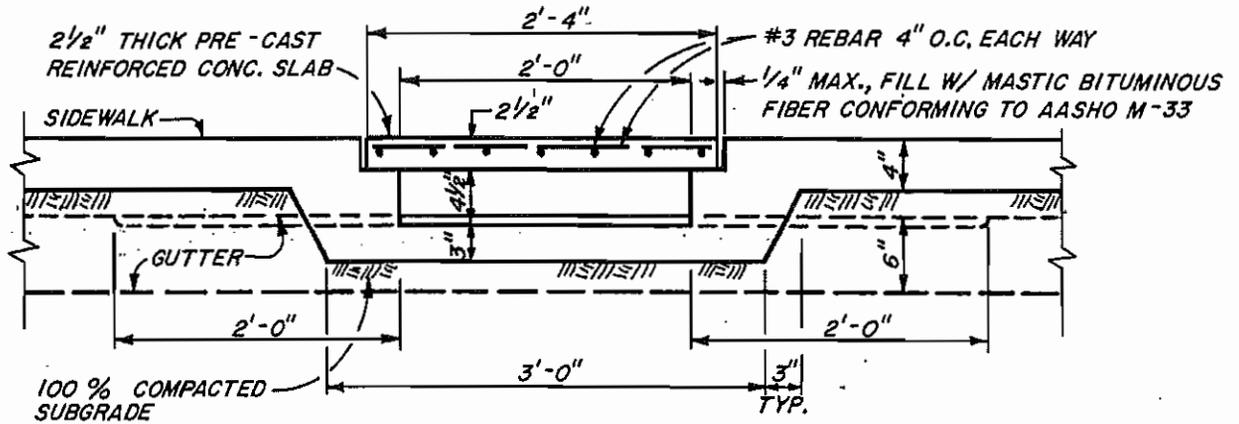
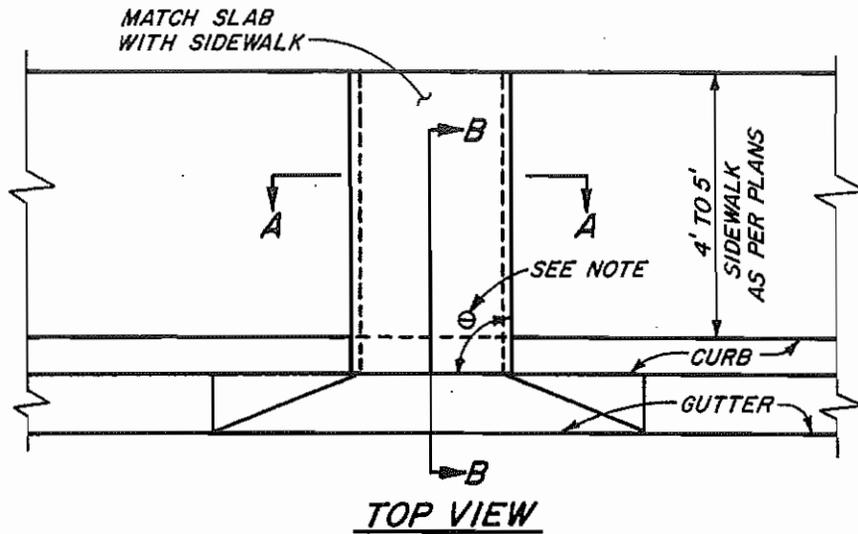


SECTION "A-A"



REVISED
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD No 5-046 4' DIAMETER BRICK MANHOLE
APPROVED BY <i>U. B. Fortney</i> 5/88 DIRECTOR OF PUBLIC WORKS

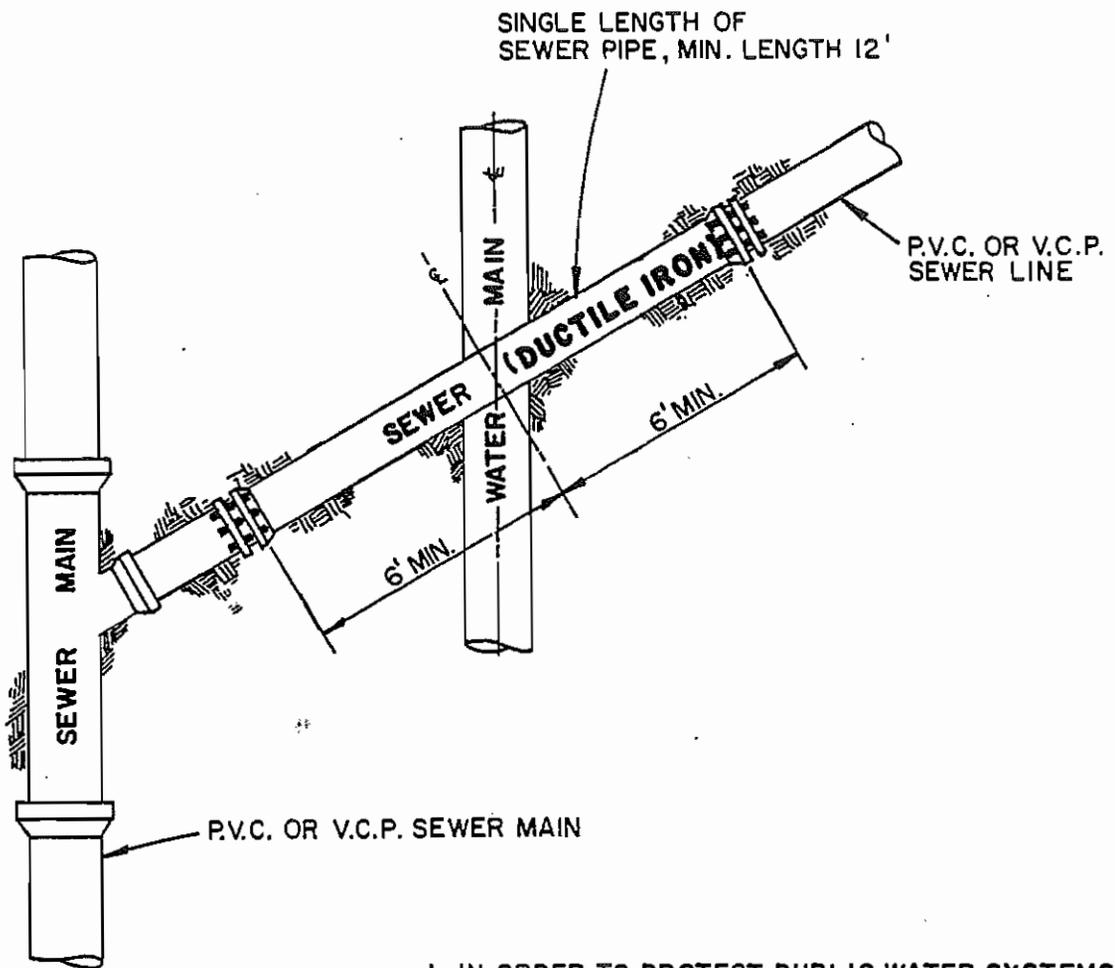
SOURCE: CITY OF YUMA STANDARD DETAILS



NOTES:

1. ANGLE $\Theta = 90^\circ$ UNLESS SPECIFIED ON THE PLAN.
2. CONCRETE FLUME TO BE INCLUDED AS DIRECTED BY THE COUNTY ENGINEER.

REVISED 8/18/98
COUNTY OF YUMA CONSTRUCTION STANDARDS
STANDARD NO. 5-050
SCUPPER



1. IN ORDER TO PROTECT PUBLIC WATER SYSTEMS FROM POSSIBLE CONTAMINATION, A WATER MAIN SHALL NOT:

A. INFRINGE UPON AN AREA WHICH IS WITHIN SIX FEET OF EITHER SIDE OF A SEWER MAIN AND SHALL NOT BE BELOW, AT THE SAME LEVEL AS, OR LESS THAN TWO FEET ABOVE THE TOP OF THE SEWER MAIN, UNLESS EXTRA PROTECTION IS PROVIDED. EXTRA PROTECTION SHALL CONSIST OF CONSTRUCTING THE SEWER MAIN WITH MECHANICAL JOINT DUCTILE IRON PIPE OR WITH SLIP-JOINT DUCTILE IRON PIPE IF JOINT RESTRAINT IS PROVIDED.

B. UNDER ANY CIRCUMSTANCES, INFRINGE UPON AN AREA WHICH IS WITHIN TWO FEET OF EITHER SIDE OF OR TWO FEET BELOW THE SEWER MAIN.

2. ALL NEW DUCTILE IRON PIPE SHALL BE LINED WITH CEMENT OR EPOXY.

(NOT TO SCALE)

REVISED

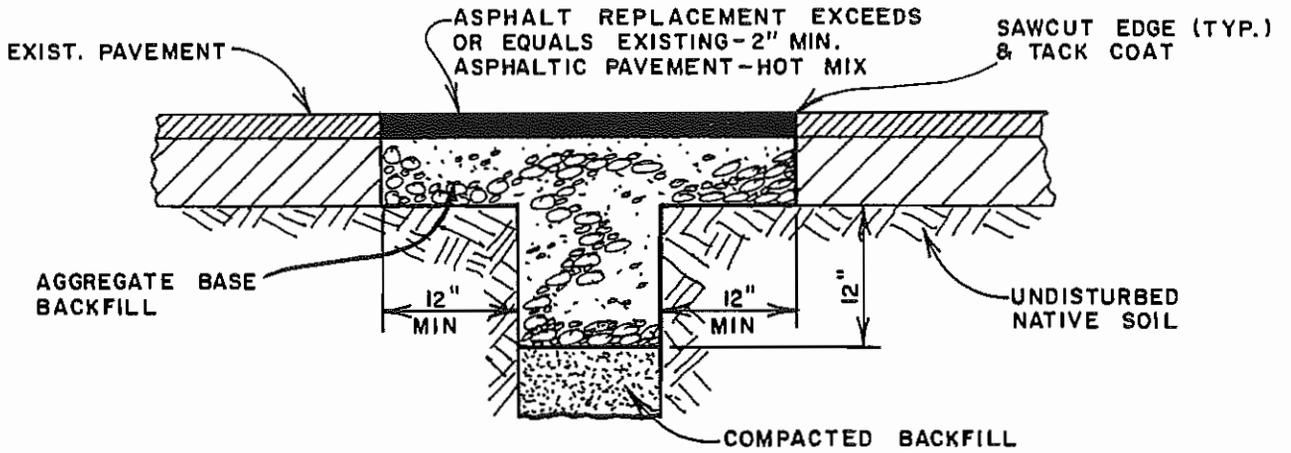
COUNTY OF YUMA
CONSTRUCTION STANDARDS

STANDARD No 5-060
TYPICAL WATER & SEWER
MAIN CROSSING

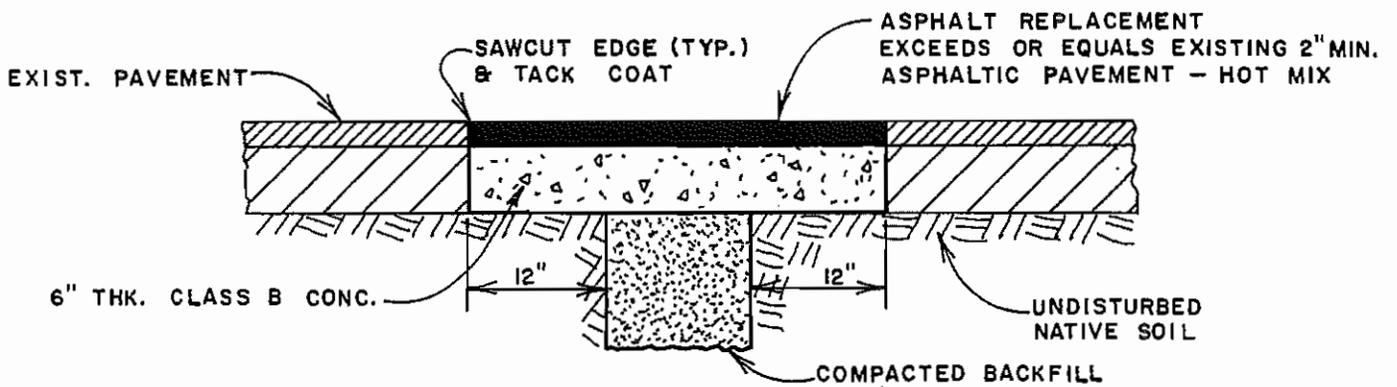
APPROVED BY *D.B. Johnson*
DIRECTOR OF PUBLIC WORKS

5/88

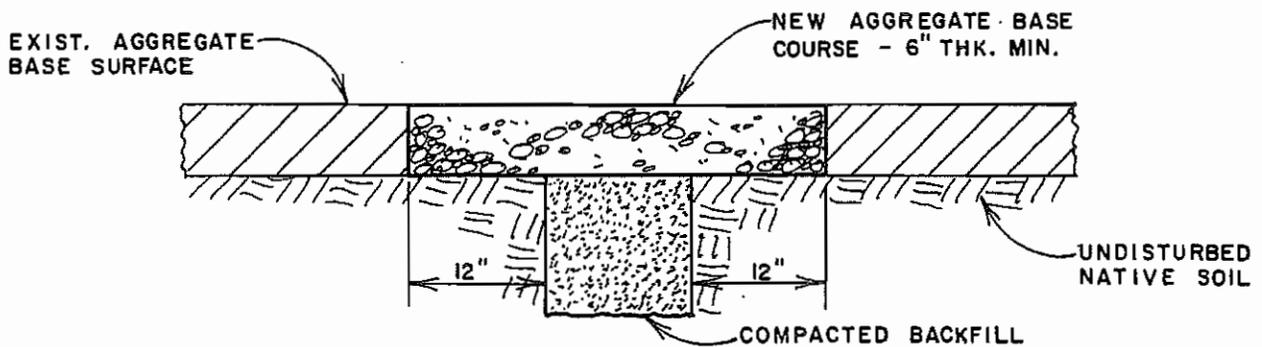
SOURCE: CITY OF YUMA STANDARD DETAILS



TYPE A



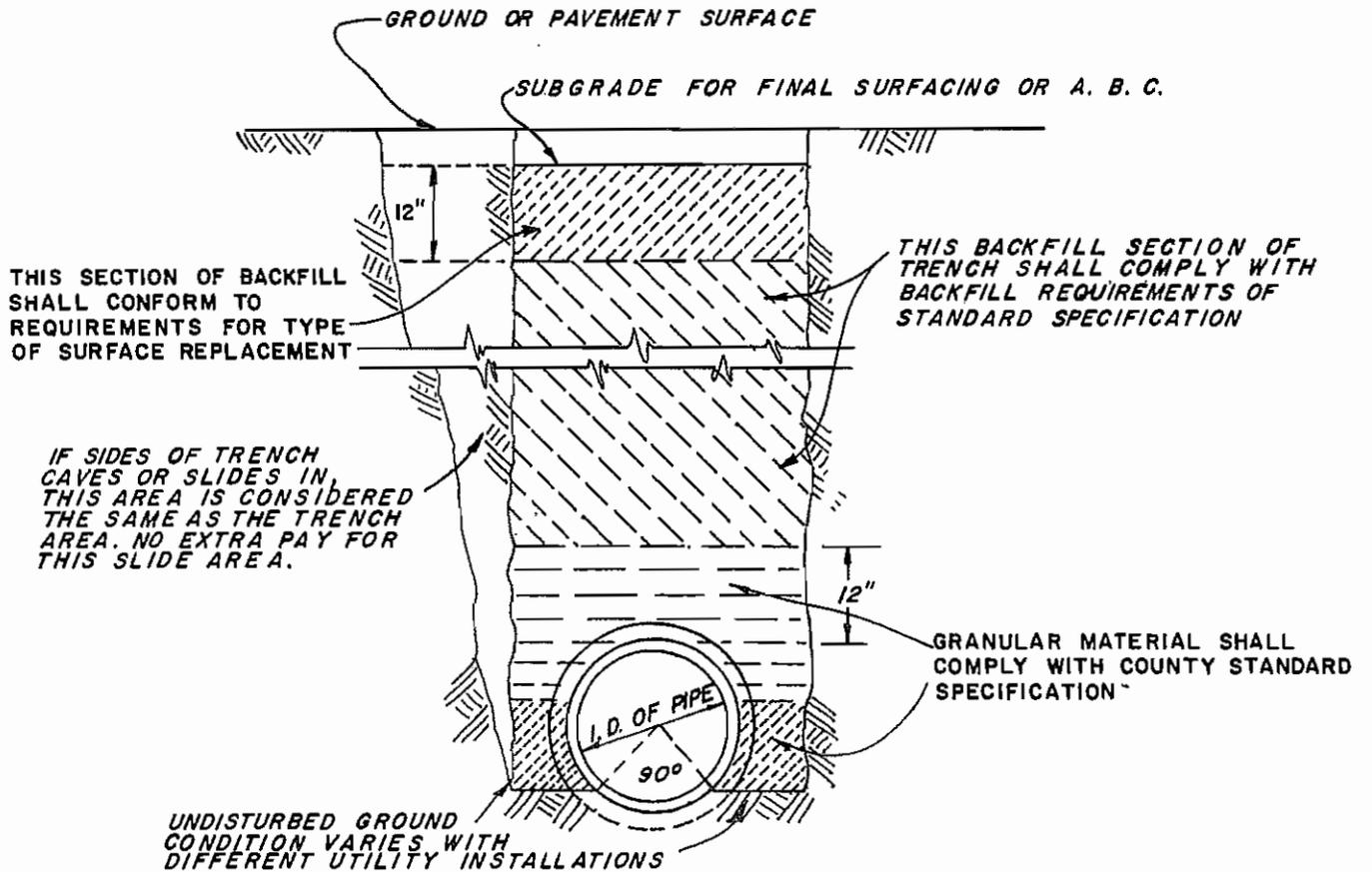
TYPE B



TYPE C

NOTE: Subgrade, A.B.C. and pavement replacement shall meet min. % compaction as specified in Yuma County Specification

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD No. 5-070
PAVEMENT AND SURFACE REPLACEMENT
 APPROVED BY *D. B. Fortney* 5/88
 DIRECTOR OF PUBLIC WORKS



COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N° ... 5-080
 TYPICAL DITCH BACKFILL
 APPROVED BY *U. B. Frazier* 5/88
 DIRECTOR OF PUBLIC WORKS

**THRUST AT FITTINGS* IN POUNDS
AT 150 POUNDS PER SQUARE INCH OF WATER PRESSURE**

SIZE	TEES AND DEAD ENDS	90° BEND	45° BEND	22½° BEND	PER DEG. OF DEFLECTION
2"	1,740	2,460	1,335	675	30.3
4"	2,715	3,840	2,085	1,065	47.3
6"	5,625	7,950	4,320	2,190	98.3
8"	9,780	13,800	7,500	3,795	171.0
10"	16,050	22,650	12,300	6,225	280.5
12"	22,800	32,250	17,550	8,850	399.0
14"	31,050	42,300	23,850	12,075	543.0
16"	40,200	57,000	30,750	15,600	705.0

<u>SOIL</u>	<u>SAFE BEARING LOAD LB/SQ. FT.</u>
MUCK, PEAT, ETC.	0
SOFT CLAY	1000
SAND	2000
SAND & GRAVEL	3000
SAND & GRAVEL CEMENTED WITH CLAY	4000

DIVIDE THRUST BY SAFE BEARING LOAD TO CALCULATE THE SQ. FT. OF THRUST BLOCK AREA NEEDED. THRUST BLOCK AREA FOR 6" PIPE AND LARGER SHALL NOT BE LESS THAN 3 SQ. FT.

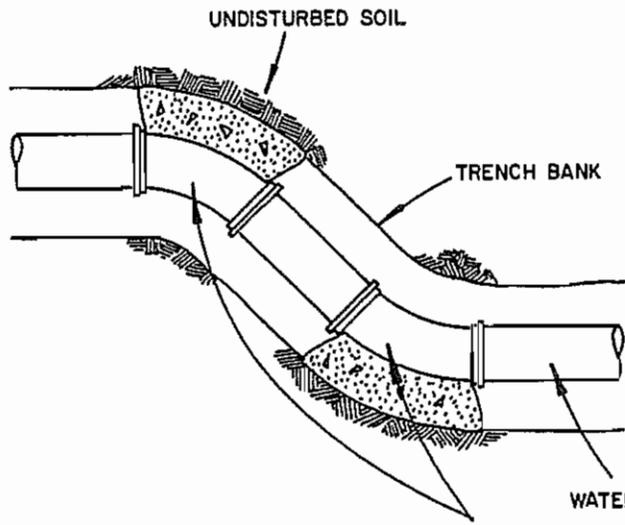
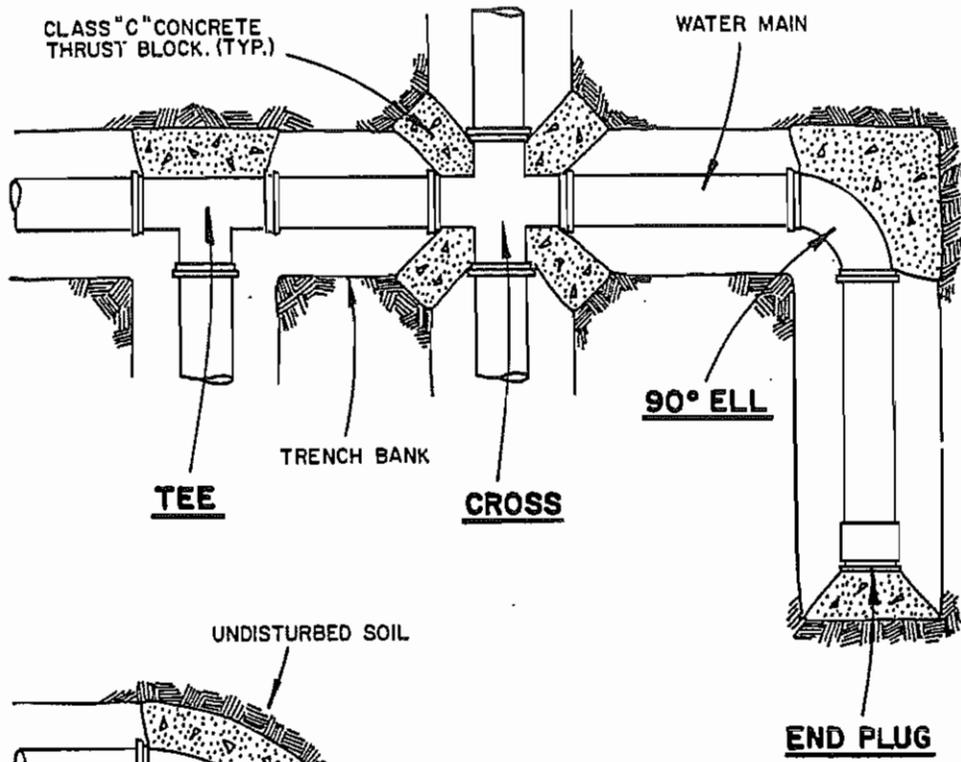
FOR PIPE SIZE GREATER THAN 16", THRUST BLOCK AREA WILL BE DETERMINED BY SOIL TESTS.

*ALL PIPE AND FITTINGS SHALL BE CLASS 150 (MIN.) UNLESS OTHERWISE NOTED.

REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD N° ... 5-090
THRUST BLOCKS

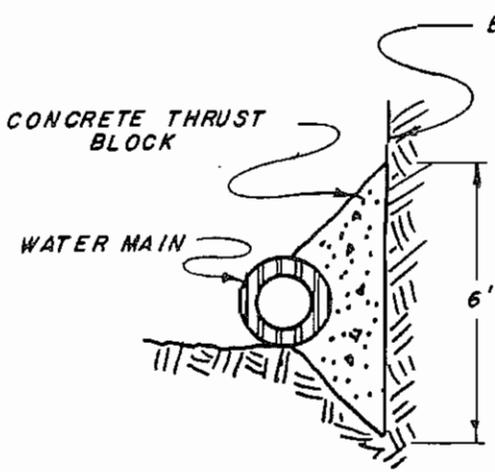
APPROVED BY U. B. Fortney 5/88
DIRECTOR OF PUBLIC WORKS



NOTE: SEE STD. 5-090 FOR CALCULATING SAFE BEARING AREAS.

45°, 22½°, 11¼° BENDS

SOURCE: CITY OF YUMA STANDARD DETAILS

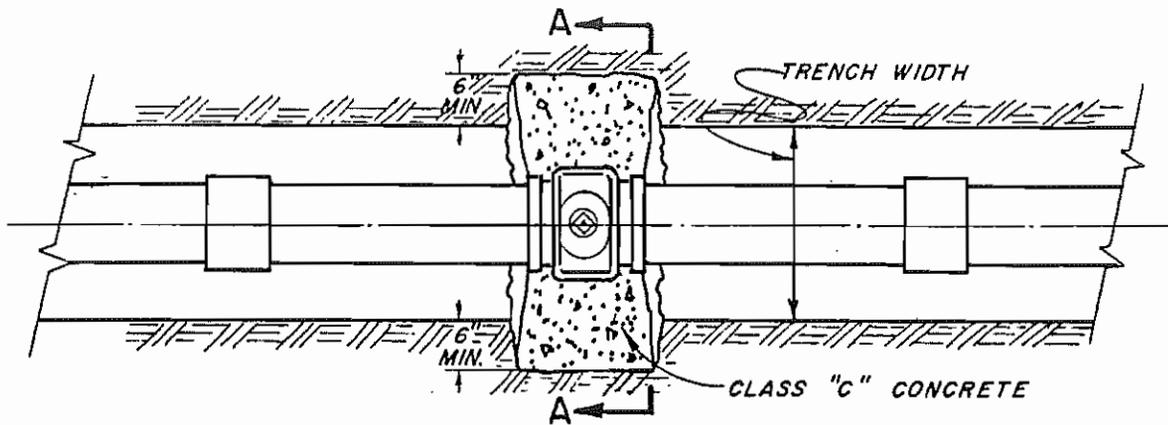


HEIGHT = WIDTH AREA REQUIRED FROM THRUST BLOCK SCHEDULE STANDARD NO. 5-090

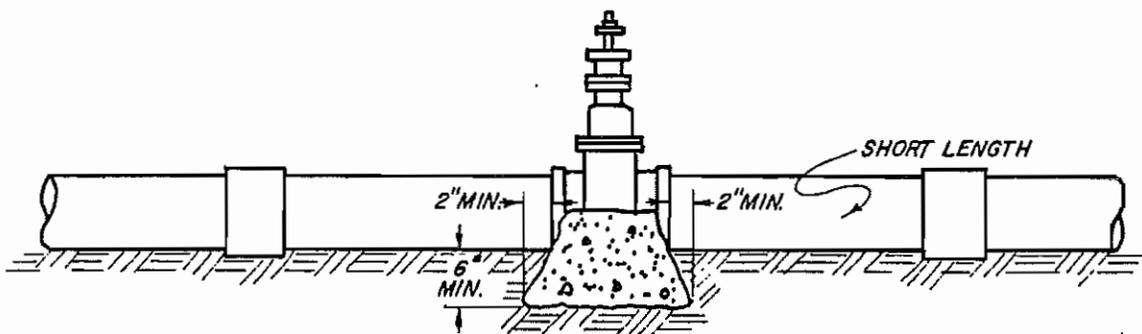
CONC. THRUST BLOCKS CLASS "C" CONCRETE

SECTION A-A

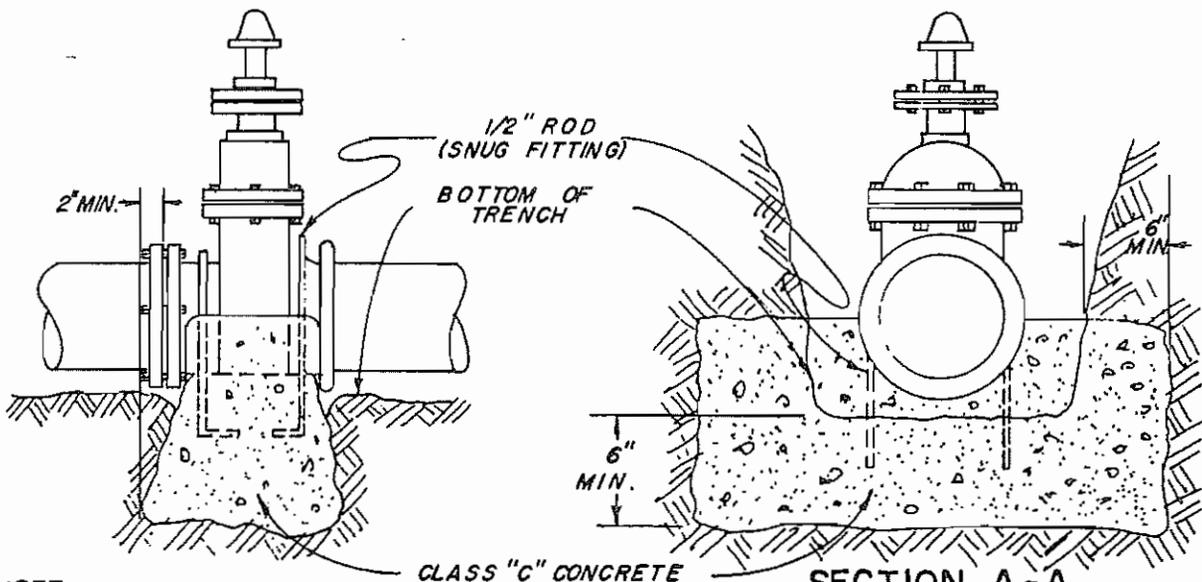
REVISED	
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD N ^o ...5-100 TYPICAL THRUST INSTALLATION	
APPROVED BY <i>D. B. Frazier</i> DIRECTOR OF PUBLIC WORKS	5/88



PLAN



ELEVATION



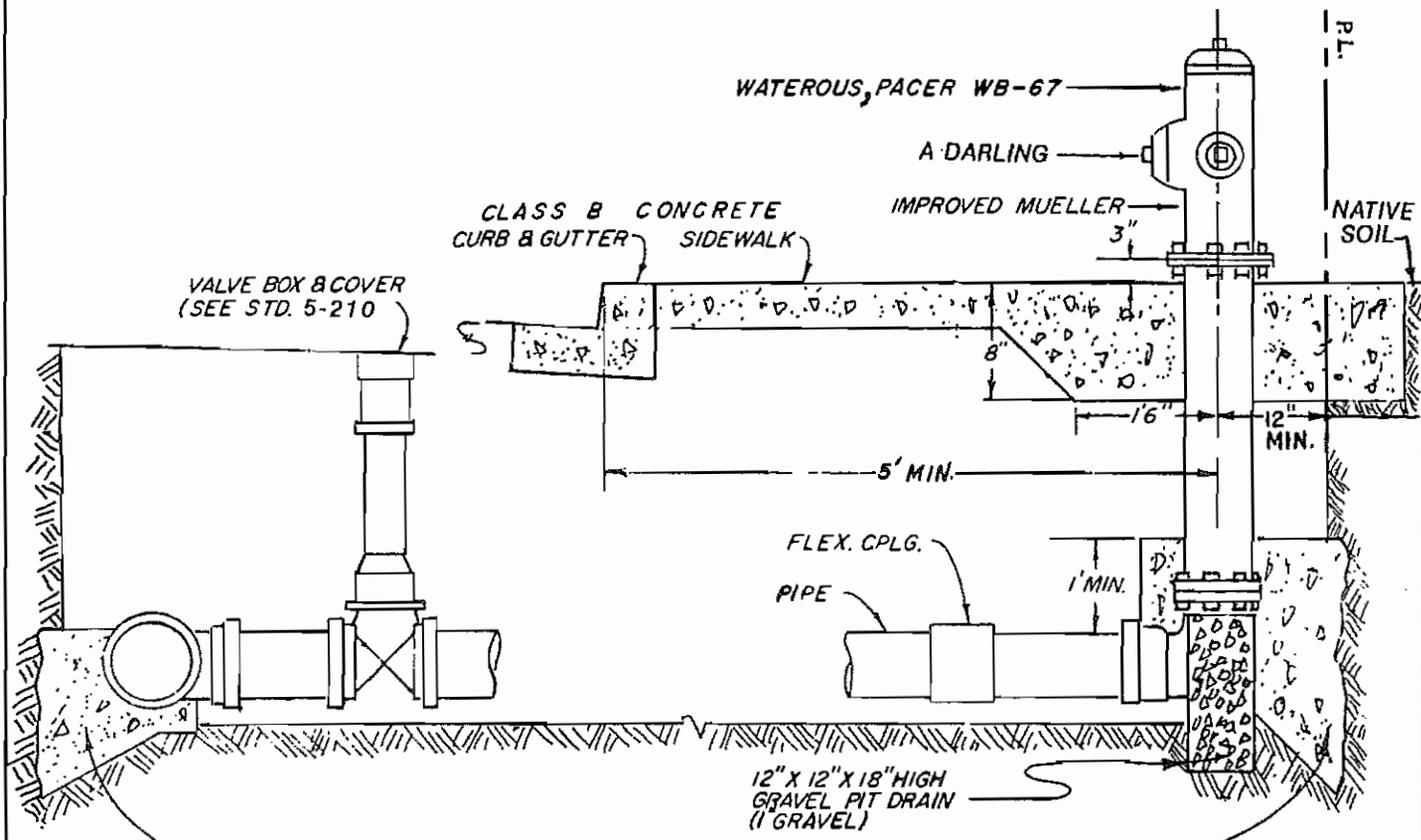
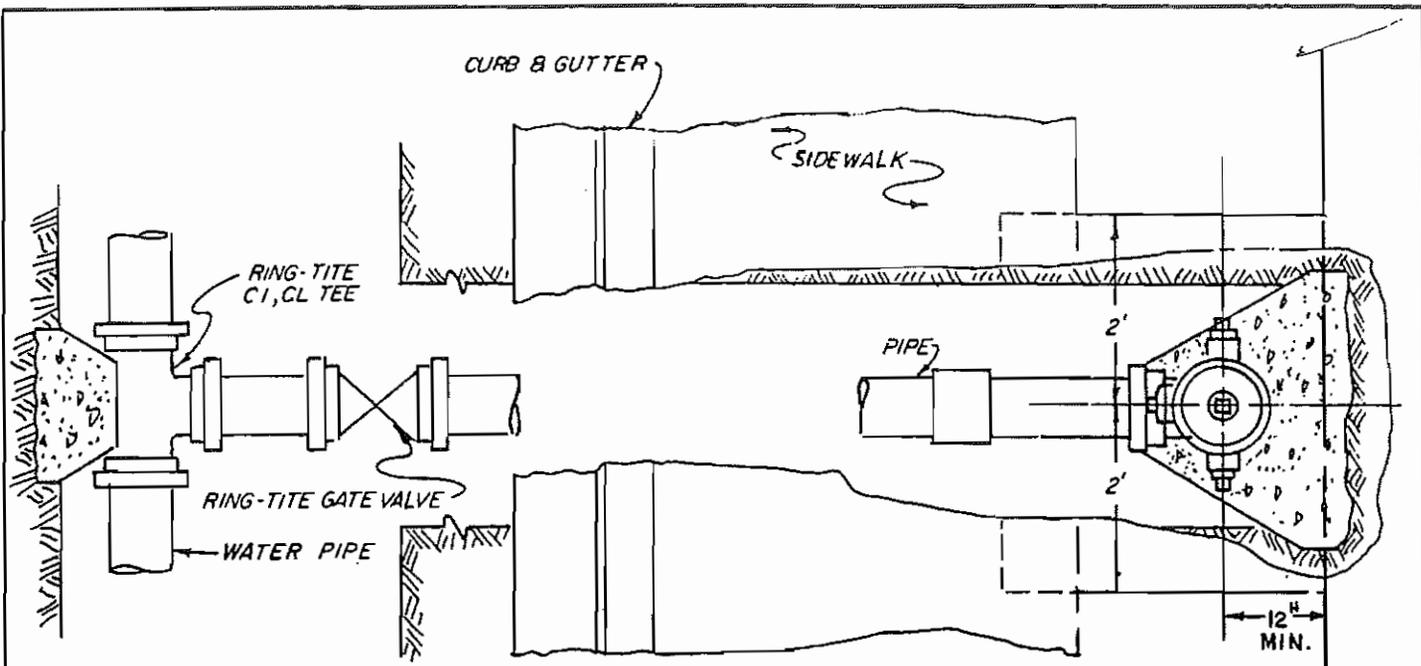
NOTE:

THIS DETAIL COVERS WATER VALVES 3" OR LARGER REGARDLESS OF PIPE USED.
 ALL EXPOSED METAL SURFACES SHALL BE WRAPPED WITH 13 MIL. POLYETHELENE.
 TIE DOWN RODS REQUIRED FOR PIPE LARGER THAN 8".

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N^o ... 5-110
 VALVE ANCHOR

APPROVED BY *P. B. Fortney* 5/88
 DIRECTOR OF PUBLIC WORKS



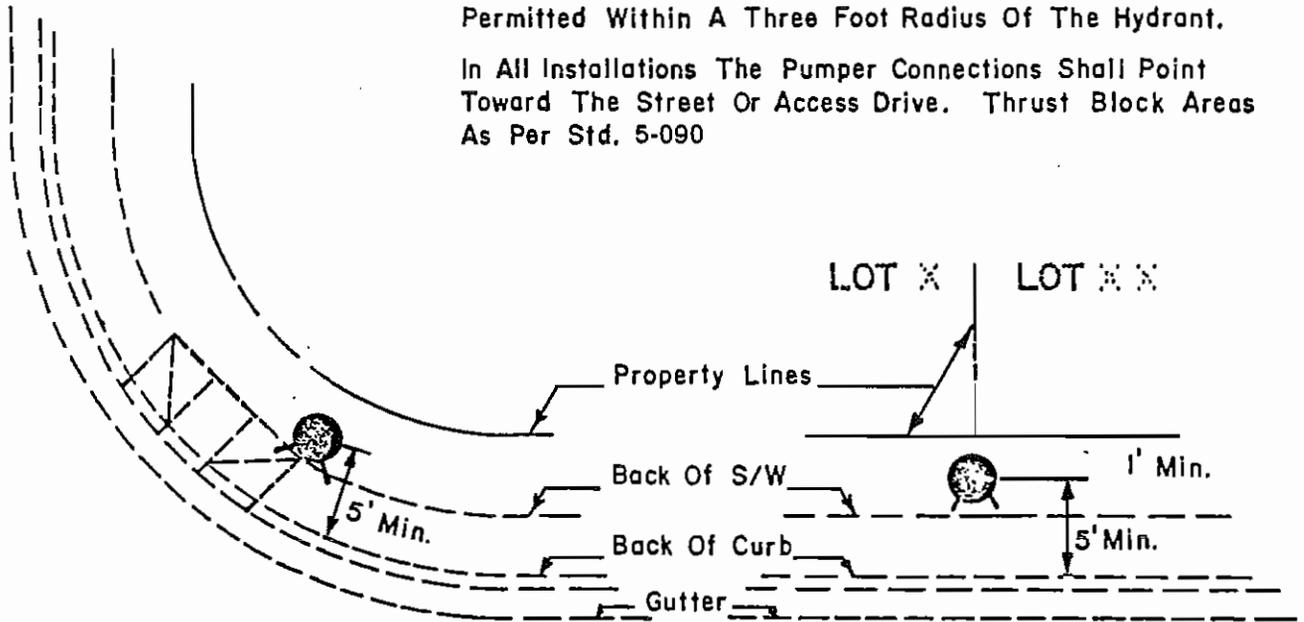
CONCRETE THRUST BLOCKS POURED AGAINST UNDISTURBED EARTH CLASS "C" CONC.

REVISED	
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD N ^o ... 5-120 FIRE HYDRANT ON WATER MAINS	
APPROVED BY <i>U. B. Fortney</i>	5/88
DIRECTOR OF PUBLIC WORKS	

NOTE:

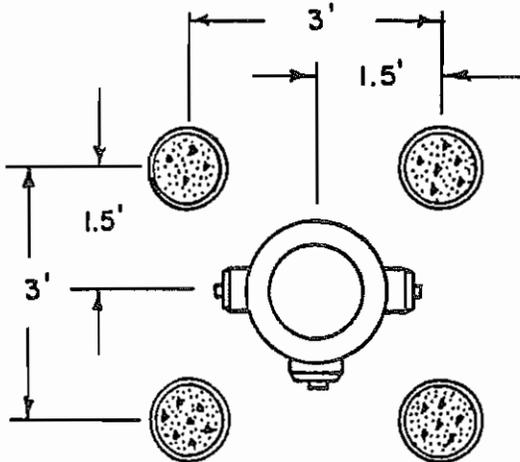
Utility Poles, Street Signs, Fences, ETC., Must Not Be Placed Between Curb And Hydrant. Obstructions Will Not Be Permitted Within A Three Foot Radius Of The Hydrant.

In All Installations The Pumper Connections Shall Point Toward The Street Or Access Drive. Thrust Block Areas As Per Std. 5-090



INTERSECTION LOCATION

MID-BLOCK LOCATION



GUARD POSTS LOCATION

(NOTE TO SCALE)

NOTE:

Total Number & Location Of Guard Posts To Be Determined By Public Works.

Guard Post Shall Be 4" Dia. Steel Pipe Filled With Conc. 6' Total Length With 3' Set in 1x3' High Conc. Buried Base.

REVISED

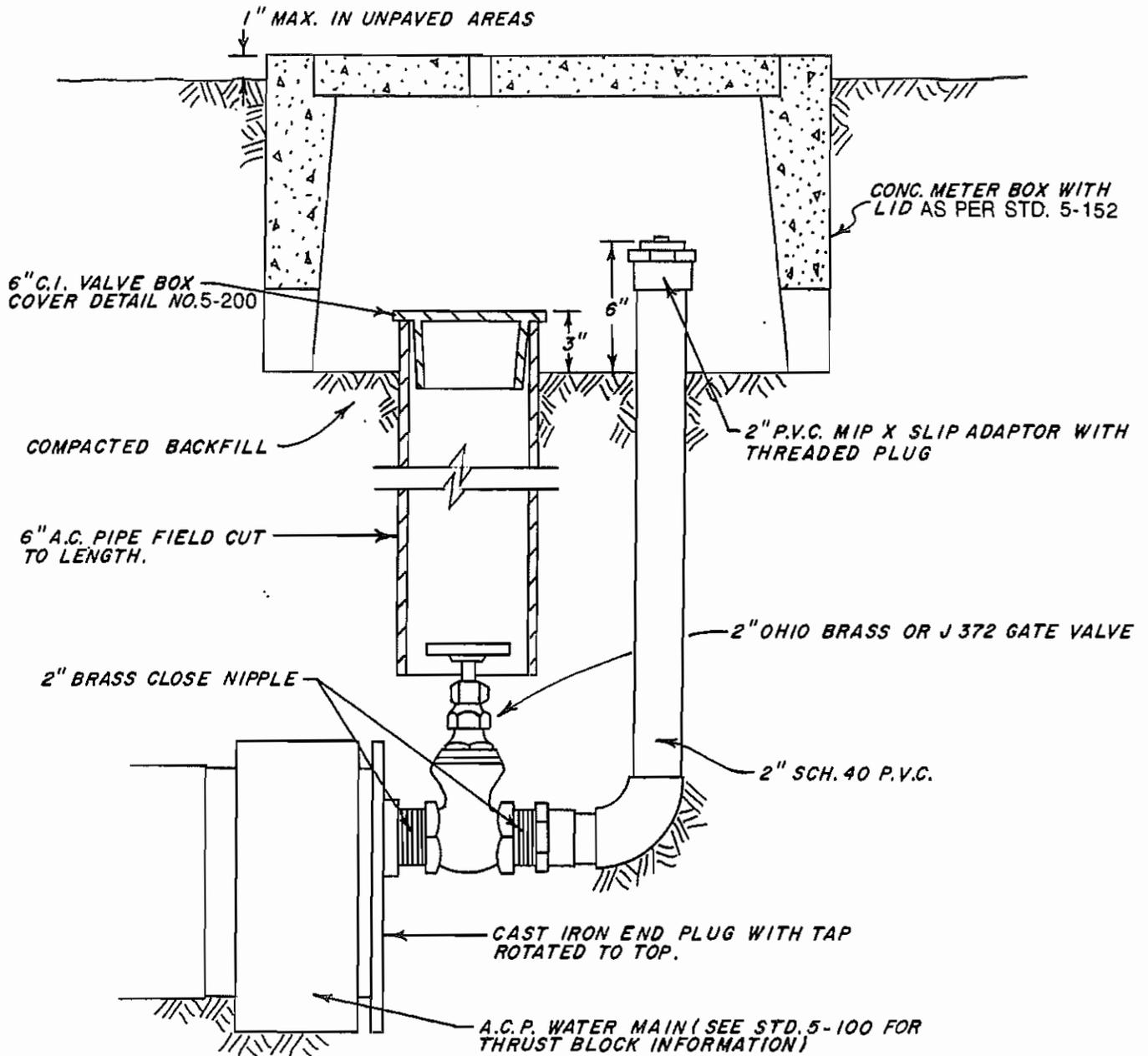
**COUNTY OF YUMA
CONSTRUCTION STANDARDS**

STANDARD No 5-130

**FIRE HYDRANT &
GUARD POSTS LOCATIONS**

APPROVED BY *U.B. Fater*
DIRECTOR OF PUBLIC WORKS

5/88

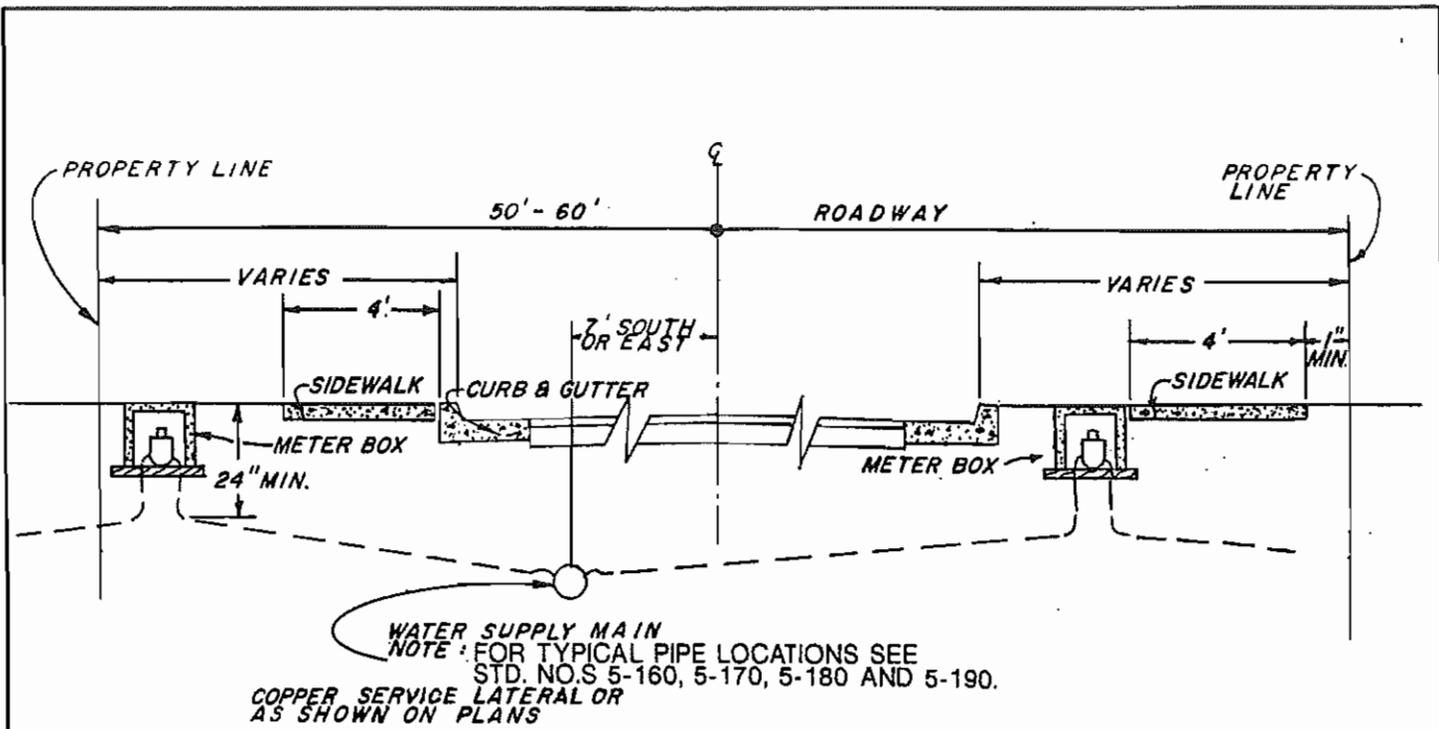


NOTE:
 SEE APPROVED PLANS FOR DISTANCE BETWEEN
 BLOWOFF & IN-LINE MAIN VALVE.
 THIS INSTALLATION IS NOT TO BE USED IN
 ROADWAY AREAS.

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD N^o... 5-140
BLOWOFF VALVE

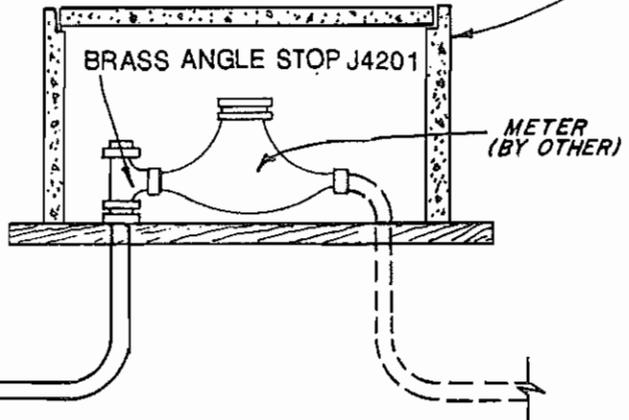
APPROVED BY *U. B. Fortney* 5/88
 DIRECTOR OF PUBLIC WORKS



TYPICAL METER BOX LOCATIONS AND SERVICE CONNECTION

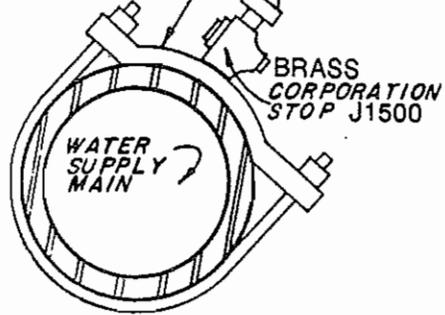
NOTE: ALL LOT SERVICE LATERALS SHALL BE INSTALLED PRIOR TO PAVING OF STREET

METER BOX TO BE INSTALLED BY CONTRACTOR. 1" ABOVE CURB ON PARKWAYS. METER BOX COVER FLUSH WITH TOP OF SIDEWALK.



1" TYPE 'K' SOFT COPPER SERVICE PIPE MIN. OR 1" SCHEDULE 40 P.V.C.

J-979 BRASS SERVICE CLAMP NOT REQUIRED WHEN TAP COUPLING IS USED



REVISED

COUNTY OF YUMA

CONSTRUCTION STANDARDS

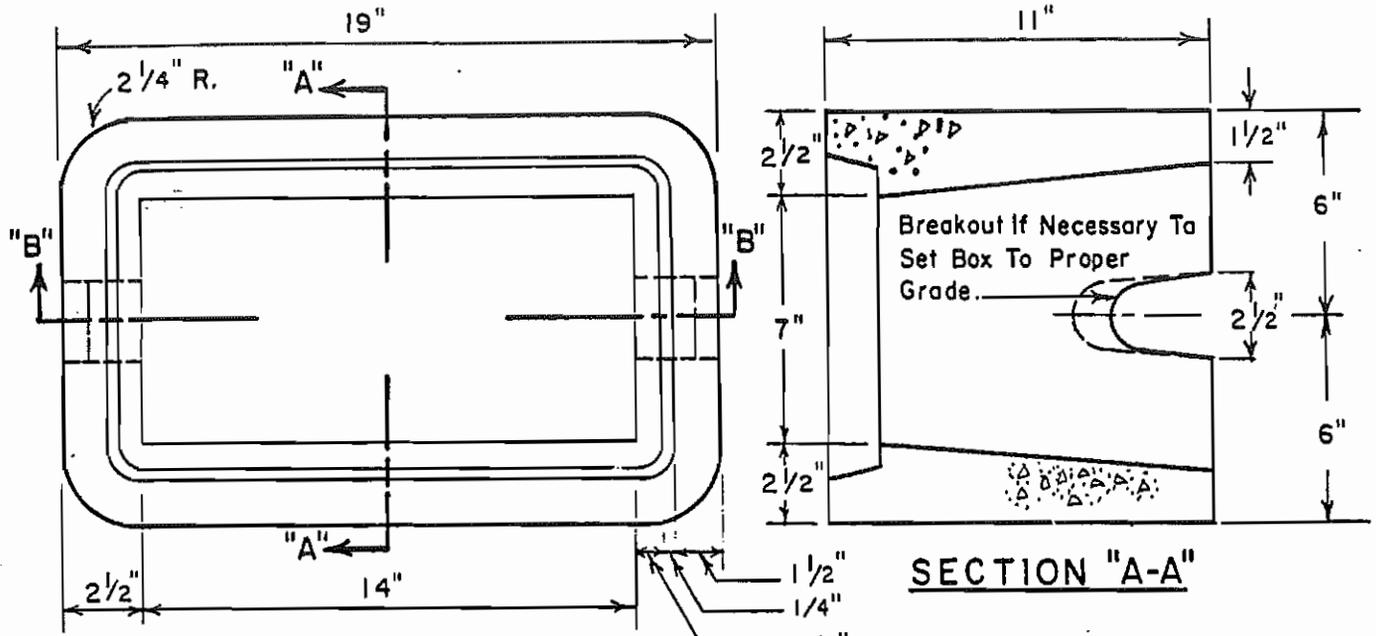
STANDARD N^o ... 5-150

SERVICE CONNECTION (WATER)

1 1/2" & SMALLER

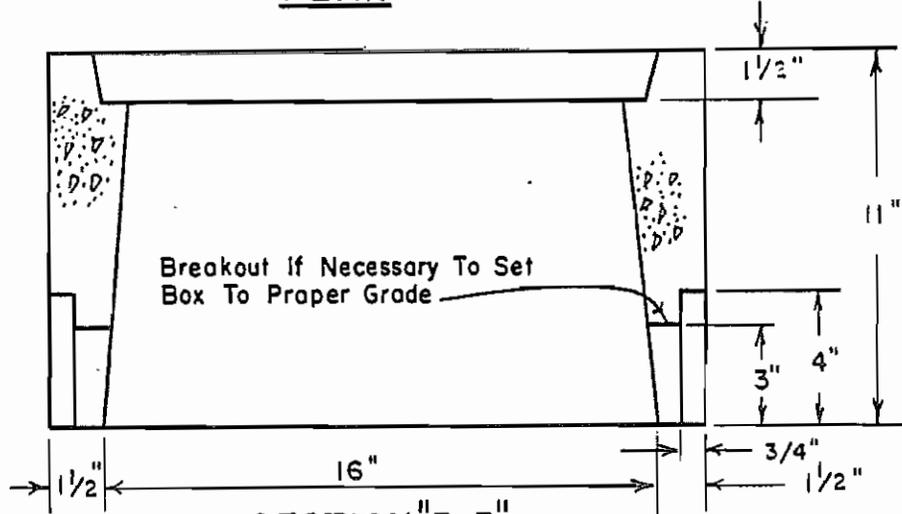
APPROVED BY U.B. Fortney 5/88

DIRECTOR OF PUBLIC WORKS



PLAN

SECTION "A-A"



SECTION "B-B"

NOTES:

THE METER BOXES SHALL CONFORM TO THE DIMENSIONS OF THE ABOVE DRAWING AND SHALL BE MADE OF PORTLAND CEMENT CONCRETE PCURED TAMPED (OR VIBRATED) IN FORMS.

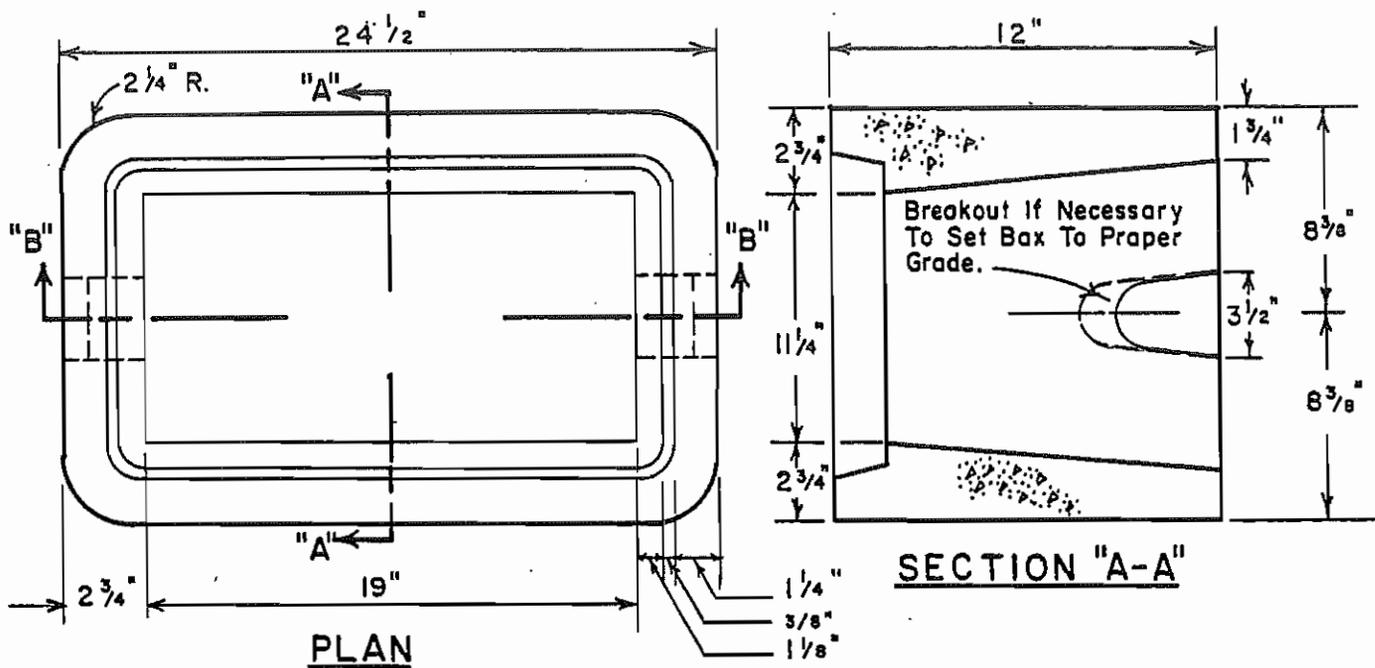
THE PORTLAND CEMENT CONCRETE SHALL BE BATCHED IN THE PROPER PROPORTIONS, BY WEIGHT, OF WATER, CEMENT, FINE AGGREGATE (A.S.T.M. NO. C-33), AND CUARSE AGGREGATE (3/8" ROCK). THIS MIX SHALL BE DESIGNED TO OBTAIN A MINIMUM OF 4000 P.S.I. AT 28 DAYS WHEN TESTED IN ACCORDANCE WITH A.S.T.M. NO. C-39. THIS MIX SHALL BE POURED AT A SLUMP NOT IN EXCESS OF 6".

UPON REMOVAL OF THE FORMS, THE WATER BOXES SHALL BE WATER CURED FOR 7 DAYS, OR SPRAYED WITH A MEMBRANE CURING COMPOUND SUCH AS HUNTS PROCESS, OR EQUAL.

THE METHOD OF SAMPLING AND TESTING OF THESE BOXES SHALL CONFORM TO A.S.T.M. NO. C-129 AND C-140, EXCEPT THAT THE MINIMUM REQUIRED SHALL BE 1000 P.S.I. AT 28 DAYS.

METER BOX LIDS SHALL BE CAST IRON OR STEEL AND FIT FLUSH WITH TOP OF BOX AND HAVE ADEQUATE BEARING ON SEAT.

REVISED
COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 5-151
CONCRETE WATER METER BOX
FOR 5/8" AND 3/4 METERS
 APPROVED BY *U. B. Frazier* 5/88
DIRECTOR OF PUBLIC WORKS



THE METER BOXES SHALL CONFORM TO THE DIMENSIONS OF THE ABOVE DRAWING AND SHALL BE MADE OF PORTLAND CEMENT CONCRETE POURED AND TAMPED (OR VIBRATED) IN TRUE FORM.

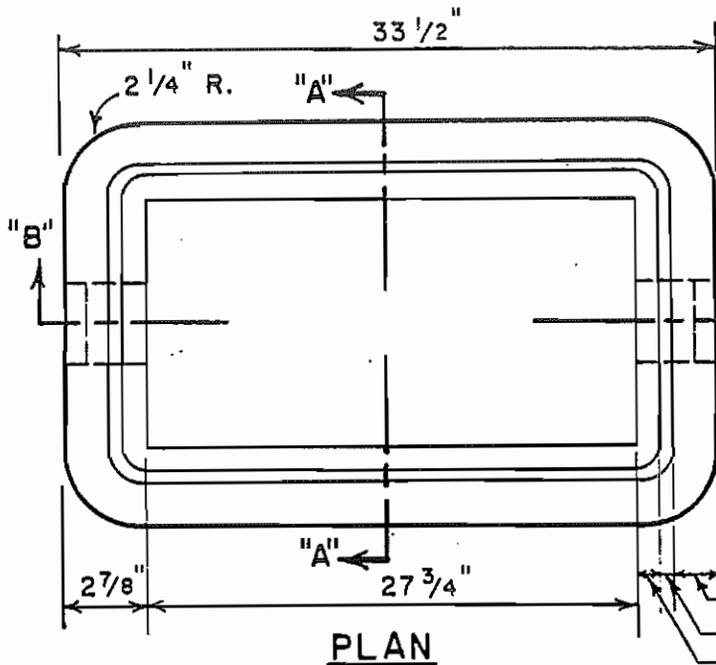
THE PORTLAND CEMENT CONCRETE SHALL BE BATCHED IN THE PROPER PROPORTIONS, BY WEIGHT, OF WATER, CEMENT, FINE AGGREGATE (A.S.T.M. NO. C-33), AND COARSE AGGREGATE (3/8" ROCK). THIS MIX SHALL BE DESIGNED TO OBTAIN A MINIMUM OF 4000 P.S.I. AT 28 DAYS WHEN TEST IN ACCORDANCE WITH A.S.T.M. C-38. THIS MIX SHALL BE POURED AT A SLUMP NOT IN EXCESS OF 6".

UPON REMOVAL OF THE FORMS, THE METER BOXES SHALL BE WATER CURED FOR 7 DAYS, OR SPRAYED WITH A MEMBRANE CURING COMPOUND SUCH AS HUNT'S PROCESS OR EQUAL.

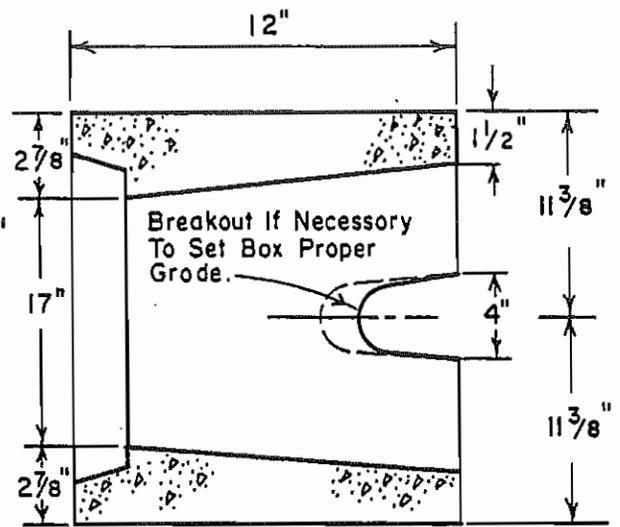
THE METHOD OF SAMPLING AND TESTING OF THESE BOXES SHALL CONFORM TO A.S.T.M. NO. C-129 & C-140, EXCEPT THAT THE MINIMUM REQUIRED STRENGTH SHALL BE 1000 P.S.I. AT 28 DAYS.

METER BOX LIDS SHALL BE CAST IRON OR STEEL AND FIT FLUSH WITH TOP OF BOX AND HAVE ADEQUATE BEARING ON SEAT.

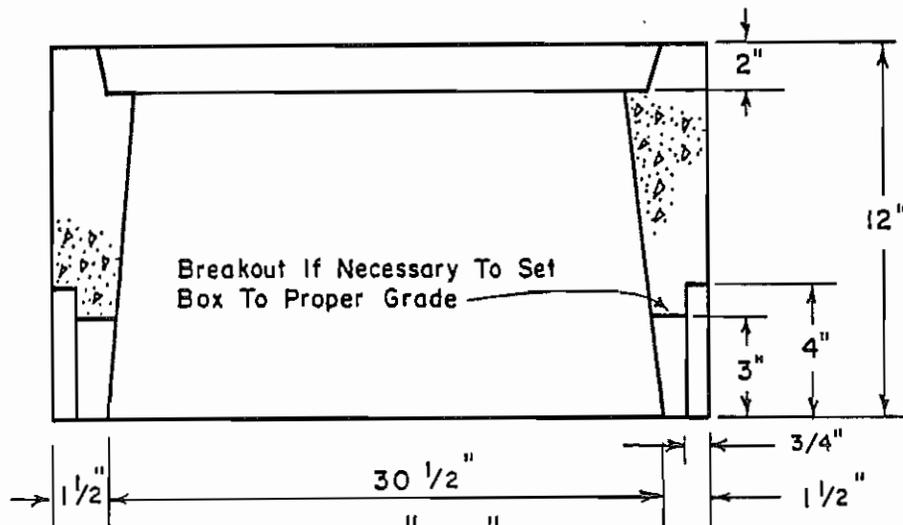
REVISED
COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 5-152
CONCRETE WATER METER BOX FOR
1" METERS
 APPROVED BY *W. B. Fortney* 5/88
 DIRECTOR OF PUBLIC WORKS



PLAN



SECTION "A-A"



SECTION "B-B"

THE METER BOXES SHALL CONFORM TO THE DIMENSIONS OF THE ABOVE DRAWING AND SHALL BE MADE OF PORTLAND CEMENT POURED AND TAMPED (OR VIBRATED) IN TRUE FORMS.

THE PORTLAND CEMENT SHALL BE BATCHED IN PROPER PROPORTIONS, BY WEIGHT, OF WATER, CEMENT, FINE AGGREGATE (A.S.T.M. NO. C-33), AND COARSE AGGREGATE (3/8" ROCK). THIS MIX SHALL BE DESIGNED TO OBTAIN A MINIMUM OF 4000 P.S.I. AT 28 DAYS WHEN TESTED IN ACCORDANCE WITH A.S.T.M. NO. C-39. THIS MIX SHALL BE POURED AT A SLUMP NOT IN EXCESS OF 6".

UPON REMOVAL OF THE FORM, THE METER BOXES SHALL BE WATER CURED FOR 7 DAYS, OR SPRAYED WITH A MEMBRANE CURING COMPOUND SUCH AS HUNTS PROCESS, OR EQUAL.

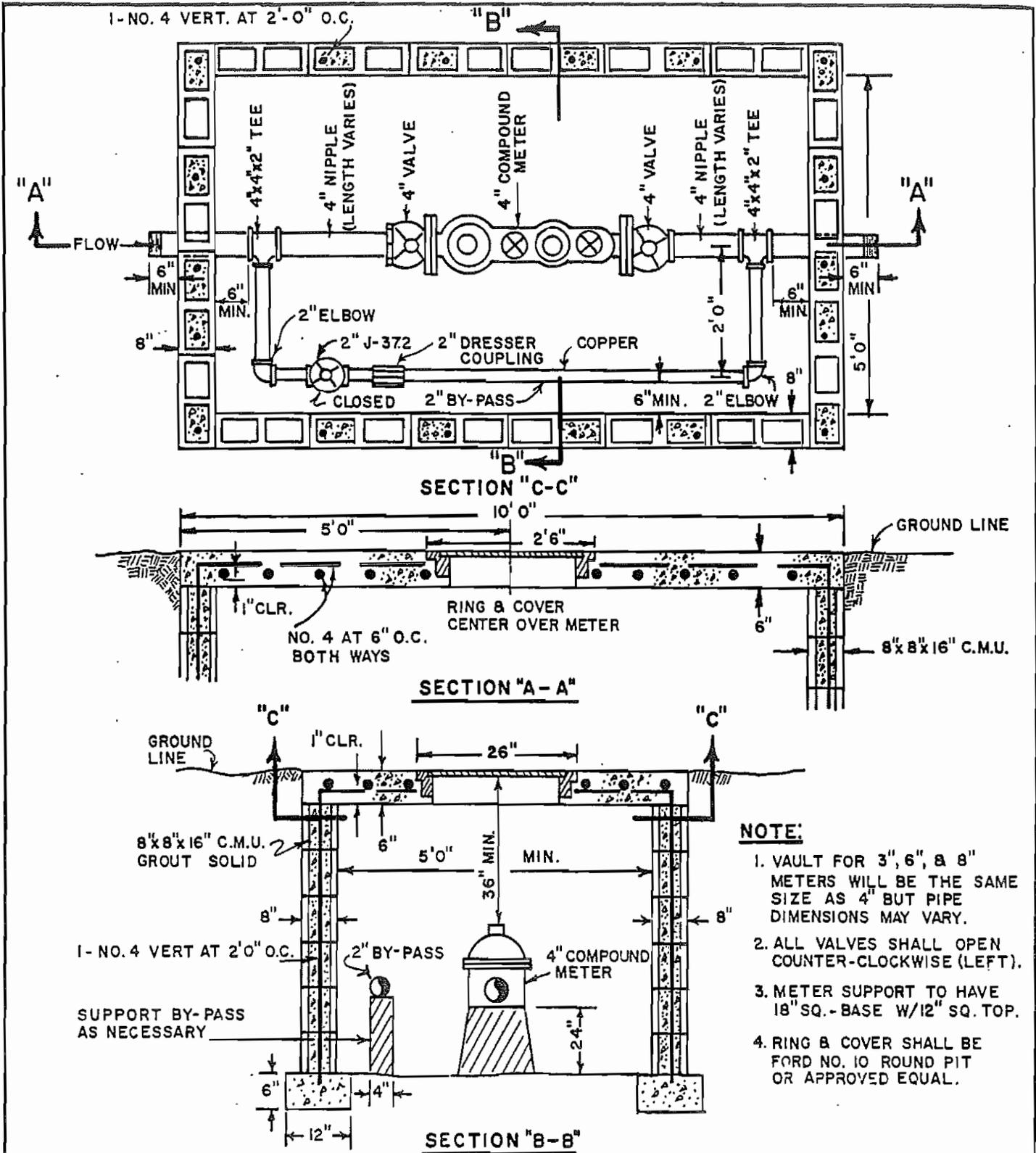
THE METHOD OF SAMPLING AND TESTING OF THESE BOXES SHALL CONFORM TO A.S.T.M. NO. C-129 & C-140 EXCEPT THAT THE MINIMUM REQUIRED STRENGTH SHALL BE 1000 P.S.I. AT 28 DAYS.

METER BOX LIDS SHALL BE CAST IRON OR STEEL AND FIT FLUSH WITH TOP OF BOX AND HAVE ADEQUATE BEARING ON SEAT.

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD No 5-153
 CONCRETE METER BOX FOR 1 1/2"
 AND 2" METERS

APPROVED BY *U. B. Fentley* 5/88
 DIRECTOR OF PUBLIC WORKS



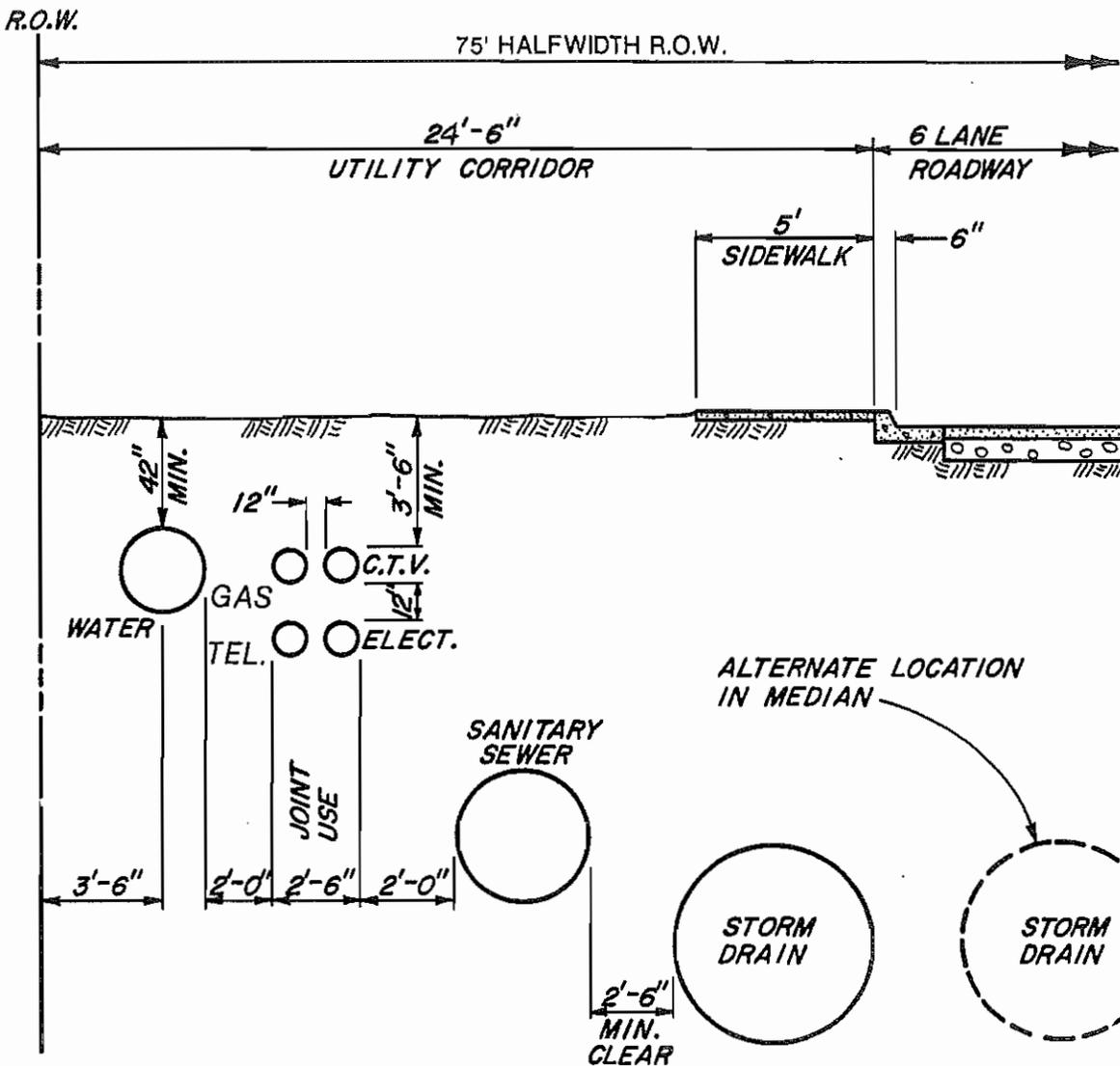
(NOT TO SCALE)

(DRAWN: L.B.K.)

REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 5-154
VAULT FOR 3" THROUGH 8" METERS

APPROVED BY *W.B. Fortney* 5/88
DIRECTOR OF PUBLIC WORKS



NOTES :

POWER, TELEPHONE, GAS, AND CABLE T.V. IN JOINT USE TRENCH OR IN SEPARATE EASEMENT OUTSIDE OF RIGHT-OF-WAY.

UTILITY PULL BOXES, VAULTS AND SWITCH GEAR WOULD BE LOCATED OUTSIDE AND ADJACENT TO UTILITY CORRIDOR.

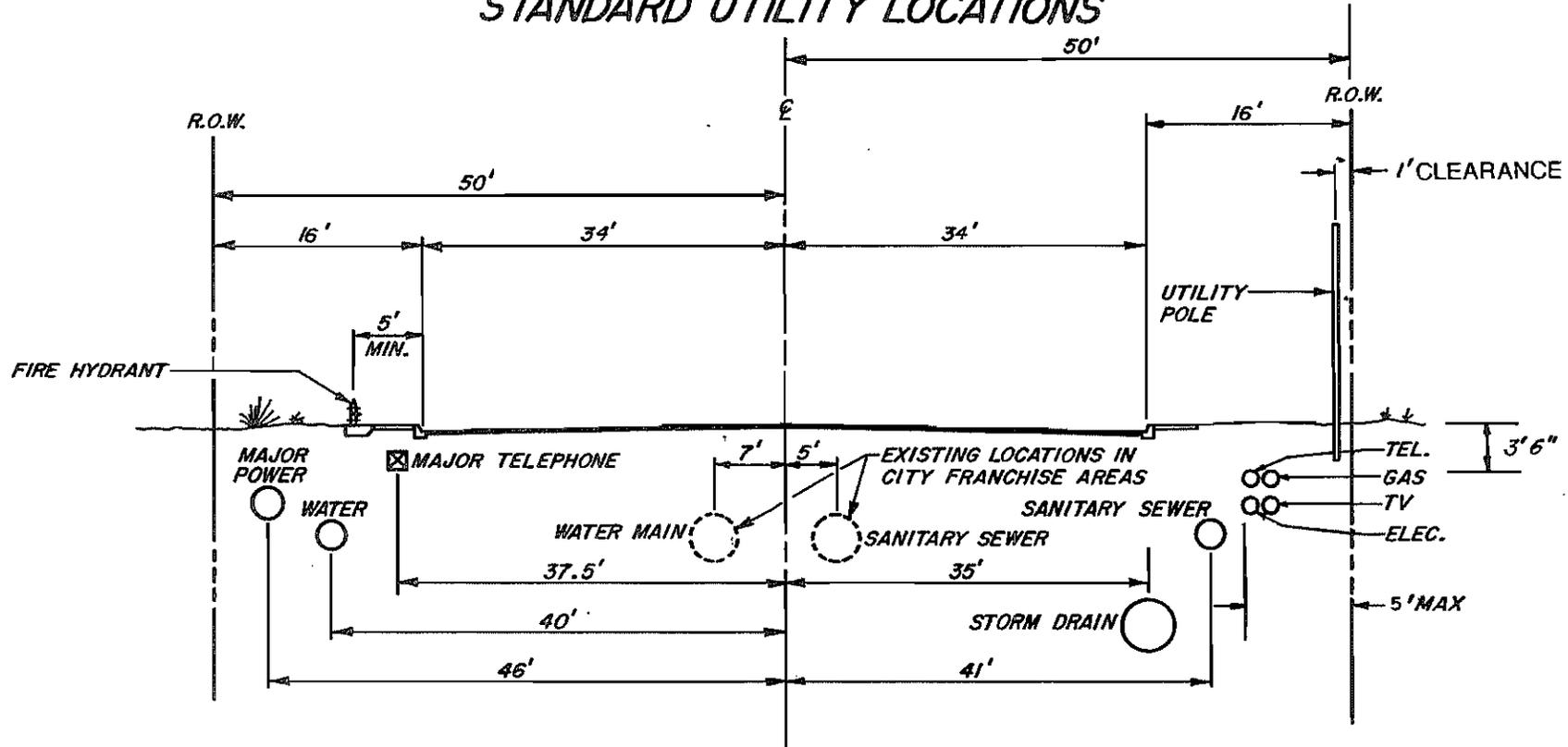
**UTILITY LOCATIONS FOR
AREA SERVICE HIGHWAYS**

REVISED

COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD No 5-160
 UTILITY LOCATIONS
 APPROVED BY *D. B. Fintley*
 DIRECTOR OF PUBLIC WORKS

5/88

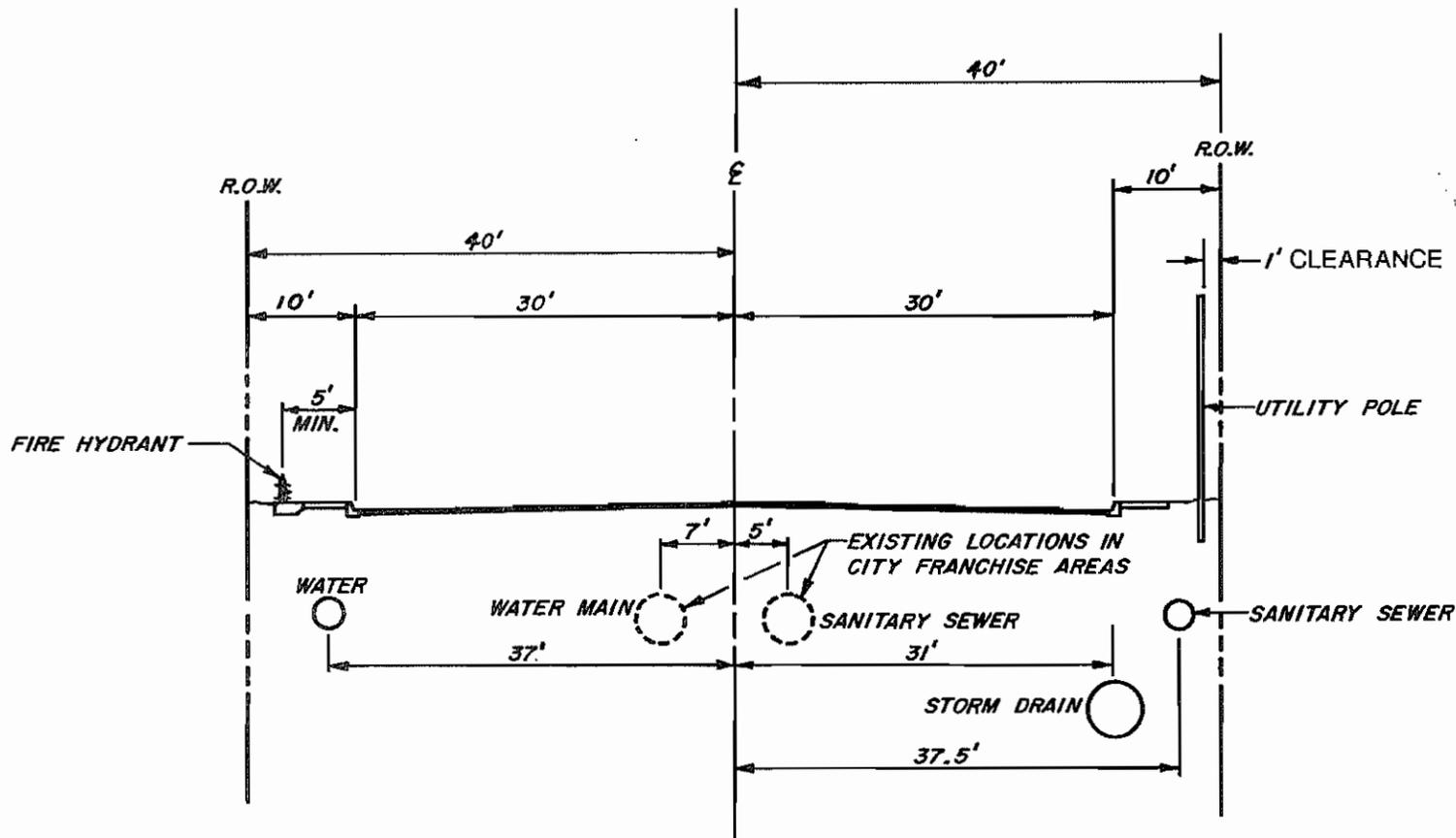
STANDARD UTILITY LOCATIONS



ARTERIAL STREETS

NOTES:
 DASHED LINES INDICATE ALTERNATIVE LOCATIONS SUBJECT TO APPROVAL BY PUBLIC WORKS.

REVISED
COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 5-170
UTILITY LOCATIONS
APPROVED BY <i>U. B. Fentley</i> 5/88
DIRECTOR OF PUBLIC WORKS



MAJOR COLLECTOR STREETS

NOTES:

DASHED LINES INDICATE ALTERNATIVE LOCATIONS SUBJECT TO APPROVAL BY PUBLIC WORKS.

TELEPHONE, GAS, ELECTRIC AND CABLE T.V. IN SEPARATE UTILITY EASEMENT.

REVISED

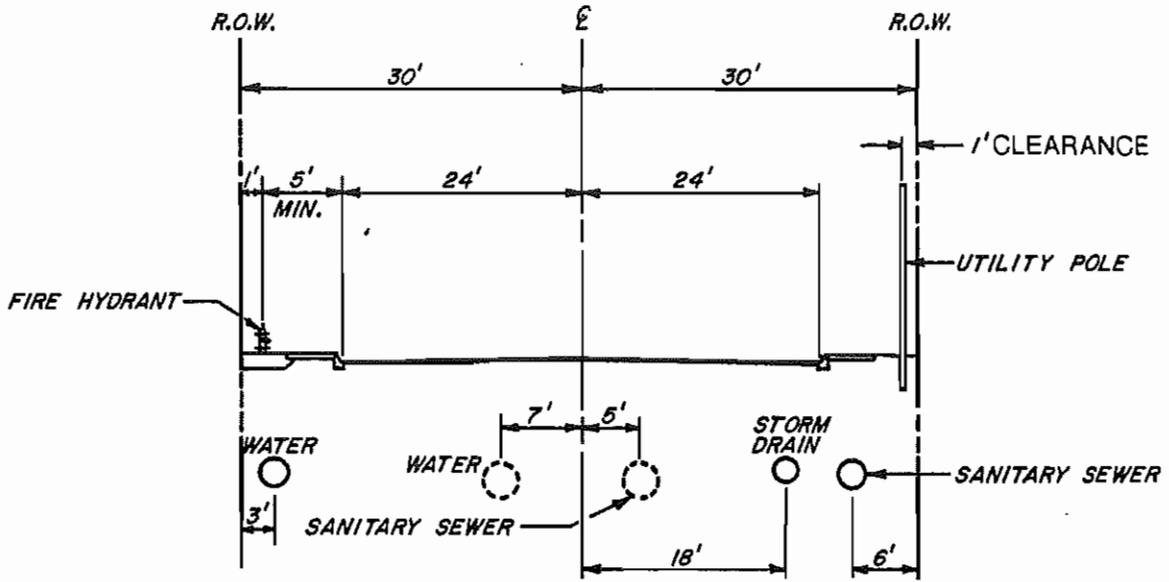
COUNTY OF YUMA
CONSTRUCTION STANDARDS

STANDARD No 5-180

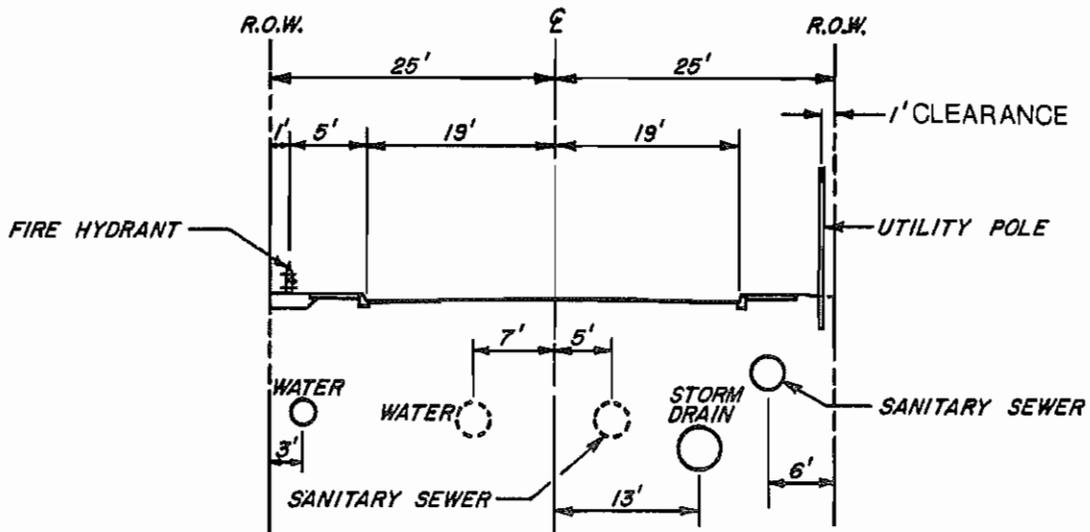
UTILITY LOCATIONS

APPROVED BY W.B. Fentress 5/88
DIRECTOR OF PUBLIC WORKS

STANDARD UTILITY LOCATIONS



RESIDENTIAL COLLECTOR STREET



RESIDENTIAL STREET

NOTES:

DASHED LINES INDICATE ALTERNATE LOCATIONS SUBJECT TO APPROVAL BY PUBLIC WORKS.

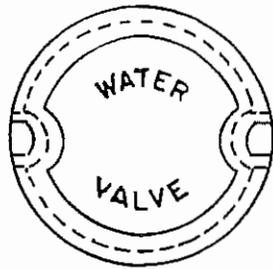
SEPARATE UTILITY EASEMENT FOR TELEPHONE, GAS, ELECTRIC AND CABLE TELEVISION REQUIRED FOR RESIDENTIAL STREETS.

REVISED

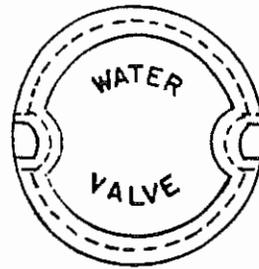
COUNTY OF YUMA
 CONSTRUCTION STANDARDS
 STANDARD No 5-190
 UTILITY LOCATIONS

APPROVED BY *D. B. Fintel*
 DIRECTOR OF PUBLIC WORKS

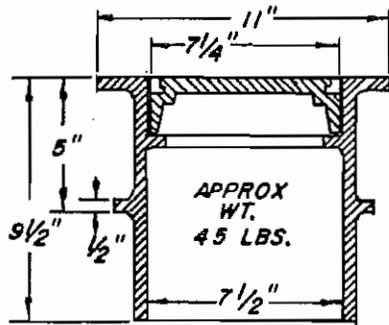
5/88



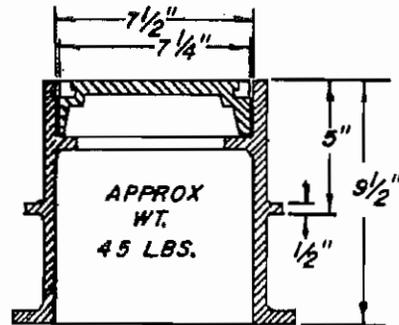
COVER



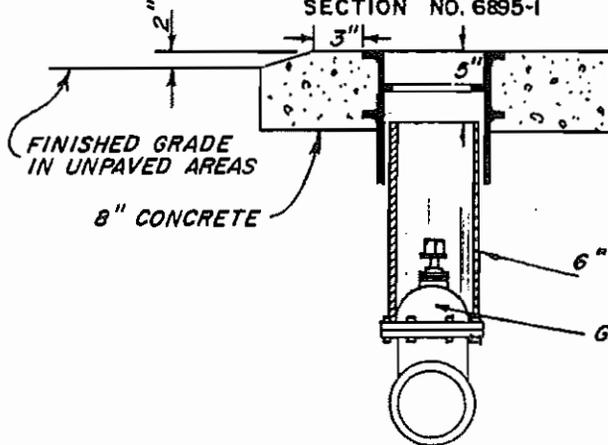
COVER



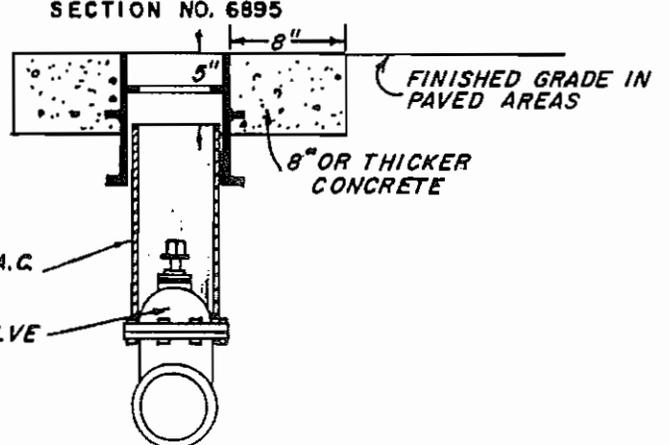
SECTION NO. 6895-1



SECTION NO. 6895



TYPICAL INSTALLATION
NO. 6895-1



TYPICAL INSTALLATION
NO. 6895

THIS DETAIL APPLIES TO ALL VALVE LOCATION
WITHIN AND OUT OF PAVEMENT AREAS.

COVER & FRAME
SHALL BE TYLER 6895,
6895-1 OR APPROVED
EQUIVALENT

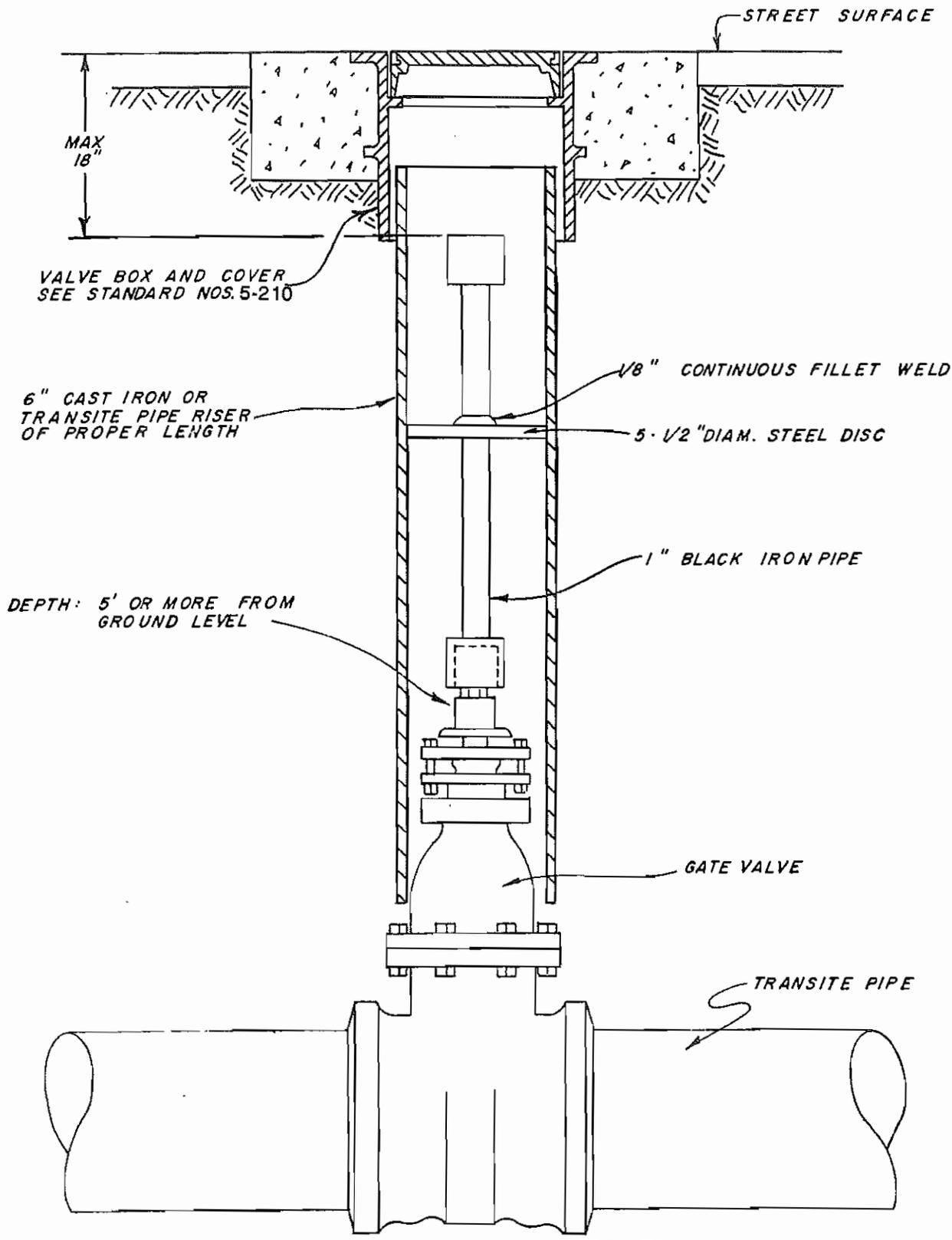
REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD N^o ... 5-210

CAST IRON VALVE
BOX COVER & FRAME

APPROVED BY *J. B. Forney*
DIRECTOR OF PUBLIC WORKS

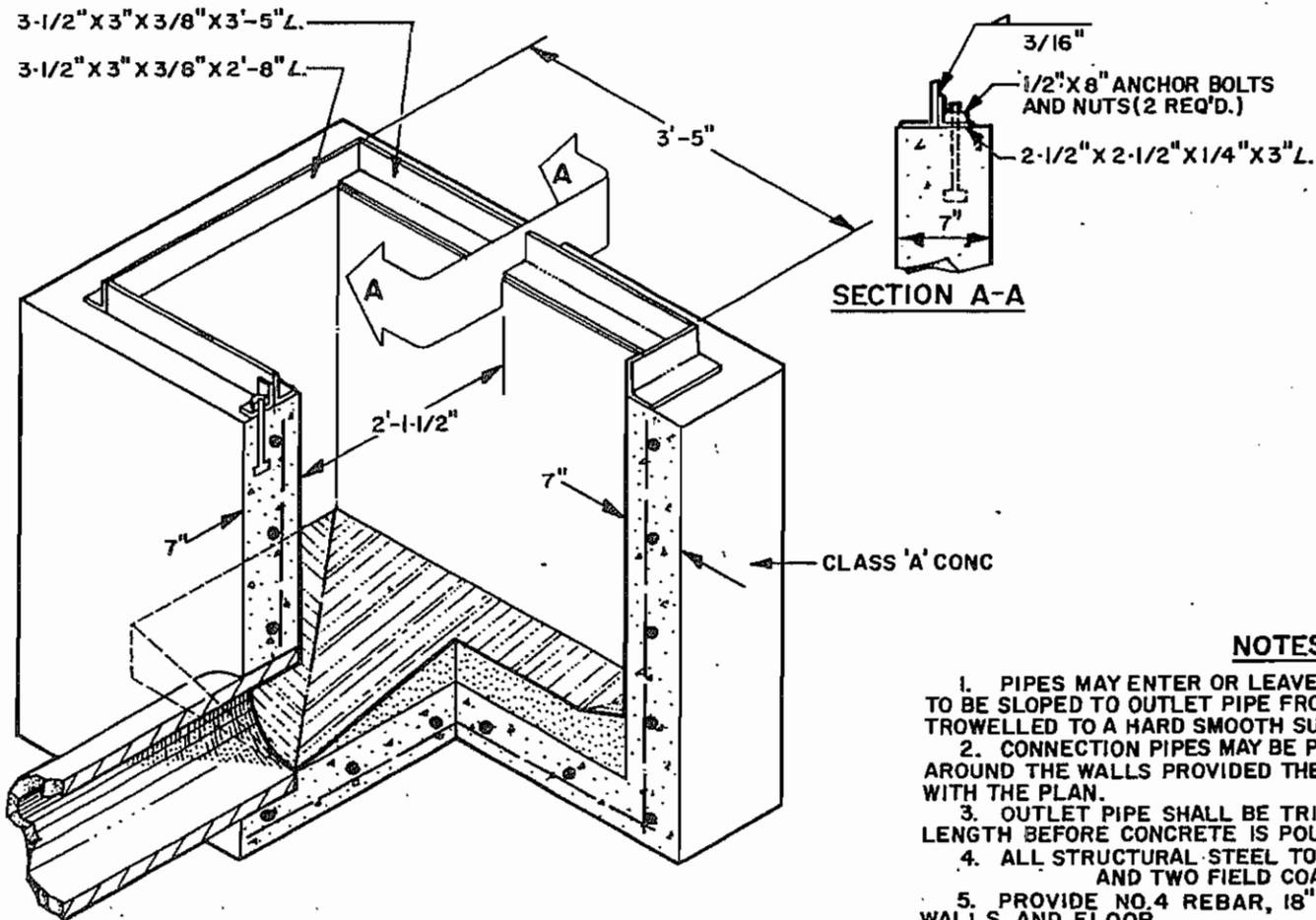
5/88



REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD № ...5-220
OPERATION NUT EXTENSION

APPROVED BY *O. B. Jentel* 5/88
DIRECTOR OF PUBLIC WORKS



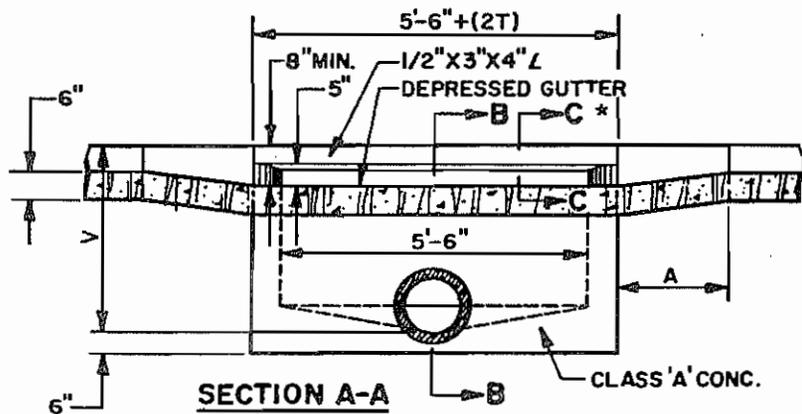
GRATE & FRAME SHALL BE STD. NO. 5-300, PLAN II.

NOTES

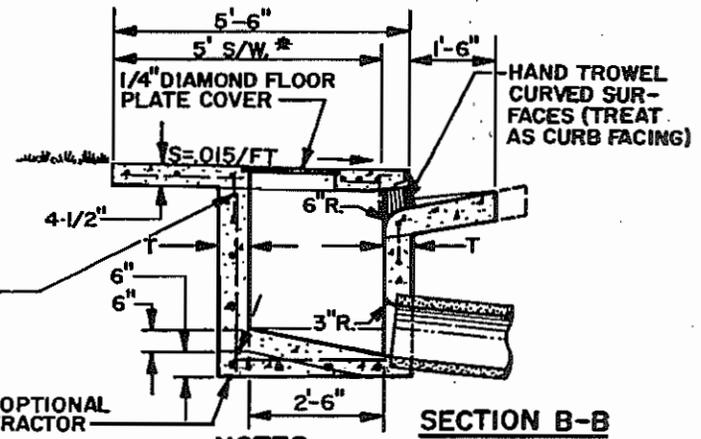
1. PIPES MAY ENTER OR LEAVE ANY WALL. BOTTOM OF BOX TO BE SLOPED TO OUTLET PIPE FROM ALL DIRECTIONS AND TROWELLED TO A HARD SMOOTH SURFACE.
2. CONNECTION PIPES MAY BE PLACED IN ANY POSITION AROUND THE WALLS PROVIDED THE POSITION IS CONSISTENT WITH THE PLAN.
3. OUTLET PIPE SHALL BE TRIMMED TO FINAL SHAPE AND LENGTH BEFORE CONCRETE IS POURED
4. ALL STRUCTURAL STEEL TO BE PAINTED ONE SHOP COAT AND TWO FIELD COATS.
5. PROVIDE NO.4 REBAR, 18" C TO C - BOTH WAYS IN WALLS AND FLOOR.

SOURCE: UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION
 MARICOPA ASSOCIATION OF GOVERNMENTS.

REVISED	7/94
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD No 5-225. CATCH BASIN - TYPE "A" (FOR USE WITHOUT CURB)	
APPROVED BY <i>U. B. Fortney</i> 5/88 DIRECTOR OF PUBLIC WORKS	



NO. 3 DOWEL BARS
(NOT USED IF TOP
IS PRECAST)
SEE DETAIL



NOTES

1. THE ENTIRE CATCH BASIN COVER MAY BE POURED IN PLACE OR PRECAST.
2. CONNECTION PIPES MAY BE PLACED IN ANY POSITION AROUND THE WALLS PROVIDED THE POSITION IS CONSISTENT WITH THE PLAN.
3. OUTLET PIPE SHALL BE TRIMMED TO FINAL SHAPE AND LENGTH BEFORE CONCRETE IS POURED.
4. FLOOR OF BASIN SHALL BE TROWELLED TO A HARD SMOOTH SURFACE AND SHALL SLOPE FROM ALL DIRECTIONS TO OUTLET.
5. ALL STRUCTURAL STEEL TO BE PAINTED ONE SHOP COAT AND TWO FIELD COATS
6. PROVIDE NO.4 REBAR, 18" C TO C - BOTH WAYS IN WALLS AND FLOOR.

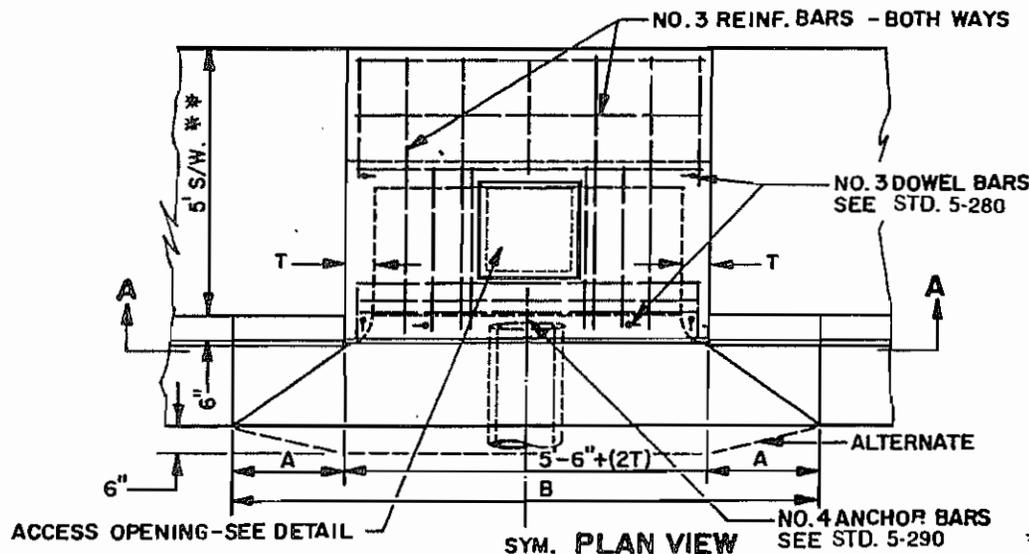
DIMENSIONS

T=6" IF V=4' OR LESS.
T=8" IF V IS BETWEEN 4' AND 8'.
T=10" IF V IS 8' OR MORE (IF V EXCEEDS 10'
SPECIAL DESIGN IS REQUIRED).
V=3'-6" UNLESS OTHERWISE SPECIFIED.

CURB	A	B
4"	3'-3"	13'
6"	1'-9"	10'
7"	1'	8'-9"

*SEE STD. 5-280 FOR DETAILS COMMON TO ALL CURB OPENING BASINS.

**4' IN LOCATIONS WHERE 4' S/W. IS REQUIRED.

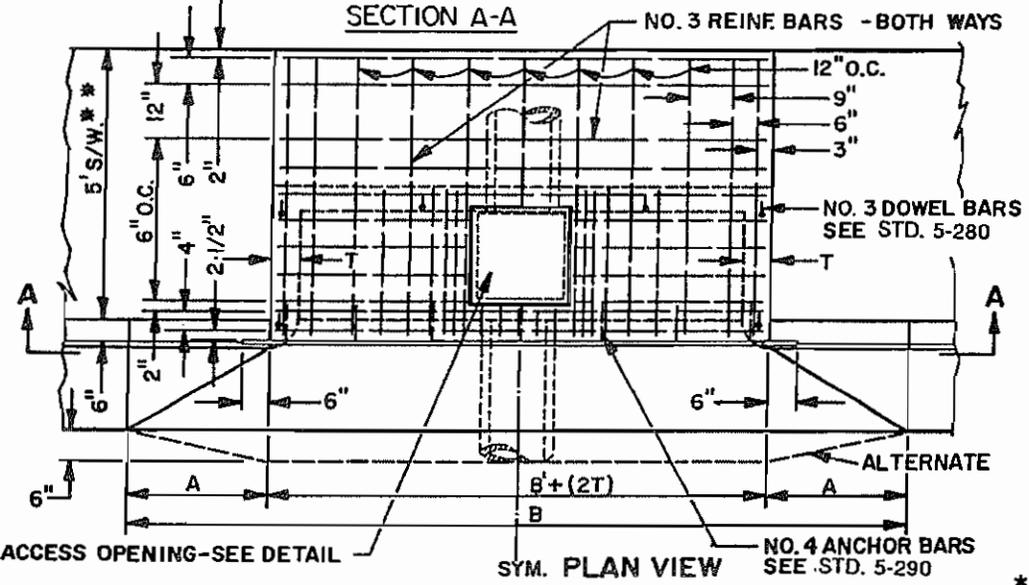
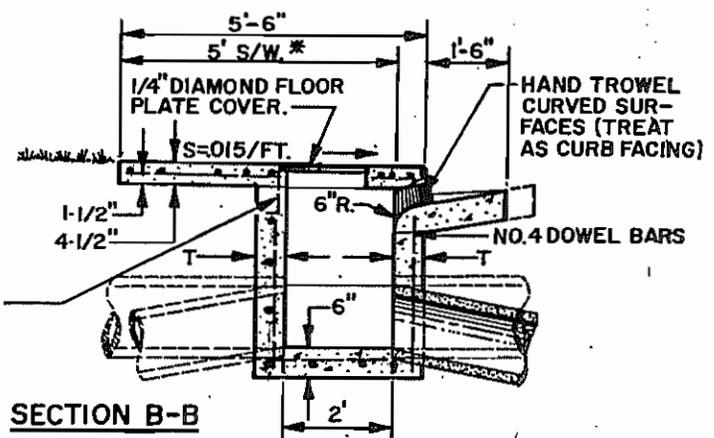
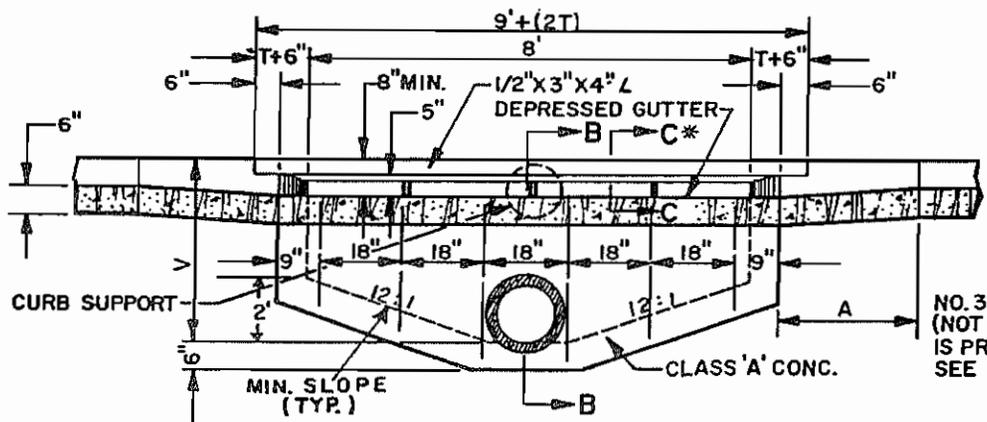


REVISED

7/94

COUNTY OF YUMA
CONSTRUCTION STANDARDS

STANDARD No 5-230
CATCH BASIN TYPE "B"
5'-6" CURB OPENING WITH ACCESS
APPROVED BY *U. B. Fortney* 5/88
DIRECTOR OF PUBLIC WORKS



- NOTES**
1. THE ENTIRE CATCH BASIN COVER MAY BE POURED IN PLACE OR PRECAST.
 2. CONNECTION PIPES MAY BE PLACED IN ANY POSITION AROUND THE WALLS PROVIDED THE POSITION IS CONSISTENT WITH THE PLAN.
 3. OUTLET PIPE SHALL BE TRIMMED TO FINAL SHAPE AND LENGTH BEFORE CONCRETE IS POURED.
 4. FLOOR OF BASIN SHALL BE TROWELLED TO A HARD SMOOTH SURFACE AND SHALL SLOPE FROM ALL DIRECTIONS TO OUTLET.
 5. ALL STRUCTURAL STEEL TO BE PAINTED ONE SHOP COAT TWO FIELD COATS.
 6. PROVIDE NO. 4 REBAR, 18" C TO C - BOTH WAYS IN WALLS AND FLOOR.

DIMENSIONS

CURB	A	B
4"	3'-3"	15'-6"
6"	1'-9"	12'-6"
7"	1'	11'

T=6" IF V=4' OR LESS.
 T=8" IF V IS BETWEEN 4' AND 8'.
 T=10" IF V IS 8' OR MORE (IF V EXCEEDS 10' SPECIAL DESIGN IS REQUIRED).
 V=4' UNLESS OTHERWISE NOTED.

*SEE STD. 5-280 FOR DETAILS COMMON TO ALL CURB OPENING BASINS
 **4" IN LOCATIONS WHERE 4' S/W IS REQUIRED. NOT TO SCALE

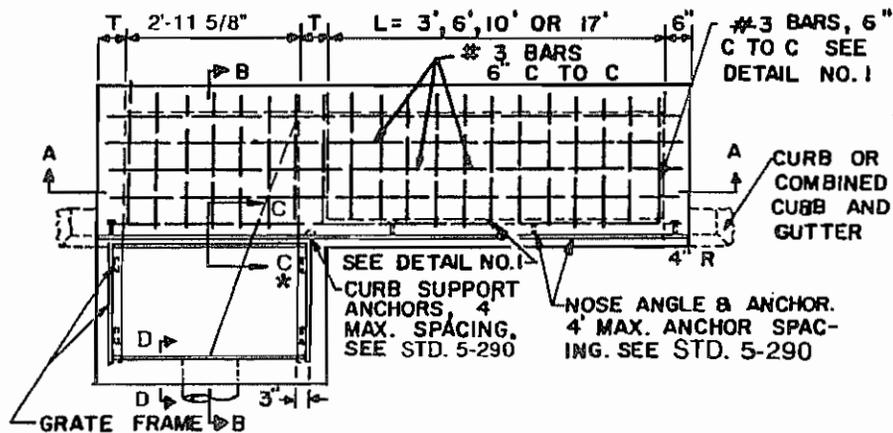
SOURCE: UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION
 MARICOPA ASSOCIATION OF GOVERNMENTS.

REVISED 7/94

COUNTY OF YUMA
 CONSTRUCTION STANDARDS

STANDARD No 5-240
 CATCH BASIN TYPE "C"
 8' CURB OPENING WITH ACCESS

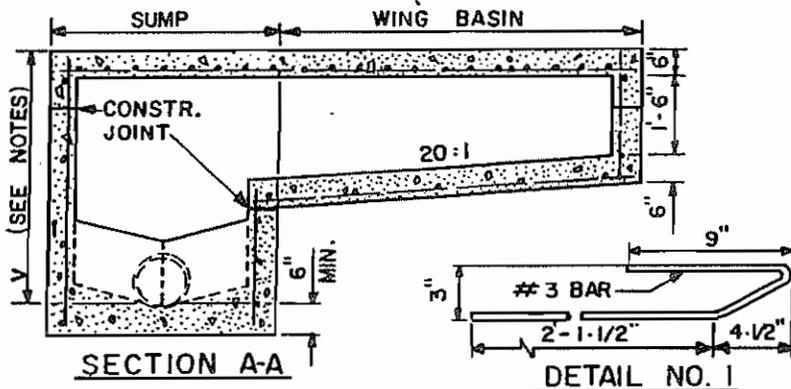
APPROVED BY *R. B. Frazier* 5/88
 DIRECTOR OF PUBLIC WORKS



GRATE FRAME AND FRAME ANCHORS AS PER STD. NO. 5-300 PLAN II

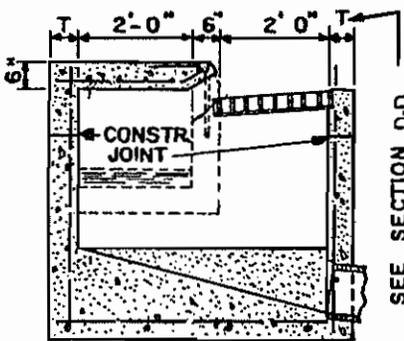
NOTE: REINFORCING BARS SHOWN ARE FOR ROOF SLAB ONLY. SEE SECTIONS FOR OTHER REINFORCING.

PLAN



SECTION A-A

DETAIL NO. 1

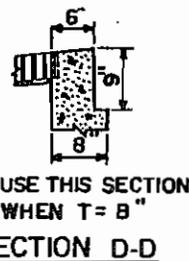


SECTION B-B

SEE SECTION D-D

NOTES:

1. SINGLE C. B. (ILLUSTRATED), SUMP WITH WING BASIN UPSTREAM.
2. DOUBLE C. B. SUMP WITH SYMMETRICAL WING BASINS EACH SIDE.
3. PIPES CAN BE PLACED IN ANY WALL EXCEPT WALL ADJACENT TO A WING BASIN.
4. SUMP FLOOR SHALL HAVE A WOOD TROWEL FINISH AND A MIN. SLOPE OF 4:1 IN ALL DIRECTIONS TOWARD OUTLET PIPE.
5. ALL REINFORCING BARS SHALL BE #4, 18" C TO C BOTH WAYS AND 1-1/2" CLEAR TO INSIDE OF WALLS AND OUTSIDE OF WING BASIN FLOOR IN WALLS AND FLOOR EXCEPT AS SHOWN.
6. ALL CONCRETE SHALL BE CLASS A
7. CONSTR. JOINTS SHALL BE PLACED TO MEET FIELD CONDITIONS.
8. T = 6" WHEN V IS LESS THAN 8'; 8" WHEN GREATER THAN 8' SEE SECTION D-D



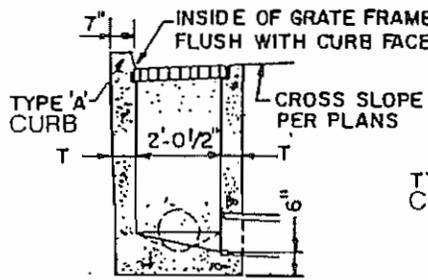
SECTION D-D

- V = 3'-3" MIN. WHEN L = 3'
 - V = 3'-5" MIN. WHEN L = 6'
 - V = 3'-7" MIN. WHEN L = 10'
 - V = 4'-0" MIN. WHEN L = 17'
- V DOUBLES FOR SYMMETRICAL WINGS.

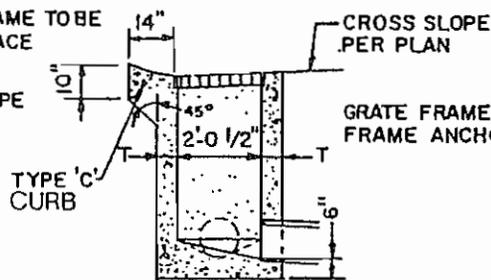
*SEE STD. 5-280 FOR DETAILS COMMON TO ALL CURB OPENING BASINS

SOURCE: UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION MARICOPA ASSOCIATION OF GOVERNMENTS.

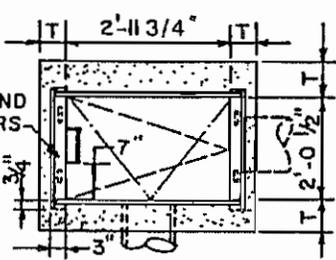
REVISED	7/94
COUNTY OF YUMA	
CONSTRUCTION STANDARDS	
STANDARD No 5-250	
CATCH BASIN , TYPE D	
APPROVED BY <i>D.B. Intney</i> 5/88	
DIRECTOR OF PUBLIC WORKS	



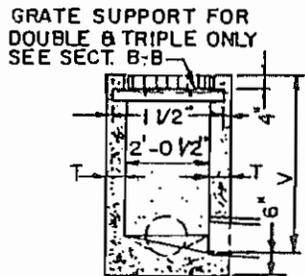
'E' CATCH BASIN IN VERTICAL CURB & GUTTER



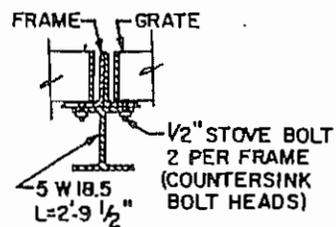
'E' CATCH BASIN IN ROLL CURB & GUTTER



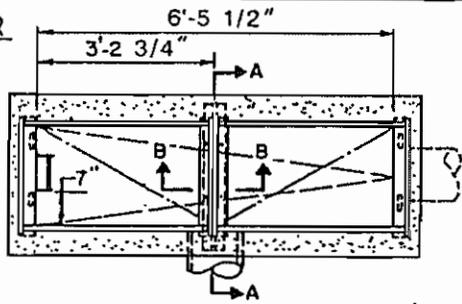
SINGLE CATCH BASIN PLAN



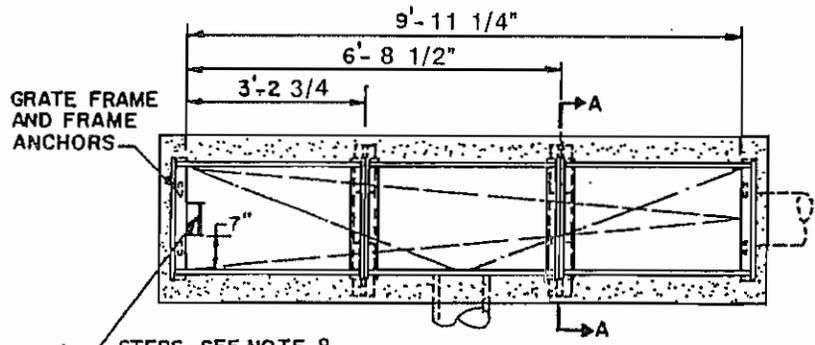
SECTION A-A



SECTION B-B



DOUBLE CATCH BASIN PLAN



TRIPLE CATCH BASIN PLAN

NOTES

1. ALL CONCRETE SHALL BE CLASS 'A'
2. CONNECTOR PIPES MAY BE PLACED IN ANY WALL AS PER PLAN.
3. FLOOR OF BASIN SHALL BE TROWELLED TO A HARD, SMOOTH SURFACE AND SHALL SLOPE FROM ALL DIRECTIONS TO OUTLET.
4. CONNECTOR PIPE SHALL BE TRIMMED TO THE FINAL SHAPE AND LENGTH BEFORE CONCRETE IS POURED.
5. PLANS SHOULD SPECIFY GRATE ELEVATION AND INVERT ELEVATION.
6. THE TYPE 'E' CATCH BASIN MAY BE PREFABRICATED, PROVIDING A SHOP DRAWING IS APPROVED BY THE ENGINEER PRIOR TO FABRICATION.
7. THE FRAME SHALL BE DET. 5-300; PLAN II AND THE GRATE SHALL BE DET. 5-300 PLAN II.
8. STEPS STD. No. 5-040 FOR V=3' OR LESS (INCL), PLACE ONE STEP 12" ABOVE THE FLOOR OF THE BASIN. V OVER 3', PLACE STEPS AT 12" INTERVALS FROM THE FLOOR OF THE BASIN WITH THE TOP STEP AT 12" (MIN.) BELOW THE TOP OF THE GRATE.
9. PROVIDE NO. 4 REBAR, 18" C TO C BOTH WAYS IN WALLS AND FLOOR.

CATCH BASIN WALL THICKNESS

T=6" IF V IS 4' OR LESS
 T=8" IF V IS 4' TO 8'
 (IF V EXCEEDS 8', SPECIAL DESIGN IS REQUIRED)
 V=3'-0" UNLESS OTHERWISE NOTED.

REVISED	7/94
COUNTY OF YUMA CONSTRUCTION STANDARDS STANDARD No 5-260 SINGLE-TRIPLE GRATE CATCH BASIN TYPE 'E'	
APPROVED BY <i>U. B. Frazier</i> 5/88 DIRECTOR OF PUBLIC WORKS	

#3 BARS @ 6" O.C., 1 1/2" CLEAR TO TOP OF NOSE SECTION & INSIDE OF WALL SEE DET. NO.1

#4 REINF. STEEL ANCHOR BARS @ 18" (MAX) O.C. WELDED TO ANGLE
#3 BARS @ 6" O.C. SEE DET. NO.1

INSIDE OF GRATE FRAME TO BE IN SAME VERTICAL PLANE AS POINT OF NOSE ANGLE

1" BATTER
NOSE ANGLE & ANCHORS SEE DET. STD. 5-290
NORMAL CROWN

GRATE SUPPORT FOR DOUBLE & TRIPLE ONLY. SEE SECT. B-B

SINGLE CATCH BASIN PLAN

NOTES

1. ALL CONCRETE SHALL BE CLASS 'A'.
2. CONNECTOR PIPES MAY BE PLACED IN ANY WALL AS PER PLANS.
3. FLOOR OF BASIN SHALL BE TROWELLED TO A HARD, SMOOTH SURFACE AND SHALL SLOPE FROM ALL DIRECTIONS TO OUTLET.
4. CONNECTOR PIPE SHALL BE TRIMMED TO THE FINAL SHAPE AND LENGTH BEFORE CONCRETE IS Poured.
5. STEPS (I SEE .STD. 5-045 POLYPROPYLENE) - V=3' (INCL); PLACE ONE STEP 12" ABOVE THE FLOOR OF THE BASIN. V OVER 3', PLACE STEPS AT 12" INTERVALS FROM THE FLOOR OF THE BASIN WITH THE TOP STEP AT 12" (MIN.) BELOW THE TOP OF THE GRATE.
6. THE FRAME SHALL BE DET. 5-300 PLAN II. AND THE GRATE SHALL BE DET. PLAN II.
7. PROVIDE NO. 4 REBAR, 18" C TO C - BOTH WAYS IN WALLS AND FLOOR.

GRATE FRAME

SECTION A-A

CURB OR COMB. CURB & GUTTER
CONC. GUTTER TRANSITION BOTH ENDS (TYP)
SEE SINGLE C.B. AND SECT. A-A FOR STEEL REINFORCING DETAILS

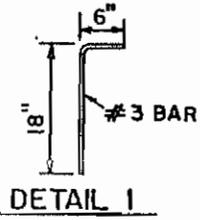
DOUBLE CATCH BASIN PLAN

SECTION B-B

1/2" STOVE BOLT 2 PER FRAME (COUNTERSINK BOLT HEADS)
5 W 18.5 L= 3'-5 1/2"

GRATE FRAME & FRAME ANCHORS

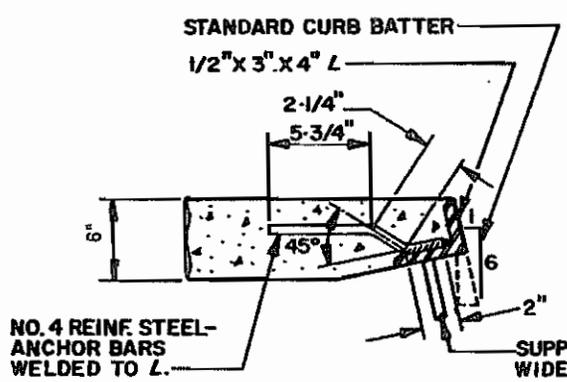
TRIPLE CATCH BASIN PLAN



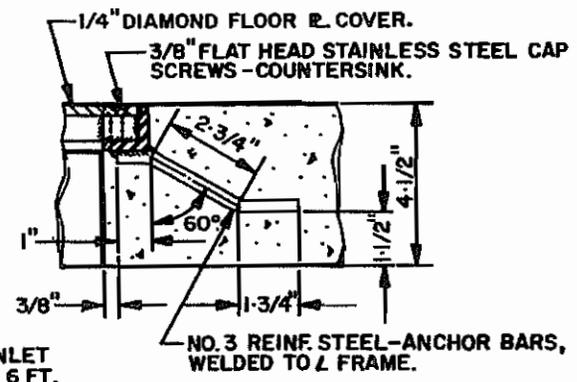
REVISED 7/94

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 5-270
CATCH BASIN TYPE 'F'
CURB OPENING WITH SINGLE-TRIPLE GRATE

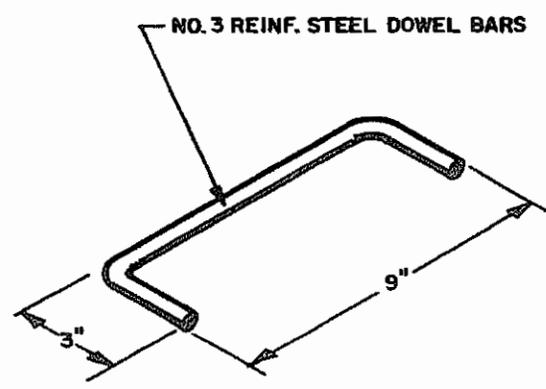
APPROVED BY *D.B. Fitey* 5/88
DIRECTOR OF PUBLIC WORKS



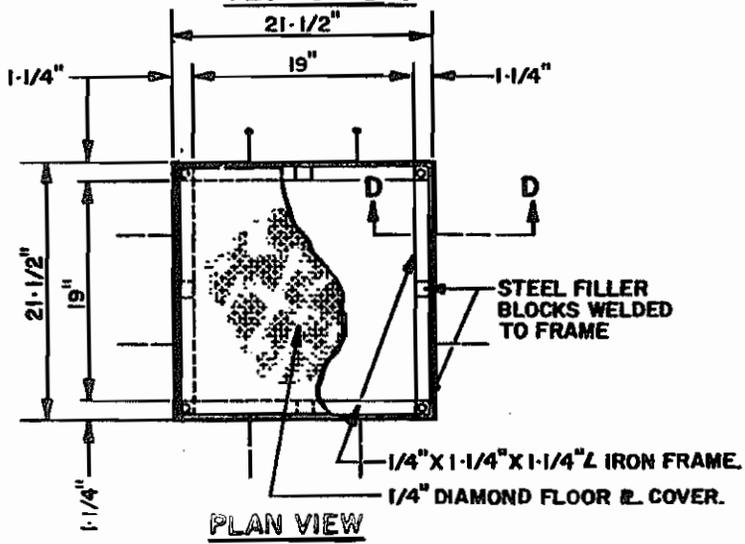
SECTION C-C*
SEE STD. 5-290 FOR ADDITIONAL CURB OPENING DETAILS



SECTION D-D



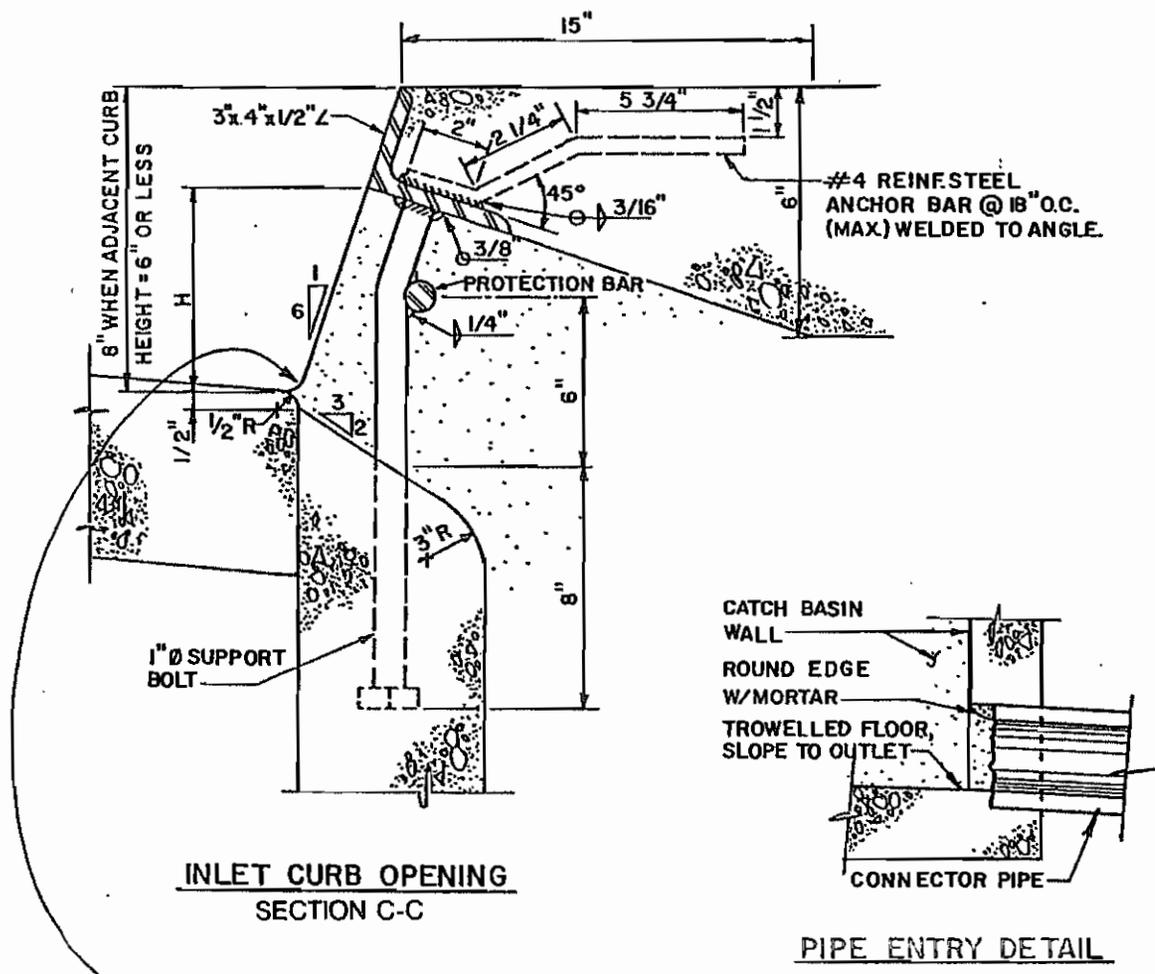
DOWEL BAR



PLAN VIEW

SOURCE: UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION
MARICOPA ASSOCIATION OF GOVERNMENTS.

<p>REVISED</p> <p>COUNTY OF YUMA</p> <p>CONSTRUCTION STANDARDS</p> <p>STANDARD No 5-280</p> <p>COMMON DETAILS & SECTIONS</p> <p>FOR CURB OPENING CATCH BASINS</p> <p>APPROVED BY <i>U.B. Fontana</i> 5/88</p> <p>DIRECTOR OF PUBLIC WORKS</p>
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**INLET CURB OPENING
SECTION C-C**

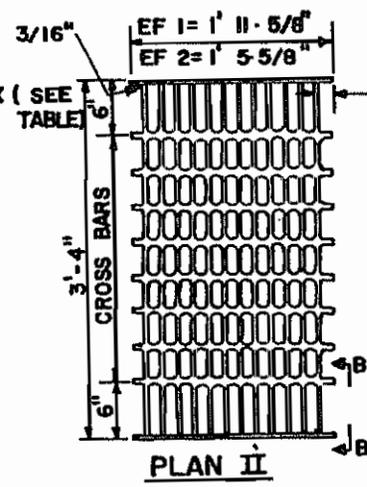
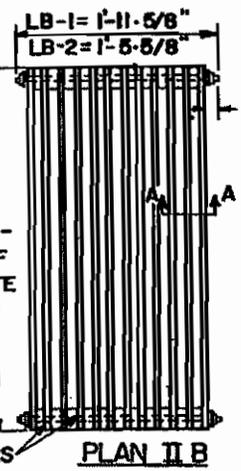
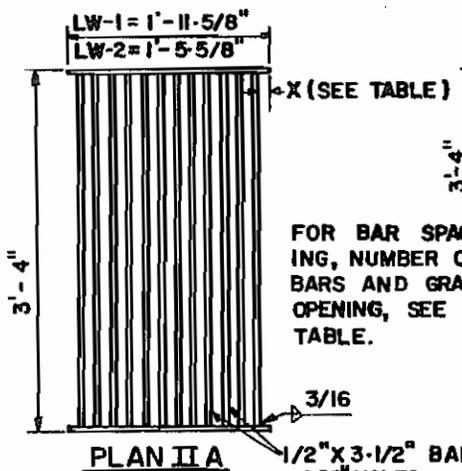
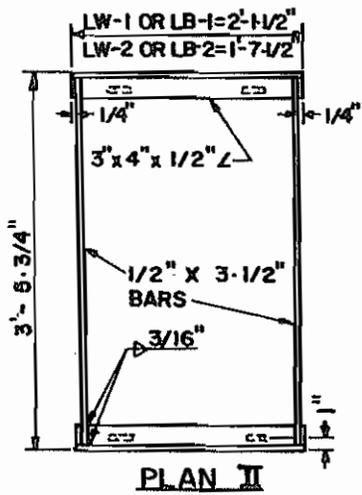
PIPE ENTRY DETAIL

GUTTER DEPRESSION AS SPECIFIED
ON PLANS 3" MAX. 1" MIN.

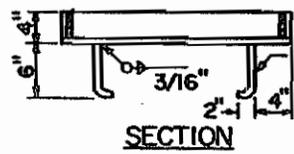
NOTES

1. CURB OPENING HEIGHT 'H' SHALL BE 5" (MINIMUM) UNLESS OTHERWISE SPECIFIED.
2. WHEN CURB OPENING HEIGHT 'H' EXCEEDS 6"; INSTALL 1" Ø STEEL PROTECTION BARS. THE PROTECTION BARS SHALL EXTEND THE FULL LENGTH OF THE CURB OPENINGS AND SHALL BE EMBEDDED 3" (MIN.) AT EACH END.
3. INSTALL ADDITIONAL BARS AT 3 1/2" CLEAR SPACING ABOVE FIRST BAR WHEN OPENING EXCEEDS 13".
4. WHEN CURB OPENING LENGTH EXCEEDS 6', INSTALL 1" Ø STEEL SUPPORT BOLTS, SPACED AT NO MORE THAN 4' D.C.
5. ALL EXPOSED METAL HARDWARE SHALL BE GIVEN ONE SHOP COAT OF NO. 1 PAINT AND 2 FIELD COATS OF NO. 10 PAINT AS PER SECTION 790, OF MAG SPECS.
6. ALL METAL UNITS SHALL BE FABRICATED FROM STRUCTURAL STEEL EXCEPT AS NOTED. STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH A.S.T.M. A-36.
7. WELDING SHALL BE IN ACCORDANCE WITH M.A.G. WELDING SPECIFICATIONS.
8. CONNECTOR PIPE SHALL BE TRIMMED TO THE FINAL SHAPE AND LENGTH BEFORE CONCRETE IS POURED.

REVISED
COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 5-290
INLET CURB OPENING
& PIPE ENTRY DETAIL
APPROVED BY <i>D.B. Finkel</i>
DIRECTOR OF PUBLIC WORKS
5/88



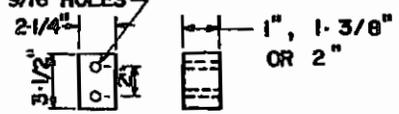
CROSS BARS: 3/8" Ø,
4" C TO C. BEARING
BARS: 3-1/2" x 1/4",
1-7/8" C TO C.
END BARS: 2-1/2" x
1/4" CROSS BARS MAY
BE FILLET WELDED,
RESISTANCE WELDED OR
ELECTROFORGED TO
BEARING BARS.



3/8" ANCHORS
DELETE ON
END WHEN
USED WITH
I BEAM
SUPPORT



GRATE TYPE
LW & EF RES-
TRICTED TO
SLOPES OF
3% OR LESS



BAR SPACER DETAIL
CAST IRON, CAST STEEL
OR STEEL BAR STOCK



SECTION A-A
GRATES TYPES LB
USE ON LONGITUDINAL
GRADES IN EXCESS OF 3%
OR AS AN ALTERNATE TO
TYPES LW OR EF ON
GRADES OF 3% OR LESS.

GRATE TYPE	CLEAR BAR SPACING	NO. BARS	X	GRATE OPENING SQ. FT.
LW OR LB-1.0	1"	16	5/16"	3.97
" " -1.1	1-3/8"	13	5/16"	4.34
" " -1.2	2"	9	1-9/16"	4.84
EF-1	1-5/8"	13	7/16"	4.66
LW OR LB-2.0	1"	12	5/16"	2.98
" " -2.1	1-3/8"	9	1/16"	3.35
" " -2.2	2"	7	1/16"	3.60
EF-2	1-5/16"	10	1/4"	3.48

NOTES:

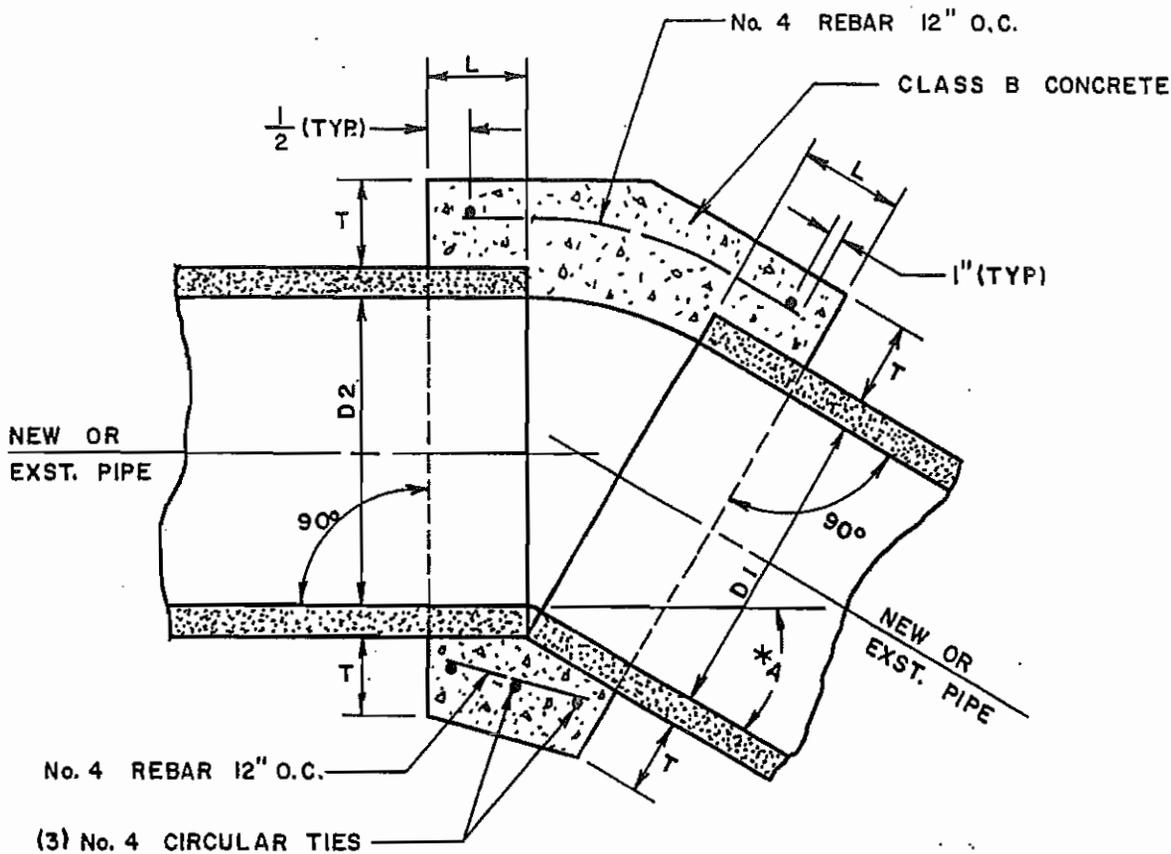
1. LW INDICATES LONGITUDINAL WELDED.
2. LB INDICATES LONGITUDINAL BOLTED.
3. EF INDICATES ELECTROFORGED.
4. GRATING UNITS AND FRAMES SHALL BE FABRICATED FROM STRUCTURAL STEEL "A-36" EXCEPT AS NOTED.
5. ALL WELDING SHALL BE IN ACCORDANCE WITH STANDARD WELDING SPECIFICATIONS.
6. THE COMPLETED ASSEMBLY SHALL BE GIVEN ONE SHOP COAT OF NO. 1 PAINT.
7. FRAMES AND GRATES SHALL FIT TO A MAXIMUM ROCK OF 0.093 AT ANY POINT.

REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 5-300
CATCH BASIN - GRATES & FRAME

APPROVED BY *D.B. Zentgraf* 5/88
DIRECTOR OF PUBLIC WORKS

SOURCE: UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION
MARICOPA ASSOCIATION OF GOVERNMENTS.



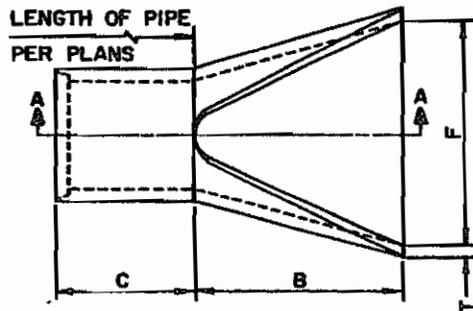
NOTES

1. A CONCRETE COLLAR IS REQUIRED WHERE PIPES OF DIFFERENT DIAMETERS OF MATERIALS ARE JOINED, OR WHERE THE CHANGES IN ALIGNMENT OR GRADE EXCEEDS THAT ALLOWED FOR ON ORDINARY JOINTS.
2. WHERE PIPES OF DIFFERENT DIAMETERS ARE JOINED WITH A CONCRETE COLLAR, L AND T, SHOULD BE THOSE OF THE LARGER PIPE. D=D 1, OR D 2, WHICHEVER IS GREATER.
3. FOR PIPE SIZES NOT LISTED USE NEXT SIZE LARGER.
4. OMIT REINFORCING ON PIPE 24" OR LESS IN DIAMETER.
5. WHERE REINFORCING IS REQUIRED, THE DIAMETER OF THE CIRCULAR TIES SHALL BE.....
OUTSIDE DIAMETER OF PIPE + T.
6. FIELD CLOSURES OF PIPE OF THE SAME DIAMETER AND WITHOUT CHANGE IN GRADE OR ALIGNMENT SHALL BE MADE WITH A CONCRETE COLLAR.

TABLE		
D	L	T
12"	1.0'	4"
18"	1.0'	5"
24"	1.0'	6"
36"	1.5'	8"
48"	1.5'	10"
57"	1.5'	10"
60"	1.75'	11"
66"	1.75'	11"

*A = ANGLE OF DEFLECTION

COUNTY OF YUMA
 CONSTRUCTION STANDARD
STANDARD No. 5-350
CONCRETE PIPE COLLAR
 APPROVED BY W.B. Fortney 7/88
 DIRECTOR OF PUBLIC WORKS

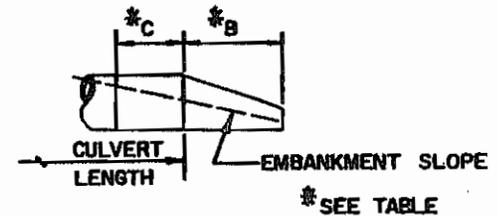


PLAN

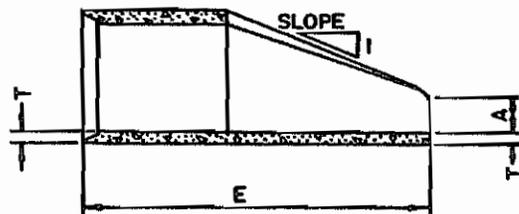
PIPE DIA.	APPROX. WEIGHT	DIMENSIONS-INCHES						APPROX. SLOPE
		T	A	B	C	E	F	
24"	1520 lbs.	3	9-1/2	43-1/2	30	73-1/2	48	3
27"	1930 lbs.	3-1/4	10-1/2	49-1/2	24	73-1/2	54	3
30"	2190 lbs.	3-1/2	12	54	19-3/4	73-3/4	60	3
36"	4100 lbs.	4	15	63	34-3/4	97-3/4	72	3
42"	5380 lbs.	4-1/2	21	63	35	98	78	3
48"	6550 lbs.	5	24	72	26	98	84	3
54"	8240 lbs.	5-1/2	27	65	33-1/4	98-1/4	90	2-1/2



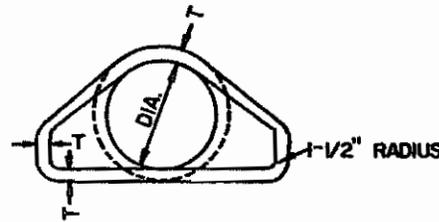
SPACING FOR MULTIPLE INSTALLATION



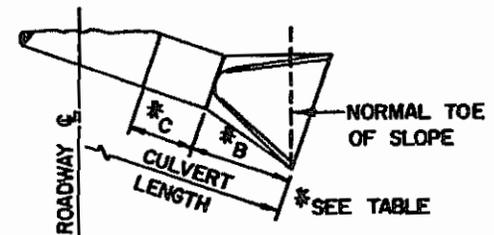
RIGHT ANGLE CULVERT



SECTION A-A



FRONT ELEVATION



SKEWED CULVERT

NOTES

1. DESIGN OF END SECTION SHALL CONFORM TO STANDARDS FOR REINFORCED CONC. PIPE.
2. END SECTION JOINT CONFORMATION SHALL MATCH THE PIPE JOINTS.
3. EMBANKMENT SLOPE SHALL BE WARPED TO MATCH SLOPE OF END SECTION.
4. CULVERT LENGTH IS AS SHOWN ON PLANS.

REVISED

COUNTY OF YUMA
CONSTRUCTION STANDARDS

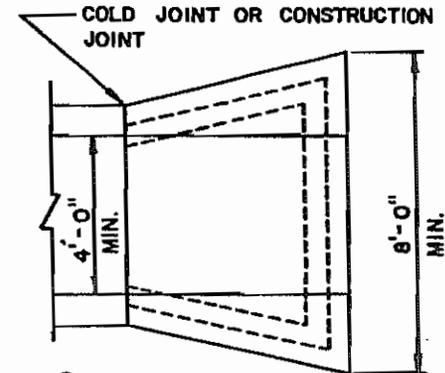
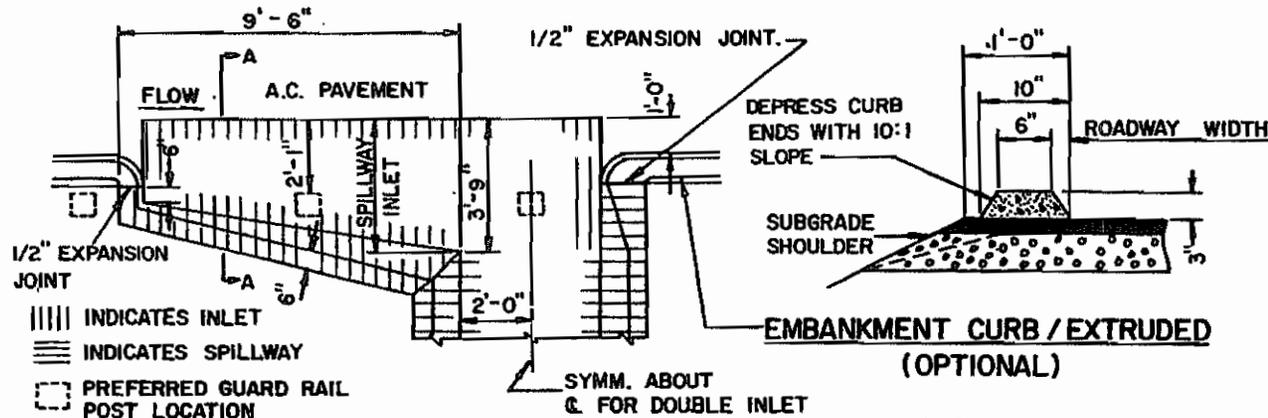
STANDARD No 5-360
END SECTION - REINFORCED CONCRETE PIPE

APPROVED BY *D. B. Jentner* 5/88
DIRECTOR OF PUBLIC WORKS

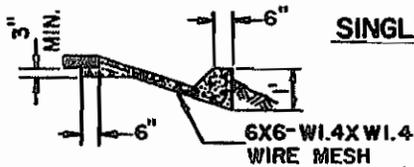
SOURCE: UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION
MARICOPA ASSOCIATION OF GOVERNMENTS.

NOTES

1. WHERE ROCK IS ENCOUNTERED THE OUTLET MAY BE OMITTED.
2. ALL PORTIONS OF SPILLWAY TO BE TROWEL FINISHED.

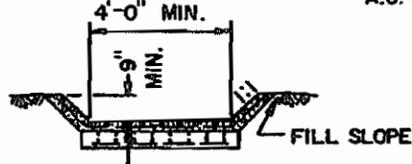


- |||| INDICATES INLET
- ==== INDICATES SPILLWAY
- PREFERRED GUARD RAIL POST LOCATION

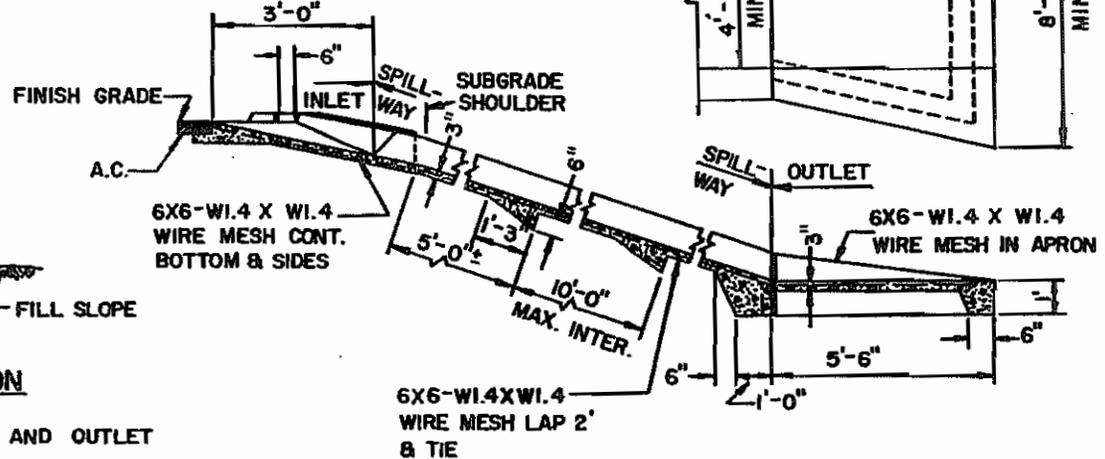


SECTION A-A

SINGLE INLET



SPILLWAY SECTION



**SECTION ON SPILLWAY @
DOUBLE INLET**

NOTES

3. CONCRETE FOR THE SPILLWAY INLET, SPILLWAY AND OUTLET SHALL BE CLASS B PER SECT. 725.
4. WHEN THE OUTLET IS USED, THE WIRE MESH SHALL EXTEND THROUGH THE JOINT INTO THE OUTLET IN LIEU OF BENDING INTO THE KEY.

SOURCE: UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION
MARICOPA ASSOCIATION OF GOVERNMENTS.

REVISED

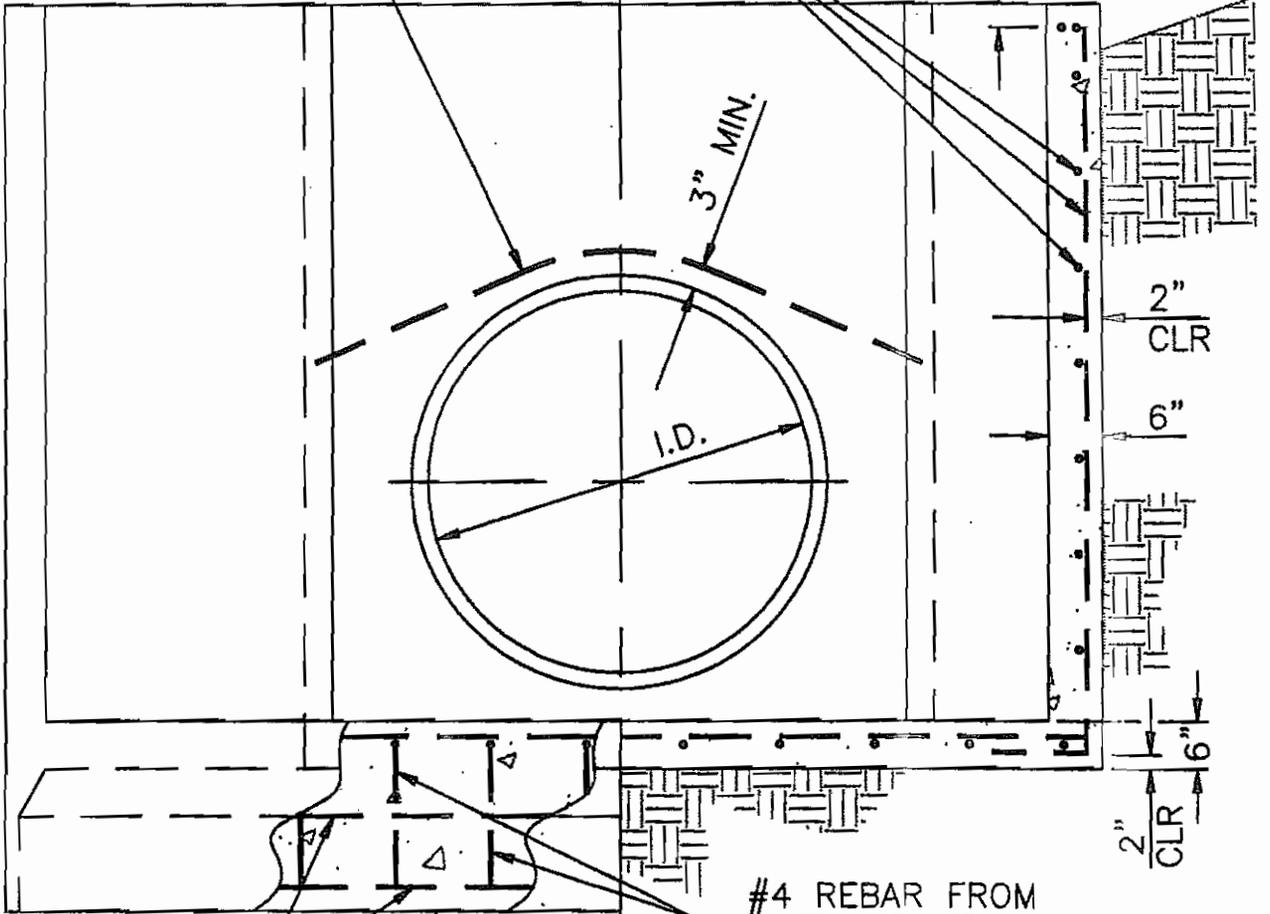
**COUNTY OF YUMA
CONSTRUCTION STANDARDS**

**STANDARD No 5-370
SPILLWAY INLET AND OUTLET**

APPROVED BY *H. B. Foster* 5/88
DIRECTOR OF PUBLIC WORKS

2-#6 BARS BEND
TO CONFORM TO
PIPE

#4 REBAR
12" O.C.

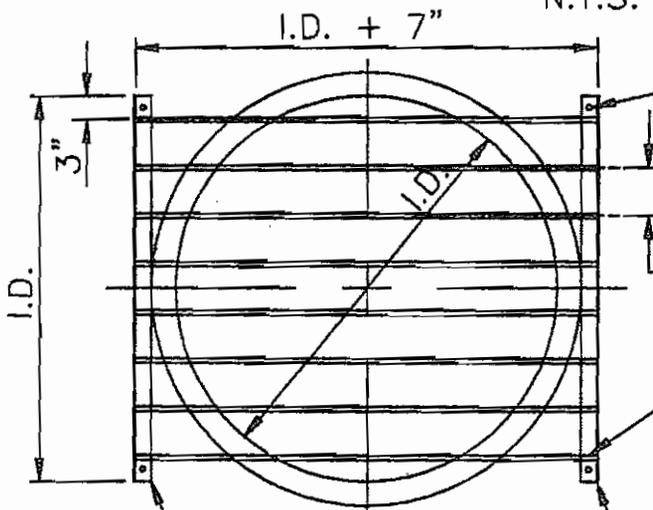


2-#4 REBAR

SECTION B-B

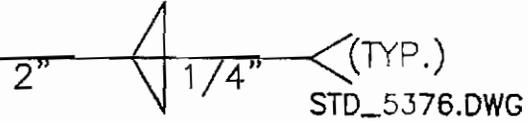
N.T.S.

#4 REBAR FROM
TRANSITION



(4) 5/8" HOLES
GROUT 1/2"x3"
1/2" GALV. BOLTS
INTO CONC. HDWL.

#5 REBAR AT 6" O.C. (TYPICAL)



STD_5376.DWG

REVISED 12/08/98

COUNTY OF YUMA
CONSTRUCTION STANDARDS

STANDARD NO. 5-376

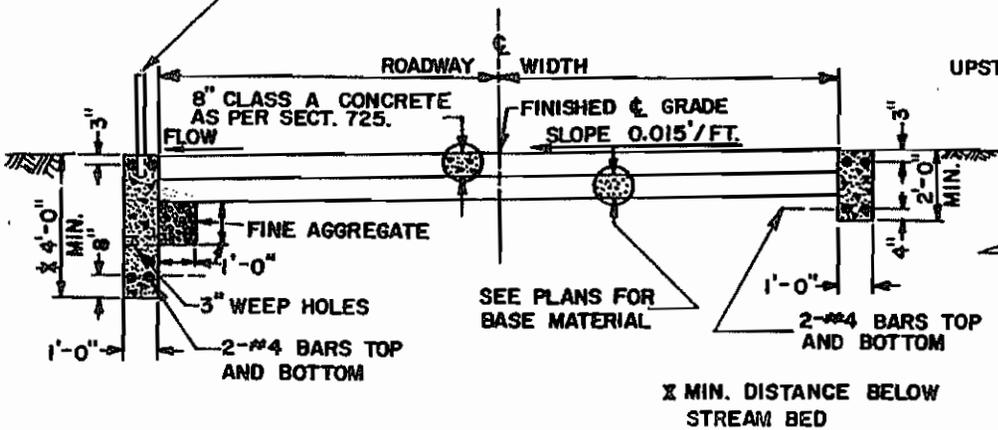
HEADWALL STRUCTURE DETAILS

TRASH GRATE DETAIL

N.T.S.

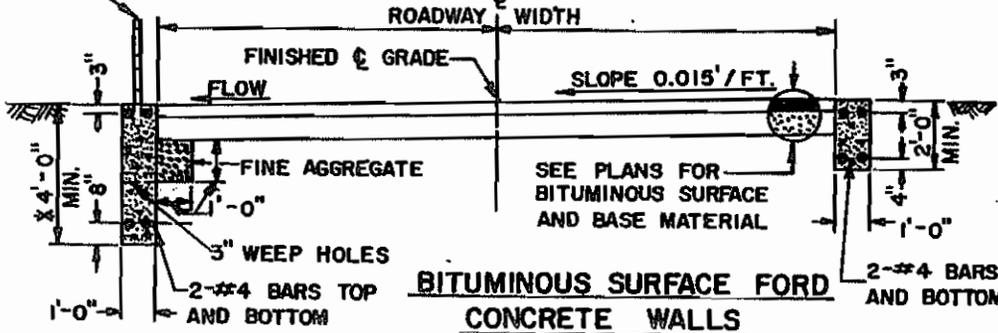
2"x 2"x 1/4" ANGLE
IRON BOTH SIDES

DEPTH GAUGE SEE
DETAIL (OPTIONAL)



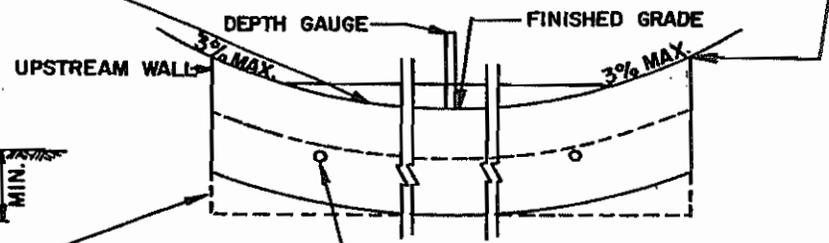
**CONCRETE SURFACE FORD
CONCRETE WALLS**

DEPTH GAUGE SEE
DETAIL (OPTIONAL)



**BITUMINOUS SURFACE FORD
CONCRETE WALLS**

VERTICAL ALIGNMENT TO BE AS
NEAR AVERAGE TRANSVERSE GRADE
OF STREAM BED AS POSSIBLE

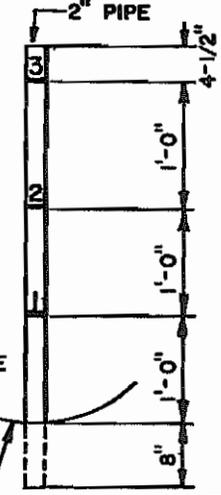


ELEVATION LOOKING UPSTREAM

WALL MAY BE BUILT
TO THIS LINE

NOTES

1. FORD WALLS SHALL BE CLASS A CONC. PER SECT. 725.
2. DEPTH GAUGE SHALL BE PAINTED 2-COATS WHITE ENAMEL. NUMERALS AND MARKERS SHALL BE 1-COAT BLACK ENAMEL.
3. NUMBERS ON DEPTH GAUGE TO BE 2" HIGH.
4. HEIGHT OF DEPTH GAUGE OPTIONAL.
5. TWO DEPTH GAUGES MAY BE USED. ONE ON EACH END OF UPSTREAM WALL. START WITH 2' INSTEAD OF 1'.



DEPTH GAUGE DETAIL (OPTION OF THE CONTRACTING AGENCY)

REVISED

**COUNTY OF YUMA
CONSTRUCTION STANDARDS
STANDARD No 5-380
CONCRETE CUT-OFF WALLS**

APPROVED BY *D. B. Frazier* 5/88
DIRECTOR OF PUBLIC WORKS

SOURCE: UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION
MARICOPA ASSOCIATION OF GOVERNMENTS.