

# ROAD

## Design and Construction Standards

and Standard Land Development Specifications

City of

Thousand Oaks



---

City of Thousand Oaks  
Public Works Department  
2100 Thousand Oaks Boulevard  
Thousand Oaks, California 91362  
(805) 449-2400  
[www.toaks.org/roadstandards](http://www.toaks.org/roadstandards)

---

MAY 20, 2003  
Updated March 27, 2012



# City of Thousand Oaks

PUBLIC WORKS DEPARTMENT  
JAY T. SPURGIN, DIRECTOR

March 27, 2012

**NOTICE: To all Engineers and Developers Who Process Development Projects in the City of Thousand Oaks**

**SUBJECT: Revisions to City of Thousand Oaks Road Standards**

Road Standards Plate Nos. 1-8, 1-9, 1-10, 1-11, 3-10, 5-4, 7-1, 7-4, 7-5, 7-6, 7-10, 8-2, 8-3, 8-11, 8-12, 8-14, 8-17, 8-18, 8-19, and 8-20 (along with the Standard Specs) have been revised to clarify and refine various requirements. Copies of the new plates are available at the following link: <http://www.toaks.org/roadstandards>.

Please include these new sheets in your set of the May 20, 2003 Road Standards.

If you have any questions, please contact Senior Engineer Nader Heydari at (805) 449-2392, or [nheydari@toaks.org](mailto:nheydari@toaks.org)

Sincerely,

Jay T. Spurgin, P. E.  
Public Works Director

**City Departments – Distribution**

City Manager	1 copy
City Attorney	1 copy
City Clerk	1 copy
Community Dev – Planning	1 copy
Community Dev – Building	1 copy
Municipal Service Center	6 copies
Public Works - CAP	31 copies
Public Works - Front Counter	1 copy (originals) + 21 sale copies
File	1 copy

DPW:\840-10\jds\inbox\Final\Spurgin\Revised Road Standards – Notice 6.doc

CITY OF THOUSAND OAKS  
 REVISIONS TO ROAD STANDARDS AND  
 LAND DEVELOPMENT SPECIFICATIONS ADOPTED MAY 20, 2003

REVISION NO.	REVISION DATE	SPECS/PLATES REPLACED	DESCRIPTION	APPROVED BY
1	6/26/03	Plates 5-1, 5-2, 5-3	Clarification of 4 foot landing area for access ramps	JTS
2	3/22/04	Index Sheet 4, Plates 1-11, 2-2, 7-3, 8-8, 8-14	Minor corrections and clarifications	JTS
3	3/22/04	Plates 8-5, 8-10, 8-11	Clarification of street light locations and requirements	JTS
4	12/15/04	Plates 1-6, 5-1, 5-2, 5-3, 6-3, 6-4, 6-5, 8-2, 8-4, 8-11	Minor corrections and clarifications	JTS
5	10/22/08	Plates 1-5, 1-6, 1-8, 1-9, 1-10, 1-11, 2-12, 5-1, 5-2, 5-3, 5-4, 8-1, 8-2, 8-5, 8-6, 8-7, 8-13, 8-14	Revise steel plate requirements. Add detectable warning surface requirements on handicap ramp. Update asphalt designation. Revise trench requirements and minor corrections.	MAF
6	03/27/12	Index Sheets, Standard Specs, Plates 1-8, 1-9, 1-10, 1-11, 3-10, 5-4, 7-1, 7-4, 7-5, 7-6, 7-10, 8-2, 8-3, 8-11, 8-12, 8-14, 8-17, 8-18, 8-19, 8-20	Minor revisions to the following areas: work hours, BMP's, sight distance requirements, detectable warning surface callout, signage materials and specifications, new 2012 road name signs standards, location of signs in median islands, water barrier for planter curbs, sidewalk compaction, street light electrolier color, trench repair detail, remove bricks from tree planting detail, added steel trench plate detail, added curb core detail	MAF / JTS

NOTE: These Road Standards are also available on the City's website at:  
<http://www.toaks.org/roadstandards>

## TABLE OF CONTENTS INDEX OF ROAD STANDARD PLATES

CITY COUNCIL RESOLUTION NO. 2003 – 059 (MAY 20, 2003)  
STANDARD LAND DEVELOPMENT SPECIFICATIONS

### 1. STANDARD DESIGN AND CONSTRUCTION CRITERIA:

		<u>PREVIOUS PLATE NO.</u>
Plate No. 1-1	Forward	A-1
Plate No. 1-2	General Notes	A-2
Plate No. 1-3	Materials Testing	A-3
Plate No. 1-4	Road Design	A-2, A-7
Plate No. 1-5	Asphalt Surfacing	New
Plate No. 1-6	Concrete and Base Materials	New
Plate No. 1-6	Drainage Design	A-5
Plate No. 1-8	Steel Plates for Open Trenches	New
Plate No. 1-9	Traffic Control	A-7
Plate No. 1-9	Traffic Signals and Striping, and Street Trees	New
Plate No. 1-10	Trench Cut Requirements	New
Plate No. 1-11	DG Trails and Stormwater BMP's	New

### 2. ROAD CROSS SECTIONS:

Plate No. 2-1	Standard Primary Road Controlled Access	B-1
Plate No. 2-2	Standard Secondary Road Controlled Access	B-2
Plate No. 2-3	Standard Secondary Road Limited Access	B-3
Plate No. 2-4	Standard Industrial & Commercial Road Low Traffic	B-4
Plate No. 2-5	Volume	B-5
Plate No. 2-6	Standard Collector Road	B-6
Plate No. 2-7	Standard Residential Minor Road	B-7
Plate No. 2-8	Standard Residential Loop & Cul-de-Sac	B-8
Plate No. 2-9	Standard Collector Road for Hillside Developments	B-9
Plate No. 2-10	Standard Residential Minor Road for Hillside Developments	B-10
Plate No. 2-11	Standard Residential Loop & Cul-de-Sac for Hillside	B-11
Plate No. 2-12	Developments Standard Rural Road Alternate Rural & Cul-de-Sac Hillside Developments	B-12

### 3. ROAD DESIGN STANDARDS:

Plate No. 3-1	Standard Cul-de-Sac Type I	C-3
Plate No. 3-2	Standard Cul-de-Sac Type II	C-2
Plate No. 3-3	Standard Road Intersection "L" Shape	C-4
Plate No. 3-4	Standard Gated Access	New
Plate No. 3-5	Standard Superelevation Guidelines	D-5

				CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT
6	2012 REVISIONS	3-27-12	MAF	
CHG	DESCRIPTION	DATE	INITIAL	
APPROVED	 CITY ENGINEER	3-27-12	DATE	ROAD STANDARD PLATES INDEX (1 OF 4)

Plate No. 3-6	Standard Superelevation Transition	D-6
Plate No. 3-7	Standard Superelevation of Compound Curves	D-7
Plate No. 3-8	Standard Vertical Curves	D-8
Plate No. 3-9	Standard Stopping Sight Distance On Horizontal Curves	D-9
Plate No. 3-10	Intersection and Corner Sight Distance Requirements at Intersections And Driveways	D-10
Plate No. 3-11	Standard Taper for Left Turn Lane	D-11
Plate No. 3-12	Standard Parabolic Flares	D-12
Plate No. 3-13	Standard Median Islands	D-13
Plate No. 3-14	Standard Median Island Sections	D-14
Plate No. 3-15	Standard S-Islands	New

**4. STORM DRAIN STANDARDS:**

Plate No. 4-1	Storm Drain Standards	New
---------------	-----------------------	-----

**5. PEDESTRIAN ACCESS RAMP STANDARDS:**

Plate No. 5-1	Standard Curb Access Ramp - Attached Sidewalk	E-8B, E-8G,
Plate No. 5-2	Standard Curb Access Ramp - Detached Sidewalk	E-8C, E-8D, E-8E
Plate No. 5-3	Standard Curb Access Ramp Transition - Attached to Detached Sidewalk	E-11
Plate No. 5-4	Standard Curb Access Ramp Notes	E-8C, E-8F1, E-8F2

**6. DRIVEWAY DESIGN STANDARDS:**

Plate No. 6-1	Standard Driveway Grades and Design Criteria	D-15
Plate No. 6-2	Standard Residential Driveway	E-1
Plate No. 6-3	Standard Commercial Driveway	E-2, E-2C
Plate No. 6-4	Intersection - Type Commercial Driveway In 5' Parkway	E-2B
Plate No. 6-5	Intersection - Type Commercial Driveway In 10' Parkway	E-2A

**7. TRAFFIC DESIGN STANDARDS:**

Plate No. 7-1	Standard Sign Specifications	G-1
Plate No. 7-2	Standard Sign Measurements	G-2
Plate No. 7-3	Standard Advance Road Name Guide Signs	G-3
Plate No. 7-4	blank	G-4
Plate No. 7-5	blank	G-5
Plate No. 7-6	Standard Intersection Road Name Sign	G-6
Plate No. 7-7	Standard Intersection Road Name Sign Location	G-7
Plate No. 7-8	Standard Locations of Signs At Intersection	G-8
Plate No. 7-9	Standard Location of Signs On Right Side of Roads	G-9
Plate No. 7-10	Standard Location of Signs In Median Islands	G-10
Plate No. 7-11	Standard Temporary Barricade Cut-of-Wall	G-11
Plate No. 7-12	Standard Lane Drops	G-12
Plate No. 7-13	Standard Guide Marker Spacing On Curves	G-13

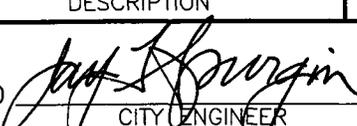
6	2012 REVISIONS	3-27-12	MAF
CHG	DESCRIPTION	DATE	INITIAL
APPROVED		3-27-12	DATE
	CITY ENGINEER		

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

ROAD STANDARD PLATES  
INDEX (2 OF 4)

**8. MISCELLANEOUS STANDARDS:**

Plate No. 8-1	Standard Bus Turnout	New
Plate No. 8-2	Standard Concrete Curb & Gutter, Curb, A.C. Berm	E-4
Plate No. 8-3	Standard Sidewalk Construction, Scoring, Cross Slopes	E-5
Plate No. 8-4	Standard Cross Gutter	E-3
Plate No. 8-5	Standard Placement of Utilities Within Street R/W	B-13
Plate No. 8-6	Standard Location of Fire Hydrant In Detached Sidewalk Areas	E-6
Plate No. 8-7	Standard Location of Fire Hydrant In Monolithic Sidewalk Areas	New
Plate No. 8-8	Standard Sidewalk Mailbox Extension Details	E-7A
Plate No. 8-9	Standard Extension Details to Existing Sidewalk	E-7B
Plate No. 8-10	Standard Electrolier Location	F-5
Plate No. 8-11	Standard Street Lighting	F-6
Plate No. 8-12	blank	F-2
Plate No. 8-13	Standard Utility Trench Compaction Specifications	F-4
Plate No. 8-14	Standard Trench Repair Within Paved Right-of-Way	F-7, F-8
Plate No. 8-15	Standard Traffic Control Chart	New
Plate No. 8-16	Standard Traffic Control Notes	New
Plate No. 8-17	Standard Tree Planting and Staking Detail	F-3
Plate No. 8-18	Standard Steel Plate Trench Detail	New
Plate No. 8-19	Standard Trench Plating Detail Notes	New
Plate No. 8-20	Standard Concrete Curb Core	New

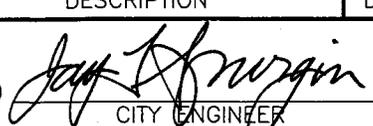
6	2012 REVISIONS	3-27-12	MAF
CHG	DESCRIPTION	DATE	INITIAL
APPROVED		3-27-12	DATE
	CITY ENGINEER		

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

ROAD STANDARD PLATES  
INDEX (3 OF 4)

**DELETED PLATES FROM PREVIOUS ROAD STANDARDS:**

Plate No. B-3 (alt)	Alternate Secondary Road Limited Access	No Longer Used
Plate No. B-5 (alt)	Alternate Collector Road	No Longer Used
Plate No. B-6 (alt)	Alternate Residential Minor Road	No Longer Used
Plate No. B-7 (alt)	Alternate Residential Loop & Cul-de-sac	No Longer Used
Plate No. C-2 (alt)	Alternate Cul-de-sac Type II	No Longer Used
Plate No. C-3 (alt)	Alternate Cul-de-sac Type I	No Longer Used
Plate No. C-4 (alt)	Alternate Road Intersection "1" Shape	No Longer Used
Plate No. E-8A	Standard Sidewalk Ramp When 12' Mm. RW Exists.	Ref Plates 5-1, 5-2
Plate No. E-9	Standard Parkway Culvert	Use SPPWC 151-1
Plate No. E-10	Standard Concrete Curb Outlet Drain	Use SPPWC 150-2
Plate No. H-1	Standard Oak Tree Cut in Slope w/ Retaining Wall	No Longer Used
Plate No. H-2	Standard Oak Tree Cut Condition	No Longer Used
Plate No. H-3	Standard Oak Tree Fill At Slope	No Longer Used
Plate No. H-4	Standard Oak Tree Fill Condition	No Longer Used
Plate No. H-5	Standard Oak Tree Cut In Slope	No Longer Used
Plate No. 7-4	Standard Vertical Height of Guide Signs	Ref MUTCD per Plate 7-6
Plate No. 7-5	Standard Reflective Letter Spacing Guide Signs	Ref MUTCD per Plate 7-6
Plate No. 8-12	Standard Centerline Survey Monument	Reference County Std.

6	2012 REVISIONS	3-27-12	MAF
CHG	DESCRIPTION	DATE	INITIAL
APPROVED		3-27-12	DATE
	CITY ENGINEER		

**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

ROAD STANDARD PLATES  
INDEX (4 OF 4)

**RESOLUTION NO. 2003-059**

**A RESOLUTION OF THE CITY COUNCIL OF  
THE CITY OF THOUSAND OAKS ADOPTING  
CITY ROAD STANDARDS AND STANDARD  
SPECIFICATIONS FOR LAND DEVELOPMENT  
AND CONSTRUCTION PROJECTS AND  
RESCINDING RESOLUTION NO. 76-391**

WHEREAS, on December 21, 1976, via Resolution No. 76-391, the City Council adopted Street Standards and Standard Specifications for Construction Projects, which have not undergone major updating and revisions since that time; and

WHEREAS, the Standard Specifications for Public Works Construction ("Greenbook"), written and promulgated by Public Works Standards, Inc., are commonly referred to and accepted by other cities in Ventura County and throughout Southern California; and

WHEREAS, the Greenbook Standard Specifications were used in developing the updated City Road Standards recommended for adoption herein; and

WHEREAS, it is in the best interests of the City and developers to have a current set of Road Standards and Standard Specifications for land development construction; and

WHEREAS, from time to time the City Engineer will deem it necessary to make minor modifications or additions to said Road Standards and Standard Land Development Specifications, provided, however, that said modifications or additions do not negatively impact adjacent properties.

NOW, THEREFORE, the City Council of the City of Thousand Oaks does resolve as follows:

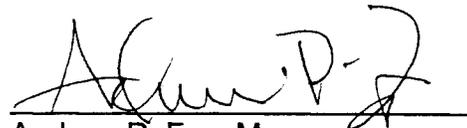
Section 1. Council Resolution No. 76-391 is hereby rescinded and superceded by this Resolution along with the attached City of Thousand Oaks Road Standards and Standard Land Development Specifications;

Section 2. The City of Thousand Oaks Road Standards, attached herewith, are hereby adopted as the City's official Road Standards and that the 2003 edition, or latest edition, of the Standard Specifications for Public Works Construction ("Greenbook"), written and promulgated by Public Works

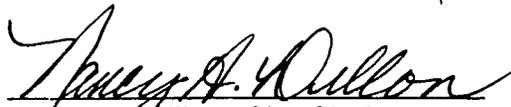
Standards, Inc., as modified in the attached Road Standards, are hereby adopted as the City's Official Standard Land Development Specifications; and

Section 3. The City Engineer is hereby authorized to make minor modifications or additions to said Road Standards and Standard Land Development Specifications.

PASSED AND ADOPTED on this 20th day of May, 2003.

  
\_\_\_\_\_  
Andrew P. Fox, Mayor  
City of Thousand Oaks, CA

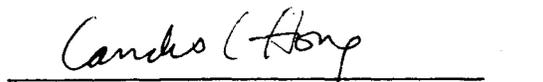
ATTEST:

  
\_\_\_\_\_  
Nancy A. Dillon, City Clerk

APPROVED AS TO FORM:

  
\_\_\_\_\_  
Mark G. Sellers, City Attorney

APPROVED AS TO ADMINISTRATION:

  
\_\_\_\_\_  
Candis L. Hong, Interim City Manager

CERTIFICATION

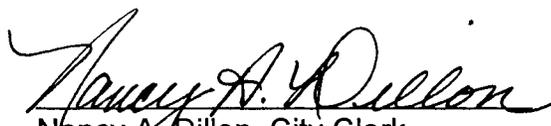
STATE OF CALIFORNIA     )  
COUNTY OF VENTURA     ) SS.  
CITY OF THOUSAND OAKS   )

I, NANCY A. DILLON, City Clerk of the City of Thousand Oaks, DO HEREBY CERTIFY that the foregoing is a full, true, and correct copy of Resolution No. 2003-059 which was duly and regularly passed and adopted by said City Council at a regular meeting held May 20, 2003 by the following vote:

AYES:     Councilmembers Masry, Wilson, Bill-de la Pena and Mayor Fox

ABSENT:   Councilmember Gillette

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the City of Thousand Oaks, California.

  
Nancy A. Dillon, City Clerk  
City of Thousand Oaks, California

**CITY OF THOUSAND OAKS**  
**STANDARD LAND DEVELOPMENT SPECIFICATIONS**

0-0 STANDARD SPECIFICATIONS

0-1 GENERAL

Except as modified herein and in the City of Thousand Oaks Road Standards, the provisions of the latest edition of the "Standard Specifications for Public Works Construction" (SSPWC, the Greenbook), the "Standard Plans for Public Works Construction" (SPPWC), and their supplements prepared and promulgated by the Southern California Chapters of the American Public Works Association and the Associated General Contractors of America, are adopted as the Standard Land Development Specifications for the City of Thousand Oaks (Thousand Oaks Municipal Code section 9-3.1027).

0-2 NUMBERING OF SECTIONS

The numbering of Subsections 1 through 600 in these Standard Land Development Specifications is compatible with the numbering in the SSPWC.

0-3 DELETIONS

The following Subsections of the SSPWC and SPPWC are hereby deleted:

- 2-1 Award of Contract
- 2-3 Subcontracts
- 2-5.3 Shop Drawings and Submittals
- 2-7 Subsurface Data
- 2-8 Right-of-Way
- 3-1.2 Payment for Changes Requested by the Contractor
- 3-2 Changes Initiated by the Agency
- 3-3 Extra Work
- 3-4 Changed Conditions
- 3-5 Disputed Work
- 5-5 Utility Delays
- 6-1 Construction Schedule and Commencement of Work
- 6-4 Default by Contractor
- 6-6 Delays and Extension of Time
- 6-7.2 Working Days
- 6-7.3 Contract Time Accounting
- 6-9 Liquidated Damages
- 7-2.2 Labor Laws

- 7-11 Patent Fees or Royalties
- 7-12 Advertising
- 7-14 Antitrust Claims
- 8 Facilities for Agency Personnel
- 9 Measurement and Payment

0-4 MODIFICATIONS

The Subsections numbered 1 through 600 which follow either replace, modify, or add to sections of like number in the SSPWC. To the extent of any conflict with the SSPWC, the provisions of these Standard Land Development Specifications shall take precedence.

1-2 DEFINITIONS

The following definitions replace or are added to those contained in Subsection 1-2 of the SSPWC.

Acceptance – The formal acceptance by Resolution of the City of Thousand Oaks City Council of those public improvements that are specified in the Agreement between the City and Developer to be accepted by the City when constructed in accordance with the plans and specifications and any modifications thereto previously approved by City.

Agency or City – The City of Thousand Oaks.

Agreement or Contract - The Subdivision or Non-Subdivision Improvement Agreement between the City and the Developer providing for the improvement work, including plans, specifications, and surety bonds; also, any and all supplemental written agreements or amendments modifying or extending the work specified.

Board or City Council - The governing body constituting the approving authority of the City.

Contract Documents – Including but not limited to: the Agreement, Bonds, permits from other agencies, Plans, Standard Specifications and Plans, City Road Standards, City Water Standards, City Wastewater Standards, City of Thousand Oaks Municipal Code, entitlement permit conditions of approval, and all Modifications to the Agreement.

Contractor – In addition to the definition given in Subsection 1-2 of the SSPWC, Contractor shall also mean Developer.

Design Speed – The speed selected by the Developer’s Engineer, and approved by the City Traffic Engineer, to establish specific minimum geometric design elements for a particular street section.

Developer – The person or persons, firm, partnership, corporation, joint venture, limited liability partnership or corporation, or combination thereof, who have entered into an Agreement with the City to construct public improvements in conjunction with a land development project. Also referred to as Permittee in the SSPWC.

Developer's Engineer – The registered civil engineer retained by the Developer, who has signed the City Consultant Acknowledgement Form, who prepares the plans and specifications and supervises construction of improvements referred to in the Agreement, also referred to as the Supervising Civil Engineer. May also mean the registered geotechnical or soils engineer retained by the Developer, who has signed the City Consultant Acknowledgement Form, who investigates the soil mechanics and slope stability of proposed grading sites and performs any and all testing required, also referred to as the Soils Engineer. May also mean the professional land surveyor retained by the Developer, who has prepared a subdivision map or design survey or provides surveying per Subsection 2-9 of the SSPWC.

Director of Public Works – The executive officer of the Department of Public Works of the City of Thousand Oaks.

Engineer - The City Engineer, or designated representative, including the Public Works Inspector, as defined in the SSPWC. Unless otherwise provided, all correspondence and decisions made relative to land development projects will be by the City Engineer or designated representative.

Laboratory – The established laboratory or laboratories authorized and approved by the City of Thousand Oaks, Department of Public Works, to specify and conduct materials and soils sampling and testing procedures for the Work.

Private Contract – In addition to the definition given in Subsection 1-2 of the SSPWC, Private Contract shall also mean all work required for land development projects.

State Standard Specifications and Plans - State of California Standard Specifications and Plans, current edition, Business and Transportation Agency, Department of Transportation (Caltrans).

Working Hours and Days - The hours of 7 a.m. through 7 p.m., Monday through Saturday, as set forth in Section 8-11.01 of the City of Thousand Oaks Municipal Code, unless otherwise provided for in the project entitlement conditions of approval.

1-3 ABBREVIATIONS

The following abbreviations are added to Subsection 1-3 of the SSPWC (also see City Road Standards Plate No. 1-2).

AAN	American Association of Nurserymen
AGC	Associated General Contractors of America
APWA	American Public Works Association
ASA	American Standard Association
ASME	American Society of Mechanical Engineers

IEEE	Institute of Electrical and Electronic Engineers
NEC	National Electrical Code
SSS	State of California Standard Specifications and Plans (Caltrans), current edition.

1-4.1 UNITS OF MEASURE

Subsection 1-4.1 of the SSPWC is replaced with the following:

The U.S Standard Measures system of units, also called U.S. Customary System, is the principle measurement system in these specifications and shall be used in the preparation of Plans and Specifications and for construction.

2-2 ASSIGNMENT

Subsection 2-2 of the SSPWC is replaced with the following:

The Agreement between the City and Developer, and associated Bonds, may not be assigned without the formal action by Resolution of the City Council upon submission of a substitution Agreement and Bonds.

2-4 CONTRACT BONDS

Subsection 2-4 of the SSPWC is replaced with the following:

Surety bonds shall be provided by the Developer as specified in the Agreement, the City of Thousand Oaks Municipal Code, and the Subdivision Map Act (Govt. Code Section 66410 et. seq.)

2-5.1 PLANS AND SPECIFICATIONS

Subsection 2-5.1 of the SSPWC is replaced with the following:

The Contractor shall maintain the following at the Work site:

1. One copy of the Plans and Specifications and all approved change orders, in good order.
2. Any and all permits issued by other agencies.
3. An updated Storm Water Pollution Control Plan and/or Stormwater Pollution Prevention Plan, including the State Waste Discharger Identification Number (WDID), as applicable.

The Plans, Specifications, and other Contract Documents will govern the Work. The Contract Documents are intended to be complementary and cooperative and to describe and provide for a complete project. Anything in the Specifications and not on the Plans, or on the Plans and not in the Specifications, will be as though shown or mentioned in both.

Plans shall be prepared by a California registered civil engineer on 4-mil thick mylar sheets, 24-inches by 36-inches in size, and utilizing City standard title blocks, details, notes, etc.

2-5.2 Precedence of Contract Documents

Subsection 2-5.2 of the SSPWC is replaced with the following:

To the extent there is any conflict among the various Contract Documents, the following shall constitute the precedence of documents for land development projects:

1. Federal and State Statutes, including the Clean Water Act (NPDES regulations), ADA, and the Subdivision Map Act (Govt. Code Section 66410 et. seq.)
2. City of Thousand Oaks Municipal Code.
3. Subdivision Improvement Agreement, or Non-Subdivision Improvement Agreement.
4. Entitlement and/or City permit conditions of approval.
5. Other agency permit conditions.
6. Approved Plans.
7. City of Thousand Oaks Standard Land Development Specifications, City Road Standards, City Water Standards, and City Wastewater Standards.
8. SSPWC, SPPWC, SSS, as applicable.

2-9 SURVEYING

Subsection 2-9 of the SSPWC is replaced by the following:

The Developers Engineer shall provide for all construction surveying required to layout, monitor and complete the work. The surveying will be performed by a Land Surveyor or Civil Engineer authorized to practice land surveying by the State of California.

The Project Benchmark, based on the Ventura County Benchmark System, shall be shown on the plans. The Developers Engineer will establish all necessary control lines based on the Plans and record information on file with the County Surveyor and the Engineer.

All survey monuments shall be per the Thousand Oaks Municipal Code, with all Standard Centerline Monuments placed per the standards of the office of the County Surveyor. All standard centerline monument markers shall be of bronze.

It is the responsibility of the Developers Engineer to protect the survey control as shown on the plans. If the survey control is destroyed or disturbed during construction, the Developers Engineer will provide for resetting and file appropriate documents with the County Surveyor.

All work shall conform to the lines, elevations, and grades shown on the Plans.

2-11 INSPECTION

The second sentence of Subsection 2-11 of the SSPWC is replaced by the following:

The Contractor shall provide at least 24 hours advance notice to the Engineer for any required inspections. Any inspection required outside of normal working hours and days, including holidays, will be at the Contractor's cost at rates established by the City.

4-1.3 Inspection Requirements (Certificates of Compliance)

Subsection 4-1.3 of the SSPWC is replaced by the following:

Unless otherwise specified, inspection at the source of production for materials and fabricated items to be used in the Work is not required. A certificate of compliance pursuant to Subsection 4-1.5 of the SSPWC, signed by an authorized officer of the producer, certifying

compliance with the contract documents, shall be submitted for all materials.

6-2 PROSECUTION OF WORK

Subsection 6-2 of the SSPWC is replaced with the following:

The Contractor shall diligently prosecute the Work to completion in order to minimize public inconvenience and possible hazard, and shall restore street and other work areas to their original condition and state of usefulness as soon as practicable. If the Engineer determines that the Contractor is failing to prosecute the Work to the proper extent, the Contractor shall, upon orders from the Engineer, immediately take steps to remedy the situation. Should the Contractor fail to take the necessary steps to fully accomplish said purposes, after orders of the Engineer, the Engineer may suspend the Work in whole or in part, until the Contractor takes said steps. If the Contractor fails to properly provide for public safety, traffic and protection of the Work during periods of suspension, the City may elect to do so, and the costs thereof shall be paid for by the Contractor. Such actions will not relieve the Contractor from liability.

6-3 SUSPENSION OF WORK

Subsection 6-3 of the SSPWC is replaced with the following:

The Work may be suspended in whole or in part when determined by the Engineer that the suspension is necessary in the interest of the City or public safety. The Contractor shall comply immediately with any written order of the Engineer.

If discovery is made of items of archaeological or paleontological interest, the Contractor shall immediately cease excavation or other work in the area of discovery and shall not continue until ordered by the Engineer. The Developer shall immediately retain the services of a City-approved archaeological consultant to investigate the nature and extent of the discovery, provide direction to the Contractor concerning continued excavation operations within the area of discovery, and provide ongoing monitoring as required by the Engineer. Discoveries may include, but not be limited to, dwelling sites, stone implements or other artifacts, animal bones, human bones, and fossils.

6-5 TERMINATION

Subsection 6-5 of the SSPWC is replaced with the following:

The City Council may terminate the Agreement as provided for in the Agreement.

6-7 TIME OF COMPLETION

Subsection 6-7 of the SSPWC is replaced with the following:

The Developer shall complete the Work within the timeframe set forth in the Agreement. An amendment to the Agreement for extension of time may be granted by the City Council if justified pursuant to Section 9-3.1004 of the Thousand Oaks Municipal Code.

7-3 LIABILITY INSURANCE

Subsection 7-3 of the SSPWC is replaced by the following:

The Contractor shall furnish to the City a certificate of general liability insurance and automobile liability insurance in the form, with the coverage limits, and in accordance with all other City requirements. Copies of said certificate forms, limits, and other requirements are available from the City Attorney's Office or from the office of the Engineer.

7-4 WORKERS COMPENSATION INSURANCE

Subsection 7-4 of the SSPWC is replaced by the following:

The Contractor shall furnish to the City a certificate of workers compensation insurance in the form, with the coverage limits, and in accordance with all provisions of the Agreement.

7-5 PERMITS

Replace the last paragraph of Subsection 7-5 of the SSPWC with the following:

A City Business License, available at the City Finance Department office, is required for all work performed within city limits. The Contractor shall pay all business taxes or license fees that are required for the work.

7-7 COOPERATION AND COLLATERAL WORK

Delete the last paragraph of Subsection 7-7 of the SSPWC.

302-5.5 Distribution and Spreading (Asphalt Concrete Pavement)

Modify Table 302-5.5(A) as follows:

Specified total thickness of pavement between 3" and 4" shall be placed in two courses.

302-5.6 Rolling (Asphalt Concrete Pavement)

Modify Table 302-5.6.1(A) as follows:

Two rollers shall be required for less than 100 tons placed per hour for any compacted thickness.

306-8.3.3 Work Hours

Subsection 306-8.3.3 of the SSPWC is replaced by the following:

Work hours are restricted to between 7 a.m. and 7 p.m. Monday through Saturday, excluding City-observed holidays, as set forth in Section 8-11.01 of the City of Thousand Oaks Municipal Code, for all portions of the Work.

Regular inspection hours are Monday thru Thursday, 7:00am to 4:00pm, and alternating Fridays, 7:00 am to 3:00pm. Work outside of these hours is subject to overtime inspection charges. Work installed without inspection is subject to removal.

The City of Thousand Oaks Public Works Department establishes uniform criteria, policies, standards and procedures for the design and construction of City roads, drainage facilities and appurtenances. It is not the intent of this manual to create or impose any standard of conduct or duty toward the public, nor is this manual a substitute for engineering knowledge, experience or judgment. This manual is neither designed as, nor does it establish, a legal standard for these functions. The methods and procedures contained herein shall be reviewed by the Engineer using them to see that they are applicable to the project on which they are working. Where not considered applicable, the Engineer shall request an exception from these standards to be approved by the City Engineer.

				CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED <i>Marko White</i> CITY ENGINEER				FOREWORD	
5/20/07 DATE				PLATE NO. <b>1-1</b>	

STANDARD DESIGN AND CONSTRUCTION CRITERIA

1. GENERAL NOTES

- 1.1. All work is to be done in accordance with the Standard Land Development Specifications of the City of Thousand Oaks (latest revision).
- 1.2. Refer to the City of Thousand Oaks Standard Land Development Specifications and the SSPWC for definitions.
- 1.3. Abbreviations used in these Standards (also see the City of Thousand Oaks Standard Land Development Specifications and SSPWC 1-3):

- AB Aggregate Base
- ADA Americans with Disabilities Act
- ADT Average Daily Traffic trips in vehicles per 24 hours
- ASB Aggregate Sub-base
- ARHM Asphalt Rubber Hot Mix
- ES Edge of Shoulder
- ENR Engineering News Record
- HOA Homeowners Association
- HPD Hillside Planned Development
- MIN Minimum
- NPDES National Pollution Discharge Elimination System
- OSHA Occupational Safety & Health Agency (State of California)
- PSE Public Service Easement
- SPPWC Standard Plans for Public Works Construction, latest edition
- SSD Stopping Sight Distance
- SSPWC Standard Specifications for Public Works Construction (Green Book), latest edition
- SSS State Standard Specifications and Plans (Caltrans), latest edition
- TOMC City of Thousand Oaks Municipal Code
- UBC Uniform Building Code, edition currently adopted by City
- VCFCD Ventura County Flood Control District (renamed Ventura County Watershed Protection District effective January 1, 2003)
- VCSD Ventura County Standard Design

				<p><b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT</p>
CHG	DESCRIPTION	DATE	INITIAL	
<p>APPROVED <i>Melis Watson</i> CITY ENGINEER</p>				<p>STANDARD DESIGN AND CONSTRUCTION CRITERIA</p>
				<p>PLATE NO. <b>1-2</b></p>
<p>5/20/03 DATE</p>				

1.6 Symbols used in these Standards (also see Plate 100-1 of the SPPWC):

R/W	Right of Way Line	TC	Top of Curb
P <sub>L</sub>	Property Line	BW	Back of Walk
F <sub>L</sub>	Flowline	EG	Edge of Gutter

- 1.7 The Developer, their Engineer, or the contractor shall secure all required permits for the project from other agencies including, but not limited to, the Regional Water Quality Control Board (NPDES and 401 permits), Army Corps of Engineers (404 permit), Calif. Dept. of Fish and Game (1601 agreement), Caltrans (encroachment permit), County of Ventura Public Works Agency (Flood Control/Roads Dept. encroachment permits), and OSHA (trench safety, confined space entry).
- 1.8 Any changes to the approved plans shall be approved by the Public Works Department on City forms prior to construction.
- 1.9 The City Engineer may, from time to time, issue new or supplemental, modify, or cancel the City Road Standard Plates showing engineering and structural details for construction. Copies of such plates will be on file in the office of the City Engineer.

2. MATERIALS TESTING

2.1. General

- 2.1.1. All control testing during construction shall be performed by the Developer's Engineer. The Developer will normally be billed directly for these services.
- 2.1.2. In the event certain services are performed using City personnel, billing will be based on a fee schedule for the various tests approved by the City Engineer.

2.2. Test Methods and Reports

- 2.2.1. Materials shall be tested in accordance with the test methods shown in the SSPWC together with supplementary test methods designated by the City Engineer.
- 2.2.2. A soil classification survey shall be performed at appropriate intervals in the street areas of subdivisions to delineate the areas of similar soils. Such classification survey shall include tests for particle gradation, Atterberg limits and such other tests as the Developer's Soils Engineer considers necessary. A limited number of tests of each class of soil shall then be performed as required for pavement design. Tests for pavement design (including R-values) shall not be performed until rough grading has been completed to within one foot of final finish subgrade.

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL	STANDARD DESIGN AND CONSTRUCTION CRITERIA	
APPROVED <u><i>Paula White</i></u> CITY ENGINEER					
				DATE <u><i>1/10/07</i></u>	

Results of soil survey and design tests shall be approved by the City Engineer prior to placement of any AB or ASB.

2.2.3. Final acceptance of stockpiled materials shall be subject to their compliance with specification requirements when in final position on the project.

2.2.4. All compaction tests shall conform to ASTM D 1557-70, modified to 5 layers.

2.2.5. Subgrade material expansive qualities shall be analyzed in accordance with the expansion index test per UBC 29-2.

**3. ROAD DESIGN**

3.1. All roads, whether private or public, shall be designed in accordance with these standards. Where standards are not definite on specific features, design shall be in accordance with good engineering practice as indicated in the American Public Works Association Standards, Caltrans Highway Design Manual, and as approved by the City Engineer.

3.2. Deviations from R/W and improvement requirements of these standards may be made only upon the approval of the City Council. Deviations from technical engineering requirements of these standards may be made upon the approval of the City Engineer, based on sufficient supporting data.

3.3. The design speed of all roads shall be equal to or greater than the anticipated operating speeds. The City Traffic Engineer may require the Engineer to incorporate a different design speed than indicated on the Road Standard Plates, if the City Traffic Engineer determines that conditions warrant such a change.

3.4. All soils testing and thickness design of pavements shall be performed by the Developer's Engineer and approved by the City Engineer.

3.5. Hillside Planned Development Roads

3.5.1. "Hillside areas" shall mean those areas so designated on the Hillside Development District Map which, in general, have an average slope before grading of 10% or more.

3.5.2. TOMC 9-4.3100 provides general guidelines for street geometric sections within HPD areas. The proposed street system and associated geometric sections shall be reviewed with the City Engineer prior to developing a detailed HPD plan or tentative map.

				CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL	STANDARD DESIGN AND CONSTRUCTION CRITERIA	
APPROVED <i>Muel Wath</i> CITY ENGINEER				DATE <i>5/20/03</i>	PLATE NO. <b>1-4</b>

3.6. Horizontal Curves

3.6.1. For central angles less than 30 minutes, no curve is required.

3.6.2. Compound curves should be avoided. If designed, the shorter radius shall be at least 2/3 the longer radius.

3.6.3. A minimum 100' tangent length is required between curves.

3.7. At street intersections where either street grade exceeds 5%, the intersection and a 25' long landing area beyond the curb returns shall have a 3% maximum grade. The cross walk area shall have a maximum 2% cross fall per ADA requirements.

3.8. Minimum street flowline slope shall be 0.6%. A minimum flowline slope of 1% shall be provided around curb returns and cul-de-sac bulbs, except for 30' each side of the grade break at the top of the cul-de-sac bulb where the flowline slope shall be 0.6%.

3.9. The centerline angle at intersections is preferred to be 90 degrees, but may vary from 72 to 108 degrees.

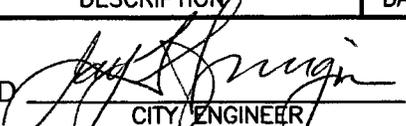
3.10. Developer shall submit roadway plan and profile sight distance plans prepared by a registered civil or traffic engineer demonstrating compliance with all SSD and corner sight distance requirements at the locations determined by the City Traffic Engineer. Submittal shall take into consideration on-site grading, final slopes, street furniture structures, walls, fences and mature landscaping. Maximum anticipated operating vehicle speed shall be used if greater than road design speed to determine minimum sight distances. Sight distance easements and/or deed restrictions may be required.

4. ASPHALT SURFACING

4.1. All AC surfacing 3" or greater in thickness shall be constructed in two courses, one base course and one surface course. The surface course shall be a minimum thickness of 1" and a maximum of 1-1/2". Core-drilled samples of the finished AC section shall be provided by the Developer's Engineer as directed by the Public Works Inspector.

4.2. AC pavement base course shall be Type III-B2-PG 64-10 and surface course shall be Type III-C2-PG 64-10, per SSPWC 400-4. For private parking lots, AC pavement for surface course may be Type III-C3-PG 64-10 or Type III-D-PG 64-10.

4.3. AC pavement structural section thickness shall be 3" minimum AC over 6" minimum AB per TOMC 9-4.2405(a)(1). Thicker structural sections shall be constructed as determined by the Soils Engineer, based on in-situ subgrade R-value and the specified traffic index. Alternative equivalent sections may be approved by the City Engineer.

				CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT	
5	Revise AC Pavement Type	10-22-08	MAP		
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED  CITY ENGINEER				STANDARD DESIGN AND CONSTRUCTION CRITERIA	
10/23/08 DATE				PLATE NO. <b>1-5</b>	

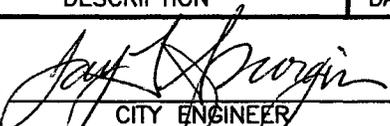
- 4.4. AC pavement shall be placed in accordance with SSPWC 302-5, and shall be compacted to 95% relative compaction.
- 4.5. Longitudinal joints shall occur within one foot of lane lines or the center of a lane. Longitudinal joints will not be allowed on wheel tracks.
- 4.6. If approved by the City Engineer, PCC pavement may be substituted for AC pavement on all sections, and shall be designed in accordance with the Caltrans Highway Design Manual. Concrete for PCC pavement shall be 520-C-2500 per SSPWC 201-1.
- 4.7. Slurry seal coats shall comply with SSPWC 203-5 and 302-4, Type II.

5. CONCRETE AND BASE MATERIALS

- 5.1. Unless otherwise indicated, all structural concrete (concrete reinforced with steel) shall be 560-C-3250 per SSPWC 201-1.
- 5.2. All other concrete improvements (curbs, gutters, driveways, sidewalks, etc.) shall be 520-C-2500 per SSPWC 201-1.
- 5.3. Higher concrete specifications shown on plans will govern.
- 5.4. Calcium chloride shall not be used in concrete mix designs.
- 5.5. AB and ASB shall be CAB or CMB per SSPWC 200-2. Alternately, PMB per SSPWC 200-2 may be used for ASB.
- 5.6. For public and private street and parking lot sections, including curbs and gutters, the upper 6" of subgrade and AB and ASB shall be compacted to 95% relative compaction. For sidewalks and residential driveways, subgrade and AB compaction shall be 90%.

6. DRAINAGE DESIGN

- 6.1. Hydrologic and hydraulic analyses in support of drainage system design shall be performed in conformance with VCFCD standards.
- 6.2. Road cross-sections may be used to convey water originating on the street, from adjoining lots, and from adjacent unimproved areas, provided vehicle and pedestrian use of the roads is not unreasonably restricted and road improvements and adjacent properties will not be damaged. Flow from unimproved areas shall have facilities to remove silt and debris before entering the street. The hydraulic design shall include the effect of non-uniform flow at changes in grade, bends and junctions of multiple streams.

				<b>CITY OF THOUSAND OAKS</b>	
				PUBLIC WORKS DEPARTMENT	
5	Revise AC Compaction Requirements	10-22-08	MAF		
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED	 CITY ENGINEER	10/23/08 DATE	STANDARD DESIGN AND CONSTRUCTION CRITERIA		PLATE NO. <b>1-6</b>

- 6.3. Peak storm runoff that has a 10% probability of occurrence (10-year average return period) shall be used for calculating the capacity of road drainage facilities. Peak storm runoff that has a 2% probability of occurrence (50-year average return period) shall be used for calculating the capacity of sump area drainage facilities. All drainage facilities shall be designed such that adjacent lot pads will not be flooded by the storm runoff that has a 1% probability of occurrence (100-year average return period). Consideration shall also be given to flooding caused by plugging of drainage facilities.
- 6.4. To prevent undue interference with traffic on urban roads (any section with curbs), a portion of the roadway shall be kept free of longitudinally flowing drainage water during the 10-year storm as shown on the Standard Plates.
- 6.5. Cross-gutters are not permitted across primary and secondary roads. Cross gutters are permitted on local residential streets at controlled (stop signs) side streets only.
- 6.6. Concentrated runoff may not flow across sidewalks. Parkway culverts shall be used.
- 6.7. Minimum Storm Drain Pipe Size and Material
  - 6.7.1. Minimum pipe sizes for City-maintained storm drains shall be 24" inside diameter for mains and 18" inside diameter for laterals.
  - 6.7.2. Pipe material for City-maintained storm drains shall be RCP with a minimum D-Load rating of 1350-D. Design of RCP shall be in accordance with VCFCO standards.
  - 6.7.3. Smaller diameters and alternative pipe materials for privately-maintained drainage laterals may be allowed within the public R/W at the discretion of the City Engineer.
  - 6.7.4. Manholes shall be constructed at major storm drain junctions, pipe diameter changes, and at minimum 500' spacing.
- 6.8. Storm drain facilities that accept stormwater from public R/W shall be owned and maintained by the City. Debris basins or other drainage improvements on public open space lands shall be maintained by the City or other public agency. Natural drainage courses on public open space lands are not maintained by the City.
- 6.9. Storm drain facilities to be maintained by the City that cross private property shall be within a storm drain easement, minimum 15' wide. For pipelines larger than 36" diameter or deeper than 10' to invert, the minimum easement width shall be 25'. Access gates and roads shall be provided for maintenance of City facilities on private property.

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL	<b>STANDARD DESIGN AND CONSTRUCTION CRITERIA</b>	
APPROVED <u><i>Mark D. White</i></u> <u>5/20/17</u> CITY ENGINEER DATE					

6.10. Storm drain facilities within private streets (gated communities) or on private property that do not convey storm runoff from public R/W shall be owned and maintained by the HOA or private property owner. Private storm drain laterals shall be connected to the public mainline at manholes. Private laterals may be connected to the back of public catch basins only upon approval of the City Engineer. Storm runoff originating from public open space lands that flows onto private property or private streets must be accommodated by the private property owner or HOA.

6.11. Storm Drain Testing and Inspection

6.11.1. Contractor shall thoroughly clean out all storm drain system components prior to final inspection by the City.

6.11.2. Developer shall perform a TV inspection of the interior condition of all storm drain system lines prior to final acceptance. The camera/recording system used shall be specifically designed for TV inspection of underground pipelines and structures. A set of video tapes or DVDs, and accompanying report, shall be provided to the Public Works Inspector for review. The inspection report shall note the precise location and include a detailed description of any and all material and/or workmanship deficiencies. After completion of any needed repairs, a TV re-inspection shall be performed with tape/DVD and report provided per above.

7. STEEL PLATES FOR OPEN TRENCHES

7.1. Steel plates for all trenches shall be installed per Plate 8-18 and 8-19.

8. TRAFFIC CONTROL

8.1 Traffic control in conformance with Plates 8-15 and 8-16 shall be provided for all work performed within City R/W. For other than standard lane closure, a traffic control plan shall be prepared and submitted to the City Traffic Engineer for approval 72 hours prior to any commencing any work.

8.2 Whenever work is being performed adjacent to a lane carrying traffic or within a traffic lane, the edge of lane or pavement shall be delineated by furnishing and placing temporary portable delineators and signs adjacent thereto in accordance with the Caltrans "Manual of Traffic Controls for Construction and Maintenance Work Zones," current edition.

6	Revise Steel Plate Requirements	3-27-12	MAF	CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT
5	Revise Steel Plate Requirements	10-22-08	MAF	
CHG	DESCRIPTION	DATE	INITIAL	
APPROVED 			3-27-12	STANDARD DESIGN AND CONSTRUCTION CRITERIA
CITY ENGINEER			DATE	
				PLATE NO. <b>1-8</b>

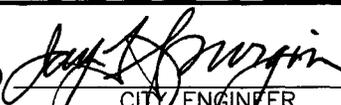
- 8.3 Hours of construction work on arterial or collector streets may be limited by the City Traffic Engineer (e.g. to non-peak traffic hours or limited days during holiday seasons).
- 8.4 Temporary, planned full street closures may be allowed upon approval by the Public Works Director. A written request, including the reason for the closure and a traffic control and detour plan, must be submitted for review and approval at least two weeks prior to the start of the closure.

9. TRAFFIC SIGNALS, PAVEMENT MARKERS AND STRIPING

- 9.1. Design and construction of traffic striping, pavement markers, and traffic signals shall conform to Sections 84, 85 and 86, respectively, of the SSS and as approved by the City Traffic Engineer. Traffic striping paint shall also conform to Federal Highway Administration specifications per 23 CFR Part 655.
- 9.2. Separate traffic signing and striping plan sheets shall be prepared and submitted for review and approval.

10. STREET TREE PLANTING

- 10.1. Street tree plantings are required for all projects per TOMC 9-3.1006 unless specifically excluded by the conditions of approval.
- 10.2. Developer shall submit plans to the Community Development Department for review and approval. See Resolution No. 93-74 "Guidelines and Standards for Landscape Planting and Irrigation Plans" for submittal requirements. Plans must be approved by both Community Development and Public Works Departments prior to construction.
- 10.3. An additional amount of \$250.00 (inflated per the City off-site improvement fee calculation sheets) for each tree shall be included in the subdivision or other improvement bonds.
- 10.4. Trees shall be planted prior to occupancy of any building. Prior to planting, the Developer shall mark the locations for street trees and request City inspection of nursery stock and planting areas. The City shall have the right of destructive inspection of up to 2% of the proposed planting stock before installation.
- 10.5. Tree selection shall be based upon consideration of the planting space, adjacent uses, environmental factors and existing species. Species shall be selected per the City Forestry Master Plan.

6	Revise Steel Plate Requirements	3-27-12	MAF	CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT	
5	Revise Steel Plate Requirements	10-22-08	MAF		
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED  CITY ENGINEER				STANDARD DESIGN AND CONSTRUCTION CRITERIA	PLATE NO. <b>1-9</b>
				3-27-12	
				DATE	

- 10.6. Trees shall be a minimum of 24" box and be certified by the nursery to be true to approved species selection. All large stones or other debris shall be removed from the planting soil. Remove nursery stakes following planting.
- 10.7. Street trees shall be planted not less than 40' apart or more than 60' except in instances where such planting will interfere with fire hydrants, utility poles, driveways, or stopping sight distance requirements per Plate 3-10. No tree shall be planted closer than 10' from fire hydrants or sewer laterals, 20' from lamp standards or either end of curb returns at intersections, and 5' from intersecting walks, driveways or meter boxes. At least two trees shall be planted at corner lots.
- 10.8. Trees shall be maintained and watered by the Developer as needed until accepted by City. Developer shall replace trees found to be missing, dead, or of poor health prior to project acceptance by the City.

**11. TRENCH CUT REQUIREMENTS**

- 11.1. For installation of small underground pipelines in existing City streets, boring, jacking, horizontal directional drilling or micro-tunneling methods shall be used to the greatest extent practicable. The City Engineer may permit open cut trenching if other methods are determined to be infeasible. (TOMC 7-2.615) All trenches in existing paved streets shall be backfilled and repaved per Plate 8-14.
- 11.2. Moratorium Streets - A moratorium against trenching is imposed on existing City streets that are less than five years old, have received an AC overlay within the last five years, or have been slurry sealed in the past 3 years. Exceptions to the moratorium may only be granted by the City Engineer, and, if granted, may be subject to additional conditions as determined by the City.
- 11.3. Where multiple trenches are cut in any street, such as for a mainline and service lateral replacement project, or where a trenching project results in significant wear or damage to the street surface, additional conditions may be imposed, including, but not limited to, an asphalt overlay or application of a slurry seal over the full width and length of the affected street.

6	Add Slurry Moratorium	3-27-12	MAF	<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
5	Page Reformatted	10-22-08	MAF		
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED  <u>3-27-12</u> CITY ENGINEER DATE				STANDARD DESIGN AND CONSTRUCTION CRITERIA	PLATE NO. <b>1-10</b>

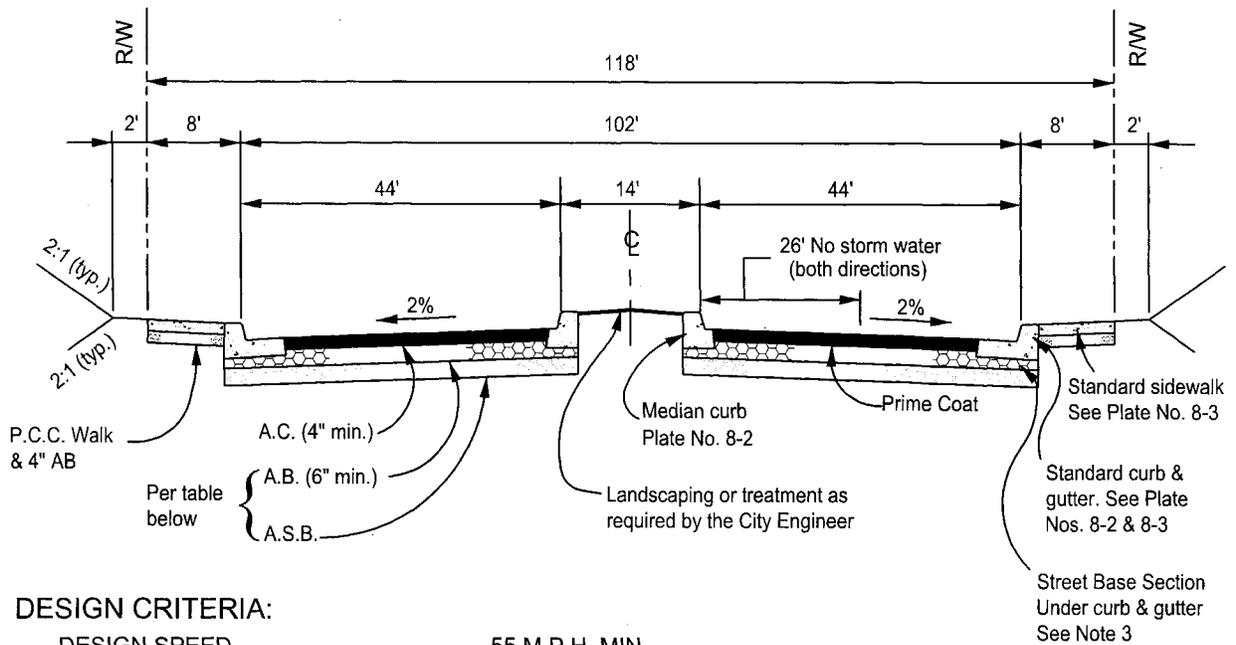
12. EQUESTRIAN TRAIL / UNPAVED PATH REQUIREMENTS

12.1 Material used for the installation of equestrian trails and unpaved paths shall be solidified decomposed granite (DG) per SSPWC 200-2.7. Resin or binder used to solidify the DG and the method of mixing, placement, and compaction of the solidified DG shall be approved by the City Engineer.

13. STORMWATER POLLUTION CONTROL AND BEST MANAGEMENT PRACTICES (BMP's)

13.1 All paved surfaces shall be designed to consider and incorporate permanent runoff reduction and pollution prevention/treatment BMP's, as specified by the Ventura County National Pollutant Discharge and Elimination System (NPDES) Municipal Permit. Technical references and resources relating to applicability and design thresholds are available at the Countywide Stormwater Quality Management Program website, [www.VCStormwater.org](http://www.VCStormwater.org).

6	Add Stormwater BMP's	3-27-12	MAF	CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT
5	Add DG Path Requirements	10-22-08	MAF	
CHG	DESCRIPTION	DATE	INITIAL	
APPROVED 				STANDARD DESIGN AND CONSTRUCTION CRITERIA
CITY ENGINEER				PLATE NO. <b>1-11</b>
3.27.12				
DATE				



**DESIGN CRITERIA:**

DESIGN SPEED	55 M.P.H. MIN.
CURVE RADIUS	1160' MIN. (WITH MAX. SUPERELEVATION)
GRADIENT	0.6% - 5.0% OR AS DETERMINED BY THE PUBLIC WORKS DIRECTOR
STOPPING SIGHT DISTANCE	500' MIN.
INTERSECTION SIGHT DISTANCE	605' MIN.
SUPERELEVATION	0.04 MAX.
CURB RETURN RADIUS	35' MIN.
CURVE LENGTH	500' MIN., 0.5 MILE MAX.
TRAFFIC INDEX	8.5

**DRAINAGE:**

SEE "1" SERIES PLATES

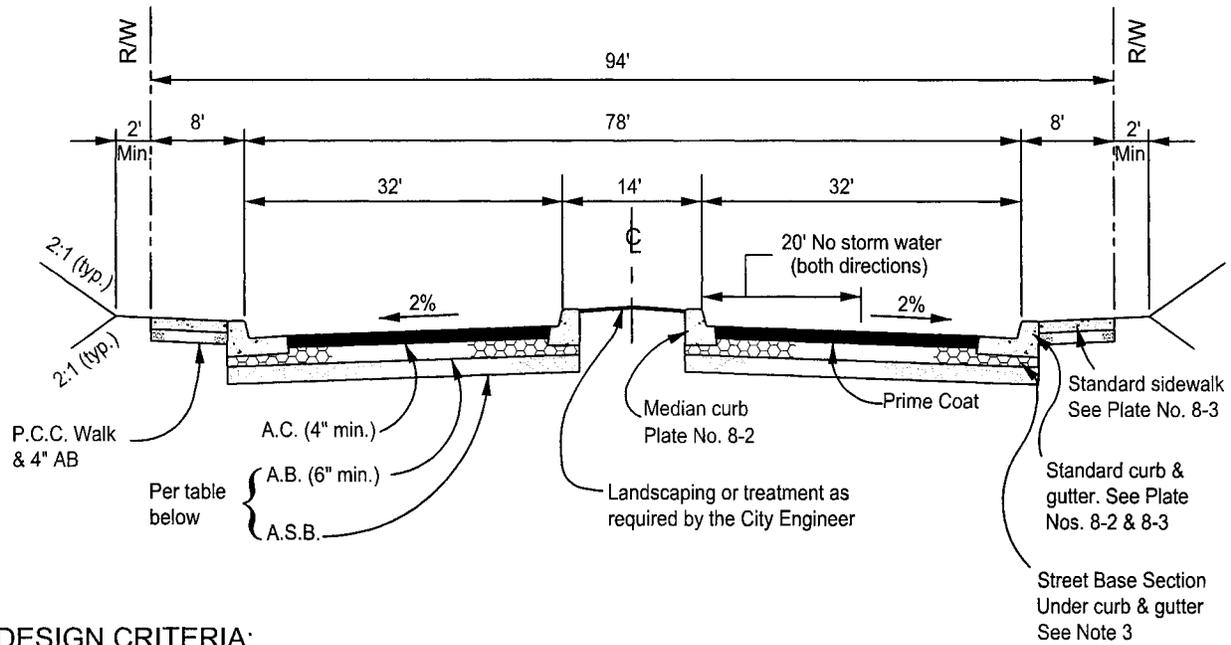
**NOTES:**

1. Emergency parking only.
2. Pavement width measured from top inside face of opposing curbs.
3. Base under curb and gutter shall extend to same depth as street base (6" min.).
4. Additional easements may be required for utilities where necessary.
5. Street trees shall be required behind sidewalk unless 10' sidewalk is provided.
6. Length of vertical curve, see Plate No. 3-8.
7. For curves > 1200', superlevation per Plate No. 3-5.
8. Median landscaping, berming and street furniture in median and along parkways located within 500' of any median opening or intersection shall be approved by City Traffic Engineer.
9. Minimum distance between intersections shall be 1320'.

TABLE FOR A.B./A.S.B.

BASEMENT SOIL 'R' VALUE	≥ 56	49-55	42-48	35-41	28-34	21-27	14-20	7-13	< 7
A.S.B. THICKNESS WHEN USED WITH 6" A.B.	—	—	5"	7"	9"	11"	14"	16"	18"
ALTERNATE - A.B. ONLY	6"	8"	10"	12"	14"	16"	18"	20"	22"

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL	STANDARD PRIMARY ROAD CONTROLLED ACCESS	
APPROVED <i>M. J. Waters</i> CITY ENGINEER				DATE	PLATE NO. <b>2-1</b>



**DESIGN CRITERIA:**

DESIGN SPEED	55 M.P.H. MIN.
CURVE RADIUS	1160' MIN. (WITH MAX. SUPERELEVATION)
GRADIENT	0.6% - 6.0% OR AS DETERMINED BY THE PUBLIC WORKS DIRECTOR
STOPPING SIGHT DISTANCE	500' MIN.
INTERSECTION SIGHT DISTANCE	605' MIN.
SUPERELEVATION	0.04 MAX. 3
CURB RETURN RADIUS	35' MIN.
CURVE LENGTH	500' MIN., 0.5 MILE MAX.
TRAFFIC INDEX	8.0

**DRAINAGE:**

SEE "1" SERIES PLATES

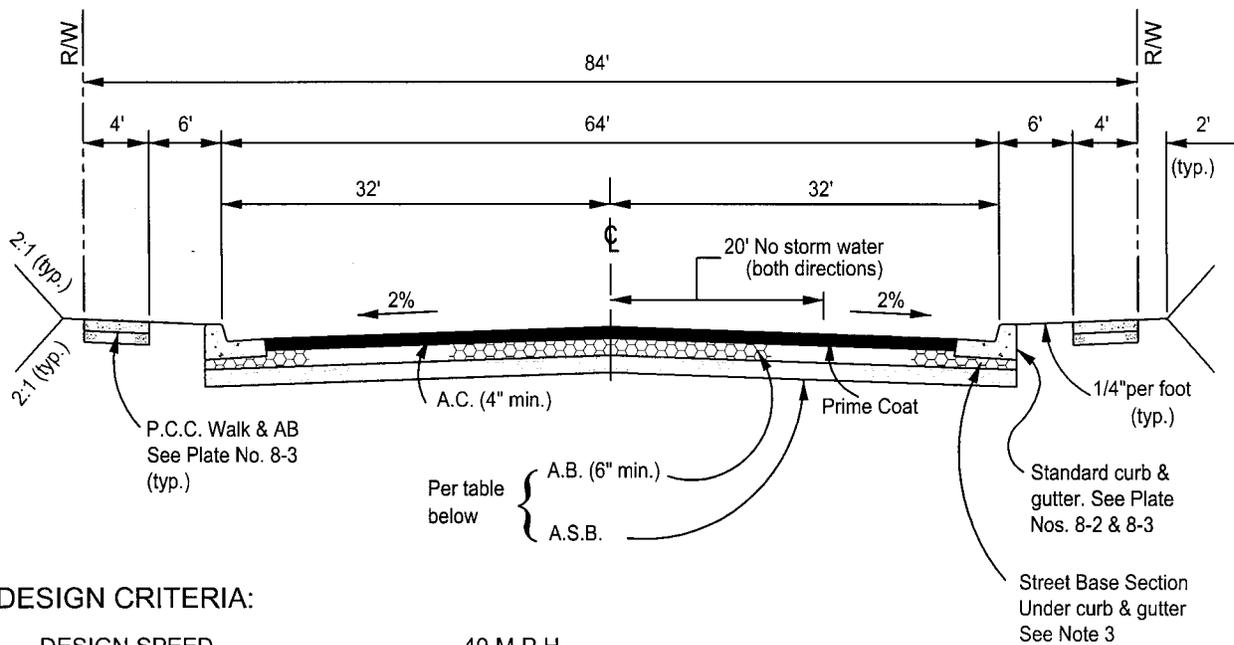
**NOTES:**

1. Emergency parking only.
2. Pavement width measured from top inside face of opposing curbs.
3. Base under curb and gutter shall extend to same depth as street base (6" min.).
4. Additional easements may be required for utilities where necessary.
5. Street trees shall be required behind sidewalk unless 10' sidewalk is provided.
6. Length of vertical curve, see Plate No. 3-8.
7. For curves > 1200', superelevation per Plate No. 3-5.
8. Median landscaping, berming and street furniture in median and along parkways located within 500' of any median opening or intersection shall be approved by City Traffic Engineer.

TABLE FOR A.B./A.S.B.

BASEMENT SOIL 'R' VALUE	≥ 52	45-51	38-44	31-37	24-30	17-23	9-16	< 9
A.S.B. THICKNESS WHEN USED WITH 6" A.B.	—	—	5"	7"	9"	11"	14"	16"
ALTERNATE - A.B. ONLY	6"	8"	10"	12"	14"	16"	18"	20"

2		Curb Return Radius = 35'	3-22-04	<i>JLS</i>	CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT
CHG	DESCRIPTION		DATE	INITIAL	
APPROVED	<i>[Signature]</i> CITY ENGINEER		3/24/04	DATE	STANDARD SECONDARY ROAD CONTROLLED ACCESS
					PLATE NO. <b>2-2</b>



**DESIGN CRITERIA:**

DESIGN SPEED	40 M.P.H.
CURVE RADIUS	825' MIN.
GRADIENT	0.6% - 6.0% OR AS DETERMINED BY THE PUBLIC WORKS DIRECTOR
STOPPING SIGHT DISTANCE	300' MIN.
INTERSECTION SIGHT DISTANCE	440' MIN.
SUPERELEVATION	NONE
CURB RETURN RADIUS	35' MIN.
CURVE LENGTH	300' MIN., 0.5 MILE MAX.
TRAFFIC INDEX	7.5

**DRAINAGE:**

SEE "1" SERIES PLATES

**NOTES:**

1. Planning Commission may require sidewalks and widening of right of way in industrial or commercial areas.
2. Pavement width measured from top inside face of opposing curb.
3. Base under curb and gutter shall extend to same depth as street base (6" min.)
4. Length of vertical curve, see Plate No. 3-8.
5. Street trees shall be required.
6. Sidewalk shall be clear of all furniture.
7. The City Traffic Engineer may require modifications to proposed landscaping, berms, slopes, street furniture, walls or structures within the sidewalk or parkway area, as well as outside of the public right-of-way, within 500' of any intersection to comply with sight distance requirements.

TABLE FOR A.B./A.S.B.

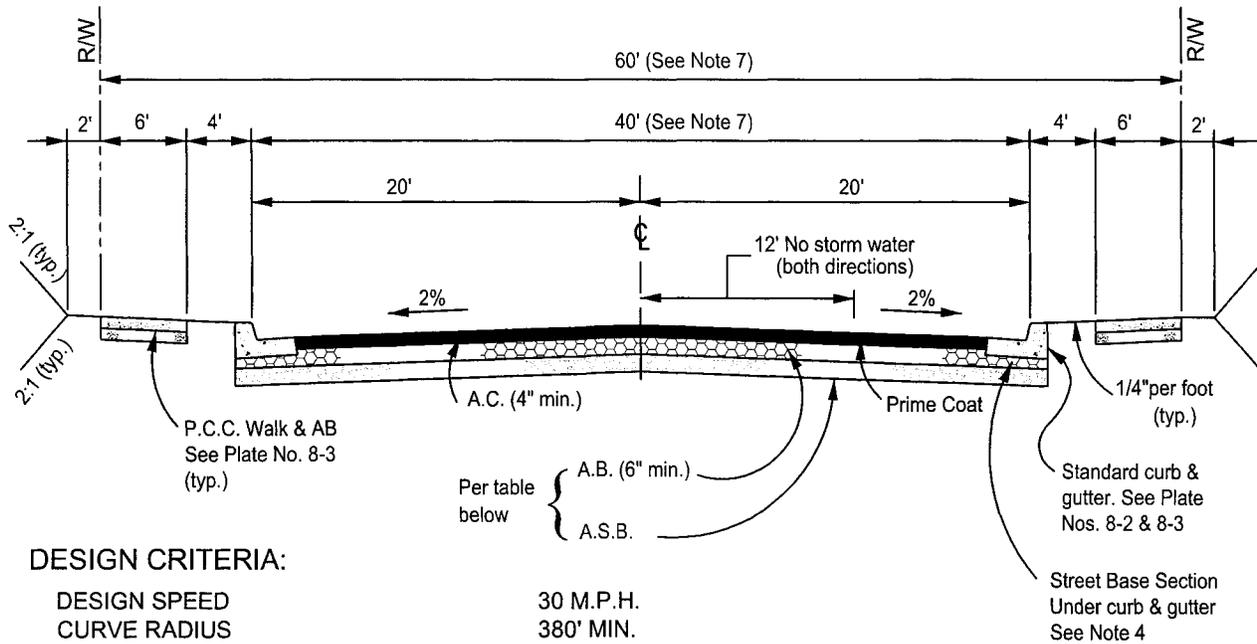
BASEMENT SOIL 'R' VALUE	≥ 50	43-49	36-42	29-35	22-28	14-21	7-13	< 7
A.S.B. THICKNESS WHEN USED WITH 6" A.B.	—	—	4"	6"	8"	10"	12"	14"
ALTERNATE - A.B. ONLY	6"	8"	9"	11"	13"	15"	17"	18"

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Paul D. Walker</i> CITY ENGINEER	5/20/07	DATE

**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
SECONDARY ROAD  
LIMITED ACCESS

PLATE NO.  
**2-3**



**DESIGN CRITERIA:**

DESIGN SPEED	30 M.P.H.
CURVE RADIUS	380' MIN.
GRADIENT	0.6% MIN-10.0% MAX. OR AS DETERMINED BY THE PUBLIC WORKS DIRECTOR
STOPPING SIGHT DISTANCE	200' MIN.
INTERSECTION SIGHT DISTANCE	330' MIN.
SUPERELEVATION	NONE
CURB RETURN RADIUS	35' MIN.
TRAFFIC INDEX	7.0

**DRAINAGE:**

SEE "1" SERIES PLATES

**NOTES:**

1. Pavement width measured from top inside face of opposing curbs.
2. Sidewalks may be deleted by Planning Commission.
3. This plate will be used only if traffic analysis indicates average daily volume will not exceed 8000 vehicles within 20 years after construction.
4. Base curb and gutter shall extend to same depth as street base (6" min.).
5. Street trees shall be required.
6. Length of vertical curve, see Plate No. 3-8.
7. Where specified by City Traffic Engineer, road pavement shall be 54' and right of way 66' (4 traffic lanes, no sidewalk, and no parking).
8. The City Traffic Engineer may require modifications to proposed landscaping, berms, slopes, street furniture, walls or structures within the sidewalk or parkway area, as well as outside of the public right-of-way, within 500' of any intersection to comply with sight distance requirements.

TABLE FOR A.B./A.S.B.

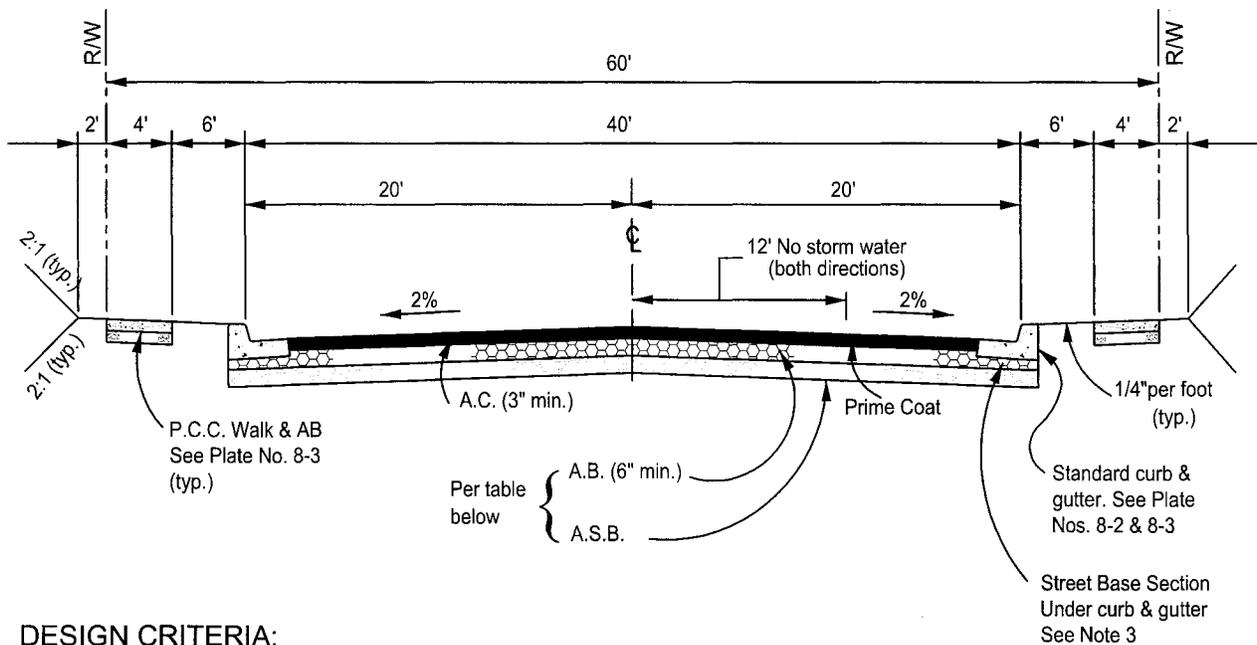
BASEMENT SOIL 'R' VALUE	≥ 42	39-42	35-38	31-34	27-30	23-26	19-22	15-18	11-14	< 11
A.S.B. THICKNESS WHEN USED WITH 6" A.B.	—	—	—	4"	5"	6"	7"	8"	9"	10"
ALTERNATE- A.B. ONLY	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Mario Weber</i>	5/27/07	
	CITY ENGINEER	DATE	

**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
INDUSTRIAL & COMMERCIAL ROAD  
LOW TRAFFIC VOLUME

PLATE NO.  
**2-4**



**DESIGN CRITERIA:**

DESIGN SPEED	30 M.P.H.
CURVE RADIUS	380' MIN.
GRADIENT	0.6% MIN-12% MAX. OR AS DETERMINED BY THE PUBLIC WORKS DIRECTOR
STOPPING SIGHT DISTANCE	200' MIN.
INTERSECTION SIGHT DISTANCE	330' MIN.
SUPERELEVATION	NONE
CURB RETURN RADIUS	25' MIN., 35' AT INT. WITH PRI. & SEC. ROADS
TRAFFIC INDEX	6.0 OR AS DETERMINED BY THE PUBLIC WORKS DIRECTOR

**DRAINAGE:**

SEE "1" SERIES PLATES

**NOTES:**

1. Pavement width measured from top inside face of opposing curbs.
2. Street trees shall be required.
3. Base under curb and gutter shall extend to same depth as street base (6" min.).
4. Collector road providing access to 250 dwelling units or less.
5. Length of vertical curves, see Plate No. 3-8.
6. The City Traffic Engineer may require modifications to proposed landscaping, berms, slopes, street furniture, walls or structures within the sidewalk or parkway area, as well as outside of the public right-of-way, within 500' of any intersection to comply with sight distance requirements.

TABLE FOR A.B./A.S.B.

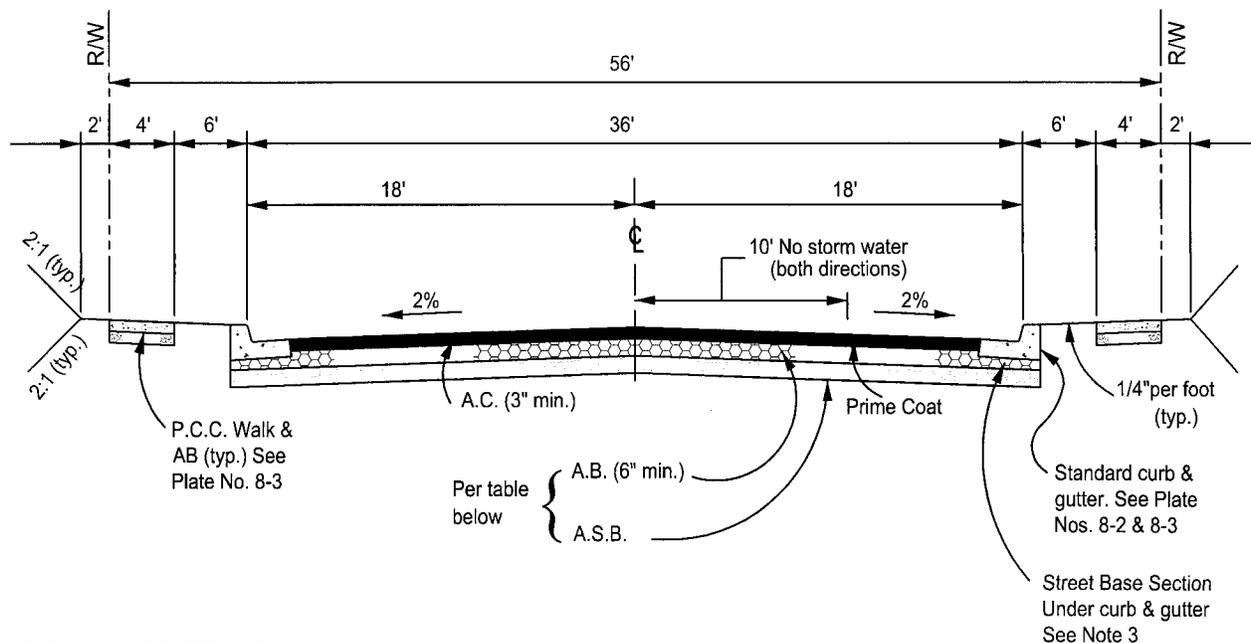
BASEMENT SOIL 'R' VALUE	> 42	37-42	32-36	27-31	22-26	17-21	12-16	7-11	< 7
A.S.B. THICKNESS WHEN USED WITH 6" A.B.	—	—	—	4"	5"	6"	7"	8"	9"
ALTERNATE - A.B. ONLY	6"	7"	8"	9"	10"	11"	12"	13"	14"

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Mark Wood</i>	1/20/07	
	CITY ENGINEER	DATE	

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

STANDARD  
COLLECTOR ROAD

PLATE NO.  
**2-5**



**DESIGN CRITERIA:**

DESIGN SPEED	25 M.P.H.
CURVE RADIUS	300' MIN.
GRADIENT	0.6% MIN-12% MAX OR AS DETERMINED BY THE PUBLIC WORKS DIRECTOR
STOPPING SIGHT DISTANCE	165' MIN.
INTERSECTION SIGHT DISTANCE	275' MIN.
SUPERELEVATION	NONE
CURB RETURN RADIUS	25' MIN.
TRAFFIC INDEX	6.0 OR AS DETERMINED BY THE PUBLIC WORKS DIRECTOR

**DRAINAGE:**

SEE "1" SERIES PLATES

**NOTES:**

1. Pavement width measured from top inside face of opposing curbs.
2. Street trees shall be required.
3. Base under curb and gutter shall extend to same depth as street base (6" min.).
4. Collector road providing access to 39 dwelling units or less.
5. Length of vertical curves, see Plate No. 3-8.
6. The City Traffic Engineer may require modifications to proposed landscaping, berms, slopes, street furniture, walls or structures within the sidewalk or parkway area, as well as outside of the public right-of-way, within 500, of any intersection to comply with sight distance requirements.

TABLE FOR A.B./A.S.B.

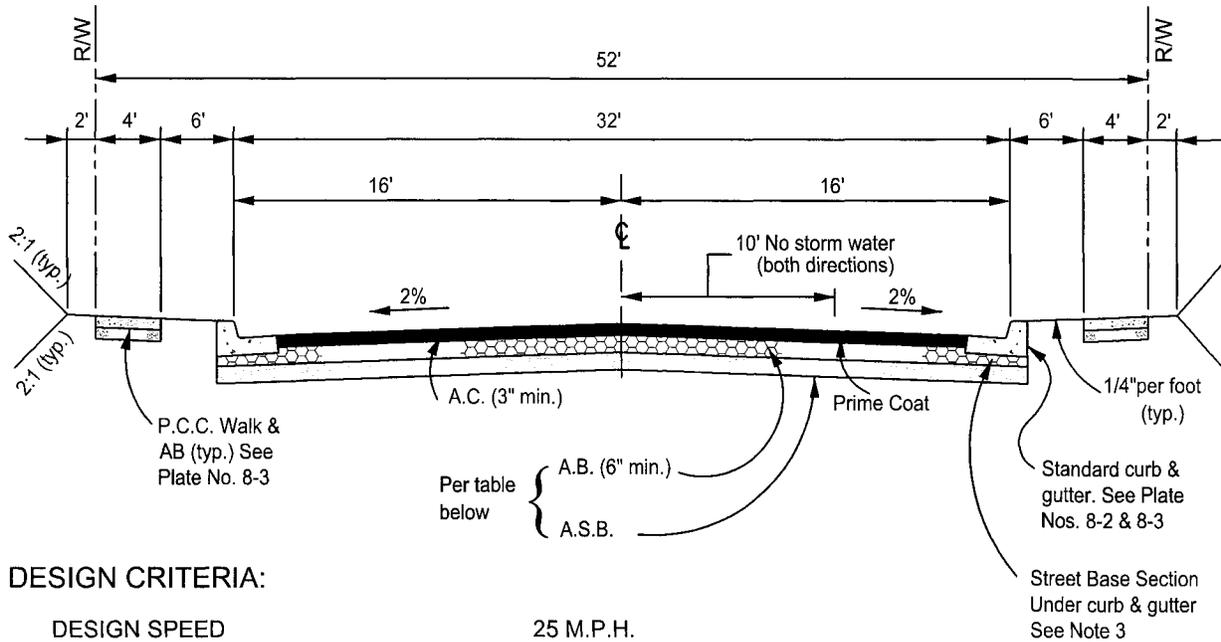
BASEMENT SOIL 'R' VALUE	> 42	37-42	32-36	27-31	22-26	17-21	12-16	7-11	< 7
A.S.B. THICKNESS WHEN USED WITH 6" A.B.	—	—	—	4"	5"	6"	7"	8"	9"
ALTERNATE - A.B. ONLY	6"	7"	8"	9"	10"	11"	12"	13"	14"

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Mulo Waters</i> CITY ENGINEER	1/20/03	DATE

**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
RESIDENTIAL MINOR ROAD

PLATE NO.  
**2-6**



**DESIGN CRITERIA:**

DESIGN SPEED	25 M.P.H.
CURVE RADIUS	225' MIN.
GRADIENT	0.6% MIN.-15% MAX. OR AS DETERMINED BY THE PUBLIC WORKS DIRECTOR
STOPPING SIGHT DISTANCE	165' MIN.
INTERSECTION SIGHT DISTANCE	275' MIN.
SUPERELEVATION	NONE
CURB RETURN RADIUS	25' MIN.
TRAFFIC INDEX	6.0 OR AS DETERMINED BY THE PUBLIC WORKS DIRECTOR

**DRAINAGE:**

SEE "1" SERIES PLATES

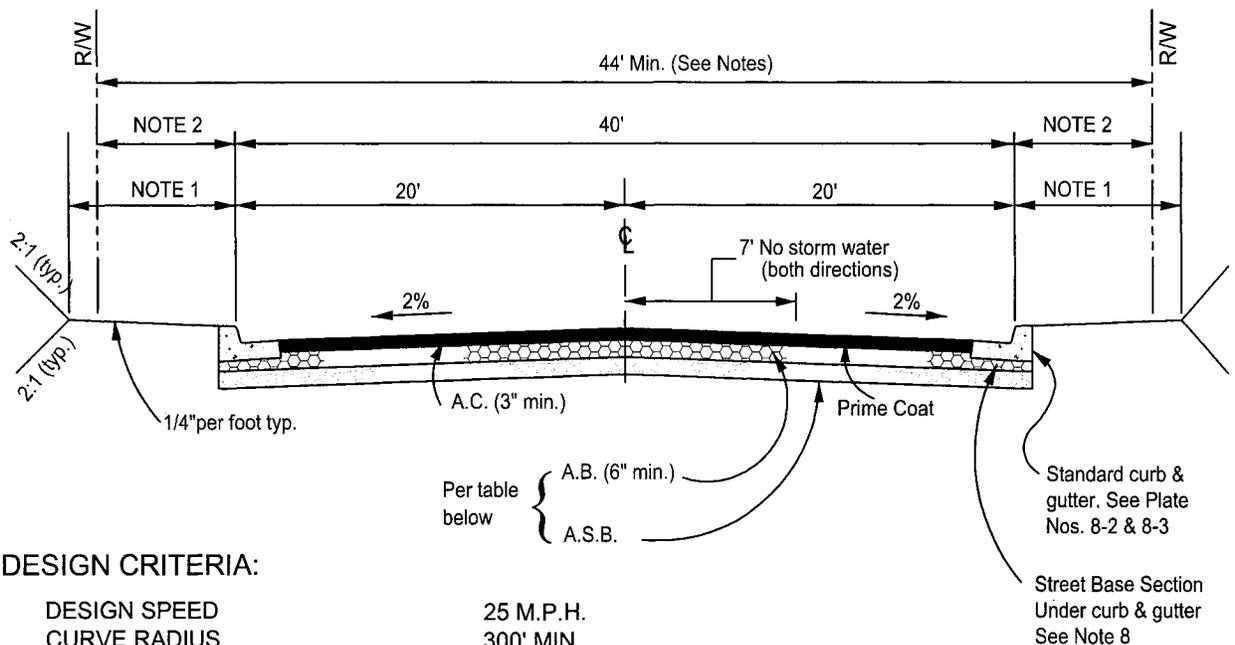
**NOTES:**

1. Local purpose road providing access to 15 dwelling units or less, 1600' or less in length and beginning and ending in the same cross road; or dead end road providing access to adjacent dwelling units and not exceeding 800' in length measured from the center of turnaround to centerline of intersecting road.
2. Pavement width measured from top inside face of opposing curbs.
3. Base under curb and gutter shall extend to same depth as street base (6" min.)
4. Street trees shall be required.
5. Length of vertical curve, see Plate No. 3-8.
6. The City Traffic Engineer may require modifications to proposed landscaping, berms, slopes, street furniture, walls or structures within the sidewalk or parkway area, as well as outside of the public right-of-way, within 500' of any intersection to comply with sight distance requirements.
7. Post one side of street "No Parking".

TABLE FOR A.B./A.S.B.

BASEMENT SOIL 'R' VALUE	> 33	28-33	23-27	18-22	12-17	< 12
A.S.B. THICKNESS WHEN USED WITH 6" A.B.	—	—	—	4"	5"	6"
ALTERNATE - A.B. ONLY	6"	7"	8"	9"	10"	11"

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL	STANDARD RESIDENTIAL LOOP & CUL-DE-SAC	
APPROVED	<i>Mark Watson</i> CITY ENGINEER	5/20/07 DATE			
				PLATE NO.	<b>2-7</b>



**DESIGN CRITERIA:**

DESIGN SPEED	25 M.P.H.
CURVE RADIUS	300' MIN.
GRADIENT	0.6% MIN.-15% MAX. OR AS DETERMINED BY THE PUBLIC WORKS DIRECTOR
STOPPING SIGHT DISTANCE	150' MIN.
INTERSECTION SIGHT DISTANCE	275' MIN.
SUPERELEVATION	NONE
CURB RETURN RADIUS	25' MIN., 35' AT INTERSECTION WITH PRIMARY AND SECONDARY ROADS
TRAFFIC INDEX	6.0

**DRAINAGE:**

SEE "1" SERIES PLATES

**NOTES:**

- Hinge point shall be a minimum of 6' from curb unless approved in writing by the City Engineer.
- Additional width of road right of way and/or 6' wide public service easement may be required for sidewalks, utilities and landscaping.
- Pavement width measured from top inside face of opposing curb.
- P.C.C. pavement required for grades of 15 % or more. P.C.C. pavement design to be approved by City Engineer.
- Street trees shall be required.
- Collector road providing access to 250 dwelling units or less.
- Length of vertical curve, see Plate No. 3-8.
- Base under curb and gutter shall extend to same depth as street base (6" min.).
- The City Traffic Engineer may require modifications to proposed landscaping, berms, slopes, street furniture, walls or structures within the sidewalk or parkway area, as well as outside of the public right-of-way, within 500' of any intersection to comply with sight distance requirements.

TABLE FOR A.B./A.S.B.

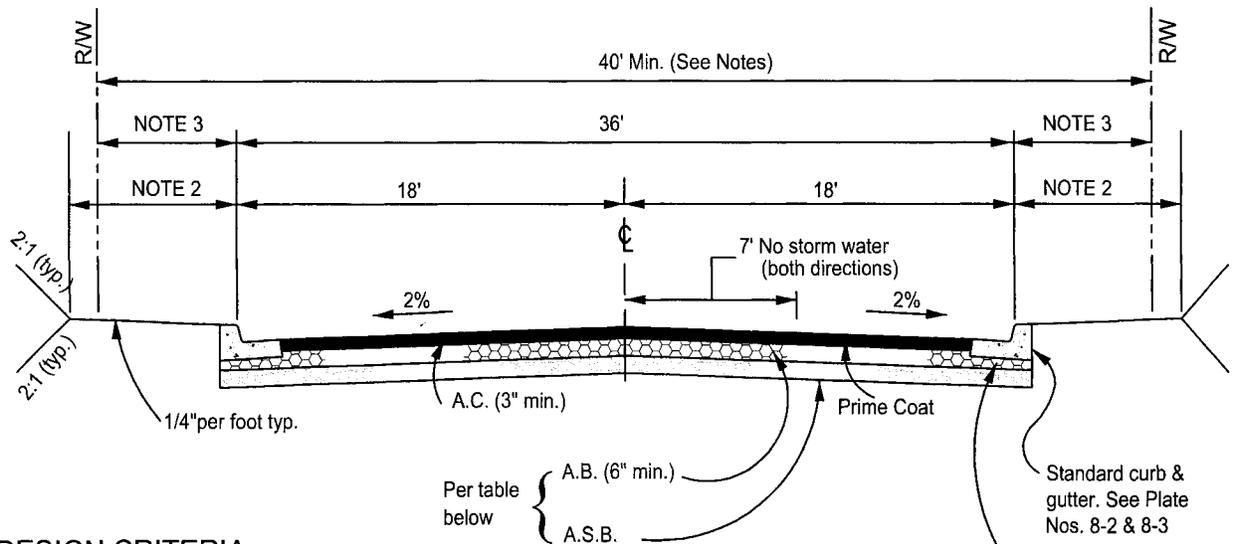
BASEMENT SOIL 'R' VALUE	> 42	37-42	32-36	27-31	22-26	17-21	12-16	7-11	< 7
A.S.B. THICKNESS WHEN USED WITH 6" A.B.	—	—	—	4"	5"	6"	7"	8"	9"
ALTERNATE - A.B. ONLY	6"	7"	8"	9"	10"	11"	12"	13"	14"

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Mark Wood</i> CITY ENGINEER	5/20/07	DATE

**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
COLLECTOR ROAD FOR  
HILLSIDE DEVELOPMENTS

PLATE NO.  
**2-8**



**DESIGN CRITERIA:**

DESIGN SPEED	25 M.P.H.
CURVE RADIUS	225' MIN.
GRADIENT	0.6% MIN. -15% MAX. OR AS DETERMINED BY THE PUBLIC WORKS DIRECTOR
STOPPING SIGHT DISTANCE	150' MIN.
INTERSECTION SIGHT DISTANCE	275' MIN.
SUPERELEVATION	NONE
CURB RETURN RADIUS	25' MIN., 35' AT INTERSECTION WITH PRIMARY AND SECONDARY ROADS
TRAFFIC INDEX	6.0

**DRAINAGE:**

SEE "1" SERIES PLATES

**NOTES:**

- Length of vertical curve, see Plate No. 3-8.
- 3' from curb to hinge point, 1' if slope gradient is less than 5 % beyond right of way.
- Additional width of road right of way and/or 6' wide public service easement maybe required for sidewalks, utilities and landscaping.
- Pavement width measured from top inside face of opposing curbs.
- P.C.C. pavement required for grades of 15 % or more. P.C.C. pavement design to be approved by City Engineer.
- Street trees shall be required.
- Local purpose road providing access to 39 dwelling units or less.
- Base under curb and gutter shall extend to same depth as street base (6" min.).
- The City Traffic Engineer may require modifications to proposed landscaping, berms, slopes, street furniture, walls or structures within the sidewalk or parkway area, as well as outside of the public right-of-way, within 500' of any intersection to comply with sight distance requirements.

TABLE FOR A.B./A.S.B.

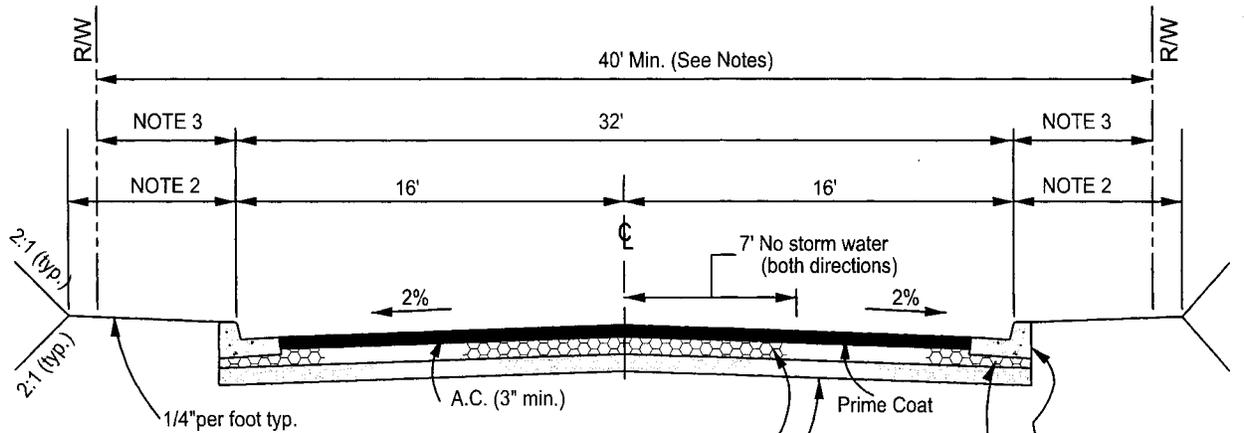
BASEMENT SOIL 'R' VALUE	> 42	37-42	32-36	27-31	22-26	17-21	12-16	7-11	< 7
A.S.B. THICKNESS WHEN USED WITH 6" A.B.	—	—	—	4"	5"	6"	7"	8"	9"
ALTERNATE - A.B. ONLY	6"	7"	8"	9"	10"	11"	12"	13"	14"

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Paulo Water</i>	12/20/03	
	CITY ENGINEER	DATE	

**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
RESIDENTIAL MINOR ROAD  
FOR HILLSIDE DEVELOPMENTS

PLATE NO.  
**2-9**



**DESIGN CRITERIA:**

DESIGN SPEED	25 M.P.H.
CURVE RADIUS	200' MIN.
GRADIENT	0.6% MIN.-15% MAX. OR AS DETERMINED BY THE PUBLIC WORKS DIRECTOR
STOPPING SIGHT DISTANCE	150' MIN.
INTERSECTION SIGHT DISTANCE	275' MIN.
SUPERELEVATION	NONE
CURB RETURN RADIUS	25' MIN., 35' AT INTERSECTION WITH PRIMARY AND SECONDARY ROADS
TRAFFIC INDEX	6.0

**DRAINAGE:**

SEE "1" SERIES PLATES

**NOTES:**

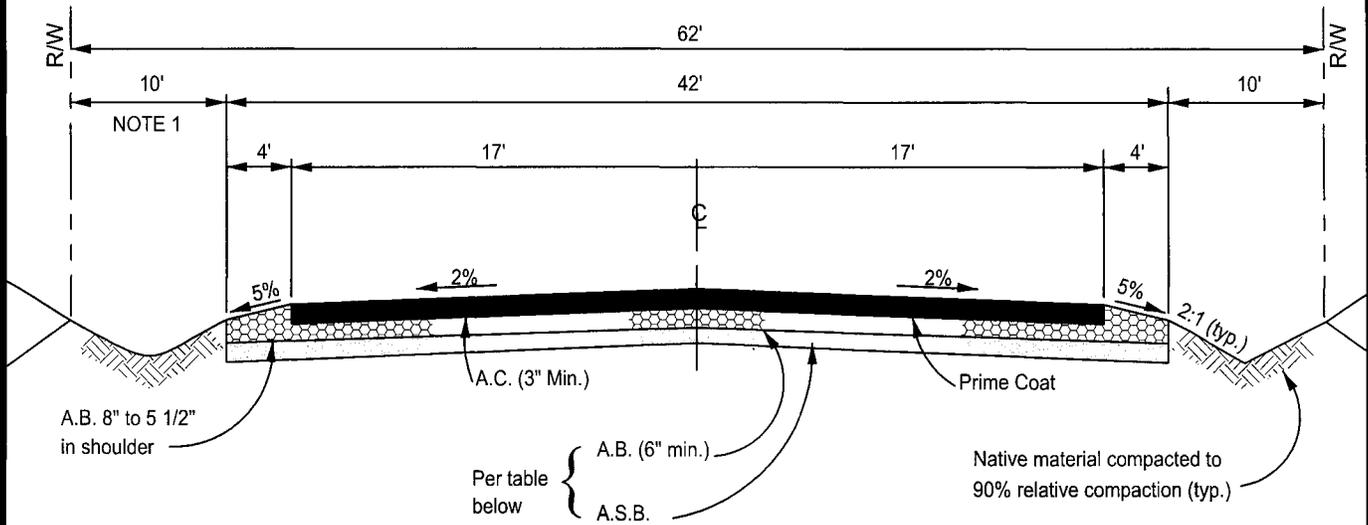
- Length of vertical curve, see Plate No. 3-8.
- 3' from curb to hinge point, 1' if side slope is less than 5 % outside right of way.
- Additional width of road right of way and/or 6' wide public service easement maybe required for sidewalks, utilities and landscaping.
- Uniform 2% cross fall toward cut slope acceptable in hillsides with no median type curb at high side.
- Pavement width measured from top inside face of opposing curb.
- Local purpose road providing access to 15 dwelling units or less, 1600' or less in length and beginning and ending in the same cross road; or dead end road providing access to adjacent dwelling units and not exceeding 800' in length measured from the center of turnaround to centerline of intersecting road.
- P.C.C. pavement required for grades of 15 % or more. P.C.C. pavement design to be approved by City Engineer.
- Off street parking shall be required as determined by the Planning Commission. Post one side "No Parking".
- Street trees shall be required.
- Base under curb and gutter shall extend to same depth as street base (6" min.).
- The City Traffic Engineer may require modifications to proposed landscaping, berms, slopes, street furniture, walls or structures within the sidewalk or parkway area, as well as outside of the public right-of-way, within 500' of any intersection to comply with sight distance requirements.

**TABLE FOR A.B./A.S.B.**

BASEMENT SOIL 'R' VALUE	> 33	28-33	23-27	18-22	12-17	< 12
A.S.B. THICKNESS WHEN USED WITH 6" A.B.	—	—	—	4"	5"	6"
ALTERNATE - A.B. ONLY	6"	7"	8"	9"	10"	11"

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL	STANDARD RESIDENTIAL LOOP & CUL-DE-SAC FOR HILLSIDE DEVELOPMENTS	
APPROVED <i>Paulo W. [Signature]</i> CITY ENGINEER				DATE 5/20/07	PLATE NO. <b>2-10</b>

FOR USE ONLY IN APPROVED LOCATIONS



DESIGN CRITERIA:

DESIGN SPEED	55 M.P.H.
CURVE RADIUS	990' MIN. (WITH MAX. SUPERELEVATION)
GRADIENT	0.6% MIN. - 10% MAX.
STOPPING SITE DISTANCE	500' MIN.
INTERSECTION SITE DISTANCE	605' MIN.
VERTICAL CLEARANCE	15'
DESIGN LOADING	(AASHO) H-20
SUPERELEVATION	0.07 MAX.
TRAFFIC INDEX	6.0
PASSING SIGHT DISTANCE	1950' MIN.
LENGTH OF VERTICAL CURVE	SEE PLATE NO. 3-8
CURVES	SUPERELEVATION PER PLATE NO. 3-5

DRAINAGE:

SEE "1" SERIES PLATES

NOTE:

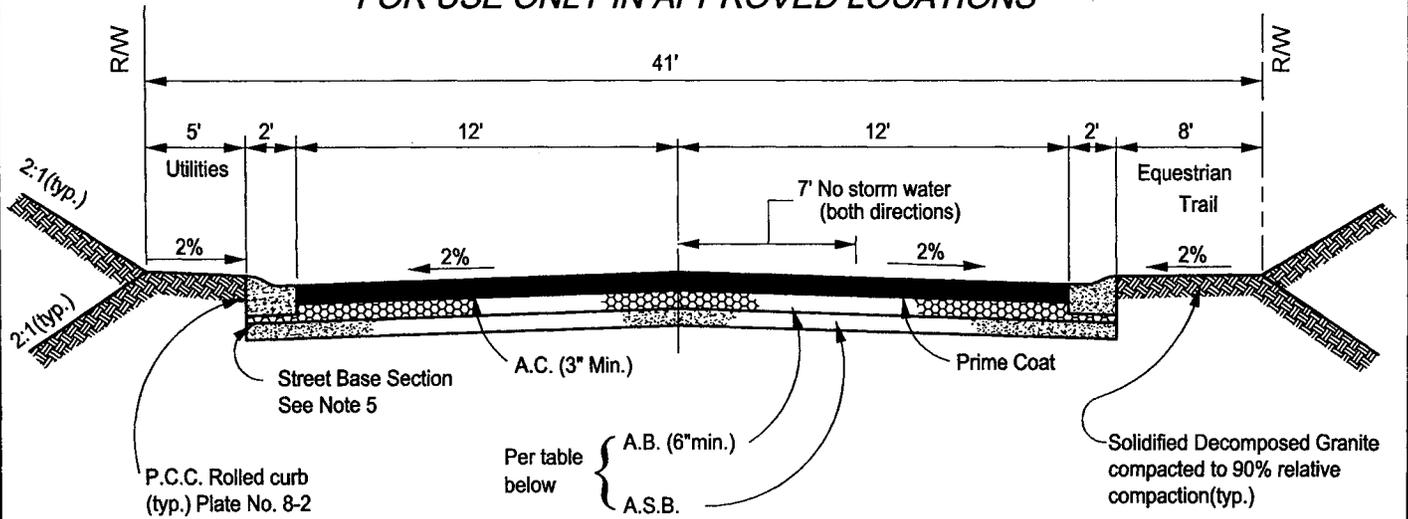
- Width may be adjusted if equestrian trail easement is required.
- The City Traffic Engineer may require modifications to proposed landscaping, berms, slopes, street furniture, walls or structures within the sidewalk or parkway area, as well as outside of the public right-of-way, within 500' of any intersection to comply with sight distance requirements.

TABLE FOR A.B./A.S.B.

BASEMENT SOIL 'R' VALUE	> 42	37-42	32-36	27-31	22-26	17-21	12-16	7-11	< 7
A.S.B. THICKNESS WHEN USED WITH 6" A.B.	_____	_____	_____	4"	5"	6"	7"	8"	9"
ALTERNATE - A.B. ONLY	6"	7"	8"	9"	10"	11"	12"	13"	14"

				CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL	STANDARD RURAL ROAD	
APPROVED <i>M. D. [Signature]</i> 5/20/13 CITY ENGINEER DATE				PLATE NO. <b>2-11</b>	

FOR USE ONLY IN APPROVED LOCATIONS



DESIGN CRITERIA:

DESIGN SPEED	25 M.P.H.
CURVE RADIUS	200' MIN.
GRADIENT	0.6% MIN. - 15.0% MAX. OR AS DETERMINED BY PUBLIC WORKS DIRECTOR
STOPPING SIGHT DISTANCE	150' MIN.
INTERSECTION SIGHT DISTANCE	275' MIN. SEE PLATE NO. 3-10
SUPERELEVATION	NONE
TRAFFIC INDEX	6.0
LENGTH OF VERTICAL CURVE	SEE PLATE NO. 3-8

DRAINAGE:

SEE "1" SERIES PLATES

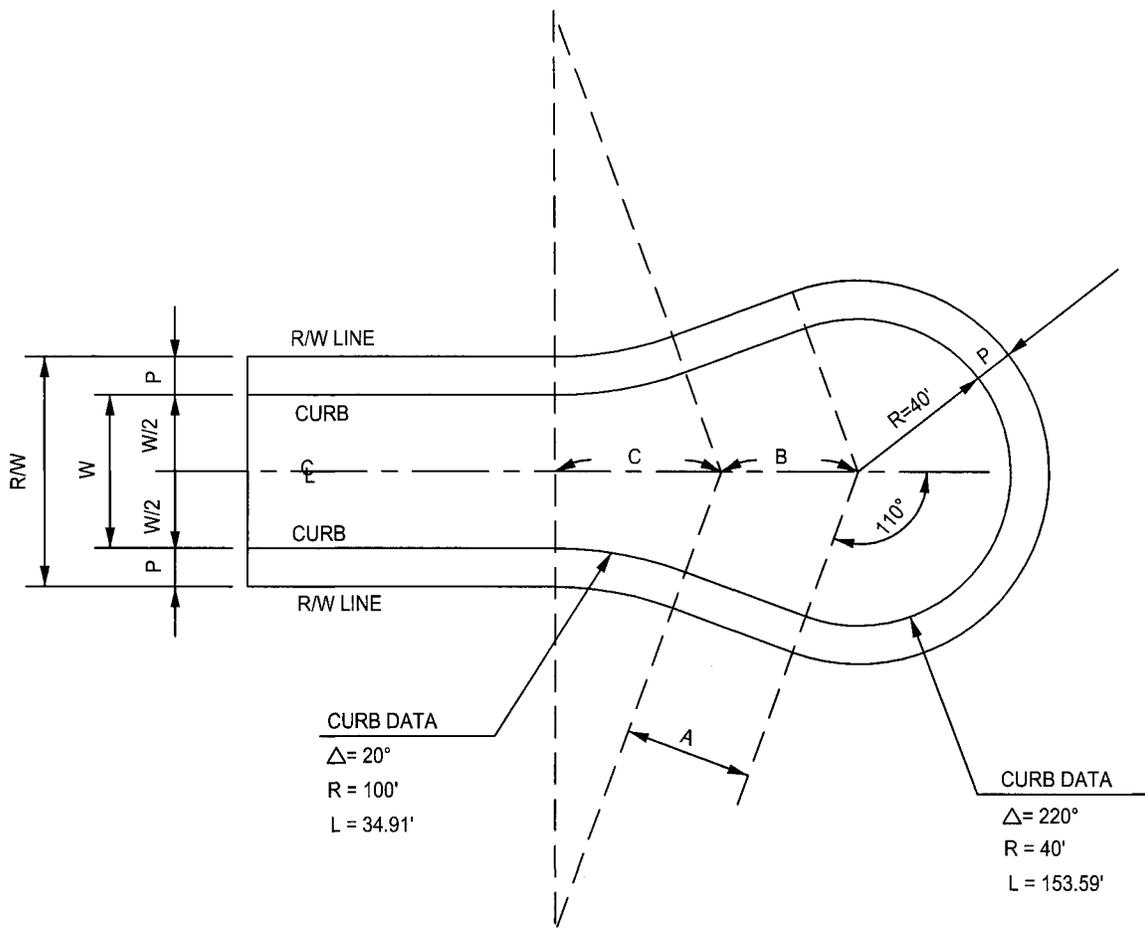
NOTES:

- Local purpose road providing access to 15 dwelling units or less, 1600' or less in length an beginning and ending in the same cross road or dead end road providing access to adjacent dwelling units and not exceeding 800' in length measured from the center of turnaround to centerline of intersecting road.
- P.C.C. pavement required for grades of 15% or more. P.C.C. pavement design to be approved by City Engineer.
- Off street parking shall be required as determined by the Planning Commission. On-street parking is prohibited.
- Street trees shall be required.
- Base under curb and gutter shall extend to same depth as street base (6" min.).
- Equestrian trail shall provide 8' width, clear of any obstructions.
- The City Traffic Engineer may require modifications to proposed landscaping, berms, slopes, street furniture, walls or structures within the sidewalk or parkway area, as well as outside of the public right-of-way, within 500' of any intersection to comply with sight distance requirements.

TABLE FOR A.B./A.S.B.

BASEMENT SOIL 'R' VALUE	> 42	37-42	32-36	27-31	22-26	17-21	12-16	7-11	< 7
A.S.B. THICKNESS WHEN USED WITH 6" A.B.	—	—	—	4"	5"	6"	7"	8"	9"
ALTERNATE - A.B. ONLY	6"	7"	8"	9"	10"	11"	12"	13"	14"

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
5	Revised Material for DG Path	10-22-08	MAF	ALTERNATE RURAL & CUL-DE-SAC HILLSIDE DEVELOPMENTS	
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED <i>Jay S. Morgan</i> 10/23/08 CITY ENGINEER DATE				PLATE NO <b>2-12</b>	



**NOTE:**

Gutter flow line gradient 1.0% min.

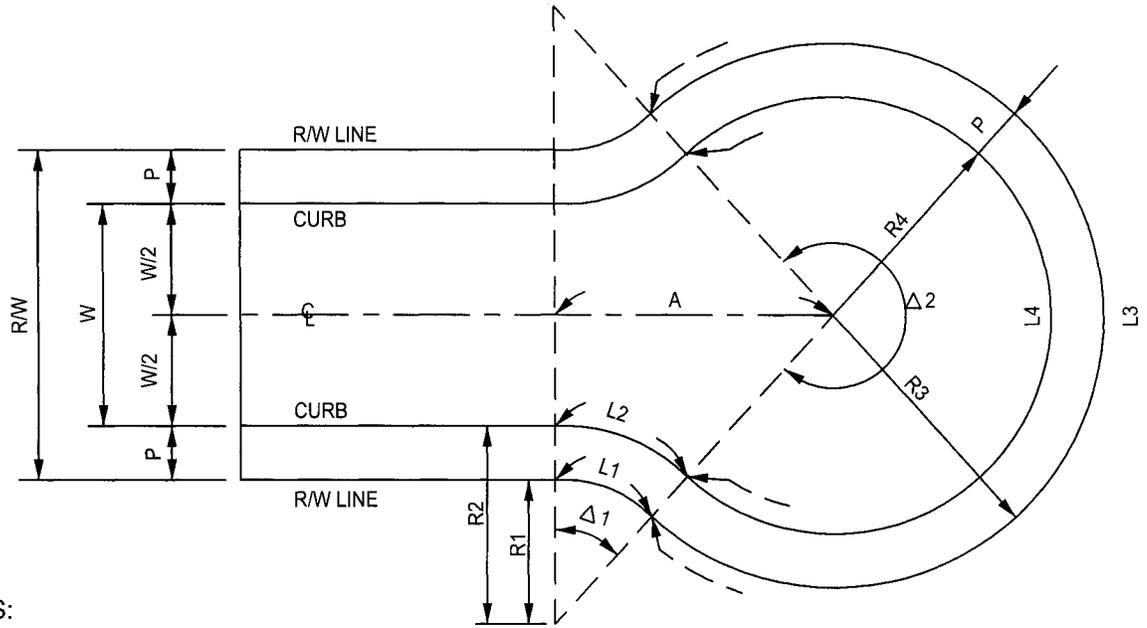
R/W = RIGHT OF WAY

W = CURB TO CURB WIDTH

V = VARIABLE

PLATE NO.	W ft.	W/2 ft.	R/W ft.	P ft.	A ft.	B ft.	C ft.
2-4	40	20	60	10	33.79	35.96	43.68
2-5	40	20	60	10	33.79	35.96	43.68
2-6	36	18	56	10	39.64	42.18	42.95
2-7	32	16	52	10	45.49	48.40	42.22
2-8	40	20	V	V	33.79	35.96	43.68
2-9	36	18	V	V	39.64	42.18	42.95
2-10	32	16	V	V	45.49	48.40	42.22

				<b>CITY OF THOUSAND OAKS</b>		PUBLIC WORKS DEPARTMENT	STANDARD CUL - DE - SAC TYPE I	PLATE NO. <b>3-1</b>
CHG	DESCRIPTION	DATE	INITIAL					
APPROVED: <i>[Signature]</i>				5/20/03				
				CITY ENGINEER				
				DATE				



**NOTES:**

Offset culdesac is permitted, with center offset =  $R4 - W/2$

R/W = RIGHT OF WAY

W = CURB TO CURB WIDTH

V = VARIES

PLATE NO.	W ft.	W/2 ft.	R/W ft.	P ft.	A ft.
2-4	40	20	60	10	50.99
2-5	40	20	60	10	50.99
2-6	36	18	56	10	53.07
2-7	32	16	52	10	54.99
2-8	40	20	V	V	50.99
2-9	36	18	V	V	53.07
2-10	32	16	V	V	54.99
PLATE NO.	Δ 1	R1 ft.	L1 ft.	R2 ft.	L2 ft.
2-4	42° 50' 00"	25	18.69	35	26.17
2-5	42° 50' 00"	25	18.69	35	26.17
2-6	45° 02' 08"	25	19.65	35	27.51
2-7	47° 09' 23"	25	20.58	35	28.81
2-8	42° 50' 00"	V	V	35	26.17
2-9	45° 02' 08"	V	V	35	27.51
2-10	47° 09' 23"	V	V	35	28.81
PLATE NO.	Δ 2	R3 ft.	L3 ft.	R4 ft.	L4 ft.
2-4	265° 40' 00"	50	231.84	40	185.47
2-5	265° 40' 00"	50	231.84	40	185.47
2-6	270° 04' 00"	50	235.68	40	188.55
2-7	274° 18' 46"	50	239.38	40	191.51
2-8	265° 40' 00"	V	V	40	185.47
2-9	270° 04' 16"	V	V	40	188.55
2-10	274° 18' 46"	V	V	40	191.51

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Madhwa</i>	8/20/03	
	CITY ENGINEER	DATE	

**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
CUL - DE - SAC  
TYPE II

PLATE NO.  
**3-2**

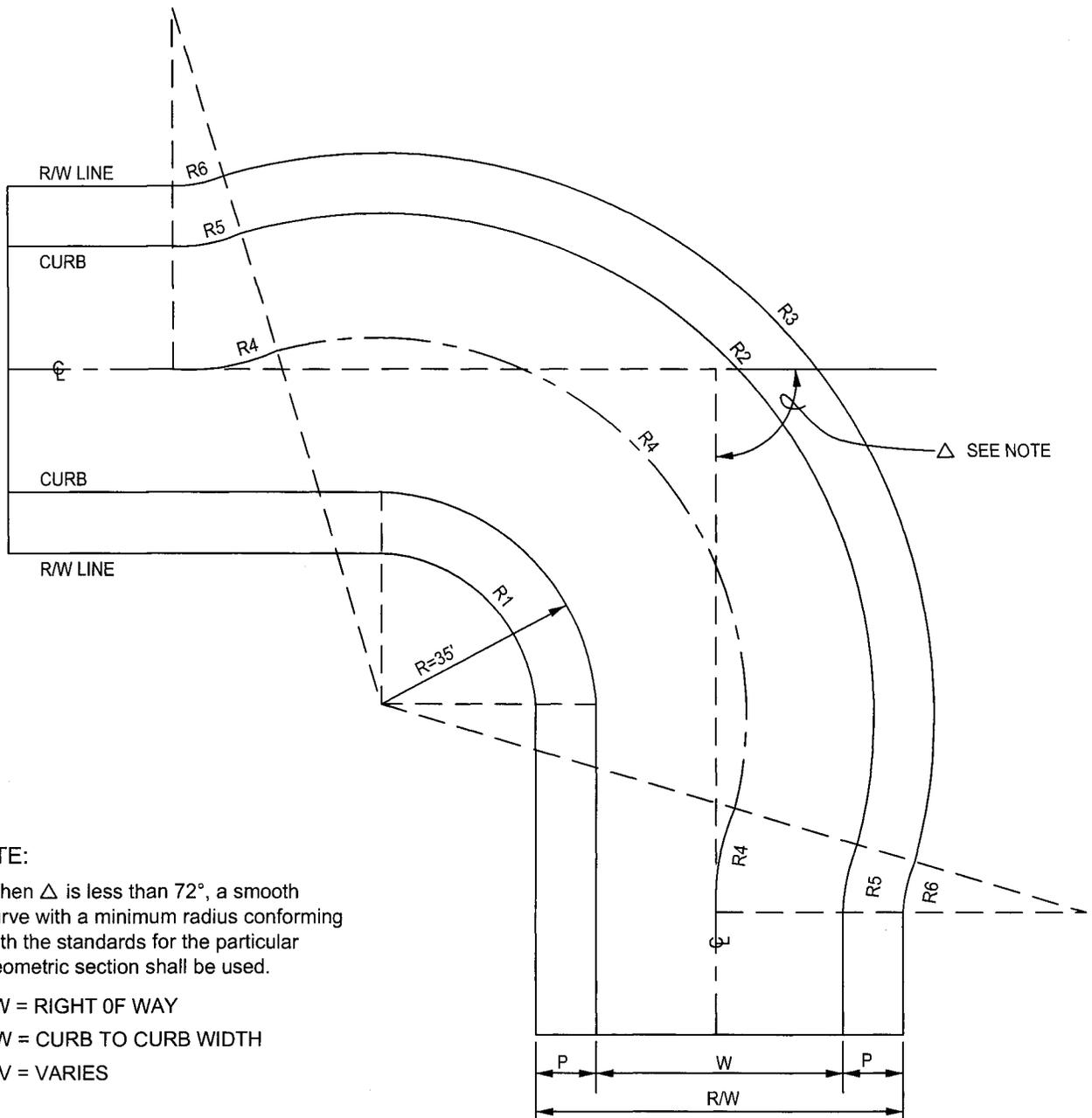


PLATE NO.	R/W ft.	W ft.	P ft.	R1 ft.	R2 ft.	R3 ft.	R4 ft.	R5 ft.	R6 ft.
2-4	60	40	10	25	80	90	60	40	30
2-5	60	40	10	25	80	90	60	40	30
2-6	56	36	10	25	78	88	60	42	32
2-7	52	32	10	25	76	86	60	44	34
2-8	V	40	V	V	80	V	60	40	V
2-9	V	36	V	V	78	V	60	42	V
2-10	V	32	V	V	76	V	60	44	V

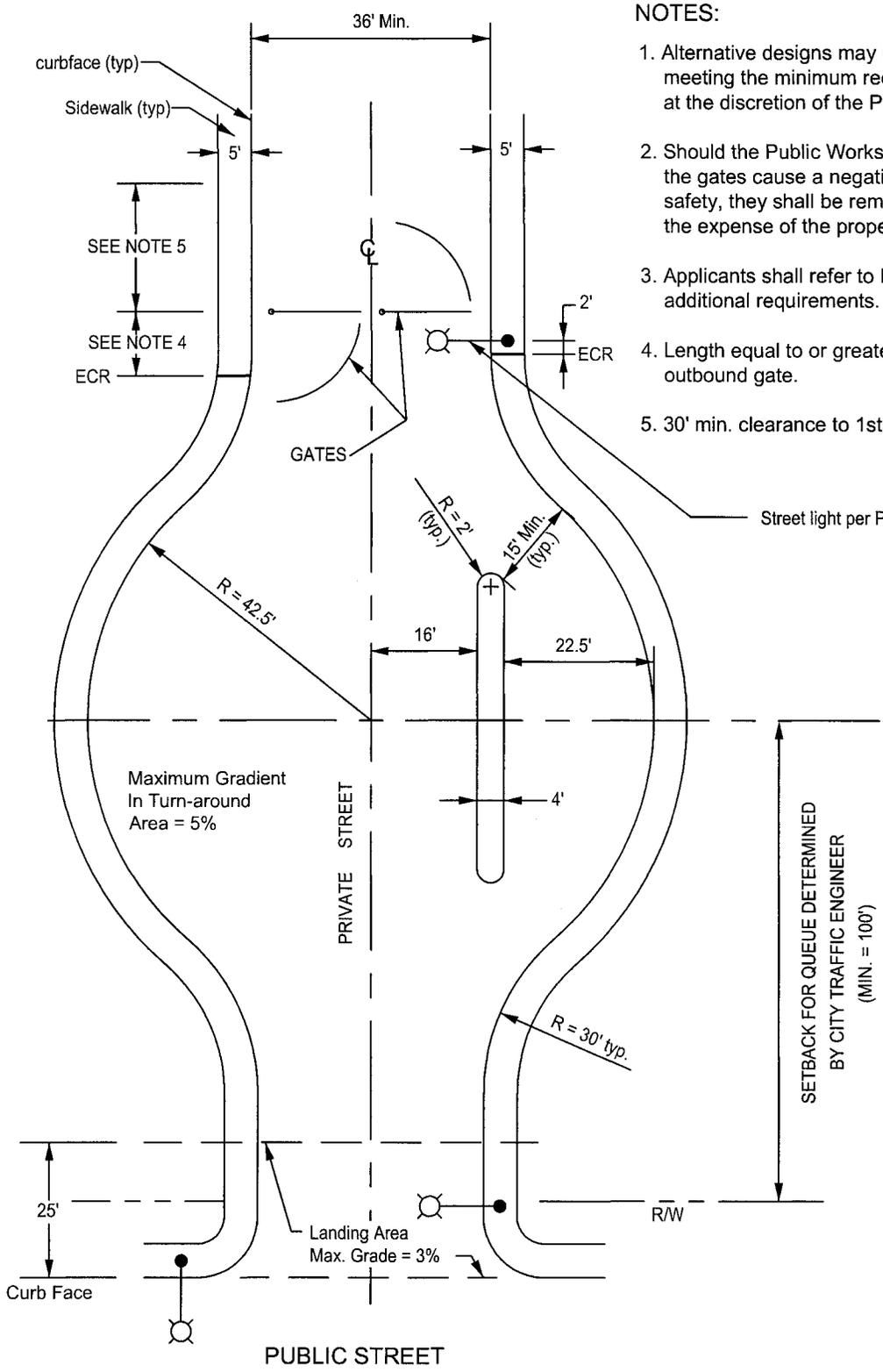
CHG	DESCRIPTION	DATE	INITIAL

APPROVED *[Signature]* 5/20/03  
 CITY ENGINEER DATE

**CITY OF THOUSAND OAKS**  
 PUBLIC WORKS DEPARTMENT

STANDARD  
 ROAD INTERSECTION  
 "L" SHAPE

PLATE NO.  
**3-3**



- NOTES:**
1. Alternative designs may be accepted subject to meeting the minimum requirements stated herein at the discretion of the Public Works Director.
  2. Should the Public Works Director determine that the gates cause a negative impact to traffic safety, they shall be removed within 24 hours at the expense of the property owner.
  3. Applicants shall refer to Fire Department for additional requirements.
  4. Length equal to or greater than length of outbound gate.
  5. 30' min. clearance to 1st driveway (both sides)

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Paul Weber</i> CITY ENGINEER	5/20/03 DATE	

**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
GATED ACCESS

PLATE NO.  
**3-4**

### URBAN CONDITIONS

Lower superelevation rates may be necessary in urban areas where restricted speed zones or road intersections are controlling factors. In addition, established road grades, curbs, or drainage may prove difficult to alter. Such conditions may warrant, for example, a reduction in the superelevation rate, different rates for each half of the roadbed or both. In warping street areas for drainage, adverse superelevation should be avoided. Approval of the Public Works Director is required for such deviations.

### AXIS OF ROTATION

The axis of rotation for superelevation is usually the centerline of the roadbed. However, in special cases such as roads where curves are preceded by long relatively level tangents, the plane of superelevation may be rotated about the inside edge of the pavement to improve perception of the curve. In flat country, drainage pockets caused by superelevation may be avoided by changing the axis of rotation from the centerline to the inside edge of the pavement. Intersection may require special treatment.

### SUPERELEVATION TRANSITION

A superelevation transition is variable in length depending upon the amount of superelevation. With respect to the beginning or end of curve, two-thirds of the transition is on the tangent approach and one-third within the curve. This results in two-thirds of the full superelevation at the beginning of the curve.

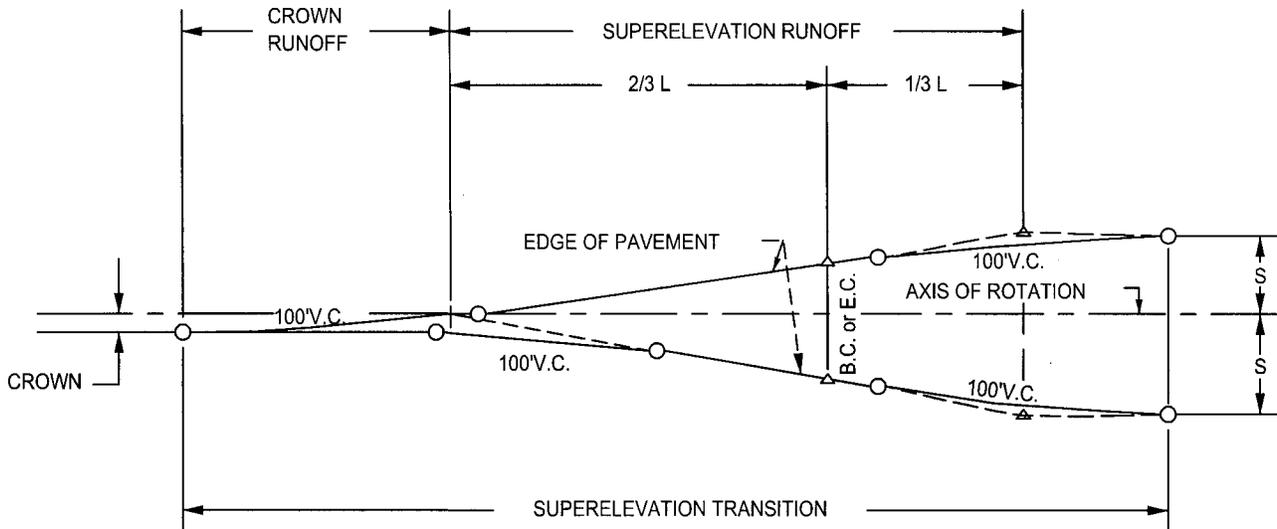
Superelevation transition shall be designed as shown on Plate Nos. 3-6 & 3-7. Shoulder transitions normally shall be made in the same manner as traveled way transitions.

After a superelevation transition is computed, profiles of the pavement edges should be plotted and irregularities removed by introducing smooth curves. For wide pavement it is often advantageous to plot intermediate profiles. On curved interchange roadways, a pronounced and unsightly sag may develop on the low side of the superelevation. This is corrected by adjusting the grades on the edges of pavement through the curve.

### SUPERELEVATION OF COMPOUND CURVES

Superelevation of compound curves shall be accomplished as shown on Plate 3-7. In Case 2, when the standard superelevation for both curves is practically equal, the superelevation ratio for the longer radius curves shall be arbitrarily reduced by one-third. This will tend to equalize the safe speed throughout the entire length of the compound curve.

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT
CHG	DESCRIPTION	DATE	INITIAL	
APPROVED	 CITY ENGINEER	5/20/03 DATE		STANDARD SUPERELEVATION GUIDELINES
				PLATE NO. <b>3-5</b>



Formula:  $L = 150 DS$  (Note: Adjust computed length to nearest 10' divisible by 3)

L = Length of superelevation run off (ft.)

S = Superelevation rate (ft./ft.)

D = Distance from axis of rotation to outside edge of lanes (ft.)

Min. L = 150'

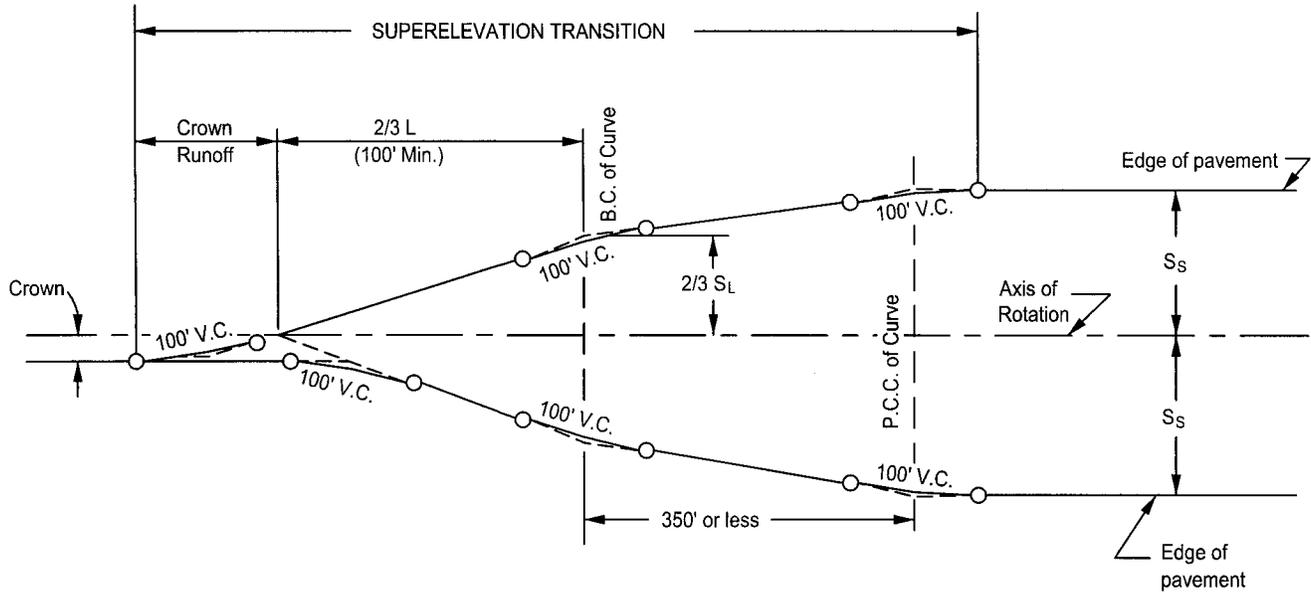
Max. L = 510'

TABLE OF SUPERELEVATION RUNOFF LENGTHS

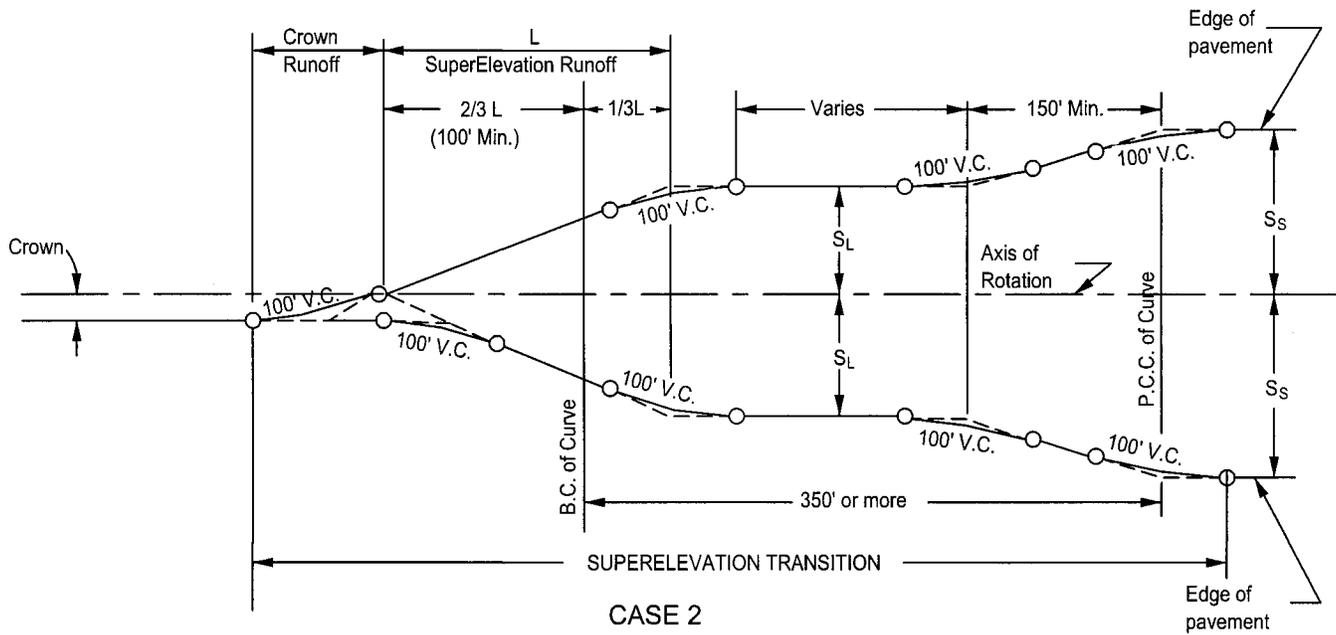
Superelevation Rate "S" ft./ft.	Length L (ft.)		
	24 ft.	36 ft.	48 ft.
0.02	150	150	150
0.03	150	180	210
0.04	150	210	300
0.05	180	270	360
0.06	210	330	450
0.07	270	390	510
0.08	300	450	
0.09	330	480	
0.10	360	510	
0.11	390		
0.12	420		

FOR WIDTHS OF "D" NOT INCLUDED IN TABLE, USE FORMULA

				CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL	STANDARD SUPERELEVATION TRANSITION	
APPROVED <i>Pauls Watson</i> CITY ENGINEER				5/12/03 DATE	PLATE NO. <b>3-6</b>



CASE 1



CASE 2

L = Length of superlevation runoff (ft.) from table on Plate No. 3-6.

$S_S$  = Superlevation rate for smaller radius curve (ft./ft.)

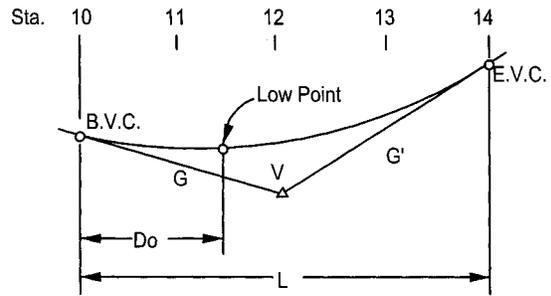
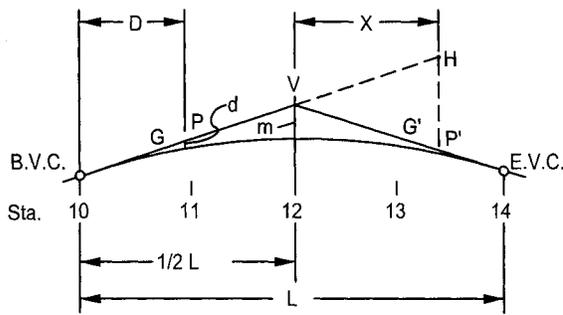
$S_L$  = Superlevation rate for larger radius curve (ft./ft.)

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Paul Weber</i> CITY ENGINEER	5/20/07 DATE	

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

STANDARD  
SUPERELEVATION OF  
COMPOUND CURVES

PLATE NO.  
**3-7**



**IN ANY VERTICAL CURVE**

$$m = \frac{(G' - G)L}{8}$$

$$m = \frac{1}{2} \left( \frac{\text{Elev. B.V.C.} + \text{Elev. E.V.C.}}{2} - \text{Elev. V} \right)$$

$$d = m \left( \frac{D}{L/2} \right)^2 = \frac{4m}{L^2} D^2$$

$$d = \frac{D^2(G'-G)}{2L}$$

$$X = \frac{100(H-P')}{(G-G')}$$

$$S = G - D \left( \frac{G-G'}{L} \right)$$

$$D_o = \frac{LG}{G-G'}$$

**NOTES:**

1. Vertical curve is required where difference in road grade is greater than 0.5 %, or where sum of grade breaks within 200' exceeds 0.5 %.
2. Minimum vertical curve length "L" (in feet) shall be 3 times the design speed (in mph). A rising grade carries a plus sign while a falling grade carries a minus sign. Thus in a crest vertical curve as above, G carries a plus sign and G' a minus sign when progressing in the direction of the stationing. When progressing in the opposite direction, G becomes a minus grade and G' a plus grade.

**WHERE**

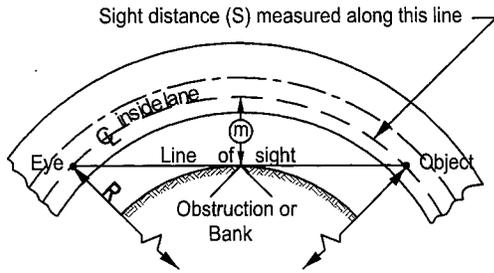
- L = Length of curve-100 ft. units or stations.
- G and G' = Grade rates - percent.
- m = Middle ordinate-ft.
- d = Correction from grade line to curve-ft.
- D = Distance from B.V.C. or E.V.C. to any point on curve - stations.
- S = Slope of the tangent to the curve at any point - percent.
- X = distance from P' to V-ft.
- H = Elevation of grade G produced to station of P'.
- P and P' = Elevation on respective grades.
- D<sub>o</sub> = Distance to low or high point from extremity of curve - stations.
- V = Elevation of intersection point of approach grades.

CHG	DESCRIPTION	DATE	INITIAL
APPROVED <i>Paul Walker</i>		5/20/07	
CITY ENGINEER		DATE	

**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
VERTICAL CURVES

PLATE NO.  
**3-8**



S = SIGHT DISTANCE IN FEET  
 R = RADIUS OF Q INSIDE LANE IN FEET  
 m = DISTANCE FROM Q INSIDE LANE IN FEET  
 V = DESIGN SPEED FOR "S" IN M.P.H.

Angle is expressed in degrees.

$$m = R \left[ 1 - \cos \left( \frac{28.65S}{R} \right) \right]$$

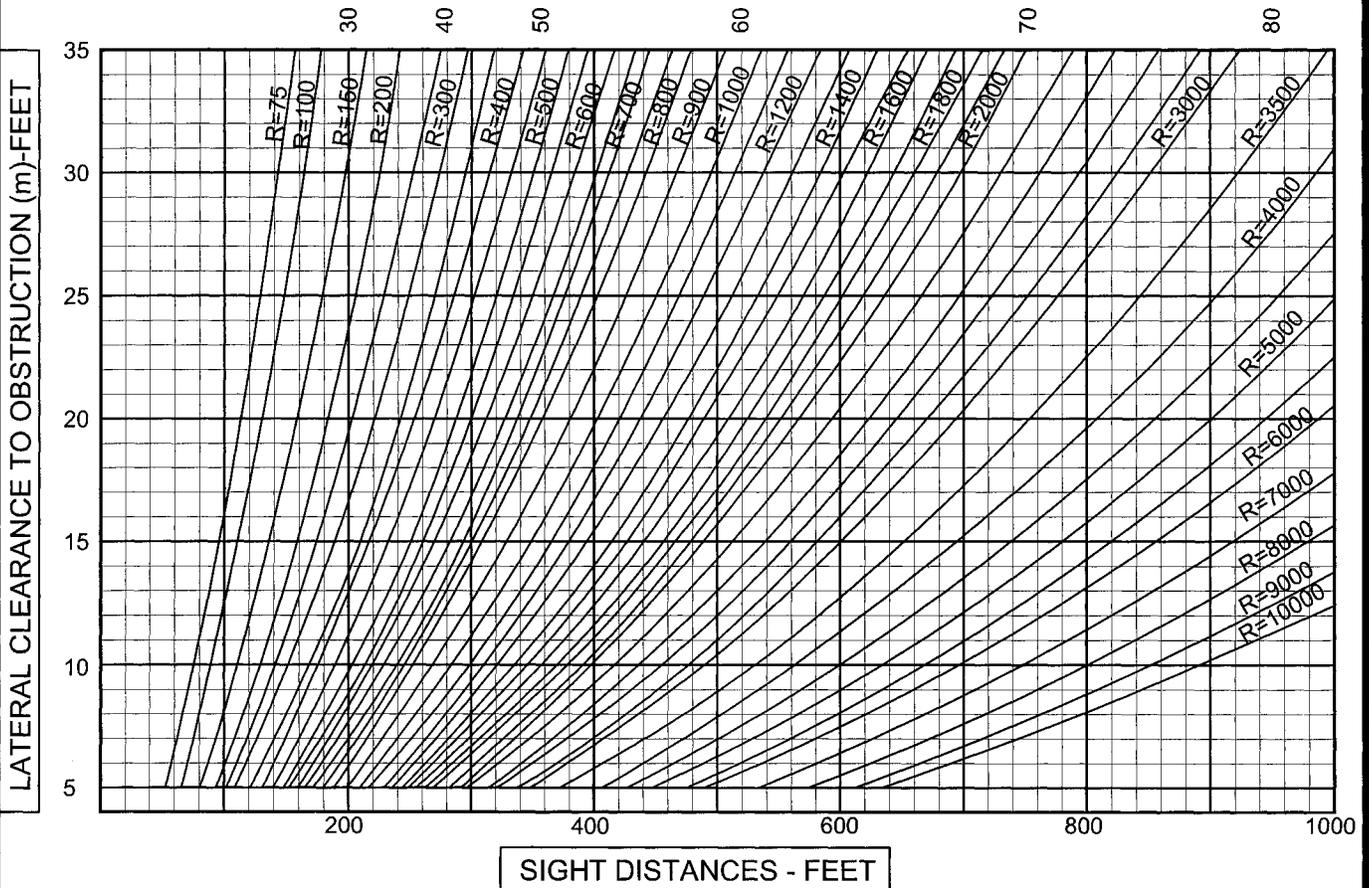
$$S = \frac{R}{28.65} \left[ \cos^{-1} \left( \frac{R - m}{R} \right) \right]$$

Formula applies only when S is equal to or less than length of curve.

HEIGHT OF EYE - 3.50'  
 HEIGHT OF OBJECT - 0.50'  
 LINE OF SIGHT IS 2.0' ABOVE CENTERLINE INSIDE LANE AT POINT OF OBSTRUCTION

DESIGN SPEED (M.P.H.)	SIGHT DISTANCE (FEET)
20	125
25	165
30	200
35	240
40	275
45	315
50	350
55	440
60	525
65	600
70	750

DESIGN SPEED - MPH

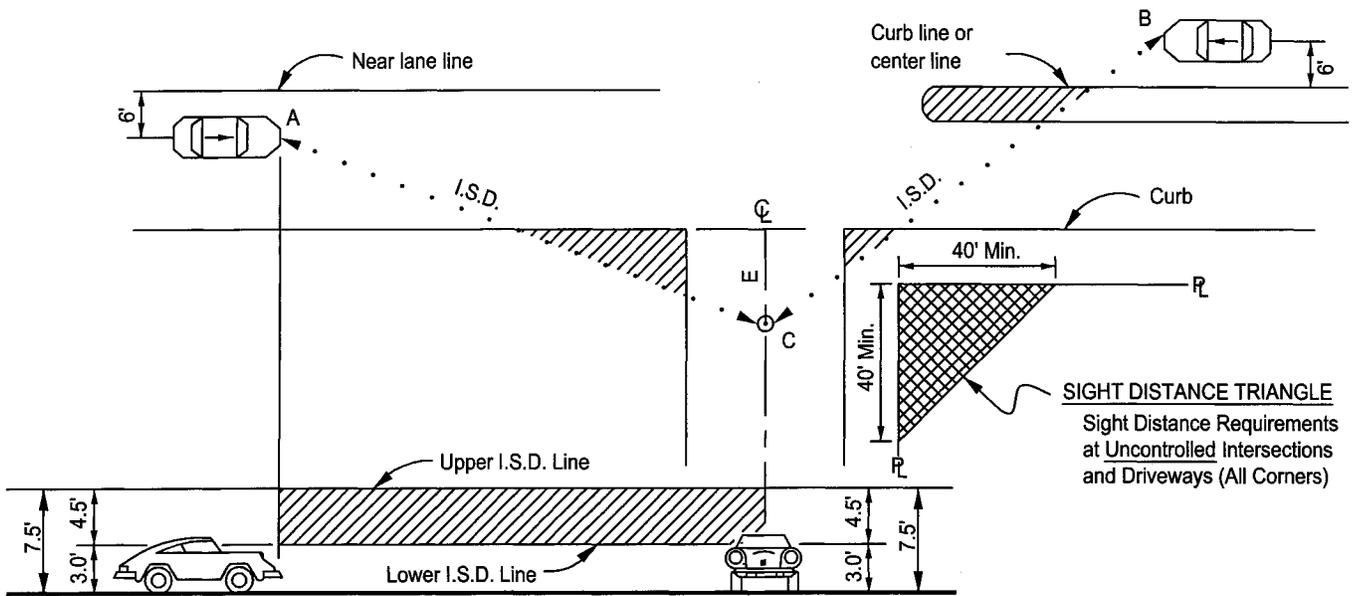


CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>[Signature]</i>	1/20/03	DATE
	CITY ENGINEER		

CITY OF THOUSAND OAKS  
 PUBLIC WORKS DEPARTMENT

STANDARD  
 STOPPING SIGHT DISTANCE  
 ON HORIZONTAL CURVES

PLATE NO.  
**3-9**



SPEED V	MIN. I.S.D.	
	For left or through traffic	For right turns only
20	220'	120'
25	275'	150'
30	330'	190'
35	385'	220'
40	440'	270'
45	495'	320'
50	550'	360'
55	605'	410'
60	660'	450'

E = 8' at driveways and 18' at public road intersections.  
(Lesser values may be considered only under special situations).

Height of eye/object at points A and B and C and within the sight triangle = 3.0' Lower limit and 7.5' Upper limit.

V = Speed (MPH) = the greater of the following:

- 1) Anticipated speed (TBD by City Traffic Engineer)
- 2) Prevailing speed
- 3) Design speed
- 4) Posted speed

I.S.D. = Minimum intersection and corner sight distance - no obstruction permitted in these areas.

▨ Limits of vertical sight zone    ▩ Sight distance triangle

There shall be no sight distance obstructions in either the horizontal or vertical sight zones for controlled intersections or within the sight distance triangle at uncontrolled intersections or driveways. Sight distance obstructions are objects that may block the view of motorists including utility vents, hills, walls, signs, street furniture, mature landscaping\*, horizontal and vertical road curvatures etc., in the combined horizontal and vertical sight zones. Individual elements (including street trees) shall be no thicker than 12 inches nor spaced closer than 100 feet apart at intersections or 50 feet apart at driveways.

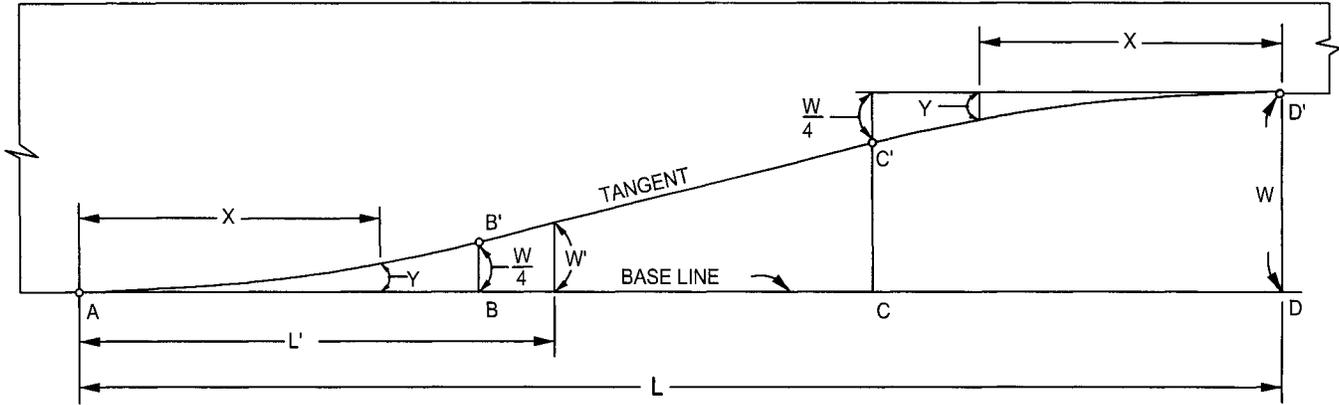
**City Policy For Evaluating Sight Distance On All Proposed Projects:**

1. The developer's engineer shall evaluate all proposed intersections and driveways to maintain the minimum I.S.D. criteria for street pans, site plans, grading plans, tract maps, and landscape plans.
2. If any locations are identified with an I.S.D less than the minimum I.S.D. for any of the speeds listed above, the developer's engineer shall bring these locations to the attention of the City Traffic Engineer by identifying the exact length of I.S.D. that is available as to each associated speed; and the obstruction limiting the I.S.D. shall be identified. The developer's engineer shall also note on the plans what improvements would be necessary to obtain the 'minimum' I.S.D.. A profile plan depicting I.S.D. final improvements and mature landscaping theme shall be provided.

**\* NOTE:**

It is especially critical that "mature landscaping" and finish sloped surfaces be considered in this I.S.D. criteria, not just the bare ground.

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
6	Modify Vertical Limits of Sight Zone	3-27-12	JRH	<b>INTERSECTION AND CORNER SIGHT DISTANCE REQUIREMENTS AT INTERSECTIONS AND DRIVEWAYS</b>	
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED <i>Jay Morgan</i> CITY ENGINEER				3.27.12 DATE	



L = TAPER LENGTH

AB = BC = CD = L/3

AB' AND C'D' ARE PARABOLIC CURVES EXCEPT  
ON CURVED ALIGNMENTS.

FORMULA:

$$Y = 2.25 \frac{WX^2}{L^2}$$

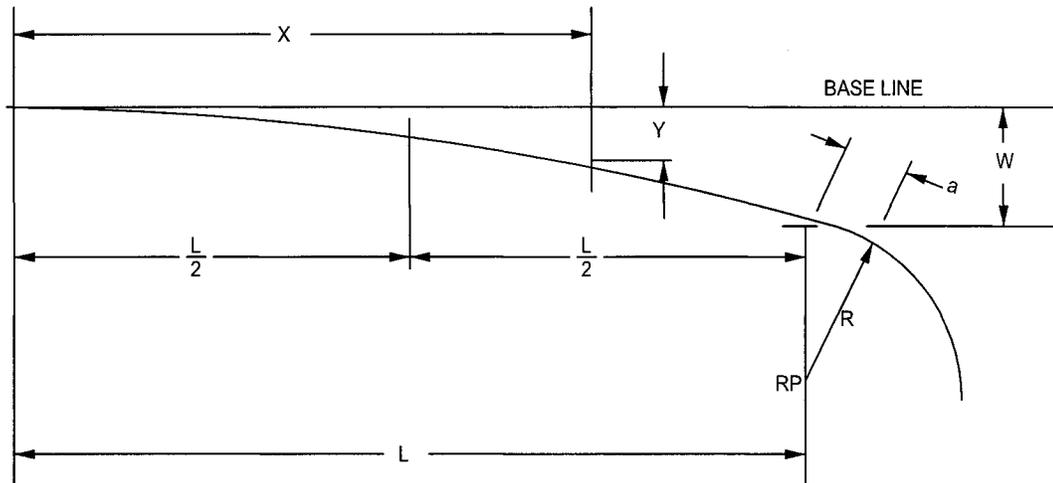
L	Distance from point "A" along base line in ft. (L')											
60'	5	10	15	20	25	30	35	40	45	50	55	60
72'	6	12	18	24	30	36	42	48	54	60	66	72
90'	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90
120'	10	20	30	40	50	60	70	80	90	100	110	120

W	Offset from base line in ft. (W')											
10'	0.16	0.62	1.41	2.50	3.75	5.00	6.25	7.50	8.59	9.38	9.84	10.00
11'	0.17	0.69	1.55	2.75	4.12	5.50	6.88	8.25	9.45	10.31	10.38	11.00
12'	0.19	0.75	1.69	3.00	4.50	6.00	7.50	9.00	10.31	11.25	11.81	12.00

NOTES:

1. The storage lane shall be 150' long minimum (not including taper)
2. To determine offset distances for any length taper use the formula for the portions AB' and C'D' which are parabolic curves. The portion B'C' is a tangent. In the case when the base line is curved, the offsets are calculated by assuming the base line to be a tangent; they are then applied to the curved base line. AB' and C'D' are no longer parabolic and B'C' is no longer a tangent.
3. The standard taper length is 90 ft. Use of other lengths is subject to the approval of the Public Works Director.

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED <i>Paul S. [Signature]</i> 5/20/03 CITY ENGINEER DATE				STANDARD TAPER FOR LEFT TURN LANE	
				PLATE NO. <b>3-11</b>	



$$Y = W \left(\frac{X}{L}\right)^2$$

L = LENGTH OF FLARE IN FEET  
 W = MAXIMUM OFFSET DISTANCE IN FEET  
 X = DISTANCE ALONG BASE LINE IN FEET  
 Y = OFFSET FROM BASE LINE IN FEET

a = TANGENT  
 R = RADIUS OF NOSE IN FEET

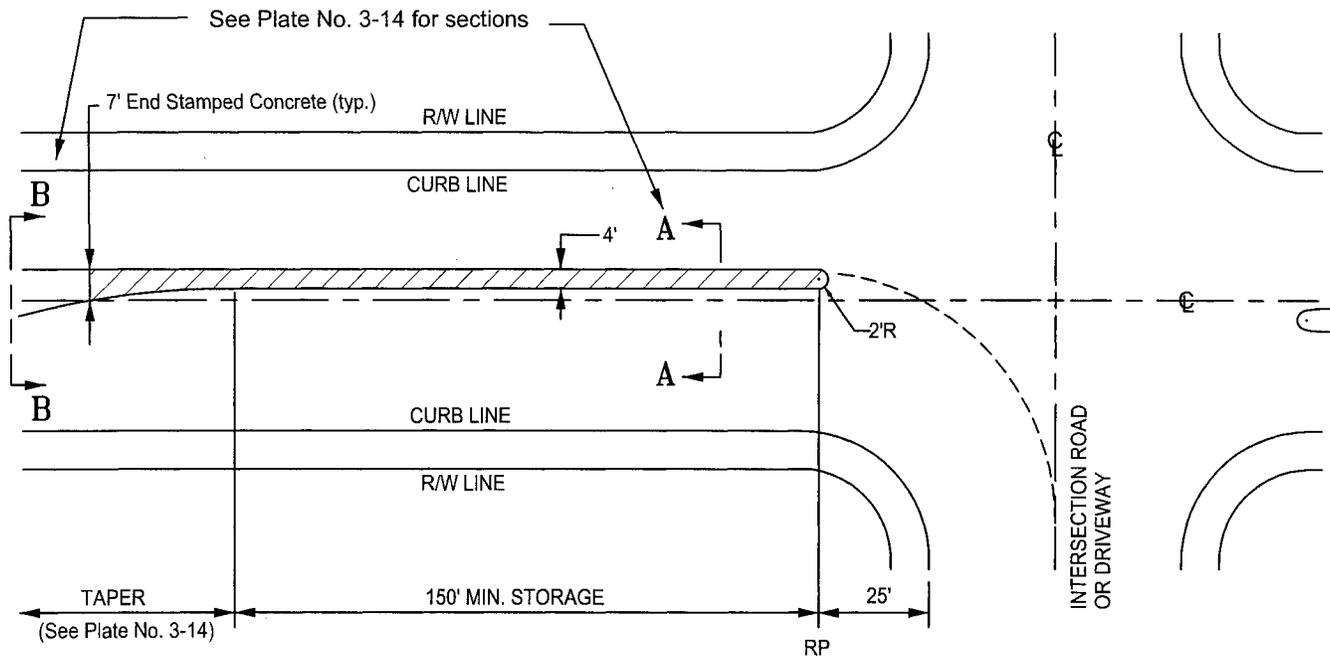
Ⓜ is shown in table thus 5.00

OFFSET IN FEET FOR GIVEN "X" DISTANCE

(X) Distance (L) Length of flare	10	15	20	25	30	40	45	50	60	70	75	80	90	100	110	120
1:5 FLARES																
25	0.80	1.80	3.20	5.00												
50	0.40		1.60		3.60	6.40		10.00								
1:10 FLARES																
50	0.20		0.80		1.80	3.20		5.00								
100	0.10		0.40		0.90	1.60		2.50	3.60	4.90		6.40	8.10	10.00		
1:15 FLARES																
45	0.15		0.59		1.33	2.37	3.00									
75	0.09		0.36		0.80	1.42		2.22	3.20	4.36	5.00					
90	0.07		0.30		0.67	1.19		1.85	2.67	3.63		4.74	6.00			
120	0.06		0.22		0.50	0.89		1.39	2.00	2.72		3.56	4.50	5.56	6.72	8.00

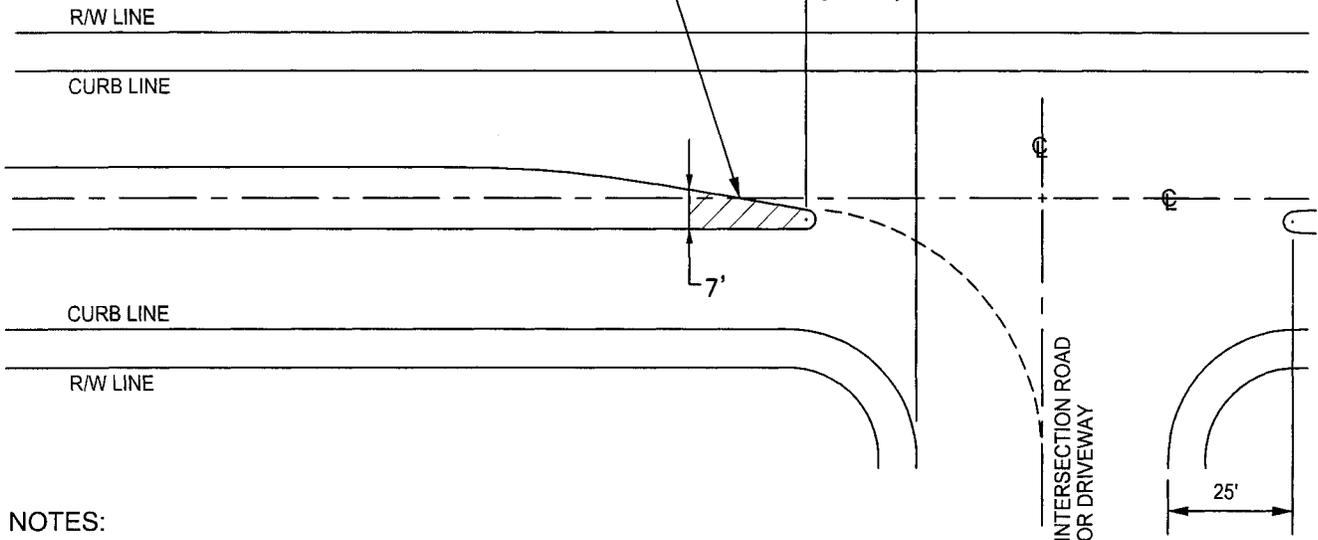
Note: The Standard Flare Shall Be 1:10, 100 Ft. Long

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED <i>Paul Water</i> CITY ENGINEER				DATE <i>1/20/07</i>	PLATE NO. <b>3-12</b>
				STANDARD PARABOLIC FLARES	



TAPER  
(See Plate No. 3-14)

PARABOLIC FLARE  
(See Plate No. 3-12)



NOTES:

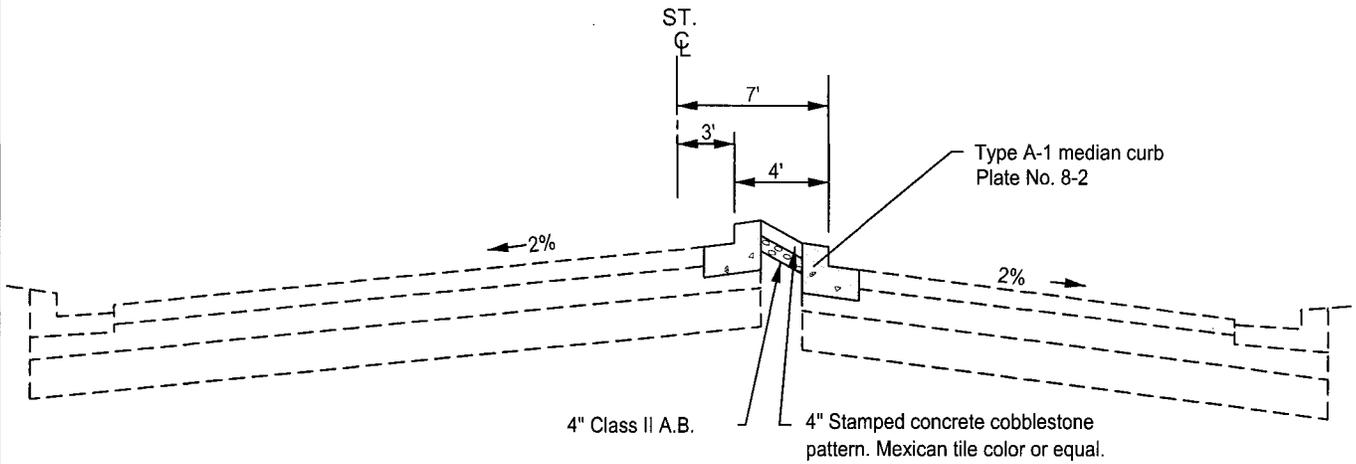
1. Round off radius point of nose stationing to nearest 5 feet interval.
2. Standard width of median 14 ft.
3. RP = Radius Point

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Paul D. Walker</i> CITY ENGINEER	5/20/03	DATE

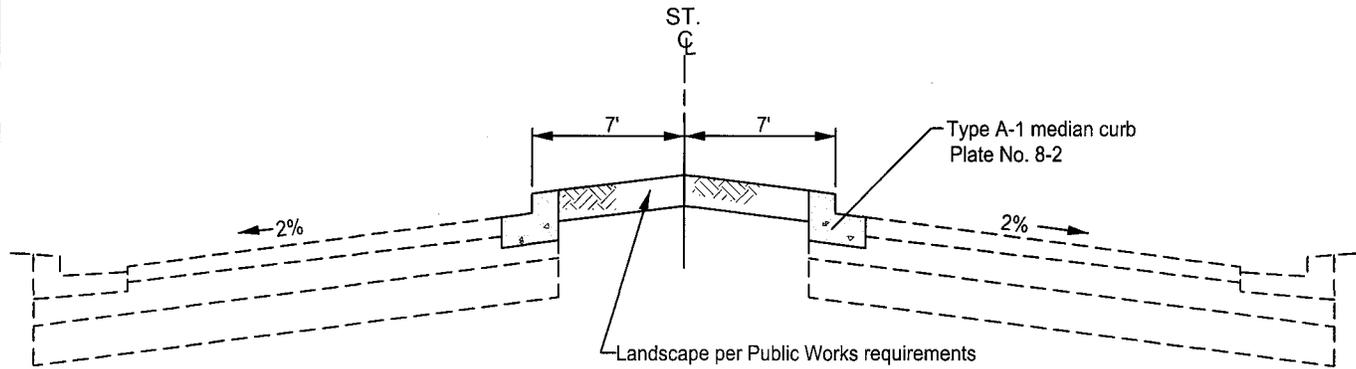
CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

STANDARD  
MEDIAN ISLANDS

PLATE NO.  
**3-13**



SECTION A-A



SECTION B-B

CHG	DESCRIPTION	DATE	INITIAL

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

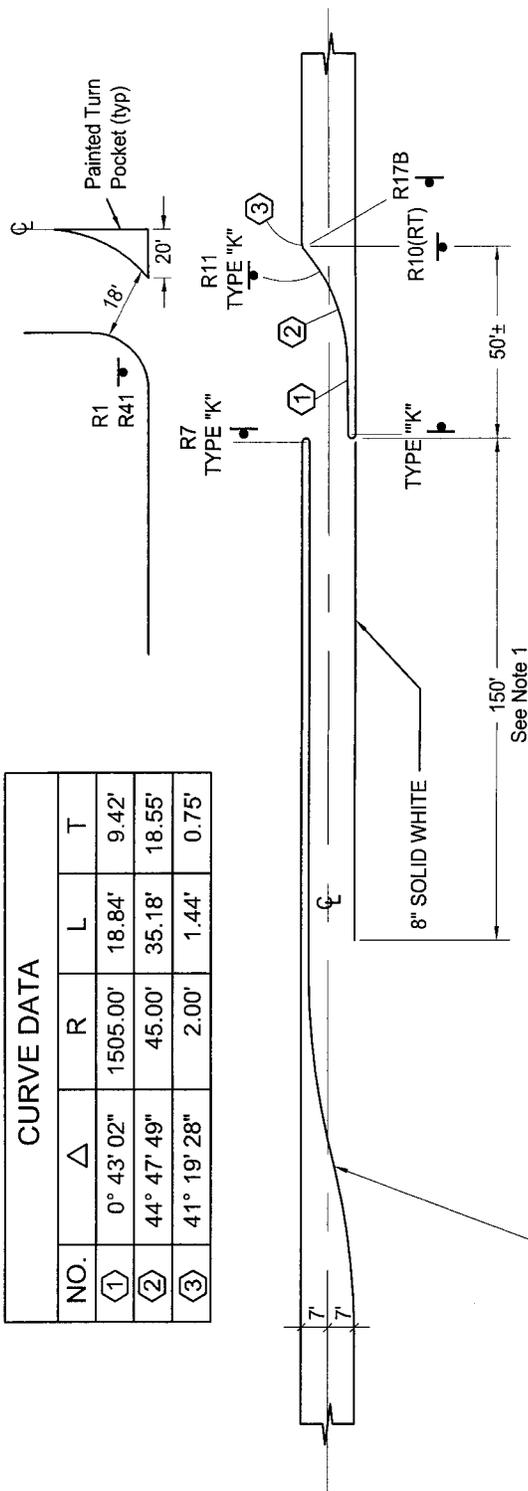
APPROVED *M. D. White* 1/20/07  
CITY ENGINEER DATE

STANDARD  
MEDIAN ISLAND SECTIONS

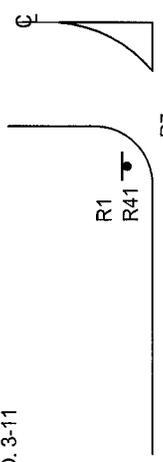
PLATE NO.  
**3-14**

CURVE DATA				
NO.	$\Delta$	R	L	T
①	0° 43' 02"	1505.00'	18.84'	9.42'
②	44° 47' 49"	45.00'	35.18'	18.55'
③	41° 19' 28"	2.00'	1.44'	0.75'

**ONE-HALF S-ISLAND**

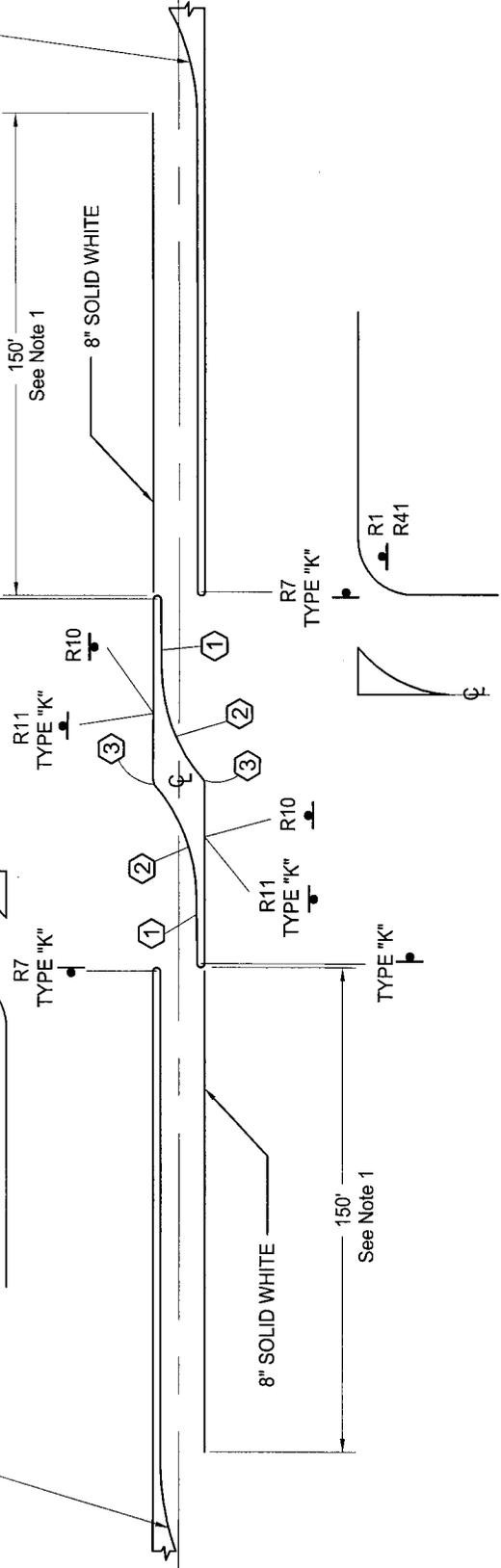


REFER TO PLATE NO. 3-11



REFER TO PLATE NO. 3-11

**FULL S-ISLAND**



Notes:

- Greater left turn pocket storage lengths may be required by the City Traffic Engineer based on site conditions.
- See Plates 3-13 and 3-14 for additional details.

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Malcolm Waters</i>	12/10/07	
	CITY ENGINEER	DATE	

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

STANDARD S-ISLANDS

PLATE NO.  
**3-15**

## STORM DRAIN STANDARDS

The City of Thousand Oaks has adopted Section 3, Flood Control and Storm Drain Facilities, of the SPPWC, as the official City standards for storm drain construction, with the following modifications:

1. Catch Basins

- a. Reinforcing steel shall be required in all catch basin walls, bases, and decks. Minimum reinforcement shall be #4 rebar at 12" centers both ways. Additional and/or heavier steel reinforcement may be required in accordance with the SPPWC.
- b. Exposed edges of inlet opening face plates shall be rounded off (no sharp edges).
- c. Grated inlets are not allowed within public R/W.
- d. Steps shall not be installed in catch basins.

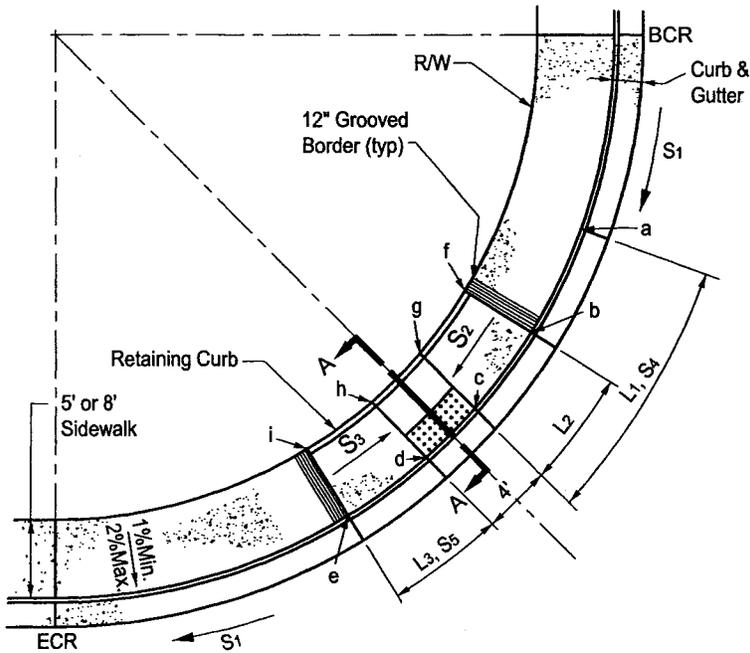
2. Manholes

- a. Manhole and junction structure access frames and covers shall conform to SPPWC 632 with a minimum clear inside diameter opening of 30".
- b. Access covers for City-maintained drainage facilities shall be cast with 1-1/2" high letters "City of Thousand Oaks" and "Storm Drain." For privately-maintained facilities, covers shall be cast with 1-1/2" high letters "Storm Drain."
- c. Manhole and junction structure access shafts shall be a minimum 48" inside diameter.
- d. Steps shall not be installed in manholes.

3. Local Depressions

- a. Catch basin local depression shall conform to SPPWC 313 Case E, where dimension "M" is same as gutter width (typically 18"), dimension "K" is 5' of full height curb, and dimension "H" (additional gutter drop at inlet opening) is 1".
- b. Rolled curb to standard curb transition length shall be 10' each side of the local depression transition "K."
- c. Lesser transition lengths may only be used if necessary to avoid conflicts with other improvements, as approved by the City Engineer.

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT
CHG	DESCRIPTION	DATE	INITIAL	
APPROVED 				STORM DRAIN STANDARDS
				PLATE NO. <b>4-1</b>



**Transition Lengths**

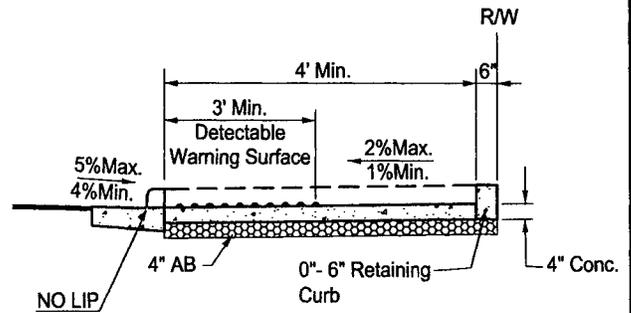
$L_1$  = gutter transition  
 $L_2, L_3$  = ramp length

**Slopes**

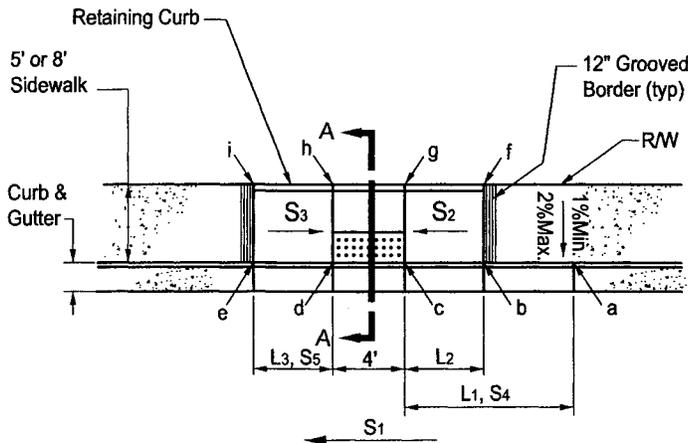
$S_1$  =  $F_L$  slope BCR to ECR  
 or street slope  
 $S_2, S_3$  = ramp slope  
 $S_4, S_5$  =  $F_L$  slope

**Elevations**

a, b, c, d, e = TC,  $F_L$ , EL  
 f, g, h, i = TC, BW



**SECTION A-A**  
 NOT TO SCALE



**NOTES:**

1. Refer to Plate No. 5-4 for notes and details.
2. All dimensions, elevations, slopes and transition lengths to be designed by Developer's Engineer.

5	Add Detectable Warning Surface	10-22-08	MAP
2	Correct typographical error	12-15-04	JTS
1	4' Landing Dimension	6-26-03	JTS
CHG	DESCRIPTION	DATE	INITIAL

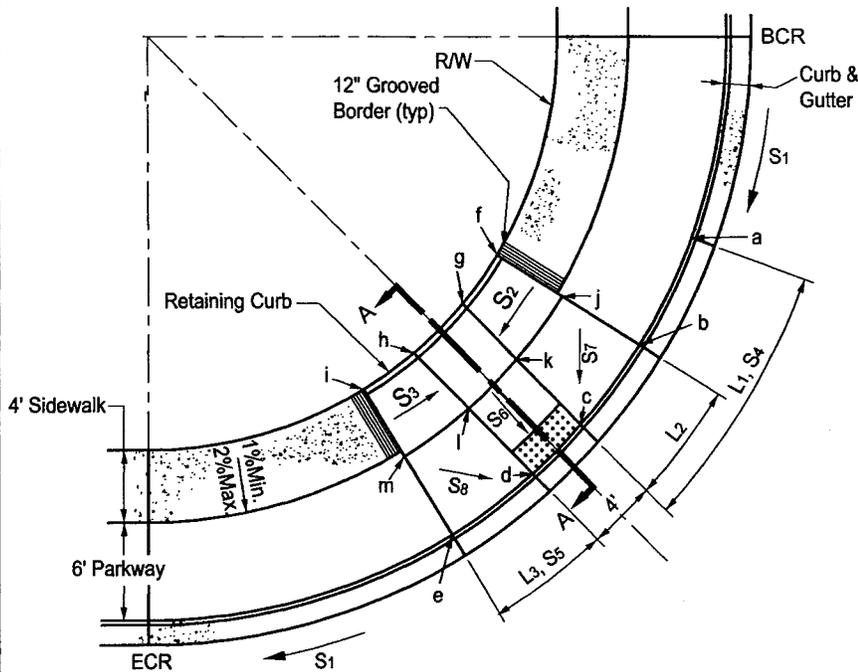
**CITY OF THOUSAND OAKS**  
 PUBLIC WORKS DEPARTMENT

APPROVED

*Jeff Burzgin*  
 CITY ENGINEER  
 10/23/08  
 DATE

STANDARD  
 CURB ACCESS RAMP  
 ATTACHED SIDEWALK

PLATE NO.  
**5-1**



**Transition Lengths**

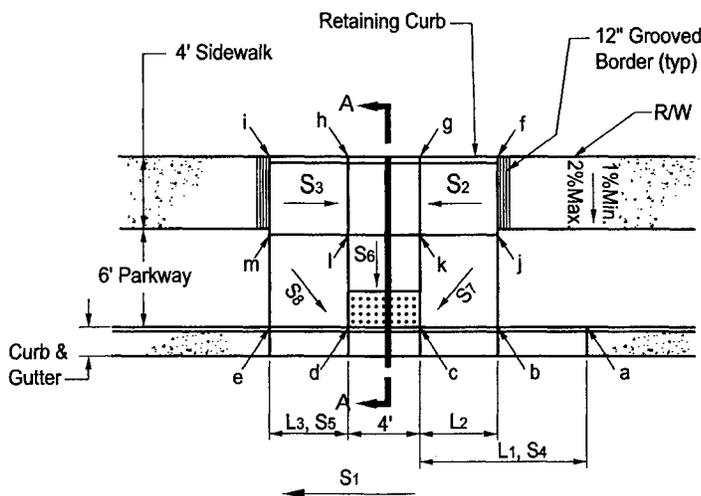
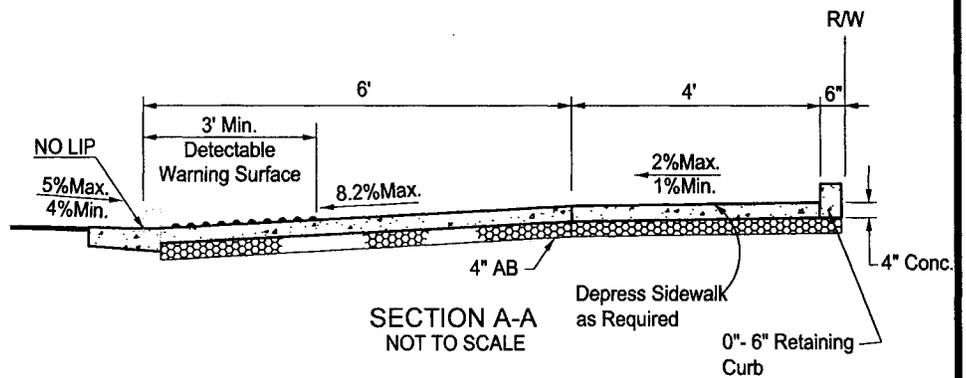
L<sub>1</sub> = gutter transition  
 L<sub>2</sub>, L<sub>3</sub> = ramp length

**Slopes**

S<sub>1</sub> =  $F_L$  slope BCR to ECR or street slope  
 S<sub>2</sub>, S<sub>3</sub>, S<sub>6</sub> = ramp slope  
 S<sub>4</sub>, S<sub>5</sub> =  $F_L$  slope  
 S<sub>7</sub>, S<sub>8</sub> = wing slope, varies, 10% max.

**Elevations**

a, b, c, d, e = TC,  $F_L$ , EG  
 f, g, h, i = TC, BW  
 j, k, l, m = finish surface



**NOTES:**

1. Refer to Plate No. 5-4 for notes and details.
2. All dimensions, elevations, slopes and transition lengths to be designed by Developer's Engineer.

5	Add Detectable Warning Surface	10-22-08	MAP
4	Correct typographical error	12-15-04	JTS
1	4' Landing dimension	6-26-03	JTS
CHG	DESCRIPTION	DATE	INITIAL

APPROVED

*[Signature]*  
 CITY ENGINEER

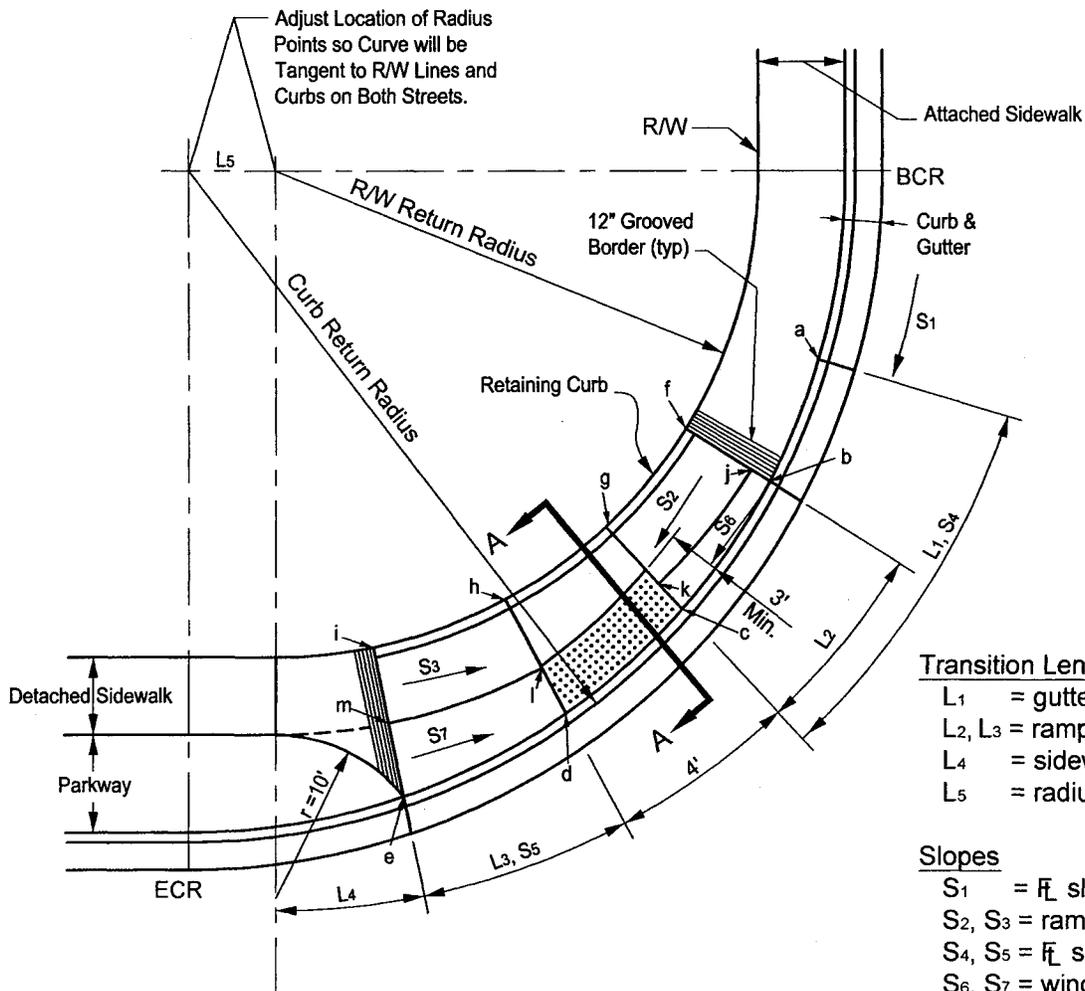
10/23/08  
 DATE

**CITY OF THOUSAND OAKS**  
 PUBLIC WORKS DEPARTMENT

STANDARD  
 CURB ACCESS RAMP  
 DETACHED SIDEWALK

PLATE NO.

**5-2**



**Transition Lengths**

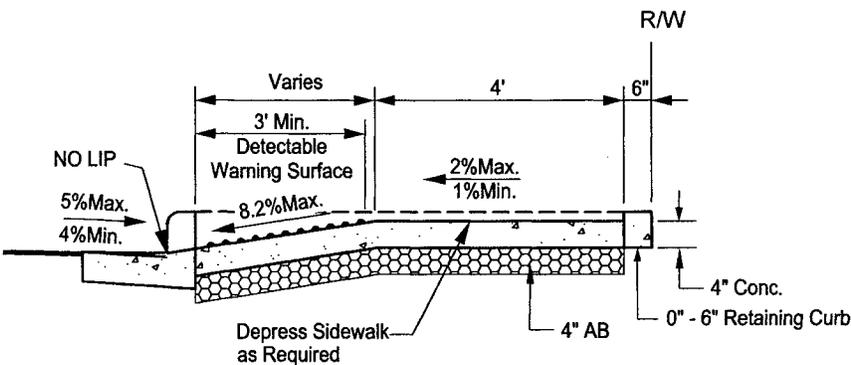
- L<sub>1</sub> = gutter transition
- L<sub>2</sub>, L<sub>3</sub> = ramp length
- L<sub>4</sub> = sidewalk transition
- L<sub>5</sub> = radius point offset

**Slopes**

- S<sub>1</sub> =  $\bar{f}_L$  slope BCR to ECR
- S<sub>2</sub>, S<sub>3</sub> = ramp slope
- S<sub>4</sub>, S<sub>5</sub> =  $\bar{f}_L$  slope
- S<sub>6</sub>, S<sub>7</sub> = wing slope, varies, 10% max.

**Elevations**

- a, b, c, d, e = TC,  $\bar{f}_L$ , EG
- f, g, h, i = TC, BW
- j, k, l, m = finish surface



SECTION A-A  
NOT TO SCALE

**NOTES:**

1. Refer to Plate No. 5-4 for notes and details.
2. All dimensions, elevations, slopes and transition lengths to be designed by Developer's Engineer.

5	Add Detectable Warning Surface	10-22-08	MAF
4	Correct typographical error	12-15-04	JTS
1	4' Landing dimension	6-26-03	JTS
CHG	DESCRIPTION	DATE	INITIAL

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

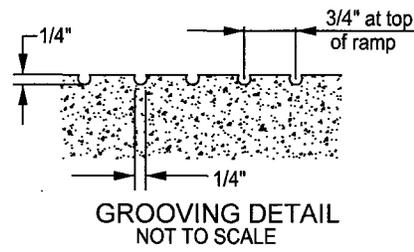
APPROVED *Jay Sprygin*  
CITY ENGINEER 10/23/08  
DATE

STANDARD  
CURB ACCESS RAMP TRANSITION -  
ATTACHED TO DETACHED SIDEWALK

PLATE NO.  
**5-3**

**NOTES FOR ACCESS RAMP STANDARD PLATE NOS. 5-1, 5-2 AND 5-3**

1. Curb access ramps shall be constructed at each corner of street intersections and where a cross walk or pedestrian way crosses a curb. Two ramps, centered on each cross walk, shall be provided at curb returns on primary, secondary, industrial and commercial roads (curb radius of 35'). For 25' radius curb returns, one ramp, centered in the return, shall be provided. Ramps shall not extend beyond the curb return BCR or ECR.
2. Ramps shall be min. 4' wide and shall generally lie in a single slope plane with minimal surface warping. Ramp slope shall be min. 6.7% and max. 8.2%, with cross slope between 1.5% and 2%. Landings shall be 4' by 4' with a max. 2% slope in any direction.
3. The bottom of all ramps or landings shall be flush with the adjacent gutter (NO LIP). The adjacent gutter slope shall be between 4% and 5%.
4. Provide a 12" wide grooved border at the top of each ramp. See detail below for dimensions of grooves. The full width and the lower 3' of ramps or landings shall have a truncated dome detectable warning surface. Domes shall be aligned on a square grid in the predominate direction of travel.
5. The dimensions and spacing of the truncated dome on the detectable warning surface shall be in accordance with ADA regulations and SPPWC Std. Plan 111 (Latest Version).
6. Truncated dome panels shall be inset into the concrete and shall be constructed so as to remain removable/replaceable in-kind with steel bolt fasteners as anchorage. Panels shall not be applied using adhesive nor with permanently embedded anchors. Concrete or brick pavers with precast truncated domes may be used.
7. Color of the detectable warning surface shall contrast visually with adjoining surfaces, either light-on-dark, or dark-on-light. Selection of color shall be approved by the City Engineer prior to installation. Terracotta color is preferred.
8. The Developers Engineer shall design each curb access ramp, including all dimensions, elevations, slopes and transition lengths as shown on Plates 5-1, 5-2 and 5-3. Approximate ramp and gutter/flowline transition lengths for various street slopes are as follows:
  - a. For street slopes <0.6%, L1=7', L2=7', L3=7', hold flowline grade.
  - b. For street slopes 0.6% to 2.5%, L1=10', L2=7', L3=5', hold edge of gutter grade.
  - c. For street slopes >2.5%, L1=15', L2=15', L3=3.5', hold edge of gutter grade.
9. The concrete surface of the entire curb access ramp shall be slip resistant and contrasting from the finish of the adjacent sidewalk.
10. Sawcut existing sidewalk at nearest score line and construct new concrete sidewalk each side of curb access ramp per Plate 8-3. Provide sidewalk extensions as required to maintain 4' min. path of travel per Plate Nos. 8-8 or 8-9.
11. Provide 6" concrete curb at end of ramp where sidewalk does not continue.
12. Sawcut and remove/replace min. 2' of existing AC pavement along entire length of access ramp. Match existing structural section, min. 3" AC over 6" AB.

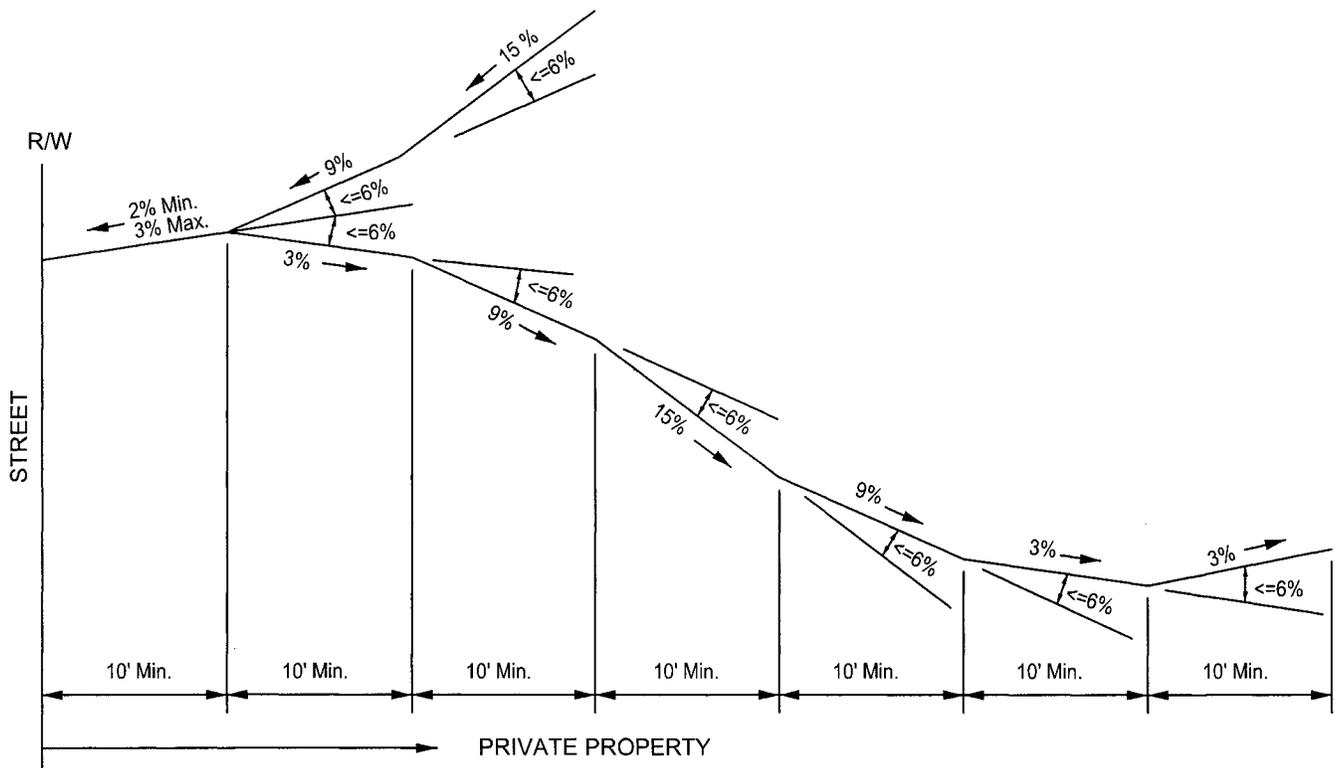


6	Corrected Detectable Warning Reference	3-27-12	MAF
5	Revised for Detectable Warning Surface	10-22-08	MAF
CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Jay H. Morgan</i> CITY ENGINEER	3.27.12 DATE	

**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
CURB ACCESS RAMP NOTES

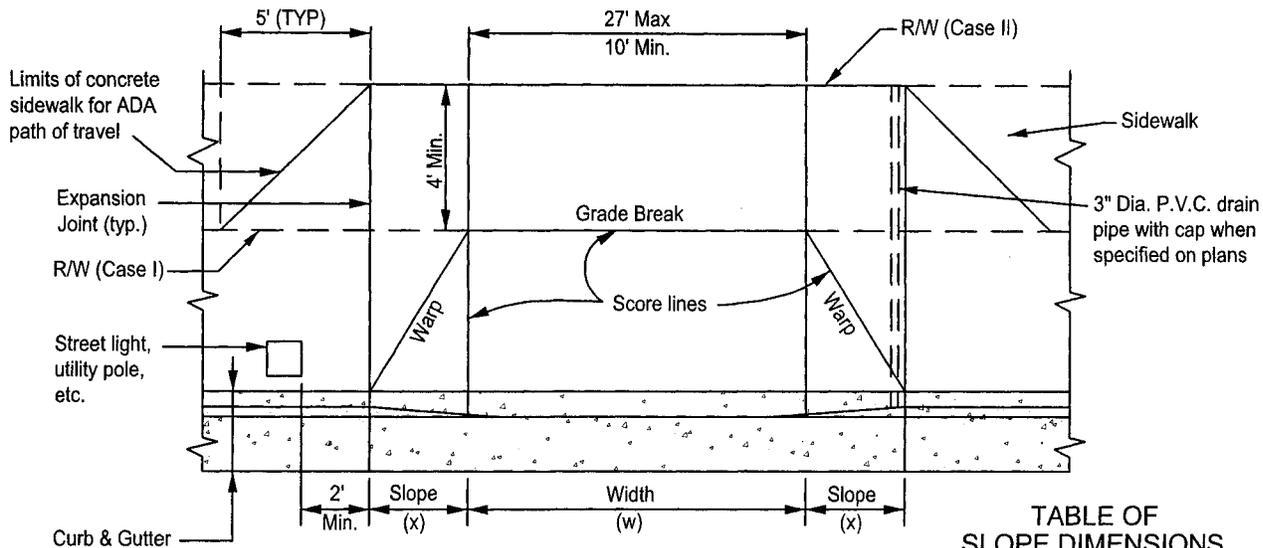
PLATE NO.  
**5-4**



**DESIGN CRITERIA:**

1. The maximum grade for new residential driveways is 15 %; 7% for new commercial/industrial driveways.
2. A grade of 2% to 3% shall be used for the first 10' of driveway approach sloping toward the street. The change in grade thereafter shall not exceed 6 % per 10'.
3. A 10' vertical curve shall be used on commercial/industrial driveways where a change in grade of 3% for the first 10' and 6% for the next 10' is used.
4. An 8% maximum downward or 12% maximum upward break over angle may be permitted only under special circumstances as approved by the City Engineer.
5. Residential driveways may be Portland Cement Concrete or Asphalt Concrete, as follows:
  - a. 4" (5 Sack) PCC on 4" AB with 6x6 # 10 wire mesh or # 3 reinforcing bars at 24" o.c.
  - b. 6" (5 Sack) PCC on native soil (reinforcing steel optional)
  - c. 3" AC on 6" AB
6. A reciprocal access easement and maintenance agreement shall be recorded where common residential driveways service two or more lots.
7. For Approaches See Plate Nos. 6-2, 6-3, 6-4, & 6-5.

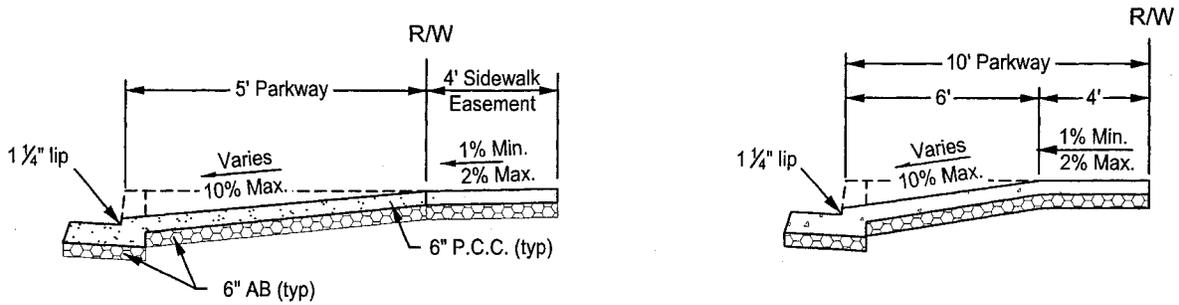
				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL	STANDARD DRIVEWAY GRADES AND DESIGN CRITERIA	
APPROVED	<i>Paul White</i> CITY ENGINEER	1/20/07 DATE			



**PLAN**  
NOT TO SCALE

**TABLE OF SLOPE DIMENSIONS**

Curb face height	Slope(x)
6" or less	2'
7" to 8"	3'



**CASE I**

**CASE II**

**CROSS-SECTIONS OF DRIVEWAY APRON**  
NOT TO SCALE

**NOTES:**

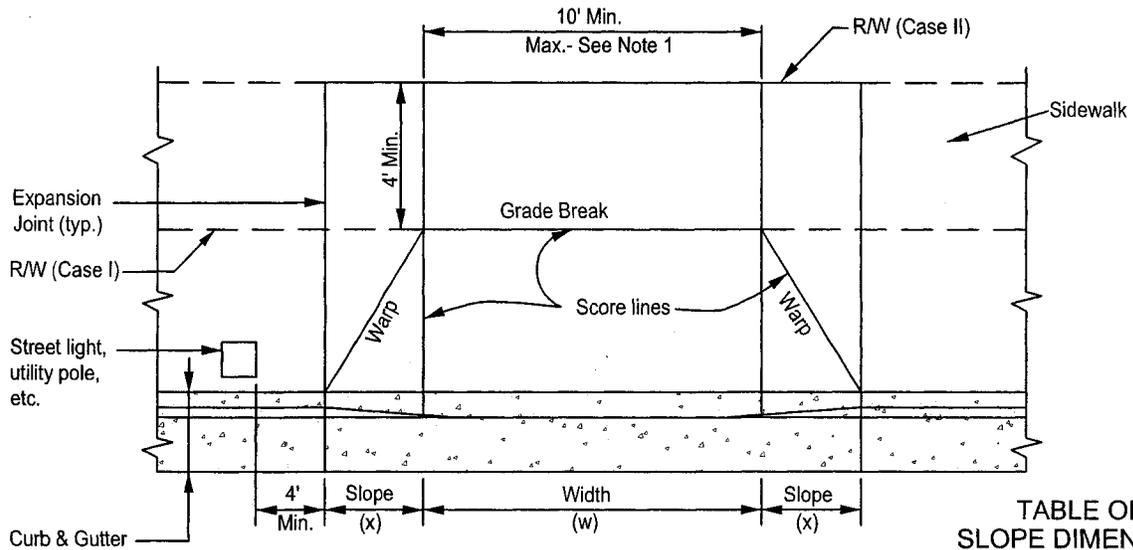
1. The total sum of all the driveway widths (w) is limited to 40% of the property frontage (however, one driveway up to 27' is allowed). The minimum distance between the top of side slopes on adjacent driveways on the same lot or parcel is 22' and on adjoining lots or parcels is 1'.
2. Driveways shall be constructed as in Case I where parkway is 5' wide and where sidewalk abuts curb. Case II shall be used when the parkway is 10' or greater and where sidewalk does not abut curve.
3. If the parkway is over 10', the driveway shall be constructed as if the parkway were 10' wide (Case II).
4. A driveway shall not be constructed or maintained where fence, buildings, natural grade or any other obstacle will prevent a motor vehicle from being stored entirely off the public R/W after entering such driveway.
5. A driveway shall not be constructed in the curb return area at intersections nor within 5' of the curb return at either end.
6. Remove and replace adjacent floating pieces of sidewalk less than 4' long.
7. A 4' wide sidewalk easement, extending 5' beyond each end of the driveway, shall be dedicated to the City for Case I conditions.

4	Clarify AB Section	12-15-04	FK
CHG	DESCRIPTION	DATE	INITIAL
APPROVED <i>[Signature]</i>		12/15/04	DATE
CITY ENGINEER			

**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

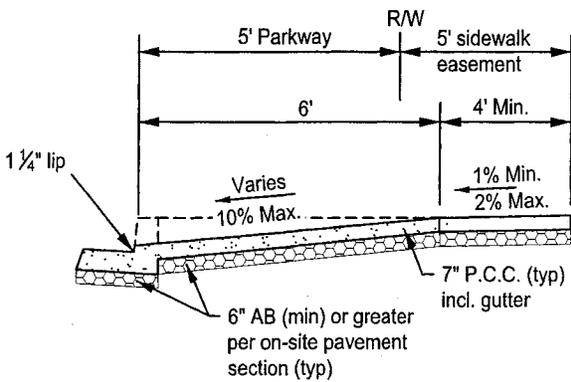
STANDARD  
RESIDENTIAL DRIVEWAY

PLATE NO.  
**6-2**

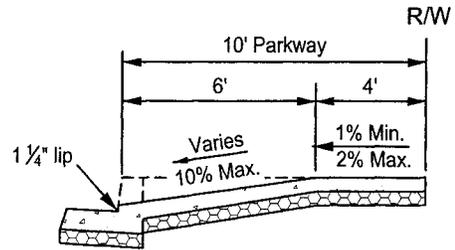


**TABLE OF SLOPE DIMENSIONS**

Curb face height	Slope(x)
8" or less	4'



**CASE I**



**CASE II**

**CROSS-SECTIONS OF DRIVEWAY APRON**

NOT TO SCALE

**NOTES:**

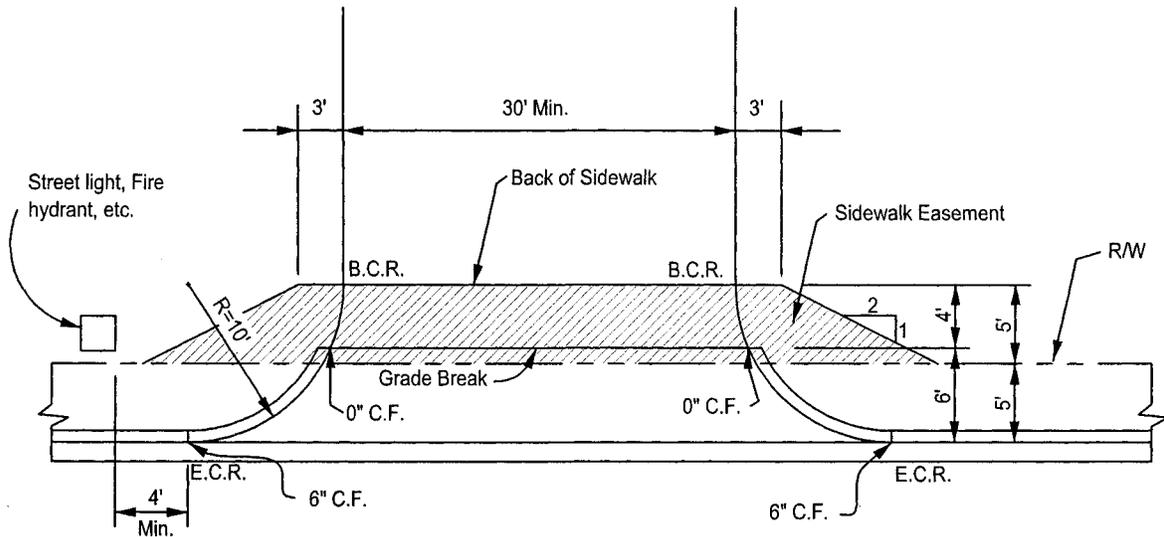
- Maximum width (w) of driveway shall be as follows:
  - Lot frontage less than 100' : 25'.
  - Lot frontage 100' or more : 30' or 20% of front footage whichever may be greater, but not to exceed a maximum of 36' wide.
  - The total aggregate width of driveways on one lot or parcel is limited to 36% of the total frontage.
- The minimum distance between the top of side slopes on adjacent driveways on the same lot or parcel is 22' and on adjoining lots or parcels is 1'.
- If the parkway is over 10', the driveway shall be constructed as if the parkway were 10' wide (Case II).
- A driveway shall not be constructed or maintained where fence, buildings, natural grade or any other obstacle will prevent a motor vehicle from being stored entirely off the public R/W after entering such driveway.
- A driveway shall not be constructed in the curb return area of intersections nor within 5' of the curb return at either end.
- Special apron design shall be required by City Engineer where curb face height exceeds 6".
- Remove and replace all adjacent floating pieces of sidewalk less than 4' long.
- A 5' wide sidewalk easement, extending 5' beyond each end of the driveway, shall be dedicated to the City for Case I conditions.

4	Clarify AB Section	12-15-04	AB
CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Mark White</i>	12/15/04	DATE
	CITY ENGINEER		

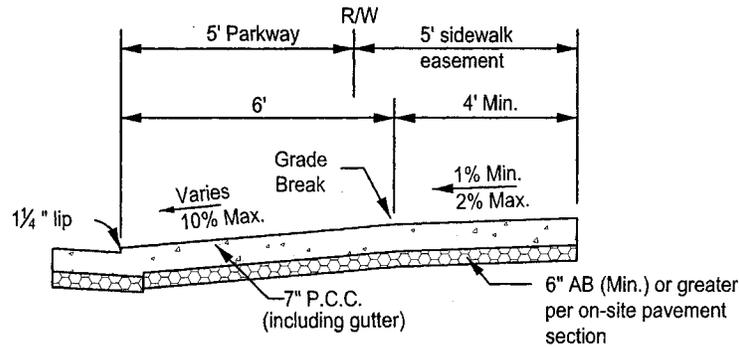
**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
COMMERCIAL DRIVEWAY

PLATE NO.  
**6-3**



PLAN  
NOT TO SCALE

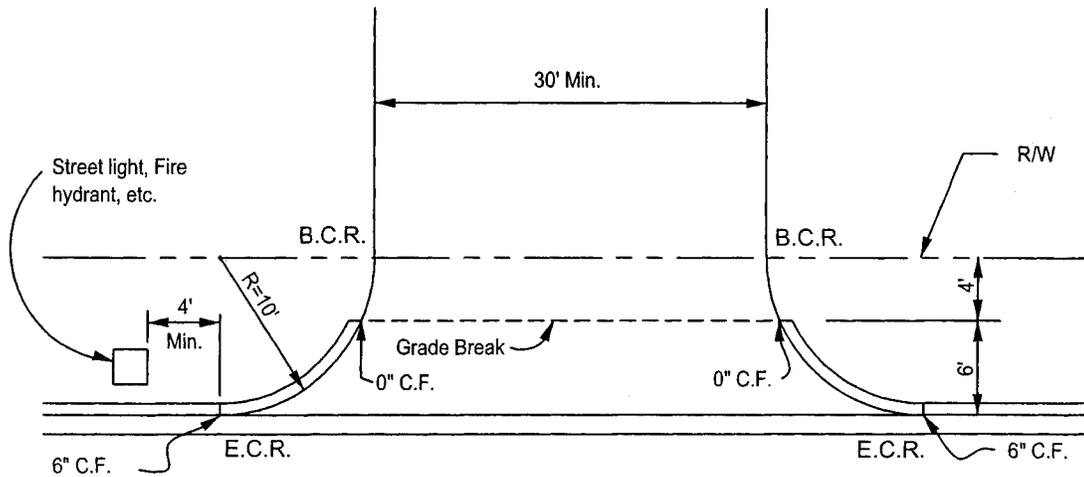


CROSS SECTION OF DRIVEWAY APRON  
NOT TO SCALE

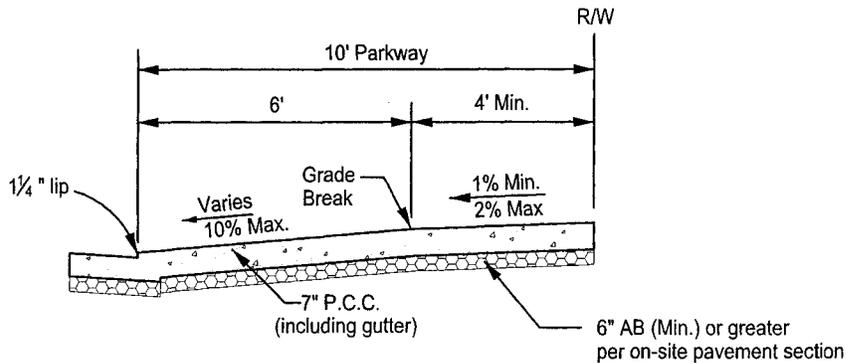
NOTES:

1. To be used in approved locations only.
2. The minimum distance between the end of curb return (ECR) at the street and adjacent property line is 1'.
3. Driveway approach shall not be constructed or maintained where fence, buildings, natural grade or any obstacle will prevent a motor vehicle from being stored entirely off the public R/W after entering such driveway.
4. Driveway approach shall not be constructed in the curb return area of intersections nor within 5' of the curb return at either end.
5. Special apron design shall be required by the City Engineer where curb face height exceeds 6".
6. Remove and replace all adjacent floating pieces of sidewalk less than 4' long.
7. A sidewalk easement as shown shall be dedicated to the City.

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
4	Clarify AB Section	12-15-04	<i>[Signature]</i>		
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED <i>[Signature]</i> CITY ENGINEER				INTERSECTION - TYPE COMMERCIAL DRIVEWAY IN 5' PARKWAY	
				DATE	PLATE NO. <b>6-4</b>



PLAN  
NOT TO SCALE



CROSS SECTION OF DRIVEWAY APRON  
NOT TO SCALE

NOTES:

1. To be used in approved locations only.
2. The minimum distance between the end of curb return (ECR) at the street and adjacent property line is 1'.
3. If the parkway is over 10', the driveway shall be constructed as if the parkway were 10' wide.
4. Driveway approach shall not be constructed or maintained where fence, buildings, natural grade or any obstacle will prevent a motor vehicle from being stored entirely off the public R/W after entering such driveway.
5. Driveway approach shall not be constructed in the curb return area of intersections nor within 5' of the curb return at either end.
6. Special apron design shall be required by the City Engineer where curb face height exceeds 6".
7. Remove and replace all adjacent floating pieces of sidewalk less than 4' long.

4	Clarify AB Section	12-15-04	JK	CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT		
CHG	DESCRIPTION	DATE	INITIAL			
APPROVED <i>Marko W...</i> CITY ENGINEER				12/15/04 DATE	INTERSECTION - TYPE COMMERCIAL DRIVEWAY IN 10' PARKWAY	PLATE NO. <b>6-5</b>

1. GENERAL SIGN REQUIREMENTS:

SIGN CODES AND SPECIFICATIONS:

Signs shall conform to the codes and specifications of the most current California Manual on Uniform Traffic Control Devices (California MUTCD) unless otherwise noted.

2. DETAILED CITY SIGN REQUIREMENTS:

A - RETROREFLECTIVITY

All signs shall conform to meet or exceed the minimum sign grade and retroreflectivity levels in Part 2 - Signs, of California MUTCD.

B - IDENTIFICATION

Identification shall be permanently marked on the back of all signs in such a position so as not to fall behind any post or frame member. Identification shall include the manufacturers name, year of manufacture, and retro reflective grade.

C - GUARANTEE

The complete sign shall be guaranteed to have an effective performance life of 10 years minimum and shall be replaced at no cost to the City if any visible sign failure occurs within that period.

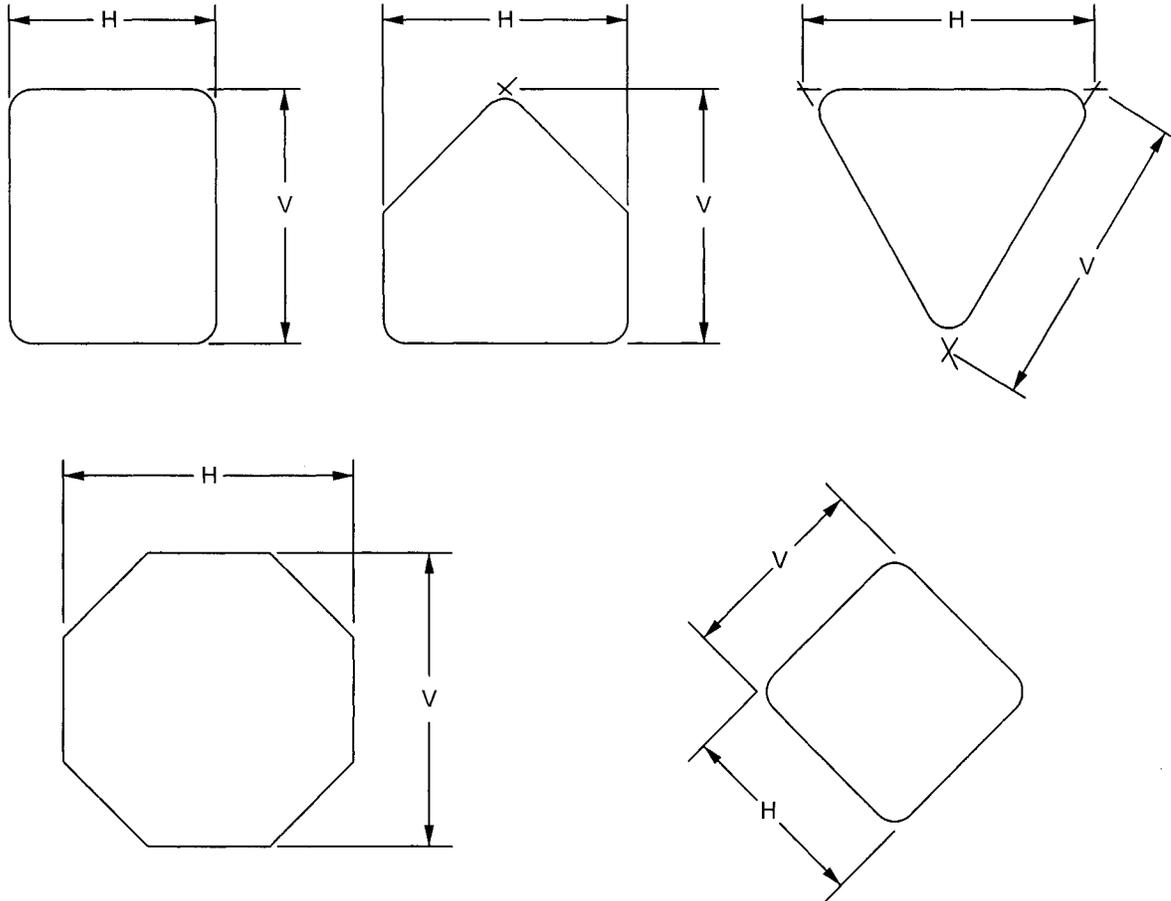
D - MOUNTING

All signs shall be mounted with City approved theft proof mountings.

E - SIGN POSTS

All sign posts in concrete walkways/sidewalks or dirt except assemblies shall use 2" x 2" telespar square tube 14 U.S.S. gauge galvanized steel set 18" in structural grade concrete foundation in 6" x 6" x 21" hole. The perforated holes shall be 7/16" in diameter. Anchors shall be 2 1/2" square heavy duty anchor 7 U.S.S. gauge 18" long. 1" - 1 1/2" of the anchor shall remain visible above ground for break-away purposes.

				CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT	
6	Modified Sign Requirements	3-27-12	JRH		
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED 				STANDARD SIGN SPECIFICATIONS	
				PLATE NO. <b>7-1</b>	
			3.27.12		
			DATE		
CITY ENGINEER					



H = Horizontal Dimension  
 V = Vertical Dimension

**NOTE:**

When a sign size is given, the first dimension is the horizontal dimension and the second dimension is the vertical dimension. The drawings above illustrate how these dimensions actually relate to various sign shapes.

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL	STANDARD SIGN MEASUREMENTS	
APPROVED	<i>Paula Weck</i> CITY ENGINEER	<i>5/24/07</i> DATE			

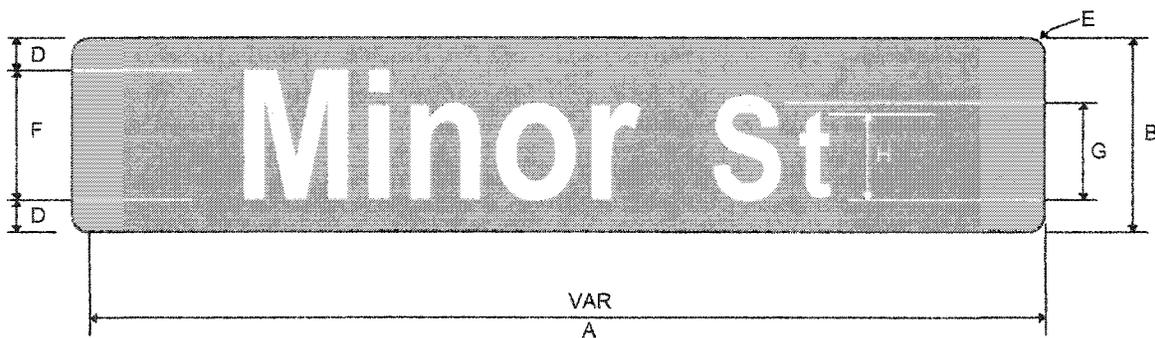


This page intentionally left blank.

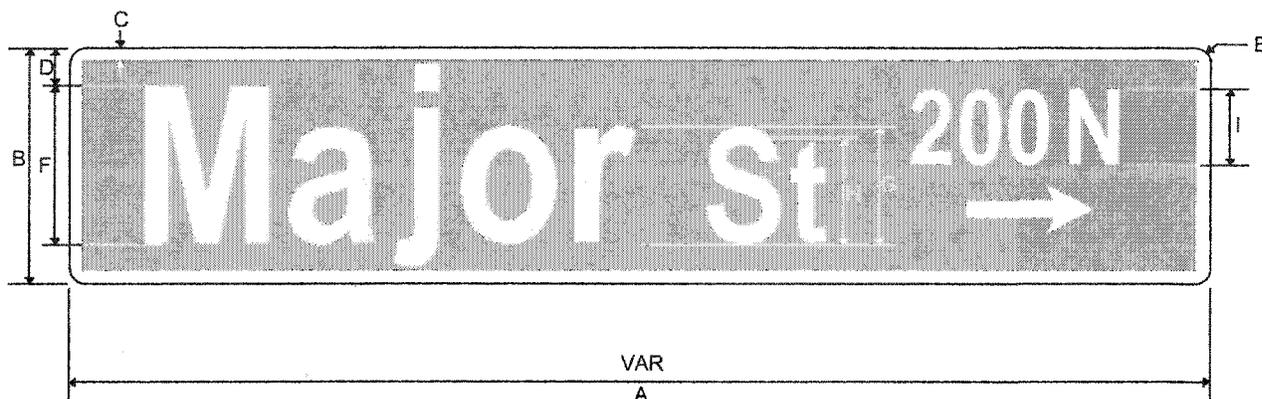
				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
6	DELETED PLATE	3-27-12	MAF		
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED	 CITY ENGINEER		3.27.12	PLATE NO. <b>7-4</b>	
			DATE		

This page intentionally left blank.

				CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT	
6	DELETED PLATE	3-27-12	MAF		
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED		3.27.12	DATE	PLATE NO. <b>7-5</b>	
	CITY ENGINEER				



LOCAL STREETS WITH SPEED LIMITS OF 25 MPH OR LESS



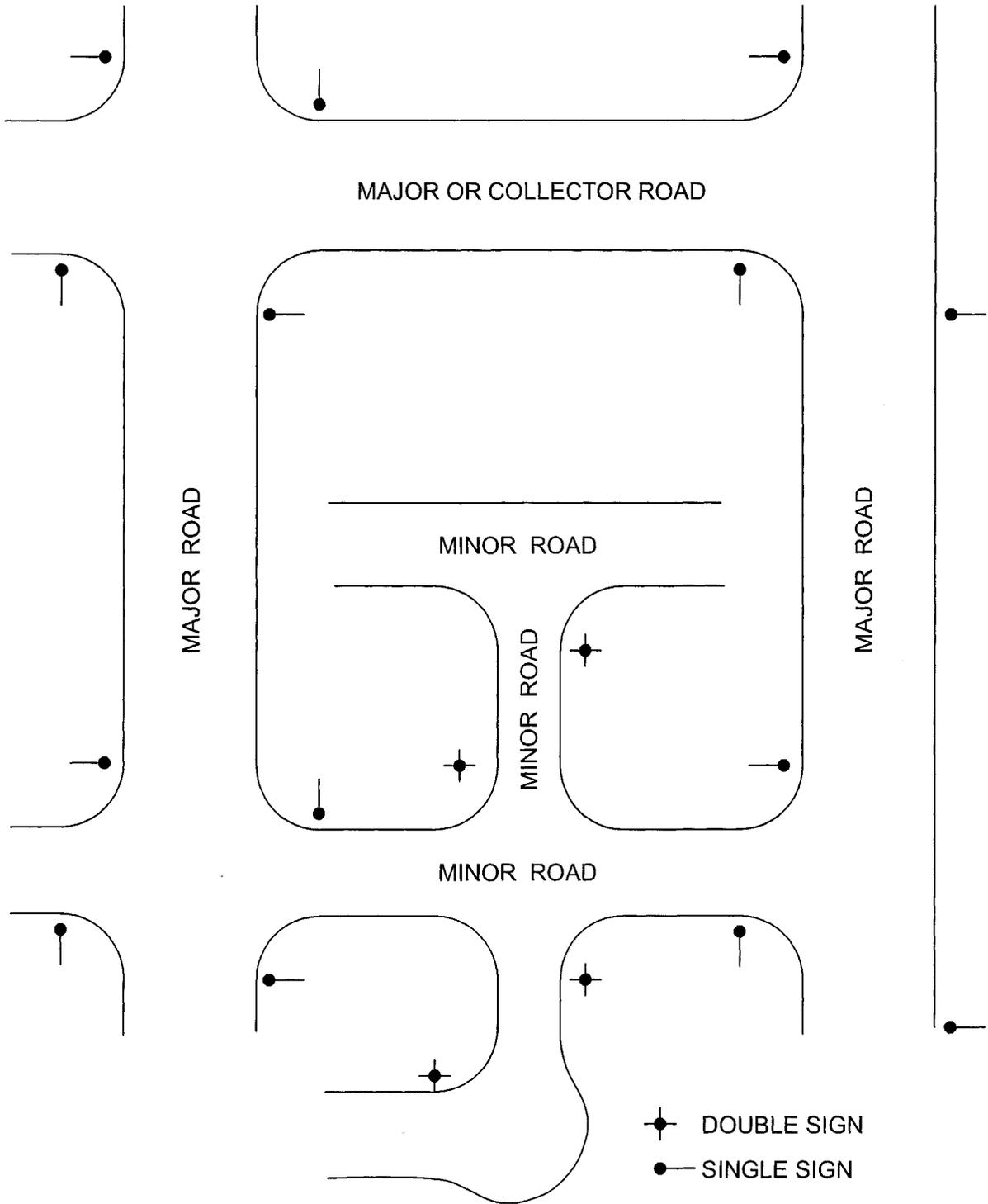
PRIMARY AND SECONDARY STREETS WITH SPEED LIMITS OF 30 MPH AND ABOVE

SPEED LIMIT	DIMENSIONS (INCHES)								
	A	B	C	D	E	F	G	H	I
25 MPH or less	VAR	6	-	1	1/2	4	3	2 1/4	-
30 TO 40 MPH	VAR	9	3/8	1 1/2	1	6	4 1/2	3 3/8	3
45 MPH & above	VAR	12	1/2	2	1 3/4	8	6	4	3

**SPECIFICATIONS**

- GUARANTEE:** All road signs shall be guaranteed for ten years.
- GENERAL:** All signs to conform to Section 2D.43 and 2D.44 of the CA-MUTCD. All signs are to have retroreflective surfaces. Lettering shall be block lettering with Capital and Lower case lettering. Speeds noted above are prima facie or posted speed limits.
- COLORS:** Border and Message shall be white (retroreflective) and background shall be green (retroreflective).
- POSTS:** Use 2" x 2" Telespar square tube sign post with square heavy duty 7 U.S.S. 2 1/2" gauge anchor and set in concrete foundation 6" x 6" x 21". 1" - 1.5" of anchor shall remain visible above ground for break-away purposes.
- BLOCK NUMBERS:** Street name signs shall have block numbers on primary and secondary streets.

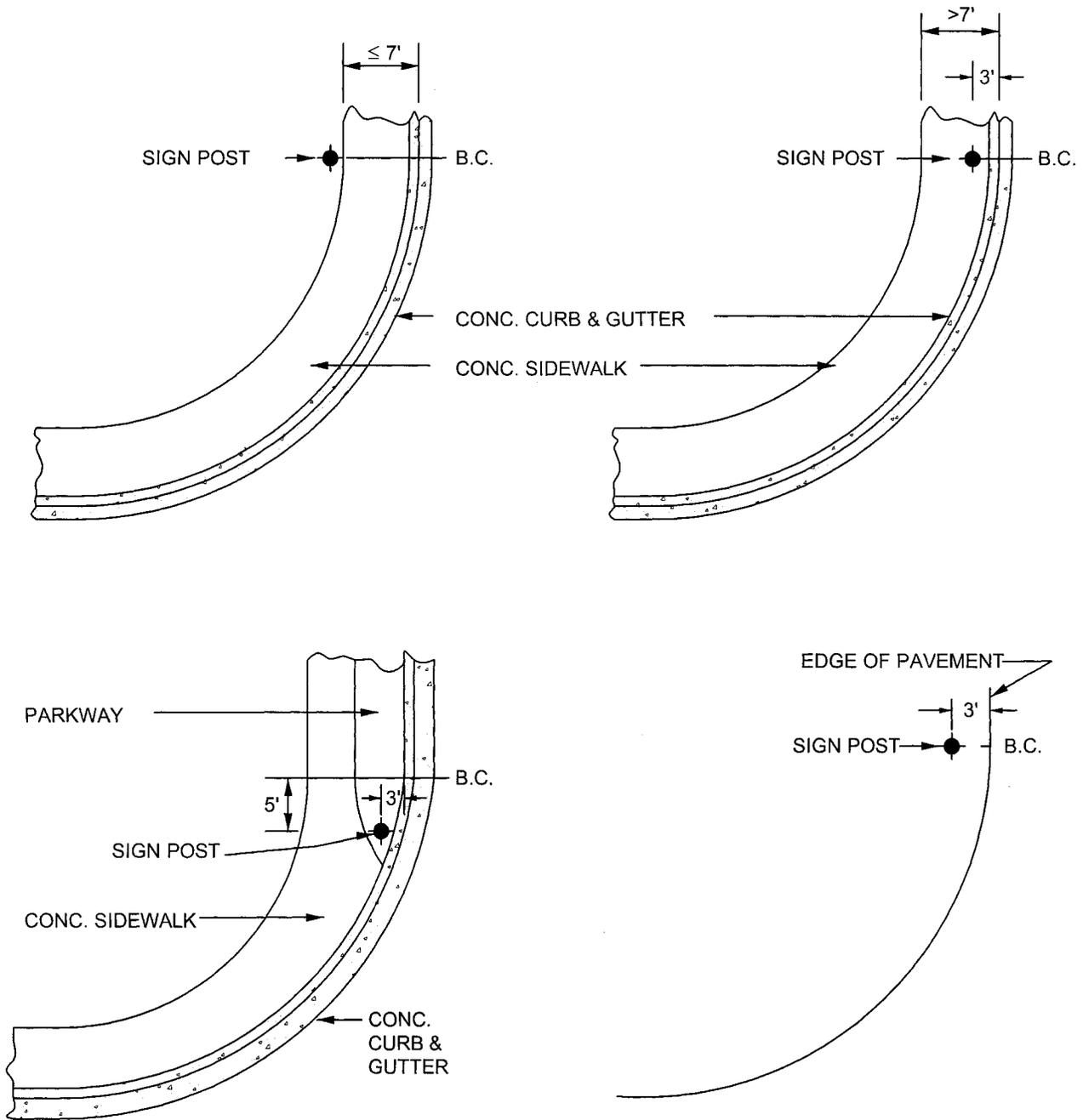
				<b>CITY OF THOUSAND OAKS</b>	
				PUBLIC WORKS DEPARTMENT	
6	NEW 2012 SIGN STANDARD	3-27-12	JRH	STANDARD INTERSECTION ROAD NAME SIGN	
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED <i>Jay Horgan</i> 3.27.12					
CITY ENGINEER				DATE	



CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Paul S. Watten</i> CITY ENGINEER	5/20/07 DATE	

<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
STANDARD INTERSECTION ROAD NAME SIGN LOCATION	PLATE NO. <b>7-7</b>

NOTE: SIGN POST SHALL BE PLACED NO FURTHER THAN 3" BEHIND SIDEWALK.



Note:

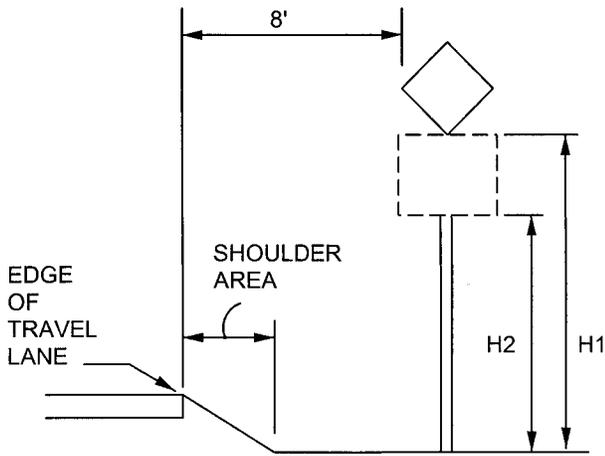
Curb Cut ramps will normally be required. (ref. Plate Nos. 5-1 & 5-6).  
Sidewalk extensions may also be required.

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>[Signature]</i> CITY ENGINEER	5/20/03 DATE	

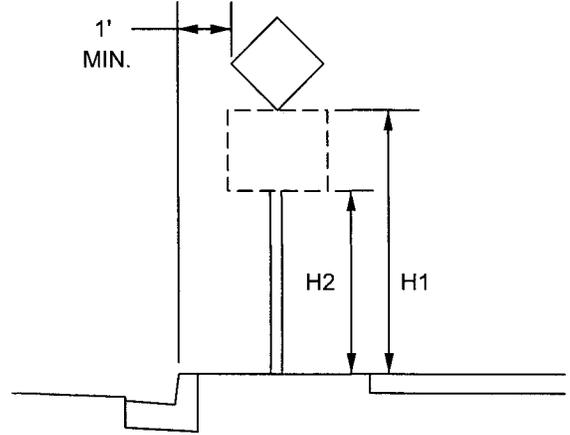
CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

STANDARD  
LOCATION OF SIGNS  
AT INTERSECTIONS

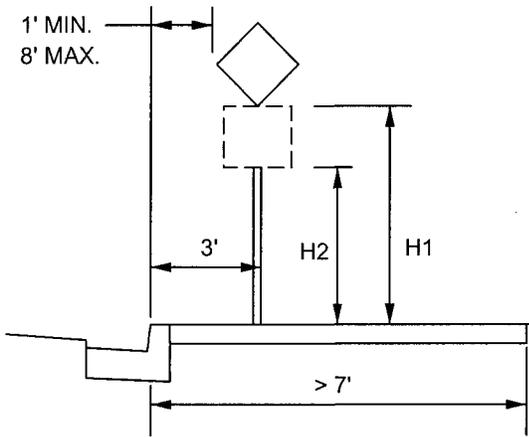
PLATE NO.  
**7-8**



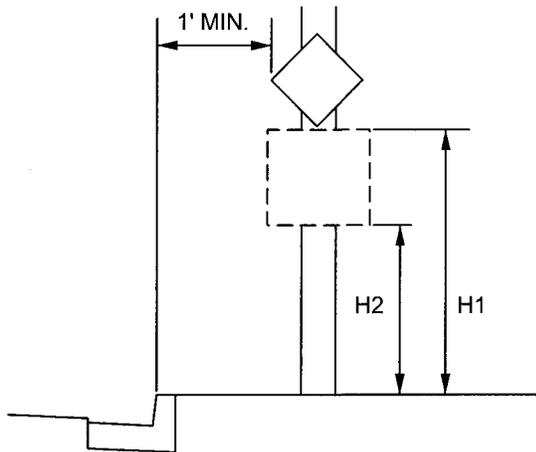
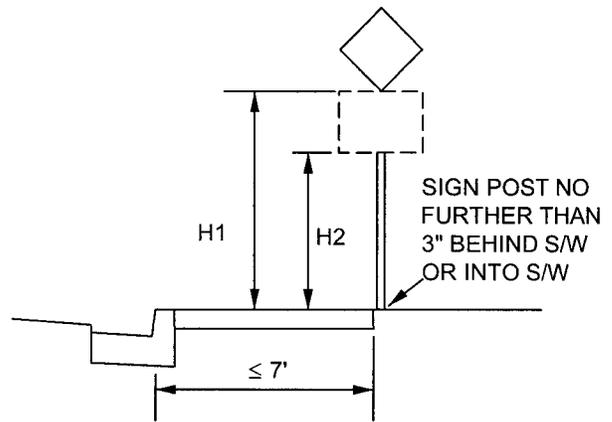
LOCATIONS WITHOUT CURBS



PARKWAYS



MONOLITHIC SIDEWALKS



ELECTROLIERS

NOTE:

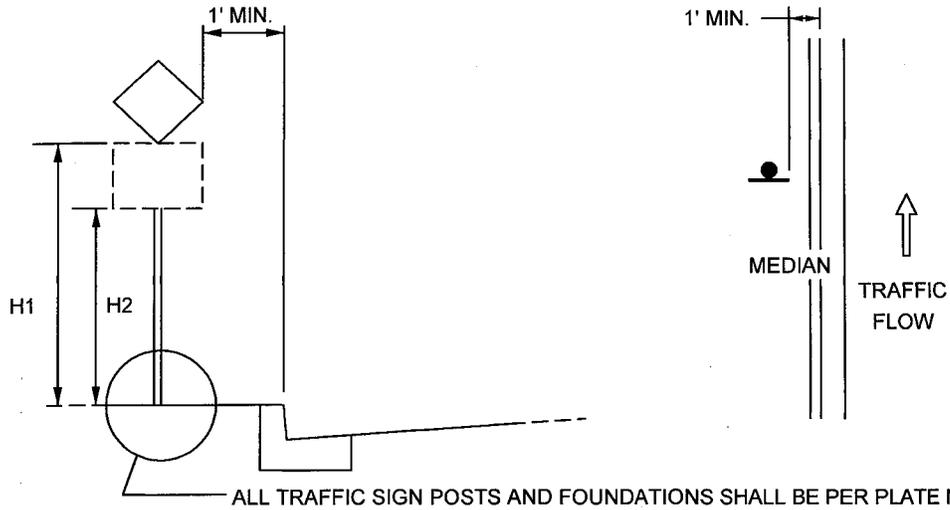
Signs shall be installed with a minimum vertical clearance (H1) of seven (7) feet. If two signs are mounted on the same post, the minimum vertical clearance (H2) shall be 80". Signs shall be mounted on electroliers when possible. If sign location reduces the required 4' min. width of accessible pathway, provide sidewalk extension per Plate No. 8-9. Mount signs with offset brackets as needed.

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Paul H. [Signature]</i> CITY ENGINEER	5/20/07 DATE	

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

STANDARD  
LOCATION OF SIGNS ON  
RIGHT SIDE OF ROADS

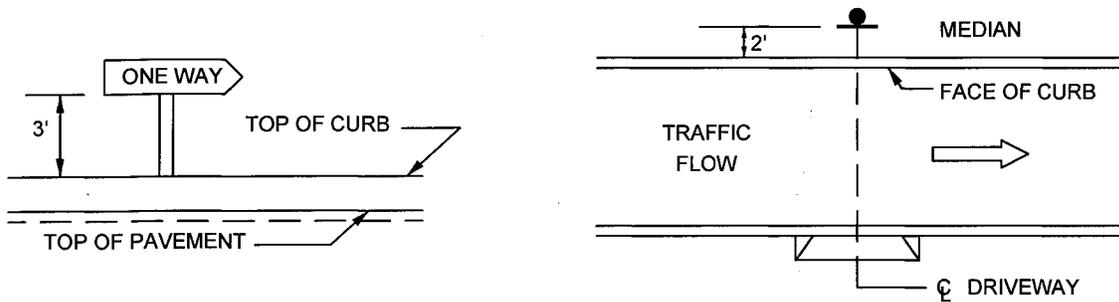
PLATE NO.  
**7-9**



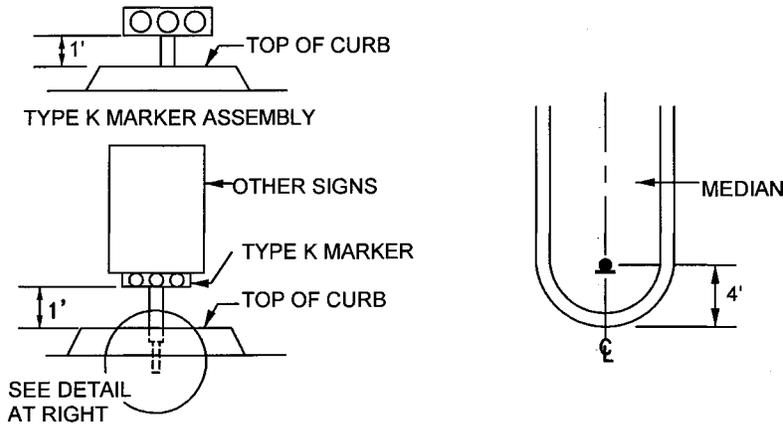
ALL TRAFFIC SIGN POSTS AND FOUNDATIONS SHALL BE PER PLATE NO. 7-1.

NOTE: Signs shall be installed with a minimum vertical clearance (H1) of seven (7) feet. If two signs are mounted on the same post, the minimum vertical clearance (H2) shall be 80 inches.

WARNING & REGULATORY SIGNS ALONG ISLANDS



ONE WAY SIGNS IN MEDIAN



SIGNS AT NOSE OF ISLANDS

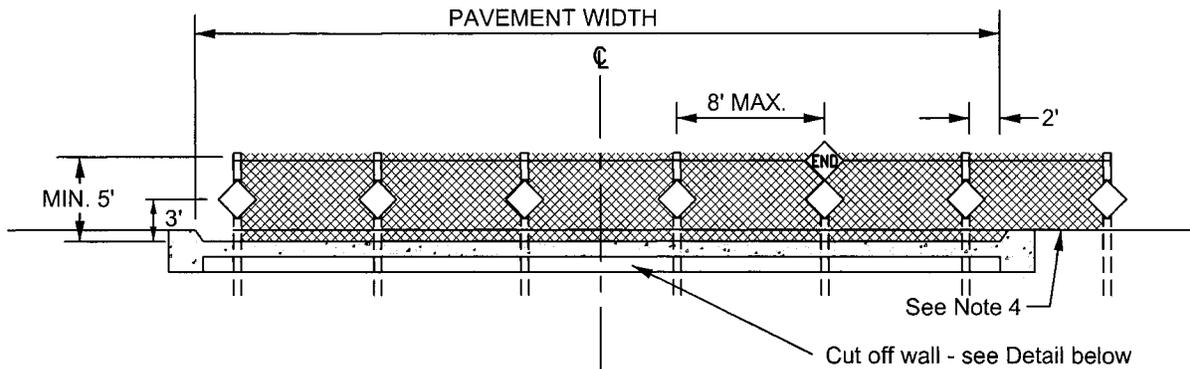
CHG	DESCRIPTION	DATE	INITIAL
6	Delete Sign Post and Minor Revisions	3-27-12	JRH

APPROVED *Jay Hourigan* 3.27.12  
 CITY ENGINEER DATE

CITY OF THOUSAND OAKS  
 PUBLIC WORKS DEPARTMENT

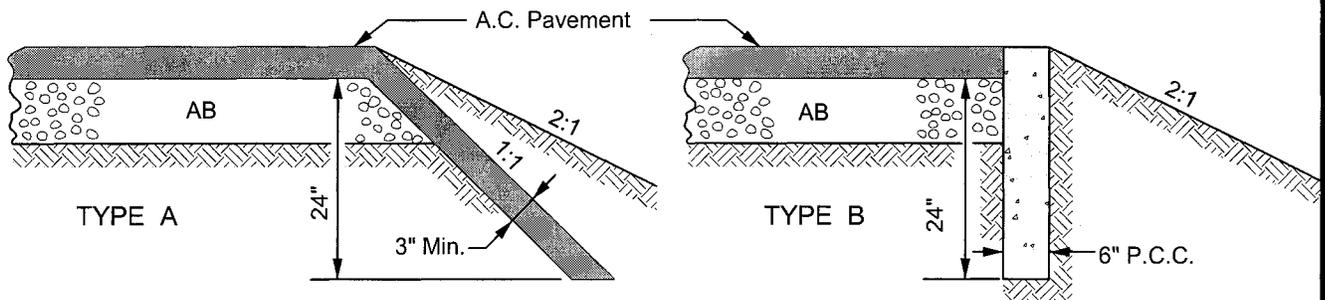
STANDARD  
 LOCATION OF SIGNS  
 IN MEDIAN ISLANDS

PLATE NO.  
**7-10**



**NOTES:**

1. Install min. 5' high galvanized chain link fence as shown and set min. 1' inside R/W line in street area.
2. Posts shall be 2 1/2" I.D. galvanized pipe set in 18" dia. x 24" deep concrete foundation at 8' max. spacing.
3. A 10 gauge galvanized tension wire shall be installed at the top and bottom of fence.
4. Extend fence across sidewalk area where sidewalk exists.
5. 18" x 18" Type N-2 marker (red reflective background) of high intensity grade reflective sheeting shall be installed on each post facing oncoming traffic with City approved theft proof bolts.
6. For additional specifications see Plate No. 7-1.
7. An access gate may be required by the City Engineer. If required, it shall be designed to be locked and closed at all times when not in use.
8. A 24" x 24" W31 (END) sign shall be installed as shown.



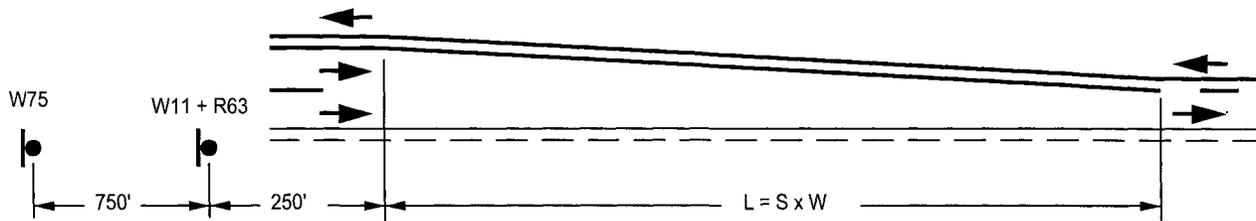
**CUT-OFF WALL DETAILS**

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Paul Wittek</i> CITY ENGINEER	1/20/07 DATE	

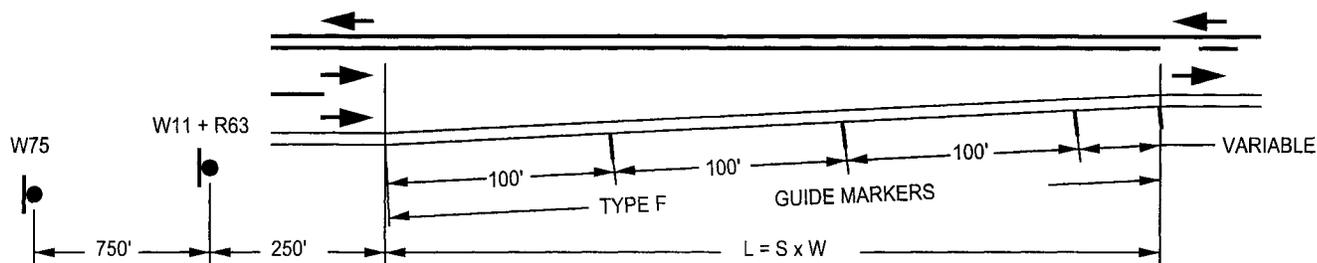
**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
TEMPORARY BARRICADE  
CUT-OFF-WALL

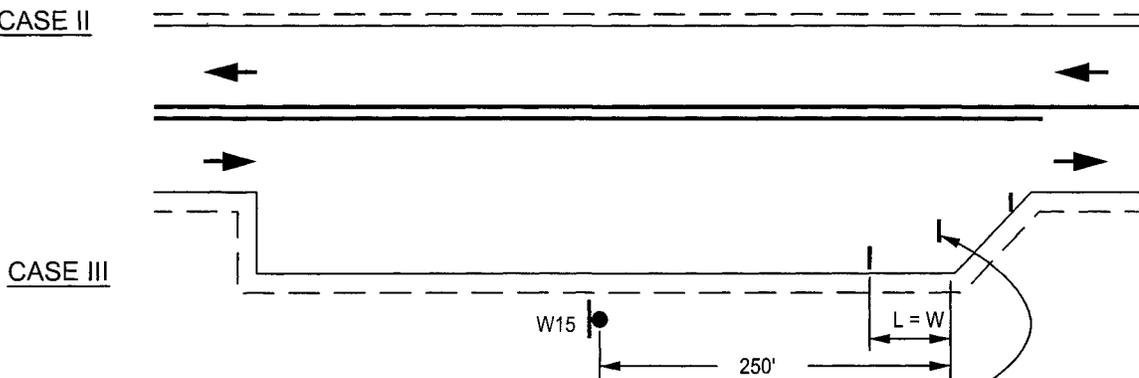
PLATE NO.  
**7-11**



CASE I

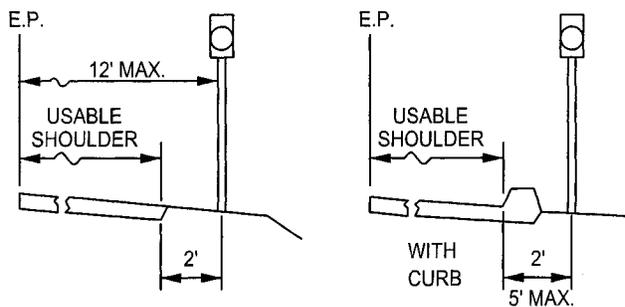


CASE II



CASE III

TYPE L CLEARANCE MARKERS (3 MIN. AT 10' MAX. SPACING)



MARKER POSITIONING

**NOTES:**

- L = Length of Taper in feet \*
- S = 85th Percentile or Design Speed
- W = Offset in Feet

Striping and arrows shall be per the SSS and Caltrans Traffic Manual. A shorter lane drop taper may be used only in locations approved by the City Traffic Engineer.

CHG	DESCRIPTION	DATE	INITIAL
APPROVED <i>Paul D. Water</i>		<i>12/03</i>	
CITY ENGINEER		DATE	

**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
LANE DROPS

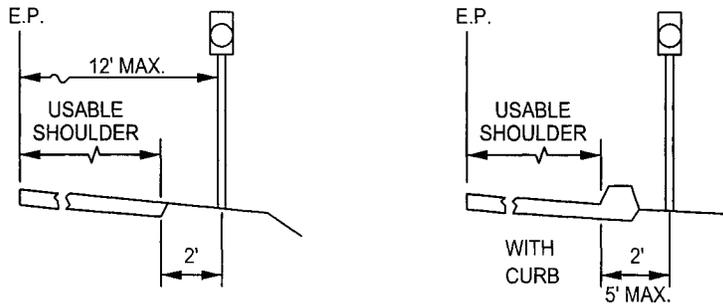
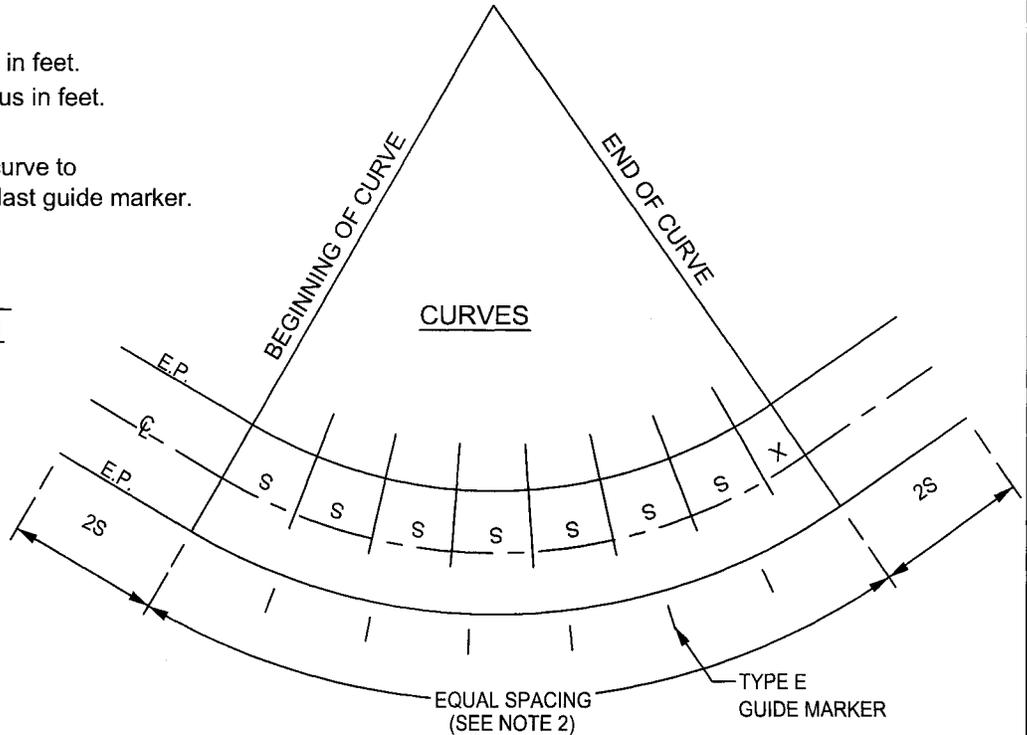
PLATE NO.  
**7-12**

**LEGEND:**

- S = Guide Marker Spacing in feet.
- R = Centerline Curve Radius in feet.
- I = Guide marker
- X = Distance from end of curve to calculated location of last guide marker.

**FORMULA:**  $S = 3 \sqrt{R-50}$

R in ft.	S in ft.
50'	20'
75'	20'
100'	25'
150'	30'
200'	35'
300'	50'
400'	55'
500'	65'
600'	70'
700'	75'
800'	80'
900'	85'
1000'	90'
1200'	100'
1400'	110'
1600'	115'
1800'	125'
2000'	130'
2500'	150'
3000'	160'

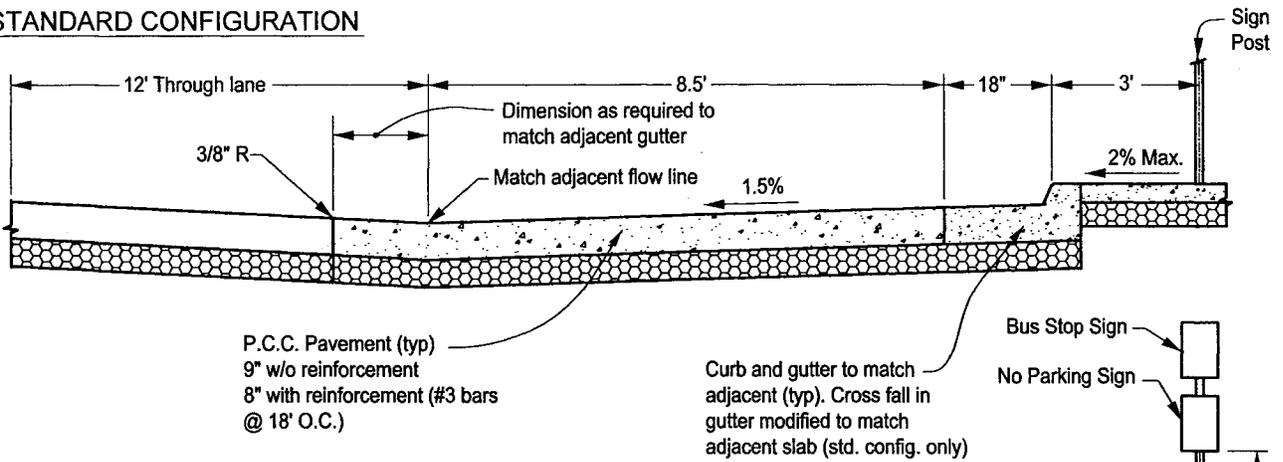


**NOTES:**

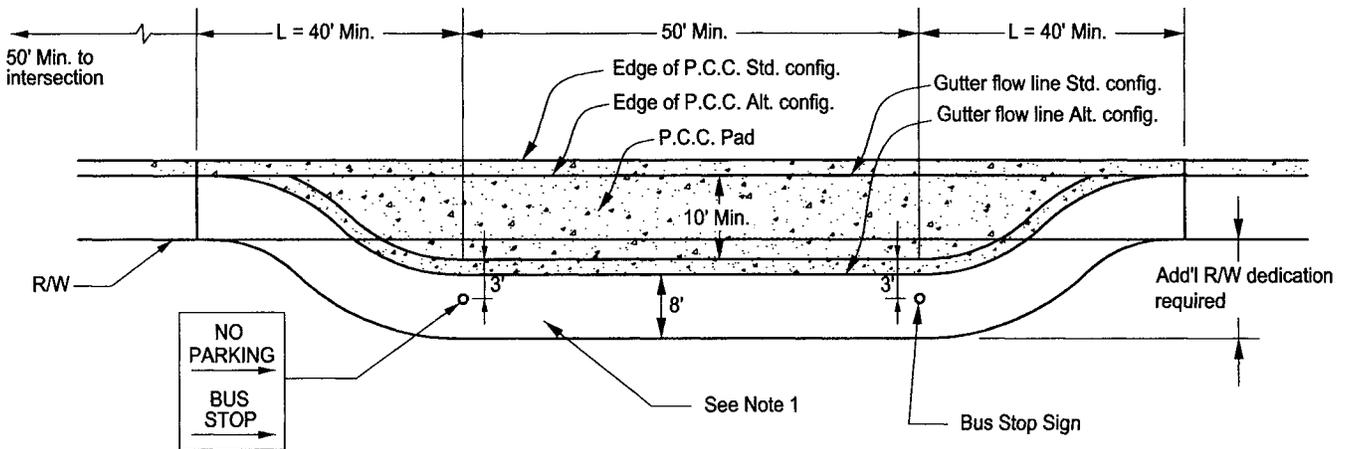
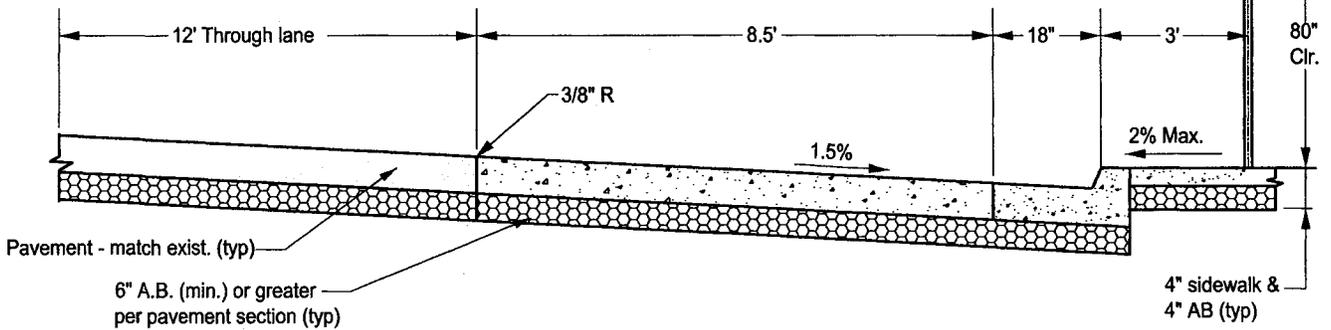
1. Maximum spacing between guide markers = 160'. Minimum spacing = 20'.
2. Prorate distance "X" among all spacing so last guide marker falls on end of curve.
3. Install markers perpendicular to oncoming traffic. Reflector bracket on back of markers should be perpendicular to opposing traffic.

<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT			
CHG	DESCRIPTION	DATE	INITIAL
APPROVED <i>[Signature]</i> CITY ENGINEER		<i>[Date]</i> DATE	<b>STANDARD GUIDE MARKER SPACING ON CURVES</b>
			PLATE NO. <b>7-13</b>

**STANDARD CONFIGURATION**



**ALTERNATE CONFIGURATION (Street grade ≥ 1%)**



**NOTES:**

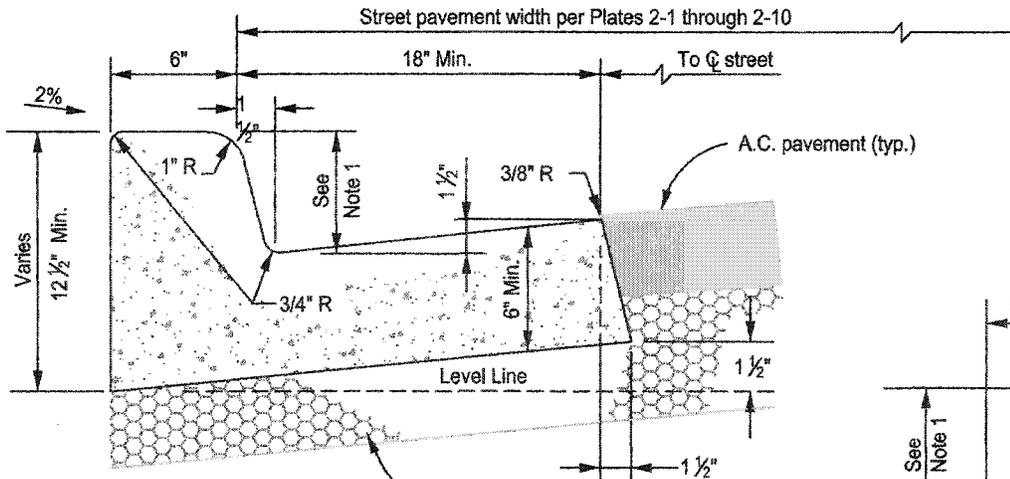
1. Wheelchair ramp per Plate No. 5-1 if required for access. Sidewalk easement may be required.
2. Installation of bus shelter to be determined by City Traffic Engineer.
3. For each additional pass through bus berth, add 50'; for each additional layover bus berth, add 80'.
4. Concrete scoring and weakened plane joints per Plate 8-3.

5	Revised Sign Offset Dimension	10-22-08	VIAE
CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>[Signature]</i>	10/23/08	DATE
	CITY ENGINEER		

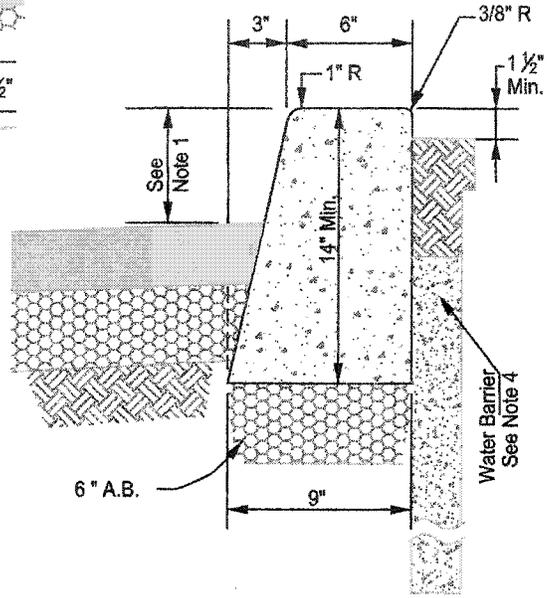
**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

**STANDARD  
BUS TURNOUT**

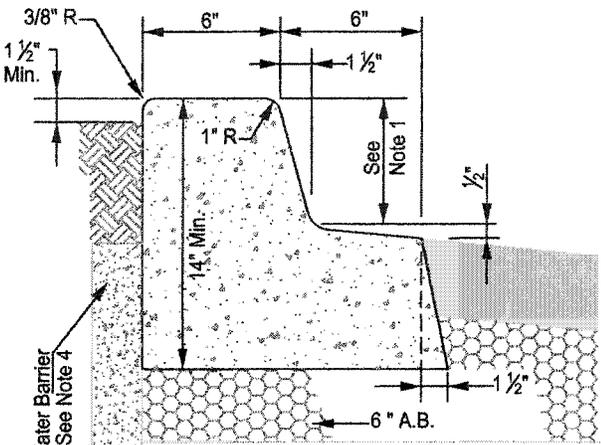
PLATE NO.  
**8-1**



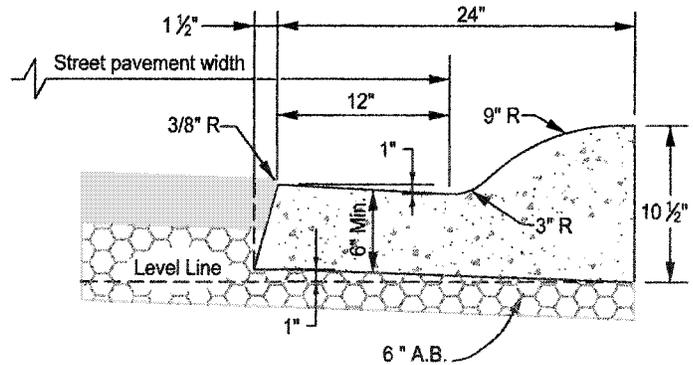
**STANDARD CURB & GUTTER TYPE A-2**



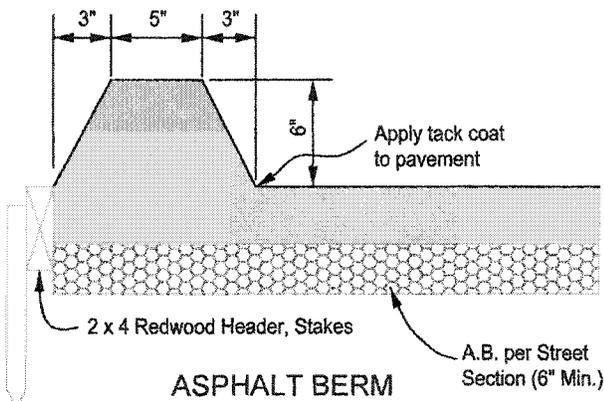
**MEDIAN / PLANTER CURB TYPE A**  
(for private streets or parking lots)



**MEDIAN CURB TYPE A-1**  
(for all public streets)



**ROLLED CURB DETAIL**



**ASPHALT BERM**

**NOTES:**

1. 6" min. curb height.
2. All concrete shall be 520-C-2500.
3. Curb cores shall be positioned per plate 8-20
4. Median and planter curbs shall include barrier to prevent migration/intrusion of water into adjacent pavement or base, to the satisfaction of the City Engineer.

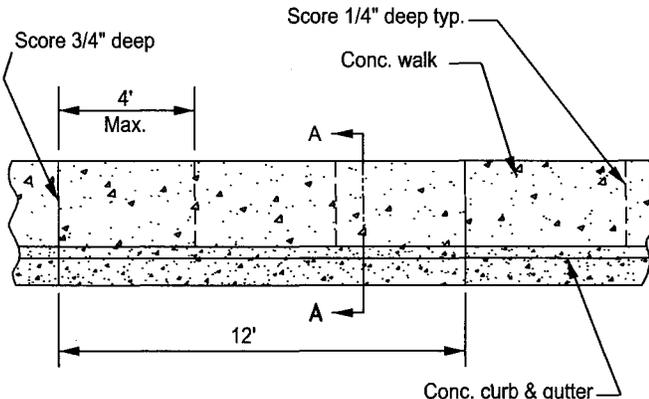
6	Added Water Barrier at Planter Curbs	3-27-12	MAF
5	Add Dimension for Median Curb	10-22-08	MAF
4	Clarify AB Section	12-15-04	JTS
CHG	DESCRIPTION	DATE	INITIAL

APPROVED *[Signature]* 3-27-12  
CITY ENGINEER DATE

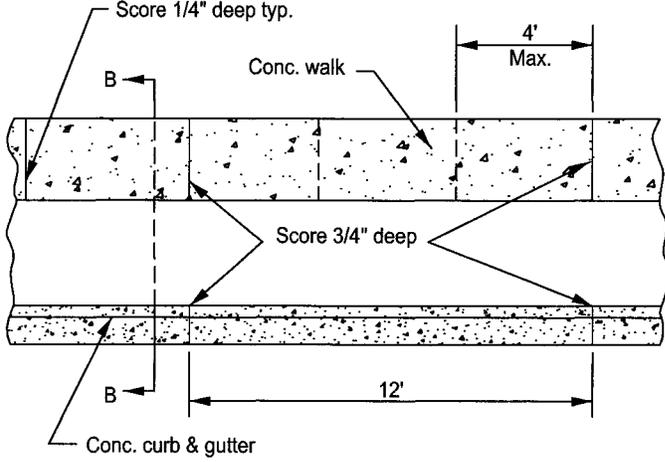
**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

**STANDARD CONCRETE CURB & GUTTER, MEDIAN CURB, A.C. BERM**

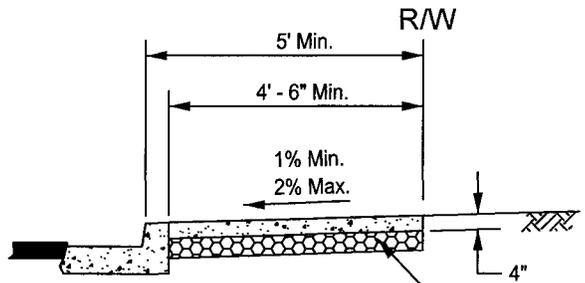
PLATE NO.  
**8-2**



MONOLITHIC SIDEWALK

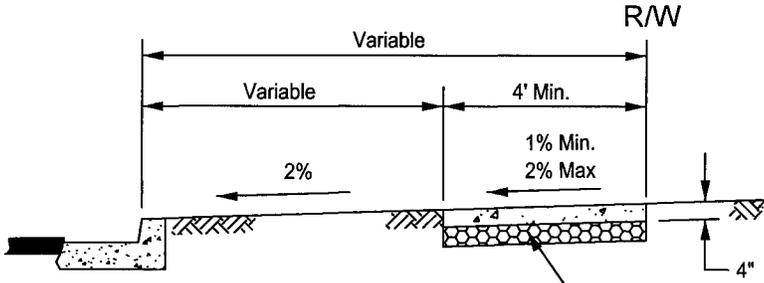


DETACHED SIDEWALK



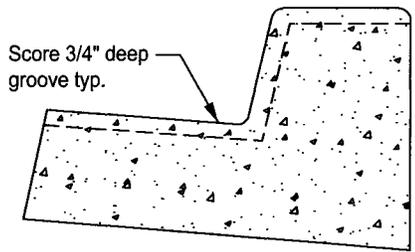
SECTION A-A

See Note 2

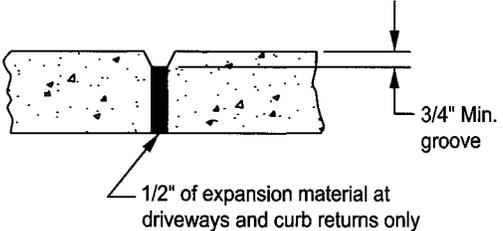


SECTION B-B

See Note 2



CURB & GUTTER



SIDEWALK

NOTES:

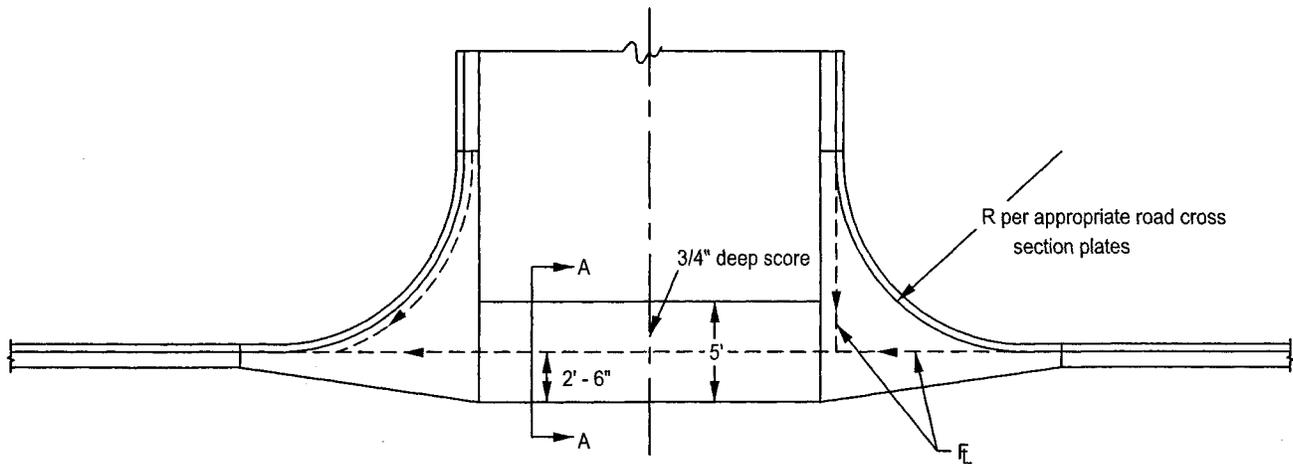
1. Provide full expansion joints in curbs and sidewalks at each side of driveways and at both ends of any curb return.
2. 4" A.B. to be placed under sidewalk and compacted to 90% relative compaction.
3. Removal of curb, gutter or sidewalk shall be to saw cut edges. Do not leave floating pieces < 8' long.
4. All concrete shall be 520-C-2500.
5. An accessible pathway of 4' min. width must be provided at all times. If an object (i.e.. fire hydrant, utility, etc.) is to be placed on the sidewalk, provide a sidewalk extension per Plate Nos. 8-8 or 8-9.

6	Modified Compaction Requirements	3-27-12	MAF
CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Jeff Spurgin</i> CITY ENGINEER	3.27.12 DATE	

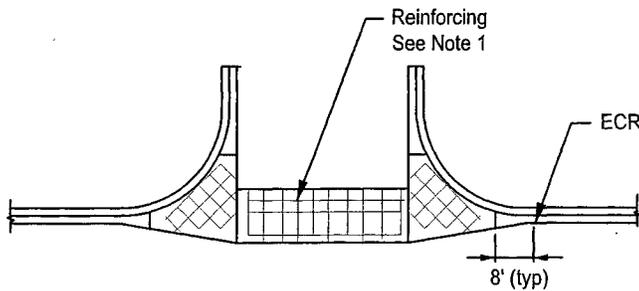
**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
SIDEWALK CONSTRUCTION,  
SCORING, CROSS SLOPES

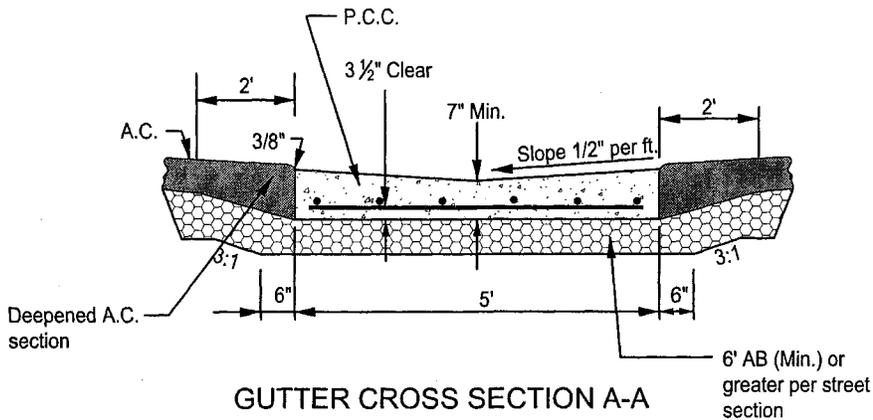
PLATE NO.  
**8-3**



PLAN



PLAN VIEW SHOWING STEEL LAYOUT



GUTTER CROSS SECTION A-A

NOTES:

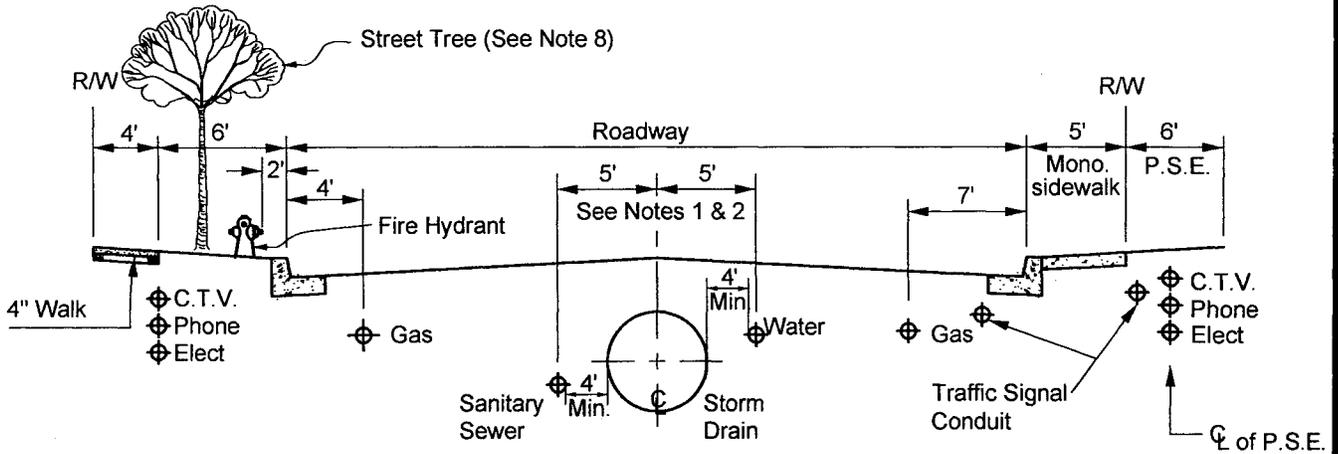
1. Use #4 reinforcing bars at 12" both ways in cross gutter and spandrels.
2. All concrete shall be 520-C-2500.
3. Cross gutters to be used only where vehicles normally stop.
4. Drainage water to be taken underground at intersections across through traveled roads.

4	Clarify AB section	12-15-04	<i>[Signature]</i>
CHG	DESCRIPTION	DATE	INITIAL
APPROVED <i>[Signature]</i>		12/15/04	
CITY ENGINEER		DATE	

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

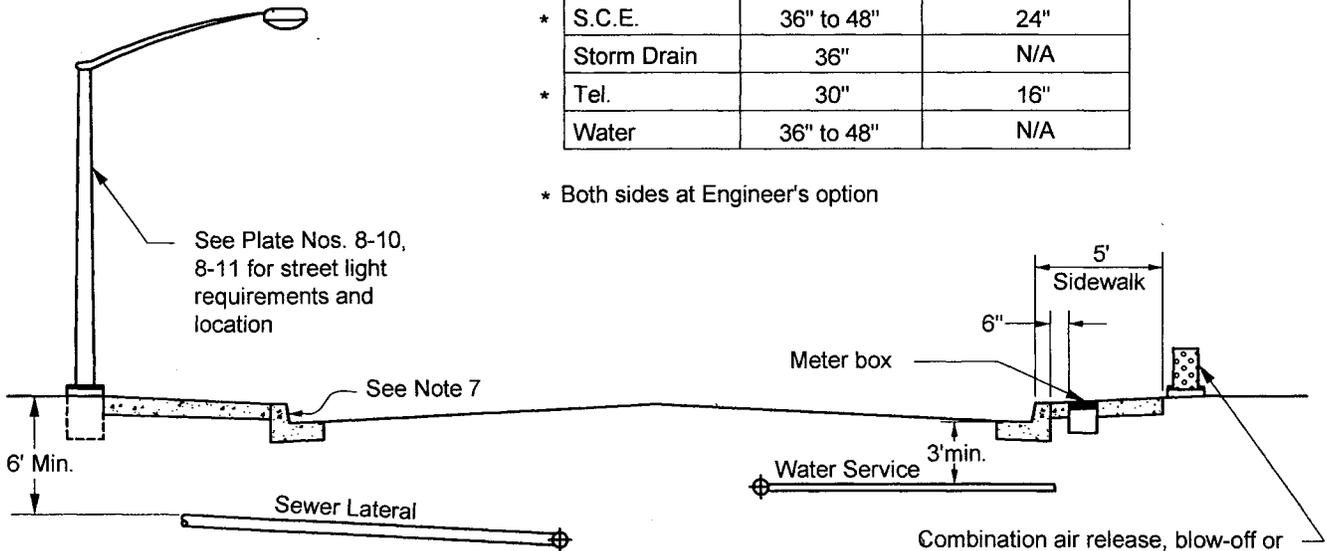
STANDARD  
CROSS GUTTER

PLATE NO.  
**8-4**



UTILITY	MIN. COVER	
	W/IN STREET, OR EASEMENT	BEHIND C&G, SIDEWALK
* C.T.V.	30"	16"
* Gas	30"	16"
Sanitary Sewer	7'+	N/A
* S.C.E.	36" to 48"	24"
Storm Drain	36"	N/A
* Tel.	30"	16"
Water	36" to 48"	N/A

\* Both sides at Engineer's option



**NOTES:**

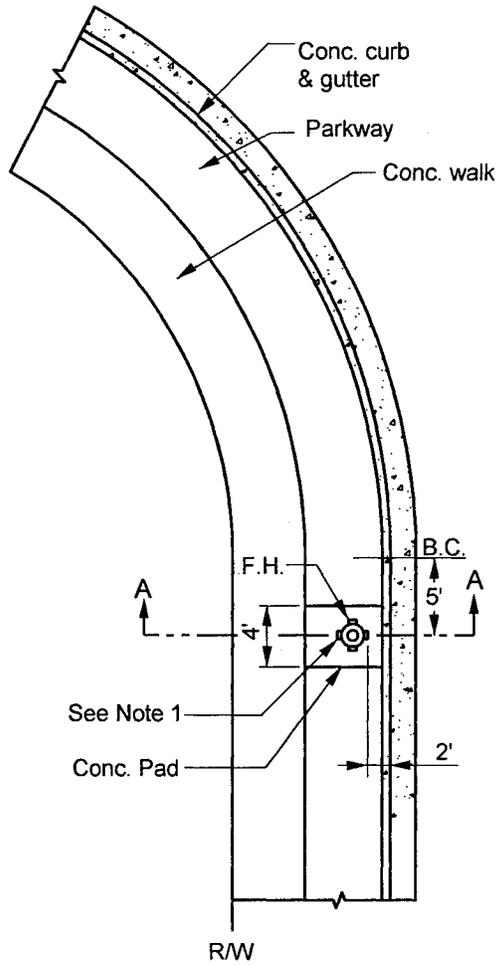
- Sanitary sewer to be 5' south or east of street center line, or as required to meet 4' min clearance to storm drain.
- Water to be 5' north or west of street center line, or as required to meet 4' min clearance to storm drain.
- All electrical utilities may be placed in common trench.
- Each respective utility should be consulted for any special requirements due to unique field and design conditions. Vaults, J-boxes, pedestals, etc. shall be located at property lines.
- A utility shall not reduce the required 4' min. width of accessible pathway for the physically handicapped. If needed, provide sidewalk extension similar to Plate Nos. 8-8 or 8-9.
- No utilities in median unless approved by City Engineer.
- Engrave 2" high letter "S" in curb face at location of sewer lateral.
- Street tree planting to conform to Plate Nos. 1-10 & 8-17.

5	Clarify Minimum Cover Requirements	10-22-08	MAF
3	Clarify Street Lighting Location	3-22-04	JTS
CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Jay A. Morgan</i> CITY ENGINEER	10/23/08 DATE	

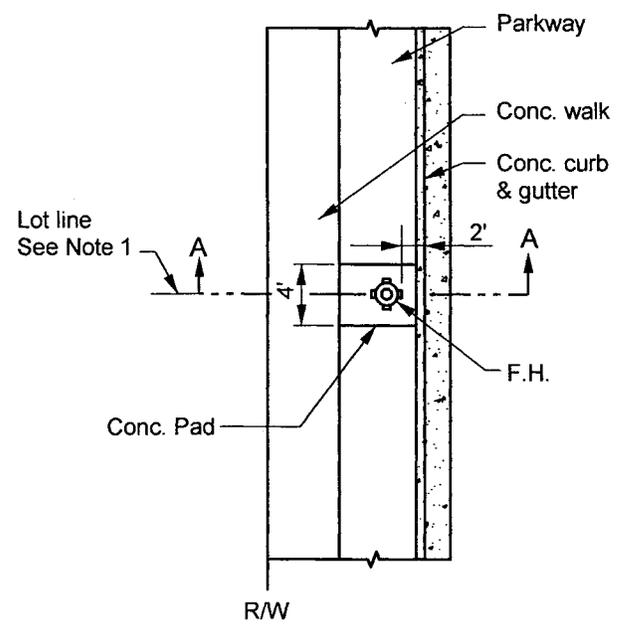
**CITY OF THOUSAND OAKS**  
PUBLIC WORKS DEPARTMENT

STANDARD  
PLACEMENT OF UTILITIES  
WITHIN STREET R/W

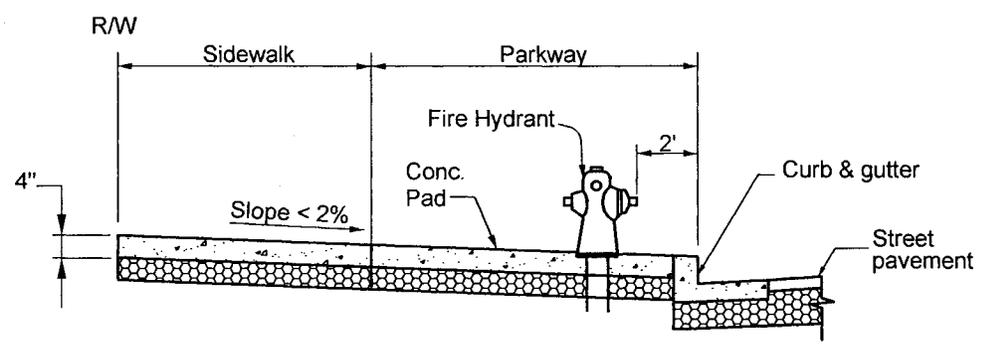
PLATE NO.  
**8-5**



F.H. AT BEGINNING OF CURB RETURN



F.H. ALONG STREET



SECTION A-A

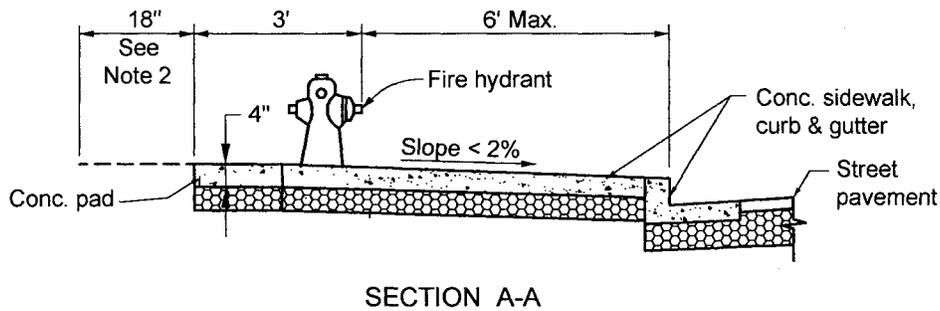
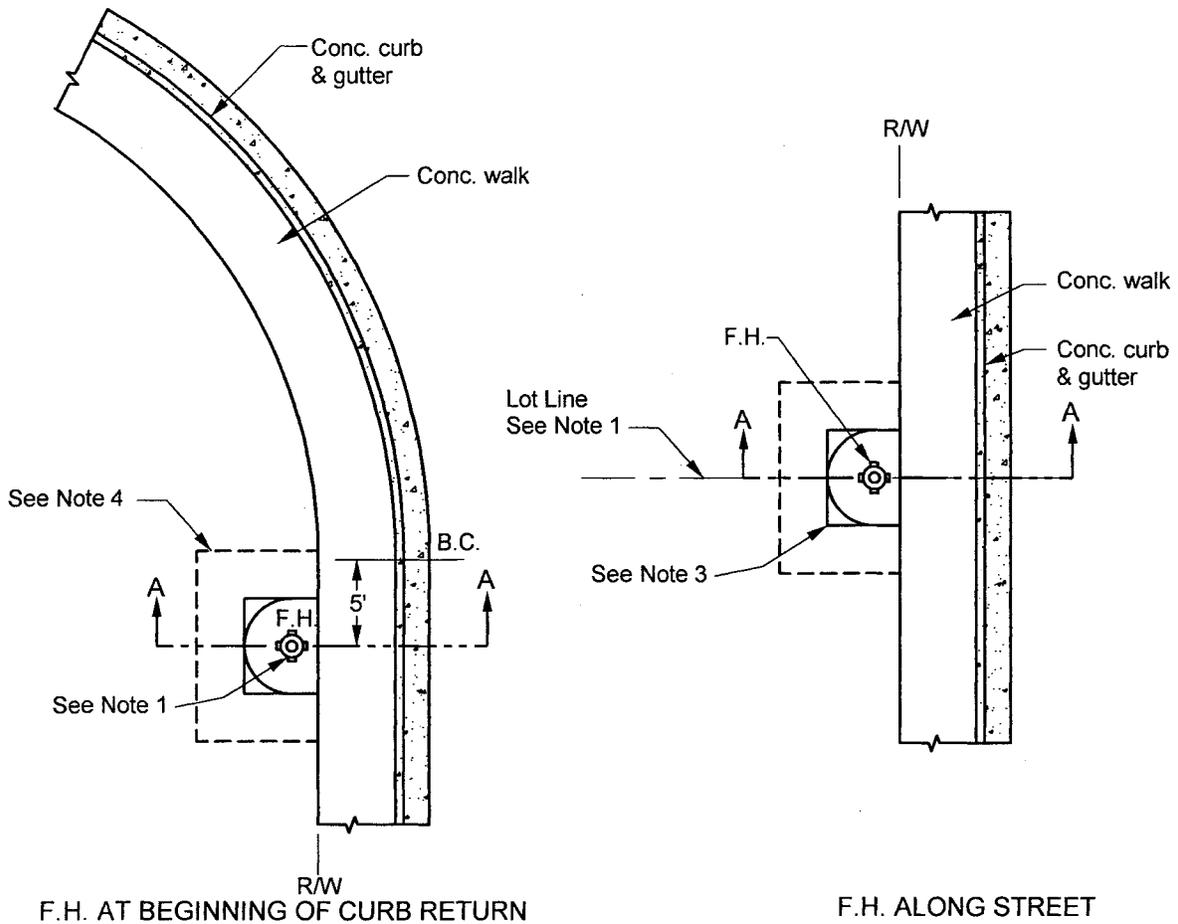
- NOTE:
1. The precise location of F.H. relative to the lot line or the B.C. offset may be shifted up to 5' to avoid conflict with street lights, mail boxes or driveway approaches (provide 4' clearance from these improvements)
  2. Location of F.H. must be approved by Ventura County Fire Protection District.
  3. See City of Thousand Oaks Water Design Standards for additional location requirements.

5	Add Concrete Pad	10-22-08	MAP
CHG	DESCRIPTION	DATE	INITIAL
APPROVED <i>Jay Shurgin</i>		10/23/08	DATE
		CITY ENGINEER	

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

STANDARD  
LOCATION OF FIRE HYDRANT IN  
DETACHED SIDEWALK AREAS

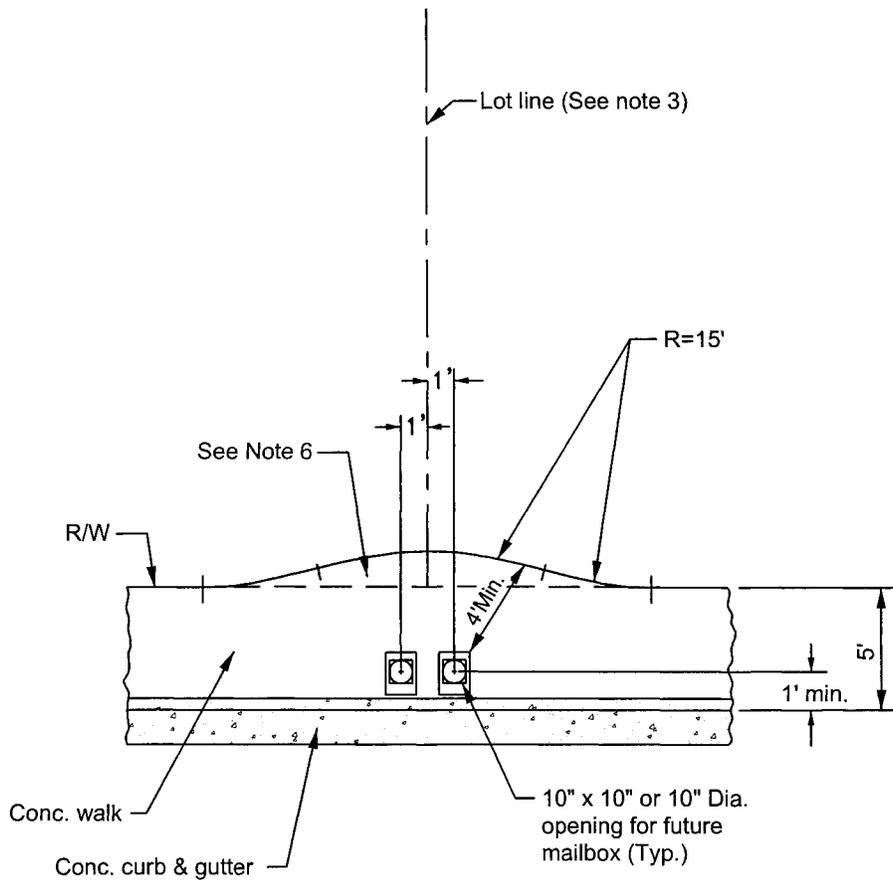
PLATE NO.  
**8-6**



**NOTES:**

1. The precise location of F.H. relative to the lot line or the B.C. offset may be shifted up to 5' to avoid conflict with street lights, mail boxes or driveway approaches (provide 4' clearance from these improvements).
2. Location of F.H. must be approved by Ventura County Fire Protection District.
3. See City of Thousand Oaks Water Design Standards for additional location requirements.
4. No shrubs, bushes or improvements exceeding 6" in height within this area.
5. Circular or rectangular configuration for concrete pad.
6. Easement to City of Thousand Oaks or water purveyor is required.

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
5	Revised F.H. Offset Dimensions & Notes	10-22-08	MAP		
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED <i>Amy H. Morgan</i> 10/23/08 CITY ENGINEER DATE				STANDARD LOCATION OF FIRE HYDRANT IN MONOLITHIC SIDEWALK AREAS	
				PLATE NO.	<b>8-7</b>

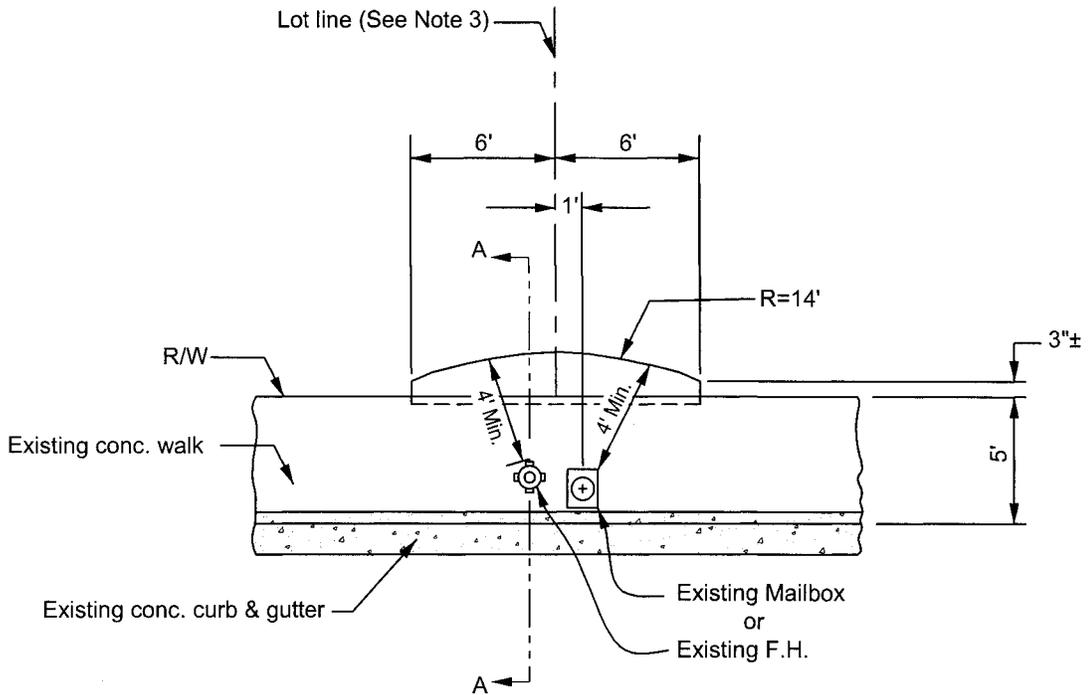


MAIL BOX PEDESTAL OPENING(S) DETAIL

NOTES:

1. Developer to leave opening (approximately 10" x 10" or 10" dia.) in sidewalk for owner to install post for mailbox. Opening to be filled in with rigid temporary material (i.e. wood or concrete block). Mailbox post not to exceed 8" in diameter.
2. Paired mailboxes to be located maximum 2' apart.
3. The precise locations of mailboxes relative to the lot line may be shifted  $\pm 5'$  to avoid conflict with street lights, fire hydrants or driveway approaches (no closer than 4' from such items.).
4. Mailbox locations shall be confirmed by Public Works Inspector prior to installation.
5. Provide 42"-48" clearance from street to bottom of mailbox, and 6" from curb face to front of mailbox.
6. 4' clearance required from mailbox to back of sidewalk (minimum). Sidewalk easement may be required.

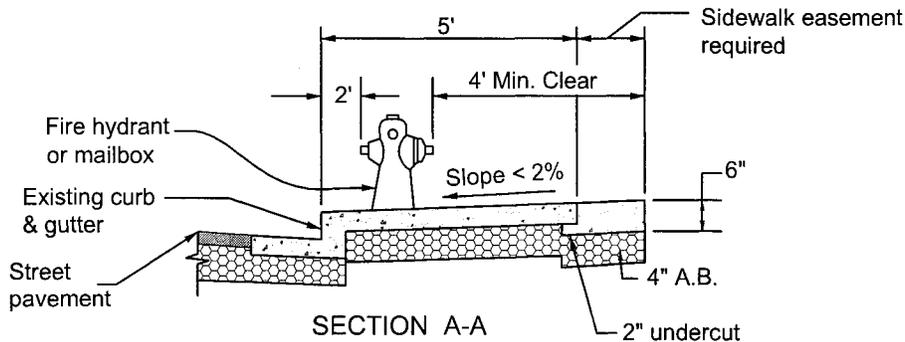
				CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT
2	Clarify clearance requirements	3-22-04	<i>AK</i>	
CHG	DESCRIPTION	DATE	INITIAL	
APPROVED <i>Mark Hutton</i> CITY ENGINEER				STANDARD SIDEWALK MAILBOX EXTENSION DETAILS
				PLATE NO. <b>8-8</b>



**SIDEWALK EXTENSION DETAIL  
FOR MAIL BOX OR FIRE HYDRANT**

**NOTES:**

1. Developer to leave opening (approximately 10" x 10" or 10" dia.) in sidewalk for owner to install post for Mailbox. Opening to be filled in with rigid temporary material (i.e. wood or concrete block).
2. Mailboxes to be located 2' apart so mailcarrier can make deposit in each from one stop location, if possible.
3. The precise location of this extension relative to the lot line may be shifted  $\pm 5'$  to avoid conflict with street light electroliers, or driveway approaches (i.e. no closer than 4' from such items.).
4. Extensions for individual Mailbox locations, other than at a common property boundary or multiple installations (i.e. 3 or more grouped together), may be permitted upon submittal of a final plot plan.

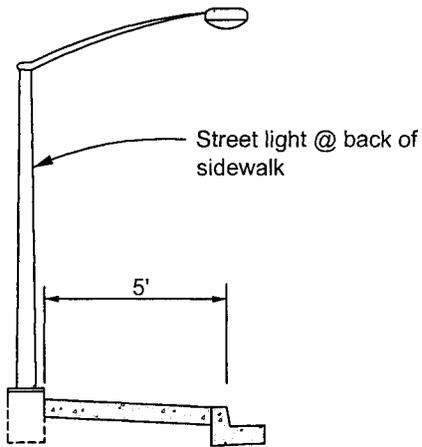


CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Paul White</i>	5/26/07	
	CITY ENGINEER	DATE	

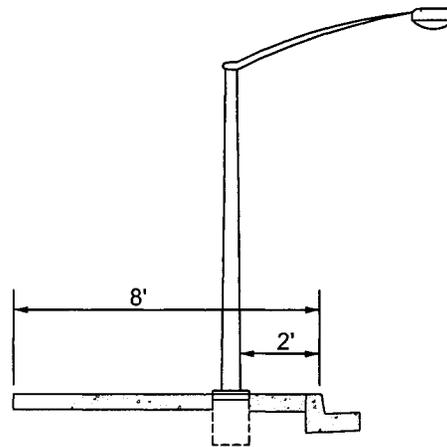
**CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT**

**STANDARD  
EXTENSION DETAILS TO  
EXISTING SIDEWALK**

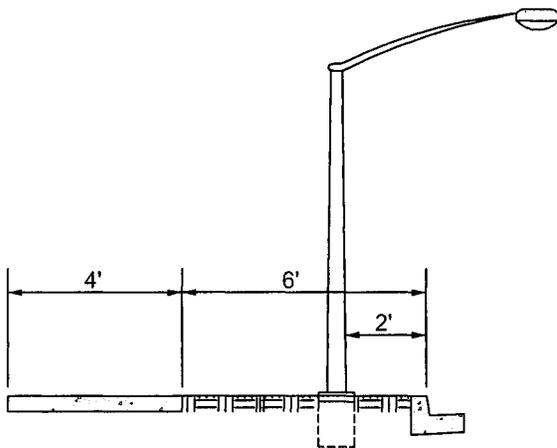
PLATE NO.  
**8-9**



Attached Sidewalk - Residential



Attached Sidewalk - Commercial



Detached Sidewalk

3	Clarify street light location	3-22-04	<i>RLB</i>
CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Markus H. ...</i> CITY ENGINEER	3/22/04	DATE

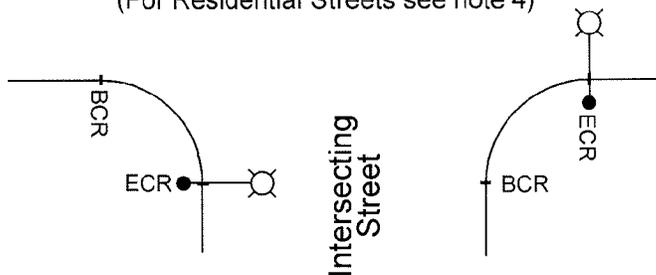
CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

STANDARD  
ELECTROLIER LOCATION

PLATE NO.  
**8-10**

Primary, Secondary or Collector Street

(For Residential Streets see note 4)



CLASSIFICATION	STANDARD PLATES	LED WATTAGE	HPSV WATTAGE	HEIGHT	MAST ARM LENGTH	NOTES
All traffic signals	N/A	133 W	250 W	30'	12' or 15'	1
Primary controlled access	2-1	106 W	200 W	32'	8'	3,5
Secondary controlled access	2-2	67 W	150 W	31'	6'	3,5
Secondary limited access	2-3	52 W	100 W	31'	6'	3,5
Industrial/Commercial	2-4	67 W	150 W	31'	6'	3,5
Collector	2-5	52 W	100 W	31'	6'	3,5
Residential/Minor streets	2-6 to 2-12	35 W	70 W	25'	4'	4

NOTES:

1. Integral with traffic signal standard (City owned).
2. All lamps shall be LED or most recently adopted energy efficient standard. Specific manufacturer and model of luminaire to be installed will be named by the City Engineer. Marbelite electrolier pole color to be earth toned and/or match existing adjacent street lights, as approved by the City Engineer.
3. At all intersections. Place pole as shown above and per Plate No. 8-10.
4. Spacing 200-250 feet along alternate sides of road in residential areas with exact locations approved by the City Engineer.
5. Spacing 200-250 feet along both sides of road (in commercial areas only) with exact locations approved by the City Engineer.
6. Sidewalk extensions around poles may also be required (similar to plate No. 8-8 or 8-9).
7. Poles will be numbered using the atlas grid number, asset type, and unique three-digit identifier.  
(Ex: M13SL001)
8. All luminaires shall have a correlated color temperature of 4000K +/- 300K.
9. All LED fixtures will be of type II or III light distribution, unless otherwise specified by City Engineer.
10. High Pressure Sodium Vapor (HPSV) lamps permitted in approved locations only.

7	Update system wattage requirements	2-26-13	MAF
6	LED standard and pole numbering	6-27-12	MAF
6	Clarify pole color	3-27-12	MAF
4	Clarify street light location	12-15-04	
3	Clarify street light requirements	3-22-04	
CHG	DESCRIPTION	DATE	INITIAL

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

APPROVED

CITY ENGINEER

DATE

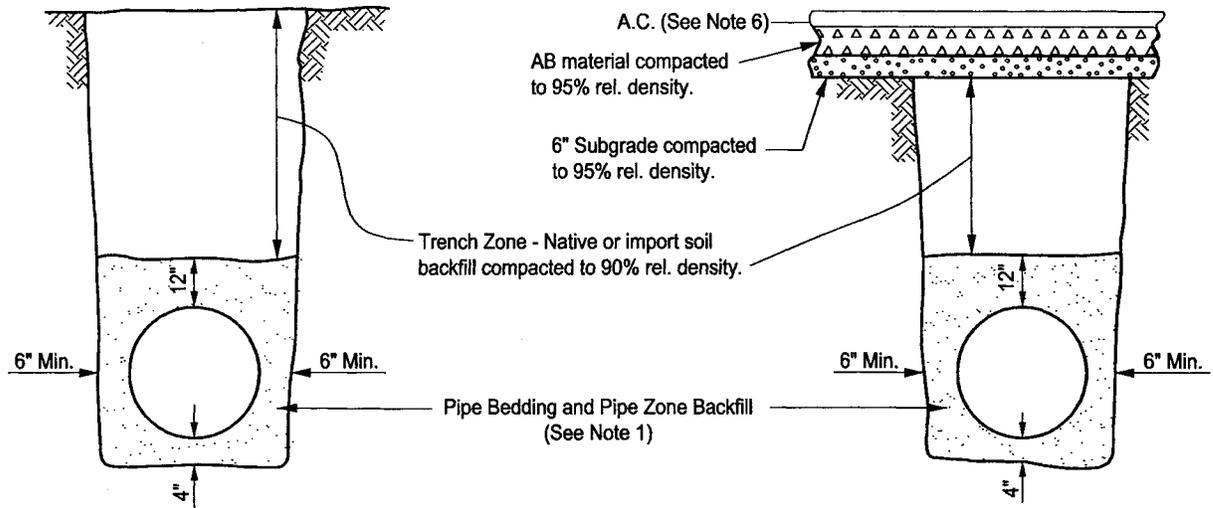
STANDARD  
STREET LIGHTING

PLATE NO.

8-11

This page intentionally left blank.

				CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT	
6	DELETED PLATE	3-27-12	MAF		
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED			3.27.12	PLATE NO.	
	CITY ENGINEER		DATE	8-12	



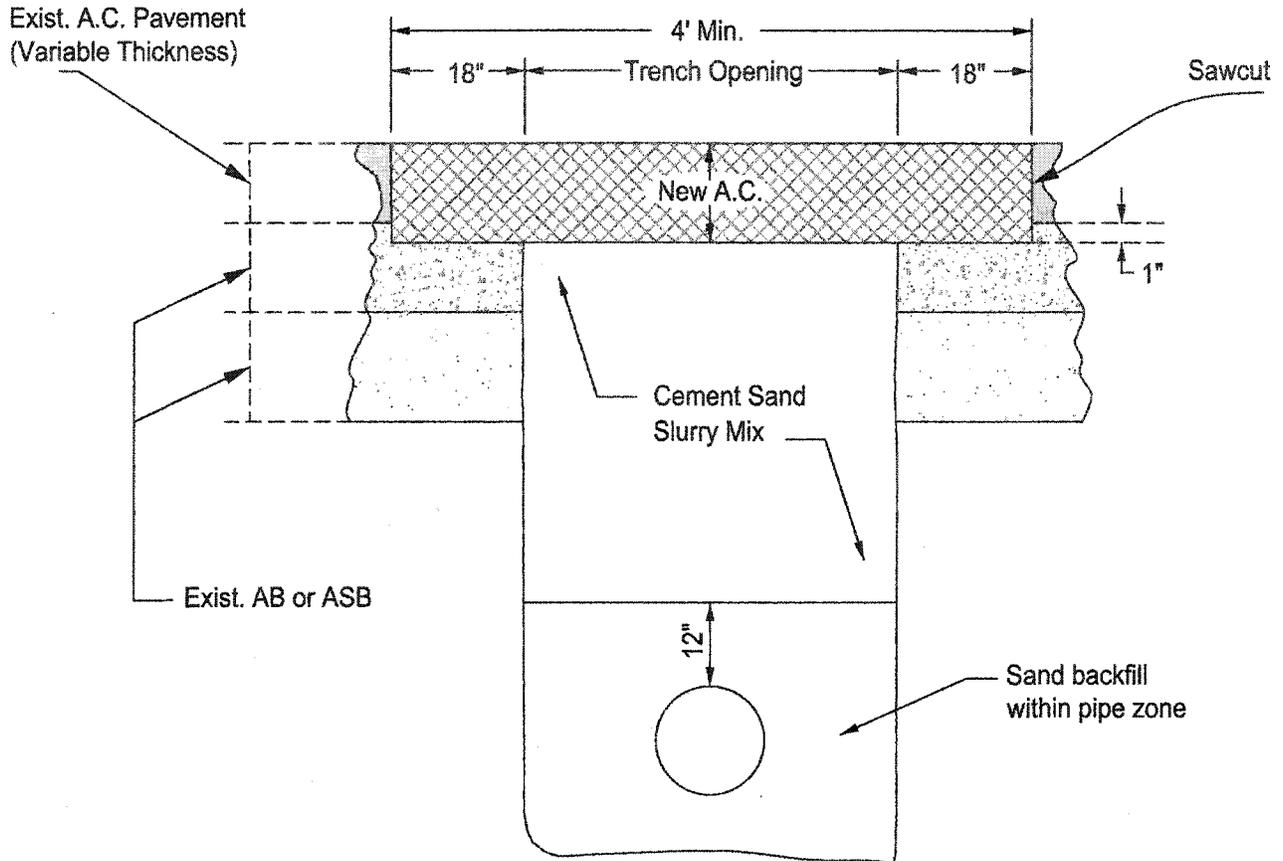
PARKWAYS, MEDIANS, EASEMENTS,  
OPEN GROUND

UNDER NEW PAVEMENT

NOTES:

1. Pipe zone backfill and bedding shall be in accordance with SPPWC Section 306-1.2.1, except for the following modifications.
  - a. Backfill with granular material SE  $\geq$  40 or fill sand.
  - b. Fill sand densified by mechanical compaction shall be compacted to 90% relative compaction or as specified of the soils engineer or Public Works Inspector.
  - c. Fill sand densified by jetting shall be compacted to 90% relative compaction or as specified by the soils engineer or by visual inspection and probing by the Public Works Inspector.
  - d. More restrictive requirements may be imposed by the utility purveyor.
  - e. For wastewater pipe provide bedding per City of Thousand Oaks Wastewater Standards.
  - f. For water pipe within the City's water service area provide bedding per City of Thousand Oaks Standards.
2. Trench zone backfill and compaction shall be in accordance with SPPWC Section 306-1.3, except for the following modifications.
  - a. 90% relative compaction is required throughout the trench zone and a compaction report is required at each maximum lift thickness.
  - b. Jetting or flooding is not allowed within the trench zone.
3. Street structural section shall be per City's Road Design Standards and Soils Engineer recommendation.
4. See Plate 8-14 for trenches cut into existing pavement.

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
5	Revised Notes & Pipe Zone Dimensions	10-22-08	MAF		
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED <i>Jay Shuman</i> CITY ENGINEER				STANDARD UTILITY TRENCH COMPACTION SPECIFICATIONS	
				DATE	PLATE NO.
				10/23/08	<b>8-13</b>



**NOTES:**

1. All trenches shall be backfilled with 100-E-100 cement/sand slurry mix.
2. These conditions shall be in addition to Plate No. 8-13.
3. Jagged and/or rough edges shall be kept at a minimum. Inspector will determine any additional saw cutting. Extreme care must be exercised on older roads where A/C has broken up or become brittle. Existing AC sections adjacent to concrete gutters, ramps, curbs, medians, catch basins, and driveways less than 18" wide shall be removed and replaced with new full depth AC section and as directed by the Public Works Inspector.
4. Asphalt for final lift shall be Type III-C2-PG 64-10 per SSPWC 400-4. Asphalt shall be 1" thicker than existing.
5. Surface of all trenches shall be maintained flush with adjacent existing pavement.
6. All work must be completed within 30 days of starting date unless otherwise authorized by the City Engineer.
7. For multiple trench repairs located adjacent to each other, distance between repairs shall be no less than 4' (floaters less than 4' are not allowed).

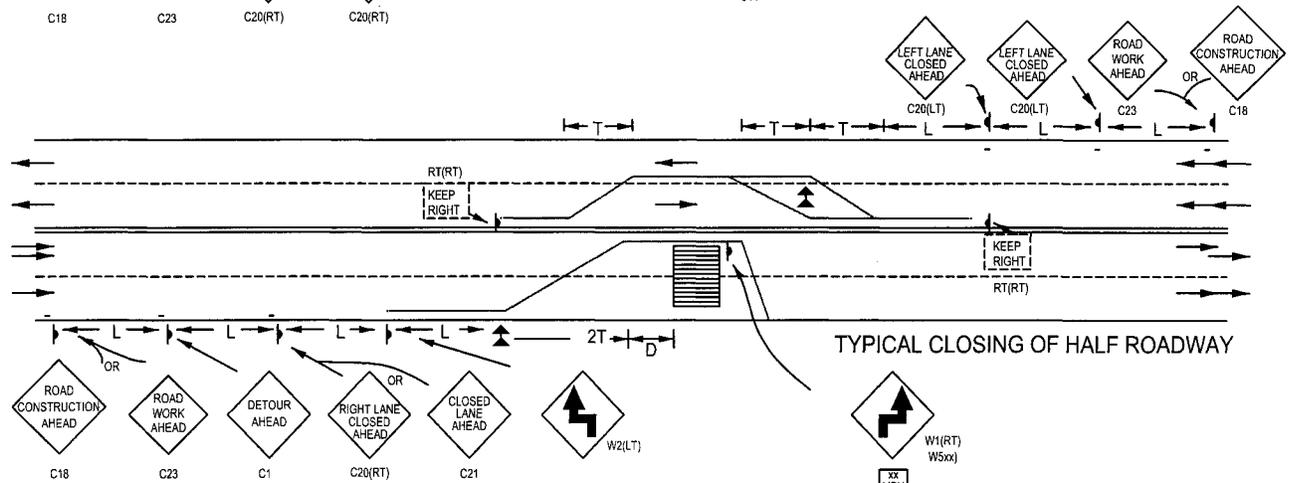
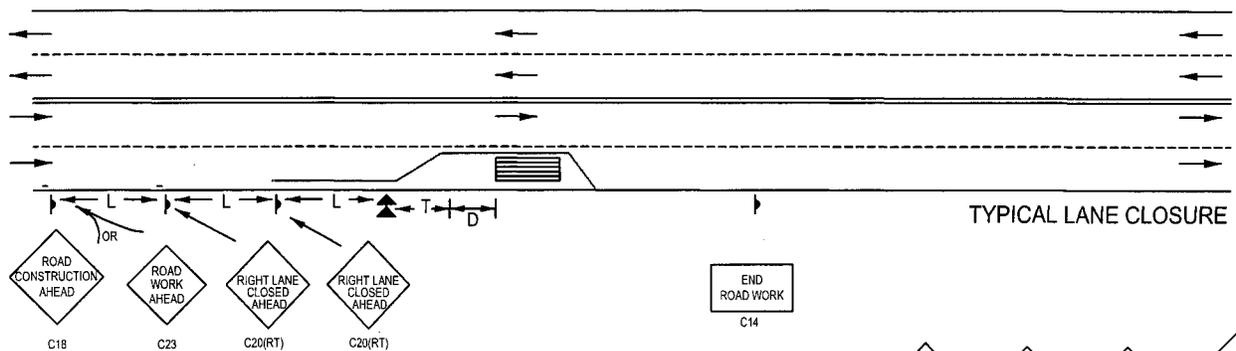
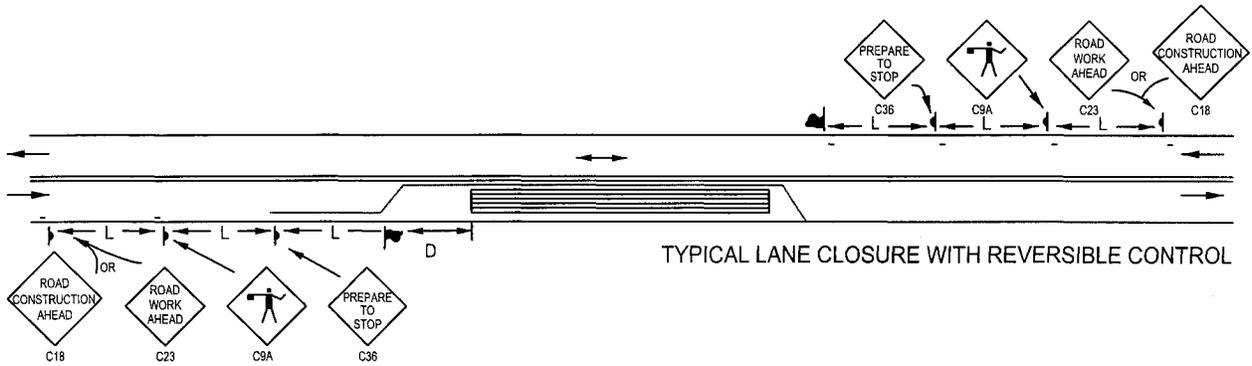
6	Remove Reinforcing Fabric Requirement	3-27-12	MAF
5	Revise Dimensions A.C. Specification	10-22-08	MAF
2	Clarify Overlay Width & Requirements	3-22-04	JTS
CHG	DESCRIPTION	DATE	INITIAL

**CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT**

APPROVED *[Signature]* 3.27.12  
CITY ENGINEER DATE

STANDARD  
TRENCH REPAIR WITHIN  
PAVED RIGHT OF WAY

PLATE NO.  
**8-14**



POSTED SPEED	T MINIMUM TAPER LENGTH	L MINIMUM SIGN SPACING	MAXIMUM SPACINGS OF CHANNELIZATION DEVICES CONES/BARRICADES TUBES	D MINIMUM BUFFER ZONE
25	125 (39)	125 (39)	25 (7.6)	10
30	180 (55)	180 (55)	30 (9.1)	15
35	250 (76)	250 (76)	35 (10.7)	15
40	325 (100)	325 (100)	40 (12.2)	20
45	550 (140)	550 (140)	45 (13.7)	20
50 +	750 (220)	750 (220)	50 (15.2)	25

**LEGEND**

- TRAFFIC SIGN WITH FLAGS
- CHANNELIZATION DEVICE
- FLASHING ARROW SIGN
- FLAGGER
- WORK ZONE
- (00) METERS

CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Mad Olvera</i> CITY ENGINEER	<i>8/20/03</i> DATE	

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

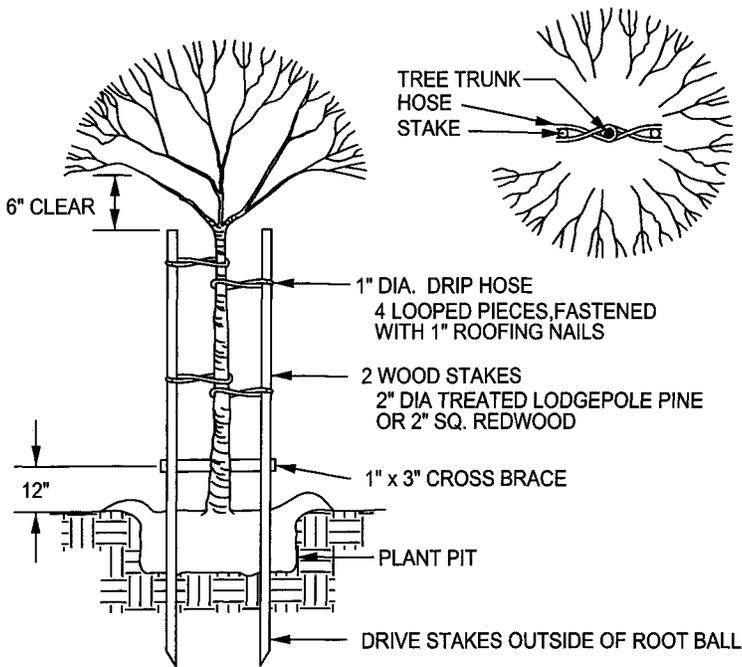
STANDARD  
TRAFFIC CONTROL CHART

PLATE NO.  
**8-15**

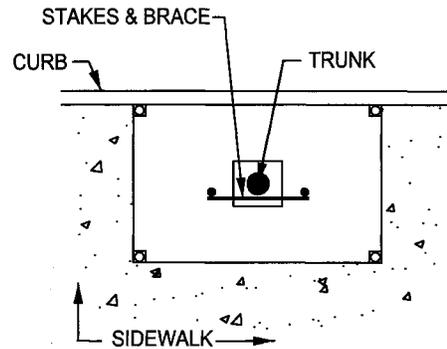
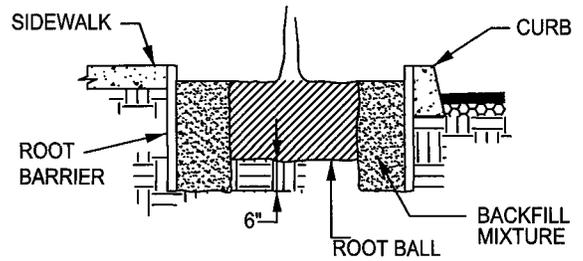
TRAFFIC CONTROL NOTES:

1. ACTUAL FIELD CONDITIONS MAY REQUIRE SOME DEVIATION FROM THESE PLANS & NOTES, HOWEVER, ANY SUCH DEVIATIONS SHALL BE APPROVED BY THE CITY TRAFFIC ENGINEER AT LEAST 72 HOURS PRIOR TO IMPLEMENTATION.
2. These plans & notes do not apply to EMERGENCY CONDITIONS on brief operations where PUBLIC & EMPLOYEE SAFETY ARE NOT JEOPARDIZED.
3. All advance warning signs shall be equipped with two orange flags.
4. All advance warning signs shall be a minimum of 36" x 36".
5. Daytime channelization devices may consist of either:
  - a. 28" minimum height cones, or
  - b. 37" minimum height tubes, or
  - c. Type one barricades.
6. All lane closures and detours that are scheduled to remain over one week shall be striped and all conflicting stripes shall be completely removed by blasting (black paint shall not be used).
7. The following are additional requirements for all night time lane closures and detours:
  - a. At least one person shall be assigned full-time to maintain traffic control devices, and
  - b. All traffic signs shall be reflectorized, and
  - c. Type A or B (flashing) yellow flashing beacon warning lights shall be used at all warning signs.
  - d. All channelization devices shall be either:
    1. Internally illuminated cones fitted with 7" reflective with sleeves, or
    2. Type 1 barricades with type C (steady burn) yellow barricade warning lights.
8. The following are additional requirements on all roads having a posted speed limit of 40 mph or greater:
  - a. All advance warning signs should be a minimum of 48" x 48", and
  - b. Type 1 or 2 flashing arrow signs (FAS) shall be used on all lane closures.
9. No trenches shall be left open overnight without the express written permission of the City Engineer. Trenches shall be either plated or back filled and resurfaced with temporary A.C.
10. Access shall be maintained at all times to all intersecting streets & driveways.
11. All provisions of the "Manual of Traffic Controls" published by the State Department of Transportation shall apply. Nothing in the City Road Standards is to be construed as to reduce the minimum State Standards.

				<b>CITY OF THOUSAND OAKS</b>	
				PUBLIC WORKS DEPARTMENT	
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED 				STANDARD TRAFFIC CONTROL NOTES	
CITY ENGINEER				PLATE NO. <b>8-16</b>	
DATE <u>5/20/07</u>					



PLANTING AND STAKING



TREE WELL

NOTES:

1. Species shall be as approved by City.
2. All trees shall be of good vigor with a sound root system and straight, single trunk.
3. Minimum tree size shall be 24" box size container, with a 3/4" trunk caliper and 6' height. Where trees are located within sight distance areas per Plate 3-10, minimum canopy clearance shall be 8'.
4. Contact City Landscape Inspector at (805) 376-5083 for approval of locations, quality of plant material and installation.
5. Surface size of tree wells are to be 4' x 6' unless American Disabilities Act (ADA) requirements necessitate a smaller opening.
6. Excavate planting pit width twice the size of the root ball, or equal to well, whichever is larger.
7. Install 1.5' x 8' root barrier panel(s) adjacent to sidewalk wherever tree is 6' or closer.
8. Amended backfill shall equal 2/3 excavated soil and 1/3 "approved" nitrized organic material. Backfill entire plant pit/tree well with amended soil. Thoroughly tamp backfill to eliminate air pockets.
9. Trees in lawn or residential front yards shall have a trunk protector installed at ground level, to prevent damage to bark and cambium.
10. All trees shall be planted within the City Right-of-Way or Public Service Easement.
11. See Plate No. 1-10 for additional street tree planting requirements.

6	Modified Remove Brick per MSC	3-27-12	MAF
CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Jay Bourgin</i> CITY ENGINEER	3.27.12 DATE	

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

STANDARD  
TREE PLANTING AND  
STAKING DETAIL

PLATE NO.  
**8-17**

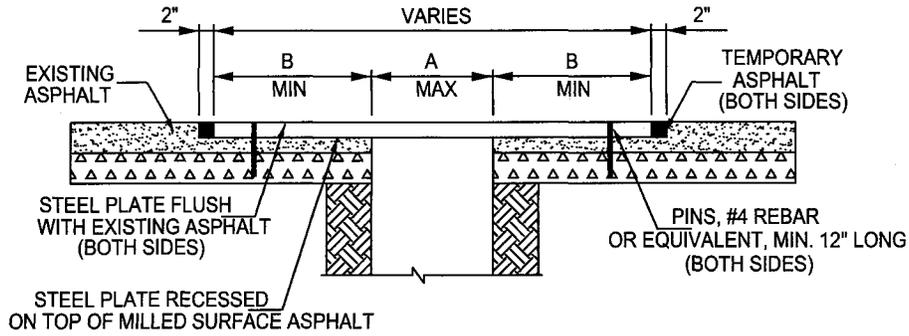
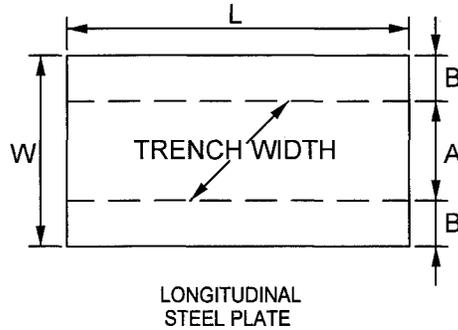
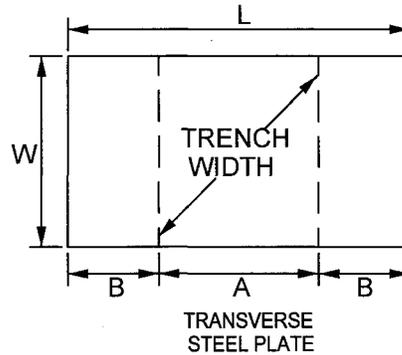


PLATE SIZE						
LONGITUDINAL				TRANSVERSE		
(A)	(B)	THICKNESS	(W)	(L)	(A)	(B)
12"	18"	1"	4'	8'	58"	19"
12"	18"	1"	4'	10'	58"	31"
24"	18"	1"	5'	10'	70"	25"
36"	18"	1"	6'	10'	44"	38"
48"	18"	1"	7'	10'	52"	34"
60"	18"	1"	8'	10'	58"	31"
12"	18"	1-1/4"	4'	15'	88"	47"
24"	18"	1-1/4"	5'	12'	104"	20"
36"	18"	1-1/4"	6'	12'	66"	39"
36"	18"	1-1/4"	6'	16'	66"	63"
48"	18"	1-1/4"	7'	12'	76"	33"
48"	18"	1-1/4"	7'	16'	76"	58"
60"	18"	1-1/4"	8'	12'	86"	29"
60"	18"	1-1/4"	8'	15'	86"	47"
60"	18"	1-1/4"	8'	16'	86"	63"
60"	18"	1-1/4"	8'	20'	86"	77"
60"	18"	1-3/8"	8'	20'	102"	69"



6	Plate 8-18 Added	3-27-12	MAF
CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>Jeff Spurgeon</i> CITY ENGINEER	3.27.12	DATE

CITY OF THOUSAND OAKS  
PUBLIC WORKS DEPARTMENT

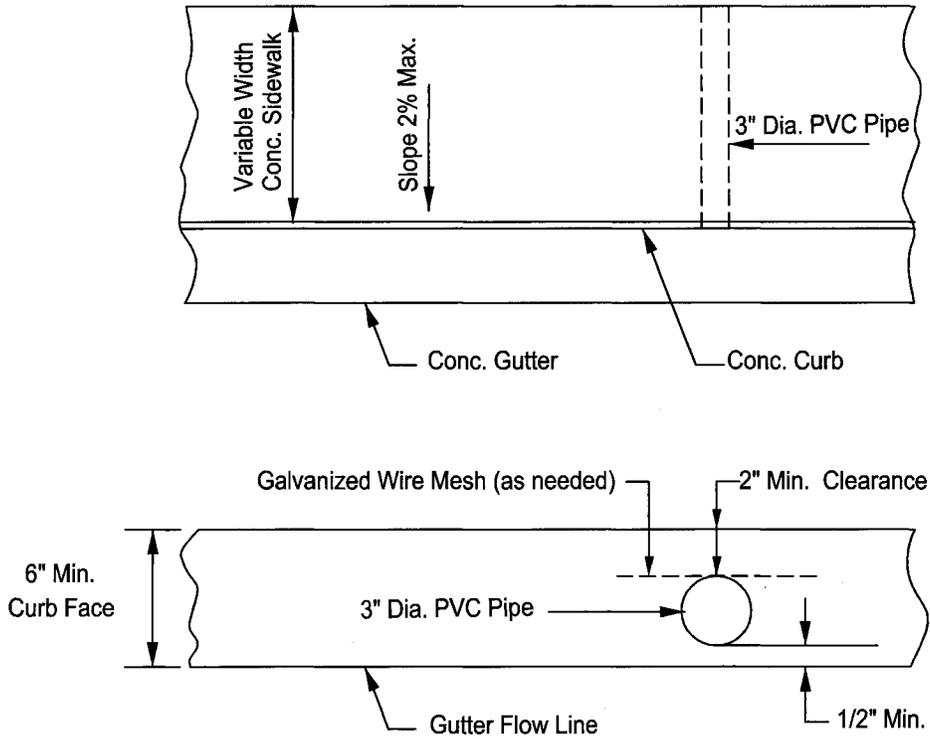
STANDARD  
TRENCH PLATING DETAIL

PLATE NO.  
**8-18**

**NOTES:**

1. Use type 1 plate installation where posted speed limit is less than 30 MPH, use type 2 plate installation where posted speed limit is 30 MPH or greater.
2. For type 2 plate installation, the steel plate shall be recessed by milling into the existing asphalt to set flush with the surface of the existing asphalt. Full depth cutting of pavement section outside of trench is not permitted. Milling depth shall match thickness of plate. The gap between the edge of the plate and the adjacent existing asphalt pavement must be filled with temporary asphalt.
3. Trench widths are based on an analysis per the 14th edition of standard specifications for highway bridges by AASHTO. An assumed AXLE loading of 12 tons with a 30% impact factor was used. The AXLE length is 6 feet: therefore the number of wheels carried by a plate depends on the roadway width.
4. Steel plate must be able to withstand H-20 traffic loadings without any movement.
5. Plates shall be fabricated from ASTM A36 steel (minimum 36 ksi), with a non-skid surface.
6. Plates shall be secured from lateral movement and vibration (associated noise) while in use by temporary asphalt (cold mix).
7. No trenches in the Public Right of Way shall be left open overnight without the express written permission of the City Engineer. Trenches shall either be plated or backfilled and resurfaced with temporary asphalt.
8. Pins made of #4 rebar, or equivalent diameter steel rod, with a minimum length of 12" shall be used to secure all trench plates to the pavement or soil to eliminate lateral movement of the plate. Pins or steel rods should not restrict the vertical movement of the steel plate. Spacing and placement of pins shall be as directed by the Public Works Inspector.
9. When two or more plates are used, the plates shall be tack welded at each corner or as required by the Public Works Inspector.
10. Plates shall be removed the following day, or as approved by the Public Works Inspector, and the trench paved with temporary or permanent asphalt. Plates shall not be left over a weekend without approval by the City Engineer.
11. Plates shall be checked at least twice per day by the Permittee to make sure they are secure.
12. Appropriate advance warning signs (i.e. "Road Plates Ahead") are required for all steel plate crossings.
13. In lieu of a steel plate, sidewalks or other non-vehicle areas may be secured with plywood. Plywood used in pedestrian areas shall be a minimum 3/4" thick, provide a smooth non-slip surface and have beveled edges.

				<b>CITY OF THOUSAND OAKS</b>	
				PUBLIC WORKS DEPARTMENT	
6	Plate 8-19 Added	3-27-12	MAF		
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED 				STANDARD TRENCH PLATING DETAIL NOTES	
CITY ENGINEER				3.27.12 DATE	PLATE NO. <b>8-19</b>



**NOTES:**

1. Type, dimensions and elevations of sidewalk, curb and gutter per plates 8-2 and 8-3.
2. For new sidewalk panels, install galvanized wire mesh over PVC Pipe. Wire Mesh shall extend 8" beyond the edge of PVC Pipe.

				<b>CITY OF THOUSAND OAKS</b> PUBLIC WORKS DEPARTMENT	
6	Plate 8-20 Added	3-27-12	MAF		
CHG	DESCRIPTION	DATE	INITIAL		
APPROVED <i>Jay A. Bourgin</i> 3-27-12 CITY ENGINEER DATE				STANDARD CONCRETE CURB CORE	
				PLATE NO.	<b>8-20</b>