



**SANTA BARBARA COUNTY
DEPARTMENT OF PUBLIC WORKS
TRANSPORTATION DIVISION**

ENGINEERING DESIGN STANDARDS

September 2011

ENGINEERING DESIGN STANDARDS

September 2011

TABLE OF CONTENTS

SECTION 1 – Introduction

- 1.1 Associated Regulations and Specifications
- 1.2 Definitions

SECTION 2 - Roadway Functional Classifications

SECTION 3 – Improvement Plans

- 3.1 Plan Review Procedure
- 3.2 Plans Layout
- 3.3 Plans Format
- 3.4 Design Adjustments
- 3.5 Record Drawings

SECTION 4 – Street Standards

- 4.1 Pavement
- 4.2 Road Widening/Adding Traveled Way To Existing Roads
- 4.3 Cul-de-sacs
- 4.4 Bicycle Lane
- 4.5 Clear Zone
- 4.6 Encroachment Permits – Policies
- 4.7 Retaining Walls
- 4.8 Private Streets

SECTION 5 – Access and Intersections

- 5.1 Access Control

SECTION 6 - Standard Conditions of Approval

Appendix A: Plan Checklist

Appendix B: Flood Control / Water Resources Standard Conditions

Appendix C: Standard Details

SECTION 1 – Introduction

The design criteria and policies contained in this manual are to provide an acceptable baseline minimum guide for design and construction, to exercise sound judgment in applying standards taking into account costs, traffic volumes, traffic and safety benefits, right of way, socioeconomic and environmental impacts.

The Engineering Design Standards contains within it the philosophy of the Department to provide all project development a degree of mobility to users of the transportation system that is in balance with other values imperative to the community. The philosophy provides for use of alternative standards when such use best satisfies the circumstances of a given situation. Design exception procedures are delegated to County project development reviewers, with approval of the Director of Public Works.

1.1 Associated Regulations and Specifications

All road plans submitted to the County for review and approval shall be consistent with these Standards and current or amended County standards and ordinances. These include, but are not limited to:

- A.** Santa Barbara County Code.
- B.** Santa Barbara County Storm Water Drainage Policy.
- C.** Santa Barbara County Circulation Element.
- D.** Santa Barbara County Land Use and Development Policies and Ordinances.
- E.** Santa Barbara County Bicycle Master Plan.
- F.** Santa Barbara County Capital Improvement Program.
- G.** State Water Resources Control Board – Construction General Permit.

The most current edition of publications and manuals shall be applicable unless specifically cited in these Standards, by the County Engineer or when required by State or Federal funding authorities. These include, but are not limited to:

1. Standard Specifications, and Special Provisions published by the State of California Department of Transportation (Caltrans).
2. Standard Plans, published by Caltrans.
3. Highway Design Manual, published by Caltrans.
4. Local Agency Guidelines, published by Caltrans.
5. Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT less than or equal to 400), published by the American Association of State Highway and Transportation Officials (AASHTO).
6. A Policy on Geometric Design of Highways and Streets, published by the American Association of State Highway and Transportation Officials (AASHTO).
7. Roadside Design Guide, published by American Association of State Highway and Transportation Officials (AASHTO).
8. Manual on Uniform Traffic Control Devices, published by the U.S. Department of Transportation, Federal Highway Administration (FHWA), as amended and approved by Caltrans.
9. Construction Manual, published by Caltrans.
10. Guide for the Development of Bicycle Facilities, adopted by AASHTO.
11. Traffic Manual, as published by Caltrans.
12. Highway Capacity Manual, published by Transportation Research Board (2000).
13. ITE Land Use & Development Manual, published by Institute of Transportation Engineers (Latest edition).
14. Bridge Design Specification, published by Caltrans.
15. American Public Works Association (Southern California Section) - Standard Plans for Public Works Construction.
16. County of Santa Barbara Public Works Department Standard Details.
17. ADA Guidelines – Americans with Disabilities Act Accessibility Guidelines.

18. ANSI / IESNA RP-8-00 – American National Standard Practice for Roadway Lighting

1.2 Definitions

In these specifications or the State Specifications the intent and meaning of the terms that are used shall be as defined in Section I of the State Standard Specifications except as herein below specifically noted, revised or added.

Consultant - Any person or persons, firm, partnership or corporation legally authorized to practice Civil Engineering in the State of California who prepares or submits improvement plans and specifications on behalf of a developer to the County of Santa Barbara for approval.

Contractor - Shall mean any person or persons, firm, partnership, corporation or combination thereof, private or municipal, who has/have entered into a contract with any person, corporation company, special district, or the County of Santa Barbara, as party or parties of the second part, or their legal representatives, for the construction of any improvement or portion of improvement within Santa Barbara County.

County - Shall mean the County of Santa Barbara.

Department - Shall mean the Santa Barbara County Department of Public Works.

Engineer - Shall mean the County Engineer of Santa Barbara County acting either directly or through properly authorized agents, the agents acting within the scope of particular duties delegated to them.

Developer - Shall mean the owner or representative.

Laboratory - Shall mean any testing agency or testing firm which has been licensed by the State of California to act in such capacity and meeting the requirements of the Engineer.

State - When State Specifications are applicable the word "State" as used in the State Standard Specifications, shall mean Santa Barbara County. Public Works Department or any other Santa Barbara County Department whose action or oversight is related to the work.

Director - The Director of Public Works of the County of Santa Barbara.

Record Drawings - Revised set of drawing submitted by a contractor upon completion of a project or a particular job. They reflect all changes made in the specifications and working drawings during the construction process, and show the exact dimensions, geometry, and location of all elements of the work completed under the contract.

Road Commissioner - Person qualified and authorized to administer the Encroachment Permits to the public.

Final Map – Is a map that conforms to all the requirements of the Subdivision Map Act, and is required for all subdivisions creating five (5) or more parcels, condominiums, community apartment projects, or the conversion of a dwelling to a stock cooperative containing five (5) or more dwelling units.

Easement - Is the right to use the real property of another without possessing it.

SECTION 2 - Roadway Functional Classifications

Arterial Roads or Streets – An arterial road or street is one which is used primarily for the purpose of carrying traffic between State Highways and/or populated centers and/or which is needed to serve large volumes of traffic within an urban area. They are divided into three functional classifications, **Principal, Minor** and **Collector**.

Collector Road or Street – A collector road or street is one which is or will be used primarily to enable traffic to move to and from local roads or streets and/or arterial roads or streets. They are divided into two classifications, **Urban** and **Rural**.

Local Roads or Streets – Consists of **local sub-collectors, local road minor**, and **local road cul-de-sac**. Minor road or street is one which is or will be used primarily for access to abutting property.

Urban Road or Street - An urban road or street is one which serves residential single family, multiple family, commercial, and industrial land use categories. In addition, as well as open space and recreational categories, as well as open space and recreational land use categories adjacent to rural uses as those categories adjacent to urban uses as shown by the Land Use Element of the General Plan.

Rural Road or Street - A rural road or street is one which serves residential suburban, residential rural, rural lands and agriculture land use categories. In addition, as well as open space and recreational land use categories adjacent to rural uses as those categories adjacent to urban uses as shown by the Land Use Element of the General Plan.

Road, Private – A road providing the principal means of access to residential structures, business entities, or parcels which is not a public road and is privately maintained.

Road, Public – A road for which a County of Santa Barbara public road Right-of-Way exists.

Driveway, Private – An access way that provides the principal means of access to four or less residential structures, business entities, or parcels.

SECTION 3 – Improvement Plans

Complete plans and specifications for all proposed public improvements, as defined herein, which are not initiated by the County of Santa Barbara Public Works Department, shall conform to the requirements of this chapter. These plans and specifications shall be submitted to the Department for approval prior to the beginning of construction of any such improvements.

3.1 Plan Review Procedure

- A. Plan Check Intake** The individual submitting the plans shall be a Registered Civil Engineer in the State of California. The Department will review the initial plan submittal package to determine whether all required information has been provided. If incomplete, the plan check will be labeled “PRELIMINARY” and will not be considered a first plan check. The first submittal must include a transmittal, six sets of 24” x 36” plans, soils report (where required), hydrology and hydraulic calculations; furthermore, structural calculations if needed. Other items may be required by the department as determined necessary. One copy of the plans and other items, showing necessary revisions will be returned to the Developer. All subsequent submittals require six sets of plans and other items unless specified otherwise by the Department. A drawing of the site plan or subdivision layout shall be included with each set of subdivision improvement plans submitted. Plans not conforming to the County of Santa Barbara Standards of quality and neatness may be rejected.

Plans may require review by other entities, including but not limited to

- ♦ County of Santa Barbara Department of Public Works Flood Control
- ♦ County of Santa Barbara Department of Public Works Traffic Section
- ♦ Fire Department
- ♦ Water and wastewater utility districts.
- ♦ Gas system utility
- ♦ Electrical power system utility
- ♦ Telephone system utility
- ♦ Cable television utility
- ♦ Special Districts

- ♦ County of Santa Barbara Planning and Development
- ♦ County of Santa Barbara Building and Safety
- ♦ Department of Public Works, Water Resources Division (Clean Water)

Plans must be submitted directly to those entities and appear on the Title Sheet or General Information Sheet for signature and date of approval.

- B. Plans Approval** When all corrections have been made to the satisfaction of the Department, the Developer's or Developers' Engineer may submit original signed, sealed, and dated drawings for approval. No construction will be authorized, or plan approved, until such time as the Department signifies approval by signature and seal on the original signed and sealed drawings of the title sheet.
- C. Bonding Estimate** Once improvement plans are approved by the Department, a bonding estimate may be submitted for review and approval, where applicable. Surety may be submitted to the Department following approval of the bonding estimate. More information about this procedure, along with standard forms to be used for this purpose, may be obtained from the Department.
- D. Plan Revisions** There shall be no revisions made to an approved set of plans, unless such revisions are submitted to the Department for approval prior to being constructed. Exempted from approval are any features of the plans that are contrary to, in conflict with, or do not conform to any Federal or State law, County Ordinance or Resolution, or generally accepted engineering practice, in keeping with the standards of the profession, even though such errors, omissions, or conflicts may have been overlooked in the review of the plans.
- E. Phased Improvements** Where the improvement plans submitted cover only a portion of the ultimate development, the plans submitted must be accompanied by the approved overall tentative plan, or a study if there is no approved overall tentative plan, showing topographic features of the ultimate development at an adequate scale to clearly show the proposed improvements.

3.2 Plans Layout

All plans shall be prepared on Mylar, vellum, bond, or approved equal, measuring 24" x 36".

- A. Roadway Improvements** Roadway plan and profile sheets shall be of appropriate scale to clearly show the proposed plan layout, along with existing and proposed centerline profiles of all roadways. The boundaries of lots fronting on the roadway, drainage easements, utility easements, slope easements, section lines and corners, land grant lines and temporary construction easements shall be shown on all roadway improvement sheets, with proper dimensions.

Appropriate Scales

Horizontal – 1 inch: 40 feet	Vertical – 1 inch:4 feet
Horizontal – 1 inch:50 feet	Vertical – 1 inch:5 feet
Horizontal – 1 inch:100 feet	Vertical – 1 inch:10 feet

Scale 1 inch: 40 feet is preferred, however the scale may be varied in rough terrain. Each plan and profile sheet shall include the typical section.

- B. Cross Sections** Cross sections shall be provided for all designs involving widening existing roads. The spacing of cross sections shall be based on the characteristics of the project, as determined by the Department.
- C. Earthwork** If any grading is proposed outside the roadway prism, a grading plan shall be submitted with other required improvement plans. Finish grading shall be depicted by contour lines, spot elevations, or by "top/toe" indications, as determined appropriate by the Department. The grading plan shall include a reference to the project soils report (if applicable), including its title, date and author.
- D. Retaining Walls** For any proposed retaining wall(s), a separate sheet shall be provided which depicts the elevation view and a typical section for each wall. The following items of work may be depicted together with the roadway improvement plans. However, the

department may require that they be separated from the roadway improvement plans if necessary for clarity.

- E. Storm Drainage** Plans for minor drainage facilities may be shown on roadway plans if appropriate. Plans for major drainage facilities shall conform to the sheet scale and size shown above for roadway improvements. Profiles of all culverts and drainage structures shall be provided, along with the hydraulic grade line.
- F. Water Supply** Plans for water system layout and improvements shall be submitted on the same plans as the roadways. Improvements outside of the roadway prism shall be drawn on separate sheets and to an appropriate scale.
- G. Wastewater Disposal** Plans for wastewater disposal systems shall be prepared on standard sheets as defined above for roadway improvements. Scales are to be as follows, except in unusually rough terrain where the scales may be adjusted.

Appropriate Scales

Horizontal – 1 inch: 40 feet

Vertical – 1 inch: 4 feet

- H. Utilities** A layout for all utilities: water, sewer, electric, telephone, cable television, and gas system improvements shall be submitted on a composite utility plan in an appropriate scale unless otherwise approved by the Department. Roadway plans shall show placement of utilities in the typical section.
- I. Traffic Control** Plans for work zone traffic control, and for installation of new permanent traffic control devices, shall be drawn on sheets and to an appropriate scale. Work zone traffic control may reference the appropriate State Standard Plan for Traffic Control Systems or Manual on Uniform Traffic Control Devices. The standard traffic control notes shall be placed on the same sheet. If new permanent traffic control devices include traffic signals or lighting, the necessary electrical details shall be incorporated into these sheets, and a paving plan may be required.
- J. Erosion Control** Temporary and permanent erosion control measures are to be shown. Erosion control notes shall be placed on the same sheet. Pollution Prevention- Erosion and Sediment control measures consistent with Grading Code 17-29 and/or requirements for

a Storm Water Pollution Prevention Plan (SWPPP) consistent with the California State Water Resources Control Board NPDES (National Pollutant Discharge Elimination System) General Construction Permit shall be shown.

K. Details The plans shall include one or more sheets entitled “Details” which shall show the following if applicable:

- ◆ Detail of all concrete structures.
- ◆ Other agency’s or agencies’ standard details which are referenced in the design.
- ◆ Miscellaneous details.
- ◆ Copy of all County Standard Drawings which are referenced in the design.
- ◆ Details of any element of the plans required for clarity.

3.3 Plans Format

The following items are to be shown on plans submitted for approval:

A. Title Sheet On improvement plans exceeding two sheets in a set, a title sheet shall be prepared. The title sheet shall also include an index of sheets.

B. Vicinity Map The title sheet shall include a vicinity map depicting the following:

- ◆ Boundaries of the site, and any Special Districts or City Limits nearby
- ◆ Street names
- ◆ Section and/or Grant Lines and corners
- ◆ Location of the project within the County, depicting a minimum
- ◆ 1.5 mile radius around the project location

C. Title Block Each sheet of the set of drawings, including the title sheet, shall have an approved title block showing:

- ◆ Name and/or number of the project
- ◆ Sheet title
- ◆ Sheet number and total number of sheets
- ◆ Project Engineers name, professional registration number, seal and signature as required by the Professional Engineers Act

- ◆ Date
 - ◆ Scale of the drawing
 - ◆ Signature blocks for Department approval
- D. Right-of-Way** Right-of-Way lines, the boundaries of lots fronting on the roadway, drainage easements, slope easements, and temporary construction easements (existing and proposed) shall be shown on the plans. All Right-of-Way and Easement lines shall be properly dimensioned.
- E. Survey Monuments** Pursuant to Section 8771(b) of the California Business and Professions Code, existing survey monuments that control the location of subdivisions, tracts, boundaries, roads, streets or highways, or provide survey control, that are within or adjacent to the area of work, shall be located and referenced by or under the direction of a Licensed Land Surveyor or Registered Civil Engineer. This shall occur prior to the time when any streets, highways, other Right-of-Way, or Easements are improved, constructed, reconstructed, maintained, resurfaced or relocated. In the event that any existing survey monument is disturbed, in any way, by the improvement work, as determined by a Licensed Land Surveyor or Registered Civil Engineer, it shall be reset accordingly and an appropriate document shall be filed with the County Surveyor prior to the final acceptance of the work by the Department.
- F. Topography** All pertinent topographic features which may affect the design, construction and operation of the improvements shall be shown on the plans, including, but not limited to, the following:
- ◆ Roadway lines.
 - ◆ Curbs, sidewalks, shoulders, and driveways.
 - ◆ Storm drains and other drainage facilities.
 - ◆ Water lines, fire hydrants.
 - ◆ Water and wastewater treatment facilities.
 - ◆ Existing structures, fences, trees and other foliage.
 - ◆ High water and frequent inundation limits.

Full topography (2'/40' Contours) shall be provided for a minimum of 50 feet in all directions of a development site, to evaluate drainage conditions.

- G. Profiles** The plans shall clearly show the existing and proposed profiles of all roadways, drainage facilities (such as: ditches, storm drains, etc...), water lines, sanitary sewers, and clearances at structures and power lines, including elevations at 25 foot minimum intervals for warped surfaces.
- H. Stationing and Orientation** The stationing on plan and profile sheets shall read from left to right. In so far as practical, the plans shall be arranged so that the north arrow is either pointed toward the top or to the right edge of the sheet. Wherever possible, stationing shall conform to existing stationing on existing Street Improvement Plans.
- I. Benchmark** The plans shall include a description of the benchmark and the datum for its reference elevation, and shall include a description of the benchmark. Vertical data should be based on NAVD 88 datum or conversion factor with source.
- J. Basis of Bearings** The plans shall indicate the basis of bearings that will be utilized for construction of the improvements. The plans shall include a description of the points that form the basis of bearings along with the appropriate reference information. Horizontal coordinates should be based on NAD 83 datum.
- K. Units of Measurement** The units of measurement on plans submitted to the Department shall be in English Units (United States Customary System). If an improvement plan includes facilities which are under the jurisdiction of another agency which requires the use of Metric Units, then it may be used on the plans for County Improvements as well, if prior Department approval is obtained.
- L. Notes** The title sheet of the plans shall include the required County General Notes.

3.4 Design Adjustments

Requests for adjustment to the requirements of the Design Standards, Standard Specifications or Standard Drawings, such as substitution of

methods or materials differing from those set forth herein, must be proposed in writing. The Developer's or Developers' Engineer must furnish complete descriptive information and justification for the substitution to the Department (including any additional information the Department may request.) The Department will provide written response to such requests for adjustment, either approving or denying the request.

The Department will consider request for emergency substitutions involving materials which suddenly become unavailable, provided requests for such emergency substitutions, including all data to show substitutions comply with specifications, are received at least 15 calendar days before date of use.

Design alternatives may be approved by the Department where the proposed alternative provides the same level of service, approximately the same estimated maintenance cost, and is not adverse to public health, safety and welfare.

The provision for design alternatives is intended to provide for some flexibility in designing streets, bikeways, pedestrian and equestrian paths; to facilitate the protection of trees or other resources; when an area specific plan has been adopted showing an alternate to the standard drawings, or where appropriate in order to provide compatibility with adjacent areas.

The County of Santa Barbara encourages development that conserves natural areas, minimizes impervious surfaces, and maximizes infiltration of storm water in order to protect water resources. The County Engineer may support deviations from adopted standards where approved techniques, such as Low Impact Development, are employed outside of the public Right-of-Way without risk to the traveling public, critical infrastructure or maintenance operations. Right-of-Way widths shall be adjusted to accommodate non-County standard improvements.

All landscaping improvements and all non-County Standards such as: meandering sidewalks, alleys, driveways, roadways and drainage features or similar improvements constructed within the County's Public Road Easement and/or on County Public Property must have a recorded owner's agreement for the long-term maintenance of such features.

3.5 Record Drawings

During the progress of the work, the Consultant shall maintain one set of prints of the improvement plans showing all “Record Drawing” changes. Each alteration shall be approved by the Engineer before being made. This set shall be available on the job for inspection by the Engineer at any time. Upon completion of the work, the Consultant shall obtain the original tracings of the improvement plans from the office of the Engineer and make changes thereon reflecting actual work constructed and return the original drawings to the Engineer prior to the County’s provided PDF File acceptance of the project.

SECTION 4 – Street Standards

4.1 Pavement

The actual thickness of the roadway structural sections shall be determined from the “R” values of the soils as determined by Caltrans test method No. 301 and as referenced by the Caltrans Highway Design Manual. For primary residential roads the minimum Traffic Index shall be 5.5. For all classes such as: industrial and commercial roads, the minimum traffic index shall be 7.0 (see Detail 6-010, “General Street Section Notes” of the County Standard Details for additional requirements). The Minimum Asphalt Concrete (A.C.) thickness for Public and Private Roads shall be as follows: When the Traffic Index is less than 5.5, the A.C. thickness shall be 0.30 feet minimum over 0.50 feet of class II base. When the Traffic Index is 5.5 or greater, the A.C. thickness shall be 0.50 feet minimum over 0.75 feet of class II base. Where pervious concrete is used, paving shall follow APWA Standard Specifications or Caltrans PCC Specification for pervious concrete.

4.2 Road Widening/Adding Traveled Way To Existing Roads

When an existing asphalt paved road is to be widened, the edge of pavement shall be saw cut to provide a clean vertical edge for joining to the new asphalt. After placement of the new pavement section, the joint shall be sealed with paving asphalt PG-64-10 for tack coat, the entire road pre-leveled and overlaid with a minimum of 0.12 feet of Hot Mix asphalt depending on the thickness of pavement lift throughout the widened area. The normal roadway crown slope for new construction is 2 percent. When widening of an existing road, a maximum of 4 percent crown slope is permitted, quarter crowns are not allowed on road widening. Grinding and/or overlaying as applicable will be required if the cross slope exceeds 4 percent.

Plans submitted shall be accompanied with existing ground cross sections at 25 foot maximum intervals depicting the entire existing roadway prism with full width. In addition, the proposed widening design shall clearly show the Right-of-Way, all accesses, existing ground centerline elevation, joint elevation, and widened edge of pavement elevation. Existing ground cross sections shall be created from a certified topographic survey by a Registered Civil Engineer, or Licensed Land Surveyor in the State of California.

When an existing shoulder is required to become part of a proposed traveled way, a pavement study or evaluation shall be performed. This evaluation shall analyze the structural capacity and determine any need for improvement. Designs based on the evaluation are subject to review and approval by the County Engineer. The responsibility for any shoulder material thickness improvement shall be considered as part of the requirement for roadway widening. The shoulder width, as a minimum, shall be replaced as it was originally (existing conditions) before the widening began.

Where widening of a roadway results in existing catch basins being located within the traveled way, a plan for adjustment and / or relocation shall be provided and approved by the Engineer.

4.3 Cul-de-sacs

- A.** Minimum public Right-of-Way diameter across the bulb section shall be 100 feet. The Right-of-Way diameter may be reduced, provided utilities and necessary storm water management are accommodated on permanent easements within the development.
- B.** Minimum diameter of surfacing across the bulb shall be 80 feet of paving flow line to flow line for a curb-type road and 80 feet total for a shoulder type road, to include 74 feet of paving with an offset of 3-foot shoulders with compacted crushed surfacing material. Public roads in areas zoned Commercial or Industrial shall have a minimum roadway diameter of 100 feet.
- C.** The length of cul-de-sac roads shall be a maximum of 750' or as approved by the County Fire Department. A maximum of 25 dwelling units will be allowed on a cul-de-sac or as approved by the County Fire Department. A cul-de-sac longer than 750' shall have a second emergency access approved by County Fire Department and comply with Section 5, Paragraph K.
- D.** The County Engineer may require an off-road walkway or an emergency vehicle access to connect a cul-de-sac at its terminus with other roads, parks, schools, bus stops, or other pedestrian traffic generators.

4.4 Bicycle Lane

Class II Bicycle Lane is a portion of a roadway designated by striping, signing, and / or pavement markers for the preferential or exclusive use of bicycles. Bicycle lanes are always one-way facilities that move in the same direction as motorized vehicles. Bicycle lanes are for bicycles only, and should not be used by pedestrians.

Road Type	Minimum Bicycle Lane Width
Curbed	5 feet from face of curb
No curb	4 feet from edge of pavement
With On Street Parking	13 feet from face of curb or edge of pavement

4.5 Clear Zone

The term "Clear Zone" is used to designate the unobstructed, relatively flat area beyond the edge of the traveled way provided for the recovery of errant vehicles. The intent is to provide for arterials as much clear, traversable recovery area as practical. The clear zone includes any shoulders or auxiliary lanes. On rural roads without curbs, where design speed is 25 m.p.h. or less the minimum setback distance for any fixed object from the edge of pavement shall be 7 feet. For rural roads with design speed between 25 mph and 35 mph, the minimum setback distance shall be 10 feet. For 35 mph or greater, refer to AASHTO Standards. In urban areas, setbacks may be reduced where there is curb and gutter or berm.

4.6 Encroachment Permits - Policies

A. General

All encroachments shall be in conformance with applicable community plans and current ADA requirements.

The Commissioner may take into account aesthetics in reviewing all encroachment permits. Above grade facilities, shall be set back as far

as possible and provide landscape or other approved screening to minimize the visual impact of the encroachment.

B. Clear Zone and Pedestrian Access:

Road Encroachment Permits shall not be issued unless the Permitted agrees to assure a clear zone from the curb face and / or edge of pavement to the proposed encroachment. The clear zone is necessary to maintain an adequate safety zone with the following adequacies: sight distance, proper access, trails, safety for pedestrians, bicyclists, and equestrians along County roadways.

C. Retaining Walls, Block Walls, Garden Walls, Fences, etc...:

Shall be set back from the curb face or edge of pavement as follows:

- ♦ Speeds of 25 mph or less posted: 7 feet minimum
- ♦ Speeds over 25 mph posted: 10 feet minimum
- ♦ Additional setback may be required at intersections and driveways for sight distance, safety issues, including Fixed Object Criteria (as defined by the Encroachment Permit Policies) and to provide for pedestrian access for existing, new or future improvements.

D. Landscaping , Storm Water Treatment, and Irrigation:

- ♦ For landscaping, a clear zone, set back shall be established as follows:
 - Rural areas (with no curb, edge of pavement condition) of speeds of 25 mph or less posted: 7 feet
 - Rural areas (no curb, edge of pavement condition) over a 25 mph posted speed - 10 feet
 - In urban areas with curb, may have reduced set-back for street trees, water treatment and landscaping.
 - Montecito Community Plan is considered a rural area and shall not allow landscaping in the clear zone unless pedestrian facilities are specifically provided for.
 - The current Summerland Community Plan, County of Santa Barbara's Engineering Standards, and County Codes do not allow any encroachments. Only minimal walls necessary for access to off street parking areas (garage, driveway, due to

elevation changes) will be permitted. Landscaping ground cover will be allowed.

- ◆ Landscaping shall be designed to provide adequate sight distance clearance for pedestrian(s), bicyclist(s), and equestrian(s) access when applicable (existing, new or future).
- ◆ Street trees shall be selected from the current Board approved street tree lists (South County and North County lists) and shall be appropriate for the location.
- ◆ Root barriers shall be installed within the drip line.
- ◆ Irrigation shall be drip with emitter, and it shall not be spray type in order to avoid overspray of pavement/sidewalk.

E. Other Fixed Objects:

- ◆ Mailboxes shall be constructed and/or located to meet County of Santa Barbara Engineering Standards' and U.S Postal Service Standards' criteria for Fixed Objects. Shoulder construction shall provide room for a mail truck to pull out of the travel lane everywhere possible.
- ◆ Above Ground Utility devices and meters (gas, electric, water, etc...) shall not be installed within the Right-of-Way unless previously approved by the County Engineer.
- ◆ Fixed Objects, (i.e., rocks, new proposed trees, etc.) shall be required to be set back based on current County of Santa Barbara Engineering Standards from the edge of pavement not less than the following: (providing adequate recovery zone for the traveling public)
 - Rural areas (with no curb) of speeds of 25 mph or less posted : 7 feet minimum
 - Rural areas (with no curb) over 25mph : 10 feet minimum
 - Urban areas (with curb) may have a reduced setback as approved by Public Works
 - Fixed objects shall be designed to provide the proper sight distance clearance for pedestrian(s), bicyclist(s), and equestrian(s) access when applicable (existing, new, or future.)

F. Entry Gates:

Shall be in conformance with Section 5.1 Access Control, paragraph J.

4.7 Retaining Walls

The following table provides the information required by the Public Work Department for Retaining Walls.

Retaining Wall Height < 3 feet with level or sloping backfill	Civil Eng. Plans Required	Structural Calculations Not Required	Temporary Shoring Plans Not Required	Soils Report Not Required
Retaining Wall height ≥ 3 feet with surcharge backfill or load	Civil Eng. Plans Required	Structural Calculations Required	Temporary Shoring Plans Required	Soils Report Required
Retaining wall height > 4 feet	Refer to Caltrans Standard Plans / APWA Standard Plans OR Civil Eng Plans Required	Structural Calculations Not Required if Caltrans / APWA Standard Plans used. Otherwise Structural Calculations Required.	Temporary Shoring Plans Required	Soils Report Required (* Soils letter required to commensurate assumed design values from standard plans.

For any free standing (non-retaining) wall, structural calculations will be required unless manufactures certification justifies otherwise.

4.8 Private Streets

- A. Shall adhere to County Fire Department Standards: (reference) www.sbcfire.com/fp/dr/fpdevstd1privateroad.pdf)

- B. Shall adhere to County of Santa Barbara Building and Grading requirements and County of Santa Barbara Flood Control Standards for Drainage.

- C. Shall be designed by a Registered Civil Engineer in the State of California.

SECTION 5 – Access and Intersections

5.1 Access Control

Access points to Institute of Transportation of Engineers Land Use County Roads are classed as private approaches or intersections. Intersection design criteria as defined in the current edition of AASHTO, Caltrans Highway Design Manual and the California Manual on Uniform Traffic Control Devices (MUTCD) shall be used whenever a public roadway intersects another public, or private road approaching, or if traffic signalization is warranted.

Access points shall be designed to provide adequate sight distance in all directions on the public roadway being accessed.

The following general design criteria for roadway intersections and approaches shall apply:

- A.** Roadway intersections shall be located at sufficient distance from all curves to provide the proper sight distance for vehicles on the intersecting roads.
- B.** Multi-leg intersections (i.e. those with more than four legs) are not permitted within local road networks. In local road networks, 'T' intersections are encouraged. For arterial access, four-leg intersections are encouraged.
- C.** Roundabout intersections taking the place of standard intersections shall be designed in accordance with current AASHTO, Caltrans or other applicable standard approved by the County Engineer.
- D.** In order to preclude encroachment on travel lanes, radii and taper for right turn entry, the exit shall be consistent with the design vehicle's turning movement requirements.
- E.** Whenever a property has potential access from two or more roads, the County Engineer may refuse access to the higher classified road.
- F.** Whenever a potential feasible access exists to any property from both a public road and private easement, the County Engineer may refuse

new access to the public road provided the private road adheres to requirements, outlined in Section 4.8, Private Streets.

- G.** New access locations, internal to the platting of property, shall be unified whenever possible to create the fewest number of access points onto a County road. Lots of Record in existing formal plat subdivisions, short plats and large lots not served by a minor or major approach shall be permitted one residential access location.
- H.** Access to corner lots shall be from the lesser-classified road, at the greatest distance possible from the intersection.
- I.** The number of intersections shall be minimized as much as possible, particularly as the classification of the affected roads increase. Intersection spacing should be maximized wherever possible.
- J.** All access gates shall be installed so that no portion of the gate, open or closed, is within the County Right-of-Way. The space between the edge of roadway and the gate shall be a minimum of 30- feet so that the entering vehicle is completely off the roadway when the gate is closed, or as approved by the County Fire Department and Public Works Director. Gates shall be located to accommodate any future widening of the roadway. All gates shall meet the requirements of County of Santa Barbara Building Code and shall require the approval of the County Fire Department and, if required, any local Fire District.
- K.** A minimum of two access points will be required for developments when required by the County Fire Department. The number and location of intersections may be more restrictive than described herein if deemed necessary by the County Engineer. The County Engineer shall base the determination on existing and projected traffic volumes, channelization, signalization and turning movements generated by the proposed project.

SECTION 6 - Standard Conditions of Approval

The following Standard Conditions and Policies will be used by the Transportation Division of the Public Works Department where appropriate to condition Tentative Tract Maps and other development projects that are reviewed by the County.

1. Construction of any improvements required by the Department of Public Works, in the approval of the Tentative Map or Development Plans, must be in conformance with County Subdivision Ordinance No. 1722, the California Department of Transportation, "Highway Design Manual," and the AASHTO Publication, "A Policy on Geometric Design of Highways and Streets," of the most current version, and meet current ADA requirements. These references, in addition, with construction details provided by the California Department of Transportation "Standard Plans" and "Standard Specifications" and the American Public Works Association, Southern California Section "Standard Plans for Public Works Construction" and the "County of Santa Barbara Public Works Department Standard Details" of the most current version shall be referred to for all matters not covered by the standards contained herein.
2. Design of any improvements to be constructed as part of the development, must be performed by a Registered Civil Engineer in the State of California. Specifications, street improvement plans and drainage plans, and storm water pollution plans, completed in accordance with Department of Public Works requirements shall be submitted to appropriate officials of other departments for their approval. Furthermore, required bonds and fees must be posted prior to approval of the Final Map.
3. Developer will be required to construct 18 feet of frontage improvements (i.e., pavement, curb, gutter, sidewalk, street lights, etc.) including adequate offsite transitions.
4. Prior to recordation of the Final Map and start of any construction, the Developer must designate to the Department of Public Works the road or roads intended for construction, the access to the development, and to the extent to which the subject roads will be

used as haul roads for earth work greater than 1000 cubic yards either export or import. A haul route encroachment permit shall be obtained from the County Department of Public Works. Public Works may at its option, designate an alternate off site access or may require surety for repair, reconstruction, or clean up in the event the subject road is damaged by construction traffic.

5. The structural road section for any proposed public road must consist of the following: Aggregate Base conforming to the Provisions in Section 26, "Aggregate Bases" of the Caltrans Standard Specifications and must be placed with a minimum thickness of 0.50 feet on all roads. However, the actual thickness of the aggregate base is to be determined by the methods outlined in the Caltrans Highway Design Manual. When the Traffic Index is less than 5.5, the minimum section will be 0.30 feet Asphalt Concrete, and 0.50 feet of Class 2 Aggregate Base.
6. Prior to County plan check of street and improvement plans, the Developer shall pay for the plan review fee as established in the most current approved fee schedule.
7. Prior to recordation of the Final Map, the Developer(s) must post sureties, execute a sub-divider agreement and provide inspection fees in amount(s) to be determined by the Department of Public Works to insure required improvements within the road Right-of-Way.
8. The Developer must post surety and provide plan checking fees in amount(s) to be determined by the Department of Public Works to insure proper construction of any public and private streets within the development. Once all improvements have been completed, including punch list items, Surety will be released down to a 15 percent bond (10 percent for cash or letter of credits) and held for a one year warranty period. Surety will be fully released by the Public Works Director after a final walk through of the newly constructed site; furthermore, at a minimum, a fog seal treatment of the streets shall be placed. Final surface treatment of the streets shall be determined at the time of the requested surety release.

9. Prior to release of the Road Improvement Surety and acceptance of the roads within the subdivision, the Developer shall have the utility companies certify in writing, that all underground utilities have been installed correctly and extended to tract boundaries with laterals stubbed out to the property lines at each lot.
10. Prior to the release of the Road Improvement Surety, the Registered Civil Engineer or Licensed Land Surveyor who performed the construction staking for subject development must certify in writing, that all curbs, gutters, storm drains, and other related street work have been staked in the field in accordance with the street improvement plans and drainage plans signed by the Director of Public Works.
11. Hydrologic studies indicating drainage flows to be anticipated from the entire watershed within which the development location must be submitted to the Department of Public Works- Flood Control Section for review and approval. Detailed hydraulic studies of storm water runoff to be carried in each gutter of each street must be submitted by the Consulting Engineer for approval by the Department of Public Works. The amount of storm water runoff to be carried in a street section shall comply with the current Flood Control Division standards. Special drainage facilities will be required when the capacity of the street section has been reached. Design criteria for underground drainage facilities will be based on a minimum storm frequency of 25 years, or 100 years in some conditions. Actual design frequency will be determined by the Department of Public Works Flood Control, or the Flood Control Engineer and the Public Works Director.
12. All off tract drainage and flood control facilities and installations must be installed and completed prior to any grading of the subject development.
13. The Developer must furnish and install all road name signs and traffic control signs to County standards.
14. The Developer must offer for dedication as easement to the County, at no cost to the County, all road rights of way shown within the boundaries of subject development map. All road Right-of-Way offered for dedication to the County must be free and clear of any

easements prior to recordation of the Final Map, unless proved otherwise by the Department of Public Works.

15. A denied access strip one foot wide must be offered for dedication in fee to the County as a separate parcel of land, not part of the road Right-of-Way, and standard Public Works Department road barricades must be constructed across the end of all roads extending to the tract boundaries of any unit of the tract except where the end of such roads connect to existing improved public roads.
16. Prior to approval of street improvement plans and drainage plans by the Department of Public Works, the following utilities must be shown on plans and approved by an authorized representative of the utility. The following utilities and services must be installed underground in the roads pursuant to Resolution No. 87-344 and must be connected to each dwelling unit where houses are built , or stubbed out to each lot where lots only are sold:
 - ◆ Sewer System
 - ◆ Water Distribution System
 - ◆ Gas Distribution System
 - ◆ Storm Drain Pipes required by The Department of Public Works.
 - ◆ A preliminary plan showing underground electrical, telephone and Cable T.V. service must be submitted by each agency.

All new utilities and relocation of existing utilities including surface and above grade installations shall be clear of and behind sidewalk and driveways.

17. Prior to construction of any approved development by the Department of Public Works, a Traffic Control Construction Phasing and an Erosion Control Plan shall be submitted for approval by the Department of Public Works.
18. All underground utilities under roadways or hardscape facilities shall be approved in writing by an authorized representative of the utility company prior to placement of Portland Cement Concrete or road base material and hot mix asphalt.

19. After sign off by the Department of Public Works Inspector and prior to the release of final surety, the Developer's Engineer shall add "Record Drawing" information to the original tracings in red or orange ink and sign them as "Record Drawings." Mylar is the accepted print medium for these drawings.
20. All double frontage residential lots (i.e., those lots having a street both front and rear), must have denied access to the rear street if the rear street is a major or collector street.
21. Developer must comply with the Department of Public Works policy relating to Subdivision Street Trees and Utility Service Laterals on all subdivision streets.
22. Prior to occupancy, a long term maintenance agreement and or Covenants, Conditions and Requirements (CC&R's) for subdivision shall be executed and recorded for all non standard improvements and landscaping in the public street Right-of-Way.
23. Occupancy of any building within subject development will be denied until all street improvements, street lights, ADA compliant access to the nearest intersection, and drainage facilities have been approved, inspected and accepted by the Department of Public Works.
24. The Developer's Engineer must certify to the County Department of Public Works that any private streets within the subject development are constructed according to approved plans, prior to occupancy of any dwelling unit within the tract. The Developer must be responsible for ensuring that a Registered Civil Engineer in the State of California is retained to inspect private road work to the extent necessary for certification of construction in accordance with the approved plans. Private road security will be retained until adequate certification is received.
25. Upon completion of construction and prior to occupancy, the entire road Right-of-Way abutting this project will be cleaned by the Developer to allow the Department of Public Works' Inspector(s) to check for damage to curbs, gutters, or sidewalks caused by

- construction traffic. Any damage will be repaired by the Developer prior to occupancy.
26. The Developer must comply with the current Bikeway Element of the General Plans and with Community Plans, as applicable as to the dedication and construction of bikeways.
 27. A comprehensive soils report, prepared by a Registered Geotechnical Engineer in the State of California, will be required with the submission of the Street Improvement Plans. The report shall include data regarding the nature of the existing underlying street, soils, groundwater, and slopes. In addition, it should address any over excavation and re-compaction needs for roadways. The soils report shall include slope stability information for embankment fills or cut slopes, and retaining walls supporting roads and include conclusions and recommendations for street grading plan procedures and design criteria for corrective measures.
 28. The Developer shall be responsible to pay for a County approved laboratory for materials and compaction testing. The frequency of testing shall be determined by the County. The Developer shall be responsible for the cost of all testing and retesting.
 29. Developer may be required by the County to resurface a road after construction work has been completed if it is determined by the County that the developer has caused significant damage to an existing public road during construction of the project.
 30. All underground utility trench backfills on private property and in private roads must be compacted and tested to a minimum of 95% relative compaction, or to the satisfaction of the Director of Public Works. Compaction test reports must be submitted before any grading is finalized.
 31. The sub-divider must furnish one copy of the Final Tract Map to the Public Works Department for approval.
 32. Developer must comply with current NPDES (National Pollutant Discharge Elimination System) Construction General Permit, including implementation of a SWPPP (Storm Water Pollution Prevention Plan) that identifies site-specific measures to control the discharge of pollutants to waters of the United States.

33. Regardless of all review and/or acceptance of tract plans, specifications, calculations, and reports by Public Works or other County departments, the Registered Civil Engineer whose signature and stamp appear on the tract grading and road improvement plans is responsible for the accuracy and integrity of the design and base information relating to the plans and calculations. Design conflicts which arise during construction may result in work being stopped until discrepancies are resolved.

APPENDIX A - PLAN CHECKLIST

Engineer Contact Name _____
Telephone No. _____



**COUNTY OF SANTA BARBARA
PUBLIC WORKS DEPARTMENT**

PLAN CHECK RECORD

Date Checker Initials

Initial Check _____
2nd Re-Check _____
3rd Re-Check _____
4th Re-Check _____
5th Re-Check _____

**STREET AND PUBLIC IMPROVEMENT PLANS STANDARDS
AND CORRECTION LIST**

Assessors Parcel No.(s) _____
Project Name _____ Tract No. _____
Owner's Name _____ Telephone No. _____
Project Address _____
Engineer's Name _____ Telephone No. _____
Developer's Name _____ Telephone No. _____

Checked (✓ or C) Items indicate that the item is complete and acceptable. X'd items require correction or resubmittal.

Corrections shall be made on the tracings and two (2) new sets of plans shall be submitted. **IF YOU MAKE CHANGES TO THE PLAN OTHER THAN OR IN ADDITION TO WHAT PLAN CHECK HAS REQUESTED, YELLOW HIGHLIGHT THE CHANGES ON ONE SET OF THE RESUBMITTED PLANS.**

RETURN THIS SHEET WITH CORRECTED PLANS AND THE ORIGINAL CHECK PRINT.

No.	ITEM	1ST	2ND	3RD	REMARKS
A. INITIAL SUBMITTAL REQUIREMENTS					
1.	Road Encroachment Permit application completed				
2.	Six (6) sets of Street Improvement Plans including drainage and wet utilities (2-Permits,3-Water Resources/Flood Control, and 1-Traffic) and one (1) PDF Index Map required on first Plan Check. Submit only three (3) sets of prints for subsequent submittals.				
3.	Six (6) sets of Dry Utility Plans (3-Permits, 2- Water Resources, and 1-Traffic)				
4.	Four (4) sets of Grading Plans (1-Permits (reference only) , 2-Water Resources, and 1-Traffic)				
5.	Four (4) sets of Landscape and Irrigation Plans (1-Permits, 2-Water Resources, and 1-Traffic)				
6.	Caltrans clearance (if applicable)				
7.	Reference drawings of adjacent streets (if applicable)				
8.	Four (4) sets of Final Map (1-Permits, 2-Water Resources, and 1-Traffic).				
9.	Four (4) sets of Tentative Map (1-Permits, 2-Water Resources, and 1-Traffic)				
10.	Three (3) copies of hydrology & hydrology calculations (1-Permits, and 2-Water Resources)				
11.	Four (4) copies of structural calculations and soil reports for bridges and retaining walls (2-Permits, and 1-Design)				
12.	Preliminary soils reports (2 copies)				
13.	One (1) copy of Engineer's Estimate				
14.	One (1) copy of the Conditions of Approval (Permit)				
15.	Return one (1) red lined plans and plan check correction list.				

No.	ITEM	1ST	2ND	3RD	REMARKS
B. FINAL SUBMITTAL REQUIREMENTS					
1.	Wet signature and seal of Engineer on all sheets of the plans				
2.	Nine (9) sets of Street Improvement Plans (6-Permits, 2-Water Resources/ Flood Control, and 1-Traffic) and one (1) copy on CD to Water Resources				
3.	Public Works signature on final plans				
4.	Flood Control signature on final Plans				
5.	Water Resources (Clean Water) signature on plans (when applicable)				
6.	Fire Department signature on final plans				
7.	Utilities signature on final plans				
8.	Wet signature and stamp of Design Engineer on all sheets of the plans				
9.	Three (3) sets final copies of hydrology & hydrology calculations with stamp and wet signature (1-Permits, and 2-Water Resources)				
10.	Two (2) sets final copies of structural calculations and soil reports (Retaining Walls, Bridges) with stamp and wet signature.				
11.	Traffic Mitigation fee paid				
12.	Water Resources Mitigation fee paid				
13.	Fees paid for Encroachment Permit and Lab Review				
14.	One (1) most current copy of Engineer's Estimate for Bonds (Permits)				
15.	Bonds, securities, cash deposits submitted (Public and Private)				
16.	Easement documents, ready for recordation, for off-site public street and drainage improvements				
C. TITLE SHEET CONTAINING					
1.	Tract, parcel map, or any other referenced				
2.	Location Map, Vicinity Map, Key Map				
3.	Signature block for Public Works				
4.	Signature block for Fire Department				
5.	Signature block for Flood Control District				

No.	ITEM	1ST	2ND	3RD	REMARKS
6.	Signature for Water Resources (Clean Water) when applicable				
7.	Signature block for Sewer & Water District				
8.	Signature block for Electric, Gas, Telephone, and Cable				
9.	General Notes for Street Improvement Plan				
10.	Sheet Index				
11.	Bench mark and basis of bearing (Surveyor's Notes)				
12.	List on title sheet of any approved deviations from County standards				
13.	Legend with construction notes.				
D. STREET IMPROVEMENT PLANS (PERMITS)					
1.	Provide title block with the name, address, and telephone number of the firm, and the name and registration of the Engineer in charge of the work, and the date of preparation				
2.	Plans consecutively numbered with the total number of sheets on each sheet.				
3.	Provide all existing improvement plans and show reference call outs (conforms into existing street)				
4.	Provide plans prepared on 24" x 36" <u>Mylar film</u> base sheets				
5.	<p>Contain on their front sheet a statement by the Engineer in responsible charge of the work stating:</p> <p>"I hereby declare that I am the Engineer of work for this Project, that I have exercised responsible charge of the design of the project as defined in Section 6703 of the Business and Professional Code. I understand that the check of project drawings and specifications by the County of Santa Barbara is confined to a review only and does not relieve me, as Engineer of Work, of my responsibilities for project design."</p> <p>Firm: _____</p> <p>Address: _____</p> <p>Telephone: _____</p> <p>_____</p> <p>Signature of Engineer</p>				

No.	ITEM	1ST	2ND	3RD	REMARKS
	_____ Print Name of Engineer Professional Registration Number/Exp. Date _____ Discipline: _____				
6.	Have an index or key map clearly showing the sheet numbers and their relation to the overall project. The index shall be drawn to scale and shall show the overall layout of the water, sanitary sewer, storm drain, fire hydrant, and street lighting systems.				
7.	Generally be prepared to scales that provide a clear presentation of the work to be done. Plan-profile sheets shall normally be prepared to the scales of 1"=40" for horizontal dimensions. Horizontal scales may be changed in order to provide greater clarity.				
8.	Signed and stamped on each sheet by the Engineer				
9.	Street Improvement Plans shall be drawn as a separate plan from grading, erosion control, on-site improvements, landscaping, or building plans				
10.	Have a north arrow with all plan views and bar scale (all sheets)				
11.	<u>Plans</u> showing stationing, bearing, street dimensions, horizontal curves, sawcut line, and conform grind				
12.	<u>Profiles</u> showing stationing, grades and vertical curves. Show profiles for Centerline, Right Curbs and Left Curbs.				
13.	Typical sections showing; <ul style="list-style-type: none"> a. Dimensions to center line, pavement width, flow line, right of way line, hinge points. b. Slopes of travel lane and shoulder c. Concrete Curb and Gutter d. Traffic Index and minimum structural section of each street e. Street lights and fire hydrant; install 1' behind sidewalk or 6' clear from curb face 				
14.	Super-elevation diagram				
15.	Compare easements and grading/ Street Improvements Plan to:				
	a) Tentative Map; elevations, alignment, and typical sections				

No.	ITEM	1ST	2ND	3RD	REMARKS
	b) Review Final Map for street dedications (Public or Private Streets) and easements				
16.	Elevations at intersection and curb returns shown				
17.	Provide maximum 2% cross slope at intersections for pavement and pedestrian crosswalk areas.				
18.	Provide Pedestrian Access Ramps per Caltrans current Standard Plans, most recent edition or current ADA standards.				
19.	Provide Pedestrian Access; <ul style="list-style-type: none"> a. Concrete sidewalks (County Maintain) or decomposed granite path (Private Maintenance Agreement) b. Headwall and drainage pipe may need extending 				
20.	Label easements and roads either Public, Private, Flood Control, Parks, or others				
21.	Manufacturer's data for all fabricated items not specified in the standard plans				
	E. UTILITY PLANS (PERMITS)				
1.	Provide plans for sewer, water, (wet utilities) improvements. Show fire hydrants, air valves, and any above ground facilities.				
2.	Provide separate plans for plan for electric, gas, telephone and Cable (dry utilities) improvements.				
3.	Utility General Notes or Typical Section <ul style="list-style-type: none"> a. Trench Backfill Detail b. One sack cement slurry backfill under existing paved structures, with 0.5' AC "T" trench cap. c. Provide on plan. Traffic Control/Detour/Phasing Plan must be submitted 10 days prior to the start of construction 				
4.	Plans showing utility location(offset from centerline).				
5.	Profiles showing 30" min. cover, pipe size & types, slopes, manhole rim/invert elevations				
6.	Show fire hydrant, vaults and any above ground facilities on the plan.				
	F. LANDSCAPE PLANS (PERMITS)				

No.	ITEM	1ST	2ND	3RD	REMARKS
1.	Fixed object and/or facilities placed in median require County Traffic Section approval.				
2.	Select only trees from the County's approved tree list.				
3.	Cut and fill slopes within the County's ROW shall have 3:1 or less				
4.	Provide a County approved and recorded Long Term Maintenance Agreement for landscape, irrigation and miscellaneous facilities installed in the public ROW				
5.	Show an installation detail of County approved tree 12" root barrier and stake with double 2" dia lodge wind-tie posts.				
6.	Provide traffic sight distance clearance at full plant maturity.				
7.	Special Community Districts and/or Committees specific landscape requirements; Provide Coastal Development Permit approval, in Coastal Zone.				
8.	Check County Setback policy for landscaping within recovery zone				
G. EROSION CONTROL PLANS (IF REQUIRED)					
1.	Provide for all Street Improvement Plans				
2.	Must show placement of facilities, specified location and erosion control basin calculations				
3.	Must have provisions to access erosion control facilities during wet weather				
4.	24-hour telephone number for emergency erosion control and name of specific individual with authority and responsibility for erosion control (show on plans)				
5.	Indicate how slopes will be protected				
6.	Add note to plans: Additional erosion control measures may be needed by the request of the County inspector during construction.				
7.	Construction Access, install rumble metal strips over layer of rocks				
H. STRUCTURES (DESIGN)					
1.	BRIDGE:				
a.	Soil foundation report				
b.	Structure Calculations				

No.	ITEM	1ST	2ND	3RD	REMARKS
	c. Bridge Plan				
	d. Adequate utility conduit (future use)				
	2. RETAINING WALL:				
	a. Soils letter with soils parameter				
	b. Structure Calculations				
	c. Plan and profile view of structure				
	d. All dimensions and elevations (top of wall, top of footings @25' o/c, and shown on the plan)				
	e. Steel placement shown on plan and elevation views				
	f. Fence and Guard Railing required (if applicable)				
	g. Water proofing of wall				
	h. French drain details with outlet shown				
	i. Graffiti proof treatment				
	I. HYDROLOGY AND HYDRAULICS CALCULATIONS (FLOOD CONTROL)				
	1. Be prepared on 8 1/2" x 11" or 11" x 17" sheets				
	2. Be securely bound and shall have durable covers. The front cover shall be marked with the name and discretionary permit number of the project.				
	3. Be prepared in a neat and logical fashion. Methods, formulas used, and results shall be clearly shown				
	4. Provide a topo map to scale showing drainage areas				
	5. Be signed and stamped by the Engineer of Work				
	6. Provide hydraulic calculations sizing facilities				
	a. PCC brow ditch (provide 1' free board)				
	b. Storm drain pipe				
	c. Inlets (Length & type)				
	1. Grated Inlets (not allowed in Public or Private streets) - assume the grate is 50% plugged for all calculations.				
	2. Sump location sized for 100 yr. storm with positive 100 yr. overland escape.				

No.	ITEM	1ST	2ND	3RD	REMARKS
	d. Curb & gutter				
	1. Residential street - (1) 10' wide lane open for Q_{10} ; 10 cfs max curb				
	2. Collector Street - (2) 10' wide lane open each direction for Q_{10} ; 10 cfs max				
	3. Major arterial - (2) lanes open at each direction for Q_{10} ; 10 cfs max				
	4. 10 cfs maximum in curb & gutter				
	5. Q_{25} maintained between curbs				
	6. Q_{100} maintained in the R-O-W or private street easement				
	e. Open channel flow				
	f. 100 year overland escape for sump area				
	g. Other				
	7. Conform to all other requirements of the County of Santa Barbara Flood Control for all matters pertaining to storm water drainage				
	J. STORM DRAIN PLANS (FLOOD CONTROL; WATER RESOURCES/ CLEAN WATER)				
	1. Plan view with stationing				
	2. Profile with pipe size, D-load or class of pipe, type of pipe and length shown				
	3. Hydraulic information and Energy grade lines shown on all facilities				
	4. Hydraulic data shown for all facilities				
	A. Q_{25} , Q_{100}				
	B. Velocity				
	C. Water Quality Design Volume or Flow Rate if required for Clean Water and hydrograph matching if required for hydromod control.				
	D. Hydrograph matching, (if required.)				
	5. Easement widths shown & adequate width for all storm drains (25' minimum width between building)				
	6. Show limits of flood plain on plans				
	7. Provide D-load table or calculations				
	8. Water tight joints specified for all pipe under pressure or pipe slope greater than 20 percent				

No.	ITEM	1ST	2ND	3RD	REMARKS
9.	Storm drain water picked up in curbs and median curb prior to super elevation transition				
10.	Provide slope anchors if $\geq 20\%$ slope				
11.	Retention: Basin design (if required) Flood Control to review and sign plans.				
12.	Adequate manhole spacing to clean and maintain the facility. Water tight manhole lids if pressure flow.				
13.	Concrete collar can be used only when grade break is 15 degree or less. Otherwise, use a cleanout.				
14.	Show manhole inlet/outlet invert 0.10' difference in elevation				
15.	Avoid under sidewalk drains. If used Provide 25' of infiltration area, (gravel or vegetation) swale prior to outlet into street (2 cfs and 2fps velocity maximum) allowed at outlet.				
16.	Manufacturer's data for all fabricated items not specified in the standard plans				
K. STREET IMPROVEMENT AND STRIPING PLANS (TRAFFIC)					
1.	Existing and proposed pavement delineation and striping plan provided				
2.	Construction notes for signing and striping				
3.	Show note on plan: Provide detour, traffic control and phasing plans 10 days prior to start of construction.				
4.	Provide (Caltrans) traffic signal plans and specs reference				
5.	Provide a centerline radius adequate for design speed (10 mph above posted speed limit) of the roadway. Provide adequate length of vertical curves.				
6.	Provide an adequate length of tangent between reversing curves				
7.	Review any sight distance problems. Driveways, intersections, street curves, and grading plan at intersections.				
8.	Guardrail provided, check slopes and fixed objects.				
9.	Street lights shown with adequate spacing.				

APPENDIX B- Flood Control / Water Resource Standard Details

Santa Barbara County Flood Control and Water Conservation District “Standard Conditions of Project Plan Approval”

<http://www.countyofsb.org/pwd/pwwater.asp?xid=3652>

County of Santa Barbara “Standard Conditions for Project Plan Approval – Water Quality BMPs”

http://www.sbprojectcleanwater.org/post_construction.html

SANTA BARBARA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

STANDARD CONDITIONS OF PROJECT PLAN APPROVAL

The following Standard Conditions list standards that apply to new development projects that fall under the Flood Control District's authority to review. It is neither intended as, nor does it establish, a legal standard for these functions. Special situations may call for variation from these conditions, subject to Flood Control District approval, or such other approval as may be specifically provided for. These Standard Conditions, as well as earlier versions, do not apply and have not applied to existing facilities, nor are they intended to imply that existing facilities need any improvements, unless the Flood Control District requires such improvements through development project approval.

General

1. All developments shall comply with all applicable requirements of the most current: (County codes may be viewed online at <http://bpc.iserver.net/codes/stbarb/>)
 - Santa Barbara County's Floodplain Management Ordinance (Santa Barbara County Code (SBCC) Chapter 15A, "Floodplain Management");
 - Santa Barbara County's Setback Ordinance (SBCC Chapter 15B, "Development Along Watercourses"); and
 - SBCC Chapter 24, "Offenses, Miscellaneous," Section 24-7, "Watercourses - Erecting buildings, etc., which obstruct flow prohibited."
2. The applicant shall provide a site plan of the proposed development showing the limits of the special flood hazard areas and base flood elevations as they appear on the most current Federal Emergency Management Agency (FEMA) flood insurance rate map (FIRM). Flood maps may be viewed online at <http://msc.fema.gov/>
3. The applicant shall provide a site plan of the proposed development showing the top of bank along those parts of a watercourse which are included within the areas of special flood hazard shown in the flood insurance rate maps and along those parts of a watercourse which lie between areas of special flood hazard on the same watercourse.
4. New development shall mitigate for increased runoff by directing drainage to an acceptable watercourse, improving downstream facilities, mitigating the increased runoff on-site, and/or as otherwise required by the Public Works Director. Runoff shall be conveyed safely to prevent erosion from slopes and/or channels. Natural drainage systems shall be utilized to the maximum extent practical. Disturbed slopes shall be vegetated with appropriate native or drought tolerant vegetation, permanent channel crossings shall be stabilized, and energy dissipaters such as riprap will be used at outlets of new storm drains, culverts, conduits or channels that enter unlined channels to minimize erosion potential.

5. Improvements may be required to intercept and convey off-site and on-site runoff through the project site to a District approved water course or drainage facility.
 6. Development located within the limits of floodplain/floodway as shown on the current FIRM may be required to process a conditional letter of map revision prior to map recordation or zoning clearance.
 7. All developments shall comply with all applicable requirements of the most current Standard Conditions for Project Plan Approval-Water Quality Best Management Practices, as administered by the Santa Barbara County Public Works Department, Project Clean Water.
 8. Development located within "Special Problems Areas" as defined in Article XIII of the Santa Barbara County Building Code may be subject to additional conditions of approval.
 9. Development located within the Repetitive Loss Zone as described in Board Resolution No. 92-138 and the Floodplain Management Plan may be subject to additional conditions of approval.
 10. Development located within the Orcutt Planning Area may be subject to Regional Drainage Impact Mitigation Fees, payable prior to map recordation or zoning clearance.
-

Design

1. The applicant submits the Grading and/or Improvement plans directly to the Flood Control District for plan check. A plan check fee deposit made payable to the Santa Barbara County Flood Control and Water Conservation District shall accompany the initial submittal. The plan check fee deposit shall be the amount as shown in the current District fee schedule. The Agreement for Payment of Plan Check Fees form is attached and is filled out by the applicant upon the initial submittal.
2. Hydrologic studies prepared by a California-licensed civil engineer shall be made of the watershed area contributing drainage to the project. Both calculations and clearly marked watershed maps shall be submitted at the plan check submittal for approval by the Public Works Director. Contributing areas shall be based on natural contours or an accepted master drainage plan. Drainage quantities shall be derived from considerations that include expected future development of the watershed, soil types, historical storm data and gradient of terrain. These considerations must receive approval by the Public Works Director. For most major channels, discharge rates will be supplied by the Public Works Director.
3. Storm drains and drainage inlets shall be sized for a peak 25-year runoff event with a positive overland escape design for a 100-year storm. Storm drains shall be constructed of at least Class III reinforced concrete pipe with a minimum diameter of 18" unless other materials, pipe classifications, or sizes are approved by the Public Works Director. When an existing culvert is to be extended and/or the grade changed, a concrete collar must be used.

4. Storm drains and drainage inlets in sump conditions shall be sized for a 100-year storm and shall provide positive overland escape. The overland escape path must be constructed in a manner to transport the peak rate of runoff assuming all storm drains are inoperative.
5. The minimum width of an easement for the installation of a storm drain shall be the pipe diameter plus 6 inches on both sides for the pipe trench, plus the distance of a 1:1 trench slope projected from the bottom of the pipe to the ground. All storm drain easements to be dedicated to the Flood Control District shall be permanently separated from the underlying residential properties by a 42" high chain link fence, or other District-approved fence type.
6. Drainage inlets shall be located and designed in a manner to assure an adequate travel lane with no more than 10 cubic feet per second conveyed per gutter, within the curbs in a 10-year storm. All 25-year storm flows shall be contained within the curbs or other conveyance as otherwise approved. Drainage design of public roadways shall conform to the requirements of the roadway's owner. At least one lane free of water in each direction shall be provided in the 10- and 25-year storm events for arterial, major and industrial street classifications; 100-year storm flows shall be contained within the right-of-way or private street easement. Drainage inlet design shall follow the methods outlined in the Federal Highway Administration's H.E.C. No. 22 (<http://isddc.dot.gov/OLPFiles/FHWA/010593.pdf>), as approved by the Flood Control District. Only curb opening inlets (no grated inlets) shall be used in sump conditions.
7. Manholes must conform to the County Standard Details within the Santa Barbara County Public Works Engineering Design Standards. Spacing of manholes shall conform to the following table:

Pipe Size, <i>d</i>	Manhole Spacing
$d \leq 30$ in	200 ft (with numerous horizontal angles/bends)
	300 ft
$30 \text{ in} < d < 45$ in	400 ft
$d \geq 45$ in	500 ft

Manholes shall also be provided in accordance with the following criteria:

- a) Where there is a sudden change in pipe size or slope.
 - b) At the junctions of two converging pipes of approximately the same size.
 - c) At junctions where the side inlet diameter is greater than half of the main line diameter.
 - d) At junctions where the side inlet flow is greater than half of the main line flow.
8. The runoff calculations for storm drain design shall be based on the Rational Method. The Time of Concentration (T_C) shall be calculated as follows:
 - a) For agricultural areas, use the Nomograph attached to these Standard Conditions.
 - b) For urban areas, $T_C = T_T + T_L$ (Travel Time + Lot Time)

$$\text{Travel Time (min)} = \frac{L}{60V}$$

$L = \text{length (ft)}$
 $V = \text{average velocity (ft/sec)}$

$$\text{Lot Time} = 10 \text{ min}$$

9. Rainfall Intensity curves and Rainfall Coefficient vs. Rainfall Intensity curves incorporated into the District's "Program Rational-XL" shall be used in drainage design unless otherwise directed. Curves are downloadable at <http://www.countyofsb.org/pwd/water/downloads.htm>.
10. Projects shall be designed with a clearly defined permanent overland escape path (preferably a street) for storm runoff. The escape path shall be free of obstructions including and not limited to fencing, landscaping and sound walls. Downhill cul-de-sacs are discouraged as overland escape. Downhill sump cul-de-sacs shall have an improved dedicated overland escape.
11. The lowest finish floor elevation of all new structures shall be at least 2 feet above the 100-year water surface elevation. Graded lot pads with slab on grade foundations shall be at least 1.5 feet above the 100-year water surface elevation, with finish floor 2 feet above 100-year water surface elevation. Finish floor elevations may be increased if deemed necessary by the Public Works Director. Finish floor elevations shall be higher than the water surface elevations of the overland escape of adjacent streets, bridges and other obstructions.
12. Grading and improvement plans for drainage improvements signed by a California-licensed civil engineer shall include the following information:
 - a) The design energy and hydraulic grade lines shall be on the Improvement or Underground Storm Drain profiles. Junction losses are to be calculated by the pressure plus momentum theory.
 - b) The 100-year energy and hydraulic grade lines shall be shown on plans and profiles for open channel designs.
 - c) Hydraulic data shall be included on engineering plans for all drainage improvements including channels and pipes as required by the Public Works Director.
 - d) Storm drain center lines and drainage inlet locations shall be identified on the Grading Plans.
 - e) Hydraulic/hydrologic studies shall be prepared, signed and stamped by the California-licensed civil engineer who signs the improvement plans. The final, District-approved study shall be submitted to the District in hard copy and PDF format.
13. Detention basins are required by the District to reduce the post-development peak storm water runoff discharge rate as specifically defined below:
 - In all areas of the County of Santa Barbara, except New Cuyama
 - Other areas of the County if downstream facilities are determined by the Public Works Director to be inadequate.

Basins shall be designed to meet the following standards:

- a) Hydrologic/Hydraulic Analysis: The hydrologic/hydraulic analysis of detention basins shall be performed by a California-licensed civil engineer using a commercially available version of the Santa Barbara Urban Hydrograph method or District approved equivalent.

b) The following optional input parameters must be used with SBUH:

- Runoff Method: SBUH
- Pond Routing Method: Storage-Indication
- Rainfall Distribution: SCS 24-hour, Type I distribution
- Antecedent Moisture Condition: AMC II
- Hydrograph ordinate time increment: 0.10 hour
- Rainfall Amounts, 24-hour totals:

Area	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
Buellton/Santa Ynez	2.83 in.	4.10 in.	4.93 in.	5.97 in.	6.72 in.	7.45 in.
Lompoc	2.20	3.17	3.82	4.62	5.20	5.76
Los Alamos	2.01	2.92	3.51	4.25	4.79	5.30
Sisquoc	1.89	2.74	3.30	3.99	4.49	4.98
South Coast	3.20	4.61	5.55	6.71	7.56	8.38
Santa Maria/Orcutt	1.81	2.62	3.15	3.81	4.29	4.76

- Hydrologic soil groups for areas within Santa Barbara County can be determined on-line at: <http://websoilsurvey.nrcs.usda.gov/app/>
- Curve numbers for hydrologic soil groups per Tables 2-2A through 2-2D (Runoff curve numbers) of “TR-55, Urban Hydrology for Small Watersheds,” published by USDA NRCS. TR-55 may be viewed on-line at: ftp://ftp.wcc.nrcs.usda.gov/downloads/hydrology_hydraulics/tr55/tr55.pdf
- Information on computing composite curve numbers to account for unconnected impervious areas and low-impact development (LID) design components is given in TR-55 and “Low-Impact Development Hydrologic Analysis” prepared by Prince George’s County, Maryland, a portion of which may be viewed online at: <http://www.countyofsb.org/pwd/water/derev.htm>

If LID design elements are considered in the hydrologic analysis of the project, those elements must be guaranteed to remain in place for the lifetime of the project. This guarantee must be demonstrated in the form of a written statement from the owner and/or inclusion in the development’s Covenants, Conditions and Restrictions.

- Basin data required to be submitted for District review includes:
 1. Basin input parameters listed above;
 2. Watershed map;
 3. Soil Survey Map/Hydrologic Soil Group for watershed, including copy of Soil Survey Map of subject property;

4. Specifics of proposed development (area, time of concentration, including time of concentration and composite curve number calculations);
5. Proposed basin geometry;
6. Proposed outlet works and resultant outlet works hydraulics;
7. Peak depth, peak outflow, peak storage;
8. Inflow volume, outflow volume;
9. Plotted inflow and outflow hydrographs.

c) Volume:

- Orcutt/Santa Maria and Vandenberg Village/Mission Hills: Basins shall be designed with:
 1. Not less than 0.07 acre feet per acre for residential developments or 0.10 acre feet per acre for commercial/industrial developments; and
 2. A gravity bleeder line that reduces storm water runoff (maximum outflow discharge) from a 25-year 24-hour storm event developed condition to 0.07 cubic feet per second per acre.
- Orcutt/Santa Maria, easterly of US 101: Basins shall be designed with:
 1. Not less than 0.07 acre feet per acre for residential developments or 0.10 acre feet per acre for commercial/industrial developments; and
 2. A gravity bleeder line that reduces storm water runoff (maximum outflow discharge) from a 100-year 24-hour storm event developed condition to 0.07 cubic feet per second per acre.
- Orcutt/Santa Maria, within areas of 'ineffective watershed' as shown on Plate 2 of the Flood Insurance Study of the City of Santa Maria dated December 1976: Due to the enormous volume of sumps located within the Ineffective Watershed Area (IFA), the IFA is considered to contribute no surface runoff to the surrounding area. Development proposed within areas of IFA shall be designed to not divert runoff from historical drainage patterns and in outflow discharge rates that do not exceed pre-development amounts.
- Greenhouses: Basins shall provide detention for the 2- through 100-year 24-hour storm events, where appropriate. Maximum outflow discharge rates of the post-development condition shall not exceed 75 percent of the calculated pre-development runoff.
- Santa Ynez Valley and South Coast: Basins shall provide detention such that the post-development peak storm water runoff discharge rate shall not exceed the pre-development rate for the 2-year through 100-year storm events.
- Other areas of the County: Basin volume standards will be determined on a case by case basis by the Public Works Director.

d) All detention basins shall be free draining. Terminal basins (i.e. pumped basins) are not allowed.

- e) Above ground detention basins shall be designed to meet the following standards:
- **Low flow drainage:** The bottom of the basin shall have a positive-draining gradient flowing to the outlet with a gravel-backfilled filter fabric encased trench to capture nuisance flow runoff. The trench shall be of sufficient size considering the characteristics of the native soils.
 - **Outflow Device:** Outlet pipes shall be oversized (18 inch minimum) with an orifice restriction (if necessary) to limit outflow to the maximum outflow discharges listed above. Orifice restriction plates shall be removable for emergency situations. A removable trash rack shall be provided at the outlet. Orifice plates and trash racks shall be galvanized. Mounting hardware shall utilize stainless steel bolts.
 - **Emergency Overflow:** An emergency overflow spillway shall be sized for the peak 100-year 24-hour storm runoff. The spillway shall be engineered and shall be reinforced concrete and shall provide appropriate downstream energy dissipation. The spillway shall be designed with a minimum of 12 inches of freeboard above the 100-year 24-hour calculated spill water surface elevation.
 - **Slopes:** Maximum side slopes shall be four horizontal to one vertical on interior slopes and two horizontal to one vertical on exterior slopes. A District-approved soil cement core mix design, or a two sack slurry trench shall be required on all filled levee sections. A geotechnical engineering report shall be provided for all fill levee sections. The report shall address remedial grading, benching, and slope stability of the levee sections.
 - **Access Ramp:** A graded 16-foot wide maintenance access ramp shall be provided down into the basin near the outlet. A 16-foot wide commercial driveway approach shall be provided where curb and gutter front the maintenance ramp.
 - **Fencing:** On facilities to be dedicated to the Flood Control District, perimeter fencing (minimum height of 42 inches) shall be required on all basins exceeding two feet in depth or where interior side slopes are steeper than six horizontal to one vertical. A double eight-foot wide swing gate (16 feet total) shall be provided at the access ramp. Perimeter fencing on facilities to remain private is at the option of the applicant.
 - **Landscaping:** The Flood Control District shall review and approve of any proposed basin landscape plan. Landscape planting shall be selected to be as maintenance free as possible. No trees and /or shrubs are to be planted within 15 feet of the basin outlet. Floating objects such as railroad ties and landscape bark are not permissible.
 - **Ownership, maintenance:** Ownership of the basin and maintenance thereof is the responsibility of the owner/subdivider. A notarized Maintenance Agreement is required as described later in these conditions.

- f) Underground detention systems shall be designed to meet the following standards:
- **Application:** The use of underground detention systems will be allowed on certain projects at the discretion of the Flood Control District. There is no guarantee that underground systems will be accepted on every project. Projects under consideration must have suitable site topography, acceptable downstream conditions, and shall provide evidence that there is an appropriate entity in place to provide long term maintenance.
 - **Products/Materials:** The products/materials and installation of underground systems shall meet all applicable ASTM and AASHTO standards, at the discretion of Flood Control.
 - **Manufacturer Certification:** A letter or certification from the manufacturer stating that the product design meets their requirements and constraints shall be submitted to Flood Control. The Engineer of record who stamps the drawings still has overall responsibility for the design and functionality of the system.
 - **System Design:** Underground systems may be designed with an open bottom or as a closed system. Open bottom systems are encouraged for water quality benefits. However, no credit toward the required detention volume as a result of infiltration is allowed. The bottom slope of the chamber shall be taken into consideration while calculating the available volume of the system. Systems shall be oversized 10% above the calculated required volume, or shall provide 12" of freeboard above the maximum calculated water surface elevation.
 - **Geotechnical Authorization:** A letter from a registered Geotechnical Engineer shall be submitted to Flood Control for all open bottom systems, stating that the behavior of native soils will not be adversely impacted by the introduction of water into the soil.
 - **Underground systems using aggregate void space as storage volume** may account for the assumed or calculated void ratio multiplied by a factor of 0.75 as the available storage volume. Material lab testing may be required to verify the assumed void ratio. Systems utilizing aggregate void space as storage volume shall have a positive outlet, and shall use a geotextile filter to separate the aggregate material from the surrounding soils.
 - **Outflow Device:** All underground systems shall be free draining. Outlet pipes shall be oversized (12 inch minimum) with an orifice restriction (if necessary) to limit outflow to the maximum outflow discharges listed above. Orifice restriction plates shall be removable for emergency situations. Orifice plates shall be galvanized. Mounting hardware shall utilize stainless steel bolts.
 - **Emergency Overflow:** Underground systems shall be designed to overflow back onto the project site in the event of a blockage, rather than bypassing the system. Underground overflow weirs are not allowed. This will provide clear visual evidence of system failure and the need for maintenance, while protecting downstream properties from the additional overflows. Overflow onto the project site shall be designed not to affect any structures or utilities.
 - **Pretreatment:** All flows entering the underground system shall be pre-treated with an appropriate best management practice approved by Flood Control to filter out debris, trash, and sediments. Pretreatment chambers designed as part of the main underground storage chamber shall not be counted towards the overall volume

requirements of that system. Underground pretreatment units shall have physical accessibility for inspection and maintenance.

- Ownership, maintenance: Ownership of the underground system and maintenance thereof is the responsibility of the owner/subdivider. A maintenance plan shall be submitted, and a notarized Maintenance Agreement as described later in these conditions is required.
14. Drainage improvements proposed to be dedicated to Flood Control shall be shown on stand-alone improvement plan and profile sheets. (These sheets may be incorporated within the project's overall plan set.)
 15. Development located within V-zones (Coastal High Hazard Areas) shall follow the recommendations presented in the guidance document "Coastal Construction Manual" published by the Federal Emergency Management Agency. A registered civil engineer or architect shall certify that the design and methods of construction to be used are in accordance with said guidance document (http://www.fema.gov/pdf/rebuild/mat/fema499/hgcc_fact05.pdf).
 16. A completed Floodproofing Certificate for Non-residential Structures (FEMA Form 81-65, <http://www.fema.gov/pdf/nfip/manual200610/08cert.pdf>) is required for all such buildings located within a Special Flood Hazard Area.
 17. Encroachments in the regulatory floodway require a registered civil engineer to submit a "no-rise" certification stating that the encroachments would not result in any increase in flood levels within the community during the base flood discharge. See attachment for certification form.
 18. The Flood Control District shall review and approve of any proposed landscape plan.
 19. The District reserves the right to modify these conditions as site conditions warrant.

Prior to Final Map Recordation/Zoning Clearance

1. Dedication of real property for drainage within the subdivision shall be provided. Easements shall be dedicated on the Final Map or dedicated by a separate instrument. The Developer shall reimburse the District for all costs associated with easement processing and acceptance.
2. Drainage easements for off-site drainage conveyances shall be acquired and presented to Flood Control. A title report shall accompany these easements.
3. The Maintenance Agreement (Subdivider's or Owner's Agreement) shall be notarized and is a condition of approval for development. The agreement will be perpetual and will require the present and future owners of the property to be responsible for the construction, ownership and maintenance of the private drainage improvements of the development.

4. Electronic drawings in PDF format of the fully approved Grading and/or Drainage Plans, Improvement Plans, Landscaping Plans, and Final Map shall be submitted to the District on compact disc along with one set of signed prints of the same.
 5. A copy of the project's Conditions, Covenants & Restrictions for the Homeowners Association shall be submitted to the District for approval.
 6. Surety Bonds for drainage improvements in amounts approved by the Public Works Director shall be posted with the Public Works Department for work inside the public right-of-way and with the Planning & Development Department for work outside the public right-of-way.
 7. Pursuant to County Ordinance 4536, the developer must submit evidence that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including a §404 of the Federal Clean Water Act (33 U.S.C. 1334), a California Department of Fish and Game Streambed Alteration Agreement (1603) and a §401 Water Quality Certification from the Regional Water Quality Control Board. The developer's attention is directed to his obligation to obtain all City and County permits/approvals as required, as well as the approval of the underlining property owner(s) of record.
 8. Prior to issuance of Building Permits, any fill material required to elevate building pads above the 100-year base flood elevation shall be compacted to a minimum of 90% relative maximum density per ASTM D-1557, and observed and reported by a Registered Civil Engineer.
-

Construction

1. The developer shall obtain a Temporary Entry Permit from the District prior to construction of proposed improvements located within District right-of-way or interfacing with District facilities. A fee is required. The District shall be notified by the Contractor a minimum of two working days in advance of construction of this work. A note shall be placed on the plans to this effect.
2. The District will provide inspection of construction of proposed improvements that are to be dedicated to the District or that interface with District facilities. An inspection deposit is required. The District shall be notified a minimum of two working days in advance of this work. A note shall be placed on the plans to this effect.
3. The California-licensed civil engineer that signs the Grading and/or Improvement Plans shall be responsible for the inspection of proposed private drainage improvements and providing a Drainage Improvement Certification as described below. A note shall be placed on the plans to this effect.
4. During construction, if differing site conditions are encountered that materially affects the drainage improvements shown on the approved plans, the engineer of record shall submit

revised plans to the District for the District's review and approval prior to the construction of the work.

Close-out/Occupancy Clearance

1. Prior to occupancy clearance, the "Construction Record" drawings (both original mylars and by PDF format) shall be submitted by the engineer of record to the Santa Barbara County Flood Control and Water Conservation District of construction of proposed improvements that are to be dedicated to the District or that interface with District facilities. "Construction Record" drawings shall provide a complete and accurate record of all changes of construction from that shown in the approved plans and specifications.
 2. Prior to occupancy clearance, a Drainage Improvement Certification shall be required from the engineer of record. The District certification form (see attachment) requires that the California-licensed civil engineer certify that all drainage improvements (including but not limited to storm drains, drainage inlets, junctions, revetment, ditches, swales, channels and detention basins) were constructed in substantial conformance with the approved plans and specifications.
 3. Prior to occupancy clearance, a Project Summary Report that summarizes the hydrology and hydraulics, easement acquisitions and including reduced size plans shall be submitted to Flood Control in PDF format. Those projects that include improvements that are to be dedicated to the District or that interface with District facilities shall include actual construction costs and "construction record" drawings in electronic format as noted above.
 4. Prior to occupancy clearance, an Elevation Certificate (FEMA Form 81-31, <http://www.fema.gov/pdf/nfip/manual200610/08cert.pdf>) shall be submitted to the District's Floodplain Manager for all lots located within a Special Flood Hazard Area.
-

Standard Conditions of Approval Recommended by



Matthew Griffin

1-26-2011

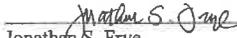
Date

Interim Engineering Manager

Santa Barbara County Flood Control & Water Conservation District; Water Resources Division

Santa Barbara County Public Works Department

Standard Conditions of Approval Approved and Adopted by



Jonathan S. Frye

1-26-11

Date

Interim Deputy Public Works Director

Santa Barbara County Flood Control & Water Conservation District; Water Resources Division

Santa Barbara County Public Works Department

Attachments:

- Agreement for Payment of Plan Check Fees
- Nomograph for determining Time of Concentration for agricultural areas
- Plate 2 of the Flood Insurance Study of the City of Santa Maria dated December 1976: Ineffective Watershed Area (IFA)
- Floodway No-Rise Certification
- Drainage Improvement Certification

ATTACHMENTS

Agreement for Payment of Plan Check Fees

| Nomograph for determining Time of Concentration for agricultural areas

Plate 2 of the Flood Insurance Study of the City of Santa Maria dated December 1976:

Ineffective Watershed Area (IFA)

Floodway No-Rise Certification

Drainage Improvement Certification

Santa Barbara County Flood Control & Water Conservation District

Agreement for Payment of Plan Check Fees

Santa Barbara County Flood Control & Water Conservation District (hereinafter District) and

_____ (hereinafter APPLICANT) AGREE AS FOLLOWS:

1. APPLICANT has submitted to DISTRICT an application for _____, Case # _____, (hereinafter PROJECT).

2. DISTRICT has set variable fees pursuant to Resolution No. 96-47. APPLICANT understands and agrees that Government Code §66451.2. authorizes DISTRICT to charge and collect reasonable fees for processing of tentative, final and parcel maps and for other procedures required or authorized by Government Code § 66451.2. or local ordinance.

3. APPLICANT and DISTRICT agree that because of the size, nature or scope of the proposed project, it is impossible to ascertain the full extent of the costs involved in processing the plan check upon initiation of case processing. APPLICANT and DISTRICT further agree that it is in the interest of the parties to permit payment of a deposit and to permit subsequent periodic billing and payment as charges are incurred. APPLICANT agrees s/he will be benefited by retaining greater cash liquidity and will pay only after costs are actually incurred. DISTRICT agrees it will be benefited through the greater certainty of recovering its full costs to process APPLICANT's plan check.

4. Therefore, pursuant to Resolution No. 96-47 APPLICANT shall pay an initial deposit, and if actual recorded costs plus administrative costs exceed the initial deposit, APPLICANT shall make periodic payments to DISTRICT to reimburse the DISTRICT for the processing of the plan check mentioned above. Such periodic payments shall be made within 30 days of the billing date. APPLICANT further agrees that failure to pay such accrued costs shall be grounds for plan checks not being considered complete for signature.

APPLICANT

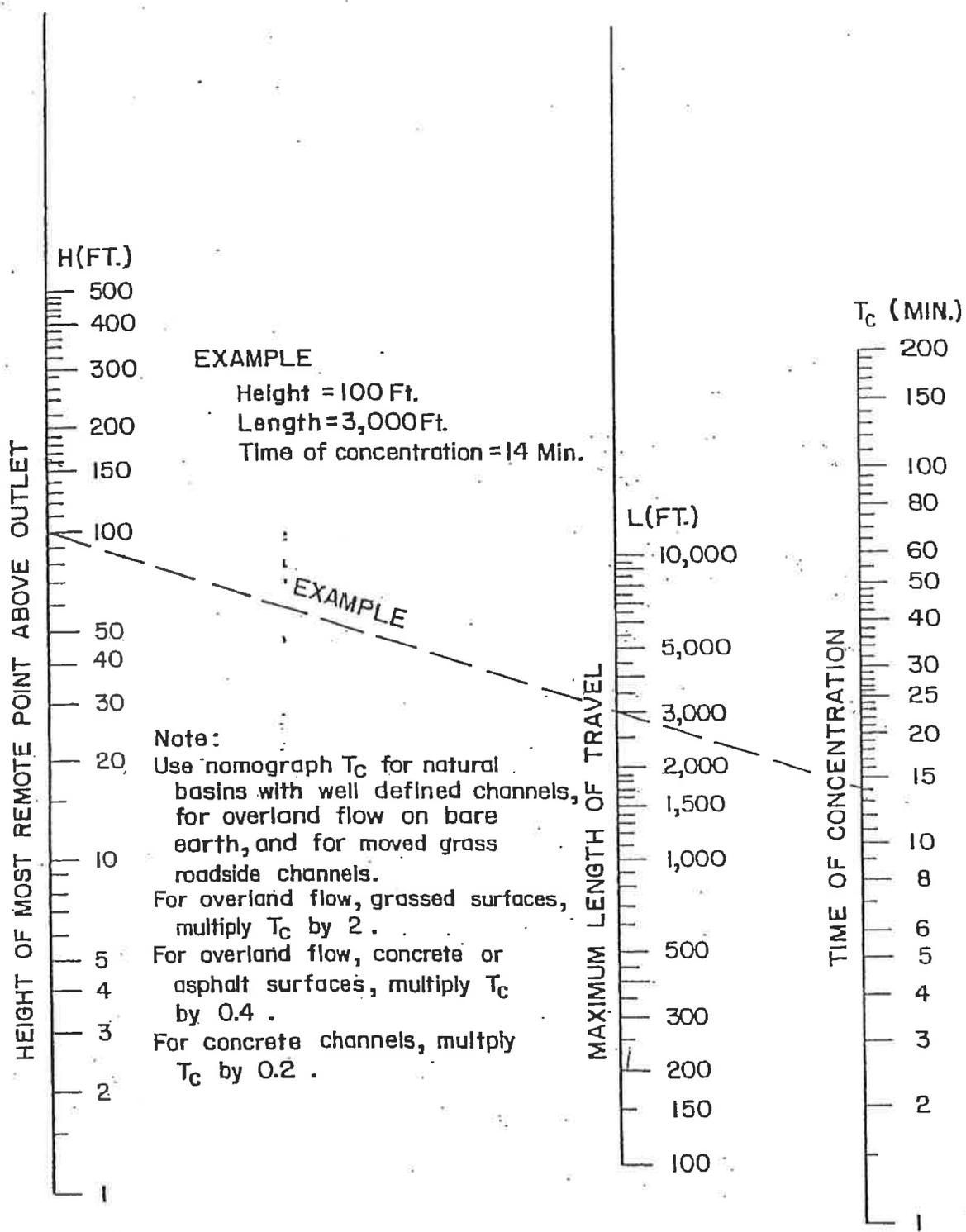
SANTA BARBARA COUNTY FLOOD
CONTROL & WATER CONSERVATION
DISTRICT

BY: _____

BY: _____

DATE: _____

DATE: _____



SANTA BARBARA COUNTY
 DEPARTMENT OF PUBLIC WORKS
 ROAD DIVISION

**TIME OF CONCENTRATION OF
 SMALL DRAINAGE BASINS**

**FIGURE
 3**



CERTIFICATION OF A "NO-RISE" DETERMINATION FOR A PROPOSED FLOODWAY DEVELOPMENT

Community Name

Development Name

Lot/Property Designation

Property Owner

I hereby certify that the proposed remedial measures, in combination with the property development designated above, will result in no loss of flow conveyance during the occurrence of the 1 percent annual chance of exceedence (100-year flood) discharge.

I further certify that the data submitted herewith in support of this request are accurate to the best of my knowledge, that the analyses have been performed correctly and in accordance with sound engineering practice, and that the proposed structural works are designed in accordance with sound engineering practice.

Date

Registered Professional Engineer

**SANTA BARBARA COUNTY FLOOD CONTROL
& WATER CONSERVATION DISTRICT**

DRAINAGE IMPROVEMENT CERTIFICATION

PROJECT NAME _____

TM/TPM# _____

DP/CP# _____

ADDRESS OF PROJECT _____

APN# _____

I, the undersigned California Registered Civil Engineer, hereby certify that I or my authorized agent have inspected the Drainage Improvements (including but not limited to storm drains, drainage inlets, junctions, revetment, ditches, swales, channels and detention basins) required for the approval of the above referenced Project and that the said Drainage Improvements were constructed in substantial conformance with the approved grading and/or Improvement Plans. Sufficient material tests, where applicable, have been taken to assure that Santa Barbara County standards/specifications have been met. Copies of material tests are attached as part of this certification.

DATED _____

SIGNATURE OF CIVIL ENGINEER

TYPED NAME OF CIVIL ENGINEERING/REG NO

FIRM OR COMPANY NAME

Seal

ADDRESS OF FIRM

SUBMIT COMPLETED FORM TO THE SANTA BARBARA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT PRIOR TO OCCUPANCY CLEARANCE REQUEST.

APPENDIX C – STANDARD DETAILS



**SANTA BARBARA COUNTY
DEPARTMENT OF PUBLIC WORKS
TRANSPORTATION DIVISION**

STANDARD DETAILS

September 2011

SECTIONS

<u>NUMBER</u>	<u>TITLE</u>
1-000	GENERAL SPECIFICATIONS
2-000	TRENCH DETAILS INDEX
3-000	DRAINAGE DETAILS INDEX
4-000	CURB AND DRIVEWAY INDEX
5-000	SIDEWALKS AND RAMP INDEX
6-000	STREET SECTIONS INDEX
7-000	TRAFFIC CONTROL DETAILS
8-000	LANDSCAPING AND IRRIGATION INDEX

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
DIRECTOR OF PUBLIC WORKS

1/11/2011
DATE

0-000

TABLE OF SECTIONS

REVISION DATES

GENERAL SPECIFICATIONS

NUMBER

TITLE

1-010

GENERAL STREET SPECIFICATIONS (SHEETS 1-2)

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

1-000

GENERAL SPECIFICATIONS

REVISION DATES

NO.	DATE


DIRECTOR OF PUBLIC WORKS

1/1/2011
DATE

1. COUNTY STANDARD PLANS AND SPECIFICATIONS SHALL INCLUDE THE CURRENT VERSIONS OF CALTRANS STANDARD PLANS AND SPECIFICATIONS AND APWA STANDARD PLANS AND SPECIFICATIONS FOR SOUTHERN CALIFORNIA, IF THERE IS A CONFLICT BETWEEN THESE STANDARD PLANS AND SPECIFICATIONS, THE COUNTY STANDARD DETAILS SHALL GOVERN ON COUNTY ROADS. CALTRANS PLANS SHALL HAVE PRECEDENCE OVER APWA PLANS UNLESS SPECIFICALLY STATED OTHERWISE.

2. CONSTRUCTION PLANS SHALL BE PREPARED IN ACCORDANCE WITH DEPARTMENT OF PUBLIC WORKS ENGINEERING DESIGN STANDARDS OR CURRENT CALTRANS STANDARD PLANS AND SPECIFICATIONS.

3. COMMENCEMENT OF CONSTRUCTION SHALL NOT BE AUTHORIZED UNTIL SUCH TIME THAT THE CONSTRUCTION PLANS HAVE BEEN REVIEWED BY THE DIRECTOR OF PUBLIC WORKS AND AN ENCROACHMENT PERMIT HAS BEEN ISSUED. THE 'DIRECTOR OF PUBLIC WORKS' SHALL BE INTERPRETED TO MEAN THE DIRECTOR OR HIS DESIGNATED REPRESENTATIVE(S) REFERRED TO HERE AS THE COUNTY ENGINEER.

4. INSPECTION BY THE COUNTY ENGINEER SHALL BE REQUESTED BY THE CONTRACTOR IMMEDIATELY PRIOR TO COMMENCING AND IMMEDIATELY AFTER COMPLETING EACH PHASE OF CONSTRUCTION.

5. UNLESS PRIOR AUTHORIZATION HAS BEEN GRANTED BY THE COUNTY ENGINEER, ALL VERTICAL DATUM SHALL BE BASED ON NAVD 88 DATUM, AND HORIZONTAL COORDINATES BASED ON NAD 83 DATUM.

6. THE STANDARD TEST FOR MAXIMUM DENSITY AND OPTIMUM MOISTURE CONTENT SHALL BE ASTM D 1557 (CURRENT VERSION) METHOD 'A', 'B', OR 'C'. FIELD TEST FOR IN PLACE DENSITY AND MOISTURE CONTENT SHALL BE ASTM D 2922 AND D 3017 (CURRENT VERSIONS). TEST METHOD 'C' MAY BE MODIFIED TO ALLOW THE USE OF CALIFORNIA TEST METHOD 370 FOR DETERMINING MOISTURE CONTENT OF MINERAL AGGREGATE USING MICROWAVE OVENS.

7. WATER FOR COMPACTION AND DUST CONTROL SHALL BE MADE AVAILABLE BY THE CONTRACTOR. DUST AND EROSION CONTROL ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE AS DIRECTED BY THE COUNTY ENGINEER.

8. AN EROSION & SEDIMENT CONTROL PLAN OR A STORM WATER POLLUTION PREVENTION PLAN SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE COUNTY ENGINEER IN ACCORDANCE WITH THE COUNTY GRADING CODE (CHAPTER 14 SBCC) OR WITH THE STATE CONSTRUCTION GENERAL PERMIT FOR DISCHARGES OF STORM WATER AS APPLICABLE.

9. TRENCH BEDDING AND BACKFILL FOR ALL STORM DRAINS, CULVERTS, AND UTILITY TRENCHING SHALL COMPLY WITH THE DETAILS OF SECTION 2.

10. ALL DRAINAGE FACILITIES SHALL COMPLY WITH THE STANDARDS OF SECTION 3.

11. ALL CURBS AND DRIVEWAYS SHALL COMPLY WITH THE STANDARDS OF SECTION 4.

12. ALL SIDEWALKS & RAMPS SHALL COMPLY WITH THE STANDARDS OF SECTION 5.

13. ALL ROAD PROFILES AND STRUCTURAL SECTIONS SHALL COMPLY WITH THE STANDARDS OF SECTION 6.

14. STREET NAME SIGNS, BARRICADES, TRAFFIC CONTROL AND TRAFFIC WARNING SIGNS SHALL BE PLACED IN ACCORDANCE WITH SECTION 7 OF THESE STANDARD DETAILS AND THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, ALL OF CURRENT DATE.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
 DIRECTOR OF PUBLIC WORKS
 DATE: 4/1/2011

GENERAL STREET SPECIFICATIONS

1-010

SHT 1/2

REVISION DATES

15. UTILITIES CONSTRUCTED UNDERGROUND SHALL BE STUBBED OUT TO THE PROPERTY LINES AT EACH LOT, AT EACH TRACT LINE, AND AT THE END OF STUB STREETS OR THROUGH STREETS UNDER CONSTRUCTION. TRENCHES SHALL BE BACKFILLED, TESTED FOR COMPACTION, LEAK-TESTED, AND INSPECTED BY THE UTILITY COMPANY AND THE COUNTY ENGINEER BEFORE BASE, PAVING, AND OTHER PERMANENT SURFACE CONSTRUCTION MAY COMMENCE.

16. ASPHALTIC CONCRETE USED FOR PAVING AND A. C. DIKES SHALL BE MADE WITH A PERFORMANCE-GRADE ASPHALT AND AGGREGATE SORTED TO CALTRANS STANDARD SPECIFICATIONS, SECTION 39. THE MIX DESIGN SHALL BE APPROVED BY THE COUNTY ENGINEER PRIOR TO PLACEMENT. THE CALTRANS SPECIFICATIONS FOR MIXING, HAULING, SPREADING, AND COMPACTING SHALL BE STRICTLY FOLLOWED.

17. OVERLAY SECTIONS SHALL CONSIST OF 1/2' MAX AGGREGATE WITH MEDIUM GRADING. ASPHALT EMULSION SHALL BE APPLIED UNDER PAVEMENT REINFORCING FABRIC WHERE FABRIC IS SPECIFIED.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
 DIRECTOR OF PUBLIC WORKS

GENERAL STREET SPECIFICATIONS

1-010

SHT 2/2

REVISION DATES

DATE

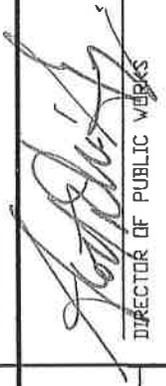
11/2011

TRENCH DETAILS

<u>NUMBER</u>	<u>TITLE</u>
2-010	GENERAL TRENCH NOTES
2-020	PIPE BEDDING DETAILS
2-030	TRENCHES FOR EXISTING PAVED ROADS
2-040	TRENCHES FOR NEW ROADS
2-050	SHOULDER DETAILS

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:


DIRECTOR OF PUBLIC WORKS

2-000

TRENCH DETAILS INDEX

REVISION DATE

--	--	--	--	--

11/1/2011
DATE

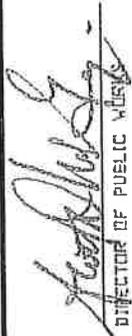
(REFER TO 1-010 FOR ADDITIONAL NOTES)

1. CAL-OSHA AND OSHA CONSTRUCTION SAFETY ORDERS FOR TRENCH REQUIREMENTS SHALL BE MET FOR ALL TRENCH OPERATIONS.
2. TRENCHES SHALL BE EXCAVATED DEEP ENOUGH TO ASSURE AT LEAST 25' OF COVER FOR THE UNDERGROUND FACILITY. OVER-EXCAVATION MAY BE REQUIRED TO ACHIEVE A STABLE, EVEN FLOOR IN THE TRENCH, AND EXTRA BEDDING MATERIAL PLACED TO PROVIDE A SUITABLE FOUNDATION FOR THE FACILITY.
3. ALL TRENCH BEDDING MATERIAL SHALL COMPLY WITH CALTRANS STANDARD SPECIFICATIONS, SECTION 19-3.
4. NO PONDING, JETTING, OR FLOODING IS PERMITTED UNDER EXISTING ROADS, IN OTHER AREAS, SUCH METHODS MUST BE APPROVED BY THE COUNTY ENGINEER.
5. ALL UTILITIES SHALL BE INSPECTED, TESTED, AND VERIFIED TO THE COUNTY ENGINEER PRIOR TO PLACEMENT OF TRENCH BACKFILL. STREET IMPROVEMENT PLANS SHALL BE SIGNED BY THE UTILITY COMPANIES AND THE COUNTY FIRE DEPARTMENT.
6. WHERE A TRENCH CROSSES UNDER AN EXISTING UTILITY, THE CONTRACTOR MUST PROVIDE ADEQUATE SUPPORT AND AVOID ANY DISTURBANCE OF THE UTILITY. BACKFILLING MUST INCLUDE PREPARING A NEW BED FOR THE EXISTING UTILITY AND PERFORMING COMPACTION TESTS.
7. MAXIMUM DENSITY AND OPTIMUM MOISTURE TESTS MUST BE MADE FOR ALL BACKFILL AND BEDDING MATERIALS EXCEPT CEMENT SLURRY OR 3/4" WASHED CRUSHED ROCK.

8. FOR TRENCHES LESS THAN 6.0' DEEP AS MEASURED FROM FINISHED GRADE TO FLOOR, ONE COMPACTION TEST SHALL BE MADE FOR EACH 50' OF TRENCH. TESTS SHALL BE MADE AT VARIOUS DEPTHS OF BACKFILL.
9. FOR TRENCHES 6.0' OR MORE DEEP AS MEASURED FROM FINISHED GRADE TO FLOOR, TWO COMPACTION TESTS SHALL BE MADE FOR EACH 50' OF TRENCH. TESTS SHALL BE MADE AT VARIOUS DEPTHS OF BACKFILL.
10. EVERY LATERAL UTILITY TRENCH SHALL BE TESTED FOR COMPACTION AT THE SAME SCHEDULE AS THE MAIN TRENCH.
11. PAVING MATERIAL SHALL BE ASPHALTIC CONCRETE PER 1-010, NOTE 16. IT SHALL BE 6' THICK AFTER COMPACTION.
12. ASPHALT PAVING SHALL BE RESTORED WITH A 'FOG' SEAL IN CONFORMANCE WITH COUNTY SPECIFICATIONS FOR ITS 'FOG' SEAL PROGRAM OF CURRENT DATE. FOG SEALING SHALL EITHER BE: A) BONDED FOR AND COMPLETED AFTER SIX MONTHS AND PRIOR TO ONE YEAR FROM THE START OF THE WARRANTY, OR B) A PAYMENT SHALL BE MADE TO THE COUNTY BASED ON THE COUNTY'S COST TO PERFORM THE FOG SEAL SHALL BE MADE PRIOR TO THE ENCROACHMENT PERMIT ISSUANCE.
13. WHERE ASPHALT IS SHOWING SIGNS OF DAMAGE OR WEAR, THE COUNTY ENGINEER MAY REQUIRE A TYPE II SLURRY SEAL INSTEAD OF 'FOG' SEAL.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:


DIRECTOR OF PUBLIC WORKS

2-010

GENERAL TRENCH NOTES

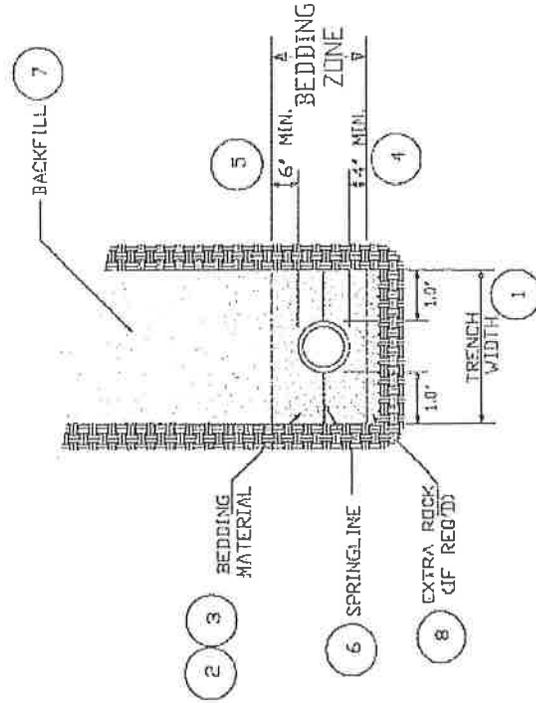
REVISION BOX

DATE

11/2011

NOTES: (REFER TO 2-010 FOR ADDITIONAL NOTES)

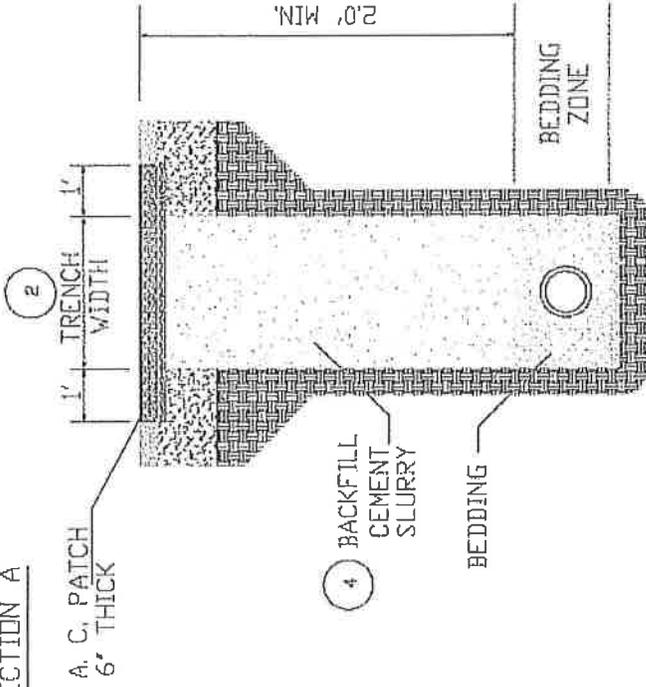
1. TRENCH WIDTH SHALL BE SUFFICIENT TO FULLY ENCLOSE THE PIPE AND ALLOW COMPACTION TESTING AT THE SPRING LINE.
2. BEDDING MATERIAL FOR UTILITY TRENCHES SHALL MEET THE STANDARDS OF THE UTILITY COMPANY INVOLVED.
3. BEDDING MATERIAL FOR HDPE, RCP AND CMP SHALL FOLLOW THE MANUFACTURER'S RECOMMENDATIONS AND SHALL BE COMPACTED TO 95% RELATIVE COMPACTION. FILL MUST BE PLACED IN LIFTS NO LARGER THAN 8" TO FACILITATE COMPACTION. FOR CMP PIPE, THE BEDDING MATERIAL SHALL BE TESTED FOR A NEUTRAL pH.
4. THE THICKNESS OF THE LAYER OF BEDDING UNDER THE PIPE SHALL BE AT LEAST 4" OR 10% OF THE PIPE DIAMETER, WHICHEVER IS LARGER.
5. BEDDING MATERIAL SHALL COMPLETELY COVER THE PIPE TO A MINIMUM HEIGHT OF 6" AFTER COMPACTION.
6. CARE MUST BE TAKEN TO PLACE THE BEDDING EVENLY UNDER THE LENGTH OF THE PIPE TO ASSURE ADEQUATE SUPPORT. COMPACTION TESTING IS REQUIRED AT THE SPRINGLINE OF THE PIPE WHEN SAND IS USED AS BEDDING MATERIAL.
7. BACKFILL MATERIAL SHALL MEET THE REQUIREMENTS OF SBCD STD 2-030 AND 2-040
8. SEE NOTE 2 ON 2-010



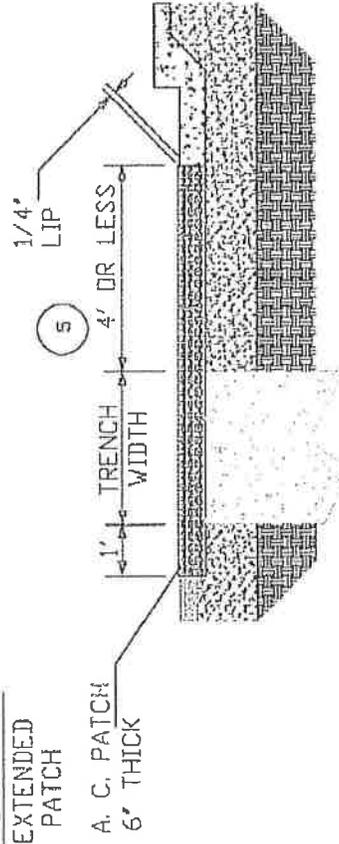
ELEVATION

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION	APPROVED BY: <i>[Signature]</i> DIRECTOR OF PUBLIC WORKS
2-020	PIPE BEDDING DETAILS
REVISION DATES	1/1/2011 DATE

SECTION A



SECTION B



NOTES: REFER TO 2-010 FOR ADDITIONAL NOTES

1. ALL TRENCH WORK ON EXISTING PAVED ROADS SHALL COMPLY WITH THIS STANDARD.
2. PAVEMENT SHALL BE SAW CUT 2' WIDER THAN THE WIDTH OF THE TRENCH PRIOR TO EXCAVATION. RECUT MAY BE NEEDED WHERE TRENCH EDGE IS NOT SOLID AS DETERMINED BY THE COUNTY ENGINEER.
3. BEDDING DETAILS SHALL COMPLY WITH SBCO STD 2-020.
4. BACKFILL MATERIAL UNDER EXISTING ROADS SHALL BE SLURRY CEMENT MEETING CALTRANS STANDARD SPECIFICATIONS, SECTION 19, FOR MATERIALS AND SHALL BE MIXED WITH 1 SACK OF CEMENT PER CUBIC YARD.
5. IF THE EDGE OF THE TRENCH IS WITHIN 4' OF THE EXISTING EDGE OF PAVEMENT (EP), THE SAWCUT SHALL BE MADE AT THE EP OR GUTTER AS SHOWN IN SECTION B.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

2-030 TRENCHES FOR EXISTING PAVED ROADS

[Signature]
DIRECTOR OF PUBLIC WORKS

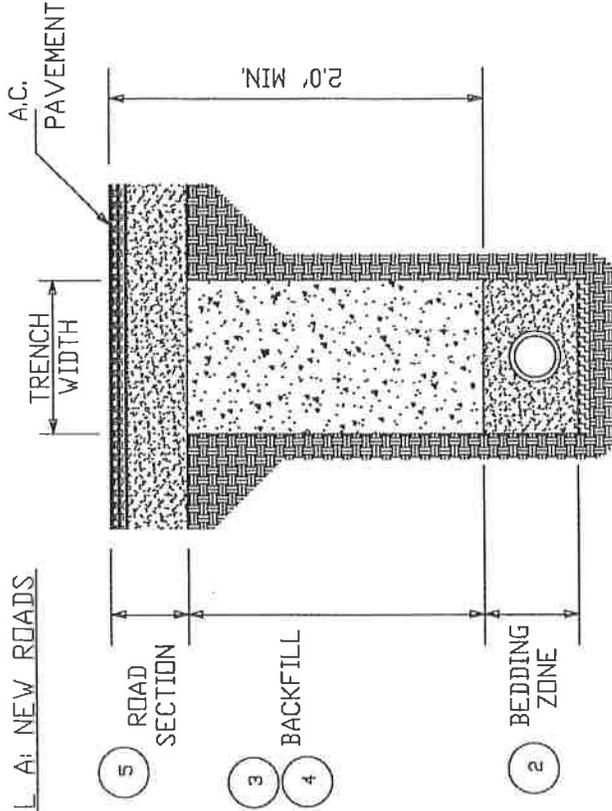
1/1/2011
DATE

REVISION BOX

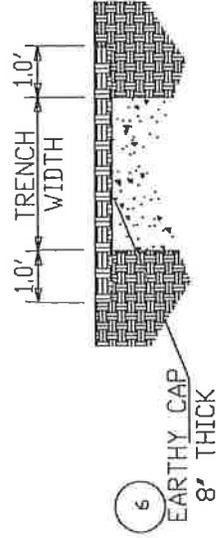
NOTES (REFER TO 2-010 FOR ADDITIONAL NOTES)

1. ALL TRENCH WORK FOR NEW ROADS AND FOR SHOULDERS WITHIN 3.0' OF PAVEMENT SHALL COMPLY WITH THIS STANDARD.
2. BEDDING DETAILS SHALL COMPLY WITH SBDO STD. 2-020.
3. TRENCH BACKFILL SHALL BE NATIVE, IMPORT, OR A MIXTURE OF THE TWO, FREE OF ORGANIC MATTER AND DEBRIS, AND WITH NO ROCKS OR CLUMPS LARGER THAN 3" WITH A SAND EQUIVALENT VALUE OF 20 OR GREATER.
4. BACKFILL SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
5. REFER TO SECTION 6 FOR THICKNESS OF THE ROAD SECTION
6. EARTHY MATERIAL SHALL MEET THE REQUIREMENTS OF SBDO STD. 2-050.

DETAIL A: NEW ROADS



DETAIL B: SHOULDER AREAS



COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
 DIRECTOR OF PUBLIC WORKS

2-040 TRENCHES FOR NEW ROADS

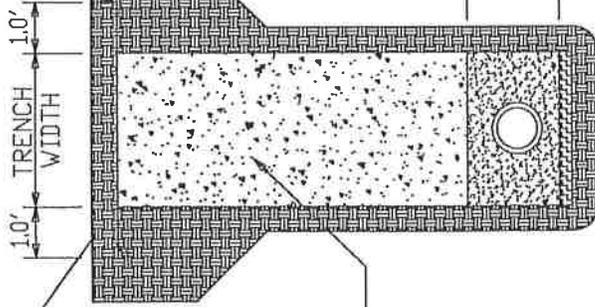
REVISION BOX

1/1/2011
 DATE

NOTES: (REFER TO 2-010 FOR ADDITIONAL NOTES)

1. TRENCHES ON SHOULDER AREAS MORE THAN 3' FROM EDGE OF PAVEMENT SHALL COMPLY WITH THIS STANDARD.
2. BEDDING DETAILS SHALL COMPLY WITH SBCCO STD. 2-020.
3. STRUCTURE BACKFILL SHALL BE NATIVE, IMPORT, OR A MIXTURE OF THE TWO, FREE OF ORGANIC MATTER AND DEBRIS, AN SE GREATER THAN 20, AND WITH NO ROCKS OR CLUMPS LARGER THAN 3".
4. BACKFILL SHALL BE COMPACTED TO 90% RELATIVE COMPACTION TO THE DEPTH OF THE BEDDING ZONE.
5. MATERIAL FOR THE EARTHY CAP SHALL BE SIMILAR TO STRUCTURE BACKFILL BUT WITH A CLAY CONTENT SUFFICIENT TO MAKE IT IMPERMEABLE AFTER COMPACTION TO 90% RELATIVE DENSITY.

5
8" THK EARTHY CAP
90% COMPACTION



4
3
STRUCTURE
BACKFILL

2
BEDDING
ZONE

2.0' MIN.

ELEVATION

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION		APPROVED BY:
2-050	SHOULDER DETAILS	<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS
		1/1/2011 DATE
REVISION BOX		

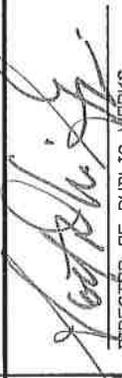
DRAINAGE FACILITIES DETAILS

<u>NUMBER</u>	<u>TITLE</u>
3-010	GENERAL DRAINAGE FACILITIES NOTES
3-020	OPEN CURB DROP INLETS
3-050	TYPE C DROP INLETS (SHEETS 1-2)
3-060	SIDEWALK UNDERDRAINS (SHEETS 1-3)
3-080	STORM DRAIN MANHOLES
3-115	CONCRETE COLLARS FOR STORM DRAINS

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION		APPROVED BY:
3-000	DRAINAGE DETAILS INDEX	 DIRECTOR OF PUBLIC WORKS
		11/12/01 DATE
REVISION DATES		

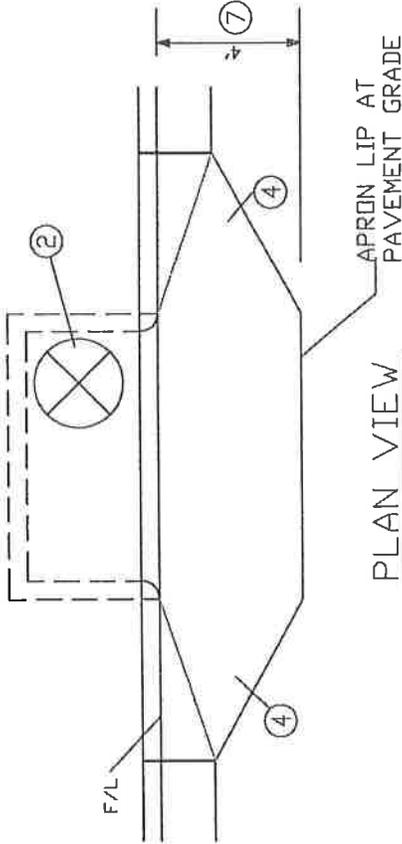
(REFE. U 1-010 FOR ADDITIONAL NOTES)

1. REFER TO SECTION 4 FOR CURB AND GUTTER STANDARDS AND TO SECTION 5 FOR SIDEWALK DETAILS.
2. UNLESS OTHERWISE NOTED, ALL CONCRETE FOR DRAINAGE STRUCTURES SHALL MEET THE REQUIREMENTS OF CALTRANS STANDARD SPECIFICATIONS, SECTION 90, CLASS 2 WITH 25% FLYASH.
3. UNLESS OTHERWISE NOTED, REINFORCING STEEL FOR DRAINAGE STRUCTURES SHALL MEET THE REQUIREMENTS OF CALTRANS STANDARD SPECIFICATIONS, SECTION 52.
4. UNLESS OTHERWISE NOTED, STRUCTURAL DETAILS SHALL FOLLOW THE APWA STANDARD PLANS SECTION 3 AS APPROPRIATE.
5. STRUCTURES NOT COVERED BY APWA AND STRUCTURAL ELEMENTS FURNISHED BY OTHERS SHALL BE APPROVED BY THE COUNTY ENGINEER.
6. STORM DRAIN PIPE SHALL CONFORM TO THE REQUIREMENTS OF APWA STANDARD SPECIFICATIONS OF CURRENT DATE AND SHALL BE OF THE CLASS, TYPE AND STRENGTH INDICATED ON THE PLANS. THE CONTRACTOR SHALL SUBMIT TO THE COUNTY ENGINEER CERTIFICATES OF COMPLIANCE AND STRENGTH TESTS FOR STORM DRAIN PIPE PRIOR TO ITS INSTALLATION.
7. STORM DRAIN PIPES FLOWING UNDER PRESSURE OR WITH A SLOPE GREATER THAN 20% SHALL BE PROVIDED WITH WATER-TIGHT JOINTS. PIPES WITH A SLOPE OF 20% OR MORE SHALL ALSO BE PROVIDED WITH SLOPE ANCHORS.
8. ALL HDPE PIPES SHALL HAVE WATER-TIGHT JOINTS PER ASTM D3212 FOR LESS THAN 54 IN DIAMETER, AND BE SEAL-TESTED PER ASTM C-1103 OR F-1417.
9. FOR ASPHALT PAVING AND DIKES, REFER TO 1-010, NOTE 16.

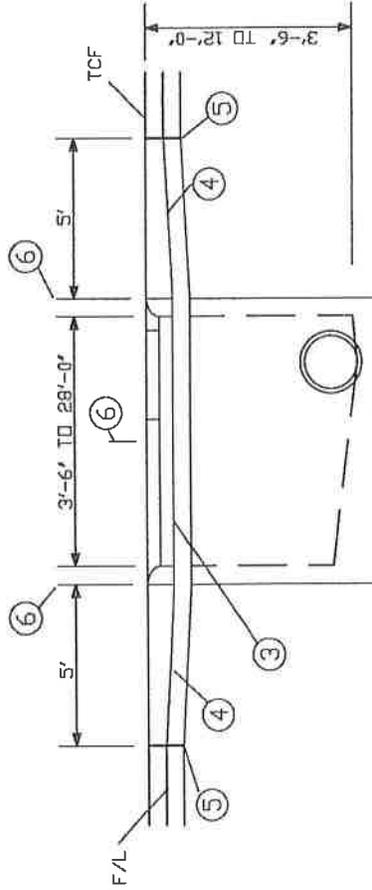
APPROVED BY:	COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION
 DIRECTOR OF PUBLIC WORKS	REVISION BOX
11/1/2011 DATE	GENERAL DRAINAGE FACILITIES NOTES

NOTES: (REFER TO 3-010 FOR ADDITIONAL NOTES)

1. FOR AN OPEN CURB DROP INLET AT THE SIZE INDICATED, THE APWA STANDARD PLAN 313 CASE 'F' SHALL BE FOLLOWED WITHOUT GRATE. FOR OTHER SIZES, REFER TO THE PROJECT PLANS.
2. STANDARD MANHOLE COVERS 24" OR LARGER SHALL BE PLACED NEAR THE OUTLET AND OVER A SERIES OF STEPS PER APWA STANDARD PLANS SECTION 3.
3. THE FLOWLINE AT THE CURB OPENING SHALL BE DEPRESSED 3" AND SET BACK 1' FROM THE FLOWLINE TO MATCH CURB STANDARD 4-030.
4. GUTTER TRANSITIONS ON EACH SIDE OF THE INLET SHALL DEPRESS THE FLOWLINE ELEVATION AS NEEDED OVER A LENGTH OF 5'. THE TRANSITIONS SHALL ALSO TAPER FROM THE GUTTER LIP TO THE APRON LIP 4' MIN OUT FROM THE FLOW LINE.
5. EXPANSION JOINTS 1/4" THICK SHALL BE PLACED AT THE OUTSIDE ENDS OF THE TRANSITION CURBS. THE JOINTS SHALL EXTEND ACROSS THE SIDEWALK, CURB, AND GUTTER.
6. WEAKENED-PLANE JOINTS 1-1/2" DEEP SHALL BE PLACED IN THE TOP SLAB AT THE ENDS OF THE BASIN AND AT 10' INTERVALS ALONG THE LENGTH OF THE BASIN. THE JOINTS SHALL EXTEND ACROSS THE SIDEWALK, CURB, AND GUTTER.
7. THE GUTTER APRON SHALL BE SLOPED TO DAYLIGHT AT STREET GRADE 4' MIN FROM THE FLOWLINE FOR THE ENTIRE LENGTH SHOWN.



PLAN VIEW



ELEVATION

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

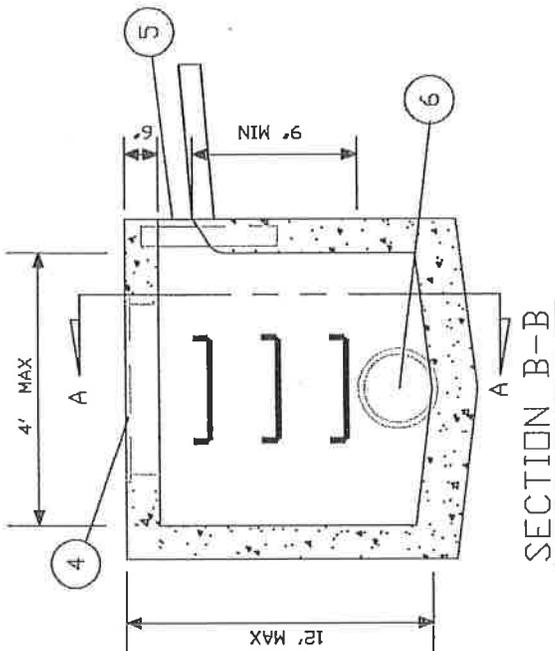
Scott D. [Signature]
DIRECTOR OF PUBLIC WORKS

3-020 OPEN CURB DROP INLET

REVISION DATES

DATE

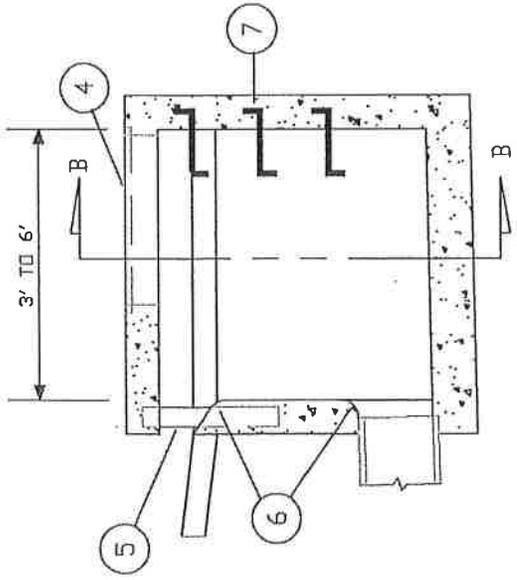
11/1/2011



SECTION B-B

NOTES: (REFER TO 3-010 FOR ADDITIONAL NOTES)

1. TYPE C INLET BASIN SHALL BE PROVIDED WITH A WINDOW ON UP TO FOUR SIDES TO RECEIVE STORMWATER. WHEN THE WINDOW GAP IS MORE THAN 6" HIGH, HORIZONTAL TRASH BARS OF 3/4" GALV. PIPE SHALL BE PROVIDED AT 6" MAX SPACINGS.
2. FOR BASINS LARGER THAN SHOWN, SPECIAL DESIGNS SHALL BE PROVIDED ON THE PROJECT PLANS.
3. FOR CONCRETE THICKNESS AT THE SIDES, FLOOR, AND TOP AND FOR REINFORCEMENT, SEE APWA 309 CATCH BASIN DETAILS.



SECTION A-A

4. A 24" OR LARGER MANHOLE FRAME AND COVER SHALL BE PROVIDED WITH EXTRA REINFORCEMENT AS SHOWN IN THE APWA DETAILS.
5. THE OPEN WINDOW CORNER SHALL BE PROVIDED WITH A 3" GALV PIPE SUPPORT 18" LONGER THAN THE VERTICAL OPENING. THE PIPE IS TO BE SLOTTED AND WELDED TO THE REBAR BOTH TOP AND SIDE.
6. THE OUTLET PIPE SHALL BE PLACED AT THE MIDPOINT OF THE WALL WITH ENTRANCE ROUNDED TO 3" RADIUS.
7. WHEN THE HEIGHT IS GREATER THAN 3.5', STEPS SHALL BE PROVIDED AT 12" INTERVALS PER APWA.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

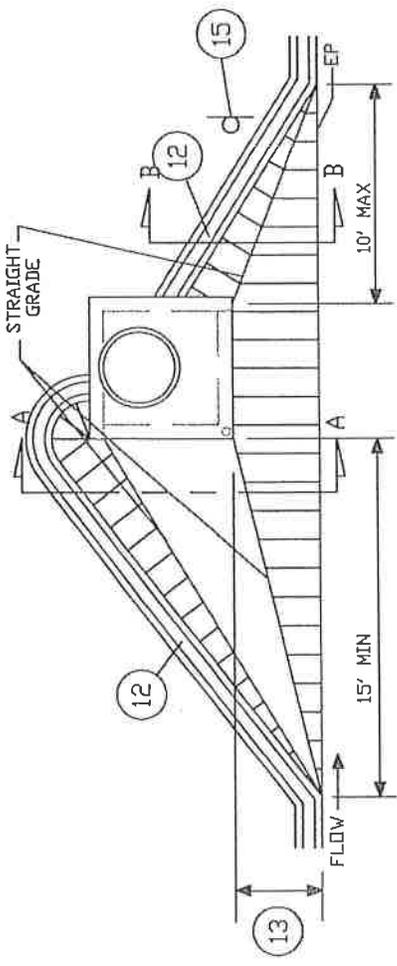
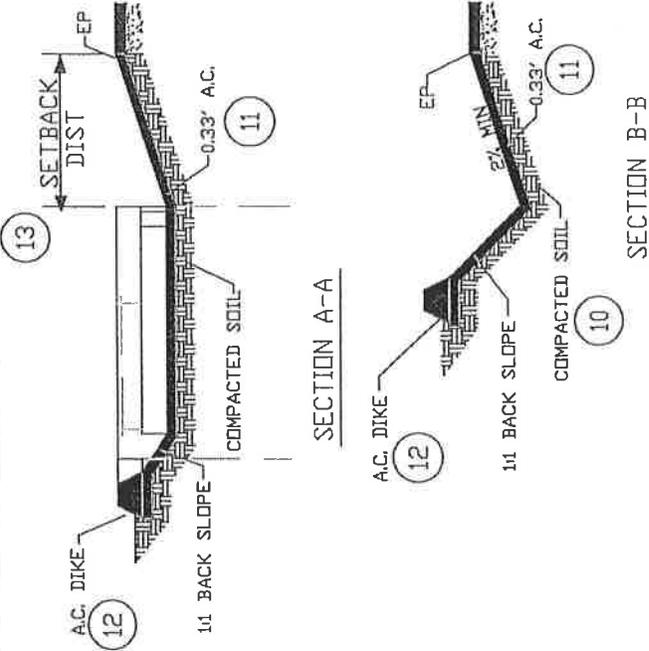
[Signature]
DIRECTOR OF PUBLIC WORKS

TYPE C DROP INLET

3-050
SHT 1/2

REVISION BOX

1/1/2011
DATE



PLAN

NOTES: (REFER TO 3-010 FOR ADDITIONAL NOTES)

- 8. THE TYPE C CATCH BASIN SHALL HAVE AN OPEN INLET ON AT LEAST 2 SIDES.
- 9. THE APRON ON THE APPROACH SIDE SHALL BE AT LEAST 15' AND ON THE DOWNSTREAM SIDE SHALL BE AT A MAXIMUM OF 10' WHERE THE BASIN IS A SUMP, BOTH APRONS SHALL BE 15' MINIMUM.
- 10. THE APRONS SHALL BE PAVEMENT OVER COMPACTED, STERILIZED NATIVE SOIL. IF THE SOIL WILL NOT COMPACT TO 90% MAXIMUM DENSITY, 6" OF CLASS 4 BASE SHALL BE PLACED AND COMPACTED BEFORE PAVING.
- 11. PAVEMENT SHALL BE ASPHALT CONCRETE 4" THICK, OR 4" OF CALTRANS CLASS 3 CONCRETE REINFORCED WITH 6x6 WIRE MESH OVER SOIL, OR 4" OF REINFORCED SHOTCRETE OVER SOIL.
- 12. APRONS SHALL BE EDGED WITH A CALTRANS TYPE 'A' A.C. DIKE.
- 13. ON RURAL ROADS WITHOUT CURBS, THE SET-BACK DISTANCE FROM THE EP SHALL BE 7' OR GREATER AS RECOMMENDED BY THE CURRENT AASHTO ROADSIDE DESIGN GUIDE.
- 14. WHERE RIGHT-OF-WAY LIMITS WILL NOT ALLOW THE REQUIRED SET-BACK, A PLAN FOR THE PROPOSED DROP INLET BASED ON THE AASHTO ROADSIDE DESIGN MANUAL SHALL BE APPROVED BY THE COUNTY ENGINEER. ADDITIONAL RIGHT-OF-WAY MAY BE REQUIRED.
- 15. REFLECTIVE OBJECT MARKER PER CAL-MUTCD.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

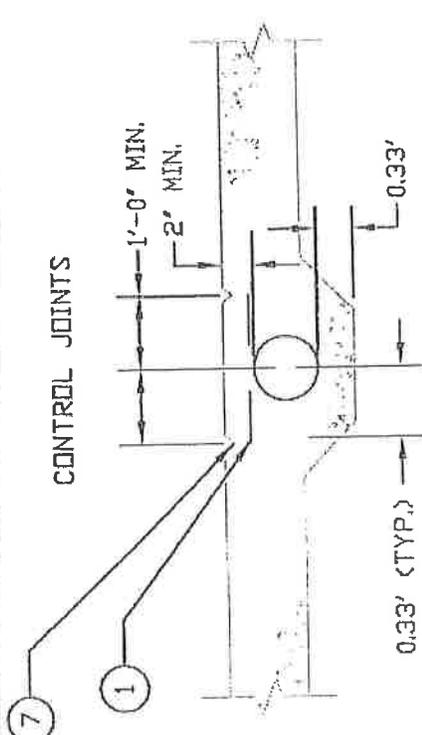
[Signature]
DIRECTOR OF PUBLIC WORKS

TYPE C DROP INLET

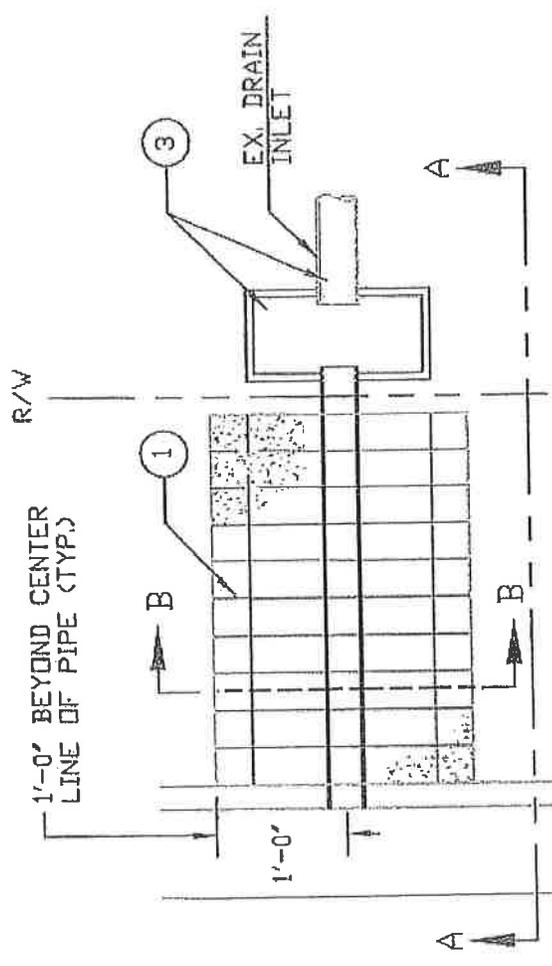
3-050
SHT 2/2

REVISION BOX

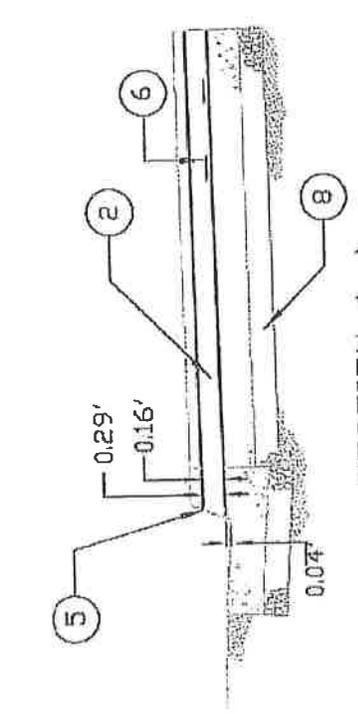
11/2011
DATE



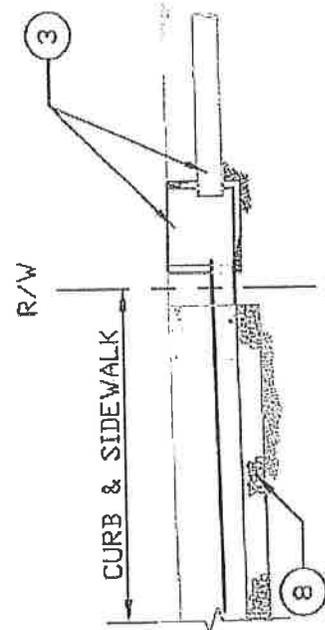
SECTION B-B



Plan View



SECTION A-A



SECTION A-A

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
DIRECTOR OF PUBLIC WORKS

SIDEWALK UNDERDRAIN
WITH PIPE

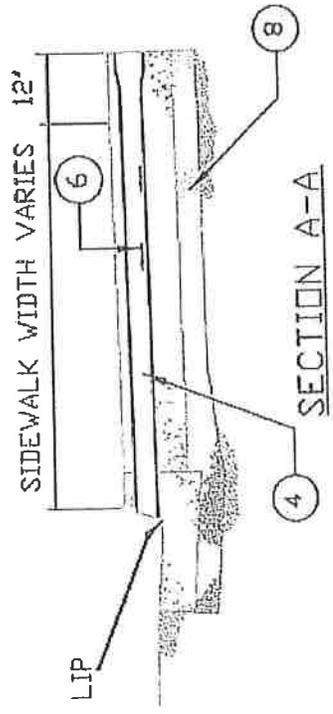
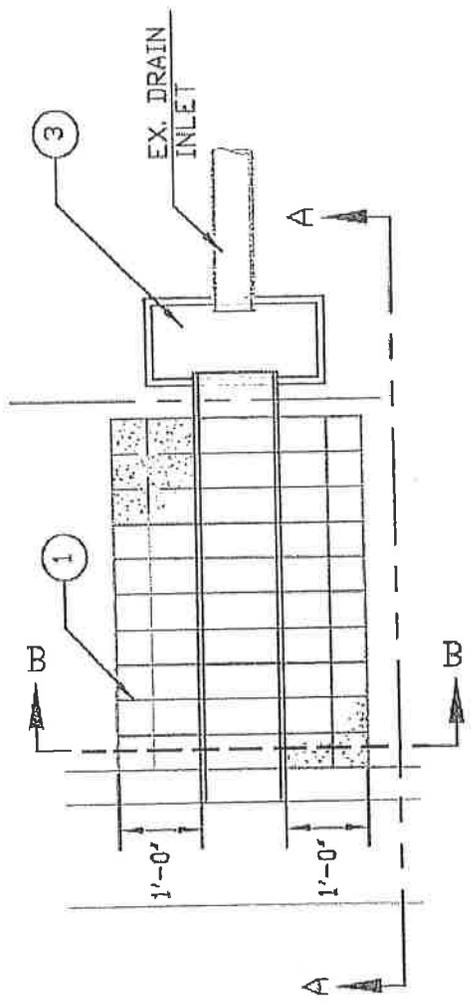
[Signature]
DATE

3-060
SHEET 1/3

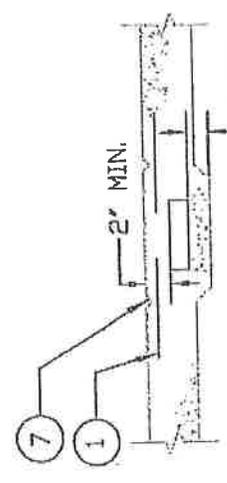
REVISION DATE

Plan View

R/W

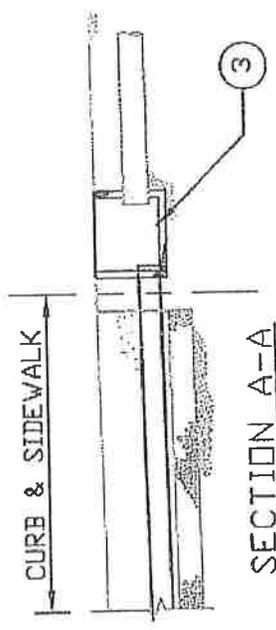


SECTION A-A



SECTION B-B

R/W



SECTION A-A

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
DIRECTOR OF PUBLIC WORKS

1/1/2004
DATE

SIDEWALK UNDERDRAIN
RECTANGULAR

3-060

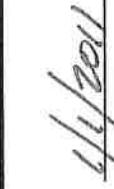
SHEET 2/3

REVISION DATE

1. 6 " X 6 IN. SPACING GALVANIZED MESH SHALL EXTEND 1'-0" BEYOND CENTERLINE OF PIPE OR SHALL EXTEND 1'-0" BEYOND OUTER EDGE OF RECTANGULAR CAST IRON CONDUIT.
2. 3" PVC PIPE SCHEDULE 40 (MINIMUM) OR APPROVED EQUAL OR BETTER, PIPE SLOPE SHALL BE 2% AND SHALL BE PARALLEL WITH SIDEWALK SURFACE AND CENTERED ON CONTROL JOINTS.
3. WHEN A DRAIN PIPE FROM A PROPERTY OWNER IS LARGER THAN 3" DIA., A CLEANOUT BOX SHALL BE USED UPSTREAM OF THE SIDEWALK DRAIN AND OUTSIDE OF THE COUNTY'S RIGHT-OF-WAY. NOTE: WHEN A SINGLE 3" MINIMUM SIZE PIPE IS USED BY THE PROPERTY OWNER, A CLEANOUT BOX IS NOT REQUIRED.
4. 3"x12.5" (MAXIMUM) RECTANGULAR CAST IRON CONDUIT - ALHAMBRA, A-470, OR APPROVED EQUAL.
5. CORING FACE OF CURB SHALL BE REQUIRED. NOTE: CORING IS REQUIRED WHEN MONOLITHIC POUR IS NOT PROVIDED. DRY PACK GROUT AROUND PIPE TO FILL THE GAP.
6. MAXIMUM ONE DRAIN PER SITE, MAXIMUM OF 2 CUBIC FEET PER SECOND (FLOW RATE) AND 2 FEET PER SECOND (VELOCITY) MAXIMUM ALLOWED AT OUTLET.
7. DEEP CONTROL JOINTS AT LOCATION SHOWN.
8. 4" COMPACTED CLASS II BASE, 90% RELATIVE COMPACTION OR APPROVED NATIVE.

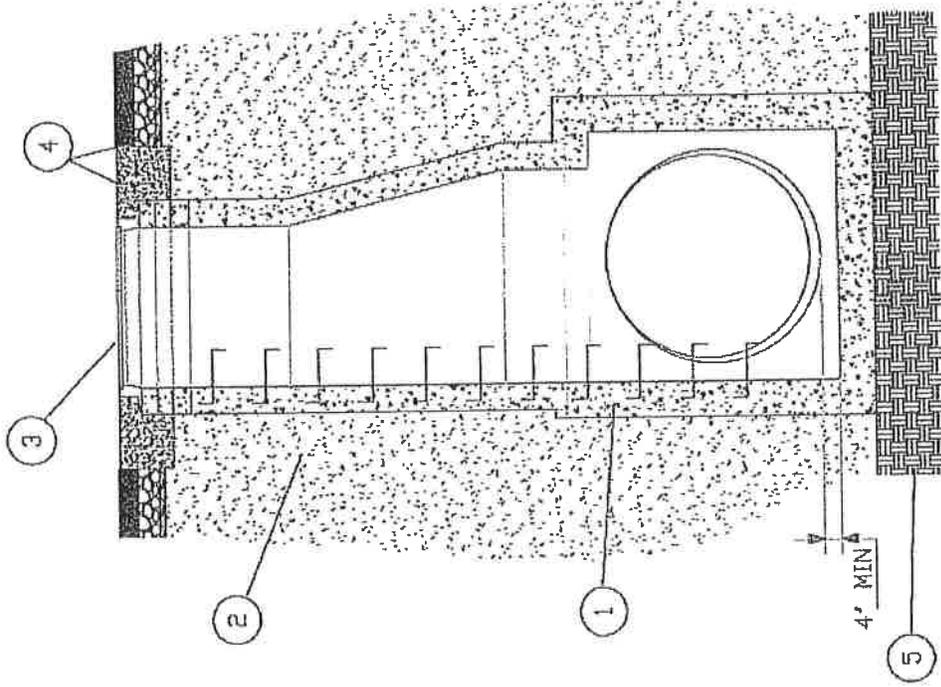
OTHER NOTES:

- UNDERDRAIN SHALL NOT BE WITHIN 5' OF A DRIVEWAY APRON OR CURB RETURN.
- IF SIDEWALK REMOVAL IS REQUIRED, A FULL PANEL SHALL BE REPLACED JOINT TO JOINT.
- SUBGRADE SHALL BE EXCAVATED SO THAT 4 INCHES OF CONCRETE WILL BE UNDER THE DRAIN AND A MINIMUM OF 2 INCHES OF CONCRETE COVERAGE.
- CONCRETE SHALL BE CALTRANS CLASS 3 OR BETTER WITH 25% FLY-ASH.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION	APPROVED BY:	 DIRECTOR OF PUBLIC WORKS
3-060 SHEET 3/3	REVISION DATE	 DATE
SIDEWALK UNDERDRAIN		

NOTES (REFER TO 3-010 FOR ADDITIONAL NOTES)

1. STRUCTURAL DETAILS SHALL FOLLOW APWA STANDARD PLANS, SECTION 3 AS APPROPRIATE FOR THE DEPTH AND LINE SIZES. CERTIFIED PRE-CAST ELEMENTS MAY BE USED WITH AN APPROVED SUBMITTAL. FOR ELEMENTS TO BE CAST IN PLACE, ALL CONCRETE SHALL BE CALTRANS CLASS 2 WITH 25% FLYASH.
2. TRENCH BACKFILL COMPACTED TO 95% OF MAXIMUM DENSITY MAY BE USED FOR FOUNDATIONS IN SHOULDER AREAS AND WHERE ALUMINUM STRUCTURES ARE PRESENT. WHERE SPACE WILL NOT ALLOW STANDARD COMPACTION EQUIPMENT TO OPERATE, THE TRENCH SHALL BE FILLED WITH A 1-SACK SLURRY CEMENT BACKFILL PER CALTRANS STANDARD SPECIFICATIONS, SECTION 19.
3. MANHOLE FRAME AND COVER SHALL BE 24" AND SET 1/8" BELOW STREET GRADE OVER A SERIES OF RINGS FOR LATER ADJUSTMENT.
4. A CONCRETE COLLAR SHALL BE PROVIDED ALSO BELOW STREET GRADE TO ENCIRCLE THE MANHOLE FRAME. IT SHALL BE 1' DEEP AND EXTEND 1' BEYOND THE FRAME AND SET 1/8" BELOW STREET GRADE.
5. THE FOUNDATION SHALL BE 3/4" WASHED CRUSHED ROCK AND AT LEAST 1' THICK.
6. FOR PIPE CONNECTIONS, REFER TO STANDARD 3-115.



ELEVATION

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
DIRECTOR OF PUBLIC WORKS

STORM DRAIN MANHOLE

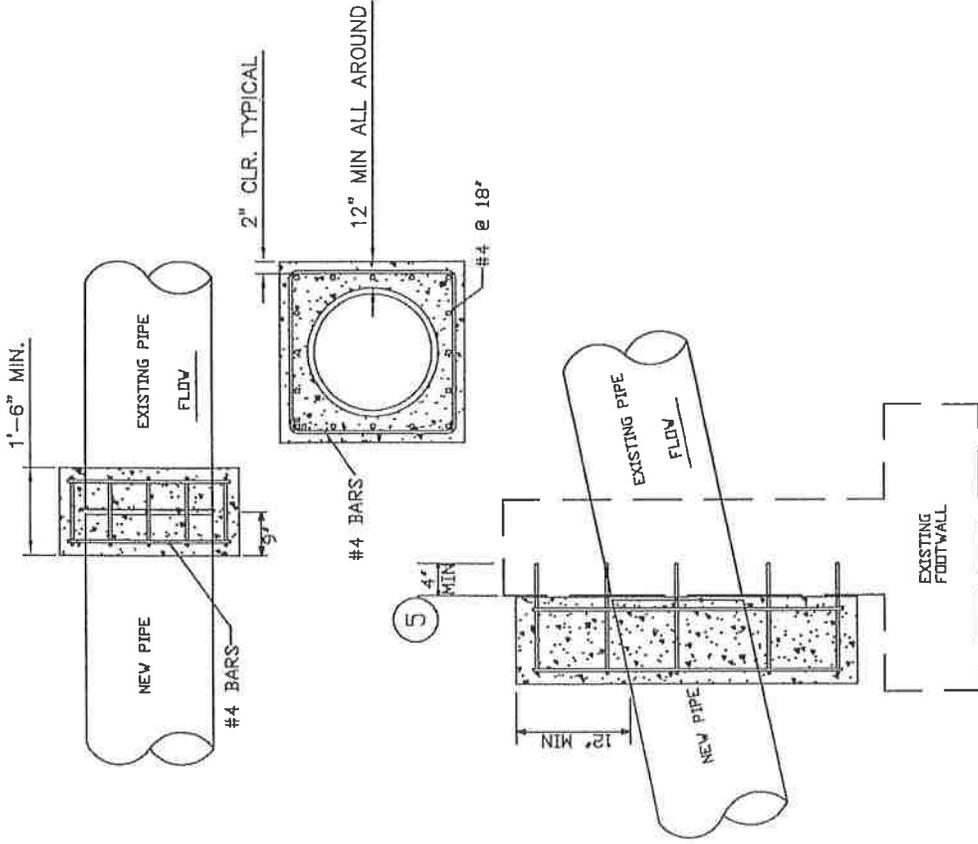
3-080

REVISION BOX

1/1/2011
DATE

NOTE: (REFER TO 3-010 FOR ADDITIONAL NOTES)

1. CONCRETE COLLARS SHALL BE PROVIDED TO JOIN DRAIN PIPES MISALIGNED UP TO 15 DEGREES AT THE ANGLE-POINT.
2. A CLEANOUT SHALL BE PROVIDED WHERE THE DIAMETER OF THE PIPES CHANGES AND WHERE THE ALIGNMENT DEVIATES MORE THAN 15 DEGREES.
3. CONCRETE SHALL BE CALTRANS MINOR CONCRETE WITH 25% FLYASH.
4. REBAR SHALL HAVE A CLEAR DISTANCE OF 2" MIN. ALL AROUND.
5. WHERE THE CONNECTION IS TO BE MADE AT AN EXISTING HEADWALL OR FOOTWALL, THE LONGITUDINAL REBARS SHALL BE DOWELED IN AT LEAST 4' AS SHOWN.



COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
DIRECTOR OF PUBLIC WORKS

3-115

CONCRETE COLLAR FOR STORM DRAINS

REVISION DATE

DATE

1/1/2011

CURB AND DRIVEWAY INDEX

<u>NUMBER</u>	<u>TITLE</u>
4-010	CURB AND DRIVEWAY GENERAL NOTES
4-020	SPANDREL AND CROSS GUTTER (SHEETS 1-2)
4-030	CURBS AND GUTTERS
4-035	MEDIAN STRIPS
4-040	DRIVEWAY DETAILS (SHEETS 1-2)
4-045	MONOLITHIC CURB AND SIDEWALK
4-050	DRIVEWAY SPACING
4-060	DRIVEWAY GRADE- BREAKS

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:


DIRECTOR OF PUBLIC WORKS

11/1/2011
DATE

4-000

CURB AND DRIVEWAY INDEX

REVISION DATE

(REFER TO 1-010 FOR ADDITIONAL NOTES)

1. FOR SPECIFICATIONS FOR PORTLAND CEMENT CONCRETE CLASS, COMPONENTS, AND PROCEDURES FOR MIXING, POURING, FINISHING, CURING, & CLEANING, REFER TO CALTRANS STANDARD SPECIFICATIONS, SECTION 90.
2. UNLESS OTHERWISE SPECIFIED, ALL CONCRETE SHALL BE CALTRANS CLASS 2 WITH 25% FLY-ASH CONCRETE WITH A LIGHT BROOM FINISH.
3. THE MINIMUM FALL FOR ALL GUTTERS ON STREETS AND CUL-DE-SACS IS 0.5%.
4. FOR SPECIFICATIONS FOR CLASS 2 BASE AND CLASS 4 SUBBASE, REFER TO SECTIONS 25 AND 26 OF THE CALTRANS STANDARD SPECIFICATIONS.
5. A 6" LAYER OF CLASS 2 BASE SHALL BE PLACED AND COMPACTED TO 95% OF MAXIMUM DENSITY.
6. EXPANSION JOINTS SHALL BE PROVIDED WITH CALTRANS APPROVED FILLER PAPER 1/2" THICK.
7. WEAKENED-PLANE JOINTS SHALL BE TOOLED FOR A DEEP GROOVE 1/3 OF THE THICKNESS OF THE CONCRETE.
8. WHERE CALLED FOR, SCORELINES SHALL BE TOOLED WITH A 1/4" DEEP GROOVE.
9. FOR ALL ASPHALT DIKES, REFER TO CALTRANS STANDARD PLANS.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:


DIRECTOR OF PUBLIC WORKS

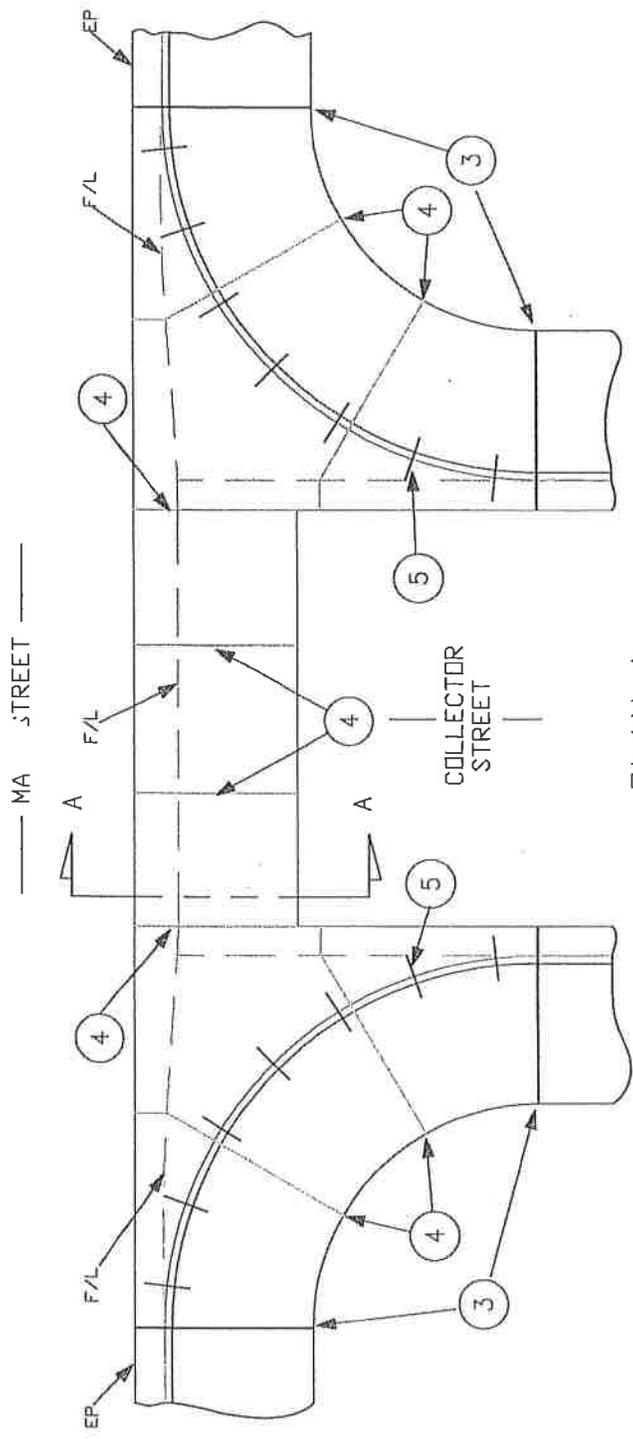
4-010

CURB AND DRIVEWAY GENERAL NOTES

REVISION DATE

DATE

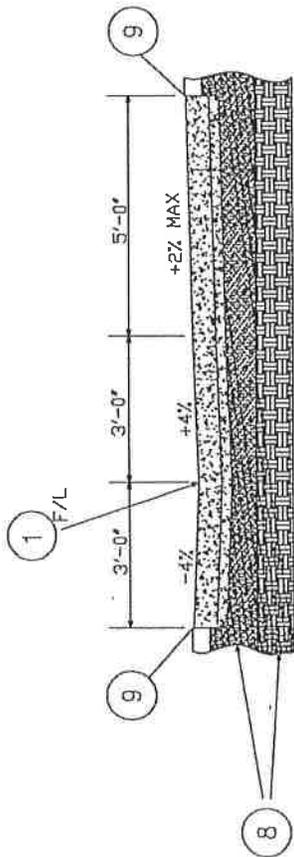
1/1/2011



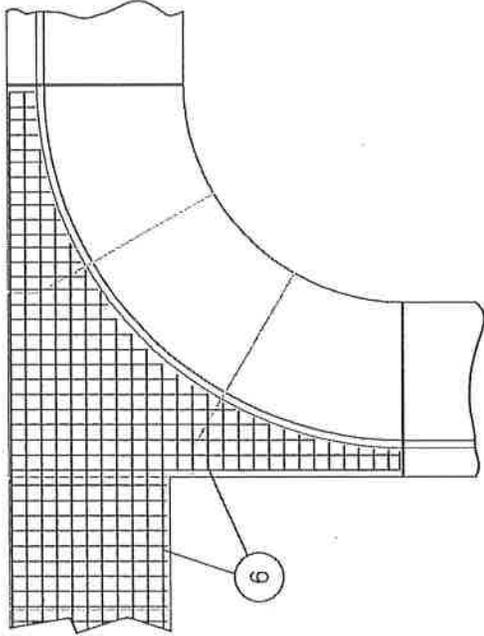
NOTES: (REFER TO 4-010 FOR ADDITIONAL NOTES)

1. CROSS-GUTTERS SHALL BE 8" THICK, 11' WIDE AND SPAN FROM SPANDREL TO SPANDREL.
2. SPANDRELS, CURB RETURNS, AND CROSS-GUTTERS SHALL BE 8" THICK. THE EDGE OF PAVEMENT ON THE MAIN STREET SHALL BE STRAIGHT AND THE FLOWLINE OFFSET AS SHOWN ON SHEET 2.
3. EXPANSION JOINTS SHALL BE PLACED AT THE ENDS OF THE CURB RETURNS AS SHOWN.
4. WEAKENED-PLANE JOINTS SHALL BE PLACED ALONG THE CROSS-GUTTER AT EQUAL INTERVALS NO GREATER THAN 10' AND THROUGH THE CURB RETURNS AS SHOWN.
5. WHERE CURB RETURN AND SPANDREL ARE NOT POURED MONOLITHICALLY, #3 REBAR 1' LONG SHALL BE DOWELLED AT 4' CENTERS AS SHOWN.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION	APPROVED BY:		
4-020 SHT 1/2	REVISION DATES	 DIRECTOR OF PUBLIC WORKS	1/1/2011 DATE



SECTION A-A



PLAN B

NOTES: (REFER TO 4-010 FOR ADDITIONAL NOTES)

- 6. SPANDREL AND CROSS-GUTTER SHALL BE REINFORCED WITH #4 REBAR GRADE #40 ON 12" CENTERS BOTH DIRECTIONS AS SHOWN ON SHEET 2. CLEAR DISTANCE SHALL BE 2" ALL AROUND AND 3" CLEAR OF SUBGRADE.
- 7. CONTOUR OF THE CROSS-GUTTER SHALL PROVIDE THE FLOWLINE 3' FROM THE MAIN EDGE WITH A 4% SLOPE ON BOTH SIDES AS SHOWN. THE OTHER 5' SHALL BE CONTOURED TO CONFORM TO THE ROADWAY PAVEMENT WITH A MAXIMUM SLOPE OF 2% PER ADA.
- 8. SUBGRADE COMPACTION SHALL CONFORM TO NOTE 5 OF 4-010.
- 9. PAVING SHALL LEAVE AN ASPHALT LIP 1/4" ABOVE THE TOP OF THE ADJACENT CONCRETE AS MEASURED AFTER COMPACTION.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
DIRECTOR OF PUBLIC WORKS

SPANDRELS AND CROSS-GUTTERS

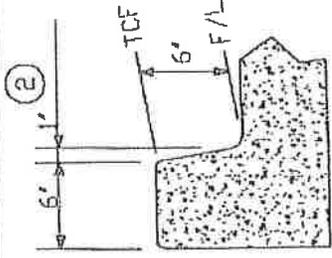
4-020
SHT 2/2

REVISION BOX

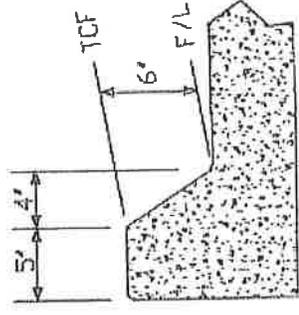
1/4/2011
DATE

NOTES: (REFER TO 4-010 FOR ADDITIONAL NOTES)

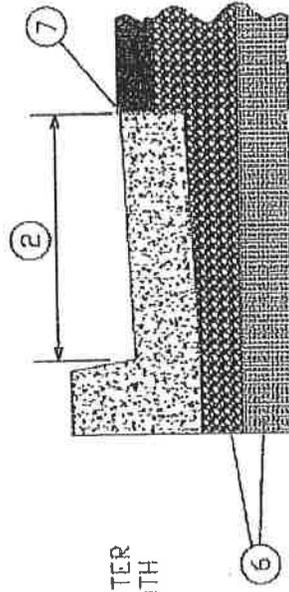
1. FOR CURING, FINISHING, AND CLEANING, SEE THE CURRENT CALTRANS STANDARD SPECIFICATIONS, SECTION 90.
2. CURB AND GUTTER SHAPES AND RADII ARE SPECIFIED IN THE CALTRANS STANDARD PLANS FOR TYPES A AND B. THE TYPE A FACE IS MODIFIED FOR A STEEPER BATTER AS SHOWN. THE STANDARD WIDTH OF GUTTER IS 18" FOR RESIDENTIAL STREETS AND 24" FOR MAJOR ROADS. FOR REPAIR AND REPLACEMENT PROJECTS, THE EXISTING WIDTH SHALL GOVERN. GUTTER CROSS-SLOPES SHALL BE 5% MAXIMUM.
3. 1/2' EXPANSION JOINTS SHALL BE PLACED AT VAULTS, DROP INLETS, CURB RETURNS, AND EVERY 200' OF RUN. EXPANSION PAPER SHALL CONFORM TO THE CALTRANS STANDARD SPECIFICATIONS.
4. WEAKENED-PLANE JOINTS SHALL BE MADE NO GREATER THAN 10' APART.
5. WHEN THE CURB IS EXTRUDED, THE EXTRUDING MACHINE MUST BE CAPABLE OF PLACING CONCRETE IN ACCORDANCE WITH THE CALTRANS STANDARD SPECIFICATIONS.
6. SUBGRADE DEPTH AND COMPACTION SHALL CONFORM TO NOTES 4 AND 5 OF 4-010.
7. PAVING SHALL LEAVE AN ASPHALT LIP 1/4' MAX. ABOVE THE TOP OF THE CONCRETE GUTTER AS MEASURED AFTER COMPACTION.



TYPE A
CURB FACE



TYPE B
CURB FACE



COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

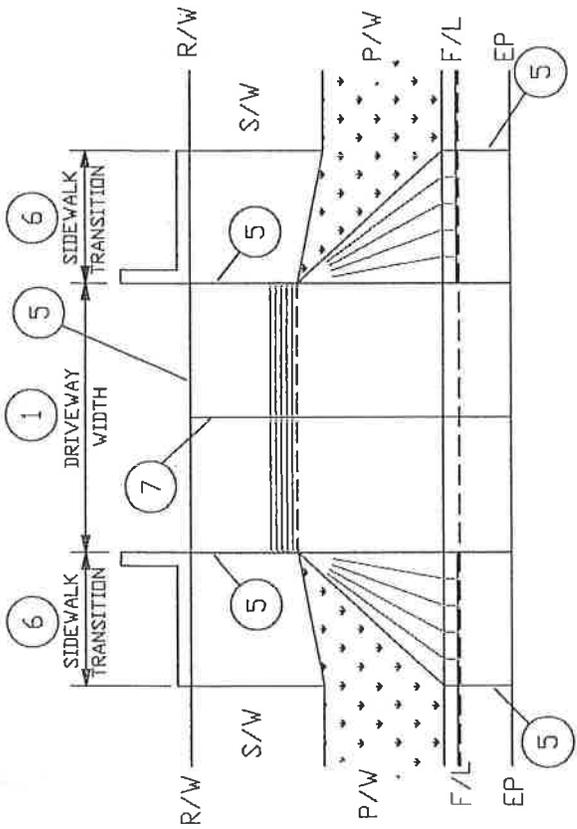
[Signature]
DIRECTOR OF PUBLIC WORKS

[Signature]
DATE

CURBS AND GUTTERS

4-030

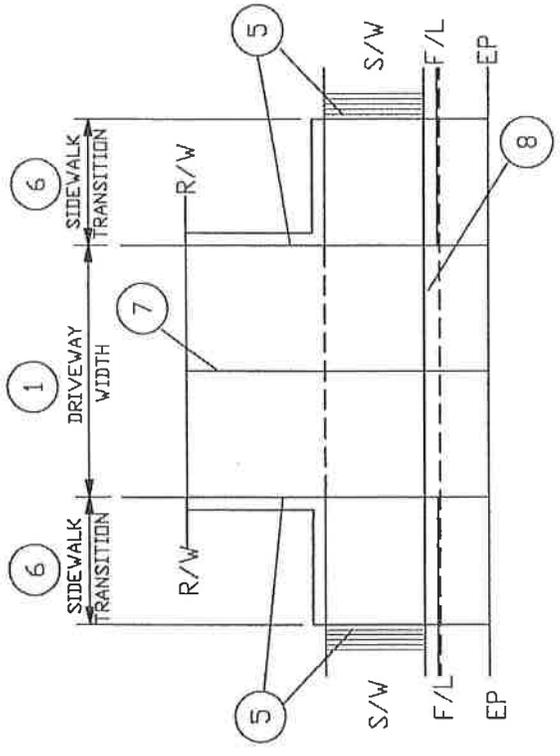
REVISION DATES



PLAN A

NOTES: (REFER TO 4-010 FOR ADDITIONAL NOTES)

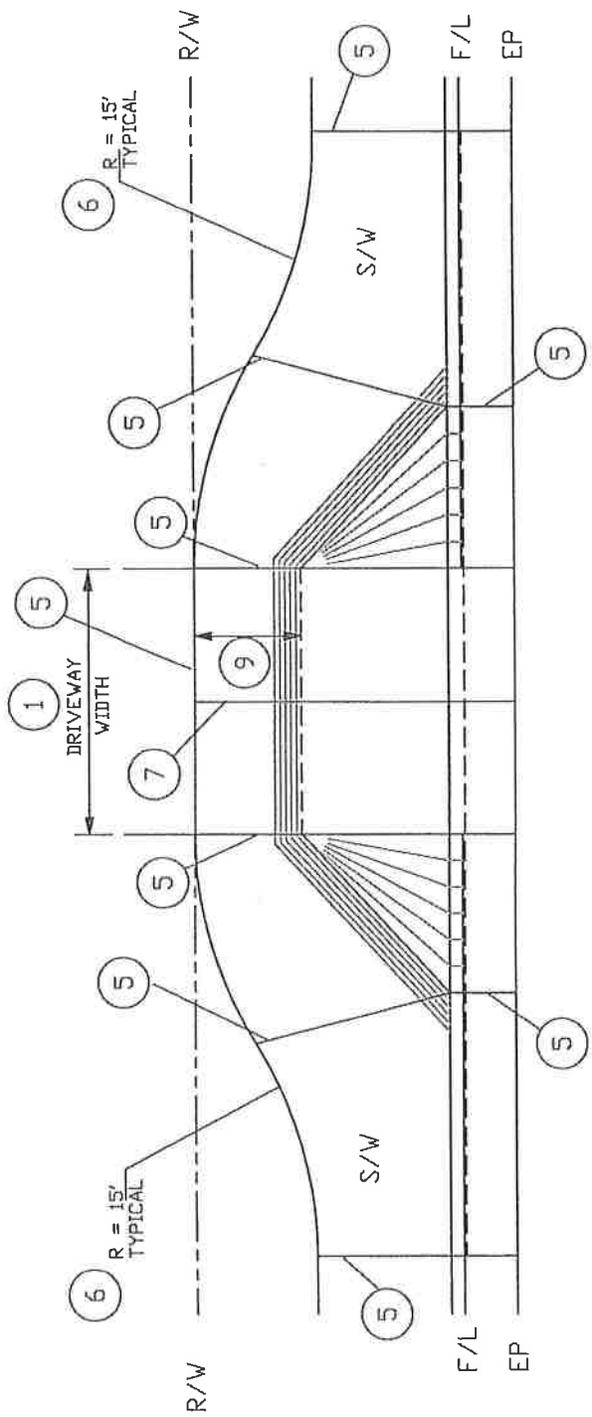
1. DRIVEWAY WIDTH FOR PRIVATE RESIDENCES SHALL BE 10' - 30', COMMERCIAL DRIVEWAYS SHALL BE 25' - 40' WIDE. FOR MULTIPLE DRIVEWAYS ON THE SAME PARCEL, THE TOTAL WIDTH SHALL FALL WITHIN THESE LIMITS.
2. ALL SLOPES AND SURFACES SHALL BE ADA COMPLIANT.
3. PORTLAND CEMENT CONCRETE SHALL BE CALTRANS CLASS 2 WITH 25% FLY ASH. FOR RESIDENTIAL DRIVEWAYS, THE THICKNESS SHALL BE 6", FOR COMMERCIAL DRIVEWAYS, THE THICKNESS SHALL BE 8".
4. SUBGRADE DEPTH AND COMPACTION SHALL CONFORM TO NOTES 4 AND 5 OF 4-010.



PLAN B

5. WEAKENED-PLANE JOINTS SHALL BE PLACED WHERE SIDEWALKS, CURBS, AND GUTTERS MEET WITH THE DRIVEWAY RAMP AS SHOWN. WHERE THE DRIVEWAY ITSELF IS CONCRETE, THIS JOINT SHALL ALSO BE PLACED AT THE BACK OF THE RAMP.
6. WHERE NECESSARY, SECTIONS OF ADJOINING SIDEWALK MAY BE DEPRESSED TO MAKE AN ADA COMPLIANT TRANSITION TO THE DRIVEWAY. RETAINING CURBS MAY BE NECESSARY.
7. WEAKENED-PLANE JOINTS SHALL BE MADE ALONG THE CENTER OF THE DRIVEWAY AS SHOWN ON 10' SPACING WHEN THE DRIVEWAY IS WIDER THAN 10'.
8. A SCORELINE SHALL CONTINUE THE LINE OF THE CURB BACK ACROSS THE DRIVEWAY RAMP.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION	APPROVED BY:		
4-040 SHT 1/2	REVISION DATE	DIRECTOR OF PUBLIC WORKS	DATE 1/1/2011



NOTES: (REFER TO 4-010 AND SHEET 1 FOR ADDITIONAL NOTES) OTHER NOTES:

9. THE SIDEWALK BEHIND THE DRIVEWAY APRON SHALL BE AT LEAST 4' WIDE WITH A 2% MAX CROSS-SLOPE

REFER TO APWA STANDARD PLANS REGARDING TYPE A AND B DRIVEWAYS.

WHERE PLAN A (TYPE B OF APWA STANDARD PLANS) DRIVEWAY IS IMPRACTICAL, MODIFIED TYPE B DRIVEWAY OF APWA STANDARD PLANS (PLAN C) SHALL SERVE AS AN ALTERNATE.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
DIRECTOR OF PUBLIC WORKS

4-040
SHT 2/2

DRIVEWAY DETAILS

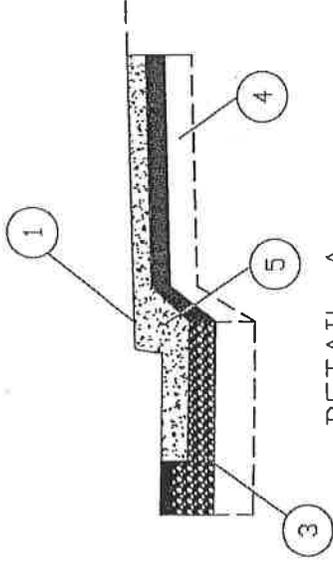
REVISION DATE

DATE

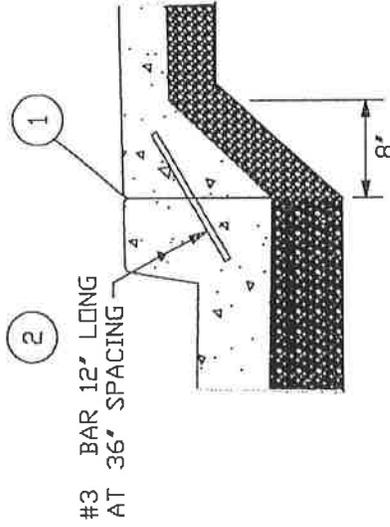
1/1/2011

NOTES: (REFER TO 4-010 FOR ADDITIONAL NOTES)

1. WHERE SIDEWALK AND CURB ABUT, IT IS RECOMMENDED THAT THE TWO BE POURED AS ONE PIECE AS SHOWN IN DETAIL A. PROVIDE A 1/2" RADIUS TOOL-MARK SHALL INDICATE THE SEPARATION OF CURB AND SIDEWALK.
2. WHERE CURB AND SIDEWALK ABUT, BUT ARE TO BE BUILT SEPARATELY, DOWELS SHALL BE PLACED AS SHOWN IN DETAIL B.
3. BASE AND SUBGRADE COMPACTION FOR THE GUTTER SHALL CONFORM TO NOTE 4 OF 4-010.
4. BASE AND SUBGRADE FOR THE SIDEWALK SHALL COMPLY WITH NOTE 3 OF 5-010.
5. CURB, GUTTER, AND SIDEWALK DETAILS ARE AS SHOWN ELSEWHERE IN THESE STANDARDS.



DETAIL A



DETAIL B

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION		APPROVED BY:
4-045	MONOLITHIC CURB AND SIDEWALK	<i>Monty W. ...</i> DIRECTOR OF PUBLIC WORKS
		11/1/2011 DATE
REVISION DATE		

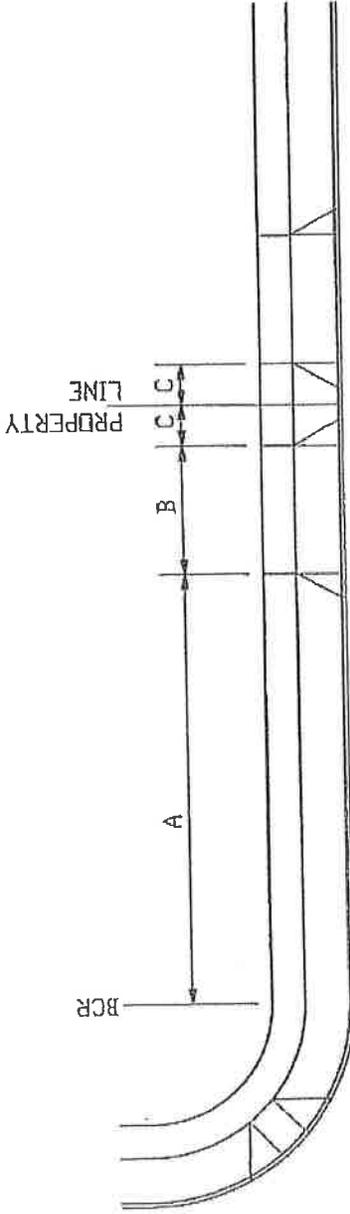


TABLE 1

CASE	A	B	C
1	5' MIN	10' MIN TO 30' MAX	5' MIN
2	250' MIN (4) (6)	25' MIN TO 40' MAX (5)	75' MIN (6)

NOTES: REFER TO SHEET 4-010 FOR ADDITIONAL NOTES

1. USE TABLE 1 FOR SPACING WHERE A SINGLE DRIVEWAY SERVES EACH PARCEL.
2. CASE 1 IS FOR DRIVEWAYS FOR SINGLE FAMILY RESIDENCES ON RESIDENTIAL STREETS; CASE 2 IS FOR ALL OTHER DRIVEWAYS.
3. THE NEAREST EDGE OF ANY DRIVEWAY FLARE MUST BE AT LEAST 3' FROM THE CENTERLINE OF A FIRE HYDRANT, UTILITY POLE, DROP INLET AND/OR APPURTENANCES, TRAFFIC SIGNAL INSTALLATION, OR LIGHT STANDARDS, AND MUST ALSO BE AT LEAST 2' FROM THE NEAREST PROJECTION OF SUCH INSTALLATION.
4. SPACING SHALL BE WIDEST POSSIBLE.
5. WIDER DRIVEWAYS SHALL REQUIRE AN APPROVED MEDIAN.
6. OR AS APPROVED BY THE COUNTY TRAFFIC ENGINEER.

APPROVED BY:

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

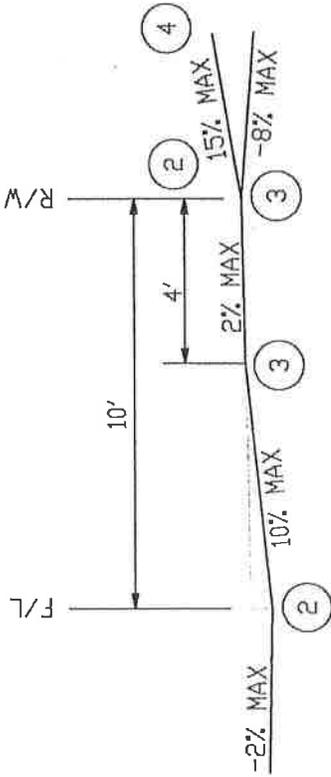
[Signature]
DIRECTOR OF PUBLIC WORKS

1/1/2011
DATE

REVISION DATE

4-050

DRIVEWAY SPACING



NOTES: REFER TO SHEET 4-010 FOR ADDITIONAL NOTES

1. GRADE-BREAK REFERS TO A SUDDEN CHANGE IN SLOPE SUCH AS AT THE FLOW LINE WHERE THE CHANGE FORMS A SAG AND AT THE RIGHT-OF-WAY WHERE THE DRIVEWAY MAY FORM A CREST OR A SAG.
2. SAG BREAKS SHALL BE LIMITED TO 15% TOTAL CHANGE IN SLOPE TO PREVENT SCRAPING OF VEHICAL BUMPERS.
3. CREST BREAKS SHALL BE LIMITED TO 10% TO PREVENT BOTTOMING OUT OF VEHICLE.
4. GRADES SHALL NOT EXCEED 15% FOR SHORT DRIVEWAYS. WHERE FIRE APPARATUS MAY BE EXPECT TO USE IT, THE DRIVEWAY GRADE SHALL BE APPROVED BY THE FIRE DEPARTMENT.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

Scott L. ...
 DIRECTOR OF PUBLIC WORKS

4-060

DRIVEWAY GRADE-BREAKS

REVISION DATE

DATE

1/1/2011

SIDEWALK DETAILS

<u>NUMBER</u>	<u>TITLE</u>
5-010	GENERAL SIDEWALK NOTES
5-030	CURB RAMP DETAILS
5-040	SIDEWALK DETAILS
5-045	SIDEWALK TRANSITIONS
5-050	SIDEWALK UTILITIES

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:


DIRECTOR OF PUBLIC WORKS

REVISION DATES

NO.	DATE

5-000 SIDEWALK AND RAMP INDEX


DATE

(REFER TO 1-010 FOR ADDITIONAL NOTES)

1. CONCRETE FOR SIDEWALKS AND CURB RAMPS SHALL BE CALTRANS CLASS 3 OR BETTER WITH 25% FLY-ASH IN THE MIX DESIGN. WHEN CONCRETE IS ALSO BEING USED FOR DRIVEWAYS AND GUTTERS, IT SHALL BE CLASS 2 OR BETTER.
2. THICKNESS OF SIDEWALKS SHALL BE 4" MINIMUM, AND THE TRANSVERSE SLOPE SHALL BE 2% MAX DRAINING TOWARD THE CURB. MINIMUM WIDTH SHALL BE 4'. REFER TO TABLES IN 5-040.
3. SUBGRADE MATERIAL SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY FOR A 0.50' DEPTH, IN EXPANSIVE SOILS AND SOILS WHICH CANNOT REACH 90% RELATIVE COMPACTION, A 0.35' LAYER OF CALTRANS CLASS 4 BASE OR BETTER SHALL BE PLACED AND COMPACTED TO 90% RELATIVE COMPACTION.
4. ADA COMPATIBLE SLOPES, DETECTABLE WARNING SURFACES, AND GROOVED BORDERS AT GRADE BREAKS SHALL BE PROVIDED WHERE REQUIRED BY ALL CURRENT REGULATIONS.
5. EXPANSION JOINTS SHALL BE MADE WITH 1/2" EXPANSION PAPER AND PLACED AT THE BEGINNING AND END OF EACH CURB RETURN, ON EACH SIDE OF DRAINAGE STRUCTURES SUCH AS DROP INLETS, AT UTILITY VAULTS AND POLES, EVERY 200' OF LENGTH, AND AT OTHER PLACES AS DIRECTED BY THE COUNTY ENGINEER.

6. WEAKENED-PLANE JOINTS SHALL BE TOOLED 1-1/2" DEEP ON SIDEWALKS, CURBS AND GUTTERS AT INTERVALS OF NO MORE THAN 10', AND AT BOTH SIDES OF METER BOXES AND PULL BOXES. JOINTS IN ADJACENT CURBS AND SIDEWALKS SHALL BE ALIGNED.

7. SCORELINES SHALL BE TOOLED 1/4" DEEP ON SIDEWALKS MIDWAY BETWEEN WEAKENED-PLANE JOINTS. ON CURB RETURNS, THEY SHALL BE PLACED SO AS TO CONTINUE THE CURB LINE THROUGH THE RAMP.

8. UTILITY BOXES AND VAULTS SHALL NOT BE LOCATED IN SIDEWALKS WHERE POSSIBLE. THERE SHALL BE A MINIMUM OF 4' SIDEWALK CLEARANCE AROUND ANY SIGNS, POLES, OR OTHER OBSTRUCTIONS.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

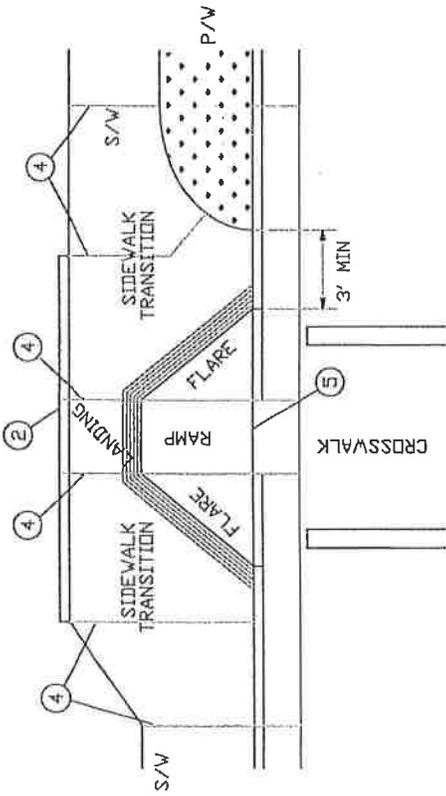

DIRECTOR OF PUBLIC WORKS

5-010 GENERAL SIDEWALK NOTES

REVISION DATES

DATE

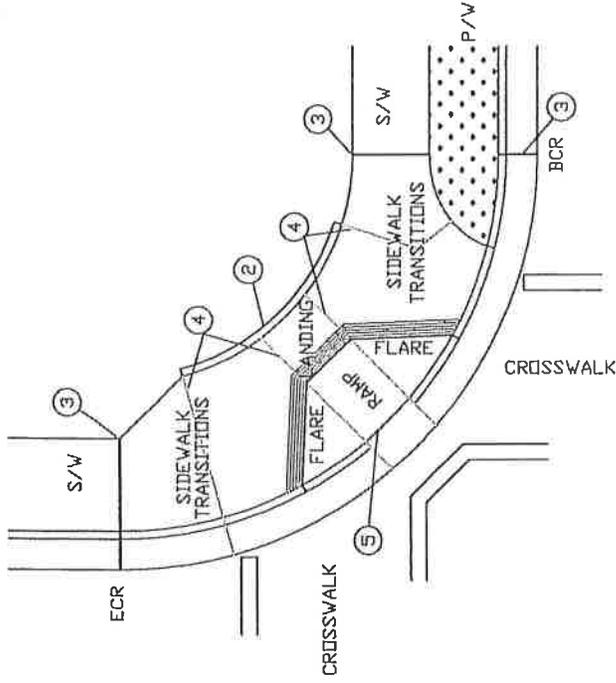
1/1/2011



PLAN A

NOTES: (REFER TO 5-010 FOR ADDITIONAL NOTES)

1. CURB RAMP SHALL FOLLOW THE CALTRANS STANDARD PLANS, ADA REQUIREMENTS, AND THESE STANDARD PLANS.
2. WHERE BACK-CURBS ARE REQUIRED FOR SLOPE STABILITY, THEY SHALL BE 6" WIDE, MAINTAIN THE SIDEWALK ELEVATION, AND PLACED OUTSIDE OF THE SIDEWALK.
3. EXPANSION JOINTS SHALL BE PLACED AT THE ENDS OF THE RAMP TRANSITIONS AS SHOWN.
4. WEAKENED-PLANE JOINTS SHALL BE MADE APPROXIMATELY AS SHOWN.
5. A SCORELINE SHALL BE MADE TO CONTINUE THE LINE FOR THE BACK OF CURB THROUGH THE CURB RAMP.



PLAN B

6. NO UTILITY BOXES OR VAULTS, ELECTRONIC PULL-BOXES, SIGN POSTS, OR SIGNAL POLES SHALL BE PLACED IN THE RAMP OR FLARE AREAS. WHERE POSSIBLE, THEY SHALL ALSO BE PLACED OUTSIDE OF THE SIDEWALK TRANSITION AND LANDING AREAS.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
DIRECTOR OF PUBLIC WORKS

5-030

CURB RAMP DETAILS

REVISION DATE

DATE

11/1/2011

NOTES: (REFER TO 5-010 FOR ADDITIONAL NOTES)

1. THE WIDTH OF THE SIDEWALKS (NOT INCLUDING THE CURB) SHALL BE AS SHOWN IN TABLE A OR B. SIDEWALKS FRONTING COMMERCIAL DEVELOPMENTS SHALL EXTEND FROM THE BACK OF THE CURB TO 6' FROM THE RIGHT-OF-WAY LINE.

2. TRANSVERSE EXPANSION JOINTS SHOULD CONTINUE THROUGH THE ADJACENT CURB AND GUTTER.

3. WEAKENED-PLANE JOINTS SHALL BE PROVIDED AT INTERVALS OF NOT MORE THAN 10' ON SIDEWALKS AND CURB/GUTTERS. WHERE SIDEWALKS ABUT THE CURB, THE WEAKENED-PLANE JOINT SHALL BE CONTINUOUS THROUGH BOTH.

4. A SCORELINE SHALL BE PLACED MIDWAY BETWEEN WEAKENED-PLANE JOINTS. WHERE THE SIDEWALK WIDTH EXCEEDS 6', A LONGITUDINAL SCORELINE SHALL BE TOOLED AT THE SIDEWALK CENTERLINE.

5. ADDITIONAL SIDEWALK WIDTH MAY BE NEEDED TO MAINTAIN A MINIMUM OF 4' CLEAR SIDEWALK AROUND EXISTING OBSTRUCTIONS SUCH AS UTILITY POLES.

PLAN A - SIDEWALK WITHOUT PARKWAY

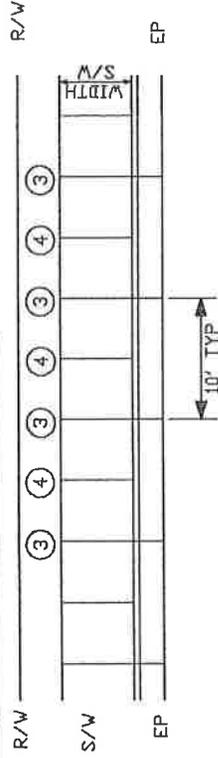


TABLE A

R/W WIDTH	STD DTL	MINIMUM WIDTH	COMMERCIAL WIDTH	STANDARD CY/LF	MONOLITHIC CY/LF
MAJOR	6-070	6'	9.5'	0.116	0.124
60'	6-030	5'	9.5'	0.073	0.082
56'	6-030	5'	9.5'	0.061	0.069
RURAL	6-030	4'	9.5'	0.049	0.057

PLAN B - SIDEWALK WITH PARKWAY

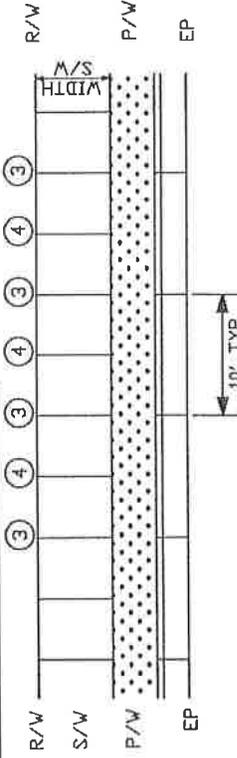


TABLE B

R/W WIDTH	STD DTL	MINIMUM WIDTH	COMMERCIAL WIDTH	STANDARD CY/LF
MAJOR	6-070	5'	9.5'	0.116
60'	6-030	5'	9.5'	0.061
56'	6-030	5'	9.5'	0.049
RURAL	6-030	4'	9.5'	0.049

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
DIRECTOR OF PUBLIC WORKS

5-040

SIDEWALK DETAILS

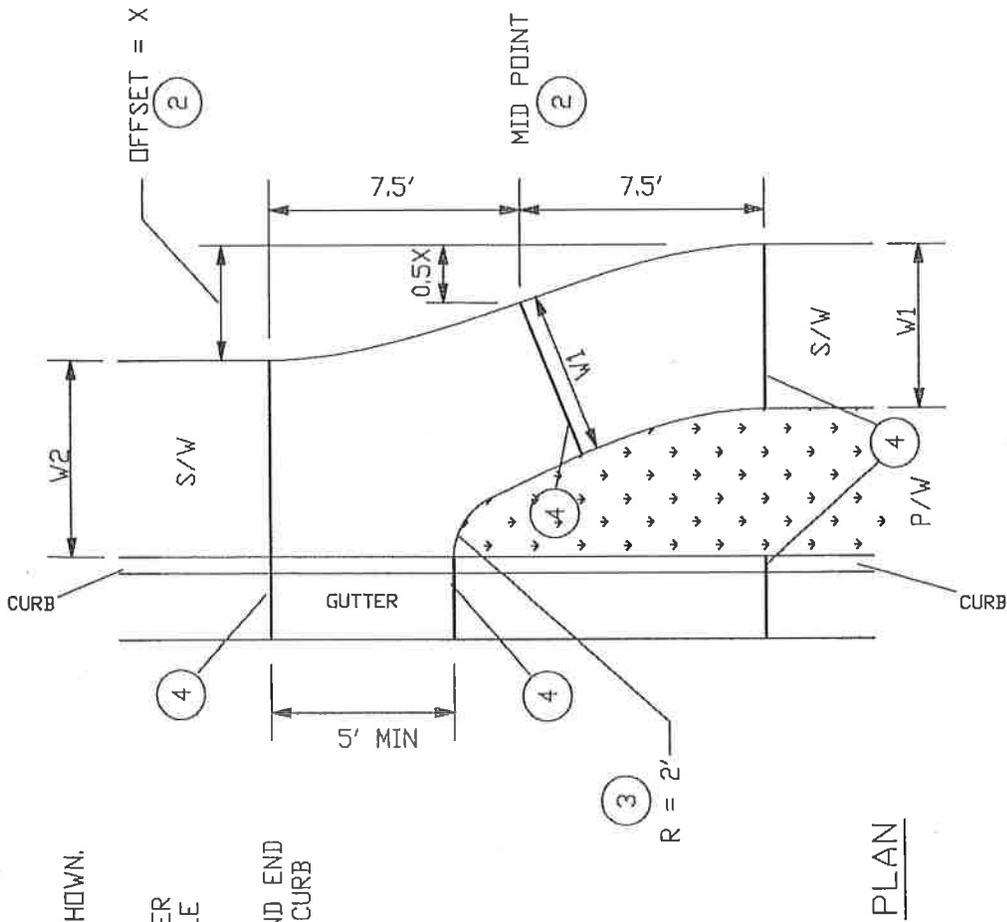
REVISION DATES

DATE

1/1/2011

NOTES (REFER TO 5-010 FOR ADDITIONAL NOTES)

1. WHERE A SIDEWALK AND CURB MEETS A SIDEWALK BEHIND A PARKWAY, THE TRANSITION SHALL BE MADE OVER 15'.
2. THE BACKSIDE FORMS A ROUNDED TRANSITION WITH OFFSETS AS SHOWN.
3. THE FRONT SIDE SHALL MEET THE CURB WITH A RADIUS OF 2' AS SHOWN. THE TRANSITION WIDTH SHALL EQUAL OR EXCEED THE SMALLER SIDEWALK WIDTH THROUGHOUT AND MEET THE CURB AT A RIGHT ANGLE WITH A 2' RADIUS CURVE AS SHOWN.
4. WEAKENED-PLANE JOINTS SHALL BE PLACED AT THE BEGINNING AND END OF THE TRANSITION, MIDWAY THROUGH THE TRANSITION, AND IN THE CURB WHERE THE SIDEWALK MEETS THE CURB.



PLAN

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

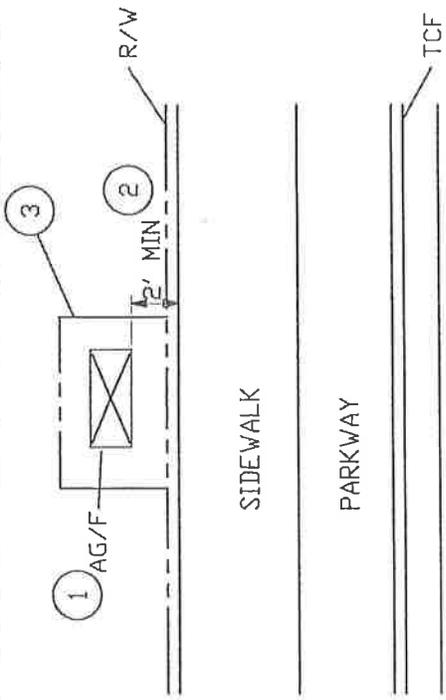
APPROVED BY:

[Signature]
 DIRECTOR OF PUBLIC WORKS

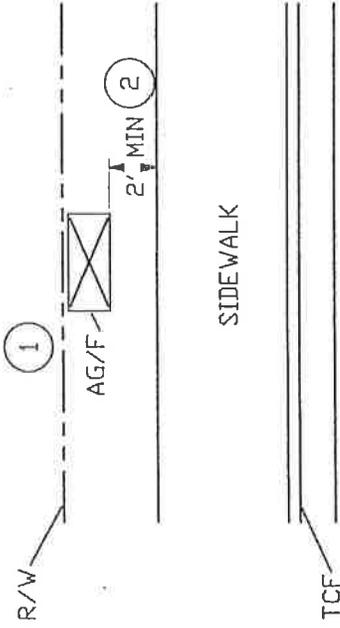
5-045 SIDEWALK TRANSITIONS

REVISION DATE

11/1/2011
 DATE



PLAN A



PLAN B

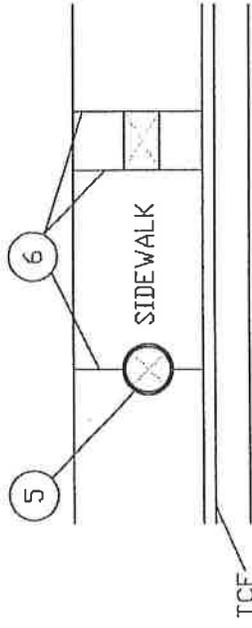
1. ABOVE-GRADE FACILITIES (AG/F) ARE FIXED OBJECTS SUCH AS FIRE HYDRANTS, TRANSFORMERS, POWER AND TELEPHONE POLES, CABLE OR TELEPHONE EQUIPMENT, DRAINAGE STRUCTURES AND TRAFFIC SIGNAL DEVICES.

2. ALL AG/F'S SHALL BE INSTALLED WITH 2' OF SET-BACK FROM ANY SIDEWALK AND AWAY FROM THE STREET AS SHOWN.

3. WHERE THERE IS NO SPACE BEHIND THE SIDEWALK WITHIN THE COUNTY'S RIGHT OF WAY FOR THE AG/F, THE OWNER MAY BE REQUIRED TO OBTAIN A SPECIAL EASEMENT FOR THE UTILITY.

4. ON RURAL ROADS WITH NO SIDEWALK, THE AG/F SHALL BE SET BACK FROM THE EP A DISTANCE OF 7' OR GREATER AS RECOMMENDED BY THE AASHTO ROADSIDE DESIGN GUIDE.

5. EXPANSION PAPER SHALL BE PLACED AT ROUND OBJECTS SUCH AS MANHOLES AND UTILITY POLES WHICH MUST BE PLACED IN THE SIDEWALK AS SHOWN ON PLAN C.



PLAN C

6. WEAKENED-PLANE JOINTS SHALL BE PLACED ACROSS THE SIDEWALK WHERE UTILITIES MUST BE PLACED IN THE SIDEWALK. ONE JOINT SHALL BE PLACED AT ROUND OBJECTS AND TWO JOINTS AT RECTANGULAR OBJECTS AS SHOWN IN PLAN C.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
DIRECTOR OF PUBLIC WORKS

5-050

SIDEWALK UTILITIES

REVISION DATE

DATE

1/1/2011

STREET SECTION DETAILS

<u>NUMBER</u>	<u>TITLE</u>
6-010	GENERAL STREET SECTION NOTES
6-020	PRIVATE ROAD AND DRIVEWAY SECTIONS
6-030	LOCAL PUBLIC ROAD SECTIONS
6-070	MAJOR & ARTERIAL ROAD SECTIONS
6-100	CUL-DE-SAC LAYOUT

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

Michael J. ...
 DIRECTOR OF PUBLIC WORKS

1/1/2011
 DATE

REVISION DATES

STREET SECTIONS INDEX

6-000

(REFER TO 1-010 FOR ADDITIONAL NOTES)

1. THE MINIMUM ASPHALT THICKNESS FOR PUBLIC AND PRIVATE ROADS SHALL BE AS FOLLOWS: WHEN THE TRAFFIC INDEX IS LESS THAN 5.5, THE A.C. THICKNESS SHALL BE 0.30' MIN. WHEN THE TRAFFIC INDEX IS 5.5 OR GREATER, THE A.C. THICKNESS SHALL BE 0.33' MIN. THE ACTUAL THICKNESS OF THE STRUCTURAL SECTIONS SHALL BE DETERMINED FROM 'R'-VALUES OF THE SOIL DETERMINED BY CALTRANS TEST METHOD 301. TRAFFIC INDEX SHOULD APPEAR ON THE PLANS AND BE APPROVED BY THE COUNTY ENGINEER.
2. THE MINIMUM GRADE PROFILE AND GUTTER SLOPES FOR STREETS AND CUL-DE-SACS SHALL BE 0.5% UNLESS OTHERWISE APPROVED BY THE COUNTY ENGINEER. CROSS-SLOPES SHALL BE AS INDICATED.
3. ASPHALT CONCRETE PAVING MATERIALS (A.C.) AND PROCESSES SHALL COMPLY WITH 1-010, NOTE 16 AND CALTRANS SPECIFICATIONS SECTION 39. WHERE THE EDGE OF PAVEMENT HAS NO CURB OR DIKE, THE A.C. AND A.B. SHALL EXTEND 1' BEYOND THE SPECIFIED EP.
4. AGGREGATE BASE MATERIALS (A.B.) SHALL COMPLY WITH CALTRANS SPECIFICATIONS SECTION 26.
5. AGGREGATE SUBBASE MATERIALS (A.S.B.) SHALL COMPLY WITH CALTRANS SPECIFICATIONS, SECTION 25.
6. ASPHALT CONCRETE DIKES SHALL CONFORM WITH CALTRANS STANDARD PLAN A87B.
7. GUARD RAILS MAY BE REQUIRED ON FILL SLOPES. REFER TO AASHTO ROADSIDE DESIGN MANUAL.
8. WHEN NECESSARY FOR UTILITIES, ADDITIONAL SHOULDER WIDTHS SHALL BE REQUIRED ON THE UNDEVELOPED SIDE OF SOME ROADS.

9. GRADING FOR SUBGRADE SHALL BE COMPLETED TO WITHIN TOLERANCES GIVEN IN CALTRANS SPECIFICATIONS, SECTION 19. SOIL SHALL BE TESTED FOR COMPACTION AND R-VALUE AND INSPECTED BEFORE BASE, PAVING, OR ANY OTHER PERMANENT SURFACE CONSTRUCTION MAY COMMENCE.

10. SUBGRADE FOR ROADS SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY FOR THE TOP 9'. THE SUBGRADE SHALL ALSO BE NON-YIELDING AS DETERMINED BY OBSERVING THE SURFACE DEFLECTION IN THE PATH OF A FULLY LOADED 2,000 GALLON WATER TRUCK BEFORE PLACING THE CLASS II BASE COURSE.

11. ALL UTILITIES SHALL BE INSPECTED, PRESSURE TESTED, COMPACTED, AND VERIFIED TO THE COUNTY ENGINEER PRIOR TO PLACEMENT OF BASE COURSE AND PAVEMENT. REFER TO 2-010.

12. REFER TO 5-010 NOTE 3 FOR SUBGRADE IN SHOULDER AND SIDEWALK AREAS.

13. ROUGH GRADE STAKES SHALL BE SET AS REQUIRED FOR ADEQUATE CONTROL OF PRIMARY ROADWAY GRADING OPERATIONS. FINAL GRADE STAKES SHALL BE SET AT NOT GREATER THAN 50' INTERVALS AND AT BC'S, EC'S, PI'S, GRADE AND ALIGNMENT CHANGES, AND AT OTHER POINTS OF CONTROL.

14. ALL ASPHALT PAVING SHALL BE 'FOG' SEALED OR SLURRY SEALED IN CONFORMANCE WITH CALTRANS SECTION 37, 'SEAL COATS', OF CURRENT DATE. SEE 2-010 NOTES 12 AND 13.

15. THE REQUIREMENTS OF THE COUNTY FIRE DEPARTMENT MAY BE DIFFERENT FROM THOSE OF PUBLIC WORKS AND BOTH REQUIREMENTS MUST BE SATISFIED. ROADS AND STREETS MAY BE REQUIRED TO BE WIDER THAN THESE SPECIFICATIONS AS A RESULT.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:


DIRECTOR OF PUBLIC WORKS

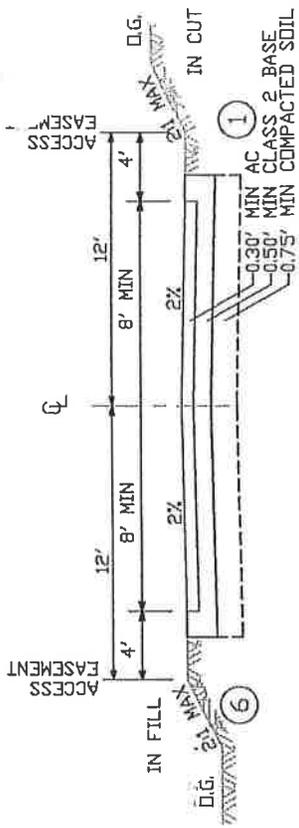
6-010

GENERAL STREET SECTION NOTES

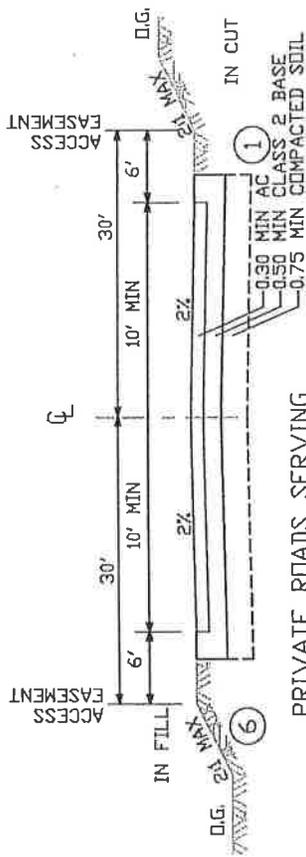
REVISION DATES

DATE

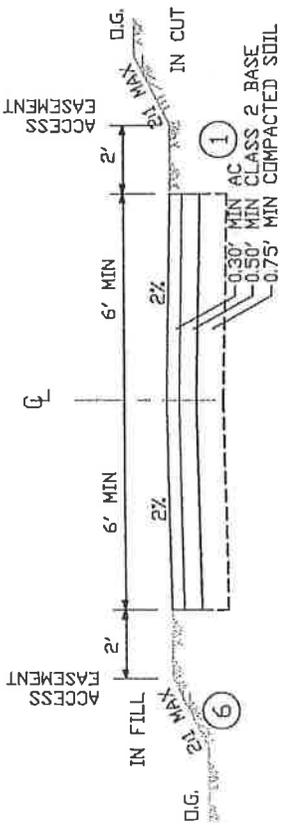
1/1/2011



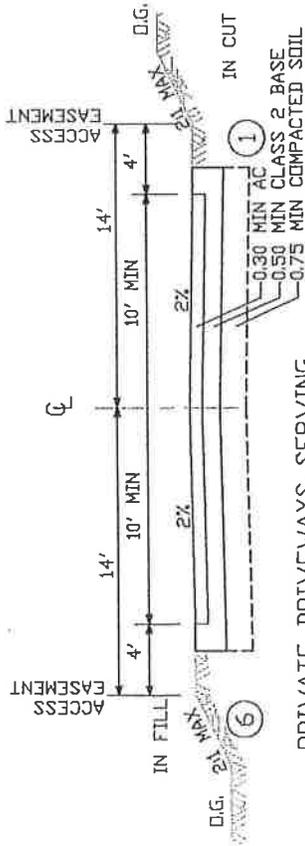
PRIVATE DRIVEWAYS SERVING UP TO 2 RESIDENTIAL LOTS



PRIVATE ROADS SERVING 5 OR MORE PARCELS



PRIVATE DRIVEWAYS OVER 100 FEET LONG SINGLE RESIDENTIAL LOT



PRIVATE DRIVEWAYS SERVING UP TO 4 RESIDENTIAL LOTS

NOTES: (SEE 6-010 FOR ADDITIONAL NOTES)

- REFER TO NOTE 1 ON 6-010 FOR ROAD SECTION.
- PRIVATE ROADS SERVING 10 OR MORE PARCELS OF FIVE ACRES OR LESS WILL BE REQUIRED TO PROVIDE A 24' TRAVEL WAY.
- NO PROVISION IS MADE ON THESE DETAILS FOR PARKING ON PAVEMENT OR FOR TURNOUTS AND TURNAROUNDS THAT MAY BE REQUIRED BY THE COUNTY TRAFFIC ENGINEER OR COUNTY FIRE DEPARTMENT.

- PLANS FOR PRIVATE ROADS AND DRIVEWAYS ARE SUBJECT TO APPROVAL BY THE COUNTY FIRE DEPARTMENT.
- PAVING IS REQUIRED ON ALL GRADES STEEPER THAN 10%.
- IN SANDY SOILS (PLASTICITY INDEX LESS THAN 1 AND SAND EQUIVALENT GREATER THAN 20), CUT AND FILL SLOPES SHALL BE NO STEEPER THAN 3:1

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

6-020 PRIVATE ROADS AND DRIVEWAY SECTIONS
ADT LESS THAN 250

REVISION DATES

[Signature]
DIRECTOR OF PUBLIC WORKS

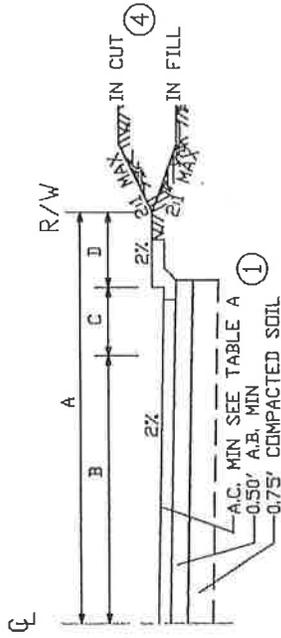
DATE

NOTES: (SEE 6-010 FOR ADDITIONAL NOTES)

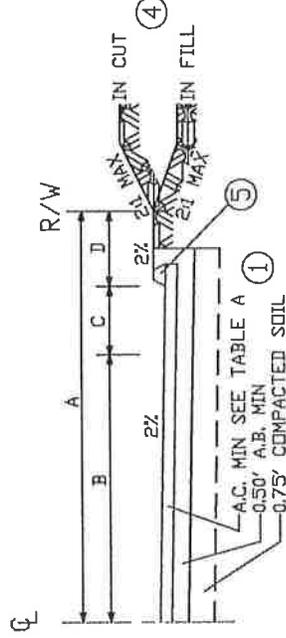
1. THE MINIMUM TRAFFIC INDEX VALUE SHALL BE AS NOTED IN TABLE 'A'. SEE NOTE 1 ON 6-010.
2. THE CROSS-SLOPE SHALL BE 2%.
3. THE CURB AND SIDEWALK SHALL BE CONSTRUCTED PER STANDARD DETAILS 4-030 AND 5-040.
4. IN SANDY SOILS (PLASTICITY INDEX LESS THAN 1 AND SAND EQUIVALENT GREATER THAN 20), EMBANKMENT SLOPES SHALL BE NO STEEPER THAN 3:1.
5. WHERE ASPHALT CONCRETE DIKES ARE REQUIRED FOR DRAINAGE, THEY SHALL BE CALTRANS TYPE 'A' IN A CUT AND TYPE 'E' IN FILL.
6. THE DIMENSIONS SHOWN IN TABLE 'A' ARE MINIMUM STANDARD VALUES. THE PLANS FOR ALL NEW ROADS SHALL BE APPROVED BY THE COUNTY ENGINEER AND SHALL CONSIDER ADDITIONAL FACTORS.

TABLE A

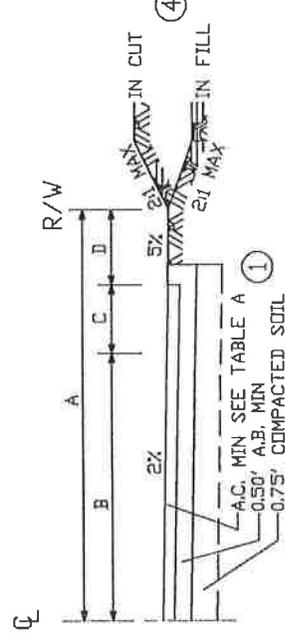
CLASS	ADT	TI	AC	A	B	C	D
RURAL ROAD	250-400	4.5	.30	18	12	0	6
RESIDENTIAL STREET	400-1000	4.5	.30	28	10	8	10
COLLECTOR STREET	1000-5000	5.5	.33	30	12	8	10



ROAD HALF-SECTION WITH SIDEWALK



ROAD HALF-SECTION WITH A.C. DIKE



ROAD HALF-SECTION WITHOUT SIDEWALK OR DIKE

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
DIRECTOR OF PUBLIC WORKS

LOCAL PUBLIC ROAD SECTIONS
ADT 250 TO 5000

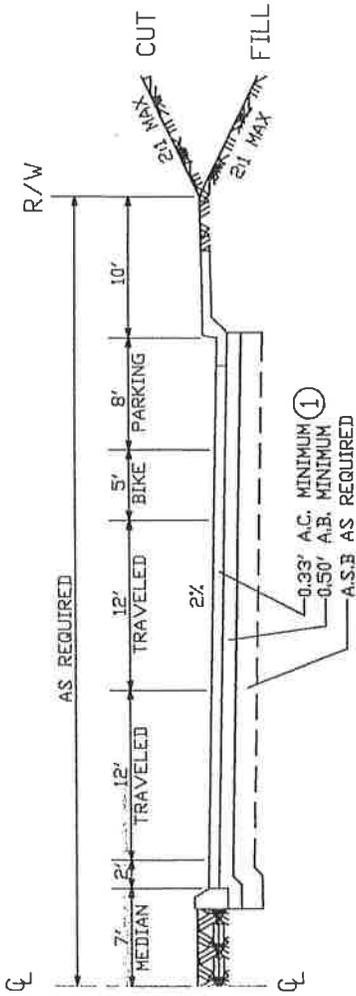
6-030

REVISION DATES

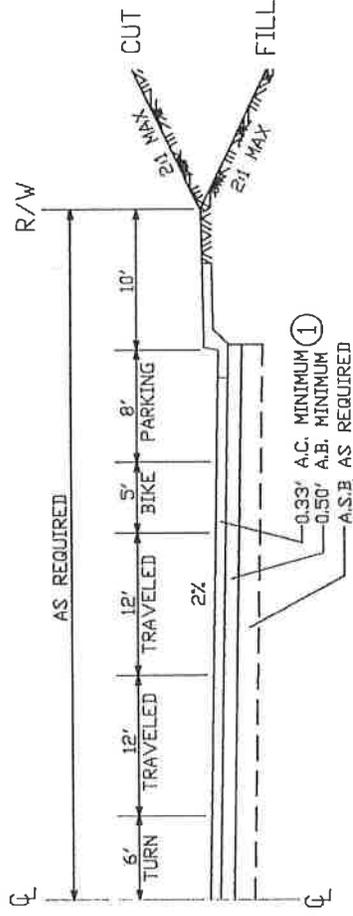
[Signature]
DATE

NOT. SEE 6-010 FOR ADDITIONAL NOTES)

1. THE RANGE OF ADT FOR THIS STANDARD IS 5000 TO 16000. THE MINIMUM TRAFFIC INDEX VALUE SHALL BE 7.0. SEE NOTE 1 ON 6-010.
2. RIGHT-OF-WAY LIMITS SHALL BE DETERMINED BY THE NUMBER AND TYPE OF LANES REQUIRED AS DETERMINED BY A TRAFFIC STUDY APPROVED BY THE COUNTY ENGINEER.
3. ADDITIONAL ROADWAY WIDTH AND RIGHT-OF-WAY SHALL BE PROVIDED WHERE RIGHT-TURN POCKETS AND BUS POCKETS ARE REQUIRED. REFER TO APWA STANDARDS.
4. THE SIDEWALK, CURB, AND 24" GUTTER SHALL BE CONSTRUCTED PER STANDARD DETAILS 4-030 AND 5-040.
5. WHERE ASPHALT CONCRETE DIKES ARE REQUIRED, THEY SHALL BE CALTRANS TYPE "A" IN A CUT AND TYPE "E" IN FILLS.
6. THE CROSS SLOPE SHALL BE 2%.



HALF-SECTION WITH RAISED MEDIAN



HALF-SECTION WITH PAINTED MEDIAN

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

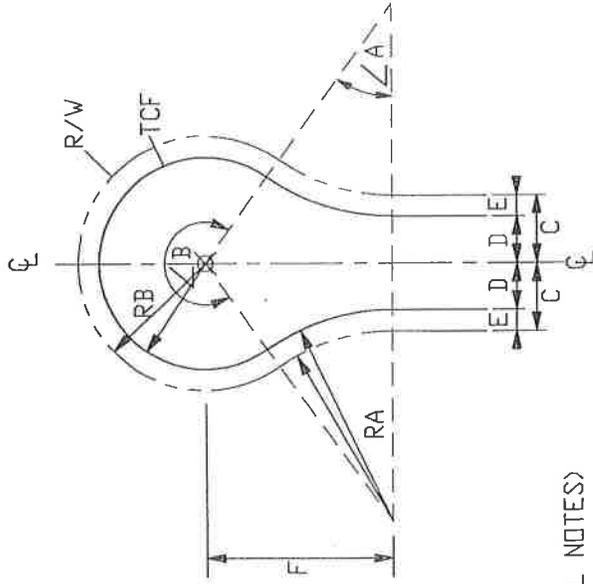
MAJOR & ARTERIAL ROAD SECTIONS
ADT 5000 TO 16000

Handwritten Signature
DIRECTOR OF PUBLIC WORKS

Handwritten Date: 1/1/2011
DATE

REVISION DATES

6-070



DIMENSIONS					
PRKG	R/W	C	D	E	F
NO	56'	28'	18'	10'	54.72'
NO	60'	30'	20'	10'	54.77'
YES	56'	28'	18'	10'	68.41'
YES	60'	30'	20'	10'	70.60'

CURVE A						
PRKG	R/W	ΔA	CURB		R/W	
			RA=	L=	RA=	L=
NO	56'	43d 49' 44"	39'	29.83'	29'	22.18'
NO	60'	40d 07' 09"	45'	31.51'	35'	24.51'
YES	56'	47d 21' 28"	45'	37.19'	35'	28.93'
YES	60'	43d 16' 05"	55'	41.53'	45'	33.98'

CURVE B						
PRKG	R/W	ΔB	CURB		R/W	
			RB=	L=	RB=	L=
NO	56'	267d 39' 28"	40'	186.86'	50'	233.58'
NO	60'	260d 14' 18"	40'	181.68'	50'	227.10'
YES	56'	274d 42' 56"	48'	230.15'	58'	278.09'
YES	60'	266d 32' 10"	48'	223.29'	58'	269.81'

NOTES: (SEE 6-010 FOR ADDITIONAL NOTES)

1. CUL-DE-SACS SHALL CONFORM TO SECTION 4.3 OF THESE ENGINEERING DESIGN STANDARDS.
2. THE MINIMUM CURB RADIUS IN THE BULB SHALL BE 40' WHEN NO PARKING WILL BE ALLOWED AND 48' WHEN PARKING WILL BE ALLOWED.
3. THE MINIMUM TRAFFIC INDEX SHALL BE AS NOTED IN TABLE 'A' OF 6-030, SEE NOTES 1 AND 15 ON 6-010.
4. MINIMUM GUTTER PROFILE GRADE SHALL BE 0.5% TO AVOID PONDING IN THE CUL-DE-SAC. CROSS-SLOPE SHALL BE 2%.
5. SIDEWALK WIDTH SHALL BE PER STANDARD DETAIL 5-040.
6. LAYOUT INFORMATION IS SHOWN IN TABLES A, B, AND C AND SUBJECT TO APPROVAL BY THE COUNTY FIRE DEPARTMENT.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
DIRECTOR OF PUBLIC WORKS

6-100 CUL-DE-SAC LAYOUT

REVISION BOX

11/1/2011
DATE

TRAFFIC CONTROL

<u>NUMBER</u>	<u>TITLE</u>
7-010	GENERAL SIGNAGE NOTES
7-020	DEAD-END SIGNS & BARRICADE
7-050	ROADSIDE SIGN POSTS
7-060	STREET NAME SIGNS

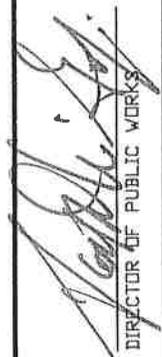
COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

7-000

TRAFFIC CONTROL INDEX

REVISION DATES


DIRECTOR OF PUBLIC WORKS

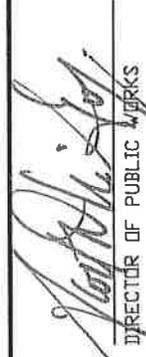
11/2011
DATE

NOTES: (REFER TO 1-010 FOR ADDITIONAL NOTES)

1. TRAFFIC SIGNS, MARKING AND STRIPING SHALL CONFORM TO THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CAL-MUTCD), CURRENT VERSION AND CALTRANS STANDARD PLANS AND SPECIFICATIONS.
2. THE PLACEMENT OF TRAFFIC SIGNS, MARKINGS, AND STRIPING IN SUBDIVISIONS SHALL FOLLOW A PLAN REVIEWED BY THE COUNTY ENGINEER.
3. THE PLACEMENT OF "STOP" SIGNS AND SPEED LIMIT SIGNS REQUIRE THE APPROVAL OF THE COUNTY BOARD OF SUPERVISORS AT THE REQUEST OF THE COUNTY ENGINEER. SIGNS MUST BE APPROVED AND IN PLACE PRIOR TO OPENING THE ROAD TO THE PUBLIC.
4. STREET NAME SIGNS SHALL CONFORM TO 7-050 AND 7-060.
5. TAPER LENGTHS FOR ROADWAY WIDENING AND NARROWING, TRAFFIC SIGNS, AND PAVEMENT MARKINGS SHALL BE REVIEWED BY THE COUNTY ENGINEER.
6. FLEXIBLE OBJECT AND OTHER MARKERS MAY BE REQUIRED IN RURAL AREAS AS DIRECTED BY THE COUNTY ENGINEER.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:


DIRECTOR OF PUBLIC WORKS

7-010

GENERAL SIGNAGE NOTES

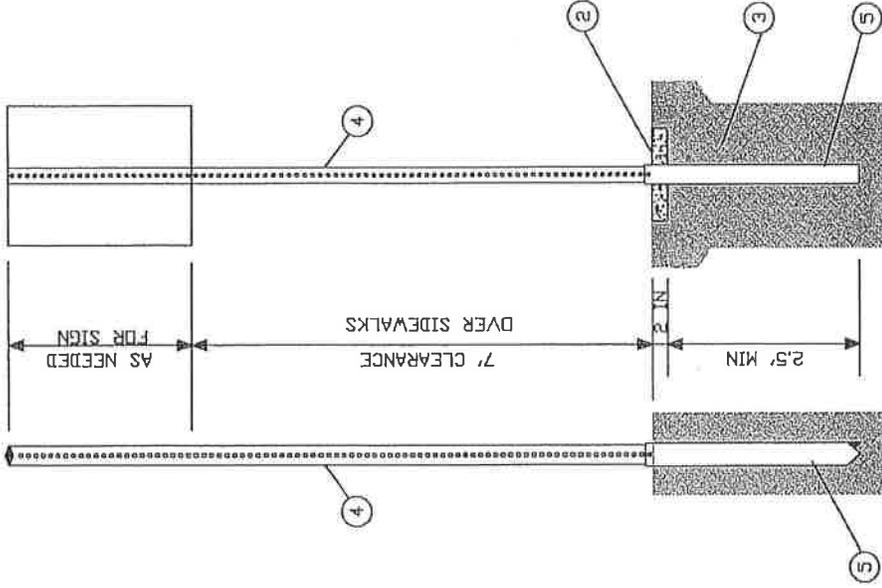
REVISION DATE


DATE

1/1/2011

NOTES: (REFER TO 7-010 FOR ADDITIONAL NOTES)

1. FOR SIGN POST FOUNDATION SPECIFICATIONS SEE THE CALTRANS STANDARD SPECIFICATIONS FOR CONSTRUCTION OF LOCAL STREETS AND ROADS SECTION 56 (ROADSIDE SIGNS - CONSTRUCTION)
2. IF THE SIGN POST IS TO BE PLACED IN A SIDEWALK, A 12" DIAMETER OR 12x12" SQUARE BLOCKOUT 2" THICK SHALL BE PROVIDED.
3. THE SOIL IN THE BLOCKOUT SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY.
4. ALL SIGN POSTS SHALL BE A 2x2" SQUARE TUBE OF PERFORATED, 10 OR 12-GAUGE, GALVANIZED STEEL.
5. ALL SIGN POSTS SHALL BE PROVIDED WITH A BREAKAWAY ANCHOR SLEEVE PLACED AT FINISHED GRADE LEVEL.
6. PLACEMENT OF SIGN POSTS SHALL NOT CONFLICT WITH ADA REQUIREMENTS FOR SIDEWALK WIDTH.



COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

[Signature]
 DIRECTOR OF PUBLIC WORKS

7-050

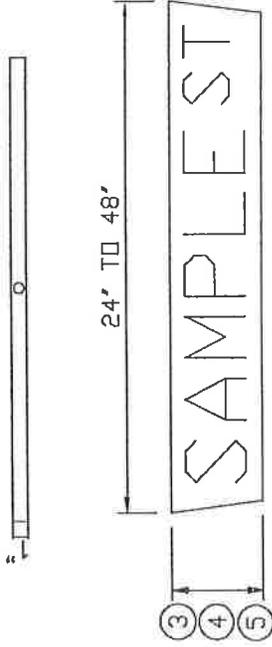
ROADSIDE SIGN POSTS

REVISION DATES

11/1/11
 DATE

NOTE:

1. PLACEMENT AND MOUNTING DETAILS SHALL FOLLOW CALTRANS STANDARD PLANS FOR ROADSIDE SIGNS. SIGN POST INSTALLATION SHALL FOLLOW 7-050.
2. LETTERING STYLE SHALL FOLLOW THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES STANDARD HIGHWAY SIGNS BOOK.
3. ON LOCAL ROADS WITH SPEED LIMITS OF 25 MPH OR LESS, THE LETTERING SHALL BE 4" HIGH CAPITAL LETTERS. SUPPLEMENTARY LETTERING (RD, ST, ETC.) SHALL BE 3" HIGH CAPITALS. 4" LETTERS REQUIRE A 6" SIGN.
4. ON MULTI-LANE STREETS WITH SPEED LIMITS GREATER THAN 40 MPH, THE LETTERING SHALL BE 8" HIGH CAPITALS. SUPPLEMENTARY LETTERING SHALL BE 4" HIGH CAPITALS. 8" LETTERS REQUIRE A 9" SIGN.
5. ALL OTHER ROADS SHALL HAVE 6" HIGH CAPITAL LETTERS AND 3" HIGH SUPPLEMENTARY CAPITAL LETTERS. 6" LETTERS REQUIRE A 9" SIGN.
6. ALL LETTERS AND BACKGROUND SHALL BE RETROREFLECTIVE.
7. THE COLOR FOR ALL LETTERS SHALL BE WHITE.
8. THE BACKGROUND COLOR FOR PUBLIC STREETS SHALL BE REDWOOD BROWN AND FOR PRIVATE STREETS SHALL BE DARK BLUE AS APPROVED BY THE COUNTY ENGINEER.
9. MOUNTING HARDWARE SHALL COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS.



COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION		APPROVED BY:
7-060	STREET NAME SIGNS	<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS
		REVISION DATE: <u>11/1/2011</u> DATE

LANDSCAPE

NUMBER

8-010

TITLE

TREE PLANTING

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION

APPROVED BY:

Scott W. ...
DIRECTOR OF PUBLIC WORKS

8-000

LANDSCAPING AND IRRIGATION INDEX

REVISION DATES

DATE

1/1/2011

NOTES:

1. PARKWAY TREES MUST BE SELECTED FROM THE LIST OF TREES APPROVED BY THE BOARD OF SUPERVISORS AND THE DIRECTOR OF PUBLIC WORKS.
2. TREES SHALL BE PLANTED IN ACCORDANCE WITH THE BEST PRACTICE FOR THE TYPE AND SIZE OF TREE.
3. TREE WELLS IN PARKWAYS OR SIDEWALKS SHALL CONFORM TO APWA STANDARD PLANS AND PROVIDED WITH ROOT SHIELDS, STAKES, PERFORATED PIPES, AND TREE WELL COVERS OR GRATES.
4. TREE WELLS AND GRATES SHALL BE PLACED TO ALLOW AT LEAST 4' OF SIDEWALK CLEARANCE FOR PEDESTRIAN TRAFFIC.
5. TREE GROWTH SHALL BE LARGE ENOUGH TO PROVIDE ADEQUATE SIGHT-DISTANCE AT DRIVEWAYS AND INTERSECTIONS AND AT LEAST 7' OF CLEARANCE OVER SIDEWALKS.
6. WHERE A PARKWAY IRRIGATION SYSTEM IS BEING INSTALLED, IT SHALL BE A DRIP-TYPE SYSTEM.
7. TREES SHALL NOT BE PLANTED ABOVE STORM DRAIN FACILITIES OR OTHER UTILITIES.

APPROVED BY:	COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION				
 DIRECTOR OF PUBLIC WORKS	REVISION DATE: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 50px; height: 20px;"></td> </tr> </table>				
11/1/2011 DATE	8-010 TREE PLANTING				

EXHIBIT 1

City of Carpinteria
DEPARTMENT OF PUBLIC WORKS

Associated Regulations and Specifications

All improvement plans submitted to the City for review and approval shall be consistent with these Standards and current or amended City standards and ordinances. These include, but are not limited to:

- A. City of Carpinteria Municipal Code
- B. City of Carpinteria Circulation Element
- C. City of Carpinteria Storm Water Management Plan
- D. City of Carpinteria Land Use and Development Policies and Ordinances
- E. City of Carpinteria Bicycle Master Plan
- F. City of Carpinteria Capital Improvement Program
- G. California Water Resources Control Board – General Construction Permit

The most current edition of publications and manuals shall be applicable unless specifically cited in these Standards, by the City Engineer or when required by State or Federal funding authorities. These include, but are not limited to:

- 1. County of Santa Barbara – Department of Public Works Engineering Design Standards
- 2. County of Santa Barbara – Department of Public Works Standard Details
- 3. California Department of Transportation (Caltrans) – Standard Specifications and Special Provisions
- 4. Caltrans – Standard Plans
- 5. Caltrans – Local Assistance Procedures Manual
- 6. Caltrans – Local Assistance Program Guidelines
- 7. Caltrans – Local Programs Procedures
- 8. Caltrans – Quality Assurance Program Manual for Use by Local Agencies
- 9. Caltrans – Highway Design Manual
- 10. Caltrans – Construction Manual
- 11. Caltrans – Traffic Manual (Chapter 7 & 9)
- 12. Caltrans – Bridge Design Specifications
- 13. American Association of State Highway and Transportation Officials (AASHTO) – A Policy on Geometric Design of Highways and Streets
- 14. AASHTO – Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT less than or equal to 400)
- 15. AASHTO – Roadside Design Guide
- 16. AASHTO – Guide for the Development of Bicycle Facilities
- 17. U.S. Department of Transportation, Federal Highway Administration as amended by the California Department of Transportation – Manual on Uniform Traffic Control Devices (CA-MUTCD)
- 18. U.S. Department of Justice, Americans with Disabilities Act – ADA Standards for Accessible Design
- 19. National Research Council, Transportation Research Board (TRB) – Highway Capacity Manual
- 20. Institute of Transportation Engineers (ITE) – Land Use and Development Manual

21. ITE – Transportation Planning Handbook
22. ITE – Manual of Transportation Engineering Studies
23. ITE – Traffic Engineering Handbook
24. ITE – Trip Generation
25. American Public Works Association (APWA) – Standard Plans for Public Works Construction
26. APWA – Standard Specifications for Public Works Construction
27. American National Standards Institute/Illuminating Engineering Society of North America – RP-8-00 American National Standard Practice for Roadway Lighting
28. Urban Land Institute (ULI) – Shared Parking
29. ULI – Parking Generation
30. ULI – Dimensions of Parking