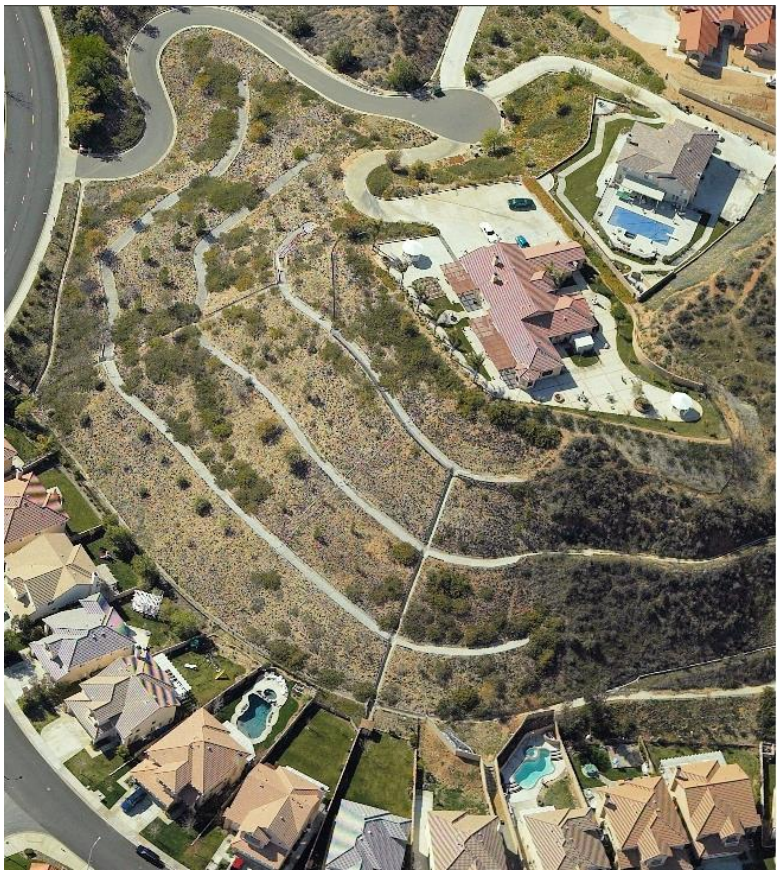
Grading Guidelines



County of Los Angeles 🛠 Department of Public Works 🛠 Building and Safety & Land Development Divisions

County of Los Angeles
Department of Public Works
Building and Safety Division / Land Development Division
900 South Fremont Avenue, Third Floor
Alhambra CA 91803
(Monday – Thursday, 7 am – 5 pm, Closed Friday)

Building and Safety Division:
Building Section (626) 458-3173
Electrical Section (626) 458-3180
Mechanical/Plumbing Section (626) 458-3182
Drainage and Grading Section (626) 458-6390

Land Development Division:
Subdivision Plan Checking (626) 458-4943
Subdivision Mapping Section (626) 458-4902
Subdivision Management (626) 458-4904
Subdivision Public Counter (626) 458-4930

Gail Farber, *Director of Public Works*
Hector Bordas, *Assistant Deputy Director*

February 18, 2015

NOTE: *Building and Safety Division: Permits and information may be obtained in the district or city office of the area in which the construction is planned. For your convenience, plan check applications for construction in the unincorporated County territory may be submitted at the Alhambra headquarters office as well as the local district office. Land Development Division: permit applications must be submitted at the Alhambra headquarters office. Should questions arise regarding permit or construction requirements, please contact your local district office, either in person, by telephone, or you can email your questions to:* http://dpw.lacounty.gov/general/dpwrequest/

BUILDING AND SAFETY

DISTRICT OFFICES

Antelope Valley
335A East Avenue K6
Lancaster CA 93535
(661) 524-2390

Calabasas/Malibu
(M-Th 7-5:30)*
26600 Agoura Rd Suite 110
Calabasas CA 91302
(818) 880-4150

Carson (M-Th 7-6)*
701 E. Carson St.
Carson CA 90745
(310) 830-7600

East Los Angeles
4801 E. 3rd St.
Los Angeles CA 90022
(323) 881-7030

La Puente
16005 E. Central Ave.
La Puente CA 91744
(626) 961-9611

Lomita/Lennox
24320 S. Narbonne Ave.
Lomita CA 90717
(310) 534-3760

San Gabriel Valley
125 S. Baldwin Ave.
Arcadia CA 91007
(626) 574-0941

Santa Clarita
23757 Valencia Blvd.
Valencia CA 91355
(661) 222-2940

Southwest (M-Th 7:00-6) *
1320 West Imperial Hwy.
Los Angeles CA 90044
(323) 820-6500

South Whittier
13523 Telegraph Rd.
Whittier CA 90605
(562) 946-1390

Universal
100 Universal City Plaza MT85
Universal City CA 91608
(818) 762-6284

CONTRACT CITY OFFICES

Artesia (8-10)*
18747 Clarkdale Ave.
Artesia CA 90701
(562) 865-6263

Carson (M-Th 7-6)*
701 E. Carson St.
Carson CA 90745
(310) 830-7600

Cerritos (8-5)*
18125 Bloomfield Ave.
Cerritos CA 90703
(562) 860-0311

Commerce
2535 Commerce Way
Commerce CA 90040
(323) 887-4455

Industry
16005 E. Central Ave.
La Puente CA 91744
(626) 961-9611

Irwindale (M-Th 8-12)*
5050 N. Irwindale Ave.
Irwindale CA 91706
(626) 430-2200

La Canada Flintridge (8-10)*
1327 Foothill Blvd.
La Canada Flintridge CA 91011
(818) 790-8651

Lakewood (M-Th, Alt F 7-5:30)*
5050 N. Clark Ave.
Lakewood CA 90712
(562) 866-9771

La Mirada
(M-F 8-10, M-Th 4-5:30)*
13700 S. La Mirada Blvd.
La Mirada CA 90638
(562) 943-0131

Lawndale (7:30-11:30)*
14717 S. Burin Ave.
Lawndale CA 90260
(310) 970-2100

Lomita
24320 S. Narbonne Ave.
Lomita CA 90717
(310) 534-3760

Rolling Hills
24320 S. Narbonne Ave.
Lomita CA 90717
(310) 534-3760

Rolling Hills Estates
24320 S. Narbonne Ave.
Lomita CA 90717
(310) 534-3760

Santa Fe Springs (8-4)*
11710 E. Telegraph Rd.
Santa Fe Springs CA 90670
(562) 868-0511

Temple City (8-12)*
9701 Las Tunas Dr.
Temple City CA 91780
(626) 285-0488

Westlake Village
(M-Th 7-5:30)*
26600 Agoura Rd Suite 110
Calabasas CA 91302
(818) 880-4150

Normal Office Hours: Monday-Friday, 8:00 a.m. to 4:30 p.m., except legal holidays or as indicated above by the *. Inspection requests must be made 24 hours in advance.

PREFACE

The purpose of this guide is to provide an informational manual to homeowners, contractors and engineers for the preparation and processing of grading permit applications. Portions of the grading code that are commonly encountered during the planning, permitting, and construction of grading work are presented herein in order to reduce unnecessary plan review time and construction delays. Also provided are referrals to other governmental agencies that may have an influence on the design and approval of the proposed project. The information presented in this guide does not presume to cover all the possible Code and ordinance requirements. The prospective owner and contractor may find it necessary to confer directly with the staff of Building and Safety Division or Land Development Division, of the Department of Public Works, for a specific project.

Los Angeles County Codes

The purpose of the building code is to provide minimum standards to safeguard the public's safety and welfare by regulating the design, construction, quality of materials, use, occupancy, location and maintenance of all dwellings, other structures, certain equipment and grading.

Los Angeles County is currently using the following codes:

- 2014 Los Angeles County Building Code (LACBC-Title 26) based on the 2013 California Building Code (CBC)
- 2014 Los Angeles County Residential Code (LACRC-Title 30) based on the 2013 California Residential Code (CRC)
- 2014 Los Angeles County Green Building Code (LACGBC-Title 31) based on the 2013 California Green Building Code (CGBC)

The codes are adopted with amendments to meet local conditions. Appendix J of the LACBC (the portion of the code related specifically to grading) is provided in its entirety in this packet.

BUILDING AND SAFETY & LAND DEVELOPMENT OFFICES

The Building and Safety and Land Development Divisions of the Department of Public Works are the agencies responsible for the enforcement of the applicable codes (as indicated above) for the unincorporated areas of Los Angeles County as well as contract cities. Building and Safety Division reviews grading plans for Code compliance, issues grading permits, and inspects grading and construction work. Land Development Division reviews subdivision grading plans for Code compliance and enforcement of Conditions of Approval for various departments and agencies. Both Building and Safety and Land Development Divisions staff the Alhambra headquarters office at 900 South Fremont Avenue, 3rd floor, Alhambra, CA 91803. Building and Safety Division also staffs 11 regional District Offices for the convenience of the public. Building and Safety Division also provides building and safety services for 16 Contract Cities. See the directory of offices herein for the location, telephone number and hours of operation for each office.

LOCAL PLANNING AGENCY

The local planning agency (*Department of Regional Planning for unincorporated areas of Los Angeles County*) regulates the subdivision of land, as well as the location, height and use of dwellings and other structures, off-street parking, and grading through the Zoning Ordinance. For all grading projects, the proposed development must comply with the intended land use for the site, and therefore compliance with the Zoning Ordinance is required prior to issuance of any grading permits.

Parcels of land that have not been established by a subdivision map may need proof that they were legally created. The Department of Regional Planning investigates the history of your parcel and issues a Certificate of Compliance if the legality is affirmed. Therefore it is advisable that you understand the zoning regulations applicable to your property before preparing plans or making other arrangements for construction. Relevant zoning information affecting your project may be obtained in person from Department of Regional Planning or the local Building and Safety District Office, many of which have Regional Planning representatives. Applicants may contact the local District Office for more information.

For grading projects associated with any proposed subdivision of land, a Tentative Parcel Map or Tentative Tract Map must be approved by Regional Planning prior to applying for a grading permit.

If your lot is located in the jurisdiction of one of the Contract City offices, contact the local planning agency of that city. City planning agencies may have additional regulations or requirements that could impact grading.

PERMITS REQUIRED

No person shall do any grading without first having obtained a grading permit from the building official. A grading permit shall be obtained for each property. Generally, plans and permit for grading must be processed and issued separately from and prior to any building permit on the property. ***Building permits cannot be issued until rough grading (graded soil surface is within six inches of final planned grade or elevation and all rough drainage devices are installed) is complete and approved by the Building Inspector.***

Certain minor grading is exempt from the need to obtain a grading permit, including the following:

1. When approved by the building official, grading in an isolated, self–contained area if there is no danger to private or public property.
2. An excavation below finished grade for basements and footings of a building, retaining wall or other structure authorized by a valid building permit. *This shall not exempt any fill made with the material from such excavation or exempt any excavation having an unsupported height greater than 5 feet after the completion of such structure.*
3. Cemetery graves.
4. Refuse disposal sites controlled by other regulations.
5. Excavations for wells or tunnels or utilities.
6. Mining, quarrying, excavating, processing or stockpiling of rock, sand, gravel, aggregate or clay where established and provided for by law, provided such operations do not affect the lateral support or increase the stresses in or pressure upon any adjacent or contiguous property.
7. Exploratory excavations *under the direction of soil engineers or engineering geologists*. *This shall not exempt grading of access roads or pads created for exploratory excavations.*
8. An excavation that does not exceed 50 cubic yards (38.3 m^3) and complies with one of the following conditions:
   (a) is less than 2 feet (0.6 m) in depth.
   (b) does not create a cut slope greater than 5 feet (1.5 m) measured vertically upward from the cut surface to the surface of the natural grade and is not steeper than 2 units horizontal to 1 unit vertical (50 percent slope).
9. A fill not intended to support a structure, that does not obstruct a drainage course and complies with one of the following conditions:
   (a) is less than 1 foot (0.3 m) in depth and is placed on natural terrain with a slope flatter than 5 units horizontal to 1 unit vertical (20 percent slope).
   (b) is less than 3 feet (0.9 m) in depth at its deepest point measured vertically upward from natural grade to the surface of the fill, does not exceed 50 cubic yards, and creates a fill slope no steeper than 2 units horizontal to 1 unit vertical (50 percent slope).
   (c) Is less than 5 feet (1.5 m) in depth at its deepest point measured vertically upward from natural grade to the surface of the fill, does not exceed 20 cubic yards, and creates a fill slope no steeper than 2 units horizontal to 1 unit vertical (50 percent slope).

GRADING DESIGNATION

Grading in excess of 5,000 cubic yards or that is proposed to support any structure shall be performed in accordance with the approved grading plan prepared by a civil engineer, and shall be designated as “engineered grading.” Grading involving less than 5,000 cubic yards and that will not support any structure shall be designated “regular grading” unless the permittee chooses to have the grading performed as engineered grading, or the building official determines that special conditions or unusual hazards exist, in which case grading shall conform to the requirements for engineered grading. The project shall also be considered “engineered grading” whenever the grading involves development of two or more lots or parcels.

PERMIT PROCEDURE

GRADING PERMIT APPLICATIONS

To obtain a permit for grading on any property not currently in the subdivision process, the applicant shall first complete an application form furnished for that purpose at the Building and Safety office closest to the location of the job site. Each application shall describe the work to be covered by the permit including the grading quantities in cubic yards, the site address, contact information for the owner, permittee, engineer and contractor, and provide other information as may reasonably be required by the Division. The staff at the local Building and Safety office may assist you in completing the application, and possibly input the information in the computerized permitting system.

A legal description of the property, obtained from either a tax bill for the property or the deed to the property, may need to be provided when the site is unimproved. If an address has not been assigned to the property, one will need to be obtained from Mapping and Property Management Division. The counter personnel at the local Building and Safety office can assist you in this process.

To obtain a permit for grading for a proposed subdivision (Parcel Map or Tract Map), the applicant must obtain and complete the grading permit application as stated above and submit the plans, reports, and supplemental documents directly to Land Development Division. See below for specific SUBMITTAL REQUIREMENTS.

Generally Parcel and Tract Maps do not have individual addresses assigned to each lot until after the grading permit is issued and the Final Parcel or Tract Map is approved by the Department of Regional Planning. Therefore it is critical that the lot numbers shown on the grading plan match those shown on the tentative Parcel or Tract Map and final map.

SUBMITTAL REQUIREMENTS

Grading first plan check submittals shall include the following:

1. Grading permit application
2. Grading plan check fee
3. Four (4) sets of legible grading plans
4. Three (3) sets of current (less than one year old) soils engineering and/or geology investigation reports. In addition, a complete text-searchable electronic version of the geotechnical report in Adobe Portable Document Format (PDF) presented on a compact disc is required. It shall include an electronically generated representation of the license seal, signature, license, and date of sealing or signing.
5. Supplemental documentation such as hydrology/hydraulic calculations, earthwork volume calculations, oak tree reports, easement documents, deed restrictions, etc. as applicable to your project. The plan checker will request all the necessary supplemental documentation during his/her review.

The following additional items must be submitted to Land Development Division for proposed subdivision grading:

6. Approved Tentative Map and Conditions, Conditional Use Permit, Oak Tree Permit, and Mitigation Monitoring Program
7. Hydrology map approved by Land Development Division
8. Copies of all improvement plans such as street, sewer and storm drain plans should be submitted for reference with all grading plan submittals.

INFORMATION REQUIRED ON GRADING PLANS

Engineered Grading: Engineered grading plans and specifications shall be prepared and signed by a licensed civil engineer. Plans shall be drawn to scale, with a scale no smaller than 1" = 40'. Plans shall show in sufficient clarity the nature and extent of the work proposed and that it will conform to the provisions of the applicable codes and all relevant laws, ordinances, rules and regulations. The first sheet of each set of plans shall give the location of the work, the name and address of the owner, and

the person by whom they were prepared. The plans shall include the following information:

1. General vicinity of the proposed site.
2. Grading notes and completed "Project Information" table.
3. Property limits and accurate contours of existing ground and details of terrain and area drainage.
4. Limiting dimensions, elevations or finish contours to be achieved by the grading, and proposed drainage channels and related construction.
5. Detailed plans of all surface and subsurface drainage devices, walls, cribbing, dams and other protective devices to be constructed with, or as a part of, the proposed work, together with a map showing the drainage area and the estimated runoff of the area served by any drains.
6. Location of any buildings or structures on the property where the work is to be performed and the location of any buildings or structures on land of adjacent owners that are within 15 feet of the property or that may be affected by the proposed grading operations.
7. Recommendations included in the soils engineering and geology report(s) shall be incorporated in the grading plans and specifications.
8. A drainage plan for that portion of a lot or parcel to be utilized as a building site (building pad), including elevations of floors with respect to finish site grade and locations of proposed stoops, slabs and fences that may affect drainage. Proposed structures must be free of flood hazard. If a site is subject to inundation, overflow or erosion, a permit may not be issued unless provisions are made to eliminate the hazard. Therefore, plans must also show all mitigative measures to protect proposed structures and hydrology/hydraulic calculations justifying the design must be provided.
9. Location and type of any proposed private sewage disposal system.
10. Where grading plans show proposed slopes 20' or more in height, details for landscaping and irrigation for the slopes is required.
11. Provisions for storm water flows to prevent erosion and sediment transport onto adjacent properties, adjacent roadways, storm drain systems and natural drainage courses during the rainy season. These provisions must be shown on a local Erosion and Sediment Control Plan (ESCP). In addition, for projects which are one acre or larger a State Storm Water Pollution Prevention Plan (SWPPP) is required to be filed with the Regional Water Quality Control Board.
12. Many commercial and industrial projects, as well as subdivisions and large hillside single-family residences, are required to provide permanent devices to treat stormwater flows and urban runoff. See "NPDES COMPLIANCE" for applicability and specific requirements.

Review sheets for grading, drainage, and ESCP as well as several other useful forms and publications are available on our Public Works website at http://dpw.lacounty.gov/bsd/publications. The review sheets contain the notes needed for the grading plan, ESCP and LID.

Regular Grading: Application for a "regular grading" permit shall be accompanied by a plan in sufficient clarity to indicate the nature and extent of the work. The plans shall give the location of the work, the name of the owner and the name of the person who prepared the plan. The plan shall include the following information at a minimum:

1. General vicinity of the proposed site.
2. Limiting dimensions and depth of cut and fill.
3. Location of any buildings or structures where work is to be performed, and the location of any buildings or structures within 15 feet (4572 mm) of the proposed grading.

Contact the local Building and Safety office for additional project-specific requirements that may apply.

PLAN CHECK AND PERMIT FEES

The grading plan check fee will be collected at the time the plans and supporting documents are submitted for review. The permit (inspection fee) will be collected at the time the grading permit is issued. Permit fees and plan checking or review fees for grading are proportional to the amount of grading proposed. The fees shall be based on the number of cubic yards of material in excavation or fill, whichever is greater, plus any overexcavation or removal and recompaction. If a review from Geotechnical and Materials Engineering Division is required for the review of the soils engineering and geology report(s), this fee will be assessed at the time of submittal, along with the plan check fee.

GRADING PERMIT SECURITY

For projects in which the proposed grading involves more than 1,000 cubic yards, the owner (or authorized agent) must post with the building official a grading permit security in one of the following forms:

1. A bond furnished by a corporate surety authorized to do business in this state.
2. A cash bond.
3. Savings and loan certificates or shares deposited and assigned to the County of Los Angeles.
4. An instrument of credit.

Note: For items 3 and 4 above, approval from Public Works, Fiscal Division is required.

The amount of security shall be based on the number of cubic yards of material in excavation or fill, whichever is greater, plus the cost of all drainage or other protective devices or work necessary to eliminate geotechnical hazards.

EXPIRATION OF FEES/PERMITS

Grading Plan Check: If a permit is not secured within twelve (12) months after plans have been filed for checking, two six-month extensions may be granted upon written request and payment of an extension fee equal to 25 percent of the plan check fee by the applicant.

Grading permit applications processed through Land Development Division for subdivisions do not expire as long as the application is active and in the plan check process.

Grading Permit: The issued permit shall expire by limitation if the work is not commenced within six (6) months from the date of issuance, or if the work is suspended or abandoned for a period of six (6) months at any time after the start of work.

PERMIT FEE REFUND

If the work for which a grading permit is issued has not begun and the applicant desires a refund of the permit fee, he/she must file for the refund within one year of the date the permit fee was paid (or within 6 months of the permit extension granted by the Building and Safety Division). The amount of the refund will be 80 percent of the fee paid.

SUSPENSION OR REVOCATION OF PERMITS

When a permit has been issued in error or on the basis of incorrect information supplied by the applicant or is in violation of any applicable regulation, the Building Official may suspend or revoke said permit.

STOP WORK ORDERS

If work for which a permit is required has been started without the required permit, the Grading Inspector may issue an order to comply with the code (Stop Work Order). The owner of the property must then obtain the required permit and correct any work done that does not comply with applicable regulations. The code provides that the grading permit fee shall be doubled when work has been done without the required permit and the owner or contractor was responsible for securing the permit.

COVENANTS/DEED RESTRICTIONS

Whenever an applicant proposes to do work outside his/her property or to do work which affects an adjoining property, the applicant may be required to make a declaration of covenant to perform said work and must obtain written permission from the adjoining property owner(s) in the form of a covenant. This work may include (but is not limited to): grading, retaining walls, inlet structures (acceptance of drainage), outlet structures (discharge of drainage), or any change in the existing drainage pattern (including changes in flow rates, velocities, and water surface elevations). These covenants must be notarized and recorded prior to grading approval. The Building and Safety or Land Development Division staff can provide sample documents and assist you in preparing these documents.

For subdivision grading projects, in addition to the covenant requirements stated above, deed restrictions are recorded as part of the Final Parcel or Tract Map.

AGENCY APPROVALS

CLEARANCES REQUIRED

Every construction project is reviewed for compliance with the LACBC, LACRC and LACGBC, which includes verifying graded sites for buildings are free of flood & geotechnical hazards and that the proposed grading will not be a hazard to adjacent properties. Other county departments and agencies may also review plans and/or reports to verify compliance with laws and ordinances under their jurisdiction. Prior to obtaining a grading permit,

approvals (or clearances) from the following agencies may be required based on site location and proposed development:

PUBLIC WORKS DEPARTMENT

900 South Fremont Ave, Alhambra, CA 91803

Building and Safety Division

All retaining walls that are shown on the grading plans that must be constructed at the time of grading must be approved prior to issuance of the grading permit. A separate retaining wall permit and fees are required. Retaining walls are plan checked and permitted by the local Building and Safety District Office. Retaining walls that are less than 4' high from the bottom of the foundation to the top of the wall that do not support a surcharge are exempt from a building permit.

Geotechnical and Materials Engineering Division

In areas of questionable geologic or soil stability, the Building Official will require the grading plans to be reviewed by this Division. Soils and/or geology reports may be requested. A grading permit will not be issued unless the necessary plans showing compliance with the recommendations of the geotechnical consultants' report(s) are approved and remedial action is proposed or completed, as applicable. If an uncorrectable geologic hazard is found to exist, the permit may be denied.

Construction Division/Land Development Division

Approval is required prior to any work within a public right-of-way or easement. For work within the public right-of-way, slope easement, or future road widening easement of a **public street**, an encroachment or excavation permit is required from Construction Division. For any proposed work within a **County of Los Angeles Flood Control District easement** (including encroachment into the easement and connection to a public storm drain), an encroachment and/or connection permit is required, also from Construction Division.

For work within the public right-of-way, slope easement, or future road widening easement of a **private and future street**, approval from Land Development Division is required.

Environmental Programs Division

All grading projects in the unincorporated area of Los Angeles County will need to submit a "Construction and Demolition Debris Recycling and Reuse Plan" for approval from Environmental Programs Division.

In addition, for commercial, industrial and subdivision development where NPDES/LID is required (See NPDES COMPLIANCE), approval is required from the Industrial Waste Unit for all structural BMPs selected to treat onsite pollutants.

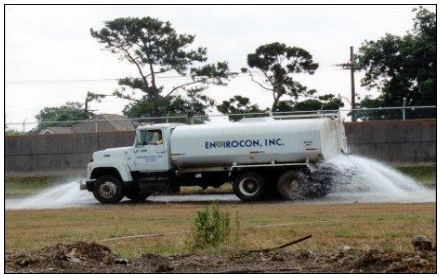
DEPARTMENT OF REGIONAL PLANNING

320 W. Temple St., Hall of Records, Los Angeles, CA 90012

Zoning issues such as land use, building height, location on a lot, number of stories, vehicular access, parking, and grading are handled by the Department of Regional Planning *for the unincorporated areas of Los Angeles County*. All proposed grading must conform to the approved land use of the area and/or the applicable community standards district.

Oak Tree Ordinance

Oak trees are protected in Los Angeles County, and therefore any proposed development within the protected zone of an oak tree requires an Oak Tree Permit from the Department of Regional Planning. This ordinance applies for all oak trees with trunks which are 8 inches or larger in diameter, measured 4½ feet from natural grade (or for oaks with multiple trunks, a combined diameter or 12 inches or larger), and the protected zone is defined as 5 feet outside the dripline (or canopy) of the oak tree, or 15 feet from the trunk, whichever is greater.



CITY PLANNING DEPARTMENT

Construction within the jurisdiction of a Contract City usually requires the City Planning Department approval. Please contact the individual city's planning department for any planning/zoning requirements.

LOS ANGELES COUNTY FIRE DEPARTMENT

Fire Prevention Bureau

The ability of the Fire Department to fight a structure fire depends in part upon the availability of an adequate water supply to control and extinguish the fire, adequacy of access roads, and the travel distance to the site. For grading projects in which a future structure is planned, the Fire Department must have physical access to the site. For most projects, a signed statement by the owner or engineer certifying that you are aware of the Fire Department's requirements is generally adequate. However, in more rural areas in which the public road is more than 150' from all points of the structure, the Fire Department strongly recommends obtaining "Grading and Access Approval" in advance, to prevent the future need for a secondary grading permit to make road improvements to meet Fire Department requirements. Contact your local Fire Prevention Bureau for more information.

In addition, in Very High Fire Hazard Severity Zones (commonly referred to as "Fire Zone 4"), the applicant must obtain a Fire Department Permit prior to issuance of the grading permit.

CALIFORNIA COASTAL COMMISSION

All new construction that occurs in the "Coastal Zone" requires a permit from the Coastal Commission prior to issuance of a grading permit. The Coastal Zone boundary varies between 1,000 yards to 5 miles inland from mean high tide. If you are not sure whether your site is in the Coastal Zone, contact your local Building and Safety office or the Coastal Commission for assistance:

- *South Central Coast Area (West of City of LA): 89 S. California St., Ventura, CA 93001, (805) 585-1800*
- *South Coast Area (All areas south east of the City of LA): 200 Ocean Gate, 10th Floor, Long Beach, CA 90802, (562) 590-5071*

CALTRANS

Any work proposed within the State highway right-of-way or easement requires a permit from the State Department of Transportation. Call (213) 897-3631 for permit information.

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

4949 Viewridge Ave., San Diego, CA 92123, (858) 636-3160

All work within or near a natural streambed or watercourse (including but not limited to "blue line streams") requires a Streambed Alteration Agreement from the Dept. of Fish and Wildlife prior to issuance of the grading permit. All conditions of the Streambed Alteration Agreement must be made a part of the grading plans.

U.S. ARMY CORPS OF ENGINEERS

Department of the Army, Los Angeles District, Corps of Engineers, 911 Wilshire Blvd, Los Angeles, CA 90017, (213) 452-3412

All work within or near a natural streambed or watercourse (including but not limited to "blue line streams") also requires approval from the U.S. Army Corps of Engineers. The Army Corps generally issues 404 Permits for projects in which fill and/or removal of material in the natural streambed is proposed. All conditions of the permit must be made a part of the grading plans.

STATE DEPARTMENT OF CONSERVATION

Abandonment of Oil and Gas Wells
Los Angeles Area: 5816 Corporate Ave. Suite 200, Cypress, CA 90630, (714) 816-6847

Clearance is required if the proposed development encroaches or impacts an existing oil or gas well, or if the project calls for the abandonment of a gas or oil well.

Department of Conservation, Office of Mine Reclamation
801 K St. MS 09-06, Sacramento, CA 95814, (916) 323-9198

Clearance is required if the proposed development impacts an existing mine.

AIR QUALITY MANAGEMENT DISTRICT

For jurisdiction determination, please visit http://www2.aqmd.gov/webappl/gisaqi2/VEMap3D.aspx

South Coast Air Quality Management District, 21865 E. Copley Drive, Diamond Bar, CA 91765. (909) 396-2000

Projects with 50 acres of disturbed area or 5,000 cubic yards or more of grading are required to comply with AQMD requirements. Prior to grading plan approval, an approval letter shall be submitted to Building and Safety. This excludes agricultural use, emergencies, and utilities.

Antelope Valley Air Quality Management District, 43301 Division Street, Suite 206, Lancaster, CA 93535. (661) 723-8070

Projects that meet either one of the following requirements must comply with AQMD requirements.

- Residential Development with a disturbed area of 10 acres or greater or a Commercial Development with a disturbed area of 5 acres or greater.
- Any project that has 7,500 cubic yards of grading or more. This excludes agricultural use, emergencies, utilities, and residential properties with a disturbed area of less than half an acre.

Prior to grading plan approval, an approval letter shall be submitted to Building and Safety.

GRADING INSPECTION

Grading operations for which a permit is required shall be subject to inspection by the building official. Professional inspection of engineered grading (or if required by the building official for regular grading) shall be provided by the civil engineer, soils engineer and the engineering geologist retained to provide such services.

The permittee shall be responsible for the work to be performed in accordance with the approved plans and specifications and in conformance with the provisions of the Building Code. The permittee shall engage consultants, if required, to provide professional inspections on a timely basis. The permittee shall act as a coordinator between the consultants, the contractor and the building official. In the event of changed conditions, the permittee shall be responsible for informing the building official of such change and shall provide revised plans for approval.

INSPECTION REQUESTS

A request for inspection should be placed with the local Building and Safety office the day before the inspection is desired. Inspection requests may be called in any time during regular office hours (some offices also have an off-hours request answering machine). In general, Building Inspectors may be contacted directly in the local District Office prior to 9:00 am.

REQUIRED INSPECTIONS

Requests for inspections by the Building official shall be made at the following stages of grading:

Pre-Grade Meeting: Prior to any brushing or grading work, the permittee shall request a meeting involving the Building Inspector, the field engineer, the soils engineer (or his field technician), the geologist (if applicable), the grading contractor, the permittee, and any other agencies which may be involved. The purpose of this meeting is for everyone involved to familiarize themselves with the plans and each other, and discuss any site-specific concerns in order to avoid future problems during construction.

Initial: When the site has been cleared of vegetation and unapproved fill and it has been scarified, benched or otherwise prepared for fill. No fill shall have been placed prior to this inspection.

Rough: When approximate final elevations have been established; drainage terraces, swales and other drainage devices necessary for the protection of the building site from flooding are installed; berms installed at the top of the slopes; and the statements required by the consultants have been submitted.*

Final: When grading has been completed; all drainage devices necessary to drain the building pad are installed; slope planting established, irrigation systems installed; and the as-graded plans and required statements and reports have been submitted and approved.*

Rough and Final Grading Certifications may be obtained by viewing the Drainage and Grading, Permit-Inspection documents at the following link: http://dpw.lacounty.gov/bsd/publications/index.cfm.

Supplemental Inspections: In addition to the called inspections specified above, the building official may make such other inspections as may be deemed necessary to determine that the work is being performed in conformance with the requirements of this code. Investigations and reports by an approved soil-testing agency, soils engineer and/or engineering geologist may be required.

FIELD REVISIONS

Site conditions often warrant design changes to the approved grading plans as construction progresses. It is the responsibility of the permittee to inform the Building Inspector and grading plan check engineer of these changes and provide revised plans for approval prior to proceeding with the changes. The final grading approval will not be issued until the revised “as-graded” plans are approved.

NPDES COMPLIANCE

Urban and stormwater runoff is considered to be one of the largest sources of pollution to both local waterways and coastal areas of the United States. As a permittee of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System Permit (MS4 Permit), the County of Los Angeles is required to develop and implement a Storm Water Quality Management Program, with the goal of reducing pollutants from storm water and urban runoff to receiving waters.

Development Planning and Development Construction are the two programs of the MS4 permit that relate to grading permits on private property.

Development Planning: One specific requirement of the Development Planning Program is NPDES/LID, which was developed as part of the County's MS4 permit to address storm water pollution from new development and redevelopment by the private sector. Projects that fall within the following categories of development must design and implement NPDES/LID Best Management Practices:

- All development projects equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area
- Residential new or redeveloped projects that creates, adds, or replaces ≥10,000 square feet of impervious surface area.
- Industrial parks 10,000 square feet or more of surface area
- Commercial malls 10,000 square feet or more surface area
- Retail gasoline outlets 5,000 square feet or more of surface area
- Restaurants (SIC 5812) 5,000 square feet or more of surface area
- Parking lots 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces
- Street and road construction of 10,000 square feet or more of impervious surface area
- Automotive service facilities with 5,000 square feet or more of surface area
- Projects located in or directly adjacent to, or discharging directly to a Significant Ecological Area (SEA),where the development will discharge storm water runoff that is likely to impact a sensitive biological species or habitat; and Create 2,500 square feet or more of impervious surface area
- Redevelopment projects identified below*:
  - Land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area
  - Development which alters less than 50% of impervious surfaces. Only proposed re-development needs to meet NPDES requirements.
  - Development which alters 50% or more of impervious surfaces. Entire site shall meet NPDES requirements.

*Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

Development Construction: All projects with any grading or earth disturbing construction activity must develop and implement a plan designed to minimize the transport of sediment and protect public and private property and natural drainage courses from the effects of erosion, flooding or the deposition of mud, debris or construction related pollutants. The plan must show Best Management Practices (BMP), which include scheduling, operating and maintenance procedures, treatment requirements, and any management practice that prevents, eliminates, or reduces pollution.

For sites with a disturbed area less than one acre, a Erosion and Sediment Control Plan (ESCP) must be developed, which provides temporary erosion and sediment control measures during the rainy season. The BMPs shown on the ESCP shall be installed on or before October 15th.

For sites with a disturbed area of one acre or greater, a Stormwater Pollution Prevention Plan (SWPPP) must be developed and implemented in addition to the ESCP. The SWPPP must provide year round BMPs to control construction related pollutants that originate from the site as a result of construction related activities. The SWPPP must provide general site management, waste management, non-stormwater management, and materials pollution control BMPs, in addition to erosion and sediment control BMPs.

In addition to filing a ESCP with the local Building and Safety District Office or Land Development Division, the applicant must file a Notice of Intent for a State SWPPP and obtain a Waste Discharge Identification Number (WDID) with the State Water Resources Control Board, Division of Water Quality, (916) 341-5536, FAX (916) 341-5543. The following link will provide access to the Board's SMARTS system for submitting a Notice of Intent: https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.jsp

All BMPs shall be installed before grading begins. As grading progresses, all BMPs shall be maintained in good working order to the satisfaction of the design engineer and Building Inspector. The ESCP must be revised annually or as required by the Building

Official to reflect the current site conditions, and BMPs must be installed each year until the Building Inspector issues final grading approval and all permanent drainage and erosion control systems, if required, are in place.

LOW IMPACT DEVELOPMENT (LID) COMPLIANCE

All development within the Los Angeles County Unincorporated Areas must comply with the County of Los Angeles LID Ordinance, Title 12 – Section 12.84 and the County of Los Angeles Green Building Code, Title 31 - Section 4.106 or Section 5.106 Site Development. In addition, Residential and Non-Residential Voluntary Measures can also be implemented per Appendix A4 and A5 of the County of Los Angeles Green Building Code, Title 31. LID standards are intended to distribute stormwater and urban runoff across developed sites to help reduce adverse water quality impacts and replenish groundwater supplies. All projects must comply with the Low Impact Development Requirements of the Los Angeles County Grading Review Sheet. The LID manual can be located at the following link: http://dpw.lacounty.gov/ldd/lib/fp/Hydrology/Low%20Impact%20Development%20Standards%20Manual.pdf.

APPENDIX J GRADING

SECTION J101 GENERAL

J101.1 Scope. The provisions of this Chapter apply to grading, excavation, and earthwork construction, including fills and embankments and the control of runoff from graded sites, including erosion sediments and construction-related pollutants. The purpose of this Chapter is to safeguard life, limb, property, and the public welfare by regulating grading on private property.

J101.2 Flood hazard areas. The provisions of this Chapter shall not apply to grading, excavation, and earthwork construction, including fills and embankments, in floodways designated in Chapter 11.60 of Title 11, Health and Safety of the Los Angeles County Code or in floodways within flood hazard areas established in Section 1612.3 or in flood hazard areas where design flood elevations are specified but floodways have not been designated, unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed work will not result in any increase in the level of the base flood.

J101.3 General hazards. Whenever the Building Official determines that any existing excavation, embankment, or fill on private property has become a hazard to life and limb, or endangers property, or adversely affects the safety, use, or stability of a public way or drainage channel, the Building Official may give written notice thereof to the owner of the property upon which the excavation, embankment or fill is located, or other person or agent in control of said property. Upon receipt of said notice, the owner or other person or agent in control of the property shall repair or eliminate such excavation, embankment, or fill so as to eliminate the hazard, in conformance with the requirements of this Code, within the period specified in said notice.

J101.4 Safety precautions. If at any stage of the work the Building Official determines by inspection that further grading as authorized is likely to endanger any public or private property or result in the deposition of debris on any public way or interfere with any existing drainage course, the Building Official may order the work stopped by notice in writing served on any persons engaged in doing or causing such work to be done, and any such person shall immediately stop such work. The Building Official may authorize the work to proceed if the Building Official finds adequate safety precautions can be taken or corrective measures incorporated in the work to avoid likelihood of such danger, deposition or interference.

If the grading work as done has created or resulted in a hazardous condition, the Building Official shall give written notice requiring correction thereof as specified in Section J101 of this Code.

J101.5 Protection of utilities. Both the permittee and the owner of the property on which the grading is performed shall be responsible for the prevention of damage to any public and/or private utilities or services.

J101.6 Protection of adjacent property. Both the permittee and owner of the property on which the grading is performed shall be responsible for the prevention of damage to adjacent property. No person shall excavate on land sufficiently close to the property line to endanger any adjoining public street, sidewalk, alley, or other public or private property without taking adequate measures to support and protect such property from settling, cracking or other damage that might result from the proposed work. Any person performing any grading that involves imported or exported materials shall take special precautions, as approved by the Building Official, to prevent such materials from being deposited on adjacent properties, any public way and/or any drainage courses.

J101.7 Storm water control measures. Both the permittee and the owner of the property on which the grading is performed shall put into effect and maintain all precautionary measures necessary to protect adjacent water courses and public or private property from damage by erosion, flooding, and deposition of mud, debris, and construction-related pollutants originating from the site during grading and related construction activities.

J101.8 Maintenance of protective devices and rodent control. All drainage structures and other protective devices, and all burrowing rodent control measures, as shown on the grading plans approved by the Building Official, shall be maintained in a good condition and, when necessary, promptly repaired by the permittee or owner of the property on which grading has been performed or by any other person or agent in control of such property.

J101.9 Correlation with other sections. The provisions of this Chapter are independent of the provisions of Chapter 99 of this Code relating to building and property rehabilitation. This Section may be applied even though the same facts have been used to determine that there is substandard property subject to the provisions of Chapter 99.

J101.10 Conditions of approval. In granting any permit under this Code, the Building Official may include such conditions as may be reasonably necessary to prevent creation of a nuisance or hazard to public or private property. Such conditions may include, but shall not be limited to:

1. Improvement of any existing grading to comply with the standards of this Code.
2. Requirements for fencing of excavations or fills, which would otherwise be hazardous.

SECTION J102 DEFINITIONS

J102.1 Definitions. For the purposes of this Appendix Chapter, the terms, phrases and words listed in this Section and their derivatives shall have the indicated meanings.

APPROVAL. When the proposed work or completed work conforms to this Chapter, as determined by and to the satisfaction of the Building Official.

AS–BUILT. See Section J105.12.

BEDROCK. The relatively solid, undisturbed rock in place either at the ground surface or beneath superficial deposits of alluvium, colluvium and/or soil.

BENCH. A relatively level step excavated into earth material on which fill is to be placed.

BEST MANAGEMENT PRACTICE (BMP). Practices, prohibitions of practices, or other activities to reduce or eliminate the discharge of pollutants to surface waters. BMPs include structural and nonstructural controls, management practices, operation and maintenance procedures, and system, design, and engineering methods that are required to be employed in order to comply with the requirements of the National Pollution Discharge Elimination System (NPDES) permit issued to the County of Los Angeles (see Section 106.4.3 and Title 31, Green Building Standards Code of the Los Angeles County).

BORROW. Earth material acquired from an off–site location for use in grading on a site.

CIVIL ENGINEER. A professional engineer registered in the State of California to practice in the field of civil works.

CIVIL ENGINEERING. The application of the knowledge of the forces of nature, principles of mechanics and the properties of materials to the evaluation, design, and construction of civil works.

COMPACTION. The densification of a fill by mechanical means.

CUT. See “Excavation.”

DESILTING BASINS. Physical structures constructed for the removal of sediments from surface water runoff.

DESIGN ENGINEER. The Civil Engineer responsible for the preparation of the grading plans for the site grading work.

DOWN DRAIN. A device for collecting water from a swale or ditch located on or above a slope, and safely delivering it to an approved drainage facility.

EARTH MATERIAL. Any rock, natural soil or fill or any combination thereof.

ENGINEERING GEOLOGIST. A geologist experienced and knowledgeable in engineering geology, holding a valid certificate of registration as a geologist in the specialty of engineering geology issued by the State of California under the applicable provisions of the Geologist and Geophysicist Act of the Business and Professions Code.

ENGINEERING GEOLOGY. The application of geologic knowledge and principles in the investigation and evaluation of naturally occurring rock and soil for use in the design of civil works.
EROSION. The wearing away of the ground surface as a result of the movement of wind, water or ice.
EXCAVATION. The removal of earth material by artificial means, also referred to as a cut.
FIELD ENGINEER. The Civil Engineer responsible for performing the functions as set forth in Section J105.3.
FILL. Deposition of earth materials by artificial means.
GEOTECHNICAL ENGINEER. See Soils Engineer.
GEOTECHNICAL HAZARD. An adverse condition due to landslide, settlement, and/or slippage. These hazards include but are not limited to loose debris, slopewash, and mud flows from natural or graded slopes.
GRADE. The vertical location of the ground surface.
GRADE, EXISTING. The grade prior to grading.
GRADE, FINAL. See Section J105.7.
GRADE, FINISHED. The grade of the site at the conclusion of all grading efforts.
GRADE, INITIAL. See Section J105.7.
GRADE, ROUGH. See Section J105.7.
GRADING. An excavation or fill or combination thereof.
KEY. A compacted fill placed in a trench excavated in earth material beneath the toe of a slope.
LANDSCAPE ARCHITECT. A person who holds a certificate to practice landscape architecture in the State of California under the applicable landscape architecture provisions of Division 3, Chapter 3.5 of the Business and Professions Code.
LINE. The horizontal location of the ground surface.
PERMITTEE. See Section J105.6.
PRIVATE SEWAGE DISPOSAL SYSTEM. A septic tank with effluent discharging into a subsurface disposal field, into one or more seepage pits or into a combination of subsurface disposal field and seepage pit or of such other facilities as may be permitted in accordance with the procedures and requirements set forth in Title 28, Plumbing Code of the Los Angeles County Code and as required by the Los Angeles County Department of Public Health.
PROJECT CONSULTANTS. The professional consultants required by this Code which may consist of the Design Engineer, Field Engineer, Soils Engineer, Engineering Geologist, and Landscape Architect as applicable to this Chapter.
PROFESSIONAL INSPECTION. The inspection required by this code to be performed by the Project Consultants. Such inspections shall be sufficient to form an opinion relating to the conduct of the work.
QSD. Qualified SWPPP Developer as defined in the California State Construction General Permit.
QSP. Qualified SWPPP Practitioner as defined in the California State Construction General Permit.
SITE. A lot or parcel of land or contiguous combination thereof, under the same ownership, where grading is performed or permitted.
SLOPE. An inclined surface, the inclination of which is expressed as a ratio of horizontal distance to vertical distance.
SOIL. Naturally occurring superficial deposits overlying parent bedrock.
SOILS ENGINEER (GEOTECHNICAL ENGINEER). A civil engineer experienced and knowledgeable in the practice of soils engineering.
SOILS ENGINEERING (GEOTECHNICAL ENGINEERING). The application of the principals of soils mechanics in the investigation, evaluation, and design of civil works involving the use of earth materials and the inspection or testing of construction thereof.
STORM DRAIN SYSTEM. A conveyance or system of conveyances, including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, and manmade channels, designed or used for collecting and conveying storm water.
STORM WATER POLLUTION PREVENTION PLAN (SWPPP). A site drawing with details, notes, and related documents that identify the measures proposed by the permittee to:
(1) control erosion and prevent sediment and construction-related pollutants from being carried offsite by storm water, and
(2) prevent non-storm water discharges from entering the storm drain system.
SURFACE DRAINAGE. Flows over the ground surface.
SOIL TESTING AGENCY. An agency regularly engaged in the testing of soils and rock under the direction of a Civil Engineer experienced in soil testing.
TERRACE. A relatively level step constructed in the face of a graded slope for drainage and maintenance purposes.

SECTION J103 PERMITS REQUIRED

J103.1 Permits required. Except as exempted in Section J103.2, no grading shall be performed without first having obtained a permit from the Building Official. A grading permit does not include the construction of retaining walls or other structures. A separate permit shall be obtained for each site and may cover both excavations and fills. Any engineered grading as described in Section J104.2.3 shall be performed by a contractor licensed by the State of California to perform the work described hereon.

Regular Grading less than 5,000 cubic yards may require a licensed contractor if the Building Official determines that special conditions or hazards exist.

J103.2 Exemptions. A grading permit shall not be required for the following:

1. When approved by the Building Official, grading in an isolated, self-contained area, provided there is no danger to the public, and that such grading will not adversely affect adjoining properties or public right of ways.
2. Excavation for construction of a structure permitted under this Code.
3. Cemetery graves.
4. Refuse disposal sites controlled by other regulations.
5. Excavations for wells, or trenches for utilities.
6. Mining, quarrying, excavating, processing or stockpiling rock, sand, gravel, aggregate or clay controlled by other regulations, provided such operations do not affect the lateral support of, or significantly increase stresses in, soil on adjoining properties.
7. Exploratory excavations performed under the direction of a Geotechnical Engineer or Engineering Geologist. This shall not exempt grading of access roads or pads created for exploratory excavations. Exploratory excavations must not create a hazardous condition to adjacent properties or the public in accordance with Section J101.3. A restoration plan must be provided and approved by the Building Official for all grading of access roads or pads. Restoration shall be completed within 90 days after the completion of soils testing unless otherwise approved by the Building Official.
8. An excavation that does not exceed 50 cubic yards (38.3 m3) and complies with one of the following conditions and as shown in Figure J103.2:
   a. Is less than 2 feet (0.6 m) in depth.
   b. Does not create a cut slope greater than 5 feet (1.5 m) measured vertically upward from the cut surface to the surface of the natural grade and is not steeper than 2 units horizontal to 1 unit vertical (50 percent slope).
9. A fill not intended to support a structure that does not obstruct a drainage course and complies with one of the following conditions and as shown in Figure J103.2:
   a. Is less than 1 foot (0.3 m) in depth and is placed on natural terrain with a slope flatter than 5 units horizontal to 1 unit vertical (20 percent slope).
   b. Is less than 3 feet (0.9 m) in depth at its deepest point measured vertically upward from natural grade to the surface of the fill, does not exceed 50 cubic yards, and creates a fill slope no steeper than 2 units horizontal to 1 unit vertical (50 percent slope).
   c. Is less than 5 feet (1.5 m) in depth at its deepest point measured vertically upward from natural grade to the surface of the fill, does not exceed 20 cubic yards, and creates a fill slope no steeper than 2 units horizontal to 1 unit vertical (50 percent slope).

Exemption from the permit requirements of this Appendix Chapter shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this Code or any other laws or ordinances of this jurisdiction.

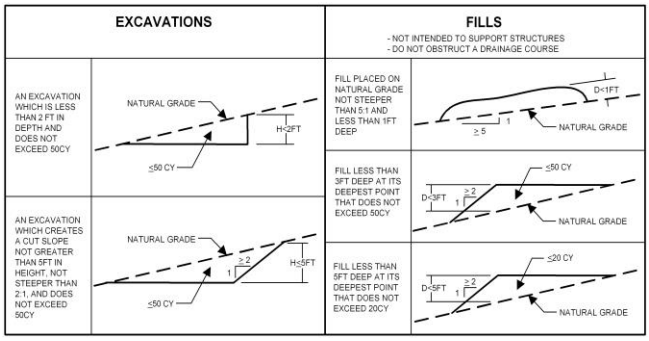


FIGURE J103.2
GRADING EXEMPTION CASES

J103.3 Unpermitted grading. A person shall not own, use, occupy or maintain any site containing unpermitted grading. For the purposes of this Code, unpermitted grading shall be defined as either of the following:

1. Grading that was performed, at any point in time, without the required permit(s) having first been obtained from the Building Official, pursuant to Section J103.1; or
2. Grading for which a permit was obtained pursuant to this Section, but which was not completed, pursuant to Section J105, prior to the expiration of the permit, pursuant to Section 106.5.4.

J103.4 Availability of permit at site. No person shall perform any grading that requires a permit under this Chapter unless a copy of the grading permit and approved grading plans are in the possession of a responsible person and available at the site for the Building Official's reference.

J103.5 Grading fees. Fees shall be assessed in accordance with the provisions of this Section. The amount of the fees shall be as specified in Section 107 of this Code.

1. Plan Review Fees. When a plan or other data are required to be submitted, a plan review fee shall be paid at the time of submitting plans and specifications for review. Separate plan review fees shall apply to retaining walls or major drainage structures as required elsewhere in this Code. For excavation and fill on the same site, the fee shall be based on the volume of excavation or fill, whichever is greater.
2. Permit Fees. A fee for each grading permit shall be paid to the Building Official at the time of issuance of the permit. Separate permits and fees shall apply to retaining walls or major drainage structures as required elsewhere in this Code.
3. Site Inspection Fee. When the Building Official finds that a visual inspection of the site is necessary to establish drainage requirements for the protection of property, existing buildings or the proposed construction, a site inspection shall be made during plan check of grading plans. A fee for such inspection shall be paid to the Building Official at the time of submitting plans and specifications for review.

J103.6 Compliance with zoning code. The Building Official may refuse to issue a grading permit for work on a site if either the proposed grading or the proposed land use for the site shown on the grading plan application does not comply with the provisions of Title 22, Planning and Zoning of the Los Angeles County Code.

J103.7 Grading security.

J103.7.1 Scope and purpose. The Building Official may require a permittee or the owner(s) of the property on which the grading is proposed to occur to provide security, as a condition of the issuance of a grading permit for any grading involving more than 1,000 cubic yards (764.6 m3). Where unusual conditions or special hazards exist, the Building Official may require security for grading involving less than 1,000 cubic yards (764.6 m3). The purpose of the security shall be to guarantee the permittee's obligation to mitigate any hazardous conditions, including flood and geotechnical hazards, that may be created if the grading is not completed in accordance with the approved plans and specifications, and to complete any work that the Building Official determines is necessary to bring the property into compliance with this Chapter.

Security required by this Section may include incidental off-site grading on property contiguous with the site to be developed, provided written consent of the owner of such contiguous property is filed with the Building Official.

The Building Official may waive the requirements for security for the following:

1. Grading being done by or for a governmental agency.
2. Grading necessary to remove a geotechnical hazard, where such work is covered by an agreement and security posted pursuant to the provisions of Title 21 Subdivisions of the Los Angeles County Code.
3. Grading on a site, not exceeding a slope of three horizontal to one vertical, provided such grading as determined by the Building Official will not affect drainage from or to adjacent properties.
4. Filling of holes or depressions provided such grading will not affect the drainage from or to adjacent properties.

J103.7.2 Form of security. The security referred to in Section J103.7.1 shall be in one of the following forms:

1. A bond furnished by a corporate surety authorized to do business in this state.
2. Cash.
3. Savings and loan certificates or shares deposited and assigned to the County as provided in Chapter 4.36 of Title 4, Revenue and Finance of the Los Angeles County Code.
4. An instrument of credit from a financial institution subject to regulation by the state or federal government and pledging that funds in the amount required by the Building Official are on deposit and guaranteed for payment, or a letter of credit issued by such a financial institution.

J103.7.3 Amount of security. The amount of security shall be based on the number of cubic yards of material in either excavation or fill, whichever is greater, and the cost of all drainage or other protective devices or work necessary to eliminate potential flooding and geotechnical hazards. That portion of the security valuation based on the volume of material in either excavation or fill shall be computed as follows:

100,000 cubic yards or less—50 percent of the estimated cost of grading work.

Over 100,000 cubic yards—50 percent of the cost of the first 100,000 cubic yards plus 25 percent of the estimated cost of that portion in excess of 100,000 cubic yards.

When the rough grading has been completed in conformance with the requirements of this Code, the Building Official may, at his or her discretion, consent to a proportionate reduction of the security to an amount estimated to be adequate to ensure completion of the grading work, site development or planting remaining to be performed. The costs referred to in this Section shall be as estimated by the Building Official.

J103.7.4 Conditions. All security shall include the conditions that the principal shall:

1. Comply with all of the provisions of this Code, applicable laws, and ordinances;
2. Comply with all of the terms and conditions of the grading permit; and
3. Complete all of the work authorized by the permit.

J103.7.5 Term of security. The term of each security shall begin upon the filing with the Building Official and the security shall remain in effect until the work authorized by the grading permit is completed and approved by the Building Official.

J103.7.6 Default procedures. In the event any grading for which a permit has been issued is not completed in accordance with the approved plans and specifications for said work or with all terms and conditions of the grading permit, the Building Official may declare that a default has occurred. The Building Official shall give notice thereof to the principal and surety or financial institution

executing the security, or to the owner in the case of a cash bond or assignment.

The Building Official may thereafter determine the work that is necessary to mitigate any hazardous or unsafe conditions on the site and cause such work to be performed.

Where the security consists of a bond or instrument of credit, the surety or financial institution executing the security shall be responsible for the payment of all costs and expenses incurred by the Building Official in causing such work to be performed, up to the full amount of the security. In the case of cash security or assignment, the Building Official may pay all costs and expenses incurred in causing such work to be performed from the funds deposited, and return any unused portion of such deposit or funds to the person making said deposit or assignment.

J103.7.7 Right of entry. The Building Official or the authorized representative of any surety company or financial institution furnishing the security shall have access to the premises described in the permit for the purpose of inspecting the work.

In the event of default, as described in Section J103.7.6, the surety or financial institution furnishing the security or the Building Official, or any person employed or engaged on the behalf of any of these parties, shall have the right to go upon the premises to perform the mitigation work, as described in Section J103.7.6.

Neither the permittee, owner, or any other person shall interfere with or obstruct the ingress into or egress from any such premises, of any authorized representative of the surety or financial institution executing the security or the Building Official engaged to perform the mitigation work, as described in Section J103.7.6.

SECTION J104 PERMIT APPLICATION AND SUBMITTALS

J104.1 Submittal requirements. In addition to the provisions of Section 106.4, the applicant shall state the following:

1. The estimated quantities of excavation, fill, borrow, removal or combination thereof.
2. The proposed land use for the site on which the grading is to be performed.

J104.2 Site plan requirements. In addition to the provisions of Section 106, a grading plan shall show the existing grade and finished grade in contour intervals of sufficient clarity to indicate the nature and extent of the work and show in detail that it complies with the requirements of this Code. The plans shall show the existing grade on adjoining properties in sufficient detail to identify how grade changes will conform to the requirements of this Code.

J104.2.1 Grading designation. Grading in excess of 5,000 cubic yards (3825 m3) or that is proposed to support any structure shall be designated as "engineered grading." All engineered grading shall be performed in accordance with an approved grading plan and specifications prepared by a Civil Engineer, unless otherwise required by the Building Official.

Grading involving less than 5,000 cubic yards (3825 m^3) and that will not support any structure shall be designated "regular grading" unless the permittee chooses to have the grading be designated as engineered grading, or the Building Official determines that, due to the existence of special conditions or unusual hazards, the grading should be designated as engineered grading.

J104.2.2 Regular grading requirements. In addition to the provisions of Section 106, and Section J104.2, an application for a regular grading permit shall be accompanied by two sets of plans in sufficient clarity to indicate the nature and extent of the work. The plans shall give the location of the work, the name of the owner, and the name of the person who prepared the plan. The plan shall include the following information:

1. General vicinity of the proposed site.
2. Limits and depths of cut and fill.
3. Location of any buildings or structures where work is to be performed, and the location of any buildings or structures within 15 feet (4.6 m) of the proposed grading.
4. Contours, flow areas, elevations, or slopes, which define existing and proposed drainage patterns.
5. Storm water mitigation measures in accordance with the requirements of Section 106.4.3 of this Code. See Section J110.8 for specific requirements.
6. Location of existing and proposed utilities, drainage facilities, and recorded public and private easements and restricted use areas.
7. Location of all recorded floodways as established by Chapter 11.60 of Title 11, Health and Safety of the Los Angeles County Code.
8. Location of all Special Flood Hazard Areas as designated and defined in Title 44 of the Code of Federal Regulations.

J104.2.3 Engineered grading requirements. In addition to the provisions of Section 106, and Section J104.2, an application for a permit for engineered grading shall be accompanied by four sets of plans and specifications, and supporting data consisting of a geotechnical report and engineering geology report.

Specifications shall contain information covering construction and material requirements. Plans shall be drawn to scale on paper and shall be of sufficient clarity to indicate the nature and extent of the work proposed and shall show in detail that the proposed work will conform to the provisions of this Code and all relevant laws, ordinances, rules, and regulations. The first sheet of each set of plans shall depict the location of the proposed work, the name and address of the owner, and the person by whom they were prepared.

The plans shall include or be accompanied by the following information:

1. General vicinity of the proposed site.
2. Property limits and accurate contours of existing ground and details of terrain and area drainage.
3. Limiting dimensions, elevations, or finish contours to be achieved by the grading, proposed drainage channels, and related construction.
4. Detailed plans of all surface and subsurface drainage devices, walls, cribbing, dams and other protective devices to be constructed with, or as a part of, the proposed work. A map showing the drainage area and the estimated runoff of the area served by any drains shall also be provided.
5. Location of any existing or proposed buildings or structures located on the property on which the work is to be performed and the location of any buildings or structures on adjacent properties that are within 15 feet (4.6 m) of the property or that may be affected by the proposed grading operations.
6. Recommendations in the geotechnical report and the engineering geology report shall be incorporated into the grading plans or specifications. When approved by the Building Official, specific recommendations contained in the soils engineering report and the engineering geology report, that are applicable to grading, may be included by reference.
7. The dates of the geotechnical and engineering geology reports together with the names, addresses, and phone numbers of the firms or individuals who prepared the reports.
8. A statement of the quantities of material to be excavated and/or filled. Earth work quantities shall include quantities for geotechnical and geological remediation. In addition, a statement of the quantities of material to be imported or exported from the site.
9. A statement of the estimated starting and completion dates for proposed work.
10. A statement signed by the owner, acknowledging that a Field Engineer, Geotechnical Engineer and Engineering Geologist, when appropriate, will be employed to perform the services required by this Code, when the Building Official requires that such professional persons be so employed. These acknowledgments shall be on a form furnished by the Building Official.
11. Storm water mitigation measures are required to be shown on the grading plan in accordance with the requirement of Section 106.4.3 of this Code. See Section J110.8 for specific requirements.
12. A drainage plan for those portions of property proposed to be utilized as a building site (building pad), including elevations of floors with respect to finish site grade and locations of proposed stoops, slabs and fences that may affect drainage.
13. Location and type of any proposed private sewage disposal system, including the location of the expansion area.

14. Location of existing and proposed utilities, drainage facilities, and recorded public and private easements and restricted use areas.
15. Location of all recorded floodways as established by Chapter 11.60 of Title 11 Health and Safety of the Los Angeles County Code.
16. Location of all Special Flood Hazard Areas as designated and defined in Title 44 of the Code of Federal Regulations.

J104.3 Geotechnical and engineering geology reports. The geotechnical report required by Section J104.2.3 shall include data regarding the nature, distribution, and strength of existing soils, conclusions and recommendations for grading procedures and design criteria for corrective measures, including buttress fills, when necessary, and an opinion on the adequacy for the intended use of sites to be developed by the proposed grading as affected by geotechnical factors, including the stability of slopes. All reports shall conform with the requirements of Section 111 and shall be subject to review by the Building Official. Supplemental reports and data may be required as the Building Official may deem necessary. Recommendations included in the reports and approved by the Building Official shall be incorporated in the grading plan or specifications.

The engineering geology report required by Section J104.2.3 shall include an adequate description of the geology of the site, conclusions, and recommendations regarding the effect of geologic conditions on the proposed development, and an opinion on the adequacy for the intended use of sites to be developed by the proposed grading, as affected by geologic factors. The engineering geology report shall include a geologic map and cross sections utilizing the most recent grading plan as a base. All reports shall conform with the requirements of Section 111 and shall be subject to review by the Building Official. Supplemental reports and data may be required as the Building Official may deem necessary. Recommendations included in the reports and approved by the Building Official shall be incorporated in the grading plan or specifications.

Exception: A geotechnical or engineering geology report is not required where the Building Code official determines that the nature of the work applied for is such that a report is not necessary.

J104.4 Liquefaction study. For sites with mapped maximum considered earthquake spectral response accelerations at short periods (*Ss*) greater than 0.5g as determined by Section 1613, a study of the liquefaction potential of the site shall be provided, and the recommendations incorporated in the plans. A geotechnical investigation will be required when the proposed work is a “Project” as defined in California Public Resources Code Section 2693, and is located in an area designated as a “Seismic Hazard Zone” as defined in Title 14 of the California Code of Regulations Section 3722 and on Seismic Hazard Zone Maps issued by the State Geologist under Public Resources Code Section 2696.

Exception: A liquefaction study is not required where the building official determines from established local data that the liquefaction potential is low.

SECTION J105 INSPECTIONS

J105.1 General. Grading inspections shall be governed by Section 108, and as indicated herein. Grading operations for which a permit is required shall be subject to inspection by the Building Official. In addition, professional inspection of grading operations shall be performed by the Field Engineer, Geotechnical Engineer and the Engineering Geologist retained to provide such services in accordance with this Section for engineered grading and as required by the Building Official for regular grading.

J105.2 Special and supplemental inspections. The special inspection requirements of Section 1705.6 shall apply to work performed under a grading permit where required by the Building Official. In addition to the called inspections specified in Section J105.7, the Building Official may make such other inspections as may be deemed necessary to determine that the work is being performed in conformance with the requirements of this Code.

The Building Official may require investigations and reports by an approved soil testing agency, Geotechnical Engineer and/or Engineering Geologist, and Field Engineer. Inspection reports shall be provided when requested in writing by the Building Official. The Building Official may require continuous inspection of drainage devices by the Field Engineer in accordance with this Section when the Building Official determines that the drainage devices are necessary for the protection of the structures in accordance with Section 110.

J105.3 Field engineer. The Field Engineer shall provide professional inspection of those parts of the grading project within such engineer’s area of technical specialty, oversee and coordinate all field surveys, set grade stakes, and provide site inspections during grading operations to ensure the site is graded in accordance with the approved grading plan and the appropriate requirements of this Code. During site grading, and at the completion of both rough grading and final grading, the Field Engineer shall submit statements and reports as required by Sections J105.11 and J105.12. If revised grading plans are required during the course of the work they shall be prepared by a Civil Engineer and approved by the Building Official.

J105.4 Geotechnical engineer. The Geotechnical Engineer shall provide professional inspection of those parts of the grading project within such engineer’s area of technical specialty, which shall include observation during grading and testing for required compaction. The Geotechnical Engineer shall provide sufficient observation during the preparation of the natural ground and placement and compaction of the fill to verify that such work is being performed in accordance with the conditions of the approved plan and the appropriate requirements of this Chapter. If conditions differing from the approved geotechnical engineering and engineering geology reports are encountered during grading, the Geotechnical Engineer shall provide revised recommendations to the permittee, the Building Official, and the Field Engineer.

J105.5 Engineering geologist. The Engineering Geologist shall provide professional inspection of those parts of the grading project within such engineer’s area of technical specialty, which shall include professional inspection of the bedrock excavation to determine if conditions encountered are in conformance with the approved report. If conditions differing from the approved engineering geology report are encountered, the Engineering Geologist shall provide revised recommendations to the Geotechnical Engineer.

J105.6 Permittee. The permittee shall be responsible for ensuring that the grading is performed in accordance with the approved plans and specifications and in conformance with the provisions of this Code. The permittee shall engage project consultants, if required under the provisions of this Code, to provide professional inspections on a timely basis. The permittee shall act as a coordinator between the project consultants, the contractor and the Building Official. In the event of changed conditions, the permittee shall be responsible for informing the Building Official of such change and shall provide revised plans for approval.

J105.7 Required inspections. The permittee shall call for an inspection by the Building Official at the following various stages of work and shall obtain the approval of the Building Official prior to proceeding to the next stage of work:

Pre-grade. Before any construction or grading activities occur at the site. Permittee shall schedule a pregrade inspection with the Building Official. The permittee shall ensure that all project consultants are present at the pregrade inspection.

Initial grade. When the site has been cleared of vegetation and unapproved fill and has been scarified, benched, or otherwise prepared for fill. No fill shall have been placed prior to this inspection.

Rough grade. When approximate final elevations have been established, drainage terraces, swales, and other drainage devices necessary for the protection of the building sites from flooding have been installed, berms have been installed at the top of the slopes, and the statements required by Section J105.12 have been received.

Final grade. When grading has been completed, all drainage devices necessary to drain the building pad have been installed, slope planting has been established, irrigation systems have been

installed, and the as-built plans and required statements and reports have been submitted.

J105.8 Notification of noncompliance. If, in the course of fulfilling their respective duties under this Chapter, the Field Engineer, the Geotechnical Engineer, or the Engineering Geologist determines that the work is not being done in conformance with this Chapter or the approved grading plans, the Field Engineer, Geotechnical Engineer, or the Engineering Geologist shall immediately report, in writing, the discrepancies and the recommended corrective measures to the permittee and to the Building Official.

J105.9 Transfer of responsibility. If the Field Engineer, the Geotechnical Engineer, or the Engineering Geologist of record is changed at any time after the grading plans required pursuant to Section J104.2.2 or J104.2.3 have been approved by the Building Official, the permittee shall immediately provide written notice of such change to the Building Official. The Building Official may stop the grading from commencing or continuing until the permittee has identified a replacement and the replacement has agreed in writing to assume responsibility for those parts of the grading project that are within the replacement's area of technical competence.

J105.10 Non-inspected grading. No person shall own, use, occupy, or maintain any non-inspected grading. For the purposes of this Code, non-inspected grading shall be defined as any grading for which a grading permit was first obtained, pursuant to Section J103, above, but which has progressed beyond any point requiring inspection and approval by the Building Official without such inspection and approval having been obtained.

J105.11 Routine field inspections and reports. Unless otherwise directed by the Building Official, the Field Engineer for all engineered grading projects shall prepare routine inspection reports and shall file these reports with the Building Official as follows:

1. Bi-weekly during all times when grading of 400 cubic yards or more per week is occurring on the site;
2. Monthly, at all other times; and
3. At any time when requested in writing by the Building Official.

Such reports shall certify to the Building Official that the Field Engineer has inspected the grading site and related activities and has found them in compliance with the approved grading plans and specifications, this code, all grading permit conditions, and all other applicable ordinances and requirements. The reports shall conform to a standard "Report of Grading Activities" form which shall be provided by the Building Official.

J105.12 Completion of work. Upon completion of the rough grading work and at the final completion of the work, the following reports and drawings and supplements thereto are required for engineered grading or when professional inspection is otherwise required by the Building Official:

1. An "as-built" grading plan prepared by the Field Engineer retained to provide such services in accordance with Section J105.3 showing all plan revisions as approved by the Building Official. This shall include original ground surface elevations, as-built ground surface elevations, lot drainage patterns, and the locations and elevations of surface drainage facilities and the outlets of subsurface drains. As-built locations, elevations and details of subsurface drains shall be shown as reported by the Geotechnical Engineer.
   The as-built grading plan shall be accompanied by a certification by the Field Engineer that to the best of his or her knowledge, the work within the Field Engineer's area of responsibility was done in accordance with the final approved grading plan.
2. A report prepared by the Geotechnical Engineer retained to provide such services in accordance with Section J105.4, including locations and elevations of field density tests, summaries of field and laboratory tests, other substantiating data, and comments on any changes made during grading and their effect on the recommendations made in the approved geotechnical engineering investigation report. The report shall include a certification by the Geotechnical Engineer that, to the best of his or her knowledge, the work within the Geotechnical Engineer's area of responsibility is in accordance with the approved geotechnical engineering report and applicable provisions of this Chapter. The report shall contain a finding regarding the safety of the completed grading and any proposed structures against hazard from landslide, settlement, or slippage.
3. A report prepared by the Engineering Geologist retained to provide such services in accordance with Section J105.5, including a final description of the geology of the site and any new information disclosed during the grading and the effect of such new information, if any, on the recommendations incorporated in the approved grading plan. The report shall contain a certification by the Engineering Geologist that, to the best of his or her knowledge, the work within the Engineering Geologist's area of responsibility is in accordance with the approved engineering geology report and applicable provisions of this Chapter. The report shall contain a finding regarding the safety of the completed grading and any proposed structures against hazard from landslide, settlement, or slippage. The report shall contain a final as-built geologic map and cross sections depicting all the information collected prior to and during grading.
4. The grading contractor shall certify, on a form prescribed by the Building Official, that the grading conforms to said as-built plan and the approved specifications.
5. When a landscape permit is required by Section 490.1 of the California Department of Water Resources Model Water Efficient Landscape Ordinance, the Landscape Architect shall certify on a form prescribed by the Building Official that the landscaping conforms to approved landscape plans and specifications.

J105.13 Notification of completion. The permittee shall notify the Building Official when the grading operation is ready for final inspection. Final approval shall not be given until all work, including installation of all drainage facilities and their protective devices, and all erosion-control measures have been completed in accordance with the final approved grading plan, and all required reports have been submitted and approved.

J105.14 Change of ownership. Unless otherwise required by the Building Official, when a grading permit has been issued on a site and the owner sells the property prior to final grading approval, the new property owner shall be required to obtain a new grading permit.

SECTION J106 EXCAVATIONS

J106.1 Maximum cut slope. The slope of cut surfaces shall be no steeper than is safe for the intended use, and shall be no steeper than two units horizontal to one unit vertical (50-percent slope) unless the owner or authorized agent furnishes a geotechnical or an engineering geology report, or both justifying a steeper slope. The reports must contain a statement by the Geotechnical Engineer or Engineering Geologist that the site was investigated and an opinion that a steeper slope will be stable and will not create a hazard to public or private property, in conformance with the requirements of Section 111. The Building Official may require the slope of the cut surfaces to be flatter in slope than 2 units horizontal to 1 unit vertical if the Building Official finds it necessary for the stability and safety of the slope.

Exception:

1. A cut surface shall be permitted to be at a slope of 1.5 units horizontal to one unit vertical (67-percent slope) provided that all of the following are met:
   1.1. It is not intended to support structures or surcharges.
   1.2. It is adequately protected against erosion.
   1.3. It is no more than 8 feet (2438 mm) in height.
   1.4. It is approved by the Building Official.
   1.5. Ground water is not encountered.

J106.2 Earth retaining shoring. [DSA-SS & DSA-SS/CC]

J106.2.1 General. *The requirements of this section shall apply to temporary and permanent earth retaining shoring using soldier piles and lagging with or without tie-back anchors in soil or rock, only when existing or new DSASS, DSA-SS/CC or OSHPD 1 or 4 facilities are affected. Shoring used as construction means and methods only, which does not affect existing or new DSA-SS,*

DSA-SS/CC or OSHPD 1 or 4 facilities, are not regulated by DSA or OSHPD and shall satisfy the requirements of the authorities having jurisdiction.

Design, construction, testing and inspection shall satisfy the requirements of this code except as modified in Sections J106.2.2 through J106.2.8.

***J106.2.2 Duration.** Shoring shall be considered temporary when elements of the shoring will be exposed to site conditions for a period of less than one (1) year, and shall be considered permanent otherwise. Permanent shoring shall account for the increase in lateral soil pressure due to earthquake. At the end of the construction period, the existing and new structures shall not rely on the temporary shoring for support in any way. Wood components shall not be used for permanent shoring lasting more than two (2) years. Wood components of the temporary shoring that may affect the performance of permanent structure shall be removed after the shoring is no longer required.*

All components of the shoring shall have corrosion protection or preservative treatment for their expected duration. Wood components of the temporary shoring that will not be removed shall be treated in accordance with AWPA U1 (Commodity Specification A, Use Category 4B and Section 5.2), and shall be identified in accordance with Section 2303.1.8.1.

***J106.2.3 Surcharge.** Surcharge pressure due to footings, traffic or other sources shall be considered in design. If the footing surcharge is located within the semicircular distribution or bulb of earth pressure (when shoring is located close to a footings), lagging shall be designed for lateral earth pressure due to footing surcharge. Soil arching effects may be considered in the design of lagging. Underpinning of the footing may be used in lieu of designing the shoring and lagging for surcharge pressure. Alternatively, continuously contacting drilled pier shafts near the footings shall be permitted. The lateral surcharge design pressure shall be derived using Boussinesq equations modified for the distribution of stresses in an elastic medium due to a uniform, concentrated or line surface load as appropriate and soil arching effects.*

***J106.2.4 Design and testing:** Except for the modifications as set forth in Sections J106.2.4.1 and J106.2.4.2 below, all Prestressed Rock and Soil Tie-back Anchors shall be designed and tested in accordance with PTI Recommendations for Prestressed Rock and Soil Anchors (PTI-2004).*

***J106.2.4.1 Geotechnical requirements**: The geotechnical report for the earth retaining shoring shall address the following:*

1. *Minimum diameter and minimum spacing for the anchors including consideration of group effects.*
2. *Maximum unbonded length and minimum bonded length of the tie-back anchors.*
3. *Maximum recommended anchor tension capacity based upon the soil or rock strength/grout bond and anchor depth/spacing.*
4. *Allowable bond stress at the ground/grout interface and applicable factor of safety for ultimate bond stress for the anchor. For permanent anchors, a minimum factor of safety of 2.0 shall be applied to ground soil interface as required by PTI-2004 Section 6.6.*
5. *Minimum grout pressure for installation and post-grout pressure for the anchor. The presumptive post grout pressure of 300 psi may be used for all soil type.*
6. *Class I corrosion protection is required for all permanent anchors. The geotechnical report shall specify the corrosion protection recommendations for temporary anchors.*
7. *Performance test for the anchors shall be at a minimum of two (2) times the design loads and shall not exceed 80 percent of the specified minimum tensile strength of the anchor rod. A creep test is required for all prestressed anchors that are performance tested. All production anchors shall be tested at 150 percent of design loads and shall not be greater than 70 percent of the specified minimum tensile strength of the anchor rod.*
8. *Earth pressure, surcharge pressure and the seismic increment of earth pressure loading, when applicable.*
9. *Maximum recommended lateral deformation at the top of the soldier pile, at the tie-back anchor locations, and the drilled pier concrete shafts at the lowest grade level.*
10. *Allowable vertical soil bearing pressure friction resistance, and lateral passive soil resistance for the drilled pier concrete shafts and associated factors of safety for these allowable capacities.*
11. *Soil-pier shaft/pile interaction assumptions and lateral soil stiffness to be used in design for drilled pier concrete shaft or pile lateral loads.*
12. *Acceptable drilling methods.*
13. *Geotechnical observation and monitoring recommendations.*

***J106.2.4.2 Structural requirements**:*

1. *Tendons shall be thread-bar anchors conforming to ASTM A 722.*
2. *Anchor design loads shall be based upon the load combinations in Section 1605A.3.1 and shall not exceed 60 percent of the specified minimum tensile strength of the tendons.*
3. *The anchor shall be designed to fail in grout bond to the soil or rock before pullout of the soil wedge.*
4. *Design of shoring system shall account for asbuilt locations of soil anchors considering all specified construction tolerances in Section J106.2.8.*
5. *Design of shoring system shall account for both short and long-term deformation.*

***J106.2.4.3 Testing of tie-back anchors**:*

1. *The geotechnical engineer shall keep a record at job site of all test loads, total anchor movement, and report their accuracy.*
2. *If a tie-back anchor initially fails the testing requirements, the anchor shall be permitted to be regrouted and retested. If anchor continues to fail, the followings steps shall be taken:*

a. *The contractor shall determine the cause of failure – variations of the soil conditions, installation methods, materials, etc.*
b. *The contractor shall propose a solution to remedy the problem. The proposed solution will need to be reviewed and approved by the geotechnical engineer, shoring design engineer and building official.*

3. *After a satisfactory test, each anchor shall be locked-off in accordance with Section 8.4 of PTI 2004.*
4. *The shoring design engineer shall specify design loads for each anchor.*

***J106.2.5 Construction.** The construction procedure shall address the following:*

1. *Holes drilled for piles/tie-back anchors shall be done without detrimental loss of ground, sloughing or caving of materials and without endangering previously installed shoring members or existing foundations.*
2. *Drilling of earth anchor shafts for tie-backs shall occur when the drill bench reaches two to three feet below the level of the tie-back pockets.*
3. *Casing or other methods shall be used where necessary to prevent loss of ground and collapse of the hole.*
4. *The drill cuttings from earth anchor shaft shall be removed prior to anchor installation.*
5. *Unless tremie methods are used, all water and*
1. *loose materials shall be removed from the holes prior to installing piles/tie-backs.*
6. *Tie-back anchor rods with attached centralizing devices shall be installed into the shaft or through the drill casing. Centralizing device shall not restrict movement of the grout.*
7. *After lagging installation, voids between lagging and soil shall be backfilled immediately to the full height of lagging.*
8. *The soldier piles shall be placed within specified tolerances in the drilled hole and braced against displacement during grouting. Fill shafts with concrete up to top of footing elevation, rest of the shaft can generally be filled with lean concrete. Excavation for lagging shall not be started until concrete has achieved sufficient strength for all anticipated loads as determined by the shoring design engineer.*
9. *Where boulders and/or cobbles have been identified in the geotechnical reports, contractor shall be prepared to address*

boulders and/or cobbles that may be encountered during the drilling of soldier piles and tie-back anchors.

10. *The grouting equipment shall produce grout free of lumps and indispensed cement. The grouting equipment shall be sized to enable the grout to be pumped in continuous operation. The mixer shall be capable of continuously agitating the grout.*
11. *The quantity of grout and grout pressure shall be recorded. The grout pressure shall be controlled to prevent excessive heave in soils or fracturing rock formations.*
12. *If post-grouting is required, post-grouting operation shall be performed after initial grout has set for 24 hours in the bond length only. Tie-backs shall be grouted over a sufficient length (anchor bond length) to transfer the maximum anchor force to the anchor grout.*
13. *Testing of anchors may be performed after postgrouting operations, provided grout has reached strength of 3,000 psi as required by PTI-2004 Section 6.11.*
14. *Anchor rods shall be tensioned straight and true. Excavation directly below the anchors shall not continue before those anchors are tested.*

J106.2.6 Inspection, survey monitoring and observation.

1. *The shoring design engineer or his designee shall make periodic inspections of the job site for the purpose of observing the installation of shoring system, testing of tie-back anchors and monitoring of survey.*
2. *Testing, inspection and observation shall be in accordance with testing, inspection and observation requirements approved by the building official. The following activities and materials shall be tested, inspected, or observed by the special inspector and geotechnical engineer:*
   a. *Sampling and testing of concrete in soldier pile and tie-back anchor shafts.*
   b. *Fabrication of tie-back anchor pockets on soldier beams*
   c. *Installation and testing of tie-back anchors.*
   d. *Survey monitoring of soldier pile and tieback load cells.*
   e. *Survey monitoring of existing buildings.*
3. *A complete and accurate record of all soldier pile locations, depths, concrete strengths, tie-back locations and lengths, tie-back grout strength, quantity of concrete per pile, quantity of grout per tie-back and applied tie-back loads shall be maintained by the special inspector and geotechnical engineer. The shoring design engineer shall be notified of any unusual conditions encountered during installation.*
4. *Calibration data for each test jack, pressure gauge and master pressure gauge shall be verified by the special inspector and geotechnical engineer. The calibration tests shall be performed by an independent testing laboratory and within 120 calender days of the data submitted.*
5. *Monitoring points shall be established at the top and at the anchor heads of selected soldier piles and at intermediate intervals as considered appropriate by the geotechnical engineer.*
6. *Control points shall be established outside the area of influence of the shoring system to ensure the accuracy of the monitoring readings.*
7. *The periodic basis of shoring monitoring, as a minumum, shall be as follows:*
   a. *Intitial monitoring shall be performed prior to any excavation.*
   b. *Once excavation has begun, the periodic readings shall be taken weekly until excavation reaches the estimated subgrade elevation and the permanent foundation is complete.*
   c. *If performance of the shoring is within established guidelines, shoring design engineer may permit the periodic readings to be biweekly. Once initiated, bi-weekly readings shall continue until the building slab at ground floor level is completed and capable of transmitting lateral loads to the permanent structure. Thereafter, readings can be monthly.*
   d. *Where the building has been designed to resist lateral earth pressures, the periodic monitoring of the soldier piles and adjacent structure can be discontinued once the ground floor diaphragm and subterranean portion of the structure is capable of resisting lateral soil loads and approved by the shoring design engineer, geotechnical engineer and building official.*
   e. *Additional readings shall be taken when requested by the special inspector, shoring design engineer, geotechnical engineer or building official.*
8. *Monitoring reading shall be submitted to the shoring design engineer, engineer in responsible charge, and building official within three working days after they are conducted. Monitoring readings shall be accurate to within 0.01 feet. Results are to be submitted in tabular form showing at least the intial date of monitoring and reading, current monitoring date and reading and difference between the two readings.*
9. *If the total cummulative horizontal or vertical movement (from start of construction) of the existing buildings reaches 1/2 inch or soldier piles reaches 1 inch all excavation activities shall be suspended. The geotechnical and shoring design engineer shall determine the cause of movement, if any, and recommend corrective measures, if necessary, before excavation continues.*
10. *If the total cumulative horizontal or vertical movement (from start of construction) of the existing buildings reaches 3/4 inch or soldier piles reaches 11/2 inches all excavation activities shall be suspended until the causes, if any, can be determined. Supplemental shoring shall be devised to eliminate further movement and the building official shall review and approve the supplemental shoring before excavation continues.*
11. *Monitoring of tie-back anchor loads:*
    a. *Load cells shall be installed at the tie-back heads adjacent to buildings at maximum interval of 50 feet, with a minimum of one load cells per wall.*
    b. *Load cell readings shall be taken once a day during excavation and once a week during the remainder of construction.*
    c. *Load cell readings shall be submitted to the geotechnical engineer, shoring design engineer, engineer in responsible charge and building official.*
    d. *Load cell readings can be terminated once the temporary shoring no longer provides support for the buildings.*

J106.2.7 Monitoring of existing DSA-SS, DSA-SS/CC, and OSHPD 1 and 4 structures

1. *The contractor shall complete a written and photographic log of all existing DSA-SS, DSA-SS/CC, and OSHPD 1 & 4 structures within 100 ft or three times depth of shoring, prior to construction. A licensed surveyor shall document all existing substantial cracks in adjacent existing structures.*
2. *The contractor shall document existing condition of wall cracks adjacent to shoring walls prior to start of construction.*
3. *The contractor shall monitor existing walls for movement or cracking that may result from adjacent shoring.*
4. *If excessive movement or visible cracking occurs, the contractor shall stop work and shore/reinforce excavation and contact the shoring design engineer and building official.*
5. *Monitoring of the existing structure shall be at reasonable intervals as required by the registered design professional subject to approval of the building official. Monitoring shall be performed by a licensed surveyor and shall consist of vertical and lateral movement of the existing structures. Prior tostarting shoring installation a preconstruction meeting shall take place between the contractor, shoring design engineer, surveyor, geotechnical engineer and building official to identify monitoring locations on existing buildings.*
6. *If in the opinion of the building official or shoring design engineer, monitoring data indicate excessive movement or other distress, all excavation shall cease until the geotechnical engineer and shoring design engineer investigate the situation and make recommendations for remediation or continuing.*
7. *All reading and measurements shall be submitted to the building official and shoring design engineer.*

J106.2.8 Tolerances. *The following tolerances shall be specified on the construction documents.*

1. *Soldier piles:*

   i. *Horizontal and vertical construction tolerances for the soldier pile locations.*
   ii. *Soldier pile plumbness requirements (angle with vertical line).*
2. *Tie-back anchors:*
   i. *Allowable deviation of anchor projected angle from specified vertical and horizontal design projected angle.*
   ii. *Anchor clearance to the existing/new utilities and structures.*

SECTION J107 FILLS

J107.1 General. Unless otherwise recommended in the geotechnical report, fills shall comply with the provisions of this Section.

Exception: The Building Official may permit a deviation from the provisions of this Chapter for minor fills not intended to support structures, where no geotechnical report has been prepared.

J107.2 Surface preparation. Fill slopes shall not be constructed on natural slopes steeper than 2 units horizontal to 1 unit vertical (50 percent slope). The ground surface shall be prepared to receive fill by removing vegetation, topsoil and other unsuitable materials (including any existing fill that does not meet the requirements of this Chapter), and scarifying the ground to provide a bond with the fill material.

Subdrains shall be provided under all fills placed in natural drainage courses and in other locations where seepage is evident, except where the Geotechnical Engineer or Engineering Geologist recommends otherwise. Such sub-drainage systems shall be of a material and design approved by the Geotechnical Engineer and acceptable to the Building Official. The Geotechnical Engineer shall provide continuous inspection during the process of subdrain installations. The location of the subdrains shall be shown on a plan prepared by the Geotechnical Engineer. Excavations for the subdrains shall be inspected by the Engineering Geologist when such subdrains are included in the recommendations of the Engineering Geologist.

J107.3 Benching. Where existing grade is at a slope steeper than five units horizontal to one unit vertical (20-percent slope) and the depth of the fill exceeds 5 feet (1524 mm) benching shall be provided into sound bedrock or other competent material as determined by the Geotechnical Engineer. The ground preparation shall be in accordance with Figure J107.3 or as determined by the Geotechnical Engineer. When fill is to be placed over a cut, a key shall be provided which is at least 10 feet (3048 mm) in width and 2 feet (610 mm) in depth. The area beyond the toe of fill shall be sloped for sheet overflow or a paved drain shall be constructed thereon. The Geotechnical Engineer or Engineering Geologist or both shall inspect and approve the cut as being suitable for the foundation and placement of fill material before any fill material is placed on the excavation.

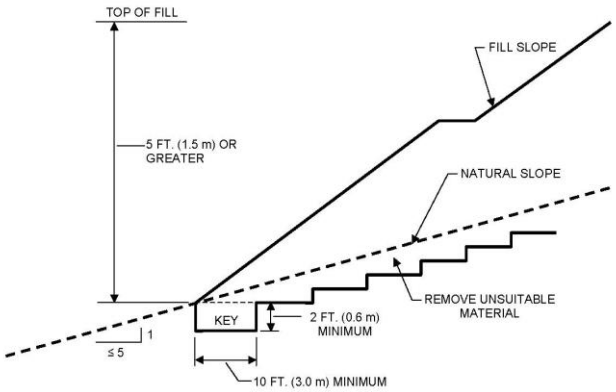


FIGURE J107.3
BENCHING DETAILS

J107.4 Fill material. Fill material shall not include organic, frozen or other deleterious materials. Unless approved by the Building Official, no rock or similar irreducible material greater than 12 inches (305 mm) in any dimension shall be included in fills.

Exception: The Building Official may permit placement of larger rock when the Geotechnical Engineer properly devises and recommends a method of placement, and continuously inspects the placement and approves the fill stability.

The following requirements shall also apply:

1. Prior to issuance of the grading permit, potential rock disposal areas shall be delineated on the grading plan.
2. Rock sizes greater than 12 inches (0.3 m) in maximum dimension shall be 10 feet (3.0 m) or more below grade, measured vertically.
3. Rocks shall be placed so as to assure filling of all voids with well-graded soil.
4. The reports submitted by the Geotechnical Engineer shall acknowledge the placement of the oversized material and whether the work was performed in accordance with the engineer's recommendations and the approved plans.
5. The location of oversized rock dispersal areas shall be shown on the as-built plan.

J107.5 Compaction. All fill material shall be compacted to a minimum of 90 percent of maximum density as determined by ASTM D 1557, Modified Proctor, in lifts not exceeding 12 inches (305 mm) in depth within 40 feet (12.2 m) below finished grade and 93 percent of maximum dry density deeper than 40 feet (12.2 m) below finished grade, unless a lower relative compaction (not less than 90 percent of maximum dry density) is justified by the Geotechnical Engineer and approved by the Building Official. Where ASTM D 1557, Modified Proctor is not applicable, a test acceptable to the Building Official shall be used.

Field density shall be determined by a method acceptable to the Building Official. However, not less than ten percent of the required density tests, uniformly distributed, shall be obtained by the Sand Cone Method.

Fill slopes steeper than 2 units horizontal to 1 unit vertical (50 percent slope) shall be constructed by the placement of soil a sufficient distance beyond the proposed finish slope to allow compaction equipment to operate at the outer surface limits of the final slope surface. The excess fill is to be removed prior to completion or rough grading. Other construction procedures may be utilized when it is first shown to the satisfaction of the Building Official that the angle of slope, construction method and other factors will comply with the intent of this Section.

J107.6 Maximum fill slope. The slope of fill surfaces shall be no steeper than is safe for the intended use. Fill slopes steeper than two units horizontal to one unit vertical (50-percent slope) shall be justified by geotechnical reports conforming to the requirements of Section 111, containing a statement by the Geotechnical Engineer that the site has been investigated and an opinion that a steeper fill slope will be stable and will not create a hazard to public or private property. Substantiating calculations and supporting data may be required where the Building Official determines that such information is necessary to verify the stability and safety of the proposed slope. The Building Official may require the fill slope to be constructed with a face flatter in slope than 2 units horizontal to 1 unit vertical (50 percent slope) if the Building Official finds it necessary for stability and safety of the slope.

J107.7 Slopes to receive fill. Where fill is to be placed above the top of an existing slope steeper than 3 units horizontal to 1 unit vertical (33 percent slope), the toe of the fill shall be setback from the top edge of the existing slope a minimum distance of 6 feet (1.8 m) measured horizontally or such other distance as may be specifically recommended by a Geotechnical Engineer or Engineering Geologist and approved by the Building Official.

J107.8 Inspection of fill. For engineered grading, the Geotechnical Engineer shall provide sufficient inspections during the preparation of the natural ground and the placement and compaction of the fill to ensure that the work is performed in accordance with the conditions of plan approval and the appropriate requirements of this Chapter. In addition to the above, the Geotechnical Engineer shall provide continuous inspection

during the entire fill placement and compaction of fills that will exceed a vertical height or depth of 30 feet (9.1 m) or result in a slope surface steeper than 2 units horizontal to 1 unit vertical (50 percent slope).

J107.9 Testing of fills. Sufficient tests of the fill soils shall be made to determine the density and to verify compliance of the soil properties with the design requirements. This includes soil types and shear strengths in accordance with Section J111, Referenced Standards.

SECTION J108 SETBACKS

J108.1 General. Cut and fill slopes shall be set back from the property lines in accordance with this Section. Setback dimensions shall be measured perpendicular to the property line and shall be as shown in Figure J108.1, unless substantiating data is submitted justifying reduced setbacks and reduced setbacks are recommended in a geotechnical engineering and engineering geology report approved by the Building Official.

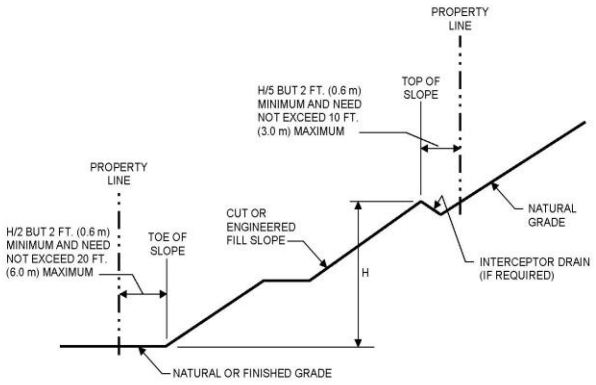


FIGURE J108.1
SETBACK DIMENSIONS

J108.2 Top of slope. The setback at the top of a cut slope shall not be less than that shown in Figure J108.1, or than is required to accommodate any required interceptor drains, whichever is greater. For graded slopes the property line between adjacent lots shall be at the apex of the berm at the top of the slope. Property lines between adjacent lots shall not be located on a graded slope steeper than 5 units horizontal to 1 unit vertical (20 percent slope).

J108.3 Toe of fill slope protection. The setback from the toe of a fill slope shall not be less than that shown by Figure J108.1. Where required to protect adjacent properties at the toe of a slope from adverse effects of the grading, additional protection, approved by the Building Official, shall be included. Such protection may include but shall not be limited to:

1. Setbacks greater than those required by Figure J108.1.
2. Provisions for retaining walls or similar construction.
3. Erosion protection of the fill slopes.
4. Provision for the control of surface waters.

J108.4 Alternate setbacks. The Building Official may approve alternate setbacks if he or she determines that no hazard to life or property will be created or increased. The Building Official may require an investigation and recommendation by a qualified engineer or Engineering Geologist to justify any proposed alternate setback.

SECTION J109 DRAINAGE AND TERRACING

J109.1 General. Unless otherwise recommended by a Civil Engineer and approved by the Building Official, drainage facilities and terracing shall be provided in accordance with the requirements of Section J109.2 for all cut and fill slopes steeper than 3 units horizontal to 1 unit vertical (33 percent slope).

For slopes flatter than 3 units horizontal to 1 unit vertical (33 percent slope) and steeper than 5 units horizontal to 1 unit vertical (20 percent slope) a paved swale or ditch shall be installed at 30 foot (9.1 m) vertical intervals to control surface drainage and debris. Swales shall be sized based on contributory area and have adequate capacity to convey intercepted waters to the point of disposal as defined in Section J109.5. Swales must be paved with reinforced concrete not less than 3 inches (0.08 m) in thickness, reinforced with 6-inch (0.2 m) by 6-inch (0.2 m) No.10 by No.10 welded wire fabric or equivalent reinforcing centered in the concrete slab or an equivalent approved by the Building Official. Swales must have a minimum flow line depth of 1 foot (0.3 m) and a minimum paved width of 18 inches (0.5 m). Swales shall have a minimum gradient of not less than 5 percent. There shall be no reduction in grade along the direction of flow unless the velocity of flow is such that slope debris will remain in suspension on the reduced grade.

J109.2 Drainage terraces. Drainage terraces at least 8 feet (2.4 m) in width shall be established at not more than 30-foot (9144 mm) vertical intervals on all cut or fill slopes to control surface drainage and debris.

When only one terrace is required, it shall be at midheight. For cut or fill slopes greater than 100 feet (30.5 m) and up to 120 feet (36.6 m) in vertical height, one terrace at approximately midheight shall be 20 feet (6.1 m) in width. Terrace widths and spacing for cut and fill slopes greater than 120 feet (36.6 m) in height shall be designed by the Civil Engineer and approved by the Building Official. Suitable access shall be provided to permit proper cleaning and maintenance.

Drainage swales on terraces shall have a longitudinal grade of not less than 5 percent nor more than 12 percent and a minimum depth of 1-foot (0.3 m) at the flow line. There shall be no reduction in grade along the direction of flow unless the velocity of flow is such that slope debris will remain in suspension on the reduced grade. Drainage swales must be paved with reinforced concrete not less than 3 inches (0.8 m) in thickness, reinforced with 6-inch (0.2 m) by 6-inch (0.2 m) No. 10 by No. 10 welded wire fabric or equivalent reinforcing centered in the concrete slab or an approved equal paving. Drainage swales shall have a minimum depth at the deepest point of 1 foot (0.3 m) and a minimum paved width of 5 feet (1.5 m). Drainage swales on terraces shall be sized based on contributory area and have adequate capacity to convey intercepted waters to the point of disposal as defined in Section J109.5. Downdrains or drainage outlets shall be provided at approximately 300-foot (91.4 m) intervals along the drainage terrace or at equivalent locations. Downdrains and drainage outlets shall be of approved materials and of adequate capacity to convey the intercepted waters to the point of disposal as defined in Section J109.5.

J109.3 Interceptor drains and overflow protection. Berms, interceptor drains, swales or other devices shall be installed along the top of cut slopes to prevent surface waters from overflowing onto and damaging the face of a slope. Berms used for slope protection shall not be less than 12 inches (0.3 m) above the level of the pad and shall slope back at least 4 feet (1.2 m) from the top of the slope.

Interceptor drains shall be installed along the top of graded slopes greater than 5 feet in height receiving drainage from a slope with a tributary width greater than 30 feet (9.1 m) measured horizontally. They shall have a minimum depth of 1 foot (305 mm) and a minimum width of 3 feet (915 mm). The slope shall be approved by the Building Official, but shall not be less than 50 units horizontal to 1 unit vertical (2 percent). The drain shall be paved with concrete not less than 3 inches (76 mm) in thickness, or by other materials suitable to the application and reinforced as required for drainage terraces. Discharge from the drain shall be accomplished in a manner to prevent erosion and shall be approved by the Building Official.

J109.4 Drainage across property lines. Drainage across property lines shall not exceed that which existed prior to grading. Excess or concentrated drainage shall be contained on site or directed to an approved drainage facility. Erosion of the ground in the area of discharge shall be prevented by installation of nonerosive down drains or other devices.

J109.5 Disposal. All drainage facilities shall be designed to convey waters to the nearest practicable street, storm drain, or natural watercourse or drainage way approved by the Building

Official or other appropriate governmental agency provided that the discharge of such waters at that location will not create or increase a hazard to life or property. Erosion of the ground in the area of discharge shall be prevented by installation of non-erosive down drains or other devices. Desilting basins, filter barriers or other methods, as approved by the Building Official, shall be utilized to remove sediments from surface waters before such waters are allowed to enter streets, storm drains, or natural watercourses. If the drainage device discharges onto natural ground, riprap or a similar energy dissipator may be required.

Building pads shall have a minimum drainage gradient of 2 percent toward an approved drainage facility or a public street unless otherwise directed by the Building Official. A lesser slope may be approved by the Building Official for sites graded in relatively flat terrain, or where special drainage provisions are made, when the Building Official finds such modification will not result in a hazard to life or property.

SECTION J110 SLOPE PLANTING AND EROSION CONTROL

J110.1 General. The faces of cut and fill slopes shall be prepared and maintained to control erosion. This control shall consist of effective planting, erosion control blankets, soil stabilizers or other means as approved by the Building Official.

Exception: Erosion control measures need not be provided on cut slopes not subject to erosion due to the erosion-resistant character of the materials as approved by the Project Consultants, to the satisfaction of the Building Official. Erosion control for the slopes shall be installed as soon as practicable and prior to calling for final inspection.

J110.2 Other devices. Where necessary, check dams, cribbing, riprap or other devices or methods shall be employed to control erosion and provide safety.

J110.3 Planting. The surface of all cut slopes more than 5 feet (1.5 m) in height and fill slopes more than 3 feet (0.9 m) in height shall be protected against damage from erosion by planting with grass or ground cover plants. Slopes exceeding 15 feet (4.6 m) in vertical height shall also be planted with shrubs, spaced at not to exceed 10 feet (3 m) on centers, or trees, spaced at not to exceed 20 feet (6.1 m) on centers; or a combination of shrubs and trees at an equivalent spacing, in addition to the grass or ground cover plants. The plants selected and planting methods used shall be suitable for the soil and climatic conditions of the site.

Plant material shall be selected which will produce a coverage of permanent planting to effectively control erosion. Consideration shall be given to deep-rooted plant material needing limited watering, maintenance, high root to shoot ratio, wind susceptibility, and fire-retardant characteristics. All plant materials must be approved by the Building Official.

Planting may be modified for the site if specific recommendations are provided by both the Geotechnical Engineer and a Landscape Architect. Specific recommendations must consider soils and climatic conditions, irrigation requirements, planting methods, fire-retardant characteristics, water efficiency, maintenance needs, and other regulatory requirements. Recommendations must include a finding that the alternative planting will provide a permanent and effective method of erosion control. Modifications to planting must be approved by the Building Official prior to installation.

J110.4 Irrigation. Slopes required to be planted by Section J110.3 shall be provided with an approved system of irrigation that is designed to cover all portions of the slope. Irrigation system plans shall be submitted to and approved by the Building Official prior to installation. A functional test of the system may be required.

For slopes less than 20 feet (6.1 m) in vertical height, hose bibs to permit hand watering will be acceptable if such hose bibs are installed at conveniently accessible locations where a hose no longer than 50 feet (15.2 m) is necessary for irrigation.

Irrigation requirements may be modified for the site if specific recommendations are provided by both the Geotechnical Engineer and a Landscape Architect. Specific recommendations must consider soils and climatic conditions, plant types, planting methods, fire-retardant characteristics, water efficiency, maintenance needs, and other regulatory requirements. Recommendations must include a finding that the alternative irrigation method will sustain the proposed planting and provide a permanent and effective method of erosion control. Modifications for irrigation systems must be approved by the Building Official prior to installation.

J110.5 Plans and specifications. Planting and irrigation plans shall be submitted for slopes which are required to be planted and irrigated pursuant to Sections J110.3 and J110.4. Except as otherwise required by the Building Official for minor grading, the plans for slopes 20 feet (6.1 m) or more in vertical height shall be prepared and signed by a Civil Engineer or Landscape Architect. If requested by the Building Official, planting and irrigation details shall be included on the grading plan.

J110.6 Rodent control. Fill slopes shall be protected from potential slope damage by a preventative program of rodent control.

J110.7 Release of security. The planting and irrigation systems required by this Section shall be installed as soon as practical after rough grading. Prior to final approval of grading and before the release of the grading security, the planting shall be well established and growing on the slopes and there shall be evidence of an effective rodent control program.

J110.8 National Pollutant Discharge Elimination System (NPDES) compliance.

J110.8.1 General. All grading plans and permits and the owner of any property on which such grading is performed shall comply with the provisions of this Section for NPDES compliance.

All best management practices shall be installed before grading begins or as instructed in writing by the Building Official for unpermitted grading as defined by Section J103.3. As grading progresses, all best management practices shall be updated as necessary to prevent erosion and to control construction-related pollutants from discharging from the site. All best management practices shall be maintained in good working order to the satisfaction of the Building Official until final grading approval has been granted by the Building Official and all permanent drainage and erosion control systems, if required, are in place. Failure to comply with this Section is subject to “Noncompliance Penalties” pursuant to Section J110.8.5. Payment of a penalty shall not relieve any persons from fully complying with the requirements of this Code in the execution of the work.

J110.8.2 Storm Water Pollution Prevention Plan (SWPPP). The Building Official may require an SWPPP. The SWPPP shall contain details of best management practices, including desilting basins or other temporary drainage or control measures, or both, as may be necessary to control construction-related pollutants which originate from the site as a result of construction-related activities. When the Building Official requires an SWPPP, no grading permit shall be issued until the SWPPP has been submitted to and approved by the Building Official.

For unpermitted grading as defined by Section J103.3 upon written request an SWPPP in compliance with the provisions of this Section and Section 106.4.3 for NPDES compliance shall be submitted to the Building Official. Failure to comply with this Section is subject to “Noncompliance Penalties” per Section J110.8.5. Payment of a penalty shall not relieve any persons from fully complying with the requirements of this Code in the execution of the work.

J110.8.3 Erosion and Sediment Control Plans (ESCP). Where a grading permit is issued and the Building Official determines that the grading will not be completed prior to November 1, the owner of the site on which the grading is being performed shall, on or before October 1, file or cause to be filed with the Building Official an ESCP. The ESCP shall include specific best management practices to minimize the transport of sediment and protect public and private property from the effects of erosion, flooding, or the deposition of mud, debris, or construction related pollutants. The best management practices shown on the ESCP shall be installed on or before October 15. The plans shall be revised annually or as required by the Building Official to reflect the current site conditions.

The ESCP shall be accompanied by an application for plan checking services and plan-checking fees in an amount

determined by the Building Official, up to but not exceeding 10 percent of the original grading permit fee.

Failure to comply with this Section is subject to "Noncompliance Penalties" pursuant to Section J110.8.5. Payment of a penalty shall not relieve any persons from fully complying with the requirements of this Code in the execution of the work.

J110.8.4 Storm Water Pollution Prevention Plan (SWPPP), effect of noncompliance. Should the owner fail to submit the SWPPP or the ESCP as required by Section J110.8 or fails to install the best management practices, it shall be deemed that a default has occurred under the conditions of the grading permit security. The Building Official may thereafter enter the property for the purpose of installing, by County forces or by other means, the drainage, erosion control, and other devices shown on the approved plans, or if there are no approved plans, as the Building Official may deem necessary to protect adjoining property from the effects of erosion, flooding, or the deposition of mud, debris or constructed-related pollutants.

The Building Official shall also have the authority to impose and collect the penalties imposed by Section J110.8.5. Payment of a penalty shall not relieve any persons from fully complying with the requirements of this Code in the execution of the work.

J110.8.5 Noncompliance penalties. The amount of the penalties shall be as follows:

1. If an SWPPP or an ESCP is not submitted as prescribed in Sections J110.8.2 and J110.8.3:

Grading Permit Volume	Penalty
1–10,000 cubic yards (1–7645.5 m3)	$50.00 per day
10,001–100,000 cubic yards (7646.3–76 455 m3)	$250.00 per day
More than 100,000 cubic yards (76 455 m3)	$500.00 per day

2. If the best management practices for storm water pollution prevention and wet weather erosion control, as approved by the Building Official, are not installed as prescribed in this Section J110.8:

Grading Permit Volume	Penalty
1–10,000 cubic yards (1–7645.5 m3)	$100.00 per day
10,001–100,000 cubic yards (7646.3–76 455 m3)	$250.00 per day
More than 100,000 cubic yards (76 455 m3)	$500.00 per day

NOTE: See Section 108 for inspection request requirements.

SECTION J111 REFERENCED STANDARDS

These regulations establish minimum standards and are not intended to prevent the use of alternate materials, methods or means of conforming to such standards, provided such alternate has been approved by the Building Official.

The Building Official shall approve such an alternate provided he or she determines that the alternate is, for the purpose intended, at least the equivalent of that prescribed in this Code in quality, strength, effectiveness, durability and safety.

The Building Official shall require that sufficient evidence or proof be submitted to substantiate any claims regarding the alternate.

The standards listed below are recognized standards. Compliance with these recognized standards shall be prima facie evidence of compliance with the standards set forth in Sections J104 and J107.

ASTM D 1557 – Latest Revision	Laboratory Characteristics Compaction of Soil Using Modified Effort	J107.**5**
ASTM D 1556 – Latest Revision	Density and Unit Weight of Soils In Place by the Sand Cone Method	J104.2.3, J104.3 and J107.9
ASTM D 2167 – Latest Revision	Density and Unit Weight of Soils In Place by the Rubber Balloon Method	J104.2.3, J104.3 and J107.9
ASTM D 2937 – Latest Revision	Density of Soils in Place by theDrive Cylinder Method	J104.2.3, J104.3 and J107.9
ASTM D 2922 – Latest Revision	Density of Soil and Soil Aggregate In Place by Nuclear Methods	J104.2.3, J104.3 and J107.9
ASTM D 3017 – Latest Revision	Water Content of Soil and Rockin Place by Nuclear Methods	J104.2.3, J104.3 and J107.9

SECTION J112 VIBRO STONE COLUMNS FOR GROUND IMPROVEMENT [DSA-SS & DSA-SS/CC]

J112.1 General. *This section shall apply to vibro stone columns(VSCs) for ground improvement using unbounded aggregate materials. Vibro stone column provisions in this section are intended to increase bearing capacity, reduce settlements and mitigate liquefaction for shallow foundations. These requirements shall not be used for grouted or bonded stone columns, ground improvement for deep foundation elements, or changing site class. VSCs shall not be considered a deep foundation element. Ground improvement shall be installed under the entire building/structure footprint and not under isolated foundation elements only. Design, construction, testing and inspection shall satisfy the requirements of this code except as modified in Sections J112.2 through J112.5.*

J112.2 Geotechnical report. *The geotechnical report shall specify vibro stone column requirements to ensure uniformity in total and differential immediate settlement, long term settlement and earthquake induced settlement.*

1. *Soil compaction shall be in accordance with California Geological Survey (CGS) Special Publication 117A (SP-117A): Guidelines for Evaluating and Mitigating Seismic Hazard in California.*
2. *Area replacement ratio for the compaction elements and the basis of its determination shall be explained. Minimum factor of safety for soil compaction shall be in accordance with SP-117A.*
3. *Depth of soil compaction elements and extent beyond the footprint of structures/foundation shall be defined. Extent beyond the foundation shall be half the depth of the VSCs with a minimum of 10 ft or an approved alternative.*
4. *Minimum diameter and maximum spacing of soil compaction elements shall be specified. VSCs shall not be less than 2 feet in diameter, and center to center spacing shall not exceed 8 feet.*
5. *The modulus of subgrade reactions for shallow foundations shall account for the presence of compaction elements.*
6. *The modulus of subgrade reactions, long-term settlement and post-earthquake settlement shall be specified along with expected total and differential settlements for design.*
7. *The acceptance criteria for the cone penetration test (CPT) in accordance with ASTM D 3441 complemented by the standard penetration test (SPT) in accordance with ASTM D 1586, if necessary, to verify soil improvement shall be specified*
8. *The requirements for special inspection and observation by the geotechnical engineer shall be specified.*
9. *A final verified report (FVR) documenting the installation of the ground improvement system and confirming that the ground improvement acceptance criteria have been met shall be prepared by the geotechnical engineer and submitted to the enforcement agency for review and approval.*

J112.3 Shallow foundations. *VSCs under the shallow foundation shall be located symmetrically around the centroid of the footing or load.*

1. *There shall be a minimum of four stone columns under each isolated or continuous/combined footing or approved equivalent.*
2. *The VSCs or deep foundation elements shall not be used to resist tension or overturning uplift from the shallow foundations.*
3. *The foundation design for the shallow foundation shall consider the increased vertical stiffness of the VSCs as point supports for analysis, unless it is substantiated that the installation of the*

VSCs result in improvement of the surrounding soils such that the modulus of subgrade reaction, long term settlement, and post-earthquake settlement can be considered uniform throughout.

J112.4 Installation. *VSCs shall be installed with vibratory probes. Vertical columns of compacted unbounded aggregate shall be formed through the soils to be improved by adding gravel near the tip of the vibrator and progressively raising and repenetrating the vibrator which will results in the gravel being pushed into the surrounding soil. Gravel aggregate for VSCs shall be well graded with a maximum size of 6 inches and not more than 10 percent smaller than 3/8 inch after compaction.*

J112.5 Construction documents. *Construction documents for VSCs, as a minimum, shall include the following:*

1. *Size, depth and location of VSCs.*
2. *Extent of soil improvements along with building/structure foundation outlines.*
3. *Field verification requirements and acceptance criteria using CPT/SPT.*
4. *The locations where CPT/SPT shall be performed.*
5. *The testing, inspection and observation (TIO) program shall indicate the inspection and observation required for the VSCs.*

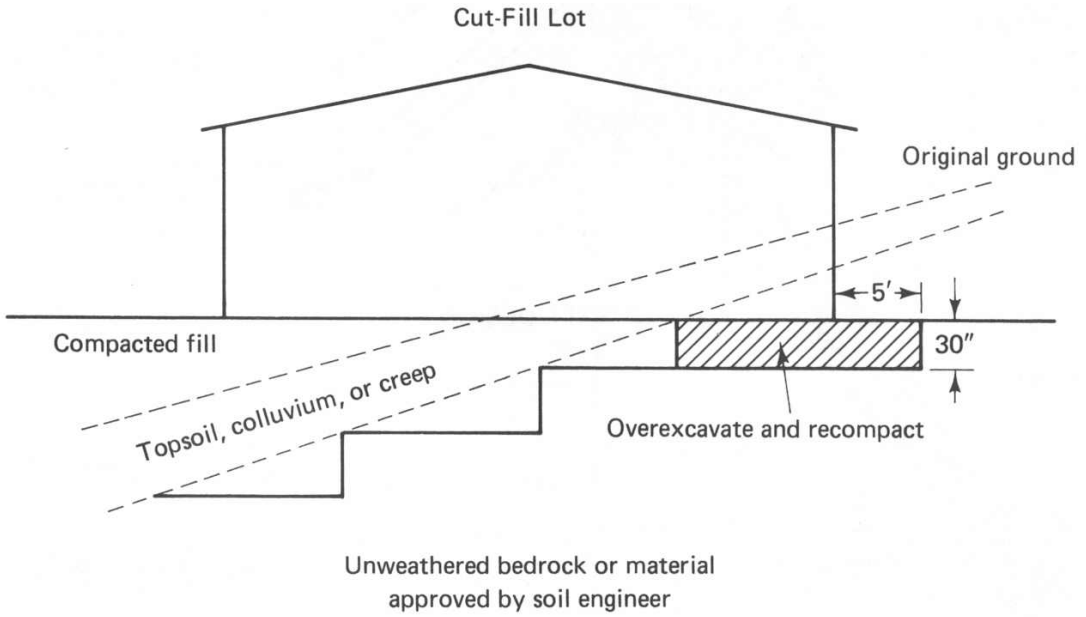


FIGURE 1 – TYPICAL HILLSIDE CUT OVER FILL LOT

Note: Intended only as a general guideline. For specific site recommendations, a soils engineer should be consulted.

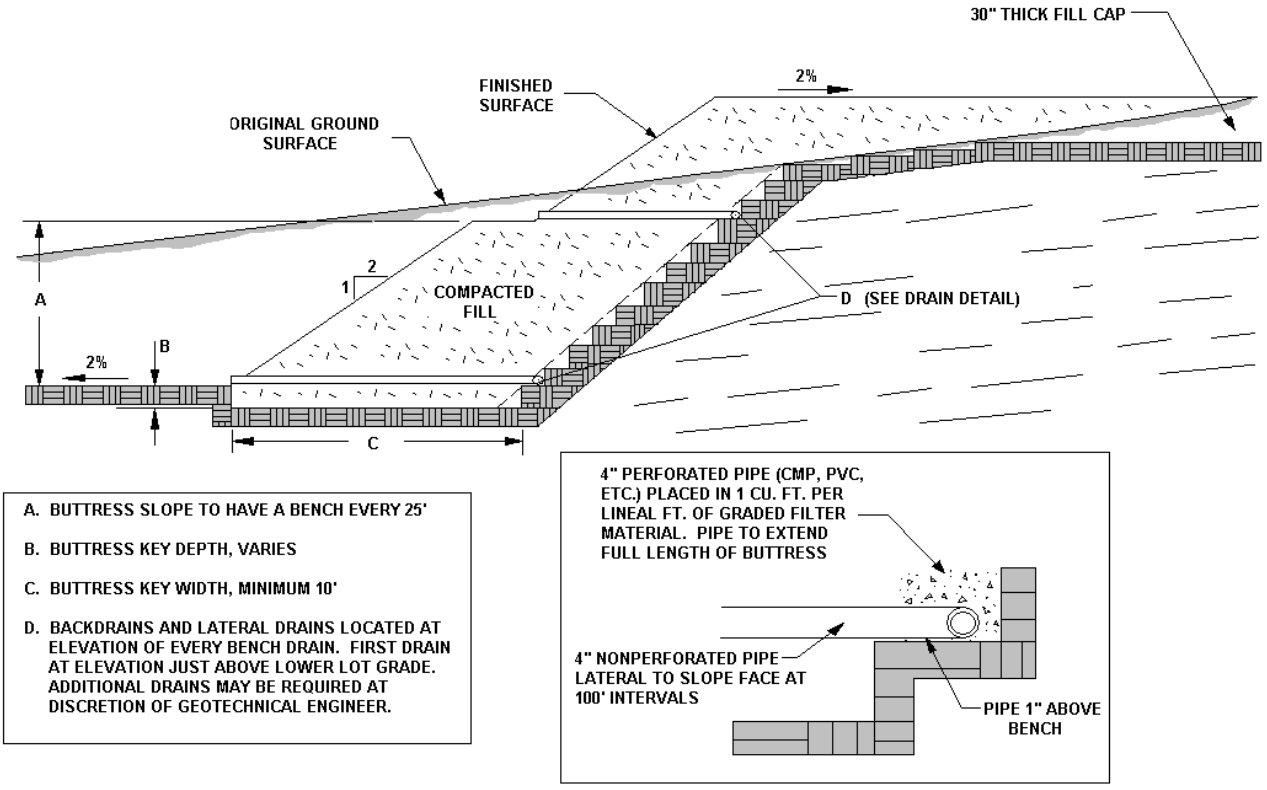


FIGURE 2 – TYPICAL BUTTRESS FILL SECTION

Note: Intended only as a general guideline. For specific site recommendations, a soils engineer should be consulted.

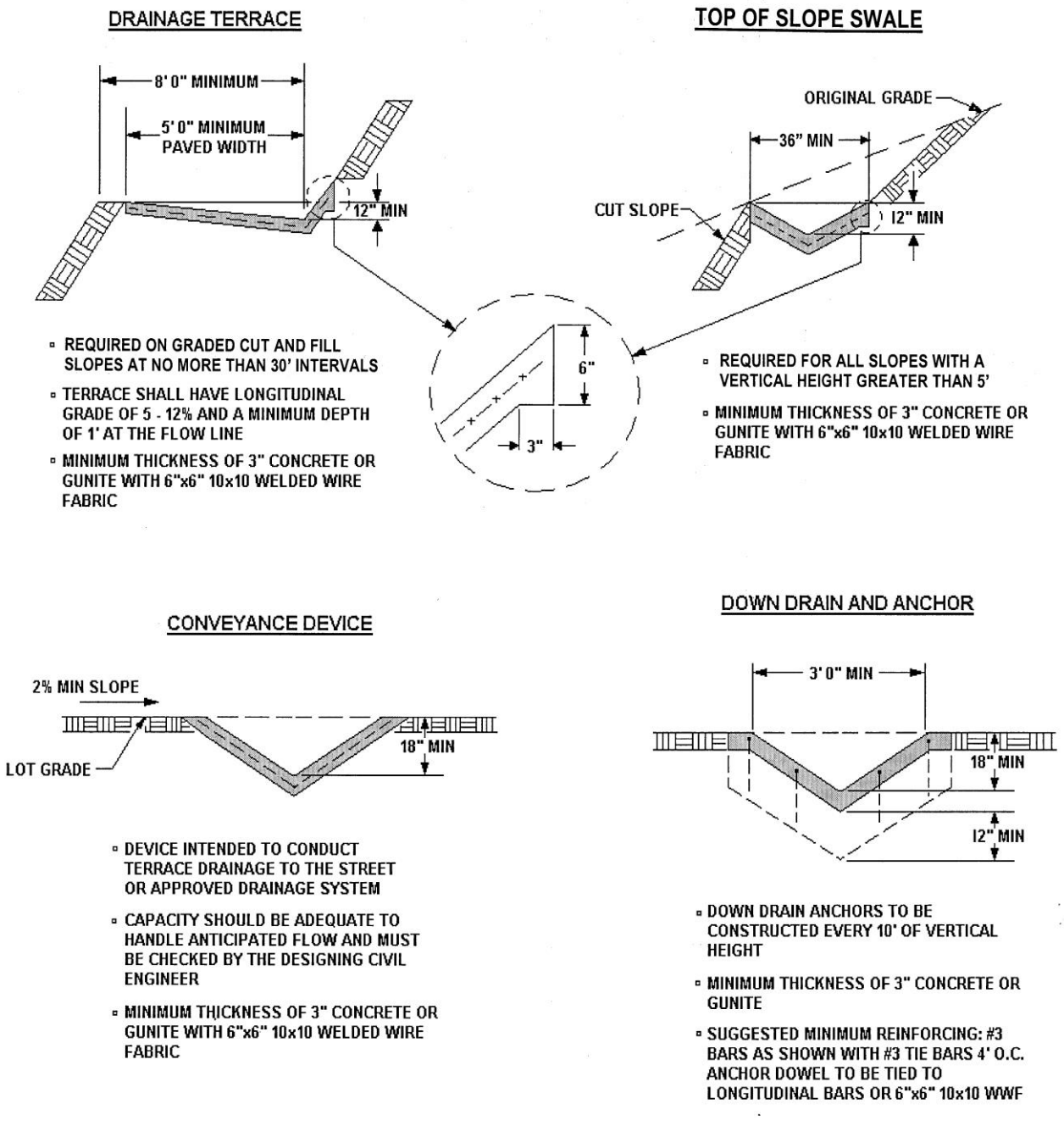


FIGURE 3 – RECOMMENDED MINIMUM SLOPE DRAINAGE DEVICES

Not to Scale

FOUNDATION/BUILDING SETBACKS TO SLOPES

1808.7 Foundations on or adjacent to slopes. The placement of buildings and structures on or adjacent to slopes steeper than one unit vertical in three units horizontal (33.3-percent slope) shall comply with Sections 1808.7.1 through 1808.7.5.

1808.7.1 Building clearance from ascending slopes. In general, buildings below slopes shall be set a sufficient distance from the slope to provide protection from slope drainage, erosion and shallow failures. Except as provided in Section 1808.7.5 and Figure 1808.7.1, the following criteria will be assumed to provide this protection. Where the existing slope is steeper than one unit vertical in one unit horizontal (100-percent slope), the toe of the slope shall be assumed to be at the intersection of a horizontal plane drawn from the top of the foundation and a plane drawn tangent to the slope at an angle of 45 degrees (0.79 rad) to the horizontal. Where a retaining wall is constructed at the toe of the slope, the height of the slope shall be measured from the top of the wall to the top of the slope.

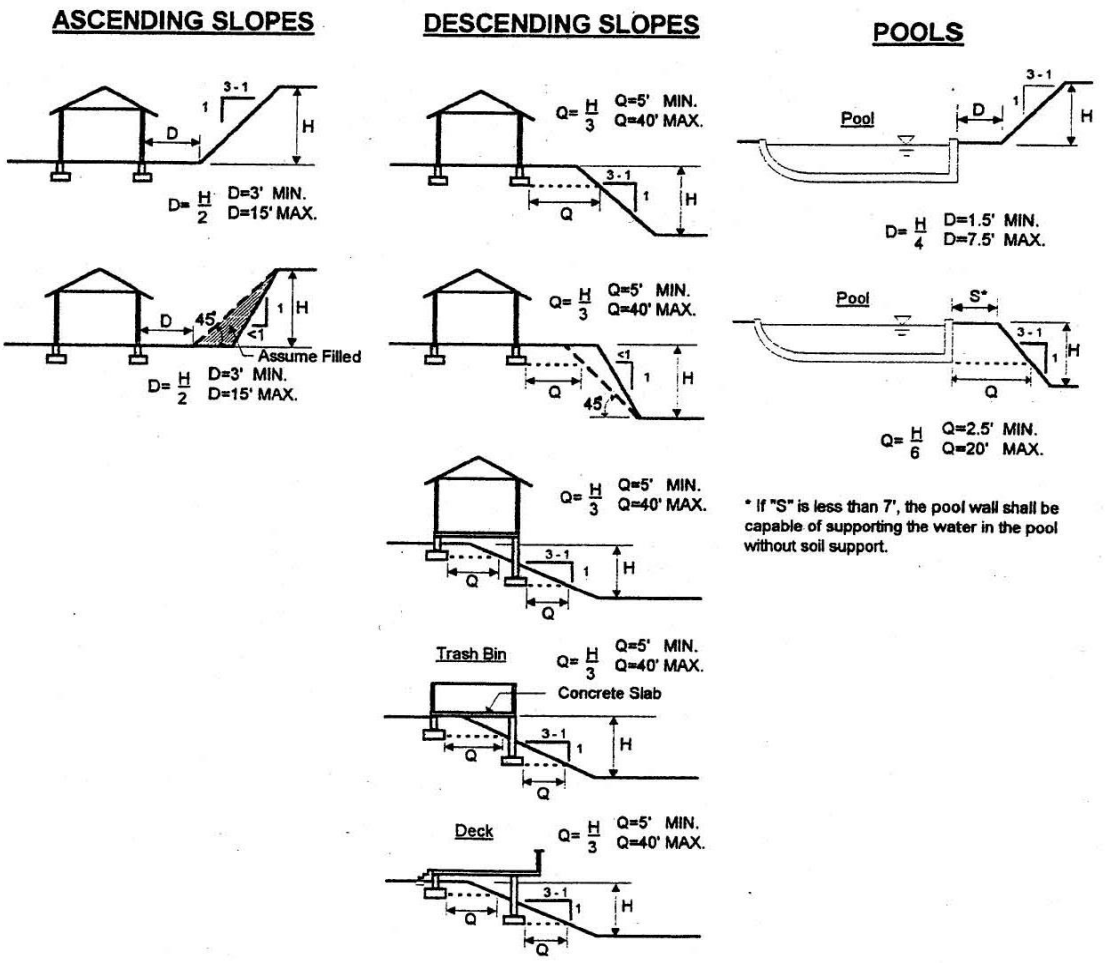
1808.7.2 Foundation setback from descending slope surface.

Foundations on or adjacent to slope surfaces shall be founded in firm material with an embedment and set back from the slope surface sufficient to provide vertical and lateral support for the foundation without detrimental settlement. Except as provided for in Section 1808.7.5 and Figure 1808.7.1, the following setback is deemed adequate to meet the criteria. Where the slope is steeper than 1 unit vertical in 1 unit horizontal (100-percent slope), the required setback shall be measured from an imaginary plane 45 degrees (0.79 rad) to the horizontal, projected upward from the toe of the slope.

1808.7.3 Pools. The setback between pools regulated by this code and slopes shall be equal to one-half the building footing setback distance required by this section. That portion of the pool wall within a horizontal distance of 7 feet (2134 mm) from the top of the slope shall be capable of supporting the water in the pool without soil support.

1808.7.4 Foundation elevation. On graded sites, the top of any exterior foundation shall extend above the elevation of the street gutter at point of discharge or the inlet of an *approved* drainage device a minimum of 12 inches (305 mm) plus 2 percent. Alternate elevations are permitted subject to the approval of the *building official*, provided it can be demonstrated that required drainage to the point of discharge and away from the structure is provided at all locations on the site.

1808.7.5 Alternate setback and clearance. Alternate setbacks and clearances are permitted, subject to the approval of the *building official*. The *building official* shall be permitted to require a geotechnical investigation as set forth in Section 1803.5.10.



SLOPE SETBACK REQUIREMENTS FROM PROPERTY LINES

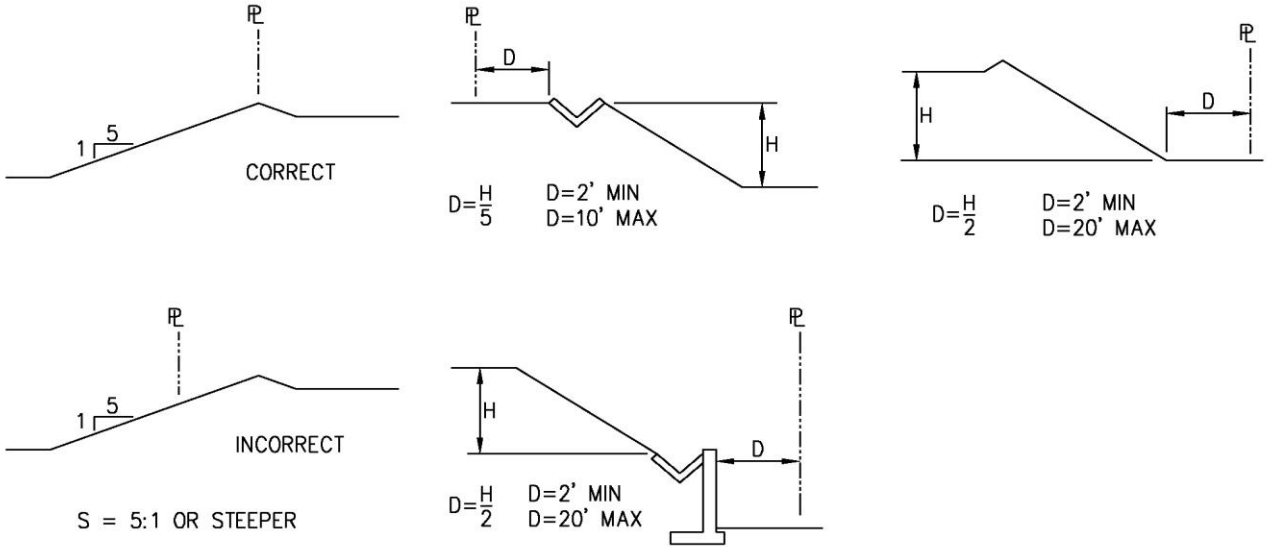
J108.1 General. Cut and fill slopes shall be set back from the property lines in accordance with this section. Setback dimensions shall be horizontal distances measured perpendicular to the property line and shall be as shown in Figure J108.1, unless substantiating data is submitted justifying reduced setbacks and reduced setbacks are recommended in a geotechnical engineering and engineering geology report approved by the Building Official.

J108.2 Top of slope. The setback at the top of a cut slope shall not be less than that shown in Figure J108.1, or than is required to accommodate any required interceptor drains, whichever is greater. For graded slopes the property line between adjacent lots shall be at the apex of the berm at the top of the slope. Property lines between adjacent lots shall not be located on a graded slope steeper than to 5 units horizontal to 1 unit vertical (20 percent slope).

J108.3 Toe of Fill Slope. The setback from the toe of a fill slope shall not be less than that shown by figure J108.1. Where required to protect adjacent properties at the toe of a slope from adverse effects of the grading, additional protection, approved by the Building Official, shall be included. Such protection may include but shall not be limited to:

1. Setbacks greater than those required by Figure J108.1.
2. Provisions for retaining walls or similar construction.
3. Erosion protection of the fill slopes.
4. Provision for the control of surface waters.

J108.4 Alternate Setbacks. The Building Official may approve alternate setbacks if he or she determines that no hazard to life or property will be created or increased. The Building Official may require an investigation and recommendation by a qualified engineer or engineering geologist to justify any proposed alternate setback.



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