

**COUNTY OF VENTURA
PUBLIC WORKS AGENCY**

**ROAD
STANDARDS**



**APPROVED BY BOARD OF SUPERVISORS
(FOR APPROVAL DATES, SEE REVISION DATE
TABLES AT END OF STANDARDS)**

FOREWORD

The "Ventura County Road Standards" establishes uniform policies and procedures for the design and construction of County roads and appurtenances.

This manual is not a textbook or a substitute for engineering knowledge, experience or judgment. Neither does it impose any standard of conduct or duty to the public. Instead, the methods and procedures contained in this manual should be reviewed by the engineer using them to determine applicability to the project on which he is working.

When methods and procedures are not applicable, the engineer should request a variance.

CIVIL ENGINEERS IN CHARGE OF ROAD STANDARDS

Civil Engineers	Registration Number	Standards Dated
W. W. Macmillan	6954	Before 1962
T. M. Morgan	8634	1962-1991
R. E. Quinn Jr.	29614	1991-2000
A. T. Pringle	50408	2000-2009
P. L. Nelson	76144	2009-2013
H.L. Schwind	33532	2013

COUNTY OF VENTURA GUIDE TO ENGINEERS, DEVELOPERS
AND CONTRACTORS

The following publications have been adopted by the County for regulating the design and construction of public improvements constructed by developers; work performed under County or Watershed Protection District permits; land grading; water systems; and sanitary sewer systems:

1. Ventura County Road Standards (**RdStd**)
2. Ventura County Water Works Manual and Sewerage Manual (**VCWWM & VCSM**).
3. Standard Specifications for Public Works Construction (**SSPWC**).
4. Standard Land Development Specifications (**SLDS**) which adopt supplement and modify SSPWC.
5. Ventura County Water Works Districts Nos. 1, 16, 17, and 19; Ventura County Service Areas 29 and 30; and Lake Sherwood Community Services District Rules and Regulations (**R&R**).
6. Standard Plans for Public Works Construction (**SPPWC**).
7. State Standard Plans from CALTRANS (**SSP**).
8. Land Development Manual.
9. Standard cover sheets for grading
10. Individual project plans and specifications (**P&S**).

The scope of each publication is contained within that publication. The publications should be used as follows:

Engineers -Use RdStd, VCWWM and VCSM (also R&R in Districts listed in 5 above) as the general requirements for design. Do not assume contractors have copies of these publications so don't make references to plates or formulas from these documents in the P&S. Material in SLDS, SSPWC, SPPWC, and SSP may be referred to in the P&S as contractors may be assumed to have copies of these publications.

NOTE: The Ventura County Standard Designs are no longer being published and should not be used as a reference. Use SPPWC in their place. Where SPPWC does not contain an appropriate design, SSP may be used. If neither have the needed feature, details of the feature must be shown in the P&S.

Developers and Contractors -Use SLDS (which adopts and modifies SSPWC); SPPWC and SSP where specified in the P&S; Grading Cover Sheet and P&S.

FUTURE AMENDMENTS TO THIS MANUAL

Amendments to this manual may be issued from time to time. Users of this publication may contact the Agency to determine the latest revision date. See the "Revision" pages herein that list the latest date for each page. To ascertain the current purchase price and postage charge for the manual or to purchase an updated edition, contact the Agency at the address shown below. Individual pages may also be purchased at the standard price for Xerox copies. The latest version of this manual is available free on the Agency's web site:

<http://www.ventura.org>

In header click **Departments**, then below, click: **Public Works Agency**, Then Select: **Engineering Services**, then click on **Standards, Manuals, and Links**.
In the list click on **Road Standards [PDF]**.

Agency: Public Works Agency Engineering Services Department County
Surveyor's Public Counter 800 South Victoria Avenue Ventura,
California 93009-1670

Location: The County Surveyor's Public Counter is at the Ventura County
Government Center, Hall of Administration, Third floor, at the top of
the escalator from the main entrance atrium.

Phone: **(805) 654-2068**

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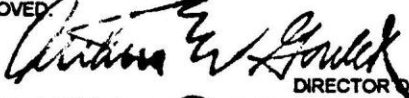

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SI & (US) UNITS	REVISION: F	PLATE A-1
<p>1. GENERAL ROAD DESIGN POLICIES</p> <p>1.1 Scope All roads which are to be included in the County Road System shall be designed to conform to the County of Ventura, ROAD STANDARDS. Where standards are not definitive, design shall conform to good engineering practice, and be approved by the DPW. The California Department of Transportation Highway Design Manual (HDM) generally provides guidance in "good engineering practice" of road design.</p> <p>1.2 Deviations - Approval Required Deviations from Right of Way and improvement requirements of the ROAD STANDARDS will be allowed only with the approval of the Board of Supervisors. Deviations from the technical engineering requirements of the ROAD STANDARDS may be granted by the DPW, or by the Board of Supervisors. Any request for deviation from the requirements of the ROAD STANDARDS shall be accompanied by sufficient supporting data. This supporting data shall be provided by the individual requesting the deviation and submitted and approved prior to utilizing the proposed deviation in design.</p> <p>1.3 Standard Drawings The DPW may issue, modify, or cancel standard drawings showing engineering and structural details for road and other construction. Where no standard for an item has been issued by the DPW, SPPWC or CALTRANS Standard Plans shall be used if the construction feature is covered therein. Copies of the standard drawings issued by the DPW shall be filed with the Clerk of the Board.</p> <p>1.4 Adjacent to Cities For areas of the County adjacent to incorporated cities, the DPW may require the use of road geometrics compatible with adjacent city standards.</p> <p>1.5 Additional Right of Way Required Turning lanes at intersections, sight distance requirements, and bicycle lanes, may require Right of Way and improvement widths greater than those shown on the B-series plates.</p> <p>1.6 Access Policy The Access Policy adopted by the Board of Supervisors limits the number of lots served by each of the roadway widths shown on the B-series plates. More restrictive limitations than those shown on the B-series plates required by the Fire Department and Sheriff for emergency access will govern.</p>		
ADOPTED BY BOARD OF SUPERVISORS: 00/00/00	<p align="center">COUNTY OF VENTURA PUBLIC WORKS AGENCY ROAD STANDARDS</p>	
<p>APPROVED:  DIRECTOR OF PUBLIC WORKS</p>		
<p>RECOMMENDED:  RCE 50408 EXPIRES 06-30-01</p>	<p align="center">DESIGN POLICY</p>	

- 1.7 The minimum horizontal curve radii provided on the B-series plates are based on a single curve on a straight grade. Similarly, the minimum vertical curve lengths provided on Plate D-1 are based on a single curve on a straight alignment. The criteria used in setting these minimums are sight distance and smooth riding characteristics.

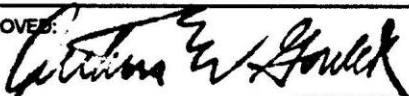
The following design features, within any portion of the road of length equal to the required sight distance, may result in the reduction of sight distance below the required minimum:

- a. More than one horizontal curve,
- b. More than one vertical curve,
- c. More than one allowed grade break, or
- d. A combination of vertical curves, grade breaks and horizontal curves.

When such combination of features are included, the alignment must be investigated and redesigned as necessary to maintain the sight distance required by the applicable B-Series plate.

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COUNTY OF VENTURA
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DESIGN POLICIES

2. GENERAL NOTES**2.1 Standard Specifications**

All work shall conform to the SLDS.

2.2 No Text.**2.3 PCC Pavement**

PCC Pavement may be substituted for AC Pavement on all sections when approved by the DPW. See Plate A-7 for design requirements.

When PCC Pavement is used, the PCC Pavement shall extend between intersections. Transition to AC shall be made at the prolongation of the outer edge of the gutter line of the intersecting road. To enhance appearance, black pigmented curing compound may be used on PCC Pavement.

2.4 Alternative Materials

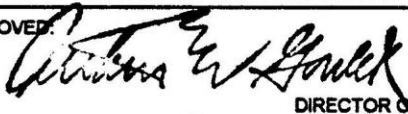
Stabilized soil or stabilized aggregate may be used instead of base materials. Test data supporting equivalency may be required.

2.5 DUAL UNITS OF MEASUREMENT

These standards show all units of measurement in two measuring systems: System International, referred to as SI, and U. S. Customary Units (US). "SI" is commonly referred to as "metric". The SI units are shown first, followed by the US units in parenthesis. Many of the dimensions in the standards are not mathematically equal as the SI units are rounded, and in some cases are the result of several SI measurements that were rounded. Because of this, a single system of measurement must be used on any project. A short transition zone will be required where projects using different measurement systems join.

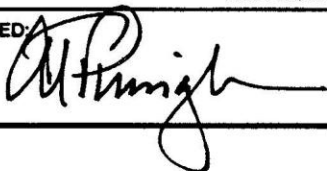
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GENERAL NOTES

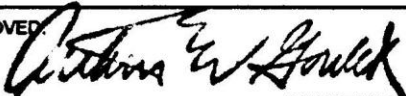
2.6 Abbreviations:

AC	Asphalt Concrete (SLDS 400-4.1.1): For Plates B-4, B-5 and B-6 - Class III-C3-AR-4000 or III-C3-AR-8000 For Plates B-2, B-3 and B-7 - Class III-B3-AR-4000 or III-B3-AR-8000
BSB	Bituminous Stabilized Base
CTB	Cement Treated Base
LTB	Lime Treated Base
PMB	Processed Miscellaneous Base (SLDS 400-2).
PCC	Portland Cement Concrete: Structures (Reinforced) Class 330-C-21 (560-C-3000) Pavement Minimum Class 330-A-23 (550-A-3250) Curbs, gutters, driveways and walks Class 280-C-14 (470-C-2000) Higher Classes shown on plans or in specifications will govern.
SC	Soil Cement
SS	Select Subbase (SLDS 400-2) R=40.
PSE	Public Service Easement.
AASHTO	American Association of State Highway and Transportation Officials.
ADT	Average Daily Traffic in vehicles per day.
E.P.	Edge of Pavement
E.S.	Edge of Shoulder
HDM	"Highway Design Manual", California Department of Transportation
SLDS	"Ventura County Standard Land Development Specifications", latest revision.
SPPWC	"Standard Plans for Public Works Construction", latest edition with all adopted changes.
SSP	"State Standard Plans", by State of California Department of Transportation (CALTRANS), latest edition.
SSPWC	"Standard Specifications for Public Works Construction", latest edition, with all adopted changes.
VCSS	"Ventura County Standard Specifications": Form 1 adopts SSPWC with modifications. Form 2 General Provisions (Part 1) only.

Other abbreviations are in accordance with SSPWC.

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ROAD STANDARDS

GENERAL NOTES

3. MATERIALS TESTING

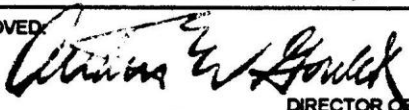

3.1 Administrative

- 3.11 A Materials Engineer acceptable to the DPW shall be employed and paid by the developer of any land development project and by permittee on jobs requiring County permits. The County Materials Engineer, or a Consulting Engineer employed by the County, shall be the Materials Engineer on County projects.
- 3.12 The Materials Engineer shall be a Registered Civil Engineer knowledgeable in the field of soil mechanics and road materials.
- 3.13 All design for the thickness of pavements, soil and materials testing, and all control testing during construction shall be performed by the Materials Engineer.

3.2 Test Methods and Reports

- 3.21 Materials shall be tested in accordance with the test methods required by the "Standard Land Development Specifications", as well as those supplementary test methods required by the DPW.
- 3.22 A soil classification survey (Unified Soil Classification System) shall be performed at appropriate intervals in the street areas of subdivisions to determine the areas with similar soils. A limited number of soils tests shall be made, as required, prior to pavement design. Tests for pavement design shall not be done until rough grading has been completed to within one foot of final finish surface grade, nor until it is assured that the soils sampled are representative of those at the final grade.
- 3.23 The test report shall include the results of sampling and testing, work sheets for the subgrade strength tests, a plan showing material limits and areas represented by a given subgrade strength test and specific recommendations derived from the test data given. Any other test data not required but which will have an effect on the recommendations shall be included.
- 3.24 During construction a sufficient number of tests shall be made to assure that the quality of construction and component materials is equal to that required by specification. These specified requirements include, but are not limited to, fill densities and supporting qualities, subgrade and base quality and compaction, and asphalt concrete quality and compaction.

When treated soil or aggregate is used, a quality control plan must be submitted and approved by the Agency.
- 3.25 Though materials may be tested for conformity to specification while stockpiled, final acceptance of these materials will be subject to their conformity to specification requirements when in final position on the work.

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**COUNTY OF VENTURA
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MATERIALS TESTING

4. DRAINAGE

4.1 Limited Use of Road Section for Drainage

Road cross-sections may be used to convey water originating from adjoining lots and from adjacent unimproved areas if vehicle and pedestrian use of the road is not unreasonably restricted, and if the road improvements and adjacent property will not be damaged. Facilities shall be installed to remove debris from flow from unimproved areas before the flow enters the street. The hydraulic design shall take into consideration the effect of non-uniform flow at changes in grade, bends and junctions of multiple streams of water.

4.2 Design Storm Flow

"Storm runoff" used in calculating the capacity of road drainage facilities is that which has a ten percent probability of occurrence (ten year average return period), provided that the adjacent lot pads shall not be flooded by the storm runoff which has a one percent probability of occurrence (100 year average return period). Drainage facilities in sumps may combine side inlet catch basins for the ten percent flow, and overflow channels for the excess flow. Additionally, flooding caused by clogged drainage facilities shall be taken into consideration. Culverts and bridges shall be designed to accommodate the two percent (50 year average return period) storm flow.


4.3 Urban Roads (Any Section with Curbs)

4.31 For the ten percent storm, flow shall be accommodated below the elevation of the top of the curb. To increase the carrying capacity of roads, the curb height may be increased to 200 mm (8") and/or the cross-slope reduced to not less than one percent, provided the algebraic sum of the cross-slope and the longitudinal slope is equal to or greater than two percent. Design shall insure that curbs shall not be overtopped when water is carried across the crown.

4.32 To prevent pavement erosion damage and danger to pedestrians, the flow (based on a ten percent storm) carried in a half road section shall not in any case exceed the value given by the formula $Q=3.5/S$ ($Q = 125/S$) where S is the longitudinal slope of the roadway in percent. In no case shall the maximum value of Q in a half road section exceed $1.1 \text{ m}^3/\text{s}$ (40 cfs).

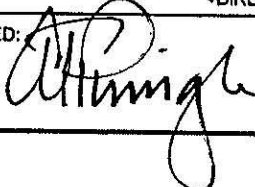
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ROAD STANDARDS

DRAINAGE

4.33 To prevent road damage caused by drainage water escaping from the road gutters, thorough engineering consideration shall be given in the design to contributing factors including the quantity of water, the effects of water carried debris, the effects of non-uniform flow conditions, and the effect of parked cars.

Such consideration may result in more conservative designs than otherwise provided by the Road Standards, including any combination of the following:

- a. Reduction of the quantity of water allowed to be carried in the road cross-section by the installation of storm drains and catch basins.
- b. Installation of sidewalks adjacent to the curbs where not otherwise required.
- c. Installation of deflectors at driveways and other vulnerable locations.
- d. Utilization of higher curb faces.
- e. Changing cross-slope to 1%.

4.34 Designs meeting the following criteria will be presumed to meet the requirements of 4.33:

<u>Approximate 10% Q in ½ of road - m³/s(cfs)</u>	<u>Gutter Velocity m/s (fps)</u>	<u>Depth to Curb Height Ratio</u>	<u>Special Requirements</u>
<0.7/S (25/S)	<1.8 (6)	≤1.0	None
0.7/S (25/S) to 1.6/S(55/S)	1.8 (6) to 2.4 (8)	≤0.5 0.5 to 1.0	None [1]
1.6/S (55/S) to 3.5/S (125/S)	2.4 (8) to 3.0(10) 2.4 (8) to 3.0(10)	≥0.4 0.4 to 1.0	None [2]

- [1] Install deflectors at driveways and diagonally across unpaved parkways adjacent to curbs with max. spacing of 60/(S-2) m (200/(S-2) feet.).
- [2] No unpaved parkways allowed adjacent to curbs.

S is the longitudinal slope of the roadway in percent.

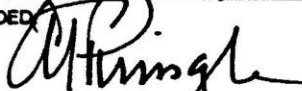
4.35 Interference to traffic flow by storm water on primary, secondary, commercial and industrial roads (Plates B-2 and B-3) shall be minimized by keeping that portion of the roadway designated on Plates B-2 and B-3 free from longitudinally flowing water during the ten percent storm. No cross gutters are permitted across primary or secondary roads (Plates B-2, B-3[A], B-3[B], B-3[C]). No cross gutter are permitted across collector roads (Plates B-5[A] and deleted B-4[A] and B-6[A]) except at locations where vehicular traffic is required to stop or where through traffic movement is precluded such as at the single leg of a T-intersection.

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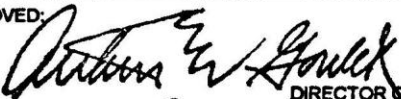
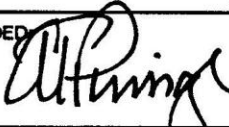

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DRAINAGE

SI & (US) UNITS	REVISION: B	PLATE A - 4b
<p>4.36 Minimum gradients required by the B-Series plates are for gutter grades. This may require street center line grades to be greater than the minimum provided by the B-Series plates where gutters are not parallel thereto.</p> <p>4.37 Wherever possible, cul-de-sacs shall drain away from the bulb end.</p> <p>4.4 Rural Roads (Not Curbed)</p> <p>4.41 To carry drainage from the road Right of Way and from overland sheet flows of adjacent property to the nearest natural drainage way or drainage channel, lined or unlined roadside ditches shall be provided on each side of the road. A ditch may be omitted when adjacent land drains away from the road, and road runoff sheet flows over adjacent land without concentrating.</p> <p>4.42 Roadside ditches shall not be used to intercept or divert natural or artificial channels.</p> <p>4.43 For the ten percent storm, water shall be maintained below the elevation of the outer edge of the shoulder. For the two percent storm, water shall be maintained below the elevation of the edge of pavement.</p> <p>4.44 Roadside ditches shall have adequate culverts at driveways. The minimum shall be 450 mm (18") in diameter or an equivalent flow capacity arch or rectangular section with a minimum inside dimension of 375 mm (15").</p> <p>4.45 The side slopes of ditches shall be 2:1 or flatter. Design of the ditch shall be such that the velocity of flow will not erode the ditch. Lining of ditches may be required. Allowable velocities for unlined ditches shall not exceed the recommended velocities tabulated in the "Ventura County Flood Control Design Manual", Section 314.</p> <p>4.5 Sump Drainage</p> <p>a. Catch basins at low points of a road (sumps) shall not utilize grate-only inlets.</p> <p>b. An outlet for drainage shall be provided from sumps, in addition to catch basins designed for the 10% occurrence storm flow, to insure that the 1% occurrence storm flow will not flood over lot pads.</p>		
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4.6 Physical Standards for Drainage Facilities

The California Department of Transportation Highway Design Manual (HDM), Chapter 850, shall be the criteria for the physical design of drainage facilities in County road rights of way except as otherwise provided herein. Where drainage facilities within County road rights of way are or will be operated and maintained by the Ventura County Flood Control District, their standards must also be complied with.

4.61 References in the HDM to SSS shall be replaced by appropriate sections of the SLDS. Where special construction methods are required and SLDS does not provide for such method, special provisions will be required.

4.62 The limitation in HDM Section 854.2(d) shall not apply to County roads providing Class 560-C-4000 concrete is used and maximum cover depth does not exceed one half of the values given in HDM Table 854.2.

4.63 Storm drainage facilities substantially paralleling the road centerline and under the pavement section shall be one of the following:

- Reinforced concrete pipe (cast-in-place or precast)
- Reinforced concrete box (cast-in-place or precast)
- Ribbed polyvinyl chloride pipe
- Exterior Corrugated/Interior Smooth, High Density Polyethylene Pipe
- Asphalt Lined and Coated Galvanized or Aluminized Corrugated Steel Pipe without smooth lining of cement or asphalt

4.64 Where design flow velocities of drainage facilities exceed 6 m/s (20 fps), adequate protection against erosion shall be provided in the invert of pipe and lined channels.

4.65 Flexible Pipe: Corrugated Steel Pipe, Ribbed PVC-PS46 and HDPE-Exterior Corrugated/Interior Smooth shall have a minimum cover of 600 mm (24") measured from top of rigid pavements or the bottom of flexible pavement base course and shall have a maximum cover of 4.5 m (15') without special approval of calculation showing adequate strengths at other heights of cover.

Full-time inspection of flexible pipe bedding and placement is required. For privately-funded projects, permit and inspection fees will be increased accordingly.

4.66 Local depressions for catch basins shall not extend into the curb returns at intersections. They shall not interfere with curb ramps at any location.

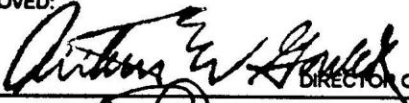
4.7 Lot Drainage

4.71 The direct connection of roof drains and roof gutter drains to conduits under sidewalks is prohibited by the Ventura Countywide Stormwater Quality Program.

4.72 Drainage from landscaped areas of lots may be directed to the road gutter by properly designed conduits under sidewalks.

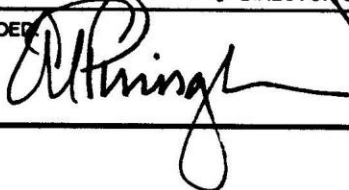
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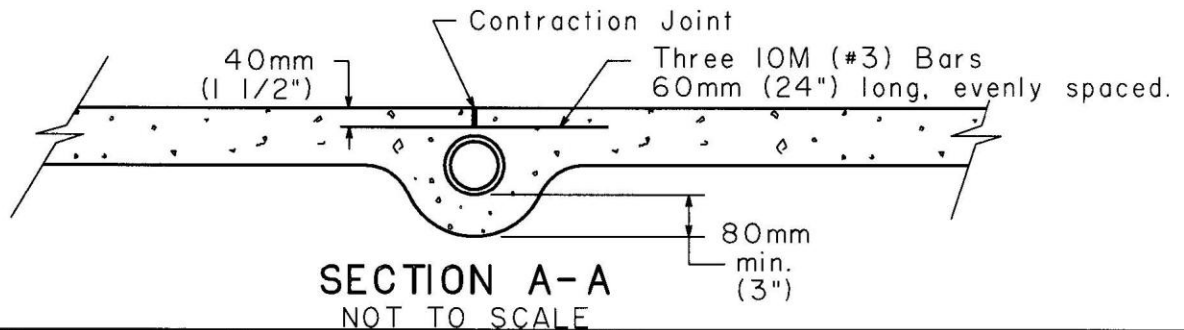
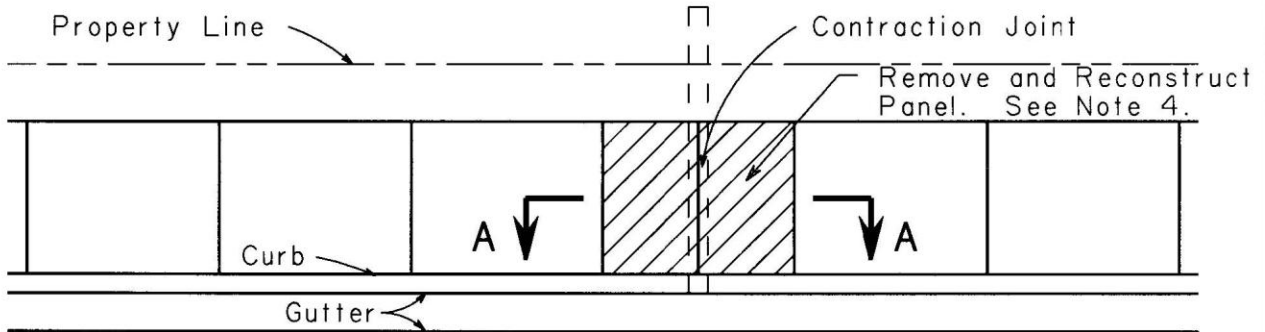
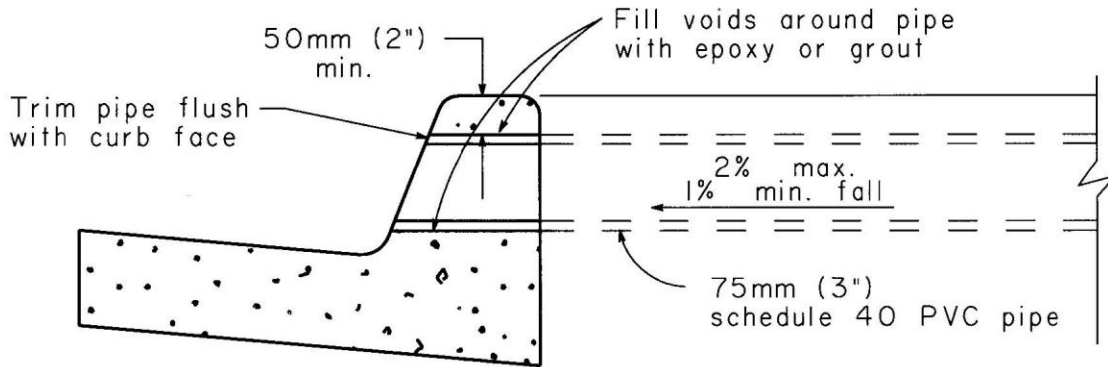
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PUBLIC WORKS AGENCY
ROAD STANDARDS

DRAINAGE

S.I. & (US) UNITS

REVISION: orig

PLATE A-4d



NOTES:

1. This configuration may be used only where there is an existing curb in residential areas. For new construction use SPPWC Plan 150.
2. Through curb drains may be used only as provided by Plate A-4c (Section 4.7) to drain landscape areas.
3. Hole through curb must be cored. If curb is damaged, reconstruct per SPPWD Plan 150.
4. If sidewalk is existing, remove a panel by saw-cutting between adjacent construction joints, and replace per PLATE E-3.

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DIRECTOR OF PUBLIC WORKS

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DRAINAGE

RESIDENTIAL CURB DRAIN
THROUGH EXISTING CURB

5. ROADWAY FOUNDATION AND SLOPE CRITERIA

5.1 Cross-section Stability

Roadways shall be located on a stable foundation. The slopes, both uphill and downhill from the roadway, shall be stable. Slopes outside the road Right of Way lines, shown on "B" series plates as "2:1 typ", shall be constructed in accordance with the Ventura County Building Code and the Land Development Manual, Chapters 7 and 8. These requirements may result in slopes other than 2:1.

5.2 Expansive Soils Stabilization


When basement soil R-value is 14 or less, 100 mm (4") of PMB shall be placed under curbs, gutters and sidewalks.

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FOUNDATION & SLOPES

6 ASPHALT CONCRETE PAVEMENT DESIGN**6.1 General Principles**

The design of asphalt concrete pavement is based on the principle of layers of progressively decreasing strengths from the finished surface to the sub-grade. In each case, the finished surface consists of a layer of asphalt concrete pavement of the thickness computed by the design formulas, but not less than a specified minimum thickness.

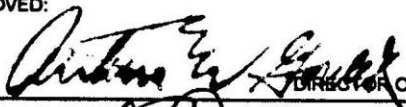
The design method provides a numerical solution to the thickness of any layer based on the following:

- a. The Traffic Index, a measure of the amount and type of truck traffic that is expected over the 20-year period following construction.
- b. The physical strength, measured by gravel equivalent, of the layer being designed.
- c. The physical strength, measured by R-Value, of the layer immediately below the layer being designed.
- d. The minimum physical strength, measured by R-Value, of the sub-grade material.
- e. The thickness and physical strength, measured by gravel equivalent, of the material above the layer being designed, if any.

By varying the types of materials used, a number of different, acceptable pavements can be designed for each combination of Traffic Index and sub-grade R-Value.

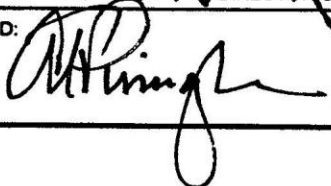
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A.C. PAVEMENT DESIGN

6.2 Economic Considerations

The relative costs of the materials making up the layers of pavement vary from time to time resulting in differing combinations of layers being the most economical at any given time.

In selecting a complete pavement design, the following should be taken into consideration:



- a. Sub-grade soils can be improved in strength by several types of treatment which do not require the material to be removed from the site.
- b. Base materials with R-Values less than that of Standard Specification PMB may be used economically with the lower Traffic Indices. A note on the plans or a special provision is needed.
- c. Existing bases and surfacing can be reused. This may require treatment in place or removal and reprocessing.
- d. Materials cannot be compared on cost per ton basis alone because:
 - (1) Higher strength materials require less thickness when used in place of lower strength materials.
 - (2) Elimination of a complete layer by thickening the layer above may result in savings in construction costs not reflected in per ton costs alone.
 - (3) Gravel equivalent of A.C. increases when thickness is over 120 mm (0.4').
- e. Thinner overall thickness of the layered pavement sections results in less excavation and may avoid interference with or damage to utility and drainage facilities.
- f. Current scarcity in the supply of any material used.

Several alternate sections should be designed, the overall cost of each estimated, and the most economical section specified. Where costs are nearly equal or where relative costs of materials are changing rapidly, it may be desirable to provide more than one acceptable design from which the contractor can choose the one to construct.

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A.C. PAVEMENT DESIGN

6.3 Design Method**6.3.1 Nomenclature**

T = Thickness of layer in feet.

TI = Traffic Index from B-series Plates or a greater value indicated by a traffic engineering study.

GF = Gravel factor of material in a layer.

GE = Gravel equivalent of the pavement or a layer. The theoretical thickness of the pavement or layer if composed entirely of material with a GF of one.

SF = Safety factor. An additional thickness of A.C. expressed as gravel equivalent.

R = Minimum resistant R-Value of material.

AC = Subscript referring to Asphalt Concrete layer.

B = Subscript referring to Base layer.

SB = Subscript referring to Subbase layer.

SG = Subscript referring to Subgrade.

MIN= Subscript referring to Minimum Allowable Thickness of a layer.

6.3.2 Constants for AC

GF = 2.5 for $TI \leq 5$.

GF = $5.67 (TI)^{.4}$ for $TI > 5$.

T_{AC} min. over Base material or stabilized subgrade = 65 mm (0.21').


T_{AC} min. over unstabilized Subgrade = 90 mm (0.3').

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A.C. PAVEMENT DESIGN

6.3.3 Constants for Bases and Subbase

<u>Material</u>	<u>R*</u>	<u>GF</u>	<u>SF_{AC}** mm (Ft.)</u>	<u>T Min.,mm (Ft.)-</u>
SS	60	1.0	0	100 (0.33) (Subbase only)
PMB	78	1.1	50 (0.16)	100 (0.33)
LTB	80	***	55 (0.18)	150 (0.50)
SC	80	1.2	0	150 (0.50)
BSB	80	1.3	0	150 (0.50)
CTB	80	1.2	55 (0.18)	150 (0.50)

* Maximum R-Value, lesser values must be used if Standard Specifications are modified.

** For $TI < 8.0$, $SF_{AC} = 0$.

*** $LTB\ GF = 0.9 + (\text{Unconfined compressive strength in kPa}/145\ (\text{PSI}/1000))$

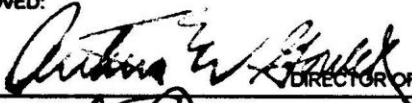
6.3.4 Conventional Design

A layered system of A. C., base and sub-base over the subgrade. The material in each layer must have a higher R-Value than the material below it. The thickness of each layer is designed, starting with the A.C. surface layer and working down, as follows:

- $GE_{AC} = TI \times (100 - R_B) + SF_{AC}$ ($GE_{AC} = 0.0032 \times TI \times (100 - R_B) + SF_{AC}$)
- $T_{AC} = GE_{AC}/GF_{AC}$ If $T_{AC} < 65$ (0.21), use $T_{AC} = 65$ mm (0.21')
- $GE_B = TI \times (100 - R_{SB}) - (T_{AC} \times GF_{AC})$
($GE_B = 0.0032 \times TI \times (100 - R_{SB}) - (T_{AC} \times GF_{AC})$)
- $T_B = GE_B/GF_B$ If $T_B < T_{MIN}$, use $T_B = T_{MIN}$
- $GE_{SB} = TI \times (100 - R_{SG}) - (T_{AC} \times GF_{AC}) - (T_B \times GF_B)$
($GE_{SB} = 0.0032 \times TI \times (100 - R_{SG}) - (T_{AC} \times GF_{AC}) - (T_B \times GF_B)$)
- $T_{SB} = GE_{SB}$ If $T_{SB} < T_{MIN}$, then either
(1) $T_{SB} = T_{MIN}$ or
(2) $T_B = (GE_B + GE_{SB})/GF_B$ and $T_{SB} = 0$

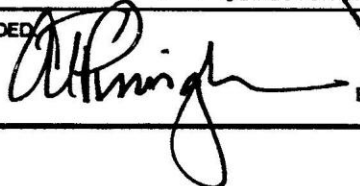
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ROAD STANDARDS

A.C. PAVEMENT DESIGN

6.3.5 Thick Lift Design

An A.C. surface layer, 90 mm (0.3') or more in thickness, placed either directly on the subgrade (stabilized* or unstabilized) or over a layer of base material* designed as follows:

- a. $GE_{AC} = T_1 \times (100 - R_{SG}) - T_B \times GF_B$
 $(GE_{AC} = 0.0032 \times T_1 \times (100 - R_{SG}) - T_B \times GF_B)$
- b. $T_1 = GE_{AC} / GF_{AC}$
- c. If $T_1 \leq 120$ mm (0.4'), $T_{AC} = T_1$
- d. If $T_1 > 120$ mm (0.4'),
 $T_2 = [GE_{AC} - (120 \times GF_{AC})] / (1.3 \times GF_{AC})$
 $(T_2 = [GE_{AC} - (0.4 \times GF_{AC})] / (1.3 \times GF_{AC}))$
- e. If $T_2 \leq 120$ mm (0.4'), $T_{AC} = 120$ mm (0.4') + T_2
- f. If $T_2 > 120$ mm (0.4'),
 $T_3 = [GE_{AC} - (280 \times GF_{AC})] / (1.5 \times GF_{AC})$
 $(T_3 = [GE_{AC} - (0.92 \times GF_{AC})] / (1.5 \times GF_{AC}))$
- g. Then $T_{AC} = 240$ mm (0.8') + T_3

*Base or stabilized subbase shall be 150 mm (0.5') or thicker.

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ROAD STANDARDS

A.C. PAVEMENT DESIGN

7 PORTLAND CEMENT CONCRETE PAVEMENT DESIGN**7.1 THICKNESS**

7.11 For roads having a Traffic Index (TI) greater than 6.5, design per CALTRANS HDM, Topic 607 using a minimum PCC class of 330-A-23 (560-A-3250).

7.12 For roads having a Traffic Index (TI) of 6.5 or less, design pavement per CALTRANS HDM, Topic 607 for TI 6-7, or in accordance with the following table:

Subgrade	Base Class & Thickness mm (Ft.)	Concrete Class	PCCP Thickness mm (Ft.)
10-40	150 (0.5) PMB	330-A-23 (560-A-3250)	160 (0.53)
		390-A-28 (650-A-4000)	150 (0.50)
	150 (0.5) CTB	330-A-23 (560-A-3250)	155 (0.51)
		390-A-28 (650-A-4000)	145 (0.47)
≥40	No Base	330-A-23 (560-A-3250)	150 (0.50)
		390-A-28 (650-A-4000)	145 (0.48)
	100 (0.33) CTB	330-A-23 (560-A-3250)	135 (0.44)
		390-A-28 (650-A-4000)	120 (0.40)

Subgrade shall be prepared per SSPWC §301-1.

7.2 Joints & Construction

7.21 PCC pavement shall be constructed per SSPWC §302-6 using the PCC class from 7.1 above.

7.22 Contact (Construction) joints and weakened plane joints shall be per SPPWC 134. Contact joints shall be installed around catch basin aprons and manhole slabs.

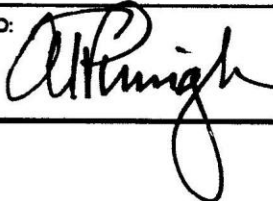
7.23 The joint layout plan shall provide that, in general, joints are spaced so as the slabs between joints have a maximum dimension of 15 feet and a minimum dimension of 5 feet. To the extent practicable, longitudinal joints shall coincide with lane lines. See American Concrete Pavement Association publication "Design and Construction of Joints for Concrete Streets" for good design practice.

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ROAD STANDARDS

PCC PAVEMENT DESIGN

SI & (US) UNITS	REVISION: F	PLATE B - 1
PLATE	USE / PAVEMENT WIDTH /LIMITATIONS	
B-2	Controlled Access - primary and secondary roads [A] - Primary / 2 @ 13.2 m (44') [B] - Secondary / 2 @ 9.6 m (32')	
B-3	Secondary Free Access Roads - commercial and industrial roads [A] - Secondary/19.2 m (64') / Use requires approval of Road Commissioner [B] - Major commercial or industrial /19.2 m (64')/ADT>16,000 [C] - Commercial or industrial/15.8 m (52')/ADT 8,000 to 16,000 [D] - Minor commercial or industrial/12 m (40')/ADT <8,000	
B-4	Residential roads - urban with parkways (Standard Deleted - Plate designation retained for reference to previous standards)	
B-5	Residential roads - urban without parkways [A] - Collector/12 m (40')/When used as cul-de-sac, see Access Policy. [B] - Minor/10.8 m (36')/When used as cul-de-sac where zoning allows lots of 1860 m ² (20,000 s.f.) or less, maximum length is 240 m (800') When used as a loop, loop must begin and end in same road, have maximum length of 490 m (1,600'.) and serve 100 dwelling units or less. [C] - Cul-de-sac/32'/Cul-de-sac shall not exceed 200' from centerline of turnaround to centerline of intersecting road.	
B-6	Residential roads - hillside and RPD concept Developments (Standard Deleted - Plate designation retained for reference to previous standards).	
B-7	Rural roads - without curbs [A] - Rural road/9.8 m (32')/Use requires approval of Road Commissioner [B] - Collector - rural subdivisions/9.8 m (32')/Lot size over 0.2 ha (½ acre). Use requires approval of Road Commissioner	
Note:	See the Access Policy for limitation on the number of lots served by each type of road section.	
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RECOMMENDED:  RCE 50408 EXPIRES 06-30-01	SECTION INDEX & NOTES	

NOTES APPLICABLE TO ALL B-SERIES PLATES:

1. Pavement widths in curbed sections, measured between top inside faces of curbs.
2. Additional right-of-way width or easements may be required for utilities. The PSE's shown on Plate B-5 shall be offered for dedication.
3. Drainage to be designed in accordance with Plate A-4.
4. Pavement to be designed in accordance with Plate A-6 or A-7.
5. No superelevation where design speed is 65 km/h (40 MPH) or less.
6. "WR" indicates "when required by the Planning Commission".
7. At intersections of two road types, use curb return radius for type requiring the longer radius.
8. Curbs and gutters, median curbs and cross gutters per Plate E-1. Sidewalks per Plate E-3.
9. Hinge point of slope shall be a minimum of one foot away from sidewalks.
10. Where maximum number of lots served is a criterion, extension of roads; additional divisions of tributary land, including redivision of lots exceeding two acres in size; and rezoning effects shall be considered.
11. Prime coat may be omitted if all of the following conditions are met:
 - a) Asphalt layer is placed within two weeks of completion of base course.
 - b) Traffic is not routed over completed base before paving.
 - c) Construction is completed during the dry season of May through October.

If construction is performed during the wet season of November through April, prime coat may be omitted if no rain occurs between completion of base course and paving and the time between completion of base and paving is reduced to three days.

Where prime coat has been omitted and

- (1) rain occurs,
- (2) traffic is routed over base course, or
- (3) paving is delayed,

measures shall be taken to restore base course, subbase course and subgrade to conditions that will meet specifications, as directed by the Engineer.


12. Fog seal coat is not required for new construction. It is an optional method of pavement rejuvenation.

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ROAD STANDARDS

SECTION INDEX & NOTES

13. Minimum road gradients shall be as follows:

a) For roads where both gutters are built on cut or not more than two feet of fill:

<u>Land Gradient</u>	<u>Minimum Gutter Gradient</u>
>2.5%	1%
2.5% to 1%	0.4 x Land Gradient
<1%	0.4%

b) For roads where either gutter is built on fill more than two feet deep:

<u>Land Gradient</u>	<u>Minimum Gutter Gradient</u>
>1.67%	1%
1.67% to 1%	0.6 x Land Gradient
<1%	0.6%

c) Where the end of a new road is not controlled by joining an existing road, or by a major land form constraint, the designer of the road shall consider minor realignments to avoid road grades under 1%.

d) For roads using Plate B-7, minimum centerline grades shall be the same as the minimum gutter grades in "a" above.

e) "Land Gradient" shall mean the natural gradient of the land prior to grading measured along the general direction of the road.

14. Maximum road gradients for Plate B-5 sections may be increased in hillside areas to the following maximum:

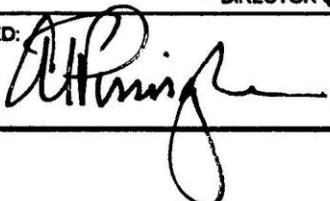
	<u>B5[A]</u>	<u>B5[B]</u>	<u>B5[C]</u>
Over 200' length	15%	15%	15%
Less than 200' length	15%	20%	25%

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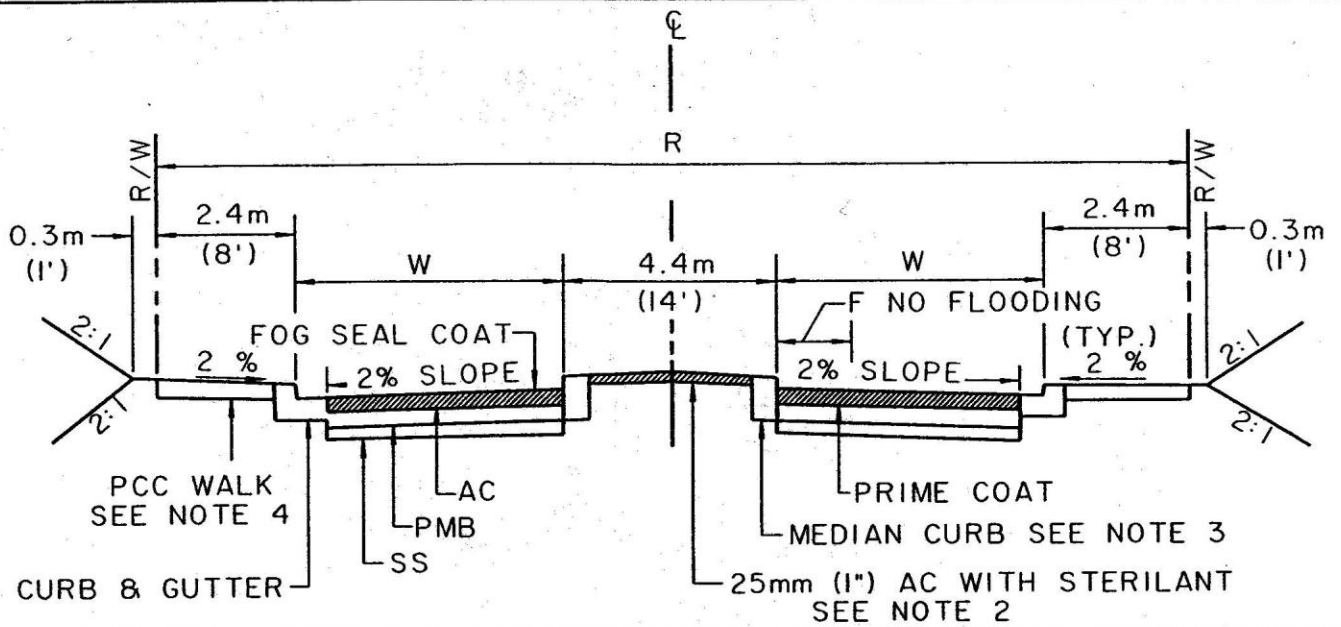

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ROAD STANDARDS

SECTION INDEX & NOTES



DESIGN CRITERIA:	B-2 [A] PRIMARY	B-2 [B] SECONDARY
Right of way width, R	35.6m (118')	28.4m (94')
Pavement width, W	13.2m (44')	9.6m (32')
Flooding free width, F	7.9m (26')	4.3m (14')
ADT in 20 years, max	36,000	24,000
Superelevation, max	Applies to B-2 [A] & B-2 [B] 0.07	
Curb return radius, min	10m (35')	
Curve length, min/max	150/800m (500'/2640')	
Tangent length between curves, min	120m (400')	
Traffic index	8.0	
Design speed	Applies to B-2 [A] & B-2 [B]	
Curve radius, min without superelevation	Flat terrain 100km/h (60mph)	Mountains 80km/h (50mph)
Gradient, min/max (%) (see plate B-1b)	700m (2400')	400m (1400')
Stopping sight distance	1.0/3.0 180m (580')	1.0/5.0 135m (440')

NOTES:

- Emergency parking only.
- Median planter boxes may be required.
- Median curbs required only adjacent to intersections. Extend through end of left turn pocket and transition.
- Sidewalks, curb and gutter may be omitted when approved by the road commissioner and the planning director.
- Provide extra R/W width at intersections for sight distance as detailed on plate D-5.
- Superelevated curve radii, superelevation and transitions shall be in accordance with sections 202 & 203 HDM.

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Ronald Plover

DIRECTOR OF PUBLIC WORKS

RECOMMENDED:

Al Pinger

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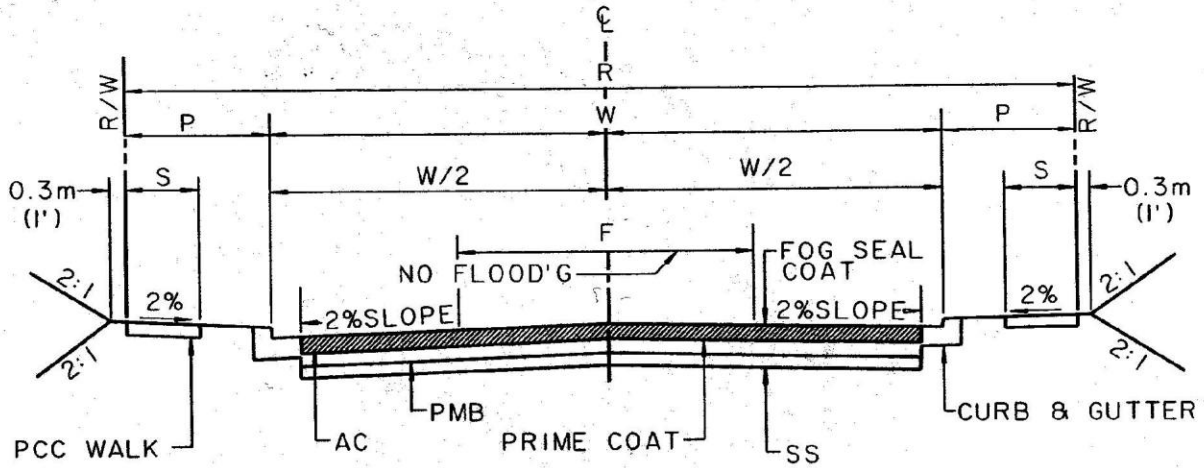
ROAD STANDARDS

CONTROLLED ACCESS
PRIMARY AND SECONDARY

S.I. & (US) UNITS

REVISION: 1

PLATE B-3



DESIGN CRITERIA	B-3 [A] SECONDARY	B-3 [B] MAJOR COMM OR IND	B-3 [C] COMM OR IND	B-3 [D] MINOR COMM OR IND
Right of way width, R	24.0m (80')	24.0m (80')	20.6m (68')	18.0m (60')
When req'd by Planning Comm.		29.0m (96')		
Pavement width, W	19.2m (64')	19.8m (64')	15.8m (52')	12.0m (40')
Flooding free width, F	8.5m (28')	8.5m (28')	4.9m (16')	1.2m (4')
Parkway width, P	2.4m (8')	2.4m (8')	2.4m (8')	3.0m (10')
When req'd by Planning Comm.	—	4.9m (16')	—	—
Sidewalk width, S	2.4m (8')	2.4m (8')	—	—
When req'd by Planning Comm.	—	3-4.9m (8'-16')	2.4m (8')	3.0m (10')
Curb return radius	10m (35')	14m (45')	14m (45')	14m (45')
Curve length, max/min	800m/90m (300'/2640')	800m/90m (300'/2640')	—	—
Tangent length between curves, min	60m (200')	60m (200')	—	—
Traffic index	7.5	7.5	7.5	7.0
ADT in 20 years (max)	20,000	20,000	16,000	8,000
Design speed	65km/h (40mph)	65km/h (40mph)	65km/h (40mph)	50km/h (30mph)
Curve radius, min	240m (800')	240m (800')	170m (550')	90m (300')
Gradient, min/max (%)	1.0/5.0	1.0/5.0	1.0/6.0	1.0/10.0
(see Plate B-1, Notes 3 & 13)				
Stopping sight distance	90m (300')	90m (300')	90m (300')	60m (60')

NOTES: 1. For B-3 [C], provide extra R/W width at intersection for sight distance as detailed on plate D-5.

2. Sidewalks, curb and gutter may be omitted in rural areas when approved by the road commissioner and planning director.

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Donald C. Coors

DIRECTOR OF PUBLIC WORKS

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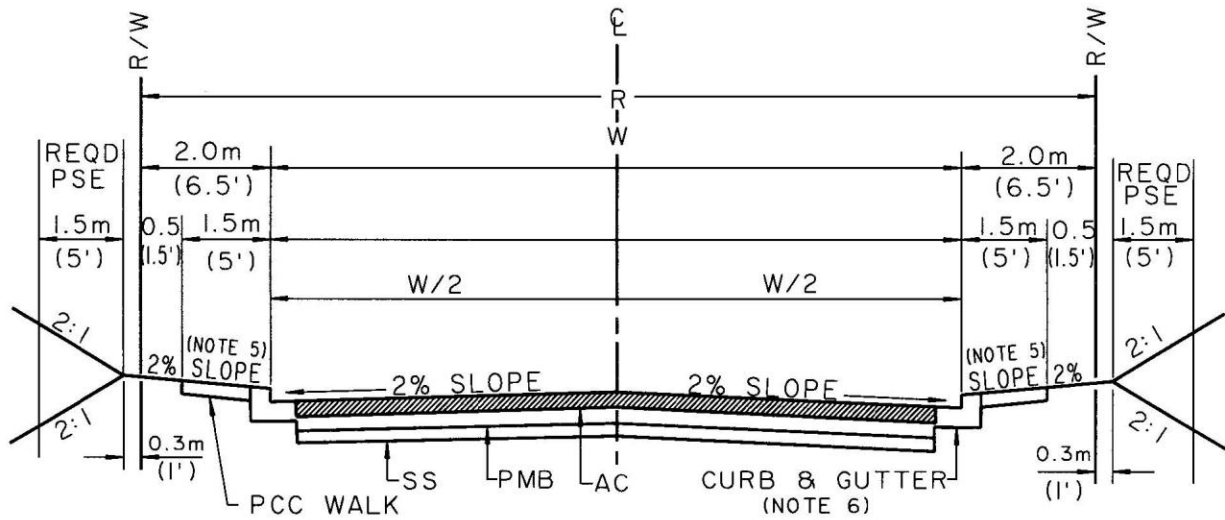
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ROAD STANDARDS

SECONDARY FREE ACCESS
AND
COMMERCIAL AND INDUSTRIAL ROADS



DESIGN CRITERIA	B-5 [A] COLLECTOR	B-5 [B] MINOR	B-5 [C] CUL-DE-SAC
Right of way width, R	16.0m (53')	14.8m (49')	13.8m (45')
Pavement width, W	12.0m (40')	10.8m (36')	9.8m (32')
Curb return radius	8.0m (25')	8.0m (25')	8.0m (25')
Traffic index 200 lots served	6.5	N/A	N/A
Traffic index 141-200 lots served	6.0	N/A	N/A
Traffic index 51-140 lots served	5.5	5.5	N/A
Traffic index 21-50 lots served	5.0	5.0	5.0
Traffic index 20 lots served	4.5	4.5	4.5
Lots served, max - cul-de-sac			
Lot size ≤ 0.2ha (20,000sf)	170	50	10
Lot size ≥ 0.2ha (20,000sf)	200	140	39
Lots served, max (loop)	550	100	0
Lots served, max (other)	550	140	39
Design speed (km/h)	50	40	40
Curve radius, min	90	75	60
Gradient, min/max (%)	1.0/12.0	1.0/12.0	1.0/15.0
(see Plate B-1, Notes 3, 13 & 14)			
Stopping sight distance	60m (200')	50m (160')	50m (160')
Cul-de-sac length max			
lots ≤ 0.2ha (20,000sf)	ANY	245m (800')	60m (200')
lots ≥ 0.2ha (20,000sf)	ANY	ANY	60m (200')
Loop length, max	ANY	500m (1600')	0

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00
 APPROVED:

Anthony E. Spaul
 DIRECTOR OF PUBLIC WORKS

RECOMMENDED:
Alvin
 RCE 50408
 EXPIRES 06-30-01

COUNTY OF VENTURA
 PUBLIC WORKS AGENCY

ROAD STANDARDS

URBAN RESIDENTIAL ROADS
 WITHOUT PARKWAYS

NOTES:

1. Changes in R/W and improvements required between Plate B-5 and other plates shall occur only at intersections, not in midblock.
2. When using the design shown on Plate B-5, the transitions at intersections as shown on Plate D-9 and the sidewalk widening as shown on Plate D-10 shall be installed.
3. Where the land gradient (Plate B-1b, Section 13.e) is greater than 10%, slopes for Plate B-5 may be increased to 15% for reaches more than 30 meters away from intersections.
4. On Loops and Cul-de-sacs in hillside areas, crown may be eliminated and a 2% cross-fall provided, for the entire width of pavement, toward the cut slope. A Type A-1 curb may be used on the high side.
5. Sidewalk Requirements:

<u>Abutting Lot Size</u>	<u>Requirement</u>
0.4 ha (1 Ac) or smaller	PCC Sidewalk
Larger than 0.4 ha (1 Ac) and smaller than 0.8 ha (2 Ac)	PCC Sidewalk or alternate approved by Director
0.8 ha (2 Ac) or larger	No sidewalk required. Slope area behind curb up at 4%.

Preapproved alternates are:

 - a. AC with redwood header.
AC 100 mm (4") thick, Class III-C2-AR4000 thickened at driveways per Plate E-1.1.
 - b. AC with redwood header.
AC 50 mm (2") thick, Class III-C2-AR4000 over 100 mm (4") of PMB. Driveways shall be per Plate E-1.1.
6. Where abutting lots are 0.8 ha (2 Ac) or larger, standard curb and gutter may be replaced by a rolled curb and gutter, or by a PCC gutter with sloped paving extending to a height of 150 mm (6") above the gutter flow line. Rolled curb and gutter shall be per State Standard Plan A87, Type E.

ADOPTED BY BOARD OF SUPERVISORS: 00/00/00

APPROVED:



DIRECTOR OF PUBLIC WORKS

RECOMMENDED:

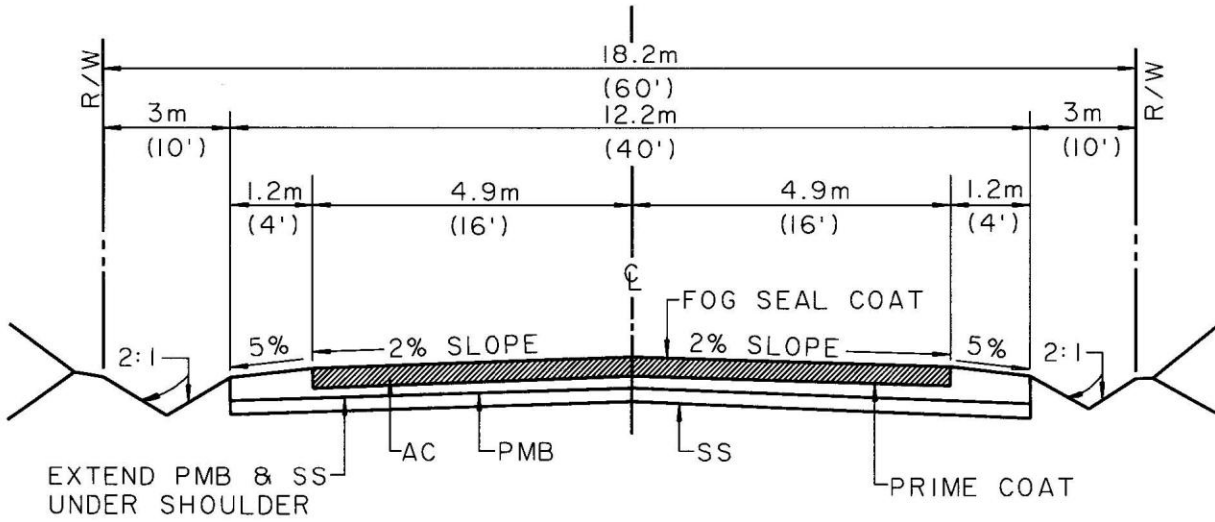


RCE 50408

EXPIRES 06-30-01

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
ROAD STANDARDS

RESIDENTIAL ROADS URBAN WITHOUT
PARKWAYS



DESIGN CRITERIA

B-7[A]
RURAL

B-7[B]
COLLECTOR

Traffic index
 ADT in 20 years, max
 Design speed
 Curve radius, min
 Without superelevation
 With max superelevation
 Gradient, min/max (%)
 (see Plate B-1, Notes 3 & 13)
 Stopping sight distance
 Superelevation, max

7.0
 8000
 80km/h (50mph)

 420m (1375')
 260m (850')

 1.0/10.0
 135m (440')
 0.11

6.5
 4000
 65km/h (40 mph)

 170m (550')
 N/A

 1.0/12.0
 90m (300')
 NONE

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Arthur W. Gould
 DIRECTOR OF PUBLIC WORKS

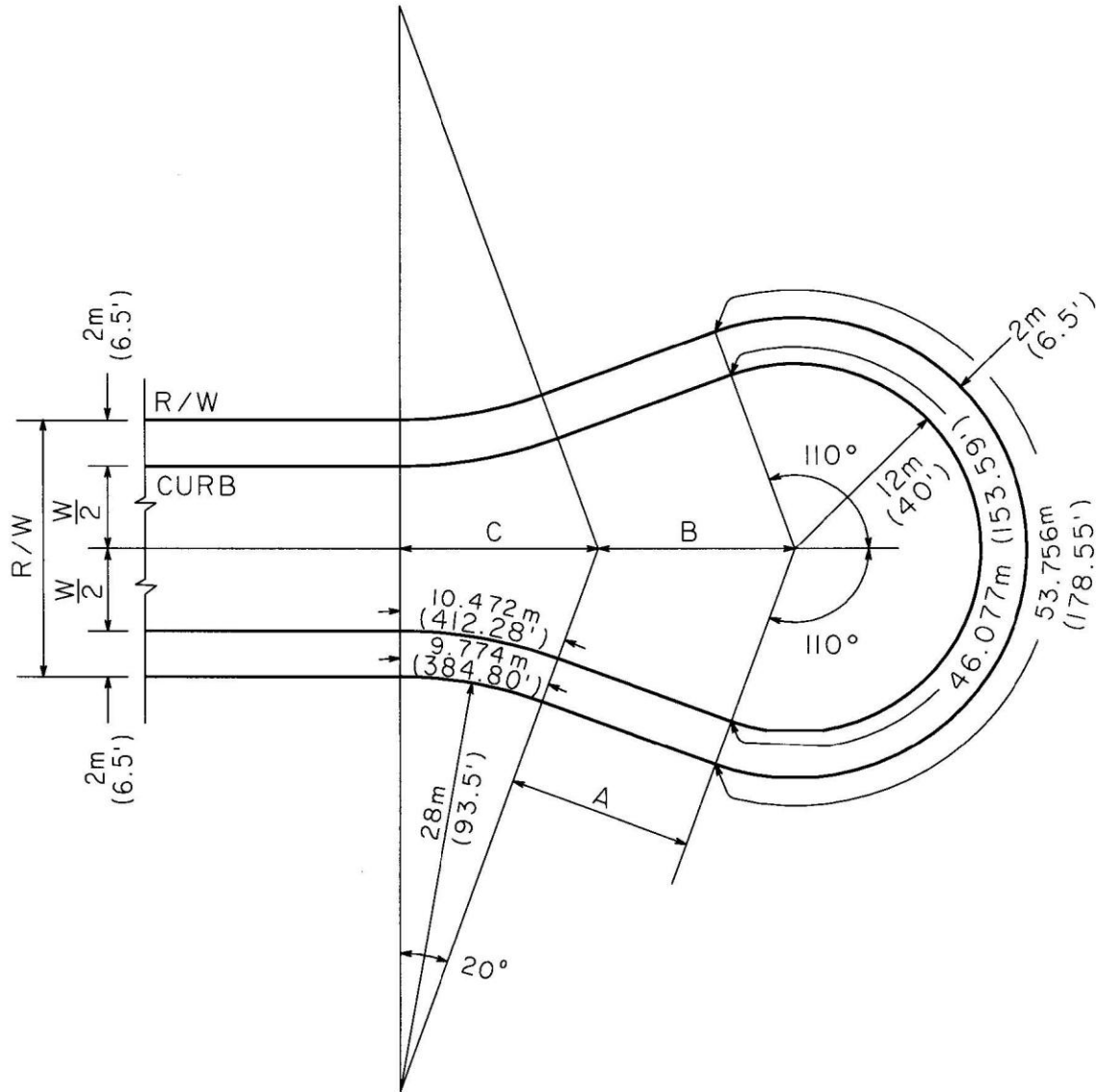
RECOMMENDED:

Al Pringle
 RCE 50408
 EXPIRES 06-30-01

COUNTY OF VENTURA
 PUBLIC WORKS AGENCY

ROAD STANDARDS

RURAL ROADS
 WITHOUT CURBS



UNITS	PLATE	W	W/2	R/W	A	B	C
S.I.	B-5 A	12.0m	6.0m	16.0m	10.137m	10.788m	13.103m
	B-5 B	10.8m	5.4m	14.8m	11.891m	12.654m	12.885m
	B-5 C	9.8m	4.9m	13.8m	13.353m	14.210m	12.703m
(US)	B-5 A	40'	20'	53'	33.79'	35.96'	43.68'
	B-5 B	36'	18'	49'	39.64'	42.18'	42.95'
	B-5 C	32'	16'	45'	45.48'	48.40'	42.22'

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Antonio E. Garcia
 DIRECTOR OF PUBLIC WORKS

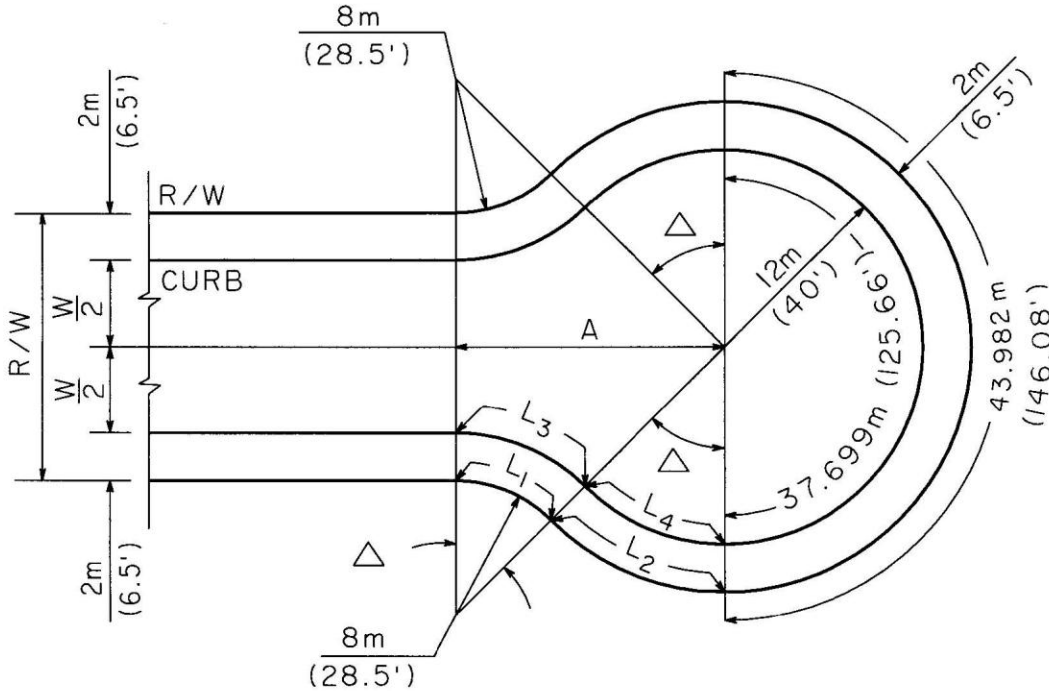
RECOMMENDED:

Alvin
 P&E 50408
 EXPIRES 06-30-01

COUNTY OF VENTURA
 PUBLIC WORKS AGENCY

ROAD STANDARDS

CUL-DE-SAC
 TYPE I



UNITS	PLATE	W	W/2	R/W	A	Δ
S.I.	B-5 [A]	12.0m	6.0m	16.0m	15.100m	43° 20' 31"
	B-5 [B]	10.8m	5.4m	14.8m	15.711m	45° 34' 23"
	B-5 [C]	9.8m	4.9m	13.8m	16.186m	47° 22' 09"
	PLATE	L ₁	L ₂	L ₃	L ₄	
	B-5 [A]	6.052m	10.590m	7.565m	9.078m	
	B-5 [B]	6.363m	11.136m	7.954m	9.545m	
	B-5 [C]	6.614m	11.574m	8.267m	9.921m	
(U.S.)	PLATE	W	W/2	R/W	A	Δ
	B-5 [A]	(40')	(20')	(53')	(50.99')	42° 50' 00"
	B-5 [B]	(36')	(18')	(49')	(53.06')	45° 02' 08"
	B-5 [C]	(32')	(16')	(45')	(54.99')	47° 09' 23"
	PLATE	L ₁	L ₂	L ₃	L ₄	
	B-5 [A]	(23.31')	(215.61')	(26.17')	(185.47')	
	B-5 [B]	(22.40')	(219.18')	(27.51')	(188.55')	
B-5 [C]	(23.46')	(219.18')	(28.81')	(191.51')		

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Antonio E. Guek
DIRECTOR OF PUBLIC WORKS

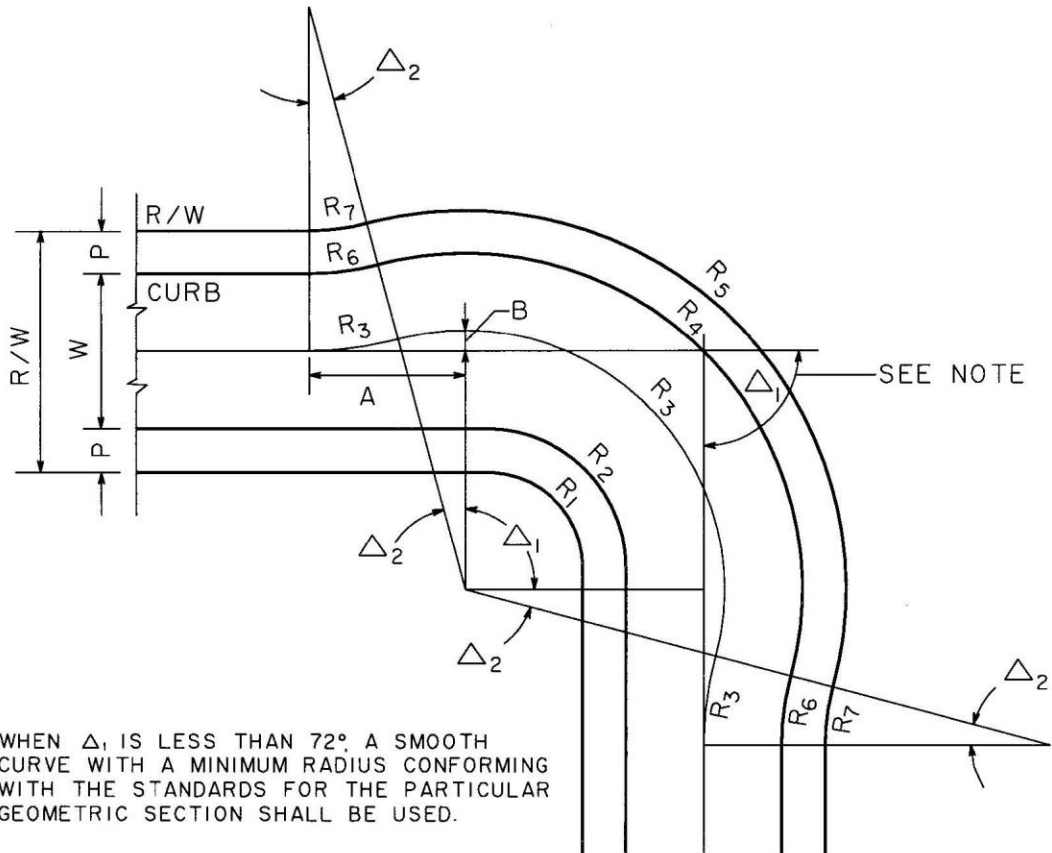
RECOMMENDED:

Altman
RCE 50408
EXPIRES 06-30-01

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

CUL-DE-SAC
TYPE II



NOTE: WHEN Δ₁ IS LESS THAN 72°, A SMOOTH CURVE WITH A MINIMUM RADIUS CONFORMING WITH THE STANDARDS FOR THE PARTICULAR GEOMETRIC SECTION SHALL BE USED.

UNITS	PLATE	R/W	W	P	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	R ₇	Δ ₂	A	B
S.I.	B-3 [A] *	25.2m	19.2m	3.0m	7.0m	10m	24m	33.6m	36.6m	14.4m	11.4m	24° 43' 26"	20.076m	4.4m
	B-3 [B] *	25.2m	19.2m	3.0m	11.0m	14m	24m	33.6m	36.6m	14.4m	11.4m	7° 24' 07"	6.184m	0.4m
	B-3 [B2] *	29.0m	19.2m	4.9m	9.1m	14m	24m	33.6m	38.5m	14.4m	9.5m	7° 24' 07"	6.184m	0.4m
	B-3 [C]	20.6m	15.8m	2.4m	11.6m	14m	24m	31.9m	34.3m	16.1m	13.7m	17° 00' 39"	14.042m	2.1m
	B-3 [D]	18.0m	12.0m	3.0m	11.0m	14m	21m	27.0m	30.0m	15.0m	12.0m	12° 31' 41"	9.110m	1.0m
	B-5 [A]	16.0m	12.0m	2.0m	8.0m	10m	18m	24.0m	26.0m	12.0m	10.0m	19° 11' 17"	11.832m	2.0m
	B-5 [B]	14.8m	10.8m	2.0m	8.0m	10m	18m	23.4m	25.4m	12.6m	10.6m	21° 54' 33"	13.433m	2.6m
B-5 [C]	13.8m	9.8m	2.0m	8.0m	10m	18m	22.9m	24.9m	13.1m	11.1m	23° 57' 06"	14.615m	3.1m	
(US)	B-3 [A] *	(84')	(64')	(10')	(25')	(35')	(80')	(112')	(122')	(48')	(38')	23° 15' 22"	(63.17')	(13.00')
	B-3 [B] *	(84')	(64')	(10')	(35')	(45')	(80')	(112')	(122')	(48')	(38')	11° 06' 46"	(30.84')	(3.00')
	B-3 [B2] *	(96')	(64')	(16')	(29')	(45')	(80')	(112')	(128')	(48')	(32')	11° 06' 46"	(30.84')	(3.00')
	B-3 [C]	(68')	(52')	(8')	(37')	(45')	(80')	(106')	(114')	(54')	(46')	19° 18' 32"	(52.91')	(9.00')
	B-3 [D]	(60')	(40')	(10')	(35')	(45')	(70')	(90')	(100')	(50')	(40')	15° 21' 32"	(37.08')	(5.00')
	B-5 [A]	(53')	(40')	(6.5')	(28.5')	(35')	(60')	(80')	(86.5')	(40')	(33.5')	16° 35' 52"	(34.28')	(5.00')
	B-5 [B]	(49')	(36')	(6.5')	(28.5')	(35')	(60')	(78')	(84.5')	(42')	(35.5')	19° 40' 00"	(40.39')	(7.00')
B-5 [C]	(45')	(32')	(6.5')	(28.5')	(35')	(60')	(76')	(82.5')	(44')	(37.5')	22° 19' 54"	(45.60')	(9.00')	

* USE ONLY WHERE APPROVED BY THE PLANNING DIRECTOR AND ROAD COMMISSIONER

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Antonio E. Garcia
DIRECTOR OF PUBLIC WORKS

RECOMMENDED:

Atkinson
RCE 50408
EXPIRES 06-30-01

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

ROAD INTERSECTION
"L" SHAPE

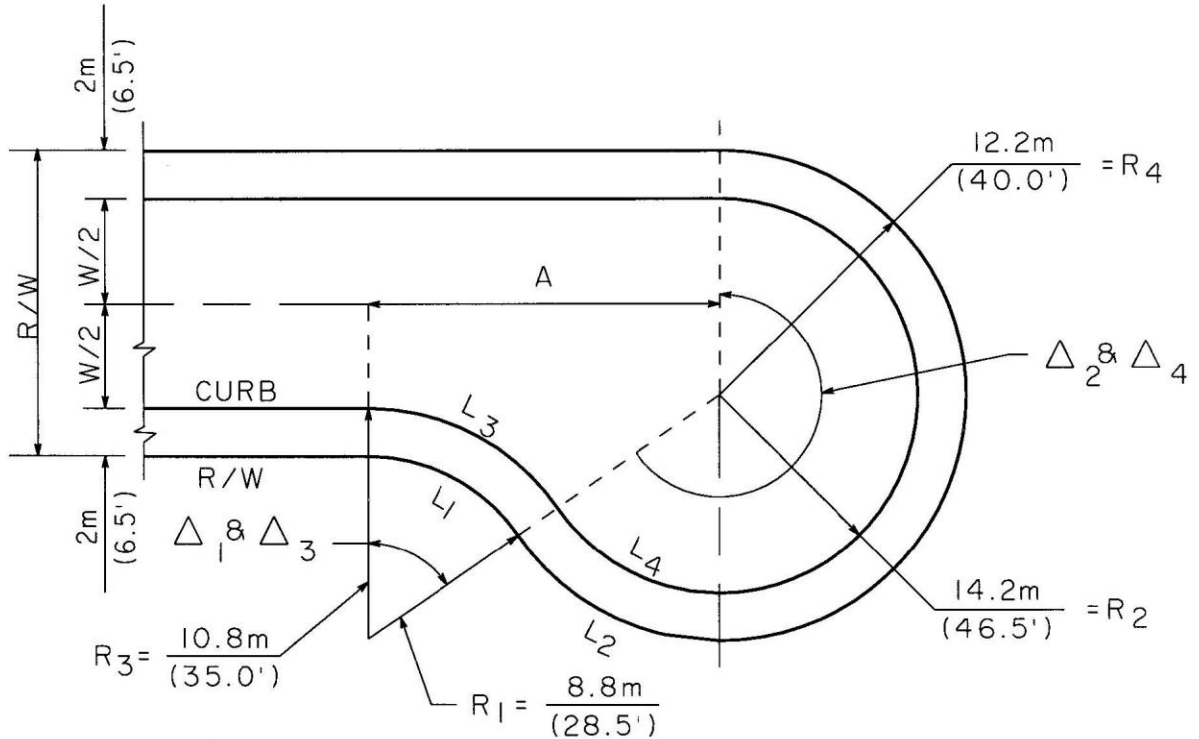


Diagram above is Type III-R which is preferred.

Mirror image of diagram is Type III-L.

UNITS	PLATE	W	W/2	R/W	A	$\Delta_1 \& \Delta_3$	$\Delta_2 \& \Delta_4$
S.I.	B-5 [A]	12.0m	6.0m	16.0m	20.412m	62° 33' 24"	242° 33' 24"
	B-5 [B]	10.8m	5.4m	14.8m	20.591m	65° 52' 38"	245° 52' 38"
	B-5 [C]	9.8m	4.9m	13.8m	21.411m	68° 34' 35"	248° 34' 45"
	PLATE	L1	L2	L3	L4		
	B-5 [A]	9.608m	60.115m	11.792m	51.647m		
	B-5 [B]	10.188m	60.938m	12.418m	52.354m		
	B-5 [C]	10.533m	61.608m	12.927m	52.930m		
(U.S.)	PLATE	W	W/2	R/W	A	$\Delta_1 \& \Delta_3$	$\Delta_2 \& \Delta_4$
	B-5 [A]	(40')	(20')	(53')	(66.33')	62° 10' 54"	242° 10' 54"
	B-5 [B]	(36')	(18')	(49')	(68.29')	65° 35' 08"	245° 35' 08"
	B-5 [C]	(32')	(16')	(45')	(69.97')	68° 53' 59"	248° 53' 39"
	PLATE	L1	L2	L3	L4		
	B-5 [A]	(30.93')	(196.55')	(37.98')	(169.07')		
	B-5 [B]	(32.62')	(199.31')	(40.06')	(171.45')		
B-5 [C]	(34.27')	(202.00')	(42.09')	(173.76')			

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Andrew W. Gould
DIRECTOR OF PUBLIC WORKS

RECOMMENDED:

A. H. ...
BCE 50408
EXPIRES 06-30-01


COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

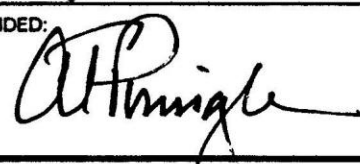
CUL-DE-SAC
TYPE III

SI UNITS				REVISION: D				PLATE D - 1			
VERTICAL CURVES - MINIMUM LENGTH (meters)											
DESIGN SPEED_kph		40		50		65		80		100	
SIGHT DIST meters		50		65		95		130		190	
Grade Diff in %	CUL -DE- SAC	S	C	S	C	S	C	S	C	S	C
0.5	4	4	4	4	4	4	4	6	6	8	8
1	4	4	4	4	4	4	4	6	6	8	8
1.5	4	4	4	4	4	6	6	8	8	12	110
2	4	4	4	4	4	8	8	12	58	16	178
3	6	6	6	14	6	40	56	68	126	118	268
4	6	26	6	44	30	78	90	116	168	184	358
5	8	42	20	62	50	100	112	148	210	230	446
6	10	52	34	74	64	120	134	176	252	276	536
7	12	60	44	86	74	140	156	206	294	322	624
8	12	68	50	98	84	160	180	236	334	368	714
9	14	76	56	110	94	180	202	264	376	414	804
10	16	86	62	122	106	200	224	294	418	460	892
11	18	94	68	134	116	220	246	324	460	506	982
12	18	102	76	146	126	240	268	352	502	552	1070
13	20	110	82	158	136	260	290	382	544	598	1160
14	22	118	88	170	148	278	312	412	586	644	1248
15	24	128	94	182	158	298	336	440	626	690	1338
16	24	136	100	194	168	318	358	470	668	734	1428
18	28	152	112	218	188	358	402	528	752	826	1606
20	30	170	124	242	210	398	446	586	836	918	1784
22	34	186	136	266	230	438	492	646	920	1010	1962
24	36	204	150	292	252	478	536	704	1002	1102	2140
26	40	220	162	<p>LEGEND: C = Crest Curves; S = Sag Curves; A = Algebraic % Diff in grades; L= Length of Curve. Grade breaks of less than 0.5% may be made without a vertical curve at intervals in meters not less than (A x V) Vertical curve elevations shall be computed and staked at intervals that will insure a smooth curve made up of short chords. Points shall be not further apart in meters than (2.2 x (L/A)^{1/4}), and BVC, Center & EVC shall always be computed and staked. See HDM for discussion of good practice in designing vertical curves.</p>							
28		236	174								
30		254	186								
32		270	198								
34		288	210								
36		304	224								
38		320	236								
40		338	248								
50		422	310								

ADOPTED BY BOARD OF SUPERVISORS: 00/00/00

APPROVED: 

DIRECTOR OF PUBLIC WORKS

RECOMMENDED: 

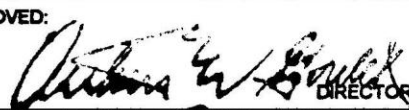

RCE 50408
EXPIRES 06-30-01

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

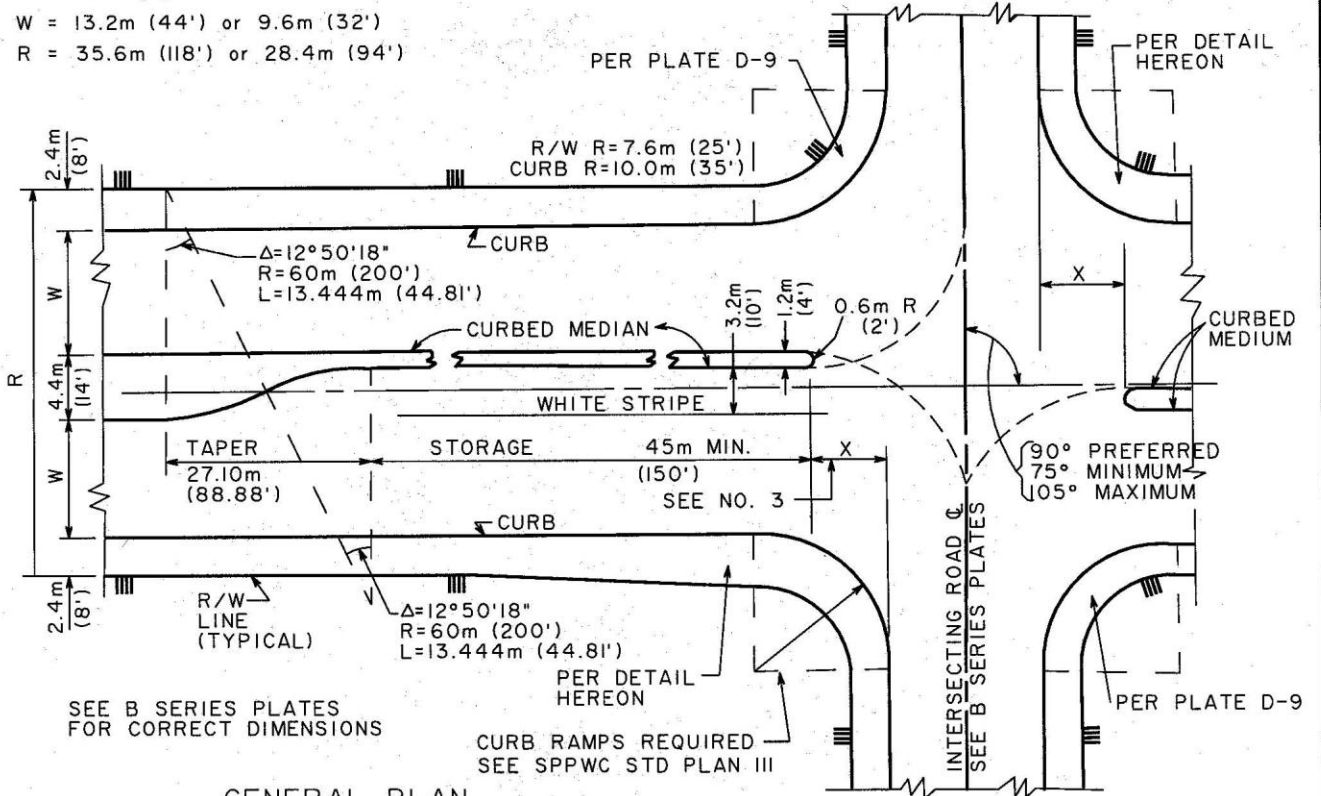
ROAD STANDARDS

VERTICAL CURVES
MINIMUM LENGTH

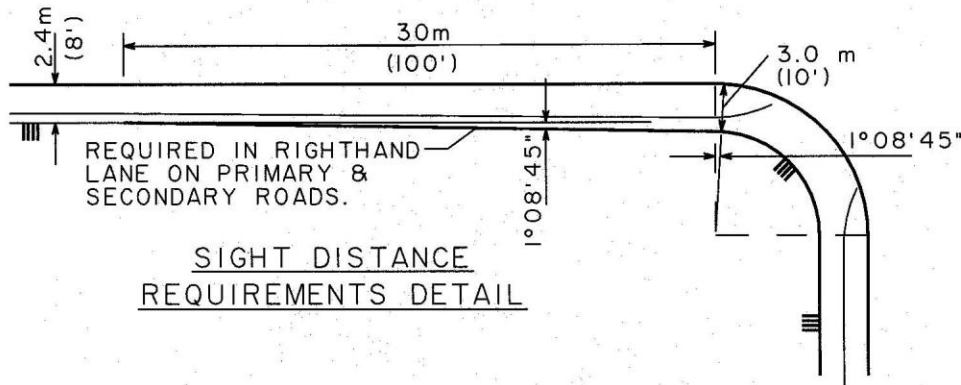
(US) UNITS				REVISION: Orig				PLATE D - 1a			
VERTICAL CURVES - MINIMUM LENGTH (Feet)											
DESIGN SPEED MPH		25		30		40		50		60	
SIGHT DIST FEET		150		200		300		430		580	
Grade Diff in %	CUL-DE-SAC	S	C	S	C	S	C	S	C	S	C
0.50	10	10	10	10	10	10	10	10	10	20	20
1	20	10	10	10	10	20	20	20	20	30	30
1.5	20	10	10	10	10	20	20	30	30	40	280
2	30	20	20	20	20	30	30	40	220	50	500
3	40	20	20	40	20	120	160	240	440	360	760
4	50	90	30	130	70	240	270	400	590	560	1020
5	60	130	60	190	140	320	340	500	730	700	1270
6	70	170	100	220	180	380	410	600	880	840	1520
7	80	190	140	260	220	440	480	700	1020	970	1780
8	90	220	160	300	250	500	550	800	1170	1110	2030
9	100	250	180	330	280	560	610	900	1320	1250	2280
10	110	270	200	370	310	630	680	1000	1460	1390	2530
11	120	300	220	410	340	690	750	1100	1610	1530	2790
12	130	330	240	440	370	750	820	1200	1750	1670	3040
13	140	350	260	480	400	810	880	1300	1900	1800	3290
14	150	380	270	510	430	870	950	1400	2040	1940	3550
15	160	410	290	550	460	940	1020	1500	2190	2080	3800
16	170	430	310	590	490	1000	1090	1600	2330	2220	4050
17	180	460	330	620	520	1060	1160	1700	2480	2360	4300
18	190	490	350	660	550	1120	1220	1800	2630	2500	4560
19	200	510	370	700	580	1180	1290	1900	2770	2640	4810
20	210	540	390	730	610	1250	1360	2000	2920	2770	5060
22	230	590	430	810	670	1370	1490	2200	3210	3050	5570
24	250	650	470	880	730	1490	1630	2400	3500	3330	6080
26	270	700	510	LEGEND: C = Crest Curves; S = Sag Curves; V=Design Speed (MPH) A = Algebraic % Diff in grades; L= Length of Curve. Grade breaks of less than 0.5% may be made without a vertical curve at intervals in feet not less than (5 x A x V). Vertical curve elevations shall be computed and staked at intervals that will insure a smooth curve made up of short chords. Points shall be not further apart in feet than $4 \times (L/A)^{1/2}$, and BVC, Center & EVC shall always be computed and staked. See HDM for discussion of good practice in designing vertical curves.							
28	750	540	580								
30	810	620	660								
32	860	700	740								
34	910	770	810								
36	970	770	880								
38	1020	810	940								
40	1070	860	1000								
50	1340	970	1060								

ADOPTED BY BOARD OF SUPERVISORS: 00/00/00		COUNTY OF VENTURA PUBLIC WORKS AGENCY ROAD STANDARDS	
APPROVED:  DIRECTOR OF PUBLIC WORKS			
RECOMMENDED:  RCE 50408 EXPIRES 06-30-01		VERTICAL CURVES MINIMUM LENGTH	

B-2 [A] B-2 [B]
 W = 13.2m (44') or 9.6m (32')
 R = 35.6m (118') or 28.4m (94')



GENERAL PLAN



SIGHT DISTANCE REQUIREMENTS DETAIL

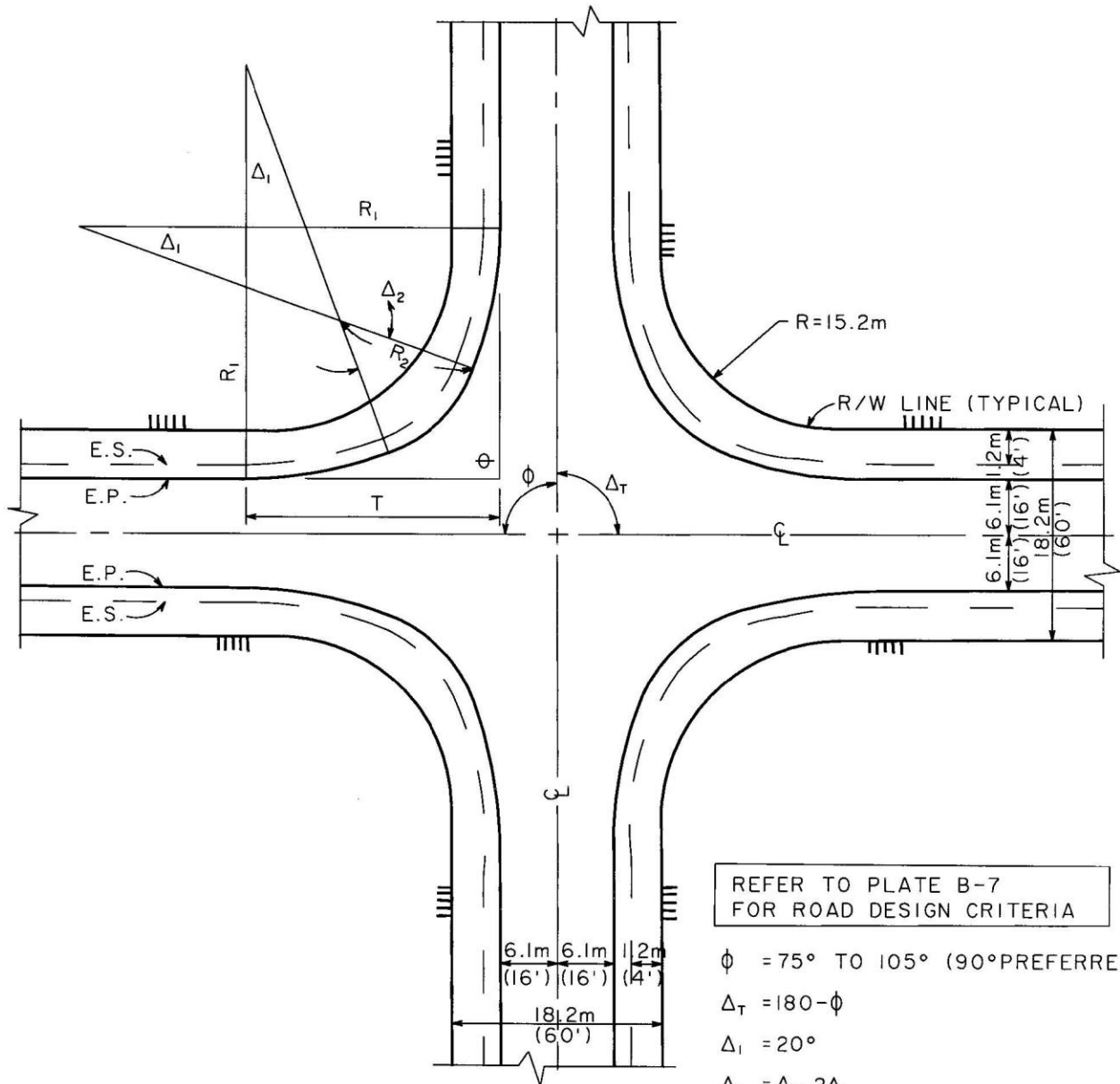
1. Dashed curves between C of intersecting road and outside face of median curbs are controlling left turn paths. End of median, "X", shall be determined using the controlling radius from table and intersection angle. Minimum "X" = 3m (10').

INTERSECTING ROAD TYPE	CONTROLLING RADIUS
PL B-2	18m (60')
B-3 [B], B-3 [C] B-3 [D], B-7	15m (50')
B-3 [A], B-5	14m (45')

ADOPTED BY BOARD OF SUPERVISORS: 12-17-02
 APPROVED: *Arnold Hoover*
 DIRECTOR OF PUBLIC WORKS

RECOMMENDED: *Al Smith*
 RCE 50408
 EXPIRES 06-30-05

COUNTY OF VENTURA
 PUBLIC WORKS AGENCY
 ROAD STANDARDS
 PRIMARY AND SECONDARY
 ROAD INTERSECTIONS



REFER TO PLATE B-7
FOR ROAD DESIGN CRITERIA

$\phi = 75^\circ \text{ TO } 105^\circ \text{ (} 90^\circ \text{ PREFERRED)}$
 $\Delta_T = 180 - \phi$
 $\Delta_1 = 20^\circ$
 $\Delta_2 = \Delta_T - 2\Delta_1$
 $\phi = 180 - \Delta_T$
 $R_1 = 36.6 \text{ m (120')}$
 $R_2 = 12.2 \text{ m (40')}$
 $T = 13.321 \text{ m} + \frac{14.549 \text{ m SIN } 1/2 \Delta_2}{\text{SIN } 1/2 \phi}$
 $(T = 43.68 \text{ ft} + \frac{47.70 \text{ ft SIN } 1/2 \Delta_2}{\text{SIN } 1/2 \phi})$

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Arthur W. Gould
DIRECTOR OF PUBLIC WORKS

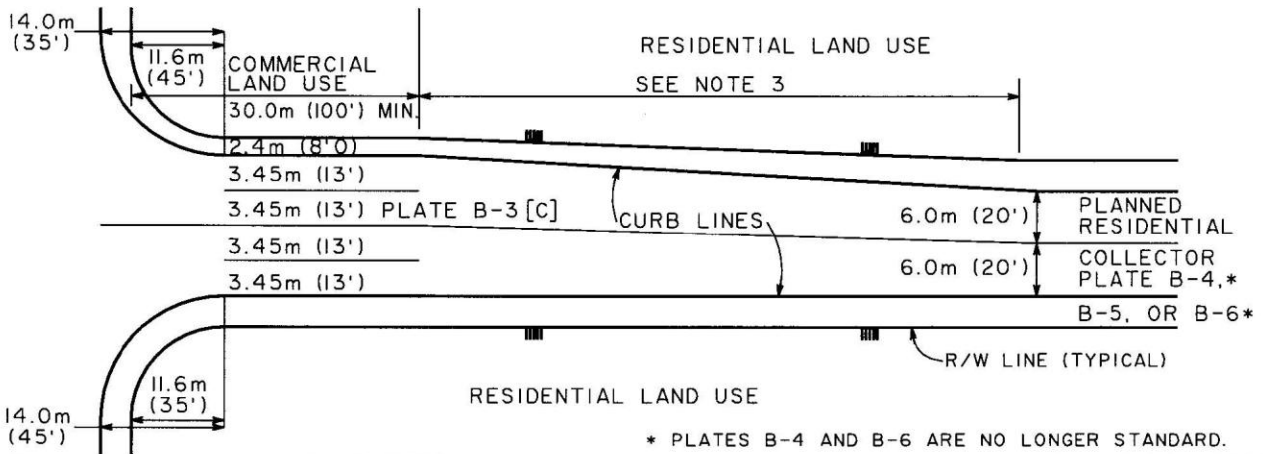
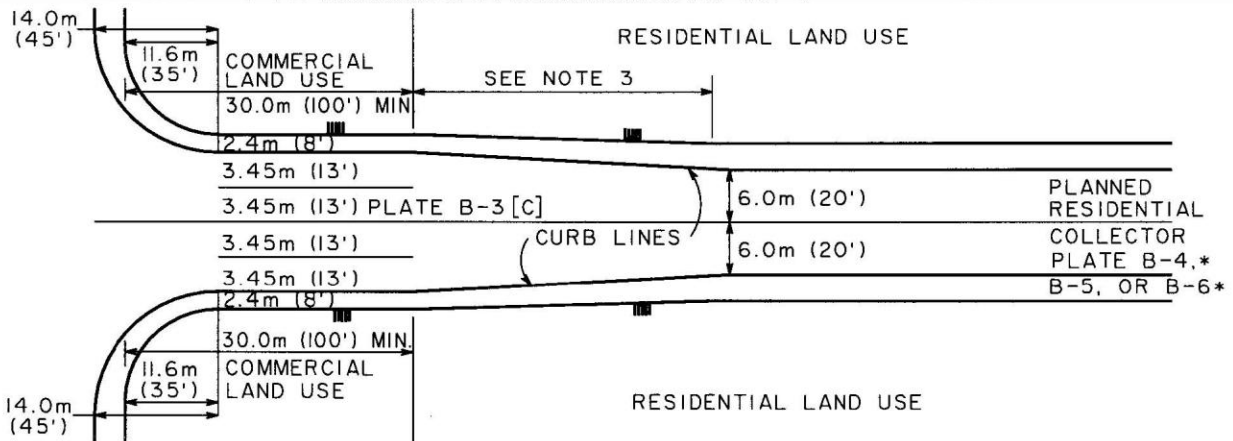
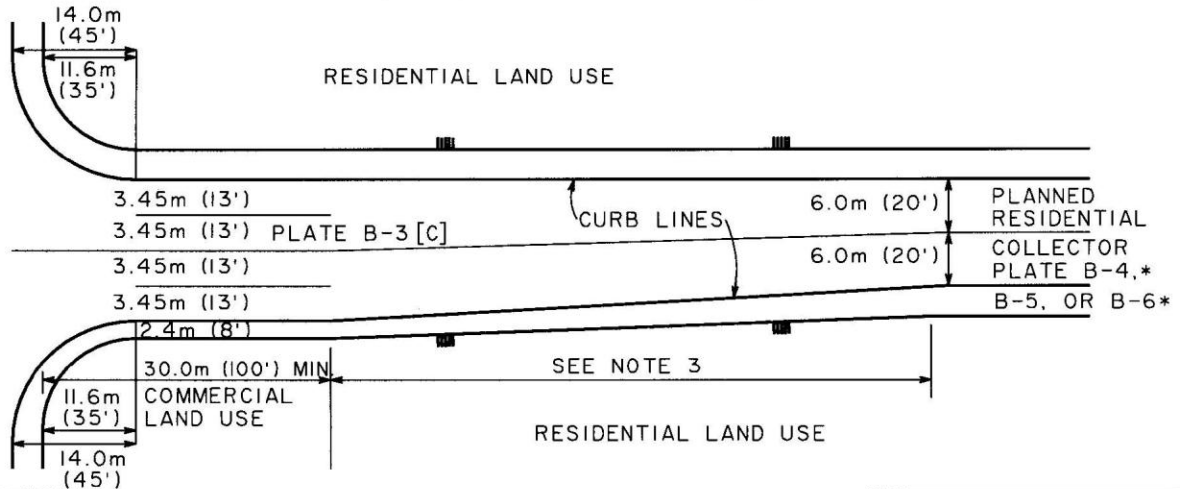
RECOMMENDED:

A. H. King
RCE 50408
EXPIRES 06-30-01

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

RURAL ROAD INTERSECTION



- NOTES:
- To be used on land development projects only when a condition of approval.
 - See plates D-5, D-12 and E-8 for intersection details.
 - Flare curb line at 6m per 100m (6' per 100'). Flare R/W line to meet B-series plate dimension at each end of flare.

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Antonio E. Gaudet
 DIRECTOR OF PUBLIC WORKS

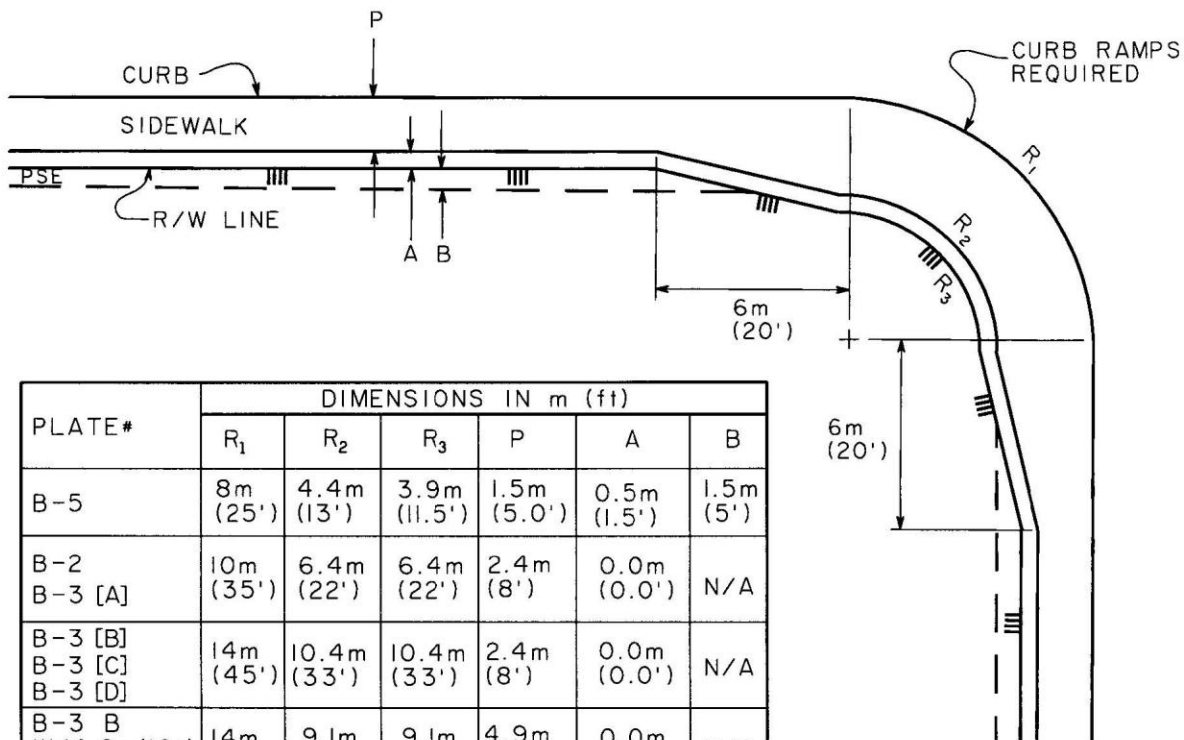
RECOMMENDED:

Al Pringle
 RCE 50408
 EXPIRES 06-30-01

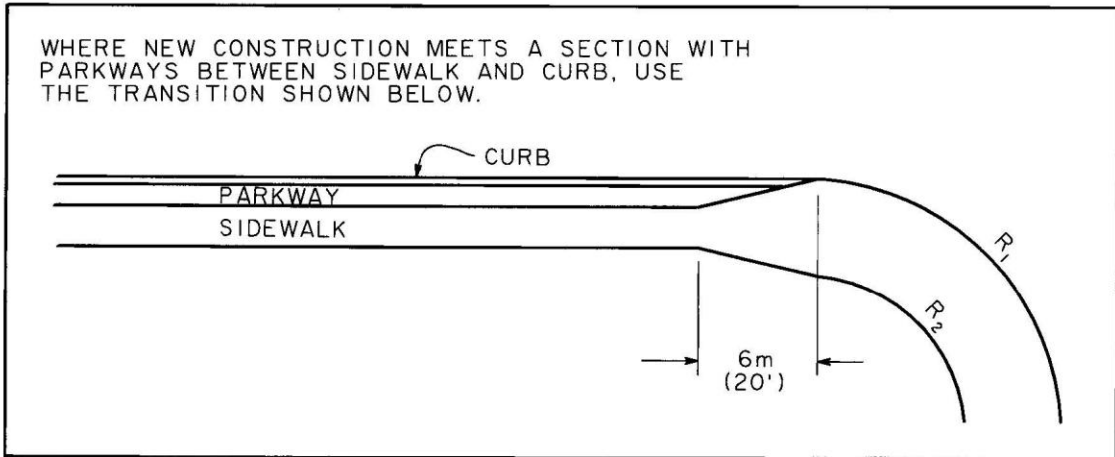
COUNTY OF VENTURA
 PUBLIC WORKS AGENCY

ROAD STANDARDS

RESIDENTIAL / COMMERCIAL
 TRANSITION-PERMANENT CONSTRUCTION



PLATE#	DIMENSIONS IN m (ft)					
	R ₁	R ₂	R ₃	P	A	B
B-5	8m (25')	4.4m (13')	3.9m (11.5')	1.5m (5.0')	0.5m (1.5')	1.5m (5')
B-2 B-3 [A]	10m (35')	6.4m (22')	6.4m (22')	2.4m (8')	0.0m (0.0')	N/A
B-3 [B] B-3 [C] B-3 [D]	14m (45')	10.4m (33')	10.4m (33')	2.4m (8')	0.0m (0.0')	N/A
B-3 B W/4.9m(16') SIDEWALK	14m (45')	9.1m (29')	9.1m (29')	4.9m (16')	0.0m (0.0')	N/A



1. PSE = public services easement.
2. See SPPWC standard plan III for curb ramps.
3. See SPPWC standard plan II2 for curb & sidewalk joints.

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Antonio E. Gaudet
DIRECTOR OF PUBLIC WORKS

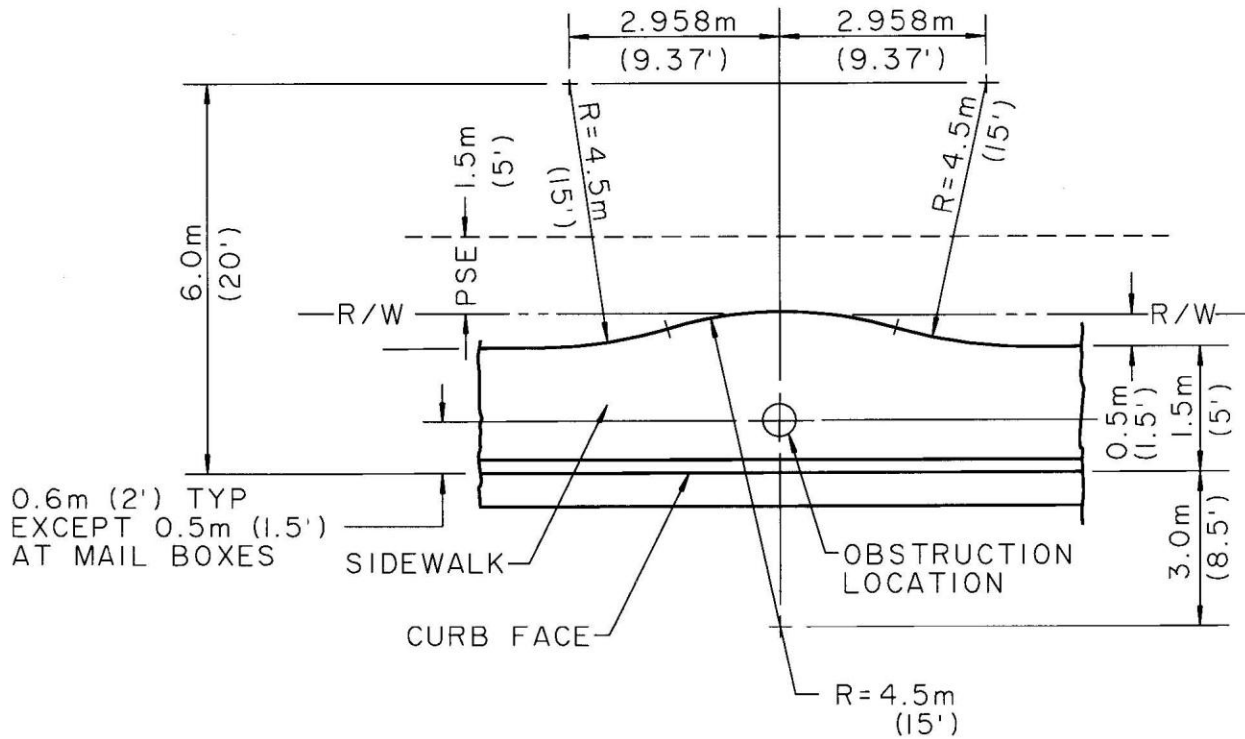
RECOMMENDED:

A. Pringle
SCE 50408
EXPIRES 06-30-01

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

SIDEWALK TRANSITION
AT INTERSECTION



1. When plate B-5 improvement configuration is used, provide sidewalk widening as indicated above at all obstructions.
2. Street lights shall be located behind sidewalk.
3. For obstructions wider than 0.6m (2') in either direction, special design is required.
4. Provide block out for mail box installation for each lot. Whenever feasible, mail boxes for adjacent lots shall be located 0.6m (2') apart centered on the common lot line. Mail boxes shall be at least 1.0m (3') from driveways, where necessary to avoid driveways or other obstructions, pairs of mail boxes may be located up to 1.5m (5') from the common lot line.
5. PSE = public service easement.

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Antonio W. Goulet
 DIRECTOR OF PUBLIC WORKS

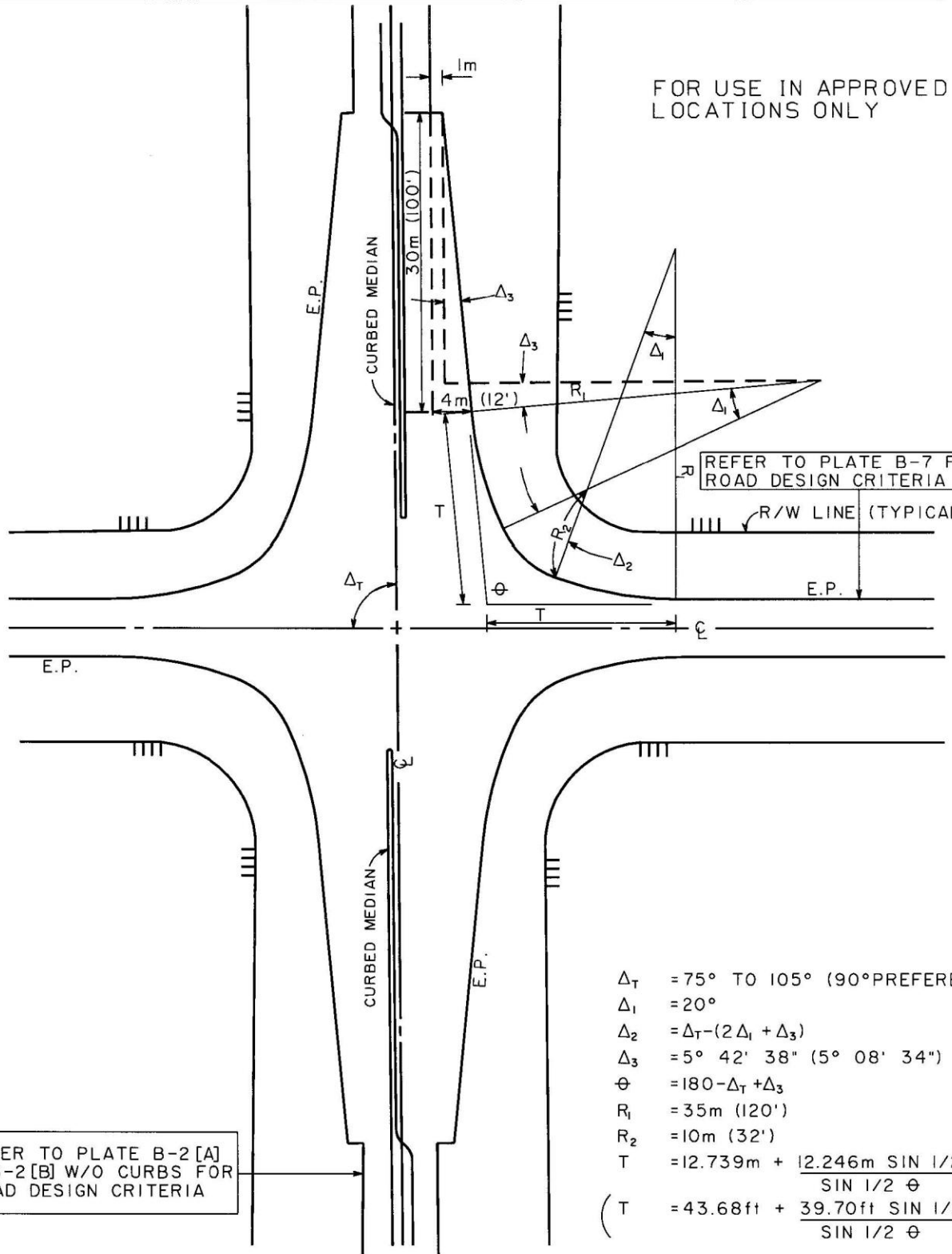
RECOMMENDED:

Al Pring
 RCE 50408
 EXPIRES 06-30-01

COUNTY OF VENTURA
 PUBLIC WORKS AGENCY

ROAD STANDARDS

SIDEWALK WIDENING AT
 OBSTRUCTIONS



FOR USE IN APPROVED LOCATIONS ONLY

REFER TO PLATE B-7 FOR ROAD DESIGN CRITERIA

REFER TO PLATE B-2 [A] & B-2 [B] W/O CURBS FOR ROAD DESIGN CRITERIA

$$\begin{aligned} \Delta_T &= 75^\circ \text{ TO } 105^\circ \text{ (90^\circ PREFERRED)} \\ \Delta_1 &= 20^\circ \\ \Delta_2 &= \Delta_T - (2\Delta_1 + \Delta_3) \\ \Delta_3 &= 5^\circ 42' 38'' \text{ (5^\circ 08' 34'')} \\ \phi &= 180 - \Delta_T + \Delta_3 \\ R_1 &= 35\text{m (120')} \\ R_2 &= 10\text{m (32')} \\ T &= 12.739\text{m} + \frac{12.246\text{m SIN } 1/2 \Delta_2}{\text{SIN } 1/2 \phi} \\ \left(T &= 43.68\text{ft} + \frac{39.70\text{ft SIN } 1/2 \Delta_2}{\text{SIN } 1/2 \phi} \right) \end{aligned}$$

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Antonio W. Goulet
DIRECTOR OF PUBLIC WORKS

RECOMMENDED:

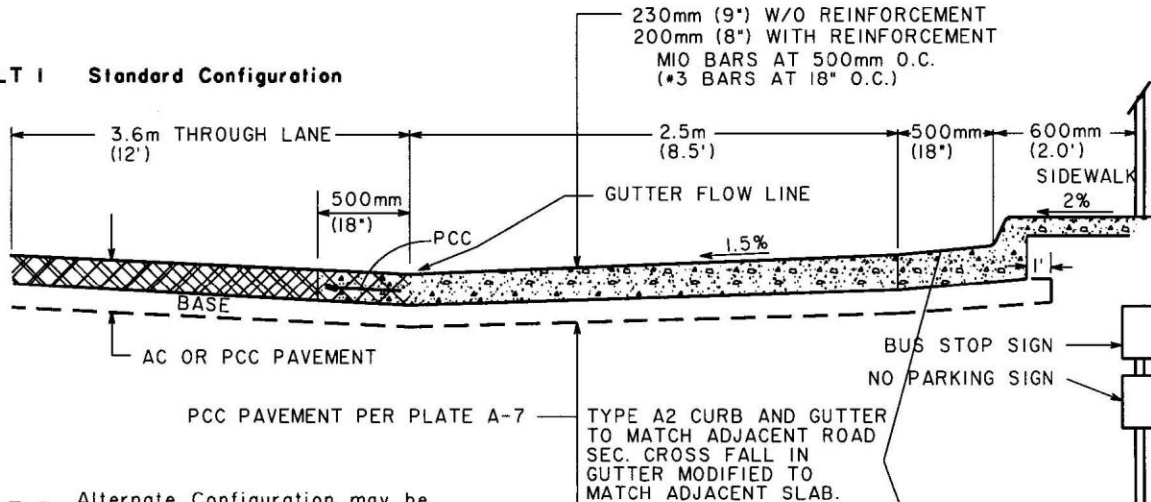
A. Pringle
RCE 50408
EXPIRES 06-30-01

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

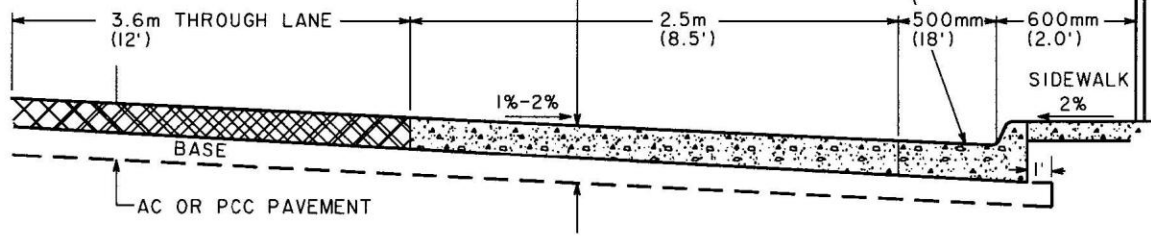
ROAD STANDARDS

PRIMARY AND SECONDARY ROAD
WITH RURAL ROAD INTERSECTION

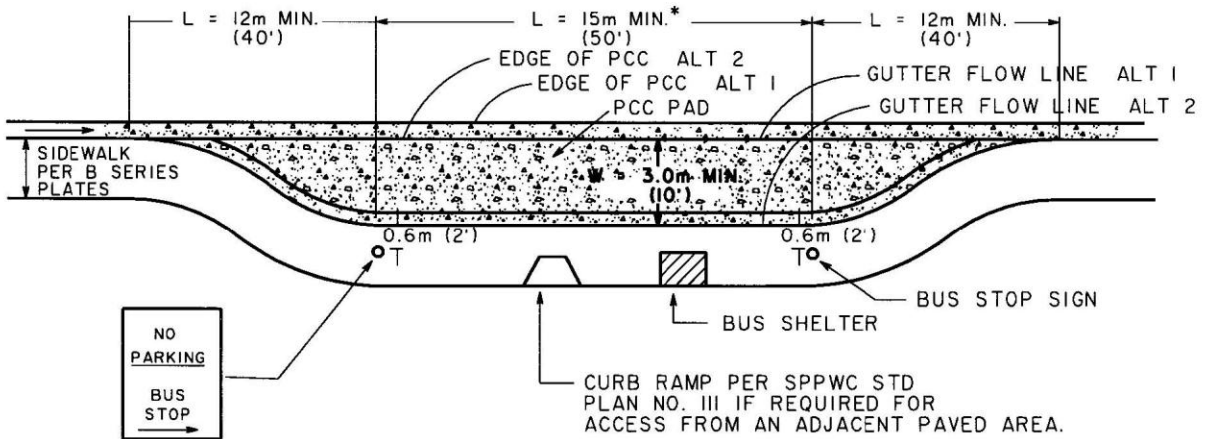
ALT 1 Standard Configuration



ALT 2 Alternate Configuration may be used where road grade is >1%



ALTERNATE CROSS-SECTIONS



* For each additional pass through bus berth add 15m (50'), and for each additional layover bus berth add 25m (80').

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Antonio V. Lopez
DIRECTOR OF PUBLIC WORKS

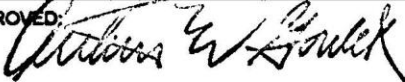

RECOMMENDED:

Al Hough
RCE 50408
EXPIRES 06-30-01

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

BUS TURNOUT

SI & (US) UNITS	REVISION: E	PLATE E - 1
<p>1. CONCRETE CURBS & GUTTERS:</p> <p>1.1 Where Required The requirements for installing curbs and gutters are shown on B-Series plates.</p> <p>1.2 Design Curbs and gutters shall be constructed per SPPWC Standard Plan 120, types A-1 and A-2. W = 450 mm (18") or to match adjacent gutter.</p> <p>1.3 PCC Class Concrete class and construction shall be as specified in SLDS or VCSS.</p> <p>1.4 Base Required Where roadway subgrade has a R-value ≤ 14, 100 mm (4") thickness of PMB shall be placed under curbs and gutters.</p> <p>2. CROSS GUTTERS:</p> <p>2.1 Where Required Cross gutters shall be installed wherever surface drainage is to be carried across a road.</p> <p>2.2 Where Prohibited No surface drainage is to be carried across a road and no cross gutters are permitted across the following road sections:</p> <ul style="list-style-type: none"> a). Primary or Secondary roads (Plates B-2, B-3[A], B-3[B], B-3[C]). b). Collector roads (Plates B-5[A] and deleted B-4[A] and B-6[A]) except at locations where vehicular traffic is required to stop or where through traffic movement is precluded such as at the single leg of a T-intersection. <p>2.3 Design Cross gutters shall be constructed per SPPWC Standard Plan 122 and 123.</p> <p>2.4 PCC Class Concrete class and construction shall be as specified in SLDS or VCSS.</p> <p>2.5 Base Required Cross gutters and spandrels shall be constructed over 150 mm (6 ") thickness of PMB.</p>		
ADOPTED BY BOARD OF SUPERVISORS: 00/00/00	<p align="center">COUNTY OF VENTURA PUBLIC WORKS AGENCY ROAD STANDARDS</p>	
<p>APPROVED: </p> <p align="center">DIRECTOR OF PUBLIC WORKS</p>		
<p>RECOMMENDED: </p> <p align="right">RCE 50408 EXPIRES 06-30-01</p>	<p align="center">CURBS & GUTTERS</p>	

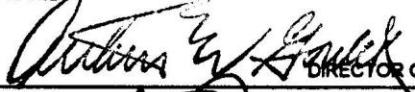
2. DRIVEWAYS**2.1 Residential**

Residential driveways shall be constructed according to SPPWC Std. Plan 110, Type A with the following limitations:

- 2.11 $W \geq 3$ m (10') and $W \leq 8.2$ m (27')
- 2.12 The sum of W's for all driveways shall not exceed 40% of the property frontage, however at least one $W = 3$ m (10') driveway is allowed on each lot.
- 2.13 No driveway shall be constructed in the curb return area at intersections or within 1.5 m (5') of the BCR or ECR.
- 2.14 No driveway or driveway apron shall be constructed in the area occupied by a catch basin's local depression.
- 2.15 The outer edge of the driveway warp shall be 0.6 m (2') clear of obstructions in the R/W such as fire hydrants, utility poles, street light standards, signs and mailboxes.
- 2.16 No driveway is allowed unless there is space on the private property for parking an 5.5 m (18') long vehicle.
- 2.17 Where the road grade exceeds 5% and there is no sidewalk next to the curb, an L-shaped deflector curb shall be installed on the downslope side of the driveway. The curb shall be Type A-1, 150 mm (6") high above the roadway curb, extending 1.5 m (5') along the driveway and 0.6 m (2') along the roadway curb.
- 2.18 Where sidewalks are not installed, PCC may be colored or textured or both. Texturing shall not reduce the required thickness and shall not be either so smooth or so rough as to be hazardous to pedestrians.
- 2.19 Driveways shall be PCC class 280-C-14 (470-C-2000), 150 mm (6") thick. Where the existing road does not have PCC curbs, driveways may be constructed of AC class III-C2-AR4000, either 150 mm (6") thick or 50 mm (2") thick over 100 mm (4") of PMB.
- 2.20 Where the existing road does not have PCC curbs, driveways shall be constructed at an elevation compatible with future construction of curbs and gutters.
- 2.21 Minimum distance between outer edges of adjacent driveway slopes:
 On same lot ≥ 6.7 m (22')
 On adjacent lots ≥ 0.3 m (1')

ADOPTED BY BOARD OF SUPERVISORS: 00/00/00

APPROVED:



DIRECTOR OF PUBLIC WORKS



RECOMMENDED:


RCE 50408
EXPIRES 06-30-01

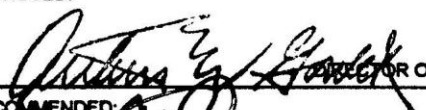

COUNTY OF VENTURA
 PUBLIC WORKS AGENCY
 ROAD STANDARDS

RESIDENTIAL DRIVEWAYS

- 2.2 Commercial**
Commercial driveways shall be constructed according to SPPWC Std. Plan 110, Type A with the following limitations:
- 2.21 Minimum W = 3 m (10').**
The sum of all W's shall not exceed 60% of lot frontage.
- | | |
|----------------------------|--|
| <u>Lot width</u> | <u>Maximum W</u> |
| < 30 m (100') | 6 m (20') |
| 30 m (100') to 45 m (150') | 9 m (30') |
| > 45 m (150') | 20% of lot frontage but
≤ 18 m (60'.) |
- 2.22 Minimum distance between outer edges of adjacent driveway slopes:**
On same lot ≥ 6.7 m (22')
On adjacent lots ≥ 0.3 m (1')
- 2.23 No driveway shall be constructed in the curb return area at intersections or within 1.5 m (5') of the BCR or ECR.**
- 2.24 No driveway is allowed where there is any obstacle that prevents any vehicle entering the driveway from completely clearing the public right of way when parked on the lot.**
- 2.25 Driveways shall be PCC class 280-C-14 (470-C-2000), 225 mm (9") thick over 100 mm (4") of PMB (R=78). Where the existing road does not have PCC curbs, driveways may be constructed of AC class III-C2-AR4000, either 175 mm (7 in.) thick or 75 mm (3") thick over 200 mm (8") of PMB.**
- 2.26 The outer edge of the driveway warp shall be 1.5 m (5') clear of obstructions in the R/W such as fire hydrants, utility poles street light standards, signs and mailboxes.**
- 2.27 Where the road grade exceeds 5% and there is no sidewalk next to the curb, a L-shaped deflector curb shall be installed on the downslope side of the driveway. The curb shall be Type A-1, 150 mm (6") high above the roadway curb, extending 1.5 m (5') along the driveway and 0.6 m (2') along the roadway curb.**
- 2.28 Where the existing road does not have PCC curbs, driveways shall be constructed at an elevation compatible with future construction of curbs and gutters.**

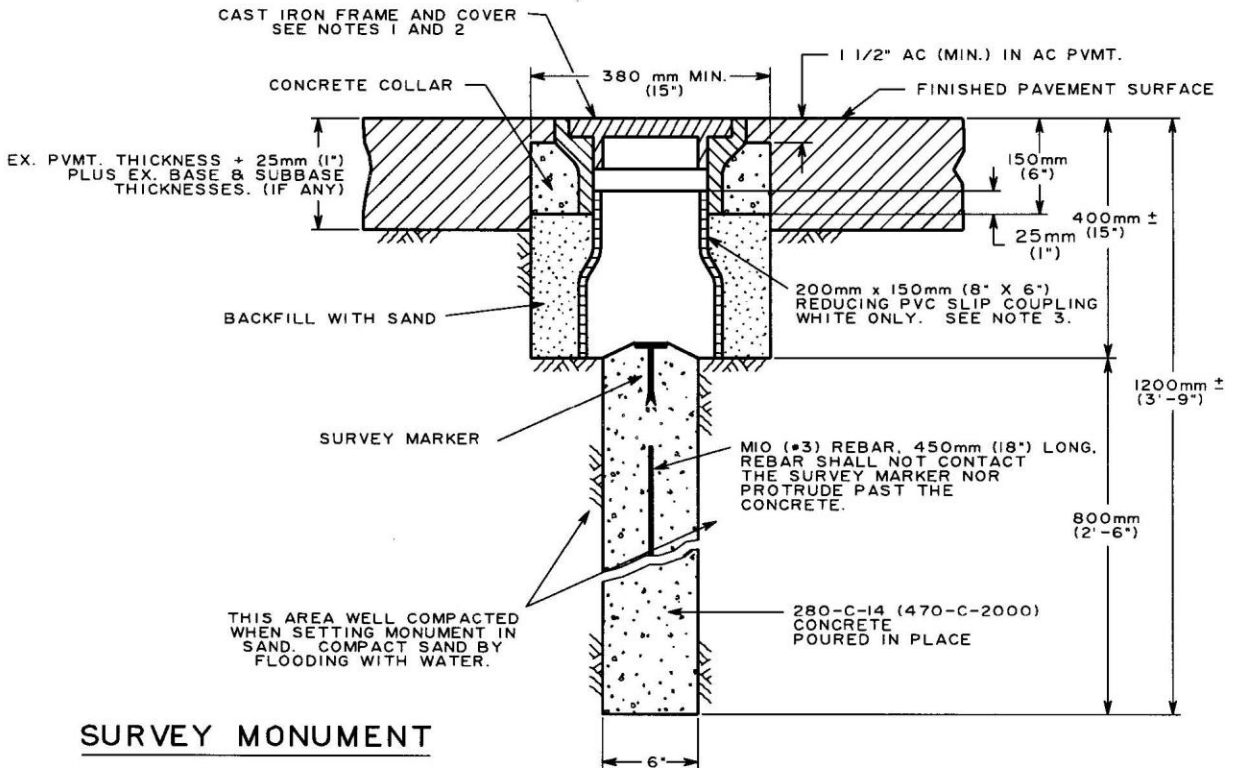
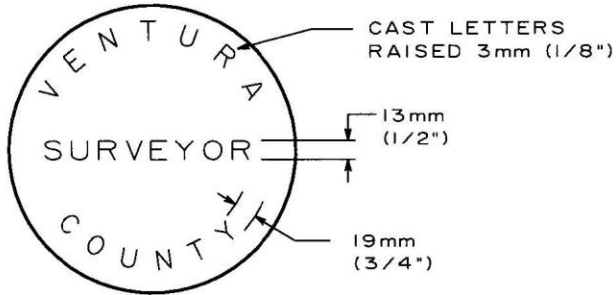
ADOPTED BY BOARD OF SUPERVISORS: 00/00/00	COUNTY OF VENTURA
APPROVED:	PUBLIC WORKS AGENCY
 DIRECTOR OF PUBLIC WORKS	ROAD STANDARDS
RECOMMENDED:  RCE 50408 EXPIRES 03/31/95	COMMERCIAL DRIVEWAYS

- 3. SIDEWALKS:**
The requirements for installing sidewalks are shown on B-Series plates.
- 3.1 Design & Construction**
- 3.11 Sidewalks shall be constructed per SPPWC Standard Plan 112.
- 3.12 Sidewalks shall be constructed of PCC, 100 mm (4") thick.
- 3.13 Where roadway subgrade has a R-value ≤ 14 , 100 mm (4") of PMB shall be placed under the sidewalk.
- 3.14 Concrete class and construction shall be as specified in SLDS or VCSS.
- 3.2 Curb Ramps**
Curb ramps, as required by the Americans With Disabilities Act and state law, shall be installed at all intersections. Construction shall be per SPPWC Standard Plan 111, Case A. Sidewalks, sidewalk flares at intersections and rights of way widths may have to be increased to accommodate ramp design.
- 4. SURFACE ACCESS TO UNDERGROUND FACILITIES (MANHOLES, etc.):**
All surface accesses to underground facilities located within a sidewalk, sidepath or a marked or unmarked (Vehicle Code § 275) crosswalk area of a roadway, shall meet the following requirements:
1. Covers shall support a load of 225 kg (500 lbs.) applied to a 25 mm (1 in.) diameter area at any location on the cover. The deflection, when so loaded, shall not exceed 1% of the longest dimension of the cover. There shall be no residual deflection after the load is removed. Plastic covers shall be ultraviolet resistant. Covers located in roadways, driveways or other locations to which vehicles have access, shall be designed for traffic loading.
 2. No variation in the surface of the access closure shall exceed 3 mm (1/8") from the surrounding surface.
 3. No opening in the access closure shall exceed 12 mm (1/2 in.) in width nor 60 mm (2.5") in length. Circular openings shall not exceed 20 mm (3/4 in.) in diameter.
 4. Hold down fastenings shall be flush with the surface of the access closure.
 5. The exposed surface of the access closure shall have a permanent slip resistant surface.
 6. The resultant finished access closure, as installed, shall not result in a significant variation in the sidewalk, sidepath or crosswalk surface that will cause a hazard to pedestrian use.

ADOPTED BY BOARD OF SUPERVISORS: 00/00/00 <hr/> APPROVED:  DIRECTOR OF PUBLIC WORKS <hr/> RECOMMENDED:  RCE 50408 EXPIRES 06-30-01	COUNTY OF VENTURA PUBLIC WORKS AGENCY ROAD STANDARDS SIDEWALKS AND SURFACE ACCESS CLOSURES
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TOP OF COVER DETAIL

COVER TO BE EMBOSSED WITH SPECIAL LETTERING AS SHOWN



SURVEY MONUMENT

NOTE 1 : Frame is Alhambra Foundry cast iron monument handhole frame with bituminous paint: Plate No. A-2925-F.

NOTE 2 : Cover is Alhambra Foundry cast iron monument handhole cover with bituminous paint: Plate No. A-2925-A; marked "VENTURA COUNTY SURVEYOR". See top of cover detail above.

NOTE 3 : 200mm X 150mm (8" X 6") IPS class 1000kPa (125) PVC fabricated reducing slip coupling: 7mm (9/32") wall thickness: colored white.

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Antonio G. Sulek
DIRECTOR OF PUBLIC WORKS

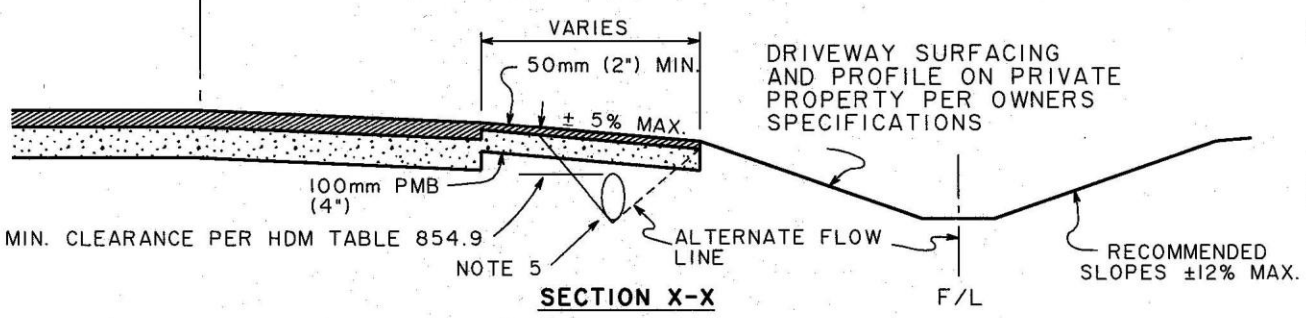
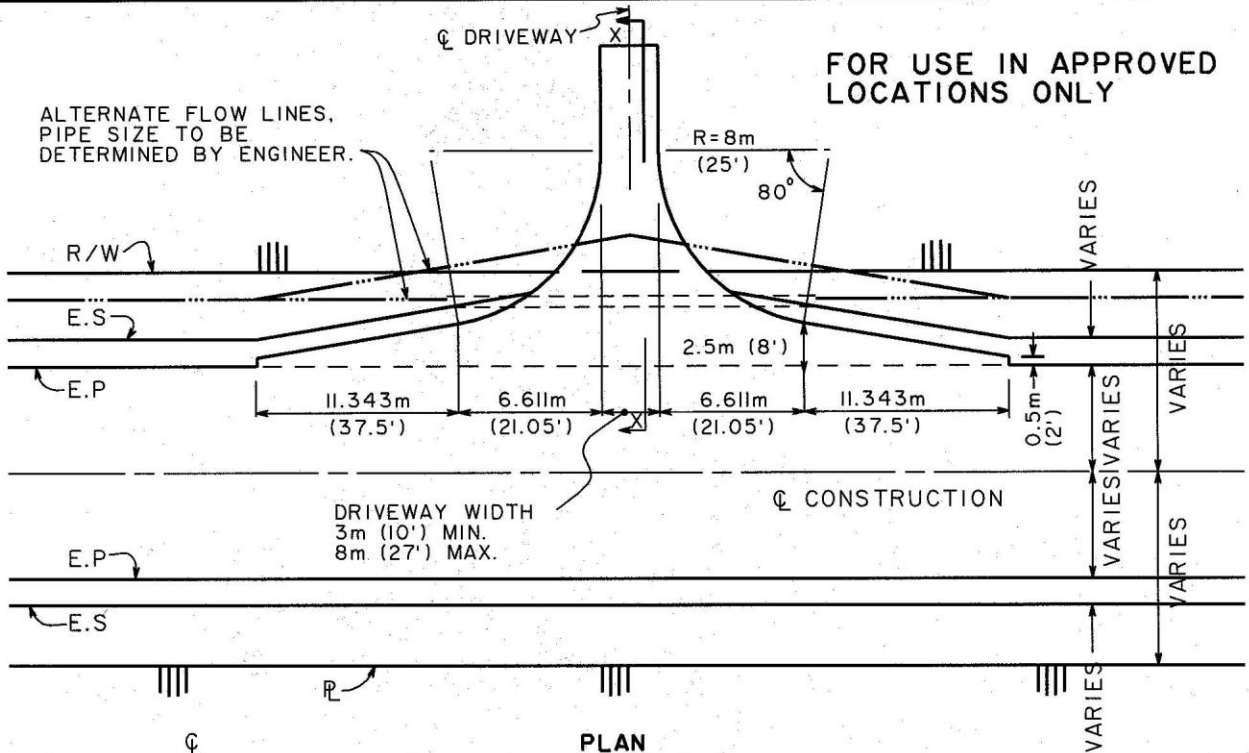
RECOMMENDED:

Although
RCE 50408
EXPIRES 06-30-01

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

SURVEY MONUMENT



1. The total sum of all driveway widths (exclusive of radii) shall be limited to 20% of the property frontage. at least one 8m (27') driveway will be allowed on each lot.
2. Minimum distance between drives shall be 9m (28') on the same property.
3. Approved locations will generally include areas of a rural nature where curbs are not installed and where curb installation in the future is unlikely and where the ADT is greater than 1000.
4. Base under driveway may be omitted where natural ground has adequate structural strength on approval of the engineer.
5. Design of pipe per Road Standards Plate A-4 Sections 4.4 and 4.6.

ADOPTED BY BOARD OF SUPERVISORS: 12-17-02

APPROVED: *Ronald J. Flores*

DIRECTOR OF PUBLIC WORKS

RECOMMENDED: *A. H. Prince*

RCE 50408
EXPIRES 06-30-05

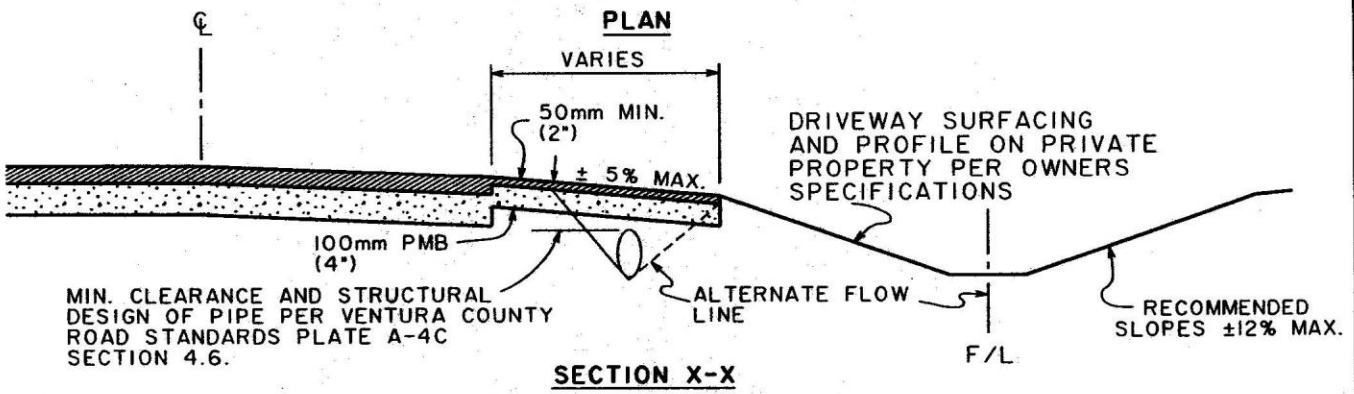
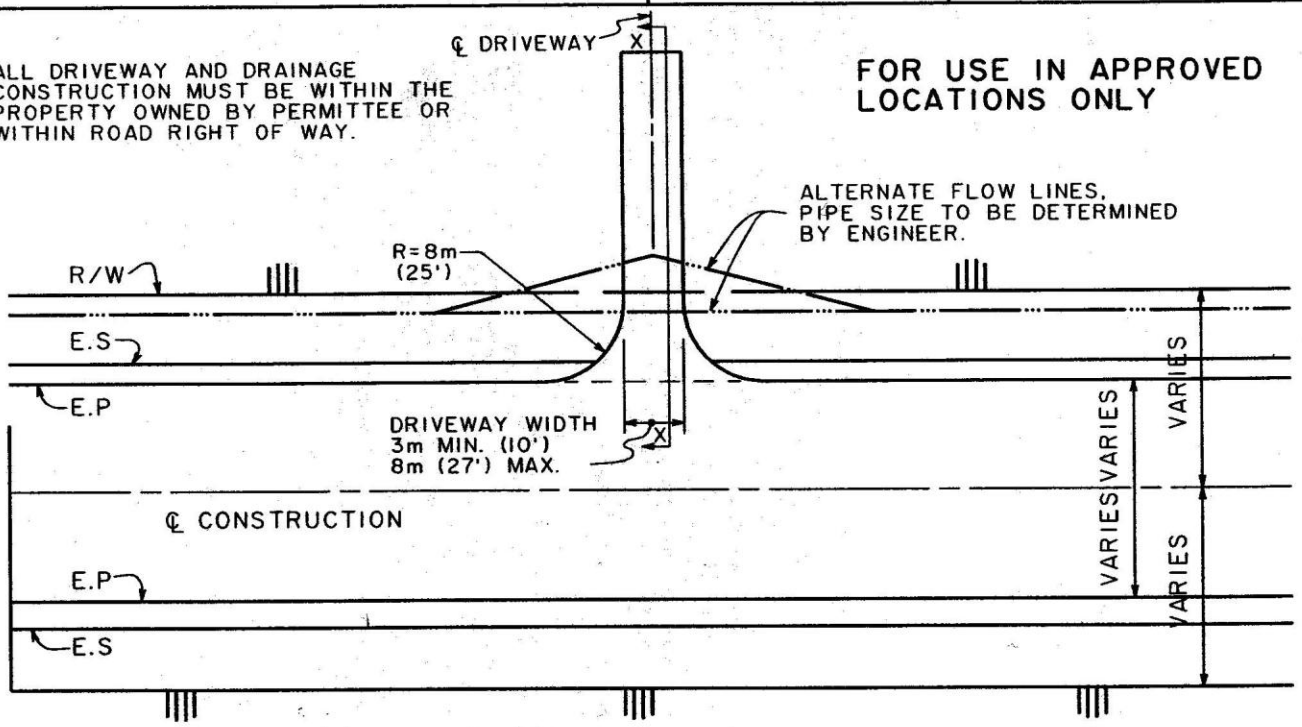
COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

RURAL DRIVEWAY
ADT > 1000

ALL DRIVEWAY AND DRAINAGE CONSTRUCTION MUST BE WITHIN THE PROPERTY OWNED BY PERMITTEE OR WITHIN ROAD RIGHT OF WAY.

FOR USE IN APPROVED LOCATIONS ONLY



1. Total sum of all driveway widths (exclusive of radii) shall be limited to 20% of the property frontage. At least one 8m (27') driveway will be allowed on each lot.
2. Minimum distance between drives shall be 9m (28') on the same property.
3. Approved locations will generally include areas of a rural nature where curbs are not installed and where curb installation in the future is unlikely and where the ADT is 1000 or less.
4. Base under driveway may be omitted where natural ground has adequate structural strength on approval of the engineer.

ADOPTED BY BOARD OF SUPERVISORS: 03-20-01

APPROVED:

Ronald C. Brown

DIRECTOR OF PUBLIC WORKS

RECOMMENDED:

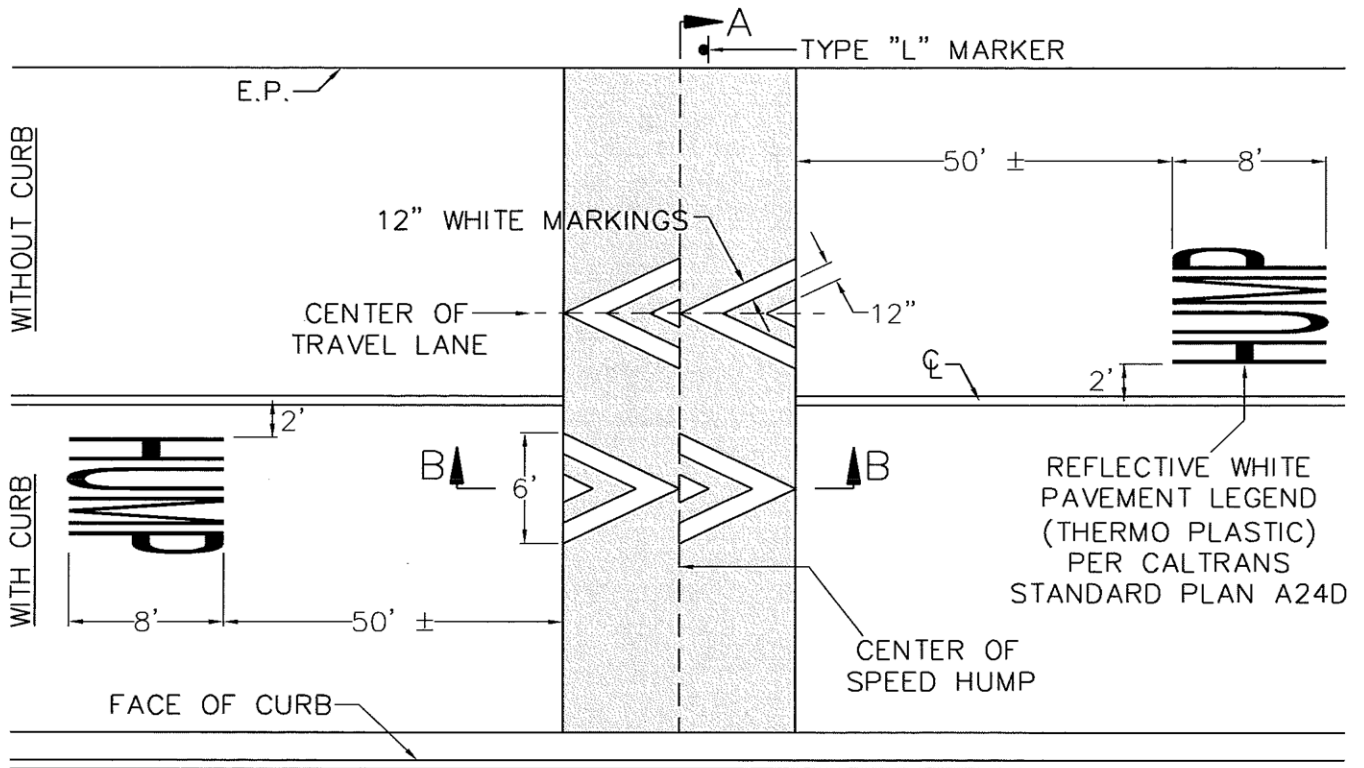
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RCE 50408
EXPIRES 06-30-01

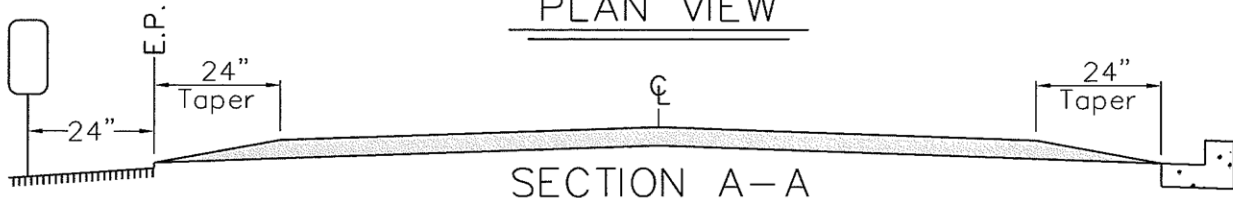
COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

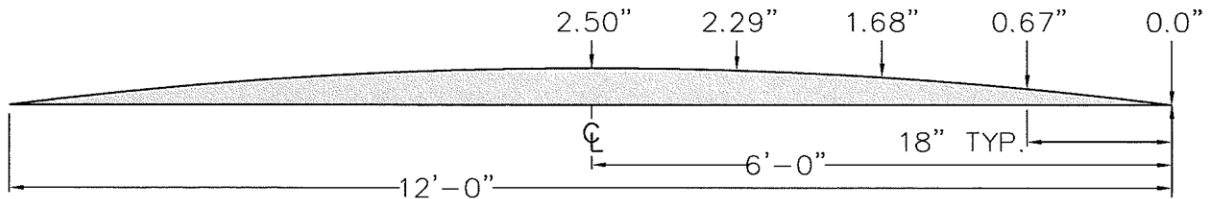
RURAL DRIVEWAY ADT
≤ 1000



PLAN VIEW



SECTION A-A



SECTION B-B

NOTE:

1. Speed humps may be installed only if approved by the Road Commissioner.
2. A warning sign stating "Speed Hump" (W17-1) shall be placed at the approach to the first hump. Signs shall be of high intensity sheeting (30"x30"). Co-mount a W13-1 "10 MPH" (24"x24") warning sign per CALTRANS standards.

ADOPTED BY BOARD OF SUPERVISORS: 07-16-13

APPROVED:

[Signature]

DIRECTOR OF PUBLIC WORKS

RECOMMENDED:

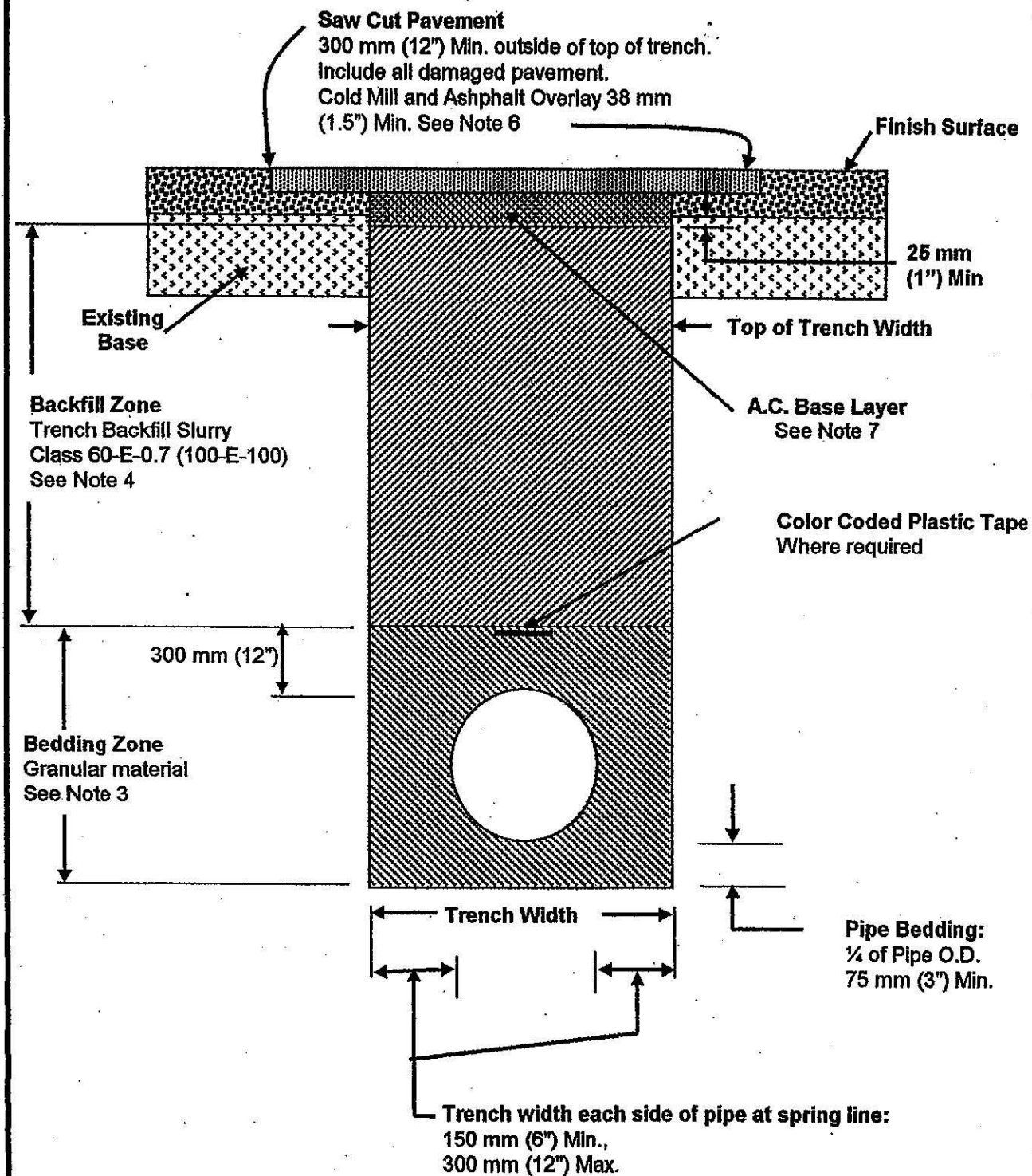
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RCE 33532
EXPIRES 06-30-14

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

SPEED HUMP



ADOPTED BY BOARD OF SUPERVISORS: 06/21/05

APPROVED:

Donald C. Coors
DIRECTOR OF PUBLIC WORKS

RECOMMENDED:

Mike T. Pringle

RCE 50408
EXPIRES 06-30-05

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
ROAD STANDARDS

TRENCH BEDDING AND BACKFILL
IN EXISTING PAVEMENT

NOTES:

1. Construction shall conform to Standard Land Development Specifications (SLDS) except as noted.
2. Trench width shall be as shown unless otherwise shown on the approved plans.
3. Bedding material shall be granular with 100% passing 19 mm (¾") sieve, 90 to 100% passing the 9.5 mm (3/8") sieve and not more than 4% passing 75 µm (No. 200 sieve).
4. Backfill between the bedding zone and subgrade shall be Trench Backfill Slurry Class 60-E-0.7 (100-E-100). The Director of Public Works may approve the substitution of one of the following:
 - a. Controlled Low Strength Material (SLDS 201-6), provided that laboratory control is provided to insure compliance with the specifications.
 - b. Non-cementitious backfill, provided that the backfill is tested and certified to meet the approved specifications for the material by an independent testing laboratory (SLDS 306-1.3). A Quality Control Plan shall be submitted for approval.
5. Compaction shall not use flooding, ponding or jetting unless directed by Soils Engr.
6. A.C. Overlay shall be Class III-C2-AR-4000 or III-C2-AR-8000, 38 mm (1.5") min.
7. AC Base Layer
 - a. Where existing pavement surface is AC the AC Base Layer thickness shall be equal to or greater than the existing AC thickness plus 25 mm (1") with a minimum of 75 mm (3") and a maximum of 200 mm (8"). For roads where Traffic Index is 7.0 or greater (Plates B-2, B-3 & B-7a), the AC Base layer thickness shall be 100 mm (4") min.
 - b. Where existing pavement surface is PCC pavement, saw cut 50 mm (2") into the existing pavement at the outer edge of the trench and break the remaining thickness. Replace the PCC and base to the same depth as the existing pavement. The PCC shall be 330-AS-23 (560-A-3250).

ADOPTED BY BOARD OF SUPERVISORS: 06/21/05

APPROVED:

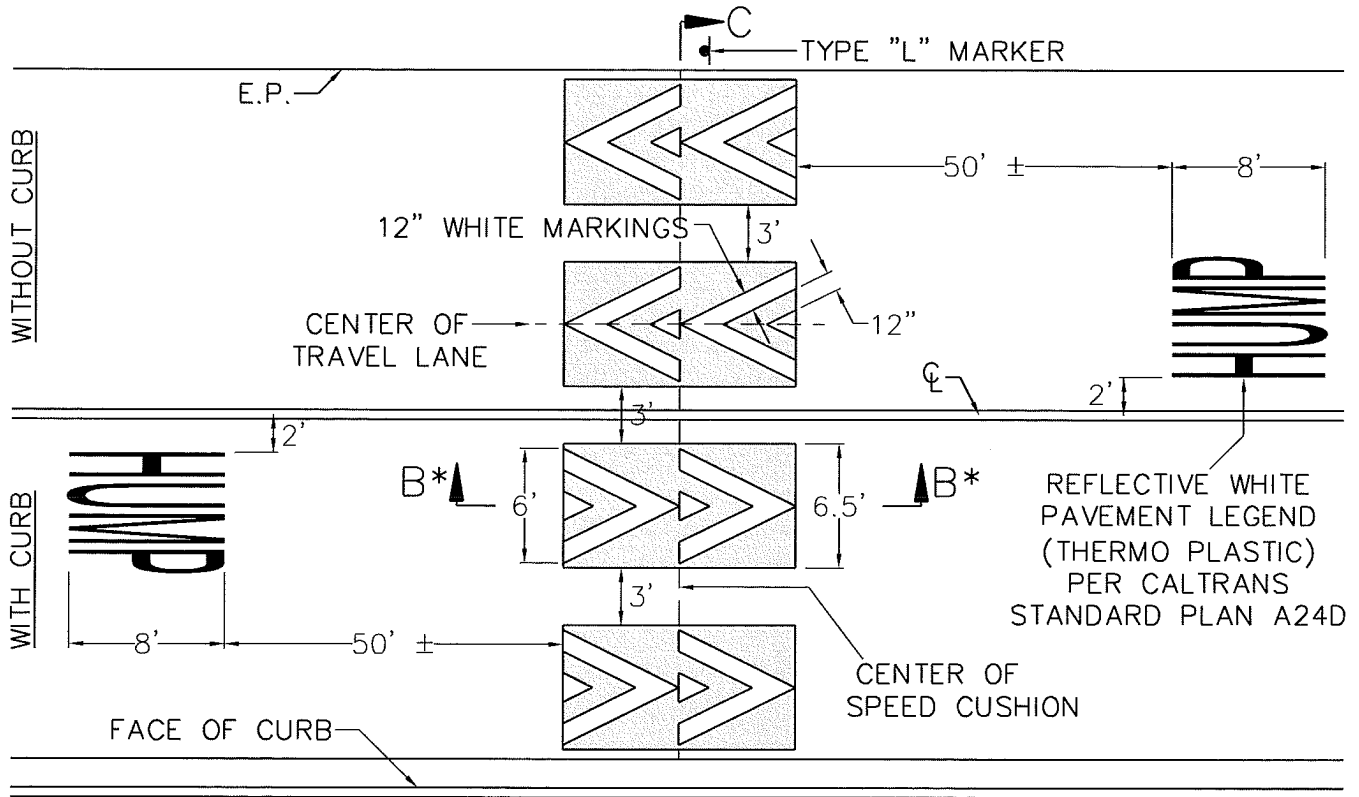
Ronald P. Hoover
DIRECTOR OF PUBLIC WORKS

RECOMMENDED:

Mike T. Pringle
RCE 50408
EXPIRES 06-30-05

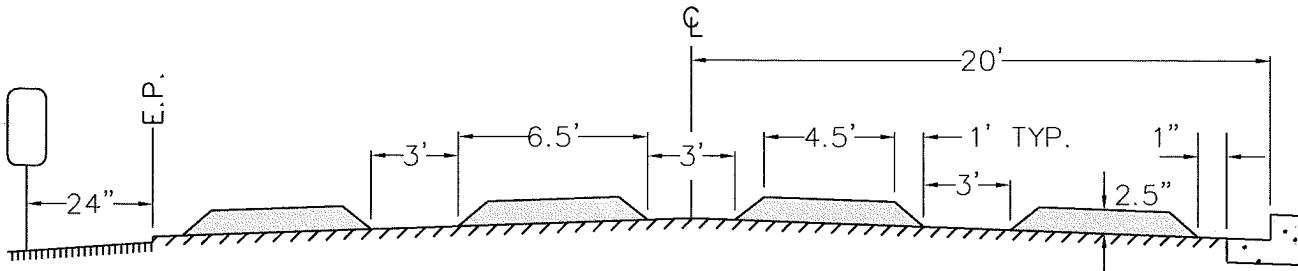
COUNTY OF VENTURA
PUBLIC WORKS AGENCY
ROAD STANDARDS

TRENCH BEDDING AND BACKFILL
IN EXISTING PAVEMENT



* See Section B-B on Speed Hump
Road Standard on PLATE E-9

PLAN VIEW



SECTION C-C

NOTE:

1. Speed cushions may be installed only if approved by the Road Commissioner.
2. A warning sign stating "Speed Hump" (W17-1) shall be placed at the approach to the first cushion. Signs shall be of high intensity sheeting (30"x30"). Co-mount a W13-1 "10 MPH" (24"x24") warning sign per CALTRANS standards.
3. For two-lane roads with a traveled way width of 24 ft or less, use the design shown above while omitting the two outer speed cushions.

ADOPTED BY BOARD OF SUPERVISORS: 07-16-13

APPROVED:

[Signature]

DIRECTOR OF PUBLIC WORKS

RECOMMENDED:

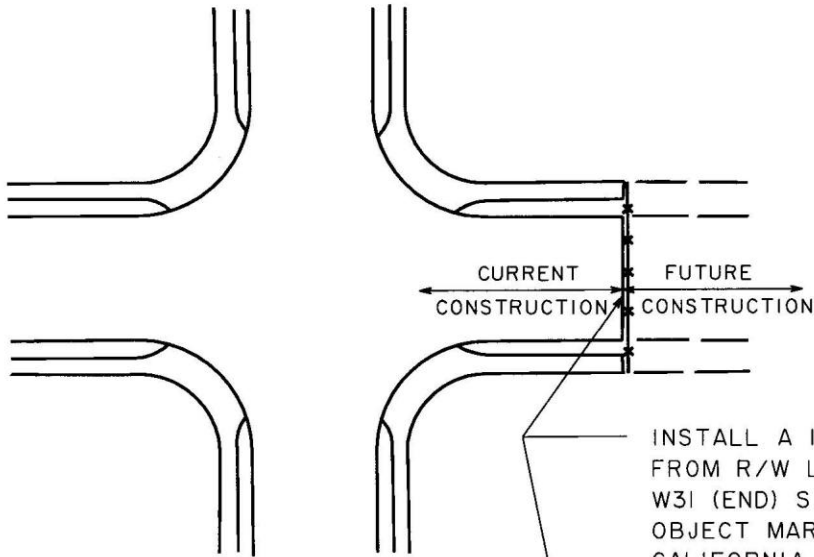
[Signature]

RCE 33532
EXPIRES 06-30-14

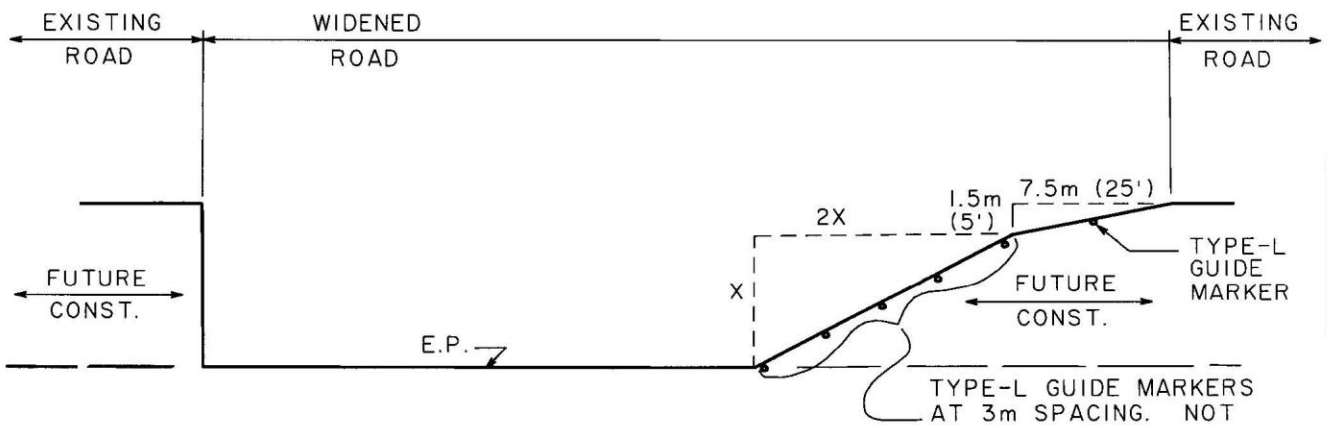
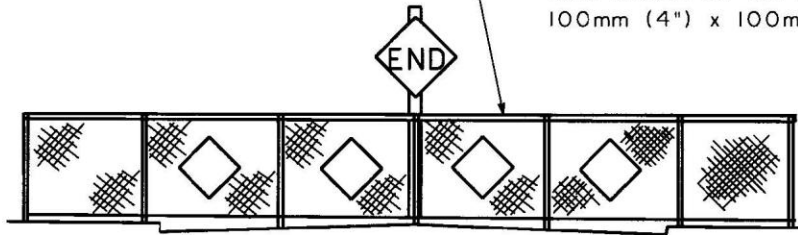
COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

SPEED CUSHION



INSTALL A 1.2m (4') HIGH CHAIN LINK FENCE FROM R/W LINE TO R/W LINE, WITH ONE W31 (END) SIGN AND FOUR TYPE N-2 (RED) OBJECT MARKERS. SIGNS TO COMPLY WITH CALIFORNIA TRAFFIC MANUAL AND FENCE TO COMPLY WITH SUBSECTION 304-3 OF THE STANDARD LAND DEVELOPMENT SPECIFICATIONS. THE W31 (END) SIGN SHALL BE 750mm (30") x 750mm (30") AND MOUNTED ON A 100mm (4") x 100mm (4") REDWOOD POST.



ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Arthur W. Gould
DIRECTOR OF PUBLIC WORKS

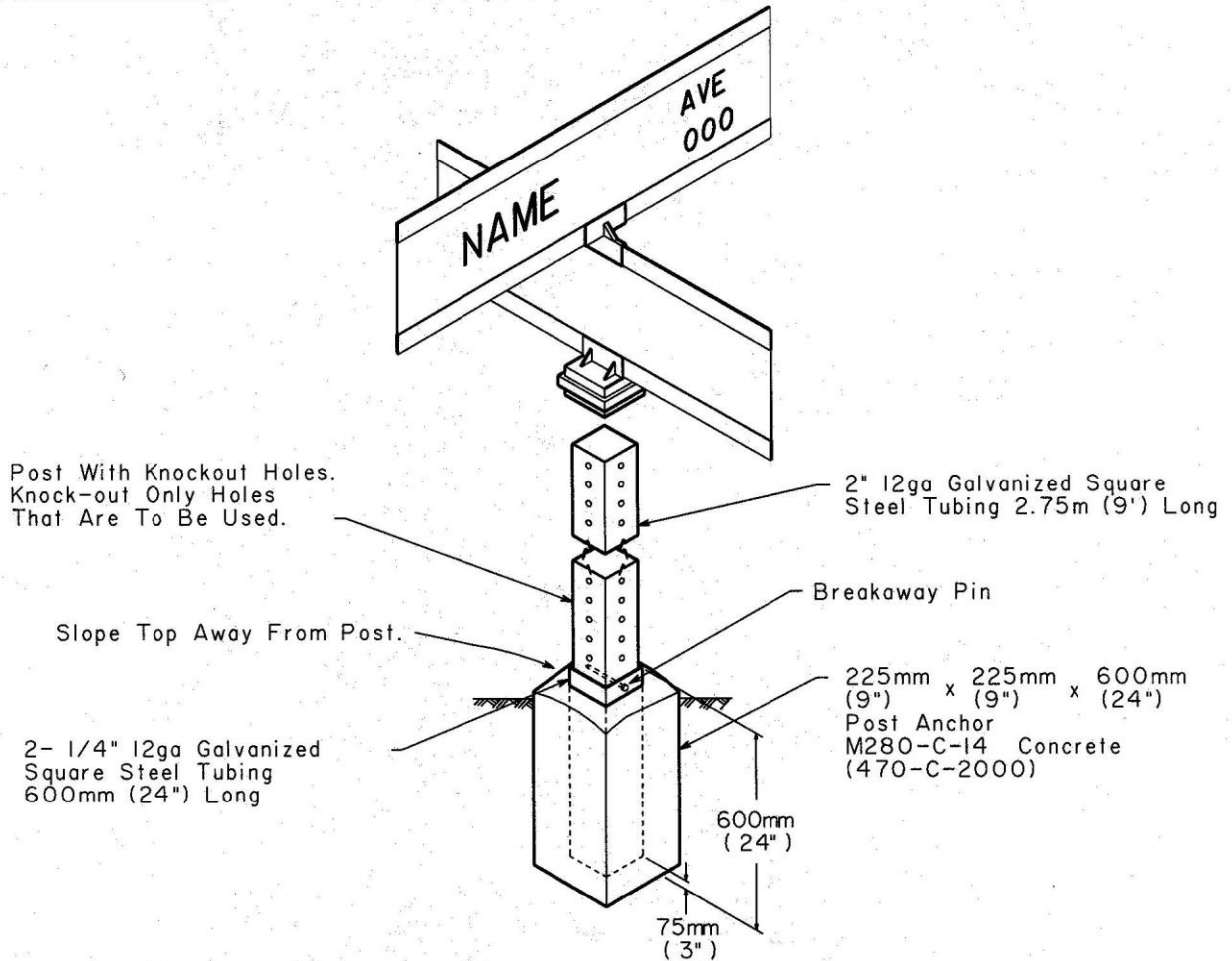
RECOMMENDED:

Al Pringle
RCE 50408
EXPIRES 06-30-01

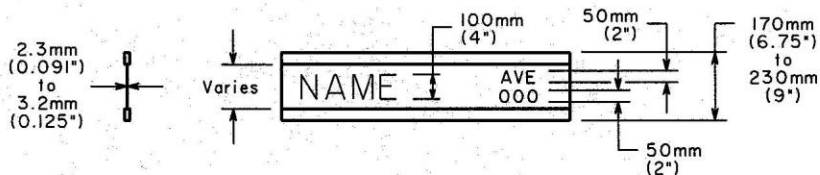
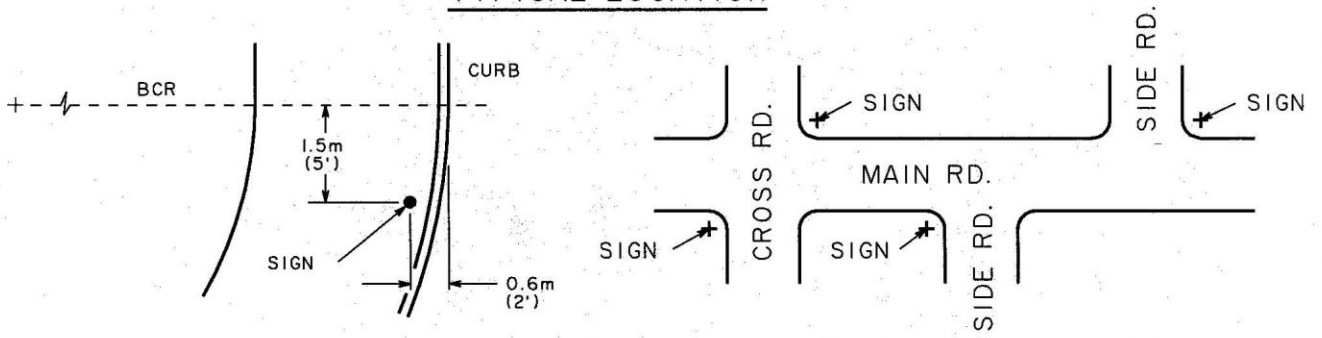
COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

TEMPORARY TERMINATION
OF ROAD IMPROVEMENTS



TYPICAL LOCATION



ADOPTED BY BOARD OF SUPERVISORS: 12-17-02

APPROVED:

Donald L. Lewis

DIRECTOR OF PUBLIC WORKS

RECOMMENDED:

AT Pringle

RCE 50408
EXPIRES 06-30-05

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

ROAD INTERSECTION
NAME SIGN

PRIVATE ROAD NAME SIGNS

ROAD NAME PRIVATE

Where a private road intersecting a county road is designed in accordance with Plate D-5 or D-6, a private road name sign may be installed on the same post with a county road name sign.

In all other cases, the private road name sign shall not be within the road right of way.

SPECIFICATIONS

DESIGN: Road signs shall consist of two double face signs and have a positive locking device which will keep the signs mounted at right angles, with road name and block number. The road name shall appear on the sign as shown on the official Record Map. Block numbers will be supplied by the Ventura County Building and Safety Department.

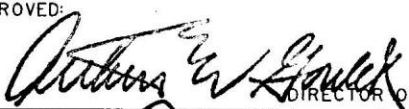
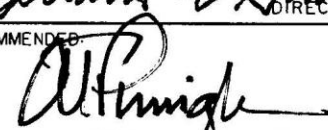
SIZE: Length of sign may be 600mm (24"), 750mm (30") or 900mm (36").
Maximum width 230mm (9") at center.

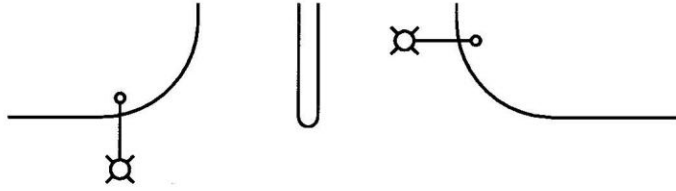
MATERIAL: Signs shall be commercially available signs meeting the State of California Department of Transportation (CALTRANS) specifications. Signs and fittings shall be made of aluminum, anodized or processed, to prevent corrosion.

FINISH: Signs shall have high intensity reflective sheeting finish, applied per CALTRANS specifications. Background to be green, letters and numbers to be white.

LETTERING: Road name letters shall be 100mm (4") high U.C. letters. The designation of street, avenue, etc., and numbers shall be 50mm (2") U.C. letters. The letters shall be of the open capital type as set forth by the "Manual of Uniform Traffic Control Devices for Streets and Highways" (latest edition). Road name letters and numbers shall be individually laid out to fit either the 600mm (24"), 750mm (30") or 900mm (36") space.

GUARANTEE: All road signs shall be guaranteed for seven years against chalking and/or fading due to normal atmospheric corrosion.

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00	COUNTY OF VENTURA PUBLIC WORKS AGENCY
APPROVED:  DIRECTOR OF PUBLIC WORKS	ROAD STANDARDS
RECOMMENDED:  RCE 50408 EXPIRES 06-30-01	ROAD INTERSECTION NAME SIGN

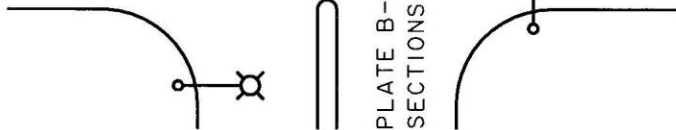


PRIMARY TO PRIMARY



PRIMARY TO SECONDARY (CONTROLLED)

PLATE B-2 SECTIONS



SECONDARY (CONTROLLED) TO SECONDARY (CONTROLLED)

PLATE B-2 SECTIONS

SECONDARY (CONTROLLED) TO SECONDARY (FREE)

PRIMARY TO SECONDARY (FREE)

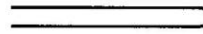
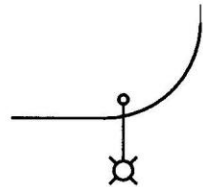


PLATE B-3 SECTIONS



PLATE B-2 SECTIONS

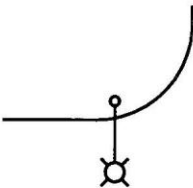
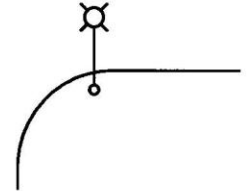
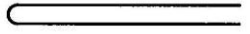
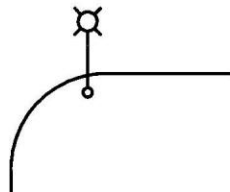


PLATE B-3 SECTIONS

SECONDARY (FREE) TO SECONDARY (FREE)



PLATE B-3 SECTIONS



ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Antonio W. Spulek
DIRECTOR OF PUBLIC WORKS

RECOMMENDED:

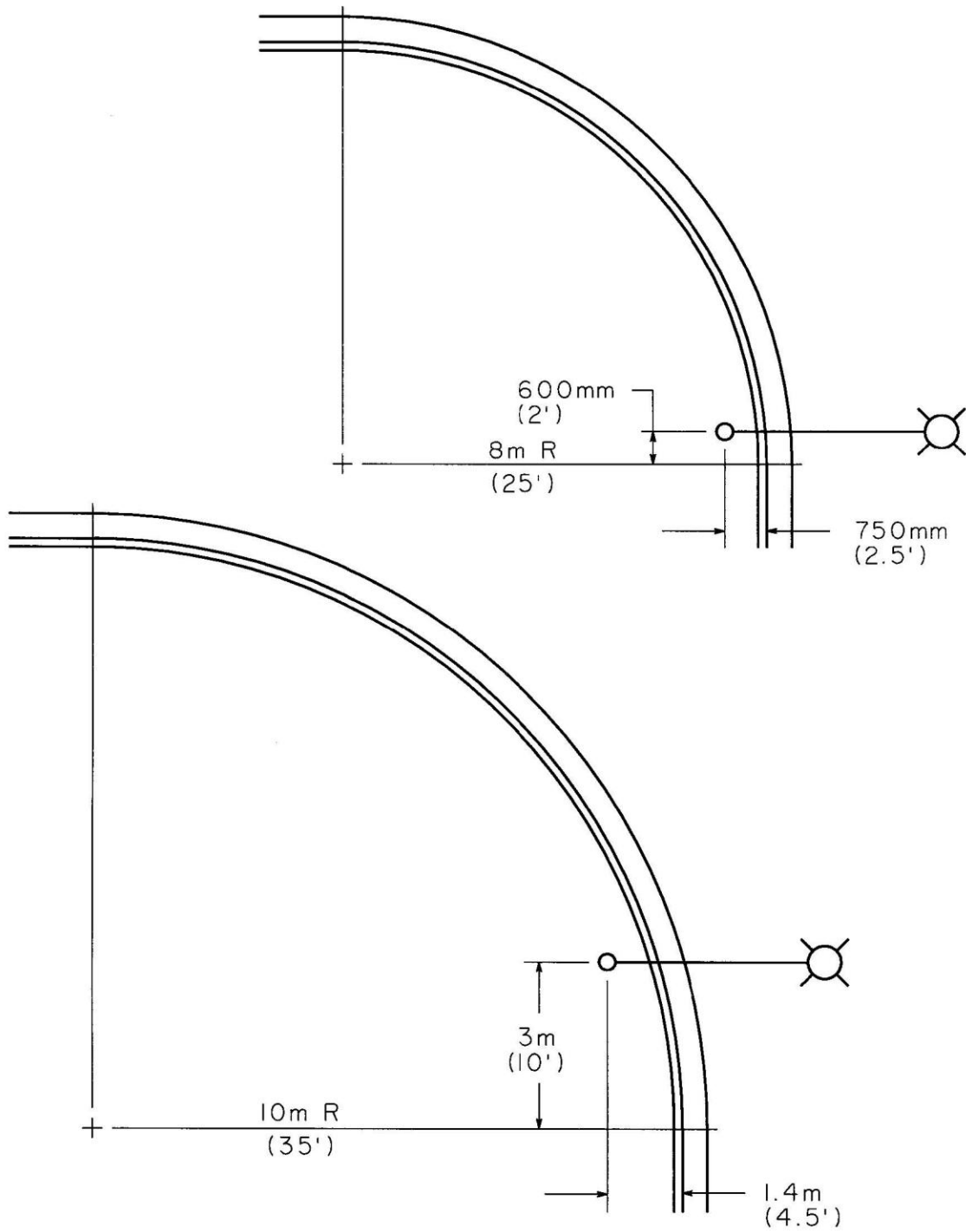
Al Hinnigh

RCE 50408
EXPIRES 06-30-01

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

INTERSECTION LIGHTING



ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Arthur W. Gaudet
DIRECTOR OF PUBLIC WORKS

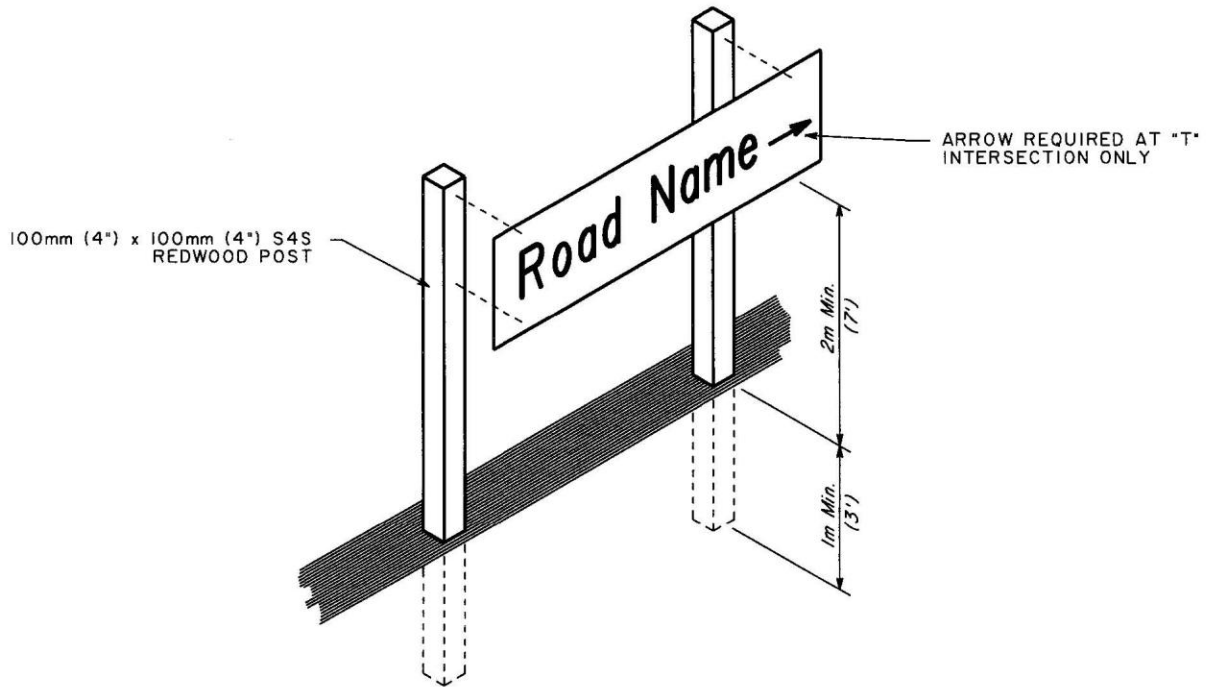
RECOMMENDED:

A. P. Hingh
RCE 50408
EXPIRES 06-30-01

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

ELECTROLIER LOCATION



DESIGN: Signs shall consist of one single face sign with cross road name and arrow, if applicable.

MATERIAL: Signs shall be manufactured by applying reflective sheeting and letters to sheet aluminum or plywood in conformance with State of California, Department of Transportation (CALTRANS) specifications. A list of manufacturers whose signs meet State specifications will be maintained by the Public Works Agency. Aluminum nuts, bolts, and washers may be substituted for galvanized hardware.

FINISH: Signs shall have reflective sheeting finish per CALTRANS specifications. Background to be green, letters and numerals shall be white.

LETTERING: Road name letters shall be 150mm (6") upper case and 100mm (4") lower case type E letters. Letter and border spacing shall conform to CALTRANS specifications.

LOCATION: Advance road name signs shall be installed on all primary and secondary roads approximately 100m (300') in advance of all cross road intersections. Signs shall be placed in conformance with CALTRANS Traffic Manual. On free access secondary roads, signs to be installed only when required as a condition of approval.

ADOPTED BY BOARD OF SUPERVISORS: 03-14-00

APPROVED:

Antonio V. Gould
DIRECTOR OF PUBLIC WORKS

RECOMMENDED:

A. P. ...
RCE 50408
EXPIRES 06-30-01

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

ADVANCE ROAD NAME SIGNS

Roadway lighting, when required, shall conform to the following table:

PLATE

<u>NO.</u>	<u>ROAD CLASS</u>	<u>LUMEN</u>	<u>SPACING</u>
B-2[A]	Primary Controlled Access		
	Commercial	22000	60 m-75 m (200'-250') both sides of median
	Residential	16000	60 m-75 m (200'-250') both sides of median
B-2[B]	Secondary Controlled Access		
	Commercial	22000	60 m-75 m (200'-250') both sides of median
	Residential	16000	60 m-75 m (200'-250') both sides of median
B-3[A]	Secondary Free Access and nonconforming roads with more than two lanes of traffic		
	Commercial	22000	60 m-75 m (200'-250') staggered both sides
	Residential	5800	55 m-70 m (180'-240') staggered both sides
B-3[B]	Industrial & Commercial	22000	60 m-75 m (200'-250')
B-3[C]	Industrial & Commercial	22000	60 m-75 m (200'-250')
B-3[D]	Industrial & Commercial low traffic		
		5800	@Intersections only
B-5[A]	Collector		
	Commercial	22000	60 m-75 m (200'-250') both sides
	Residential	5800	55 m-70 m (180'-240')
B-5[B]	Residential- Minor	5800	55 m-70 m (180'-240')
B-5[C]	Residential-Loop & Cul-de-Sac		
		5800	55 m-70 m (180'-240')
B-7[A]	Rural Road and non-conforming roads with less than 18 m (60') of R/W		
		22000	@Intersections only
B-7[B]	Rural collector and Non-conforming roads with 18 m (60') or greater R/W and two lanes of traffic		
		22000	@intersections only

NOTES:


- 1 Only high pressure sodium vapor lights shall be used.
- 2 Public works director may modify these requirements.
- 3 Intersection lighting shall be as shown on Plates F-6 & F-7.
- 4 Glare shields may be required when their need is indicated.
- 5 These spacing requirements are for straight level roads. Winding roads and steep (>5%) or hilly roads may require additional lighting.
- 6 Mounting shall be 7.6 m - 8.5 m (25' - 28') for 5800 Lumen lights and 8.5 m - 9.8 m (28' - 32') for 16000 and 22000 Lumen lights.

ADOPTED BY BOARD OF SUPERVISORS: 00/00/00

APPROVED:


DIRECTOR OF PUBLIC WORKS

RECOMMENDED:


RCE 50408
EXPIRES 06-30-01

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
ROAD STANDARDS

ROADWAY LIGHTING

COUNTY OF VENTURA PEDESTAL PLACEMENT POLICY

A "pedestal" is an above-ground structure which often serves as a junction or service box for utility company facilities. These pedestals are used by companies such as cable television, telephone and electric. It is the preference of the County of Ventura that utility boxes be at ground level when located within the road right of way, or located outside of the road right of way. However, the County recognizes undergrounding is not always operationally or economically practical and, therefore, establishes the following policy for the placement of utility pedestals. For the purpose of these policies, pedestals will be broken into two categories, "small" and "large". Small pedestals are defined as being less than 0.6 m (24") in height and less than 0.3 m (12") by 0.3 m (12") in area. Large pedestals will be all others.

- 1) Where curb and gutter, parkway and sidewalk exists or is proposed, the small pedestal should be placed behind the sidewalk or outside of the road right of way, and the large pedestal may be placed in the parkway.
- 2) Where only curb and gutter exists or is proposed, the small pedestal should be placed a minimum distance of 1.5 m (5') behind the curb or outside of the road right of way, and the large pedestal may be placed behind the curb and gutter.
- 3) For all other roads, the pedestal should be placed a minimum distance of 3 m (10') from the edge of pavement for roads without paved shoulders or a minimum of 1.5 m (5') from the edge of pavement for roads with 1.5 m (5') or more paved shoulders.
- 4) Exceptions, waivers or variances to these policies may be granted on a case-by-case basis with review and approval by the Road Commissioner or his authorized representative.
- 5) This policy is not retroactive.

Adopted by the Board of Supervisors on September 16, 1986

**EXCERPTS FROM ORDINANCE GOVERNING ENCROACHMENTS
ON COUNTY HIGHWAYS**

Section 12404 - PRESERVATION OF SURVEY MONUMENTS - A monument set for the purpose of preserving survey points, lines or elevation shall not be removed or disturbed without first obtaining permission from the Commissioner. Replacement of a removed or disturbed monument shall be done by a registered civil engineer or a licensed land surveyor and shall be at the expense of the permittee.

Section 12408 -MINIMUM COVER - The minimum cover over any pipe or conduit installed under any public highway shall be 0.8 m (30") of material measured vertically from the existing or proposed flowline of the nearest gutter to the top of the pipe or conduit. If a gutter flowline is not established, the cover shall be 0.8 m (30") of material measured from the surface of the nearest outermost edge of the traveled way to the top of the pipe or conduit. Where there are existing curbs and gutters or where curbs and gutters are under construction, utilities may maintain a minimum 0.4 m (16") of cover starting one foot back of the curblines in the parkway or sidewalk areas. The Commissioner may permit the installation of pipes or conduits at lesser depths where the required cover cannot be provided or where the Commissioner determines that special construction techniques will be employed which will preclude the need for greater depth and will produce a more beneficial installation.

**COUNTY OF VENTURA
REVISED SPEED
HUMP/CUSHION POLICY**

Approved by the Board of Supervisors on July 16, 2013

POLICIES	
1	<p>Speed humps/cushions will be installed only:</p> <ul style="list-style-type: none"> • If the location meets the warrants established by the Board of Supervisors. • Upon receipt of the required petition or when the Road Commissioner or his designee initiates the proposal <li style="text-align: center;">-and- • The Board of Supervisors or the Road Commissioner or his designee approves the request <li style="text-align: center;">-and- • In conformance with the standard design in effect at the time of installation. <p>A petition for installation of speed humps/cushions must be signed by a minimum of 67% of the property owners on the street or the portion of the street affected concurring in the proposed installation. The petition must contain language to the effect that, if the petition is approved, the petitioners must deposit with the Public Works Agency funds in the estimated amount of the cost of installation of the speed humps/cushions before work will be authorized.</p>
2	<p>Since speed humps/cushions are located in the travelway, additions, alterations, or removals of any or all speed humps/cushions may be directed at any time.</p>
3	<p>Prior to the approval of new speed humps/cushions on any street, the County Traffic Engineer must request concurrence from the Ventura County Fire Protection District, the Sheriff's Department, and the California Highway Patrol within 20 calendar days.</p>
4	<p>Speed-hump/cushion construction costs must be paid by the property owners who sign the required petition. If the Road Commissioner or his designee originates a proposal and the property owners concur, construction costs will be paid by the County.</p>
5	<p>The Transportation Department will reassess the speed-hump/cushion program and report to the Board of Supervisors at approximately five-year intervals. Critical program issues that require Board action prior to the five-year review will be scheduled for policy guidance.</p>

Revised 6/24/13

**COUNTY OF VENTURA
SPEED HUMP/CUSHION WARRANTS**

Approved by the Board of Supervisors on July 16, 2013

WARRANTS		Satisfied	
		Yes	No
1	<p>The road must be either a residential road or a local road defined as follows:</p> <p>a. A residential road, or "residence district," as defined in California Vehicle Code Section 515 is that portion of a highway and the property contiguous thereto, other than a business district, (a) upon one side of which highway, within a distance of a quarter of a mile, the contiguous property fronting thereon is occupied by 13 or more separate dwelling houses or business structures, or (b) upon both sides of which highway, collectively, within a distance of a quarter of a mile, the contiguous property fronting thereon is occupied by 16 or more separate dwelling houses or business structures. A residence district may be longer than one-quarter of a mile if the above ratio of separate dwelling houses or business structures to the length of the highway exists. The "residence district" determination must be consistent with California Vehicle Code Section 240.</p> <p>Buildings must be located within 75 feet of the roadway curb face or edge of pavement and they must face and gain access from the road, to be considered as "fronting" on the road.</p> <p>b. A local road is defined for the purpose of this guideline as a road intended primarily to provide direct access to abutting residential buildings. Residential buildings include separate dwelling houses, apartment buildings, or multiple dwelling houses.</p>		
2	The speed limit on the road must be 25 miles per hour or less, established in accordance with State law or Board of Supervisors' action.		
3	A speed survey must show that 67 percent of the motorists exceed the 25-miles-per-hour speed limit.		
4	The road must have a paved width of 40 feet or less and no more than two traffic lanes.		
5	The average traffic volume must be greater than 1,000 vehicles in a 24-hour period.		
6	<p>No speed hump/cushion may be installed on any street where the Road Commissioner or his designee determines it cannot be safely installed due to:</p> <p>a. Severe horizontal or vertical curves</p> <p>b. Inadequate sight distance to the humps/cushions</p> <p>c. Excessive street downgrades</p>		
7	No speed hump/cushion may be installed on any street where the Road Commissioner or his designee determines it will create equal or greater traffic problems by causing traffic diversion to a nearby residential or local road.		

Revised 6/24/13

ROAD STANDARDS - Revision Dates					Page 1 of 6 pages		
PLATE	Original	Rev. A	Rev. B	Rev. C	Rev. D	Rev. E	Rev. F
A-1	02/06/62	03/26/68	06/12/73	03/04/75	04/15/80 02/19/91	12/16/97	03-14-00
A-1a	01/27/98	03-14-00					
A-2	02/06/62	03/26/68	06/12/73	04/15/80	01/05/82	01/28/86	02/19/91
A-2a	04/15/80	02/19/91	12/16/97	03-14-00			
A-3	02/06/62	03/26/68	06/12/73	04/15/80 02/19/91	03-14-00		
A-3a	04/15/80	Deleted 03-14-00					
A-4	02/06/62	03/26/68	04/15/80	03-14-00			
A-4a	04/15/80 02/19/91	03-14-00					
A-4b	04/15/80	02/19/91	03-14-00				
A-4c	04/15/80	11/10/81	01/28/91 02/19/91	03-14-00			
A-4d Text **	11/10/81	09/27/83	12/09/86	05/12/87	05/09/89	03-14-00 Deleted	
A-4d Curb Drain	03-14-00						
A-4e	12/09/86	05/09/89	Deleted 03-14-00				
A-5	02/06/62	03/26/68	04/15/80	01/28/86	03-14-00		
A-6	02/06/62	03/26/68	04/15/80	03-14-00			
A-6a	04/15/80	03-14-00					
A-6b	04/15/80	03-14-00					
A-6c	04/15/80	11/16/82	03-14-00				
A-6d	04/15/80	03-14-00					
A-7	02/06/62	03/26/68	06/12/73	Deleted 04/15/80	12/16/97	03-14-00	

* There are two revisions with the same letter designation.

** When A-4 (Curb Drain) was added, it was marked original.

The dates show their effective periods of application.

Numbering of plates with the same basic number has varied with different editions of these Standards, i.e. "A-4.3" ,"A-4c" and "A-4C" all refer to the same plate. The 1999 revisions have standardized the numbering system in the style "A-4a".

ROAD STANDARDS - Revision Dates					Page 2 of 6 pages		
PLATE	Rev G	Rev. H	Rev. H	Rev. J	Rev. K	Rev. L	Rev. M
A-1							
A-1a							
A-2	03-14-00						
A-2a							
A-3							
A-3a							
A-4							
A-4a							
A-4b							
A-4c							
A-4d							
A-4e							
A-5							
A-6							
A-6a							
A-6b							
A-6c							
A-6d							
A-7							

ROAD STANDARDS - Revision Dates					Page 3 of 6 pages		
PLATE	Original	Rev. A	Rev. B	Rev. C	Rev. D	Rev. E	Rev. F
B-1	02/06/62	03/01/66	03/26/68	06/12/73	04/15/80	02/19/91	03-14-00
B-1a	04/15/80	07/19/83	01/28/86	02/19/91	12/16/97	03-14-00	
B-1b	01/28/86	02/19/91	12/16/97	03-14-00			
B-2	02/06/62	03/01/66	03/26/68	06/12/73	04/15/80	07/19/83	01/28/86
B-3	02/06/62	03/01/66	06/12/73	04/15/80	07/19/83	01/28/86	12/09/86
B-4	02/06/62	03/01/66	06/12/73	04/15/80	07/19/83	01/28/86	Deleted 02/19/91
B-5	02/06/62	03/01/66	06/12/73	04/15/80	07/19/83	01/28/86	02/19/91
B-5a	None	None	None	None	None	None	02/19/91
B-6	02/06/62	03/01/66	06/12/73	04/15/80	10/21/80	07/19/83	01/28/86
B-7	02/06/62	03/01/66	06/12/73	04/15/80	01/28/86	12/09/86	03-14-00
B-8	03/01/66	03/26/68	06/12/73	Deleted 04/15/80			
B-9	03/01/66	03/26/68	06/12/73	Deleted 04/15/80			
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B-11	03/26/68	06/12/73	Deleted 04/15/80				
B-12	03/26/68	06/12/73	Deleted 04/15/80				
B-13	03/26/68	06/12/73	Deleted 04/15/80				
B-14	10/03/78	Deleted 04/15/80					

ROAD STANDARDS - Revision Dates					Page 4 of 6 pages		
PLATE	Rev. G	Rev. H	Rev. I	Rev. J	Rev. K	Rev. L	Rev. M
B-1							
B-1a							
B-1b							
B-2	12/09/86	02/19/91	03-14-00	03-20-01			
B-3	02/19/91	03-14-00	03-20-01				
B-4	Deleted 02/19/91						
B-5	03-14-00						
B-5a	03-14-00						
B-6	12/09/86	Deleted 02/19/91					
B-7							
B-8							
B-9							
B-10							
B-11							
B-12							
B-13							
B-14							

ROAD STANDARDS - Revision Dates					Page 5 of 6 pages		
PLATE	Original	Rev. A	Rev. B	Rev. C	Rev. D	Rev. E	Rev. F
C-1	02/06/62	03/26/68	Deleted 09/27/83				
C-2	02/06/62	03/26/68	03/01/83	01/28/86	02/19/91	03-14-00	
C-3	02/06/62	03/26/68	06/12/73	03/01/83	02/19/91	03-14-00	
C-4	02/06/62	03/26/68	03/01/83	02/19/91	03-14-00		
C-5	03-14-00						
D-1	02/06/62	03/01/66	06/12/73	12/09/86	12/16/97 03-14-00*	03-14-00	
D-1a	03-14-00						
D-2	02/06/62	03/26/68	Deleted 02/19/91				
D-3	03/01/66	Deleted 02/19/91					
D-4	03/01/66	Deleted 02/19/91					
D-5	03/01/66	03/26/68	06/12/73	09/27/83	03-14-00	03-20-01	12-17-02
D-6	03/26/68	06/12/73	04/15/80	09/27/83	03-14-00		
D-7	03/26/68	09/27/83	02/19/91	03-14-00			
D-8	06/12/73	Deleted 03-14-00					
D-9	10/03/78	09/27/83	03-14-00				
D-10	10/03/78	04/15/80	03-14-00				
D-11	04/15/80	09/27/83	03-14-00				
D-12	09/27/83	Deleted 03-14-00					
D-13	01/28/86	05/20/86	03-14-00				

D-1 Rev E was marked as Rev D until corrected on 06-19-01.

ROAD STANDARDS - Revision Dates					Page 6 of 6 pages		
PLATE	Original	Rev. A	Rev. B	Rev. C	Rev. D	Rev. E	Rev. F
E-1	02/06/62	03/26/68	06/12/73	01/28/86	12/16/97	03-14-00	
E-1a	01/28/86	Deleted 12/16/97					
E-2	02/06/62	03/26/68	06/12/73	12/16/97	03-14-00		
E-2a	12/16/97	03-14-00					
E-3	02/06/62	03/26/68	06/12/73	11/16/82	12/16/97	03-14-00	
E-4	02/06/62	03/26/68	06/12/73	04/15/80	12/16/97	03-14-00	
E-5	02/06/62	03/26/68	06/12/73	03/04/75	10/03/78	01/28/86	Deleted 12/16/97
E-6	02/06/62	06/12/73	03-14-00	12-17-02			
E-7	02/06/62	06/12/73	03-14-00	03-20-01			
E-8	12/23/74	09/27/83	Deleted 12/16/97				
E-9	06/19/01	11/12/13					
E-10a	12/17/02	06/21/05					
E-10b	12/17/02	06/21/05					
E-11	11/12/13						
F-1	02/06/62	06/12/73	04/12/77	02/09/82	03-14-00		
F-2	02/06/62	03/26/68	Deleted 06/12/73				
F-3	02/06/62	Deleted 06/12/73					
F-4	02/06/62	03/26/68	06/12/73	11/16/82	03-14-00	12-17-02	
F-4a	03-14-00						
F-5	02/06/62	Deleted 06/12/73					
F-6	03/26/68	03-14-00					
F-7	03/26/68	03-14-00					
F-8	02/06/62	06/12/73	11/16/82	03-14-00			
F-9	04/01/69	None	02/19/91	03-14-00			
F-10	04/01/69	Deleted 02/19/91					