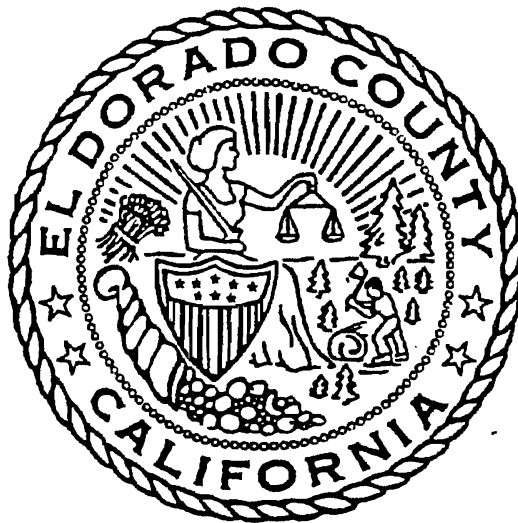


COUNTY OF EL DORADO



DESIGN AND IMPROVEMENT STANDARDS MANUAL

Adopted:

May 27, 1986

Resolution No. 136-86

Revised 5/18/90

Resolution No. 128-90



COUNTY OF EL DORADO

DESIGN AND IMPROVEMENT
STANDARDS MANUAL

BOARD OF SUPERVISORS

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Prepared by:

El Dorado County Community Development Department
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Resource Conservation District
Jim Kimmel, Director

El Dorado County Office of Emergency Services
Vernon Peterson, Deputy Director

Technical Assistance Provided by:

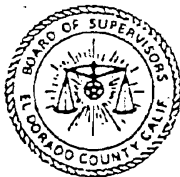
El Dorado County Fire Agencies
El Dorado County Fire Chiefs' Association
California Department of Forestry
United States Forest Service

Adopted:
May 27, 1986
Resolution No. 136-86

Revised:
November 22, 1988
Resolution No. 390-88

Revised:
August 22, 1989
Resolution No. 262-89

Revised:
May 18, 1990
Resolution No. 12S-90



RESOLUTION No. 322-92

OF THE BOARD OF SUPERVISORS OF THE COUNTY OF EL DORADO

RESOLUTION TO ADOPT CHANGES TO THE "DESIGN AND IMPROVEMENT STANDARDS MANUAL"

WHEREAS, El Dorado County regulates development on private property within the unincorporated areas to safeguard life, limb, health, property and public welfare; and

WHEREAS, developers make an offer of dedication of the private property to El Dorado County including improvements; and

WHEREAS, the "Design and Improvement Standards Manual" standardizes generally accepted engineering practices in the improvement of dedicated property; and

WHEREAS, the "Design and Improvement Standards Manual" was adopted by the Board of Supervisors on May 27, 1986, and revised on November 22, 1988 and May 8, 1990; and

WHEREAS, public input was an important factor in developing the amendments to the "Design and Improvement Standards Manual"; and

WHEREAS, the prevalence of steep terrain in El Dorado County mandates flexibility in design to minimize grading and to maintain the visual resource quality of the hillside environment; and

NOW THEREFORE, BE IT RESOLVED, that the El Dorado Board of Supervisors amends specified sections of the "Design and Improvements Standards Manual" as follows:

HILLSIDE DESIGN STANDARDS

NOTE: The following standards shall be amended to the Design Manual as described by volume and section notation below.

1. VOLUME II SECTION 2 GENERAL INFORMATION AND CRITERIA

Paragraph B-4 shall be amended to read as follows:

4) Area requirements for lots: Lots having an average natural or graded (if proposed) slope of 10% or greater shall have the minimum area and frontage indicated in Section 12 herein, or shall comply with zoning requirements for lots and area and frontage, whichever is more restrictive.

2. VOLUME II SECTION 2 GENERAL INFORMATION AND CRITERIA

Paragraph B-7 shall be amended to read as follows:

7) Flag shaped lots shall be prohibited except as provided for by the provisions of SECTION 12 D herein.

Paragraph E-3 shall be amended to read as follows:

3) Pedestrian and other non-vehicular circulation systems are an integral part of any development project. These systems shall be incorporated into the tentative map design and noted or described on the tentative map.

Public pedestrian walkways, or sidewalks may be required where deemed essential to provide for circulation and access including but not limited to school playgrounds, parks, shopping centers, public transit facilities and other community facilities which may generate pedestrian use. The right-of-way for said walkway shall not be less than 10 feet wide and shall only be required when the project is within a one-mile radius of the community facility, existing or proposed.

3. VOLUME II SECTION 12 shall be added to read as follows:

SECTION 12 HILLSIDE LAND USE STANDARDS

A. Intent/Response

It is the purpose of these standards to:

- Maintain the visual quality of the environment;

- Minimize damage to natural terrain;
- Provide for creative design for hillside developments;
- Provide standards to assist the Board of Supervisors, the Planning Commission, the Planning Director, the Transportation Director, and the staff in the evaluation of hillside developments in El Dorado County; and to
- Complement the Planned Development and Specific Plan processes to attain the best quality of hillside development.

It is intended that these standards serve as a supplement to other applicable regulations through providing additional planning and design tools to minimize environmental impact.

These standards are not meant to discourage unique and/or inventive design and planning solutions.

It is the intent of the County of El Dorado that building sites in hillside areas be planned, designed, and constructed in such a manner as to preserve or enhance to the greatest extent possible those physical features which optimize the aesthetic quality and

public safety of the final built environment. The design flexibility inherent in these standards is intended to result in creative site planning, meeting the challenges of steep terrain, yet minimizing the effects of construction on the visual quality of the hillside. It is not intended to inhibit or restrict development.

SPECIAL NOTE:

The Planned Development and/or Specific Plan processes which allow further creativity and flexibility in construction on hillsides, are strongly encouraged in hillside areas to complement the "HILLSIDE LAND USE STANDARDS" to achieve the best quality of hillside development.

B. Applicability/Slope Calculation

These "HILLSIDE LAND USE STANDARDS" shall be applicable in Class I subdivisions under any circumstance where the natural site cross-slope is 10% or greater.

For purposes of Section 12, cross-slope shall be calculated by either dividing the vertical distance by the horizontal distance on a section drawn perpendicular to the contours for the full dimension of the proposed lot at 50 foot intervals with a minimum of two (2) such sections per lot; or by making the same calculation between the highest and lowest point within the lot, whichever results in the highest average cross

slope. The cross-slope is then the average of the sections taken for each lot. Cross-slopes ending in 1/2 percent or more shall be rounded to the next highest whole number. Each lot or remainder created shall individually meet the minimum lot size standard based upon that lot's particular slope.

C. Lot Dimension Standards

1. Lot Frontage - All residential lots shall have a minimum frontage depending on the slope of the lot as noted below, or comply with zoning requirements, which ever is more restrictive:

<u>SLOPE</u>	<u>MINIMUM LOT FRONTAGE</u>
10-15%	75 feet
16-20%	90 feet
21-25%	105 feet
26-30%	120 feet
31-35%	135 feet
36-40%	150 feet

D. Flag Shaped Lots

Flag shaped lots shall be permitted only in planned developments and only when evidence has been provided which clearly indicates that such lots will result in substantially less grading or less impact on the

environment. All flag shaped lots shall conform to the following standards:

1. The narrow access portion of the lot shall not exceed 100 feet in length.
2. The driveway located within the access area shall be paved to a minimum width of 16 feet.
3. No portion of the driveway shall exceed a 16% grade. Grading for the driveway shall be noted on the preliminary grading plan.
4. The access strip shall not be included in minimum lot area requirements.
5. The access strip shall have a minimum width at any point of 25 feet and shall contain cut or fill slope areas created by the access drive.
6. A common access drive may be used to serve no more than two parcels subject to the standards noted herein except as follows:
 - a. The width of each parallel access strip shall not be less than 12 1/2 feet; and

b. An access easement shall be provided to the use and benefit of both lots served.

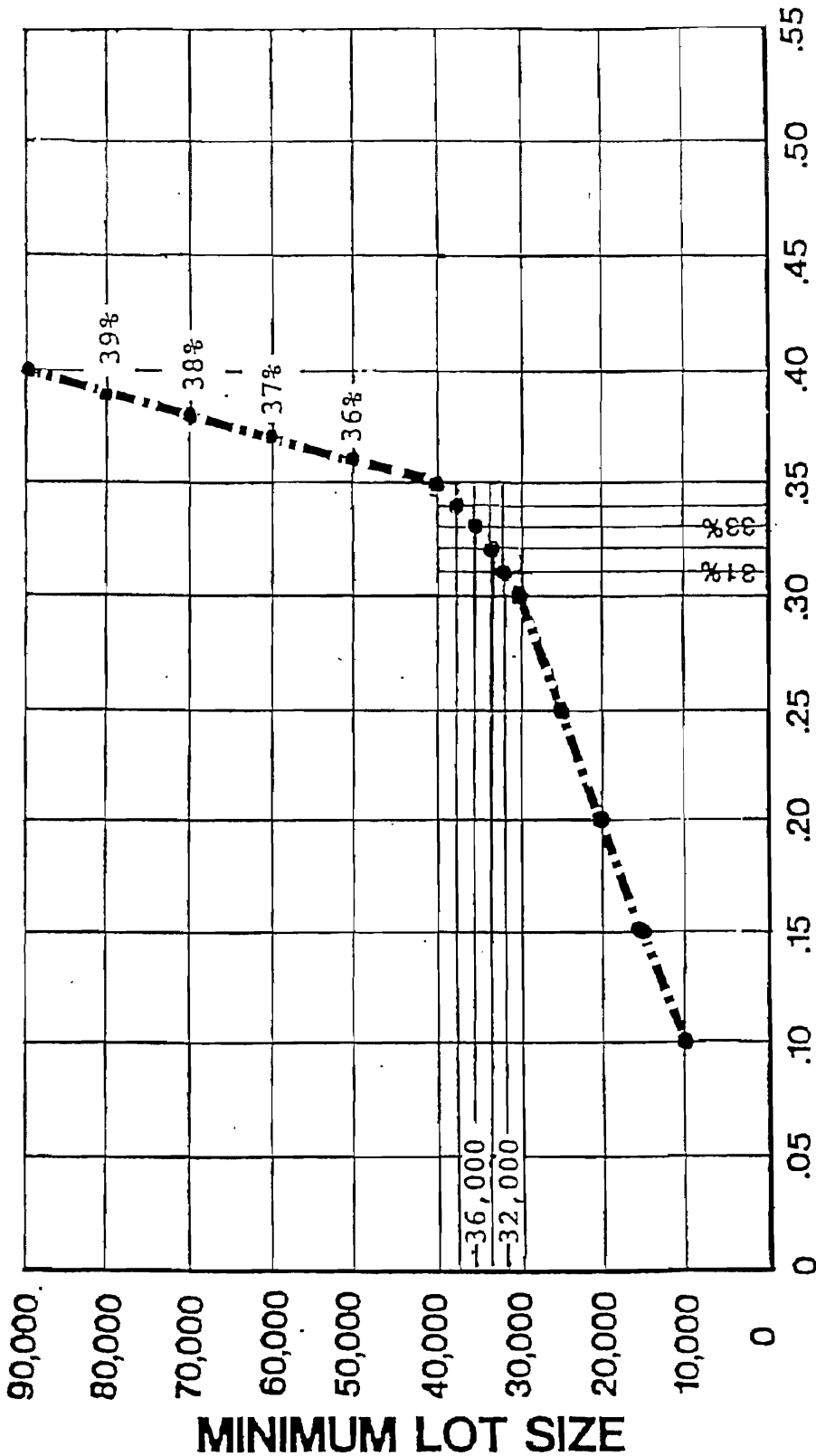
E. General Residential Lot Size Standards

The minimum required lot area shall be computed in accordance with the applicable provisions of the "Minimum Lot Size By Lot Slope" graph (Exhibit A). Lot slope shall be calculated as the average cross-slope of the lot as noted in Volume II, Section 12.

F. Standards Consistency

Unless specifically addressed herein, all other provisions of the "Design and Improvement Standards Manual" shall apply.

Any portion of a lot with slopes exceeding 40% shall not be considered as part of the required minimum lot area.



(UNLESS OTHERWISE REQUIRED BY THE EXISTING ZONE DISTRICT)

EXHIBIT A

MINIMUM LOT SIZE BY SLOPE GRAPH

SPECIAL NOTE:

All lots created utilizing these standards shall integrally comply with both the "HILLSIDE LAND USE STANDARDS" and the "HILLSIDE ROAD STANDARDS," and should at the applicant's option attempt to incorporate the suggestions of "HILLSIDE DESIGN GUIDELINES," a design guideline booklet prepared by S.A.G.E. (a local professional organization of surveyors, architects, geologists, and engineers) for public distribution and use. The "HILLSIDE DESIGN GUIDELINES" are only intended to provoke further creative thought and are not to be required standards.

G. Grading Plan Requirements - Hillside Developments

1. Applicability and Intent

It is the intent of these standards to minimize the negative effects of grading on hillsides. When grading is necessary, every effort possible shall occur to minimize the negative effects, especially taking into consideration visual, engineering and erosion concerns.

a. Grading for Roads and Dwellings

A detailed grading plan shall be submitted with the tentative map, which conforms to the submittal requirements for preliminary grading plans as set forth in Section

15.14.240 of the County Grading Ordinance. The grading plan shall clearly identify the extent of cut and fill proposed; the location, sizes and types of retaining walls proposed; the landscaping, contouring, and erosion control measures necessary to accommodate the proposed design, and the phasing of the improvements.

The grading plans will be integral to the approved tentative map. The Planning Commission may attach conditions to the approval of the map which would limit the extent of grading, reduce visual resource impact, modify the manner in which the site grading and erosion control was to occur, and require the placement of restrictions in the CC&R's for the project relating to grading limitations or practices to limit the visual and environmental impact.

b. Administration

Upon approval of a final subdivision map, adequate notation shall be made in records of the El Dorado County's Permit Center which readily identifies approved hillside projects which are subject to special hillside grading standards.

4. VOLUME II SECTION 13 shall be added to read as follows:

SECTION 13 HILLSIDE ROAD STANDARDS

A. Application/Intent

It is the purpose of these standards to:

- Provide for safe movement of vehicles and pedestrians;
- Minimize the visual resource impact of grading and vegetation removal in construction of roads by controlling the grade, widths of rights-of way and paving, and other design and construction features; and to
- Allow flexibility in setting standards to prevent erosion, flooding, and slope failure and to minimize the environmental impacts of road construction.

These standards shall apply to the design of streets and roads in relatively steep, hilly, mountainous terrain where slopes exceed 16% as defined herein, and are intended to supplement normal County design standards. Further, these standards are applicable to Class I residential, multifamily, commercial and industrial tentative maps projects only.

These Hillside Road Standards shall be applicable under the following slope criteria:

Average Cross Slope:

0-15%	Normal County Standards apply
16-24%	Hillside Road Standards (Optional)
25%-or greater	Hillside Road Standards Required

These standards shall specifically apply to:

- Design and construction of all new public and private roads and road extensions in the hillside areas;
- Improvement of all or part of any road designated as "unimproved";
- Roads designed and constructed as part of a new subdivision or re-subdivision; and to
- Rebuilding or upgrading of existing improved roads.

These standards shall not apply to routine maintenance and repair of public or private roads but may be used as guidelines.

These standards are optional when applied through the planned development process.

B. Minimum Design Standards

1. Design Speed

Hillside roads may be designed for a design speed as low as 25 mph

2. Vertical Curves

Vertical curves shall be designed with a minimum curve length of 20 times the algebraic difference in grades for both crest and sag vertical curves, except at intersections.

$$K = \frac{L}{A} \propto KA = L$$
$$A = \Delta g$$

3. Horizontal Curves

Horizontal curves shall allow a minimum center line radius of 150 feet.

4. Intersections

Vertical curves at intersections shall have a minimum curve length of 20 times the algebraic difference in grades unless a lesser value is approved by the Department of Transportation.

The absolute value of the sum of the grades of intersection streets shall not exceed 15%. For

Revised
Replaces with AA side

streets that terminate at T intersections, the center line grade shall not exceed 6.5% for the first 50 feet from the center line of the through road.

5. Maximum Grade - See Design Manual, Volume II
Section 3 B (9)

6. Minimum Right-of-Way

The right-of-way and appurtenant slope easements shall be wide enough to accommodate all required improvements, including earth retention systems.

7. Minimum Road Width

The minimum hillside road widths are related to cross slopes and Average Daily Traffic (ADT), and are established as noted on Exhibit B.

EXHIBIT B

ROAD WIDTH STANDARDS

0 - 15% Cross slope (Normal County standards shall apply)

16 - 50% Cross slope

Width

Sidewalks

Dead end less than 500 ft.
(0 - 150 ADT)

24' *

None

Dead end greater than 500 ft.
(150 - 350 ADT)

28' *

4'
One Side

Through/loop road
(150 - 350 ADT)

24' *

4'
One Side

Through/loop road

28' *

4-6' **
One Side

Split level road
(350 - 2000 ADT)

20'
Each Level

4'
One Side
Each Level

Over 2000 ADT

(Normal County standards shall apply)

NOTES:

Paving width includes gutter pan

* = No on-street parking

** = Actual width based on ADT, street length, curves and location of bus stops, schools, parks, etc.

a. Cross slope calculations prepared shall be from a detailed topographic map or from actual field surveyed cross sections.

(1) Cross slopes are measured along a road section drawn perpendicular to the contours and extending 50 feet from each side of the center of the road center of road alignment. Further, cross-slope is the inclination of the ground surface across a road alignment expressed as a percent obtained by dividing vertical distance by horizontal distance.

(2) If the proposed road improvement is 100 feet long or less, cross slopes shall be calculated at the beginning, midpoint and end, and averaged.

(3) If the proposed road improvement is over 100 feet long, cross slopes shall be calculated at least every 50 feet and averaged for each 100 foot segment.

b. ADT in excess of 2,000 generally indicates a collector street, which whenever possible should avoid steep hillsides and shall be constructed to normal County Standards

c. Road construction shall not be permitted where the cross slope exceeds 40% unless detailed engineering evaluation demonstrates that safe, stable construction is possible, and retaining walls or other design techniques utilized to minimize grading impacts.

8. Shoulder Width

Level area beyond concrete improvements such as curb and gutter or sidewalks shall be a minimum of three (3) feet on the downhill side only.

9. Roadside Utilities/Facilities

Above ground roadside utilities/facilities (right-of-way encroachment) shall be placed with two (2) foot minimum clearance from top back of curb or back of sidewalk.

10. Parking Bays

Where on-street parking is not provided, replacement parking shall be provided in parking bays positioned to take advantage of terrain features to minimize cutting or filling. Parking bays are required to accommodate a minimum of two car spaces per lot; these spaces are required in addition to off-street parking requirements of the Zoning Ordinance, in configurations similar to those noted in Exhibit C.

These parking bays shall be located within the road easement, and be noted on the tentative map.

11. Turnarounds

Alternative turnarounds are allowed and encouraged. For alternative standards see Exhibit C.

12. Fire Hydrant Access Bay

Fire hydrant access bays shall be provided at each hydrant location as noted in Exhibit C, unless otherwise modified by the affected fire protection district. These access bays shall be located within the road access easement, and shall be noted on the tentative map.

C. Geotechnical Reports

1. Feasibility Report

A geotechnical feasibility report must be submitted with a tentative map or conceptual grading plan when hillside road standards are proposed.

2. Final Report

A final detailed geotechnical report must accompany final design or improvement plan submittals. The report shall include recommendations as to cut and fill slope stability, grading specifications, and inspection criteria.

3. Monitoring

Continuous on-site monitoring and observation by the developer's geotechnical engineer will be required during hillside grading operations with a detailed report and fill certification to be submitted to the Department of Transportation prior to the final acceptance of roadways.

D. Storm Drainage Considerations

Storm drainage facilities shall be designed consistent with El Dorado County standards. Because of the potential for high flow velocities and erosion problems, special consideration must be given to energy dissipation.

5. VOLUME III DESIGN STANDARD FOR LOT OR PARCEL (NOT SUBDIVISIONS)

SECTION 2 shall be added to read as follows:

SECTION 2 GRADING PERMIT REQUIREMENTS

HILLSIDE SUBDIVISIONS (Individual Lot or Parcel)

The standards which follow apply to all lots or parcels regardless of how they were created, where average cross slopes are 25% or greater, calculated as noted in Volume II Section 12 (B) herein.

A. Limited Foundation Grading

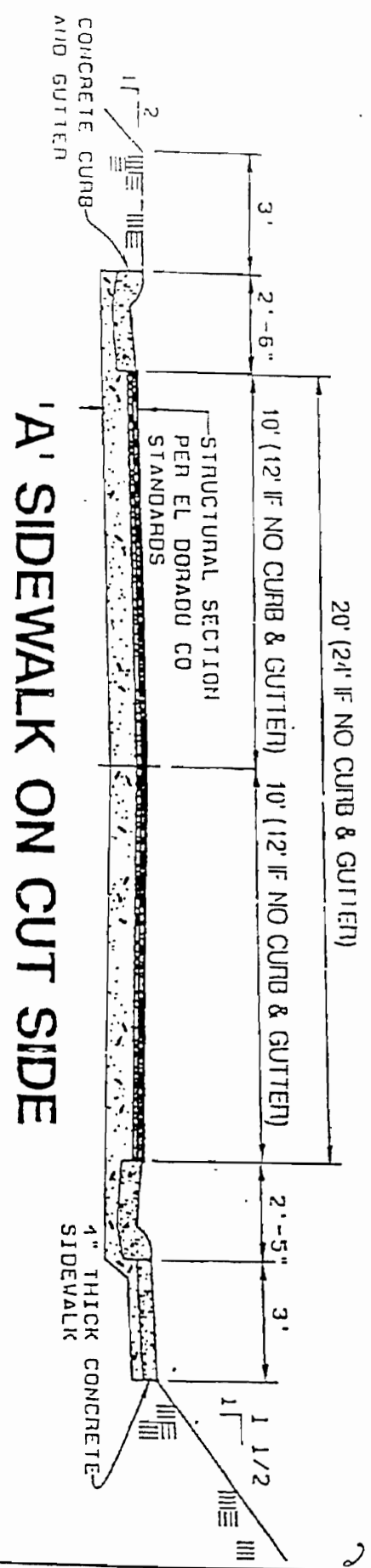
In those instances where on-site grading for dwellings will be limited as noted herein the provisions of Chapter 15.14 may apply, but no special hillside requirements apply:

1. Cut or fill will be located entirely within 5 feet of the foundation area of the proposed dwelling; or
2. Retaining walls are used to eliminate any cut or fill slopes, provided the area retained does not exceed three thousand (3,000) square feet total per lot.

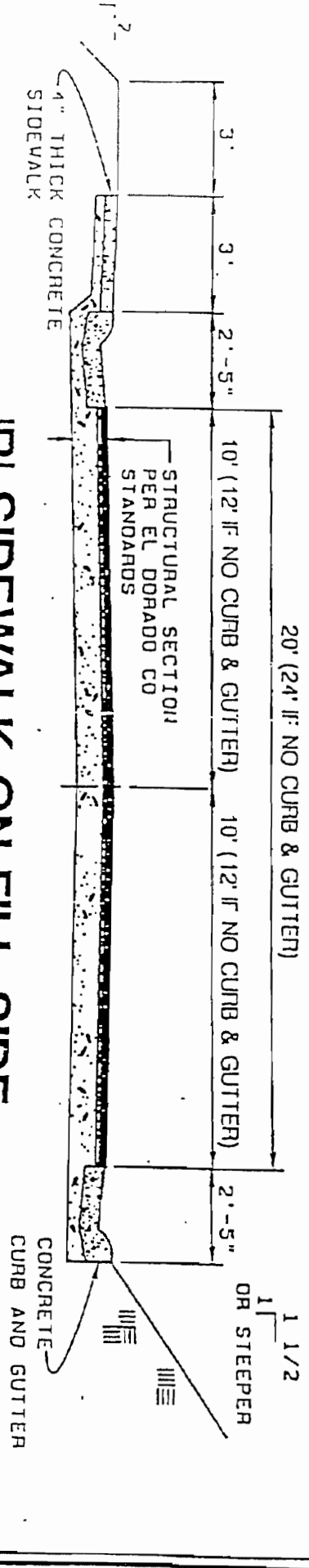
B. On-Site Lot Grading After Map Approval

Where grading is proposed which exceeds the limits noted in Volume III, Section 2, Subsection A above and was also not included in approved tentative map plans, then the following criteria shall apply:

1. The natural ground area disturbed by grading activity shall not exceed 25% of the total lot area, however under no circumstance shall the disturbed or retained area (Volume III, Section 2, A 2.), exceed 5,000 square feet. Foundation area described in Volume III Section 2, A 1. above, shall not be included in this 25% and 5,000 square foot calculation.
2. All cut and fill contours shall be rounded to eliminate abrupt edges.
3. Retaining walls in excess of ten feet in height shall be prohibited.
4. Cut slopes shall be prepared to allow for improved root growth based on a landscaping plan (see 5 below).
5. A landscape and irrigation plan which adequately replaces the natural vegetation, provides adequate erosion control, and provides visual improvements as may be necessary to reduce the negative effects of the proposed grading shall be submitted by a licensed landscape architect, licensed landscape contractor, and/or civil engineer.



'A' SIDEWALK ON CUT SIDE

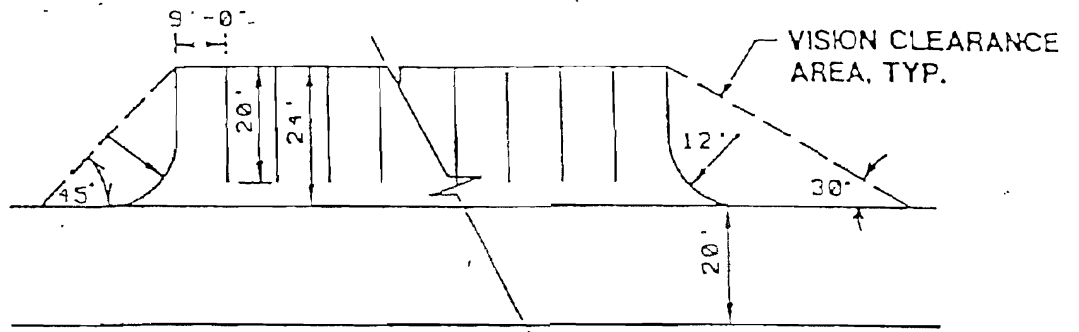


'B' SIDEWALK ON FILL SIDE

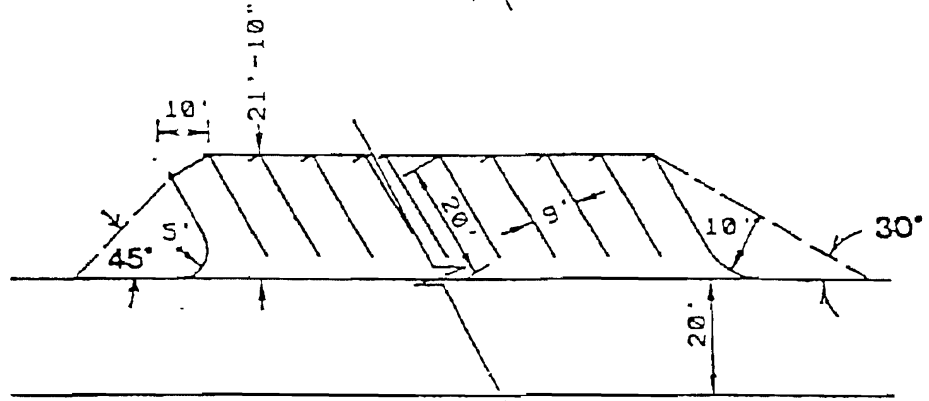
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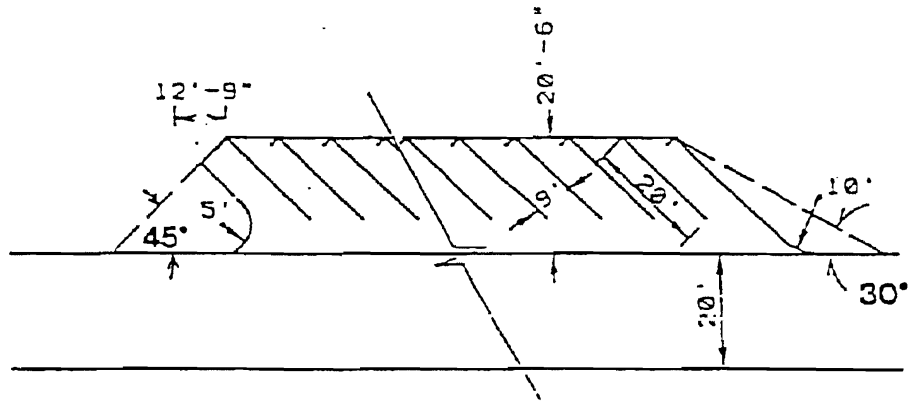
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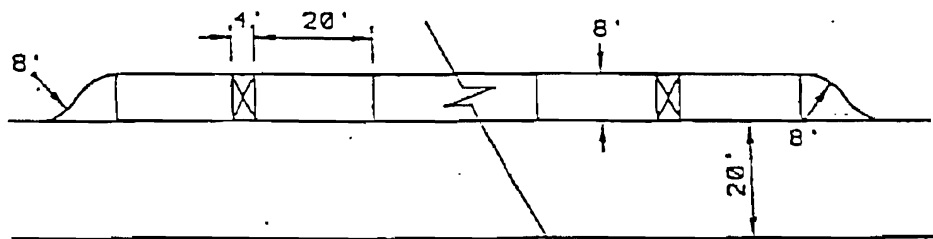
60°



45°



PARALLEL

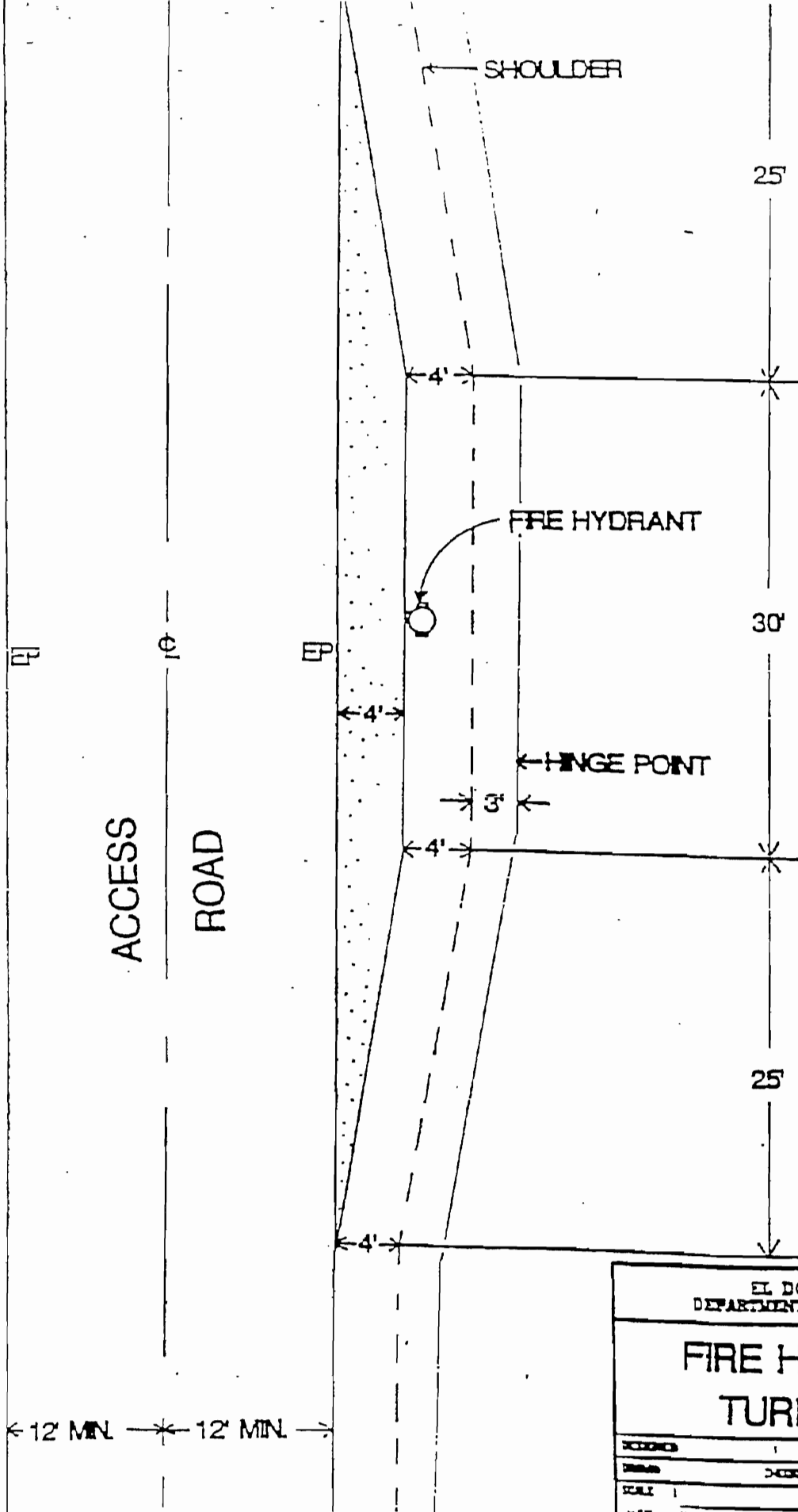


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EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

PARKING BAY STANDARDS

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ACCESS
ROAD

SHOULDER

FIRE HYDRANT

HINGE POINT

25'

30'

25'

← 12' MIN. * 12' MIN. →

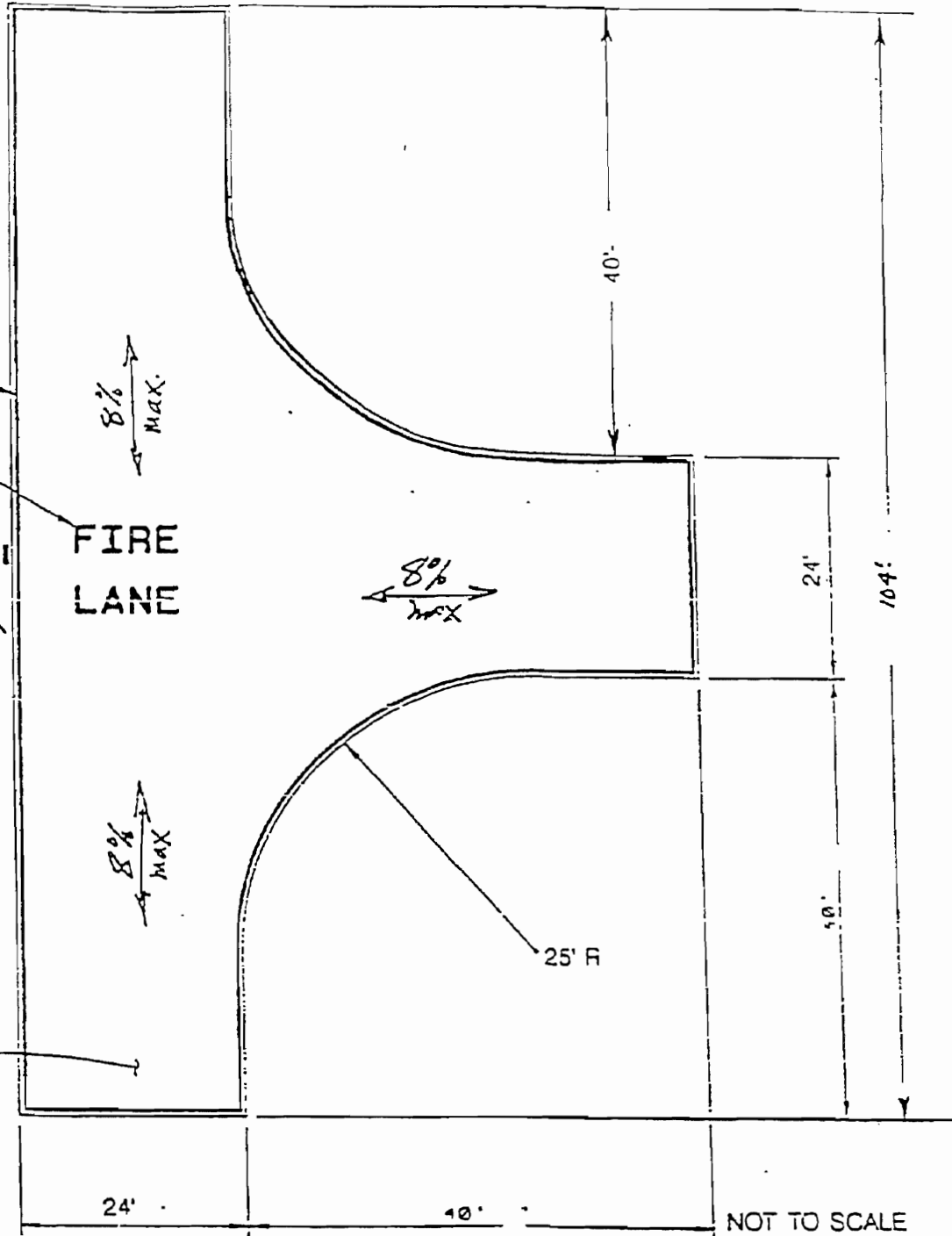
EL DORADO COUNTY DEPARTMENT OF TRANSPORTATION	
FIRE HYDRANT TURNOUT	
DESIGNED	DATE
DRAWN	CHECKED
SCALE	
NOTES (PROVIDING CIVIL ENGINEER P.C. NO. DATE)	

12" WIDE PAINTED
WHITE STRIPE

2' HIGH LETTERS

INSTALL 12" X 18"
SIGN. 'FIRE LANE
NO PARKING'
HAWKINS NO HR 388-1
OR APPROVED EQUAL

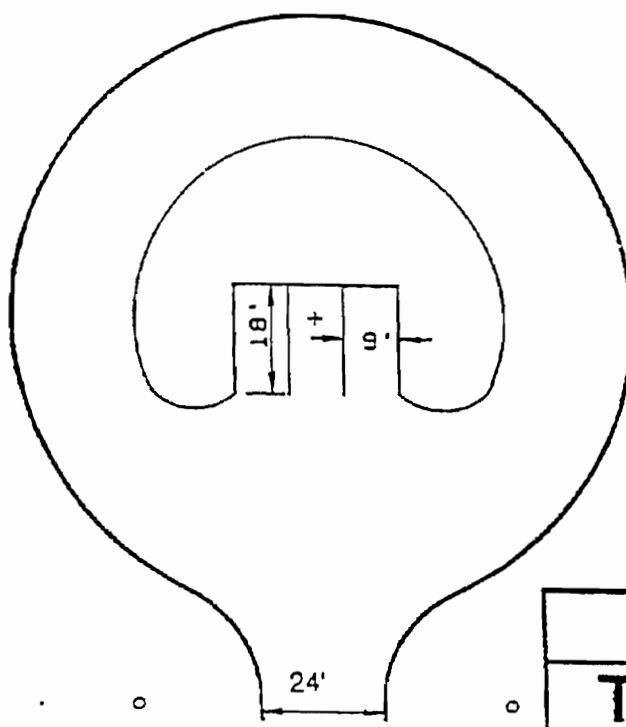
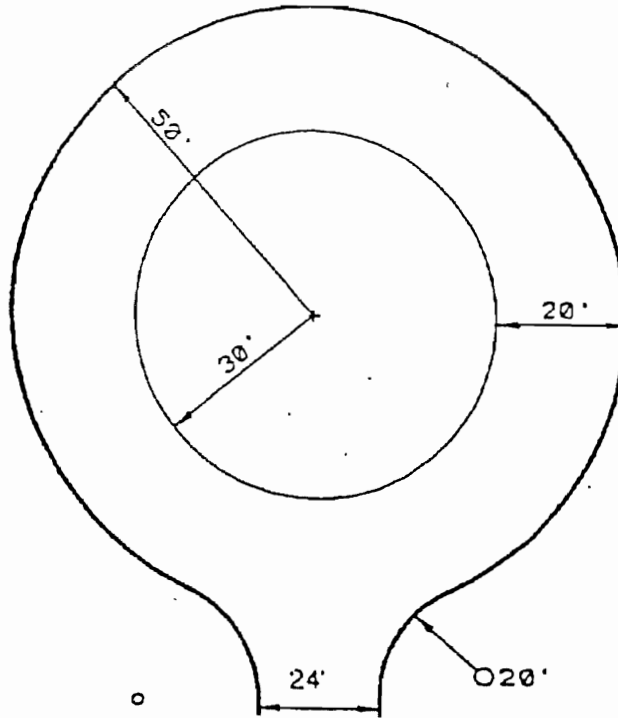
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EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

EMERGENCY VEHICLE ACCESS STANDARDS

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EL DORADO COUNTY DEPARTMENT OF TRANSPORTATION	
TURN AROUND STANDARDS	
DESIGNED	DATE
DRAWN	CHECKED
SCALE	
M.S. SUPERVISING CIVIL ENGINEER P.E. No. DATE	

PASSED AND ADOPTED by the Board of Supervisors of the County of El Dorado at a regular meeting of said Board, held on the 20th day of October, 1982, by the following vote of said Board:

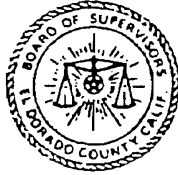
Ayes: Supervisors Robert E. Dorr, Vernon F. Gerwer, James R. Sweeney, William N. Center, John E. Upton

ATTEST
DIXIE L. FOOTE
Clerk of the Board of Supervisors
By [Signature]
Deputy Clerk

Noes: None
Absent: None
[Signature]
Chairman, Board of Supervisors

I CERTIFY THAT:
THE FOREGOING INSTRUMENT IS A CORRECT COPY OF THE ORIGINAL ON FILE IN THIS OFFICE.

DATE _____
ATTEST: DIXIE L. FOOTE, Clerk of the Board of Supervisors of the County of El Dorado, State of California.
By _____
Deputy Clerk



RESOLUTION No. 199-91

OF THE BOARD OF SUPERVISORS OF THE COUNTY OF EL DORADO

RESOLUTION TO ADOPT CHANGES TO THE "DESIGN AND IMPROVEMENT STANDARDS MANUAL"

WHEREAS, El Dorado County regulates grading on private property within the unincorporated areas to safeguard life, limb, health, property, and public welfare; and

WHEREAS, El Dorado County is amending its Grading Ordinance; and

WHEREAS, parcel and lot grading is regulated by the Grading Ordinance and through the use of the "Design and Improvement Standards Manual" adopted by the Board of Supervisors on May 27, 1986, and revised on November 22, 1988; and

WHEREAS, the following changes to the "Design and Improvement Standards Manual" are necessitated by the amendments to the Grading Ordinance:

- 1) Add to Design and Improvement Standards Manual Index, VOLUME IV - EROSION CONTROL, OAKTREE AND WETLANDS PRESERVATION REQUIREMENTS AND SPECIFICATIONS
- 2) Page 15, Add:
 - 3) A copy of all mass pad grading project applications shall be transmitted for comment to the District Supervisor of the District where the project is located prior to the Department of Transportation issuing the grading permit. The District Supervisor will be allowed 15 calendar days to respond, before the grading permit is issued.
 - 4) A "Dirt Bank (Soil Inventory)" shall be maintained by the Department of Transportation for the use of the public. It shall include the name, address and telephone number of soil exporters or importers, location of grading project, number of cubic yards available or needed, the price of the soil material, and the date the material is available or required.

3) Add: page number "15a"

4) Page 46a, Add to SECTION 1: GRADING PERMIT REQUIREMENTS

1. The stockpiling of future fill earthwork material is a "temporary" accommodation by the County of El Dorado to allow for incremental acquisition of small amounts of material as it becomes available. When it is visible, it is considered to be unsightly, aesthetically disturbing, and should be graded into a more acceptable form as soon as possible.

4. A copy of all mass pad grading project applications shall be transmitted for comment to the District Supervisor of the District where the project is located, prior to the Department of Transportation issuing the grading permit. The District Supervisor will be allowed 15 calendar days to respond before the grading permit is issued.

5. A "Dirt Bank (Soil Inventory)" shall be maintained by the Department of Transportation for the use of the public. It shall include the name, address and telephone number of soil exporters and importers, location of grading project, number of cubic yards available or needed, the price of the soil material, and the date the material is available or required.

5) Page 47, Add to title: EROSION CONTROL, OAK TREE AND WETLAND PRESERVATION REQUIREMENTS AND SPECIFICATIONS

6) Page 53, Add:

A. Purpose and Intent

Oak trees in the County enhance the natural scenic beauty, sustain long-term potential increase in property values, maintain original ecology, provide tempering of extreme temperatures, reduce soil erosion, and increase the oxygen output of the area needed to combat air pollution.

For the use of this section, Oak trees are defined as being healthy and having a diameter at breast height (dwb) of eight inches or greater.

B. No person engaging in construction activity shall:

1. Change the amount of irrigation provided to any oak tree from that which was provided prior to the commencement of construction activity.

2. Trench, grade, or pave into the drip line area of an oak tree.

3. Park or operate any motor vehicle within the drip line area of any oak tree.

4. Place or store any equipment or construction materials within the drip line of any oak tree.
5. Attach any signs, ropes, cables, or any other items to any oak trees.
6. Place or allow to flow into or over the drip line area of any oak tree any oil, fuel, concrete mix, or other deleterious substance.

Page 53a:

C. Where construction activity is proposed within 50 feet of an oak tree:

1. A 6 foot tall temporary fence shall be placed around the protected area prior to the work beginning.
2. No grade changes shall occur within the protected area unless specifically indicated in the plans.
3. No trenching shall be allowed within the protected area. If it is necessary to install underground utilities within the temporary fence, the utility trench shall be hand dug so as not to cut any roots over 2" in diameter, or a line may be bored or drilled.
4. Only dead, weakened, diseased, or dangerous branches shall be removed, and only by a licensed arborist. Any roots 2" in diameter or larger that must be cut shall be cleanly cut with pruning (not excavation) equipment.
5. Hose off all dust from foliage of oak trees once every week during the construction of the project.

SECTION 4: WETLAND PRESERVATION

A) Purpose and Intent

A significant natural resource wetlands serve important functions relating to fish and wildlife; food chain production; habitat; nesting; spawning; rearing and resting sites for aquatic and land species; protection of other areas from wave action and erosion; storage areas for storm and flood waters; natural recharge areas where ground and surface water are interconnected; and natural water filtration and purification functions.

B) No person engaging in construction activity shall:

1. Ignore or discount the regulatory requirements of State or Federal agencies applicable to any project.
2. Fill or substantially alter any existing wetland area.
3. Park or operate any motor vehicle within the wetland area.

Page 53b

4. Place or store any equipment or construction

- materials within the wetland area.
- 5. Place or allow to flow into the wetland any oil, fuel, concrete mix or other deleterious substance.
- C) Where construction activity is proposed within 50 feet of a wetland area;
 - 1. The wetland area should be clearly marked with flagged lath or other removable marking device.
 - 2. A deleterious substance filter shall be installed within any drainage course leaving one construction zone and entering the wetland area.

NOW THEREFORE, BE IT RESOLVED, by the Board of Supervisors of the County of El Dorado that the foregoing changes to the "Design and Improvement Standards Manual" be adopted.

PASSED AND ADOPTED by the Board of Supervisors of the County of El Dorado at a regular meeting of said Board, held on the 18th day of June, 1991 by the following vote of said Board:

Ayes: Supervisors Robert E. Clark, Vernon F. Berwen, James L. Sweeney, William N. Center, John E. Upton

ATTEST

DIXIE L. FOOTE

Clerk of the Board of Supervisors

By Margaret B. Moody
Deputy Clerk

Noes: none
Absent: none
James L. Sweeney
Chairman, Board of Supervisors

I CERTIFY THAT:
THE FOREGOING INSTRUMENT IS A CORRECT COPY OF THE ORIGINAL ON FILE IN THIS OFFICE.

DATE _____

ATTEST: DIXIE L. FOOTE, Clerk of the Board of Supervisors of the County of El Dorado, State of California.

By _____
Deputy Clerk



RESOLUTION No. 58-94

OF THE BOARD OF SUPERVISORS OF THE COUNTY OF EL DORADO

WHEREAS, Title 16 of the El Dorado County Ordinance Code regulates the subdivision of land in the County; and

WHEREAS, Sections 16.16.010 and 16.16.020 of the El Dorado County Ordinance Code require all subdivision improvements to be constructed in accordance with the County Design and Improvement Standards Manual, as adopted and amended from time to time by resolution of the Board of Supervisors; and

WHEREAS, it is essential that subdividers furnish improvement security before beginning the work of constructing the subdivision improvements, because the public health, safety, and welfare require that the subdivision improvements be properly and fully provided; and

WHEREAS, there currently exists no adequate means of securing subdivision improvements which the subdivider chooses to undertake before the Final Map approval;

NOW, THEREFORE, THE BOARD OF SUPERVISORS OF THE COUNTY OF EL DORADO DOES HEREBY RESOLVE AS FOLLOWS:

The County Design and Improvement Standards Manual is hereby amended to add the following subsection F to Section 2, General Information and Criteria, of Volume II, Design Standard for Subdivisions:

F) Subdivision Improvements and Security:

- 1) After approval of the tentative subdivision map and before the Final Map is considered for approval, no subdivider shall commence or cause to be commenced any construction of subdivision improvements until:
 - a) The subdivider and County have executed a Subdivision Grading Agreement which substantially conforms to the Grading, Erosion and Sediment Control Ordinance terms set forth in chapter 15.14 of the El Dorado County Ordinance Code; and
 - b) The subdivider has furnished security for the construction and maintenance of the improvements, including erosion control, as determined by the Department of Transportation. The dollar amount shall be posted in an amount sufficient to return the subdivision property to an unimpaired (not impacting surrounding properties) or improved (safe and stable) condition, and shall be equal to 50% of the grading cost, plus 100% of the stormwater conveyance cost, plus 100% of the erosion control cost, or an amount mutually agreed upon.
- 2) Security accompanying a Subdivision Grading Agreement shall be released as set forth in section 15.14.660 (F) of the Grading, Erosion and Sediment Control Ordinance.
- 3) If any required subdivision improvements are not complete at the time the Final Map of the subdivision is considered for approval, the subdivider shall comply with sections 16.16.040 to 16.16.052, inclusive, of the El Dorado County Ordinance Code regarding a Subdivision Improvement Agreement and accompanying security.

PASSED AND ADOPTED by the Board of Supervisors of the County of El Dorado at a regular meeting of said Board, held on the 8th day of March, 1994, by the following vote of said Board:

ATTEST
DIXIE L. FOOTE
Clerk of the Board of Supervisors

By Margaret E. Meedy
Deputy Clerk

Ayes: Supervisors William S. Bradley, Raymond B. Nesting, J. Mark Nelson, William H. Lindsey, John E. Upton
 Noes: none
 Absent: none
John E. Upton
 Chairman, Board of Supervisors

I CERTIFY THAT:
THE FOREGOING INSTRUMENT IS A CORRECT COPY OF THE ORIGINAL ON FILE IN THIS OFFICE

Date _____
ATTEST: DIXIE L. FOOTE, Clerk of the Board of Supervisors
of the County of El Dorado, State of California.

By _____
Deputy Clerk



DESIGN AND IMPROVEMENT
STANDARDS MANUAL

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VOLUME I - LAND CAPABILITY REPORT
FOR TENTATIVE MAPS
(Class 1, Rural and Minor Land Subdivisions)



SECTION 1: SCOPE OF WORK AND DISTRIBUTION

Nine (9) copies of the Land Capability Report shall be submitted with the tentative map and supplemental maps, if needed, for clarity. The report shall define the suitability of the tract with regard to waste discharge, building foundations, grading and drainage, traffic circulation and passive solar opportunities. The report shall, as applicable, provide the information outlined in Sections 2 through 10. The Land Capability Report will be distributed to the following agencies for review and comment:

- A) Environmental Health Division
- B) Department of Public Works
- C) Soils Conservation Service/Resource Conservation District
- D) Planning Division (2 copies of all information)
- E) Building Division
- F) Appropriate fire district
- G) Appropriate water and/or sewer district
- H) File copy

Major - Tentative Map

A preliminary Land Capability Report, as outlined in Sections 2 through 10, compiled from published sources, shall be submitted with the tentative map. Areas needing further clarification or additional information shall be augmented with field reconnaissance by the applicant and shall be submitted prior to filing the final map.

Minor - Tentative Map (5 or more parcels)

A preliminary Land Capability Report, as outlined in Sections 2 through 10, compiled from published sources, shall be included with submission of the tentative parcel map. Areas needing further clarification or additional information shall be augmented by the applicant with field reconnaissance and shall be submitted prior to filing the parcel map.

4 less? Should be less

SECTION 2: GROUND WATER AS IT RELATES TO SEWAGE DISPOSAL AREAS
(Required only where public water is not available).

- A) Show depth to seasonal high ground water and discuss anticipated and/or historic high level.
- B) Indicate direction of movement.
- C) Discuss recharge sources and amounts in areas where there may be a problem.
- D) Submit data on chemical and/or bacteriological quality in areas where it is apparent that a problem may exist.



- E) Show locations of:
 - 1. Marsh areas and springs.
 - 2. A 100-foot septic system setback area around each marsh or spring.

SECTION 3: SURFACE WATER (Required for all maps)

- A) Show location and extent of all flowing streams, drainage courses, ephemeral streams, canals, lakes, and reservoirs.
- B) Discuss relationship to groundwater.
- C) Show high water level on map and discuss any flood hazards.
- D) Show respective 100-foot and 50-foot septic system setback areas along each side of all permanent and intermittent streams.

Department of Public Works and/or Soil Conservation Service

The following information shall be presented with the submission of the tentative map (major or minor land division, 5 or more parcels):

- A) Prepare hydrological calculations at all critical points within the subdivision based on the rational method or other methods acceptable to the County engineer, in tabulated form showing surface water and drainage areas, time of construction, intensity, run-off coefficient and design flow.
- B) Show critical points and tributary drainage areas on a copy of the tentative map entitled, "Drainage Plan".
- C) Show the plan view of all drainage ways on the Drainage Plan.
- D) When determined to be needed by the project engineer, or required by the Department of Public Works, profiles, designed energy grade, lines and hydraulic grade lines, shall be shown for improved drainage ways, at structures, and for artificial channels.
- E) Show size and types of drainage improvements, including special structures, typical sections and easement width.



- F) Provide supporting calculations for upstream and downstream channel capacities as they affect overflow or backwater within the subdivision. Calculations shall be substantiated by such additional survey information as is required to determine profile and cross section of the upstream and downstream channel reaches under construction.
- G) ~~Recommend storm drainage facilities which will minimize the amount of silt, sand, and debris discharged to areas receiving water.~~
- H) Recommend effective means of stabilizing storm water runoff channels to prevent erosion. (Refer to Volume III, "Erosion Control Specification Requirements").

SECTION 4: SOILS AND GEOLOGY

A) Data Collection

Map and tabulate the estimated properties of the soils. Include the following in the tabulation:

Environmental Health Division (for projects where on-site sewage disposal systems are proposed):

- 1) soil series and map symbols ("Soil Survey of El Dorado Area, California", Soil Conservation Service, 1974);
- 2) evaluate grain size distribution, organic content, presence of swelling clays, etc.;
- 3) show location and extent of all rock outcrops, and if limestone is present, discuss the possibility of solution cavities serving as conduits to carry effluent into water supplies (as it relates to proposed sewage disposal areas);
- 4) define geological hazards as they relate to waste disposal, including degree and nature of fracturing and weathering and discuss the possibility of fractures serving as conduits to carry effluent into water supplies;
- 5) show depth and distribution of impervious layers including slope and direction of these layers (as it relates to proposed sewage disposal areas);

NOTE:

Mechanical modification to the sewage disposal area for the purpose of changing the terrain to meet the guideline will not be considered acceptable for approval.



- 6) Present information used to compile soils data (include Soil Conservation Service appraisal where applicable).

Building Division

- 1) Soil classification (using Standard Specifications D-2487-69, of the American Society of Testing and Materials).
- 2) Depth from surface to the various soil classifications.
- 3) Reaction (pH value).

B) Analysis and Recommendations

The following information shall be presented with the submission of the tentative map (major and minor):

- 1) Where groundwater may be present and intercept cut slopes in excavation or fill slopes in embankment, as identified in Section 2, Subsection D, determine whether the amount of subsurface water is likely to affect the stability of the slopes and design them accordingly.
- 2) Discuss seismic risks and indicate references.
- 3) Discuss earth movement probabilities which are not seismic (land slides, mud flows, etc.).
- 4) On a list entitled "Lots Requiring a Foundation Investigation Before a Building Permit Will Be Issued", identify the presence of expansive soils (soil with an expansion index greater than 20 as determined by the Expansion Index Test U.B.C. Standard No. 29-2) or other soil problems which, if not corrected, would lead to structural defects by entering each lot with critically expansive soils. Recommend the corrective action which is likely to prevent structural damage to buildings to be constructed on these lots.
- 5) When any soils in the subdivision are classified as PT, CH, or MH, as per ATM-D24878-69, further information may be required.

SECTION 5: ENVIRONMENTAL HEALTH DIVISION (as it relates to proposed sewage disposal areas)

- A) Discuss average annual precipitation, form, and seasonal distribution.



- B) When a community collection and treatment system, with on-site disposal, is intended, describe evapotranspiration rates, percolation rates or pan evaporation, and show seasonal variations.

Planning Division

- A) Discuss snow removal and snow storage for subdivisions above 3,000 feet elevation. Recommend areas for snow storage if it is anticipated that the proposed right-of-way and easements do not provide sufficient area.
- B) Discuss passive solar opportunities for proposed lots having 20,000 square feet or less. Discuss lots having, or not having, solar access and why.

SECTION 6: WASTE DISCHARGE AREA

Environmental Health Division

- A) When individual sewage disposal systems are to be used, and a public entity does not exist to provide service, a public entity shall be formed with powers and responsibilities defined herein for all subdivisions having 100 lots or more. Subdivisions with less than 100 lots which threaten to cause water quality or public health problems, will also be required to form a public entity. In either case, the design and improvements to be installed shall be reviewed and approved by the public entity which could be responsible for maintaining the system at a later date.

Public entity is a local agency, as defined in the State of California Government Code, Section 53090 et seq., which is empowered to plan, design, finance, construct, operate, maintain, and to abandon, if necessary, any sewage system and sewage treatment facility serving a land development. In addition, the entity shall be empowered to:

- 1) provide permits and to have supervision over the location, design, construction, operation, maintenance, and abandonment of individual sewage disposal systems within a land development;
- 2) design, finance, construct, operate, and maintain any facilities necessary for the disposal of waste pumped from individual sewage disposal systems;
- 3) conduct any monitoring or surveillance programs required for water quality control purposes (unless there is an existing public entity performing these tasks).



- B) Subdivisions of greater than 99 lots must be submitted and approved by the California Regional Water Quality Control Board, Central Valley Region.
- C) If the sewage disposal is to be by individual systems, show the location of the initial and total available disposal area for each lot to be reached by gravity, or proposed discharge, on a copy of the tentative map. ~~This may be shown on the Soils Map.~~
- D) If sewage disposal is to be by individual systems, provide a tabulation of the following data for each lot as determined, by representative tests (if required) at a design technical review. This data will otherwise be mandatory at the final map stage:
 - 1) Percolation rate - describe and show location of tests;
 - 2) available disposal area;

PERCOLATION RATE (minutes/inch)	MINIMUM SEWAGE DISPOSAL AREA (sq. ft.)
less than 10	6,000
11-20	8,000
21-40	10,000
41-60	12,000*
61-80	14,000
81-100	16,000
101-120	18,000
121-140	20,000
141-160	22,000
161-180	24,000
181-200	26,000
201-220	28,000
221-240	30,000
greater than 240	unsuitable for individual sewage disposal systems unless approved by the Director of Environmental Health Division

*Parcels greater than 3 acres, which have percolation rates from 41-240 mpi, can reduce the sewage disposal area to 12,000 sq. ft. and must be indicated on the map.

- 3) depth to highest level of seasonal groundwater;
- 4) depth of soil (15% porosity);
- 5) slope.



- E) Show location and identify use of all existing or proposed wells (if in service or abandoned) within the subdivision and within 100 feet of its boundary, piped water lines, public water ditch, and their setback lines.
- F) The following minimum distances are required in order to provide protection to water quality and/or public health:

DISTANCE IN FEET

Facility	Domestic Well	Public Well	Flowing Stream & Irrigation Canal (1)*	Drainage Course or Ephemeral Stream (2)*
Septic Tank or Sewer Line	50	100	50	25
Leaching Line	100	200	100	50
Seepage Pit	150	150	100	50

Facility	Cut or Fill (3)*	Property Line (4)*	Lake/Reservoir (5)*	Public Water Pipes
Septic Tank or Sewer Line	10	25	50	25 10
Leaching Line	4xh**	50	200	25
Seepage Pit	4xh**	75	200	25

**4xh = 4 times the height

- *1) As measured from the line which defines the limit of a 10-year frequency flood.
- *2) As measured from the edge of the drainage course or stream.
- *3) Distance in feet equals four times the vertical height of the cut or fill bank. Distance is measured from the top edge of the bank.



- *4) This distance shall be maintained when individual wells are to be installed and the minimum distance between waste disposal and wells cannot be assured.
- *5) As measured from the high water line.
- G) Show location of all cut or fill slopes over 2 feet in height.
- H) Discuss the public entity and indicate maintenance and operation schedules of the individual systems (when public entity is required).
- I) Show how disposal of septic tank pumping will be accomplished.
- J) Minimum Criteria Without Special Design:
 - 1) The percolation rate in the disposal area shall not be slower than 60 minutes per inch; or 30 minutes per inch if seepage pits are proposed. The percolation rate shall not be greater than 5 minutes per inch unless it can be shown that a sufficient distance of soil is available to assure proper filtration.
 - 2) Soil depth below the bottom of a leaching trench shall not be less than 5 feet.
 - 3) Depth to anticipated highest level of seasonal groundwater below the bottom of a leaching trench or seepage pit shall not be less than 5 feet. Greater depths are required if soils do not provide adequate filtration.
 - 4) Ground slope in the disposal area shall not be greater than 30%.

SECTION 7: INDIVIDUAL WATER SUPPLY

Environmental Health Division

- A) Discuss geohydrology of water availability.
- B) Indicate problem areas on map.
- C) Demonstrate, by test wells, adequate water supply of 5 gpm in areas of historically low groundwater productivity. Include production reports.
- D) Submit data on wells surrounding the proposed project.



**SECTION 8: WATER AND SEWER REPORT - TENTATIVE MAPS
(MAJOR AND MINOR)**

- A) The public purveyor shall give the County a written statement on the capability of the system, water and/or sewer, that would serve the proposed development. This statement shall include system improvements that will be needed to comply with whichever is the greater requirement. The tentative map shall be conditioned upon the developer providing the needed improvements. The report shall be considered in making a determination as to the viability of the project as it relates to the availability of water and sewer service.
- B) WATER AND SEWER COMMITMENT (MAJOR AND MINOR)

Prior to approval of the final map by the Board of Supervisors, or prior to the filing of a parcel map, the required water and/or sewer improvements shall be completed or described within a subdivision agreement and a security provided to guarantee completion.

The public purveyor shall submit a letter stating that the water and/or sewer improvements have been completed to the satisfaction or that the improvements described in the subdivision agreement are acceptable to the public purveyor. The letter shall include a statement from the public purveyor that it is willing and able to provide service to each lot of the subdivision when the described improvements are complete.

SECTION 9: DEVELOPMENT PLAN

Environmental Health Division

- A) If development is to be staged, show the extent of each stage and expected time for implementation.
- B) Discuss plans for handling liquid wastes and the resulting impact on water quality at all stages of development.



SECTION 10: TRAFFIC ANALYSIS

Public Works

- A) Show the anticipated traffic volumes generated by the proposed subdivision on a copy of the tentative map or area map entitled, "Traffic Circulation Map", for each proposed access to a collector or arterial road. When required by the Public Works Department, identify routes for construction truck traffic and recommend pavement and base thicknesses for staging of construction to accommodate this traffic. (Required for Major Subdivisions when 50 lots or more are proposed).
- B) Traffic Circulation - A Traffic Circulation Study shall be provided with the submission of the land division tentative map (major and minor land divisions - 5 or more parcels). The study shall determine if the road system has a two-point access to be classified as a future extension road, cul-de-sac or a dead-end road.
- C) Should a secondary access or exit road not exist, discuss the measures to be taken that will provide for an emergency exit.
- D) The study shall also include any proposed bus turnouts, shelters or park and ride lots.

SECTION 11: NOISE ANALYSIS

Planning Division

- A) When residential development, other than for a single family detached dwelling, is proposed, calculate the anticipated exterior noise level in a dBA adjacent to existing and proposed airports, industrial sites, railroads, and State highways. Discuss the method used for calculation. If the result exceeds 60 dBA, discuss any proposed method to reduce the noise level below this amount.

AUTHORITY: California Health & Safety Code, Section 17922.6
California Health & Safety Code, Section 39850.1
(noise level)

STANDARDS: California Administrative Code, Title 25,
Chapter 1, Article 4, Section 1092.



SECTION 12: CERTIFICATION AND DOCUMENTATION

- A) The Land Capability Report shall be prepared under the responsible charge of a civil engineer, land surveyor or geologist, registered in this State. The responsible party shall provide the following certification.

I hereby certify, to the best of my knowledge, the subdivision known as _____ has been designed in accordance with the current specifications and guidelines established by the County of El Dorado, and the information provided in this Land Capability Report was collected and presented under my direction.

Name of Responsible Party

Certification No.

Date:

- B) Identify all persons who participated in the preparation of the Land Capability Report by listing names, professional area of competence, certification number (if registered), and describe their contribution to the report.
- C) List all published sources utilized for preparation of this report and where such sources are located.

VOLUME II - DESIGN STANDARD FOR SUBDIVISIONS
(Class I, Rural, and Minor Land Subdivisions)



SECTION 1: SUBDIVISION

The term "subdivision" shall mean, for the purpose of this Design Manual, Class I Subdivisions, Rural Subdivisions, and Minor Land Divisions, commonly referred to as parcel maps.

- 1) Class I Subdivisions consist of five (5) or more parcels less than 2.0 acres in size.
- 2) Rural Subdivisions consist of five (5) or more parcels, two (2) acres or larger in size.
- 3) Minor land divisions (parcel maps) consist of four (4) or less lots of any size and those special projects containing five (5) or more lots as identified in the Minor Land Division Ordinance.

SECTION 2: GENERAL INFORMATION AND CRITERIA

A) Lot: The basic development unit - an area with fixed boundaries, used or intended to be used by open space (recreational), public facilities, one or more buildings and its accessory building(s), and not divided by any public highway or alley. A "zoning lot" must meet the requirements of the zoning district in which it is located and must front on a public street or an approved private street. The following list suggests the variety of lot types: corner, deep, interior, reversed corner, flag, and through or double frontage lot.

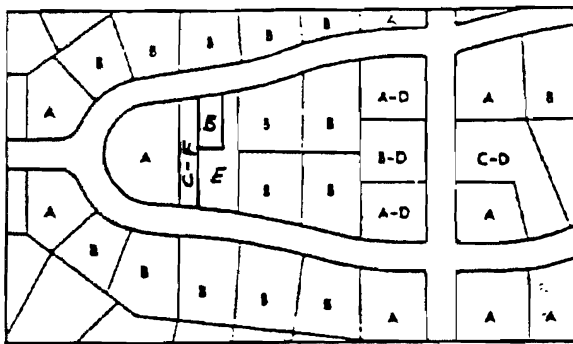
- 1) Corner Lot: A lot located at the intersection of two or more streets having an angle of intersection of not more than 135 degrees.
- 2) Deep Lot: A lot whose depth is excessive in relation to its frontage (sometimes called a "stringbean" lot). Lots are not to exceed a 3 to 1 ratio unless a design waiver is granted.
- 3) Interior Lot: A lot bounded by a street on only one side.
- 4) Reversed Corner Lot: A corner lot, the rear of which abuts the side of another lot.



- 5) Flag Shaped Lot: A lot which has a narrow strip of land abutting the street (flag pole) and expands into a larger area (the flag). A lot shall not be considered a flag lot if the frontage meets the minimum parcel width.
- 6) Through (Double Frontage) Lot: A lot abutting on two parallel, or approximately parallel streets.

LOT

This illustrates the basic types of lots



- A = Corner Lot
- B = Interior Lot
- C = Through (or Double Frontage) Lot
- D = Reversed Frontage Lot
- E = Flag Shaped Lot
- F = Deep Lot

B) Design of lots:

- 1) The dimensions, shape and orientation of the lots shall be determined with regard to solar orientation, topography, land features and circulation.
- 2) All lots shall conform to zoning requirements, particularly lot dimensions and area.
- 3) All lots shall provide building sites and open space areas suitable to the use and type of building contemplated and to the yards, parking and loading required by zoning, with the minimum grading and change of the natural drainage.
- 4) Area requirement for lots:: Lots having an average natural or graded (if proposed) slope of over 10 % shall have the minimum area and frontage indicated in the following table, or shall comply with zoning requirements for lot area and frontage, whichever is more restrictive.

SLOPE (% Grade)	AREA (SQ. FT.)	FRONTAGE (FT.)
10-20%	10,000	75
21-30%	20,000	120
31-40%	30,000	150

The remaining land area over 40% shall be preserved as natural open space or shall be added to a lot conforming to the foregoing slope area standards.



- 5) Frontage (lot widths) shall be determined at the right-of-way line. All lots shall have frontage to a public street or a street meeting County subdivision design and improvement standards. The minimum lot width shall be as is required within the appropriate zoning category for the project. The frontage of a lot in the turnaround area of a cul-de-sac or along a radius curve may be measured along the curve, at the required building setback. Lot width shall not include road easements existing or proposed, except as provided.
- 6) Construction of driveways required: A driveway shall be constructed where the street excavation or embankment along the frontage exceeds a depth or height or six feet; or,

where the Planning Division, Planning Commission or Board of Supervisors finds the reasonable access to a lot is blocked.
- 7) Flag shaped lots shall be discouraged.
- 8) Through lots or double frontage lots shall not normally be approved. Double frontage lots shall be provided when necessary for: (a) protection of residential properties from through traffic and adverse nonresidential uses;; (b) for separation of through and local traffic; (c) to overcome difficulties, topography, or other special conditions; and (d) when future divisions occur based upon the current Land Use Element of the General Plan. Screen planting and a fence or wall of a type approved by the County Engineer may be required along the rear property line in the form of a reserve strip, no less than 10 feet wide, within which existing live trees shall be preserved and across which there shall be no right of vehicular passage.
- 9) Reserve strips controlling access to streets or other land shall not be approved, except as provided in paragraph B-8 above, and only if ownership control of the strips is placed with the County.
- 10) The depth of the lots shall not be less than 100 feet nor more than three times the average width.
- 11) Side lot lines shall be substantially normal or radial to street lines.
- 12) No lot within a subdivision or minor land division of five or more lots shall be divided by a public road system.



- 13) No lot should be divided by special assessment district, fire district, school district, city, or county boundary lines.

C) Grading Requirements:

All grading shall adhere to the requirements of the El Dorado County Grading Ordinance, Section 15.14 of the County Code.

If a grading permit is not required, all other requirements as established within the Design Manual shall be adhered to.

MASS PAD GRADING CRITERIA

1. Basic Principles

- a. It is the intent of these grading standards that all grading shall reflect, to the greatest extent possible, the natural gradient and contours of the site. Grading shall be designed to minimize the appearance of extensive, artificial banks which may be visible from public streets or other public views.
- b. To the extent that it is consistent with sound engineering practices and the need to provide proper drainage and roadway configuration, pad elevations shall be determined with the objective to preserve native trees having a trunk diameter in excess of 6 inches and which are generally in good health.
- c. Cross-lot or rear-lot drainage shall generally be avoided. However rear-lot drainage can be utilized when it reduces the rear-lot vertical difference between adjacent lots. When rear-lot drainage is proposed, a properly designed drainage system shall be installed to collect drainage on each lot.

2. Differential Pad Elevations

- a. Side Yards: The differential pad elevation between adjacent interior side lot lines shall not exceed the product of street grade times the lot width.
- b. Rear Yards: The differential pad elevation between adjacent interior rear lot lines shall not exceed the product of the slope between the adjacent street centerlines times the distance between those centerlines.



3. Contour Grading

- a. Front Yards: In order to minimize a "stair step" effect on streetscapes in padded lot areas, the transitional slope areas along the side lot lines in the front yards shall be softened by reducing the slope or by contouring the top and toe of the slope into the front yards of each unit. Front yard landscaping shall be required to be installed by the subdivider in situations where mass pad grading is combined with a buildout program.
- b. Rear Yards: In order to allow for a maximum of usable rear yard and to provide proper drainage between lots, contour grading shall not be required along rear lot lines nor along side lot lines in those areas which are not visible from a public street.

4. Drainage

- a. Drainage System: Utilize concrete curb and gutter in all subdivisions where lots are less than 20,000 square feet. Grading shall provide for positive, controlled lot drainage to the street and/or storm drain system.
- b. House Construction: The Building Official, at final inspection for any house, shall verify that pad slopes and drainage substantially conform to approved plans.
- c. Subsequent Construction: For mass pad graded lots on which homes have been built, and which are subject to County permit issuance for construction of secondary structure, including but not limited to, pools, gazebos, etc., evidence of conformance to the original lot drainage pattern shall be provided as part of the building permit for secondary structures, or a revised lot drainage plan shall be approved which provides positive, controlled lot drainage. These shall be subject to the final sign-off by the Building Official.

LEVEL OF REVIEW

1. During the tentative map of tentative parcel map review, the Department of Transportation shall determine if a project meets the definition of "mass pad grading".
2. Subdivisions which meet the definition of "mass pad grading" shall be required to submit a preliminary plan consisting of either proposed finished contours or a diagram of the pad locations and limits of the tops, toes and slopes of all graded areas. Median elevations of pads shall also be shown on the diagram. Typical cross-sections may be submitted to illustrate critical areas.



D) Lands Subject to Hazards:

- 1) Land subject to hazards, such as slides, periodic or occasional inundation, or otherwise unsuitable for the intended use, shall be:
 - a) either set aside for uses in which danger to life or property would be minimal, or in which an aggravation of the hazard may not result, or by providing appropriate easements; or,
 - b) improved with such corrective measures, approved by the County Engineer, or Civil Engineer, as will be reasonably expected to limit the hazard or make the land suitable for the intended uses.
- 2) Land subject to extreme wildfire hazards shall be modified by such corrective measures as may be required by the Planning Division, Planning Commission and/or the Board of Supervisors, from recommendations made by the California Department of Forestry, United States Forest Service, and structural fire protection districts.

E) Curbs, Gutters and Sidewalks are Required:

- 1) On residential streets in subdivisions (major or minor) where one or more lots of less than 10,000 square feet are proposed, except that sidewalks are not required on single-family residential cul-de-sacs but, curbs and gutters shall be provided.
- 2) In all commercially and industrial zoned development, the requirement for sidewalks shall be reviewed on a case-by-case basis.
- 3) Public pedestrian walkways, or sidewalks may be required where deemed essential to provide for circulation and access to school playgrounds, parks, shopping centers, transportation, and other community facilities. The right-of-way for said walkway shall not be less than 10 feet wide and shall only be required when the project is within a one-mile radius of the community facility, existing or proposed.
- 4) Wherever the grade of sidewalks or walkways exceeds 20%, steps of a design acceptable to County Engineer shall be required.



SECTION 3: STREETS

A) Street Layout:

- 1) The layout, character, extent, width, grade and location of proposed streets shall be established with due regard to:
 - a) public convenience and safety;
 - b) topography and other land features;
 - c) proposed uses of the land to be served by such street;
 - d) expected traffic type and volume to be carried by such streets, and
 - e) proper relation to, connection with, continuation and projection of streets in the adjacent area, whether these streets are existing or proposed in another subdivision, in the general plan, or in the official map, as approved or adopted by the Board of Supervisors.



2) Access: (Proposed Clarification for Access)

Proposed streets for Class I, Rural Subdivisions and Minor Land Divisions shall connect to a County or State maintained street or highway having sufficient improvements to accommodate the additional traffic flow resulting from the proposed subdivision. Sufficient improvements shall mean:

- a) County or State maintained roads shall have adequate width, alignment, and surfacing to accommodate the increased level of traffic from the proposed development; or
- b) When the County road is identified to be improved under Chapter 12.32 et. seq. of the County Code, where the road improvement fees are collected; or
- c) When the development is a rural subdivision, the proposed street may connect, if authorized, to an existing rural subdivision street which connects to a County or State street of sufficient improvement.

If the proposed street of a Standard, Rural or Minor Land Division does not connect to a State or County maintained road, the road connection from the proposed subdivision to a State or County maintained road shall be improved as follows:

- a) Standard Subdivision - Road connection shall be of the same improvement standard as the proposed subdivision street(s).
- b) Rural Subdivision - Approved access on all rural subdivisions shall include a minimum 50 foot right-of-way and require the collector street through the development to be connected to a County or State maintained highway of sufficient standards to accommodate the additional traffic flow resulting from the proposed subdivision or connection to an existing approved rural subdivision road of the same or better standard.



If access is through another rural subdivision, written authorization is required from the entity responsible for the maintenance of said access road to roads consenting to the connection, and providing for the sharing of the maintenance costs on said access road or roads with the entity requiring said access to the County or State maintained highway. A statement is to appear in the Articles of Association, Articles of Incorporation, or other document, setting forth the duties and liabilities of the entity responsible for the maintenance of roads within a rural subdivision so that future road access to adjacent lands will not be unreasonably withheld.

c) Minor Land Division:

i. Off-site Access Improvement: Off-site access required to serve the subdivision shall be improved to the same standards as required on-site but shall be limited to the equivalent cost for the on-site improvements.

ii. Roadway Width and Surfacing for Access Roads to Minor Land Divisions: The road preparation and graded width shall be to minimum County road standards but the minimum width of surfacing shall not be less than eighteen (18) feet and must have a stable all-weather gravel or paved surface.

iii. Drainage: The road shall have well-defined roadside ditches directing surface water away from the roadway to a water course. Water shall not cross the road surface but should be conveyed through a culvert of adequate size to accommodate storm water without flooding the roadway. If a reliable history of roadway flooding or damage caused by inadequate drainage facilities exists, the existing road shall not be approved for an access road.

3) Where a property is subdivided with one or more lots substantially larger than the minimum size required in the zoning district in which a subdivision is located, streets and lots may be required to be laid out so as to permit future re-subdivision in accordance with the standards contained under Volume II of this Design Manual.



- 4) When a subdivision abuts or contains an existing or proposed arterial or collector street, limited access highway, or railroad, special treatment may be required for the protection of residential properties, the separation of through and local traffic, and the requirements of future highway plans. Special treatment includes:
 - a) marginal access or service streets;
 - b) double frontage lots with screening by wall, fence and/or planting in a non-access reservation along the rear property line; and
 - c) parks or reservation of right-of-way.
- 5) Collector streets shall be designed to carry a maximum of the access traffic to, and through traffic within, the subdivision and traffic from local streets to arterial streets and highways. Lot frontage shall be avoided on these streets when the design traffic volume exceeds 400 vehicles per hours. Collector street spacing should be from 1/4 mile to one (1) mile.
- 6) Local streets should carry traffic limited to lots fronting such streets and should have a curvilinear and discontinuous alignment, such as loops and cul-de-sacs, so as to discourage through traffic, but carry traffic conveniently and as directly as possible to collector streets. Local street spacing should be from 250 feet to 1,500 feet apart.
- 7) Some proposed streets may be required to extend to the boundary line of the subdivision. When more than four (4) lots front such street stub, a temporary turnaround easement shall be provided at the end. A barrier approved by the County Engineer shall be installed at the end of the improved street.
- 8) Half streets shall not be approved for major subdivisions unless they are planned as stage construction of a four-lane street and two travel lanes are constructed. Parcel maps may be permitted to establish less than full right-of-way; however, the following criteria shall be considered:
 - a) The remaining right-of-way may be expected to be provided from a future division. If zoning, general plan designation, or parcel sizes prevent future division, no reduction in right-of-way shall be granted.



b) If less than full right-of-way is granted, the full road improvements shall be required.

- 9) At least two connections with an existing, improved public street, or with a future street extension approved by the Planning Commission or the Board, shall be provided, except when a proposed subdivision only contains one cul-de-sac street that is less than 500 feet in length in which case the one connection is sufficient. When the secondary access is to be provided, with a future street extension, then a temporary exit road or acceptable alternative may be required, and approved by the Planning Director, with a favorable recommendation from the responsible fire agencies.

Minor Land Divisions may be approved with one access street of adequate capacity to accommodate the proposed increase in traffic. If approved, a future street route identifying a second connection or an acceptable alternative, to a County maintained road shall be prepared by project engineer and approved by the Planning Director. The proposed future street route, or acceptable alternative, shall then be utilized for future land divisions

- 10) Street intersections shall not exceed four separate streets, nor shall "Y" intersections be allowed.
- 11) The layout of proposed streets, where applicable, shall furthermore be designed in a manner acceptable to the approving body.
- 12) A dead-end street connecting to a County or State maintained street may exceed 500 feet in length, but not more than 2,640 feet, and only when geographic features restrict a street extension and the street will not serve more than twenty-four (24) existing or potential parcels. Dead-end streets are defined as any road originating from a County or State maintained road having two means of access. Such dead-end streets shall have a turnaround at the closed end and the following minimum widths:
- a) Rural subdivisions and minor land divisions - 10-foot shoulders, for a total roadway width of 40 feet. Width reductions for shoulders may be reduced by the Planning Director with a favorable recommendation from the responsible fire agency;
- b) Class 1 subdivisions - a pavement width of 36 feet;



- c) Commercial and industrial streets - a pavement width of 40 feet;
- d) Fuel modification (thinning) may be required up to 100 feet from the edge of the roadway (on-site) by the Planning Director upon favorable recommendation from the fire protection agencies, based on the following criteria:

<u>Fire Rating</u>	<u>When Length of Road is to Exceed</u>
Extreme	500 feet
High	800 feet
Moderate	1,000 feet

B) Street Geometry: (Major Subdivision or Minor Land Divisions, Five (5) or More Parcels)

- (1) Intersections shall be at least 150 feet apart at street centerline on local roads and 300 feet apart on collector roads.
- 2) Streets shall be laid out so as to intersect as nearly as possible at right angles, and no street shall intersect any other street at less than 70 degrees.
- 3) The summation of the absolute values of the centerline gradients of the proposed streets within an intersection shall not exceed 10%. The centerline gradient of a street terminating at an intersection shall not exceed 5% at any point within the intersection and for a distance of 50 feet from the point of the intersection. The gradient within turnarounds shall not exceed 8% or an acceptable alternative approved by the County Engineer.
- 4) All streets and intersections shall have a minimum sight distance based on the design speeds. The sight distance at intersections shall be at least 200 feet from a point on the minor road, 15 feet from the edge of the major road pavement.
- 5) Cul-de-sacs serving more than four (4) lots shall not be longer than 500 feet, or more than is allowed under the current fire rating as provided at the closed end, with a turnaround having an outside roadway radius of 40 feet and a right-of-way radius of 50 feet. A short, pear-shaped, one-way loop with a central island may be provided with an outside roadway radius of 60 feet and inside radius of 40



feet, and the right-of-way shall be 10 feet from the roadway. A hammerhead-shaped turnaround may be provided with the stubbed ends forming a T or Y, extending 50 feet from their point of intersection, having a surface width equal to the width of the incoming street and the right-of-way shall be 10 feet from the roadway, except in extreme fire hazard areas where the outside road radius shall be 60 feet and the right-of-way radius 70 feet (Std. Plan. 114).

- 6) A tangent at least one hundred (100) feet long shall be introduced between reversed curves. The County Engineer may approve of a tangent shorter than 1,200 feet on local roads provided the adjacent curves have a minimum radius of 200 feet or an acceptable alternate approved by the County Engineer.
- 7) The minimum centerline curve radius length of subdivision streets shall be 100 feet for local streets and 300 feet for minor collecting streets. The minimum curve radius length for major collector streets and arterial streets shall be determined by the County Engineer.
- 8) Changes in horizontal direction shall occur through curves having a centerline radius at least fifty-five (55) feet in length. (Four or fewer parcels only).
- 9) The gradient of any street shall not exceed the following limits:

Arterial-----To be determined by County Engineer

Major Collector-----To be determined by County Engineer

Minor Collector-----10%

Local, Short Loops,
Dead ends, and Cul-

de-sacs-----12% (may be increased 15% for lengths not exceeding 600 feet)

Minor Land

Divisions-----The road gradient shall not exceed 15%.

The gradient of any street (major or minor land division) above 3,000 feet elevation shall not exceed 10%.

The gradient of any street shall not be less than 0.5% (sag and crest vertical curves expected).



10) Changes in street grades for major and minor land division of 5 or more lots shall be connected by vertical curves of minimum length in feet equal to the following factors times the algebraic differences in the rate of grade expressed in percent.

See Assho

TYPE OF STREET	FACTOR
Arterial	To be determined by County Engineer
Major Collector	To be determined by County Engineer
Minor Collector	28
Local *	20 (except 28 through intersections)

* when T int are in you take

The factor may be reduced on local streets to 10 for sag vertical curves and for crest vertical curves ending at "T" intersections on local streets.

vertical curves

C) Minimum Rights of Way for Class I, and Rural Subdivisions and Minor Land Division Road Easements

1) The street rights-of-way and public road easement width shall be based on functional classification as shown in the current El Dorado County Regional Transportation Plan, and shall not be less than the following basic right-of-way widths:

STREET TYPE	BASIC ROW WIDTH (Feet)
Arterial	80
Major Collector	80
Minor Collector	60
Local	50

Except for streets above 3,000 feet elevation, or in extreme fire hazard areas, the minimum right-of-way widths shall be 60 feet (provisions) for snow storage and fire protection shall be incorporated when necessary. These requirements are only for major and minor land division, 5 or more parcels.

2) Basic street rights-of-way and road easement lines shall be equal distance from, and parallel to, the roadway centerline.



D) Improvement Requirements - ALL LAND DIVISIONS:

- 1) Street width, all land divisions: The street rights-of-way shall conform to Volume II, Section 30. The typical street section, Volume IV, for Class I, Rural Subdivisions, commercial land divisions, and minor land divisions shall be determined with consideration of its functional and extreme fire hazard classification and its anticipated traffic volume.
- 2) Improvement requirements for Class I subdivisions, industrial and commercial land divisions, rural subdivisions, and minor land divisions, shall be as is identified in Volume IV - Standard Plans. The County Engineer may approve of equivalent surfacing and base with other materials.
- 3) Streets for any lands industrially and/or commercially zoned, shall be improved to Class I improvement requirements, except the pavement and base shall be increased to provide a base at least eight (8) inches thick and pavement at least 3 inches thick.
- 4) Erosion Control: "Grading work should be timed to commence and be completed during the dry season months of May through September. Erosion stabilization work should be completed by October 15, or additional practices will be required to stabilize disturbed areas through the wet season." (See Volume III for Erosion Control Requirements and Specifications.)
- 5) Brush, trees, stumps and other debris shall be cleared from the entire graded area of any and all streets, and additional areas as determined by the County Engineer (or for rural subdivisions and minor land divisions - a civil engineer).
- 6) Street signs: Street name signs of a type and construction approved by the County Engineer shall be placed at each intersection. Traffic control signs shall be placed where designated by the County Engineer. A sign at each access of a rural and minor land division reading, "This Road is Not County Maintained", shall be placed in a prominent location, and shall have 4-inch block letters - black on white background.
- 7) Other requirements: The County Engineer may require additional location and construction requirements as he determines to be necessary to prevent excessive operating costs, protection against deterioration, and obsolescence.



8) In addition to the construction standards listed herein, the current edition of the State of California, Department of Transportation, Standard Specifications and Standard Plans, shall be used with special provisions prepared by a civil engineer and approved by the County Engineer in lieu thereof.

E) Street Names:

Street names and suffixes shall be designated by the subdivider, subject to the approval of the approving agency and in accordance with Ordinance No. 2021. The following agency shall review and approve street names for the appropriate Land Division.

Minor Land Division - Planning Division-Community Development Department

Major Land Division - Planning Commission and/or Board of Supervisors

NOTE: All proposed street names shall be reviewed by the Planning Division of the Community Development Department for compliance with Ordinance No. 2021.

SECTION 4: DRAINAGE CRITERIA FOR ALL LAND DIVISIONS

A) General Drainage Requirements:

The subdivisions shall be designed to receive surface water, stream water, and flood water emanating from outside its boundaries and from within and passing such water through and off the subdivision without injury to improvements, buildings or building sites. Surface waters shall be discharged into the natural watercourse to which they would normally drain. If surface waters are gathered, they must be conveyed under control to a water course. Design of drainage facilities shall be such that they will accommodate the ultimate development within the drainage area with minimum modification to building setback areas around wetlands (i.e., marsh, springs and streams).

B) Definitions:

1) Surface Waters

Surface waters are those falling upon, arising from, and naturally spreading over lands and produced by rainfall, melting snow, or springs. They continue to be surface waters until, in obedience to the laws of gravity, they percolate through the ground or flow vagrantly over the surface of the land into well-defined watercourses or streams.



2) Stream Waters

Stream waters are former surface waters which have gathered together into a well-defined watercourse.

- 3) A watercourse is a running stream of water, a natural stream, or storm water channel, including rivers, creeks, runs, and rivulets. Streams flow in a particular direction though it need not flow continually. They may sometimes be dry, and they usually flow in a definite channel having a bed, sides, or banks. It does not include the water flowing in the hollows or ravines in land, which is the surface water from rain or melting snow and is discharged through them from a higher to a lower level, but which at other times are destitute of water.

4) Flood Waters

The term "flood waters" is used to indicate waters which escape from a watercourse in great volume and flow over adjoining lands in no regular channel, though the fact that such errant waters make for themselves a temporary channel or follow some natural channel, gully or depression, does not affect their character as flood waters or give to the course which they follow the character of a natural watercourse.

5) Drainage Way

The term "drainage way" has been used herein to refer to those natural depressions in the earth's surface, such as swales, ravines, draws and hollows, in which surface waters tend to collect, but which do not constitute a watercourse in the defined sense.

C) Design of Drainage Facilities:

1) Hydrologic Design

- a) Those watercourses set forth in an adopted master plan of drainage for the County of El Dorado shall be designed and constructed for the quantities of water indicated in such master plan. All other watercourses and drainage ways shall be designed by a civil engineer in accordance with the criteria described herein.



- b) Drainage facilities for areas greater than 100 acres shall be designed for an average recurrence interval of 100 year flood utilizing any available head on culverts. Drainage facilities for areas less than 100 acres shall be designed for an average recurrence interval of 10 years with no head on culverts.

Design flows shall be computed by use of rational formula: $Q = C I A$ or other methods acceptable to the County Engineer. Basic data prerequisite to the determination of "C" and "I" may be obtained from the State Department of Transportation Highway Design Manual or determined through the application of hydrology.

2) Hydraulic Design

- a) The depth of flow or ponding shall not exceed a level which would cause inundation of building sites or areas required for water disposal systems.
- b) Roadside ditches shall be designed to carry off from the roadside only. Roadside ditches shall not be used to transport stream water or other water that has been gathered and conveyed to the roadside. Drainage channels in easements shall be constructed to discharge water from the roadside ditches. The depth and velocity of flow in roadside ditches should be analyzed and tabulated to determine erosion measures and frequency of cross culverts.
- c) The subdivision shall be designed so that streets do not run along drainage ways. Drainage ways shall not block reasonable access to lots. Reasonable access is defined as permitting a driveway to be constructed utilizing an 18-inch diameter pipe or smaller. If large drainage ways must be located within the road rights of way, the water shall be carried underground in closed conduit.
- d) Depressed areas that may cause ponding shall be graded to drain freely.
- e) The minimum culvert size for street crossings shall be 18 inches in diameter. The minimum size for street cross culverts with grate covered drop inlets, shall be 12 inches in diameter.



- f) Street cross culverts placed in drainage ways shall have flared end sections, beveled end sections, or P.C.C. concrete headwalls on the inlet side. The outlet side shall have such end sections or slope protection that will return water to the normal flow without causing erosion.
- g) The maximum allowable velocities for roadside ditches and open channels shall be:

TYPE OF LINING	VELOCITIES (FT./SECOND)
Earth	3 to 6
Rock	10
Grouted Rock	15

- h) Where natural drainage ways and other courses contain sufficient areas to convey the design discharge and where such natural waterways have proven themselves reasonably stable and it can be shown that erosion is not likely to occur as a result of the subdivision, such channels may remain in their natural state.

3) Structural Design

- a) Drainage facilities shall conform to standards found in this Design Manual. If applicable standards are not available, structural design shall be made and materials shall be specified by the civil engineer.
- b) Drainage channels shall have side slopes of 2 to 1, or flatter unless mechanical stabilization is used. Bank stabilization and stream bed stabilization along constructed or natural channels is required if the channel velocities are sufficient to cause bank or bed erosion.
- c) If closed conduit is used, manholes shall be provided at all angle points and at intervals not to exceed 300 feet along the conduit.
- d) Drainage facilities shall be able to withstand legal vehicle loads and contain materials that will have a service life of 50 years.

D) Easements for Drainage Purposes

- 1) Drainage easements shall be shown on the parcel or final map and identified by the words, "Drainage Easement".



- 2) Drainage easements for closed conduits and appurtenances shall be no less than 10 feet in width and sufficient to provide 2 feet of clearance outside such conduits and appurtenances. Drainage easements for closed conduits shall not traverse a building site and shall, insofar as possible, be placed along or adjacent to lot boundary lines in a straight alignment without angle points.
- 3) Drainage easements for constructed channels and appurtenances shall be no less than 10 feet in width and sufficient to contain the top width of the channel plus a 5 foot continuous maintenance way on one side and 2 feet on the other side for channels less than 20 feet in top width. The maintenance way shall be 15 feet when the channel width is greater than 20 feet.
- 4) Drainage easements for natural waterways:
 - a) Drainage ways originating within the subdivision and not receiving water from culverts or roadside ditches do not require easements. All other drainage ways and all watercourses require drainage easements.
 - b) Drainage easements for natural waterways shall be located and approximately shown within the lot or parcel.
 - c) Drainage easements shall be no less than 10 feet wide and sufficient to contain the channel plus additional space for a maintenance way.

E) Drainage Easement Maintenance

- 1) Class I Subdivisions to be required to formulate a community services district or develop a county services area to provide drainage easements maintenance.

SECTION 5: WATER SUPPLY AND DISTRIBUTION SYSTEM

A) Water Supply and Distribution Systems Required For Domestic Use and Fire Protection

Water supply and distribution systems shall be provided to all lots when lots or parcels are less than 4.5 acres and public sewer is not available.



When water supply and distribution systems are provided, then it shall be constructed to the standards contained in this section or to the public purveyor's requirements, whichever is greater. The public purveyor shall have final approval of the design of all water distribution systems.

B) Source

The water supplied for a subdivision shall be obtained from a source free from pollution, and from a source adequate to provide a continuous supply of water that is wholesome, potable, in no way harmful or dangerous to health, and insofar as practicable, free from objectionable odors, taste, color and turbidity.

C) Pressure

The water supply and distribution system shall be so designed and constructed that it will maintain a normal operating pressure at all service connections not less than 25 pounds per square inch above atmospheric pressure, or more than 125 pounds per square inch above atmospheric pressure, except that during periods of hourly maximum demands, the pressure at the time of peak seasonal loads may not be less than 20 pounds per square inch above atmospheric pressure and that during periods of hourly minimum demand, the pressure may not be more than the design of the pipe line installed.

D) Water Supply

The water supply shall be so designed and constructed that it will supply at least the following volume rates for two hours at any fire hydrant in the system while the system is in normal operation without reducing the water pressure in any part of the system below 20 pounds per square inch above atmospheric pressure:

DWELLINGS PER ACRE	GALLONS PER MINUTE FOR TWO (2) HOURS
2 or less	500
More than 2	750

Larger flows may be required by the fire protection agency having the responsibility in that area where structural conditions require it.



E) Water Mains

- 1) Water mains shall be placed in street or public utility easements.
- 2) The distribution system shall be laid out in a properly segmented grid or loop system with valves provided at intersections and at intervals so that repairs may be affected with a minimum interruption of service.
- 3) Dead ends in mains shall be avoided insofar as practicable, and a means shall be provided to flush any dead ends which may be installed in the mains.
- 4) All water mains on which fire hydrants are connected shall be one of the following minimum sizes:
 - a) six inches inside diameter within a grid or loop system and on dead-end legs of less than 600 feet long;
 - b) eight inches or longer inside diameter for all other mains.

F) Service Connections

For Class 1 Subdivisions, a service connection pipe at least three-quarters inch inside diameter shall be placed to each lot from the water main.

G) Fire Hydrants

Fire hydrants shall be placed so no point in any of the streets fronting on lots served by the water distribution system are further than 250 feet from the nearest hydrant in a standard subdivision or when less than two (2) acre parcels are proposed; for rural subdivisions and minor land divisions with water mains - 500 feet; and 125 feet in a commercial and industrial area. Each fire hydrant shall be installed in a street and shall have a gate valve between the water main and the riser.

Fire hydrants shall be of a type and size approved by the public entity providing services, and shall have two 2-1/2 inch outlets and one 4-1/2 inch outlet (4-inch Tahoe). Fire hydrants shall be located not more than 8 feet from the edge of the roadway and near the level with the roadway. The 4-1/2 inch outlet (4-inch Tahoe), shall be no less than 18 inches above the ground level or greater than 24 inches. (See Std. 106A and 106B). The location of fire hydrant installations is subject to approval by the structural fire protection agency having the responsibility in that area.



H) Materials

Metallic and nonmetallic materials may be used separately and in combination to construct component parts of a water system including, but not limited to, conduits, pipes, couplings, caulking materials, protective linings and coatings, services, valves, hydrants, pumps, tanks and reservoirs, provided:

- 1) The material shall have a reasonable useful service life;
- 2) The material shall be capable of withstanding, with ample safety factors, the internal and external forces to which it may be subject to in service;
- 3) The material shall not cause the water to become impure, unwholesome, unpotable or unhealthful;
- 4) Materials and equipment shall be so selected as to mitigate corrosion, electrolysis and deterioration.

I) Standards of Construction

- 1) Water mains shall be installed below the frost line or be otherwise protected to prevent freezing and shall not have less than 30 inches of cover over the top of the pipe in public streets.
- 2) Service pipe shall be laid to a depth sufficient to prevent freezing and not less than 18 inches except at its termination in connecting with a meter or customer's piping.
- 3) Water mains and other services, when crossing other utilities, shall be separated by at least one foot.
- 4) Water mains and services installed within streets shall be installed and successfully tested under pressure before pavement is constructed.

J) Plans and Specifications

Prior to the approval of the final map or filing of the parcel map, (5 or more parcels), the subdivider shall submit to the County Engineer, plans and specifications of the water supply and distribution systems prepared by a civil engineer, registered in the State of California, of sufficient detail to enable the County Engineer to ascertain whether such systems conform to the standards set forth herein and to standard acceptable engineering practices. Such plans and specifications shall be reviewed, approved and signed by the authorized representative of the appropriate fire district and water district responsible for providing service upon completion of the project.



K) Additional Requirements

The County Engineer or water purveyor may require additional improvements for water systems having unusual problems.

L) Water Commitment - Final Maps (Major and Minor)

Prior to approval of the final map by the Board of Supervisors, or prior to the filing of a parcel map, the required water improvements shall be completed or described within a subdivision agreement and a security provided to guarantee completion.

The public purveyor shall submit a letter stating that the water improvements have been completed to its satisfaction or that the improvements described in the subdivision agreement are acceptable to the public purveyor. The letter shall include a statement from the public purveyor that it is willing and able to provide service to each lot of the subdivision when the described improvements are completed.

SECTION 6: FIRE PROTECTION REQUIREMENTS (As Revised 9/81)

The following are considered minimum fire protection requirements and may be modified by the Planning Director with a favorable recommendation from the fire protection district. Such modification may include the increase or decrease of the minimum fire protection requirement standards dependent upon the unique needs of the servicing fire district.

A) Fire Protection Required

- 1) When division of land (minor or major) is proposed and is within a fire protection district, the minimum fire protection requirements must be met, unless modified by agreement between the subdivider and structural fire protection district and wildland fire protection agencies.
- 2) When a major subdivision (no matter the size of the lots) is proposed, it shall be within a structural fire protection district.
- 3) A proposed minor land division creating parcels 9.0 acres or smaller shall be within a structural fire protection district.
- 4) If the proposed subdivision (major or minor) creating parcels 9.0 acres or smaller, or a commercial or industrial division is not within an existing fire protection district, one of the following shall occur:



- a) annex to an existing fire protection district;
or,
- b) contract for service with existing structural fire protection district until such time as the annexation is finalized.

B) No Fire Protection Required

- 1) When a minor land division is proposed and is creating parcels 9.1 acres or larger and is not within a fire district, but is located within the sphere of influence, minimum fire protection requirements shall not be required. However, review by the future fire protection district shall be required and comments shall be provided to the developer as comments only.
- 2) When no structural fire protection exists, the subdivider may be required by the Planning Director, at the recommendation of the California Department of Forestry, U.S. Forest Service and future fire protection district, to:
 - a) expand cleared rights-of-way and enlarge cul-de-sacs;
 - b) perform selective clearing so that fuel load levels are reduced; and,
 - c) other reasonable measures to protect structures in area where structural fire protection does not exist; i.e., if the land division is adjacent to existing water lines, it may be required to be extended for fire protection purposes.

C) Water Supply and Source Requirements for Fire Protection (Major and Minor Land Divisions, Five (5) or more parcels)

The supply system and source shall provide a minimum of 60,000 usable gallons of storage for 5 to 50 lots; 120,000 gallons for 51 to 100 lots; and 180,000 gallons for 100 or more lots. The water supply system and source shall be located at the direction of the Planning Director and based on comments received from the structural fire protection district.

- 1) Where water distribution systems are not available, the following will be considered by the structural fire protection district:



- a) tanks;
 - b) reservoirs;
 - c) canals; and
 - d) other systems as may be approved by the structural fire protection district.
- 2) Any of the above water supplies, or combinations thereof, may be required by the Planning Director with a favorable recommendation from the structural fire protection agency having the responsibility in that area.
 - 3) A facility for refilling fire trucks shall be provided for taking of water from the water supplies and shall conform to the standard drawings. The standard drawings may be modified by the fire protection district having the responsibility in that area where structural conditions require it.
 - 4) Fire hydrant locations shall be approved by the Fire Chief of the district providing the service, under Article 10, Section 10.301 of UFC.

SECTION 7: WATER SUPPLY FOR DOMESTIC USE, FOR PARCELS NOT SUPPLIED WITH WATER BY A PUBLIC AGENCY

- A) On parcels of 4.5 acres and larger, individual wells can be utilized.
- B) Information will be required by Environmental Health to assure an adequate water supply per parcel. This may be done by a combination of:
 - 1) tests wells (must produce 5 gpm to be considered as an indicator for adjacent parcels) and/or;
 - 2) data from surrounding properties.
- C) In water scarce areas, additional requirements may be placed on the subdivider to assure adequate water availability.

SECTION 8: SEWAGE COLLECTION AND DISPOSAL SYSTEM REQUIRED

- A) The sewage collection and disposal system provided, shall comply with the following standards or the public purveyor's requirements, whichever is greater. The following land divisions shall be serviced by a sewer system supplied by a public agency and sewer lines shall be extended to each parcel created:



- 1) Commercial and Industrial Land Divisions;
- 2) standard Subdivisions;
- 3) minor land divisions creating one or more parcels smaller than 4.5 acres.

Prior to filing the final map or parcel map, sewer service must be available for immediate use or agreements to make improvements guaranteed by suitable security.

Sewer service requirements may be waived by the approving body where such system is not available and where public water systems are provided under Section 5A.

B) Disposal System

The means used to dispose of sewage shall have sufficient capacity to dispose of all sewage and industrial waste which may be reasonably anticipated from the full expected use of the division of lands in addition to any other area such system may serve. The disposal system shall so treat all sewage, including any industrial waste, all liquid, solid or gaseous residue after treatment, so it will not contaminate any surface or underground waters to a degree which creates an actual hazard to the public health through poisoning or the spread of disease, or pollute any surface or underground water to a degree which adversely affects such waters for domestic, industrial, agricultural, navigational, recreational or other beneficial use, or shall such system create a nuisance to any community by odors or unsightliness resulting from unreasonable practice in the disposal of sewage.

C) Metallic and nonmetallic materials may be used separately and in combination to construct the component parts of a sewer collection and disposal system provided:

- 1) the material shall have reasonably useful service life;
- 2) the material shall be capable of withstanding, with ample safety factors, the internal and external forces to which it may be subjected in service;
- 3) material and equipment shall be so selected as to minimize corrosion, electrolysis and deterioration; and



4) concrete pipe shall not be used for sewer mains or laterals.

D) Sewer Mains

Sewage shall be collected in a network of sewer mains laid within the rights-of-way of streets or public utilities easements leading to the sewage disposal system. All sewer mains shall be of sufficient size to carry all sewage and industrial waste which can reasonably be anticipated from the full expected use of all lots and areas served by the mains. Gravity sewer mains shall be laid to such grade that will provide a minimum velocity of flow of two (2) feet per second at all points in such mains. Sewer mains shall be installed with not less than 30 inches of cover and shall have a 10 foot separation from the water line except where water and sewer lines cross.

E) Laterals

A service connection lateral of not less than 4-inch nominal size for a gravity flow system shall be placed to each lot from the sewer main in a Class 1 Subdivision and where new line extensions are constructed for other land divisions. Laterals shall be laid to a minimum grade of one-fourth (1/4) inch per foot from the lot line to the sewer main. A cleanout shall be provided upon each lateral just within the boundary line of the lot served. Such laterals and cleanouts shall be installed in accordance with the Sanitary Sewer Detail Drawings hereinafter set forth.

F) Sewer Opening

Manholes shall be constructed in gravity flow sewer mains at every change of grade or direction, and along straight portions of mains, so that no point in any main shall be farther than 250 feet from the nearest manhole. A lamp hole or manhole must be provided at the end of all sewer mains. Manholes and lamp holes shall be installed in accordance with the sanitary sewer standard drawings.

G) Storm Waters

No storm water drain shall be connected to any sewer main or lateral.

H) Trenching

All sewer mains, manholes, and laterals, shall be placed, successfully tested, and the backfill compacted, prior to the surfacing of the streets affected.



I) Plans and Specifications

Prior to the approval of the final map or filing a parcel map (5 or more parcels), the subdivider shall submit to the County Engineer, plans of the sewage collection and disposal system prepared by a civil engineer, registered in the State of California, of sufficient detail to enable the County Engineer to ascertain whether such system conforms to the standards set forth herein and to standard acceptable engineering practices. Such plans and specifications shall be signed by the authorized representative of the entity that will operate the sewer systems, certifying it has approved the final construction plans and specifications, and that it is willing to maintain and operate the sewer system on its completion.

J) Additional Requirements

The County Engineer or the public purveyor may require additional improvements for sewer systems having unusual problems.

K) Sewer Commitment - Final Maps (Major and Minor)

Prior to approval of the final map by the Board of Supervisors, or prior to the filing of a parcel map, the required sewer improvements shall be completed or described within a subdivision agreement and a security provided to guarantee completion.

The public purveyor shall submit a letter stating the sewer improvements have been completed to its satisfaction or that the improvements described in the subdivision agreement are acceptable to the public purveyor. The letter shall include a statement from the public purveyor that it is willing and able to provide service to each lot of the subdivision when the described improvements are completed.

L) Use of Community Sewage Disposal System/Facilities for the Western Slope of El Dorado County

The use of a community sewage disposal system may be allowed when public sewer service is not available or feasible. The allowance of such system or facility shall be determined on a case-by-case basis and each determined on its own merit.

The purpose of this section is to provide for the establishment of on-site community sewage disposal systems/facilities in areas where the connection to a public sewer is not currently feasible. The allowance of such system/facility is to be determined on a case-by-case basis, each determined on its own merit.



The on-site community sewage disposal system/facility, hereinafter called system, shall mean any works and/or facilities used to collect, treat or dispose of domestic waste water generated within the boundaries of a project.

This section shall govern the management of all systems not proposed to be connected to an existing public sewer facility. This section is intended to regulate the use of new systems or the expansion of capacity for existing systems constructed after the effective date of this section for the treatment and disposal of domestic sewage. This section shall be applicable to those users, including residential, commercial and industrial developments, whose waste discharge can be considered as normal domestic sewage and public sewage facilities are not available.

This section shall not be applicable to commercial or industrial developments where other than normal domestic sewage is generated. These systems shall be allowed only in Industrial, Commercial, Multi-Family Residential and Single Family Residential - High Density areas as designated on the El Dorado County area plans.

This section shall be liberally construed so as to ensure protection of the public health, to assure reliable and reasonable service to the customer, to prevent degradation of surface and/or subsurface waters, to minimize any other detrimental environmental effects that could result from the collection, treatment, storage, and disposal of sewage or waste water associated with on-site sewage disposal systems.

The developer of a project that requires a system, except those systems relying upon community leach field disposal of septic tank effluent, shall enter into a contractual agreement with a public entity to supervise the operation and maintenance of the system. The public entity shall be the El Dorado Irrigation District, the Georgetown Divide Public Utility District, or the City of Placerville, hereinafter called "Entity."

The developer shall cause to be formed, a property owner's association or similar body, hereinafter called "Body"*, which shall be responsible for the normal and routine operation of the system. The contractual agreement shall include, as participants, the Body, the

*In the case of single owner of a multi-unit residential or recreational type facility (such as a mobile home park or campground), the owner shall be the Body.



supervising Entity, and the County of El Dorado, if applicable, hereinafter called County. Provisions shall be made in the contractual agreement to prevent the termination of said contract without the concurrence of all parties to the contract. The contractual agreement shall be tied to the property services by the system so that the supervising Entity shall have the power to assess the Body for any expense incurred, with the right to lien the property should the Body default. The Body must be able to collect funds for the normal operation and maintenance of the system. The Body must have in its employ, or contract with, a person to operate, monitor and routinely maintain the system on a day-to-day basis. This person shall be a qualified waste water plant operator, certified by the State.

The level of certification shall be commensurate with the required duties and responsibilities. In the event of problems with the operation and maintenance by the Body, the Entity shall take all steps necessary to correct the problems in a timely fashion to the satisfaction of the El Dorado County Health Department.

A defined area of benefit and service fees within a county service area or public utility district shall be established prior to the recordation of a final map. The funding for this area of benefit shall be set up so as to accrue funds to provide for the future repair and/or replacement of major components of the system. The level of funding shall be reviewed under authority of the El Dorado County Board of Supervisors or public utility district on a yearly basis to determine if sufficient monies are available to provide the necessary ability to correct any foreseeable problems with the system. The contractual agreement shall stipulate the manner in which this funding can be used for project repair and/or replacement. The County may require a bond or other accepted surety to cover the initial period until sufficient funds have accrued to the service areas to handle potential problems. The amount of surety may be reduced annually by the amount equal to the reserve funds accrued within the past year. The contractual agreement shall be continued until the system, in its entirety, has been abandoned and the dwelling units and other buildings served by such system have been connected to a public sewer system. This policy shall provide that when a subregional sewer treatment plant and collection system becomes available, a review of the system will be made. If it is determined by the Entity to be advantageous, the system shall be connected to the public sewer system. Those

**LEVELS OF RESPONSIBILITY AND FUNDING
FOR ON-SITE COMMUNITY SEWAGE DISPOSAL SYSTEM**

RESPONSIBILITY

Abate problems if required

Review and approve design and construction
Supervise operation and maintenance

Step in and correct problems should they develop and not be corrected

Provide day-to-day operation and maintenance by certified plant operator

FUNDING

Establish, collect and hold in reserve fees for recapitalization

Assess fee to cover costs; place liens if owners fail to pay fee; request reimbursement from County Service Area where appropriate

Assess and collect fee to cover cost of daily operation and maintenance

COUNTY SERVICE AREA
AREA OF BENEFIT

PUBLIC ENTITY

BODY





All systems shall be designed by a qualified registered engineer and approved by all agencies involved. The design must be approved by the supervising Entity, the Division of Environmental Health, and the California Regional Water Quality Control Board, Central Valley Region. Construction shall be supervised by the appropriate agencies, engineer, and public entity. Upon approval by all agencies, and after the necessary contractual agreements and county service areas of benefits have been established, the California Regional Water Quality Board will issue a waste water permit to the Entity. The Entity will be accountable to the County for the correction of problems or nuisance conditions that may develop.

All the above provisions shall be made conditions to the Final Map.

Prior to recordation of final map, the developer must have approval assigned and contractual agreement with Entity. Entity has no obligation to issue permit or enter contractual agreement with developer solely as a result of this policy. The entity shall be responsible for operation and maintenance of sewer facilities within the County maintained streets.

SECTION 9: UNDERGROUND POWER AND/OR COMMUNICATION UTILITY SYSTEMS

- A) Underground power and/or communication systems shall be referred to as separate entities.
- B) Electrical and communication systems shall be placed in public streets, public utility easements, or rights-of-way acquired by the applicable utility.
- C) Standards of Construction
 - 1) Electrical and communication systems shall have 24 inch minimum cover when in public street.
 - 2) Electrical and communication systems in public streets shall be placed before pavement is constructed and shall be accurately constructed in conformance with the plans.
 - 3) Surface facilities that will be located in paved areas shall have traffic frames and lids conforming to the standard drawings approved by the County Engineer.



- 4) Surface facilities that protrude from the finished grades shall be located so that they will not cause a hazard.
- 5) The final plans and specifications shall show the work to be performed by the subdivider, normally consisting of conduit, pull boxes, and transformer pads. Wires are normally supplied by the utility entity and need not be shown on the plans.
- 6) When crossing other utilities, electrical systems shall be separated by at least one foot and their vertical and horizontal locations shall conform to details on the approved plans.
- 7) Electrical systems shall be set at a minimum of 5 feet (horizontal distance) from sewer or water lines.

D) Plans and Specifications

Prior to the approval of the final map, the subdivider shall submit to the County Engineer plans showing the location of the electrical and communication systems, prepared by a civil engineer, registered in the State of California, of sufficient detail to enable the County Engineer to ascertain whether such systems conform to the standards set forth herein and to standard acceptable engineering practices. Such plans and specifications shall be approved by the authorized representative of the entity operating the electrical or communication systems, and shall be accompanied by a letter from the entity stating that the entity and subdivider have entered into an agreement that will provide the utility's service to a lot line at each lot in the subdivision.

SECTION 10: ENCROACHMENTS ON COUNTY MAINTAINED ROADS

All encroachments onto County maintained roads shall conform to the applicable standard in Chapter 2, Road Encroachments, Chapter 12.08 et seq. of the County Code and the standards in this Design Manual. Road encroachments shall be authorized by a subdivision agreement or road improvement agreement approved by the Board of Supervisors or an encroachment permit issued by the Department of Public Works.



SECTION 11: DEVIATION TO DESIGN STANDARDS

- A) Subdivisions (minor and major) shall conform to the standards of design and improvements as specified in this volume. Any deviation to these standards, or request for waivers, shall be considered by the Planning Division of the Community Development Department, Planning Commission, or where appropriate, the Board of Supervisors.

Following are the three categories of subdivision (minor and major) and the body and/or official responsible for determining/approving deviations to the design and improvement standards as set forth herein:

- 1) Minor Land Divisions (4 parcels or less),
Planning Division
(may be appealed first to the Planning Commission and then may be appealed to the Board of Supervisors);
- 2) Minor Land Divisions (5 or more parcels),
Planning Commission
(may be appealed to the Board of Supervisors);
- 3) Major Land Divisions (subdivisions),
Board of Supervisors.

B) Identification and Documentation of Design Waiver:

The subdivider is to identify each deviation or request for waiver of any of the design or improvement requirements of these standards on the tentative map. Documentation must be submitted supporting a request for a design waiver.

NOTE: Deviation to design requirements shall apply only to street designs, alignments, and other standards not established under zoning requirements. For example, a request for a reduction of lot size from the zoning district criteria shall require a variance application; a request to increase the slope of a road is considered a design waiver.



VOLUME III - DESIGN STANDARD FOR LOT OR PARCEL
(NOT SUBDIVISIONS)

SECTION 1: GRADING PERMIT REQUIREMENTS

All grading must comply with the El Dorado County Grading Ordinance, Chapter 15.14, for multifamily, commercial and industrial construction.

Grading for single family residence construction shall require a grading permit only if one of the following prescriptive standards are exceeded: the driveway grade below 3,000-foot elevation exceeds 15% (nonsurfaced) or 20% (asphalt or concrete surfaced) and for above 3,000-foot elevation exceeds 15% (nonsurfaced) or 15% (asphalt or concrete surfaced), the cut (not supported by the house foundation) or fill earthwork exceeds 5 feet in height, the excavation or fill quantity will exceed 250 cubic yards; the removal, plowing under, or burial of more than 10,000 square feet of surface area on slopes 10% or greater will occur; grading will change existing drainage courses (ditches or swales) on lot or parcel; the proposed grading/construction activity will alter previously placed erosion control items on the lot or parcel.



VOLUME IV
EROSION CONTROL REQUIREMENTS AND SPECIFICATIONS

SECTION 1: GRADING AND DRAINAGE REQUIREMENTS

- A) All road cuts and fills will have maximum slopes of 2:1. Exceptions to this will be: 1) areas where inspector determines that rock material will not warrant seeding for erosion control; 2) areas where retaining walls will be constructed.
- B) Mitigation of sediment runoff beyond project boundaries will be addressed in the erosion control plan. Required mitigation measures shall comply with, but not be limited to, the applicable sections of El Dorado County Ordinance Code Chapter 15.16.200
- C) Areas involving extensive grading and shaping will require stockpiling and reuse of topsoil to provide for adequate revegetation.
- D) Erosive velocities in water conveyance structures will be identified by the project engineer. Where necessary, rip-rap or similar practices will be required.
- E) An erosion control plan will be reviewed with the appropriate resource conservation district and/or Public Works representative prior to September 15th of the year grading commences. At this time, an inspection schedule of erosion control practices will be agreed upon.

SECTION 2: CRITICAL AREA PLANTING CONSTRUCTION SPECIFICATION

A) Scope

Establish vegetation on severely eroding areas or areas with an erosion potential. Its purpose is to stabilize the soil; reduce or prevent damage from sediment and runoff to downstream areas; improve wildlife habitat; and enhance natural beauty.

B) Areas to be Seeded, Timing of Seeding

Complete revegetation and stabilization of all disturbed soils, both within and outside of County rights-of way, will be accomplished with specified amounts and types of vegetative species, mulch, and fertilizer material.



Revegetation work will be planned to proceed between September 15 and October 15. Following grading, if erosion control practices are not installed by October 15, specification "F", "Emergency Treatment," will be required.

C) Material

- 1) Seed - All seed shall be delivered to the site, tagged, and labeled in accordance with the California Agricultural Code and shall be acceptable to the County Agricultural Commissioner and/or Resource Conservation District.

Seed shall be of quality which has a minimum pure live seed content of 80% (% purity x % germination) and weed seed shall not exceed 0.5% of the aggregate of pure live seed and other material. Legume seed shall be inoculated with inoculate specific to its needs within two hours prior to seeding. Inoculant shall not be used later than the date indicated on the container or as otherwise specified. All inoculated seed shall be labeled to show the weight of seed, the date of inoculation, and the weight and source of inoculant materials.

- 2) Fertilizer - A commercial fertilizer shall be Ammonium Phosphate and contain a minimum of 16% Nitrogen, 20% Phosphorus and 0% Potash, uniform in composition, dry and free-flowing, pelleted or granular.

All fertilizer shall be delivered in unbroken or unopened containers, labeled in accordance with applicable state regulations, and bear the warranty of the producer for the grade furnished.

- 3) Mulch - Mulch shall be one of the following materials as approved by the government representative:

Straw - Straw shall be new straw derived from rice, wheat, oats, or barley, and be free of mold and/or noxious weed seed. Straw shall be furnished in air dry bales.

Evidence shall be furnished that clearance has been obtained from the County Agricultural Commissioner and/or Resource Conservation District, as required by law, before straw obtained from outside the County in which it is to be used is delivered to the site of the work.



Wood Fiber Mulch - Wood fiber mulch is a wood cellulose fiber that contains no germination or growth inhibiting factors. It is colored with a nontoxic, water soluble, green dye to provide a proper gauge for metering over ground surfaces. It has the property to be evenly dispersed and suspended when agitated in water.

D) Seeding Requirements

- 1) General - All seeding, fertilizing, and mulching operations shall begin when approval is given by the appropriate County Engineer or conservation district representative.
- 2) Seedbed Preparation - The entire area to be seeded shall be reasonably smooth and conform to the desired shape before actual seedbed preparation is begun. Any debris which would interfere with seeding operations, growth, or maintenance of the vegetation order will be removed. The area to be seeded shall have a firm seedbed which has previously been roughened by scarifying, discing, harrowing, chiseling, or otherwise worked to a depth of two to four inches (2" to 4"). No implement shall be used that will create an excessive amount of downward movement of soil or clods on sloping areas. Seedbed may be prepared at time of completion or earth moving work.
- 3) Fertilizing - Fertilizer shall be distributed uniformly over the seedbed at the rate of 500 pounds per acre, and shall be in such physical condition to insure uniform application over the area to be fertilized.

Fertilizer may be applied in any way that will result in uniform distribution. The fertilizer shall be incorporated into the soil. Incorporation may be as a part of the seedbed or as part of the seeding operation. If fertilizing is a part of the seedbed preparation, it shall not be accomplished more than fifteen (15) days prior to seeding.

- 4) Seeding - Seed shall be broadcast by hand, mechanical hand seeder, power operated seeder, hydroseeder, or other approved equipment. Seed shall have a soil cover of not more than one-half (1/2) inch. Seeding will be carried out using one of the following methods:



Method 1:

The seed may be drilled, not to exceed one-half (1/2) inch deep and cultipacked or rolled once over with a corrugated roller on all areas where equipment can be operated safely. Seed operations will be across the slope.

Method 2:

The seed may be broadcast and covered with a light harrow and drag, ring-roller, or with other suitable equipment. Seed operations will be across the slope. If the area cannot be worked with implements such as harrows, ring-rollers, or similar scarifiers due to slopes or availability of equipment, the slope shall be "cat walked" prior to seed and fertilizer broadcasting. The term "cat walked" here shall refer to operating track-laying equipment up and down a slope to create cleat depressions to hold seed and fertilizer.

Method 3:

The seed may be applied in a slurry mix of wood cellulose fiber distributed uniformly at the prescribed rate. (See-Hydro-mulching below). The application unit used for "Hydro-mulch" shall be equipped with an operational agitator to maintain the seed and mulch in suspension within the unit's tank prior to and during application.

Method 4:

Where emergency treatment of exposed soils extends beyond October 15, emergency mulching without seed will be prescribed. (See Item "F". "Emergency Treatment.")

5) Kind of Seed and Amount

The following information will be ascertained during the Technical Design Review process and calculated by the Resource Conservation District for each project:

Soils: _____ Percent Slope: _____

Elevation _____ Exposure: _____



The amount and kind of seed for this project will be as follows:

lbs./ac. = lbs./1,000 sq. ft.

Seeding shall not be done prior to September 15, or later than October 15, the year of application unless special provisions and/or conditions are approved.

E) Mulching

A mulch covering shall be distributed uniformly over the surface of the seeded area. Mulching shall follow immediately after seeding unless otherwise directed. A straw mulch or wood/paper fiber will be required for mulch material. The Conservation District will require one of the following mulching programs for each project:

- 1) straw or wood/paper fiber;
- 2) straw mulch only (if project is broadcast seeded, drill seeded, or hydroseeded, straw mulch will still be required).

Method of Mulch Placement:

- 1) Straw Mulch - A straw mulch shall be applied at a rate of two (2) tons per acre. The mulch shall be applied by hand, blower, or other suitable equipment. If straw is applied with a blower, it shall not be chopped in lengths less than six (6) inches.

To prevent removal of straw by wind, the mulch will be anchored in place. Anchoring process, as approved, may include using hand tools, mulching rollers, discs, paper netting, or similar type of suitable equipment.

Acceptable Methods for anchoring straw mulch:

- a) On areas where a seedbed has been prepared, the straw may be tucked in with a mulching roller or straw crimper that punches the mulch in the ground to a depth of approximately two (2) inches. On areas inaccessible to equipment, mulch can be anchored using hand tools such as a spade, shovel, or other suitable equipment.



- b) Straw may be anchored by using fiber netting, properly stapled down, and with anchor trenches to cover the netting at top and bottom. Mulch net should be durable and capable of withstanding a minimum of one year's weathering without disintegration. Netting should be provided to allow for shrinkage and for stapling with anchor pins. Anchor pins need to be of sufficient length and properly placed to anchor the net.

Chopped straw that is shorter than 6 inches must be anchored with a suitable netting.

Anchor pins shall be of rigid 0.12 inch diameter or heavier galvanized wire with a minimum length of 10 inches of hook, J-type pins, or 0.09 inch diameter or heavier with a minimum length of six inches for U-type staples. Anchor pins will be inserted full length at a maximum of three foot spacings at all ends and along lap joints; at a maximum of five foot spacings at intermediate points; and along edges when using mulch net materials wider than 60 inches.

- c) Straw may be anchored on slopes less than, or equal to, two (2) horizontal to one (1) vertical unit by using a wood or paper fiber material applied in a slurry with hydroseeding equipment.

All mulching material must be acceptable to the Agricultural Commissioner of El Dorado County, California, as to plant quarantine regulations.

- 2) Wood Cellulose Fiber/Hydro Mulch - A wood or paper fiber mulch at a rate of 1500 pounds per acre may be applied hydraulically in a water slurry. The wood fiber mulch, seed, and fertilizer can be mixed and applied hydraulically in the form of slurry.

F) **Emergency Treatment**

Exposed areas needing treatment to control erosion between October 15 and April 15 will require emergency treatment practices to be installed. These practices will consist of all or a portion of the following:



- 1) Covering designated critical areas with 2 tons per acre of suitable small grain straw. Straw must be suitably anchored. This practice may include application of approved seed and fertilizer material with the condition that erosion compliance approval ~~will not be issued prior to a late spring~~ inspection. Compliance approval will only be granted when the designated inspector deems the resulting vegetative stand to be adequate.

- 2) Sediment catchment practices will be installed to the satisfaction of the soil conservation service. Sediment catchment installations will be constructed in such a way as to contain sediment runoff from moving beyond project boundaries.