CHAPTER 5 – GRADING, EROSION, AND SEDIMENT CONTROL
(draft rev. 10/01/10; Source Doc Draft 1-6-11)

Sections:

"Shall" (or similar) Statement	Implementing State/Federal Law, General Plan Policy, or County Ordinance

Note: This Chapter was most recently called Volume III: Grading, Erosion and Sediment Control and was last updated by Board Resolution #047-2007 in 2007 along with Title 15.14 El Dorado County Grading, Sediment and Erosion Control Ordinance (Grading Ordinance). This manual, and particularly this Chapter, supersedes Volume III in its entirety.

In this Chapter, the following definitions[JCY1] apply:

- **Architect.** An individual holding a current license to practice architecture in the State of California.
- **Borrow.** Earth material acquired from an off-site location for use in grading on a site.
- **Civil Engineer.** An individual currently registered as a Civil Engineer by the State of California.
- **Compaction.** The increase of density of a soil or rock by mechanical means.
- **Design Professional.** Refers to a California registered Civil Engineer or Land Surveyor, or a California licensed Architect, Landscape Architect, Geologist, or Engineering Geologist; whose license is current and who practices under the authorization provided in the "Practice Act" of their particular profession as set forth in the "California Business and Professions Code".
- **Design Professional in Responsible Charge.** Refers to the individual engaged by the owner to act as the design professional in responsible charge. When required by the County Building Official, that individual **shall** be designated on the permit application.

California Business and Professions Code Requires Design Professionals to identify their work. Designating same on Permit Application is for the convenience of the Building Dept. Staff.

- **Engineering Geologist.** A licensed Professional Geologist certified as an Engineering Geologist by the State of California.
- **Exposed Wall Face.** The vertical distance measured from the finish grade (consolidated soil or rock) at the toe of a retaining wall to the top of the wall.
- **Geologist.** A person licensed by the State of California as a Professional Geologist.
- **Geotechnical Engineer.** A Civil Engineer who holds a valid authorization to use the title "Geotechnical Engineer," as provided in the "State of California Business and

Professions Code". The terms "Geotechnical Engineer", "Soils Engineer" and "Soil Engineer" are deemed to be synonymous.

- **Geotechnical Report.** The documentation of a study or investigation made by a Geotechnical Engineer or Civil Engineer of the earth materials (See "Geotechnical Engineering") at the proposed development site. This documentation **shall** include an engineering evaluation of the properties of the encountered earth materials and recommendations for their disturbance, removal, modification, or replacement to prepare the project site for its proposed use. The terms "Geotechnical Report", "Soils Report" and "Soil Report" are deemed to be synonymous.

Professional Standard of Practice. Language developed in coordination with S.A.G.E.

- **Keyway; Key.** A special backfilled excavation which is constructed beneath the toe area of a planned fill slope on sloping ground to improve the stability of the slope.
- **Land Surveyor.** A Professional Land Surveyor licensed by the State of California.
- **Landscape Architect.** An individual holding a current license to practice landscape architecture in the State of California under the authority of the "Landscape Architects Practice Act" of the "California Business and Professions Code".
- **Licensed Professional.** An individual that meets the definition in the current "California Professional Engineers, Land Surveyors, Architects and Landscape Architects Act".
- **Mass Pad Grading; Mass Lot Grading.** Typically done in conjunction with a subdivision where building pads and adequate drainage are created for each lot. Often results in removal of most/all vegetation in the subdivision to make adequate room for buildings and drainage.
- **Retaining Wall.** Walls constructed to withstand lateral earth and/or fluid pressures, including any live and dead load surcharge, the self weight of the wall, and earthquake loads in accordance with accepted engineering practice. This definition also applies to free standing swimming pool walls.
- **Surcharge; Surcharge Load.** For the purpose of this manual, surcharge refers to an additional weight added to soil that can influence the stability of a soil mass or retaining wall. Examples of surcharge loads include structures, vehicles, snow, above ground swimming pools, stacks of material such as firewood and building products, large trees, the additional weight of earth due to an ascending backslope behind a wall, etc.
- **Terrace.** A relatively level step constructed on the face of a graded cut or fill slope surface for drainage, maintenance, or other purposes. (Note: For purposes of this manual, "benches" are located under a fill and "terraces" are located on the face of a constructed slope.)

5.1 General Policies

A. Any project that proposes grading, whether it is ministerial or discretionary, may **require** a grading permit, unless the project is exempted under the provisions of the Grading Ordinance. Grading permits may be required for residential building permits (all types), subdivisions, Parcel Maps, commercial projects, industrial projects, research & development projects, multi-family projects, etc. Even if a grading permit is not required, all other requirements as established by the Design Manuals **shall** be followed. Projects proposed in the Tahoe Basin **shall** meet the Tahoe Regional Planning Agency's (TRPA) requirements (see Section 5.3.3.5 of this Chapter).

County Grading Ordinance, NPDES Small Municipal Permit.

County Grading Ordinance

TRPA Ordinance xxx

B. Except as otherwise noted in this Chapter, the provisions of the currently adopted "Soils and Foundations" and "Grading Appendix" chapters of the California Building Code (CBC), **shall** apply.

Adoption of the LDM would effectively adopt referenced sections of the California Building Code

C. This Chapter is not intended to supersede or otherwise pre-empt any applicable local, State, or Federal law or regulation. Where conflicts may occur between this Chapter and such laws or regulations, the most restrictive **shall** apply.

Standard practice

D. Natural features, including vegetation, oak trees, watercourses, wetlands, steep slopes and similar resources **shall** be preserved consistent with the Policies, Objectives, and Implementation Measures of the *General Plan*, any applicable Specific Plan, the requirements of Title 17 Zoning Ordinance, the conditions of approval of any applicable discretionary permit, the "Oak Tree and Wetlands Preservation" standards included in this manual, and the requirements of the grading permit under which the work is conducted.

General Plan and OWMP

E. Grading permits **shall** not be approved for a discretionary project until the discretionary project is approved by the approving authority. Grading permits for ministerial applications which are zoned commercial, multi-family, industrial, or research & development, and all public facilities (e.g., parks, utilities, roads), **shall** not be issued

CEQA
County Grading Design Manual, Section E.5 et. seq.

	without a Building Permit application which has been submitted to Development Services Department (DSD) Building Services for plan review. In unusual circumstances, the approving authority responsible for issuing the grading permit may make an exception to these requirements.	**See above**
F.	Agricultural grading is exempt from these provisions but may **require** an agricultural grading permit. The Agriculture Department **shall** be contacted for specific requirements relating to agriculture grading.	**NPDES Small Municipal Permit, County Grading Ordinance Section 15.14.140.O and .P**
G.	No person **shall** perform any grading work or place obstructions within the right-of-way of a public road or street, or within a public easement under the jurisdiction of the County, without prior approval of the County Engineer.	**County Encroachment Ordinance, Section 12.08**
H.	County-maintained roads **shall** comply with the Standard Plans, and standard specifications.	**California Streets and Highways Code, Section 942 authorizes Board of Supervisors to establish standards, rules and requirements for work on public highways.**

Note: It is the applicant's responsibility to apply for the appropriate permit from the appropriate approving authority. An exemption granted by one Department does not entitle an applicant to an automatic exemption from obtaining a grading permit issued by another Department, if the project falls under the purview of the latter. For more information, contact DSD. (See Chapter 7, Section 7.1 of this manual for contact and website information.)

5.2 Design and Construction Standards

This manual contains multiple references to various agencies and source documents including contact information. These references can be found in a handout located at the DSD counter or website.

5.2.1 Earthwork

All earthwork **shall** comply with the applicable Chapters and Appendix sections of the California Building Code (CBC) for design and construction standards. The following provisions reflect additional local requirements or clarifications:	**California Building Code**

5.2.1.1 Excavation – Cut Slope Standards

A. Unsupported Foliation or Bedding Planes. No slope **shall** be cut at an angle steeper than the bedding/foliation planes or orientation of the principal joint sets in any formation where such planes or joints dip down toward the proposed cut face. A cut slope with this underlying condition (i.e. downslope-dipping bedding planes or joint sets) may be permitted if the Engineering, Geotechnical Engineering and Engineering Geology Reports demonstrate that the slope would be stable at a steeper angle.

Professional Standard of Practice. Language developed in coordination with S.A.G.E.

Exception
Requirements may be modified if recommended in an acceptable Geologic Report or Geotechnical Report.

5.2.1.2 Fill Construction Standards

Completed fills **shall** comply with the applicable provisions of the CBC, unless recommended otherwise in an acceptable Geotechnical Report.

California Building Code, Appendix J, Section J107

5.2.1.3 Terrace and Terrace Drainage Requirements

A. Interceptor (Brow) Ditches. Interceptor ditches **shall** be provided above all cut or fill slopes exceeding 10 feet in height if the tributary drainage area above the cut slopes toward the cut and has a drainage path greater than 40 feet measured horizontally. Interceptor ditches **shall** be designed to accommodate the flow volume and velocity of runoff estimated for a 100-year storm event as determined in a County-accepted Drainage Report prepared by a Civil Engineer. They **shall** have a minimum depth of 12 inches and a minimum width of 30 inches measured horizontally across the drain. An alternate design prepared by a design professional may be approved.

Professional Standard of Practice, Grading Ordinance, developed in coordination with S.A.G.E.

Clarification of Orignal Grading Ordinance language and consistent with Drainage Manual. Developed in coordination with S.A.G.E.

California Building Code, Appendix J, Section J109 with some modification

B. Ditches **shall** be designed to accommodate 100 year storm events, but are not mandated to provide extra 1 foot "free board" as may otherwise be required in the Drainage Manual

California Building Code, Appendix J, Section J109 with some modification

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5.2.2 Storm Water Management Requirements, Erosion and Sediment Control, and Drainage

A. For projects on the West Slope of the Sierra

Nevada in the County, storm water management, erosion and sediment control and drainage **shall** comply with the adopted Drainage Manual, Storm Water Management Plan (SWMP) and **current** California State Water Resources Control Board's (SWRCB) Order(s) regulating construction activities. **NPDES Small Municipal ~~General~~ Permit and SWMP**

B. Minimum construction site Best Management Practices (BMPs) listed in the SWMP and the Minimum Construction Site Storm Water Management Practices available on EMD's website. (See Chapter 7, Section 7.1 of this manual for contact and website information.) SWMP **shall** be implemented on all projects to control erosion and sediment, and other construction-related pollutants. **NPDES Small Municipal ~~General~~ Permit and SWMP**

Other approved BMPs are found in the SWMP, Section 4.4 Construction Site Runoff Controls and the Stormwater Best Management Practice (BMP) Construction Handbook published by the California Stormwater Quality Association. (See Chapter 7, Section 7.1 of this manual for contact and website information.)

C. Erosion and sediment control measures **shall** include an effective revegetation program to stabilize all disturbed areas which will not be otherwise protected. See Vegetation Establishment Guidelines for the Sierra Nevada Foothills and Mountains published by the High Sierra Resource Conservation and Development Council (refer to EMD's website). **NPDES Small Municipal ~~General~~ Permit and SWMP**

D. Topsoil Salvage. No topsoil **shall** be removed from the site unless otherwise directed or authorized by the approving authority issuing the grading permit. **NPDES Small Municipal ~~General~~ Permit and SWMP**

Topsoil overburden **shall** be stockpiled and redistributed within the disturbed area to provide a suitable base for seeding and planting. **NPDES Small Municipal ~~General~~ Permit and SWMP**

Runoff from the stockpiled area **shall** be controlled to prevent erosion and resultant sedimentation of receiving water. **NPDES Small Municipal ~~General~~ Permit and SWMP**

E. Drainage and Acceptance of Historic Runoff. All grading projects **shall** be designed to convey the runoff water historically delivered to the site from off-site property to an adequate storm drain or existing watercourse. **NPDES Small Municipal ~~General~~ Permit and SWMP**

For projects in the Tahoe Basin, the provisions of this manual **shall** apply, except where those provisions are in **NPDES Small Municipal ~~General~~ Permit and SWMP**

conflict with the requirements of the Lahontan Regional Water Quality Control Board (RWQCB) or TRPA. In such cases, the requirements of the Lahontan RWQCB or TRPA **shall** take precedence. Further information may be found at the Lahontan RWQCB's website. (See Chapter 7, Section 7.1 of this manual for contact and website information.)

NPDES Tahoe General Permit, California Government Code Section 66800 et. seq.

5.2.3 Setbacks

5.2.3.1 General Requirement

Cut and fill slopes **shall** be set back from permit area boundaries in accordance with the CBC.

California Building Code, Appendix J, Section J108

5.2.4 Mass Pad Grading

"Mass pad grading" (also known as mass lot grading) means the grading or disturbance of the surface of any lot or parcel more than the percentage specified below for the size of the lot or parcel in question:

Percentage (%) of Land Area Disturbed	**Parcel Size** *(square feet)*
80	Less than 6,000
60	6,000-19,999
50	20,000-43,559
30	43,560-87,120
20	Greater than 87,120

Mass pad grading is usually, but not always, associated with subdivisions in which the grading of all lots is more efficiently done at one time. Also, due to the terrain encountered in the County, mass pad grading may be necessary to create adequately-drained, near-level building sites and to provide for adequate access to these sites.

5.2.4.1 Basic Principles

A. The volume of grading **shall** be limited to that necessary to accomplish the proposed development. It is the intent of this section, consistent with the *General Plan*, that all grading **shall** reflect the natural gradient and contours of the site, to the greatest extent possible.

General Plan Goal 2.3 and Policy 2.3.1.1

Developed in coordination with S.A.G.E.

B. Grading **shall** be designed to minimize the creation of extensive, artificial banks or terraces which may be visible from public streets or other public views.

C. Grading **shall** conform to the design standards provided in this manual unless demonstrated

Standard practice. Developed in coordination with S.A.G.E.

through adequate analysis and report that an alternate design can provide a stable slope that avoids severe erosion and other hazards.

D. 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 which are generally in good health (see Chapter 2 of this manual for standards related to oak tree protection).

General Plan and OWMP

E. 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. When cross lot drainage does occur, it **shall** be contained within dedicated drainage easements. This drainage **shall** be conveyed via closed conduit or v-ditch, to either a natural drainage course of adequate size or an appropriately sized storm drain system within the public roadway unless exceptions are provided by an approved drainage study.

Drainage Manual, Legal Precident, Professional Standard of Practice

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5.2.4.2 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 applicant in areas where mass pad grading is combined with a build-out program.

General Plan Goal 2.3 and Policy 2.3.1.1

Standard practice

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.

Limits interpretation of grading requirements.

5.2.4.3 House Construction

The Building Official, at final inspection for any house,

California Building Code,

shall verify that pad slopes and drainage substantially **~~Section1803~~Section1804** conform to approved plans.

5.2.4.4 Subsequent Construction

For mass pad graded lots on which homes have been built, and which are subject to County permit issuance for construction of a 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 submitted for review and approval. A revised drainage plan **shall** provide for positive, controlled lot drainage. These **shall** be subject to the final sign-off by the approving authority issuing the permit.

Drainage Manual, Legal Precident, Professional Standard of Practice

~~Standard practice~~, California Building Code

~~Standard practice~~, California Building Code

5.2.5 Retaining Wall Design and Construction

The purpose of this section is to provide basic information to assist applicants in obtaining permits, ensuring proper design and construction of the wall system, and in obtaining the proper inspections.

5.2.5.1 Governing Standards and Guidelines

Retaining walls **shall** be designed in accordance with the applicable Chapters and Appendices of the latest edition of the CBC, in addition to the applicable provisions provided in this section. All retaining walls requiring a permit **shall** consider earthquake loading in accordance with the applicable Chapters of the Building Code.

California Building Code

A Reference Guide is available at the approving authority responsible for issuing the permit.

5.2.5.2 Permit Requirements

Construction of retaining walls **requires** a permit and is regulated by local building and zoning codes and this manual.

2007 County Grading Ordinance

Exception

Walls retaining less than four feet of earth measured from the bottom of the footing, and that have a finish grade above and below the wall sloping less than 5:1 (five horizontal to one vertical) and do not impound Class I, II, or III-A liquids as those liquids are defined in the CBC, are exempt from permit. Walls built on the property line or within a perpendicular distance from the property line equal to the height of the exposed wall face **shall** not be constructed of wood.

Professional Standard of Practice

Experience with wood retaining walls and proximity to theoretic failure plane on adjacent property.

All walls located within a County-maintained road right-of-way are subject to review and approval by the Department of Transportation (DOT).

5.2.5.3 Design Requirements

All permitted retaining walls **require** a soils investigation in accordance with the CBC. — **California Building Code**

Exception
Walls, or a combination of walls, constructed of concrete or masonry that are less then 10 feet in height. Soil design parameters and requirements for site observation **shall** be in accordance with the CBC. — **California Building Code**

Seismic design is **required** for all permitted retaining walls unless exempted by exception in the CBC. — **California Building Code.**

However, all rockery walls **require** a seismic analysis. — **California Building Code.**

Seismic design may be submitted in accordance with the Federal Highway Administration (FHWA) methods provided in the referenced standard, provided local parameters are used in the design. At the discretion of the design professional, the seismic thrust may be evaluated with the pseudo-static Mononabe-Okabe equation, or walls may be designed using the approximated value of the resultant seismic force = $14H^2$ positioned 0.6H above the top of the footing or base, where "H" is the retained earth height. In addition, Mechanically Stabilized Earth (MSE) wall designs **shall** include the horizontal inertia force of the reinforced fill. The Mononabe-Okabe inertia force equation may be used, or, walls may be designed using the approximated value of the inertia force = 20HL positioned 0.5H above the base, where "H" is the retained earth height and "L" is the depth of reinforced fill. — **Developed in coordination with S.A.G.E.** / **Professional Standard of Practice** / **~~Standard practice~~ and International Code Council (ICC) Reports**

Minimum Design Requirements:

A. Retaining walls **shall** be designed to withstand lateral earth and/or fluid pressures, including any live and dead load surcharge, the self weight of the wall, and earthquake loads; all in accordance with accepted engineering practice, the CBC, and all applicable International Code Counsel (ICC) or International Conference of Building Officials (ICBO) Legacy Evaluation Reports. Snow on ground surcharge loads of 20 psf or less may be ignored. — **California Building Code**

B. All retaining wall heights are measured from the bottom of the footing to the top of the wall.

C. Walls **shall** be designed for the minimum factors of safety shown in Table 1. Combined loading factors **shall** be in accordance with the CBC. **Professional Standard of Practice ~~Standard, practice~~, California Building Code and ICC Reports**

D. Justification **shall** be provided for lateral pressure resistance used in the top 12 inches or above frost line is used. **Professional Standard of Practice ~~Standard practice~~**

E. Concrete retaining walls designed to resist earthquake forces **shall** be constructed of concrete with a minimum strength as specified in ACI 318 and the CBC. **ACI 318 and California Building Code Section xxx**

F. Rockery walls **shall** not have chinking on the exposed face and the minimum weight of cap rocks **shall** be 200 pounds. **Rockery Design and Construction Guidelines – FHWA 11/2006**

G. Drainage behind walls **shall** be provided in accordance with the CBC. **Professional Standard of Practice ~~Standard practice~~, California Building Code**

H. Restrained walls **shall** not be backfilled until restrained connection and supporting elements are completed or temporary shoring is in place. **Professional Standard of Practice ~~Standard practice~~**

Table 1. External Stability Factors of Safety *

Failure Mode	Factor of Safety
Soil bearing capacity	2.0-3.0
Sliding	1.5
Overturning	1.5
Overturning of MSE walls	2.0
Supporting elements of a restrained wall	1.5
Global stability	1.5

* The above safety factors may be used with the various load combinations of the CBC.

5.2.5.4 Plan Check Submittal Requirements

A. All plans **must** be drawn to scale. Two copies of all plans, calculations and supporting documents are required for submittal. Design professional prepared material **shall** be stamped and wet signed, **Professional Standard of Practice ~~Standard practice~~** **~~Standard practice~~, California Business and Professions Code**

B. Plot Plan indicating the location, accurate width of the wall, length and height of the wall, lot drainage patterns, top and bottom of wall elevations and finish grade contours, and the distance to the property line, easements and adjacent structures on the lot (refer to Section 5.2.3 of this Chapter for setback requirements),

C. Typical cross section(s),

D. Elevation views for clarification of complex wall configurations,

E. Special inspection and structural observation requirements **shall** be listed on the Plan Title Sheet, **California Building Code Section 1705**

F. The calculations **shall** reference the design parameters and soil type used in the design if a Soils Report is not provided, **Professional Standard of Practice ~~Standard practice~~**

G. If the manufacturer provides a "Standardized Design", provide the standardized manual with a Design Professional's wet signed stamp on the cover sheet. The applicant **shall** highlight on the plan the wall to be used for construction. All the provisions of the standardized wall **shall** apply, including slope configuration and material type, **Professional Standard of Practice ~~Standard practice~~**

H. A Soil Investigation Report providing the design parameters for use in the design of the walls, as **required** in Section 5.2.5.3 of the Chapter, and **California Building Code**

I. One copy of the latest Design Manual and the ICC-ES Report if the wall is a manufactured product (i.e. keystone wall, anchor wall, etc.).

5.2.5.5 Construction

Retaining walls **must** be constructed per the plans, the approved engineering calculations; and, where applicable, the manufacturer's installation manual, and the latest ICC-ES Report. **Professional Standard of Practice ~~Standard practice~~**

5.2.5.6 Inspections

The following inspections will be **required** during the retaining wall construction: **California Building Code**

Inspections by County Staff. The schedules in the following tables provide an abbreviated description of the minimum inspections **required** for retaining walls. **California Building Code**

Segmental or MSE Retaining Walls

Inspection	Scope of Inspection
1st	Footing/leveling pad; Batter (if any); Discuss Special Inspection procedures (if applicable), drain(s), and backfill compaction & testing.
2nd	Lowest layer of grid or third course of modules; Permeable drain material; Batter; Backfill Compaction Report; Grid, type, length, taut.
3rd	Mid layer of grid or mid course of modules; Permeable drain material; Batter; Backfill Compaction Report; Grid, type, length, taut.
Final	Drain to daylight; Cap layers; Batter; Erosion control; Backfill Compaction Report; Special Inspection Report.

Rockery Retaining Walls

Inspection	Scope of Inspection
1st	Footing/leveling pad; Batter (if any); Discuss Special Inspection procedures (if applicable), drain(s), and backfill compaction.
2nd	Mid-height of wall; Permeable drain material; Batter; Backfill Compaction Report.

Final	Drain to daylight; Cap rocks; Batter; Erosion control; Backfill Compaction Report; Special Inspection Report.

Reinforced Concrete Retaining Walls

Inspection	Scope of Inspection
1st	Footing pad and size; Key size; Reinforcement; Soil condition at toe; Discuss Special Inspection procedures (if applicable).
2nd	Prior to concrete pour; Wall forms and reinforcement (**must** be accessible); Anchor bolts and hardware placement.
3rd	Drain(s); Wall waterproofing; Restrained support or temporary shoring per design professional; Discuss drain rock and backfill compaction procedures.
Final	Drain to daylight; Weep holes; Restrained support; Erosion control; Backfill Compaction Report; Special Inspection Report.

Block (Masonry) Retaining Walls

Inspection	Scope of Inspection
1st	Footing pad and size; Key size; Reinforcement; Soil condition at toe; Discuss Special Inspection procedures (if applicable).
2nd	Four foot lift, prior to grout pour; Block, mortar joints, reinforcement and grout cells.
3rd	Top lift, prior to last grout pour; Block, mortar joints, reinforcement and grout cells; Anchor bolts and hardware placement.
4th	Drain(s); Wall waterproofing; Restrained support or temporary shoring per design professional; Discuss drain rock and backfill compaction procedures.
Final	Drain to daylight; Weep holes; Restrained support; Erosion control; Backfill Compaction Report; Special Inspection Report.

Special Inspection by Qualified Professional. When required, the following special inspections **shall** be performed by the designer or a certified inspector acceptable to the County, and testing **shall** be performed by a qualified testing agency acceptable to the County. Special inspections are in addition to the required inspections performed by County Building inspectors.

Professional Standard of Practice ~~Standard practice~~, ICC Reports and California Building Code Chapter 17

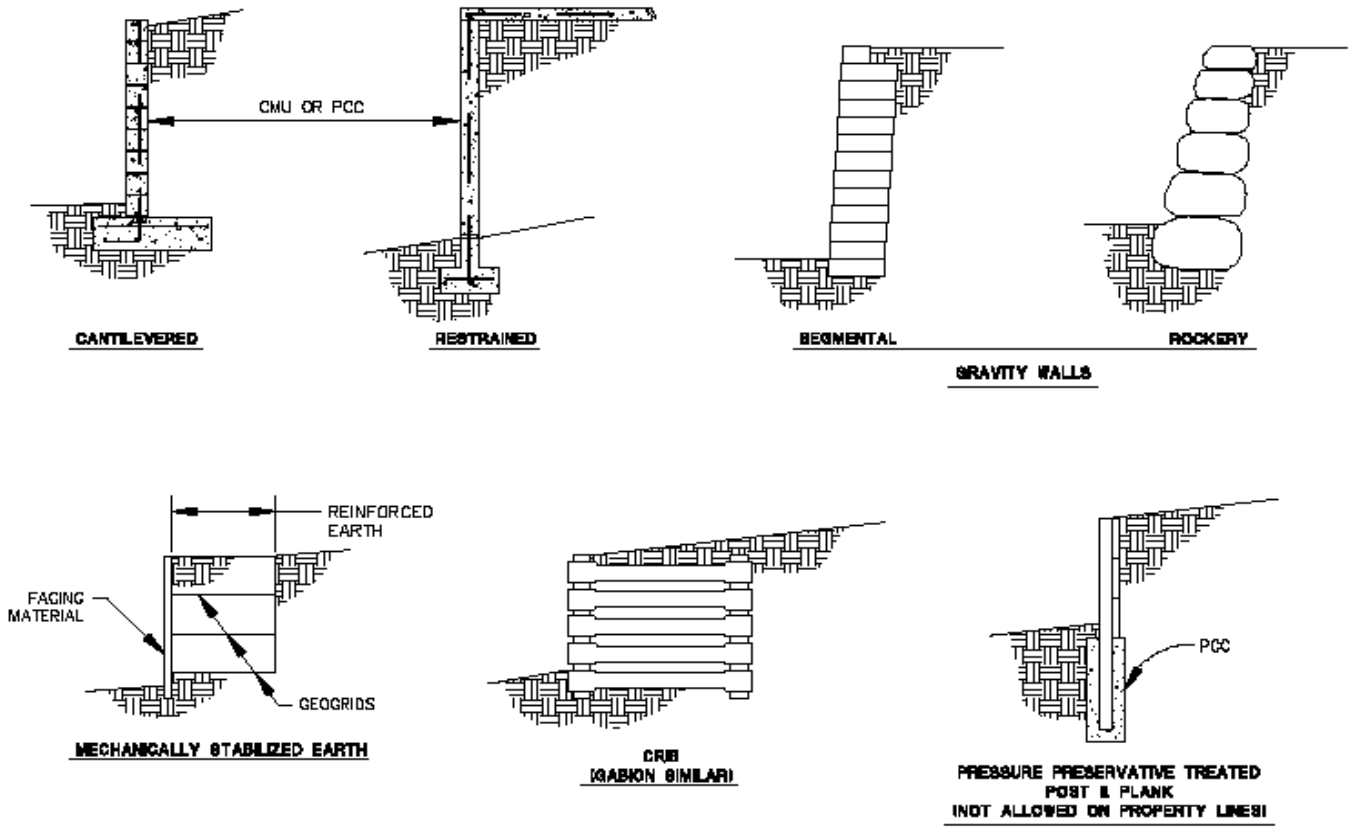
Special Inspections and Testing

Item	Continuous	Periodic
Soil Compaction		X
Reinforced Concrete	X	
Structural Masonry	X	
Shotcrete	X	
Segmental or Rockery Wall Placement		X
Grids and Tie Backs		X
Gabion or Crib Wall		X
ICC or ICBO Legacy Report	As Specified	As Specified
Structural Observation	As Specified	As Specified

A.	Compaction testing of soil backfill (excluding drain rock) **shall** be provided at an appropriate interval to verify proper compaction levels are obtained.	**Professional Standard of Practice ~~Standard practice~~**
B.	Segmental or MSE walls **shall** be constructed under the observation of the design professional, and **shall** include review of the footing pad, base course and geogrid placement, face batter, wall facing cavity (if any) backfill, review of compaction testing, and overall compliance with the plans.	**Professional Standard of Practice ~~Standard practice~~ and ICC Reports**
C.	Rockery walls **shall** be constructed under the observation of the design professional, and **shall** include review of the footing pad, rock and backfill placement, review of compaction testing, and overall compliance with the plans.	**Professional Standard of Practice ~~Standard practice~~ and FHWA Report**
D.	Soil characteristics **shall** be observed by the design professional or the geotechnical engineer to confirm that they are consistent with the assumptions used in the wall design.	**Professional Standard of Practice ~~Standard practice~~**
E.	Compaction and Special Inspection or Structural Observation Reports **shall** be provided before or at the time of inspection by the County.	**California Building Code Section ~~106~~107**
	Reports not prepared by the design professional **shall** be reviewed and approved by the design professional before being provided to the County.	**California Building Code Section ~~106~~107**
	All final reports **shall** be provided to the County before final inspection.	**California Building Code Section ~~106~~107**
	On projects where a design professional in responsible charge has been designated by the owner, that person **shall** review and approve all reports before they are provided to the County.	**California Building Code Section ~~106~~107**

5.2.5.7 Appendices

Code references, general information, Retaining Wall Design Checklist, and examples of different types of retaining walls, as illustrated below, can be found in the reference guide available at the approving authority for issuing the permit.



DRAWING #1
PICTORAL GLOSSARY OF RETAINING WALL TYPES
NOT TO SCALE

5.3 Grading Permit Application and Procedures

5.3.1 Responsibilities

Review and regulation of grading is a joint responsibility shared between DSD, DOT, and the Agriculture Department. Depending on the project, one or more organizations may need to review the grading plan. This may include non-County agencies such as the California Department of Fish and Game, public utilities, etc. A list of these agencies is available at DSD. The following table identifies the responsible Department for various types of grading permits.

Type of Grading	Examples/Clarification	Type of Project Association	Responsible Department
Agricultural Grading	Grading that involves the conversion of one acre or more of undisturbed vegetation to agricultural cropland (Reference *General Plan* Policy 7.1.2.7)	Agricultural only; not done in conjunction with development of any structures	Agriculture Department

Residential Grading	Grading associated with the construction of single-family dwellings, accessory buildings, swimming pools, retaining walls, or residential driveways and multi-family site developments that are not associated with a division of land or off-site improvements	Single-Family building permits, Multi-Family building permits, and associated on-site structures	DSD
Non-Residential Development Grading (also known as "Commercial Grading")	Grading done on sites that are not residential and that are not associated with a division of land or off-site improvements	Non-Residential building permits such as commercial or industrial buildings	DSD
General Grading	Grading unrelated to the construction of single-family residences, accessory buildings, or residential driveways; Typical general grading would include ponds, pads for horse arenas, additional parking areas, and rural (non-County maintained) access roads	General grading covers miscellaneous on-site grading not associated with structures	DSD
Subdivision Grading	All subdivision grading (including Parcel Maps) irrespective of the type of land use (e.g., residential, commercial, etc.) includes mass pad grading across the property line of two or more, existing or proposed, contiguous lots or parcels	Subdivision grading is associated with discretionary projects	DOT
Right of Way, Encroachments and Public Utility/Drainage Easements	Grading that takes place within the County's right-of-way	Grading in the County's right-of-way is typically associated with discretionary projects or DOT's CIP projects	DOT

*Source: Exhibit A of Resolution # 048-2007 adopted by the Board of Supervisors as Implementation of Chapter 15.14 of the County Code.

5.3.1.1 Transfer of Professional Responsibility

If the design professional is changed:

A. Prior to Permit Issuance. It **shall** be the duty of the applicant to notify the Building Official, in writing, of such change and to provide documentation that a replacement(s) has agreed to accept responsibility within the required area(s) of technical competence. The permit **shall** not be issued until such documentation is provided.

California Building Code, Business and Professions Code.

Department Policy

B. After Permit Issuance. The work **shall** be stopped until the approving authority has been notified, in writing, that the replacement(s) has agreed to accept responsibility within the area of technical competence for approval upon completion of the work. It **shall** be the duty of the applicant to provide notification of such change prior to the commencement or recommencement of such grading or associated work. (Adapted from Section 3317.8 of the 2001 CBC.)

Department Policy

Department Policy

5.3.2 Submittal Requirements

5.3.2.1 Grading Plans

A. Agricultural grading plans **shall** be prepared to the specifications of the Agriculture Department. All other grading plans submitted to the County in support of a permit application **shall** be prepared by qualified individuals as discussed below and **shall** include the following:

NPDES / SWMP, Grading Ordinance

Grading Ordinance
~~Standard practice~~ California Busisness and Professions Code

1. Certification. The signature and professional stamp of the design professional except as provided in Section 5.3.2.4 of this Chapter.

2. Plan Size. Plans **shall** be submitted on sheets 24 inches by 36 inches unless an alternate paper size has been approved.

Standard practice

3. Number of Copies. A minimum of three complete sets of grading plans **shall** be submitted.

Standard practice

4. Title Block. Plans **shall** be entitled "Grading Plan" and state the purpose of the proposed grading. The name of the design professional responsible for plan preparation and the design professional in responsible charge **shall** be listed. The title block **shall** be located at the lower right corner or along the right edge of the plan sheet.

Standard practice

California Business and Professions Code

Standard practice

5. **Topographic Features.** Accurate contour lines drawn at intervals not greater than two feet of elevation, unless an alternate interval has been authorized by the approving authority issuing the permit, depicting topographic features and drainage patterns and the configuration of the ground before and after grading in the area proposed to be disturbed and immediately adjacent areas, relative to an established bench mark. Topographic maps **shall** be prepared by a design professional.

California Business and Professions Code, CBC Sections ~~106~~ 107 and J104

6. **Limits of Grading.** The plans **shall** clearly delineate the boundaries between areas of cut, areas of fill placement, and areas that would remain at natural or pre-existing grade.

Professional Standard of Practice ~~Standard practice~~, CBC Sections ~~106~~ 107 and J104

7. **Property Boundaries.** Property lines and easements **shall** be clearly marked.

Professional Standard of Practice ~~Standard practice~~

8. **Construction Details.** Construction details for roads (including structural pavement sections), man-made watercourses, culverts, bridges and drainage devices, retaining walls, cribbing, dams, and other improvements existing or to be constructed, together with supporting calculations and maps as required.

9. **Cross-sections.** Cross-sections, profiles, elevations, dimensions and construction details **shall** be provided based on accurate field data.

Professional Standard of Practice ~~Standard practice~~

10. **Erosion Control.** For projects greater than one acre in Disturbed Soil Area (DSA) the following are **required**:
    a. Waste Discharge Identification Number (WDID) Letter from the SWRCB, or Central Valley RWQCB, and
    b. Storm Water Pollution Prevention Plan (SWPPP).

NPDES Small Municipal and Construction General Permit

11. **Preliminary Landscape and Irrigation Plan.** A preliminary landscaping and irrigation plan to demonstrate consistency with Title 17 Zoning Ordinance and any discretionary approvals associated with the grading permit.
12. **Material Volume Estimate.** An estimate of the quantities of excavation and fill, adjusted for anticipated swell or shrinkage.
13. **Stockpiles and Borrow Sites.** The location of any on-site stockpile, borrow site, or location for storage of surplus material.

14. **Design Professional in Responsible Charge.** The name and contact information of the design professional in responsible charge **shall** be identified on the plans.

California Busisness and Professions Code~~California Board for Professional Engineers and Land Surveyors~~

15. **Certificate Block.** A certificate block (i.e. signature block for licensed professionals), **shall** be provided on the cover sheet of the project plans.

California Busisness and Professions Code ~~California Board for Professional Engineers and Land Surveyors~~

16. **Cost Estimate.** The applicant **shall** submit a detailed cost estimate covering the proposed work, except if the project is limited to grading associated with a single family dwelling on an individual lot.

Professional Standard of Practice, Supports bonding requirements. ~~Standard practice~~

5.3.2.2 Storm Water Management, Erosion and Sediment Control

NPDES Small Municipal and Construction General Permit

A. Control of storm water, erosion, sediment and other construction related pollutants is **required** for all grading projects.

~~NPDES General Permit~~

1. **Storm Water Pollution Prevention Plan (SWPPP).** A SWPPP and WDID are **required** for projects exceeding one acre in DSA by the conditions of the general permit from the SWRCB (see Section 5.2.2 of this Chapter). Requirements for the SWPPP are found in the general permit, and the Storm Water Management Plan (SWMP). A copy of the SWPPP **shall** be kept on the project site at all times and made available to representatives of the County or State upon request.

NPDES Small Municipal and Construction General Permit ~~NPDES General Permit~~

NPDES Small Municipal and Construction General Permit

~~NPDES General Permit~~

2. **RCD Approval.** The applicant **must** submit grading plans (including SWPPP) to the Resource Conservation District (RCD) and obtain approval from the RCD for all erosion and sediment control practices prior to issuance of a grading permit by the County.

Cooperative agreement between County and RCD

3. **Professional Recommendations.** SWPPPs **shall** comply with the recommendations of the design professional.

~~Standard practice~~ California Business and Professions Code – Professional Standard of Practice

4. **Engineered Facilities.** The structural and hydraulic adequacy of all storm water containment or conveyance facilities shown on the plans **shall** be certified by the design professional through stamp and signature on the accepted plans. Sufficient calculations and supporting material to demonstrate such adequacy **shall** accompany the plans when submitted. Adequate provision **shall** be made for long-term maintenance of permanent erosion-control and sediment-control structures.

California Business and Professions Code, Drainage Manual

Professional Standard of Practice ~~**Standard practice**~~

NPDES Small Municipal ~~**NPDES General**~~ **Permit**

5. **Inspection, Repair, and Maintenance.** Inspection, repair, and maintenance of all erosion and sediment control facilities are **required** during the rainy season (October 15th – May 1st), and for sediment cleanout and vegetation maintenance. Inspection, maintenance and repair of construction site BMPs **shall** occur at least once per week, and prior to and immediately after storm events. During extended storm events, construction site BMPs **shall** be inspected at least once every 24 hours.

NPDES Construction General Permit

NPDES Construction General Permit

NPDES Construction General Permit

5.3.2.3 Technical Reports

Certain technical reports may be **required** as part of a grading permit application. The types of reports, the qualifications of the report preparer and the circumstances under which a report is **required** are discussed below:

~~**Standard practice**~~ **Professional Standard of Practice**

~~**Standard practice**~~

A. **Geotechnical Report.** It is prepared under the direct supervision of, and sealed and signed by, a ~~design professional~~Civil Engineer or Geotechnical Engineer and **shall** be submitted at the time of application for all project types as **required** by the CBC.

B. **Geologic Report.** It is prepared under the direct supervision of, and signed by, a Certified Engineering Geologist or qualified Professional Geologist and **shall** be submitted at the time of application if:

1. Such a report is **required** by the approving authority issuing the permit, and
2. The project is located in an area of known geologic hazards such as unstable slopes, collapsible soils, severe erosion, rockfall or seismically-induced ground failure.

The Soil or Geologic Study Report **shall** conform to the requirements of the CBC.

C. **Drainage Report.** It is prepared by a design professional in conformance with the design criteria provided in the Drainage Manual and is **required** with all grading permit applications. All drainage reports **shall** be prepared under the direct supervision

of, and signed and stamped, by a design professional in conformance with the guidelines and design criteria provided in the Drainage Manual. These reports **shall** contain, at a minimum, the following:

1. A vicinity map showing the location of the site relative to known cultural features such as towns and roads,
2. A topographic map of the site upon which the location of all watershed boundaries and watercourses are marked,
3. Calculations that estimate the pre-project and post-project runoff, and
4. Recommendations for placement and design of any necessary drainage facilities.

Exceptions

1. The requirement is waived for minor projects where a study is not required by another regulatory agency, or
2. The project involves development of a single family dwelling. (A drainage study may be required due to special circumstances or the requirements of another regulatory agency.)

5.3.2.4 Waiver of the Requirement for Design Professional Prepared Plans

The requirement that grading plans (with the exception of agricultural grading plans) submitted for County review be prepared, signed and stamped by a design professional may be waived if **all** of the following conditions are met:

A. The proposed grading would not endanger public health, safety or welfare,
B. Cuts and fills do not exceed a combined total of 500 cubic yards,
C. The grading does not involve an access road serving three or more existing or potential residences,
D. A fill intended to support structures is not proposed,
E. All proposed cuts or fills would be designed to avoid adverse affects on any adjacent structure or property,
F. The construction of drainage or sediment-control structures, culverts or facilities would not be required,
G. The alteration of an existing drainage course would not occur,
H. An unstable slope condition would not be created,
I. The grading would not affect the channelized flow of the 100-year storm event,
J. The plan is prepared by the property owner of record for the subject parcel as allowed under the California Business and Professions Code, Section 6744, and
K. The submitted plans meet all other requirements of the Design Manuals.

5.3.3 Grading Permit Processing Procedures

5.3.3.1 Review of Permit Applications

General Plan, California Environmental Quality Act

The design of proposed grading projects **shall** be reviewed for consistency with the *General Plan*, the Title 17 Zoning Ordinance, the CBC, conditions of approval from discretionary actions by the County, the requirements of Title 15.14, the Drainage Manual, this manual and other applicable regulations. Only grading projects found consistent with all applicable design standards, laws and regulations, and conditions of

approval may be issued a grading permit.

5.3.3.2 County Review of Technical Reports

Any Engineering, Geotechnical or Geologic Study Report **shall** be subject to the review and acceptance of the approving authority issuing the permit. As part of the approving authority's review of the submitted report, supplemental reports and data may be **required** prior to report acceptance. Reports may be found inadequate for County use based on inaccurate description of the conditions on the project site, failure to address the technical issues identified by the County, failure to meet established standards of professional practice, the lack of clear professional recommendations, or the lack of an original signature and stamp affixed by the design professional responsible for the work. Recommendations included in reports **shall** be incorporated in the final plans and specifications.

California Building Code Chapter 18

Professional Standard of Practice ~~Standard practice~~

Professional Standard of Practice

~~Standard practice~~

5.3.3.3 Compliance with CEQA

The California Environmental Quality Act (CEQA) may **require** the preparation of environmental documents concerning a proposed grading project. In such event, the County may function as the lead agency or responsible agency. The applicant will be advised as to any additional information **required** with the permit application. The applicant **shall** be required to pay all costs associated with the preparation and processing of an environmental document. The department issuing the permit **shall** decide whether to prepare the document itself or retain a consultant(s) to prepare the document.

California Environmental Quality Act

Professional Standard of Practice
~~Standard practice~~
Public finance law prevents use of public funds for limited private benefit.
~~Standard practice~~

Standard practice

5.3.3.4 Standard Conditions of Approval

A. Consistency with County Design Standards. The proposed grading **shall** conform to the design standards established in the Design Manuals, including this manual.

Standard practice

B. Follow-up to a Discretionary Approval. Where a proposed grading project would implement a discretionary permit approval (i.e., Special Use Permit, subdivision of land, etc), no grading permit **shall** be issued prior to approval of the discretionary use by the approving authority.

General Plan, California Environmental Quality Act

C. Compliance with Terms of Approval. The permit **shall** be limited to work shown on the grading plans. In issuing a permit, the approving authority issuing the permit may impose any condition of approval deemed necessary to protect the health, safety and welfare of the public, to prevent the creation of a hazard to public or private property, and to assure proper completion of the grading, including but not limited to:

~~Standard practice~~

To require the administration of the regulations without enforcement would be pointless.

1. Mitigation of adverse environmental impacts disclosed in any environmental document,
2. Reconfiguration of any existing graded surface to comply with the standards of this manual,
3. Installation of fencing or other protective devices to avoid work site hazards or environmental damage,
4. Requirements for dust, erosion, sediment and noise control, hours of operation and season of work, weather conditions, sequence of work, access roads and haul routes,
5. Requirements for safeguarding watercourses from deposition of sediment or debris in quantities exceeding natural levels,
6. Requirements for safeguarding areas reserved for on-site sewage disposal,
7. Demonstration by the applicant, through adequate engineering or geologic analysis and report, that the site of the proposed grading activities is not subject to unstable slopes, substantial settlement, erosion, flooding or seismic hazards or that such hazards are adequately mitigated by the design recommendations included in the submitted report(s), and
8. Demonstration by the applicant of compliance with State or Federal regulations.

A Grading Permit issued by the approving authority **shall** not relieve the applicant of the responsibility for securing other permits or approvals as **required** by other County agencies or agencies of the State or Federal government.

US Army Corps of Engineers, Fish & Wildlife, Dept. of Fish and Game, Regional Board, etc.

D. Changed Conditions. Where conditions encountered in the grading operation deviate from that anticipated in the Geotechnical and Geologic Study Reports, or where such conditions warrant changes to the recommendations contained in the original studies, revised reports may be **required**.

Professional Standard of Practice

E. Safety. Excavations **shall** not endanger life or property. Access to any temporary or permanent excavation that constitutes a potential safety hazard **shall** be restricted by fencing or other barrier as long as such hazard exists. Excavation safety measures **shall** conform to any applicable CAL-OSHA standards.

~~Standard practice~~
Professional Standard of Practice ~~Standard practice~~

OSHA

OSHA

F. Setbacks. Grading and other development **shall** be set back from property boundaries, established easements, creeks or other water bodies, steep natural slopes and other resources as required by the *General Plan*, the Title 17 Zoning Ordinance, the conditions of approval of any applicable subdivision map or discretionary permit, the CBC and this manual. Setback distances may be increased based on a recommendation included in an acceptable Geotechnical or Geologic Report. Any request for a reduced setback would require similar documentation and would be reviewed for consistency with the *General Plan*, Title 17 Zoning Ordinance and other applicable regulations.

General Plan, Zoning Code, California Building Code, Grading Ordinance

G. Protection of Levees. No person **shall** excavate or remove any material from, or otherwise alter, any levee required for river, creek, bay, or local drainage control, without prior consent of the approving authority responsible for the maintenance of the levee.

Property Rights / Liability, common law

H. Obstruction of Storm Waters. Grading activities that obstruct, divert, impede or interfere with the natural flow of storm waters within man-made channels or natural watercourses are prohibited unless it is demonstrated that all of the following are true:

1. The proposed activities will not cause flooding or exacerbate an existing flooding condition as documented in a County-accepted drainage report conforming to the requirements set forth in the Drainage Manual,
2. The proposed activities would not result in severe or ongoing erosion, and
3. The applicant is in compliance with applicable sections of the State of California Water Code, State of California Fish and Game Code, The National Clean Water Act, the SWMP, and other applicable local, State, and Federal laws.

5.3.3.5 Tahoe Basin Special Conditions of Approval

A. General. All grading projects **shall** conform to the rules and regulations of TRPA. (See Section 7.1 of this manual for contact and website information.)

TRPA Ordinance xxx?

B. Grading Season. Grading **shall** be prohibited during the period from October 15th through May 1st unless otherwise provided in this manual. The County requires complete winterization of any project by October 15th pursuant to TRPA Code of Ordinances, Section 64.2.

TRPA Ordinance xxx?

C. Other Agencies. All grading work **shall** conform to any restriction required by other Federal, State, or local agencies.

TRPA Ordinance xxx?

D. Applicability. Except for Section 15.14.140 Exemptions, the provisions of the Grading, Erosion and Sediment Control Ordinance, Chapter 15.14, **shall** apply to grading activities in the Tahoe Basin. **TRPA Ordinance xxx?**

E. Permit Waivers. The requirement for a grading permit may be waived if the work complies with all of the following conditions:

1. The excavation does not exceed five feet in vertical depth at its deepest point measured from the existing ground surface, there is not a reasonable possibility of interception of a water table, and the volume of earth moved does not exceed three cubic yards,
2. The fill does not exceed three feet in vertical depth at its deepest point measured from the original ground surface and the fill material does not exceed three cubic yards per site, and
3. Disturbance, injury, or removal of vegetation has been authorized by a TRPA project approval in accordance with TRPA Code of Ordinances, Section 65.2.

5.3.3.6 Grading Plans for Stockpiles

Plans submitted for a stockpile permit application **must** comply with the application requirements listed in this manual. The plan must also contain all of the following: **Grading Ordinance, NPDES General Permit**

A. The estimated date the stockpile will be removed from the site. This date **shall** not exceed one year from the date of initial placement. An extension of time may be granted for good cause shown, **Standard practice**

B. A prominent note stating that the final inspection **shall** not be complete until all of the stockpiled material has been removed from the site, or utilized as part of a permitted development project, and that all required permanent erosion control devices and materials are in place, and **Grading Ordinance, NPDES General Permit**

C. A written statement signed by the landowner that acknowledges and accepts the following:

1. The landowner authorizes the placement, temporary storage and removal of earth materials on the subject property as specified in the approved grading plans,
2. The landowner is solely responsible for the stockpile and for compliance with the terms and conditions of approval included in any relevant permit, and
3. The person (named) submitting the permit application is acting as an agent of the landowner.

5.3.3.7 Modification of Approved Plans

A. Requests for modifications of an approved final plan **shall** be submitted to the approving authority for review. **California Building Code (as if it were a regular plan)**

B. All necessary geotechnical and geological information, and all design details **shall** accompany any proposed modification. **California Building Code (as if it were a regular plan)**

C. The proposed modification **shall** be consistent with any applicable subdivision map or use permit conditions of approval.

Subdivision Map Act

5.3.3.8 Water Impoundments

A. DSOD-Regulated. Water impoundments involving a dam greater than twenty-five feet in height or storage of more that fifty acre-feet of water (or other design thresholds currently adopted by the State) are under the jurisdiction of the State of California Department of Water Resources, Division of Safety of Dams (DSOD). The height of a dam **shall** be measured from the lowest elevation of the outside limit of the dam to the maximum possible water storage elevation (i.e. the spillway elevation). Such reservoirs **require** a grading permit issued by the County with engineering review and approval by DSOD. The grading permit can only be issued if the project is found in conformance with County regulations, including the *General Plan*.

California Division of Safety of Dams (DSOD)

Grading Ordinance

B. Non-DSOD Regulated. Construction of any dam or obstruction to water flow **shall** require a grading permit pursuant to Ordinance Code, Section 15.14.130 and this manual. Design and construction standards for non-jurisdictional dams are established in the Drainage Manual. The construction of dams **shall** follow the current practices of the DSOD as set forth in the Guidelines for the Design and Construction of Small Embankment Dams.

County Ordinance Chapter 15.14.130

California Division of Safety of Dams (DSOD)

5.3.4 Inspections and Construction Requirements

5.3.4.1 Inspections

A. Construction Schedule. When required, a project schedule **shall** be provided that includes, at a minimum, the dates for the following:

NPDES General Permit, California Fish and Game Code, Grading Ordinance

1. Commencement of work,
2. Start and finish of rough grading,
3. Completion of drainage facilities,
4. Completion of work in any watercourse,
5. Completion of erosion and sediment control facilities, and
6. Completion of hydro mulching and other drought-resistant landscaping. If rough grading is proposed between October 15th and May 1st, a more detailed schedule of grading activities and use of erosion and sediment control facilities

may be required; Final schedule to be provided after the grading permit is issued prior to the beginning of construction.

B. Regular Inspections. The County may inspect any work done under the authority of a permit granted pursuant to the Grading Ordinance. No applicant **shall** be deemed to have complied with this Ordinance until a final inspection of the work has been completed by the County and it has been determined, in writing, that the work has been completed in accordance with all requirements and conditions of the permit. The applicant **shall** provide adequate access to the site for inspection during the performance of all grading work and for a minimum period of one year after the final inspection of all improvements.

Grading Ordinance
~~**Standard practice**~~

Grading Ordinance
~~**Standard practice**~~

C. Violation and Abatement Inspections. Pursuant to Section 5.3.4.1.D.1 of this Chapter, the approving authority issuing the permit may **require** site inspections to investigate an alleged violation of the Grading Ordinance, or inspections necessary to document the abatement of a verified violation of this Ordinance.

Grading Ordinance
~~**Standard practice**~~

D. Special Inspections.

1. Criteria for Special Inspections. As a condition of any permit, or as part of the investigation or abatement of a violation of the Grading Ordinance, the approving authority issuing the permit, may **require** the applicant to provide periodic or continuous monitoring of the construction activities under the direction and responsibility of the design professional within their area of expertise and licensure. The applicant **shall** contract for such services and be responsible for the payment of all costs. Continuous or periodic observation and reporting by the design professional **shall** include, but not be limited to, the following situations:

Grading Ordinance, Professional Standard of Practice

~~**???**~~

Grading Ordinance
~~**Standard practice**~~

California Building Code

   a. During the preparation of a site or the placement of fills which exceed three feet in depth on slopes which exceed 10 percent,
   b. Fill placement for vehicular ways **shall** be continuously inspected when fills exceed 10 feet in height,
   c. During the preparation of a site for the placement of any fill and during

Standard Practice

the placement of such fill which is intended to support any building or structure,

d. During the installation of subsurface drainage facilities, and

e. Construction of retaining wall; see Section 5.2.6 of this Chapter.

The use of a licensed professional for inspections or observations **shall** not preclude additional inspections by representatives of the County. **California Building Code, Grading Ordinance**

2. Special Inspection Reports. Reports filed by the design professional regarding a Special Inspection **shall** state, in writing, a professional opinion based on personal knowledge that adequate inspection has been performed and the work accomplished during the period covered by the report has been completed in substantial accordance with the approved plans and specifications. **Professional Standard of practice**

E. Progress Reports. When required, periodic progress reports **shall** be provided under the direction of the design professional in responsible charge that address the following: ~~**Standard practice**~~ **Grading Ordinance**

1. Laboratory test results,
2. Slope stability,
3. Material placement,
4. Retaining wall installation,
5. Drainage facilities installation,
6. Utilities installation,
7. Compliance with special permit or plan requirements, and
8. Other technical issues.

F. Storm Water Inspections. Inspection and monitoring of construction BMPs is **required** to reduce or eliminate erosion and sediment or other pollutant discharge to storm drains and waterways. **NPDES General Permit**

G. Final Technical Reports. Upon completion of grading work, a final report(s) may be **required** that addresses geotechnical, geologic, drainage or engineering issues and includes, but is not limited to, the following: ~~**Standard practice**~~ **Grading Ordinance, Professional Standard of Practice**

1. A complete record of all field and laboratory tests including location and elevation of all field tests,

2. A professional opinion regarding slope stability, soil bearing capacity, and any other pertinent information,
3. Recommendations regarding foundation and roadway design, including soil bearing potential, and building restrictions or setbacks from the top or toe of slopes, and
4. A declaration of professional opinion by the design professional, in the format **required** by the approving authority, as to whether the work was done in substantial accordance with the recommendations contained in the accepted soil or geologic reports and in conformance with the approved plans and specifications, including but not limited to, line, grade and drainage design.

California Business and Professions Code – Professional Standard of Practice~~Standard practice~~

H. As-built Plans. When required, the applicant **shall** submit an "as-built" grading plan following completion of grading operations in an acceptable format.

Professional Standard of Practice ~~Standard practice~~

5.3.4.2 Construction Site Requirements

A. Protection of Existing Utilities. The applicant **shall** take all reasonable measures to prevent or avoid damage to existing public utilities or services. The applicant **shall** be responsible for the cost of repair of any damage to facilities resulting from the grading activities performed under the authority of the permit.

California Public Utility Code, Professional Standard of Practice ~~Standard practice~~

~~Standard practice~~

B. Protection of Adjacent Property. The owner of record of the property upon which the grading permit is issued is responsible for any physical damage to adjacent property resulting from the grading activities. All persons **shall** take all reasonable measures to prevent or avoid damage to any adjoining public street, sidewalk, alley or other public or private property.

Professional Standard of Practice

~~Standard practice~~

C. Advance Notice. The applicant **shall** construction-stake the site and notify the approving authority at least 48 hours prior to the start of work.

Standard practice

D. Grading Limits. Limits of grading **shall** be clearly defined and marked in the field to prevent damage by construction equipment. Wetlands and oak trees **shall** be protected from construction activity as described in Chapter 2 of this manual.

Professional Standard of Practice ~~Standard practice~~

General Plan and OWMP

E. Minimization of Exposed Area. During the rainy season (October 15th – May 1st), the smallest practical area of erodible land **shall** be exposed at

NPDES General Permit

any one time during grading operations and the time of exposure **shall** be minimized. **NPDES General Permit**

F. Storm Water, Erosion and Sediment Control. The applicant **shall** fully comply with the requirements of the SWMP, Clean Water Act, the SWRCB Rules and Regulations, and other applicable orders and permits issued from time to time by the SWRCB. The applicant is responsible for the following during construction operations: **SWMP, Clean Water Act, and SWRCB**

Implementation and maintenance of storm water and non-storm water BMPs to reduce or eliminate discharge of sediment or other pollutants to any watercourse, drainage system, or adjacent property,

1. Damage to watercourses and adjacent properties in the form of erosion, flooding, or deposition which may result from the permitted grading, and
2. Sediment deposition onto public or private vehicle ways.

Construction site BMPs **shall** be inspected by the applicnat weekly during the rainy season, and in advance of forecasted storm events. Following any storm event, BMPs **shall** be inspected for effectiveness and replaced and/or supplemented as necessary. **NPDES General Permit**

NPDES General Permit

See Sections 5.2.2 and 5.3.2 of this Chapter for further information.

G. Approved Plans. One set of approved plans and permit **shall** be retained on the site and made available for use by the County inspector at all times during the work. **General Permit, California Building Code**