



County of Mendocino State of California

Road and Development Standards

Approved: Howard N. Dashiell Date: August 14, 2008
Howard Dashiell, Director

County of Mendocino Department of Transportation
340 Lake Mendocino Drive
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(707) 463-4363

RESOLUTION NO. 08-136

RESOLUTION OF THE MENDOCINO COUNTY BOARD OF SUPERVISORS APPROVING DEPARTMENT OF TRANSPORTATION ROAD AND DEVELOPMENT CONSTRUCTION STANDARDS FOR ROAD IMPROVEMENTS AND OTHER PROJECT-RELATED IMPROVEMENTS IN SUBDIVISIONS AND OTHER LAND DEVELOPMENT PROJECTS REQUIRING COUNTY AUTHORIZATION (COUNTY-WIDE)

WHEREAS, the Subdivision Map Act Section 66456.2 states that Civil Engineers shall prepare Improvement Plans for Subdivisions in California; and

WHEREAS, the Subdivision Map Act Section 66418 & 66419 states Improvement Plans shall present "Designs" for "Developments"; and

WHEREAS, design standards provide a common frame of reference for all with an interest in the County's roads; and

WHEREAS, standards have proven to be highly successful in many communities setting reasonable, consistent requirements; and

WHEREAS, standards result in a road system that meets current needs, allowing for orderly expansion; and

WHEREAS, standards allow for efficient design, construction and maintenance; and

WHEREAS, the Mendocino County last adopted Road Standards in 1970's but none in recent times; and

WHEREAS, Mendocino County Road and Development Construction Standards (Standards) are intended to supplement the Standard Plans and Standard Specifications prepared by the California Department of Transportation (Caltrans), providing an additional level of detail only where needed; and

WHEREAS, the Caltrans Standard Plans and the Caltrans Standard Specifications will serve as valuable companions to the County of Mendocino Standards; and

WHEREAS, contractors will rely on the Standards for detailed construction requirements; and

WHEREAS, property owners who are interested in completing improvements within a County Maintained Road will refer to the Standards when planning the work; and

WHEREAS, public officials that are reviewing land development projects would refer to the typical design features.

NOW, THEREFORE, BE IT RESOLVED that the Mendocino County Board of Supervisors:

1. Hereby authorizes and directs the Director of Transportation to incorporate any modifications approved by the Board into the *draft* Standards dated 5 August 2008, then date, sign and issue the *final* Standards document.

2. Hereby authorizes and directs the Department of Transportation to make the aforementioned Standards available to any interested party.
3. Hereby authorizes and directs the Department of Transportation to have a supply of the above-listed Standards printed and readily available for purchase at a price of \$25.00 or at an updated price determined by the Director of Transportation as appropriate to recover the applicable printing costs.

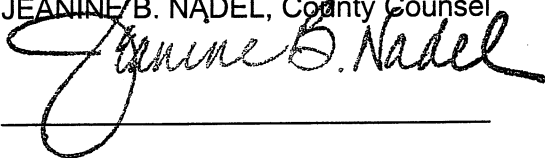
The foregoing Resolution introduced by Supervisor Pinches, seconded by Supervisor Colfax, and carried this 5th day of August 2008, by the following vote:

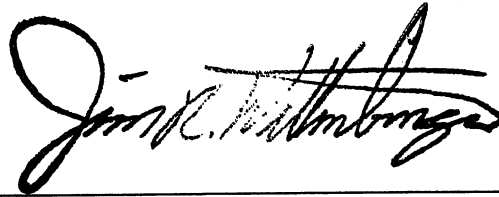
AYES: Supervisors Delbar, Pinches, Smith, Colfax, and Wattenburger
NOES: None
ABSENT: None

ATTEST: KRISTI FURMAN
Clerk of the Board



APPROVED AS TO FORM:
JEANINE B. NADEL, County Counsel





JIM R. WATTENBURGER, Chair
Mendocino County Board of Supervisors

I hereby certify that according to the provisions of Government Code Section 25103, delivery of this document has been made.

BY: KRISTI FURMAN
Clerk of the Board



Record of Changes

Change Number	Date of Change	Person that Entered the Change	Date Entered
Several	August 2014	Mendocino County Department of Transportation	August 2014

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Introduction

Purpose

The Road and Development Standards serve the following goal, set by the County of Mendocino General Plan:

Provide an adequate, well-maintained, efficient, and safe network of County-maintained roads that extend into the unincorporated areas of the County from the State Highway system, and provide for both area and regional surface transportation needs of the County.

The standards apply to road improvements and other road-related improvements (e.g. roadside drainage systems) in subdivisions and other developments requiring county approvals, and which are required for property access subject to the expectation of public use by residential owners within a subdivision or business open to the general public, as well as improvements that are undertaken by the County Department of Transportation (DOT). They also apply to privately maintained roads and related improvements that are required for development projects subject to the expectation of public use where public health and safety is a factor.

Road standards have proven to be highly successful in many communities, setting reasonable, consistent requirements. Standards result in a road system that works well, meeting current needs and allowing for orderly expansion, where appropriate. Standards allow for efficient design, construction, and maintenance. Standards provide a common frame of reference for all of those with an interest in the County's roads, including:

- Civil Engineers
- Citizens
- Public officials
- Contractors
- Property owners
- Utility agencies
- Developers
- Planners

The County of Mendocino last adopted Road Standards in 1972. These Road Standards supercede the 1972 Road Standards and any previous Road Standards adopted by the County of Mendocino.

All reference to Caltrans Standard Plans and Standard Specifications are to the 2010 edition unless otherwise specified.

Document Overview

The Road Standards are organized as follows:

Tab A – Standard Plans
Tab B – Standard Specifications
Tab C – Road Design Standards
Tab D – Drainage Design Standards
Tab E – Traffic Design Standards
Tab F – Street Light Design Standards
Tab G – Checklists and Forms
Tab H – Exception Procedures

A table of contents has been provided at the beginning of the document and in each tab. Pages are numbered consecutively in each tab. For example, the Standard Plans are numbered A-1, A-2, etc. The standard plans in Tab A are also assigned an identification number that will be stable over time, even if pages are renumbered in future editions of the document.

The numbering system for the standard plans is based on that used by Caltrans. For example, the first standard plan would be referred to as *MENDOT STD. NO. A10*. Where the standard plan consists of more than one sheet, they are noted A, B, etc. For example, the typical cross sections for County of Mendocino Roads consist of *MENDOT STD. NO. A10A* through *A10J*. The numbering system for the standard plans and standard specifications is not sequential because it follows a standard format and numbers have been reserved for future use.

The Caltrans Standard Plans will serve as a valuable companion to the County of Mendocino Road Standards. The document is intended to supplement the standard plans and specifications prepared by the California Department of Transportation (Caltrans), providing an additional level of detail only where needed. The Engineering Service Center at the Caltrans web site, <http://www.dot.ca.gov/hq/esc/> (as of July 2000) makes their standards available for viewing and transfer at no charge.

User's Guide

Civil Engineers, whether designing private projects, checking the plans for private projects, or designing county projects, will need to be familiar with the entire document as well as referenced standards, particularly those prepared by Caltrans. See Tab B, Standard Road Specifications, for the precedence of referenced standards. The Civil Engineer in responsible charge of the work must use independent judgement in applying the standards and in evaluating situations where no standards are provided. The County Road Standards are not intended to cover all aspects of design, but rather to address recurring situations where a consistent approach is appropriate. *Subdivision Map Act Section 66456.2 – Civil Engineers shall prepare Improvement Plans – and Section 66418 & 66419 – Improvement Plans present “Designs” for “Developments”.* *Professional Engineers Act: California Business and Professions Code Sec. 6700-6799. Section 6730: Necessity for registration (Civil Engineers) - In order to safeguard life, health, property and public welfare, any person, either in a public or private capacity,*

except as in this chapter specifically excepted, who practices, or offers to practice, civil engineering, electrical engineering or mechanical engineering, in any of its branches in this state, including any person employed by the State of California, or any city, county, or city and county, who practices engineering shall submit evidence that he is qualified to practice, and shall be registered accordingly as a civil engineer, electrical engineer or mechanical engineer by the board. Section 6731: Definition of civil engineering: Civil engineering embraces the following studies or activities in connection with fixed works for ... drainage, ... highways, ... grading,etc. Section 6744: Exemption for landholder: This chapter does not require a registration for the purpose of practicing civil engineering, by an individual, a member of a firm or partnership, or by an officer of a corporation on or in connection with property owned or leased by the individual, firm, partnership, or corporation, unless the civil engineering work to be performed involves the public health or safety or the health and safety of employees of the individual, firm, partnership or corporation.

Citizens with concerns about possible road construction would want to start with Tab A, which includes typical cross sections for various road classifications. Road classifications are based on the General Plan and on whether the road is urban or rural. See the discussion of terms and definitions.

Public Officials that are reviewing land development projects would refer to Tab A, which illustrates the typical cross-sections and various other road design features. Tab H, Exception Procedures, may also be an important reference.

Contractors will primarily rely on Tabs A and B for detailed construction requirements.

Property Owners and **Utility Agencies** that are interested in completing improvements within a County Road (e.g. a new driveway approach, utility lines, tree planting) would refer to the Standard Plans in Tab A when planning the work and seeking bids from contractors.

Developers and **Planners** reviewing development projects will primarily use Tabs A, C, and I, but may want to begin with the Functional Road Classifications in Tab C, the Road Design Standards. Road design requirements must be considered early in the design of any development.

Common Terms and Definitions

Approval Authority. The public official or body empowered to act upon a permit or request for approval, or empowered to act upon an appeal of a decision on a permit or request for approval.

California Department of Transportation. Caltrans or CALTRANS.

California Streets and Highway Code. S&H

California Vehicle Code. CVC

Commercial or Industrial Road. A road providing access to, or through, an area that contains commercial or industrial uses (not limited to commercial or industrial “use types” in the Mendocino County Code Zoning Code).

County Road. A road accepted by the County of Mendocino on behalf of the public, for public use, which may or may not be accepted for public maintenance. (S&H Sec. 941)

County Maintained Road. Roads open to the public and designated by the County of Mendocino Board of Supervisors for maintenance pursuant to the California Vehicle and Streets & Highways Codes. (S&H Sec. 941)

DOT Director. Director of the Department of Transportation of the County of Mendocino, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

Driveway. A vehicular access that serves no more than one lot or parcel. These standards do not regulate driveways beyond the public Right-of-Way.

Driveway Approach. That portion of a driveway within the road right-of-way between the edge of road pavement and the property line. When the width of right of way is not defined the driveway approach shall be constructed and maintained to provide for the care and protection of the county road and traveling public (see right-of-way below). (A driveway is an “encroachment” and subject to regulation pursuant to S&H Ch. 5.5)

Exception. Relief from a requirement of the road standards, granted by the approval authority through the exceptions process described in Tab H.

Functional Road Classification. The classification of a road segment according to its purpose. The County of Mendocino General Plan classifies and lists certain roads according to the following classifications: Minor Arterial, Connector, Major Collector, Minor Collector, and Local Connector. All county roads that are not listed are considered Local Roads. Caltrans classifies roads in accordance with the “Transportation System Network” (TSN) designations, which are published by Caltrans for all “on system” roads in California. All TSN roads that are not listed by Caltrans are considered Local Roads as well. These TSN designations are listed in C-3 & C-4 of this standard. The Mendocino County General Plan classification of “Connector” has no equivalent in the TSN system. DOT is hopeful that future revisions of the General Plan will adopt the TSN system.

Lot or Parcel. Pre Mendocino County Code (MCC) sec 17-24&25 - A “Lot” means a parcel of land held by one owner. A “parcel” means a unit of land held by one owner.

Private Road. A road over which the general public has no right to pass.

Private Road with Public Easement. A private road, requiring county approvals, and which provides property access subject to the expectation of public use by residential owners is regulated under this standard. A private road may have a public easement granted over it to satisfy a parcel development but it is still a private road.

Public Road. A road over which the general public has the right to pass.

Right of Way. Right of Way shall be defined as one of the following: 1) property offered to the County of Mendocino for public road purposes; 2) recorded access easements or private road easements; or 3) easements by Implied Grant or Reservation on roads tied to the original government land patents with long standing public access history in that the County maintained the road as a public action; furthermore, “strict necessity” (ref Civil Code 803) –for example- roads on section lines necessary for homesteaders to get to there farms – also, these roads were reviewed public road included on the counties list of maintained roads at the time of the Collier-Burns Act in 1948; or 4) prescriptive rights held by County of Mendocino for public road purposes. In those cases where County Maintained Road is not within a dedicated or acquired “fee title” road right-of-way and yet the County Maintained Road has been designated by the Board of Supervisors the County has in fact made a County Maintained Road pursuant to law (S&H Sec. 25). This condition creates road right-of-way by prescription or “presumed dedication” which is beyond the scope of these road standards. When a title conveyance makes reference to a County or public road and no width is indicated it is implied to be a minimum of 40 feet (S&H Sec. 906).

Road. Road shall mean any public or private road that provides access to more than one lot.

Rural Road. Rural Road Standards shall apply in all areas not designated for urban road standards. Also, Rural Connector Roads shall be used to connect isolated subdivisions and businesses with existing County public roads under the conditions described in Tab C, Road Design Standards.

Sidewalk. An improved path for public convenience that will not endanger persons or property and will accommodate the disabled. (S&H Sec. 907. Any owner or occupant of land may construct a sidewalk on the county highway along the line of his/her land, subject to the authority conferred by law on the Board of Supervisors.)

Urban Road. Urban road standards shall apply when any one of the following conditions are met:

- 1) Any of the property abutting the road has a General Plan land use classification with a base density of less than forty thousand square feet per parcel, regardless whether public water or sewers are available or currently extended to the property.
- 2) Urban improvements, such as curb, gutter, or sidewalk, are in existence on the road frontage of property adjacent to, or in the vicinity of, the development.
- 3) The road is within an urban area on a map prepared by the State of California Department of Transportation or the County of Mendocino Department of Transportation. As of February 2007, urban areas had been designated for Ukiah, Willits, and Fort Bragg on said maps.

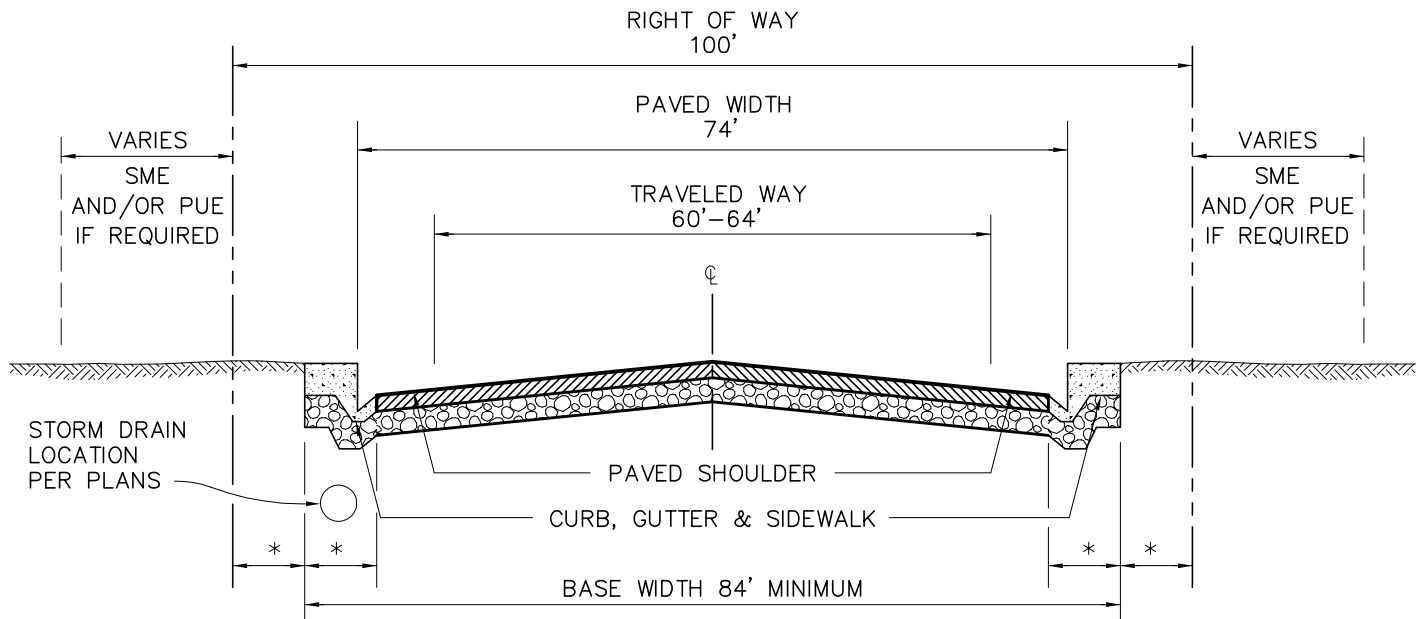
Subject to the Approval Authority, urban road standards may apply when the road is within an urbanized or urbanizing area as evidenced by one or more of the following: 1) the road is within a city sphere of influence and pre-zoned by the city at a base density of less than one acre, 2) it is within the urban limit line within the Coastal zone, 3) sites with certain uses having high occupancies regardless of zoning. For example- multi-family housing, some civic uses, or other uses with high traffic volumes constituting urban land use intensities (over 15 people per acre).

Feedback and Changes

Suggestions are welcome and should be directed to the County of Mendocino Department of Transportation by letter or e-mail - dot@co.mendocino.ca.us.

Changes to the Road Standards may be adopted from time to time. Changes will be posted on the County of Mendocino Web Site and will be available at the Department of Transportation. Each change will be numbered and will include instructions for removing, replacing, and adding pages. Use the Record of Changes form, in the Table of Contents Tab, to ensure that you have the most current version of the standards.

Tab A – Standard Plans



* = VARIES, SEE NOTE 5.

LEGEND:



PAVEMENT

BASE

PUE PUBLIC UTILITY EASEMENT
SME SLOPE MAINTENANCE
EASEMENT

NOTES:

1. PARKING GENERALLY PROHIBITED. PAVED SHOULDER TO SERVE AS BIKEWAY AND/OR EMERGENCY STOPPING AREA.
2. RIGHT OF WAY BEHIND SIDEWALK MAY BE USED FOR ROADSIDE FACILITIES SUCH AS SIGNS, PUBLIC UTILITIES, LANDSCAPING AND DRAINAGE FACILITIES.
3. BASED ON THE RECOMMENDATION OF THE DOT DIRECTOR AND SUBJECT TO THE APPROVAL AUTHORITY, THE MINIMUM PAVED WIDTH OF MINOR ARTERIAL AND MAJOR COLLECTOR URBAN ROADS MAY BE REDUCED BY 12'-14' WHERE CENTER TURN LANES OR MEDIANS ARE NOT REQUIRED.
4. BASED ON THE RECOMMENDATION OF THE DOT DIRECTOR AND SUBJECT TO THE APPROVAL AUTHORITY, THE MINIMUM PAVED WIDTH OF MINOR ARTERIAL AND MAJOR COLLECTOR URBAN ROADS MAY BE REDUCED BY UP TO 24 FEET WHERE FOUR TRAVEL LANES ARE NOT REQUIRED.
5. SEE MENDOT STD. NO. A40A FOR CURB, GUTTER AND SIDEWALK DETAILS.

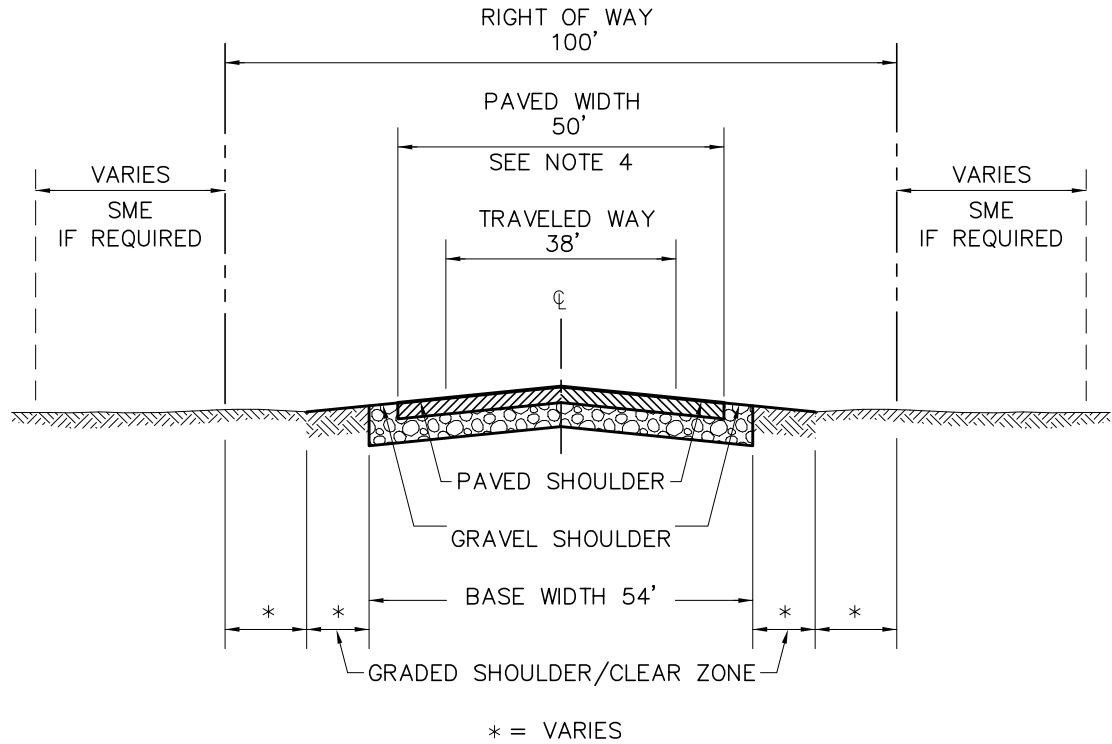


MINOR ARTERIAL AND MAJOR COLLECTOR – URBAN TYPICAL ROAD SECTION

MENDOT
STD. NO.
A10A

SCALE: NONE DESIGN: RCW DRAWN: LMM OCT. 2000

PAGE: A-1



LEGEND:

	PAVEMENT
	BASE
	COMPACTED EARTH
SME	SLOPE MAINTENANCE EASEMENT

NOTES:

1. PARKING MAY BE PROHIBITED. PAVED SHOULDER TO SERVE AS BIKEWAY AND WALKWAY.
2. GRADED SHOULDER MAY BE USED FOR ADDITIONAL CLEAR ZONE IF REQUIRED.
3. RIGHT OF WAY OUTSIDE OF CLEAR ZONE MAY BE USED FOR ROADSIDE FACILITIES SUCH AS TURNOUTS, SIGNS, ROADSIDE VEGETATION, PUBLIC UTILITIES AND DRAINAGE FACILITIES.
4. BASED ON THE RECOMMENDATION OF THE DOT DIRECTOR, AND SUBJECT TO THE APPROVAL AUTHORITY, THE MINIMUM PAVED WIDTH OF MINOR ARTERIAL RURAL ROADS MAY BE REDUCED BY UP TO 14' WHERE CENTER TURN LANES OR MEDIANS ARE NOT REQUIRED.
5. SEE MENDOT STD. A18 FOR ROAD GRADING SECTIONS.

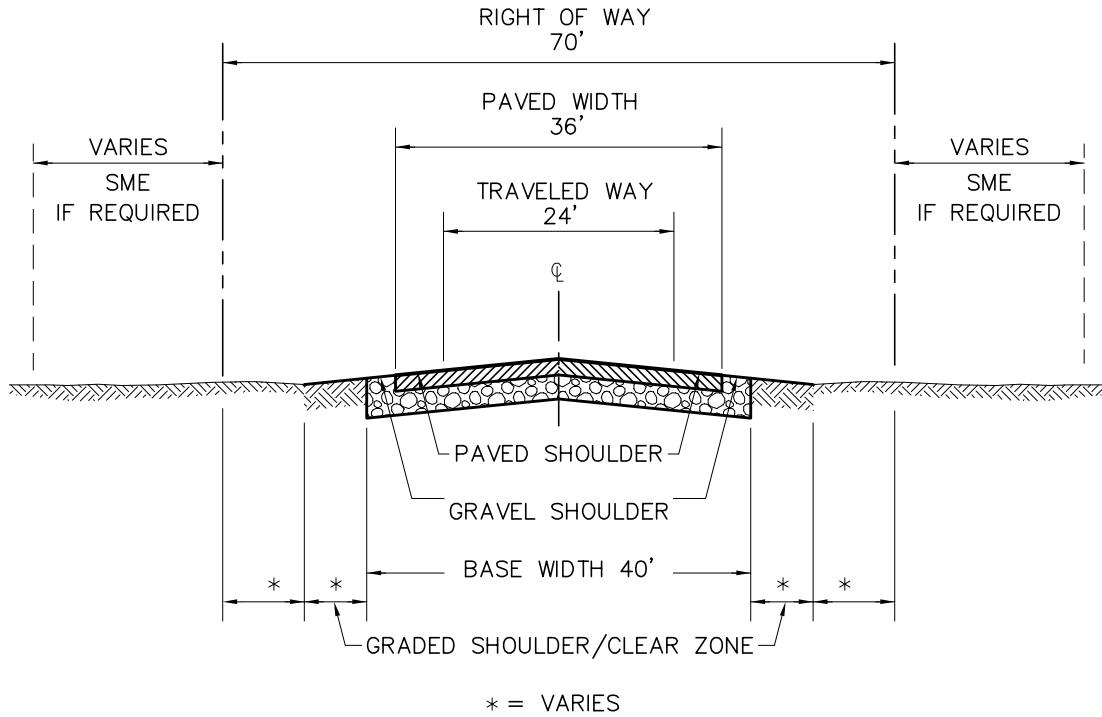


MINOR ARTERIAL — RURAL TYPICAL ROAD SECTION

MENDOT
STD. NO.
A10B

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

PAGE: A-2



LEGEND:

	PAVEMENT
	BASE
	COMPACTED EARTH
SME	SLOPE MAINTENANCE EASEMENT

NOTES:

1. PARKING MAY BE PROHIBITED. PAVED SHOULDER TO SERVE AS BIKEWAY AND WALKWAY.
2. GRADED SHOULDER MAY BE USED FOR ADDITIONAL CLEAR ZONE IF REQUIRED.
3. RIGHT OF WAY OUTSIDE OF CLEAR ZONE MAY BE USED FOR ROADSIDE FACILITIES SUCH AS TURNOUTS, SIGNS, ROADSIDE VEGETATION, PUBLIC UTILITIES AND DRAINAGE FACILITIES.
4. SEE MENDOT STD. A18 FOR ROAD GRADING SECTIONS.



CONNECTORS, MAJOR AND MINOR COLLECTORS, AND LOCAL CONNECTORS—RURAL TYPICAL ROAD SECTION

MENDOT
STD. NO.
A10C

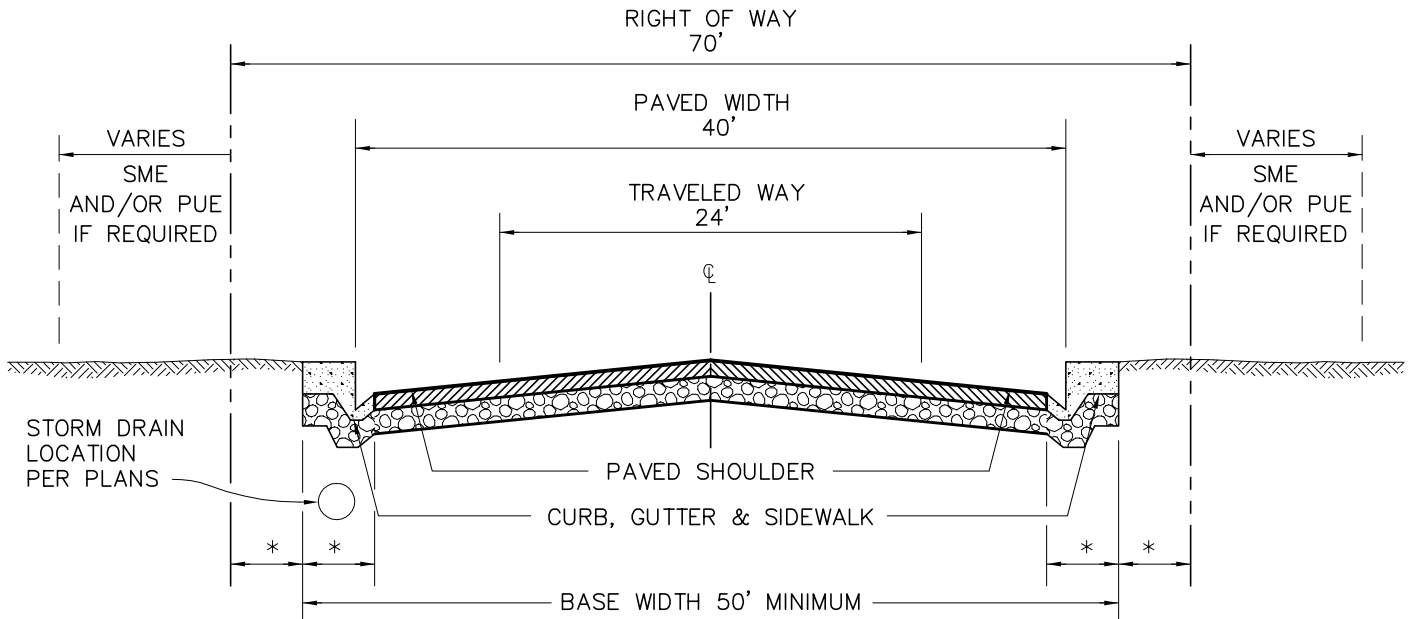
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DESIGN: RCW

DRAWN: LMM

OCT. 2000

PAGE: A-3



* = VARIES, SEE NOTE 3.

LEGEND:



PAVEMENT



BASE

PUE PUBLIC UTILITY EASEMENT
SME SLOPE MAINTENANCE EASEMENT

NOTES:

1. PAVED SHOULDER TO SERVE AS PARKING LANE AND/OR BIKEWAY.
2. RIGHT OF WAY BEHIND SIDEWALK MAY BE USED FOR ROADSIDE FACILITIES SUCH AS SIGNS, PUBLIC UTILITIES, LANDSCAPING AND DRAINAGE FACILITIES.
3. SEE MENDOT STD. NO. A40A FOR CURB, GUTTER AND SIDEWALK DETAILS.

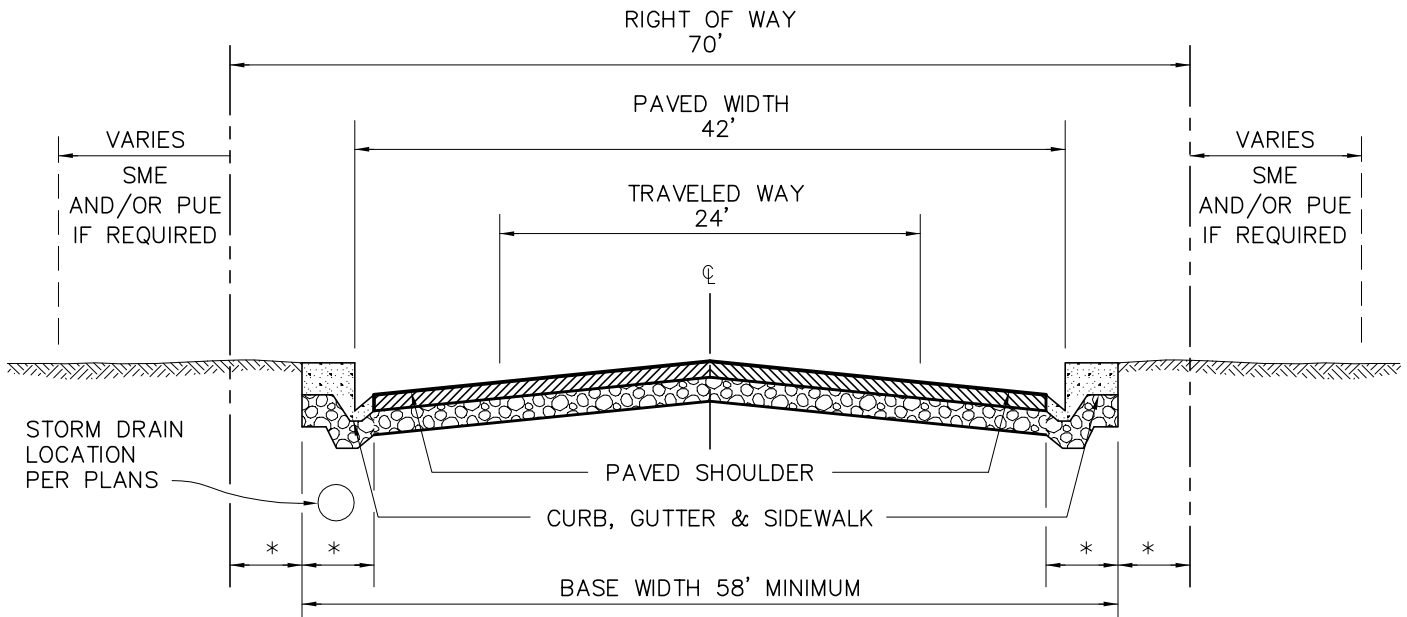


MINOR COLLECTOR, LOCAL CONNECTOR URBAN TYPICAL ROAD SECTION

MENDOT
STD. NO.
A10D

SCALE: NONE | DESIGN: RCW | DRAWN: CLG | OCT. 2000

PAGE: A-4



* = VARIES, SEE NOTE 3.

LEGEND:



PAVEMENT

BASE

PUE PUBLIC UTILITY EASEMENT

SME SLOPE MAINTENANCE
EASEMENT

NOTES:

1. PAVED SHOULDER TO SERVE AS PARKING LANE AND/OR BIKEWAY.
2. RIGHT OF WAY BEHIND SIDEWALK MAY BE USED FOR ROADSIDE FACILITIES SUCH AS SIGNS, PUBLIC UTILITIES, LANDSCAPING AND DRAINAGE FACILITIES.
3. SEE MENDOT STD. NO. A40A FOR CURB, GUTTER AND SIDEWALK DETAILS.

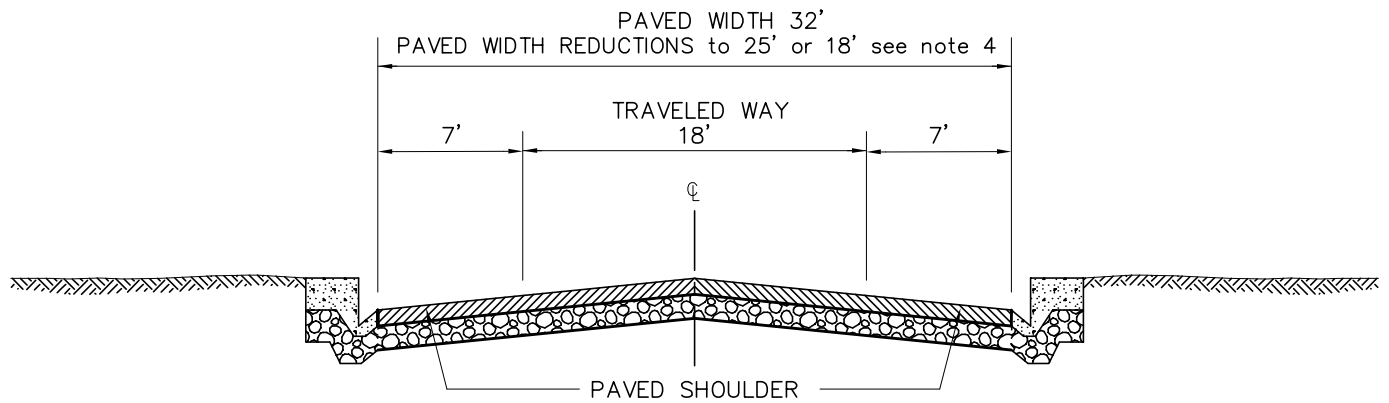


LOCAL ROAD, COMMERCIAL OR INDUSTRIAL URBAN TYPICAL ROAD SECTION

MENDOT
STD. NO.
A10E

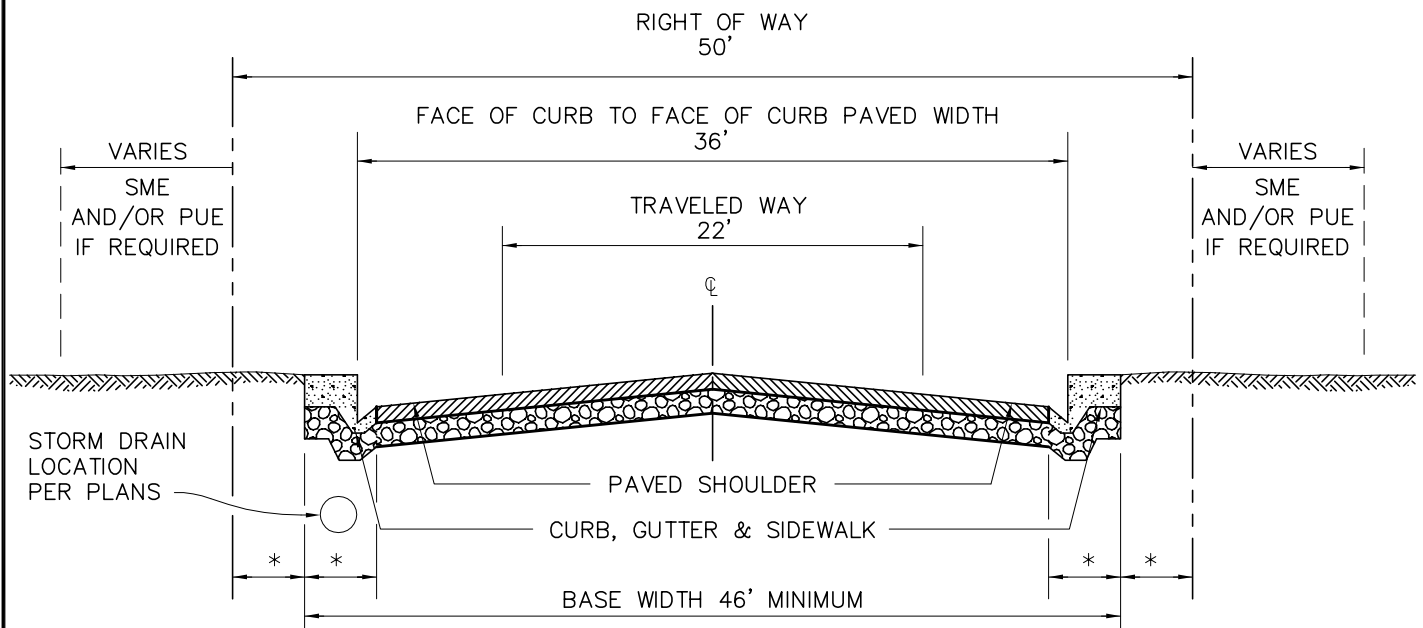
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PAGE: A-5



REDUCED

Details not shown
same as standard



STANDARD

LEGEND:

-  PAVEMENT
-  BASE
- PUE PUBLIC UTILITY EASEMENT
- SME SLOPE MAINTENANCE EASEMENT
- * = VARIES, SEE NOTE 3.

NOTES:

1. PAVED SHOULDER TO SERVE AS PARKING LANE WHERE PARKING IS PERMITTED.
2. RIGHT OF WAY BEHIND SIDEWALK MAY BE USED FOR ROADSIDE FACILITIES SUCH AS SIGNS, PUBLIC UTILITIES, LANDSCAPING AND DRAINAGE FACILITIES.
3. SEE MENDOT STD. NO. A40A FOR CURB, GUTTER AND SIDEWALK DETAILS.
4. SEE MENDOT STD. TAB(s) C.3.H & H CONCERNING WIDTH REDUCTIONS RELATED TO NO STREET PARKING.



LOCAL ROAD, RESIDENTIAL AND URBAN TYPICAL ROAD SECTION

MENDOT
STD. NO.
A10F

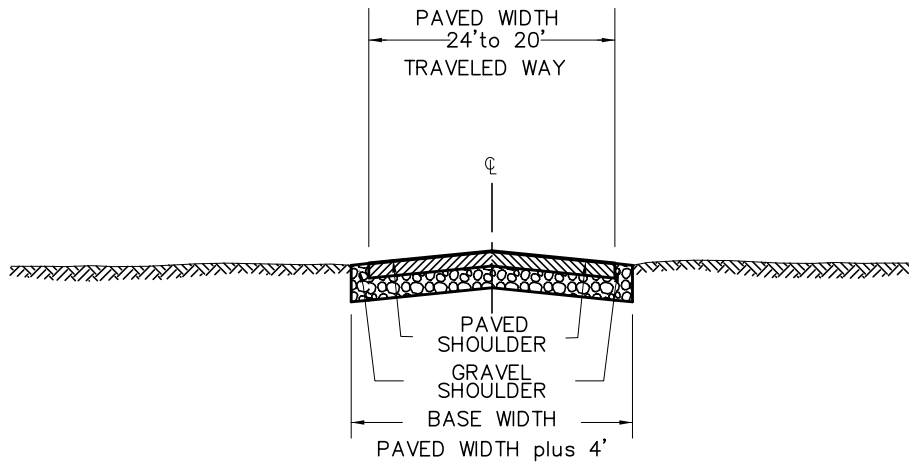
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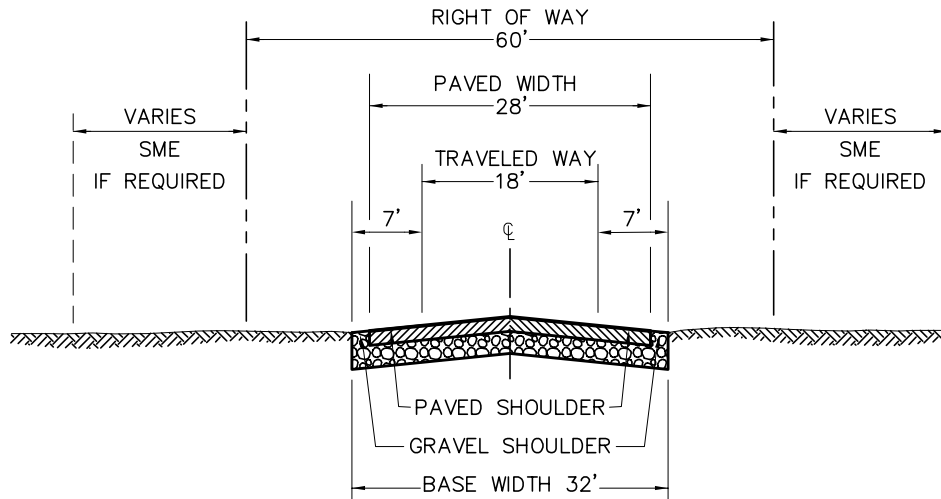
AUG. 2004

PAGE: A-6



REDUCED

Details not shown
same as STANDARD



STANDARD

LEGEND:



PAVEMENT

BASE

SME SLOPE MAINTENANCE
EASEMENT

NOTES:

1. PARKING MAY BE PROHIBITED. PAVED SHOULDER TO SERVE AS BIKEWAY AND WALKWAY.
2. RIGHT OF WAY OUTSIDE OF SHOULDER MAY BE USED FOR ROADSIDE FACILITIES SUCH AS TURNOUTS, SIGNS, ROADSIDE VEGETATION, PUBLIC UTILITIES AND DRAINAGE FACILITIES.
3. SEE MENDOT STD. A18 FOR ROAD GRADING SECTIONS.
4. SEE MENDOT STD. TAB(s) C.3.H & H FOR REDUCED WIDTH.

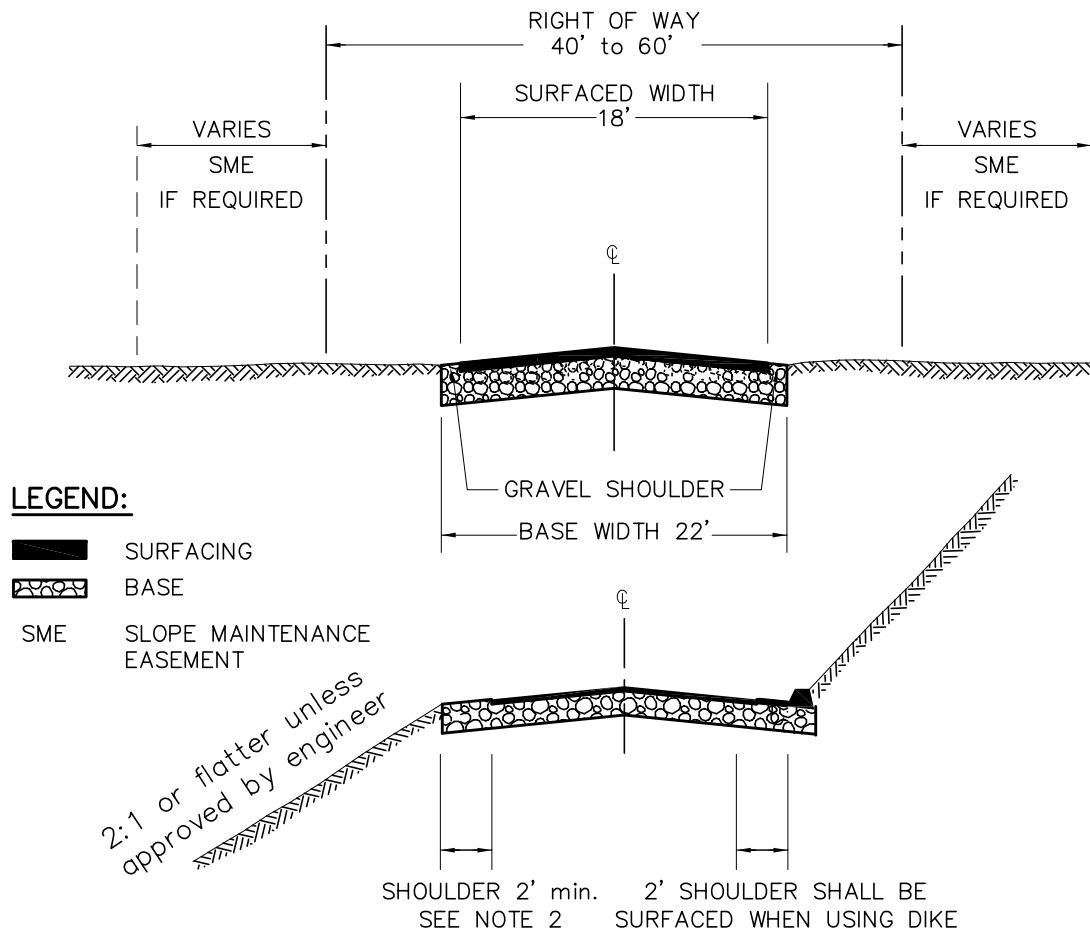


LOCAL ROAD — RURAL TYPICAL ROAD SECTION

MENDOT
STD. NO.
A10G

SCALE: NONE | DESIGN: HND | DRAWN: HND | AUG. 2004

PAGE: A-7



NOTES:

1. PARKING MAY BE PROHIBITED. PAVED SHOULDER TO SERVE AS BIKEWAY AND WALKWAY.
2. RIGHT OF WAY OUTSIDE OF SHOULDER MAY BE USED FOR ROADSIDE FACILITIES SUCH AS TURNOUTS, SIGNS, ROADSIDE VEGETATION, PUBLIC UTILITIES AND DRAINAGE FACILITIES.
3. SEE MENDOT STD. A18 FOR ROAD GRADING SECTIONS.
4. MINIMUM EASEMENT WIDTH SHALL BE 60' WHEN THE ROAD SERVES, OR HAS THE POTENTIAL TO SERVE, MORE THAN 4 LOTS.
5. A STRUCTURAL SECTION DESIGNED WITH A MINIMUM TI 4.5 SHALL BE PROVIDED PER SEC. C.3.S. OTHERWISE, MINIMUM IMPROVEMENT LEVELS FOR NON CONTINUOUS ROADS SHALL BE DEFINED AS FOLLOWS:

PROFILE GRADE	BASE WIDTH	BASE THICKNESS	SURFACING	SURFACING WIDTH
<16%	22'	14"	NONE	NONE
<20%>16%	22'	14"	DOUBLE CHIP SEAL	18'
<20%>16%	22'	9"	2.5" AC min.	18'

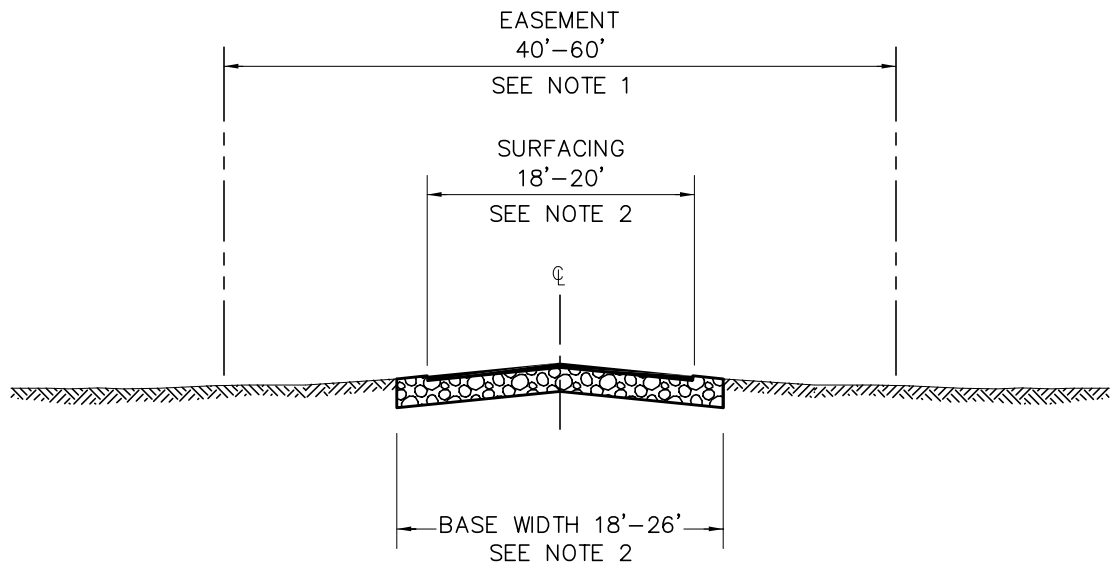


**LOCAL ROAD – NON CONTINUOUS
TYPICAL ROAD SECTION**

MENDOT
STD. NO.
A10G1

SCALE: NONE | DESIGN: HND | DRAWN: HND | AUG. 2004

PAGE: A-8a



LEGEND:

-  SURFACING
-  BASE

NOTES:

1. MINIMUM EASEMENT WIDTH SHALL BE 60' WHEN THE ROAD SERVES, OR HAS THE POTENTIAL TO SERVE, MORE THAN 4 LOTS.
2. IMPROVEMENT LEVELS FOR PRIVATE ROADS SHALL BE DEFINED AS FOLLOWS:

IMPROVEMENT LEVEL	BASE WIDTH	BASE THICKNESS	SURFACING	SURFACING WIDTH
A	22'	8" or Design*	NONE	NONE
B	22'	12" or Design*	DOUBLE CHIP SEAL	18'
C	26'	8" or Design*	NONE	NONE'
D	26'	12" or Design*	DOUBLE CHIP SEAL	20'

- * Structural section thickness may be reduced based on soil "R" value and TI = 4.5, per C.3.S. "Pavement Design"
3. SEE ROAD DESIGN STANDARDS, TAB C, FOR THE REQUIRED IMPROVEMENT LEVELS FOR PRIVATE MINOR SUBDIVISION ROADS.
 4. SEE MENDOT A18 FOR ROAD GRADING SECTIONS. ONLY TYPICAL SECTIONS "A" AND "B" SHALL BE USED FOR PRIVATE ROADS.



**PRIVATE
MINOR SUBDIVISION ROAD
TYPICAL ROAD SECTION**

MENDOT
STD. NO.
A10H

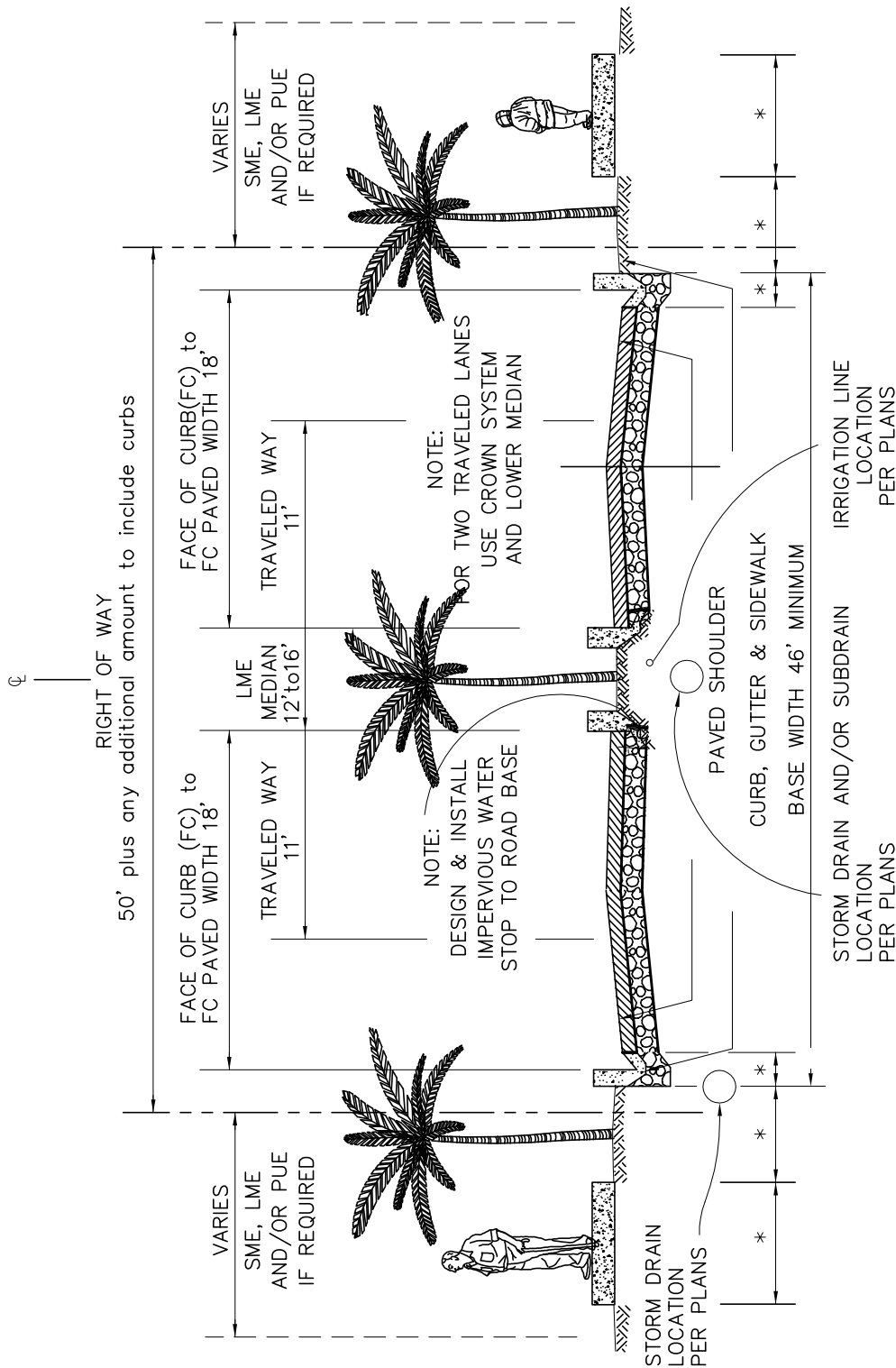
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Rev. June. 06

PAGE: A-8b



NOTES:

1. PAVED SHOULDER TO SERVE AS PARKING LANE WHERE PARKING IS PERMITTED.
2. RIGHT OF WAY BEHIND SIDEWALK MAY BE USED FOR ROADSIDE FACILITIES SUCH AS SIGNS, PUBLIC UTILITIES, LANDSCAPING AND DRAINAGE FACILITIES.
3. SEE MENDOT STD. NO. A40A FOR CURB, GUTTER, SIDEWALK, & MEDIAN LANDSCAPE MAINTENANCE DETAILS.
4. SEE MENDOT STD. TAB(s) C.3.H & H CONCERNING WIDTH REDUCTIONS RELATED TO NO STREET PARKING.

LEGEND:

	PAVEMENT
	BASE
	PUE
	SME
	LME

* = VARIES, SEE NOTE 3.

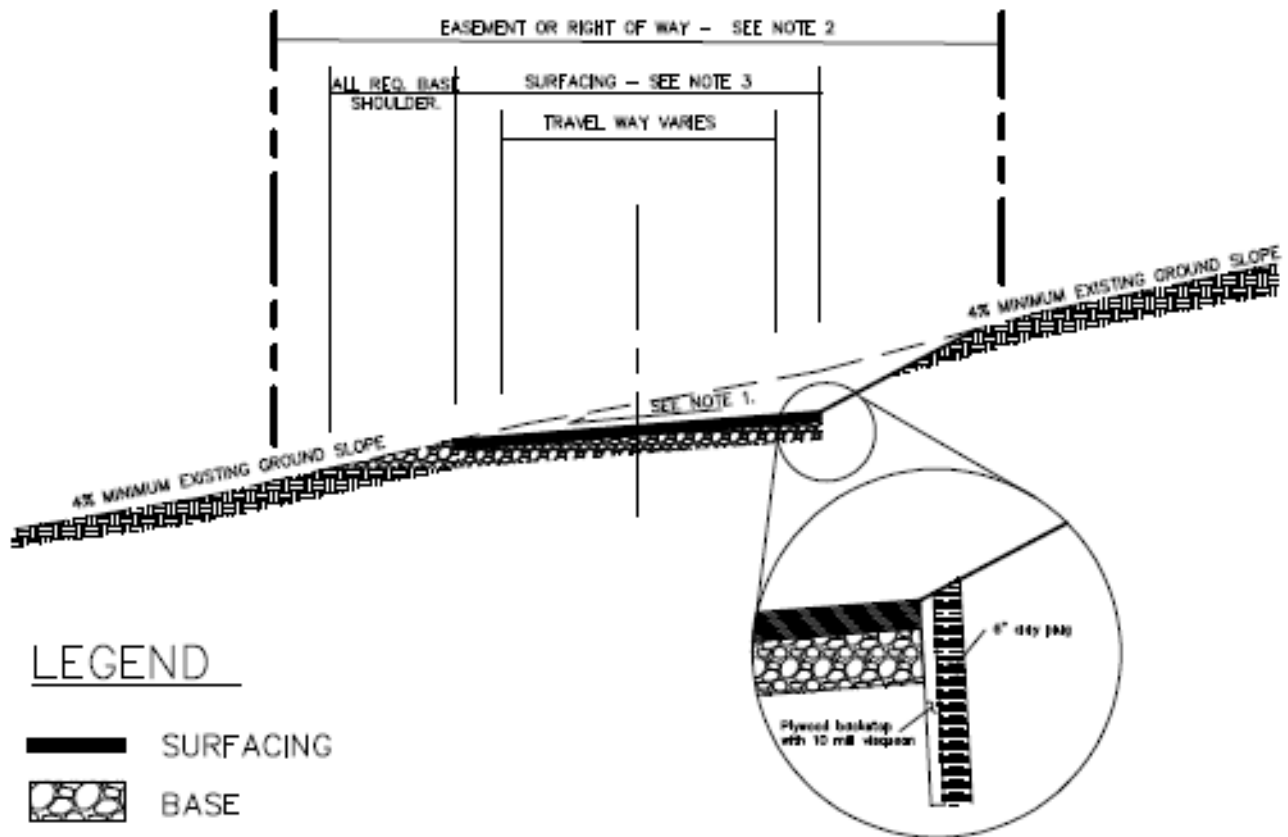


LANDSCAPED LOCAL ROAD HEALTHY NEIGHBORHOOD RESIDENTIAL URBAN STREET DESIGN EXCEPTIONS

SCALE: NONE | DESIGN: HND | DRAWN: HND | JUNE, 2005

MENDOT
STD. NO.
A10I

PAGE: A-8c

**NOTES:**

SEE Note 5. Water Barrier

1. DESIGN OF CROSS SLOPE SHALL CONFORM TO Tab C_d - Alternate Design Standards.
2. MINIMUM PRIVATE EASEMENT OR PUBLIC RIGHT OF WAY WIDTH SHALL CONFORM TO THE ROAD DESIGNATION.
3. SURFACING WIDTH SHALL CONFORM TO THE APPROPRIATE STD. NOS. A10G & H; HOWEVER FULL SHOULDER WIDTH MUST ALL BE PLACED ON THE OUTSLOPED PORTION.
4. PAVEMENT AND/OR BASE THICKNESS' SHALL CONFORM TO THE REQUIRED ROAD DESIGNATION.
5. DEVELOPERS DESIRING TO USE THIS ALTERNATE STANDARD SHALL PROVIDE A WATER BARRIER UNLESS THE PROJECT SOILS INVESTIGATION INDICATES THAT SUBSOIL WATER WILL NOT MIGRATE INTO THE BASE LAYER IN SUFFICIENT AMOUNTS TO CAUSE PAVEMENT DAMAGE.



LOW IMPACT TO HYDROLOGY GUIDELINES / ALTERNATE DESIGN STANDARDS

MENDOT
STD. NO.
A10J

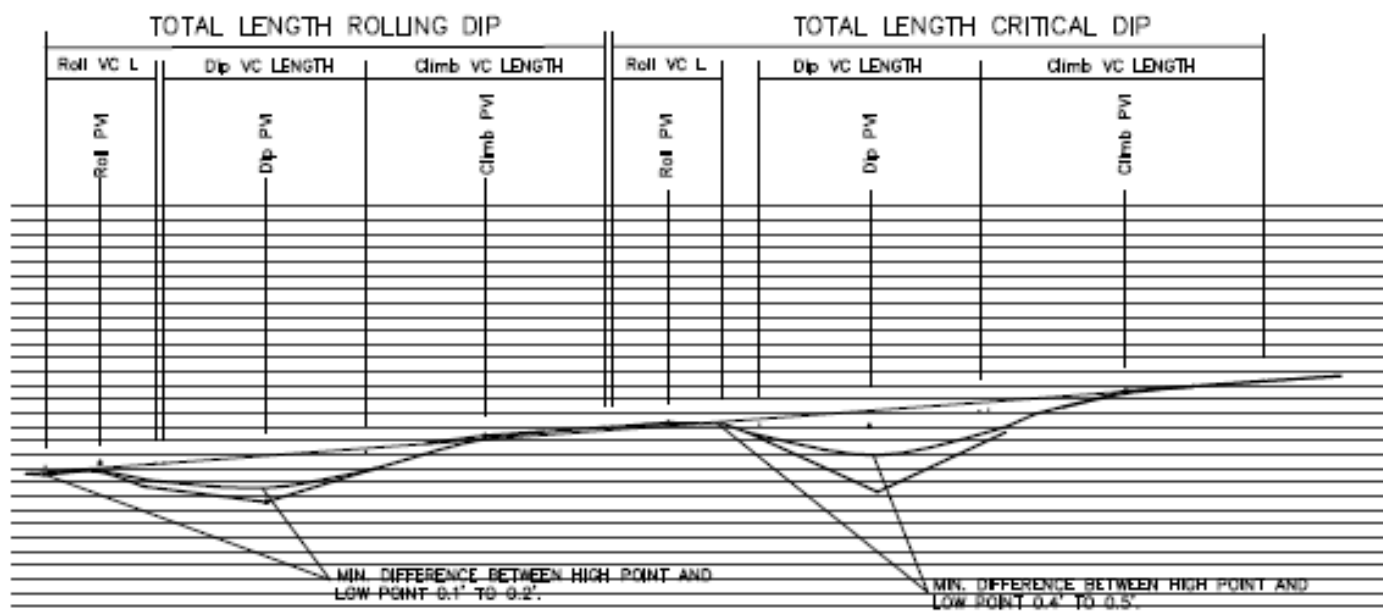
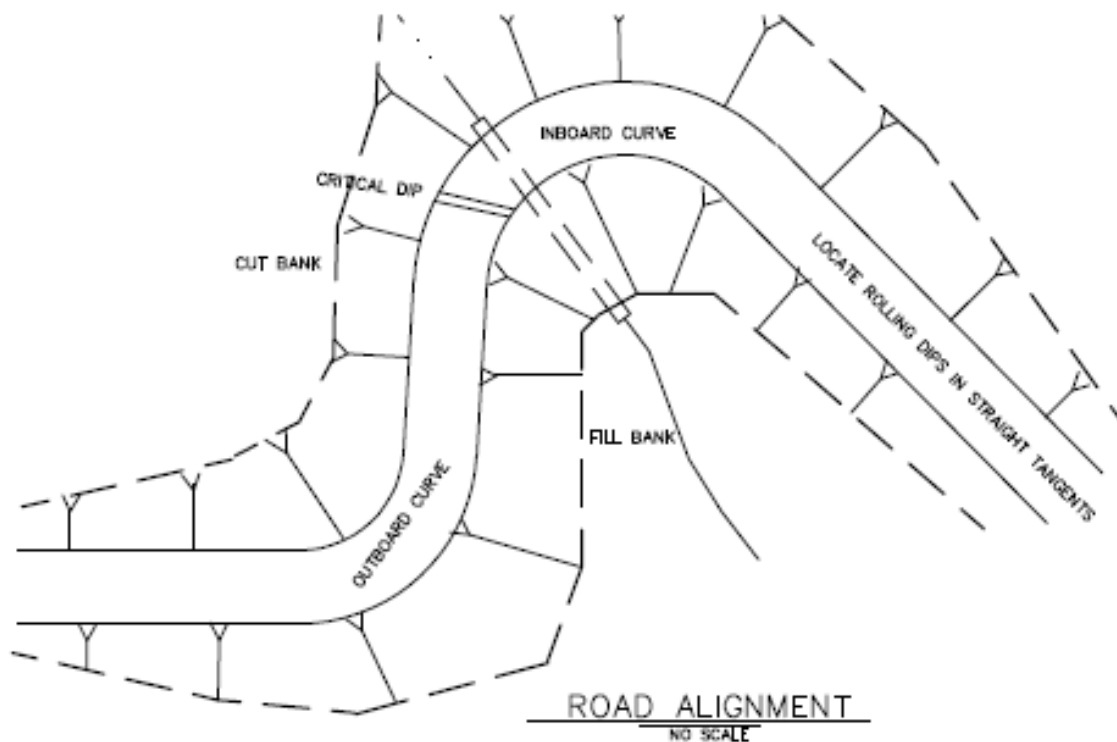
SCALE: NONE

DESIGN: HND

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JAN. 2008

PAGE: A-8d



ROAD PROFILE

NO SCALE

NOTES:

1. DESIGN OF CROSS SLOPE SHALL CONFORM TO Tab Ca - Alternate Design Standards.



LOW IMPACT TO HYDROLOGY GUIDELINES / ALTERNATE DESIGN STANDARDS

MENDOT
STD. NO.
A10K

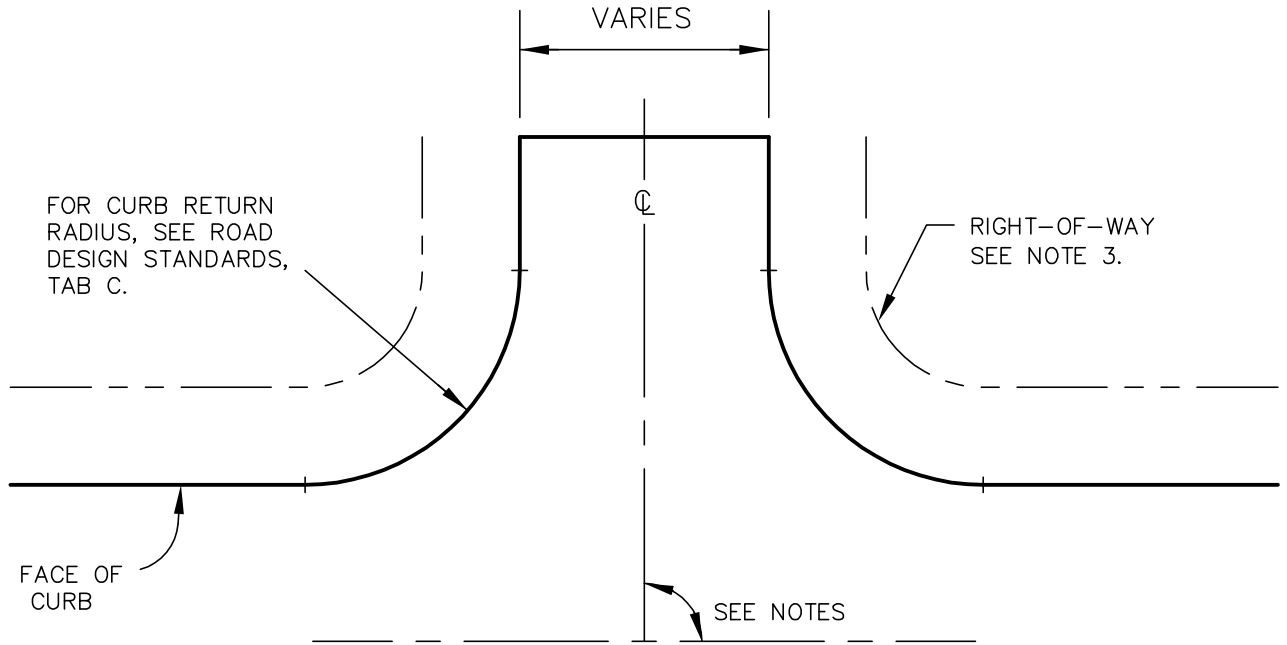
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DESIGN: HND

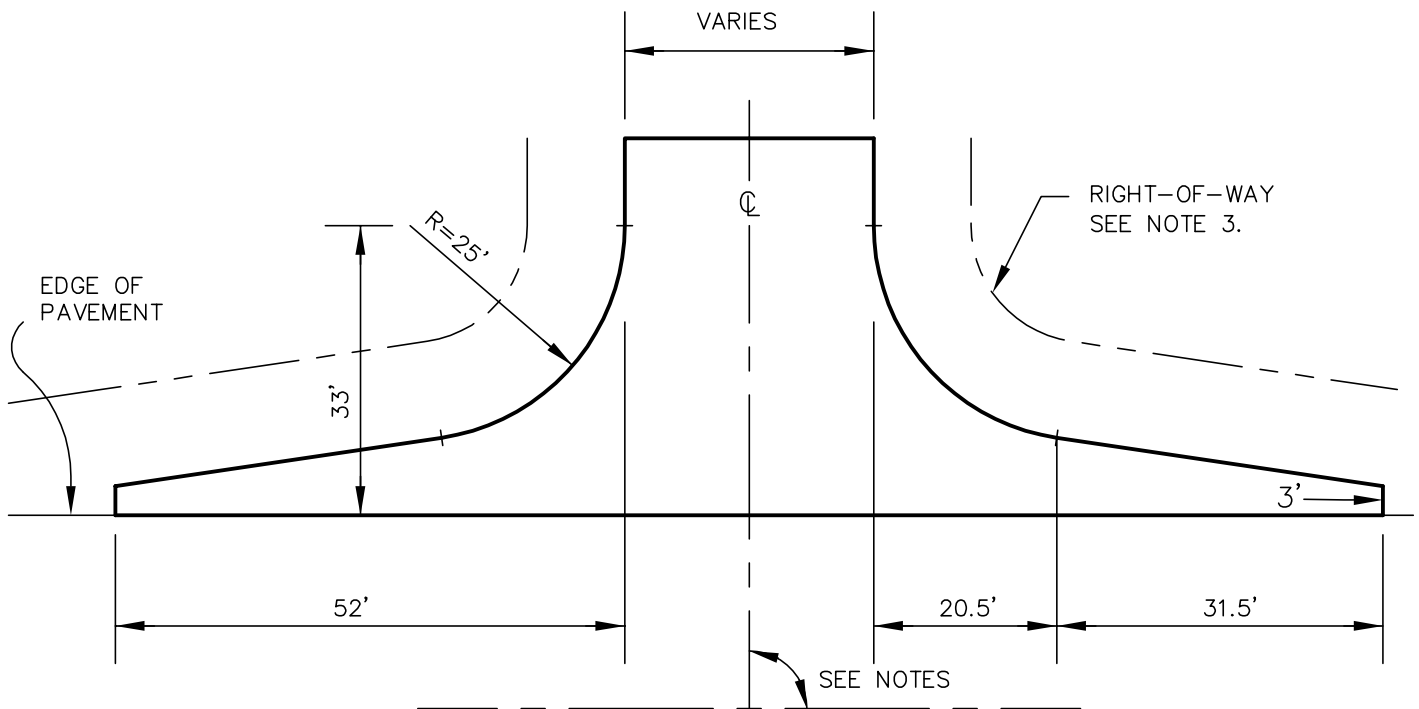
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JAN. 2008

PAGE: A-8e



INTERSECTION "A"



INTERSECTION "B"

NOTE: SEE INTERSECTION GEOMETRY NOTES ON STD. A11B.



INTERSECTION GEOMETRY

MENDOT
STD. NO.
A11A

SCALE: NONE

DESIGN: RCW

DRAWN: LMM

OCT. 2000

PAGE: A-9

NOTES:

1. INTERSECTIONS WITH ARTERIAL ROADS SHALL BE DESIGNED ON A CASE-BY-CASE BASIS.
2. INTERSECTION GEOMETRY FOR OTHER ROADS SHALL BE BASED ON THE FOLLOWING TABLE:

ROAD CLASSIFICATION	URBAN MAJOR COLLECTOR	RURAL MAJOR COLLECTOR/ CONNECTOR/ MINOR COLLECTOR	URBAN MINOR COLLECTOR	URBAN LOCAL	RURAL LOCAL/ PRIVATE ROAD
URBAN MAJOR COLLECTOR	A				
RURAL MAJOR COLLECTOR/ CONNECTOR/ MINOR COLLECTOR	A	B			
URBAN MINOR COLLECTOR	A	A	A		
URBAN LOCAL	A	B	A	A	
RURAL LOCAL/ PRIVATE ROAD	A	B	A	A	B

3. RIGHT-OF-WAY LINES AT EACH INTERSECTION SHALL BE ROUNDED.
4. A GREATER RETURN RADIUS MAY BE REQUIRED IF ROADS INTERSECT AT OTHER THAN RIGHT ANGLES.

NOTE: SEE INTERSECTION GEOMETRY ON STD. A11A.



INTERSECTION GEOMETRY NOTES

MENDOT
STD. NO.
A11B

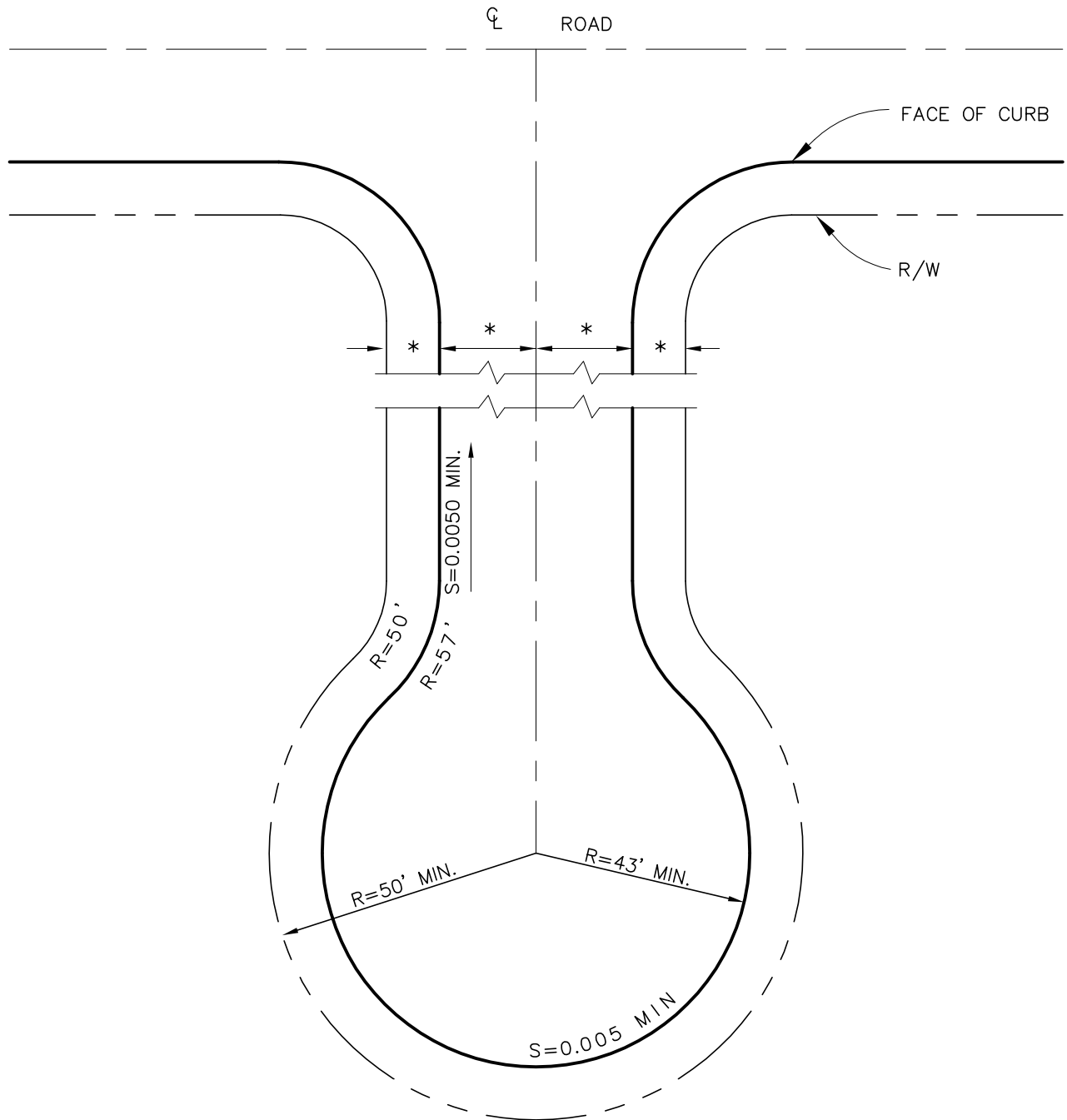
SCALE: NONE

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OCT. 2000

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URBAN CUL-DE-SAC

MENDOT
STD. NO.
A12

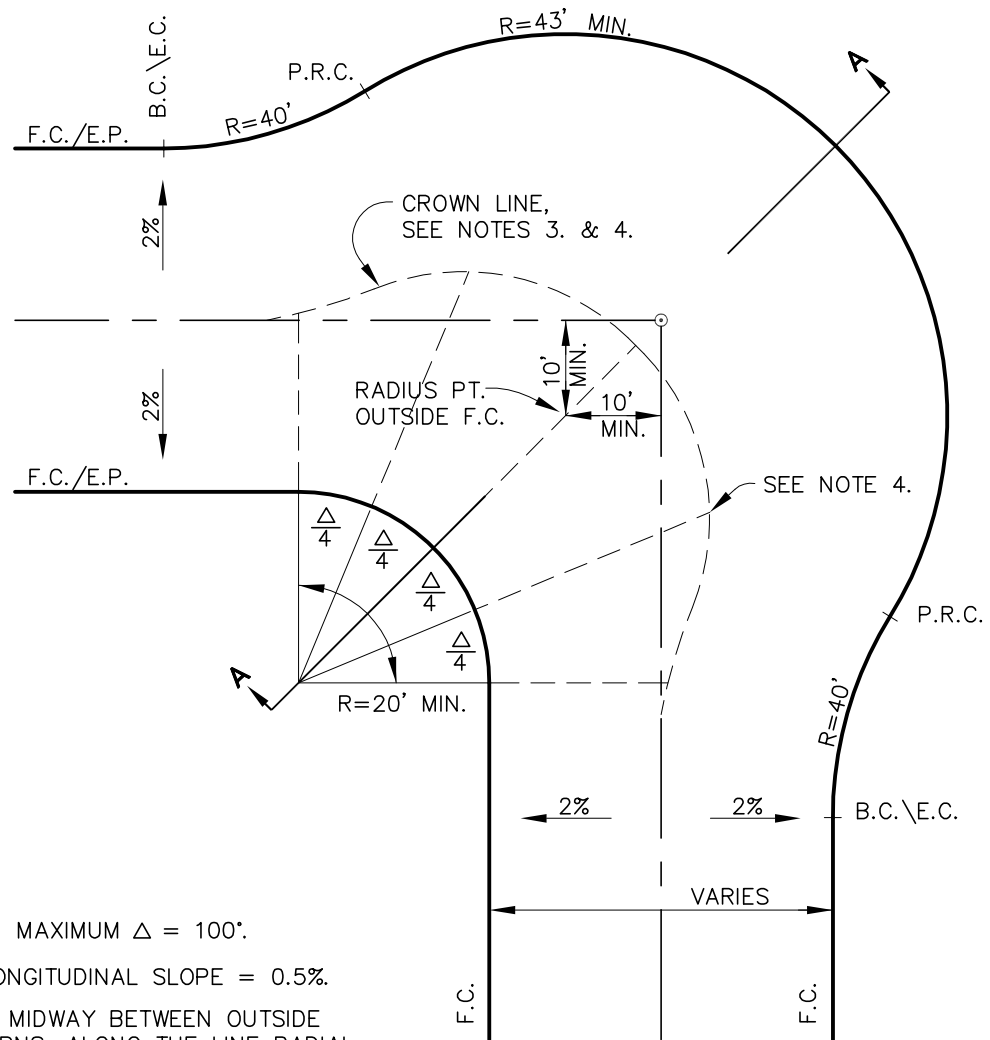
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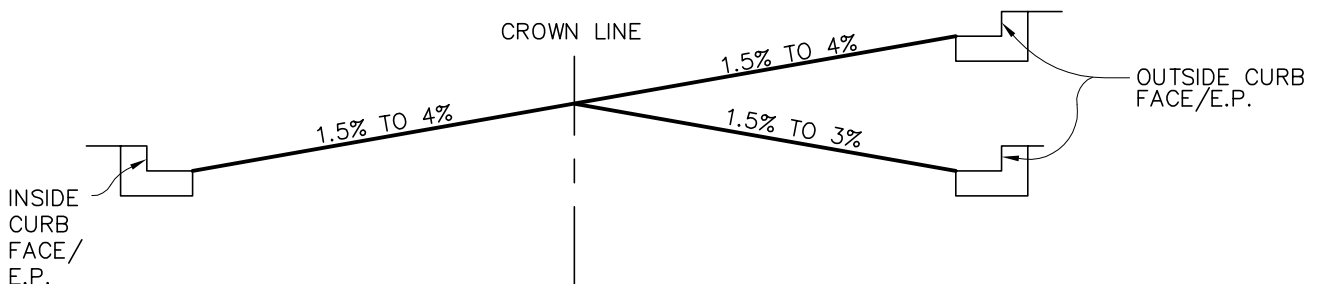
OCT. 2000

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NOTES:

1. MINIMUM $\Delta = 60^\circ$; MAXIMUM $\Delta = 100^\circ$.
2. MINIMUM CURB LONGITUDINAL SLOPE = 0.5%.
3. CROWN LINE LIES MIDWAY BETWEEN OUTSIDE AND INSIDE RETURNS, ALONG THE LINE RADIAL TO INSIDE RETURN.
4. CROWN LINE ELEVATION TO BE SHOWN ON THE PLANS AT $\Delta/4$ POINTS.



SECTION A-A
MAXIMUM & MINIMUM CROSS SLOPES



ROAD KNUCKLE

MENDOT
STD. NO.
A13

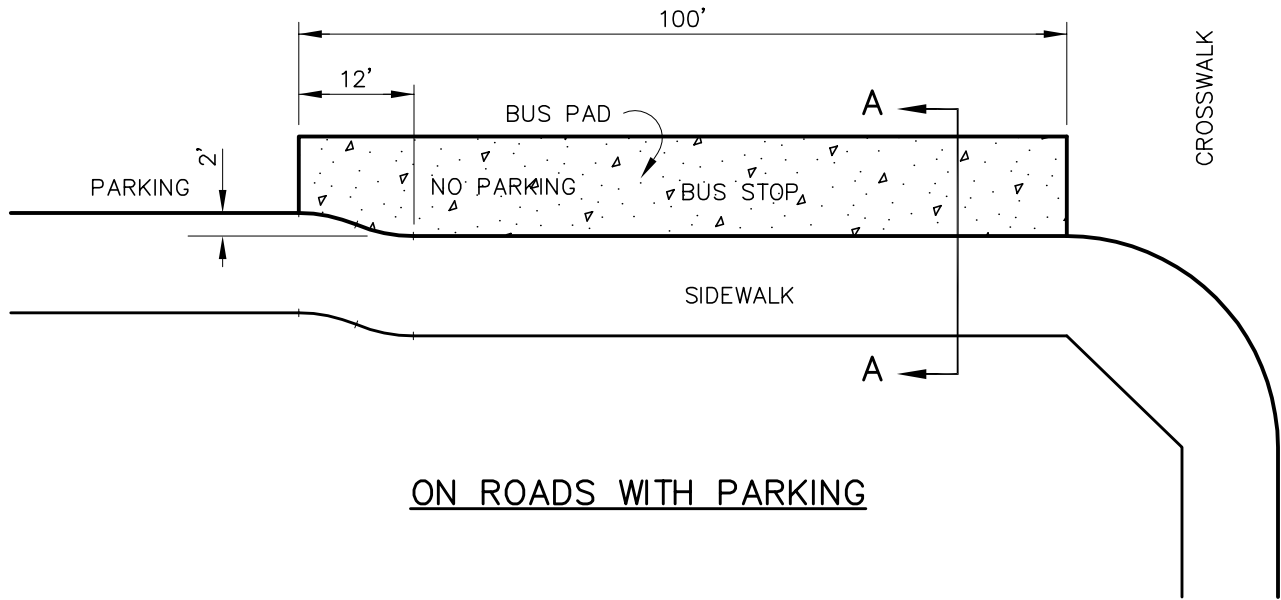
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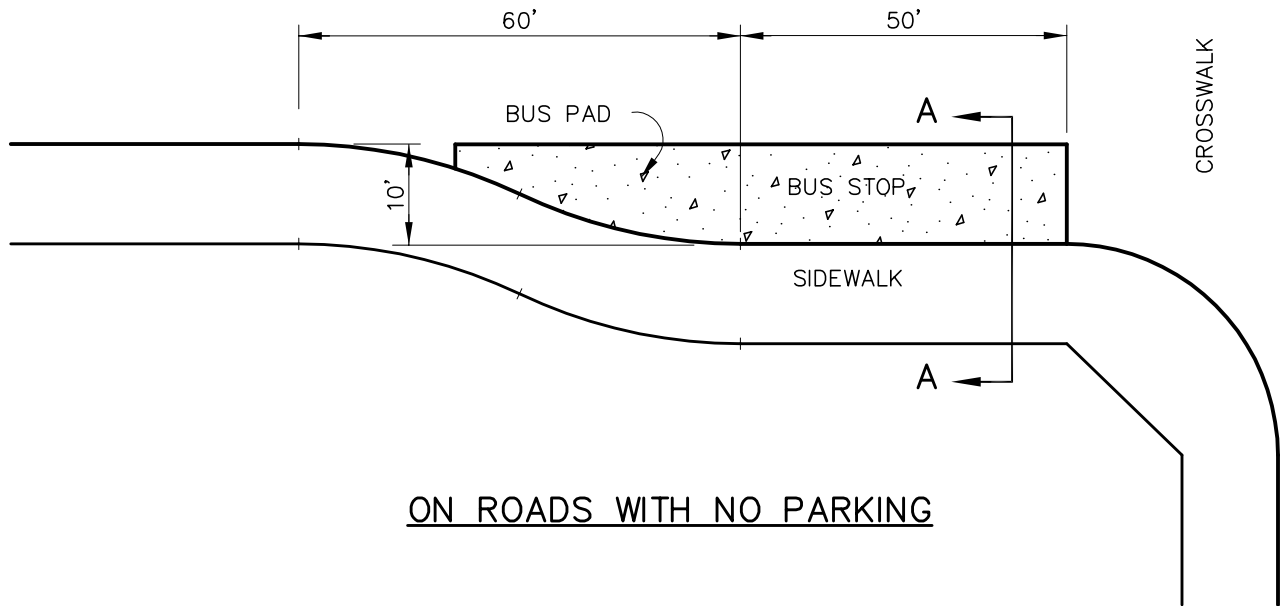
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ON ROADS WITH PARKING



ON ROADS WITH NO PARKING

NOTES:

1. SEE SECTION A-A, MENDOT STD No. A14C
2. BUS BENCHES AND/OR SHELTER SHALL BE LOCATED BEHIND THE SIDEWALK OR IN SUCH A MANNER THAT A MINIMUM 5' CLEAR SIDEWALK IS PROVIDED.
3. DESIGN SHALL CONFORM TO THESE REQUIREMENTS, EXCEPT AS OTHERWISE APPROVED BY THE DOT DIRECTOR.



BUS STOP – INTERSECTION LOCATIONS

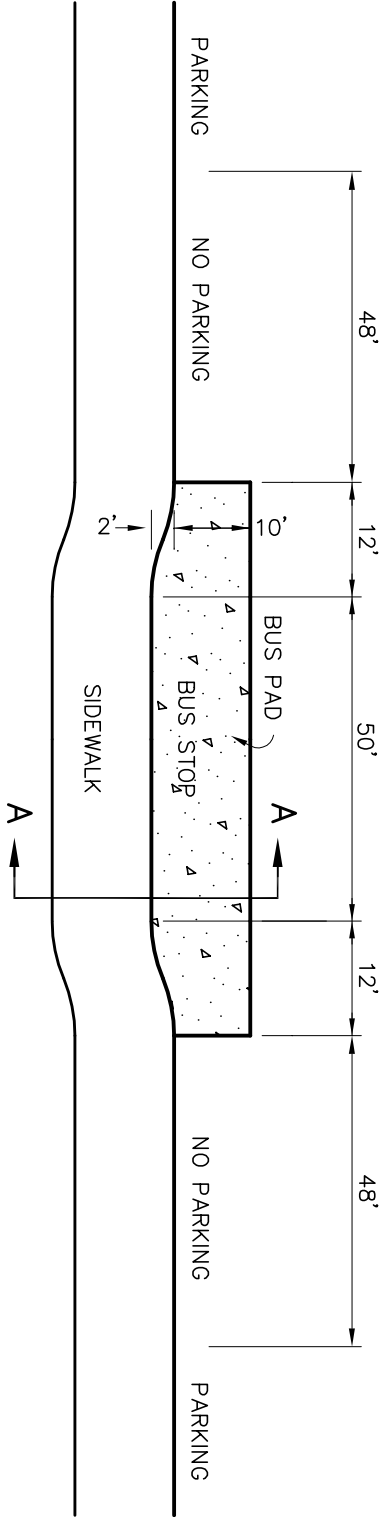
MENDOT
STD. NO.
A14A

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

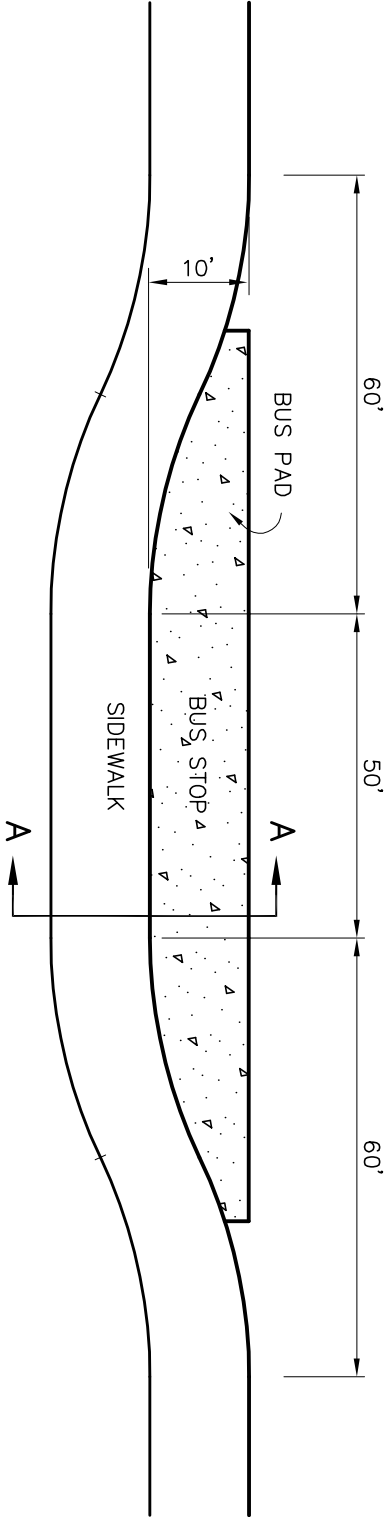
PAGE: A-13



SCALE: NONE	DESIGN: RCW	DRAWN: LMM	OCT. 2000	PAGE: A-14
BUS STOP - MID BLOCK LOCATIONS				MENDOT STD. NO. A14B



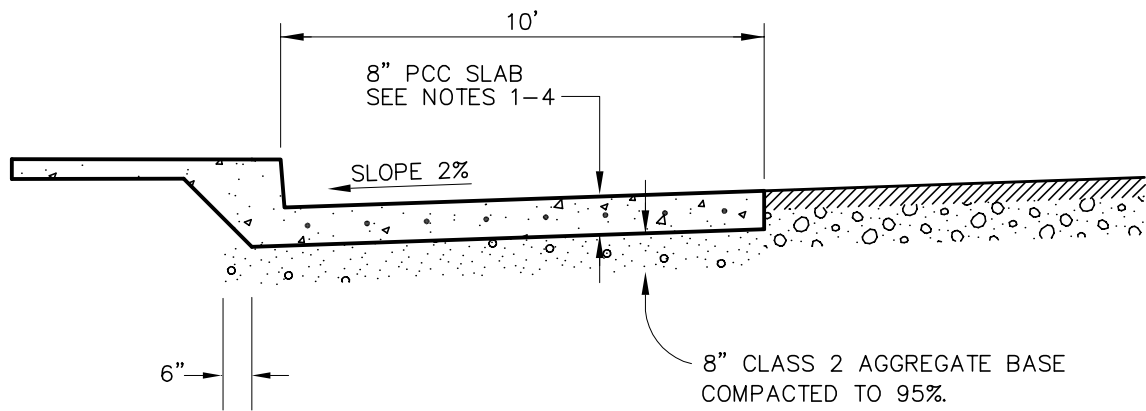
ON ROADS WITH PARKING



ON ROADS WITH NO PARKING

NOTES:

- 1. SEE SECTION A-A, MENDOT STD. No. A14C.
- 2. BUS BENCHES AND SHELTER SHALL BE LOCATED BEHIND THE SIDEWALK OR IN SUCH A MANNER THAT A MINIMUM 5' CLEAR SIDEWALK IS PROVIDED.
- 3. DESIGN SHALL CONFORM TO THESE REQUIREMENTS, EXCEPT AS OTHERWISE APPROVED BY THE DOT DIRECTOR.



SECTION A-A

NOTES:

1. EXPANSION JOINTS & SCORE MARKS SHALL MATCH EXISTING CURB, GUTTER, & SIDEWALK.
2. USE CLASS "1" P.C.C. (6-SACK MIX) FOR BUS STOP SLAB.
3. CONSTRUCT SUBDRAINS WHEN REQUIRED BY DOT DIRECTOR.
4. REINFORCING STEEL REQUIRED IN CONC. #4 @ 12" O.C. EACH WAY, OR #5 @ 16" O.C. EACH WAY.
5. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DOT DIRECTOR.

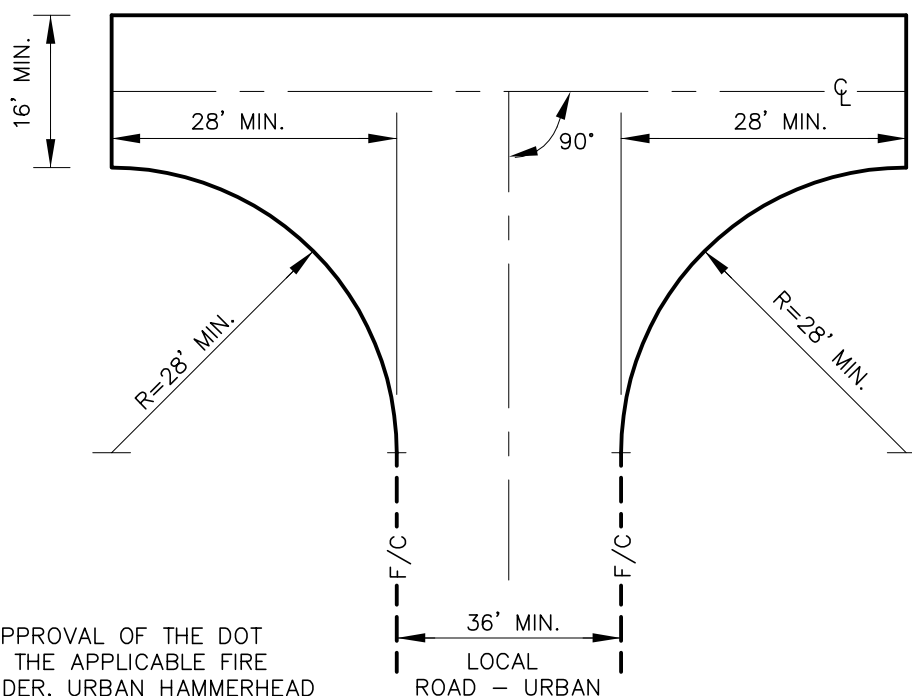
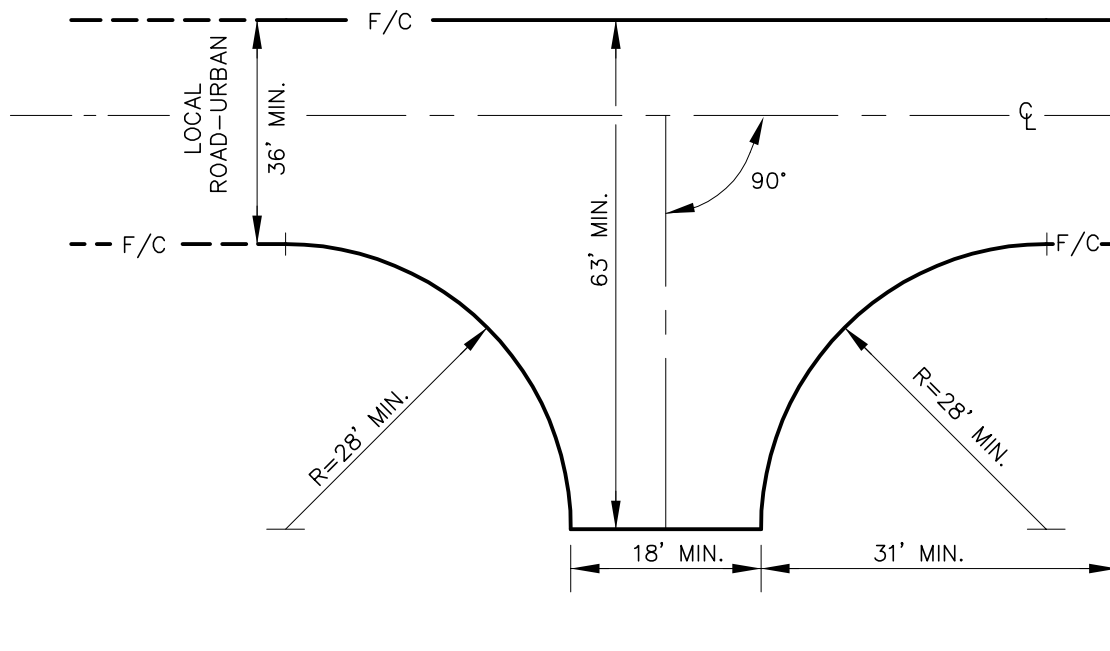


BUS STOP — SLAB DETAIL

MENDOT
STD. NO.
A14C

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

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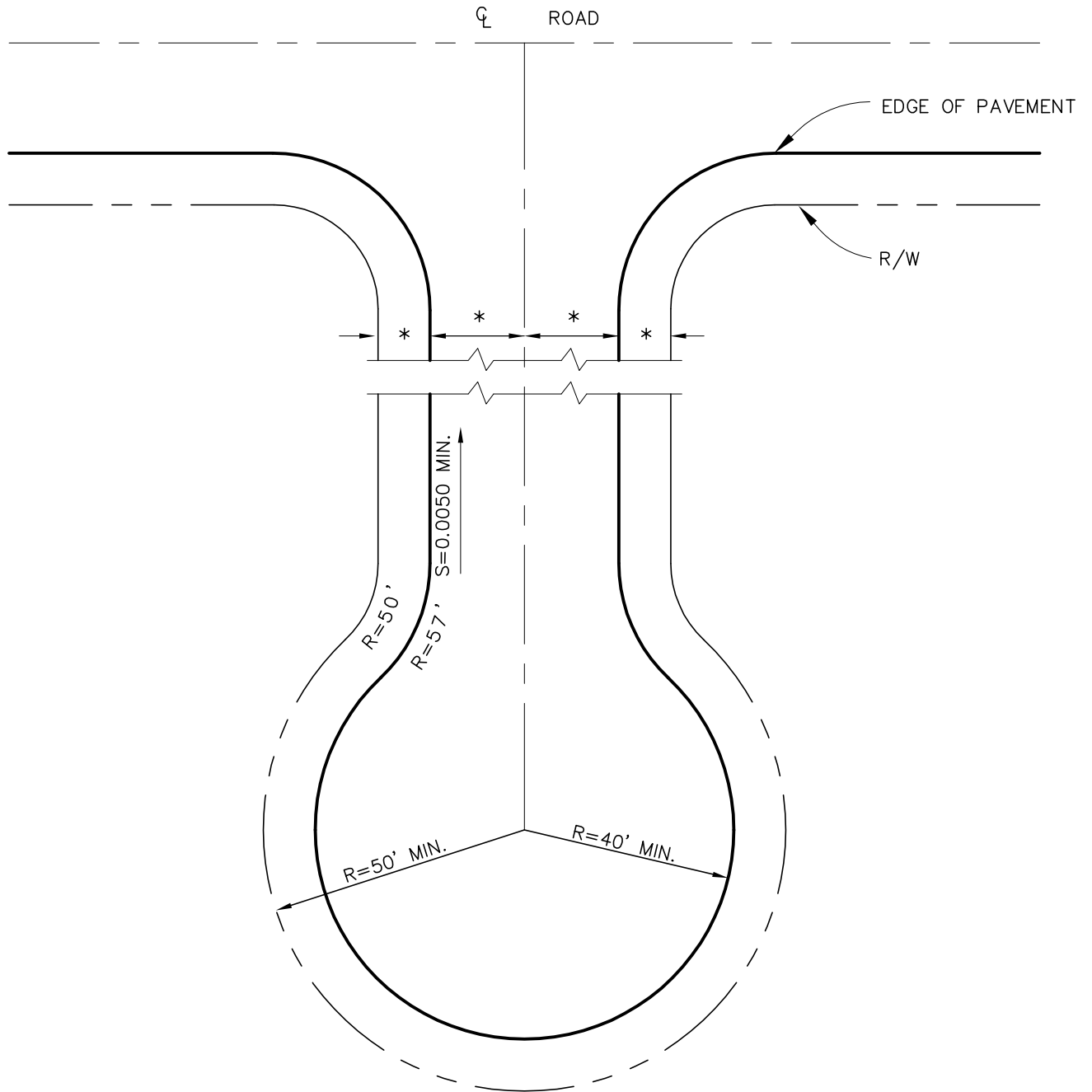
NOTE:

SUBJECT TO APPROVAL OF THE DOT DIRECTOR AND THE APPLICABLE FIRE SERVICE PROVIDER, URBAN HAMMERHEAD TURNAROUNDS MAY ONLY BE USED ON LOCAL ROADS AND SHALL ONLY BE USED WHERE TOPOGRAPHY PRECLUDES THE USE OF A CUL-DE-SAC DESIGN.



HAMMERHEAD "T" TURNAROUND URBAN

MENDOT
STD. NO.
A15



CROSS SLOPE IN BULB AREA
SHALL BE MIN. 2% AND MAX. 7%.

* VARIES. SEE ROAD CLASSIFICATIONS



RURAL CUL-DE-SAC

MENDOT
STD. NO.
A16

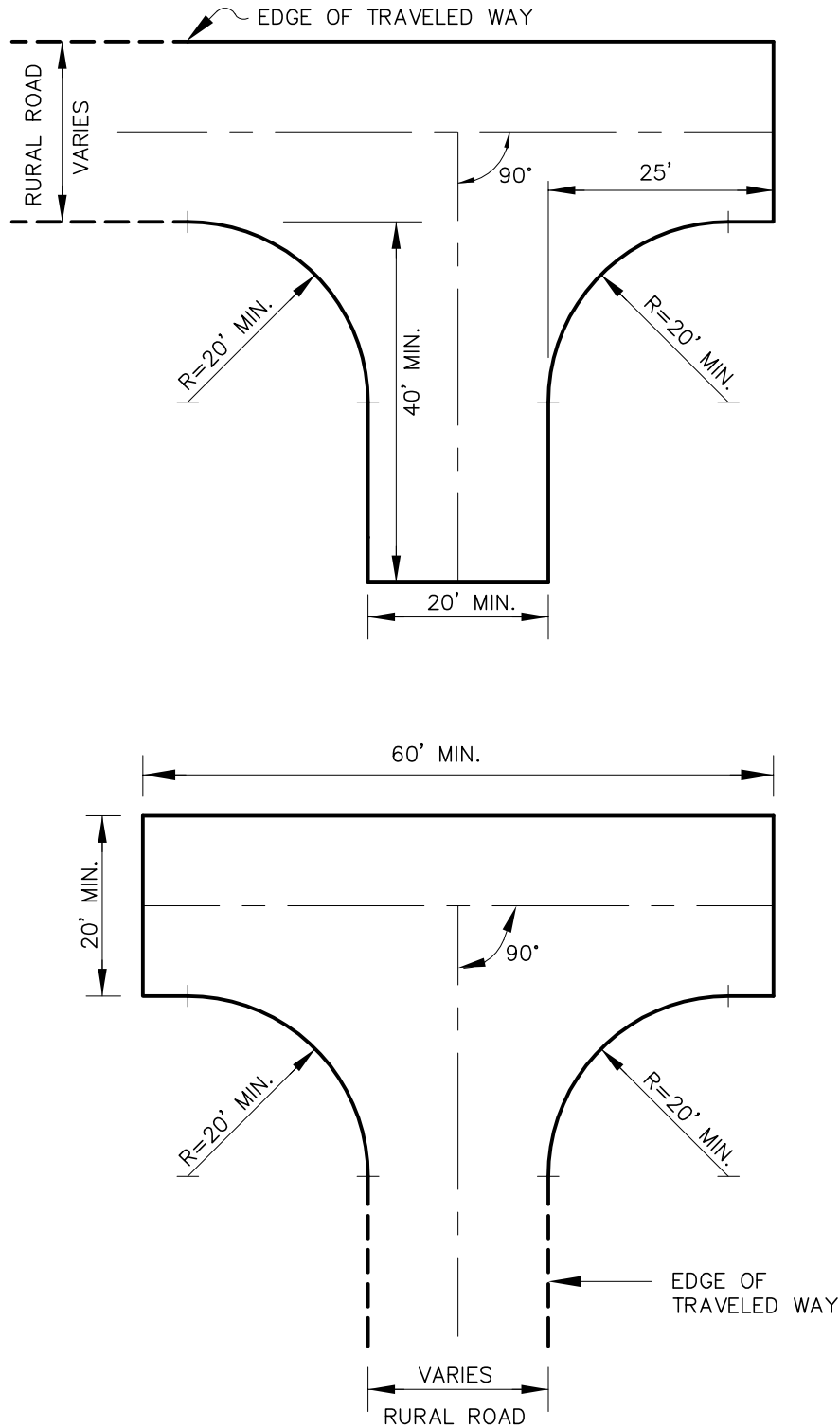
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OCT. 2000

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NOTE:

SUBJECT TO APPROVAL OF DOT DIRECTOR,
AND THE APPLICABLE FIRE SERVICE PROVIDER,
HAMMERHEAD TURN-AROUNDS SHALL ONLY
BE USED WHERE TOPOGRAPHY PRECLUDES
THE USE OF A CUL-DE-SAC DESIGN.



HAMMERHEAD "T" TURNAROUND RURAL

MENDOT
STD. NO.
A17

SCALE: NONE

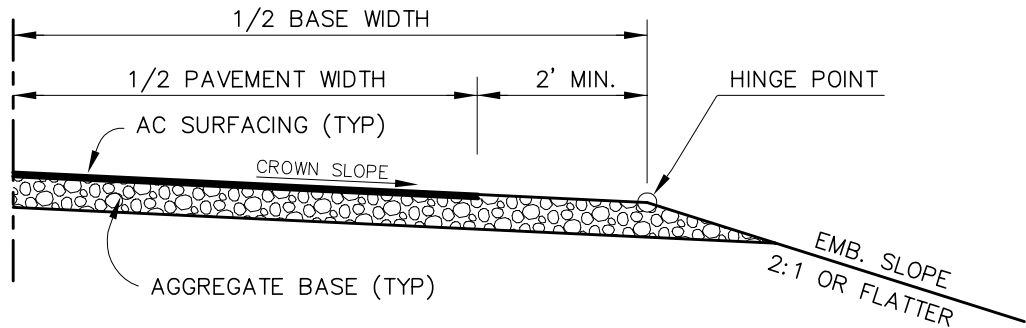
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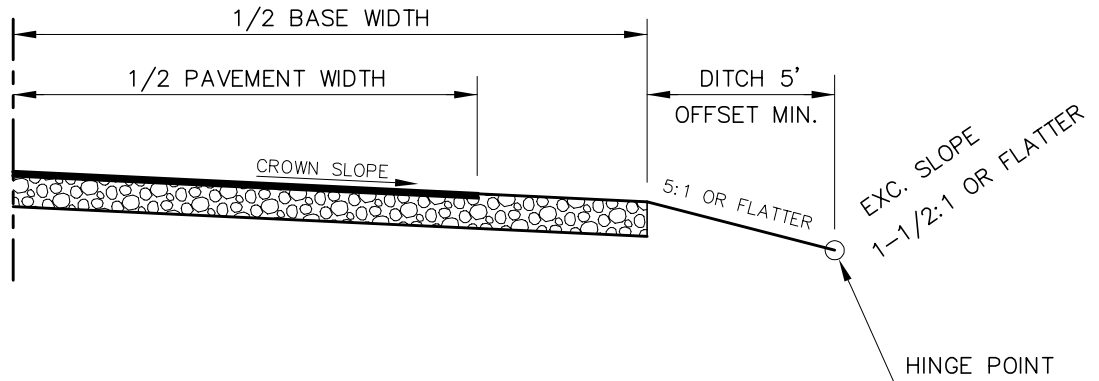
OCT. 2000

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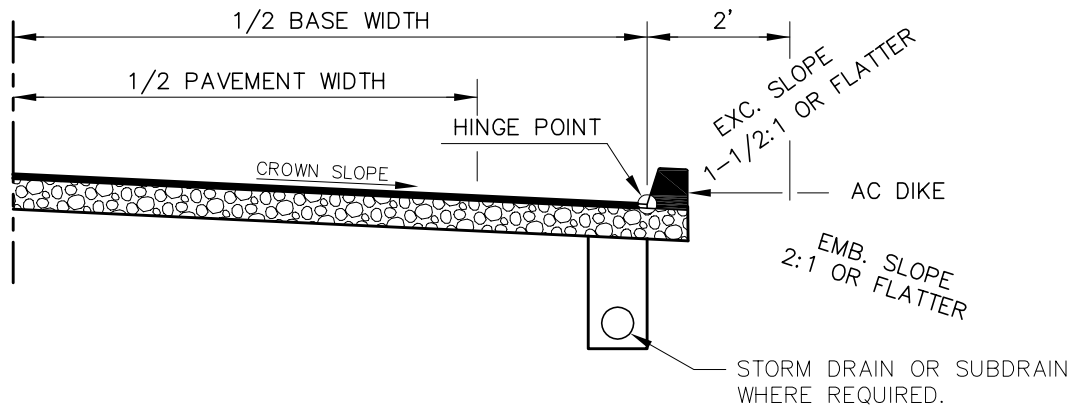
**TYPICAL
SECTION
"A"**



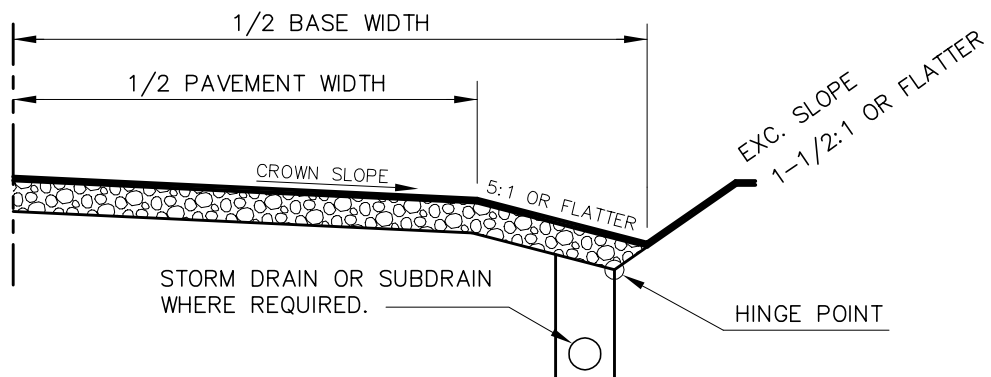
**TYPICAL
SECTION
"B"**



**TYPICAL
SECTION
"C"**



**TYPICAL
SECTION
"D"**



RURAL ROAD GRADING SECTIONS

MENDOT
STD. NO.
A18

SCALE: NONE

DESIGN: RCW

DRAWN: LMM

OCT. 2000

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GENERAL NOTES

1. ALL MATERIAL WORKMANSHIP AND CONSTRUCTION SHALL CONFORM TO THE COUNTY OF MENDOCINO STANDARD SPECIFICATIONS AND STANDARD PLANS AND THE STATE OF CALIFORNIA STANDARD PLANS AND SPECIFICATIONS, LATEST EDITION.
2. FOR WORK IN OR AFFECTING THE COUNTY ROAD RIGHT-OF-WAY, THE CONTRACTOR SHALL OBTAIN AN ENCROACHMENT PERMIT FROM THE COUNTY OF MENDOCINO (340 LAKE MENDOCINO DRIVE, UKIAH, CA 95482) BEFORE START OF WORK. CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE PERMIT. FOR WORK IN OR AFFECTING THE STATE HIGHWAY RIGHT-OF-WAY, A CALTRANS ENCROACHMENT PERMIT IS REQUIRED.
3. CONTRACTOR SHALL OBTAIN REQUIRED PERMITS FROM ALL AGENCIES AND PAY ALL AGENCY FEES PRIOR TO COMMENCEMENT OF ANY WORK. CONTRACTOR SHALL CONFORM WITH ZONING CODE, BUILDING CODE, AND ALL OTHER REQUIREMENTS ADMINISTERED BY THE COUNTY OF MENDOCINO PLANNING AND BUILDING SERVICES DEPARTMENT.
4. CONTRACTOR SHALL GIVE THE COUNTY OF MENDOCINO DEPARTMENT OF TRANSPORTATION 48 HOURS NOTICE BEFORE STARTING WORK. CONTRACTOR SHALL ARRANGE A PRE-CONSTRUCTION MEETING. CALL (707) 463-4363 OR CONTACT AT 340 LAKE MENDOCINO DRIVE, UKIAH, CA 95482.
5. WORK HOURS ARE LIMITED TO MONDAY THROUGH FRIDAY, 7:00 A.M. TO 5:00 P.M. WHEN LANE CLOSURES ARE MADE FOR A WORK DAY ONLY, AT THE END OF EACH WORK DAY, ALL COMPONENTS OF THE TRAFFIC CONTROL SYSTEM, EXCEPT PORTABLE DELINEATORS PLACED ALONG OPEN TRENCHES OR EXCAVATION ADJACENT TO THE TRAVELED WAY, SHALL BE REMOVED FROM THE TRAVELED WAY AND SHOULDER. IF THE CONTRACTOR SO ELECTS, SAID COMPONENTS MAY BE STORED AT SELECTED CENTRAL LOCATIONS AS APPROVED BY THE DOT DIRECTOR, WITHIN THE LIMITS OF THE COUNTY RIGHT OF WAY. INSPECTION WILL BE AVAILABLE MONDAY THROUGH FRIDAY FROM 8:00 A.M. TO 4:30P.M. CONTRACTORS SHALL SCHEDULE INSPECTIONS 48 HOURS IN ADVANCE BY CALLING (707) 463-4363.
6. ANY DISCREPANCY DISCOVERED BY CONTRACTOR IN THESE PLANS OR ANY FIELD CONDITIONS DISCOVERED BY CONTRACTOR THAT MAY DELAY OR OBSTRUCT THE PROPER COMPLETION OF THE WORK PER THESE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE COUNTY DOT AND OWNER IMMEDIATELY UPON DISCOVERY. SAID NOTIFICATION SHALL BE IN WRITING.
7. GRADE BREAKS ON CURBS AND SIDEWALKS SHALL BE ROUNDED OFF IN FORMS AND SURFACE FINISHING.
8. ITEMS SPECIFIED ON THE STANDARD PLANS ARE APPROVED FOR USE BY THE COUNTY OF MENDOCINO. ALL SUBSTITUTES OR ALTERATIONS SHALL BE SUBMITTED TO THE COUNTY OF MENDOCINO FOR APPROVAL.
9. THE CONTRACTOR SHALL MAINTAIN A NEAT APPEARANCE TO THE WORK. IN ANY AREA VISIBLE TO THE PUBLIC, THE FOLLOWING SHALL APPLY:

WHEN PRACTICABLE, BROKEN CONCRETE AND DEBRIS DEVELOPED DURING CLEARING AND GRUBBING SHALL BE DISPOSED OF CONCURRENTLY WITH ITS REMOVAL. IF STOCKPILING IS NECESSARY, THE MATERIAL SHALL BE REMOVED OR DISPOSED OF WEEKLY.

THE CONTRACTOR SHALL FURNISH TRASH BINS FOR ALL DEBRIS FROM STRUCTURE CONSTRUCTION. ALL DEBRIS SHALL BE PLACED IN TRASH BINS DAILY. FORMS OR FALSEWORK THAT ARE TO BE REUSED SHALL BE STACKED NEATLY CONCURRENTLY WITH THEIR REMOVAL. FORMS AND FALSEWORK THAT ARE NOT TO BE REUSED SHALL BE DISPOSED OF CONCURRENTLY WITH THEIR REMOVAL.
10. CONTRACTOR SHALL COMPLY WITH ANY AND ALL MITIGATION MEASURES ADOPTED BY THE COUNTY OF MENDOCINO FOR THE PROJECT.
11. CONTRACTOR SHALL COMPLY WITH THE COUNTY OF MENDOCINO CODE 22.12 REGARDING THE DISCOVERY OF ARCHAEOLOGICAL SITES DURING THE PERFORMANCE OF WORK.
12. OWNER OR CONTRACTOR SHALL PROVIDE COMPACTION, GRADATION, SAND EQUIVALENT AND ALL OTHER TESTS AS REQUIRED BY THE COUNTY MENDOCINO.



IMPROVEMENT PLAN STANDARD NOTES – GENERAL

MEN DOT
STD. NO.
A20A

SCALE: NONE

DESIGN: HND

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FEB. 2008

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NOTIFICATION FOR INSPECTIONS

APPROVAL OF ALL WORK SHALL BE NECESSARY AT THE COMPLETION OF EACH OF THE FOLLOWING STAGES OF WORK AND SUCH APPROVAL MUST BE OBTAINED BEFORE SUBSEQUENT STAGES OF WORK MAY BE COMMENCED. ADDITIONALLY, THE INSPECTOR SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF ANY OF THE FOLLOWING STAGES OF WORK.

ANY CONSTRUCTION OR EXCAVATION REQUIRING INSPECTION THAT IS UNDERTAKEN WITHOUT INSPECTION IS SUBJECT TO RECONSTRUCTION AND REEXCAVATION AT THE CONTRACTOR'S EXPENSE.

INSPECTION MUST BE SCHEDULED FOR THE FOLLOWING WORK:

1. COMPACTION AND PREPARATION OF EMBANKMENTS, EXCAVATIONS, AND SUBGRADE.
2. CONSTRUCTION OF FORMS FOR ALL CONCRETE STRUCTURES, INCLUDING CURBS, GUTTERS, AND SIDEWALKS.
3. EXCAVATION FOR STORM DRAINS AND CULVERTS.
4. PLACING OF CONCRETE IN STRUCTURES, INCLUDING CURBS, GUTTERS AND SIDEWALKS.
5. PLACING OF STORM DRAINS AND CULVERT PIPES.
6. EXCAVATION AND BACKFILL FOR STRUCTURES AND PIPES AND PUBLIC UTILITIES. WATER AND SEWER FACILITIES MUST BE INSPECTED BY THE COMPANY/AGENCY WITH JURISDICTION.
7. CONSTRUCTION OF ROADSIDE DITCHES AND OTHER DRAINAGE WAYS.
8. PLACING AND COMPACTING OF BASE MATERIAL. IF MORE THAN ONE COURSE OR TYPE OF BASE OR SUBBASE IS TO BE USED, APPROVAL SHALL BE NECESSARY FOR EACH COURSE AND/OR TYPE.
9. PLACING OF PAVEMENT OR SURFACING. WITHIN 48 HOURS OF PAVING, ALL WATER VALVE BOXES, CLEANOUTS AND MANHOLE FRAMES AND COVERS SHALL BE BROUGHT TO GRADE AND INSPECTED.
10. STRIPING AND SIGNING LAYOUT AND PLACEMENT.
11. FINAL CLEAN-UP.



IMPROVEMENT PLAN STANDARD NOTES NOTIFICATION FOR INSPECTIONS

MENDOT
STD. NO.
A20B

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

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GRADING STANDARD NOTES

1. AN ENCROACHMENT PERMIT MUST BE OBTAINED FROM THE COUNTY OF MENDOCINO DEPARTMENT OF TRANSPORTATION PRIOR TO ANY GRADING SHOWN ON THESE PLANS, CONTRACTOR SHALL ALSO COMPLY WITH ANY AND ALL GRADING PERMIT REQUIREMENTS ADMINISTERED BY THE COUNTY OF MENDOCINO PLANNING AND BUILDING SERVICES DEPARTMENT.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK WITH THE SOILS ENGINEER. ALL GRADING SHALL BE PERFORMED TO THE SATISFACTION OF THE SOILS ENGINEER AND SHALL BE IN CONFORMANCE WITH THE PROJECT SOILS REPORT.
3. ROAD SUBGRADE SHALL BE COMPACTED PER THE COUNTY STANDARD ROAD SPECIFICATIONS.
4. AS A MINIMUM, ALL GRADED AREAS AND EXPOSED SOIL WITHIN THIS PROJECT SHALL BE SEEDED FOR EROSION CONTROL BY THE CONTRACTOR. SEED AND MULCH WILL BE APPLIED BY OCTOBER 15TH TO ALL CUT AND FILL SLOPES WITHIN OR ADJACENT TO PROJECT ROADS. SEED AND FERTILIZER WILL BE APPLIED HYDRAULICALLY OR BY HAND AT THE RATES SPECIFIED BELOW. ON SLOPES, STRAW WILL BE APPLIED BY BLOWER OR BY HAND AND ANCHORED IN PLACE BY PUNCHING. ALL CRITICAL EARTHWORK OPERATIONS SHALL BE PERFORMED DURING THE DRY WEATHER SEASON, FROM APRIL 15TH TO OCTOBER 15TH OR AS OTHERWISE APPROVED BY THE DEPARTMENT OF TRANSPORTATION. THE CLEARING OF EXISTING VEGETATION SHALL BE CONFINED WITHIN THE LIMITS OF ACTUAL EARTHWORK. STAGING OF THE WORK SHALL BE REQUIRED TO ENSURE THAT THE AMOUNT OF LAND CLEARED AT ANY TIME IS LIMITED TO THE AREA THAT CAN BE DEVELOPED DURING THE CONSTRUCTION PERIOD. STORM WATER SHALL NOT BE ALLOWED TO FLOW DIRECTLY DOWN UNPROTECTED SLOPES. ENERGY DISSIPATING STRUCTURES AND EROSION CONTROL DEVICES SHALL BE PLACED AT ALL DRAINAGE OUTLETS WHICH DISCHARGE TO NATURAL CHANNELS AS SHOWN ON THESE PLANS. ALL SEDIMENT TRAPS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL SUCH TIME THAT THE COUNTY ACCEPTS MAINTENANCE RESPONSIBILITY.

<u>ITEM</u>	<u>POUNDS PER ACRE</u>
"BLANDO BROME"	30
ANNUAL RYE GRASS	20
FERTILIZER (16-20-0 & 15% SULPHUR)	500
STRAW MULCH	4000 OR 3500 LBS OF WOOD CELLULOSE

5. THE ABANDONMENT OR ALTERATION OF ANY AND ALL SEPTIC SYSTEMS AND WELLS SHALL COMPLY WITH THE COUNTY OF MENDOCINO HEALTH DEPARTMENT PERMIT REQUIREMENTS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE DUST CONTROL MEASURES FOR THE ENTIRE CONSTRUCTION PERIOD OF THIS PROJECT TO THE SATISFACTION OF THE COUNTY AND AIR QUALITY MANAGEMENT DISTRICT AS APPLICABLE.
7. PROJECTS GREATER THAN OR EQUAL TO ONE (1) ACRE IN SIZE WILL REQUIRE A CONSTRUCTION GENERAL PERMIT AND STORM WATER POLLUTION PREVENTION PLAN (SWPPP) THROUGH THE APPROPRIATE REGIONAL WATER QUALITY CONTROL BOARD.
8. THE CONTRACTOR SHALL NOTIFY THE MENDOCINO COUNTY ENVIRONMENTAL HEALTH DEPARTMENT AT 234-6625 IMMEDIATELY IF HAZARDOUS WASTE OR MATERIAL IS ENCOUNTERED DURING EXCAVATION OF GRADING OPERATIONS.



IMPROVEMENT PLAN STANDARD NOTES – GRADING

MEN DOT
STD. NO.
A20C

SCALE: NONE DESIGN: HND DRAWN: HND FEB. 2008

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UNDERGROUND CONSTRUCTION STANDARD NOTES

1. NO GUARANTEE IS INTENDED THAT UNDERGROUND OBSTRUCTIONS, NOT SHOWN ON THESE PLANS, MAY BE ENCOUNTERED. THOSE SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE AND THE CONTRACTOR IS CAUTIONED THAT THE OWNER, THE ENGINEER, AND THE COUNTY OF MENDOCINO ASSUME NO RESPONSIBILITY FOR ANY OBSTRUCTIONS EITHER SHOWN OR NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL COOPERATE WITH ALL UTILITY COMPANIES WORKING WITHIN THE LIMITS OF THIS PROJECT.
2. CONTRACTOR SHALL NOT BEGIN EXCAVATION UNTIL ALL EXISTING UTILITIES HAVE BEEN MARKED IN THE FIELD BY THE APPLICABLE ENTITY RESPONSIBLE FOR THAT PARTICULAR UTILITY. THE CONTRACTOR SHALL NOTIFY EACH APPLICABLE ENTITY AT LEAST 24 HOURS BEFORE STARTING WORK.
3. UNDERGROUND SERVICE ALERT: CALL TOLL FREE (800) 227-2600 OR 811 AT LEAST 48 HOURS PRIOR TO EXCAVATION.
4. CONTRACTOR SHALL UNCOVER EXISTING BURIED UTILITIES WITH UTILITY OWNER TO VERIFY LOCATIONS AND ELEVATIONS OF UTILITIES. BURIED UTILITIES INCLUDE BUT ARE NOT LIMITED TO WATER MAINS AND LATERALS, SEWER MAINS, STORM DRAINS, GAS MAINS AND LATERALS, ELECTRICAL DISTRIBUTION LINES AND TELEPHONE LINES. ALL UTILITIES CONFLICTING WITH THE PROPOSED CONSTRUCTION SHALL BE RELOCATED PRIOR TO THE START OF CONSTRUCTION.
5. THE CONTRACTOR SHALL VERIFY EXISTING INVERTS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. THE CIVIL ENGINEER IN RESPONSIBLE CHARGE OF THE WORK MAY ADJUST THE GRADE OF NEW STORM DRAIN CONSTRUCTION ACCORDINGLY WITH CONCURRENCE FROM THE COUNTY DEPARTMENT OF TRANSPORTATION.
6. DISTANCES AND INVERTS ARE TO AND AT THE CENTER OF THE MANHOLES, CLEANOUTS, DROP INLETS, CATCH BASINS, AND YARD DRAINS OR AS MARKED ON THE DRAWINGS.
7. ALL UNDERGROUND IMPROVEMENTS SHALL BE INSTALLED AND APPROVED PRIOR TO PAVING.
8. THE CONTRACTOR SHALL STAMP THE LETTER "S" ON THE FACE OF CURB DIRECTLY ABOVE THE SEWER LATERAL, AND THE LETTER "W" ON THE FACE OF CURB DIRECTLY ABOVE WATER SERVICES, AND "B" ON FACE OF CURB DIRECTLY ABOVE A BLOW OFF OR AIR RELIEF VALVE. AT A DRIVEWAY THE STAMP SHALL BE PLACED AT THE BACK OF RAMP. THE LETTERS SHALL BE 4" HIGH AND COMPLETELY LEGIBLE.
9. SURFACE MOUNTED TRANSFORMERS SHALL NOT BE USED UNLESS LOCATION OF SUCH UTILITIES ARE SHOWN ON THE PLANS AND APPROVED BY THE COUNTY.



IMPROVEMENT PLAN STANDARD NOTES UNDERGROUND CONSTRUCTION

MENDOT
STD. NO.
A20D

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

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DRAINAGE STANDARD NOTES

1. STORM DRAIN CONDUITS SHALL CONFORM TO CALTRANS SPECIFICATIONS AND SHALL BE R.C.P. PIPE, CORRUGATED METAL PIPE OR HDPE PLASTIC PIPE WITH SMOOTH INTERIOR WALL. CORRUGATED METAL PIPE SHALL NOT BE USED IN THE ROAD RIGHT-OF-WAY, EXCEPT FOR DRIVEWAY CULVERTS, CROSS CULVERTS, AND CREEK OUTLETS. MINIMUM COVER OVER PIPE TO BE 30", EXCEPT WHERE SLURRY CEMENT BACKFILL IS PROVIDED PER MENDOT STD. A60C. THE MAXIMUM ALLOWABLE COVER SHALL BE LIMITED TO 11 FEET FOR ALL SIZES.
2. ALL STORM DRAIN MANHOLES SHALL BE A MINIMUM OF 48" IN DIAMETER. UNLESS OTHERWISE NOTED, MANHOLE FRAME AND COVER SHALL HAVE 24" CLEAR OPENING, AND BE HEAVY DUTY NON-ROCKING. RAISED LETTERS ON TOP OF THE COVER SHALL READ "STORM DRAIN". PIPES SHALL NOT PROTRUDE INSIDE THE MANHOLE. PIPE ENDS SHALL BE ROUNDED.
3. REINFORCED CONCRETE PIPE AND CAST-IN-PLACE STORM DRAIN PIPE SHALL BE PLACED AND BACKFILLED IN ACCORDANCE WITH STANDARD DRAWINGS A60A, A60B, AND A60C. STORM DRAIN WITHIN COUNTY MAINTAINED ROADS SHALL BE MINIMUM 18 INCH DIAMETER, WITH FOLLOWING EXCEPTIONS:
 - A. LATERALS SERVING INDIVIDUAL PROPERTIES MAY BE 12 INCH DIAMETER
 - B. DRIVEWAY CULVERTS MAY BE A MINIMUM OF 12 INCH DIAMETER.



IMPROVEMENT PLAN STANDARD NOTES – DRAINAGE

MENDOT
STD. NO.
A20E

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

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SIGNING, STRIPING AND PAVEMENT MARKINGS STANDARD NOTES

1. CONTRACTOR SHALL NOTIFY THE COUNTY DEPARTMENT OF TRANSPORTATION (DOT) OF CONTRACTOR'S INTENT TO PLACE ANY PAVEMENT MARKER, TRAFFIC STRIPE, PAVEMENT MARKING, AND PAVEMENT LEGEND LAYOUT LINES 10 WORKING DAYS BEFORE THE MARKER AND STRIPES WORK IS TO BE PERFORMED. ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR.
2. ALL LAYOUT WORK IS TO BE PERFORMED BY THE CONTRACTOR AND SHALL BE FIELD APPROVED BY A COUNTY INSPECTOR BEFORE THE ACTUAL WORK BEGINS.
3. PAVEMENT MARKERS AND TRAFFIC STRIPE DETAIL REFERENCE NUMBERS ARE SHOWN ON CALTRANS STANDARD PLANS A20-A, A20-B, A20-C AND A20-D.
4. ROADSIDE SIGNS: ROADSIDE SIGNS SHALL BE AS SHOWN ON THE PLANS, IN ACCORDANCE WITH THE PROVISIONS OF SECTION 56, "SIGNS", OF THE STANDARD SPECIFICATIONS, AND AS DIRECTED BY THE COUNTY DEPARTMENT OF TRANSPORTATION.
5. SIGN PANELS SHALL CONFORM TO THE CURRENT CALTRANS SIGN PANEL SPECIFICATIONS. MINIMUM GRADE OF SIGN SHEETING MATERIAL SHALL BE TYPE 2, SUPER ENGINEERING GRADE, PER MOST CURRENT ASTM SPECIFICATION, OR HIGHER GRADE AS REQUIRED BY THE DOT DIRECTOR. SIGNS USED FOR SCHOOL AREA TRAFFIC CONTROL SHALL BE RETROFLECTIVE OR ILLUMINATED, AS SHOWN ON PLANS.
6. LOCATIONS OF ALL SIGNS SHALL BE AS SHOWN ON THE PLANS AND AS DIRECTED BY THE COUNTY.
7. SIGN PANELS SHALL BE MOUNTED ON METAL OR WOOD POSTS AS SHOWN ON THE PLANS. POST MATERIALS AND INSTALLATION SHALL BE PER THE CALTRANS STANDARD PLANS AND SPECIFICATIONS. METAL POSTS SHALL BE WIDE-FLANGE METAL POSTS PER CALTRANS STANDARD SPECIFICATIONS. ALL FASTENERS AND ATTACHMENT HARDWARE SHALL BE GALVANIZED.
8. MARKERS AND DELINEATORS: MARKERS AND DELINEATORS SHALL BE AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE PROVISIONS OF SECTION 82, "MARKERS AND DELINEATORS" OF THE STANDARD SPECIFICATIONS AND THESE SPECIAL PROVISIONS, AND AS DIRECTED BY THE COUNTY DEPARTMENT OF TRANSPORTATION DIRECTOR.
9. LOCATION OF ALL MARKERS AND DELINEATORS SHALL BE AS SHOWN ON THE PLANS AND AS DIRECTED BY THE COUNTY DEPARTMENT OF TRANSPORTATION DIRECTOR.
10. TRAFFIC STRIPES AND PAVEMENT MARKINGS: TRAFFIC STRIPES AND PAVEMENT MARKINGS SHALL BE AS SHOWN ON THE PLANS, IN ACCORDANCE WITH THE PROVISIONS OF SECTION 84, "TRAFFIC STRIPES AND PAVEMENT MARKINGS" OF THE STANDARD SPECIFICATIONS AND AS DIRECTED BY THE COUNTY DEPARTMENT OF TRANSPORTATION DIRECTOR.



IMPROVEMENT PLAN STANDARD NOTES SIGNING, STRIPING & MARKINGS

MENDOT
STD. NO.
A20F

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

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SIGNING, STRIPING AND PAVEMENT MARKINGS STANDARD NOTES (CONTINUED)

11. ALL STRIPING PAVEMENT MARKINGS, INCLUDING STOPLINES, AND ALL CHANNELIZING LINES SHALL BE THERMOPLASTIC UNLESS OTHERWISE SHOWN OR NOTED ON THE PLANS.
12. THERMOPLASTIC TRAFFIC STRIPES AND PAVEMENT MARKINGS: THERMOPLASTIC TRAFFIC STRIPES AND PAVEMENT MARKINGS SHALL CONFORM TO THE PROVISIONS OF SECTION 84-2, "THERMOPLASTIC TRAFFIC STRIPES AND PAVEMENT MARKINGS" OF THE STANDARD SPECIFICATIONS.
13. THERMOPLASTIC MATERIAL SHALL BE APPLIED AT A MINIMUM THICKNESS OF 0.125 INCH.
14. PAVEMENT MARKERS: PAVEMENT MARKERS SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF SECTION 85, "PAVEMENT MARKERS" OF THE STANDARD SPECIFICATIONS.
15. PAINTED/THERMOPLASTIC STRIPES AND PAVEMENT MARKINGS: EXISTING PAINTED/THERMOPLASTIC TRAFFIC STRIPES AND PAVEMENT MARKINGS WHICH CONFLICT WITH THE NEW TRAFFIC STRIPING AND PAVEMENT MARKING PLANS SHALL BE REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH SECTION 15-2, REMOVAL METHODS, OF THE CALTRANS STANDARD SPECIFICATIONS.
16. RAISED PAVEMENT MARKER REMOVAL: EXISTING RAISED PAVEMENT MARKERS WHICH CONFLICT WITH THE NEW TRAFFIC STRIPING AND PAVEMENT MARKING PLAN SHALL BE REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH SECTION 15-2, REMOVAL METHODS, OF THE CALTRANS STANDARD SPECIFICATIONS.



IMPROVEMENT PLAN STANDARD NOTES – SIGNING, STRIPING & MARKINGS (CONTINUED)

MENDOT
STD. NO.
A20G

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

PAGE: A-26

LIGHTING NOTES:

1. ALL WIRING METHODS AND EQUIPMENT CONSTRUCTION SHALL CONFORM TO THE CURRENT NATIONAL ELECTRICAL CODE.
2. ALL WIRING SHALL BE IN APPROVED CONDUIT. ALL CONDUIT SHALL BE A MINIMUM OF 2" DIAMETER, SCHEDULE 40 P.V.C. (POLYVINYL CHLORIDE), EXCEPT FROM EACH STREET LIGHT TO THE ADJACENT PULL BOX WHICH MAY BE 1" DIAMETER PVC OR METAL, AND SHALL HAVE THE FOLLOWING COVER FROM TOP OF CONDUIT.
 - A. WITHIN SIDEWALK OR PARKWAY AREAS: 18" MIN.
 - B. WITHIN ROADWAY AREAS: 30" MIN.
3. ALL METAL CONDUIT AND OTHER METAL PARTS SHALL BE CONTINUOUSLY BONDED AND GROUNDED.
4. ALL BENDS AND/OR OFFSETS SHALL BE MADE WITH FACTORY SECTIONS.
5. UNLESS OTHERWISE APPROVED BY THE DOT DIRECTOR, A NO. 5 PULL BOX (STATE STD. ES-8) SHALL BE USED AT ALL STREET LIGHT STANDARDS.
6. ALL PULL BOXES SHALL BE PER CALTRANS STD. No. ES-8.
7. WHEN PULL BOXES ARE SUBJECT TO VEHICULAR TRAFFIC, THEY SHALL BE SET ON CONCRETE FOOTINGS AND CAST IRON TRAFFIC COVERS SHALL BE INSTALLED.
8. ALL SPLICES SHALL BE MADE WITH APPROVED SOLDERLESS WATERPROOF CONNECTORS OF THE PROPER SIZE PER NEC 300-15. (EXAMPLE: WIRENUT OR SPLIT BOLT PLUS TAPE PLUS COATING.) ALL SPLICES SHALL BE LOCATED IN AN APPROVED BOX.
9. ALL EMPTY CONDUITS SHALL HAVE A 1/4" NYLON PULL ROPE PROVIDED INSIDE.
10. ALL CONDUITS SHALL BE SEALED WITH AN APPROVED DUCT SEAL. CONDUITS STUBBED FOR FUTURE EXTENSION SHALL BE CAPPED.
11. ALL STREET LIGHTING PROJECTS ARE SUBJECT TO APPROVAL BY THE DOT DIRECTOR.
12. ALL PULL BOX COVERS SHALL BE SECURED WITH BRASS HOLD DOWN BOLTS AND INSCRIBED, "STREET LIGHTING".
13. ALL STREET LIGHTS EQUIPPED WITH A PHOTOCELL CONTROL SHALL HAVE THE PHOTOCELL ORIENTED TO THE NORTH.
14. ALL WIRE SHALL BE THHN A.W.G. THE MINIMUM SIZE SHALL BE #8.



IMPROVEMENT PLAN STANDARD NOTES – LIGHTING

MENDOT
STD. NO.
A20H

SCALE: NONE

DESIGN: RCW

DRAWN: LMM

OCT. 2000

PAGE: A-27

PRESERVATION OF SURVEY MONUMENTS:

1. CONTRACTOR IS RESPONSIBLE FOR PRESERVATION AND/OR PERPETUATION OF ALL EXISTING MONUMENTS WHICH CONTROL SUBDIVISIONS, TRACTS, BOUNDARIES, STREETS, HIGHWAYS, OR OTHER RIGHTS-OF-WAY, EASEMENTS, OR PROVIDE SURVEY CONTROL WHICH WILL BE DISTURBED OR REMOVED DUE TO CONTRACTOR'S WORK. CONTRACTOR SHALL PROVIDE A MINIMUM OF 10 WORKING DAYS NOTICE TO CIVIL ENGINEER OR SURVEYOR IN RESPONSIBLE CHARGE OF THE WORK PRIOR TO DISTURBANCE OR REMOVAL OF EXISTING MONUMENTS. CIVIL ENGINEER OR SURVEYOR IN RESPONSIBLE CHARGE OF THE WORK SHALL COORDINATE WITH CONTRACTOR TO RESET MONUMENTS OR PROVIDE PERMANENT WITNESS MONUMENTS AND FILE THE REQUIRED DOCUMENTATION WITH THE COUNTY SURVEYOR PURSUANT TO BUSINESS AND PROFESSIONS CODE SECTION 8771.

2. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS TO RESET ANY RECORD SURVEY MONUMENTS DAMAGED BY CONTRACTOR'S FORCES – PERSONNEL OR SUB-CONTRACTORS.

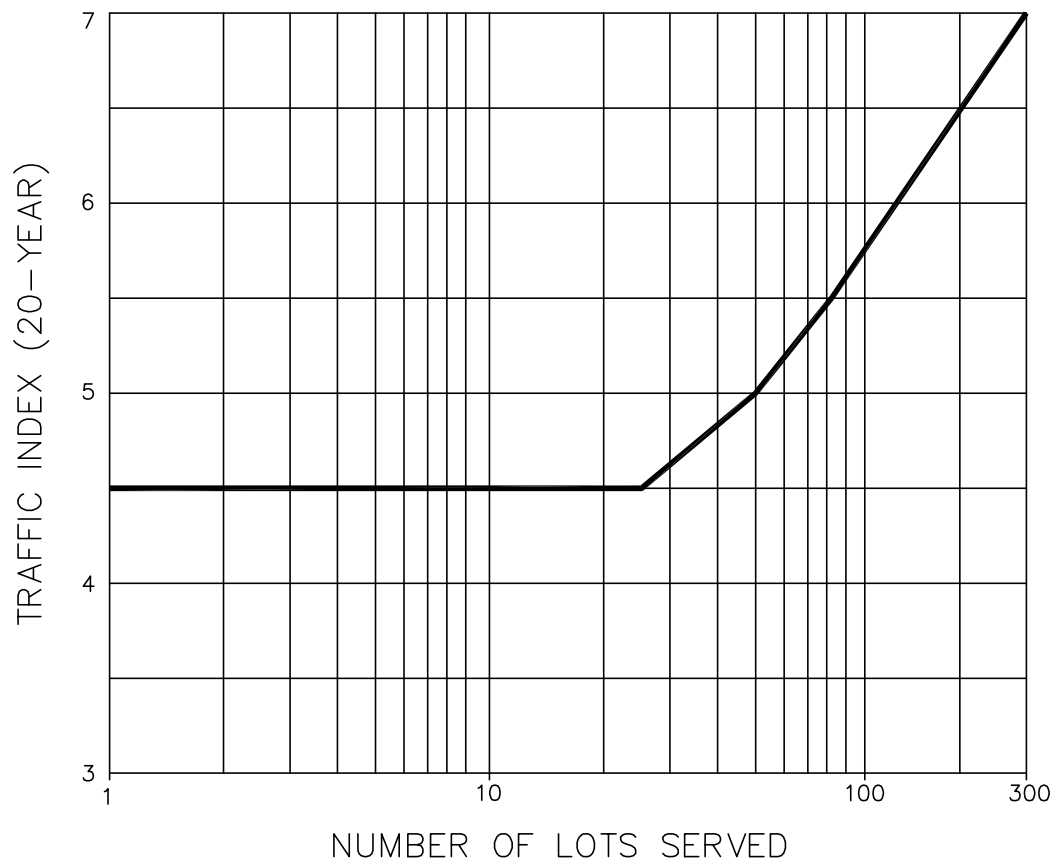


**IMPROVEMENT PLAN STANDARD
NOTES – PRESERVATION OF
SURVEY MONUMENTS**

MENDOT
STD. NO.
A20I

SCALE: NONE | DESIGN: HND | DRAWN: HND | FEB. 2008

PAGE: A-28



T.I. = 2.472 (LOTS) ^{0.1825} MIN. T.I. = 4.5

NOTES:

1. FOR USE WITH RESIDENTIAL ROADS THAT SERVE OR MAY SERVE 300 LOTS OR LESS.
2. CHART IS BASED ON A 20 YEAR DESIGN LIFE.
3. THE NUMBER OF LOTS SERVED SHALL INCLUDE ALL LOTS WHOSE RESIDENTS WOULD USE THE ROAD FOR ACCESS. LOTS ON THE ROAD UNDER DESIGN OR ON CONNECTING ROADS SHALL BE INCLUDED IN THE TOTAL.



TRAFFIC INDEX (TI) CHART FOR FLEXIBLE PAVEMENTS – RESIDENTIAL ROADS

MENDOT
STD. NO.
A21

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

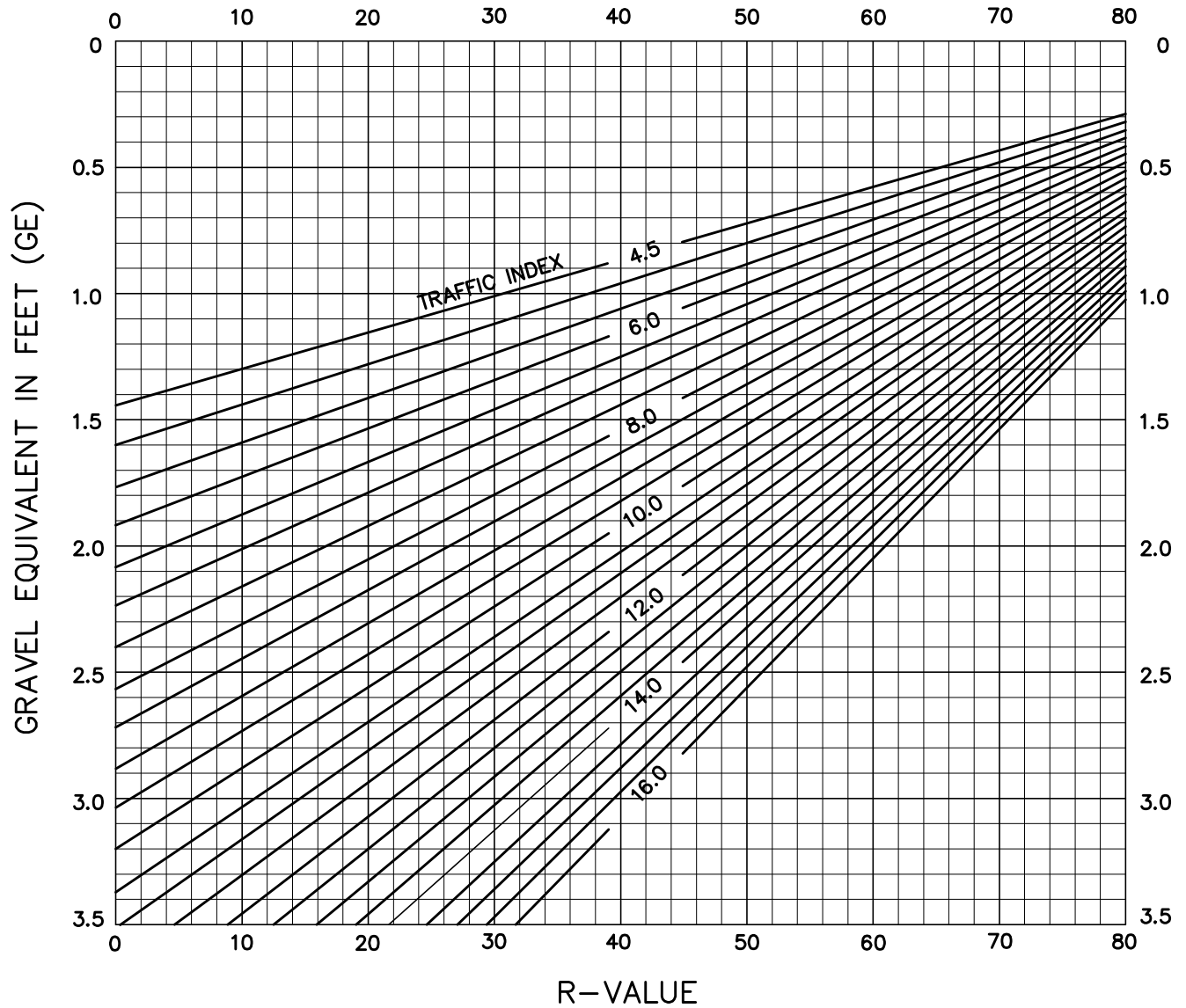
PAGE: A-29

STRUCTURAL DESIGN CHART FOR FLEXIBLE PAVEMENTS

EQUATION:

$$G.E. = 0.0032 (T.I.)(100-R)$$

G.E. = GRAVEL EQUIVALENT
 T.I. = TRAFFIC INDEX
 R = RESISTANCE VALUE

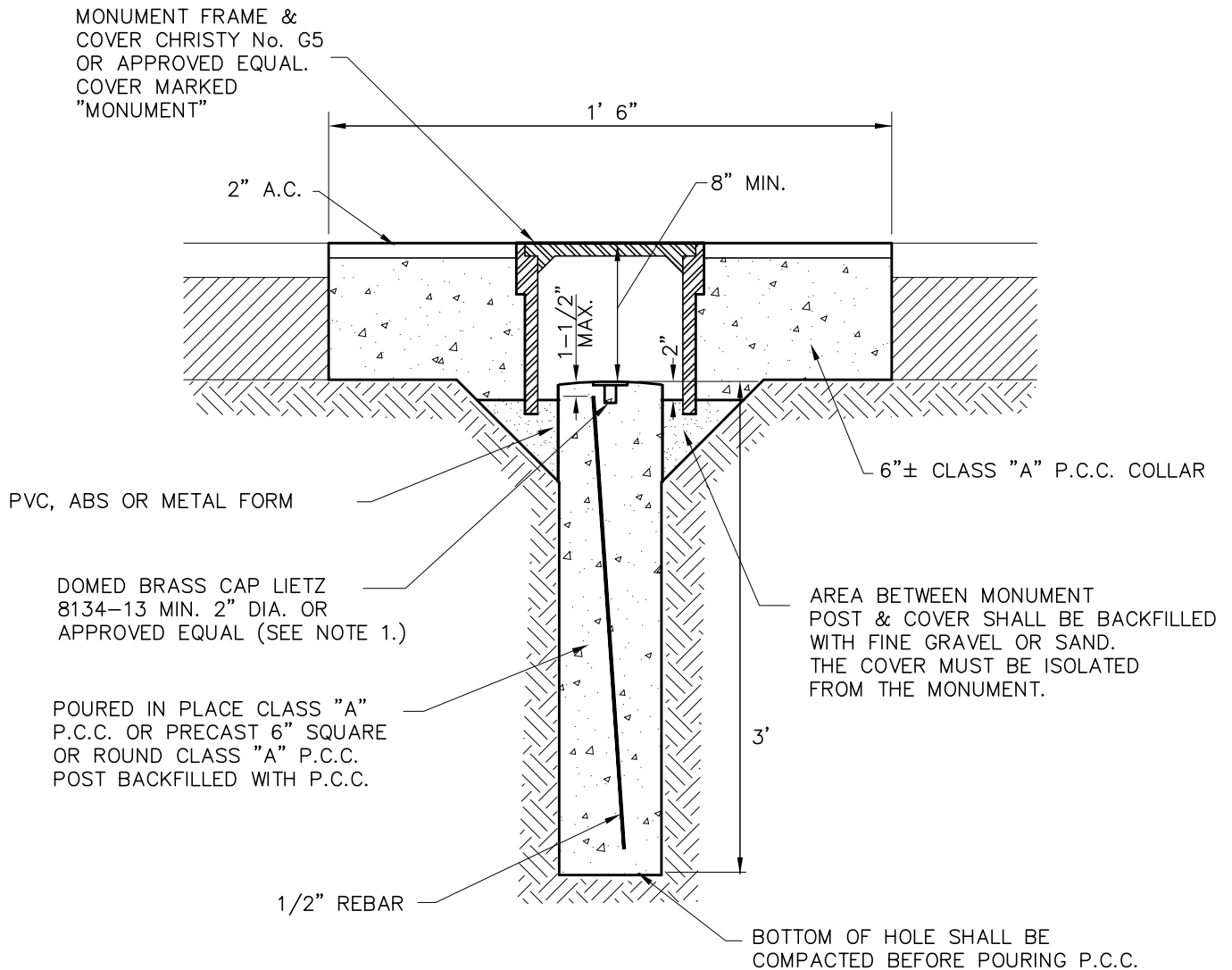


GRAVEL EQUIVALENTS (GE) CHART FOR FLEXIBLE PAVEMENTS

MENDOT
 STD. NO.
A22

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

PAGE: A-30



NOTES:

1. SURVEYOR OR ENGINEER SETTING THE MONUMENT SHALL INDICATE EXACT POINT BY MAKING A CROSS ON THE CAP AND SHALL STAMP YEAR SET AND HIS/HER LICENSE TYPE AND NUMBER.
2. THE DEPTH OF THE MONUMENT POST SHALL BE LENGTHENED OR SHORTENED AS DICTATED BY THE GROUND CONDITIONS OR AS APPROVED BY THE DOT DIRECTOR. IN SOFT GROUND OR FILL AREAS THE MONUMENT POST SHALL BE LENGTHENED TO BED IT ON A STABLE BASE.



SURVEY MONUMENT – ROAD

MENDOT
STD. NO.
A30

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

PAGE: A-31



BARBICADE – ROAD

PAGE: A-32

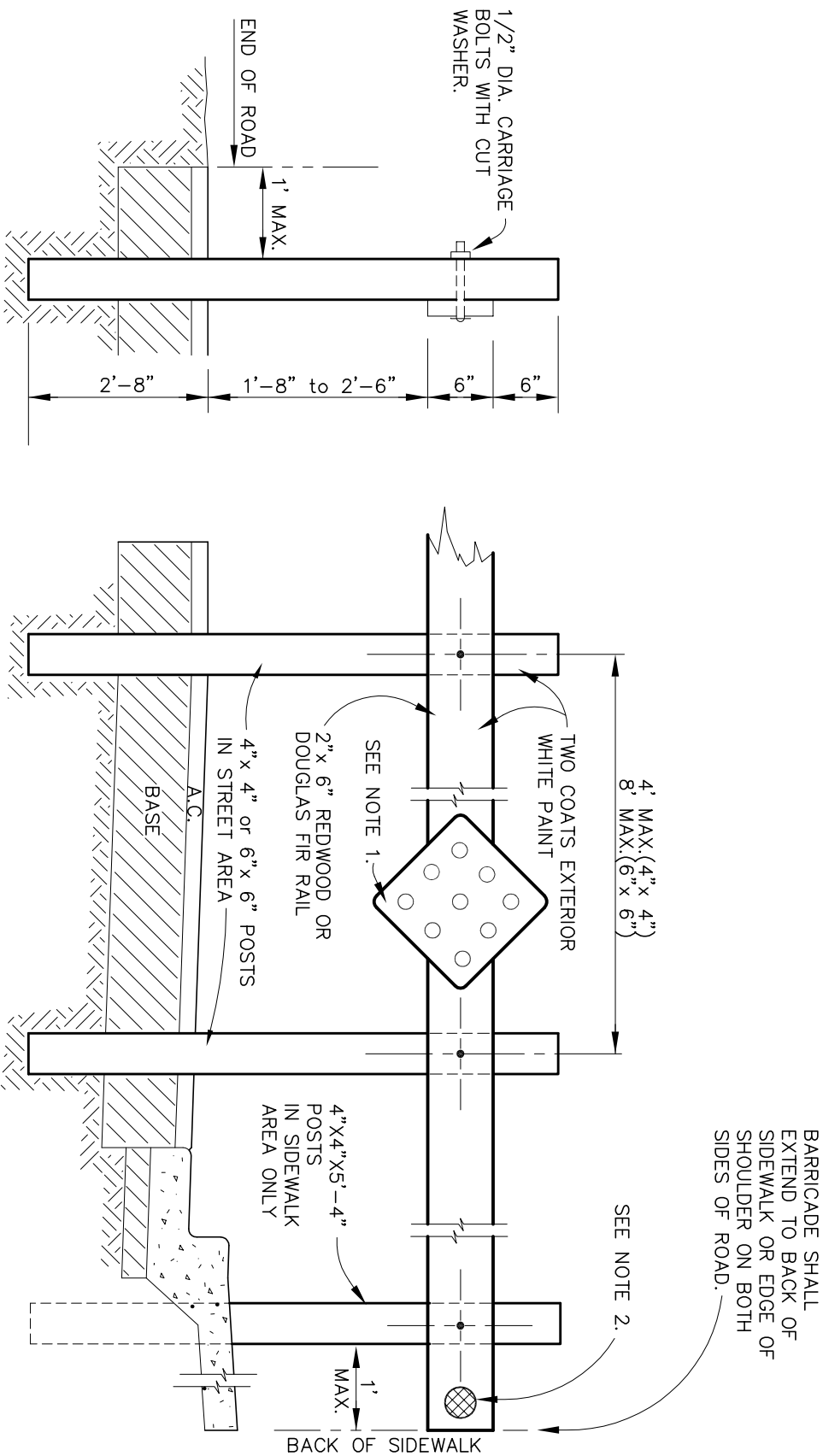
OCT. 2000

DRAWN: LMM

DESIGN: RCW

SCALE: NONE

MENDOT
STD. NO.
A31



NOTES:

1. INSTALL 18" X 18" ALUMINUM TYPE N-5 REFLECTOR, NO MORE THAN 8' O.C., MINIMUM 3
2. SIDEWALKS ONLY – INSTALL 4" YELLOW REFLECTORS AT 3' O.C.
3. POSTS SHALL BE CLEAR REDWOOD OR PRESSURE TREATED FIR APPROVED FOR IN GROUND USE UNDER UBC.
4. ALL HARDWARE SHALL BE HOT-DIPPED GALVANIZED.



BARRICADE – SIDEWALK

SCALE: NONE

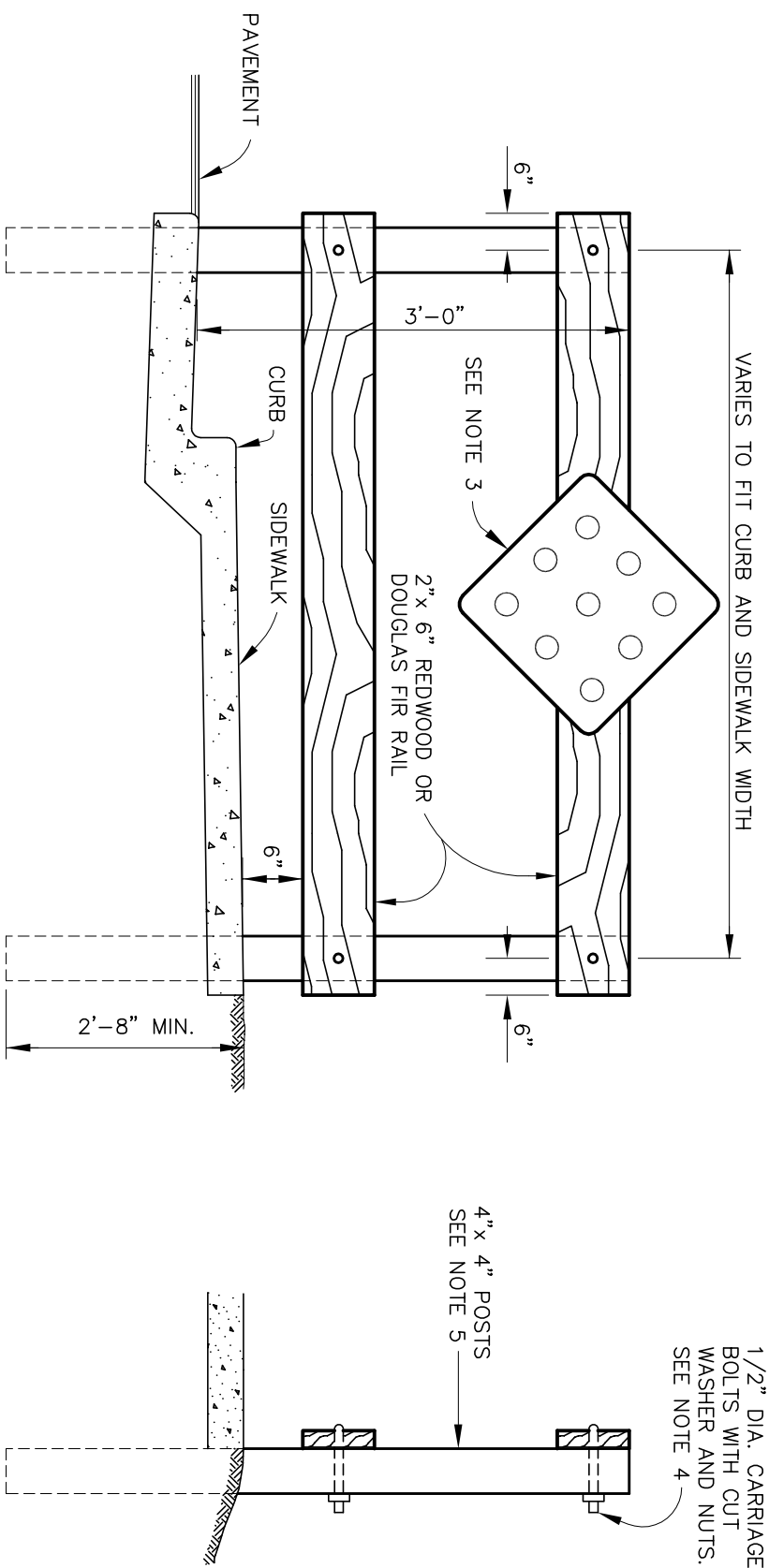
DESIGN: RCW

DRAWN: LMM

OCT. 2000

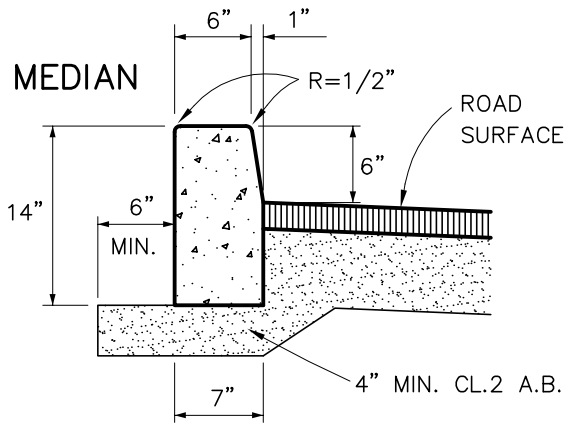
PAGE: A-33

A32
MENDOT
STD. NO.

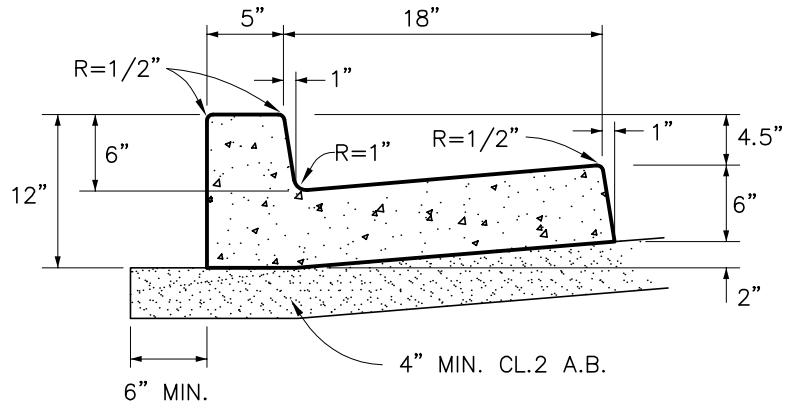


NOTES:

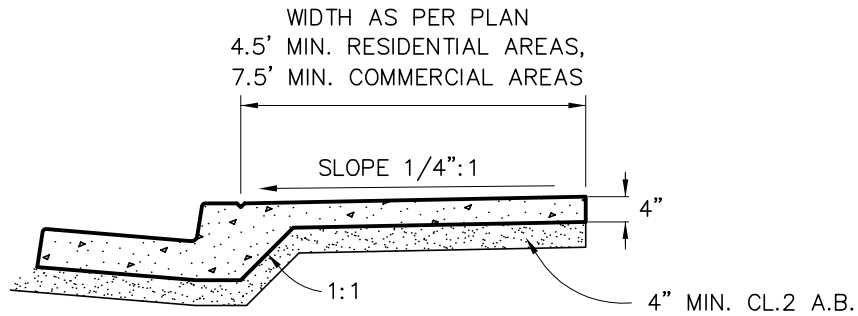
1. SIDEWALK BARRICADES TO BE ERECTED AT ANY LOCATION WHERE SATISFACTORY PROVISION CAN NOT MADE FOR PEDESTRIANS TO CONTINUE BEYOND THE TERMINUS OF A SIDEWALK.
2. ALL EXPOSED SURFACES TO BE PAINTED WITH TWO (2) COATS OF WHITE PAINT.
3. INSTALL 18" X 18" ALUMINUM TYPE N-5 REFLECTOR, NO MORE THAN 8' O.C., MINIMUM 3
4. ALL HARDWARE SHALL BE HOT-DIPPED GALVANIZED.
5. POSTS SHALL BE CLEAR REDWOOD OR PRESSURE-TREATED FIR APPROVED FOR IN-GROUND USE UNDER UBC.



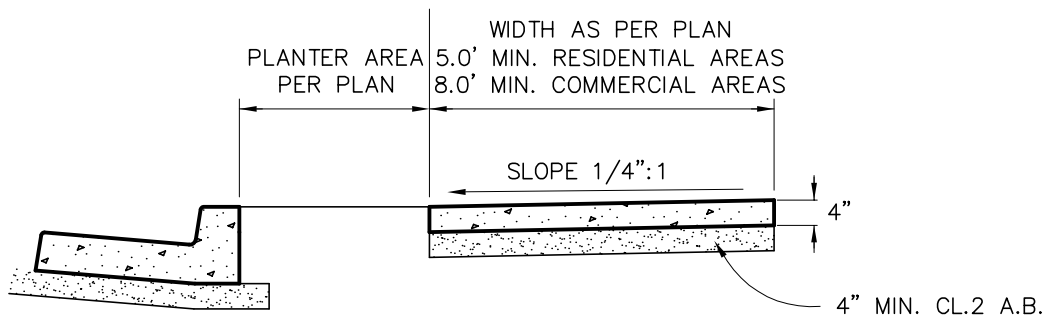
**STANDARD
VERTICAL CURB**



**STANDARD
CURB AND GUTTER**



**TYPE 'A' SIDEWALK
PLACED MONOLITHIC WITH CURB**



**TYPE 'B' SIDEWALK
PLACED SEPARATE FROM CURB**

SEE CURB, GUTTER AND SIDEWALK NOTES ON STANDARD A40B



CURB, GUTTER, SIDEWALK & MEDIAN

MENDOT
STD. NO.
A40A

SCALE: NONE

DESIGN: HND

DRAWN: HND

JUNE 2006

PAGE: A-34

NOTES:

1. CONCRETE SHALL BE CLASS 1, 1" MAXIMUM AGGREGATE SIZE PER CALTRANS STANDARD SPECIFICATIONS AND SHALL CONTAIN NOT LESS THAN 6 SACKS OF CEMENT PER CUBIC YARD. NO COLOR OR LAMP-BLACK SHALL BE ADDED UNLESS OTHERWISE SHOWN ON THE PLANS OR SPECIAL PROVISIONS.
2. EXPANSION JOINTS, 1/2 INCH WIDE, SHALL BE PLACED AT BOTH SIDES OF DRIVEWAY APPROACHES, AT EACH SIDE OF DRAINAGE STRUCTURES, AT ENDS OF CURB RETURNS, AND AT 60 FEET ON CENTER. EXPANSION JOINTS SHALL BE ALIGNED THROUGH ADJACENT CURB, GUTTER AND SIDEWALK.
3. WEAKENED PLANE JOINTS AT LEAST 1-1/2 INCH DEEP SHALL BE PLACED AT 15 FEET ON CENTER. WEAKENED PLANE JOINTS SHALL BE INSTALLED AT CENTER OF ALL DRIVEWAY APPROACHES OVER 20' WIDE.
4. SCORE MARKS AT LEAST 1/4 INCH DEEP SHALL BE PLACED AT BACK OF CURB AND IN ALL SIDEWALKS TO ESTABLISH AN EQUAL SQUARE PATTERN BASED ON THE SIDEWALK WIDTH. MAXIMUM SCORE MARK SPACING SHALL BE 5 FEET.
5. SUBGRADE SHALL BE COMPACTED TO AT LEAST 95% RELATIVE COMPACTION IN THE TOP 6 INCHES.
6. EXISTING CONCRETE TO BE REPLACED SHALL BE REMOVED AT EXPANSION JOINTS, WEAKENED PLANE JOINTS OR SCORE MARKS. CONCRETE REMOVED AT WEAKENED PLANE JOINTS OR SCORE MARKS SHALL BE SAWCUT. SAWCUTS SHALL BE AT LEAST 1-1/2 INCH DEEP.
7. NO UTILITY BOXES OR POLES SHALL BE PLACED IN THE SIDEWALK AREA WITHOUT THE WRITTEN APPROVAL OF THE DOT DIRECTOR.
8. NEW WORK SHALL MATCH EXISTING IN SCORE PATTERN AND COLOR.
9. NO CONCRETE SHALL BE PLACED UNTIL AFTER THE COUNTY INSPECTOR HAS APPROVED FORMS AND SUBGRADE.
10. ALL EXPOSED EDGES SHALL BE ROUNDED WITH 1/2 INCH RADIUS TOOL.
11. ALL SURFACES SHALL BE BROOM FINISHED.
12. ALL SIDEWALK CONSTRUCTED ADJACENT TO CURBS SHALL BE TYPE "A", PLACED MONOLITHIC WITH CURB, UNLESS OTHERWISE SHOWN ON THE PLANS OR SPECIAL PROVISIONS.
13. LANDSCAPE MAINTENANCE EASEMENTS (LME) SHALL BE MAINTAINED BY THE ENTITY TASKED WITH THAT RESPONSIBILITY THROUGH THE DEVELOPMENT PERMIT. SHOULD VEGETATION EVER POSE A SAFETY HAZARD THE MENDOCINO COUNTY ROAD COMMISSIONER RESERVES ALL OPTIONS UNDER CALIFORNIA STREETS AND HIGHWAYS CODE. SOME OPTIONS UNDER THE STREETS AND HIGHWAYS CODE ARE TO REMOVE THE VEGETATION OR CAUSE THE VEGETATION TO BE REMOVED BY OTHERS, *AT THE RESPONSIBLE PARTIES EXPENSE*. THE LANDSCAPE MAINTENANCE EASEMENT HOLDER SHALL BE CONSIDERED THE OWNER OF THE VEGETATION AND ALSO BE FINED FOR EACH DAY THE VEGETATION REMAINS IN PLACE AFTER DIRECTION BY THE ROAD COMMISSIONER TO REMOVE IT.
14. THE ROAD BASEMENT SOILS AND BASE ROCK SECTION SHALL BE PROTECTED FROM SUBSURFACE WATER BY DESIGN AND MAINTENANCE OF SURFACE AND SUBSURFACE WATER INTERCEPTORS IN THE LANDSCAPE MAINTENANCE EASEMENTS (LME). DAMAGE TO THE ROAD SECTION AS A RESULT OF IMPROPER MAINTENANCE OF THE LME SHALL BE REPAIRED AT THE EXPENSE OF THE ENTITY TASKED WITH THAT RESPONSIBILITY THROUGH THE DEVELOPMENT PERMIT.

NOTES REFER TO STANDARD A40A



CURB, GUTTER, SIDEWALK & MEDIAN LANDSCAPE MAINTENANCE NOTES

MENDOT
STD. NO.
A40B

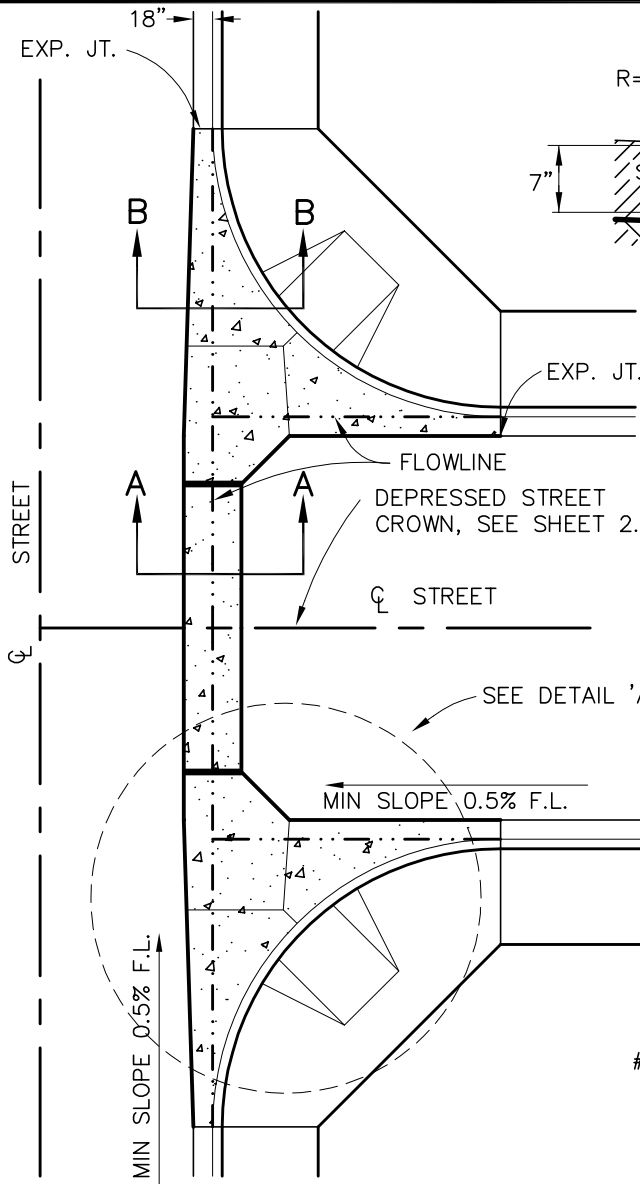
SCALE: NONE

DESIGN: HND

DRAWN: HND

JUNE 2006

PAGE: A-35



TYP. CROSS-GUTTER PLAN

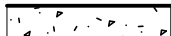
NOTE:

ALL CONCRETE SHALL BE CLASS "1"
(6 SACK/CU. YARD)

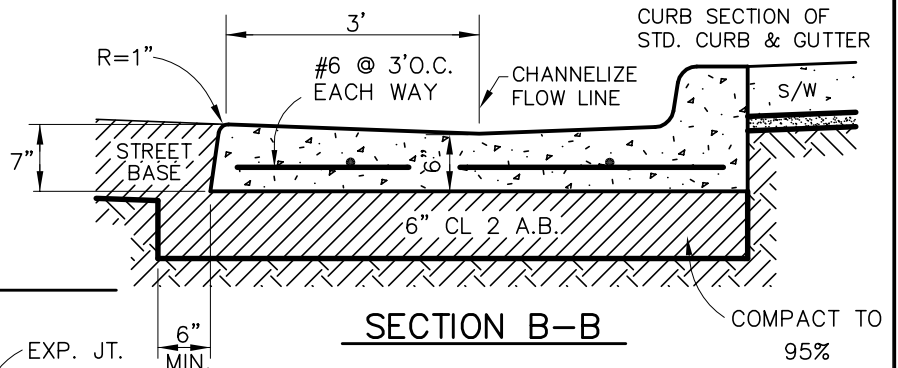
LEGEND

EXP. JOINT

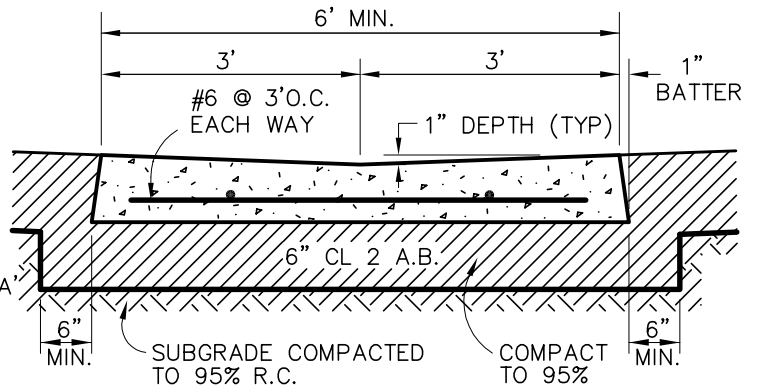
1/2" EXPANSION JOINT



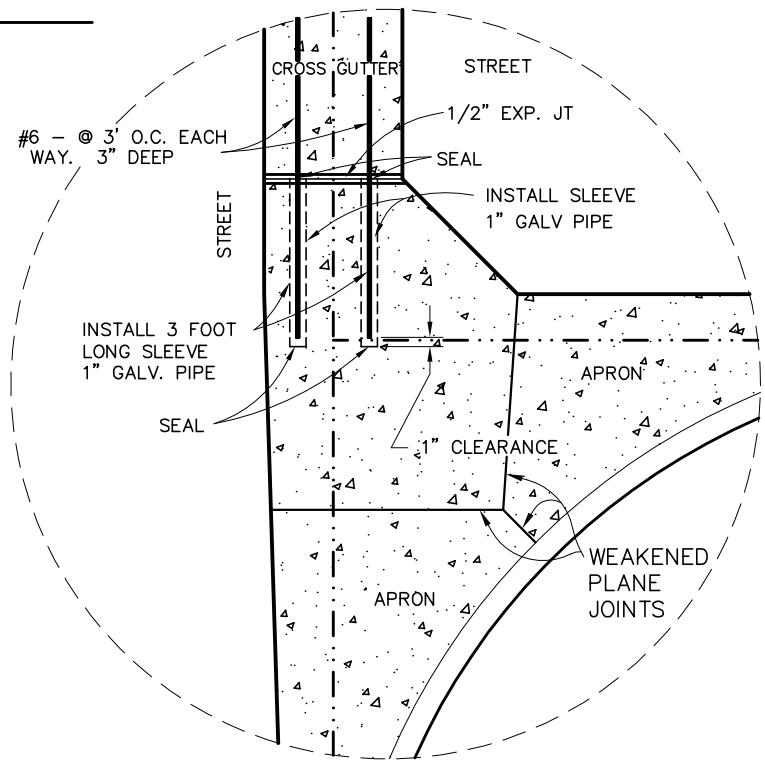
AREA OF APRON & CROSS GUTTER



SECTION B-B



SECTION A-A



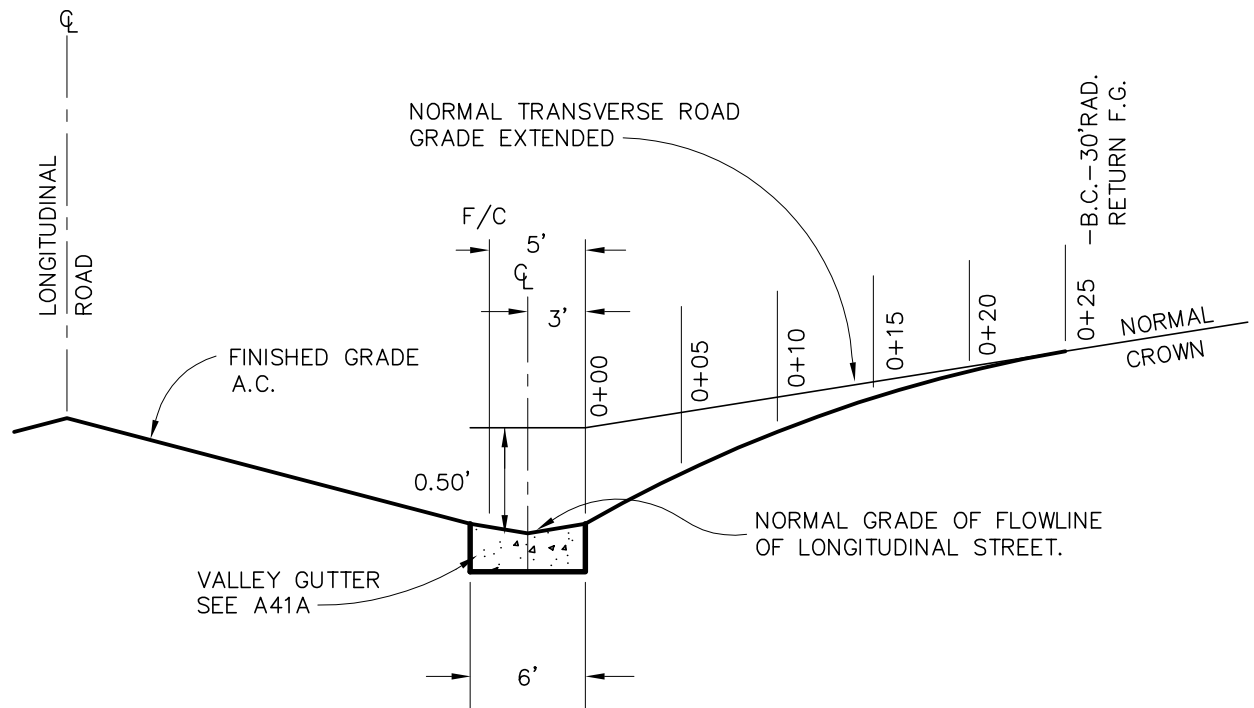
DETAIL "A"

TYPICAL BOTH SIDES



VALLEY GUTTER

MENDOT
STD. NO.
A41A



PROFILE ALONG CL TRANSVERSE ROAD

NOTE:

ORDINATES, IN DECIMAL PARTS OF A FOOT, ESTABLISH THE DISTANCE OF THE PAVEMENT SURFACE OF THE TRANSVERSE ROAD BELOW THE NORMAL ROAD GRADE, FROM STA 0+00 TO 0+25.

	A.C.		SURFACING			
STA	0+00	0+05	0+10	0+15	0+20	0+25
ORDIN	0.42	0.31	0.20	0.09	0.02	0.00

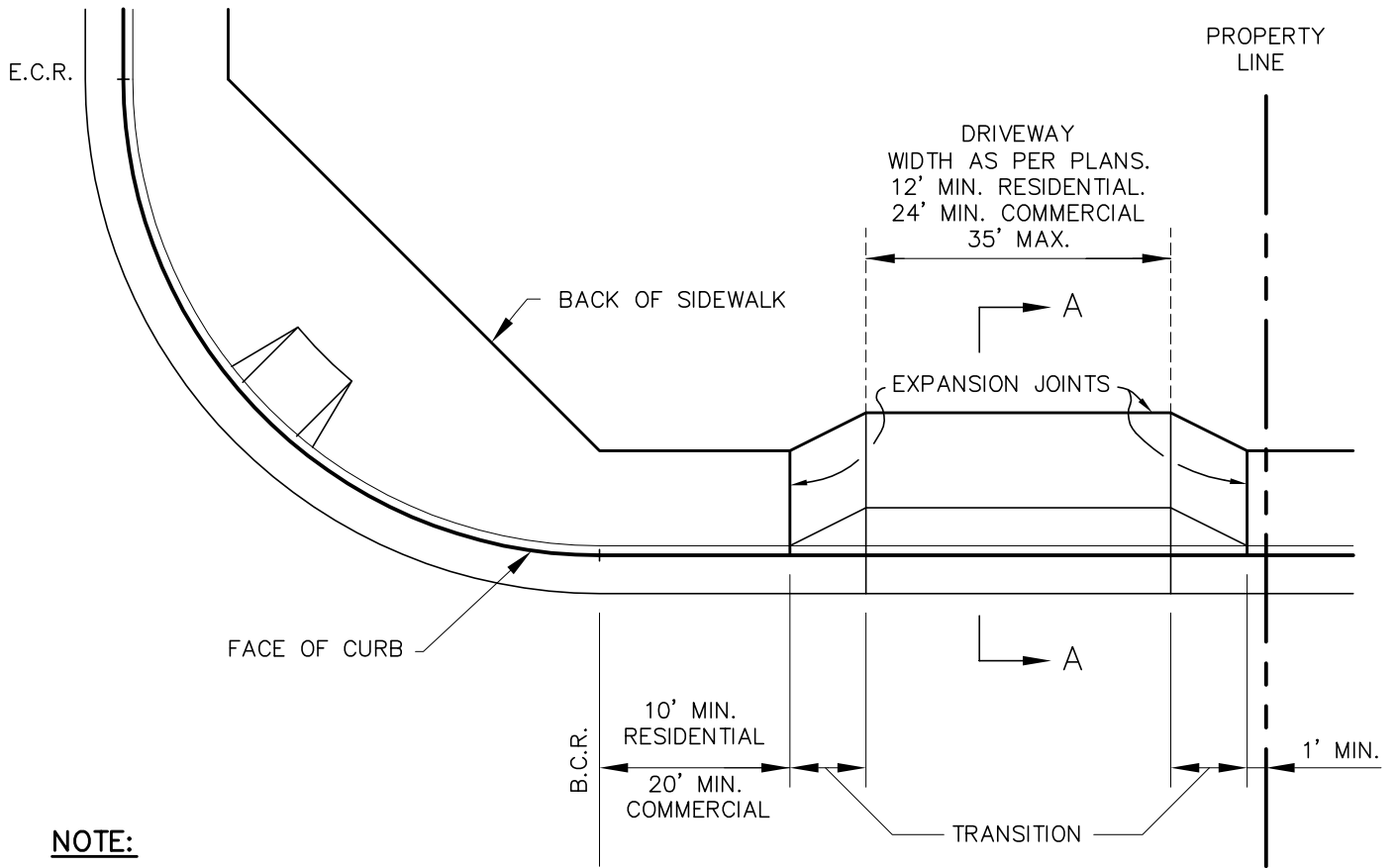


VALLEY GUTTER ROAD PROFILE

MENDOT
STD. NO.
A41B

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

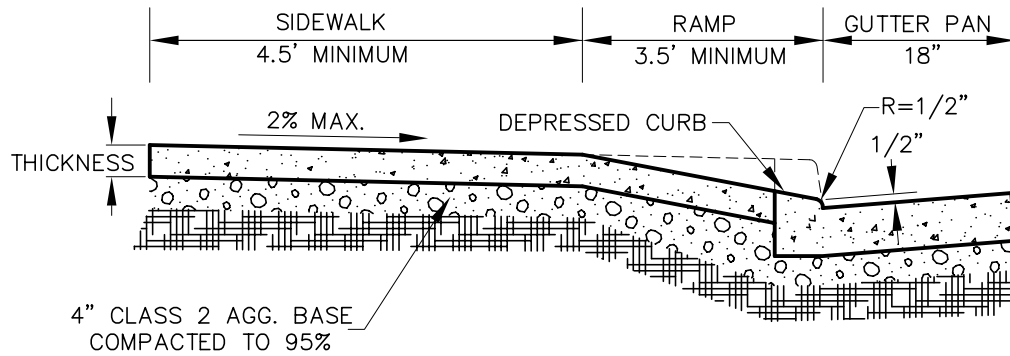
PAGE: A-37



NOTE:

1. SEE MENDOT STD. NO. A40B FOR GENERAL NOTES.

PLAN



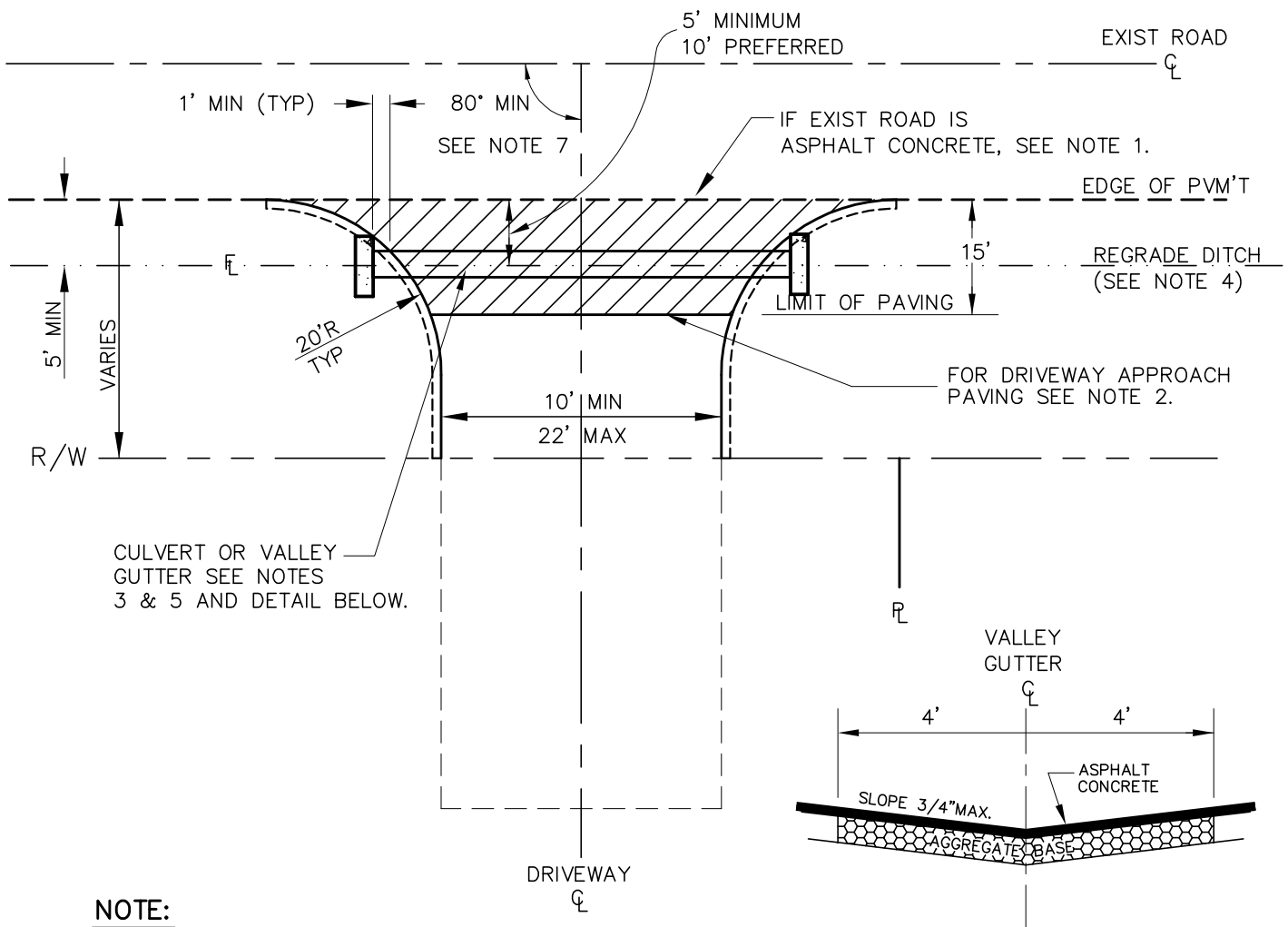
SECTION A-A

DRIVEWAY TYPE	THICKNESS	TRANSITION
RESIDENTIAL	6"	2'
COMMERCIAL	8"	4'



**DRIVEWAY APPROACH
URBAN ROADS**

MENDOT
STD. NO.
A50



NOTE:

SEE STD. A51C FOR ALL REFERENCED NOTES.

ROUND CORNERS

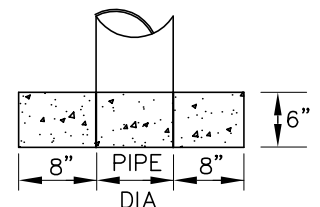
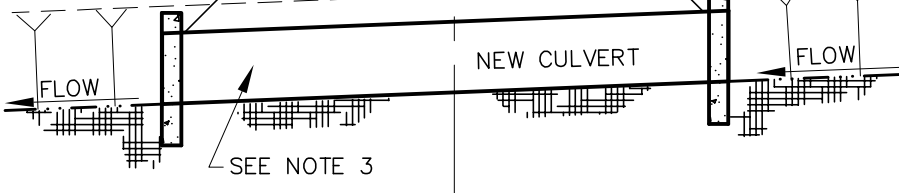
No 4 REBAR TYP
CENTER IN
6" WALL

SEE NOTE 2 FOR
DRIVEWAY APPROACH
PAVING

C/L DRIVEWAY

HEADWALL TYP

NEW CULVERT

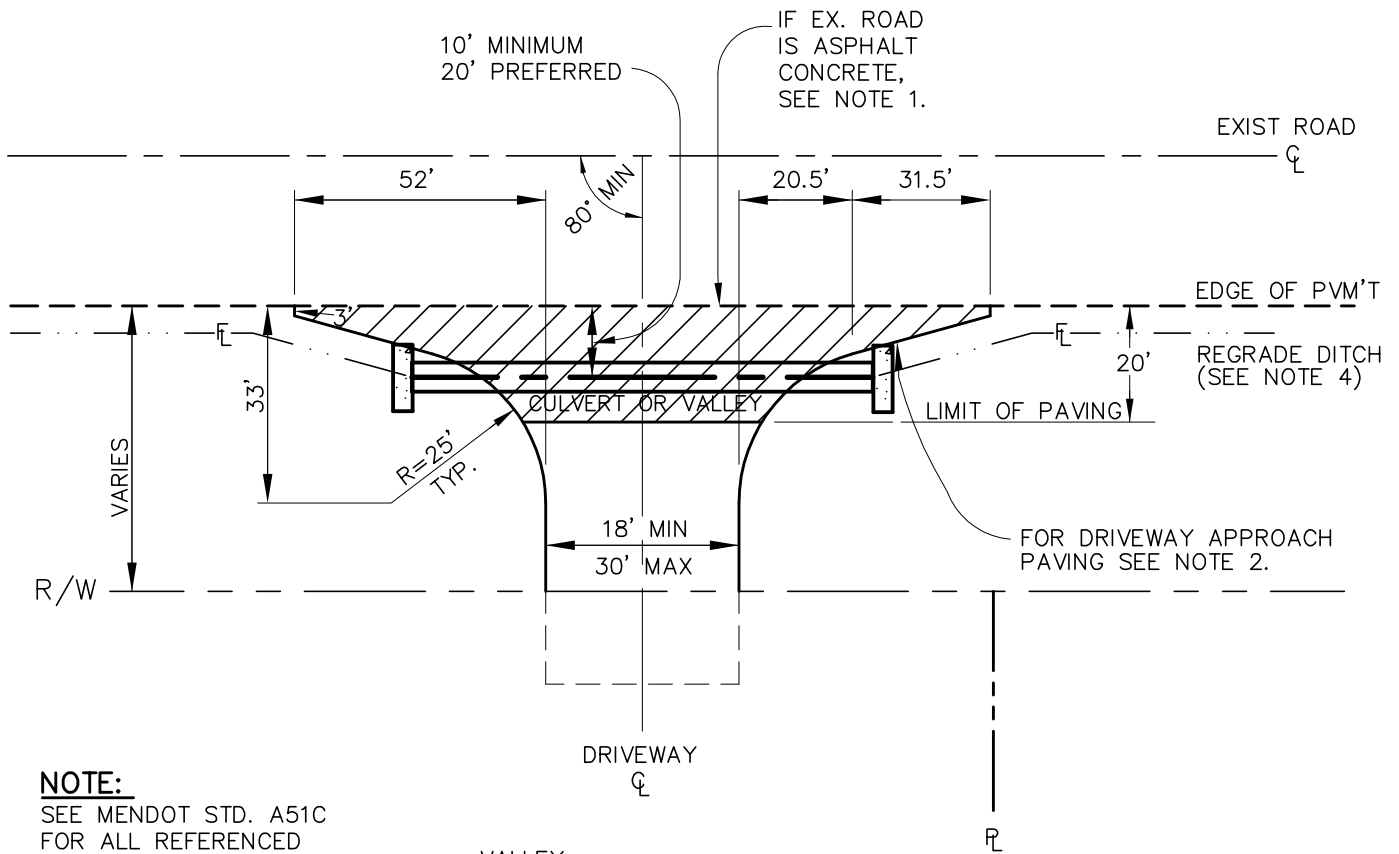


HEADWALL



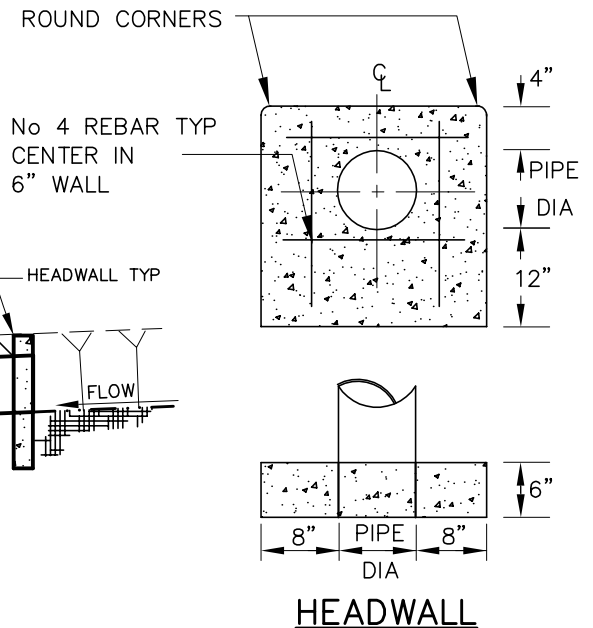
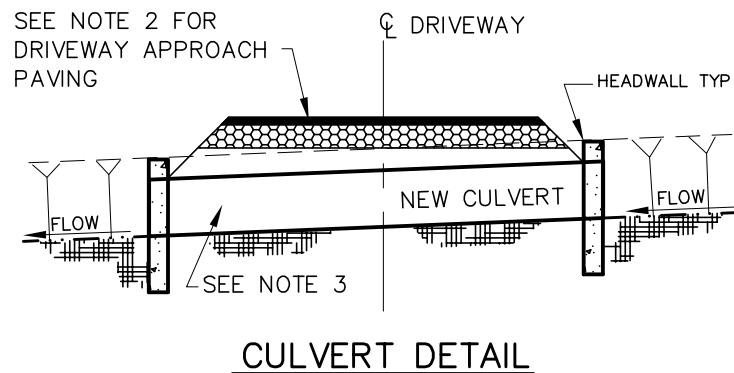
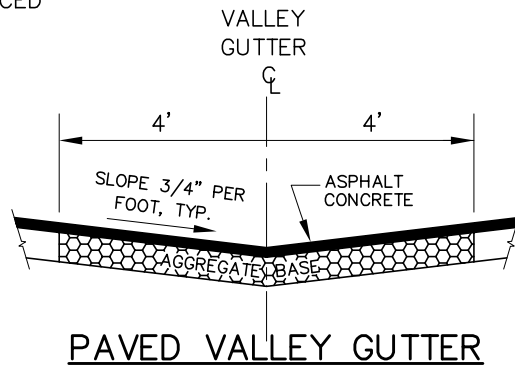
RESIDENTIAL DRIVEWAY APPROACH RURAL ROADS

MENDOT
STD. NO.
A51A



NOTE:

SEE MENDOT STD. A51C
FOR ALL REFERENCED
NOTES.



**COMMERCIAL DRIVEWAY
AND PRIVATE ROAD APPROACH
RURAL ROADS**

MENDOT
STD. NO.
A51B

SCALE: NONE

DESIGN: HND

DRAWN: CLG

FEB. 2008

PAGE: A-40

NOTES:

1. NEATLY CUT EXIST. EDGE OF PAVEMENT AND APPLY TACK COAT.
2. RESIDENTIAL DRIVEWAY APPROACH MATERIAL SHALL BE ASPHALT CONCRETE IF ROAD FRONTING DRIVEWAY IS PAVED, PAVING SHALL CONSIST OF 2" A.C. OVER 6" A.B. MINIMUM.
3. COMMERCIAL DRIVEWAY AND PRIVATE ROAD APPROACH MATERIAL SHALL BE ASPHALT CONCRETE IF ROAD FRONTING THE APPROACH IS PAVED. PAVING SHALL CONSIST OF 3" A.C. OVER 8" CL. 2 A.B. MINIMUM.
4. DRIVEWAY APPROACH SURFACING SHALL BE COMPARABLE TO THE SURFACING OF THE ADJACENT ROAD.
AGGREGATE BASE SHALL BE ONE FOOT WIDER THAN THE PAVED WIDTH ON EACH SIDE.
5. CULVERT SHALL BE 12" DIA. MIN. R.C.P. OR HDPE PLASTIC PIPE WITH SMOOTH INTERIOR WALL CONFORMING TO CALTRANS STANDARD SPECIFICATIONS. IN NO CASE SHALL PIPE BE SMALLER THAN UP STREAM CULVERT. LENGTH OF THE CULVERT SHALL BE THAT REQUIRED TO EXTEND ONE FOOT BEYOND THE TOE OF THE DRIVEWAY FILL.
6. REGRADE DITCH ADJACENT TO PROPERTY LINE FOR ENTIRE FRONTAGE OF PROPERTY, IF REQUIRED.
7. CULVERT SHALL BE REQUIRED WHERE THERE IS A ROADSIDE DITCH, UNLESS FLOWLINE OF DITCH IS LESS THAN 3" BELOW EDGE OF PAVEMENT PROFILE. VALLEY GUTTER SHALL BE PROVIDED WHERE CULVERT IS NOT REQUIRED (SEE DETAIL ON STD. NO. A51A)
8. ALL DRIVEWAYS SHALL INTERSECT EXIST STREETS AT 80° MINIMUM, UNLESS OTHERWISE APPROVED BY THE DOT DIRECTOR.
9. SEE MENDOT STD NO. A52 FOR DRIVEWAY/ROAD CONNECTION PROFILE.
10. SEE MENDOT STD NO. A53 FOR SIGHT DISTANCE REQUIREMENTS.
11. AN ENCROACHMENT PERMIT SHALL BE OBTAINED PRIOR TO CONSTRUCTING A DRIVEWAY APPROACH ON A COUNTY ROAD.
12. CULVERT SIZE AND MATERIAL SUBJECT TO THE APPROVAL OF COUNTY



DRIVEWAY APPROACH RURAL ROADS – NOTES

MENDOT
STD. NO.
A51C

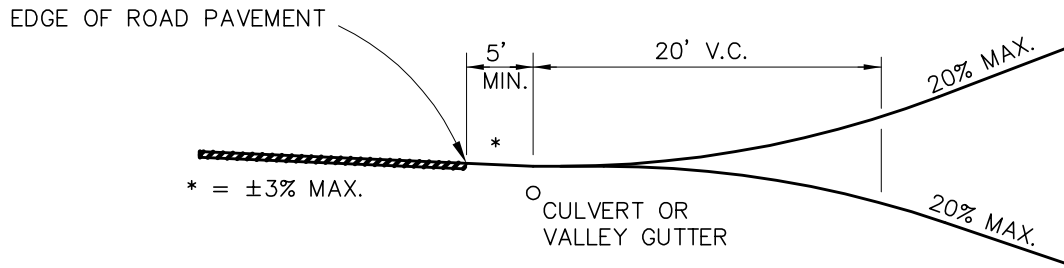
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DESIGN: HND

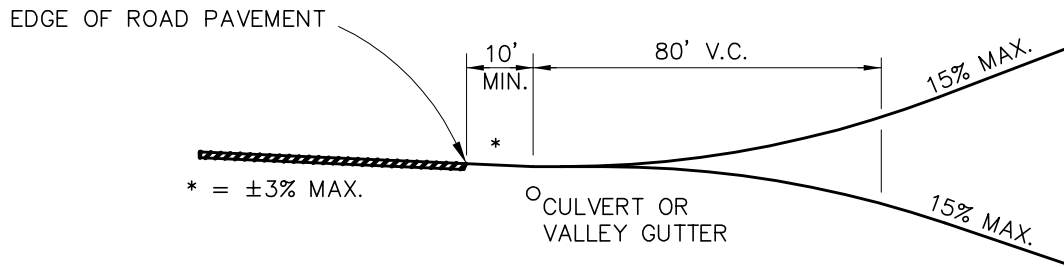
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FEB. 2008

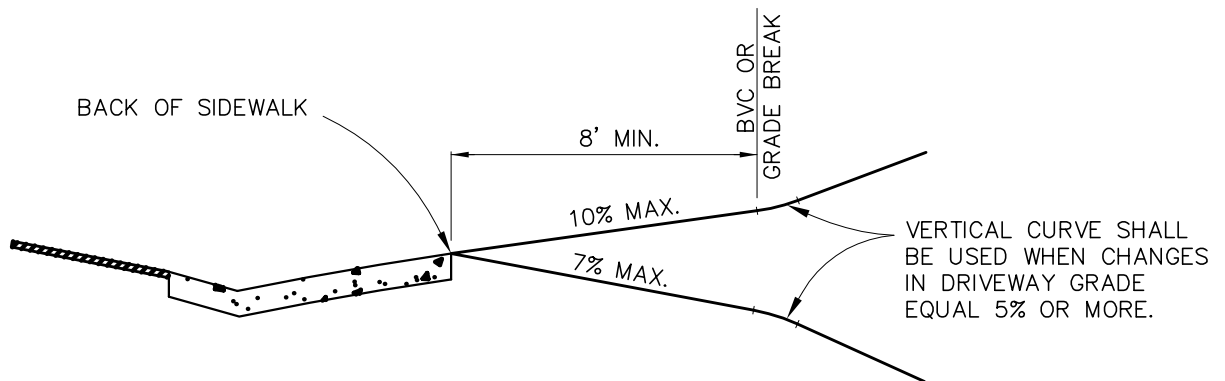
PAGE: A-41



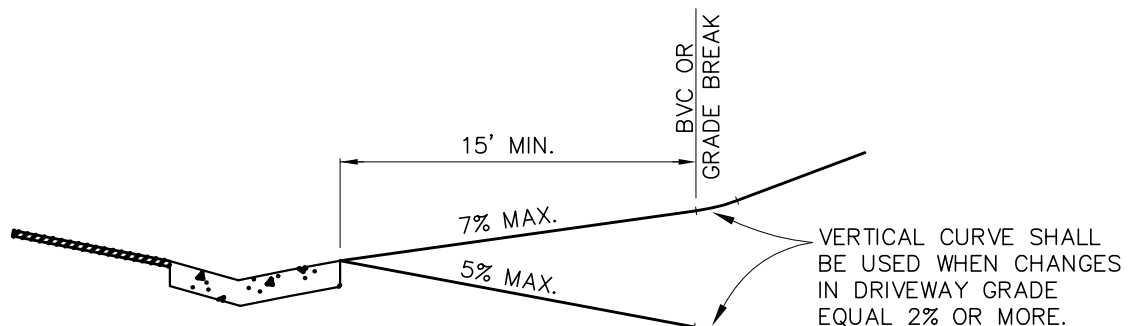
RURAL ROADS/RESIDENTIAL DRIVEWAYS



RURAL ROADS/COMMERCIAL DRIVEWAYS AND PRIVATE ROADS



URBAN ROADS/RESIDENTIAL DRIVEWAYS



URBAN ROADS/ COMMERCIAL DRIVEWAYS



DRIVEWAY APPROACH PROFILES

MENDOT
STD. NO.
A52

SCALE: NONE

DESIGN: RCW

DRAWN: CLG

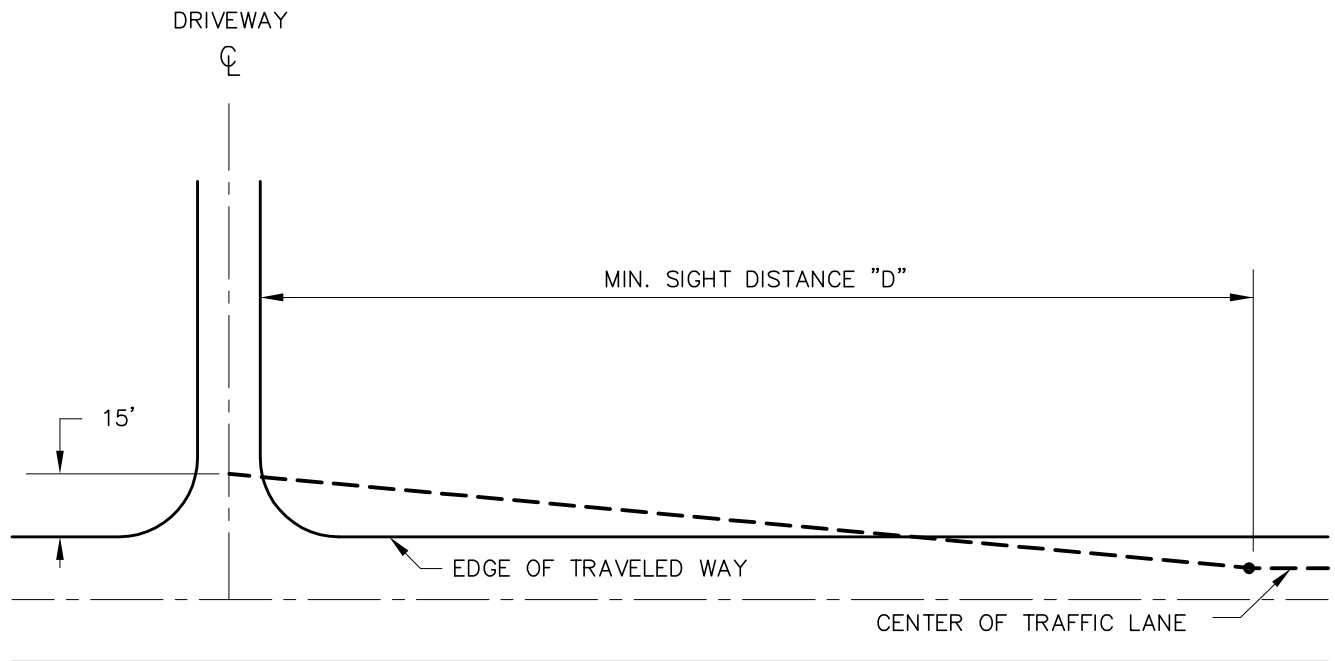
OCT. 2000

PAGE: A-42

NOTE: SIGHT DISTANCE FOR THE CRITICAL APPROACH SHALL MEET THE MINIMUM STOPPING SIGHT DISTANCE SET BY THE CALTRANS DESIGN MANUAL

85% PREVAILING SPEED	"D" *
25	150'
30	200'
35	250'
40	300'
45	360'
50	430'
55	500'
60	580'
65	660'

* MAY INCREASE BY 20% ON SUSTAINED DOWNGRADES IN EXCESS OF 3% AND OVER 1 MILE IN LENGTH AS WARRANTED.



DRIVEWAY APPROACH MINIMUM STOPPING SIGHT DISTANCE

MENDOT
STD. NO.
A53

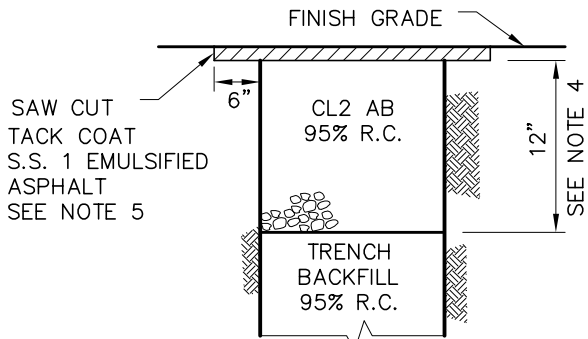
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DESIGN: HND

DRAWN: HND

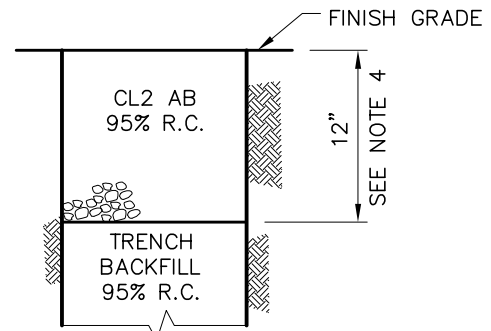
FEB. 2008

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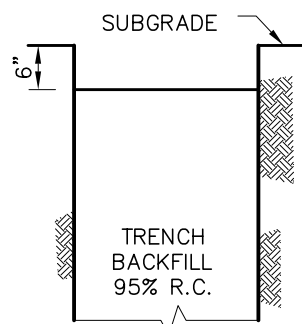
TYPE A

(EXISTING ROAD OR PAVED SHOULDERS)



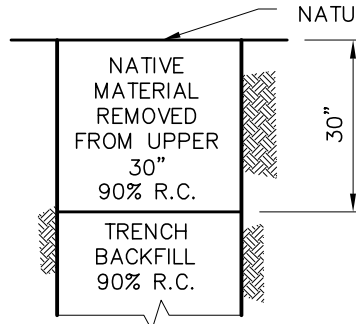
TYPE B

(UNPAVED SHOULDER AREAS)



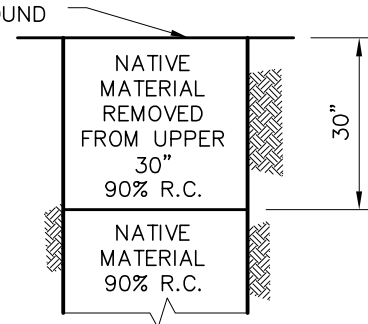
TYPE C

(ROADS UNDER CONSTRUCTION)



TYPE D

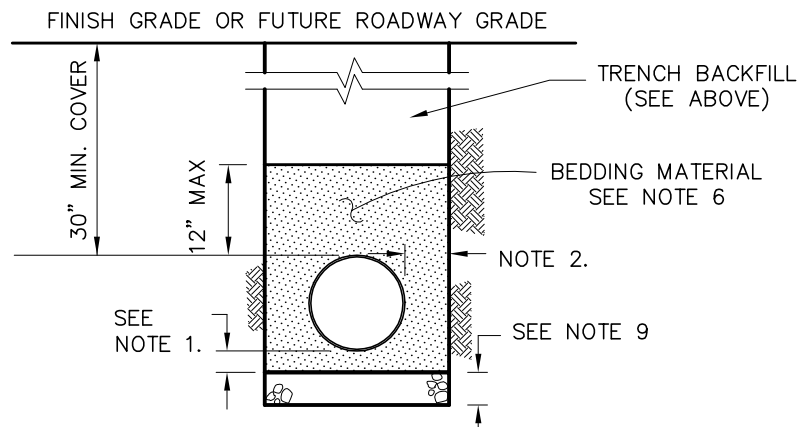
(PUBLIC UTILITY EASEMENTS)
(OUTSIDE ROAD AREA)



TYPE E

(PUBLIC UTILITY EASEMENTS)
(UNDEVELOPED AREAS)

TRENCH BACKFILL AND SURFACING



PIPE BEDDING

NOTE:

SEE MENDOT STD. A60B AND A60C FOR ALL TRENCH RESTORATION NOTES.



TRENCH RESTORATION SECTIONS

MENDOT
STD. NO.
A60A

SCALE: NONE

DESIGN: HND

DRAWN: HND

FEB. 2008

PAGE: A-44

TRENCH RESTORATION NOTES:

1. BEDDING BELOW PIPE SHALL BE AS REQUIRED BY UTILITY OR AGENCY THAT OWNS THE FACILITY.
2. 12" MIN., OR 6" MIN. IF SLURRY CEMENT BACKFILL IS USED. SEE NOTE 10.
3. RELATIVE COMPACTION DESIGNATED R.C.
4. THE MINIMUM ROAD STRUCTURAL SECTION SHALL BE A MIN. OF 3" A.C. ON 12" CL. 2 A.B. OR SHALL MATCH EXISTING PAVEMENT THICKNESS WHICHEVER IS THICKER, UNLESS OTHERWISE SHOWN ON THE PLANS. STRUCTURAL SECTION IN SHOULDERS SHALL MATCH EXISTING AND SHALL BE A MIN. OF 8" CL. 2 A.B.
5. NEATLY CUT PAVEMENT SIX INCHES FROM EDGE OF TRENCH AFTER TRENCH IS BACKFILLED. SS1 DESIGNATES SS1 ASPHALTIC EMULSION PER CALTRANS STANDARD SPECIFICATION, SECTION 94, ASPHALTIC EMULSION.

6. MATERIAL SPECIFICATIONS

- 6a. DRAIN ROCK SHALL BE EITHER OF THE NOMINAL SIZES DESIGNATED AS 1-1/2" BY 3/4" OR 2-1/2" BY 1-1/2".
- 6b. PIPE BEDDING AND TRENCH BACKFILL MATERIAL SHALL BE A WELL GRADED GRAVEL/SAND MATERIAL AND SHALL HAVE A MINIMUM SAND EQUIVALENT VALUE OF 20 AND SHALL CONFORM TO THE FOLLOWING GRADINGS:

PERCENT PASSING

	<u>3"</u>	<u>3/4"</u>	<u>3/8"</u>	<u>NO. 4</u>	<u>NO. 16</u>	<u>NO. 30</u>	<u>NO. 200</u>
PIPE BEDDING		100	80-100	10-50	5-30		0-4
TRENCH BACKFILL	100			35-100		20-100	

- 6c. IN ADDITION, WHEN TESTED WITH THE FOLLOWING SERIES OF SIEVES, NO MORE THAN 25% OF THE MATERIAL WILL BE RETAINED BETWEEN ANY ADJACENT SIEVES: 3", 2-1/2", 2", 1-1/2", 1", 3/4", 1/2", 3/8", NO. 4, NO. 8, NO. 16, NO. 30, NO. 50, NO. 100, AND NO. 200.
- 6d. **AGGREGATE BASE** CL 2 A.B. DESIGNATES CLASS 2 AGGREGATE BASE AND SHALL CONFORM TO THE PROVISIONS OF SECTION 26 OF THE COUNTY STANDARD SPECIFICATIONS.
- 6e. **NATIVE MATERIAL** SHALL NOT CONTAIN ROCKS LARGER THAN 3".



TRENCH RESTORATION NOTES

MENDOT
STD. NO.
A60B

SCALE: NONE

DESIGN: HND

DRAWN: HND

FEB. 2008

PAGE: A-45

7. **COMPACTION REQUIREMENTS:** (AS SHOWN ON A60A AND IN THE FOLLOWING MODIFICATIONS)
- 7a. **DRAIN ROCK** SHALL BE CONSOLIDATED WITH VIBRATORY COMPACTION EQUIPMENT TO A MINIMUM R.C. OF 90%.
- 7b. **PIPE BEDDING MATERIAL** SHALL BE CONSOLIDATED WITH VIBRATORY COMPACTION EQUIPMENT TO A MINIMUM R.C. OF 90%.
- 7c. **GENERAL:** THE COMPACTION REQUIREMENTS SHALL BE ACHIEVED UTILIZING METHODS AND EQUIPMENT APPROVED BY THE COUNTY. ANY METHOD OF COMPACTION WHICH FAILS TO UNIFORMLY ACHIEVE THE REQUIRED LEVELS OF COMPACTION THROUGHOUT THE LENGTH AND DEPTH OF TRENCHES SHALL BE DISCONTINUED. COMPACTION METHODS AND EQUIPMENT SHALL BE SUCH AS NOT TO DAMAGE THE INSTALLED PIPE, EXCEED ITS LOADING CAPACITY OR DISTURB ITS ALIGNMENT. FLOODING, PONDING OR JETTING WILL NOT BE ALLOWED.
- 7d. **MECHANICAL COMPACTION:** TRENCH BACKFILL SHALL BE PLACED IN UNIFORM, HORIZONTAL LAYERS NOT EXCEEDING EIGHT (8) INCHES IN THICKNESS BEFORE COMPACTION. EACH LAYER SHALL BE COMPACTED, USING MECHANICAL MEANS, TO THE SPECIFIED DENSITY SHOWN ON THE PLANS.
- THE CONTRACTOR MAY, AT CONTRACTOR'S SOLE OPTION AND AT CONTRACTOR'S SOLE EXPENSE, CONSTRUCT A TEST TRENCH SECTION WHICH DEMONSTRATES METHODS, EQUIPMENT, OR MATERIALS WHICH WILL RELIABLY ACHIEVE THE REQUIRED COMPACTION IN LIFTS GREATER THAN 8 INCHES. AT ITS SOLE DISCRETION, THE COUNTY MAY INCREASE THE MAXIMUM ALLOWABLE LIFT THICKNESS PERMITTED BASED UPON THE RESULTS DEMONSTRATED BY THE TEST TRENCH SECTION. SHOULD SUBSEQUENT TESTING DEMONSTRATE THAT THE REQUIRED COMPACTION IS NOT BEING RELIABLY ACHIEVED, THE COUNTY MAY, AT ITS SOLE DISCRETION, REDUCE THE MAXIMUM LIFT THICKNESS TO ITS ORIGINAL VALUE OF 8 INCHES.
8. **TRENCHING METHODS:** ROCK WHEEL TRENCHING SHALL BE ALLOWED FOR TRENCH CONSTRUCTION IN COUNTY ROADS. INSTALLATION OF CABLE USING THE PLOW METHOD SHALL NOT BE ALLOWED.
9. **TRENCH BASE:** TRENCH BASE SHALL BE STABILIZED USING ADDITIONAL PIPE BEDDING; DRAIN ROCK, OR OTHER SUITABLE MATERIAL AS DIRECTED BY UTILITY, COUNTY DOT, OR CIVIL ENGINEER IN RESPONSIBLE CHARGE OF THE WORK.
10. **SLURRY CEMENT BACKFILL:** SLURRY CEMENT BACKFILL MAY BE USED FOR TRENCH BACKFILL ONLY AS AUTHORIZED BY COUNTY DOT, BUT SHALL BE REQUIRED WHEN TRENCH WIDTHS OF LESS THAN 12 INCHES ARE REQUESTED. SLURRY CEMENT BACKFILL SHALL MEET THE REQUIREMENTS OF SECTION 19-3.062, SLURRY CEMENT BACKFILL, OF THE CALTRANS STANDARD SPECIFICATIONS, UNLESS COUNTY DOT DIRECTOR APPROVES A SPECIFIC MIX DESIGN.



TRENCH RESTORATION NOTES (CONTINUED)

MENDOT
STD. NO.
A60C

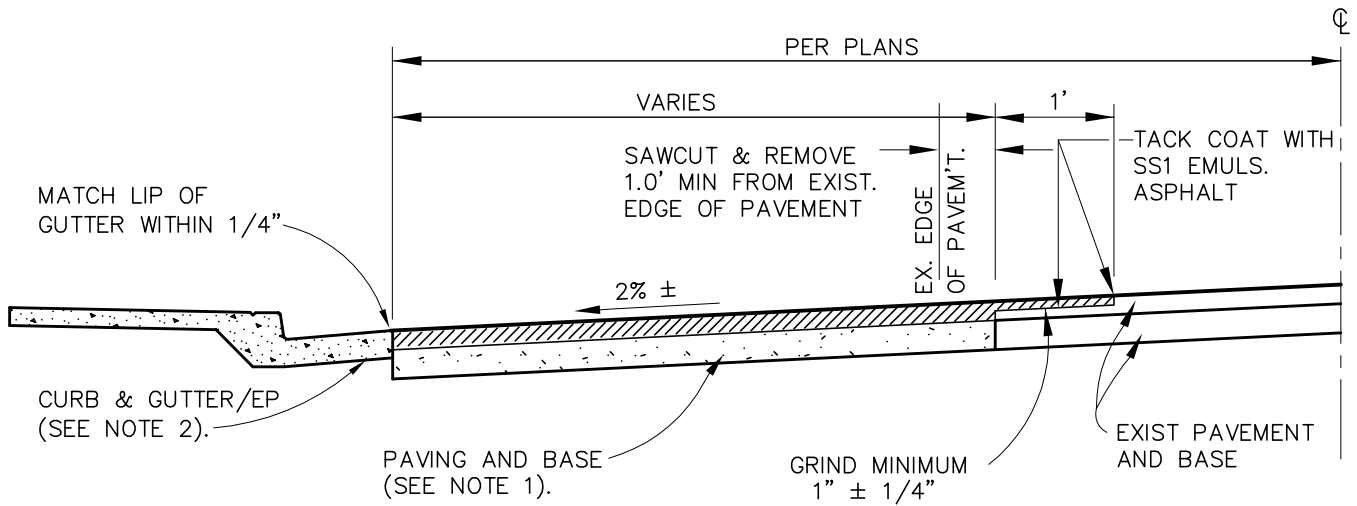
SCALE: NONE

DESIGN: RCW

DRAWN: LMM

OCT. 2000

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NOTES:

1. PAVING AND BASE THICKNESS TO BE DETERMINED USING COUNTY PAVEMENT DESIGN STANDARDS. MINIMUM PAVEMENT THICKNESS TO BE 2-1/2".
2. SEE MENDOT STD. A40A FOR CURB GUTTER & SIDEWALK DETAILS.
3. WHEN CURB, GUTTER AND SIDEWALK ARE NOT REQUIRED, REVERT TO MENDOT STD. A18 FOR TYPICAL SHOULDER CONSTRUCTION.

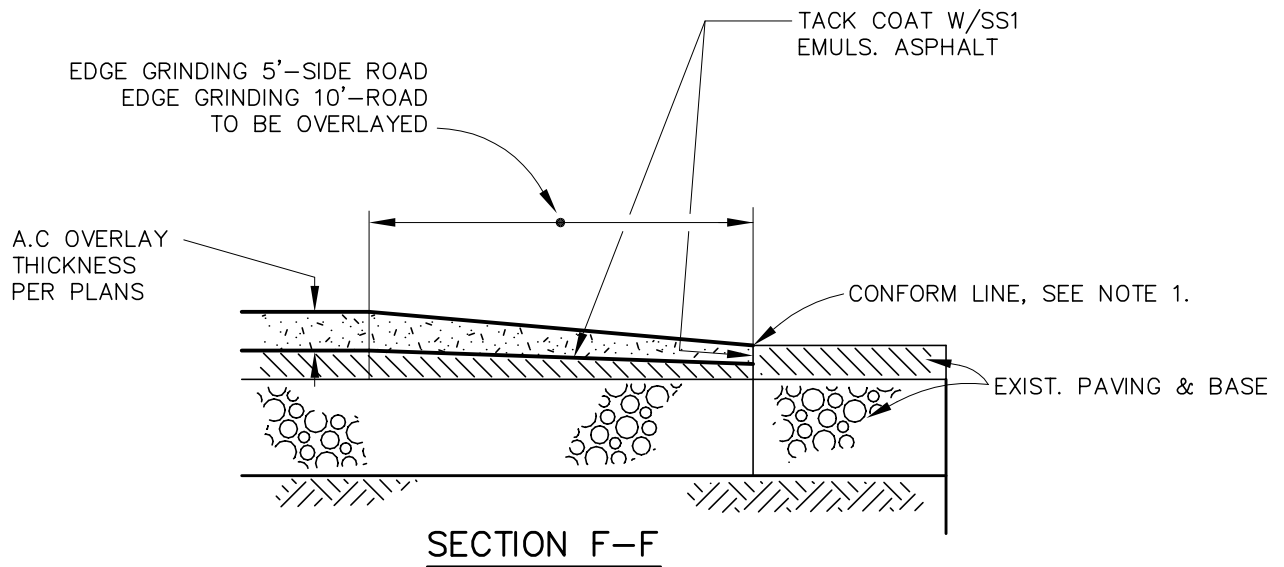
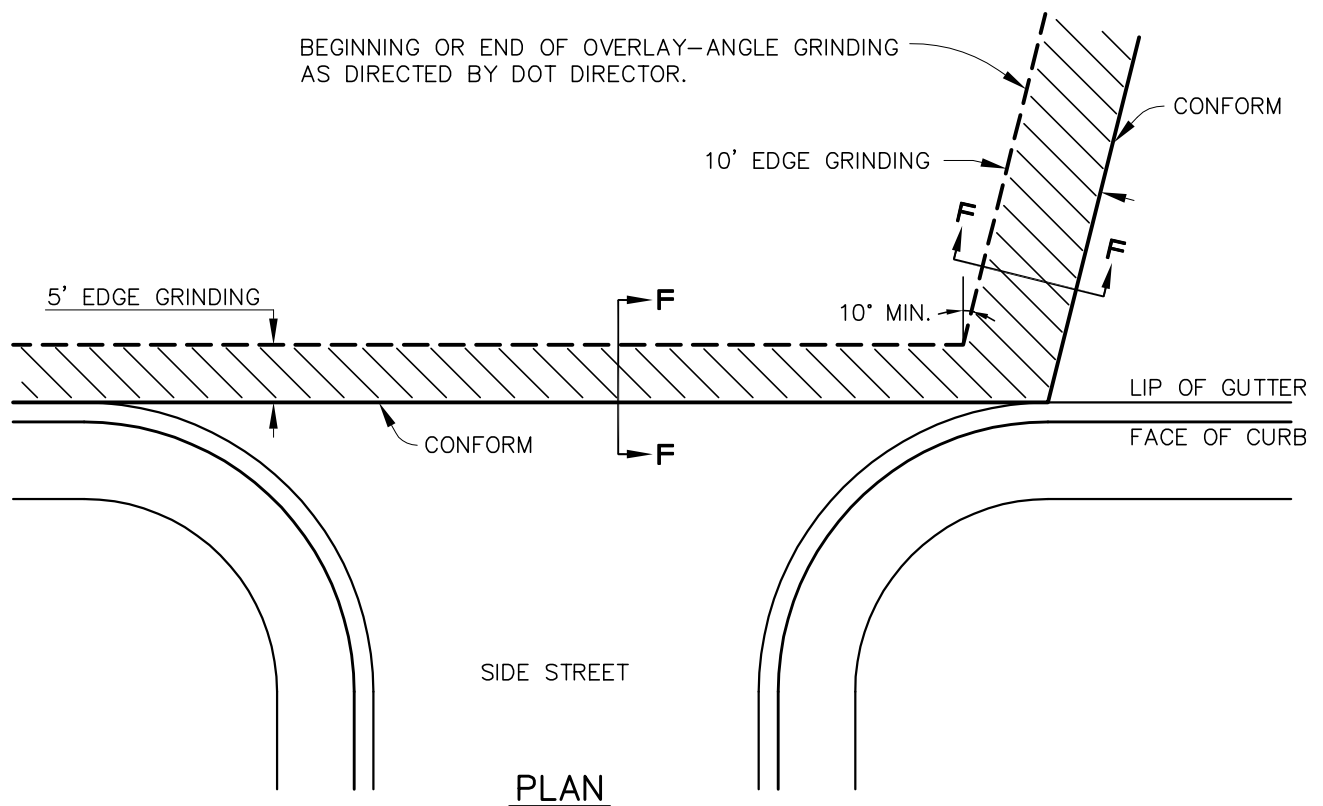


ROAD WIDENING/PAVEOUT DETAIL

MENDOT
STD. NO.
A70

SCALE: NONE | DESIGN: HND | DRAWN: HND | FEB. 2008

PAGE: A-47

**NOTES:**

1. EDGE GRINDING SHALL BE A MINIMUM OF $1" \pm 1/4"$.
2. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPTS AS OTHERWISE APPROVED BY THE DOT DIRECTOR.

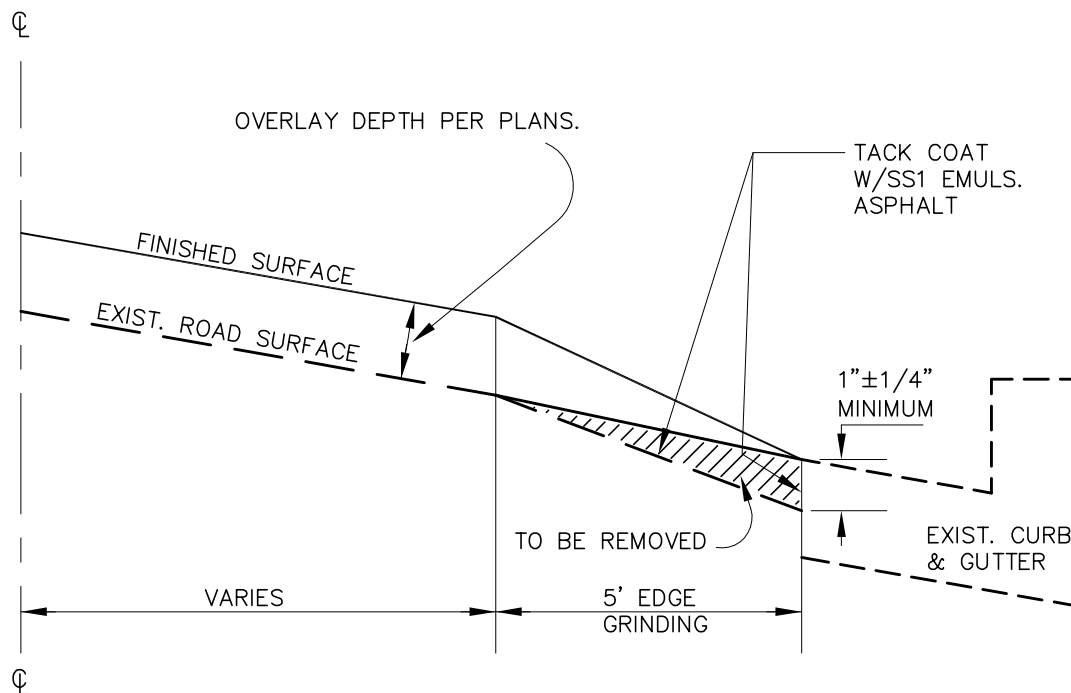


**PAVEMENT REPAIR DETAIL -
SIDE ROAD/
END OF OVERLAY CONFORM**

MENDOT
STD. NO.
A71

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

PAGE: A-48

**NOTES:**

1. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DOT DIRECTOR.
2. MAXIMUM CROSS SLOPE SHALL BE 5%.



**PAVEMENT REPAIR DETAIL –
EDGE GRINDING AT
LIP OF GUTTER**

MENDOT
STD. NO.
A72

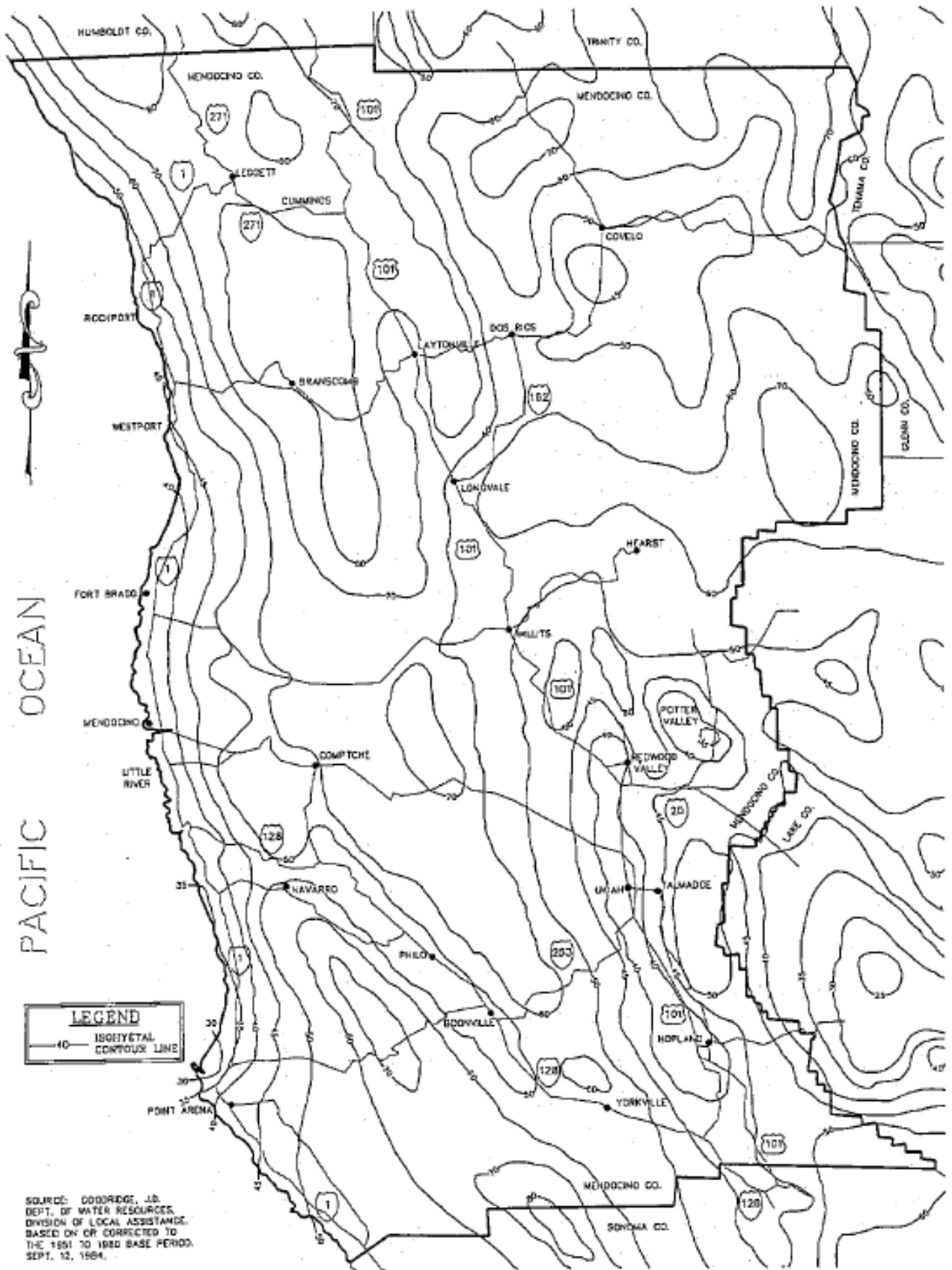
SCALE: NONE

DESIGN: RCW

DRAWN: LMM

OCT. 2000

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MEAN SEASONAL PRECIPITATION IN INCHES

MENDOT
STD. NO.
D10

SCALE: NONE

DESIGN: RCW

DRAWN: CLG

OCT. 2000

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1. THE FOLLOWING INTENSITY/DURATION/FREQUENCY (IDF) CURVES WERE OBTAINED FROM THE CALIFORNIA DEPARTMENT OF TRANSPORTATION IN JUNE, 2000, AND ARE BASED ON THEIR IDF32 SOFTWARE PACKAGE, WHICH IS NOTED AS FOLLOWS:

*IDF32
Caltrans Rainfall Intensity Program
Copyright 1998
Department of Transportation
State of California*

This program is freeware. There are no restrictions on its distribution.

NOTICE: This software does not necessarily reflect the official views or policy of the California Department of Transportation or the California Department of Water Resources. While the data and methodology contained herein is believed to be accurate, the State of California or local agencies assume no liability arising from errors, omissions, or other defects in this software. This software does not constitute a standard, a specification or a regulation.

2. THE SOFTWARE INCLUDES IDF CURVES FOR THE FOLLOWING LOCATIONS IN OR NEAR MENDOCINO COUNTY:

RAINFALL STATION	ELEVATION	LATITUDE	LONGITUDE	YEARS OF DATA
CASPER CREEK 4	240	39.348	123.753	1963-1978
CASPER CREEK 5	400	39.357	123.736	1965-1978
COVELO EEL RIVER	1514	39.833	123.083	1941-1985
FORT BRAGG	80	39.446	123.807	1940-1985
HOPLAND 8 NE	2510	39.017	123.000	1944-1975
LAYTONVILLE	1640	39.700	123.483	1941-1986
LEGGETT	700	39.867	123.717	1972-1986
NAVARRO 1 NW	220	39.164	123.563	1954-1986
POINT ARENA	122	38.917	123.700	1940-1986
POTTER VALLEY 3 NNW	1060	39.367	123.133	1953-1964
POTTER VALLEY 3 SE	1100	39.300	123.067	1953-1982
POTTER VALLEY POWERHOUSE	1014	39.367	123.133	1965-1986
REDWOOD VALLEY	718	39.267	123.200	1938-1971
UKIAH-LAKE MENDOCINO DAM	670	39.233	123.183	1972-1986
UKIAH-MASONITE	615	39.167	123.200	1953-1957
WILLITS HOWARD	1925	39.350	123.317	1940-1986
YORKVILLE	1120	38.917	123.267	1940-1986



INTENSITY/DURATION/FREQUENCY CHARTS NOTES

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

MENDOT
STD. NO.
D11A

PAGE: A-51

3. FOR EASE OF USE, SIX IDF CURVES HAVE BEEN REPRODUCED IN THESE ROAD STANDARDS, REPRESENTING A RANGE OF GEOGRAPHICAL AREAS AND RAINFALL INTENSITIES; THESE CURVES ARE SHOWN IN BOLD ABOVE. THE ENGINEER IN RESPONSIBLE CHARGE OF THE WORK SHALL USE JUDGMENT TO DETERMINE THE APPROPRIATE IDF FOR THE DRAINAGE SITE. THE FOLLOWING GUIDANCE IS PROVIDED FROM CALTRANS' IDF PROGRAM REGARDING INTERPOLATION:

To obtain the best IDF curve for the drainage site, the user must use judgment to determine if an IDF curve from one nearby station or an interpolation of curves from more than one station is appropriate. it is recommended that for drainage sites in hilly or mountainous terrain that the site and nearby stations be plotted on USGS 7.5- or 15- minute quadrangle maps, to facilitate visualization of the relationship of the site, the rainfall stations and the terrain. The following should be considered:

Station within a few miles of site - If there is a rainfall station fairly close by, a single-station IDF curve is most likely best. Averaging in data from more distant stations using interpolation will only 'dilute' the quality of the curve.

Intervening Mountains or Ranges - The rainfall intensity of a site can be strongly influenced by 'orographic influence.' Typically, the west side of mountains will be wetter than the east side; this is due to prevailing westerlies during winter storms and the thermodynamic properties of moist air as it ascends mountain ranges. In California, rainfall intensities can vary sharply in the space of a few miles. Use judgment before accepting IDF data from a station that is located on the opposite side of a ridge from your drainage site.

Elevation differences - The elevation of the stations are provided for information; elevations are not a factor in program calculations. Before accepting IDF data from a station, compare elevations between site and station. Be wary of elevation differences greater than 1000 feet.

4. TO OBTAIN A COPY OF THE IDF 32 PROGRAM, CONTACT CALTRANS, 1120 N. STREET, PO BOX 942874, SACRAMENTO, CA 94274-0001.

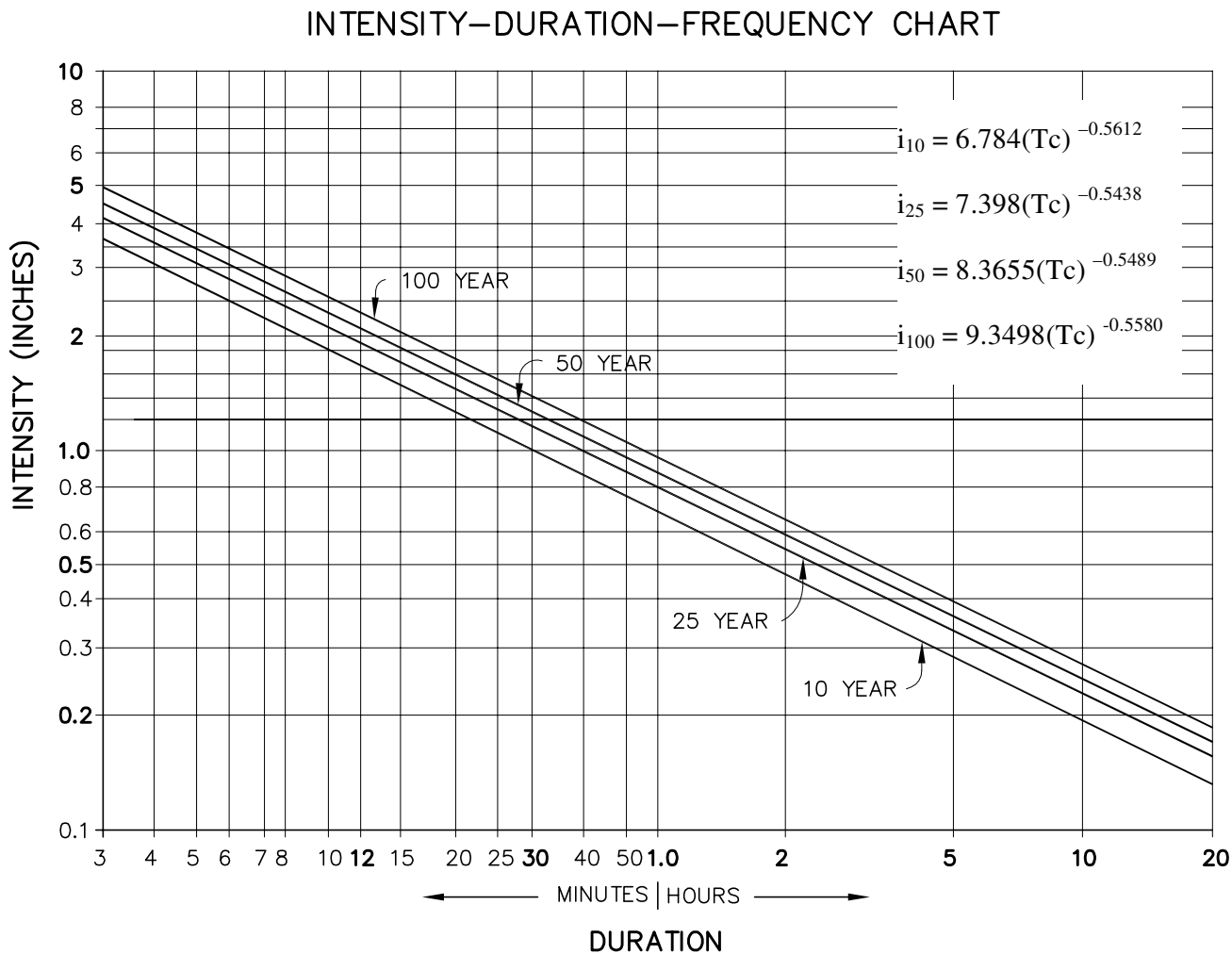


INTENSITY/DURATION/FREQUENCY CHARTS NOTES (CONTINUED)

MENDOT
STD. NO.
D11B

SCALE: NONE DESIGN: RCW DRAWN: LMM OCT. 2000

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STATION DATA	
LONGITUDE:	123.083
LATITUDE:	39.833
ALTITUDE:	1514
YEARS OF DATA:	1941-1985



INTENSITY/DURATION/FREQUENCY CHART

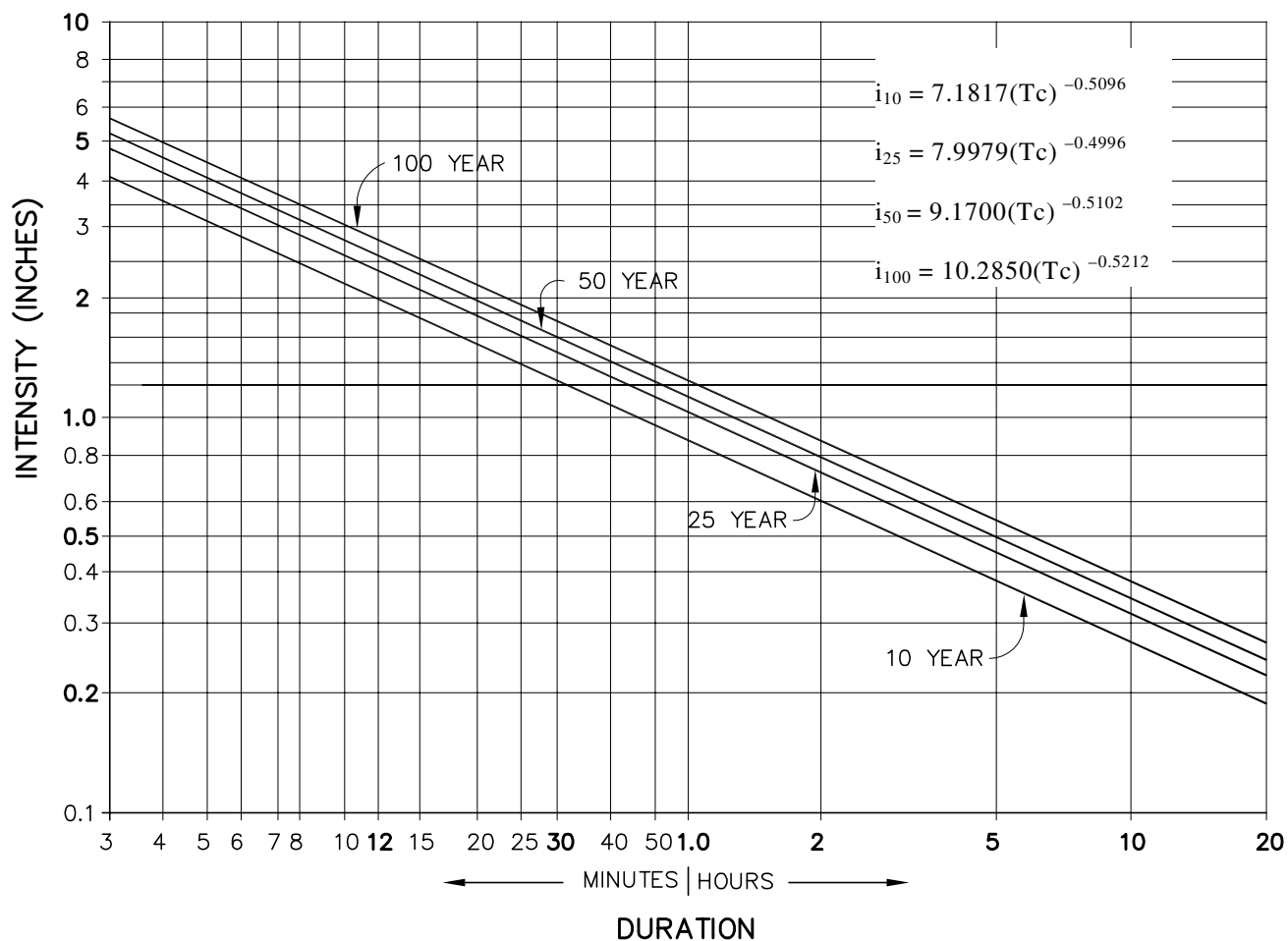
COVELO EEL RIVER

MENDOT
STD. NO.
D11C

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

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INTENSITY-DURATION-FREQUENCY CHART



STATION DATA

LONGITUDE:	123.807
LATITUDE:	39.446
ALTITUDE:	80
YEARS OF DATA:	1940-1985

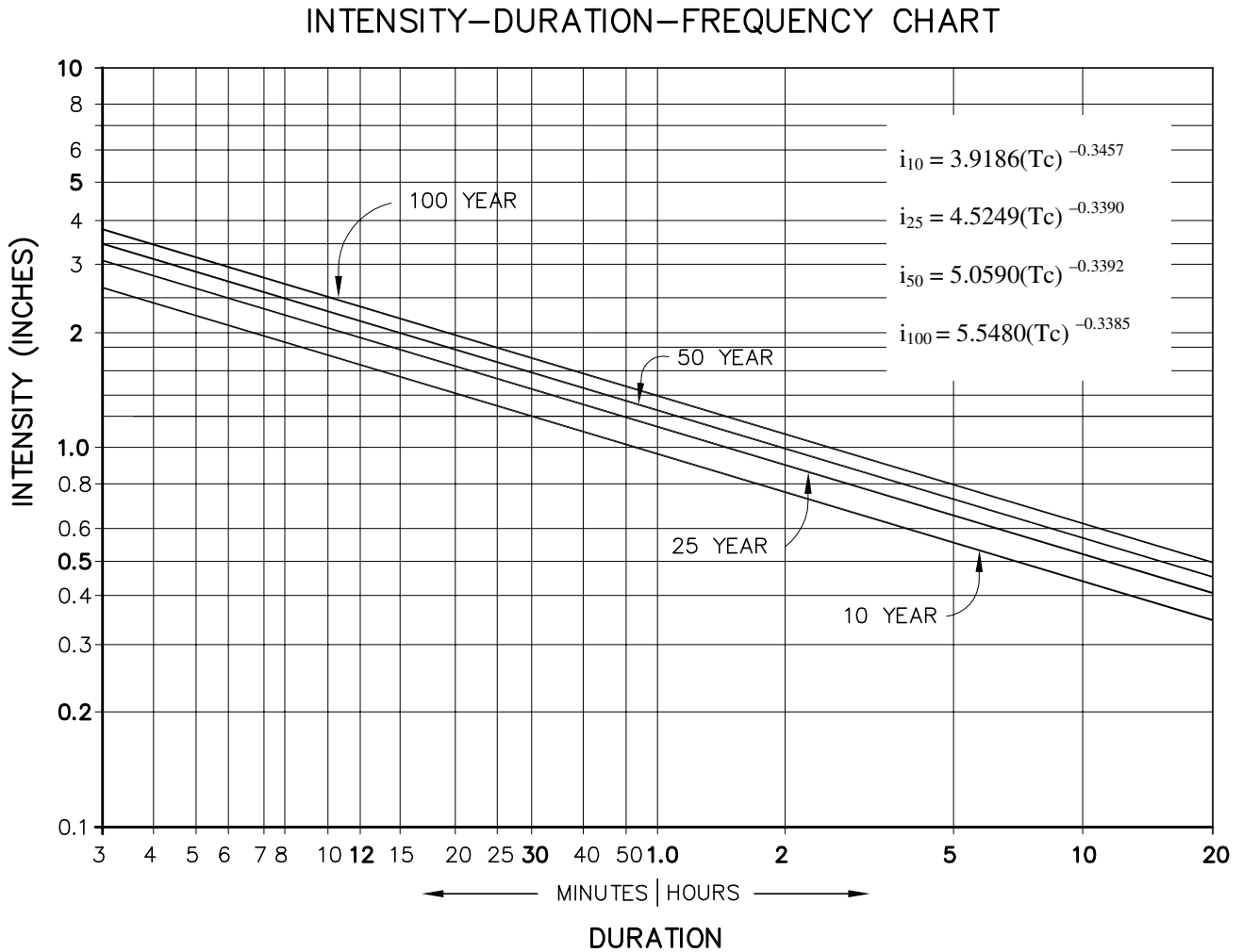


INTENSITY/DURATION/FREQUENCY CHART FORT BRAGG

MENDOT
STD. NO.
D11D

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

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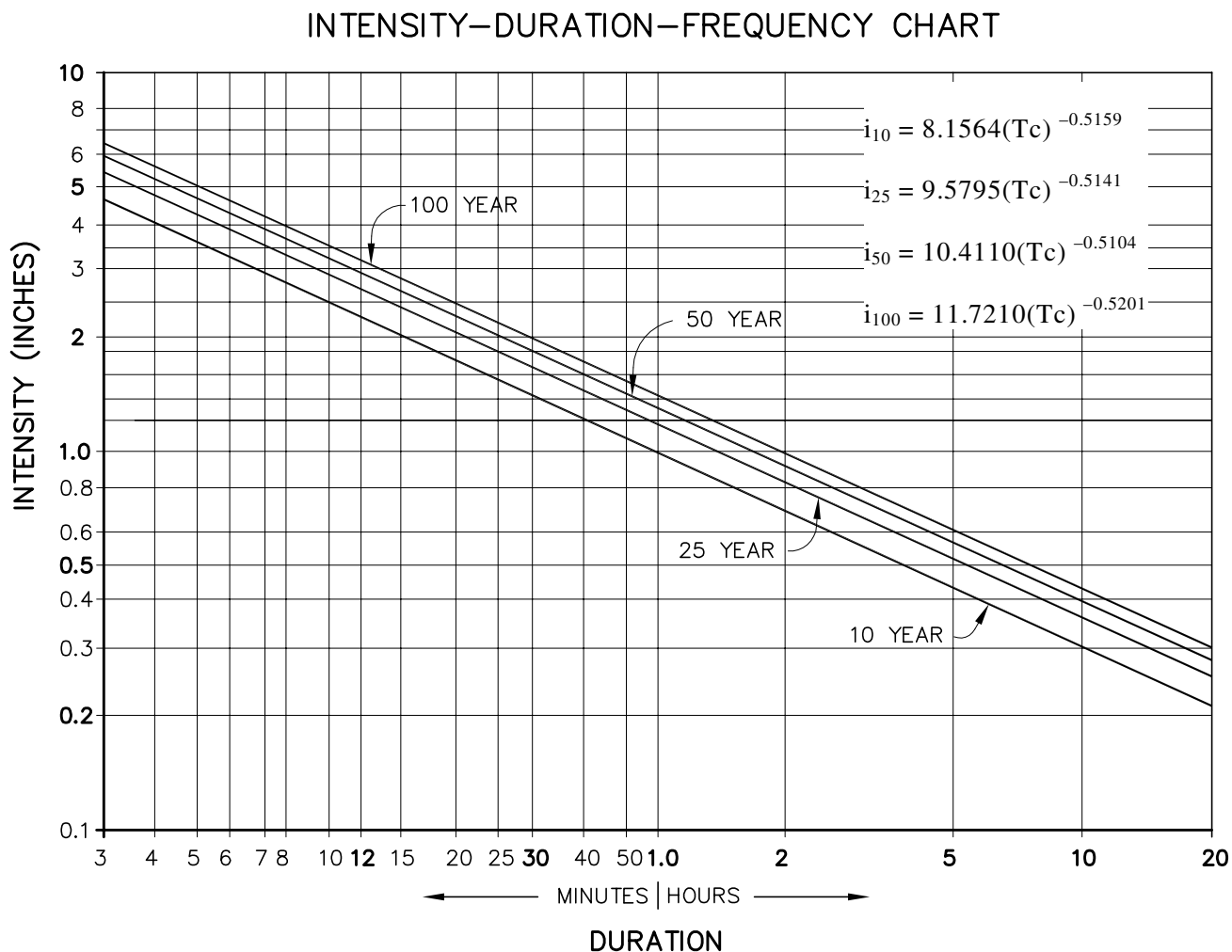


STATION DATA	
LONGITUDE:	123.717
LATITUDE:	39.867
ALTITUDE:	700
YEARS OF DATA:	1972-1986



INTENSITY/DURATION/FREQUENCY CHART LEGGETT

MENDOT
STD. NO.
D11E



STATION DATA	
LONGITUDE:	123.700
LATITUDE:	38.917
ALTITUDE:	122
YEARS OF DATA:	1940-1986



INTENSITY/DURATION/FREQUENCY CHART POINT ARENA

MENDOT
STD. NO.
D11F

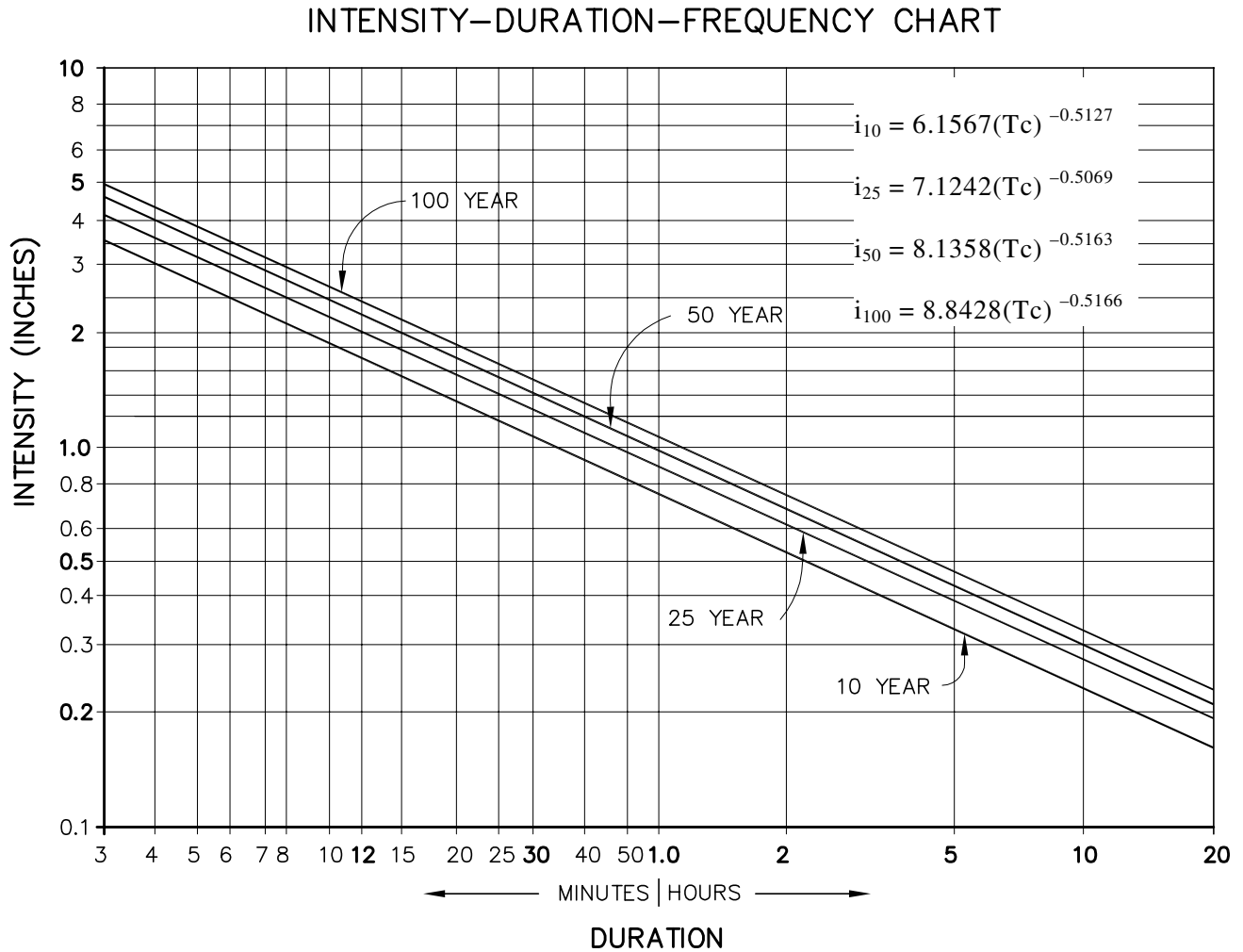
SCALE: NONE

DESIGN: RCW

DRAWN: LMM

OCT. 2000

PAGE: A-56



STATION DATA	
LONGITUDE:	123.183
LATITUDE:	39.233
ALTITUDE:	670
YEARS OF DATA:	1972-1986



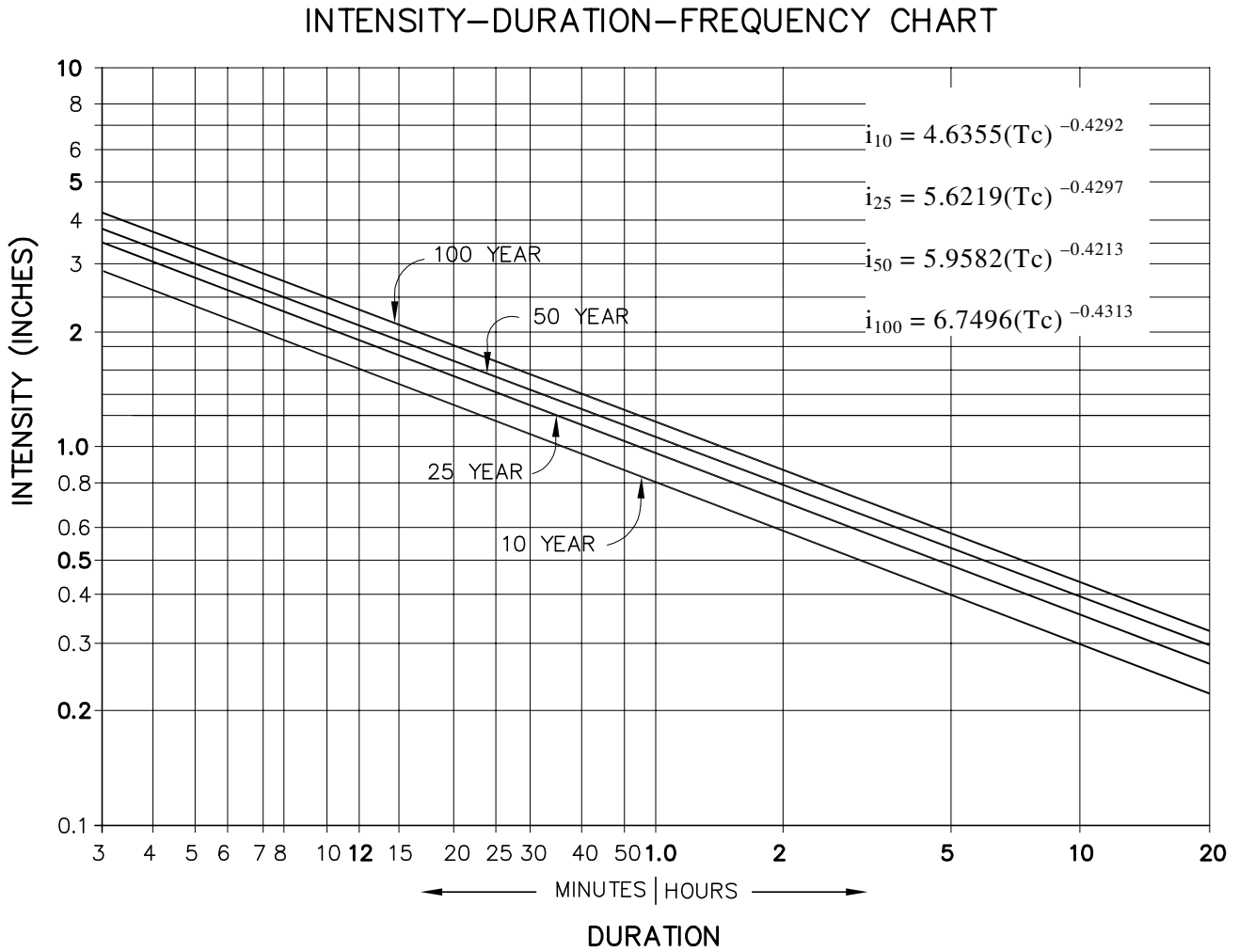
INTENSITY/DURATION/FREQUENCY CHART

UKIAH-LAKE MENDOCINO DAM

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

MENDOT
STD. NO.
D11G

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STATION DATA	
LONGITUDE:	123.317
LATITUDE:	39.350
ALTITUDE:	1925
YEARS OF DATA:	1940-1986



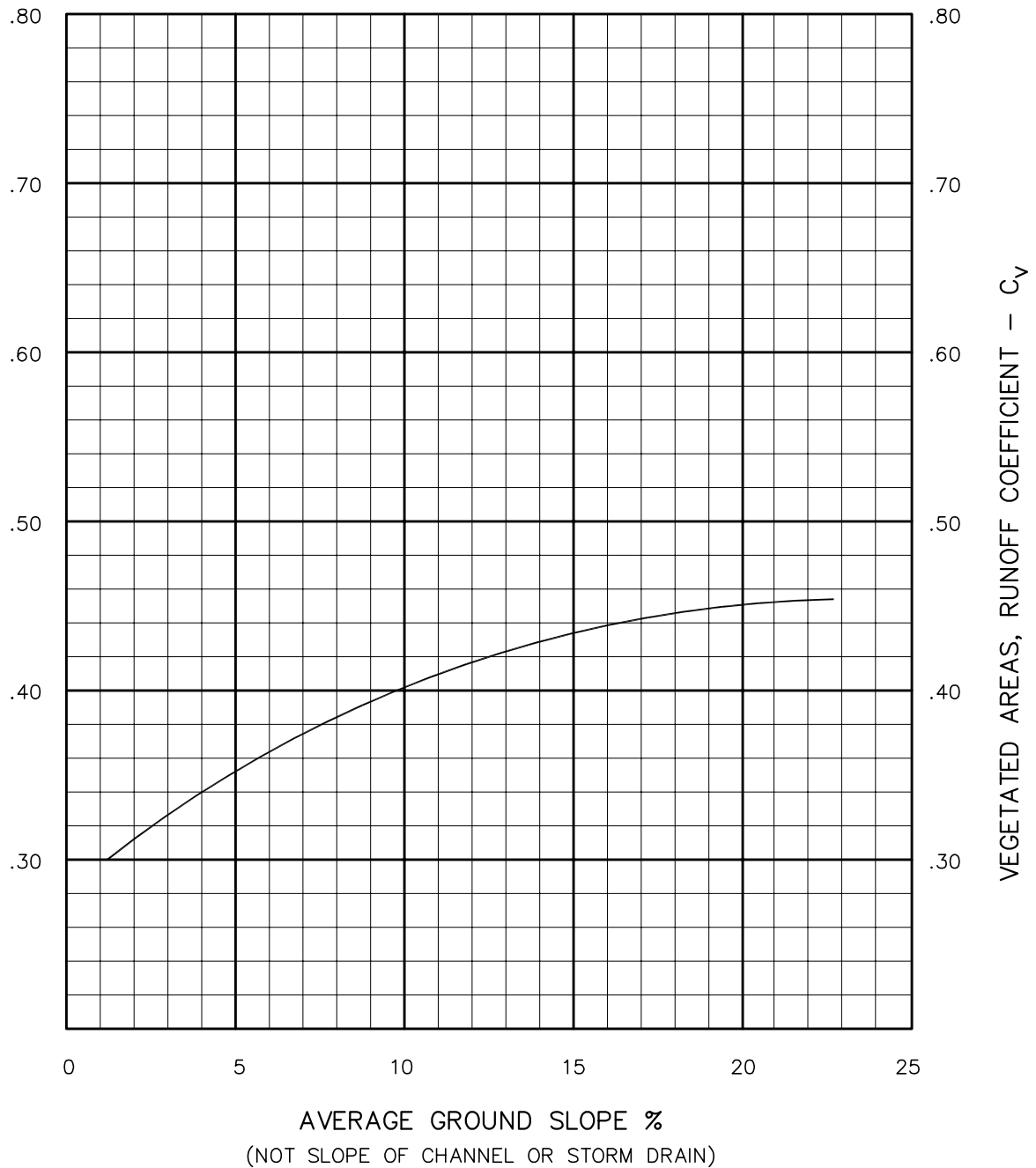
INTENSITY/DURATION/FREQUENCY CHART

WILLITS HOWARD

MENDOT
STD. NO.
D11H

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

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RUNOFF COEFFICIENTS FOR RATIONAL FORMULA, VEGETATED AREAS

MENDOT
STD. NO.
D12

1. IF PIPE INTO OR OUT OF THE CATCH BASIN IS LARGER THAN 24" OR DEPTH 'H' IS GREATER THAN 3', USE MENDOT STD. NO. D21. 'H' IS THE DIFFERENCE IN ELEVATION BETWEEN THE OUTLET PIPE FLOW LINE AND THE NORMAL GUTTER GRADE LINE UNDEPRESSED AT THE CURB FACE.
2. CATCH BASIN BASE MAY BE PRECAST OR CAST IN PLACE, AT CONTRACTOR'S OPTION. IF PRECAST, MEANS SHALL BE PROVIDED FOR ADJUSTMENTS IN FIELD TO MEET FINAL GRADE OF PAVING OR SURFACING. PRECAST BASE SHALL BE SANTA ROSA CAST PRODUCTS MODEL 4A OR APPROVED EQUAL... CAST IN PLACE BASE SHALL BE REINFORCED WITH No. 4 BARS AT 12" EACH WAY (E.W.), 1.5" CLEAR FROM INSIDE FACE OF WALL, AND SHALL BE CLASS 1 CONCRETE (6-SACK MIX).
3. ALL PRECAST MATERIALS SHALL BE GROUTED PER MANUFACTURER'S SPECIFICATIONS.
4. PROVIDE STEPS FOR ALL CATCH BASINS WHERE 'H' IS GREATER THAN 30". SEE CALTRANS STD. PLAN D74C FOR STEP DETAIL.
5. PROVIDE 2" WEEPHOLES AS DIRECTED BY COUNTY DOT INSPECTOR OR GEOTECHNICAL ENGINEER.

WALL THICKNESS, 'T', SHALL BE 6".

PROVIDE CONCRETE COVER WITH CAST IRON FRAME RING, INCLUDING NPDES LOGO. SANTA ROSA CAST PRODUCTS CI-CO OR APPROVED EQUAL.

BACK OF CURB

FACE OF CURB

EXP JOINT (TYP. BOTH SIDES)

LIP OF GUTTER

4'-0" 4'-0" 4'-0"

6" 18" 30"

4'

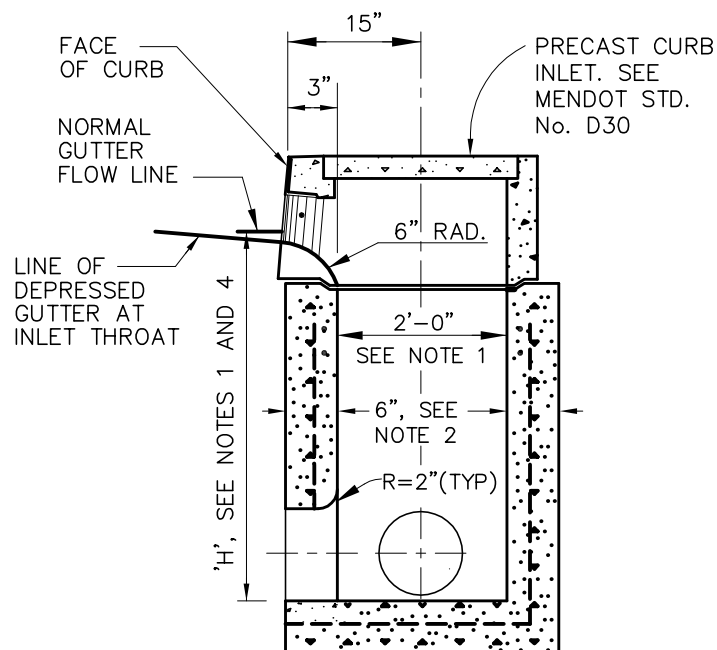
6"

8-1/2" 2-1/2"

TOP OF CURB

DEPRESSED FLOWLINE

NORMAL GUTTER FLOWLINE



SECTION A-A

TYPE "A"
CATCH BASIN

MENDOT
STD. NO.
D20

SCALE: NONE

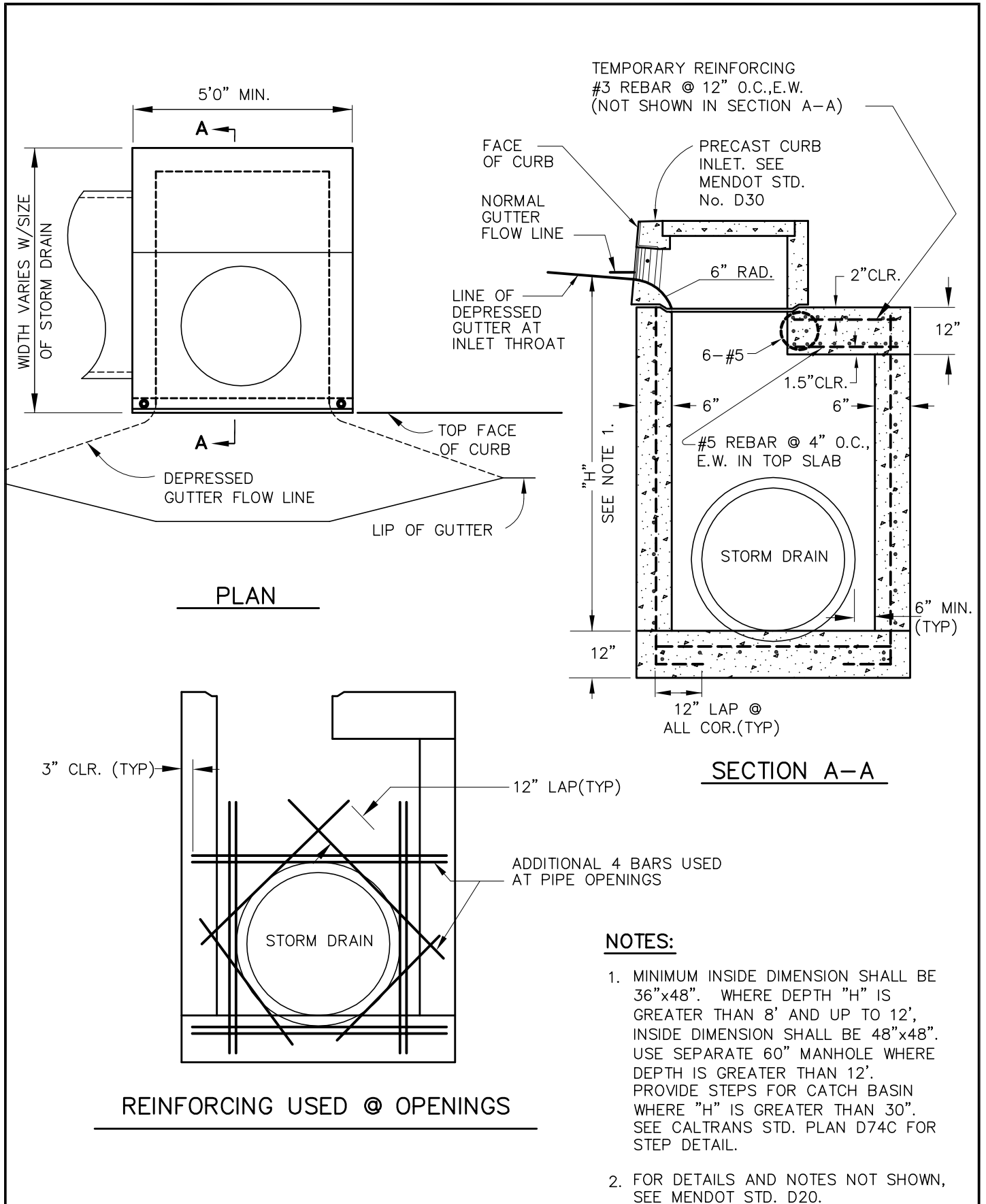
DESIGN: RCW

DRAWN: LMM

OCT. 2000

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TYPE "B" CATCH BASIN

MENDOT
STD. NO.
D21

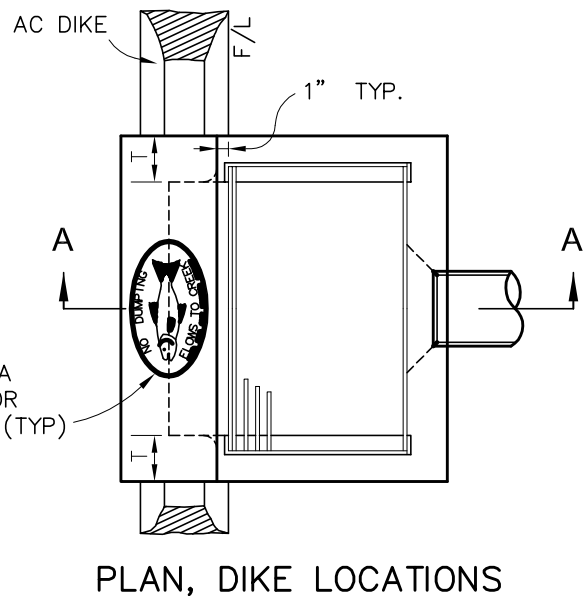
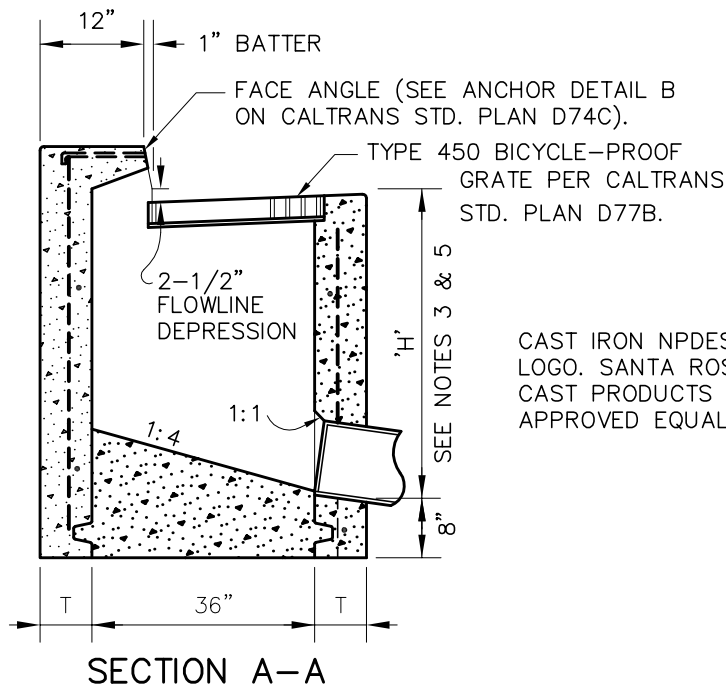
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DRAWN: LMM

OCT. 2000

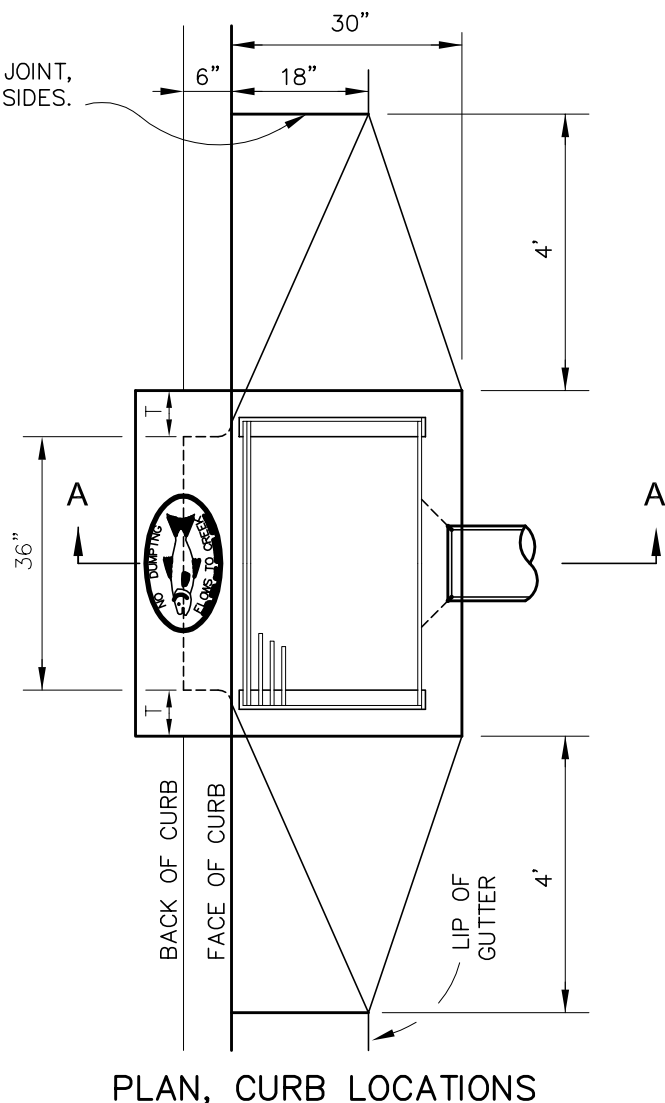
PAGE: A-61



NOTES:

1. SEE MENDOT STD D20 FOR DETAILS AND NOTES NOT SHOWN.
2. CATCH BASIN INLET MAY BE PRECAST OR CAST IN PLACE, AT CONTRACTOR'S OPTION. PRECAST INLET SHALL BE SANTA ROSA CAST PRODUCTS MODEL GOL, OR APPROVED EQUAL. FOR DIKE LOCATIONS, PRECAST INLET SHALL BE SANTA ROSA CAST PRODUCTS MODEL G2, OR APPROVED EQUAL.
3. CATCH BASIN INLET MAY BE PRECAST OR CAST IN PLACE, AT CONTRACTOR'S OPTION. IF PRECAST, MEANS SHALL BE PROVIDED FOR ADJUSTMENTS IN THE FIELD TO MEET FINAL GRADE OF PAVING OR SURFACING. PRECAST BASE SHALL BE SANTA ROSA CAST PRODUCTS OR APPROVED EQUAL. CAST IN PLACE BASE SHALL BE REINFORCED WITH No. 4 BARS AT 12" EACH WAY (E.W.), 1.5" CLEAR FROM INSIDE FACE OF WALL, AND SHALL BE CLASS 1 CONCRETE (6 SACK MIX). PROVIDE 48" MANHOLE BASE WHERE 'H' IS GREATER THAN 8' AND UP TO 12' USING SRCP REDUCER SLAB 48MH-IM OR APPROVED EQUAL. PROVIDE SEPARATE 60" MANHOLE WHERE DEPTH IS GREATER THAN 12'. 'H' IS THE DIFFERENCE IN ELEVATION BETWEEN THE OUTLET PIPE FLOW LINE AND THE NORMAL GUTTER GRADE LINE UNDEPRESSED AT THE CURB FACE.
4. ALL PRECAST MATERIALS SHALL BE GROUTED PER MANUFACTURER'S SPECIFICATIONS.
5. PROVIDE STEPS FOR CATCH BASINS WHERE 'H' IS GREATER THAN 30". SEE CALTRANS STD. PLAN D74C FOR STEP DETAIL.
6. PROVIDE 2" WEEPHOLES AS DIRECTED BY COUNTY DOT INSPECTOR OR GEOTECHNICAL ENGINEER.
7. WALL THICKNESS, "T", SHALL BE 6" FOR DEPTHS UP TO 8' AND SHALL BE 8" FOR DEPTHS GREATER THAN 8'.

EXPANSION JOINT,
TYP. BOTH SIDES.



TYPE "C" CATCH BASIN

MENDOT
STD. NO.
D22

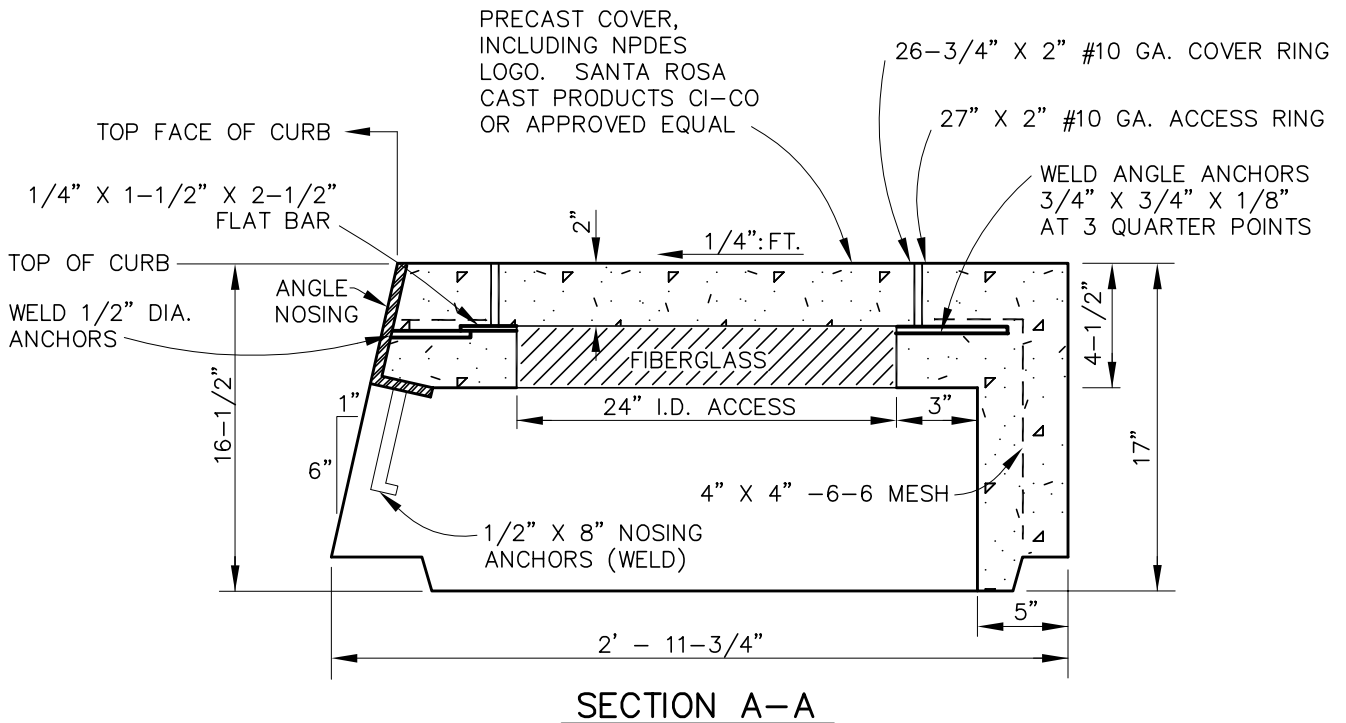
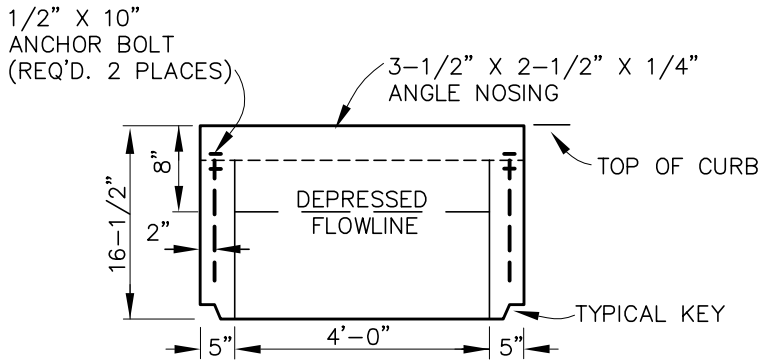
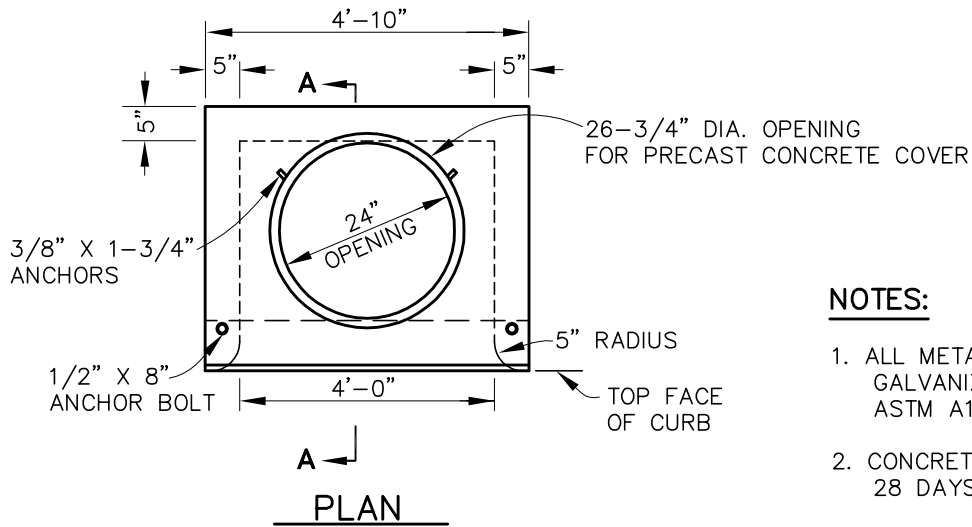
SCALE: NONE

DESIGN: RCW

DRAWN: LMM

OCT. 2000

PAGE: A-62

**NOTES:**

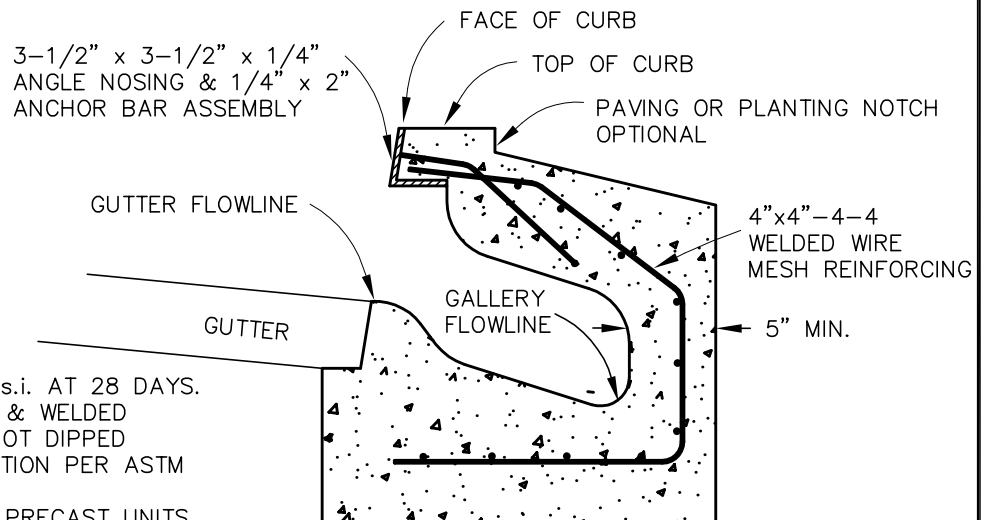
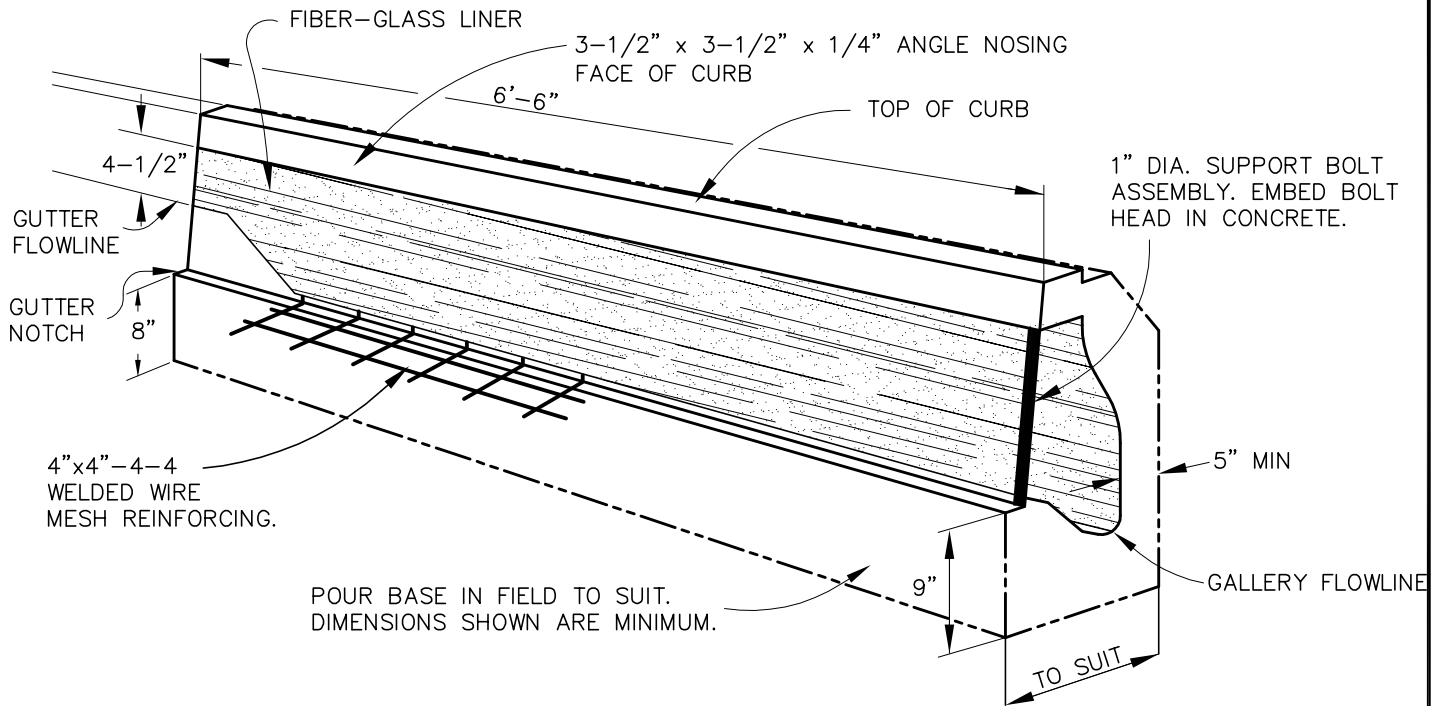
1. ALL METAL PARTS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123.
2. CONCRETE SHALL TEST 3000 PSI AT 28 DAYS.
3. ALL REINFORCING SHALL BE 4" X 4" - 6-6 MESH.
4. WEIGHT OF UNIT COMPLETE = 1500± LBS. COVER ONLY = 100± LBS.
5. 3/4" GALVANIZED STEEL GUARD ROD FOR OPENINGS IN EXCESS OF 9".
6. BASE MAY BE PRECAST OR CAST IN PLACE TO SUIT.
7. PRECAST UNIT SHALL BE SANTA ROSA PRECAST 4AC OR APPROVED EQUAL.

**PRECAST CURB INLET**

MENDOT
STD. NO.
D30

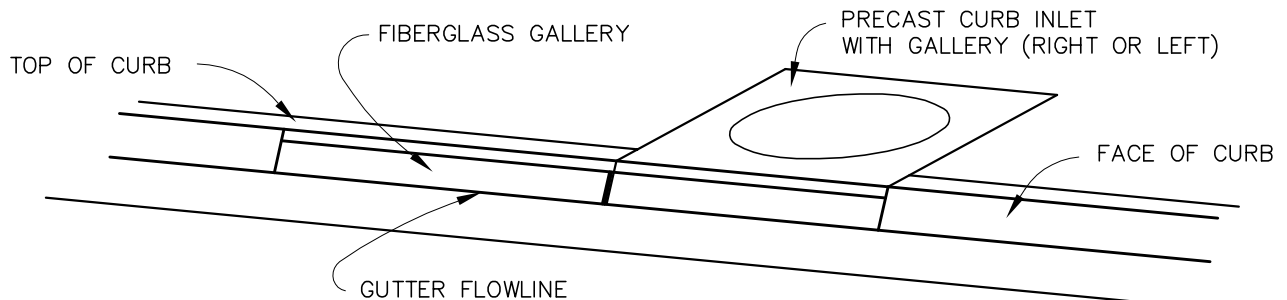
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PAGE: A-63



NOTES:

1. CONCRETE SHALL BE 3000p.s.i. AT 28 DAYS.
2. NOSING ASSEMBLY (ANGLED & WELDED ANCHOR BARS) SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION PER ASTM SPEC. A123-59.
3. EITHER CAST-IN-PLACE OR PRECAST UNITS ARE ACCEPTABLE.



GALLERY INLET

MENDOT
STD. NO.
D31

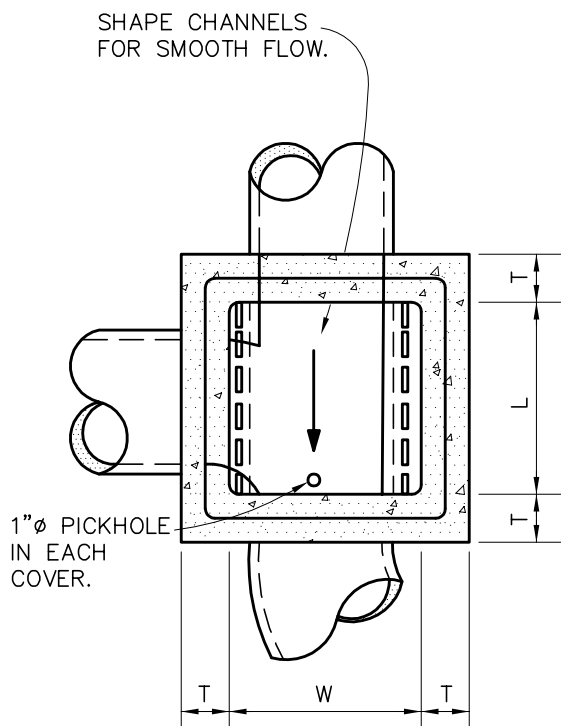
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OCT. 2000

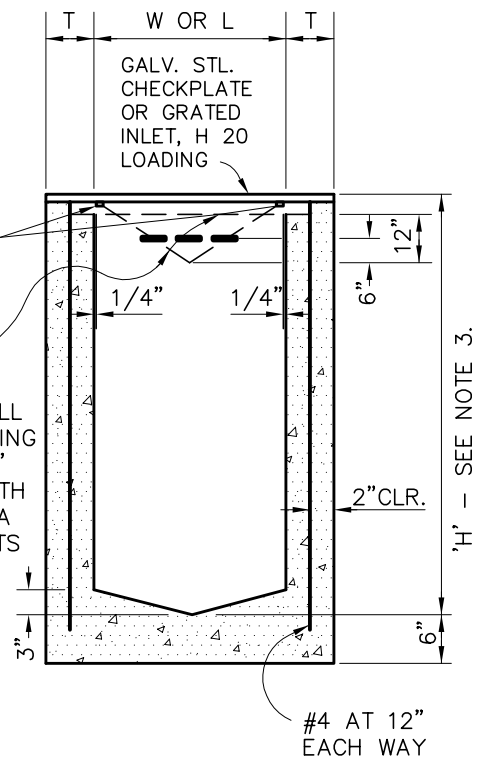
PAGE: A-64



PLAN SECTION

2 1/2" x 1 1/2" x 1/4" L,
WELD TO CHECKPLATE

IF USED AS V-DITCH
DROP INLET, FORM SIDES
TO FIT STD. DITCH. INSTALL
GALV. BAR ACROSS OPENING
AND 2 1/2" x 1 1/2" x 1/4"
AT TOP. INLET FROM EARTH
DITCH MAY BE PER SANTA
ROSA PRE CAST PRODUCTS
TYPICAL SIDE OPENING.



PROFILE SECTION

DEPTH	L	W	T	COVER(S)
3' OR LESS	24"	24"	6"	1 - 36"x 36"
OVER 3' TO 8'	36"	36"	6"	2 - 24"x 48"
OVER 8' TO 12'	SEE NOTE 3		8"	2 - 30"x 48"
OVER 12'	CUSTOM STRUCTURE			

NOTE:

1. SEE MENDOT STD D20 FOR GENERAL NOTES, REINFORCING, AND STEP REQUIREMENTS.
2. DROP INLET MAY BE PRECAST OR CAST IN PLACE, AT CONTRACTOR'S OPTION. PRECAST INLET SHALL BE SANTA ROSA CAST PRODUCTS (SRCP) MODEL 2K, 1M, OR 3M OR APPROVED EQUAL.
3. PROVIDE 40" MANHOLE BASE WHERE 'H' IS GREATER THAN 8' AND LESS THAN OR EQUAL TO 12', USE SRCP REDUCER SLAB 48MH-1M OR APPROVED EQUAL.



DROP INLET AND TURNING STRUCTURE

MENDOT
STD. NO.
D32

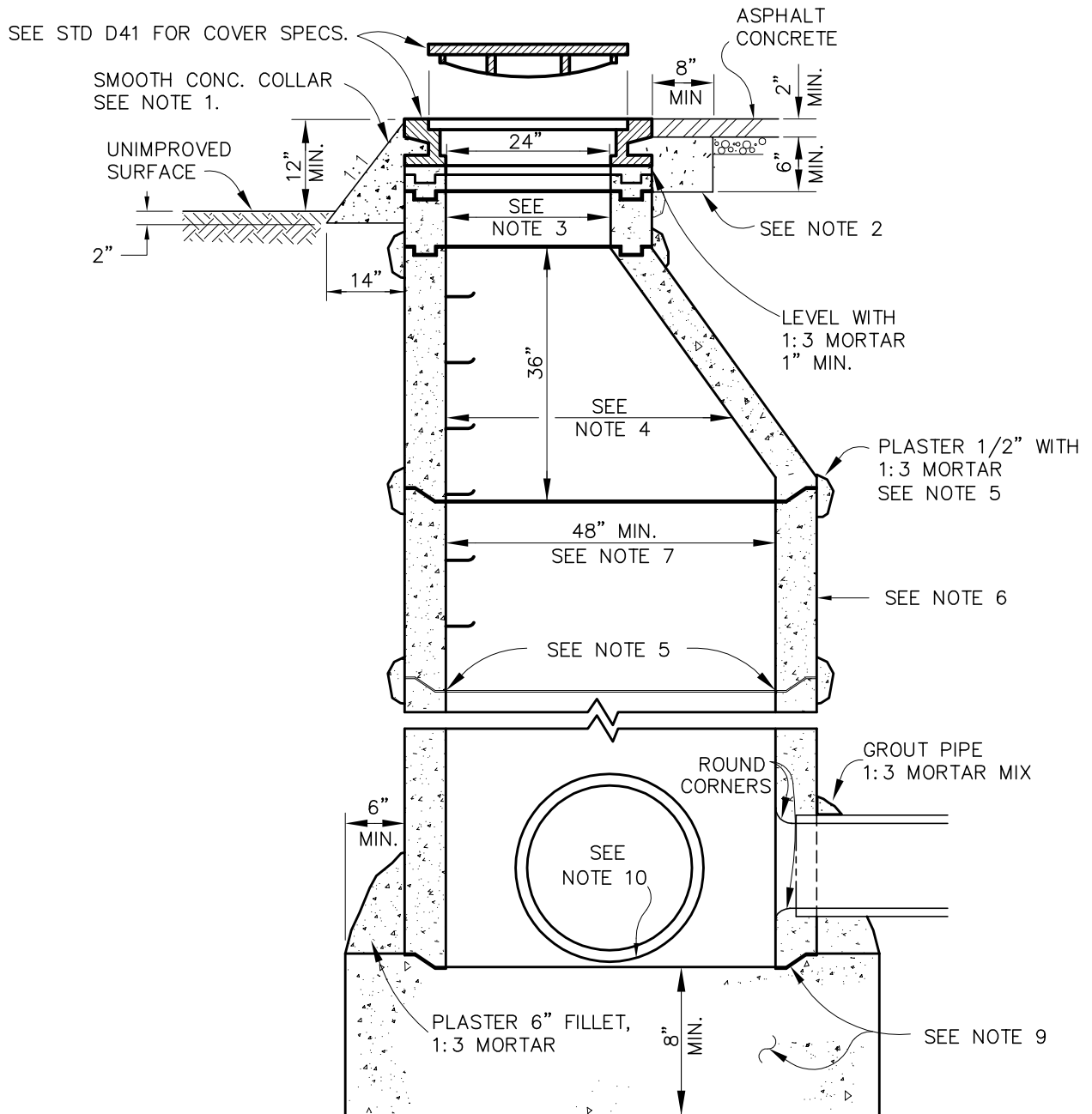
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OCT. 2000

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NOTE: SEE MANHOLE NOTES ON STANDARD D40B



STORM DRAIN MANHOLE

MENDOT
STD. NO.
D40A

SCALE: NONE

DESIGN: RCW

DRAWN: LMM

OCT. 2000

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NOTES:

1. WHEN MANHOLES ARE INSTALLED IN UNIMPROVED AREAS, THE TOP OF THE COVER SHALL BE A MINIMUM OF 1 FOOT ABOVE ADJACENT GRADE AND CONCRETE COLLAR SHALL BE PROVIDED. CONCRETE COLLAR SHALL BE CLASS 1 CONCRETE (6-SACK MIX). SEE DETAIL.
2. WHEN MANHOLES ARE INSTALLED IN PAVED AREAS, CONCRETE COLLAR SHALL BE PROVIDED. SEE DETAIL.
3. PROVIDE A MINIMUM OF ONE 3" AND ONE 6" GRADE ADJUSTMENT RING AT TOP OF MANHOLE. MAXIMUM HEIGHT OF GRADE ADJUSTMENT RINGS SHALL NOT EXCEED 20".
4. CONE SECTION SHALL BE ECCENTRIC, WITH STEPS ON THE VERTICAL SIDE. STEPS SHALL BE PER CALTRANS STD. PLAN D74C. WHERE DEPTH IS NOT SUFFICIENT TO PROVIDE CONE SECTION, REDUCER SLAB PER MENDOT STD. D42 SHALL BE USED.
5. ALL JOINTS SHALL BE SEALED WITH RAM-NEK JOINT COMPOUND, 1:3 MORTAR MIX, OR APPROVED EQUAL. WET BOTH TONGUE AND RING BEFORE APPLYING MORTAR AND SETTING RING. WIPE INSIDE EDGE OF JOINTS SMOOTH AND PROVIDE POINTED JOINT. PLASTER OUTSIDE OF JOINT WITH 1/2" LAYER OF MORTAR.
6. PRECAST MANHOLE MATERIAL SHALL BE MANUFACTURED TO ASTM SPECIFICATION C-478. ALL SECTIONS OF MANHOLE SHALL BE IDENTICAL MAKE AND MANUFACTURER. PRECAST MANHOLE SHALL BE SANTA ROSA PRECAST MODEL M48E OR APPROVED EQUAL.
7. DEPTH SHALL BE MEASURED FROM RIM TO FLOWLINE OF OUTLET PIPE. MANHOLES OVER 7 FEET IN DEPTH, OR WITH A PIPE GREATER THAN 36" INSIDE DIAMETER, SHALL BE 5 FEET INSIDE DIAMETER.
8. MENDOT STD. NO. D40 SHALL NOT BE USED FOR MANHOLES LESS THAN 3 FEET IN DEPTH, PIPES GREATER THAN 60" INSIDE DIAMETER, OR FOR MANHOLES WITH MORE THAN 3 PIPE CONNECTIONS.
9. BASE SHALL BE CAST IN PLACE TO FULL THICKNESS SHOWN. BASE SHALL BE CONSTRUCTED OF CLASS 1 CONCRETE (6-SACK MIX) AND SHALL BE PLACED AGAINST UNDISTURBED EARTH. JOINT BETWEEN BASE AND FIRST WALL SECTION SHALL BE FORMED BY SETTING WALL SECTION ON FRESH CONCRETE OR BY USING TONGUE & GROOVE IMPRESSION RING.
10. CONSTRUCT FLOW CHANNELS TO MATCH PIPE SHAPE USING STEEL TROWEL. ELEVATION CHANGES THROUGH MANHOLE SHALL BE A STRAIGHT GRADE WITH NO ABRUPT CHANGES. DIRECTIONAL CHANGES SHALL BE MADE WITH SMOOTH CURVES.

NOTE: NOTES REFER TO MENDOT STD. D40A.



STORM DRAIN MANHOLE NOTES

MENDOT
STD. NO.
D40B

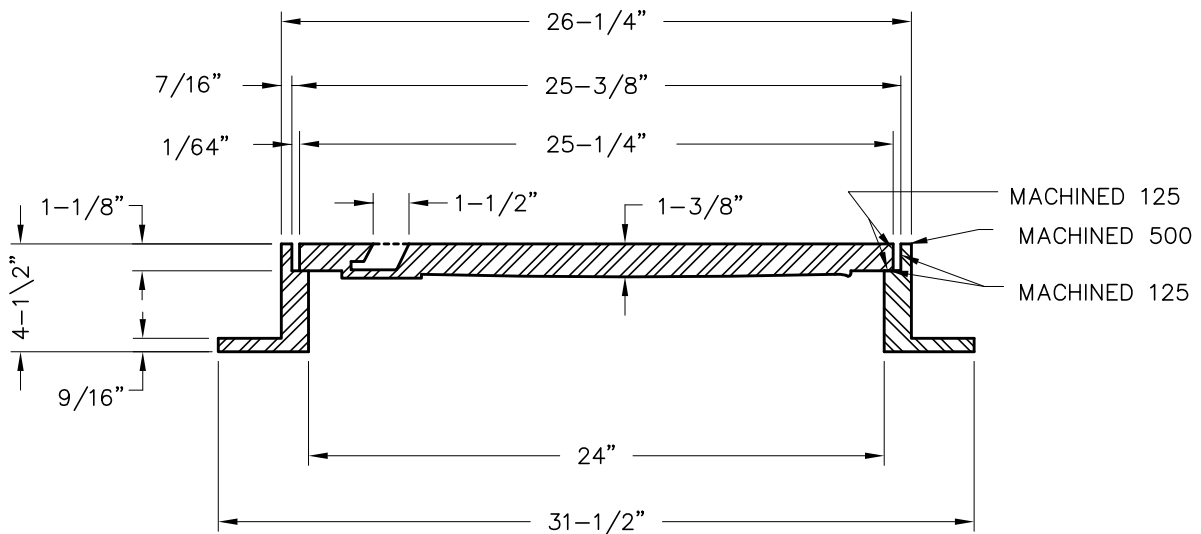
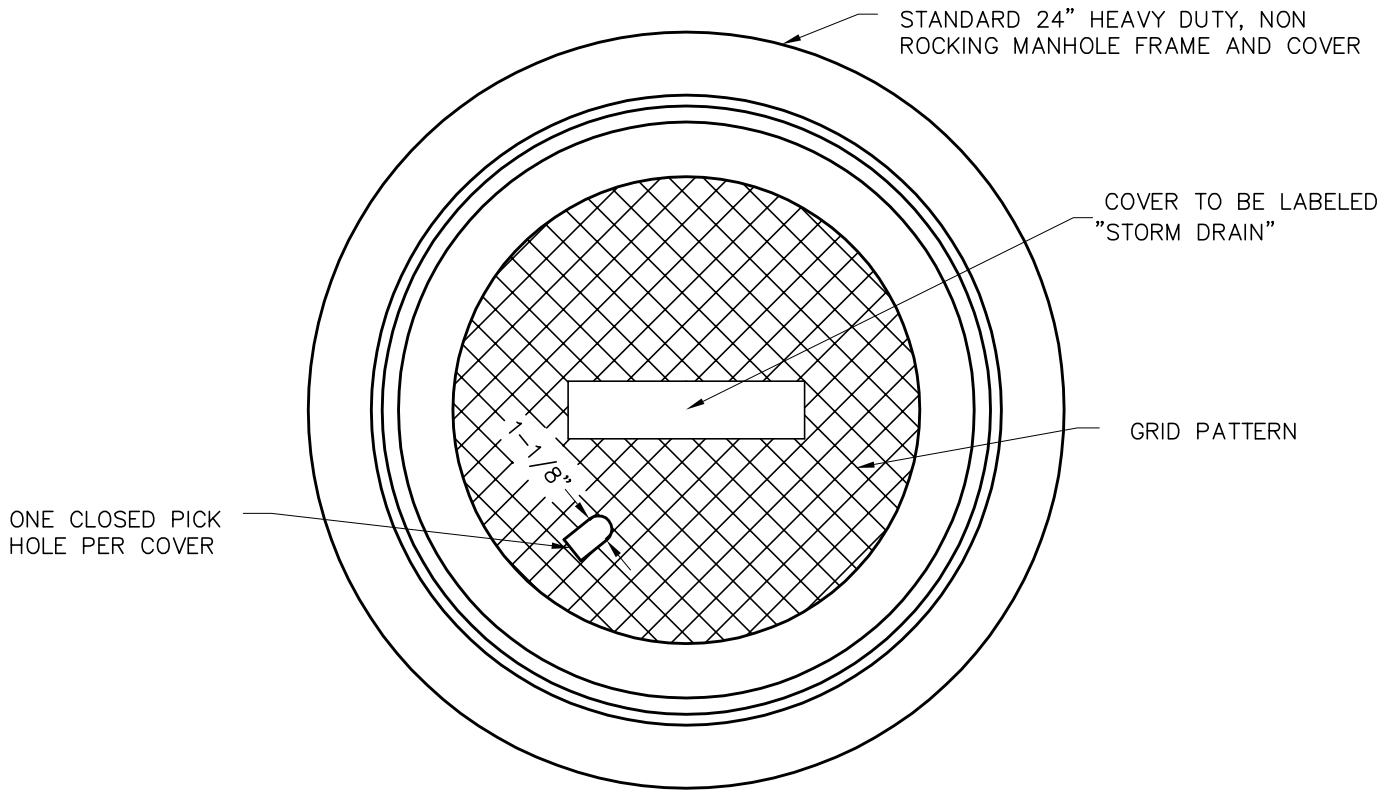
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OCT. 2000

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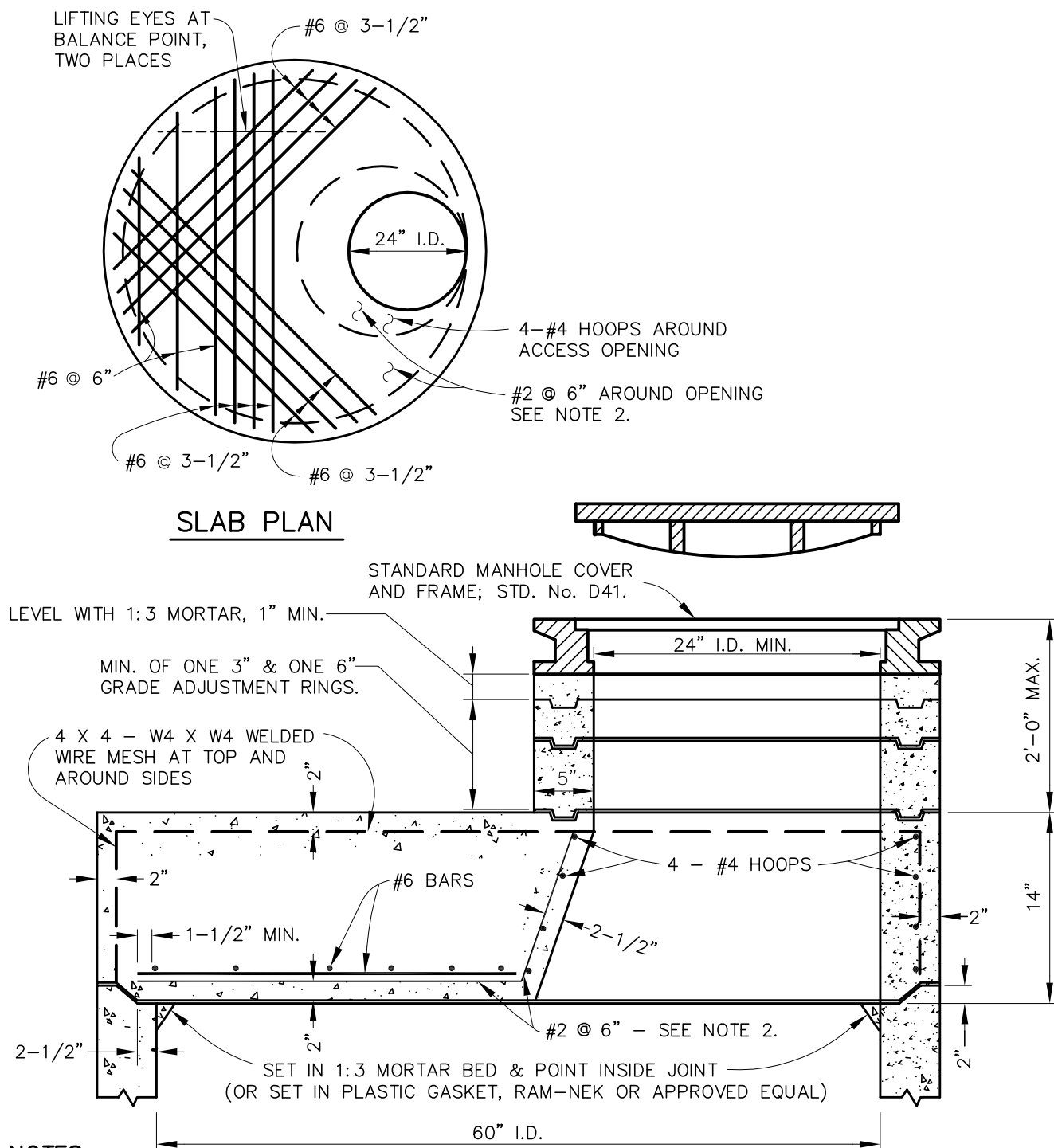
NOTES:

1. ALL CASTINGS SHALL BE DIPPED IN APPROVED ASPHALT PAINT.
2. ALL MATERIAL USED IN MANUFACTURING SHALL CONFORM TO A.S.T.M. DESIGNATION 48-30, OR TO UNITED STATES GOVERNMENT SPECIFICATIONS QQI-652B.
3. MINIMUM WEIGHT COMPONENTS: COVER - 130 POUNDS
FRAME - 135 POUNDS
4. CAST IRON FRAME AND COVER SHALL BE MACHINE FITTED AND PAINTED WITH BITUMINOUS PAINT. SOUTHBAY FOUNDRY SBF1900 OR APPROVED EQUAL.



STORM DRAIN MANHOLE FRAME AND COVER

MENDOT
STD. NO.
D41

**NOTES:**

1. FOR DETAILS OF BASE AND BARREL SECTIONS, SEE COUNTY STD No. D40A AND D40B.
2. #2 BARS BENT UP AND SPACED 6" O.C. AROUND 24" OPENING. HORIZONTAL LEGS TO FAN OUT EQUALLY SPACED, TO 2-1/2" CLEAR AT EDGE OF SLAB.
3. REDUCER SLAB MAY BE PRECAST OR CAST IN PLACE, AT CONTRACTOR'S OPTION. PRECAST SLAB SHALL BE CERTIFIED BY THE MANUFACTURER FOR H20 HIGHWAY LOADING AND SHALL BE SANTA ROSA PRECAST M60-24E OR APPROVED EQUAL. FOR 48" DIAMETER MANHOLES, USE SANTA ROSA PRECAST M48-24E OR APPROVED EQUAL.

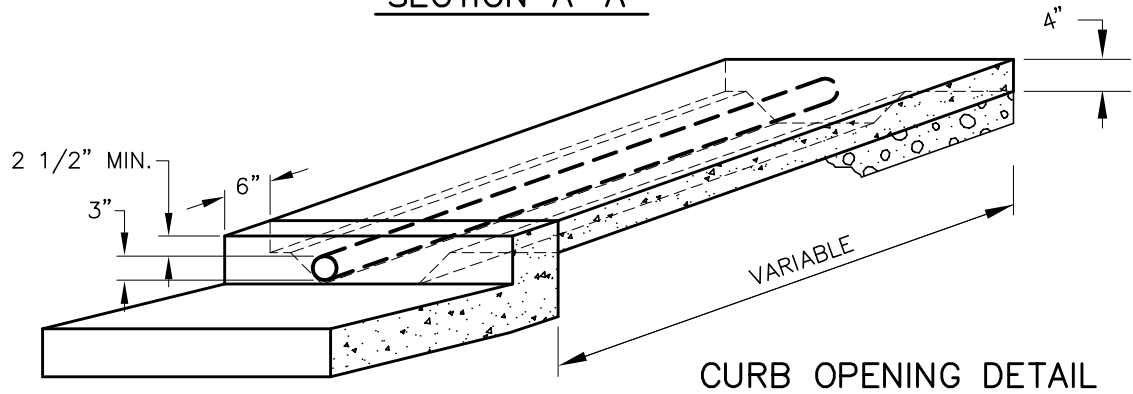
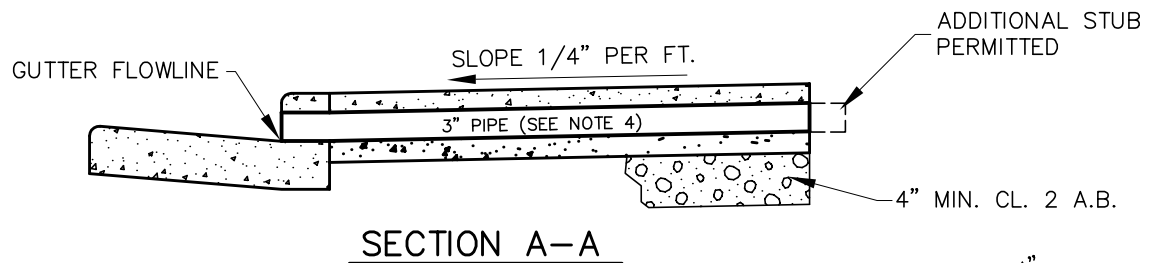
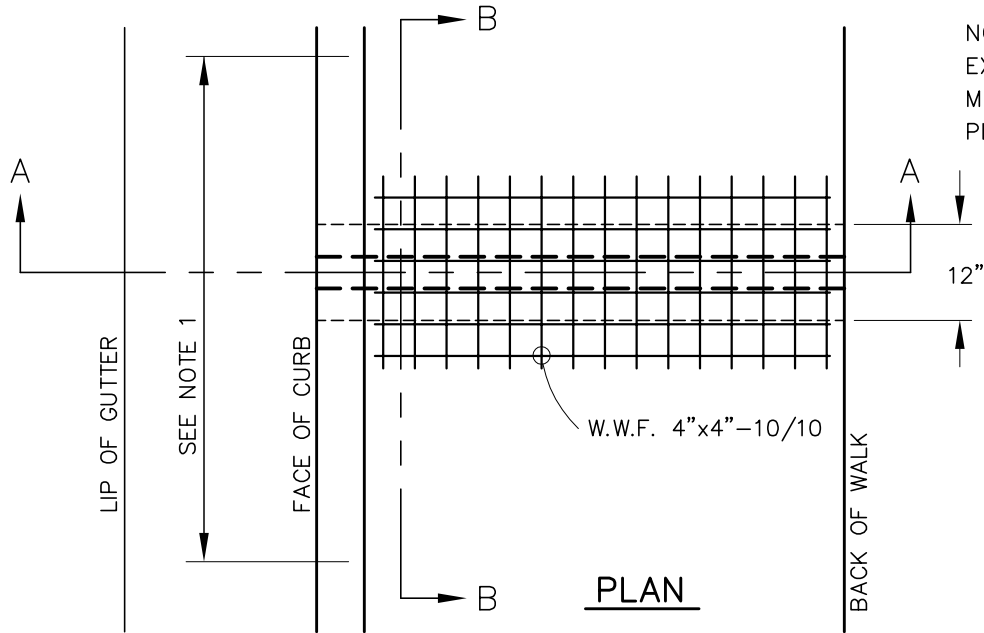


STORM DRAIN MANHOLE PRECAST CONCRETE REDUCER SLAB

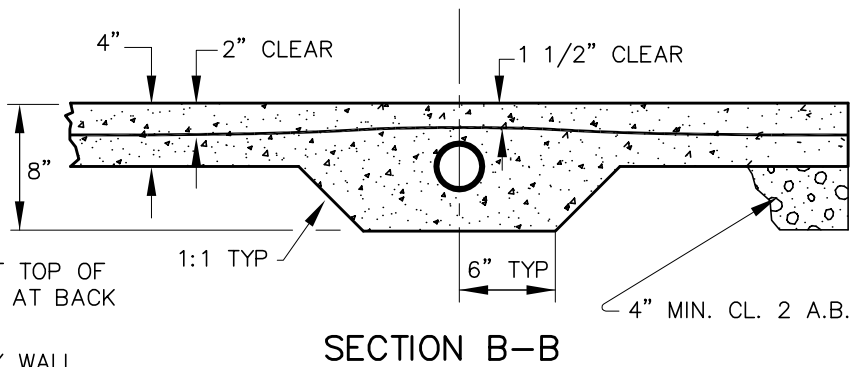
MENDOT
STD. NO.
D42

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PAGE: A-69

**NOTES:**

1. WIRE MESH SHALL BE 2' WIDE. LENGTH SHALL EQUAL SIDEWALK WIDTH MINUS 4". IF SIDEWALK EXISTING, SEE NOTE ABOVE.
2. ON SITE DRAINAGE AND LOCATION OF CURB OUTLETS SHALL BE BY THE OWNER TO THE SATISFACTION OF THE COUNTY.
3. DRAIN PIPE SHALL BE INSTALLED SO THAT TOP OF PIPE IS 2 1/2" MIN. BELOW FINISH GRADE AT BACK OF SIDEWALK
4. SIDEWALK DRAIN TO BE 3" SCH 40 HEAVY WALL RIGID POLYVINYL CHLORIDE PIPE OR APPROVED SUBSTITUTE.



CURB OUTLET TYPE "A"

MENDOT
STD. NO.
D50

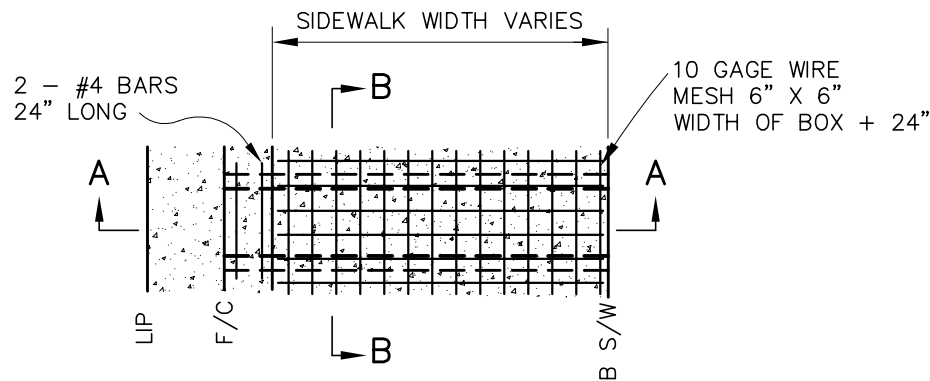
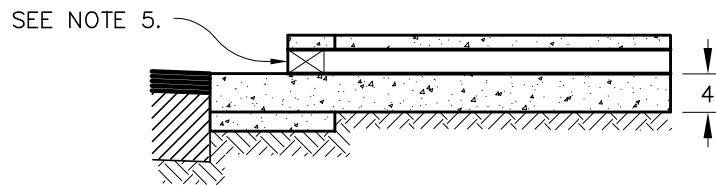
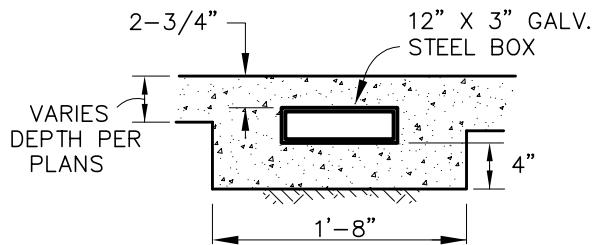
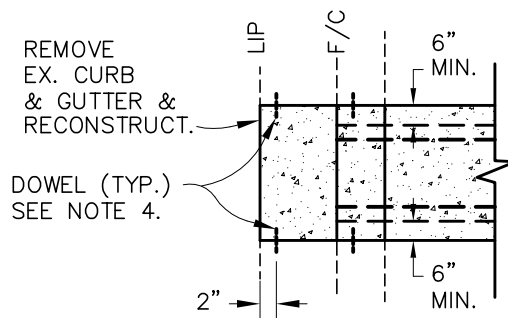
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OCT. 2000

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PLANSECTION A-ASECTION B-BEX. SIDEWALK**NOTES:**

1. WITH APPROVAL OF THE DOT DIRECTOR, WIDTH OF BOX MAY BE REDUCED TO 6" FOR LOW FLOW LOCATIONS.
2. STEEL SHALL BE 16 GAGE AND SHALL BE HOT DIPPED GALVANIZED.
3. ALL CONCRETE SHALL BE CLASS "1" (6 SACKS PER CUBIC YARD).
4. IF CURB & GUTTER IS EXISTING, CONTRACTOR SHALL SAWCUT & REMOVE THE CURB & GUTTER AND INSTALL 1/2" x 8" DOWELS PER THE EX. SIDEWALK DETAIL.
5. PROVIDE TEMPORARY BLOCKING AT CURB FACE WHILE PLACING CONCRETE TO PREVENT CRUSHING. ENDS OF SHEET METAL BOX SHALL BE SMOOTH AND SQUARE, WITH NO PROTRUDING EDGES. END OF SHEET METAL BOX SHALL BE 1/4" BEHIND CURB FACE.
6. TYPE "B" CURB OUTLET SHALL NOT BE USED IN LOCATIONS WITH A PLANTER STRIP.
7. SEE MENDOT STD. A40 FOR GENERAL NOTES AND DETAILS NOT SHOWN.



CURB OUTLET TYPE "B"

MENDOT
STD. NO.
D51

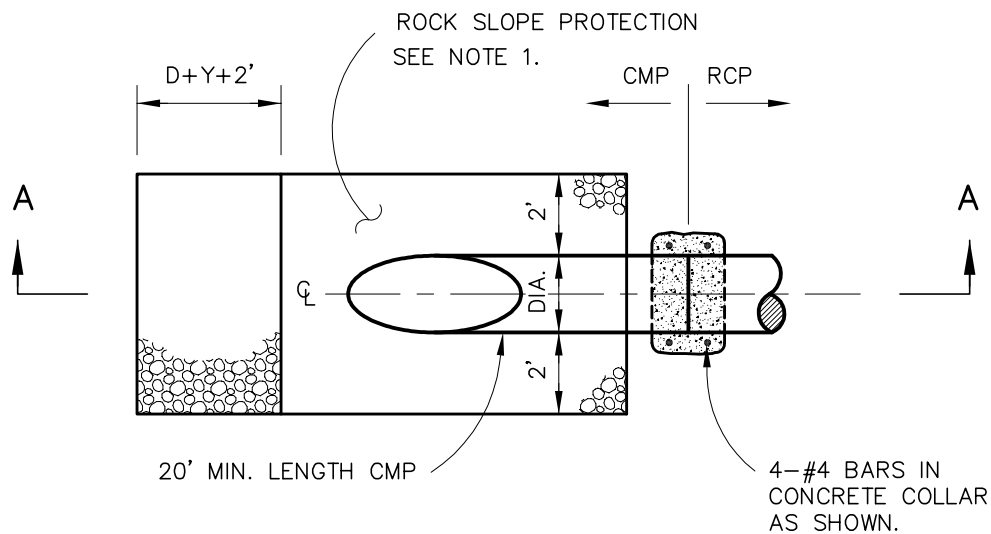
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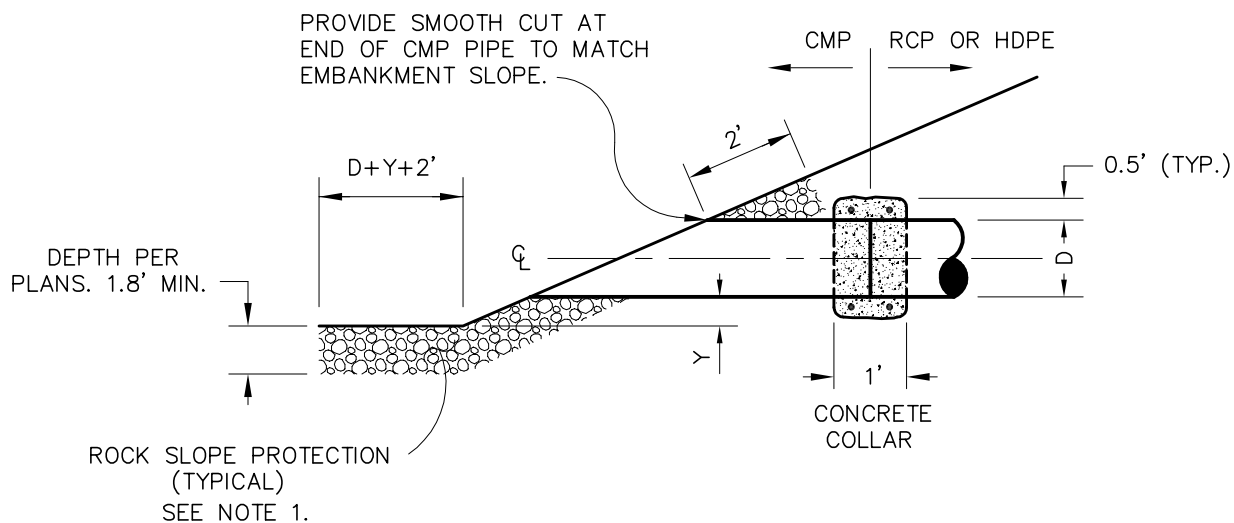
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OCT. 2000

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PLAN



SECTION A-A

NOTES:

1. ROCK SLOPE PROTECTION SHALL BE DESIGNED BY THE ENGINEER IN RESPONSIBLE CHARGE OF THE WORK PER CALTRANS HIGHWAY DESIGN MANUAL. MINIMUM ROCK SLOPE PROTECTION AT STANDARD CMP OUTLET SHALL BE FACING CLASS, PLACEMENT METHOD B, PER SECTION 72 OF THE CALTRANS STANDARD SPECIFICATIONS, SLOPE PROTECTION. MINIMUM THICKNESS SHALL BE 1.8 FEET AND MINIMUM STONE WEIGHT SHALL BE 7 POUNDS. THE USE OF BIOLOGICAL METHODS (E.G. CUTTINGS, BRUSH MATTRESSES) TO PROTECT SLOPES IS ENCOURAGED.
2. DIAMETER OF PIPE SHALL BE DESIGNATED 'D'. HEIGHT ABOVE CREEK BED SHALL BE DESIGNATED 'Y'. WHERE D IS LESS THAN 24", MINIMUM Y SHALL BE 2 FEET. WHERE D IS GREATER THAN OR EQUAL TO 24", MINIMUM Y SHALL BE 1 FOOT.
3. ATTENTION IS DIRECTED TO THE REQUIREMENTS OF THE CALIFORNIA DEPARTMENT OF FISH AND GAME AND THE REGIONAL WATER QUALITY CONTROL BOARD REGARDING STREAMBED ALTERATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ANY AND ALL PERMIT CONDITIONS.



CORRUGATED METAL PIPE OUTLET

MENDOT
STD. NO.
D60

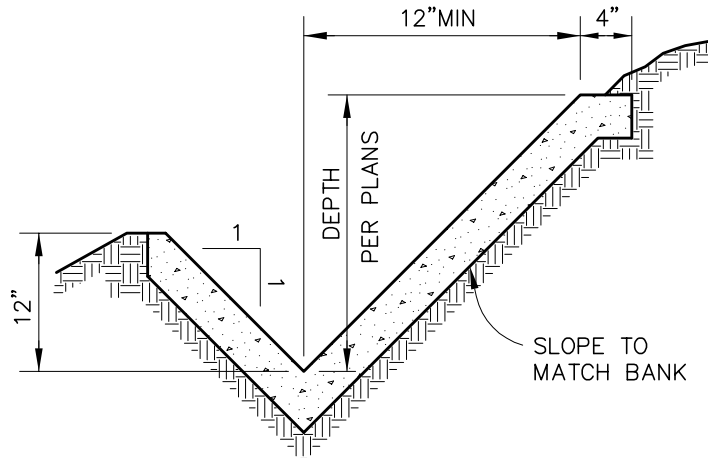
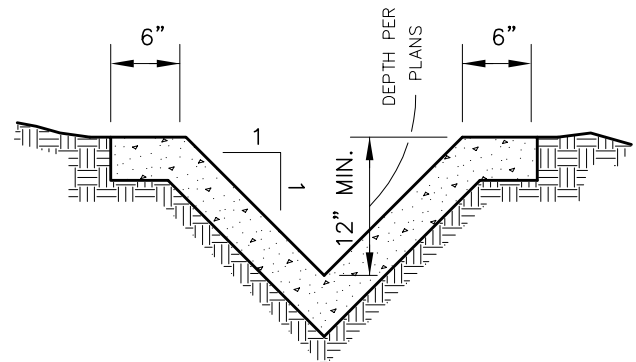
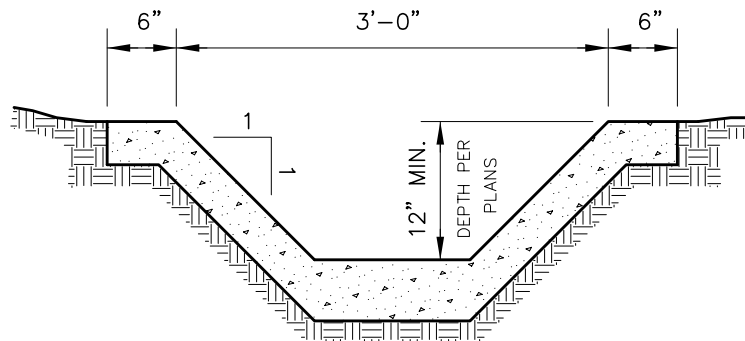
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OCT. 2000

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TYPE "A"TYPE "B"TYPE "C"**NOTE:**

1. ALL SECTIONS SHALL BE AT LEAST 4" THICK.
2. CONCRETE SHALL BE CLASS "2" (5 SACK). REINFORCING, #4 AT 24" O.C. EACH WAY, SHALL BE PROVIDED.
3. BOTH SIDES OF THE DITCH SHALL BE FORMED WITH 2"x4" LUMBER, UNLESS OTHERWISE SHOWN ON PLANS.
4. CONCRETE FINISH SHALL BE ORDINARY SURFACE FINISH PER SECTION 51-1.18A OF THE CALTRANS STANDARD SPECIFICATIONS.
5. DITCH SIDES SHALL BE BACKFILLED AND COMPACTED IMMEDIATELY AFTER THE REMOVAL OF SIDE FORMS.
6. NO CONCRETE SHALL BE PLACED PRIOR TO FORM INSPECTION BY THE DOT INSPECTOR.
7. NO DITCH IS TO BE CONSTRUCTED ON FILLED GROUND PRIOR TO CERTIFICATION OF THE FILL TO THE DOT BY THE SOIL ENGINEER.
8. NO EXPANSION JOINTS SHALL BE REQUIRED.
9. CONCRETE-LINED DITCHES SHALL ONLY BE USED OUTSIDE OF THE ROADWAY CLEAR ZONE.

**DITCHES, CONCRETE LINED**

MENDOT
STD. NO.
D61

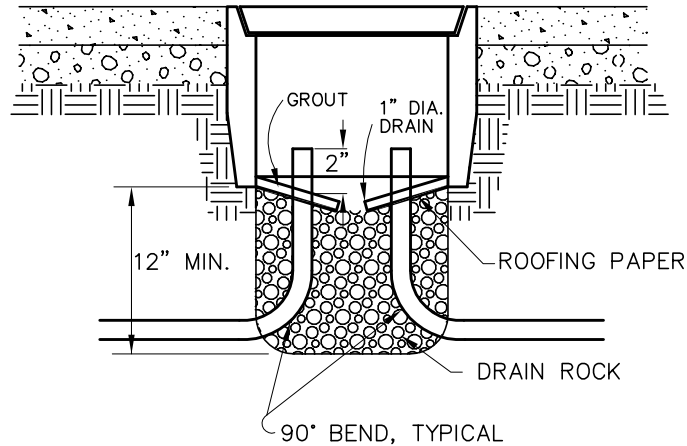
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OCT. 2000

PAGE: A-73



NOTES:

1. ALL PULL BOXES SHALL BE #5 (STATE STD ES-8) EXCEPT THE MAIN TRAFFIC SIGNAL PULL BOX WHICH SHALL BE 30" X 48" MINIMUM.
2. COVERS SHALL BE MARKED "STREET LIGHT", "TRAFFIC SIGNAL", OR "IC" (INTERCONNECT) AS APPROPRIATE.
3. PULL BOXES SUBJECTED TO VEHICULAR TRAFFIC SHALL BE INSTALLED WITH "TRAFFIC COVERS".
4. ALL CONDUITS SHALL BE SEALED WITH AN APPROVED DUCT SEAL. CONDUITS STUBBED FOR FUTURE EXTENSION SHALL BE CAPPED.

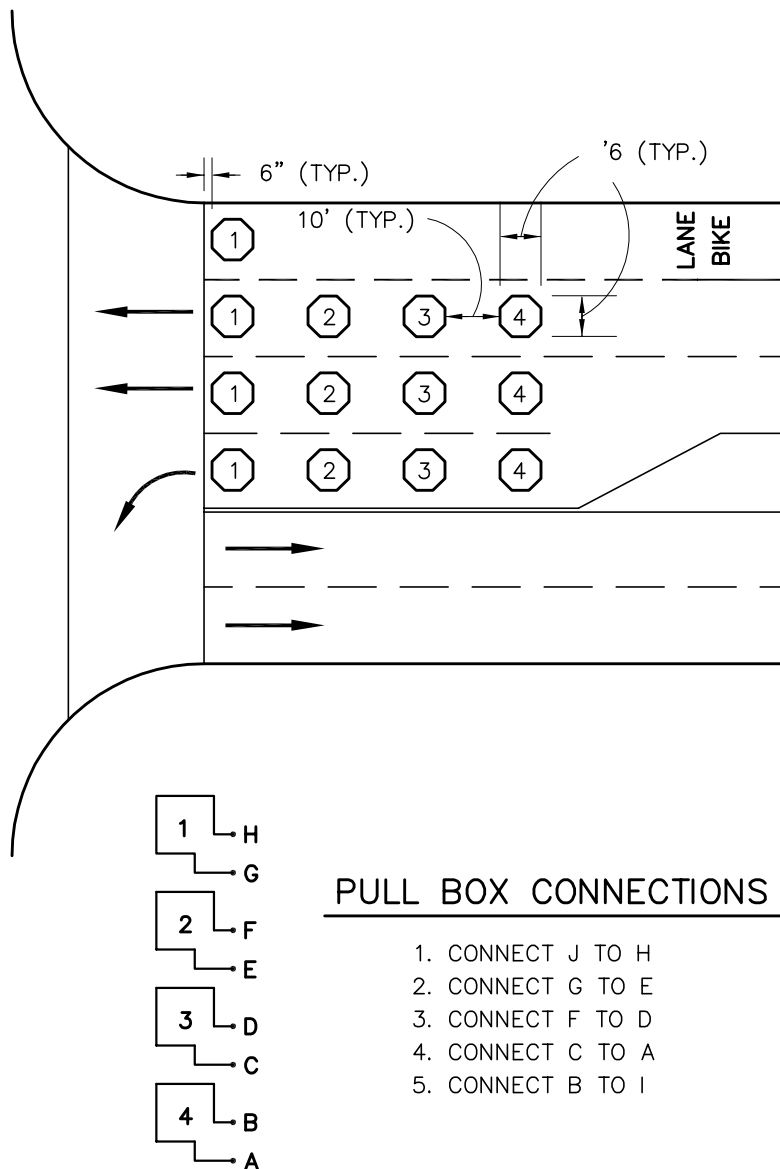
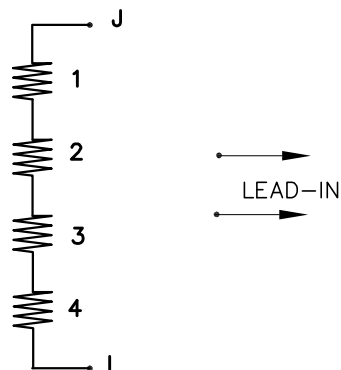


SIGNAL & LIGHTING CONDUIT AND PULL BOX DETAILS

MENDOT
STD. NO.
ES10

SCALE: NONE | DRAWN: LMM | APPVD: RCW | OCT. 2000

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NOTES:

1. LOOPS SHALL BE CENTERED IN LANES.
2. ADJACENT LOOPS ON THE SAME SENSOR UNIT CHANNEL SHALL BE WOUND IN OPPOSITE DIRECTIONS.
3. LOOPS IN ADJACENT LANES SHALL BE WOUND IN OPPOSITE CONFIGURATION.
4. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DOT DIRECTOR
5. ALL DETECTORS LABELED "1" SHALL BE TYPE D PER CALTRANS STD. PLAN ES-5B, TO PROVIDE BICYCLE DETECTION. BICYCLE LOOP DETECTOR SYMBOL PER CALTRANS STD PLAN A24C SHALL BE PLACED OVER AT LEAST ONE THROUGH MOVEMENT DETECTOR LOOP AND SHALL BE LOCATED IN BIKE LANE, WHERE AVAILABLE. BICYCLE LOOP DETECTOR SYMBOL SHALL ALSO BE PLACED OVER LEFT TURN DETECTOR, WHERE INSTALLED.
6. ALL OTHER LOOPS SHALL BE TYPE AND PER CALTRANS STD. PLAN ES-5B.

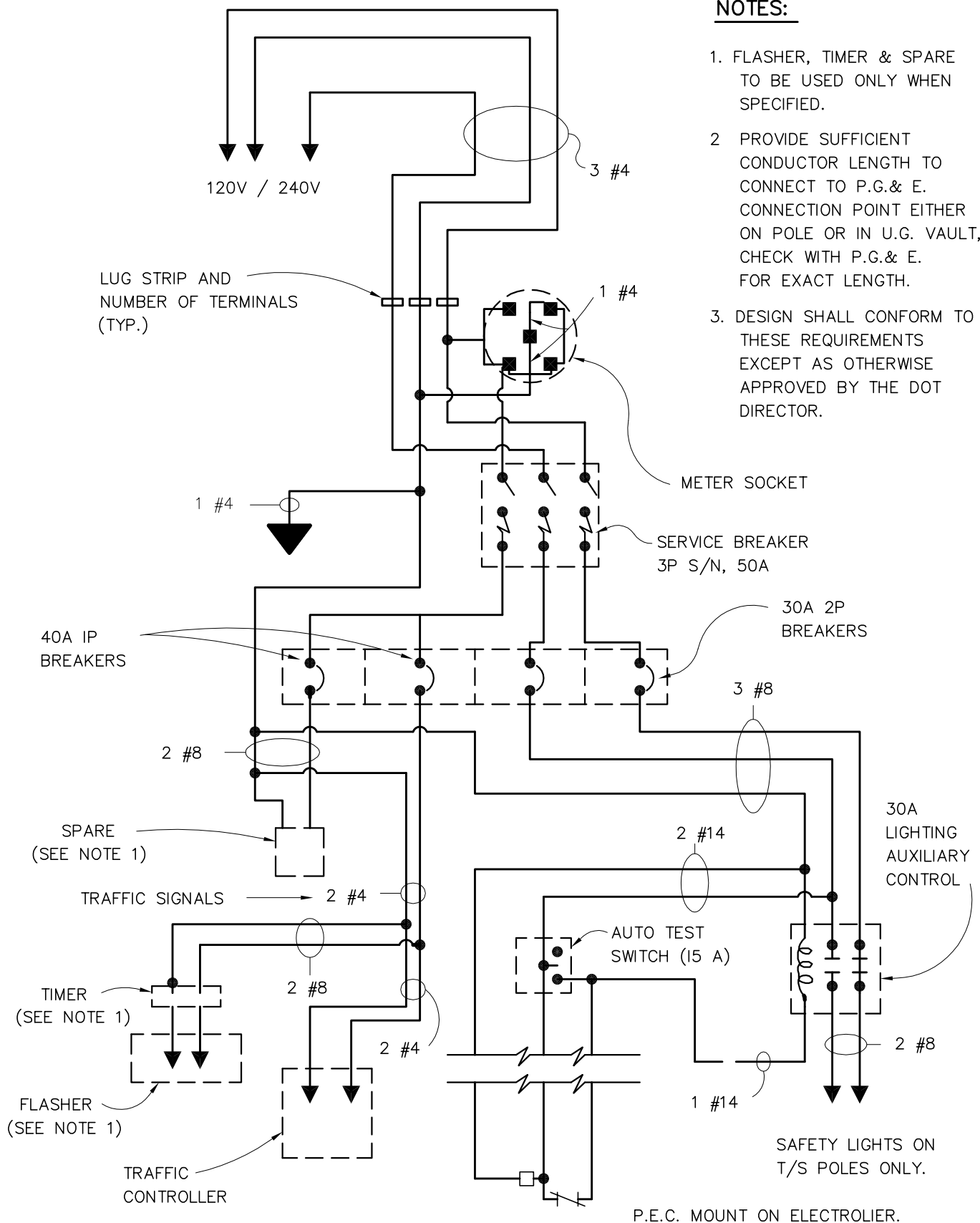


SIGNAL DETECTOR LOOPS

MENDOT
STD. NO.
ES40

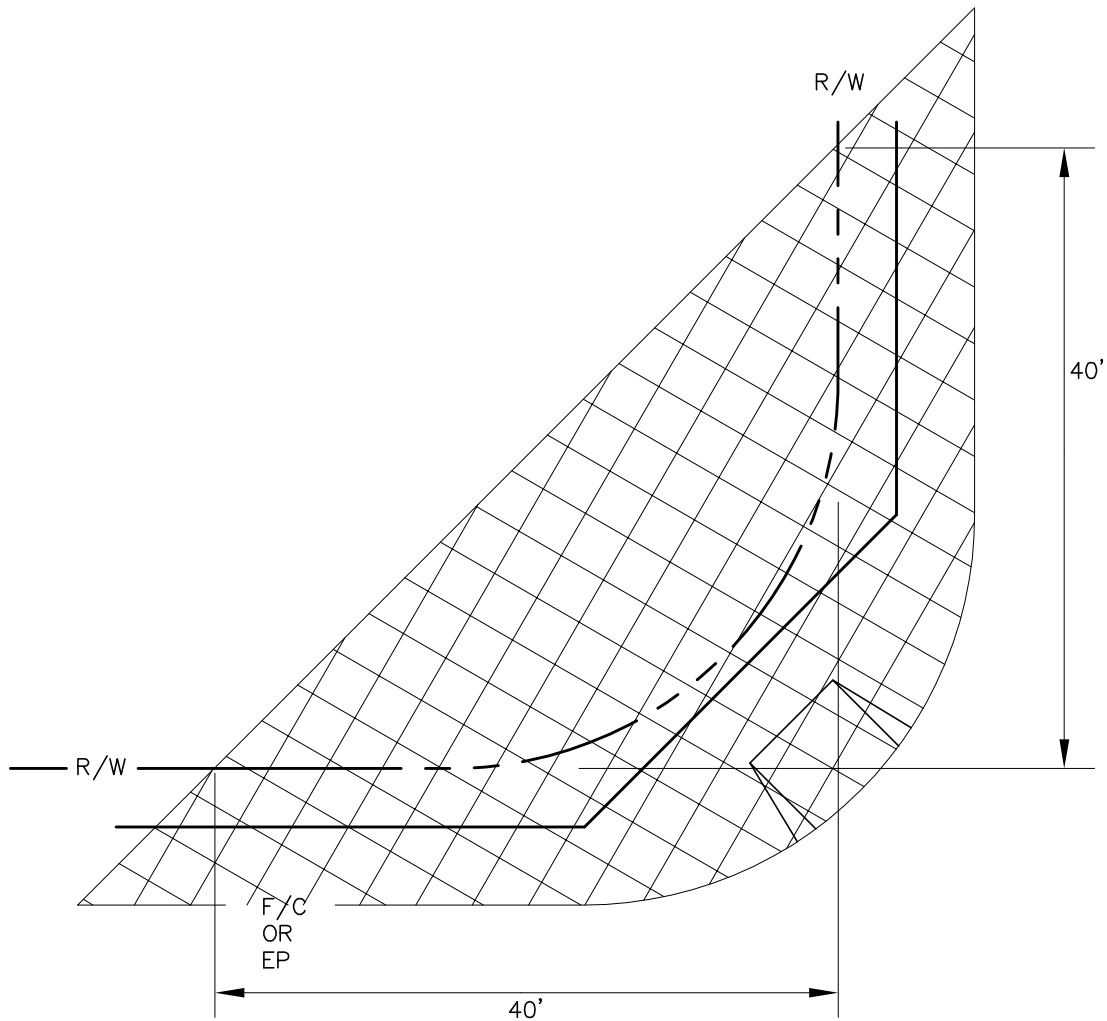
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SIGNAL - ELECTRICAL SERVICE WIRING DIAGRAM

MENDOT
STD. NO.
ES41



INTERSECTION

NOTES:

1. THIS STANDARD SHALL APPLY ONLY TO URBAN ROADS WITH DESIGN SPEEDS OF 30 MPH OR LESS. SIGHT DISTANCE CONTROL ZONE FOR OTHER ROADS SHALL BE BASED ON MENDOT STD. NO. A53.
2. FENCES AND PLANTING SHALL ALSO CONFORM TO ANY AND ALL REGULATIONS ADMINISTERED BY THE COUNTY OF MENDOCINO DEPARTMENT OF PLANNING AND BUILDING SERVICES.

SIGHT DISTANCE CONTROL ZONE



WITHIN THIS AREA ALL SHRUBS, BUSHES, FENCES AND OTHER IMPROVEMENTS SHALL BE RESTRICTED TO A 3'-6" (42") MAXIMUM HEIGHT, AND TREES SHALL BE MAINTAINED TO PROVIDE A CLEARANCE OF 8'-0" ABOVE THE ROADWAY (MIN.).

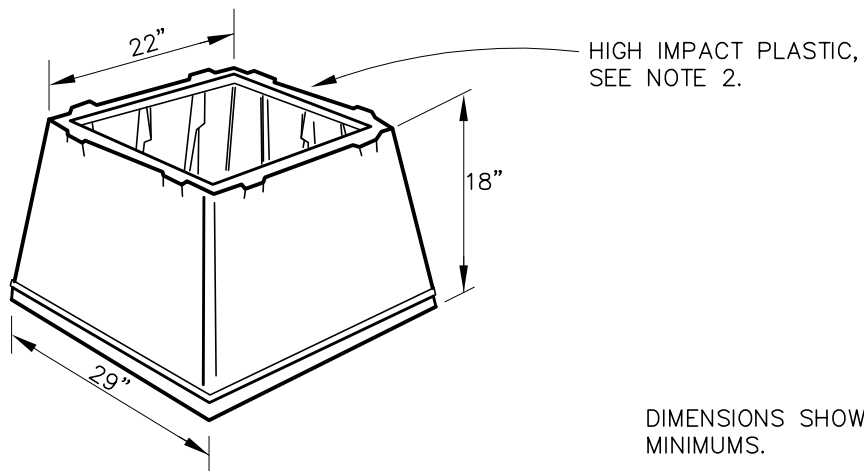
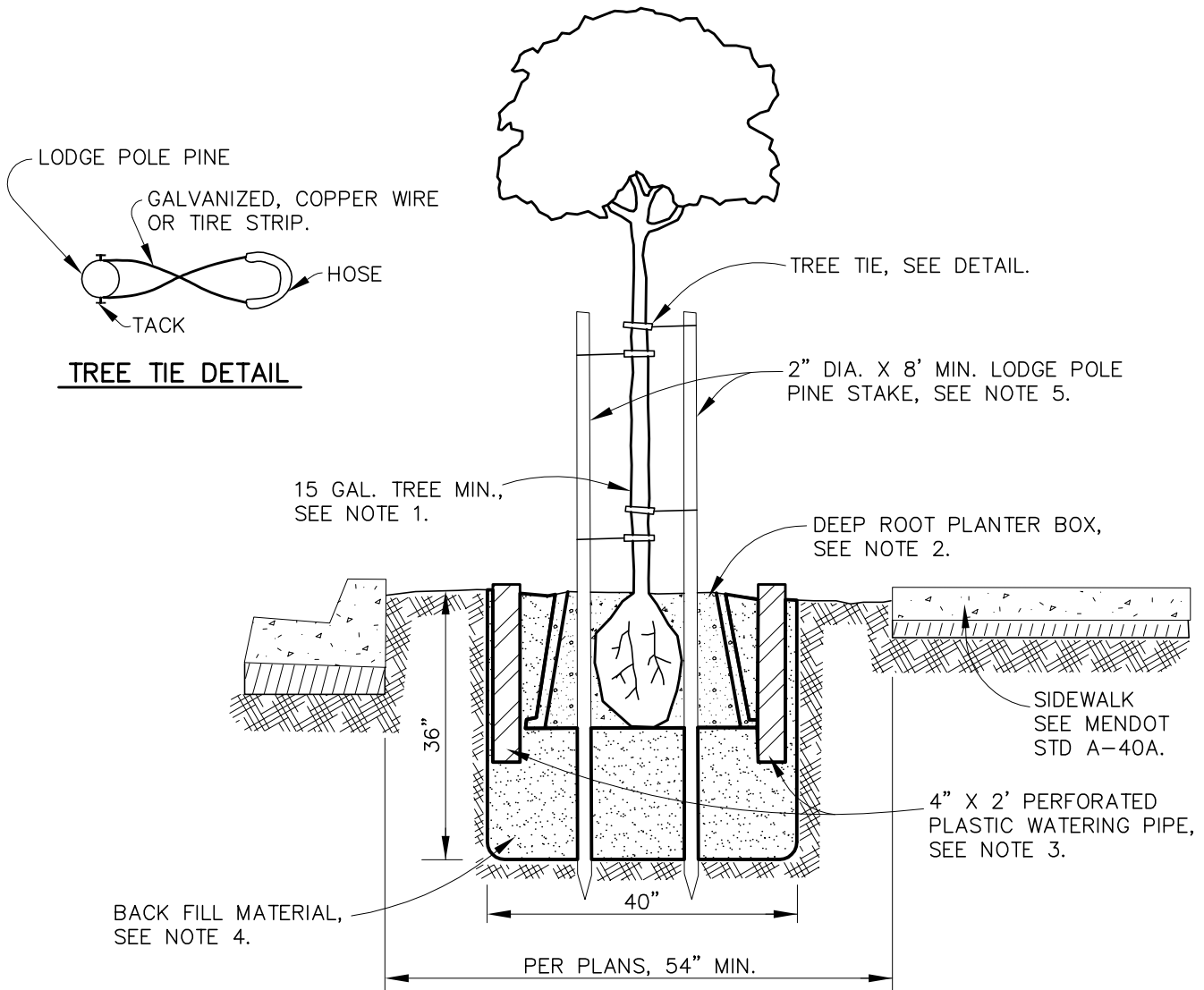


CORNER SIGHT DISTANCE URBAN FENCE AND PLANTING STANDARDS

MENDOT
STD. NO.
H10

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DEEP ROOT PLANTER

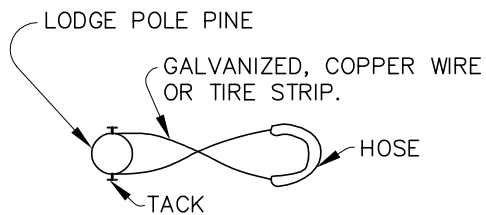
DIMENSIONS SHOWN ARE MINIMUMS.

SEE MENDOT STD. H11D FOR REFERENCED NOTES

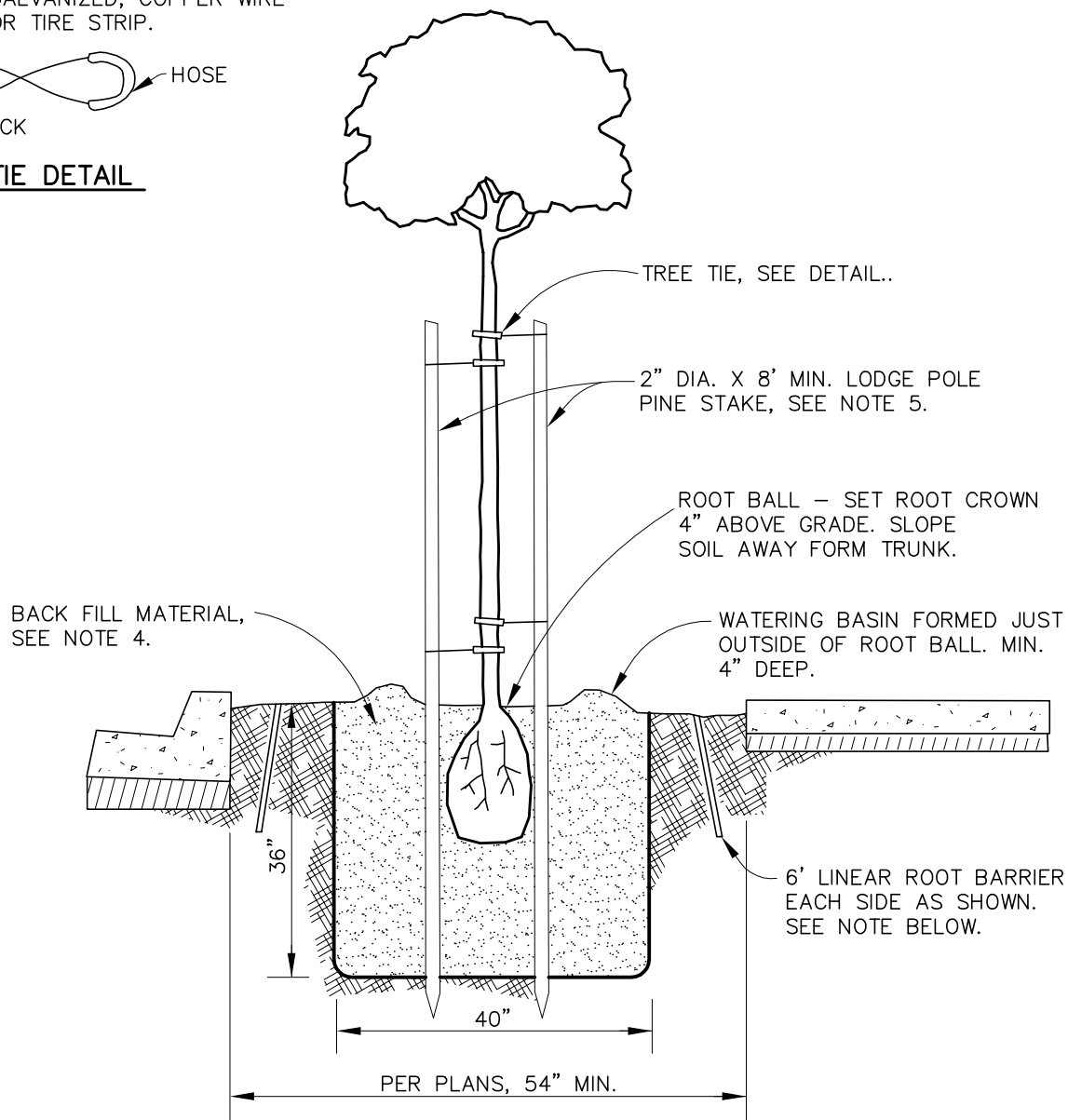


TREE PLANTING SIDEWALK AREAS

MENDOT
STD. NO.
H11A



TREE TIE DETAIL



PLANTING DETAIL

NOTES:

ROOT BARRIER MATERIAL SHALL BE APPROVED BY THE DOT DIRECTOR. THE BARRIER SHALL BE PLACED BETWEEN THE TREE AND CURB, AND SIDEWALK. BARRIER SHALL BE A MINIMUM 14" DEEP AND INSTALLED AT A 10° SLANT AS SHOWN.

SEE MENDOT STD. H11D FOR REFERENCED NOTES.



TREE PLANTING PARKWAY AREAS

MENDOT
STD. NO.
H11B

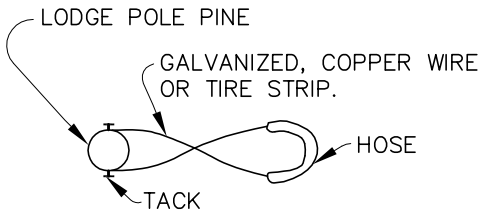
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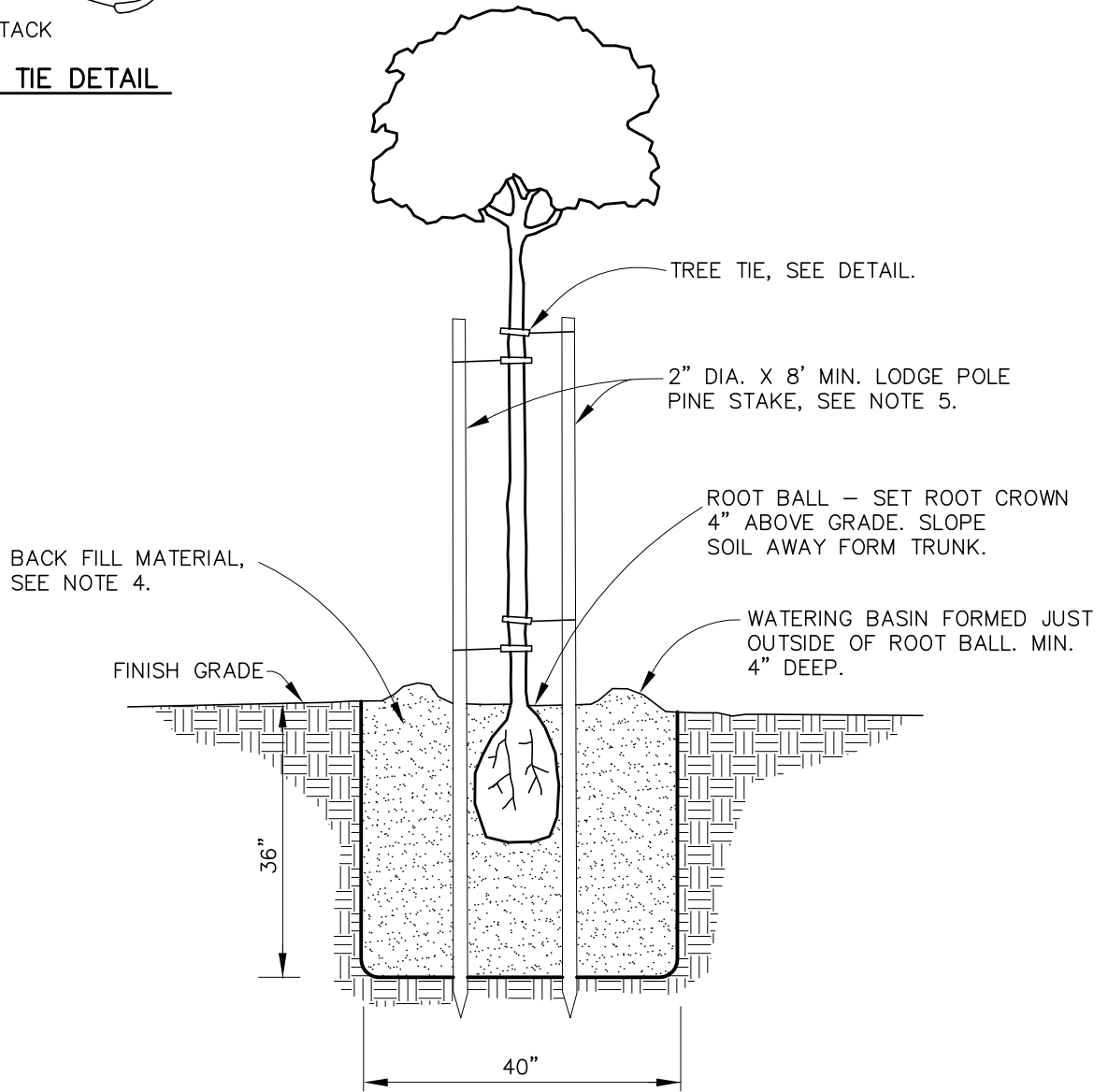
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OCT. 2000

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TREE TIE DETAIL



PLANTING DETAIL

SEE MENDOT STD. H11D FOR REFERENCED NOTES.



TREE PLANTING SHOULDER AREAS

MENDOT
STD. NO.
H11C

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

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GENERAL NOTES:

1. TREES SHALL BE OF A SIZE NOT LESS THAN 8 FT. IN HEIGHT NOR LESS THAN 1 INCH CALIPER. A TREE MAY BE REJECTED IF IT IS NOT OF A SHAPE OR CONDITION ACCEPTABLE TO THE COUNTY DOT DIRECTOR OR THE APPROVAL AUTHORITY.
2. TREES IN SIDEWALK AREAS SHALL BE PLANTED IN DEEP ROOT PLANTER BOX. THE PLANTER BOX SHALL BE A MINIMUM OF 22 INCHES AT THE TOP, 29 INCHES AT THE BOTTOM AND 18 INCHES DEEP. DEEP ROOT PLANTER SHALL BE FABRICATED FROM A HIGH DENSITY AND HIGH IMPACT PLASTIC SUCH AS POLYVINYL CHLORIDE, ABS OR POLYETHYLENE AND HAVE A MINIMUM THICKNESS OF 0.06 INCH. THE PLASTIC SHALL HAVE 1/2 INCH HIGH RAISED VERTICAL RIBS ON THE INNER SURFACE SPACED NOT MORE THAN SIX (6) INCHES APART.
3. INSTALL TWO DEEP WATERING PERFORATED PLASTIC PIPES AS SHOWN. FILL PIPES WITH 3/4 INCH CLEAN DRAIN ROCK.
4. TREES SHALL BE PLANTED IN A MIXTURE OF 1/2 NATIVE SOIL AND 1/2 LEAF MOLD OR REDWOOD MULCH.
5. TREES SHALL BE STAKED WITH TWO 2 INCH BY 8 FT. MINIMUM LODGE POLE PINE STAKES OR EQUAL. STAKES SHALL BE COATED WITH GREEN PRESERVATIVE STAIN.
6. TREES SHALL BE PLANTED A MINIMUM OF 20 FT. APART. TREES SHALL BE PLANTED A MINIMUM OF 20 FT. FROM CURB RETURNS, 15 FT. FROM STREET LIGHTS AND 6 FT. FROM DRIVEWAYS, SEWER LATERALS AND WATER SERVICES, OR AS OTHERWISE DIRECTED BY THE COUNTY DOT DIRECTOR.

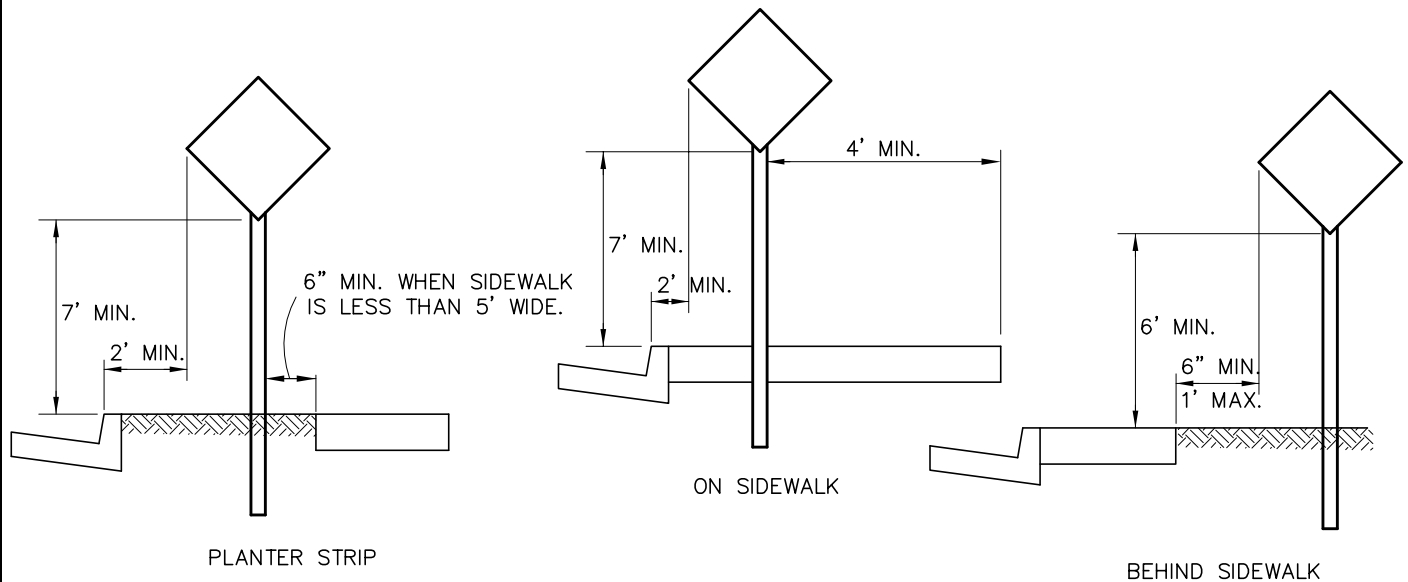


STREET TREE PLANTING NOTES

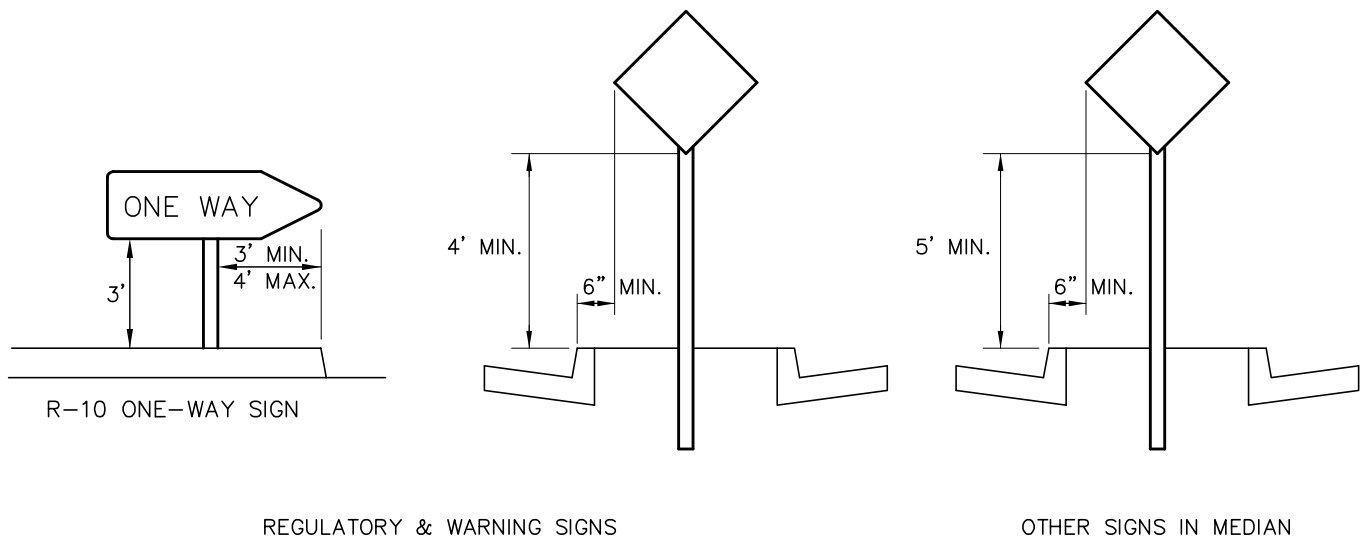
MENDOT
STD. NO.
H11D

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SIDEWALK AREA



MEDIAN AREA

NOTES:

- DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DOT DIRECTOR.

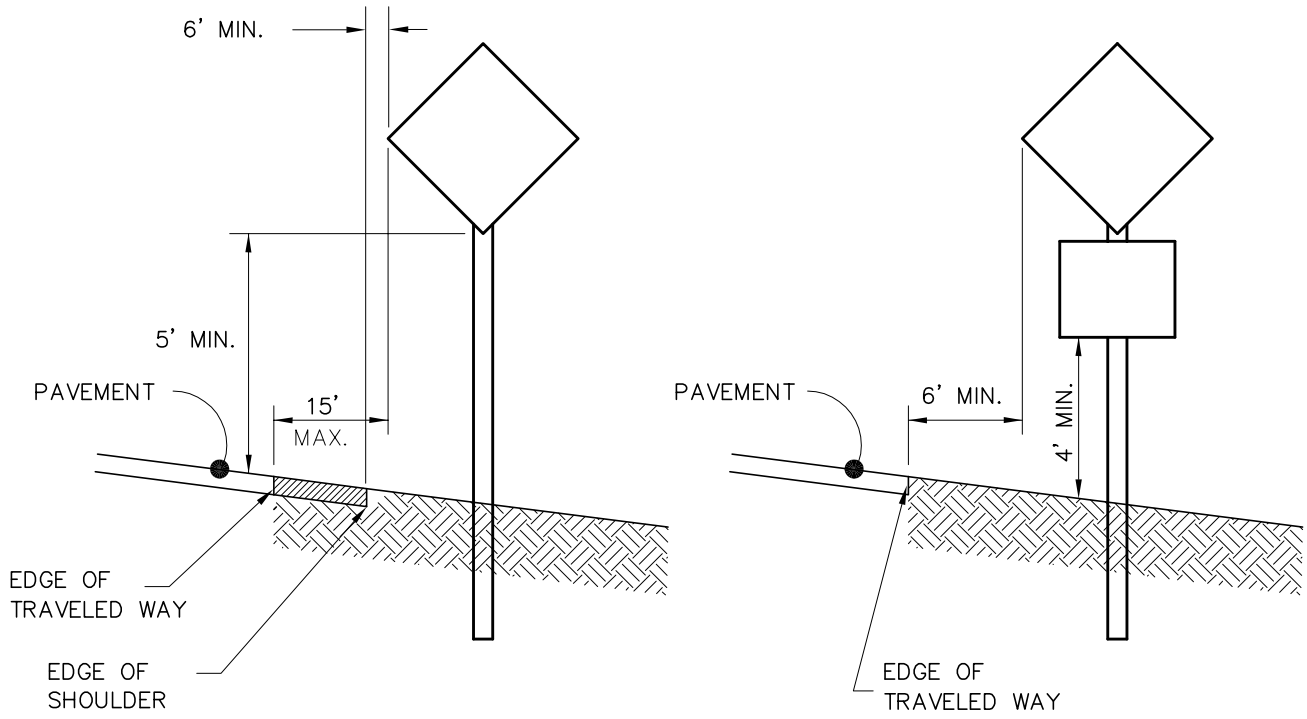


ROADSIDE SIGN LOCATION— URBAN AREAS

MENDOT
STD. NO.
RS10

SCALE: NONE | DESIGN: HND | DRAWN: HND | FEB. 2008

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RURAL AREA

NOTES:

1. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DOT DIRECTOR.



ROADSIDE SIGN LOCATION RURAL AREAS

MENDOT
STD. NO.
RS11

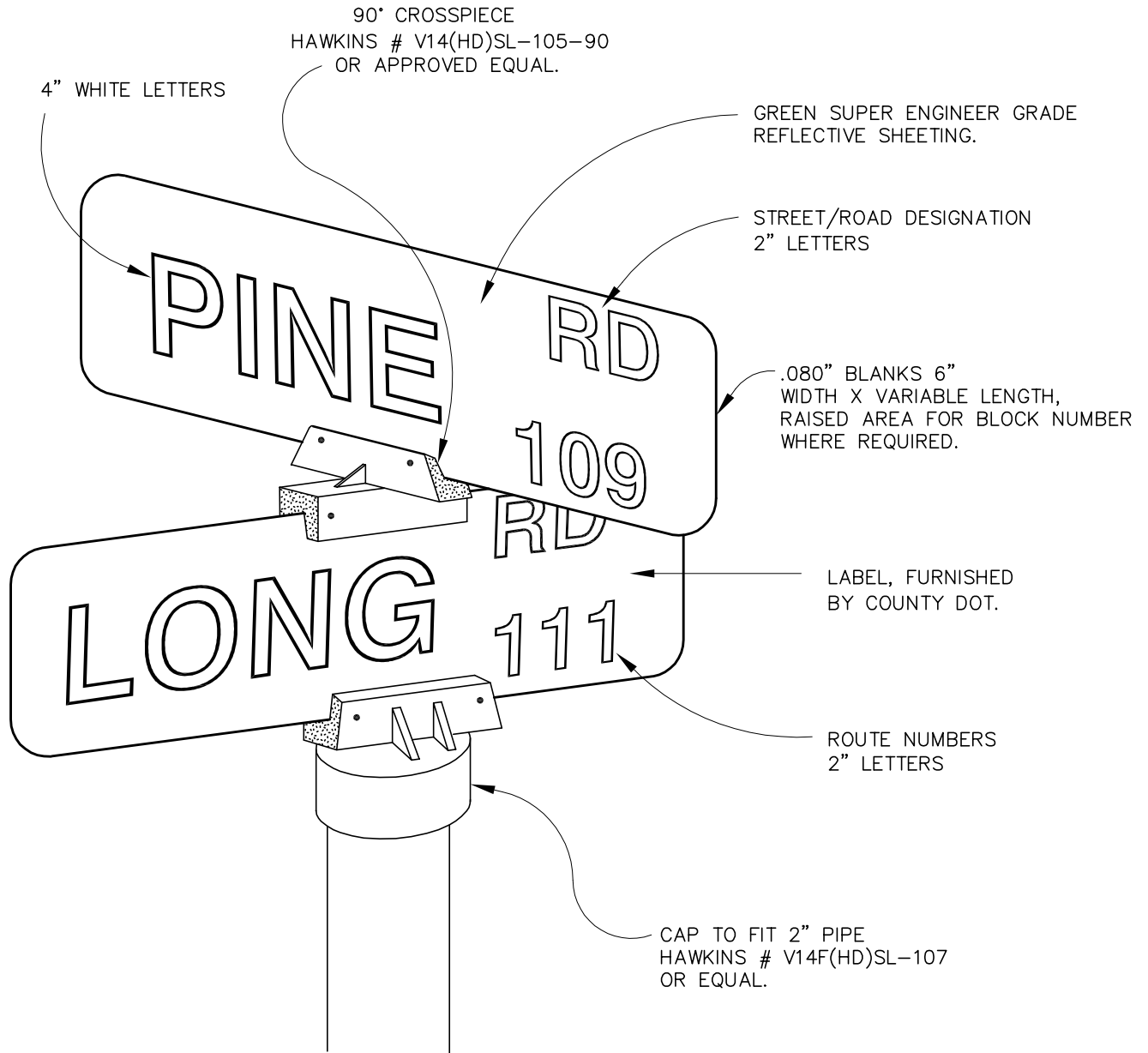
SCALE: NONE

DESIGN: HND

DRAWN: HND

FEB. 2008

PAGE: A-83



NOTES:

1. DETAIL APPLIES TO COUNTY ROADS.
2. SIGNS SHALL ALSO COMPLY WITH THE REQUIREMENTS OF THE CALIFORNIA DEPARTMENT FORESTRY AND/OR LOCAL FIRE AGENCY, WHERE THOSE STANDARD ARE MORE RESTRICTIVE.

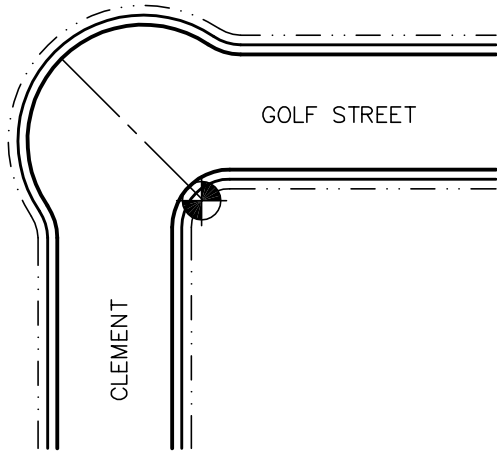


STREET NAME SIGNS DETAIL

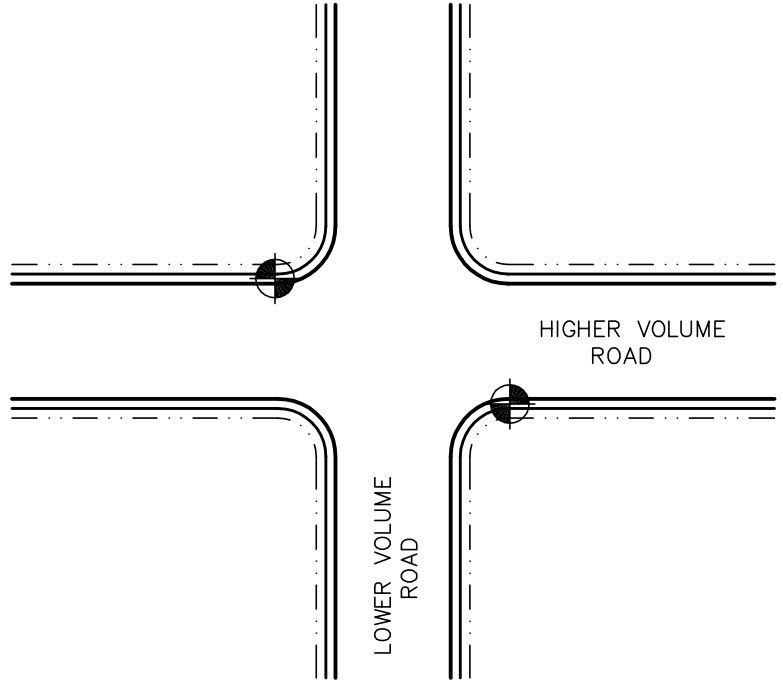
MENDOT
STD. NO.
RS20

SCALE: NONE | DESIGN: RCW | DRAWN: LMM | OCT. 2000

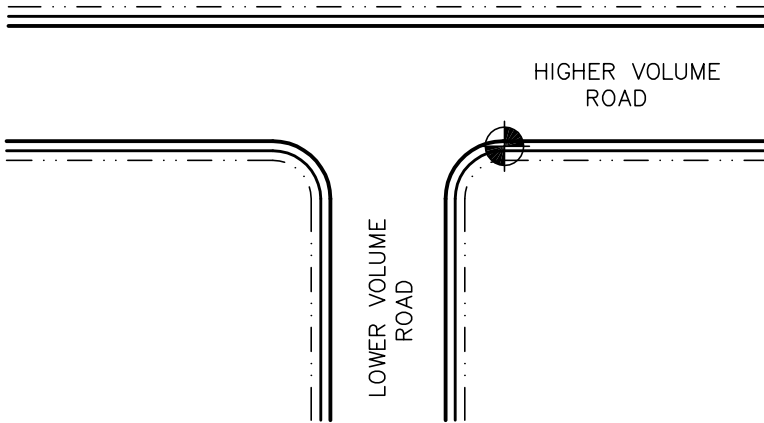
PAGE: A-84



"L" INTERSECTION



"FOUR WAY" INTERSECTION



"T" INTERSECTION

LEGEND:



NOTES:

1. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DOT DIRECTOR.



STREET NAME SIGNS TYPICAL LOCATION

MENDOT
STD. NO.
RS21

SCALE: NONE

DESIGN: RCW

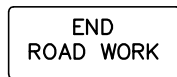
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OCT. 2000

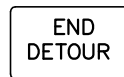
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1 (C18)
Black on Orange
30" X 30"
5" Lettering (C Series)



2 (C14)
Black on Orange
42" X 18"
5" Lettering (C Series)



3 (C7)
Black on Orange
30" X 18"
5" Lettering (C Series)



4 (C27)
Black on Orange
24" X 24"
(or 36" x 36" Optional)
4" Lettering (D Series)



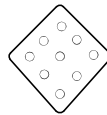
5 (C16)
Black on Orange
48" X 48"
7" Lettering (C Series)



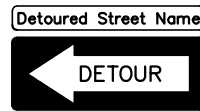
6 (C9A)
Black on Orange
48" X 48"



7 (C1)
Black on Orange
48" X 48"
8" Lettering (D Series)



8 (TYPE N MARKER)
Orange
18" X 18"



9 (C5)
Black on Orange on Black
48" x 18"
6" Lettering (D Series)
Left & Right

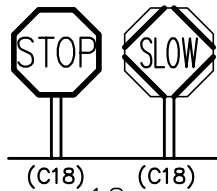


10 (C2)
Black on White
48" x 30"
8" Lettering (D Series)

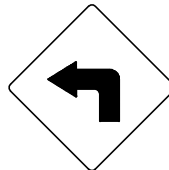


11 (TYPE N MARKER)

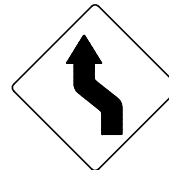
3-3-1/4" Yellow
Reflectors on 15" x 6"
White Plate



12 (C18)
White on Red and
Black on Orange on Black
24" x 24"-8 Series C Letters
18" x 18"-6" Series C Letters
Non-Reflectorized



13 (W3)
Black on Orange
36" x 36"
Left & Right



14 (W1)
Black on Orange
36" x 36"
Left & Right



15 (C22B)
Black on Orange
30" x 30"

NOTES:

- Since it is not possible to prescribe detailed standards of application for all situations which may arise, typical standards are presented here for the most common situations. These are desirable standards for normal open street situations, and additional protection should be provided for complicated situations, particularly on high speed or high volume streets. This sheet shall be used in conjunction with the "Manual of Traffic Controls for Construction and Maintenance Work Zones" issued by the State of California, Business, Transportation and Housing Agency, Department of Transportation, latest edition, which shall prevail.
- Delineators shall be placed at 50 foot intervals along lane transitional areas and at 50 foot intervals along construction areas.
- Distance between signs and/or work area may be varied depending on terrain and traffic speed.
- All warning signs or delineators used shall be reflectorized or illuminated.
- During the hours when no work is in progress, Men Working signs (No. 15) and Flagman Ahead signs (No. 6) shall be covered or removed.
- On Portable Flasher Support, the entire area of orange and white shall be reflectorized. Reflectorization shall conform to specifications listed in Section 5-04 "Barricades", of the manual listed in Note 1. The predominant color of the barricade components shall be white.

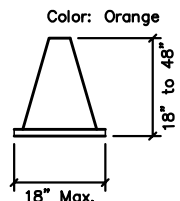
LEGEND

- Sign (Smooth side faces traffic)
- Delineator
- Portable Flasher Support
- Direction of traffic

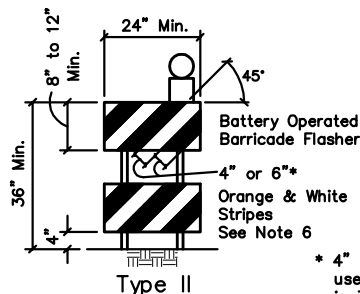


16 (C36)

Black on Orange
48" X 48"

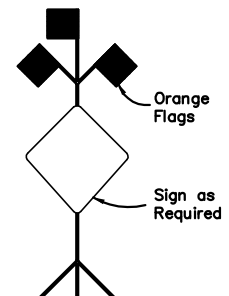


CONE DELINEATOR



PORTABLE FLASHER SUPPORT
BARRICADE

* 4" Stripes may be used if length of rail is 3 feet or less.



HIGH FLAG STANDARD
FOR WORKING SIGNS



TRAFFIC CONTROL SYSTEM FOR CONSTRUCTION ZONES DETAILS

MENDOT
STD. NO.
T21

SCALE: NONE

DESIGN: RCW

DRAWN: CLG

OCT. 2000

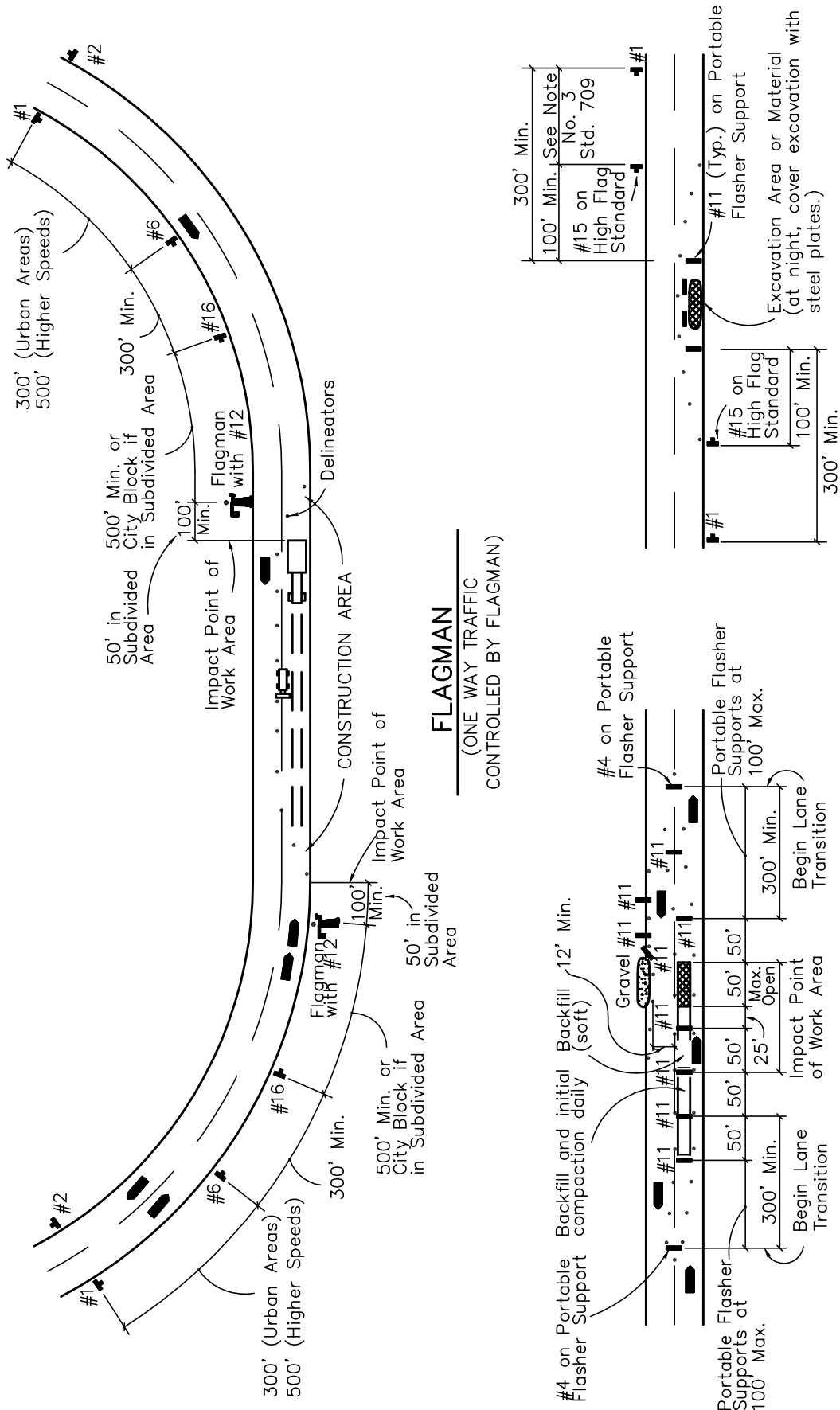
PAGE: A-79



TRAFFIC CONTROL REQUIREMENTS

SCALE: NONE	DESIGN: RCW	DRAWN: CLG	OCT. 2000	PAGE: A-80
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MENDOT
STD. NO.
T22A



TYPICAL MINIMUM NIGHT REQUIREMENTS (CONTRACTOR TO INSPECT REGULARLY, ESPECIALLY FLASHERS)

FLAGMAN (ONE WAY TRAFFIC CONTROLLED BY FLAGMAN)



TRAFFIC CONTROL REQUIREMENTS (CONT.)

MENDOT
STD. NO.
T22B

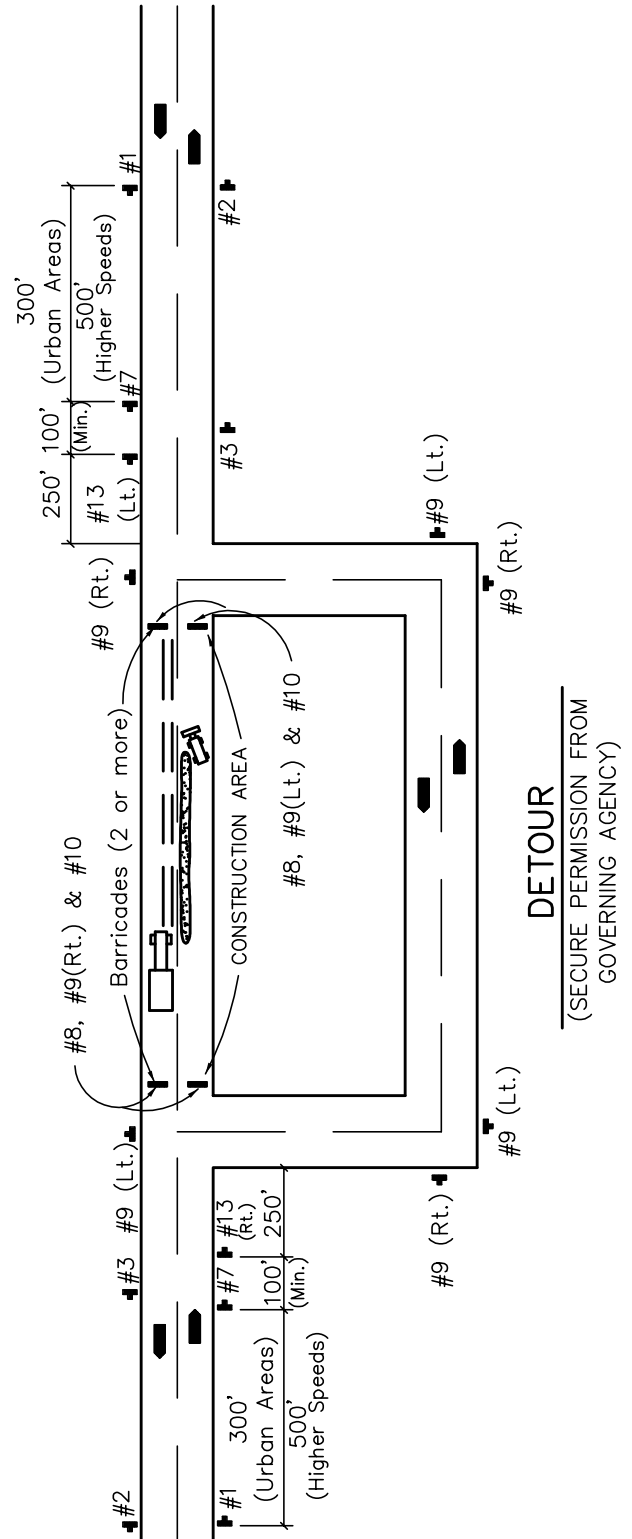
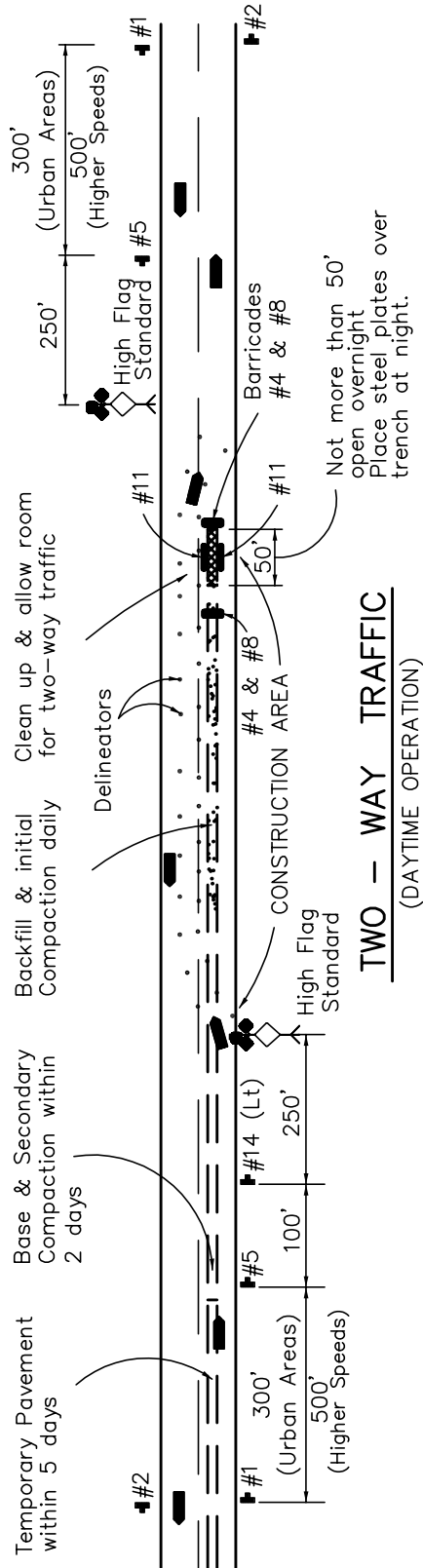
SCALE: NONE

DESIGN: RCW

DRAWN: CLG

OCT. 2000

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SECTION 1. GENERAL

1-1.01 Referenced Specifications. Roads within the County of Mendocino requiring county approvals, and which are required for property access subject to the expectation of public use by residential owners within a subdivision or business open to the general public shall be constructed in accordance with the most recent version of the Standard Specifications of the State of California, Department of Transportation, Division of Highways, which specifications are hereinafter referred to as the State Standard Specifications, and in accordance with the following modifications and revisions, and County of Mendocino Standard Plans.

Whenever in the State Standard Specifications the terms State of California, Department of Transportation, Director or Engineer are used, the following terms shall be understood and interpreted to mean and refer to such substituted terms as follows:

State of California -- County of Mendocino.

Department-- Owner.

Director-- County Director of the Department of Transportation of the County of Mendocino.

Engineer--The Director, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

Owner – In the case of County projects, the term Owner means the County of Mendocino Department of Transportation. In the case of private projects, the term owner means the person who is working or having work done under permit or agreement with the County.

These County Standard Road Specifications, the Caltrans Standard Specifications, the County Standard Road Plans, the Caltrans Standard Plans, project plans, special provisions, contract change orders, and all supplementary documents are essential parts of the work, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary, and to describe and provide for a complete work.

Conditions of project approval will be established during the permitting processes including Federal, State, and local agencies. Approved (approved by all necessary agencies) project plans shall govern over County Standard Road Plans; County Standard Road Plans shall govern over Caltrans Standard Plans; County Standard Road Plans, Caltrans Standard Plans, and project plans shall govern over these County Standard Road Specifications; County Standard Road Specifications shall govern over Caltrans Standard Specifications; and the project special provisions shall govern over both these County Standard Road Specifications and the plans.

Should it appear that the work to be done or any of the matters relative thereto are not sufficiently detailed or explained in these specifications, the special provisions or the plans, the Contractor shall apply to the Engineer for such further explanations as may be necessary and shall conform to them as part of the contract. In the event of any doubt or question arising respecting the true meaning of these Standard Road Specifications, the special provisions or the plans, reference shall be made to

the Engineer, whose decision thereon shall be final.

In the event of any discrepancy between any drawing and the figures written thereon, the figures shall be taken as correct. Detail drawings shall prevail over general drawings.

The Contractor shall be responsible for completing any necessary conversions from SI (System International, or metric) to US units when using the Caltrans Standard Plans and the Caltrans Standard Specifications. All such conversions shall be a soft conversion in which the SI unit is converted to an exact US equivalent.

Specifications pertaining to the administration of County contracts will be contained in the Special Provisions for the contract.

County Standards shall mean County of Mendocino Standard Road Plans and Specifications. ATSM shall mean American Society for Testing and Materials latest edition of the specifications.

1-1.02 Construction Limitations. The contractor will be expected to conduct operations in a manner that causes minimum damage to the natural vegetation, landscape, fisheries, air quality, water quality, and the environment in general. Care shall be exercised to avoid hazards that may cause injury to persons, animals or property either during working hours or after work hours, which will include dust control, backfilling trenches immediately following pipe laying and temporary fencing as required.

Prior to working in the County right-of-way, the Contractor shall obtain an encroachment permit from the County. Work by County contract does not require an encroachment permit. A copy of the permit shall be kept on site at all times.

The Contractor shall be responsible for obtaining any other necessary permits from the appropriate federal, state, and/or local agencies including but not limited to Air Quality Control, California Department of Fish and Wildlife (CDF&W), North Coast Regional Water Quality Control Board (RWQCB), Army Corps of Engineers (COE), and NOAA Fisheries.

The Contractor shall be responsible for obtaining permission from the property owners for any construction outside of the work site or easements as shown on the plans.

Receptacles for construction debris, including but not limited to oil, cleaning fluids and litter shall be covered. Such debris shall be disposed of in a proper manner. The Contractor's attention is directed to Section 7-1.01, "Laws to be Observed", of the Caltrans Standard Specifications.

Dust control and prohibition of burning of waste construction materials or vegetation will be enforced for all construction activity.

The Contractor shall comply with all local sound control and noise level rules, regulations, and ordinances, which apply to any work performed pursuant to the contract. Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler.

1-1.03 Water for Construction and Dust Control. The Contractor shall be responsible for providing all water necessary for construction and testing.

1-1.04 Protection of Existing Facilities and Property. The Contractor shall notify Underground Service Alert (USA) for marking the locations of existing underground facilities.

The existing underground facilities in the area of work may include telephone, fiber optic, television and electrical cables, gas mains, water mains, sewer pipe and drainage pipe. The various utility companies shall be notified before trenching begins and at such other times as required to protect their facilities. Underground facilities shall be located and exposed ahead of trenching to prevent damage to the facilities, and to determine the depth and character of all facilities that cross or infringe on the trench prism. The Contractor shall immediately notify the Engineer of any facilities found to differ from those shown on the drawings. If damage should occur to the existing facilities, the utility company and the County shall be notified immediately and repairs acceptable to the utility company shall be made at the Contractor's expense.

The locations of the existing facilities are typically compiled from the best information available during design. However, the locations of the underground facilities shown on the drawing are approximate only and should not be taken as final or all-inclusive. The Contractor is cautioned that the drawings may be incomplete and the Contractor shall repair all damage done to existing facilities at his own expense.

Existing facilities shall not be intentionally disturbed and shall be supported and protected against injury and maintained in good operating condition at the expense of the Contractor for the entire duration of the contract.

Any proposed disruption of the existing facilities shall be approved by and coordinated with the Engineer.

1-1.05 Traffic Control. The Contractor shall provide traffic control during all road work according to Section 7-1.03, "Public Convenience"; Section 7-1.04, "Public Safety"; and Chapter 12, "Temporary Traffic Control" of the Caltrans Standard Specifications. The Contractor shall submit to the Engineer proposed traffic control plans at least 72 hours prior to beginning construction. The Contractor shall have a copy of the approved traffic control plans on site at all times.

Excavation shall be backfilled or covered before leaving the work for the night. All trenching in the travelway shall be plated with non-skid plates or paved (temporary or permanent) before leaving the work for the night. Flasher barricades or illuminated cones shall be placed adjacent to the trench plates if required by the Engineer.

All detours and traffic control shall be between 8:00 a.m. and 5:00 p.m.; unobstructed two-way traffic shall be maintained daily between 5:00 p.m. and 8:00 a.m. Any work within Caltrans right-of-way will require a separate encroachment permit from Caltrans.

Adequate traffic control, flaggers, signing and barricades shall be provided by the Contractor at all times as approved by the Engineer.

If at any time, work continues for more than one working day, advance-warning signs affixed to 4" x 4" wooden posts anchored to the ground shall be used. At no time shall construction signs be attached in any way to power or light poles.

The Contractor shall be responsible for keeping the police, fire department and the local schools informed of obstructions to either private or public roads caused by reason of his operations. The Contractor shall make provisions for the safe passage of pedestrians around the area of work at all times.

1-1.06 Occupational Safety and Health Standards. The Contractor's attention is directed to Section 7-1.02K(6), "Occupational Safety and Health Standards" of the Caltrans Standard Specifications. For the purposes of this section, "Engineer" shall be defined as the civil engineer in responsible charge of the work.

1-1.07 Clean Up. Attention is directed to Section 4-1.13, "Cleanup", of the Caltrans Standard Specifications.

Before final inspection of the work, the Contractor shall clean the construction site and all ground occupied in connection with the work, of all rubbish, excess materials, falsework, temporary structures and equipment. All parts of the work shall be left in a neat and presentable condition.

Nothing herein shall require the Contractor to remove warning, regulatory, and guide signs prior to formal acceptance by the Engineer.

SECTION 6. CONTROL OF MATERIALS

6-1.01 Relative Compaction. Whenever relative compaction specified in these Standard Road Specifications or the Special Provisions, the relative compaction shall be determined by Test Method No. California 231 or the latest Caltrans test method, except as authorized in advance by the Engineer.

6-1.02 Statistical Testing. Statistical means will not be used for determination of specification compliance. Whenever both individual test results and moving average requirements are specified in these Standard Road Specifications, the moving average requirements shall apply to the individual test results.

SECTION 7. LEGAL RELATIONS AND RESPONSIBILITY

7-1.01G Water Pollution. The following shall apply in addition to Section 13, "Water Pollution Control" of the State Standard Specifications.

Designers shall employ devices or methods that improve storm water quality beyond the initial construction phase of the project such as but not limited to the following: vegetated swales, bio-

retention basins, drainage flow over roadway medians, sidewalk greenway vegetation, etc... subject to pursuant Tab H – Exception Procedures, when determined acceptable in regard to road safety and maintenance.

Filtration of runoff before discharge to a water body may be required pursuant to the standards and conditions established by the appropriate agency(ies). Exact specifications for storm water treatment facilities are beyond the scope of these road standards.

SECTION 16. CLEARING AND GRUBBING

16-1.01 Description. The following shall apply in lieu of Section 16-1.01 of the State Standard Specifications: This work shall consist of removing all objectionable material within the limits shown on the plans and as directed by the Engineer. Clearing and grubbing shall be performed in advance of grading operations and in accordance with the requirements of these Standard Road Specifications.

16-1.02 Preservation of Property. All existing street designation and traffic control signs and posts within the aforementioned limits of work shall be carefully removed, cleaned of excess earth and delivered to the County Corporation Yard, except those required for traffic control as determined by the Engineer.

16-1.03 Construction. The area to be cleared and grubbed shall be the area shown on the plans, unless otherwise specified in the Special Provisions.

All stumps, large roots and other objectionable material shall be removed to a depth of three feet below finished grade in the area between the curbs, and to a depth of twelve inches below finished grade in the area between curb and property line. The resulting spaces shall be backfilled with suitable material placed and compacted in accordance with the applicable provisions of Section 19-6.02 of the State Standard Specifications.

16-1.04 Removal and Disposal of Materials. Burning within the limits of the project will not be allowed. Combustible debris shall be disposed of away from the site of the work. Any and all burning shall be in compliance with all County of Mendocino and Air Quality Management District regulations.

16-1.05 Vegetation Preservation. The Contractor shall comply with all requirements of the tree and vegetation preservation plan (if one is included as part of the improvement plans) and any other requirements at the County of Mendocino Department of Planning and Building Services. Contractor shall remove the minimum amount of vegetation necessary for the work and shall minimize disturbance or damage to vegetation beyond the area that is being cleared or grubbed. See Section 19-1.02 of the County Road Specifications.

All trees to be removed shall be marked in the field. A representative of the County must field review the trees to be removed prior to removal.

SECTION 19. EARTHWORK

19-1.01 General. Earthwork shall conform to the provisions of Section 19 of the State Standard Specifications. Water used to achieve optimum moisture content for required relative compaction must be obtained from a permitted source – not withdrawn from a stream without the necessary permits.

19-1.02 Protection of Vegetation. The contractor shall comply with all requirements of the tree and vegetation preservation plan (if one is included as part of the improvement plans) and any other requirements of the County of Mendocino Department of Planning and Building Services. When it is necessary to excavate adjacent to existing trees, shrubs or hedges, the Contractor shall use all possible measures to avoid injury to the trees, shrubs or hedges and their roots. Roots or limbs two (2) inches or larger in diameter shall not be cut without the express approval of the Engineer. All roots two (2) inches in diameter and larger left in place shall be wrapped with burlap to prevent scarring and excessive drying. When it is necessary to cut limbs and branches of trees to provide clearance for equipment used in construction, the Contractor shall make pruning cuts just beyond the branch bark ridge. All cuts through two-inch or larger roots and limbs shall be hand-trimmed and cleanly cut before being repaired.

19-1.03 Subgrade Preparation. Subgrade shall be smooth and uniform, and true to the required grade cross-section, and shall be within the tolerance specified in these Standard Road Specifications or as shown on the plans. The Contractor shall repair at his expense any damage to a prepared subgrade caused by his operations or by use of public traffic. No material shall be placed upon the prepared subgrade until the subgrade is in the condition meeting the requirements specified.

Subgrade that does not conform to the above requirements shall be reshaped to conform to the specified tolerances and recompacted, all at the Contractor's expense.

19-1.04 Grade Tolerance. Immediately prior to placing subsequent layers of material thereon, the grading plane shall conform to one of the following.

- A. When aggregate subbase or aggregate base are to be placed on the grading plane, the grading plane shall not vary more than 0.05' above or 0.1' below the grade approved by the Engineer.
- B. When asphalt concrete base is to be placed on the grading plane, the grading plane shall not vary more than 0.05' above or below the grade established by the Engineer.

19-1.05 Unsuitable Material. The following shall apply in lieu of Section 19-1.03B of the State Standard Specifications: Material below the natural ground surface in embankment areas and basement material below the grading plane in excavation areas that is determined by the Engineer to be unsuitable for the planned use shall be excavated and disposed of or stabilized as directed or approved by the Engineer.

When unsuitable material is removed and disposed of, the resulting space shall be filled with material suitable for the planned use. Such suitable material shall be placed and compacted in layers as hereinafter specified for constructing embankments.

Stabilization of unsuitable material shall comply with the following provisions:

- A. Unsuitable material may be processed in place, may be excavated and placed on the grade or other locations suitable for further processing, or may be partially excavated and partially processed in place. Care must be undertaken to avoid construction debris from falling into the stream channel. Any material that does fall into a stream during construction should be immediately removed in a manner that has minimum impact to the streambed and water quality.
- B. Processing may consist of drying to provide a stable replacement material or mixing with hydrated lime or granular quicklime.
- C. Stabilized material shall be placed and compacted in layers as hereinafter specified for constructing embankments.

19-1.06 Trench Excavation. The Contractor shall perform all excavations of every description and all substances encountered to the depth indicated on the drawings. During excavation, that material suitable for backfilling shall be deposited in an orderly manner a sufficient distance from the banks for the trench to avoid overloading and to prevent slides or cave-ins. All excavated material not required or suitable for backfill shall be removed and disposed of outside the streets right-of-way. The Contractor shall first obtain a written permit from the property owner on whose property the disposal is to be made and he shall file with the Engineer said permit, together with a written release from the property owner absolving the County from any and all responsibility in connection with the disposal of material on said property. Material shall not be disposed of within any floodway in the County of Mendocino or within the normal channel of any river, creek, stream, ditch, canal, swale or other watercourse and within portions of same as required to efficiently carry the flood flow as determined by the Engineer.

Trenches shall be the necessary width for proper laying of the pipe, and the banks shall be as nearly vertical as practicable. The bottoms of the trenches shall be accurately graded to provide uniform bearing and support for each section of pipe on the prepared pipe bedding at every point along its entire length. Trenches shall be excavated to the depth indicated on the drawings and care shall be taken not to excavate beyond the depth indicated or required.

The Contractor shall at all times furnish, install and maintain sufficient bracing and shoring in trenches to ensure the safety of workmen and to protect and facilitate the work. All such bracing and shoring shall be removed from the trench as backfilling proceeds.

The Contractor shall furnish, install and operate such pumps or other devices as may be necessary for removing water from the trenches during construction.

19-1.07 Structure Backfill. Specifications for pipe bedding, trench backfill and surfacing shall be as shown on *MENDOT STD. NO. A60, "Trench Restoration,"* of the County of Mendocino Standard Road Plans.

Except for structure backfill placed at specific locations described and enumerated in Sec. 19-3.02B of the State Standard Specifications, structure backfill material specifications and compaction requirements shall be as follows:

Structure backfill shall have a Sand Equivalent of not less than twenty (20) and shall conform to the following grading:

<u>Sieve Sizes</u>	<u>Percentage Passing</u>
3"	100
No. 4	35-100
No. 30	20-100

19-1.08 Relative Compaction (95 Percent). The following shall apply in lieu of Sec. 19-5.03B of the State Standard Specifications.

Relative compaction of not less than 95 percent shall be obtained for a minimum depth of twelve (12) inches below the grading plane for the full base width of the planned structural section, whether in excavation or embankment.

Any area of the subgrade determined by the Engineer to be unstable, as evidenced by excessive deflection under the movement of equipment, shall be brought to satisfactory stability by additional rolling, reworking, removal and replacement of unsuitable material, or stabilization with lime, as directed by the Engineer.

Lime-treated materials shall be compacted to not less than 95 percent relative compaction in accordance with the provisions of Section 24, except when lime is used to stabilize unsuitable material as specified in Sec. 19-1.03B of the State Standard Specifications.

Relative compaction of not less than 95 percent shall be obtained for embankment under bridge and retaining wall footings without pile foundations within the limits established by incline planes sloping 1.5:1 out and down from lines one foot outside the bottom edges of the footing.

19-1.09 Relative Compaction 90 percent. The following shall apply in lieu of Sec. 19-5.03C of the State Standard Specifications.

Relative compaction of not less than 90 percent shall be obtained in all materials in embankment except as specified herein to be 95 percent. Material placed in accordance with the provisions of Sec. 19-1.03B, "Unsuitable Material," of the State Standard Specifications shall be compacted to not less than 90 percent relative compaction.

19-1.10 Excess Material. Excess trench material shall be removed promptly and disposed of elsewhere by the Contractor at his own expense. The Contractor shall not dump material on any private property without the permission of the owner thereof.

19-1.11 Samples for Approval. Representative samples of all material to be imported shall be sufficiently in advance of installation operations for testing and approval of the Engineer. All costs

associated with testing shall be paid by the Contractor. Imported material shall not be installed until it has been so approved.

Tests will be made in accordance with the following standards:

1. Grading--ASTM C114 and C136
2. Plasticity Index--ASTM D424
3. Sand Equivalent Value--Test Method No. Calif. 217 (CALTRANS)

SECTION 24. LIME TREATMENT

24-1.01 Description. The following shall apply to Section 24-2 of the State Standard Specifications.

This work consists of stabilizing basement soil, mixing in place material, lime and water, and spreading and compacting the mixture to the lines, grades and dimensions shown on the plans and as specified in these Standard Road Specifications and the Special Provisions.

Where designated by the Engineer, basement soil below the planned lime-treated subgrade shall be stabilized in the following manner:

The material shall be excavated to the lines and grades specified by the Engineer and spread in a uniform layer over another portion of the grade.

Dry lime in the amount specified by the Engineer shall be spread and mixed into the material as provided in Sec. 24-2.01D(4), "Mixing" of the State Standards. The material shall then be used to backfill the original excavation in six-inch compacted layers. Each layer below a plane twelve inches below the grading plane shall be compacted to not less than 90 percent relative compaction. Each successive six-inch layer up to the bottom of the planned lime-treated subgrade shall be compacted to not less than 92 percent relative compaction.

24-1.02 Materials. When permitted by the Engineer in writing, and when accompanied by an adequate safety program to be proposed by the Contractor, granular quicklime conforming to the specifications of ATSM Designation C51 may be used in lieu of commercial hydrated lime. Hydrated lime shall be used only when permitted by the Engineer in writing.

When sampled by the Engineer at the point of delivery, the sample of quicklime shall contain not less than 90 percent calcium oxide (CaO), as determined by ATSM: C25-67.

When granular quicklime is used, initial mixing shall continue until the quicklime is uniformly distributed throughout the material. Water shall be added as required to provide sufficient moisture for hydration. The mixture shall be cured for not less than sixteen hours prior to final mixing.

The Contractor shall provide a grade checker to ensure mixing to the full depth as specified. Water shall be added during the final mixing operations until the water content of the mixture is approximately two percent about the test optimum moisture content.

24-1.03 Spreading and Compacting. Lime-treated material shall be compacted to not less than 95 percent, as determined by Test Method No. California 216 and 231. The sample of lime-treated soil used for determining the maximum wet density shall be obtained from the test site at the time of testing.

24-1.04 Curing. The curing seal requirement may be waived at the discretion of the Engineer when it can be shown that placement of a subsequent layer of aggregate base or asphalt concrete can proceed within 24 hours after the completion of final rolling.

SECTION 25. AGGREGATE SUBBASES

25-1.01 Description. Aggregate Subbase shall be Class 4.

25-1.02 Materials. Aggregate Subbase--Class 4 shall have a minimum sand equivalent of twenty-one (21), a minimum R value of fifty (50) and shall conform to the following gradings:

<u>Sieve Size</u>	<u>Percent Passing</u>
3"	100
1-1/2"	90-100
3/4"	50-90
#4	25-55
#200	2-11

The material retained on the #4 screen shall consist of 100 percent crushed particles.

Representative samples of all material to be imported shall be supplied sufficiently in advance of installation operations for testing and approval of the Engineer. All costs associated with testing shall be paid by the Contractor. Tests for sieve analysis, R-value, sand equivalent and relative compaction shall be per Caltrans Standards.

25-1.03 Grade Tolerance. The subgrade to receive aggregate subbase, immediately prior to spreading, shall not vary more than 0.05-foot above or 0.1-foot below the grade established by the Engineer.

25-1.04 Compacting. The surface of finished aggregate subbase shall be firm and unyielding. Any visible movement vertically or horizontally of the aggregate subbase under the action of construction equipment or other maximum legal axle loads shall be considered as evidence that the aggregate subbase does not meet this requirement.

SECTION 26. AGGREGATE BASES

26-1.01 Description. Aggregate Base shall be Class 2, and the combined aggregate shall conform to either of the gradings specified in Sec. 26-1.02A of the State Standard Specifications, "Class 2 Aggregate Base."

26-1.02 Class 2 Aggregate Base. Quality Requirements: The minimum sand equivalent value shall be not less than 22 for any individual test with an operating range of twenty-five (25) minimum, as defined by Section 26-1.02A of the State Standard Specifications. The resistance (R-value) shall not be less than seventy-eight (78) for any individual test. The durability index shall not be less than thirty-five (35) for any individual test. The durability index may be lowered to twenty-five (25) to accommodate local sources with prior written approval by the Engineer.

26-1.03 Compacting. The surface of the finished aggregate base shall be firm and unyielding. Any visible movement vertically or horizontally of the aggregate base under the action of construction equipment or other maximum legal axle loads shall be considered as evidence that the aggregate base does not meet this requirement.

26-1.04 Shoulder Backing. This work shall consist of constructing shoulder backing adjacent to the edge of the new surfacing in accordance with the details shown on the plans and these Standard Road Specifications.

The material for shoulder backing shall consist of Class 2 Aggregate Base meeting all quality requirements of Section 26-1.02 of these Standard Road Specifications.

The areas where shoulder backing is to be constructed shall be cleared of all weeds, grass and debris. Removed weeds and grass shall be disposed of outside the highway right-of-way in accordance with the provisions in Section 7-1.13 of the State Standard Specifications (2006 Edition).

Shoulder backing material shall be watered and rolled to form a smooth, firmly compacted surface. Watering shall conform to the provisions in Section 17, "Watering," of the Caltrans Standard Specifications.

Shoulder backing material shall not be deposited on the new surfacing prior to placing it in final position, nor shall it be bladed onto the new surfacing during mixing, watering and blading operations.

Shoulder backing construction shall be completed along the edges of any portion of new surfacing within five days after completion of that portion of the new surfacing. Until such time as the Contractor is able to complete shoulder backing along any portion of new surfacing, he shall furnish and place portable delineators and C31 "Low Shoulder" signs off of and adjacent to the new surfacing. A portable delineator and a C31 sign shall be placed at the beginning of the drop-off in the direction of travel on the adjacent lane, and at the following maximum intervals along the drop-off:

C31 signs--2,000 feet

Portable Delineators:

on tangents--500 feet

on curves--200 feet

The portable delineators and C31 signs shall be maintained in place at each location until shoulder backing operations are completed at that location. Portable delineators and signs shall conform to the requirements in Section 12, "Construction Area Traffic Control Devices," of the Caltrans Standard Specifications, except that the base material for the signs shall not be plywood and the signs may be set on temporary portable supports or in barricades.

SECTION 37. BITUMINOUS SEALS (CHIP SEALS)

37-1.01 Description. Where used in the Road Standards, "Double Chip Seal" shall meet the requirements for a double bituminous seal coat in Section 37-2, "Seal Coats" of the Caltrans Standard Specifications. Double chip seal shall consist of an application of asphaltic emulsion followed with an application of screenings, and another application of asphaltic emulsion followed by another application of screenings.

37-1.02 Materials. Liquid asphalt prime coat shall conform to the requirements of Section 93, "Liquid Asphalts" of the Caltrans Standard Specifications. Liquid asphalt prime coat shall be SC-250. The following screening sizes may be used: 1st Application: 3/18" x No. 6; 2nd Application: 5/16" x No. 8.

Asphaltic emulsion shall conform to the requirements of Section 94, "Asphaltic Emulsions" of the Caltrans Standard Specifications. Asphaltic emulsion used for double chip seal shall be CRS-1.

SECTION 39. ASPHALT CONCRETE

39-1.01 Description. A minimum of two weeks prior to the placement of any asphalt concrete, the Contractor shall notify the Engineer of which asphalt plant will be used to supply the mix. For any job, asphalt concrete shall be supplied from a single plant.

39-1.02 Asphalts. Asphalt binder to be mixed with aggregate for asphalt concrete surface, leveling, or open graded courses shall be AR-4000 grade paving asphalt.

Asphalt binder to be mixed with aggregate for asphalt concrete base shall be AR-8000 grade paving asphalt.

39-1.03 Aggregate. The aggregate grading of the various types of asphalt concrete shall conform to one of the following as directed by the Engineer:

Surface Course	Type A—1/2" Maximum, Medium or Coarse, or 3/4" Maximum, Coarse
Leveling Course	Type A—3/4" Maximum, Coarse
Asphalt Concrete Base	Type A or B—3/4" Maximum, Medium
Open Graded	3/8" Maximum

39-1.04 Grade Tolerance. The subgrade to receive asphalt concrete or asphalt concrete base immediately prior to applying prime coat shall not vary more than 0.05-foot above or below the grade established by the Engineer.

39-1.05 Prime Coat and Tack Coat. Prime coat shall consist of either SC-70 or MC-70 grade liquid asphalt as directed by the Engineer and shall be furnished and applied in accordance with the provisions in Section 93, "Liquid Asphalts" of the Caltrans Standard Specifications. Application shall be made when the surface is dry or but slightly damp, and when the air temperature in the shade is above fifty (50) degrees Fahrenheit, unless otherwise permitted by the Engineer. When approved by the Engineer, additional thickness of asphalt concrete (A.C.) may be substituted for the prime coat. An additional 0.04 foot would be required if the design thickness of A.C. is less than 0.25 foot and an additional 0.02 foot if the design thickness of A.C. is 0.25 foot or greater.

Following application of the prime coat, at least twenty-four (24) hours shall elapse before placing asphalt concrete. Any excess asphalt primer shall be blotted up with sand and removed from the grade.

Tack coat shall be diluted SS1 or CSS1, or undiluted RS-1 or CRS-1 type asphalt emulsion.

39-1.06 Haul Vehicles. Prior to loading asphalt concrete, the bed of the haul vehicle shall be clean and free from all soil, sand, gravel and other deleterious substances.

All haul vehicles shall be equipped with tarps that are in working order. Tarps shall be used on haul vehicles unless prior approval is obtained from the Engineer.

When spraying diesel or other parting agents in the bed of the haul vehicle, the minimum amount necessary to moisten the surface shall be used. In no instance will the parting agent be allowed to accumulate in the bed of the vehicle.

39-1.07 Spreading Equipment. The asphalt concrete shall be deposited from the haul vehicle into the hopper of the paving machine.

The practice of depositing the material on the roadbed in a windrow and subsequently using a pick-up machine to deposit the material in the hopper of the asphalt paver will not be allowed.

39-1.08 Compacting Equipment. Compaction rollers shall be either two-axle steel-tired rollers, pneumatic-tired rollers or approved double-drum vibratory rollers. Steel-tired static compaction rollers shall weigh not less than twelve (12) tons.

Double-drum vibratory rollers shall be operated at a maximum speed of 135-feet per minute (approximately 1.5 mph). Double-drum vibratory rollers shall have a minimum frequency of 2400 VPM and the amplitude shall be field-adjustable.

All pneumatic-tired rollers shall be equipped with an approved windskirt unless otherwise permitted by the Engineer. Pneumatic-tired rollers used for compaction of asphalt concrete base shall be so equipped that the air pressure in all tires may be regulated uniformly by the operator while the roller is in motion.

Finish rollers shall be two-axle steel-tired tandem rollers weighing not less than eight tons.

39-1.09 General Requirements. Asphalt concrete shall not be placed on any roadbed until all utility construction beneath the roadbed has been completed, sewer and water lines have been tested and water lines chlorinated. The surface course of asphalt concrete shall not be placed until final utility connections have been made unless otherwise permitted by Engineer.

Asphalt concrete shall not be placed less than thirty (30) minutes before sunset, as established by weather bureau, except as otherwise authorized the Engineer.

Asphalt concrete or asphalt concrete base shall not be placed during rainy weather or on a wet surface. Asphalt concrete shall not be placed when the atmospheric temperature is below fifty (50) degrees Fahrenheit or conditions indicate it will drop below fifty (50) degrees Fahrenheit before the material can be satisfactorily compacted. Asphalt concrete base shall not be placed when the atmospheric temperature is below forty (40) degrees Fahrenheit or conditions indicate it will drop below forty (40) degrees Fahrenheit before the material can be satisfactorily compacted. Material that cannot be placed in compliance with these requirements shall be rejected.

The compacted thickness of asphalt concrete layers shall be per Section 39-1.11, "Transportation, Spreading and Compacting", unless otherwise authorized by the Engineer.

39-1.10 Compacting. The temperature of the asphalt concrete shall be per Section 39-1.11, "Transportation, Spreading and Compacting", unless otherwise authorized by the Engineer. Unless lower temperatures are specified by the Engineer, all mixtures shall be spread and the first coverage of initial or breakdown compaction shall be performed when the temperature of the mixture is not less than 200 degrees F at mid-depth. Additional rolling equipment shall be required or the rate of spread shall be reduced to permit compliance with this requirement.

A. Asphalt concrete surface course and leveling courses.

1. Equipment required

If production in any one hour exceeds the limits set forth below, the Contractor shall cease his paving operation until additional rolling equipment has arrived on the project.

a. 125 tons per hour or more.

The Contractor will be required to furnish a minimum of two approved double-drum vibratory rollers and one eight-ton tandem finish roller for each roller.

A pneumatic roller may be substituted for one of the vibratory rollers if approved by the Engineer.

b. 50-125 tons per hour.

The required minimum rolling equipment specified above may be reduced to one approved double-drum vibratory roller and one eight-ton tandem roller for each asphalt paver, with a separate operator for each roller when the compacted thickness is not less than 0.17'.

- c. 50 tons per hour or less, at any location.
The required minimum rolling equipment specified above may be reduced to one approved double-drum vibratory roller, weighing not less than 12 tons, for each paving machine.

2. Compaction requirements.

Compaction rolling shall consist of a minimum of four complete vibratory coverages with an approved double-drum vibratory roller.

Finish rolling shall consist of one or more coverages with an eight-ton tandem roller immediately following completion of compaction rolling.

- B. Asphalt Concrete Base.

1. Equipment required.

The Contractor shall be required to furnish one approved double-drum vibratory roller and a minimum of one pneumatic-tired roller, with a separate operator for each roller.

An approved double-drum vibratory roller may be substituted for the pneumatic-tired roller specified above.

2. Compaction requirements.

Compaction rolling shall consist of the following: a minimum of two complete vibratory coverages with an approved double-drum vibratory roller and two complete coverages with a pneumatic-tired roller. The order of rolling shall be specified by the Engineer.

Final rolling shall consist of one coverage with the vibrating units turned off.

Approval of vibratory rollers: The Engineer may approve initial use of a double-drum vibratory roller not previously approved on the basis of tests by other agencies or other information provided by the Contractor.

Approval for subsequent use of the roller shall be based on cores taken from test sections designated by the Engineer and compacted with different numbers of coverages.

Test sections shall be compacted under the following conditions:

1. Asphalt concrete temperature at mid-depth shall be between 270 and 280 degrees Fahrenheit at the beginning of rolling. Rolling shall not continue after the mix temperature has dropped to 200 degrees Fahrenheit. The compacted thickness shall be between 2 inches and 3.5 inches.
2. The Contractor or manufacturer's representative shall specify the operating

conditions of frequency and amplitude.

The basis for approval shall be the attainment of 97 percent relative compaction and satisfactory surface condition following final rolling. The number of coverages required shall be the minimum number required to obtain 97 percent relative compaction.

The mix will be sampled during paving of the test sections, and the test maximum density will be the average density of specimens compacted in accordance with California Test 304. The in-place density for each test section shall be the average of three core densities. Relative density will be the ratio of in-place density to test maximum density.

39-1.11 Pavement Reinforcing Fabric. Those areas to receive the reinforcing fabric will be marked in the field and shall consist of the following materials and shall be applied in accordance with those procedures outlined below:

The fabric and placement of fabric shall conform to the provisions of Section 88 of the Caltrans Standard Specifications and these Standard Road Specifications.

Prior to placing the fabric, the existing pavement to receive the fabric shall be cleaned of all materials such as, but not limited to, leaves, sand, dirt, gravel, water and vegetation.

Placement of the fabric shall be made only under the following conditions:

1. The ambient air temperature is above fifty (50) degrees Fahrenheit and rising.
2. The pavement is dry and the pavement temperature is above forty (40) degrees Fahrenheit and rising.

The surface area to receive the fabric shall be sprayed with steam-refined paving asphalt type AR-4000 at the rate of 0.22 - 0.28 gallons per square yard. The Contractor's attention is directed to Section 92-1.04, "Applying", of the Caltrans Standard Specifications. The exact rate of application shall be as approved by the Engineer. The asphalt shall be sprayed with a suitably metered truck and the truck must have been recently calibrated by test method California No. 399A. The temperature of the asphalt binder must be spread between 290 degrees F. and 365 degrees F.

The width of asphalt application will be the fabric width plus 4 inches. Paving asphalt shall be applied no farther in advance of the fabric than the distance the Contractor can maintain free of traffic. The paving operation shall closely follow fabric placement and no more fabric than can be covered up with the hot mix that working day shall be placed.

The fabric shall overlap two - six inches at all joints. No joints shall be lapped with more than two layers of fabric. Transverse joints shall be shingled in the direction of the paving to prevent edge pickup by the paver.

The fabric shall be placed on the asphaltic binder with a minimum of wrinkles and broomed or squeegeed to remove any bubbles prior to the binder cooling. The equipment for placing the fabric shall be mechanized and capable of handling full rolls of material and shall be capable of laying the fabric without forming excessive wrinkles and/or folds. As directed by the Engineer, if folds or wrinkles ½ inch in height or greater exist, the fabric shall be slit and allowed to lay flat. Brooming

will maximize fabric contact with the pavement surface. The equipment used to place the fabric is subject to approval by the Engineer.

At all utility covers which could be covered with fabric, the fabric shall be neatly cut around the cover to allow for raising the cover to finished grade.

Turning of the paving machine or other vehicles should be gradual and shall be kept to a minimum to avoid damage to the membrane. Should equipment tires stick to the fabric during pavement operations, small quantities of asphaltic concrete shall be broadcast ahead to prevent sticking.

SECTION 51. STORM DRAIN STRUCTURES

51-1.01 General. Storm drain structures shall be constructed in conformance with the County of Mendocino Standard Road Plans and as shown on the plans.

SECTION 63. CAST-IN-PLACE CONCRETE PIPE

63-1.01 Description. Cast-in-place concrete pipe shall conform to Section 63 of the State Standard Specifications (2006).

63-1.02 Materials. Consistency of the concrete shall be determined in accordance with ASTM C-143. Maximum slump shall be two inches.

63-1.03 Structures. Where shown on the plans, inlet and outlet structures shall be constructed or installed in connection with cast-in-place concrete pipe. Where such structures are constructed or installed, the ends of pipes shall be placed flush or cut off flush with the structure face, unless otherwise directed by the Engineer.

A starter section shall be used at the beginning of each run of cast-in-place concrete pipe, and a closing section shall be used where a run cannot be completed because of lack of clearance ahead in the trench. Starter sections shall be six feet in length and of the same inside diameter as the cast-in-place concrete pipe. Manhole bases may be formed by opening and troweling the cast-in-place concrete pipe on continuous runs.

Storm drain manholes shall be standard four or five foot diameter precast manholes as detailed in the Standard Road Plans. Storm drain manhole barrels and taper sections shall be precast concrete sections using Type II Portland Cement complying with ASTM C-150.

Catch basins shall be constructed as shown in the Standard Road Plans. Concrete for cast-in-place catch basins shall be Class B. Bar reinforcing steel shall conform to and be placed in accordance with the provisions of Section 52 of the State Standard Specifications.

Connections to existing storm drain structures shall be made with care to avoid unnecessary damage to any existing curb and gutter or sidewalk. Any damaged section of curb and gutter or sidewalk shall be removed and replaced in accordance with County Road Standard Plans and as approved by

the Engineer. Pipe connections to the existing structures shall be sealed with cement mortar.

63-1.04 Curing and Protection of Concrete and Backfill. The following shall apply in lieu of Section 63-1.06 and Section 63-1.07 of the State Standard Specifications.

Backfill shall be placed in accordance with *MENDOT STD. NO. A60*, "Trench Restoration" of the County of Mendocino Standard Road Plans, except that the pipe bedding specifications shall not apply.

Curing and protecting concrete shall comply with the following requirements:

When Type E trench backfill is designated, the cast-in-place concrete pipe shall be cured by placing backfill material to an approximate depth of one foot over the top of the pipe.

When either Type A, B, C or D backfill is designated the concrete shall be cured by placing trench backfill complying with the specifications contained in Standard 300 to an approximate depth of 0.5-foot following application of either a waterproof membrane or a pigmented curing compound as provided in Section 90-7, "Curing Concrete" of the State Standard Specifications.

Hand spraying of the curing compound will be permitted. During the period following the placement of the concrete, the ends of the pipeline shall be covered with suitable material to maintain a humid condition within the pipe for a minimum of seven days.

Initial backfill placement shall be made immediately after the concrete has hardened sufficiently to prevent injury to the pipe during backfill operations. When Type E backfill is designated, only soft, damp and loose material shall be used for the initial placement of backfill.

The concrete pipe shall be protected as provided in Section 90-8, "Protecting Concrete" of the State Standard Specifications.

After the pipeline has been completed, but not prior to seven days following the placement of the concrete, the Contractor shall backfill the pipe trench in accordance with the requirements of *MENDOT STD. NO. A60*.

In all cases, the Contractor shall be responsible for correcting any damage to cast-in-place concrete pipe caused by premature or excessive loading prior to the end of a seven day curing period.

SECTION 64. PLASTIC STORM DRAIN

64-1.01 Description. Plastic storm drain pipe (ADS N-12) shall conform to the provisions of Section 64, "Plastic Pipe" of the Caltrans Standard Specifications. Plastic pipe shall be Type S corrugated polyethylene pipe with a smooth inner lining and corrugated outer wall.

64-1.02 Placing. Excavation and backfill shall be as shown on *MENDOT STD NO. A60*, "Trench Restoration" of the County of Mendocino Standard Road Plans.

No pipe shall be laid which is damaged or which, in the opinion of the Engineer, is unsuitable for use.

SECTION 65. REINFORCED CONCRETE PIPE

65-1.01 Description. Reinforced concrete pipe shall be either Class III, Class IV, or Class V, as shown on the plans and shall conform to the provisions of ASTM C-76.

65-1.02 Earthwork. Excavation and backfill shall be as shown on *MENDOT STD. NO. A60*, "Trench Restoration" of the County of Mendocino Standard Road Plans.

65-1.03 Structures. Storm drain manholes shall be standard four or five foot diameter precast manholes as detailed in the Standard Road Plans. Storm drain manholes barrels and taper sections shall be precast concrete sections using Type II Portland Cement complying with ASTM C-150.

Catch basins shall be constructed as shown in the Standard Road Plans. Concrete for cast-in-place catch basins shall be Class B. Bar reinforcing steel shall conform to and be placed in accordance with the provisions of Section 52 of the Caltrans Standard Specifications.

Connections to existing storm drain structures shall be made with care to avoid unnecessary damage to any existing curb and gutter or sidewalk. Any damaged section to be removed and replaced in accordance with County Road Standards and as approved by the Engineer. Pipe connections to the existing structures shall be sealed with cement mortar.

65-1.04 Laying Culvert Pipe. No pipe shall be laid which is cracked, checked, spalled, or damaged and which in the opinion of the Engineer is unsuitable for use.

SECTION 66. CORRUGATED METAL PIPE

66-1.01 Description. Corrugated metal pipe shall conform to the provisions of Section 66-1.02E, "Corrugated Steel Pipe" of the Caltrans Standard Specifications. Corrugated metal pipe shall not be used in the road right-of-way, except for driveway culverts, cross culverts and creek outlets.

66-1.02 Placing. Excavation and backfill shall be as shown on *MENDOT STD. NO. A60*, "Trench Restoration" of the County of Mendocino Standard Road Plans.

No pipe shall be laid which is damaged or which, in the opinion of the Engineer is unsuitable for use.

SECTION 73. CONCRETE CURB, GUTTER AND SIDEWALK

73-1.01 Description. Concrete curb, gutter and sidewalks shall conform to Section 73 of the Caltrans Standard Specifications. The following shall apply in lieu of Section 73-1.01.

This work shall consist of constructing curbs, sidewalks, gutter, depressions, island paving, and driveways of the form and dimensions shown on the plans, and as specified in these Standard Road

Specifications and the Special Provisions. The concrete shall contain not less than six sacks of cement per cubic yard. Maximum slump of the concrete shall be four (4) inches, as determined in accordance with ASTM C-143.

Reinforcement shall conform to the provisions in Section 52, "Reinforcement" of the Caltrans Standard Specifications.

73-1.02 Subgrade Preparation. The subgrade shall be constructed true to grade and cross section, as shown in the plans or directed by the Engineer. It shall be watered and thoroughly compacted, and unsuitable material removed and replaced, to provide a stable grade with above optimum moisture content for a minimum depth of 0.5-foot.

Base material under curb and gutter and sidewalk shall comply with the provisions of Section 26, "Aggregate Bases" of these Standard Road Specifications and shall be a minimum of four (4) inches in compacted thickness.

The completed subgrade shall be tested for grade and cross section by means of a template supported on the side forms, and shall not project into the planned concrete cross section at any point. The subgrade and forms shall be wet immediately in advance of placing concrete.

73-1.03 Concrete Curb, Gutter, and Sidewalk Construction. Concrete curb, gutter, and sidewalk shall be constructed in conformance with *MENDOT STD. NO. A40*, "Curb, Gutter, and Sidewalk" and as shown on the plans.

SECTION 81. MONUMENTS

81-1.01 General. The following shall apply in lieu of Section 81 of the State Standard Specifications.

This work shall consist of furnishing and installing cast-in-place survey monuments at the locations shown on the plans and in accordance with *MENDOT STD. NO. A30*, "Survey Monument - Road" of the County of Mendocino Standard Road Plans.

The exact location of the monuments will be established by the civil engineer or surveyor in responsible charge of the work, and upon completion, the monuments will be checked and the center point stamped by said civil engineer or surveyor.

Standard County brass markers shall be furnished by the Contractor. They shall be placed in survey monuments before the concrete block has acquired its initial set and shall be firmly bedded in the concrete. The concrete block shall be so located that when the marker is installed, the reference point will fall within a one-inch circle in the center of the marker.

Tab C – Road Design Standards

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Tab C – Road Design Standards

C.1. General

C.1.A) *Requirement.* The standards apply to road improvements and other road-related improvements (e.g. roadside drainage systems) in subdivisions and other developments requiring county approvals, and which are required for property access subject to the expectation of public use by residential owners within a subdivision or business open to the general public, as well as improvements that are undertaken by the County Department of Transportation (DOT). They also apply to privately maintained roads and related improvements that are required for development projects subject to the expectation of public use where public health and safety is a factor. These standards do not apply to driveways or other access roads providing access within/on a particular property. Further, existing roads intended to serve a new or intensified use or development shall be modified to comply with the minimum standards and right-of-way lines set forth in this chapter or by resolution of the Board of Supervisors for said use.

C.1.B) *Other Applicable Standards.*

- 1) In cases where roads are designated State Highways, Caltrans Highway Design Standards shall apply in lieu of County of Mendocino Road Standards.
- 2) In cases where roads are within the boundaries of a specific plan, community plan, or area plan, the County of Mendocino Road Standards shall apply, except as modified by said plan.
- 3) Roads located within the California Department of Forestry (CDF) State Responsibility Area subject to the CDF Fire Safe Standards shall be subject to the approval of CDF.
- 4) The Planning and Building Services Department shall exercise its authority as may be granted by conditions of the approval or granting of a land use entitlement.
- 5) Discharge of drainage waters are subject to State Water Quality Control Board (SWQCB) standards, which include project, and regional discharge permits (such as NPDES) which must be adhered to. Furthermore, alterations to drainage courses both instream and upland are regulated by the California Department of Fish & Game (CDF&G).
- 6) Modifications to a stream by installation of culverts, etc. are regulated by CDF&G and in some instances the National Oceanic and Atmospheric Administration (NOAA Fisheries) through 1600 agreements and Army Corps of Engineers 404 permits respectively. CDF&G publishes “California Salmonid Stream Habitat Restoration Manual” and NOAA Fisheries publishes “Guidelines for Salmonid Passage at Stream Crossings”. These publications are available at these and other agencies and it is the applicants responsibility to obtain such current requirements from the respective agency.

C.1.C) *Purpose and Intent.* To ensure that roads, accessways and future road easements are provided to accommodate the vehicular and pedestrian traffic needs and related uses generated by development and use of the property, and the orderly development of the surrounding area. Roads must be designed so as not to cause or accelerate erosion that delivers sediment to water bodies while providing the intended access. Roads shall be designed for the following purposes:

- 1) Provide functional access to the properties that are intended to take access from the road.
- 2) Afford vehicular access to points of origin and destination.
- 3) Provide reasonably direct routes between points of origin and destination.
- 4) Provide for the orderly future development of the area.
- 5) Accommodate the amount of traffic projected to use the road.
- 6) Allow room for the passage and turning of the types of vehicles that will normally use the roads.
- 7) Provide room for the parking of vehicles where the intensity of abutting uses is likely to generate a need for such parking.
- 8) Provide facilities for walkways, bikeways, equestrian trails, buses, and other means of alternative transportation, when required.
- 9) Provide sufficient grade, cross slope, and/or facilities for the conveyance of storm water.
- 10) Storm water conveyance facilities within fish and aquatic life bearing jurisdictional streams shall, in addition to providing for storm flow, also meet any conditions set by appropriate agencies (California Department of Fish and Game, National Oceanic and Atmospheric Administration, etc.) for fish and aquatic life passage.
- 11) Accommodate the grade, turning, and passage needs of emergency and service vehicles.
- 12) Be free of structural defects.
- 13) Reasonably withstand wear.
- 14) Be easily and cost effectively maintained.
- 15) Integrate with and complement the natural terrain and vegetation, or be visually enhanced by the preservation and/or planting of appropriate trees and vegetation.
- 16) Not initiate or compound hydrologic or geologic problems.
- 17) Minimize surface area that cumulatively affects air quality, air temperature and storm water runoff.

C.1.D) *Urban Road Standards.* Urban road standards shall apply when any one of the following conditions are met:

- 1) Any of the property abutting the road has a General Plan land use classification with a base density of less than forty thousand square feet per parcel regardless whether public water or sewers are available or currently extended to the property.
- 2) Urban improvements, such as curb, gutter, or sidewalk, are in existence on the road frontage of property adjacent to or in the vicinity of the development.

- 3) The road is within an urban area on a map prepared by the State of California Department of Transportation or the County of Mendocino Department of Transportation.

Subject to the Approval Authority, urban road standards may apply when the road is within an urbanized or urbanizing area as evidenced by one or more of the following: the road is within a city sphere of influence and pre-zoned by the city at a base density of less than one acre; it is within the urban limit line within the Coastal zone.

C.1.E) *Rural Road Standards.* Rural Road Standards shall apply in all areas not designated for urban road standards. Rural Local Connector roads shall be used as the connector road when a new subdivision or business, open to the general public and requiring a county use permit, with urban roads is more than 2,500 feet from the connection to an existing public road.

C.1.F) *Non Continuous Local Road Standards.* Non Continuous Local Road Standards shall apply to both urban and rural settings depending on their existing use or planned use as set forth in County of Mendocino land use documents. Local Roads in Mendocino County will generally fit into the conditions described in the American Association of State Highway and Transportation Officials (AASHTO) “Very Low-Volume Local Roads – Under 400 vpd (vehicles per day) guidelines” with modifications as defined in these standards. Local Roads have some but not necessarily all of the following characteristics:

Such roads would likely never be upgraded to interconnect to other parts of the countywide transportation system as Connectors, but may potentially serve developable tracts of land capable of supporting the specified volume of vehicles.

The Local road designation does not preclude such roads from being interconnected to the countywide road system but does require that the proposed road is - by its location and/or length - not likely to become an alternative route for nonresident drivers as the AASHTO “Very Low-Volume Local Roads” guidelines are based on use by local drivers who learn the road.

Such roads would likely never be upgraded and used to interconnect parts of the countywide transportation system. These standards shall provide for non-connected local road systems serving low population density developments and larger residential lot division projects, which result in a very low volume traffic, up to 400 vehicles per day.

C.2. Definitions

C.2.A) *Functional Classification.* As defined and listed by the CALTRANS, Transportation System Network (TSN) can be viewed at:
<http://dot.ca.gov/hq/tsip/hpms/Page1.php>.

C.2.B) *Principal Arterial*. As defined and shown in County of Mendocino General Plan. U.S. 101 is the only Principal Arterial listed in the General Plan. Because Caltrans Highway Design Standards apply to State Highways, County Road Standards have not been developed for Principal Arterial roads. Roads in this category also have a functional classification of *Urban or Rural Principal or other Arterial* (01&11-Principal Arterial Interstate-PIA, 12-Principal Arterial – Other Fwys or Expwys-OFE, & 02&14-Other Principal Arterial-OPA) as defined by CALTRANS, Transportation System Network (TSN).

C.2.C) *Minor Arterial*. As defined and shown in the County of Mendocino General Plan. Roads in this category also have a functional classification of *Urban or Rural Minor Arterial* (06&16-MA- Minor Arterial) as defined by CALTRANS, Transportation System Network (TSN).

C.2.D) *Connector*. As defined and shown in the County of Mendocino General Plan. Roads in this category are the same as Minor Arterials that have the functional classification of *Minor Arterials* (06&16-MA- Minor Arterial) as defined by CALTRANS, Transportation System Network (TSN).

C.2.E) *Major Collector*. As defined and shown in the County of Mendocino General Plan. Roads in this category also have a functional classification of *Major Collector* (07-MJC- Major Collector) as defined by CALTRANS, Transportation System Network (TSN).

C.2.F) *Minor Collector*. As defined and shown in the County of Mendocino General Plan. Roads in this category also have a functional classification of *Minor Collector or (Urban) Collector* (08-MNC or 17-Collector-COL) as defined by CALTRANS, Transportation System Network (TSN).

C.2.G) *Local Connector*. As defined and shown in the County of Mendocino General Plan. Roads in this category ARE THE SAME AS *Local roads - Rural & Urban* which have a functional classification of (09&19-LOC-Local) as defined by CALTRANS, Transportation System Network (TSN).

C.2.H) *Local Road*. A road is defined as a local road when it is not classified by the County of Mendocino General Plan as any of the above classifications. Roads in this category also have a functional classification of *Local roads - Rural & Urban* which have a functional classification of (LOC) as defined by CALTRANS, Transportation System Network (TSN).

C.2. I) *Paved Width, Urban Roads*. Paved width for urban roads shall be defined as the distance between curb faces.

C.2. J) *Paved Width, Rural Roads*. Paved width for urban roads shall be defined as the distance between the outside edges of paved shoulders.

C.2. K) *Base Width, Rural Roads*. Base width for rural roads shall be defined as the distance between the outside edges of gravel shoulders.

C.2. L) *Road*. Road shall mean any public or private way that provides access to more than one lot.

C.2. M) *Lot or Parcel*. Lot or parcel shall mean a legally existing parcel or real property, which upon application is eligible for a Certificate of Compliance demonstrating its legality as an existing parcel.

C.2. N) *Right of Way*. Right of Way, as used in this chapter, shall be defined as one of the following:

- 1) Property offered to the County of Mendocino for public road purposes.
- 2) Access easements or private road easements.
- 3) Prescriptive rights held by the County of Mendocino for public road purposes.

C.2. O) *Approval Authority*. The public official or body empowered to act upon a permit or request for approval, or empowered to act upon an appeal of a decision on a permit or request for approval.

C.3. Standards

C.3.A) *General Standards and Responsibilities*. Many factors affect the design of roads. This chapter is intended to supplement such general standards by providing the minimum design parameters for roads in Mendocino County requiring county approvals, and which are required for property access subject to the expectation of public use by residential owners within a subdivision or business open to the general public. These standards do not apply to driveways or other access roads providing access within/on a particular property. The Engineer in Responsible Charge of the Work shall:

- 1) Be responsible for the use of initiative, skill and independent judgment in the design of road projects in the County of Mendocino. He/she shall exercise a reasonable standard of care in considering all of the applicable standards and how they apply to a specific design situation.
- 2) Refer to standards such as the Caltrans *Highway Design Manual*, the American Association of State Highway and Transportation Officials (AASHTO) *Policy on Geometric Design of Highways and Streets*, Title 24/ADA, Fire Safe Standards adopted by the California Department of Forestry, and any other applicable law,

- community plan, specific plan, area plan, regulation, mitigation measure, or condition of approval applicable to the project.
- 3) Is subject to the Professional Engineers Act: California Business and Professions Code Sec. 6700-6799. Section 6730: Necessity for registration (Civil Engineers) - In order to safeguard life, health, property and public welfare, any person, either in a public or private capacity, except as in this chapter specifically excepted, who practices, or offers to practice, civil engineering, electrical engineering or mechanical engineering, in any of its branches in this state, including any person employed by the State of California, or any city, county, or city and county, who practices engineering shall submit evidence that he is qualified to practice, and shall be registered accordingly as a civil engineer, electrical engineer or mechanical engineer by the board. Section 6731: Definition of civil engineering: Civil engineering embraces the following studies or activities in connection with fixed works for ... drainage, ... highways, ... grading, ...etc.

C.3.B) *Private Roads*. Subject to the Approval Authority, minor subdivisions may include private roads, if the subdivider comes to that agreement with the Approval Authority not to meet full public road standards and/or thus not to dedicate the right-of-way for public use. Provisions for the ongoing maintenance of private roads shall be made through Conditions, Covenants, and Restrictions (CC&Rs), an assessment district, a maintenance agreement, or other suitable mechanism subject to approval by the Approval Authority. Improvement levels for private roads shall be defined as follows:

Improvement Level	Base Width	Base Thickness	Surfacing	Surfacing Width
A	18'-22'	4"-8" or Design*	None	None
B	18'-22'	6"-12" or Design*	Double Chip Seal	18'
C	26'	4"-8" or Design*	None	None
D	26'	6"-12" or Design*	Double Chip Seal	20'

* Structural section thickness may be reduced based on soil "R" value and $TI = 4$, per C.3.S.

The required improvement levels for private minor subdivision roads shall be as follows:

- 1) Residential minor subdivision; access from a proposed road or existing road not previously required for a land use entitlement or otherwise approved by the Department of Transportation: **Improvement Level A.**
- 2) Residential minor subdivision; existing access road, or portion of existing access road, at Improvement Level A; roadway serves, or has the potential to serve more than four parcels; smallest net parcel size of minor subdivision five acres or more, but less than forty acres: **upgrade to Improvement Level B.**
- 3) Residential minor subdivision; existing access road, or portion of existing access road, at Improvement Level A; roadway serves, or has the potential to serve

more than four parcels; smallest net parcel size of minor subdivision less than five acres: **upgrade to Improvement Level C.**

- 4) Residential minor subdivision; existing access road, or portion of existing access road, at Improvement Level C; roadway serves or has the potential to serve more than four parcels; smallest net parcel size of minor subdivision less than five acres: **upgrade to Improvement Level D.**
- 5) Commercial or industrial minor subdivisions: **Improvement Level D.**
- 6) Where no further road upgrade is specified, required improvement level to remain at existing level.

All other aspects of road and drainage design shall be in accordance with the standards for public local roads as contained in these Road Standards, except as modified in this Section.

Base Material. Base material shall be Class 2 or 3 aggregate base or locally available crushed rock, and shall be compacted to provide a firm driving surface. Where road upgrade requires placement of additional thickness of base material, the existing surface shall be scarified prior to placement of additional base material.

Engineering Plans/Reports. The Approval Authority may require that private minor subdivision roads be constructed in accordance with improvement plans, prepared by a California Registered Civil Engineer, and approved by the Department of Transportation. For Improvement Levels B and D, when such improvement plans are not required by the Approval Authority, road improvements shall instead be constructed under the direct supervision and control of a California Registered Civil Engineer who, upon completion of the improvements, shall file a report with the Department of Transportation verifying the road improvements have been constructed in substantial conformance with the prescribed minimum standards and accepted industry practices.

Access Easement Width. The minimum easement width for private minor subdivision roads shall be sixty feet, except where the road does not have the potential to serve more than four parcels, in which case the minimum easement width shall be forty feet. However, in all cases, the easement must be of adequate width to contain the roadway, utilities, and appurtenant drainage facilities. Roadway slopes shall also be contained within the easement width, or separate slope easements must be provided.

C.3.C) *Width Standards, Public Urban Roads.* The following table sets forth the minimum widths for paved width and right-of-way for urban roads:

Minimum Urban Road Classification	Minimum Paved Width	Minimum Right-of-Way	Desirable Right-of-Way
Principal Arterial	74 feet	120 feet	120 feet
Minor Arterial	74 feet	80 feet	100 feet
Major Collector	74 feet	60 feet	100 feet
Connectors	50 feet	70 feet	80 feet
Minor Collector	40 feet	60 feet	70 feet
Local Connector	40 feet	60 feet	70 feet
Local Road, Commercial or Industrial	42 feet	50 feet	70 feet
Local Road, Residential			
Standard	36 feet	50 feet	50 feet
Reduced	32-18 feet	50 feet	50 feet

C.3.D) *Width Standards, Public Rural Roads.* The following table sets forth the minimum widths for paved width and right-of-way for rural roads:

Rural Road Classification	Minimum Paved Width	Minimum Base Width	Minimum Right-of-Way	Desirable Right-of-Way
Principal Arterial	74 feet	60 feet	120 feet	120 feet
Minor Arterial	50 feet	40 feet	80 feet	100 feet
Major Collector	36 feet	40 feet	60 feet	70 feet
Connectors	36 feet	40 feet	70 feet	70 feet
Minor Collector	36 feet	40 feet	60 feet	70 feet
Local Connector	36 feet	40 feet	60 feet	70 feet
Local Road				
Standard	28 feet*	32 feet	50 feet	60 feet
Reduced	24-20 feet*	28-24 feet	50 feet	60 feet

* Surfacing as required by conditions of approval or other standards such as California Division of Forestry “Fire Safe Standards” but NOT necessarily AC paving.

C.3.E) *Additional Paved Width, Rural Roads.* The Approval Authority, during the approval process, or the DOT Director, during review of improvement plans, may require additional paved width or base width for rural roads if necessary in the interest of public safety for the following features:

- 1) Intersections
- 2) Road curvature
- 3) Emergency vehicle turnouts
- 4) Transition to existing roadway improvements

C.3.F) *Minimum Shoulder Width, Walkways, and Bikeways, Rural Roads.* Shoulders on rural roads above the local road classification shall be a minimum width of eight feet. Of that width, a minimum of five feet shall be paved to provide a walkway and bikeway. The Approval Authority may require additional walkways and/or bike paths for rural roads if necessary in the interest of public safety or convenience. The material used for rural walkways shall provide a smooth, even surface meeting the accessibility requirements of the Americans with Disabilities Act (ADA) and California Title 24. Asphalt concrete shall be considered as the standard material for rural walkways. Aggregate base, decomposed granite, and soil-cement will be considered as alternate materials for rural walkways, based on the recommendation of the DOT Director and subject to the Approval Authority.

C.3.G) *Future Right-of-Way Lines.* The County of Mendocino may establish right-of-way lines in addition to the corridor preservation setbacks established by the Zoning Code, for the purpose of reserving areas for future road, walkway, bikeway, or landscape area improvements. Furthermore, there is increasing demands for right-of-way to provide utilities, lighting, drainage and drainage filtration before discharge pursuant to the standards and conditions established by the appropriate agency(ies).

- 1) Findings. A right-of-way line shall be designated by resolution of the County Board of Supervisors after a noticed public hearing, based on the findings that:
 - a) The reserved area between the existing right-of-way and the designated right-of-way line is necessary for one or more of following purposes: widening, extension, or creation of roads, space for future utilities, walkways, bikeways, emergency or access routes.
 - b) The future road improvement is consistent with the County of Mendocino General Plan.
- 2) Restrictions. After the County Board of Supervisors has established a future right-of-way line, no person shall install, construct, or maintain a structure or use within the designated right-of-way except by obtaining an exception to these road standards and the following. A structure or use that exists in the designated right-of-way is a legal non-conforming structure or use, commencing on the date that the County Board of Supervisors adopts the right-of-way line, and is subject to any regulations, limitations, abatement, and amortization provided for in the County Zoning Ordinance.

C.3.H) *Exceptions to Width Standards.* All exceptions to width standards shall be subject to the review of the DOT Director and consideration of the Approval Authority. See Tab

H for Exception Procedures. The following modifications shall be considered as consistent with the intent of the Road Standard under the stated conditions:

- 1) **Parking.** Parking lanes may be eliminated from the urban roads with a minimum paved width of greater than thirty-six feet under the following conditions:
 - a) Off-street parking is provided in an amount equal to or greater than the amount specified in the County of Mendocino Zoning Code.
 - b) The paved width is not reduced to less than thirty-six feet, except that one-way streets with no parking may have a minimum paved width of twenty feet.
- 2) **Minor Arterial and Major Collector Urban Roads.** The minimum paved width may be reduced by twenty-four feet in conditions where four travel lanes are not required by current or cumulative twenty-year traffic projections. The minimum paved width may be reduced to twelve feet –OR– fourteen feet, where center turn lanes or medians are not required.
- 3) **Minor Arterial Rural Roads.** The minimum paved width of minor arterial rural roads may be reduced by twelve - fourteen feet where center turn lanes or medians are not required.
- 4) **Urban Local Roads** may be designed per AASHTO “Very Low-Volume Local Roads – Under 400 vpd (vehicles per day) guidelines” under the following two sub categories: **Standard** having a development density of 3 to 6 dwelling units (DU) per acre, or **Reduced** (or environmentally sensitive areas where minimum disturbance by the road width is desirable) having low development density of 2 or fewer dwelling units (DU) per acre. The reduced road standards in the AASHTO “Very Low-Volume Local Roads” guidelines is based on local drivers who learn the road and assumes that parcels in most areas of the United States are usable land flat enough for structures, parking and storage of boats and RV’s.

The following describes some, but not all, of the conditions for which the **Reduced** width sub category of **Urban Local Roads** may be applied:

- 2 or fewer dwelling units (DU) per acre.
25’ paved width on streets with parking on one side of the street.
- 18’ paved width on streets with NO parking on the street. The project must demonstrate that parcels will have at least .5 acres of usable area to accommodate structures, vehicle parking and RV storage.
- Streets will not likely connect to commercial, industrial, Business areas, and thus, not need to accommodate related large vehicles.
- Streets are short (under 600 feet) and/or straight, and it is determined that a narrow street will in fact reduce traffic speeds creating safer condition.

- 5) *Rural Local Roads* may be designed per AASHTO “Very Low-Volume Local Roads – Under 400 vpd (vehicles per day) guidelines” under the following two sub categories: **Standard** - 15 to 60 mph, and, **Reduced** (or environmentally sensitive areas where minimum disturbance by the road width is desirable) 15 to 30 mph and **NO ROAD PARKING**. The reduced road standards in the AASHTO “Very Low-Volume Local Roads” guidelines is based on local drivers who learn the road and assumes that **Rural** lots in most areas of the United States are on larger parcels with room to park off the road and in many cases homes so far from the road that street parking is not feasible.

The following describes some, but not all, of the conditions for which the **Reduced** width sub category of *Rural Local Roads* may be applied:

- 24’ paved width on roads with the possibility for through traffic that might include Agricultural vehicles and **NO ROAD PARKING**.
- 22’ paved width on roads **without** the possibility for through traffic that might include Agricultural vehicles but could serve resource recovery/commercial/ industrial traffic and **NO ROAD PARKING**.
- 20’ paved width on roads without the likelihood for through traffic that might include Agricultural vehicles and **NO ROAD PARKING**.
- Project with **NO ROAD PARKING** must demonstrate that lots will have at least .5 acres of usable area to accommodate structures, vehicle parking and RV storage.

C.3.I) *Road Alignment*.

- 1) Centerline Continuity. The centerlines of all roads shall be the continuation of existing centerlines on adjacent and contiguous roads. In cases where such continuation is not physically possible, such centerlines may be continued by curves, and shall be consistent with reasonable design and development practices.
- 2) Centerline Radii. Minimum centerline horizontal curve radii shall be as follows:

Classification	Minimum Centerline Radius
Minor Arterial	500 feet
Connector	300 feet
Major Collector	300 feet
Minor Collector	200 feet
Local Connector	200 feet
Local Road, Commercial or Industrial Areas	200 feet
Local Road, Residential Areas	
Standard	125 feet
Reduced	60 feet with 4’ road widening

C.3.J) *Intersections.*

- 1) Angle. All roads shall intersect at right angles, or along radial lines when the intersection is within a curve, and shall have at least fifty feet of centerline tangent adjacent to the intersection.
- 2) Alignment. A new road being added to an existing road intersection shall be aligned with its centerline directly opposite the existing road or shall be separated by at least 200 feet.
- 3) Curb Returns. Curb return radii shall be as follows, as determined by the highest road classification in the intersection:

Classification	Minimum Curb Return Radius
Minor Arterial	45 feet
Connector	45 feet
Major Collector	45 feet
Minor Collector	35 feet
Local Connector	45 feet
Local Road, Commercial or Industrial Areas	45 feet
Local Road, Residential Areas	25 feet
Standard	25 feet
Reduced	25 feet

C.3.K) *Easements for Future Road Extensions.* Where a development adjoins undeveloped land, which is identified as developable in the General Plan, provision shall be made for adequate road access through the development to such undeveloped land, unless it is determined that equally adequate access is or will be provided by other achievable routes. At a minimum, easement width for future road extensions shall be consistent with right of way width within the development, future right-of-way lines adopted by the Board of Supervisors, or as required to serve future cumulative development pursuant to the County of Mendocino General Plan.

C.3.L) *Access from Existing Substandard Roads.* Where a development proposes to gain access from an existing road that does not meet the applicable standards for private or public roads, the development shall be responsible for improving the full length of the existing access road to the point where the existing road is adequate to meet the intent of these road standards, as reviewed by the DOT Director and determined by the Approval Authority. Where other properties would benefit from the required road improvements, the developer may establish an assessment district; however, all costs and administration needed for such an assessment district shall be the responsibility of the developer.

C.3.M) Road Profile Grades.

- 1) Local Road Maximum. Grades shall not exceed sixteen percent (16%) on all local roads. For minor subdivisions and other land use permits the County DOT Director, during review of improvement plans, could approve grades exceeding 16% if surfacing and additional features such as turn outs etc., consistent with acceptable practice (such as CDF Fire Safe Standards) were presented. *The process of allowing grades exceeding 16% shall be in accordance with Tab H – Exception Procedures.*
- 2) Other Roads. On all roads other than local roads, grades shall not exceed twelve percent, except that grades up to sixteen percent may be used for isolated road segments that do not exceed 500 feet in length.
- 3) Minimum. Minimum grade rate for all roads with curb and gutter shall be 0.5 percent. Roads with asphalt concrete dike shall have a minimum grade rate of 1.0 percent.
- 4) Intersections. The grade of the pavement surface across an intersection shall not be more than seven percent, except as approved by the County DOT Director during the review of improvement plans. The grade of each road entering an intersection shall not be more than seven percent within a distance of twenty-five feet, as measured from the alignment of the curb face or edge of pavement of the crossing road, except as approved by the County DOT Director during review of improvement plans.
- 5) Vertical Curves. Vertical parabolic curves shall be used to connect grade profiles where the algebraic difference in grade rates exceeds one percent. For urban roads, the minimum length of vertical curve shall as follows:

Urban Road Classification	Minimum Stopping Sight Distance	Minimum Length of Vertical Curve
Minor Arterial	350 feet	200 feet
Connector	350 feet	200 feet
Major Collector	350 feet	200 feet
Minor Collector	200 feet	100 feet
Local Connector	200 feet	100 feet
Local Road, Commercial or Industrial Areas	350 feet	200 feet
Local Road, Residential Areas	100 feet	100 feet

For Rural Local Roads, the minimum length of vertical curve shall be determined by the Engineer in Responsible Charge of the Work based on the design speed.

C.3.N) *Cross Slope and Superelevation.* Superelevation shall be required on curves for the design of all roads with a design speed at or above twenty-five miles per hour or when the road profile grade is 8% or more. Superelevation shall be required in accordance with design speeds shown below based on length of strait tangent regardless of the posted speed limit because drivers have been shown to increase their speed on straight segments of road, and the likelihood of “run-off” accidents is greater.

<u>Tangent Length</u>	<u>Design speed for</u>
<u>Superelevation</u> 400 to 600 feet	30 mph
600 to 900 feet	35 mph
900 to 1,400 feet or more	40 mph

Superelevation shall be required for all roads classified as major collectors or higher based on the required design speed. A minimum cross slope of two percent and a maximum cross slope of five percent shall be provided on all roads, except where superelevation is required.

C.3.O) *Horizontal Alignment, Vertical Profile and Superelevation for unpaved roads.* The designers of Private Roads (C.3.B) are directed to carefully consult the subject AASHTO guidelines in reference to unpaved roads.

Designers who apply these road standards should exercise care when combining the Low Impact to Hydrology (LITH) Design Guidelines option defined in tab Ca of this standard.

For example, AASHTO guidelines allow an unpaved road designed for 15mph, with a 50ft. min. radius horizontal curve and no super elevation, provided the traction coefficient is at least 0.7. Wet clay and snow conditions fall well below a 0.7 traction coefficient. The designer must account for wet clay if there is no super elevation. In a combination LITH design approach where reverse super elevation is possible the designer must give design consideration to larger radius horizontal curves or deviation from the LITH system.

C.3.P) *Cul-de-Sacs and Turnarounds.* Cul-de-sacs or turnarounds shall be provided for any non-through road according to the Standard Road Plans and the requirements of State and local fire service providers, as applicable.

C.3.Q) *Curb, Gutter, and Walkways.* Curb, gutter, and walkways shall be required on all urban roads, and shall be constructed according to the Standard Road Plans. Walkways may be either monolithic with the curb or separate from it - hydrologically disconnected walkways and curbs leaving a vegetated or otherwise porous median for storm water filtration has been shown to be an effective practice. Curb and gutter on urban roads shall be Portland cement

concrete. The material used for walkways shall provide a smooth, even surface meeting the accessibility requirements of the Americans with Disabilities Act (ADA) and California Title 24. Porous materials, as shown on MENDOT STD NO. A40, shall be encouraged for urban walkways. Appropriate porous materials, asphalt concrete, brick, interlocking pavers, and wood will be considered as alternate materials for urban walkways, based on the recommendation of the DOT Director and subject to the Approval Authority. Developers utilizing such alternate materials may be required to provide a supply of such alternate materials to DOT for use in future repairs.

C.3.R) *Driveway Approaches on Urban Roads*

- 1) Driveway approach width shall be defined as the overall width of the curb cut to provide driveway access, including the transitions on either side of the depressed curb area. Driveway approaches on urban roads shall comply with the following requirements:
 - a) Driveway approaches shall be a maximum of forty feet in width for non-residential uses. The width shall not exceed thirty-five percent of the lot frontage, except as otherwise approved by DOT Director during review of improvement plans. The minimum driveway approach width shall be twenty feet for each legal lot of record.
 - b) Driveway approach (see pg. xviii) widths, within residential areas, shall be a minimum of twelve feet in width for single driveways, a minimum of sixteen feet for double or triple driveways up to a maximum of twenty-four feet, except as otherwise approved. The driveway beyond the end of the approach can vary in width and layout at the discretion of the developer and Approving Authority. Driveway strips to accommodate the track of the wheels leaving a vegetated or otherwise porous median for storm water filtration has been shown to be an effective practice.
 - c) Only one driveway approach may be installed for any parking or loading facility, except that one or more additional curb cuts may be allowed if the County DOT Director, during review of improvement plans, determines that each such additional driveway approach is necessary for the efficient operation of the facility and will not significantly reduce road capacity and traffic safety. The minimum separation between driveway approaches on a single parcel shall be twenty feet, as measured from the top of the curb transitions.
 - d) Any driveway approach on a corner lot in a residential area shall be located at the farthest point possible from the curb return and outside of the controlled zone for corner sight distance. Driveway approaches in residential areas shall be located a minimum of ten feet from curb returns, except as otherwise approved by the County DOT Director, during review of improvement plans.
 - e) In commercial/industrial areas, there shall be a minimum separation of 200 feet between driveway approaches and any intersection with a road classified as minor collector or higher, except as otherwise approved by the Approval

Authority. Driveway approaches in commercial/industrial areas shall be located a minimum of twenty feet from a curb return or thirty feet from a crosswalk, whichever distance is greater.

- f) Except as otherwise approved by the County DOT Director during review of improvement plans, driveway approaches for any circular residential driveway must meet the following requirements:
 - i) The driveway approaches for such driveway shall be at least twenty feet apart, as measured from the top of the curb transitions.
 - ii) Properties with lot widths of fifty feet or less shall be limited to one driveway approach.

C.3.S) *Road Names*. All road names, both public and private, shall be subject to the approval of the Approval Authority. Road names shall not be duplications of existing roads within the various regions of the County, nor shall they be so similar to existing road names as to be confusing. Roads that are obvious extensions of existing roads shall continue with the same name, if possible.

C.3T) *Pavement Design*. Design of the structural section for all roads shall be in accordance with the Caltrans Highway Design Manual, as supplemented by the following specific criteria:

2) Traffic Index (TI)

- a) The minimum TI for county maintained roads shall be 4.5.
- b) For residential roads that serve or may serve 300 lots or less, the TI shall be as shown on MENDOT STD NO. A21.
- c) For other roads, the minimum TI shall be as follows:

Classification	Minimum TI
Minor Arterial, Urban or Rural	9.0
Connector, Urban or Rural	9.0
Major Collector, Urban or Rural	8.0
Local Road, Commercial or Industrial Areas	8.0
Minor Collector, Rural	7.0
Minor Collector, Urban	7.0
Local Connector, Rural or Urban	7.0

- d) The DOT Director may require a higher TI on roads where heavy truck traffic exists or is expected.

3) Resistance "R" Values

- a) A qualified professional shall determine the R Value of the various materials that lie immediately under the planned structural section based on sufficient soil samples within the proposed road right-of-way. The cost of sampling and testing shall be at the developer's expense.
- b) The basement soil shall be tested according to California Test 301 "Method for Determination of the Resistance "R" Value of Treated and Untreated Bases, Subbases, and Basement Soils by the Stabilometer" in use by the California Department of Transportation, Transportation Laboratory. Design of the structural section for a particular road will normally be based on the lowest R Value material encountered.
- c) If the Engineer in Responsible Charge of the Work elects to utilize an "R" Value of 5, then R Value tests will not be required.
- d) The developer shall submit to the County a Materials Report, prepared by a qualified professional, showing the location and elevation of sampling points and R Value data.
- e) At the developer's option, improvement plans may be noted with the TI and an assumed R Value, with a requirement to determine the actual R Value and resulting structural section after excavation for the road subgrade.

4) Gravel Equivalents (GE). Structural section shall be determined by the GE shown on MENDOT STD. NO. A22.

- a) The gravel equivalent factor for asphalt concrete surface courses shall be obtained from the following equation: $G_r = 2.5 (5.14/T.I.)^{0.5}$
- b) In no case shall the gravel equivalent factor exceed 2.5.

5) Rural Local Residential Road Surfacing. Where the road serves or may serve not more than 25 lots, in lieu of pavement design per the Caltrans Highway Manual, structural section of rural local roads shall be a minimum of nine inches of Class 2 Aggregate Base and a minimum of 2-1/2-inch asphalt concrete.

6) Local Road, Rural. Where surfacing is required by conditions of approval or other standards such as California Department of Forestry and Fire Protection (Cal Fire) "Fire Safe Standards", then the structural section shall be designed with a minimum TI of 4.5. Where the road serves or may serve not more than 10 lots, in lieu of pavement design per the Caltrans Highway Manual, structural section of Local Road - Rural shall be a minimum of nine inches of Class 2 Aggregate Base and a minimum of 2-1/2-inch asphalt concrete OR 14 inches Class 2 Aggregate Base with or without any required double chip seal surfacing.

C.3U) *Improvement Plans.* See Tab G for standards regarding the completeness of Improvement Plans. Improvement plans shall be required when any of the following conditions apply:

- 7) All encroachments in County roads accept those encroachments that can be built using standard plans. DOT Director reserves the right to determine when improvement plans are required.
- 8) When required by the Conditions of Approval for a development project.
- 9) County road improvement projects.

C.3V) *As-Built Plans.* Within sixty days after the completion of a development, the developer shall furnish to the County DOT an as-built reproducible set of improvement plans. Plans shall be permanent polyester based film, three mil thick, or other medium as approved by the County DOT.

C.3W) *Phased Subdivisions.* For phased subdivisions of more than four lots, the subdivider shall be responsible for all roads, utilities, and drainage needed to serve the subdivision, even if the facilities are outside of the limits of that phase. This responsibility includes obtaining offers of dedication for any easements and right-of-way outside of the limits of the phase.

C.3X) *Roadside Landscaping.* The Approval Authority may require roadside landscaping for subdivisions. Said landscaping shall be constructed per the “H” series of the Standard Plans. Maintenance and operational costs for the roadside landscaping within the subdivision, including any irrigation systems, shall be the responsibility of the property owners through Conditions, Covenants, and Restrictions (CC&Rs), an assessment district, a maintenance agreement, or other suitable mechanism subject to approval by the Approval Authority.

Tab Ca – Low Impact to Hydrology Guidelines Alternate Design Standards

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Tab Ca – Low Impact to Hydrology Guidelines Alternate Design Standards

Ca.1. General

Ca.1.A) *Requirement.* This Alternate Design Standard presents special conditions, which can be used in conjunction with the previous section – Tab C. All standards not addressed in this section are to be in conformance with Tab C. All applications of Tab Ca standards shall be subject to the review of the DOT Director as **Exclusions**. See Tab H.4 for **Exclusions** Procedures, noting that application of these alternate standards shall be based on the independent judgment of the Civil Engineer in responsible charge of the work or other responsible professional. The following shall be considered as consistent with the purpose and intent of the Alternate Road Standard under the stated conditions:

Ca.1.B) *Purpose and Intent.* Provide Low Impact to Hydrology (LITH) Design Guidelines that can be considered for adoption as County Road Design Standards where appropriate. In addition, LITH design guidelines can be cited for private roads that are not required to meet County road standards for year round access or subdivisions, but which must meet individual County grading permits, use permits, or other standards.

The 1998 University of California Cooperative Extension's (UCCE) "Effects of County Land Use Regulations and Management on Anadromous Salmonids and Their Habitats: Humboldt, Del Norte, Mendocino, Siskiyou and Trinity Counties," included the following in Recommendation #9a to the counties:

“...Fish-friendly alternatives to generic CalTrans and AASHTO road standards should be developed.” :

During the UCCE assessment process, it was determined that the road design standards for the counties were based on crowned, or inslope drainage into ditches. Inboard ditches, in some instances on long or steep gradient and/or in erodible soils can result in downcutting and enlargement of ditches, acceleration of cutbank erosion and/or plugging, and diversion across a road. An additional road design to accommodate outslope road segments, was recognized as desirable. The design, however, would have to meet safety, speed and topographic design considerations.

The U.S. Forest Service, the National Park Service, the USDA Natural Resources Conservation Service, California Department of Forestry and Fire Protection, and many forest and ranch landowners have all endorsed some form of the road design approach commonly referred to as “Low Impact to Hydrology” (LITH). The goal of the LITH design approach is to make roads less disruptive to natural watershed runoff processes. This is generally accomplished by “outsloping roads” in lieu of maintaining inboard ditches and installing “rolling dips” in lieu of ditch relief culverts. The LITH designs result in fewer culverts and ditches to build and maintain, and also allow runoff to pass over the road surface, simulating typical hillslope drainage processes. Traditional road construction with inboard ditches concentrates water into a ditch, keeping it off of the road surface. Because LITH designs remove ditch segments, they increase the amount of water flowing across the road surface. Where a road also serves as a drainage conduit, the road form and surface must be maintained so that wheel depressions, or ruts, do not readily form and re-divert the water down the road. Users of these LITH guidelines are cautioned that in the absence of roadside ditches the road's traveled surface serves a dual drainage purpose and must be maintained so that

wheel depressions do not readily form. Minimizing of wheel depressions can be accomplished in various ways: 1) Close the road during the wet season when soft ground is easily deformed by wheel loads, 2) Harden the road surface to resist wheel depressions by constructing engineered fills with application of base rock layer dictated by DOT to the subgrade “R value” per road design standards, 3) Perform frequent road grading to maintain a smooth drainable plane on the outsloped and dipped sections.

The Low Impact to Hydrology Design Guidelines provide Counties and road developers with additional road design standards for very low volume local roads that result in a reduction of road related sediment to streams while meeting safety and road management concerns. These LITH road design criteria meet the requirements of the American Association of State Highway and Transportation (AASHTO) guidelines¹.

The use of LITH Design Guidelines is applicable to “Very Low-Volume Local Roads,” as defined by AASHTO, as roads with an average daily traffic (ADT) under 400. Typically, it is not recommended that connector roads be designed to LITH Design Guidelines because when a deviation from “normal²” driving patterns occurs, it may require drivers to adjust, or “learn” to drive with the change in road slope. Roads designed to LITH guidelines will have to incorporate the following design limitations:

- Lower design speeds.
- Larger horizontal curve radius necessary to accommodate outsloping.
- Flatter profile grades.
- Limitations in the length of LITH designed segments to accommodate safety considerations such as steep terrain; likelihood of ice, snow or other factors.

Application of LITH standards to existing roads must also consider the following:

- Assessment of dispersing hillslope runoff rather than continued delivery to a point location via ditch or other delivery mechanism.
- Effects of subsurface water flow through base rock in locations with high ground water, seeping, or springs.
- Typically design speed on roads are set by the radius of the horizontal curves. Modifying existing roads even to AASHTO ‘Very Low-Volume Local Roads’ standards² may require setting stopping and passing site distance standards per prevailing speeds.

The most important Low Impact to Hydrology (LITH) design principle road designers should keep in mind is to not cut off ANY natural swales, or drainage courses. Convey ALL natural swales across the road using critical dips or culverts with energy dissipaters so that natural drainage waters are delivered to their natural courses at non-erosive velocities. Do not use an inboard ditch to convey water from one natural course then concentrate it at the next road drainage facility. Following this LITH principle alone will accomplish over 90% of the goal of minimizing the road’s disruptive effect to the watershed.

¹ “Guidelines for Geometric Design of Very Low-Volume Local Roads,” American Association of State Highway and Transportation Officials, 2001.

² “Normal” driving patterns typically consist of driving on crowned or insloped surfaces. While outsloped segments may occur on roads, they tend to be relatively short in length.

REF: “Road Design Guidelines for Low Impact to Hydrology” Five Counties Salmonid Conservation Program, Howard Dashiell, CA Registered Civil Engineer (principal author) and Mark Lancaster, CA Registered Professional Forester

Ca.2. Definitions

Ca.2.A) *Alternate Design Standard - Low Impact to Hydrology*: The standards allow new roads to be designed to LITH guidelines with limits related to public health and safety. These guidelines conform to the *AASHTO Guidelines for Geometric Design of Very Low-Volume Local*

Ca.2.B) *Cross Culvert*: A conduit that moves a natural watercourse under the road.

Ca.2.C) *Crowned Road*: Typical road cross section that slopes away from the center of the road to both shoulders.

Ca.2.D) *Critical Dip*. Combination of crest and sag vertical curves to form a road profile at a stream crossing which reverses grade to form a 0.4 to 0.5 foot deep swale which conducts drainage water flowing down the profile to the shoulder and armored fill slope so that storm water is conducted to natural watercourses at non-erosive velocities. Depending on the designer's cross sectional slope in the swale, critical dips that are surfaced can conduct between 5 to 15 cfs. This can, in some cases, substitute for a cross culvert. A critical dip can serve as an additional surface route for storm water. It could conduct flood flows in conjunction with an obstructed cross culvert with only nominal, wear on improvements while minimizing erosion caused from road fill wash out.

Ca.2.E) *Ditch Relief Culvert*: A small drainage conduit that conveys small amounts of water from inboard ditches to fill slopes at non-erosive velocities.

Ca.2.F) *Fail-Safe*: When related to natural stream crossings, a strategically placed sag curve or critical dip, that prevents a failed drainage facility from diverting drainage down the road profile, or overloading an inboard ditch and impacting another stream crossing can be employed as a fail-safe.

Ca.2.G) *Inboard curve*: Horizontal curve with its center away from the cut bank and the centrifugal force projected out towards the cut bank. Inboard curves with outsloped grading could be called super-elevated.

Ca.2.H) *Inboard Ditch*. The inboard ditch is between the toe of the cut bank and the road.

Ca.2.I) *In sloped Road*. The road cross section is sloped from the fill bank and shoulder in towards the toe of the cut bank or inboard ditch.

Ca.2.J) *Low Impact To Hydrology (LITH)*. Road design guidelines that use outsloping and critical and rolling dips and also typically eliminate inboard ditches. These designs can produce less sediment where used appropriately and allow the road to blend into the watershed by passing runoff in a more natural way, resulting in a low impact to hydrology. It has been accepted by many forest and ranch road managers because of its economic and environmental benefits and reduced maintenance needs.

Ca.2.K) *Outboard curves*. Horizontal curve with its center behind the cut bank and the centrifugal force projected out over the fill bank. Outboard curves with outsloped grading could be called reversed super elevated.

Ca.2.L) *Out sloped Road*. Road cross section is sloped from the toe of the cut bank toward the shoulder and fill slope. Outsloped roads may or may not have an inboard ditch.

Ca.2.M) *Rolling Dip*: Combination of small crest and sag vertical curves to form a road profile that reverses grade to form a 0.1 to 0.2 foot deep swale which conducts drainage water flowing down the profile to the shoulder and fill slope. Depending on the designer's cross sectional slope in the swale, surfaced rolling dips can conduct between 0.1 to 1.0 cfs. This can, in some cases, substitute for a ditch relief culvert.

Ca.2.N) *Suitability Check*: When related to these Low Impact to Hydrology Design Guidelines, is a determination of whether the traditional approach may work just as well or better for the watershed and environment depending on the site conditions.

Ca.3. Guidelines

Ca.3.A) *General Standards and Responsibilities*. Same as section C.3.A except, LITH guidelines can be used in conformance with American Association of State Highway and Transportation (AASHTO) "Guidelines for Geometric Design of Very Low-Volume Local Roads" (with an average daily traffic (ADT) under 400).

Ca.3.B) *Cross Slope and Super-Elevations*. The maximum outslope cross slope shall be 6%, provided the designer considers site specific conditions that may include the following:

- 1) Outboard curves may not be safely outsloped if subject to ice, snow, northern exposure leaving a prolonged wet condition, or there exists a dangerous, deep embankment. The designer may reduce the outsloped cross slope or introduce an insloped or super-elevated design in these conditions. For example, AASHTO guidelines allow a unpaved road designed for 15mph, with a 50ft. min. radius horizontal curve and no super elevation, provided the traction coefficient is at least 0.7. Wet clay and snow conditions fall well below a 0.7 traction coefficient. The designer must account for wet clay if there is no super elevation or where reverse super elevation is possible the designer must give design consideration to larger radius horizontal curves or deviation from the LITH system.
- 2) Rolling and critical dips should not be combined with outsloped outboard curves in any case.
- 3) Critical dips should be combined with outsloped inboard curves where the designer wants to provide an additional surface route that could conduct flood flows in conjunction with a cross culvert (that would result in no more than nuisance damage to improvements) and prevent erosion caused from road fill wash out.
- 4) If a site is subject to dry weather surface water or prolonged seeps, it may require an inboard ditch as such water flowing across an outsloped road could result in a wet spot safety issue.
- 5) If a site is subject to sub-surface water which could damage paved surfaces, then the designer shall install a water barrier at the edge of pavement or provide an opinion from a soils investigation that sub-surface water is not likely to cause an adverse effect.

Ca.3.C) *Application*. When choosing these Low Impact to Hydrology Design Guidelines, developers and designers should employ suitability checks in relation to advantages for maintenance and the environment. The following factors should be considered:

- 1) Roads constructed under the Low Impact to Hydrology Design Guidelines should be low volume, local roads.
- 2) Roads constructed under the Low Impact to Hydrology Design Guidelines with profile grades less than 12% have the best chance for success. Roads with profile grades in excess of 12% should consider traditional inboard ditches and frequent use of ditch relief culverts.
- 3) When using these Low Impact to Hydrology Design Guidelines where there is only a slight natural cross slope (under 4%), there may not be sufficient grade to drain water and the road could flood. If the profile slope is near 16%, then use of lined inboard ditches with frequent cross drains, suitably located to minimize erosion, should be evaluated. Always consider Traditional Design Guidelines and LITH Guidelines for safety, road gradient, design speed, driving needs, slope, aspect, existing drainage, and other factors. LITH guidelines should be used when they can be safely applied and the advantages to the environment and maintenance costs clearly outweigh the disadvantages.

Designers should always look at safety issues when applying the LITH Design Guidelines. Other methods of spreading water may need to be used if the LITH Design Guidelines cannot be safely employed.

Ca.3. D) *Road Profile Grades*.

- 1) Overall grades of LITH road designs shall not exceed the maximum specified in the individual county adopted road design and/or fire safe standards. In all cases, the maximum grade shall be sixteen percent, except that the climb out grade may be up to twenty percent provided that the surface is chip sealed or paved and the local fire protection agency will permit such a grade in a short distance.
- 2) Vertical Curves: Vertical parabolic curves for rolling and critical dips shall be designed for drivability as these small swales are not applicable to classic stopping site distance design controls. The K value, or length of vertical curve per percent change in profile grade, for dips are set forth in Tables 1-3 below.

Unpaved Roads - Design Speed 10 to 20 mph

Resource roads with design speeds of 10-20 mph that might be seasonally closed fall into this category. The roads in this portion of the road system are not vital and need not be improved for speed or driver comfort. Projects developed in this road category may serve summer homes or provide access to non-residential or mountainous, remote property.

All roads using techniques described in the *Handbook for Forest and Ranch Roads*³ or other LITH designs for rolling and/or critical dips that are required by use permit, ordinance, or map condition must meet the guidelines set forth in Table 1 below.

³ "Handbook for Forest and Ranch Roads" William E. Weaver and Danny K. Hagans, 1994.

TABLE 1
TYPICAL DIP DESIGNS FOR VARIOUS PROFILE GRADES – K=1 to 3*

Kmin. = 1 to 3 for roll crest curve & dip sag curve

Kmin. = 20 for climb out crest curve

Climb out grade shall not exceed 16%

All distances in Feet except for distances in (), which are in meters

Rolling Dip

Original Grade	Roll		Dip		Climb out		Climb out Grade	Total length	
	Length	Vertical Curve	Length	Vertical Curve	Length			Critical Dip	
< 4%	15.00	(4.57)	15.00	(4.57)	73.00	(22.25)	6.2 %	103.00	(31.39)
. 5%	15.00	(4.57)	15.00	(4.57)	73.00	(22.25)	7.3 %	103.00	(31.39)
. 6%	15.00	(4.57)	15.00	(4.57)	76.00	(23.16)	9.5 %	106.00	(32.31)
. 7%	15.00	(4.57)	15.00	(4.57)	78.00	(23.77)	10 %	108.00	(32.92)
. 8%	15.00	(4.57)	15.00	(4.57)	83.00	(25.30)	11.3 %	113.00	(34.44)
. 9%	15.00	(4.57)	15.00	(4.57)	88.00	(26.82)	11.9 %	118.00	(35.97)
. 10%	20.00	(6.10)	20.00	(6.10)	100.00	(30.48)	14 %	140.00	(42.67)
. 11%	20.00	(6.10)	30.00	(9.14)	110.00	(33.53)	16 %	160.00	(48.77)
. 12%	20.00	(6.10)	30.00	(9.14)	130.00	(39.62)	16 %	180.00	(54.86)
. 13%	20.00	(6.10)	30.00	(9.14)	170.00	(51.82)	16 %	220.00	(67.06)
. 14%	30.00	(9.14)	30.00	(9.14)	295.00	(89.92)	16 %	355.00	(108.20)
. 15%	Not calculated – Designer's Discretion								

Critical Dip

Original Grade	Roll		Dip		Climb out		Climb out Grade	Total length	
	Length	Vertical Curve	Length	Vertical Curve	Length			Critical Dip	
< 4%	30.00	(9.14)	30.00	(9.14)	90.00	(27.43)	7.3 %	150.00	(45.72)
. 5%	30.00	(9.14)	30.00	(9.14)	95.00	(28.96)	8.9 %	155.00	(47.24)
. 6%	30.00	(9.14)	30.00	(9.14)	110.00	(33.53)	9.6 %	170.00	(51.82)
. 7%	40.00	(12.19)	40.00	(12.19)	145.00	(44.20)	10.4 %	225.00	(68.58)
. 8%	40.00	(12.19)	40.00	(12.19)	160.00	(48.77)	12 %	240.00	(73.15)
. 9%	40.00	(12.19)	40.00	(12.19)	200.00	(60.96)	14.7 %	280.00	(85.34)
. 10%	40.00	(12.19)	50.00	(15.24)	220.00	(67.06)	16 %	310.00	(94.49)
. 11%	40.00	(12.19)	50.00	(15.24)	230.00	(70.10)	16 %	320.00	(97.54)
. 12%	40.00	(12.19)	50.00	(15.24)	290.00	(88.39)	16 %	380.00	(115.82)
. 13%	40.00	(12.19)	50.00	(15.24)	330.00	(100.58)	16 %	420.00	(128.02)
. 14%	50.00	(15.24)	60.00	(18.29)	475.00	(144.78)	16 %	585.00	(178.31)
. 15%	Not calculated – Designer's Discretion								

*Designing rolling dips and critical dips is an exercise in vertical profile calculations. Table 1 was developed using the smallest K values allowed and modeled after designs in AutoCAD Land Development Desktop (LDD)© at various profile slopes. Table 1 shows the typical design of both a rolling dip and critical dip at various road profile grades. Designers are required to prepare actual designs in accordance with AASHTO.

The analysis found that designs on road profile grades under 8% took up only about 100 feet of road for rolling dips and about 200 feet of road for critical dips to produce acceptably drivable vertical

alignment. Over 8% gradient, the length of road required for and subsequent spacing between dips went up to 200 feet and 400 feet respectively. After the road profile grade exceeded 14%, the climb out grades exceeded the 16% maximum grade rule required by the California Department of Forestry and Fire Protection (Cal Fire) for fire suppression vehicles; thus use of dips on grades exceeding 14% would not appear to be prudent. If the implementation of the LITH design approach is desired and vertical alignments cannot be safely achieved under AASHTO, then the roads can only be outsloped without the installation of dips.

If roads are slick when wet and icy (often due to location) and have some deep fill bank drop offs, the designer may elect to use 2% - 4% outsloping in general and may increase to 5% or 6% in safe areas without outboard horizontal curves. On roads with profile grades over 14% with 3% to 5% outsloping, the use of traditional inboard ditches and frequent ditch relief culverts should be considered as a safer, more effective design.

Private Subdivision - Unpaved Road Design Speed 20 to 30 mph

The roads in this portion of the road system serve the public but are not in the County Maintained system and fit the very low volume AASHTO: *Guidelines for Geometric Design of Very Low Volume Local Roads* criteria. In some instances, road owners or associations consider LITH designs in order to reduce maintenance costs and benefit the environment.

In some counties LITH designs may be cited as road standards for purposes other than for subdivisions, such as road standards for grading ordinances. Because LITH designs remove ditch segments, they increase the amount of water flowing across the road surface. Where a road also serves as a drainage conduit, the road form and surface must be maintained so that wheel depressions, or ruts, do not readily form and re-divert the water down the road.⁴

This criteria would not be appropriate for arterials which support a higher percentage of non-resident traffic. Table 2 shows the typical design of both a rolling dip and critical dip at various road profile grades for these design speeds.

⁴ In these instances, minimizing of wheel depressions can be accomplished in various ways as determined appropriate for the level of use of the road. For example, for seasonal roads: 1) Close the road during the wet season when soft ground is easily deformed by wheel loads, 2) Harden the road surface to resist wheel depressions by constructing engineered fills with application road base rock designed to soil "R value" test results per road design standards, 3) Perform frequent road grading to maintain a smooth drainable plane on the outsloped and dipped sections.

TABLE 2
TYPICAL DIP DESIGNS FOR VARIOUS PROFILE GRADES – K=14

Kmin. = 14 for roll crest curve & dip sag curve

Kmin. = 20 for climb out crest curve

Climb out grade shall not exceed 20%

All distances in Feet except for distances in (), which are in meters

Rolling Dip

Original Grade	Roll Length Vertical Curve		Dip Length Vertical Curve		Climb out Length		Climb out Grade	Total length Critical Dip	
< 4%	40.00	(12.19)	60.00	(18.29)	105.00	(32.00)	7.3 %	205.00	(62.48)
. 5%	40.00	(12.19)	70.00	(21.34)	145.00	(44.20)	9 %	255.00	(77.72)
. 6%	50.00	(15.24)	90.00	(27.43)	130.00	(39.62)	12 %	270.00	(82.30)
. 7%	60.00	(18.29)	110.00	(33.53)	135.00	(41.15)	13 %	305.00	(92.96)
. 8%	70.00	(21.34)	120.00	(36.58)	145.00	(44.20)	15.2 %	335.00	(102.11)
. 9%	70.00	(21.34)	120.00	(36.58)	185.00	(56.39)	15.8 %	375.00	(114.30)
. 10%	80.00	(24.38)	130.00	(39.62)	240.00	(73.15)	15.9 %	450.00	(137.16)
. 11%	90.00	(27.43)	130.00	(39.62)	305.00	(92.96)	16 %	525.00	(160.02)
. 12%	100.00	(30.48)	130.00	(39.62)	400.00	(121.92)	16 %	630.00	(192.02)
> 12%	Not calculated – Designer's Discretion								

Critical Dip

Original Grade	Roll Length Vertical Curve		Dip Length Vertical Curve		Climb out Length		Climb out Grade	Total length Critical Dip	
< 4%	40.00	(12.19)	70.00	(21.34)	145.00	(44.20)	8.8 %	255.00	(77.72)
. 5%	40.00	(12.19)	70.00	(21.34)	150.00	(45.72)	10.7 %	260.00	(79.25)
. 6%	60.00	(18.29)	100.00	(30.48)	150.00	(45.72)	12.2 %	310.00	(94.49)
. 7%	60.00	(18.29)	120.00	(36.58)	175.00	(53.34)	13.7 %	355.00	(108.20)
. 8%	80.00	(24.38)	140.00	(42.67)	160.00	(48.77)	15.7 %	380.00	(115.82)
. 9%	80.00	(24.38)	140.00	(42.67)	225.00	(68.58)	15.9 %	445.00	(135.64)
. 10%	90.00	(27.43)	140.00	(42.67)	295.00	(89.92)	16 %	525.00	(160.02)
. 11%	100.00	(30.48)	140.00	(42.67)	340.00	(103.63)	16 %	580.00	(176.78)
. 12%	100.00	(30.48)	140.00	(42.67)	430.00	(131.06)	16 %	670.00	(204.22)
> 12%	Not calculated – Designer's Discretion								

Because private engineers take responsible charge for subdivision design, they have the ability to propose designs which go beyond the above table. On roads with profile grades over 12%, the use of inboard ditches and ditch relief culverts more frequently placed should be considered as a safer, more effective design.

Paved Road Design Speed 30 to 35 mph

Because the LITH design approach involves surface sheet flow water on “paved” roads, the possibility of hydroplaning prohibits employing this approach on roads with posted speeds over 35 mph. The use of this system on paved surfaces does allow the dip climb out grade to reach 20% and still accommodate California Division of Forestry fire suppression vehicles.

TABLE 3
TYPICAL DIP DESIGNS FOR VARIOUS PROFILE GRADES – K=14

Kmin. = 14 for roll crest curve & dip sag curve

Kmin. = 20 for climb out crest curve

Climb out grade shell shall not exceed 20%

All distances in Feet except for distances in (), which are in meters

Rolling Dip

Original Grade	Roll Length Vertical Curve		Dip Length Vertical Curve		Climb out Length		Climb out Grade	Total length Critical Dip	
< 4%	70.00	(21.34)	130.00	(39.62)	25.00	(7.62)	8.4 %	225.00	(68.58)
. 5%	90.00	(27.43)	170.00	(51.82)	110.00	(33.53)	10.4 %	370.00	(112.78)
. 6%	100.00	(30.48)	190.00	(57.91)	135.00	(41.15)	12.5 %	425.00	(129.54)
. 7%	110.00	(33.53)	220.00	(67.06)	160.00	(48.77)	14 %	490.00	(149.35)
. 8%	130.00	(39.62)	240.00	(73.15)	180.00	(54.86)	16.2 %	550.00	(167.64)
. 9%	140.00	(42.67)	270.00	(82.30)	195.00	(59.44)	18 %	605.00	(184.40)
. 10%	160.00	(48.77)	290.00	(88.39)	225.00	(68.58)	20 %	675.00	(205.74)
. 11%	170.00	(51.82)	290.00	(88.39)	270.00	(82.30)	20 %	730.00	(222.50)
. 12%	190.00	(57.91)	310.00	(94.49)	360.00	(109.73)	20 %	860.00	(262.13)
> 12%	Not calculated – Designer’s Discretion								

Critical Dip

Original Grade	Roll Length Vertical Curve		Dip Length Vertical Curve		Climb out Length		Climb out Grade	Total length Critical Dip	
< 4%	80.00	(24.38)	160.00	(48.77)	100.00	(30.48)	9.3 %	340.00	(103.63)
. 5%	100.00	(30.48)	190.00	(57.91)	135.00	(41.15)	11.3 %	425.00	(129.54)
. 6%	110.00	(33.53)	210.00	(64.01)	150.00	(45.72)	13 %	470.00	(143.26)
. 7%	120.00	(36.58)	240.00	(73.15)	185.00	(56.39)	14.8 %	545.00	(166.12)
. 8%	140.00	(42.67)	270.00	(82.30)	190.00	(57.91)	17 %	600.00	(182.88)
. 9%	150.00	(45.72)	290.00	(88.39)	205.00	(62.48)	18.5 %	645.00	(196.60)
. 10%	170.00	(51.82)	310.00	(94.49)	230.00	(70.10)	20 %	710.00	(216.41)
. 11%	180.00	(54.86)	300.00	(91.44)	300.00	(91.44)	20 %	780.00	(237.74)
. 12%	200.00	(60.96)	310.00	(94.49)	375.00	(114.30)	20 %	885.00	(269.75)
> 12%	Not calculated – Designer’s Discretion								

The above table shows that dips placed on roads with profile grades over 12% need climb out grades over 20% if they are to be a practical length, and thus are not acceptable. Also, the distances between dips are too large to accomplish the LITH guidelines. We believe that the LITH design guidelines can be successfully applied to paved county roads but only on flatter profile slopes.

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Tab D – Drainage Design Standards

D.1. Definitions

D.1.A) *Average Recurrent Interval*. Average recurrent interval is defined as the average number of years, over a long period of time, in which a given flood event is equaled or exceeded in magnitude of discharge. Flood flows to be used for the design of waterways, channels and closed conduits shall have minimum average recurrence intervals as follows:

D.1.B) *Major Waterways* have a drainage area of four square miles or more and shall be designed for an average recurrence interval of 100 years. This frequency would only apply to subdivision design and not, for instance, agricultural channel design.

D.1.C) *Secondary Waterways* have a drainage area of between one and four square miles and shall be designed for an average recurrence interval of twenty-five years, except as hereinafter provided.

D.1.D) *Minor Waterways* have a drainage area of one square mile or less and shall be designed for an average recurrence interval of ten years, except as hereinafter provided.

D.1.E) *All Waterways* are, or can be, regulated by CDF&G through 1600 agreements and in some instances the National Oceanic and Atmospheric Administration (NOAA Fisheries) through Army Corps of Engineers 404 permits. Storm water conveyance facilities within fish and aquatic life bearing jurisdictional streams shall, in addition to providing for storm flow, also meet any conditions set by appropriate agencies (California Department of Fish and Game, National Oceanic and Atmospheric Administration, etc.) for fish and aquatic life passage. Often these conditions require average recurrence intervals of 100 years or more.

D.2. Hydrologic Design:

In addition to the traditional hydrological analysis procedures outlined below designers must now also consider environmental effects on the watershed caused by the drainage improvements used. Filtration of runoff before discharge to a water body may be required pursuant to the standards and conditions established by the appropriate agency(ies). Exact specifications for storm water treatment facilities are beyond the scope of these road standards. All the methods used to mitigate for water quality are too numerous to be repeated in this standard, and designers are directed to the many publications concerning water quality and erosion control. Road Design is the main subject of this standard and the effects of a new road in the watershed must be carefully considered. The most important Low Impact to Hydrology (LITH) design principle road designers should keep in mind is to not cut off ANY natural swales, or drainage courses. Convey ALL natural swales across the road using critical dips or culverts with energy dissipaters so that natural drainage waters are delivered to their natural courses at non-erosive velocities. Do not use an inboard ditch to convey water from one natural course then concentrate it at the

next road drainage facility. Following this LITH principle alone will accomplish over 90% of the goal of minimizing the road's disruptive effect to the watershed.

Those waterways on which stream gauging stations have been maintained for a sufficient time and for which factors are available to convert historic streamflow into streamflow based upon projected development of the watershed shall be designed to carry the flows statistically predictable. Where stream gauging stations are not available, watershed design discharge shall be determined by the use of the rational formula:

$$Q = C I A K$$

in which:

- Q = design discharge, cubic feet per second
- C = runoff coefficient based upon ultimate development
- I = intensity of rainfall, inches per hour
- A = tributary watershed area, acres
- K = K factor

D.2.A) *Time of Concentration*. Time of concentration shall be based on an initial time of seven minutes for commercial or similar areas, ten minutes for lots smaller than 1/2 acre, and fifteen minutes for lots of 1/2 acre and larger.

D.2.B) *Size of Watersheds*. Most watersheds are too large for application of the rational method in one step. In that case, the waterway shall be subdivided into reaches of reasonable length and the rational formula applied to each reach step by step, properly accumulating the parameters. The initial reach for rational method hydrology must be consistent with the initial area (not more than two acres) and concentration time chosen by the designer.

D.3. Mean Seasonal Precipitation and “K” Factor. Mean Seasonal Precipitation. On MENDOT STD D10, locate the approximate site in question. Pick the nearest isohyetal contour line and record the mean seasonal precipitation for the site. Calculate the factor of safety for high precipitation areas, “K”, by dividing the mean seasonal precipitation by fifty. The minimum value of K shall be 1.0.

D.4. Runoff Coefficient, “C”

D.4.A) *Ultimate Development*. Hydraulic design shall be predicated upon ultimate development of the tributary watershed. Valley areas and gently to moderately sloping uplands, which are undeveloped at the time of design, shall be assumed to be fully developed as single and two-family residential zones (lots under 1/4 acre in size) unless a publicly proposed development, precise zoning, or the General Plan indicates a different land density or intensity. Areas of steep terrain shall be assumed to be developed fully to an intensity of use compatible with the nature of the terrain; such use may be for residential development in lots larger than 1/2 acre, unless precise existing zoning or the General Plan indicates a different density or intensity. Steep terrain is defined as terrain whose general average slope is in excess of twenty percent. Undeveloped areas whose average ground slope is between fifteen and twenty percent may be assumed as being developed into residential subdivisions with lot size of 1/4 to 1/2 acre, unless

existing development, existing zoning or the General Plan indicates a different density or intensity.

D.4.B) *Public Vegetated Areas*. Public parks, public golf courses and other publicly owned areas may be considered as vegetated to the extent that they are actually vegetated, unless publicly proposed plans show that the body having jurisdiction intends to alter the existing use of the area so as to make the surface less pervious.

D.4.C) *Other Vegetated Areas*. For other vegetated areas, runoff coefficients shall be determined by using MENDOT STD D12.

D.4.D) *Impermeable Areas*. For impermeable areas use $C_p = 0.9$

D.4.E) *Composite Areas*. When vegetated areas are combined impermeable areas in excess of twenty percent of the total area, use C_v curve (see MENDOT STD No. 12) to reduce C_p by the formula:

$$C_t = C_v \frac{A_v}{A_t} + C_p \frac{A_p}{A_t}$$

Where:

A_p = Impermeable area (includes building roof area, paving, gravel, rock)

A_t = Total Area

A_v = Area planted or vegetated

C_p = Coefficient of runoff of impermeable area

C_t = Coefficient adjusted for vegetated area

C_v = Coefficient of runoff for vegetated areas

D.4.F) *Heavy Soils*. All curves on MENDOT STD No. D12 represent well drained sandy loam soils native to Mendocino County. Increase C obtained from any curve by a value of twenty-five percent for areas of predominantly poorly drained clay soil.

D.5. **Rainfall Intensity, "I"**. Rainfall intensity shall be obtained from the Intensity/Duration/Frequency curves published by the California Department of Water Resources. Curves for several locations in Mendocino County are provided on MENDOT STD. No. D11.

D.6. Submittal Requirements

D.6.A) *Drainage Report*. For the purpose of review by the County, hydrology, hydraulic (closed conduit backwater and open channel backwater), and gutter and inlet capacity calculations will be required. The calculations must be signed and stamped by a California Registered Civil Engineer.

D.6.B) *Assumptions*. Assumptions used in preparing calculations shall be listed.

D.6.C) *Design Aids and References*. The design aids and references which were used in support of the calculations for design of drainage improvements shall be listed. Supply this office with copies of reference data. If computers are used, the input and output shall be sufficient to allow easy checking.

D.6.D) *Hydrology Maps*. Hydrology map(s) shall be provided for both on and off-site drainage areas. The maps shall be of sufficient scale and detail to show drainage areas. Drainage areas shall be numbered and outlined to facilitate checking. The area of each drainage area shall be shown on the map.

D.6.E) *Calculations*. Hydrologic and hydraulic calculations showing beginning hydraulic gradeline, energy losses at junctions, bends, structures, friction slopes, etc. shall be submitted to the engineer

D.6.F) *Hydraulic and Energy Gradeline*. In addition to the calculations, the hydraulic gradeline and the energy gradeline shall be shown for all open or closed drainage improvements except gutters.

D.6.G) *Plans*. Plan views, profiles, cross-sections and details of all drainage facilities including a typical lot grading plan shall be submitted.

D.6.H) *Inlets and Gutters*. Entrance capacity and gutter depth calculations shall be submitted for all drainage inlets.

D.6.I) *Storm water Treatment Facilities*. Filtration of runoff before discharge to a water body may be required pursuant to the standards and conditions established by the appropriate agency(ies). Exact specifications for storm water treatment facilities are beyond the scope of these road standards.

D.7. Hydraulic Design

D.7.A) General:

- 1) For the solution of hydraulic design problems commonly encountered, reference shall be made to generally accepted references. For those uncommon design problems not susceptible to solution by reference, the design engineer shall provide such reference, treatise, model study report, or prototype test as is necessary to confirm the hydraulic design.
- 2) Secondary or minor waterways out-letting into major or secondary downstream waterways shall be designed to operate against a twenty-five or ten-year flow respectively in the major or secondary downstream waterway, provided that the ground elevation along the secondary or minor system shall be above the 100-year water surface elevation in the major or secondary downstream waterway.
- 3) If a secondary or minor waterway is placed in a closed conduit, sufficient additional surface routes for flood flows shall be made available to carry the added flow increment up to the 100-year design discharge with no more than nuisance damage to improvements or projected improvements and with no inundation of present or future

buildings. If such surface routes cannot be made available, the secondary or minor waterway shall be designed to carry the 100-year design discharge.

4) Design depth of flow in gutters shall not exceed 0.4 foot for the ten-year flow. Roadside ditches, when allowed, shall not be used where the design flow is greater than that which could be carried in a standard gutter flowing 0.4 foot deep on the same slope as the road profile slope. Where the discharge exceeds gutter capacity, a closed conduit system shall be provided. Roadside ditches shall be designed so that the water surface of the design discharge will be at or below the outside edge of the road shoulder such that there is no flood water in the normal travel-way of the road and below adjacent ground level.

5) Discharge of drainage waters are subject to State Water Quality Control Board (SWQCB) standards, which include project, and regional discharge permits (such as NPDES) which must be adhered to. Filtration of runoff before discharge to a water body may be required pursuant to the standards and conditions established by the appropriate agency(ies). Exact specifications for storm water treatment facilities are beyond the scope of these road standards. Installation of Drainage Structures are regulated by CDF&G and in some instances the National Oceanic and Atmospheric Administration (NOAA Fisheries) through 1600 agreements and Army Corps of Engineers 404 permits respectively. CDF&G publishes "California Salmonid Stream Habitat Restoration Manual" and NOAA Fisheries publishes "Guidelines for Salmonid Passage at Stream Crossings". These and other publications are available at these and other agencies and it is the applicants responsibility to obtain such current requirements. Storm water conveyance facilities within fish and aquatic life bearing jurisdictional streams shall, in addition to providing for storm flow, also meet any conditions set by appropriate agencies (California Department of Fish and Game, National Oceanic and Atomistic Administration, etc.) for fish and aquatic life passage. Often these conditions require average recurrence intervals of 100 years or more.

D.7.B) *Manning's "n" Values:* Manning's "n" values for design shall be as follows:

- | | | |
|----|--|----------|
| 1) | Plastic pipes, smooth wall | n = .010 |
| 2) | Concrete, steel troweled or smooth-form finish | n = .013 |
| 3) | Concrete pipe, precast or cast-in-place | n = .014 |
| 4) | Concrete, wood float or broomed finish, including pneumatically applied mortar | n = .017 |
| 5) | Asphaltic concrete | n = .017 |
| 6) | Corrugated metal pipe (non-spiral) | n = .024 |
| 7) | Sack concrete riprap | n = .030 |

- 8) Grouted rock riprap n = .030
- 9) Loose rock riprap n = .035
- 10) Grassed channels:
 - a) For VR greater than 20 n = .035
 - b) For VR less than 20 (From Reference)
- 11) Constructed Natural Waterways n = .050 Minimum

12) For natural channels, vegetated swales, or cases not covered above, “n” values shall be determined from generally accepted references. For materials other than stated above, “n” values may be accepted if developed and specified by the State of California and/or by an independent test performed by a reputable organization.

D.7.C) *Open Channels:* Constructed open channels and waterways shall be designed to carry the quantity of flow determined as set forth above with minimum freeboard between design water surface and the top of bank of 1.50 feet or 0.2 of the specific energy, whichever is greater. Where this minimum freeboard does not provide the necessary differential head to allow adequate gravity drainage for projected development of the tributary areas, the design water surface shall be lowered sufficiently to allow such areas to drain to the channel by gravity, except where levees are permitted. Levees are generally unacceptable; specific exception to allow levees may be granted in tidal areas or in other situations of extreme difficulty only after a specific determination by the County of Mendocino Director of Transportation that the proposed levee is the only feasible method of providing adequate flood protection.

1) For natural waterways and constructed natural waterways design flow may be allowed in an overflow area above the defined banks provided, however, the flow must be contained within a defined overflow area and freeboard provided as specified above between the water surface and adjacent ground elevation or finished grade elevation within lots or areas in which improvements are to be constructed. Less than 1.50 feet freeboard may be considered for small natural swales and creeks through open space such as parks and golf courses. In any event, freeboard shall be adequate to provide for reduced capacity due to weed growth and 100-year flow within the right-of-way.

2) For computing the required freeboard, superelevation of the water surface on curves shall be determined with references noted and the design water surface adjusted therefor. Open channels shall not be designed with a slope in the range of plus or minus twenty percent of critical slope unless added freeboard for instability waves is provided. Channels designed for supercritical flow shall have their sequent depth below top of bank.

3) Channels shall be designed taking into account the energy losses due to existing and projected road crossings or other obstructions to be placed within the channel. Energy losses for bridge piers, interior walls in multiple box culverts, or other

obstructions within the channel, shall be predicated upon the entrance obstruction width plus two feet of debris allowance on each side of each obstruction. For bridge piers or multiple box culverts, in lieu of the two feet of debris allowance on the full height of the pier or interior walls, such piers or walls may be extended upstream on a two to one downward slope to the channel invert. A debris width of two feet on each side of the downward sloping wall shall be considered for the upper quarter of the bridge or culvert depth except that the minimum height of debris shall be two feet. In lieu of debris allowance at small pipes and groups of small pipes, a flared entrance section or a debris trap must be used.

4) Bridges, culverts, and utility crossings which span major and secondary open channels and which are existing, planned or projected at the time of channel design shall have a minimum clearance from soffit to design water surface of 1.0 foot and shall cause no encroachment on the specified minimum freeboard in the upstream channel or waterway. Channels shall be designed with proper allowances for hydraulic losses for all such planned or projected future crossings to maintain clearance and freeboard as specified above. In the case that a crossing is proposed over an existing channel where the hydraulic effect of the crossing was not considered in design of the channel, minor encroachment on freeboard may be permitted provided that it can be shown that such encroachment would not adversely affect gravity drainage of adjacent tributary areas. Modification of the existing channel and special attention to the design of piers or other obstructions placed in the channel may be required to keep any encroachment on freeboard at an acceptable magnitude.

5) The water surface profile shall be computed and plotted through all crossing structures. Culverts of all types providing crossings of minor waterways shall be designed hydraulically in accordance with entrance criteria contained in Section D for minor waterway closed conduit systems.

6) Constructed natural waterways shall be excavated as required to pass the design discharge under interim and ultimate conditions of natural plant and tree growth and of other natural channel characteristics. Trees and other plants and grass shall be planted as a part of initial construction to promote and encourage ultimate natural appearance. Willows and other phreatophytes shall be planted along the low flow water line as a part of initial construction.

7) The ultimate constructed natural waterway shall satisfy the freeboard requirements in this Chapter. The constructed natural waterway may be utilized in any situation where right-of-way space can be provided and temporary unvegetated appearance can be tolerated prior to growth and generation of natural amenities.

8) The gradients for constructed open unlined channels in secondary waterways shall not exceed four percent and shall be a minimum of one percent. The gradient for lined or paved ditches shall not be less than 0.5 percent.

D.7.D) *Closed Conduit Systems*

1) Major and secondary waterways placed within a closed conduit system shall have a minimum one foot clearance between the design water surface and the soffit of the conduit. The design depth in circular conduits shall not exceed 0.80 of the diameter of the conduit for major and secondary waterways. Minor waterways placed in closed conduit systems may be designed for full conduit capacity and, if necessary, pressure flow. The hydraulic entrance condition at a closed conduit minor waterway shall be such that the ten-year discharge will have the specified freeboard in the upstream channel or waterway and that the 100-year discharge will be contained within the banks of the upstream waterway or within drainage easements. The entrance to the closed conduit minor waterway may be submerged provided that the above criteria are satisfied. At inlets and non-pressure-type manholes within a closed conduit system, a hydraulic gradeline shall be not less than one foot below the gutter or inlet surface elevation or such that free weir flow will be assured at inlets. At locations where conduits are stubbed out for future extension, the design hydraulic gradeline shall be low enough to allow proper drainage of the tributary area, with a minimum of 1.5 feet below general existing ground level. For conduits designed for supercritical flow, the energy gradeline shall not be above ground level at inlets and non-pressure- type manholes

2) Energy losses due to debris load caused by splitting flow at entrance to or within a closed conduit system shall be computed in the same manner as obstruction losses in open channels. In addition to normal friction losses, energy losses due to entrance and exit conditions, bends and transitions shall be computed and considered.

3) Velocities in conduits shall be a minimum of 2.5 feet per second to give a self-cleaning action to prevent siltation.

4) Manholes, catch basins, or drop inlets shall be provided at all junctions of pipes larger than 12 inches and at intervals not to exceed 400 feet along the conduit.

5) Closed conduits shall be aligned as close to straight as possible. Reverse curves shall not be allowed. Horizontal or vertical curves shall only be made using beveled reinforced concrete pipe, using the standard bevels provided by the pipe manufacturer.

D.7.E) Other Applicable Standards.

1) Discharge of drainage waters are subject to State Water Quality Control Board (SWQCB) standards, which include project, and regional discharge permits (such as NPDES) which must be adhered to. Furthermore, alterations to drainage courses both in stream and upland are regulated by the California Department of Fish & Game (CDF&G).

2) Installation of Drainage Structures are regulated by CDF&G and the National Oceanic and Atmospheric Administration (NOAA Fisheries), in some instances, through 1600

agreements and Army Corps of Engineers 404 permits respective. CDF&G publishes “California Salmonid Stream Habitat Restoration Manual” and NOAA Fisheries publishes “Guidelines for Salmonid Passage at Stream Crossings”.

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Tab E – Traffic Design Standards

E.1. Traffic Design, General. The purpose of the standards and specifications contained herein is to establish uniform policies and procedures for traffic engineering functions of the County of Mendocino Department of Transportation. It is NOT intended to establish a legal standard for these functions. These standards are considered minimum and do not preclude the use of a higher standard such as the Manual of Uniform Traffic Control Devices (MUTCD) or Caltrans Design manuals as approved by the DOT Director. Signing, striping, and marking shall GENERALLY conform to MENDOT STD. NO. A20F, A20G, T21, except that these standards are typical and subject to the most current version of the California Sign Chart and Improvement Plan Standard Notes.

E.2. Traffic Signs.

E.2.A) Traffic Signs, General. All regulatory and warning signs shall be constructed to the standard size and specifications of the State of California, Department of Transportation (Caltrans). Signs larger than the standard sign may be required. Unless otherwise specified by the DOT Director, the thickness of all signs shall be .080 inches, except for mast-arm mounted signs which shall be 0.125 inches.

E.2.B) Traffic Signs, Urban

- 1) Typical installation shall conform to the requirements of MENDOT STD. NO. RS10.
- 2) "No Parking" signs shall be installed at a thirty-degree angle toward the traveled way.
- 3) Signs in the median area shall be placed midway between curbs. These signs shall be mounted no closer than six inches to, and no farther than six feet from, the edge of the traveled way which the sign faces.

E.2.C) Traffic Signs, Rural

- 1) Typical installation shall conform to the requirements of MENDOT STD. NO. RS11.
- 2) "No Parking" signs shall be installed at a thirty-degree angle toward the traveled way.

E.2.D) Street Name Signs

- 1) Standard street name signs at non-signalized intersections shall conform to the requirements of MENDOT STD. NO. RS20. The mounting location at non-signalized intersections shall conform to MENDOT STD. NO. RS21.
- 2) Street name signs installed at signalized intersections shall conform to the following requirements

- a) Street name signs shall be mounted to the traffic signal standard by the use of a heavy duty arm bracket for electrolier mounting.
- b) Two sets of street name signs shall be mounted at each signalized intersection.

E.2.E) *Sign Poles.*

- 1) All poles shall be two-inch I.D. galvanized steel, schedule 40 ASTM 120 and shall be threaded at both ends.
- 2) In concrete or other paved surfaces, a two-inch diameter hole shall be rock drilled to a minimum depth of eighteen inches. Upon installation, the pole shall be set using sand and cement.
- 3) In rural areas, an eight-inch diameter hole shall be dug to a minimum depth of eighteen inches. Upon installation, the pole shall be set using concrete mix.
- 4) For the bolting of signs directly to the pole, 5/16-inch x three-inch long Grade 3 bolts with a flat washer shall be used.

E.3. Pavement Markings.

E.3.A) *Raised Pavement Markings.*

- 1) Raised pavement markers shall conform to the shape, types and dimensions of State of California Standard Plan A-20A.
- 2) Except as indicated below, raised pavement markers shall conform to the requirements and applicable provisions of Section 85 of the State of California Standard Specifications. The following specifications shall be added to the applicable provisions:

A hot melt bitumen adhesive may be used to cement the markers to the pavement, instead of the Rapid Set Type or Standard Set Type adhesive. The bitumen adhesive material, if used, shall conform to the following:

<u>Specification</u>	<u>ASTM Test Method</u>	<u>Requirement</u>
Flash point, CCC, F	D 92	550 Min.
Softening Point, F	D 36	200 Min.
Brookfield Viscosity, 400 F cP, Max	D 2196	7500
Penetration, 100g 5 sec. 77° F	D 5	10-20 dmm

<u>Specification</u>	<u>ASTM Test Method</u>	<u>Requirement</u>
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Filler Content, percent by weight (insoluble in 1,1,1 Trichlorethane)

D 23711

50-75

Filler material shall be calcium carbonate and shall conform to the following fineness:

Sieve Size	Percent Passing
No. 100	100
No. 200	95
No. 325	75

Bitumen adhesive shall be indirectly heated in an applicator with continuous agitation. The adhesive shall be applied at a temperature between 400 degrees F and 425 degrees F. Markers shall be placed immediately after application of the adhesive.

Placement of markers using bitumen adhesive shall conform to the requirements for placing markers in Section 85-1.06 of the State of California Standard Specifications, except as follows:

- a. Markers shall not be placed when the pavement or air temperature is fifty degrees F or less.
 - b. Blast cleaning of clean, new asphalt concrete surfaces will not be required.
- 3) For application of the raised pavement marker to the pavement surface, the adhesive shall surround the perimeter of the marker after the marker has been pressed into place.
 - 4) Lane widths as shown on design documents shall be measured from centerline to centerline of adjacent striping patterns, or, from face of curb to the centerline of the striping pattern.

E.3.B) *Durable Pavement Markings, Tape*

- 1) At the discretion of the DOT Director, pavement markings may be required to be composed of durable pavement tape of one of two types:
 - a) General purpose high durability retroreflective pliant polymer film, or
 - b) Durable retroreflective pavement marking film.

- 2) General purpose high durability retroreflective pliant polymer film shall be used for preformed longitudinal, transverse and word/symbol markings subject to high traffic volumes and severe wear conditions such as repeated shear action from crossover or encroachment on edge and channelization lines, and stop, start, or turn movements.
- 3) Durable retroreflective pavement marking film shall be used for preformed markings subjected to moderate, well-channelized, free rolling traffic volumes, less severe wear, and where there is a need for higher reflectivity.
- 4) The preformed markings shall consist of white or yellow films with pigments selected and blended to conform to standard highway colors through the expected life of the film. Glass beads shall be incorporated to provide immediate and continuing retroreflection.
- 5) The size, quality and refractive index of the glass beads shall be such that the performance requirements for the markings shall be met and the bead adhesion shall be such that beads are not easily removed.
- 6) Preformed words and symbols, and traffic striping, shall conform to the applicable shapes, sizes, and colors as outlined in the California Department of Transportation Traffic Manual or as approved by the DOT Director.
- 7) The preformed markings shall be capable of being adhered to asphalt concrete or portland cement by a pre-coated pressure sensitive adhesive. A primer may be used to precondition the pavement surface. The preformed marking film shall mold itself to pavement contours by the action of traffic. The pavement marking films also shall be capable of application on new, dense and open graded asphalt concrete wearing courses during the paving operation. After application, the markings shall be immediately ready for traffic. All solvents and/or primers (where necessary), equipment necessary for application, and recommendations for application that will assure the materials shall be suitable for use shall be identified to the County.
- 8) The general purpose high durability retroreflective pliant polymer film, when applied according to the recommendations of the manufacturer, shall provide a neat, durable marking that will not flow or distort due to temperature if the pavement surface remains stable. The film shall be weather resistant and, through normal traffic wear, shall show no fading, lifting or shrinkage which will significantly impair the intended usage of the marking throughout its useful life and shall show no significant tearing, roll back or other signs of poor adhesion.
- 9) The durable retroreflective pavement marking film, when applied according to the recommendations of the manufacturer, shall provide a neat, durable making that will not flow or distort due to temperature if the pavement surface remains stable. The film shall be weather resistant and, through normal traffic wear, shall show no fading, lifting or shrinkage which will significantly impair the intended usage of the marking throughout its useful life and shall show no significant tearing, roll back or other signs of poor adhesion.

E.3.C) *Thermoplastic Pavement Markings.*

- 1) All striping, pavement markings, including stoplines, and all channelizing lines shall be thermoplastic unless otherwise shown or noted on the plans approved by the DOT Director.
- 2) The furnishing and applying of thermoplastic pavement marking material shall conform to the requirements of the modified California State Specification No. 8-10-41G-21.
- 3) Glass beads applied to the surface of the molten thermoplastic material shall conform to the requirements of the modified California State Specification No. 8010-51J-22 (Type II).

E.3.D) *Pavement Marking Paint.*

- 1) Pavement Marking Paint, where shown or noted on the plans approved by the DOT Director, shall be commercial quality, solvent or water borne paint and be applied in two coats to achieve the designed coverage.
- 2) The kind of paint to be used (solvent borne or water borne) shall be determined by the County.
- 3) Glass beads used for reflectorized pavement markings will conform to the modified California State Specification No. 8010-51j-22 (Type II).
- 4) Thinner shall not be mixed with paint. Paint shall dry "track free" in not less than thirty (30) minutes and not more than ninety (90) minutes.
- 5) All painted pavement markings shall be clean and sharp as to dimensions. Ragged ends of segments, fogginess along the sides, or objectionable dribbling along the unpainted portions of the pavement marking shall not be permitted.
- 6) The painted pavement marking shall have an opaque, well-painted appearance with no black or discolorations showing through.
- 7) Words, symbols and traffic striping shall conform to the applicable shape, sizes and colors as outlined in the California Department of Transportation Traffic Manual.

E.3.E) *Eradication of Pavement Markings.* Pavement marking paint and thermoplastic shall be removed by sand blasting. Painting over as a means of pavement marking eradication shall not be permitted.

E.3.F) *Temporary Pavement Markings.*

- 1) When pavement markings have been obliterated or damaged in construction work zones, temporary pavement markings shall be installed in accordance with these standards.
- 2) At the end of each day's work, temporary pavement markings shall be in place on each paving lift that is open to normal traffic flow.
- 3) Temporary pavement marking materials shall be approved by the DOT Director prior to installation.
- 4) Temporary pavement marking configurations shall be in accordance with the California Department of Transportation Traffic Manual.

- 5) The temporary pavement markings shall be maintained and replaced by the Contractor until they are covered with the next paving course or are replaced with durable pavement markings applied on the final wearing course.
- 6) Temporary pavement markings shall be applied to clean, dry surfaces in accordance with the manufacturer's recommendations.

E.4. Construction Area Traffic Control.

E.4.A) *Construction Area Traffic Control, General.* All contractors, permittees or agencies doing work in public roads or public right-of-way shall:

- 1) Obtain all necessary permits.
- 2) Install and maintain required traffic control devices.
- 3) Provide flaggers when required.
- 4) Provide adequate safeguards for workers and the public.
- 5) Assure that survey crews and other employees working in or adjacent to a traveled roadway wear flagging garments as required for flaggers.
- 6) Patrol the construction site as required to insure that all devices are in place and operating at all times.
- 7) Remove traffic control devices when they are no longer needed.

E.4.B) *Traffic Control Plan.* A traffic control plan shall be required for all road closures, detours, land closures or other work within the public right-of-way. Relief from the requirement for a traffic control plan shall require the specific approval of the DOT Director as part of improvement plan or encroachment permit review. Traffic control plans shall include delineator placement, type and location of all signs (construction signs, detour signs, street nameplates, etc.), barricade placement, flaggers, temporary pavement markings, and any other pertinent information. The latest edition of the California Department of Transportation's Manual of Traffic Controls for Construction and Maintenance Work Zones and MENDOT STDs NO. T21 and T22 shall be used as references for determining appropriate signing.

E.5. Traffic Signals.

E.5.A) *Traffic Signals, General.*

- 1) Traffic signal and safety lighting equipment shall comply with the requirements of the applicable provisions of Section 86 of the California State Specifications and Standard Plans and these traffic standards.
- 2) Foundations for traffic signal standards shall be constructed per the applicable California State Standard Plans.

E.5.B) *Traffic Signal Poles, Pedestals and Posts*

- 1) Traffic signal poles, arms, and related appurtenances shall be installed per the requirements of the California State Standard Plans.
- 2) The chase outlet shown on the California State Standard Plans in the mast arm mounting plate, and in the mast arm mounting plate on the pole, shall be one-inch minimum diameter and shall be smoothed after galvanizing to facilitate installation of conductors without damaging the insulation.
- 3) Each pole shall be provided with one three-inch x five-inch minimum handhole for wiring, located within one foot of the base and on the same side of the pole as the mast arm.

E.5.C) *Traffic Signal Controllers.*

- 1) Traffic Signal Controllers shall be Model 170 units and shall conform to the requirements of the latest edition of the "Traffic Signal Control Equipment Specifications," issued by the California Department of Transportation, and to all addenda thereto.
- 2) The power supply shall be a ferro-resonant type of transformer. Linear and switching power supplies shall not be acceptable.
- 3) The controller shall have a minimum of eight kilobytes of battery-backed RAM memory on the CPU board.
- 4) The CPU power control circuitry shall be located on the CPU board.
- 5) The ACIA baud rates shall be jumper selectable from 300 to 19K baud.
- 6) The controller shall be capable of supporting one additional ACIA auxiliary communication adapter port at addresses 6002/6003.
- 7) The standby battery assembly shall be located on the swing-out front panel assembly, and shall be easily accessible for maintenance and testing purposes.

E.5.D) *Traffic Signal Controller Cabinets.*

- 1) The controller cabinet shall be Type 332 or Type 303 as specified by the DOT Director.
- 2) When the controller is not used, conduit shall run directly to the pull box.
- 3) The controller cabinet shall be mounted no closer than four feet from the service cabinet.

E.5.E) *Traffic Signal Service Cabinets.* Traffic signal service cabinets shall meet the following requirements:

- 1) Inside dimensions:

	<u>Minimum</u>	<u>Maximum</u>
Height	41 inches	45 inches
Width	11-3/4	19 inches
Depth	8-1/4	10-1/2

- 2) Twelve-gauge steel treated with primer and two coats of baked-on enamel or electrostatically applied thermosetting polyester
- 3) A provision for reading the service meter through a window without opening any doors shall be provided. The window shall be clear glass, Lexan or plastic.
- 4) The cabinet shall be watertight with a weatherproof door and window.
- 5) Foundation shall be twenty-four inches deep below ground level and constructed per section 86-2.03 of the California State Specifications.
- 6) Timer, flasher, and spare shall be used only when shown on the plans approved by the DOT Director.
- 7) The cabinet shall be no closer than six feet from the distribution pole.
- 8) The cabinet shall be mounted no closer than four feet from the traffic signal controller cabinet.

E.5.F) *Traffic Signal Electrical Service.* Electrical service to traffic signals shall be underground.

E.5.G) *Traffic Signal Wiring.*

- 1) Traffic Signal Wiring shall conform to the requirements of MENDOT STD. No. ES41.
- 2) No splices of traffic signal lights, pedestrian signal lights, or pedestrian push button wires shall be allowed in any pull box. Ground wires may be spliced in pull boxes.
- 3) Straight splices in signal neutral and multiple lighting conductors shall be insulated in conformance with Method "A" as shown on the California State Standard Plans.
- 4) Conductors shall be permanently identified as to function. Identification shall be placed on each conductor or each group of conductors comprising a signal phase in each pull box and near the end of conductor termination.
- 5) Identification shall be by tags or bands fastened to the conductors using nylon wire ties in such a manner that they will not move along the conductors. Conductors comprising a single signal phase may be grouped together and tagged with a single band provided the band is designed to tie conductors together as well as tag them.
- 6) Marking on tags shall be by mechanical methods (scribing, etc.) and shall be permanent.

E.5.H) *Loop Detectors.*

- 1) Traffic signal loop detector wiring shall conform to the requirements of MENDOT STD. NO. ES40.
- 2) Each lane shall have one shielded cable pair lead-in continuous to controller.
- 3) No splicing of shielded cable pair lead-in shall be permitted.
- 4) Loop wire shall be #12 AWG stranded conductor with USEXLP insulation.
- 5) Detector lead-in cable shall be Type B per California State Specifications.

- 6) Detector lead-in cables shall be permanently and clearly marked at cabinet and pull boxes.
- 7) All advance loop detectors shall have their own detector lead-in cable per approach lane.
- 8) Where required on the improvement plans approved by the DOT Director, sensor units shall be provided for inductive loop traffic counting equipment.
- 9) Type "A" detector handholes shall be installed per California State Standard Plan No. ES-5E.

E.5.I) *Loop Wire Sealant.* The encapsulant shall be one-part elastomeric compound requiring no mixing, measuring or application of heat prior to or during its installation. The elastomeric sealant shall be a polyurethane material of a composition that will, within its stated shelf life, cure only in the presence of moisture. Sealant shall be suitable for use in both asphalt concrete and Portland cement concrete. The cured sealant shall have the following performance characteristics:

Property Results	Measuring Standards and Conditions
Hardness (indentation) 65-85	ASTM D 2240 Rex. Type A, Model 1700 77°F. (25°C) 50% relative humidity
Tensile strength-- 500 psi minimum Elongation-- 400% minimum	ASTM D 412 Die C, pulled at 20 IPM ASTM D 412 Die C, pulled at 20 IPM
Flex at -40°F.-- No cracks	25 mil Free Film Bend (180°) over ½-inch mandrel
Weathering Resistance-- (slight chalking)	ASTM D 822 Weatherometer 350 hours. Cured 7 days at 77°F. (25°C.) 50% relative humidity
Salt Spray Resistance-- 500 psi, minimum tensile; 400%, minimum elongation	ASTM D 117 28 days at 100 degrees F. (38 degrees C.) 5% NaCl, Die C, pulled at 20 IPM
Dielectric Constant-- less than 25% change over a temperature range of -30°C. to 50°C.	ASTM D 150

E.5.J) *Traffic Signal Faces.* Traffic signal faces shall conform to Caltrans Standard Plan ES4A and Caltrans Standard Specification Section 86-4, Traffic Signal Faces and Fitting. Red ball and red arrow shall be light emitting diode (LED) per Caltrans Standard Specifications Section 86-4.02.

E.5.K) *Pedestrian Signal Faces.*

- 1) Messages shall be lunar white WALKING PERSON and Portland Orange UPRaised HAND (symbol type) per California State Standard Plan No. ES-4B and the Institute of Traffic Engineers, Standards: "Adjustable Face Pedestrian Signal Head Standard".
- 2) One of the following types of screen shall be provided. The type of screen shall be chosen at the discretion of the contractor:
 - a) An aluminum honeycomb screen with 3/16 inch cells, 3/8 inch thick, shall be installed tilting downward, at an angle of fifteen degrees ($\pm$ two degrees) out from the top, and shall completely cover the message plate. The honeycomb screen shall be covered with a clear, 1/8 inch minimum thickness, acrylic plastic cover supported in an aluminum frame, or with a 1/16 inch nominal thickness, formed, polycarbonate plastic cover. Screen and cover shall be held firmly in place by the use of stainless steel or aluminum clips or stainless steel metal screws.
 - b) A one-inch deep eggcrate type screen and mounting frame of 0.032 inch minimum thickness 5052-H32 aluminum alloy shall be provided to cover the message plates. The screening shall be mounted in a frame constructed of 0.04-inch minimum thickness aluminum alloy. The eggcrate type screen shall be installed parallel to the face of the message plate and shall be held in place by the use of stainless steel screws.
- 3) The screen and frame shall be fabricated from aluminum anodized flat black or may be finished with flat black enamel as specified in Section 91-4.01 of the California State Standard Specifications.
- 4) Alternate methods may be substituted by the contractor for the above screens providing the results are equal to or superior to those obtained with the above specified screens, as determined by the DOT Director.
- 5) The pedestrian signal face "Upraised Hand" shall use a light emitting diode (LED) per Caltrans Standard Specification Section 86-4.07.

E.5.L) *Traffic Signal Conductor.*

- 1) All conductors for traffic signal systems shall conform to the requirements of Section 86 of the California State Specifications, or as specified herein.
- 2) All conductors shall be copper and be rated for 600-volt operation.

- 3) All conductors shall conform to the latest requirements of the National Electric Code (NEC). Conductors shall be labeled by Underwriter's Laboratories, Inc.
- 4) Colored stripes on conductor insulation to identify each phase of vehicle signals, pedestrian signals, pedestrian push buttons, and detectors shall be required.
- 5) All conductors shall be pulled by hand and shall be installed in conduit runs in one operation. The use of winches or other power actuated equipment shall not be permitted.
- 6) The maximum number of wires in the conduit shall conform to the specifications of the National Electric Code.
- 7) #14 AWG conductors shall be used for the following:
 - a) Each traffic signal lamp on each phase.
 - b) Each pedestrian signal indication on each phase.
 - c) Each pedestrian push button and pedestrian push button common installed into the controller.
 - d) Three for spares under each street.
 - e) 12-pair (branches) or 50-pair (main run), or as determined by the County DOT Director, for interconnect.
- 8) #8 AWG conductors shall be used for the following:
 - a) Two for each safety light 120/240V.
 - b) One for equipment ground.
 - c) One neutral for traffic signal.
- 9) #4 AWG conductors shall be used from the utility service point to service cabinet for traffic signals and safety lights.

E.5.M) *Traffic Signal Conduit.*

- 1) Conduit size and cover shall conform to the following:
 - a) Service run conduit shall be two-inch minimum diameter.
 - b) Conduit under any street shall be three-inch minimum diameter and shall have a minimum of twenty-four inches of cover.
 - c) Conduit under sidewalk or planter area shall have a minimum of twenty-four inches of cover.
 - d) Conduit from the main pull box to the controller shall be two (2) three-inch diameter.
 - e) Any signal run and interconnect conduit shall be two-inch minimum diameter.
- 2) All conduits shall be Schedule 40 PVC, except pole risers which shall be Schedule 80 PVC.

- 3) All underground conduits and metal parts shall be continuously bonded and grounded.
- 4) All bends and/or offsets shall be made with factory manufactured sections.
- 5) All empty conduit shall have a one-quarter inch polypropylene rope provided inside along its entire length and extending twenty-four inches out of each end.
- 6) After conduits, wire and rope have been installed, the ends of all conduits terminating in pull boxes shall be sealed with an approved type of sealing compound. Conduits stubbed for future extension shall be capped.

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Tab F – Street Light Design Standards

F.1. Purpose. The purpose of the standards and specifications contained herein is to establish uniform standards for street lights on roads in the County of Mendocino. This document is not intended or designed as, nor does it establish, a legal standard for lighting.

F.2. Rural Roads. Lighting shall only be required on rural roads at intersections and only when warranted under the Caltrans Traffic Manual. Lighting on rural roads shall be designed to the illumination levels specified by the Caltrans Traffic Manual.

F.3. Urban Roads. Lighting on urban roads shall be required and shall be designed to the illumination levels specified by the Illuminating Engineers Society of North America (IESNA). Development projects that install street lighting shall be responsible for establishing a financing program for ongoing maintenance and operation of the lighting system. The County can grant an exception or require maintenance and financing at the discretion of the Approving Authority or DOT Director.

F.4. Standards.

F.4.A) *Wiring and Pull Boxes.* Wiring and pull boxes shall be constructed according to MENDOT STDs No. A20H and ES10.

F.4.B) *Light Standards.* Light standards on County roads with underground electrical system, shall be galvanized steel Type 15 per Caltrans Standard Plans. Light standards on County roads with overhead electrical system shall be galvanized steel cobra-head luminaires mounted on wood poles. Light standards on private roads may be of a custom design, subject to the approval of the DOT Director during review of the improvement plans.

F.4.C) *Location.* Light standards shall be located to minimize glare into residences. In general, light standards shall be located at the property line between residences.

F.4.D) *Solar Power.* Photoelectric cells should be considered for lighting standards, particularly in rural areas. Photoelectric cells shall be mounted at the top of the light standard.

F.4.E) *Night Sky.* Limit lighting beyond the surface area on the ground, which is intended for illumination.

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Tab G – Completeness of Plans and Maps

G.1. General

G.1.A) *Purpose.* The purpose of this section is to provide uniform standards for the completeness of improvement plans and subdivision maps submitted to the County of Mendocino Department of Transportation for checking. The applicant shall provide the content of this checklist with all such submittals. Incomplete submittals will not be accepted.

G.1.B) *General Submittal Requirements*

- 1) Project Name and Number: _____
- 2) Project Address or Route/Post Mile: _____
- 3) Applicant:
 - a) Name: _____
 - b) Address: _____
 - c) Phone: _____
 - d) Fax: _____
 - e) E-Mail (if available): _____
- 4) Engineer in Responsible Charge of Work:
 - a) Name: _____
 - b) Address: _____
 - c) Phone: _____
 - d) Fax: _____
 - e) E-Mail (if available): _____
- 5) Number of Lots (Subdivisions): _____
- 6) Property Owner (Subdivisions):
 - a) Name: _____
 - b) Address: _____
 - c) Phone: _____
 - d) Fax: _____
 - e) E-Mail (if available): _____
 - f) Assessor's Parcel Number(s): _____
- 7) ☐ All submitted plans and calculations shall be signed and stamped

- 8) Conditions of Approval (if applicable)
 - a) ☐ Resolution(s) Approving the Project
 - b) ☐ Letter (or table) documenting compliance with each applicable conditions of approval
- 9) Mitigation Measures (if applicable)
 - a) ☐ Environmental Document
 - b) ☐ Mitigation Monitoring Program
 - c) ☐ Letter (or table) documenting compliance with each mitigation measure

G.2. Plan Checking Completeness Checklist

G.2.A) *Number of Copies of Improvement Plans.* Submit two blue-line or black-line copies with first plan check. Submit two copies with subsequent plan checks, or as otherwise requested. Do not submit original plans until requested by the County after final plan check.

G.2.B) *Improvement Plan Graphic Standards*

- 1) ☐ Maximum of 24" by 36"
- 2) ☐ North arrow (to be upward facing if practical) and sheet number (all sheets)
- 3) ☐ Scale, written and graphic (all sheets)
- 4) ☐ Location Map
- 5) ☐ Benchmark (established County or USGS benchmark – assumed benchmark elevations shall not be allowed)
- 6) ☐ Symbols Legend
- 7) ☐ Abbreviation legend
- 8) ☐ Index to drawings including reference to sheet numbers
- 9) ☐ General Notes, per MENDOT STD A20
- 10) ☐ County DOT Director approval block (Cover sheet only)
- 11) ☐ Clarity: legibly and clearly drawn and of appropriate scale.
- 12) ☐ Consistent with Caltrans Drafting and Plans Manual of Instruction, except in US Units instead of SI (Metric)
- 13) Title block (all sheets):
 - a) ☐ Name of Engineering firm
 - b) ☐ R.C.E. seal, signature, and expiration date
 - c) ☐ Date prepared
 - d) ☐ Title of project
 - e) ☐ Revisions to date
- 14) ☐ Clear and distinct delineation of project boundaries (all sheets)
- 15) Typical sections of all roads
 - a) ☐ Width of road, right-of-way, easements, curb, gutter, sidewalk and landscape parcels (if required)
 - b) ☐ Crown and centerline location

- c) ☐ Pavement and base type and thickness, traffic index and estimated R-value
- d) ☐ Cut and fill slopes (maximum & minimum and limits)
- e) ☐ Saw cut line 1' minimum into existing paving
- f) ☐ Existing and proposed cross-slopes
- g) ☐ Cross-sections for future road

extensions G.2.C) *Road Plans*

1) Plan View, Roads

- a) ☐ Centerline data (submit closure calculations)
- b) ☐ Conform centerline stationing to existing stationing, if established
- c) ☐ Show stations at all B.C.'s, E.C.'s, grade breaks, and driveways
- d) ☐ Radius, length and delta of all curb returns, centerline curves and curves at face of curb
- e) ☐ Road names, widths (including right-of-way widths)
- f) ☐ Property lines and lot numbers, if applicable
- g) ☐ Gutter slopes and arrows showing flow direction between grade breaks and around curb returns, cul-de-sacs and knuckles
- h) ☐ Arrows showing slope and direction from roadway crown or center of intersection to pavement elevations at ¼ points of curb returns, cul-de-sacs and knuckles
- i) ☐ Arrows showing flow direction for pipes, channels, and surface drainage
- j) ☐ Top of curb elevations and stationing at curve points, grade breaks, and lot lines
- k) ☐ Sidewalk and curb ramps, where needed
- l) ☐ Monuments at all road intersections
- m) ☐ Existing improvements (shown in dashed lines or screened)
- n) ☐ Length and location of all transitions to existing roadway
- o) ☐ Barricades, where needed
- p) ☐ Striping, signing and lighting - show on separate sheet(s) if necessary for clarity

2) Profile View, Roads

- a) ☐ Existing ground surface at centerline of roads - 100' each direction beyond improvements for local roads, 200' for all other roads
- b) ☐ Stationing and elevation at all grade breaks
- c) ☐ Vertical curve data
- d) ☐ Centerline, existing edge of pavement (conform) and top of curb elevations
- e) ☐ Existing and proposed elevations shown at stations
- f) ☐ Scale - vertical - maximum of 1" = 5'; horizontal - maximum of 1" = 50'
- g) ☐ Road centerline slope

G.2.D) *Storm Drainage Plans*

1) Plan View, Storm Drain

- a) ☐ Arrows showing direction of flow

- b) ☐ Stationing of all drainage structures within roads
 - c) ☐ Size and type for all drainage structures
 - d) ☐ Inlet and manhole numbers corresponding to profile view
 - e) ☐ Pipe diameter and length (radius for curved section)
 - f) ☐ Pipe material (may be specified instead in general note or shown on profile) and class of pipe
 - g) ☐ Open channels or swales – flowline elevations, typical section, slope
 - h) ☐ Existing and proposed improvements clearly delineated as such
 - i) ☐ Existing and proposed utilities (sewer, water, street lighting, joint trench) – location, type, size, material
- 2) Profile View, Storm Drain
- a) ☐ Invert grades/flowlines and rim elevations at all drainage structures
 - b) ☐ Inlet/manhole numbers corresponding to plan view
 - c) ☐ Existing ground surface and finished grade
 - d) ☐ Pipe diameter, length and material
 - e) ☐ Pipe slopes
 - f) ☐ Utility crossings (show in profile and show estimated clearance from storm drain)
 - g) ☐ Profile all storm drain pipes, except driveway culverts

G.2.E) *Sewer Plans*

- 1) Plan View, Sewer
- a) ☐ Manhole/cleanout numbers corresponding to profile view
 - b) ☐ Stationing of structures within road right-of-way
 - c) ☐ Arrows showing direction of flow
 - d) ☐ Lateral and cleanout locations
- 2) Profile View, Sewer
- a) ☐ Existing and finished grade over the line, including rim elevations
 - b) ☐ Invert elevations (in and out) and slopes
 - c) ☐ Manhole and cleanout numbers corresponding to plan review

G.2.F) *Water Plans*

- 1) ☐ Depth of cover shown
- 2) ☐ Valve size and locations, valve boxes
- 3) ☐ Fire hydrants and service lateral information
- 4) ☐ Profile detail at conflicts with storm drain or sewer

G.2.G) *Street Lighting*

- 1) ☐ Light locations, stationing and standard
- 2) ☐ Pull box location and standard when not located adjacent to light pole
- 3) ☐ Conduit location; size and type
- 4) ☐ Service point location
- 5) ☐ Operations and maintenance financing plan
- 6) ☐ Calculations to verify conformance with F.4.C

G.2.H) *Grading Plans Subject to DOT Review*

- 1) ☐ Existing and finished contours
- 2) ☐ Grade elevations at all grade breaks
- 3) ☐ Existing and proposed (if known or required) structures, including houses, wells, and septic systems
- 4) ☐ Arrows showing direction of surface flow
- 5) ☐ Existing trees noted as to whether to be saved or removed (base elevations for trees to be saved) and tree protection plan
- 6) ☐ Typical cross-section and conform grades at all property lines
- 7) ☐ Erosion and sediment control measures – shown on separate plan if needed for clarity
- 8) ☐ Creek cross-sections
- 9) ☐ Property lines and lot drainage patterns
- 10) ☐ Provisions for accepting off-site drainage
- 11) ☐ Top of curb elevations
- 12) ☐ Slope rounding details for top and toe of embankments
- 13) ☐ Details for structures in right-of-way (retaining walls, sound walls)
- 14) ☐ Specify soils engineer's control of grading in compliance with Chapter 70 U.B.C. and soil's investigation (note on grading plan)
- 15) ☐ Elevation of building pads, including property corners

G.2.I. *Supporting Data for Plan Checking*

- 1) ☐ Copy of the Soils Report
- 2) ☐ Copy of the Engineer's Estimate
- 3) ☐ Copy of the calculations for structures in right of way
- 4) ☐ Copy of calculations for roadway structural section
- 5) ☐ Copy of drainage report
- 6) ☐ Copy of centerline calculations for all roads
- 7) ☐ Copy of any necessary off-site letters of permission
- 8) ☐ Copy of on-site easements/rights-of-way deeds and plats (if map is not included)
- 9) ☐ Copy of all required off-site easements/rights-of-way deeds and plats
- 10) ☐ Copy of Arborist's Report (if applicable)
- 11) ☐ Copy of correspondence with utilities and regulatory agencies
- 12) ☐ Copy of any other reports required to implement project conditions of approval.
- 13) ☐ It is the applicant's responsibility to identify and obtain any required Federal, State, or other permits. If other such permits are available provide copies of that information

G.3. Final Map/Parcel Map Completeness Checklist

G.3.A) *Number of Copies of Final Map/Parcel Map.* Submit two blue-line or black-line copies with first map check. Do not submit original maps until requested by the County after final map check.

G.3.B) *Graphic Standards for Final Maps/Parcel Maps*

- 1) ☐ Sheet size 18" x 26" (outside dimensions)
- 2) ☐ 1" blank margin all around the edge of the sheet

- 3) ☐ No use of ditto marks
- 4) ☐ Key map, if more than two map sheets are required
- 5) ☐ Location map on first map sheet
- 6) ☐ North arrow (to be upward facing, if practical)
- 7) ☐ Scale (written and graphic)
- 8) ☐ Symbols legend
- 9) ☐ Basis of bearings with tie shown to the subdivision
- 10) ☐ The exterior boundary of the subdivision designated by a distinctive border
- 11) ☐ Reference to adjoining tracts or lots (record data)
- 12) ☐ Reference to adjoining map sheets (if more than one map sheet is required)
- 13) ☐ Reference to adjoining railroads and highways
- 14) Existing easements (on-site and off-site):
 - a) ☐ Locations and dimensions
 - b) ☐ Noted with deed reference
 - c) ☐ Purpose and nature (public or private)
- 15) Proposed easements:
 - a) ☐ Locations and dimensions
 - b) ☐ Noted with deed reference
 - c) ☐ Purpose and nature (public or private)
- 16) ☐ Each lot shown entirely on one sheet
- 17) ☐ All dimensions in feet and hundredths
- 18) ☐ Pertinent record data shown in parenthesis or per legend designation (next to measure data)
- 19) ☐ Existing monuments shown along with relevant information (found, set, retagged, or removed)
- 20) ☐ Monuments to be set shown and labeled with relevant information (size, location, type and tag)

G.3.C) *Final Map/Parcel Map Roads*

- 1) ☐ Approved names
- 2) ☐ Dimensions from centerline to edge of right-of-way
- 3) ☐ Centerline monuments
- 4) ☐ Distance between centerline monuments
- 5) ☐ Centerline bearings
- 6) ☐ Centerline curve data (delta, radius, and length)
- 7) ☐ Right-of-way curve data
- 8) ☐ Private roads designated as such
- 9) ☐ Vehicular access restriction notation (if applicable)

G.3.D) *Final Map Lots/Parcel Map Lots*

- 1) ☐ Lots numbered (beginning with number 1 and continuing consecutively without duplication or omission)
- 2) ☐ Lot line dimensions

- 3) ☐ Lot line bearings
- 4) ☐ Lot line curve data (delta, radius, and length)
- 5) ☐ Survey tie to boundary (for planned unit developments or condominium "footprints")
- 6) "Designated remainder", if applicable - Government Code Sections 66424.6 and 66434(e) shall be treated as follows:
 - a) ☐ If greater than or equal to 5 acres in size, shown by deed reference
 - b) ☐ If less than 5 acres in size, shown as part of the survey

G.3.E) *Additional Agency Final Map/Parcel Map Sheet(s)*

- 1) ☐ Net acreage to the nearest square foot (0.01 acre for lots over 1 acre in size)
- 2) ☐ Soils report notation
- 3) ☐ Area(s) subject to inundation identified as such
- 4) ☐ Building setback lines
- 5) ☐ Building envelope with survey tie to lot line or boundary (if applicable)
- 6) ☐ Seismic setback lines (if applicable)
- 7) ☐ Creek setback lines (if applicable)

G.3.F) *Supporting Data for Final Maps/Parcel Maps*

- 1) ☐ One (1) Copy of Tentative Map as approved, with conditions of approval and mitigation measures (see above)
- 2) ☐ One (1) copy of Preliminary Title Report (issued within the most recent three months)
- 3) One (1) copy survey closure calculations for the following:
 - a) ☐ Blocks
 - b) ☐ Lots
 - c) ☐ Road centerlines
 - d) ☐ Survey ties
 - e) ☐ Proposed easements (when not parallel to property lines)
- 4) ☐ One (1) copy of records referenced and used to prepare the survey (Examples: record of survey, filed maps, recorded deeds, and easements)
- 5) ☐ Two (2) copies of the legal descriptions and plats for all dedications performed by separate instrument(on-site and off-site)
- 6) ☐ Two (2) copies of project Conditions, Covenants, and Restrictions (CC&Rs)
- 7) Additional submittals involving condominium and townhouse projects:
 - a) ☐ Two (2) copies of condominium and townhouse plans
 - b) ☐ One (1) copy of architectural drawings
 - c) ☐ One (1) copy of layout calculations establishing the location of the building footprint(s)

G.4. Final Map Statements

G.4.A) Final Map Title Block

Tract No. _____ *t*

FINAL MAP

OF THE

NAME OF SUBDIVISION

BEING A PORTION OF _____

COUNTY OF MENDOCINO,
SCALE: 1" = ____

CALIFORNIA
MONTH, YEAR
SHEET OF ____

MAPS

DRAWER _____

PAGE _____

G.4.B) Final Map Owner's Statement

OWNER'S STATEMENT

THE UNDERSIGNED, BEING ALL PARTIES HAVING ANY RECORD TITLE INTEREST IN THE LAND WITHIN THIS DIVISION, HEREBY CONSENT TO THE PREPARATION AND RECORDATION OF THIS MAP AND OFFER FOR DEDICATION AND DO HEREBY DEDICATE FOR PUBLIC USES THE FOLLOWING:

*ALL PARCELS, RIGHTS OF WAY OR EASEMENTS OFFERED FOR DEDICATION-
LISTED A, B, C...*

OWNER'S SIGNATURE(s) _____

NAME

DATE

G.4.C) Final Map Trustee's Statement

TRUSTEE'S STATEMENT

I, **TRUSTEE NAME**, TRUSTEE UNDER DEEDS OF TRUST AGAINST THE LAND SHOWN HEREON, RECORDED **RECORDED DATE** IN BOOK **BOOK#** OF OFFICIAL RECORDS, PAGE **PAGE#**, MENDOCINO COUNTY RECORDS, HEREBY CONSENT TO THE MAKING AND FILING OF THIS MAP THIS _____ DAY OF _____.

TRUSTEE'S SIGNATURE(s) _____

NAME

TITLE

DATE

G.4.D) *Final Map Acknowledgement*

CALIFORNIA ALL-PURPOSE ACKNOWLEDGEMENT

STATE OF CALIFORNIA
COUNTY OF MENDOCINO

ON DATE, BEFORE ME, TITLE OFFICER'S NAME,
PERSONALLY APPEARED SIGNER'S NAME(S),

WHO PROVED TO ME ON THE BASIS OF
SATISFACTORY EVIDENCE TO BE THE PERSON(S)
WHOSE NAME(S) IS/ARE SUBSCRIBED TO THE
WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME
THAT HE/SHE/THEY EXECUTED THE SAME IN
HIS/HER/THEIR AUTHORIZED CAPACITY(IES), AND
THAT BY HIS/HER/THEIR SIGNATURE(S) ON THE
INSTRUMENT THE PERSON(S), OR THE ENTITY UPON
BEHALF OF WHICH THE PERSON(S) ACTED,
EXECUTED THE INSTRUMENT.

I CERTIFY UNDER PENALTY OF PERJURY UNDER
THE LAWS OF THE STATE OF CALIFORNIA THAT
THE FOREGOING PARAGRAPH IS TRUE AND
CORRECT.

WITNESS MY HAND AND OFFICIAL SEAL.

NOTARY'S SIGNATURE

PLACE NOTARY SEAL ABOVE

G.4.E) *Final Map Surveyor's Statement*

SURVEYOR'S STATEMENT

THIS MAP WAS PREPARED BY ME OR UNDER MY DIRECTION AND IS BASED
UPON A FIELD SURVEY IN CONFORMANCE WITH THE REQUIREMENTS OF THE
SUBDIVISION MAP ACT AND LOCAL ORDINANCE AT THE REQUEST OF
NAME ON DATE. I HEREBY STATE THAT
THIS SUBDIVISION MAP SUBSTANTIALLY CONFORMS TO THE APPROVED OR
CONDITIONALLY APPROVED TENTATIVE MAP IF ANY. I FURTHER STATE THAT
ALL MONUMENTS ARE OF THE CHARACTER AND OCCUPY THE POSITIONS
INDICATED ON OR BEFORE DATE AND THAT SAID MONUMENTS ARE
SUFFICIENT TO ENABLE THE SURVEY TO BE RETRACED.

NAME

LICENSE#, EXPIRATION DATE

G.4.F) *Final Map Accuracy Statement*

ACCURACY STATEMENT

I, **NAME OF SURVEYOR**, HEREBY STATE THAT ALL SURVEY WORK REQUIRED IN THE PREPARATION OF THIS MAP AND RELATED MONUMENTATION WAS PERFORMED TO A MINIMUM ACCURACY OF ONE FOOT IN 5,000 FEET.

NAME

LICENSE#, EXPIRATION DATE

G.4.G) *Final Map County Surveyor's Statement*

COUNTY SURVEYOR'S STATEMENT

I HAVE EXAMINED THIS MAP; THE SUBDIVISION AS SHOWN IS SUBSTANTIALLY THE SAME AS IT APPEARED ON THE TENTATIVE MAP AND ANY APPROVED ALTERATIONS THEREOF; ALL PROVISIONS OF CHAPTER 2, DIVISION 2, OF THE SUBDIVISION MAP ACT AND ANY LOCAL ORDINANCES APPLICABLE AT THE TIME OF APPROVAL OF THE TENTATIVE MAP HAVE BEEN COMPLIED WITH; I AM SATISFIED THE MAP IS TECHNICALLY CORRECT.

DATED THIS _____ DAY OF _____, _____.

NAME LICENSE NO. COUNTY SURVEYOR, COUNTY OF MENDOCINO,
LICENSE EXP. DATE: _____ STATE OF CALIFORNIA

G.4.H) *Final Map Director of Planning's Statement*

DIRECTOR OF PLANNING'S STATEMENT

THIS MAP SUBSTANTIALLY CONFORMS TO THE APPROVED TENTATIVE MAP AND THE CONDITIONS OF APPROVAL THEREOF.

DATED: _____

**NAME – DIRECTOR OF PLANNING
AND BUILDING SERVICES**

BY: _____

COUNTY OF MENDOCINO, CALIFORNIA

G.4.I) *Final Map Clerk of the Board of Supervisor's Statement*

CLERK OF THE BOARD OF SUPERVISOR'S STATEMENT

I, **NAME OF CLERK**, CLERK OF THE BOARD OF SUPERVISORS OF THE COUNTY OF MENDOCINO, STATE OF CALIFORNIA, HEREBY STATE THAT SAID BOARD OF SUPERVISORS BY RESOLUTION ON THE _____ DAY OF _____, _____, APPROVED THE WITHIN MAP AND ACCEPTED ON BEHALF OF THE PUBLIC ALL LANDS, RIGHTS OF WAY, AND EASEMENTS OFFERED FOR PUBLIC USE AS DESIGNATED ON THE WITHIN MAP FOR THE PURPOSES SPECIFIED THEREON EXCEPTING THEREFROM AND SPECIFICALLY REJECTING ITEM(S) _____ OF THE OWNER'S STATEMENT UNTIL SUCH TIME, HOWEVER, AS SUCH EASEMENTS ARE ACCEPTED BY RESOLUTION OF THE BOARD OF SUPERVISORS.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND AND CAUSED THE SEAL OF THIS OFFICE TO BE AFFIXED.

DATED THIS _____ DAY OF _____, _____.

NAME OF CLERK

CLERK OF THE BOARD OF SUPERVISORS

BY: _____

DEPUTY

G.4.J) *Final Map Proof of Ownership Statement*

PROOF OF OWNERSHIP STATEMENT

I HEREBY STATE THAT THE PROOF OF OWNERSHIP REPORT MADE BY **TITLE INSURANCE COMPANY NAME** THIS _____ DAY OF _____, _____, CONFORMS TO THE PROVISIONS OF THE "SUBDIVISION MAP ACT".

COUNTY RECORDER'S NAME – COUNTY RECORDER

BY: _____, DEPUTY

G.4.K) *Final Map Bond Statement*

BOND STATEMENT

I, **NAME OF CLERK**, CLERK OF THE BOARD OF SUPERVISORS OF THE COUNTY OF MENDOCINO, HEREBY STATE THAT THE BOND OR DEPOSIT AS REQUIRED BY THE "SUBDIVISION MAP ACT", SECTION 66464 OF TITLE 7 OF THE GOVERNMENT CODE, DIVISION 2, (COMMENCING WITH SECTION 66410) HAS BEEN FILED.

DATED: _____

NAME OF CLERK

CLERK OF THE BOARD OF SUPERVISORS

BY: _____

DEPUTY

G.4.L) *Final Map Signature Omissions*

SIGNATURE OMISSIONS

SIGNATURES OF PARTIES OWNING THE FOLLOWING TYPES OF RECORD TITLE INTEREST HAVE BEEN OMITTED PURSUANT TO APPLICABLE PROVISIONS OF THE CALIFORNIA GOVERNMENT CODE SECTION 66436. THEIR INTERESTS ARE SUCH THAT THEY CANNOT RIPEN INTO FEE.

<u>NAME</u>	<u>RECORD DATA</u>	<u>NATURE OF INTEREST</u>
-------------	--------------------	---------------------------

G.4.M) *Final Map County Recorder's Statement*

COUNTY RECORDER'S STATEMENT

FILED THIS _____ DAY OF _____, AT _____ M.
IN MAPS, DRAWER _____, PAGE _____, MENDOCINO COUNTY
RECORDS, AT THE REQUEST OF _____.

COUNTY RECORDER'S NAME – COUNTY RECORDER

BY: _____, DEPUTY

FEE: _____

G.5. Parcel Map Statements

G.5.A) Parcel Map Title Block

PARCEL MAP
OF
MINOR SUBDIVISION

CDMS _____, or
MS _____.

BEING A PORTION OF _____

**COUNTY OF MENDOCINO,
SCALE: 1" = ____**

**CALIFORNIA
MONTH, YEAR
SHEET OF ____**

MAPS
DRAWER _____
PAGE _____

G.5.B) Parcel Map Owner's Statement

OWNER'S STATEMENT

THE UNDERSIGNED, BEING ALL PARTIES HAVING ANY RECORD TITLE INTEREST IN THE LAND WITHIN THIS DIVISION, HEREBY CONSENT TO THE PREPARATION AND RECORDATION OF THIS MAP AND OFFER FOR DEDICATION AND DO HEREBY DEDICATE FOR THE PUBLIC USE THE FOLLOWING:

*ALL PARCELS, RIGHTS OF WAY OR EASEMENTS OFFERED FOR DEDICATION-
LISTED A, B, C...*

OWNER'S SIGNATURE(s) _____

NAME

DATE

G.5.C) *Parcel Map Trustee Statement*

TRUSTEE STATEMENT

I, TRUSTEE NAME, OF COMPANY'S NAME TRUSTEE UNDER DEED OF TRUST, RECORDED IN BOOK BOOK# OFFICIAL RECORDS, PAGE PAGE#, OF MENDOCINO COUNTY RECORDS, HEREBY CONSENT TO THE PREPARATION AND FILING OF THIS MAP.

BY: TRUSTEE'S SIGNATURE(s)
NAME TITLE DATE

G.5.D) *Parcel Map Acknowledgement*

ACKNOWLEDGEMENT

STATE OF CALIFORNIA
COUNTY OF MENDOCINO

ON DATE, BEFORE ME, TITLE OFFICER'S NAME,
PERSONALLY APPEARED SIGNER'S NAME(S),

WHO PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSON(S) WHOSE NAME(S) IS/ARE SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE/SHE/THEY EXECUTED THE SAME IN HIS/HER/THEIR AUTHORIZED CAPACITY(IES), AND THAT BY HIS/HER/THEIR SIGNATURE(S) ON THE INSTRUMENT THE PERSON(S), OR THE ENTITY UPON BEHALF OF WHICH THE PERSON(S) ACTED, EXECUTED THE INSTRUMENT.

I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA THAT THE FOREGOING PARAGRAPH IS TRUE AND CORRECT.

WITNESS MY HAND AND OFFICIAL SEAL.

PLACE NOTARY SEAL ABOVE
NOTARY'S SIGNATURE

G.5.E) *Parcel Map Surveyor's Statement*

SURVEYOR'S STATEMENT

THIS MAP WAS PREPARED BY ME OR UNDER MY DIRECTION AND IS BASED UPON A FIELD SURVEY IN CONFORMANCE WITH THE REQUIREMENTS OF THE "SUBDIVISION MAP ACT" AND LOCAL ORDINANCE AT THE REQUEST OF NAME IN MONTH, YEAR. I HEREBY STATE THAT THIS PARCEL MAP SUBSTANTIALLY CONFORMS TO THE APPROVED OR CONDITIONALLY APPROVED TENTATIVE MAP, IF ANY AND THAT THE SURVEY IS TRUE AND CORRECT AS SHOWN. I FURTHER STATE THAT ALL MONUMENTS ARE OF THE CHARACTER AND OCCUPY THE POSITIONS INDICATED AND THAT SAID MONUMENTS ARE SUFFICIENT TO ENABLE THE SURVEY TO BE RETRACED.

NAME

LICENSE#, EXPIRATION DATE

G.5.F) *Parcel Map Accuracy Statement*

ACCURACY STATEMENT

I, NAME OF SURVEYOR, HEREBY STATE THAT ALL SURVEY WORK REQUIRED IN THE PREPARATION OF THIS MAP AND RELATED MONUMENTATION WAS PERFORMED TO A MINIMUM ACCURACY OF ONE FOOT IN 5,000 FEET.

NAME

LICENSE#, EXPIRATION DATE

G.5.G) *Parcel Map County Surveyor's Statement*

COUNTY SURVEYOR'S STATEMENT

I HAVE EXAMINED THIS MAP; THE SUBDIVISION AS SHOWN IS SUBSTANTIALLY THE SAME AS IT APPEARED ON THE TENTATIVE MAP AND ANY APPROVED ALTERATIONS THEREOF; ALL PROVISIONS OF CHAPTER 2, DIVISION 2, OF THE SUBDIVISION MAP ACT AND ANY LOCAL ORDINANCES APPLICABLE AT THE TIME OF APPROVAL OF THE TENTATIVE MAP HAVE BEEN COMPLIED WITH; I AM SATISFIED THE MAP IS TECHNICALLY CORRECT.

DATED THIS _____ DAY OF _____, _____.

NAME LICENSE NO. COUNTY SURVEYOR, COUNTY OF MENDOCINO,
LICENSE EXP. DATE: _____ STATE OF CALIFORNIA

G.5.H) *Parcel Map Director of Planning's Statement*

DIRECTOR OF PLANNING'S STATEMENT

THIS MAP SUBSTANTIALLY CONFORMS TO THE APPROVED TENTATIVE MAP AND THE CONDITIONS OF APPROVAL THEREOF.

DATED: _____ *NAME* – DIRECTOR OF PLANNING
AND BUILDING SERVICES
BY: _____ COUNTY OF MENDOCINO, CALIFORNIA
DEPUTY

G.5.I) *Parcel Map Clerk of the Board of Supervisor's Statement*

CLERK OF THE BOARD OF SUPERVISOR'S STATEMENT

I, **NAME OF CLERK**, CLERK OF THE BOARD OF SUPERVISORS OF THE COUNTY OF MENDOCINO, STATE OF CALIFORNIA, HEREBY STATE THAT SAID BOARD OF SUPERVISORS BY RESOLUTION ON THE _____ DAY OF _____, _____, APPROVED THE WITHIN MAP AND ACCEPTED ON BEHALF OF THE PUBLIC ALL LANDS, RIGHTS OF WAY, AND EASEMENTS OFFERED FOR PUBLIC USE AS DEDICATED ON THE WITHIN MAP FOR THE PURPOSES SPECIFIED THEREON [EXCEPTING THEREFROM AND SPECIFICALLY REJECTING ITEM(S) _____ OF THE OWNER'S STATEMENT UNTIL SUCH TIME, HOWEVER, AS SUCH EASEMENTS ARE ACCEPTED BY RESOLUTION OF THE BOARD OF SUPERVISORS.]

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND AND CAUSED THE SEAL OF THIS OFFICE TO BE AFFIXED.

DATED THIS _____ DAY OF _____, _____.

NAME OF CLERK BY: _____
CLERK OF THE BOARD OF SUPERVISORS DEPUTY

G.5.J) *Parcel Map Proof of Ownership Statement*

PROOF OF OWNERSHIP STATEMENT

I HEREBY STATE THAT THE PROOF OF OWNERSHIP REPORT MADE BY
TITLE INSURANCE COMPANY NAME THIS _____ DAY OF
_____, _____, CONFORMS TO THE PROVISIONS OF THE
“SUBDIVISION MAP ACT”.

COUNTY RECORDER’S NAME – COUNTY RECORDER

BY: _____
DEPUTY

G.5.K) *Parcel Map Bond Statement*

BOND STATEMENT

I, **NAME OF CLERK**, CLERK OF THE BOARD OF SUPERVISORS OF THE COUNTY
OF MENDOCINO, STATE OF CALIFORNIA, HEREBY STATE THAT THE BOND OR
DEPOSIT AS REQUIRED BY THE SUBDIVISION MAP ACT, SECTION 66464 OF TITLE
7 OF THE GOVERNMENT CODE, DIVISION 2, (COMMENCING WITH SECTION
66410) HAS BEEN FILED.

DATED THIS _____ DAY OF _____, _____.

NAME OF CLERK BY: _____
CLERK OF THE BOARD OF SUPERVISORS DEPUTY

G.5.L) *Parcel Map Recorder’s Statement*

COUNTY RECORDER’S STATEMENT

FILED THIS _____ DAY OF _____, _____, AT _____ M.
IN MAPS, DRAWER _____, PAGE _____, MENDOCINO COUNTY
RECORDS, AT THE REQUEST OF _____.

COUNTY RECORDER’S NAME – COUNTY RECORDER

BY: _____, DEPUTY FEE: _____

G.6. Record of Survey Statements

G.6.A) Record of Survey Title Block

RECORD OF SURVEY

BEING A PORTION OF

**COUNTY OF MENDOCINO,
SCALE: 1" = ____**

**CALIFORNIA
MONTH, YEAR**

SHEET OF ____

MAPS

DRAWER ____

PAGE ____

G.6.B) Record of Survey Surveyor's Statement

SURVEYOR'S STATEMENT

THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME OR UNDER MY
DIRECTION IN CONFORMANCE WITH THE REQUIREMENTS OF THE
PROFESSIONAL LAND SURVEYORS' ACT AT THE REQUEST OF
____ IN **MONTH, YEAR**.

NAME

LICENSE#, EXPIRATION DATE

G.6.C) *Record of Survey County Surveyor's Statement*

COUNTY SURVEYOR'S STATEMENT

THIS MAP HAS BEEN EXAMINED IN ACCORDANCE WITH SECTION 8766 OF THE PROFESSIONAL LAND SURVEYORS' ACT THIS _____ DAY OF _____, _____.

NAME LICENSE NO. COUNTY SURVEYOR, COUNTY OF MENDOCINO,
LICENSE EXP. DATE: _____ STATE OF CALIFORNIA

G.6.D) *Record of Survey County Recorder's Statement*

COUNTY RECORDER'S STATEMENT

FILED THIS _____ DAY OF _____, _____, AT _____ M.
IN MAPS, DRAWER _____, PAGE _____, MENDOCINO COUNTY
RECORDS, AT THE REQUEST OF **SURVEYOR'S NAME**.

COUNTY RECORDER'S NAME – COUNTY RECORDER

BY: _____, DEPUTY

FEE: _____

Tab H – Exception Procedures

H.1. Applicability.....	H-1
H.2. Compliance with Specified Road Standards	H-1
H.3. Exceptions	H-1
H.4. Exclusions	H-1
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Tab H – Exception Procedures

H.1. Applicability. Permit or approval processes affected by the Road Standards include the following:

- H.1.A) *Subdivisions*
- H.1.B) *Lot line adjustment*
- H.1.C) *Certificate of compliance* (to correct subdivision violation)
- H.1.D) *Coastal Development Permit or Coastal Development Permit in conjunction with other permit*
- H.1.E) *Use permit*
- H.1.F) *Variance*
- H.1.G) *Building permit*
- H.1.H) *Grading permit*
- H.1.I) *Encroachment permit*
- H.1.J) *Any other land use entitlement where access on roadways may be regulated*

H.2. Compliance with Specified Road Standards. No permit or request for approval shall be issued or granted until the specified Road Standards have been met or will be met as a condition of such issuance or grant of approval, or unless the project is relieved of the requirement or an alternate method for meeting the requirement is approved through the exceptions process.

H.3. Exceptions. An applicant desiring to be relieved of a specific requirement or standard or proposing an alternate to the standard for a specific requirement shall submit a written "Request for Exception" with the application for a permit or grant of approval. Such request shall clearly set forth the grounds upon which the applicant finds that the relief or alternative is justified.

H.4. Exclusions. Based on the independent judgement of the Civil Engineer in responsible charge of the work or other responsible professional, minor variations in design or methods specified in the Road Standards, meeting the intent of the Road Standards, may be excluded from the exception process at the discretion of the DOT Director.

H.5. Action on Requests for Exceptions. Requests for exceptions shall be acted upon as an element of the permit or request for approval. The authority to approve, approve with conditions or deny requests for exceptions shall lie with the Approval Authority empowered to act upon the permit or request. The exception process shall not be used to circumvent or contradict previous approvals. If a request for exception is by level of detail appropriate to a previous approval, then it shall be referred for action by the authority making the original approval.

H.6. Findings for Approval of Requests for Exception. The approval of requests for exceptions shall be supported by the following findings:

H.6.A) *Relief.* For exceptions granting relief from a specified requirement or standard:

- 1) That the strict application of this chapter would create an unnecessary hardship due to special circumstances or conditions affecting said property;
- 2) That the exception is consistent with the intent of the requirements of this chapter and does not constitute a grant of special privilege;
- 3) That the exception would not result in significant increased adverse environmental impacts compared to the strict application of the requirements of this chapter; and
- 4) That the granting of the exception will not be detrimental to the public health, safety, convenience and general welfare or injurious to other property in the vicinity in which said property is situated.

H.6.B) *Alternate Approach.* For exceptions which permit the specified requirement to be met by alternates to the specified standard:

- 1) That the design, material, method or work proposed is, for the purpose intended, equivalent or superior to the standards prescribed by this chapter;
- 2) That the exception is consistent with the intent of the requirements of this chapter and does not constitute a grant of special privilege;
- 3) That the exception would not result in increased adverse environmental impacts compared to the strict application of the requirements of this chapter; and
- 4) That the granting of the exception will not be injurious or detrimental to the public health, safety, convenience and general welfare or injurious to other property in the vicinity in which said property is situated.

H.7. Appeals. An appeal to the decision on a request for exception shall be made in accordance with the process for an appeal on the permit or request for approval. Final appeal authority shall rest with the Board of Supervisors.

HOMEOWNER’S SUMMARY OF FIRE PREVENTION AND LOSS REDUCTION LAWS

CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION



CAL FIRE



References to “department” means CAL FIRE

“director” means the Director of CAL FIRE

Summary of Fire Safe Regulations

Title 14 Code of California Regulations: Division 1.5, Chapter 7, Subchapter 2, Articles 1-5

These regulations have been prepared and adopted for the purpose of establishing minimum wildfire protection standards in conjunction with building, construction and development in SRA. These regulations shall become effective September 1, 1991. The future design and construction of structures, subdivisions and developments in State Responsibility Area (SRA) shall provide for basic emergency access and perimeter wildfire protection measures as specified in the following articles. These measures shall provide for emergency access; signing and building numbering; private water supply reserves for emergency fire use; and vegetation modification. *The intent statements that follow are a summary and are provided for information only. Specific requirements should be obtained from the local planning and building departments.*

Article 2. Emergency Access Standards

Road and street networks, whether public or private, unless exempted under section 1270.02(e), shall provide for safe access for emergency wildland fire equipment and civilian evacuation concurrently, and shall provide unobstructed traffic circulation during a wildfire emergency consistent with sections 1273.00 through 1273.11.

Article 3. Signing and Addressing Standards

To facilitate locating a fire and to avoid delays in response, all newly constructed or approved roads, street, and buildings shall be designated by names or numbers, posted on signs clearly visible and legible from the roadway. This section shall not restrict the size of letters or numbers appearing on street signs for other purposes.

Article 4. Emergency Water Supply Standards

Emergency water for wildfire protection shall be available and accessible in quantities and locations specified in the statute and these

regulations, in order to attack a wildfire or defend property from a wildfire. Such emergency water may be provided in a fire agency mobile water tender, or naturally occurring or manmade containment structure, as long as the specified quantity is immediately available.

Article 5. Fuel Modification and Defensible Space Standards

To reduce the intensity of a wildfire by reducing the volume and density of flammable vegetation, the strategic siting of fuel modification and greenbelts shall provide

1. increased safety for emergency fire equipment and evacuating civilians; and
2. a point of attack or defense from a wildfire.

These regulations apply to new construction and development in State Responsibility Area (SRA) in California. These regulations are not retroactive to existing structures and facilities, unless a new use or occupancy is applied for. CAL FIRE offices and fire stations, as well as, County Planning and Building Departments can assist in modifying specific SRA boundaries. The following is a summary only for the purpose of information. Reference to the specific adopted language should be made before construction or development plans are prepared.

Application of Standards (Article 1)

The following activities trigger or initiate the application of specific standards within the regulations.

Creation of NEW PARCELS (except for lot line adjustments)

- o Road Standards (Article 2)
- o Gate Standards (Article 2)
- o Emergency Water Standards (Article 4)
- o Fuel Modification and Defensible Space Standards (Article 5)

Building Permit for New Construction

- o Road Standards (Article 2)
- o Gate Standards (Article 2)
- o Emergency Water Standards (Article 4)
- o Fuel Modification and Defensible Space Standards (Article 5)

Application for a Use Permit

All or part of these regulations may apply depending upon the specific use being permitted.

Siting of Mobile Homes and Manufactured Homes

- o Road Standards (Article 2)
- o Gate Standards (Article 2)
- o Emergency Water Standards (Article 4)
- o Fuel Modification and Defensible Space Standards (Article 5)

Road Construction (except for existing roads)

Roads for agricultural or mining use on one ownership, roads used solely for managing or harvesting wood products, or roads required as a condition of a parcel map approved prior to the effective date of these regulations are exempted.

- o Road Standards (Article 2)
- o Gate Standards (Article 2)
- o Signing and Addressing Standard (Article 3)
- o Fuel Modification & Defensible Space Standards (Article 5)

Inspection Authority (Article 1)

The inspection authority may be either the California Department of Forestry and Fire Protection (CAL FIRE) or the local jurisdiction.

Requests for Exceptions (Article 1)

Requests for exception from a specified requirement shall be submitted by the applicant in writing to the inspection authority, listing the applicable code section, stating the material facts supporting the exception request, listing the proposed mitigation measure and providing a map of the requested change.

Appeals (Article 1)

Any applicant may appeal the denial of an exception to the local jurisdiction who shall provide written findings to the local CAL FIRE office if the appeal is granted.

Maintenance Requirements (Article 1)

The maintenance of all requirements shall be secured as a condition of the approved permit or map.

Road Standards (Article 2)

- o Two nine foot traffic lanes (18 foot wide road surface)
- o A minimum 40,000 pound load capacity (California Vehicle Code)
- o A maximum grade of 16%
- o A minimum inside curve radius of 50 feet
- o Turnarounds shall be a minimum of 40 foot radius, a hammerhead-T may apply
- o Turnouts shall be a minimum 10 feet wide and 30 feet long with a 25 foot taper at each end
- o Turnouts shall be constructed every 400 feet.
- o One-way roads shall be a minimum 10 feet wide, serving a maximum of 10 dwelling units and not exceed 2,640 feet in cumulative length.

Dead-end roads shall not exceed the following lengths:

- o 800 feet for parcels zoned for less than 1 acre
- o 1,320 feet for parcels zoned for 1 acre to 4.99 acres
- o 2,640 feet for parcels zoned 5 to 19.99 acres
- o 5,280 for parcels zoned for 20 acres or larger

Driveway Standards (Article 2)

- o Minimum 10 feet wide
- o A minimum of 15 feet vertical clearance
- o A maximum grade of 16%
- o A minimum inside curve radius of 50 feet
- o Turnarounds are required at building sites for driveways longer than 300 feet.

Gate Standard (Article 2)

Gate openings shall be at least 2 feet wider than the road surface and shall be located at least 30 feet, *plus the length of the swing of the gate*, from the intersecting roadway.

Address Signs (Article 3)

Roads shall be named or sequentially numbered (non-duplicating in a county) with approved signs posted at each intersection:

- o A minimum 3 inch letter height, 3/8 inch stroke
- o Reflectorized and contrasting with the background color
- o Visible for 100 feet from both directions of travel

Addresses shall be posted at driveway entrances and at each fork of the driveway and shall be visible from both directions of travel. Addresses shall be sequentially numbered.

Multiple addresses shall be on a single post.

Emergency Water Supply Standards (Article 4)

These standards apply with new construction and siting of mobile homes and manufactured homes. This does not apply for standards for undeveloped lots. Water storage and supply systems shall be approved by the inspection authority and shall meet or exceed either:

PUC Revised General Order #103, Section VII and other applicable fire flow sections, or NFPA 1231, or ISO Rural Class 8 Standard.

Fire Hydrants shall:

- o Be at least 18 inches above grade
- o Be a minimum of 8- feet from flammable vegetation
- o Be installed between 4 and 12- feet from the roadway
- o Be located between 50-feet and ½ mile from the building it serves
- o Have a 2-1/2 or 4-1/2 inch N.H. male fitting
- o Be suitable crash protected if required by a local jurisdiction
- o Be identified with a 3-inch reflectorized blue dot on the driveway address sign, or placed on a post within 3-feet of the hydrant, or identified as described in the State Fire Marshal's Highway Marker Guidelines.

Fuel Modification and Defensible Space Standards (Art. 5)

Structures on parcels 1 acre and larger shall be set back from the property line at least 30 feet. Smaller parcels shall provide for comparable mitigation.

Flammable waste generated by construction or development must be lawfully disposed of before final approval of a project.

Greenbelts that are proposed as a part of a development or project shall be strategically located to separate wildland fuels and structures.

DISCLOSURE RESPONSIBILITY OF SELLERS OF REAL PROPERTY

Each seller of real property in State Responsibility Areas (SRA) is required to disclose to any prospective purchaser that the property is in a wildland area which poses a wildfire risk and/or hazard. Each seller shall also disclose that the property is required to meet the flammable vegetation clearance requirements of PRC 4291. The seller must also disclose to any prospective buyer that it is not the state's responsibility to provide fire protection services to any building or structure located within the wildlands unless the state has entered into an agreement with local government to provide structure fire protection. (PRC 4125)

FIRE RESISTIVE ROOFING

Roofs on all new buildings in State Responsibility Areas (SRA) must have at least a Class C fire resistive or non-combustible roof covering. A Class C or non-combustible roof covering is also required when 50% or more of the roof area is reroofed. A local jurisdiction may apply more stringent standards. The installer of the roof covering shall provide certification of the roof covering classification to the building owner and, when requested, to the inspection authority. (UBC, California Amendments, Section 3203)

PERMITS FOR BURNING

A person shall not burn any brush, stumps, logs, fallen timber, fallows, slash, grass-covered land, brush-covered land, forest-covered land, or other flammable material, in any state responsibility area, area receiving fire protection by the department by contract, or upon federal lands administered by the United States Department of Agriculture or Department of the Interior, unless the person has a written permit from the department or its duly authorized representative or the authorized federal officer on federal lands administered by the United States Department of Agriculture or of the Interior and in strict accordance with the terms of the permit. (PRC 4423)

DEFENSIBLE SPACE AROUND STRUCTURES

A person that owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining any mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or any land that is covered with flammable material, shall at all times do all of the following:

(a) Maintain around and adjacent to the building or structure a firebreak made by removing and clearing away, for a distance of not less than 30 feet on each side of the

building or structure or to the property line, whichever is nearer, all flammable vegetation or other combustible growth. This subdivision does not apply to single specimens of trees or other vegetation that is well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to any building or structure.

(b) Maintain around and adjacent to the building or structure additional fire protection or firebreak made by removing all brush, flammable vegetation, or combustible growth that is located within 100 feet from the building or structure or to the property line or at a greater distance if required by state law, or local ordinance, rule, or regulation. This section does not prevent an insurance company that insures a building or structure from requiring the owner of the building or structure to maintain a firebreak of more than 100 feet around the building or structure. Grass and other vegetation located more than 30 feet from the building or structure and less than 18 inches in height above the ground may be maintained where necessary to stabilize the soil and prevent erosion. This subdivision does not apply to single specimens of trees or other vegetation that is well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to a dwelling or structure.

(c) Remove that portion of any tree that extends within 10-feet of the outlet of a chimney or stovepipe.

(d) Maintain any tree adjacent to or overhanging a building free of dead or dying wood.

(e) Maintain the roof of a structure free of leaves, needles, or other dead vegetative growth.

(f) Provide and maintain at all times a screen over the outlet of every chimney or stovepipe that is attached to any fireplace, stove, or other device that burns any solid or liquid fuel. The screen shall be constructed of nonflammable material with openings of not more than one-half inch in size. (PRC 4291)

SPARK ARRESTERS

No person shall use, operate, or allow to be used or operated, any internal combustion engine which uses hydrocarbon fuels on any forest-covered land, brush-covered land, or grass-covered land unless the engine is equipped with a spark arrester, as defined in subdivision (c), maintained in effective working order or the engine is constructed, equipped, and maintained for the prevention of fire. Motor vehicles must be equipped with an approved muffler. No person shall offer for sale, lease or rent any internal combustion engine unless he provides written notice of this requirement and violation penalties. (PRC 4442)

NOTE

Counties are allowed to develop their own fire safe regulations. Many counties have enhanced the requirements stated in this summary. You should check with the County Planning Section or the fire authority in your county to verify the requirements you will have to meet.



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that the entire road lies within the hazardous area. The exterior boundary of the area is described as follows:

Beginning at the NW corner of Section 13, T8S, R5W, SBB&M, on the San Diego–Riverside County boundary line, thence S approx. 3 miles (4.83km) on the section bdry. lines common to Secs. 13 and 14, 23 and 24, and 25 and 26, to the SW cnr. of Sec. 25, T8S, R5W; thence W approx. 1.96 miles (3.15km), on the sec. bdry. lines common to Secs. 26 and 35, and 27 and 34, to the jct. with the E bdry. of Camp Pendleton Marine Corps Base Naval Reservation at the SW cnr. of Sec. 27, T8S, R5W; thence S and E, following the Camp Pendleton Marine Corps Base Naval Reservation and Grant Boundary to its jct. with the DeLuz County Road nr. the 1/4 cnr. on the S bdry. line of Sec. 12, T9S, R4W, SBB&M, near Bench Mark 304, said portion of the Naval Reservation and Grant Boundary being described as follows:

Beginning at the NW cnr. of Sec. 34, T8S, R5W, SBB&M, SE approx. 1.25 mi. (2 km) to the SW cnr. of Sec. 34, T8S, R5W; thence E approx. 2.8 miles (4.51 km) to the N 1/4 cnr. of Sec. 6, T9S, R4W; thence S approx. 1.95 mi. (3.14 km) to the S1/4 cnr. of Sec. 7, T9S, R4W; thence E approx. 0.5 mi. (0.8 km) to the SE cnr. of Sec. 7, T9S, R4W; thence N approx. 1500 ft. (0.46 km) to the NE cnr. of SW 1/4 SW 1/4 of Sec. 8, T9S, R4W; thence E approx. 2800 ft. (0.85 km) to the NE cnr. of the SE 1/4 SW 1/4 of Sec. 8, T9S, R4W; thence N approx. 3900 ft. (1.19 km) to the NW cnr. of the NW 1/4 NE 1/4 of Sec. 8, T9N, R4W; thence E approx. 0.25 mi. (0.4 km) to the NE cnr. of the NW 1/4 NE 1/4 of Sec. 8, T9S, R4W; thence S approx. 0.5 mi. (0.8 km) to the NE cnr. of the NW 1/4 SE 1/4 of Sec. 8, T9S, R4W; thence E approx. 0.25 mi. (0.4 km) to the NE cnr. of NE 1/4 SE 1/4 of Sec. 8, T9N, R4W; thence S approx. 500 ft. (0.15 km); thence NE approx. 1.25 mi. (2.01 km) to a point near elevation 1146 ft. in the SW 1/4 SW 1/4 of Sec. 3, T9S, R4W; thence SE approx. 1.43 mi. (2.3 km) to a point near elevation 1028 ft. in the NW 1/4 SW 1/4 of Sec. 11, T9S, R4W; thence E approx. 3800 ft. (1.16 km) to the NE cnr. of the NE 1/4 SE 1/4 of Sec. 11, T9S, R4W; thence E approx. 2,000 ft. (0.61 km) in the NE 1/4 SW 1/4 of Sec. 12, T9, R4W; thence S approx. 1,500 ft. (0.46 km) to the intersection with the DeLuz County Road near Bench Mark 304.

Thence E on the DeLuz County Road approx. 1,500 ft. (0.46 km) to its intersection with Sandia Creek Dr. in the NW 1/4 NE 1/4 of Sec. 13, T9S, R4W, near Bench Mark 331; thence N on Sandia Creek Dr. approx. 1.1 mi. (1.77 km) to its jct with the Rock Mtn. Rd. in the NE 1/4 NE 1/4 of Sec. 12, T9S, R3W; thence NE on said rd. approx. 1.2 mi (1.93 km) to its jct. with the Margarita Truck Trail in the SW 1/4 SE 1/4 of Sec. 6, T9S, R3W; thence N through Sec. 6, T9S, R3W, and Sec. 31, T8S, R3W; approx. 2.2 miles (3.54 km) to its intersection with the San Diego–Riverside County bdry. line at a pt. approx. .125 mi. (0.2 km) S of NW cnr. of Sec. 31, T8S, R3W; thence N approx. .37 mi. (0.6 km) and NW approx. 7.6 mi. (12.23 km) along the San Diego–Riverside County bdry. line to the point of beginning. The private campgrounds or campsites located within the exterior boundary of the DeLuz–Tenaja Hazardous Fire Area listed below are designated as locations where smoking and the building of campfires may be allowed within posted campground limits:

Fallbrook Kamp Retreat:

This campground contains approximately 60 acres (24.3 ha) and is located in DeLuz Canyon one mile (1.6 km) SW of the San Diego–Riverside County line in the E 1/2, SW 1/4 and SE 1/4, SW 1/4 of Sec. 20, T8S, R4W, in San Diego County.

This designation as a hazardous fire area shall be in effect from the date of filing with the Secretary of State through December 31, 1977 and from May 1 through December 31 each year thereafter.

NOTE: Authority cited: Section 4253, Public Resource Code. Reference: Sections 4251 and 4253, Public Resources Code.

HISTORY

1. New Article 6 (Section 1206) filed 6–3–77 as an emergency; effective upon filing (Register 77, No. 23). Issuing agency: Department of Forestry.
2. Certificate of Compliance filed 9–16–77 (Register 77, No. 38).
3. Amendment filed 9–27–77; effective thirtieth day thereafter (Register 77, No. 40). Issuing agency: Department of Forestry.

§ 1207. Closure to Entry—San Francisco Peninsula Hazardous Fire Area.

NOTE: Authority cited: Section 4256, Public Resources Code. Reference: Sections 4254, 4256 and 4257, Public Resources Code.

HISTORY

1. New Article 7 (Section 1207) filed 6–3–77 as an emergency; effective upon filing (Register 77, No. 23). Issuing agency: Director of Forestry.
2. Certificate of Compliance filed 9–16–77 (Register 77, No. 38).
3. Repealer filed 7–7–82; effective thirtieth day thereafter (Register 82, No. 28).

Chapter 7. Fire Protection*

* Formerly Subchapter 7 of Chapter 2, Division 2, Title 14, Cal. Adm. Code.

Article 1. Classification of Private Lands for Fire Protection

§ 1220. Presently Classified and Recorded Boundaries.

The boundaries of state responsibility areas for fire protection as defined in Section 4102 of the Public Resources Code, are delineated upon a series of maps of the State of California on file in the Sacramento office of the Department of Forestry. The maps are titled “Maps of State Responsibility Areas for Fire Protection.” These maps are periodically amended and adopted by the Board of Forestry pursuant to Sections 4125–4128 of the Public Resources Code consistent with procedures contained in the publication entitled “State Responsibility Area Classification System” as updated March, 8, 2006.

NOTE: Authority cited: Sections 4111 and 4125, Public Resources Code. Reference: Sections 4102, 4125, 4126, 4127 and 4128, Public Resources Code.

HISTORY

1. Redesignation from Subchapter 7 of Chapter 2, Division 2 (Sections 1220–1258, not consecutive) to Chapter 5 of Division 2 (Sections 1220–1258, not consecutive) filed 4–1–77 as procedural and organizational; effective upon filing (Register 77, No. 14). For former history, see Registers 58, No. 21; 64, Nos. 7 and 20; 67, Nos. 2 and 32; 69, No. 17; 70, No. 18 and 71, No. 51.
2. Designation of Sections 1220–1220.4 as Article 1 filed 3–17–78; effective thirtieth day thereafter (Register 78, No. 11).
3. Redesignation from Chapter 5 (Sections 1220–1258, not consecutive) to Chapter 7 (Sections 1200–1258, not consecutive) filed 5–19–78 as procedural and organizational; designated effective 7–6–78 (Register 78, No. 20).
4. Repealer of Article 1 (Sections 1220–1220.4) and new Article 1 (Sections 1220–1220.5) filed 10–13–78; effective thirtieth day thereafter (Register 78, No. 41).
5. Amendment filed 7–7–82; effective thirtieth day thereafter (Register 82, No. 28).
6. Amendment of section and NOTE filed 6–23–2006; operative 7–23–2006 (Register 2006, No. 25).

§ 1220.1. Procedure for Classification.

NOTE: Authority cited: Sections 4125–4128, Public Resources Code. Reference: Sections 4102 and 4125–4128, Public Resources Code.

HISTORY

1. Repealer filed 7–7–82; effective thirtieth day thereafter (Register 82, No. 28).

§ 1220.2. Environmental Documentation.

NOTE: Authority cited: Sections 4125–4128, Public Resources Code. Reference: Sections 4102 and 4125–4128, Public Resources Code.

HISTORY

1. Repealer filed 7–7–82; effective thirtieth day thereafter (Register 82, No. 28).

§ 1220.3. Recording of Boundary Changes.

NOTE: Authority cited: Sections 4125–4128, Public Resources Code. Reference: Sections 4102 and 4125–4128, Public Resources Code.

HISTORY

1. Repealer filed 7–7–82; effective thirtieth day thereafter (Register 82, No. 28).

§ 1220.4. Public Access and Review.

NOTE: Authority cited: Sections 4125–4128, Public Resources Code. Reference: Sections 4102 and 4125–4128, Public Resources Code.

HISTORY

1. Repealer filed 7–7–82; effective thirtieth day thereafter (Register 82, No. 28).

§ 1220.5. Suppression of Fires on Lands Adjacent to State Responsibility Areas.

NOTE: Authority cited: Sections 4125–4128, Public Resources Code. Reference: Sections 4102 and 4125–4128, Public Resources Code.

HISTORY

1. Repealer filed 7–7–82; effective thirtieth day thereafter (Register 82, No. 28).

Article 2. Fire Extinguisher Test Standards and Procedures

§ 1230. Purpose.

NOTE: Authority cited: Section 4431, Public Resources Code. Reference: Section 4431, Public Resources Code.

HISTORY

1. Repealer of Article 2 (Sections 1230–1235) and new Article 2 (Sections 1230–1235) filed 11–2–78; effective thirtieth day thereafter (Register 78, No. 44). For former history of Article 2, see Register 78, No. 11.
2. Amendment of NOTE filed 12–21–81; effective thirtieth day thereafter (Register 81, No. 52).
3. Repealer of article 2 (sections 1230 through 1235) and section filed 11–7–96; operative 1–1–97 (Register 96, No. 45).

§ 1231. Test Standards.

NOTE: Authority cited: Section 4431, Public Resources Code. Reference: Section 4431, Public Resources Code.

HISTORY

1. Amendment of subsection (a) filed 12–21–81; effective thirtieth day thereafter (Register 81, No. 52).
2. Repealer filed 11–7–96; operative 1–1–97 (Register 96, No. 45).

§ 1232. Procedures and Conditions.

NOTE: Authority cited: Section 4431, Public Resources Code. Reference: Section 4431, Public Resources Code.

HISTORY

1. Amendment filed 12–21–81; effective thirtieth day thereafter (Register 81, No. 52).
2. Repealer filed 11–7–96; operative 1–1–97 (Register 96, No. 45).

§ 1233. Effectiveness Evaluation.

NOTE: Authority cited: Section 4431, Public Resources Code. Reference: Section 4431, Public Resources Code.

HISTORY

1. Amendment filed 12–21–81; effective thirtieth day thereafter (Register 81, No. 52).
2. Repealer filed 11–7–96; operative 1–1–97 (Register 96, No. 45).

§ 1234. Approved Extinguishers.

NOTE: Authority cited: Section 4431, Public Resources Code. Reference: Section 4431, Public Resources Code.

HISTORY

1. Amendment filed 12–21–81; effective thirtieth day thereafter (Register 81, No. 52).
2. Repealer filed 11–7–96; operative 1–1–97 (Register 96, No. 45).

§ 1235. Submission for Testing.

NOTE: Authority cited: Section 4431, Public Resources Code. Reference: Section 4431, Public Resources Code.

HISTORY

1. Amendment of NOTE filed 12–21–81; effective thirtieth day thereafter (Register 81, No. 52).
2. Repealer filed 11–7–96; operative 1–1–97 (Register 96, No. 45).

Article 3. Fire Prevention Standards for Multiposition Small Engines

§ 1240. Multiposition Small Engine, Defined.

Multiposition small engine (Mse.) means—any internal combustion engine operated on hydrocarbon fuels that normally is hand-held when operated by one or more persons, which can and may be operated in any position, including but not limited to inverted and includes all of the engines to which the provisions of PRC 4443 are applicable.

NOTE: Authority cited: Section 4443, Public Resources Code. Reference: Section 4443, Public Resources Code.

HISTORY

1. New Article 3 (Sections 1240–1242.1) filed 3–17–78; effective thirtieth day thereafter (Register 78, No. 11).

§ 1241. Minimum Performance Standards for Multiposition Small Engine Exhaust System Fire Ignition Suppression for Engines Manufactured After June 30, 1978.

The following minimum performance standards for Mse. exhaust systems are established to prevent the ignition of fire in organic fuels consisting of, or developed from forest, brush or grass vegetation.

(a) Carbon Particle Retention or Destruction. Each Mse. exhaust system or a spark arrester used in or with such exhaust system shall be designed to retain or destroy 90% or more of the carbon particles having a major diameter greater than 0.023 in. (0.584 mm) as determined when tested in accordance with the provisions of part 3 of the Society of Automotive Engineers (SAE) Recommended Practice J335(b).

(b) Exposed Surface Temperature. The Mse. exhaust system shall be designed so that the exposed surface temperature shall not exceed 550 F (288 C) as determined when tested in accordance with the provisions of part 4 of SAE Recommended Practice J335(b).

(c) Exhaust Gas Temperature. The Mse. exhaust system shall be designed so that the exhaust gas temperature shall not exceed 475 F (246 C) as determined when tested in accordance with the provisions of part 5 of SAE Recommended Practice J335(b).

(d) Debris Accumulation. The Mse. exhaust system shall be designed in such a manner that there are no pockets or corners where flammable material might accumulate. Pockets are permissible only if it can be substantiated by suitable test that material can be prevented from accumulating in the pockets.

(e) Durability. The Mse. exhaust system must be constructed of durable material and so designed that it will, with normal use and maintenance, provide a reasonable service life. Parts designed for easy replacement as a part of routine maintenance shall have a service life of no less than 50 hours. Cleaning of parts shall not be required more frequently than once for each 8 hours of operation.

(f) Serviceability. A spark arrester shall be so designed that it may be readily inspected and cleaned.

§ 1241.1. Test Procedures for Multiposition Small Engine Exhaust System Fire Ignition Suppression for Engines Manufactured After June 30, 1978.

The exhaust system of Mse. shall be tested and evaluated (qualified and rated) for compliance with the minimum performance standards established therefore, by 14 CAC 1241 by using SAE Recommended Practice J335(b) as adopted December 15, 1976. Practice J335(b) is adopted by reference as though set forth at length herein.

§ 1241.2. Compliance Requirement for Multiposition Small Engines Manufactured After June 30, 1978.

Exhaust systems of Mse. operated or caused to be operated at any location in California on lands covered wholly or in part, by forest, brush, grass or any combination of such vegetation, will be only deemed to comply with the provisions of PRC 4443 if they are:

(a) certified by an Equipment Development Center of the United States Forest Service as having met the performance standards set forth in 14 CAC 1241 when tested using the procedures contained in SAE Recommended Practice J335(b) as required by 14 CAC 1241.1; and

(b) the operator of said Mse. maintains the exhaust system thereof so that it will at all times meet or exceed the minimum performance standards set forth in 14 CAC 1241.

NOTE: Authority cited: Sections 4111 and 4443, Public Resources Code. Reference: Section 4443, Public Resources Code.

HISTORY

1. Amendment filed 7–7–82; effective thirtieth day thereafter (Register 82, No. 28).

§ 1242. Minimum Performance Standards and Test Procedures for Multiposition Small Engine Exhaust System Fire Ignition Suppression for Engines Manufactured Prior to July 1, 1978.

Mse. manufactured prior to July 1, 1978, which do not meet the minimum performance standards in 14 CAC 1241–1241.2 shall be equipped with a spark arresting device, installed in, attached to, or constructed as an integral part of the exhaust system, equipped with a woven screen with a maximum opening size of 0.0232 inches (0.584 mm) and is constructed of 0.013 inches (0.330 mm) or larger diameter, heat and corrosion resistant wire or has a usable life of 50 hours or more. The spark arrester will be considered in compliance with the requirement provided the total effective exhaust area (total area of openings) of the screen is not less than the 125% of the engine exhaust port area. The exhaust system shall be constructed to permit easy removal and replacement of the spark arrester screen for field inspection, replacement and cleaning.

§ 1242.1. Compliance Requirements for Multiposition Small Engines Manufactured Prior to July 1, 1978.

Spark arresters installed in, attached to, or constructed as an integral part of the exhaust system of Mse. manufactured prior to July 1, 1978 will be deemed to be in compliance with the provisions of PRC 4443 only if they meet at least one of the criteria set forth in subsections (a) and (b).

(a) Meet the minimum performance standards in 14 CAC 1241–1241.2.

(b) Is equipped with a woven screen with a maximum opening size of 0.032 inches (0.584 mm) as defined in 14 CAC 1242.

The person operating the Mse. will maintain the exhaust system so that it continuously meets such standards.

NOTE: Authority cited: Sections 4111 and 4443, Public Resources Code. Reference: Section 4443, Public Resources Code.

HISTORY

1. Amendment filed 7–7–82; effective thirtieth day thereafter (Register 82, No. 28).

Article 4. Fire Prevention Standards for Electric Utilities

§ 1250. Purpose.

The purpose of Article 4 is to provide specific exemptions from: electric pole and tower firebreak clearance standards, electric conductor clearance standards and to specify when and where the standards apply.

NOTE: Authority cited: Sections 4292 and 4293, Public Resources Code. Reference: Sections 4292–4296, Public Resources Code.

HISTORY

1. Repealer of Article 4 (Sections 1250–1258) and new Article 4 (Sections 1250–1258) filed 11–2–78; effective thirtieth day thereafter (Register 78, No. 44). For former history, see Registers 64, No. 7; 65, No. 6; 67, No. 32; 68, No. 42; 70, No. 18; 78, No. 11.
2. Repealer of Article 4 (Sections 1250–1258) and new Article 4 (Sections 1250–1258) filed 5–22–80; effective thirtieth day thereafter (Register 80, No. 23).
3. Repealer of Article 4 (Sections 1250–1258) and new Article 4 (Sections 1250–1258) refiled 6–6–80 correcting typographical errors contained in 5–22–80 order; effective thirtieth day thereafter (Register 80, No. 23).

§ 1251. Definitions.

The following definitions apply to this Article unless the context requires otherwise.

Defined word or phrase

“Conductor” means connector, a wire, or a combination of wires, and/or any other appliance designed and manufactured for use in the transmission and distribution of electrical current.

“Connector” means a device approved for energized electrical connections.

“Duff” means partially decayed leaves, needles, grass or other organic material accumulated on the ground.

“Firebreak” means a natural or artificial barrier usually created by the removal or modification of vegetation and other flammable materials for the purpose of preventing spread of fire.

“Hot line tap or clamp connector” means a connector designed to be used with a Grip–All Clamp stick (Shotgun) for connecting equipment jumper or tap conductors to an energized main line or running connector.

“Outer Circumference” means the exterior surface of a pole or tree at ground level or a series of straight lines tangent to the exterior of the legs of a tower at ground level. (See Figure 1, this Article.)

“Self-supporting aerial cable” means an assembly of abrasion resistant insulated conductors supported by a messenger cable which is normally grounded, designed and manufactured to carry electrical current for installation on overhead pole lines or other similar overhead structures.

“Tree wire” means an insulated conductor covered with a high abrasion resistant, usually non-metallic, outer covering, designed and manufactured to carry electrical current for installation on overhead pole lines or other similar overhead structures.

NOTE: Authority cited: Sections 4292–4293, Public Resources Code. Reference: Sections 4292–4296, Public Resources Code.

HISTORY

1. Amendment filed 5–11–83; effective thirtieth day thereafter (Register 83, No. 20).
2. Amendment filed 4–7–89; operative 5–7–89 (Register 89, No. 51).
3. Repealer of definition of “Agency” and amendment of definitions of “Conductor,” “Connector” and “Firebreak” filed 10–24–2005; operative 11–23–2005 (Register 2005, No. 43).

§ 1252. Areas Where PRC 4292–4296 Apply in State Responsibility Areas.

The Director will apply PRC 4292–4296 in any mountainous land, forest covered land, brush covered land or grass covered land within State Responsibility Areas unless specifically exempted by 14 CCR 1255 and 1257.

NOTE: Authority cited: Sections 4292, 4293, Public Resources Code. Reference: Sections 4125–4128, 4292, 4293, Public Resources Code.

HISTORY

1. Amendment of section heading and section filed 10–24–2005; operative 11–23–2005 (Register 2005, No. 43).

§ 1252.1. Official Area Maps.

The official maps of State Responsibility Areas defined in 14 CCR § 1220 are available for viewing and copying during normal business hours at the California Department of Forestry and Fire Protection, 1416 Ninth Street, Sacramento, California, 95814, in the Fire Protection Section.

When, pursuant to PRC 4125–4128, the Board revises State Responsibility Area boundaries, the Director will forward a legal description of a boundary change(s) to the respective electric utility(s) serving the area(s).

NOTE: Authority cited: Sections 4292, 4293, Public Resources Code. Reference: Sections 4125–4128, 4292, 4293, Public Resources Code.

HISTORY

1. Amendment filed 10–24–2005; operative 11–23–2005 (Register 2005, No. 43).

§ 1252.2. Boundary Location—Roads, Etc.

Where the boundaries of areas described in 14 CAC 1252 are along roads, highways, streets, railroads, streams, canals or rivers, the actual boundary shall be the center–line of the course of such roads, highways, streets, railroads, streams, canals, and rivers.

NOTE: Authority cited: Sections 4292, 4293, Public Resources Code. Reference: Sections 4125–4128, 4292, 4293, Public Resources Code.

§ 1252.3. Boundary Location—Section Lines, Etc.

Where the boundaries of the area described in 14 CAC 1252 are on section, township or range lines, or on powerline rights–of–way, the poles, towers and conductors located thereon are within the area described.

NOTE: Authority cited: Sections 4292 and 4293, Public Resources Code. Reference: Sections 4125–4128, 4292 and 4293, Public Resources Code.

§ 1253. Time When PRC 4292–4296 Apply.

The minimum firebreak and clearance provisions of PRC 4292–4296 are applicable during the declared California Department of Forestry and Fire Protection fire season for a respective county. The Director shall post the declaration on the official Department web site.

NOTE: Authority cited: Sections 4292 and 4293, Public Resources Code. Reference: Sections 4125–4128, 4292 and 4293, Public Resources Code.

HISTORY

1. Repealer and new section filed 10–24–2005; operative 11–23–2005 (Register 2005, No. 43).

§ 1254. Minimum Clearance Provisions—PRC 4292.

The firebreak clearances required by PRC 4292 are applicable within an imaginary cylindroidal space surrounding each pole or tower on which a switch, fuse, transformer or lightning arrester is attached and surrounding each dead end or corner pole unless such pole or tower is exempt from minimum clearance requirements by provisions of 14 CCR 1255 or PRC 4296. The radius of the cylindroid is 3.1 m (10 feet) measured horizontally from the outer circumference of the specified pole or tower with height equal to the distance from the intersection of the imaginary vertical exterior surface of the cylindroid with the ground to an intersection with a horizontal plane passing through the highest point at which a conductor is attached to such pole or tower. (See Figure 2 this Article.) Flammable vegetation and materials located wholly or partially within the firebreak space shall be treated as follows:

(a) At ground level—remove flammable materials, including but not limited to, ground litter, duff and dead or desiccated vegetation that will allow fire to spread, and;

(b) From 0–2.4 m (0–8 feet) above ground level—remove flammable trash, debris or other materials, grass, herbaceous and brush vegetation. All limbs and foliage of living trees shall be removed up to a height of 2.4 m (8 feet).

(c) From 2.4 m (8 feet) to horizontal plane of highest point of conductor attachment—remove dead, diseased or dying limbs and foliage from living sound trees and any dead, diseased or dying trees in their entirety.

NOTE: Authority cited: Section 4292, Public Resources Code. Reference: Section 4292, Public Resources Code.

HISTORY

1. Repealer of subsection (d) filed 5–11–83; effective thirtieth day thereafter (Register 83, No. 20).
2. Amendment of first paragraph and subsection (a) filed 10–24–2005; operative 11–23–2005 (Register 2005, No. 43).

§ 1255. Exemptions to Minimum Clearance Provisions—PRC 4292.

The minimum clearance provisions of PRC 4292 are not required around poles and towers, including line junction, corner and dead end poles and towers:

(a) Where all conductors are continuous over or through a pole or tower; or

(b) Where all conductors are not continuous over or through a pole or tower, provided, all conductors and subordinate equipment are of the types listed below and are properly installed and used for the purpose for which they were designed and manufactured;

- (1) compression connectors,
- (2) automatic connectors,
- (3) parallel groove connectors,
- (4) hot line tap or clamp connectors that were designed to absorb any expansion or contraction by applying spring tension on the main line or running conductor and tap connector,
- (5) Fargo GA 300 series piercing connectors designed and manufactured for use with tree wire,
- (6) flat plate connectors installed with not less than two bolts,
- (7) tapered C-shaped member and wedge connectors,
- (8) solid blade single phase bypass switches and solid blade single phase disconnect switches associated with circuit reclosers, sectionalizers and line regulators,
- (9) equipment that is completely sealed and liquid-filled;

(10) current limiting non-expulsion fuses or

(c) On the following areas if fire will not propagate thereon;

- (1) fields planted to row crops,
 - (2) plowed or cultivated fields,
 - (3) producing vineyards that are plowed or cultivated;
 - (4) fields in nonflammable summer fallow;
 - (5) irrigated pasture land;
 - (6) orchards of fruit, nut or citrus trees that are plowed or cultivated,
 - (7) Christmas tree farms that are plowed or cultivated; and
 - (8) swamp, marsh or bog land; or
- (d) Where vegetation is maintained less than 30.48 cm (12 inches) in height, is fire resistant, and is planted and maintained for the specific purpose of preventing soil erosion and fire ignition.

NOTE: Authority cited: Section 4292, Public Resources Code. Reference: Section 4292, Public Resources Code.

HISTORY

1. Amendment filed 5–11–83; effective thirtieth day thereafter (Register 83, No. 20).
2. New subsection (b)(10) filed 4–7–89; operative 5–7–89 (Register 89, No. 15).

§ 1256. Minimum Clearance Provisions—PRC 4293.

Minimum clearance required by PRC 4293 shall be maintained with the specified distances measured at a right angle to the conductor axis at any location outward throughout an arc of 360 degrees. (See Figure 3 this Article.)

Minimum clearance shall include:

(1) any position through which the conductor may move, considering, among other things, the size and material of the conductor and its span length;

(2) any position through which the vegetation may sway, considering, among other things, the climatic conditions, including such things as foreseeable wind velocities and temperature, and location, height and species of the vegetation.

NOTE: Authority cited: Section 4293, Public Resources Code. Reference: Sections 4293 and 4296, Public Resources Code.

HISTORY

1. Amendment filed 5–11–83; effective thirtieth day thereafter (Register 83, No. 20).
2. Amendment filed 10–24–2005; operative 11–23–2005 (Register 2005, No. 43).

§ 1257. Exempt Minimum Clearance Provisions—PRC 4293.

(a) The minimum clearance provisions of PRC 4293 applicable in State Responsibility Areas are exempted:

(1) Where conductors are:

(A) insulated tree wire, maintained with the high density, abrasion resistant outer covering intact, or

(B) insulated self-supporting aerial cable, maintained with the insulation intact, or

(C) supported by sound and living tree trunks from which all dead or decadent branches have been removed.

(2) On areas described in 14 CCR 1255(c).

(3) For major woody stems that have been established in their current location for a minimum of ten years; are vigorous and healthy; whose trunks and major limbs are at least six inches from primary distribution conductors (those generally less than 22,500 volts); and of sufficient strength and rigidity to prevent the trunk or limb from encroaching within six inches of primary distribution conductors under reasonably foreseeable local wind and weather conditions. This (a)(3) exemption shall expire December 31, 2008.

(b) These exemptions do not apply to dead and decadent or rotten trees, trees weakened by decay or disease, leaning trees and portions thereof that are leaning toward conductor(s) and any other growth which may fall across the conductor and break it.

NOTE: Authority cited: Sections 4111 and 4293, Public Resources Code. Reference: Sections 4293 and 4296, Public Resources Code.

HISTORY

1. Amendment filed 10–24–2005; operative 11–23–2005 (Register 2005, No. 43).
2. New subsection (a)(3) and amendment of NOTE filed 4–30–2007; operative 5–30–2007 (Register 2007, No. 18).

§ 1258. Tree Lines.

When electric conductors and subordinate elements are fastened to living, sound trees, commonly referred to as tree lines, the requirements of PRC 4292 and 4293 shall apply the same as to a pole or tower line.

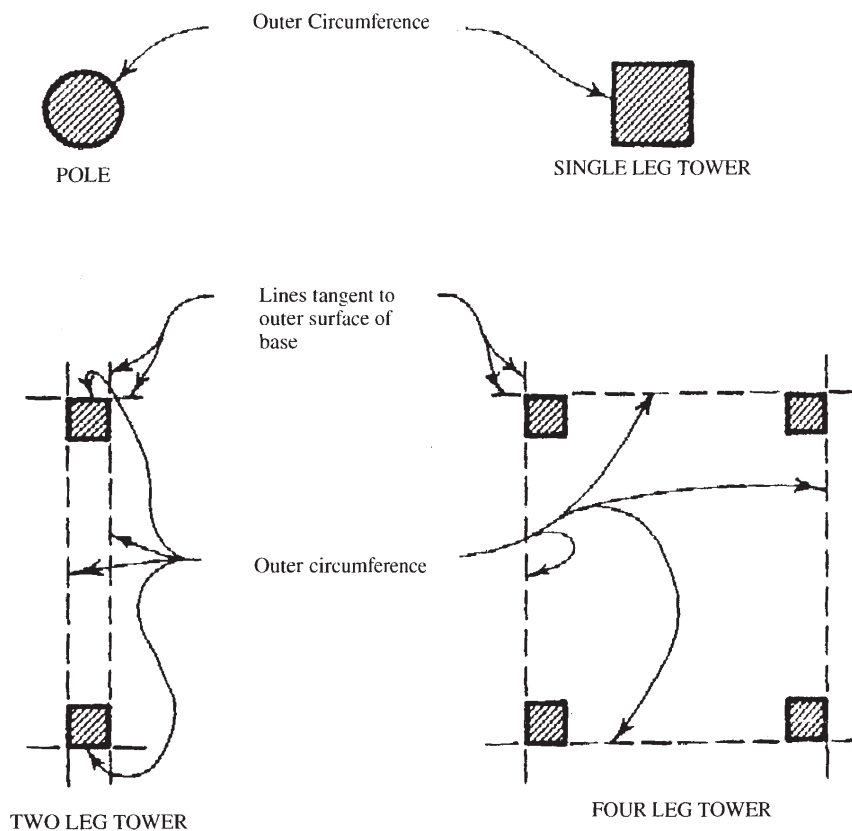
NOTE: Authority cited: Sections 4292 and 4293, Public Resources Code. Refer-

ence: Sections 4292, 4293, and 4296, Public Resources Code.

HISTORY

1. Editorial correction of printing error removing Figure 2 heading (Register 91, No. 32).
2. Repealer of Figure 2 and renumbering of figures filed 10-24-2005; operative 11-23-2005 (Register 2005, No. 43).

Figure 1

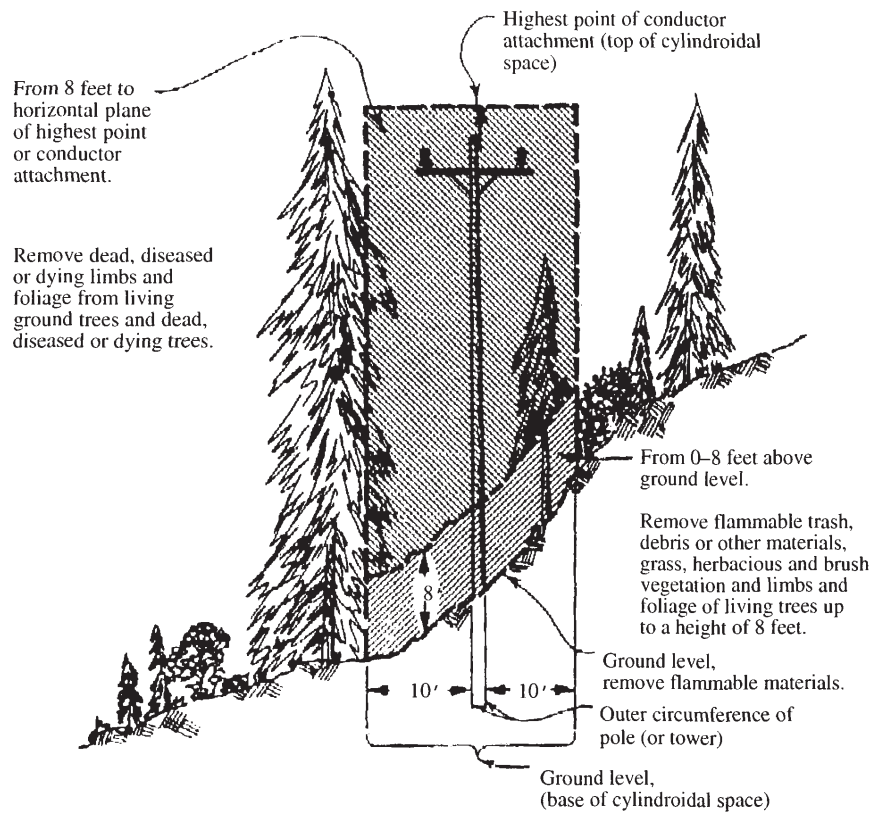


PRC 4292
14 CAC 1251

DEFINITION OF OUTER CIRCUMFERENCE
EXAMPLES
Plan views at ground level

APRIL 1980

Figure 2

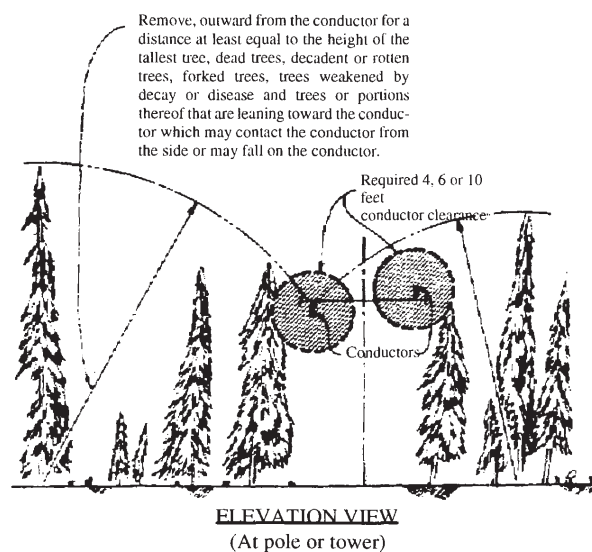
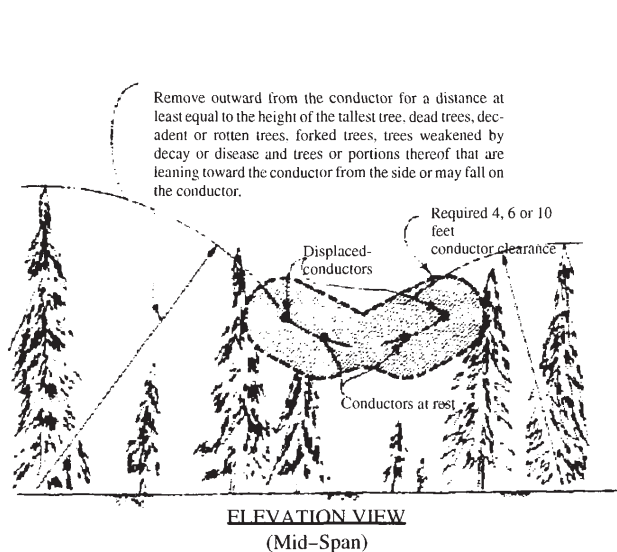
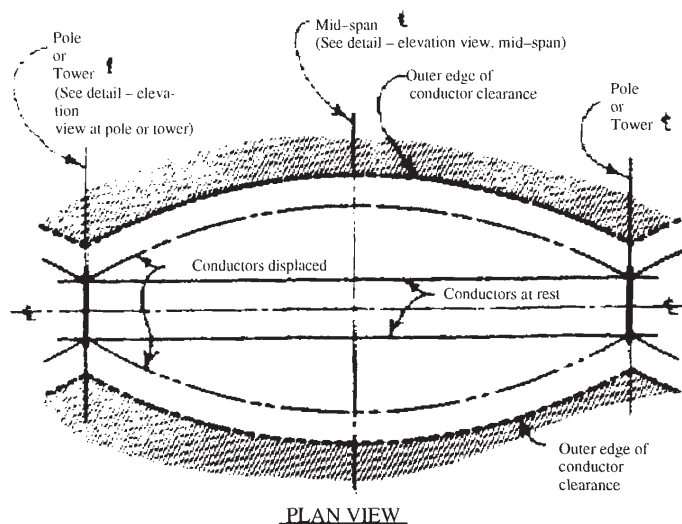
ELEVATION VIEW

PRC 4292
14 CAC 1254

FIRE BREAK CLEARANCE
REQUIREMENTS
AROUND POLES AND TOWERS

APRIL 1980

Figure 3



PRC
14 CAC 1256

CONDUCTOR CLEARANCE

April 1980

EXEMPTION: Roads required as a condition of tentative parcel maps prior to the effective date of these regulations; roads for agricultural or mining use solely on one ownership; and roads used solely for the management and harvesting of wood products.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1270.03. Local Ordinances.

Nothing contained in these regulations shall be considered as abrogating the provisions of any ordinance, rule or regulation of any state or local jurisdiction providing such ordinance, rule, regulation or general plan element is equal to or more stringent than these minimum standards. The Board may certify local ordinances as equaling or exceeding these regulations when they provide the same practical effect.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4117 and 4290, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1270.04. Provisions for Application of These Regulations.

This subchapter shall be applied as follows:

(a) local jurisdictions shall provide the Director with notice of applications for building permits, tentative parcel maps, tentative maps, and use permits for construction or development within SRA.

(b) the Director shall review and make fire protection recommendations on applicable construction or development permits or maps provided by the local jurisdiction.

(c) the local jurisdiction shall ensure that the applicable sections of this subchapter become a condition of approval of any applicable construction or development permit or map.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1270.05. Inspection Authority.

(a) Inspection shall be made pursuant to section 1270.06 by:

(1) the Director, or

(2) local jurisdictions that have assumed state fire protection responsibility on SRA lands, or

(3) local jurisdictions where these regulations have been implemented through that jurisdiction's building permit or subdivision approval process.

(b) Reports of violations shall be provided to the CDF Ranger Unit headquarters that administers SRA fire protection in that county.

NOTE: Authority cited: Sections 4119 and 4290, Public Resources Code. Reference: Section 4290, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1270.06. Inspections.

The inspection authority may inspect for compliance with these regulations. When inspections are conducted, they should occur prior to: the issuance of the use permit; certificate of occupancy; the recordation of the parcel map or final map; the filing of a notice of completion; or the final inspection of any project or building permit.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4119, 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1270.07. Exceptions to Standards.

Upon request by the applicant, exceptions to standards within this subchapter and mitigated practices may be allowed by the inspection author-

ity, where the exception provides the same overall practical effect as these regulations towards providing defensible space.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1270.08. Requests for Exceptions.

Requests for an exception shall be made in writing to the inspection authority by the applicant or the applicant's authorized representative. The request shall state the specific section(s) for which an exception is requested, material facts supporting the contention of the applicant, the details of the exception or mitigating measure proposed, and a map showing the proposed location and siting of the exception or mitigation measure.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1270.09. Appeals.

Where an exception is not granted by the inspection authority, the applicant may appeal such denial to the local jurisdiction. The local jurisdiction may establish or utilize an appeal process consistent with existing local building or planning department appeal processes.

Before the local jurisdiction makes a determination on an appeal, the inspection authority shall be consulted and shall provide to that local jurisdiction documentation outlining the effects of the requested exception on wildland fire protection.

If an appeal is granted, the local jurisdiction shall make findings that the decision meets the intent of providing defensible space consistent with these regulations. Such findings shall include a statement of reasons for the decision. A written copy of these findings shall be provided to the CDF Ranger Unit headquarters that administers SRA fire protection in that county.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1271.00. Definitions.

Accessory building: Any building used as an accessory to residential, commercial, recreational, industrial, or educational purposes as defined in the California Building Code, 1989 Amendments, chapter 11, group M, division 1, Occupancy that requires a building permit.

Agriculture: Land used for agricultural purposes as defined in a local jurisdiction's zoning ordinances.

Building: Any structure used or intended for supporting or sheltering any use or occupancy that is defined in the California Building Code, 1989 Amendments, chapter 11, except group M, division 1, Occupancy. For the purposes of this subchapter, building includes mobile homes and manufactured homes, churches, and day care facilities.

CDF: California Department of Forestry and Fire Protection.

Dead-end road: A road that has only one point of vehicular ingress/egress, including cul-de-sacs and looped roads.

Defensible space: The area within the perimeter of a parcel, development, neighborhood or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching wildfire or defense against encroaching wildfires or escaping structure fires. The perimeter as used in this regulation is the area encompassing the parcel or parcels proposed for construction and/or development, excluding the physical structure itself. The area is characterized by the establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures.

Development: As defined in section 66418.1 of the California Government Code.

Director: Director of the Department of Forestry and Fire Protection or his/her designee.

Driveway: A vehicular access that serves no more than two buildings, with no more than 3 dwelling units on a single parcel, and any number of accessory buildings.

Dwelling unit: Any building or portion thereof which contains living facilities, including provisions for sleeping, eating, cooking and/or sanitation for not more than one family.

Exception: An alternative to the specified standard requested by the applicant that may be necessary due to health, safety, environmental conditions, physical site limitations or other limiting conditions such as recorded historical sites, that provides mitigation of the problem.

Fire valve: see hydrant.

Fuel modification area: An area where the volume of flammable vegetation has been reduced, providing reduced fire intensity and duration.

Greenbelts: A facility or land-use, designed for a use other than fire protection, which will slow or resist the spread of a wildfire. Includes parking lots, irrigated or landscaped areas, golf courses, parks, playgrounds, maintained vineyards, orchards or annual crops that do not cure in the field.

Hammerhead/T: A roadway that provides a "T" shaped, three-point turnaround space for emergency equipment, being no narrower than the road that serves it.

Hydrant: A valved connection on a water supply/storage system, having at least one 2 1/2 inch outlet, with male American National Fire Hose Screw Threads (NH) used to supply fire apparatus and hoses with water.

Local Jurisdiction: Any county, city/county agency or department, or any locally authorized district that issues or approves building permits, use permits, tentative maps or tentative parcel maps, or has authority to regulate development and construction activity.

Occupancy: The purpose for which a building, or part thereof, is used or intended to be used.

One-way road: A minimum of one traffic lane width designed for traffic flow in one direction only.

Roads, streets, private lanes: Vehicular access to more than one parcel; access to any industrial or commercial occupancy; or vehicular access to a single parcel with more than two buildings or four or more dwelling units.

Roadway: Any surface designed, improved, or ordinarily used for vehicle travel.

Roadway structures: Bridges, culverts, and other appurtenant structures which supplement the roadway bed or shoulders.

Same Practical Effect: As used in this subchapter, means an exception or alternative with the capability of applying accepted wildland fire suppression strategies and tactics, and provisions for fire fighter safety, including:

- (a) access for emergency wildland fire equipment,
- (b) safe civilian evacuation,
- (c) signing that avoids delays in emergency equipment response,
- (d) available and accessible water to effectively attack wildfire or defend a structure from wildfire, and
- (e) fuel modification sufficient for civilian and fire fighter safety.

Shoulder: Roadbed or surface adjacent to the traffic lane.

State Board of Forestry (SBOF): A nine member board, appointed by the Governor, which is responsible for developing the general forest policy of the state, for determining the guidance policies of the Department of Forestry and Fire Protection, and for representing the state's interest in federal land in California.

State Responsibility Area (SRA): As defined in Public Resources Code sections 4126–4127; and the California Code of Regulations, title 14, division 1.5, chapter 7, article 1, sections 1220–1220.5.

Structure: That which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

Subdivision: As defined in section 66424 of the Government Code.

Traffic lane: The portion of a roadway that provides a single line of vehicle travel.

Turnaround: A roadway, unobstructed by parking, which allows for a safe opposite change of direction for emergency equipment. Design of such area may be a hammerhead/T or terminus bulb.

Turnouts: A widening in a roadway to allow vehicles to pass.

Vertical clearance: The minimum specified height of a bridge or over-head projection above the roadway.

Wildfire: As defined in Public Resources Code sections 4103 and 4104.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5–30–91; operative 5–30–91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1271.05. Distance Measurements.

All specified or referenced distances are measured along the ground, unless otherwise stated.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5–30–91; operative 5–30–91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1272.00. Maintenance of Defensible Space Measures.

To ensure continued maintenance of properties in conformance with these standards and measures and to assure continued availability, access, and utilization of the defensible space provided for in these standards during a wildfire, provisions for annual maintenance shall be included in the development plans and/or shall be provided as a condition of the permit, parcel or map approval.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5–30–91; operative 5–30–91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

Article 2. Emergency Access

§ 1273.00. Intent.

Road and street networks, whether public or private, unless exempted under section 1270.02(e), shall provide for safe access for emergency wildland fire equipment and civilian evacuation concurrently, and shall provide unobstructed traffic circulation during a wildfire emergency consistent with sections 1273.00 through 1273.11.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5–30–91; operative 5–30–91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1273.01. Road Width.

All roads shall be constructed to provide a minimum of two nine-foot traffic lanes providing two-way traffic flow, unless other standards are provided in this article, or additional requirements are mandated by local jurisdictions or local subdivision requirements.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5–30–91; operative 5–30–91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1273.02. Roadway Surface.

The surface shall provide unobstructed access to conventional drive vehicles, including sedans and fire engines. Surfaces should be established in conformance with local ordinances, and be capable of supporting a 40,000 pound load.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1273.03. Roadway Grades.

The grade for all roads, streets, private lanes and driveways shall not exceed 16 percent.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1273.04. Roadway Radius.

(a) No roadway shall have a horizontal inside radius of curvature of less than 50 feet and additional surface width of 4 feet shall be added to curves of 50-100 feet radius; 2 feet to those from 100-200 feet.

(b) The length of vertical curves in roadways, exclusive of gutters, ditches, and drainage structures designed to hold or divert water, shall be not less than 100 feet.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1273.05. Roadway Turnarounds.

Turnarounds are required on driveways and dead-end roads as specified in this article. The minimum turning radius for a turnaround shall be 40 feet from the center line of the road. If a hammerhead/T is used, the top of the "T" shall be a minimum of 60 feet in length.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1273.06. Roadway Turnouts.

Turnouts shall be a minimum of 10 feet wide and 30 feet long with a minimum 25 foot taper on each end.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1273.07. Roadway Structures.

(a) All driveway, road, street, and private lane roadway structures shall be constructed to carry at least the maximum load and provide the minimum vertical clearance as required by Vehicle Code sections 35550, 35750, and 35250.

(b) Appropriate signing, including but not limited to weight or vertical clearance limitations, one-way road or single lane conditions, shall reflect the capability of each bridge.

(c) A bridge with only one traffic lane may be authorized by the local jurisdiction; however, it shall provide for unobstructed visibility from one end to the other and turnouts at both ends.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1273.08. One-Way Roads.

All one-way roads shall be constructed to provide a minimum of one 10-foot traffic lane. The local jurisdiction may approve one-way roads. All one-way roads shall connect to a two-lane roadway at both ends, and shall provide access to an area currently zoned for no more than 10 dwelling units. In no case shall it exceed 2640 feet in length. A turnout shall

be placed and constructed at approximately the midpoint of each one-way road.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1273.09. Dead-End Roads.

(a) The maximum length of a dead-end road, including all dead-end roads accessed from that dead-end road, shall not exceed the following cumulative lengths, regardless of the number of parcels served:

- parcels zoned for less than one acre – 800 feet
- parcels zoned for 1 acre to 4.99 acres – 1320 feet
- parcels zoned for 5 acres to 19.99 acres – 2640 feet
- parcels zoned for 20 acres or larger – 5280 feet

All lengths shall be measured from the edge of the roadway surface at the intersection that begins the road to the end of the road surface at its farthest point. Where a dead-end road crosses areas of differing zoned parcel sizes, requiring different length limits, the shortest allowable length shall apply.

(b) Where parcels are zoned 5 acres or larger, turnarounds shall be provided at a maximum of 1320 foot intervals.

(c) Each dead-end road shall have a turnaround constructed at its terminus.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1273.10. Driveways.

All driveways shall provide a minimum 10 foot traffic lane and unobstructed vertical clearance of 15 feet along its entire length.

(a) Driveways exceeding 150 feet in length, but less than 800 feet in length, shall provide a turnout near the midpoint of the driveway. Where the driveway exceeds 800 feet, turnouts shall be provided no more than 400 feet apart.

(b) A turnaround shall be provided at all building sites on driveways over 300 feet in length, and shall be within 50 feet of the building.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1273.11. Gate Entrances.

(a) Gate entrances shall be at least two feet wider than the width of the traffic lane(s) serving that gate.

(b) All gates providing access from a road to a driveway shall be located at least 30 feet from the roadway and shall open to allow a vehicle to stop without obstructing traffic on that road.

(c) Where a one-way road with a single traffic lane provides access to a gated entrance, a 40 foot turning radius shall be used.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

Article 3. Signing and Building Numbering

§ 1274.00. Intent.

To facilitate locating a fire and to avoid delays in response, all newly constructed or approved roads, street, and buildings shall be designated by names or numbers, posted on signs clearly visible and legible from the roadway. This section shall not restrict the size of letters or numbers appearing on street signs for other purposes.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1274.01. Size of Letters, Numbers and Symbols for Street and Road Signs.

Size of letters, numbers, and symbols for street and road signs shall be a minimum 3 inch letter height, 3/8 inch stroke, reflectorized, contrasting with the background color of the sign.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1274.02. Visibility and Legibility of Street and Road Signs.

Street and road signs shall be visible and legible from both directions of vehicle travel for a distance of at least 100 feet.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1274.03. Height of Street and Road Signs.

Height of street and road signs shall be uniform county wide, and meet the visibility and legibility standards of this article.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1274.04. Names and Numbers on Street and Road Signs.

Newly constructed or approved public and private roads and streets must be identified by a name or number through a consistent countywide system that provides for sequenced or patterned numbering and/or non-duplicating naming within each county. All signs shall be mounted and oriented in a uniform manner. This section does not require any entity to rename or renumber existing roads or streets, nor shall a roadway providing access only to a single commercial or industrial occupancy require naming or numbering.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1274.05. Intersecting Roads, Streets and Private Lanes.

Signs required by this article identifying intersecting roads, streets and private lanes shall be placed at the intersection of those roads, streets, and/or private lanes.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1274.06. Signs Identifying Traffic Access Limitations.

A sign identifying traffic access or flow limitations, including but not limited to weight or vertical clearance limitations, dead-end road, one-way road or single lane conditions, shall be placed:

- (a) at the intersection preceding the traffic access limitation, and
- (b) no more than 100 feet before such traffic access limitation.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1274.07. Installation of Road, Street and Private Lane Signs.

Road, street and private lane signs required by this article shall be installed prior to final acceptance by the local jurisdiction of road improvements.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1274.08. Addresses for Buildings.

All buildings shall be issued an address by the local jurisdiction which conforms to that jurisdiction's overall address system. Accessory buildings will not be required to have a separate address; however, each dwelling unit within a building shall be separately identified.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1274.09. Size of Letters, Numbers and Symbols for Addresses.

Size of letters, numbers and symbols for addresses shall be a minimum 3 inch letter height, 3/8 inch stroke, reflectorized, contrasting with the background color of the sign.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1274.10. Installation, Location and Visibility of Addresses.

(a) All buildings shall have a permanently posted address, which shall be placed at each driveway entrance and visible from both directions of travel along the road. In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter, and the address shall be visible and legible from the road on which the address is located.

(b) Address signs along one-way roads shall be visible from both the intended direction of travel and the opposite direction.

(c) Where multiple addresses are required at a single driveway, they shall be mounted on a single post.

(d) Where a roadway provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest road intersection providing access to that site.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

Article 4. Emergency Water Standards

§ 1275.00. Intent.

Emergency water for wildfire protection shall be available and accessible in quantities and locations specified in the statute and these regulations, in order to attack a wildfire or defend property from a wildfire.

Such emergency water may be provided in a fire agency mobile water tender, or naturally occurring or manmade containment structure, as long as the specified quantity is immediately available.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1275.01. Application.

The provisions of this article shall apply when new parcels are approved by a local jurisdiction. The emergency water system shall be

available on-site prior to the completion of road construction, where a community water system is approved, or prior to the completion of building construction, where an individual system is approved.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1275.10. General Standards.

Water systems that meet or exceed the standards specified in Public Utilities Commission of California (PUC) revised General Order #103, Adopted June 12, 1956 (Corrected September 7, 1983, Decision 83-09-001), section VIII Fire Protection Standards and other applicable sections relating to fire protection water delivery systems, static water systems equaling or exceeding the National Fire Protection Association (NFPA) Standard 1231, "Standard on Water Supplies for Suburban and Rural Fire Fighting," 1989 Edition, or mobile water systems that meet the Insurance Services Office (ISO) Rural Class 8, 2nd Edition 3-80, standard shall be accepted as meeting the requirements of this article. These documents are available at CDF Ranger Unit Headquarters.

Nothing in this article prohibits the combined storage of emergency wildfire and structural firefighting water supplies unless so prohibited by local ordinance or specified by the local fire agency.

Where freeze protection is required by local jurisdictions, such protection measures shall be provided.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1275.15. Hydrant/Fire Valve.

(a) The hydrant or fire valve shall be 18 inches above grade, 8 feet from flammable vegetation, no closer than 4 feet nor farther than 12 feet from a roadway, and in a location where fire apparatus using it will not block the roadway.

The hydrant serving any building shall:

(1) be not less than 50 feet nor more than 1/2 mile by road from the building it is to serve, and

(2) be located at a turnout or turnaround, along the driveway to that building or along the road that intersects with that driveway.

(b) The hydrant head shall be brass with 2 1/2 inch National Hose male thread with cap for pressure and gravity flow systems and 4 1/2 inch draft systems. Such hydrants shall be wet or dry barrel as required by the delivery system. They shall have suitable crash protection as required by the local jurisdiction.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1275.20. Signing of Water Sources.

Each hydrant/fire valve or access to water shall be identified as follows:

(a) if located along a driveway, a reflectorized blue marker, with a minimum dimension of 3 inches shall be located on the driveway address sign and mounted on a fire retardant post, or

(b) if located along a street or road,

(1) a reflectorized blue marker, with a minimum dimension of 3 inches, shall be mounted on a fire retardant post. The sign post shall be within 3 feet of said hydrant/fire valve, with the sign no less than 3 feet nor greater than 5 feet above ground, in a horizontal position and visible from the driveway, or

(2) as specified in the State Fire Marshal's Guidelines for Fire Hydrant Markings Along State Highways and Freeways, May 1988.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

Article 5. Fuel Modification Standards

§ 1276.00. Intent.

To reduce the intensity of a wildfire by reducing the volume and density of flammable vegetation, the strategic siting of fuel modification and greenbelts shall provide

(1) increased safety for emergency fire equipment and evacuating civilians; and

(2) a point of attack or defense from a wildfire.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1276.01. Setback for Structure Defensible Space.

(a) All parcels 1 acre and larger shall provide a minimum 30 foot setback for buildings and accessory buildings from all property lines and/or the center of a road.

(b) For parcels less than 1 acre, local jurisdictions shall provide for the same practical effect.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1276.02. Disposal of Flammable Vegetation and Fuels.

Disposal, including chipping, burying, burning or removal to a landfill site approved by the local jurisdiction, of flammable vegetation and fuels caused by site development and construction, road and driveway construction, and fuel modification shall be completed prior to completion of road construction or final inspection of a building permit.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1276.03. Greenbelts.

Subdivisions and other developments, which propose greenbelts as a part of the development plan, shall locate said greenbelts strategically, as a separation between wildland fuels and structures. The locations shall be approved by the inspection authority.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

HISTORY

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

Subchapter 3. Fire Hazard

Article 1. Fire Hazard Severity

§ 1280. Fire Hazard Severity Zones.

The fire hazard severity zones and the rating reflecting the degree of severity of fire hazard that is expected to prevail in those zones, shall be designated by the Director and delineated on a series of maps on file in the Sacramento Office of the Department of Forestry and Fire Protection, Fire and Resources Assessment Program, 1300 U St. The official maps are also filed electronically on the Department's internet web site, www.fire.ca.gov/wildlands_zones_maps.php. The maps are entitled "Fire Hazard Severity Zones in [State Responsibility Area] SRA," dated November 7, 2007, and are incorporated by reference.

NOTE: Authority cited: Sections 4202, 4203 and 4204, Public Resources Code. Reference: Sections 4201, 4202, 4203 and 4204, Public Resources Code.

HISTORY

1. New article 6 (section 1280) filed 3-12-85; effective thirtieth day thereafter (Register 85, No. 11).
2. New subchapter 3 heading and renumbering of article 6 to article 1 filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
3. Amendment of section and NOTE filed 12-28-2007; operative 1-1-2008 pursuant to Government Code section 11343.4 (Register 2007, No. 52).

Article 2. Fire Hazard Reduction Standard for Railroad Right-of-Way

§ 1290. Application.

The provisions of this Article shall apply within railroad rights-of-way on forest, brush, and grass covered land throughout the state, annually commencing and ending on the dates set forth in 14 California Code of Regulations 1253 by geographic areas.

NOTE: Authority cited: Sections 4201-4204, Public Resources Code. Reference: Sections 4201-4204, Public Resources Code.

HISTORY

1. New section filed 1-22-88; operative 2-21-88 (Register 88, No. 6).
2. Renumbering article 7 to article 2 filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

§ 1291. Fire Protection Agreements.

Nothing contained in these regulations shall preempt any order or agreement in effect on the date of adoption of these regulations between an agency responsible for fire protection and an operator, so long as that order or agreement is not in conflict with the regulations contained in this article and is equivalent to or more restrictive than these regulations.

NOTE: Authority cited: Section 4296.5, Public Resources Code. Reference: Section 4296.5, Public Resources Code.

HISTORY

1. New section filed 1-22-88; operative 2-21-88 (Register 88, No. 6).

§ 1292. Definitions.

The following definitions shall apply to this article unless the context clearly requires otherwise:

(a) "Agency Having Primary Responsibility for Fire Protection" means any public agency of the federal, state, county, city, city and county, or district government which is the primary agency responsible directly or through contract for fire prevention and suppression on lands within the jurisdiction of that agency.

(b) "Authorized Agent" means any employee of an agency having primary responsibility for fire protection who is authorized to enforce the state's Forest and Fire Laws.

(c) "Distance" shall in all cases herein mean horizontal distance and not slope distance.

(d) "Fire Hazard" means a condition resulting from a combination of factors of ease of ignition, heat yield, and rate of fire spread as influenced by particular vegetation and other flammable materials, weather and slope.

(e) "Flammable Material" shall include, but is not limited to, chips; sawdust; coal; leaves; needles; duff and other dead and desiccated vegetation; and ties which are rotten on exposed surfaces or excessively splintered to the extent they will readily ignite and propagate fire.

"Flammable Material" shall not include:

(1) wooden poles or towers and crossarms supporting switching circuits or other electrical power or communication conductors not subject to PRC 4292 or 4293;

(2) wooden ties except as provided above;

(3) wooden components of trestles, tunnels, and other structures;

(4) living trees, shrubs, and brush, provided that any dead and desiccated portions are removed so that such living trees, shrubs and brush are not easily ignited or able to propagate fire.

(f) "Forest-, Brush-, and Grass-Covered Land" means lands covered wholly or in part by timber (trees), brush (shrubs), grass (including grain) or other natural vegetation. Cultivated agricultural lands planted to crops other than grain are not included.

(g) "Operator" means the person or entity responsible for maintenance of the railroad right-of-way.

(h) "Order" means a written mandate issued by an authorized agent of a public agency having primary responsibility for fire prevention hazard reduction of the area to destroy, remove or modify any vegetation or other flammable material in order to reduce or eliminate an existing fire hazard on the railroad right-of-way, pursuant to this Article.

(i) "Railroad-Caused Fire" means those preventable fires resulting from operations upon railroad rights-of-way. May not include unpreventable fires such as caused by wrecks, bombs or natural causes (i.e. lightning).

(j) "Right-of-Way" means the strip of land, outside of yard limits, owned or controlled by the person or entity operating the railroad for a distance not exceeding 100 feet or to the property boundary measured at right angles to the axis of the rail at any given location. The distance shall be measured from the outermost rail on both sides of the mainline or mainlines, on sidings, and also includes intervening strips between sidings and mainlines.

(k) "Towpath" means a narrow strip of right-of-way adjacent to each side of ballast which is commonly referred to as the walkway and is normally kept clear for personnel safety and is not less than six feet from outside rail to outer edge.

NOTE: Authority cited: Section 4296.5, Public Resources Code. Reference: Section 4296.5, Public Resources Code.

HISTORY

1. New section filed 1-22-88; operative 2-21-88 (Register 88, No. 6).

§ 1293. Minimum Standards.

Railroad rights-of-way shall be maintained in accordance with the following minimum fire hazard reduction standards:

(a) Area within ten (10) feet of outside rail, including ballast and towpath. The area must be kept clear of flammable material that by its physical arrangement or its accumulation is likely to contribute to the propagation of railroad-caused fires.

(b) Area within twenty-five (25) feet of outside of rail, including ballast and towpath. The minimum 10 foot standard will be extended to 25 feet if such an area has experienced one (1) or more preventable railroad-caused fire(s) in the previous five (5) years. An identified fire start area shall be maintained free of accumulation up to 25 feet as specified for 1/4 mile linear distance on either side of the fire start area and along both sides of the rail track.

(c) Culverts (Conduits) located on right-of-way. Inlet and outlet portals of culverts located within a distance of 25 feet from an outside rail must be kept clear of flammable material for a distance not less than five (5) feet.

(d) Tunnel portals. These areas must be kept clear of all flammable materials, not an integral part of such tunnel portals, for a minimum distance of 30-feet.

NOTE: Authority cited: Section 4296.5, Public Resources Code. Reference: Section 4296.5, Public Resources Code.

HISTORY

1. New section filed 1-22-88; operative 2-21-88 (Register 88, No. 6).

§ 1294. Compliance Order.

When an inspection by an authorized agent reveals noncompliance of these minimum standards, an order shall be issued detailing abatement requirements as provided in Section 1295.

NOTE: Authority cited: Section 4296.5, Public Resources Code. Reference: Section 4296.5, Public Resources Code.

§ 1295. Order Format.

An order to destroy, remove or modify vegetation or other flammable material, pursuant to P.R.C. 4296.5 shall be made substantially in the following format: (Name, Address and Telephone Number of Director's Agent or Agency having Primary Responsibility for Fire Protection)