Laguna Niguel
CALIFORNIA

GRADING MANUAL

COMMUNITY DEVELOPMENT DEPARTMENT
BUILDING & SAFETY

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SUBARTICLE 1. GENERAL PROVISIONS

1.1 Authority

The City of Laguna Niguel Grading Manual (hereinafter referred to as the "Grading Manual") is authorized by Laguna Niguel Municipal Code (Grading and Excavation Code) Section 8-1-801, and gives the Director the authority to formulate and modify as necessary such rules, procedures, and interpretations as may be necessary or convenient to administer the Laguna Niguel Grading and Excavation Code.

1.2 Scope and Purpose

The Grading Manual is a compilation of rules, procedures, and interpretations necessary to carry out the provisions of the Grading and Excavation Code. The Grading Manual is organized to follow the content of subarticles in the Grading and Excavation Code.

The purpose of the Grading Manual is to assist users of the Grading and Excavation Code by supplementing it with detailed information regarding rules, interpretations, standard specifications, procedures, requirements, forms, and other information used to control excavation, grading, and earthwork construction in the City of Laguna Niguel.

The City has consistently utilized various editions of the County of Orange Grading Manual since the City's incorporation in 1989. The City's current Grading Manual is based on the 2017 County of Orange Grading Manual, as modified herein to address local conditions.

1.3 Revision

The contents of the Grading Manual will be periodically revised in response to new technological developments, improved understanding of engineering characteristics of earth material and other factors deemed appropriate by the Building Official.

Emergency situations may be handled differently insofar as other legal constraints permit. Requests of this nature shall be initiated by correspondence with the Building Official.

SUBARTICLE 2. DEFINITIONS

2.1 Definitions

The definitions contained in this subarticle are helpful in interpreting the meaning of the Grading and Excavation Code and are fundamental to understanding the technical requirements of the Grading Manual. The definitions contained in this article are supplemental to those contained in the Grading and Excavation Code.

AS-BUILT GRADING PLAN is a grading plan that is a final grading plan showing proposed grading, including proposed contouring, and proposed finished elevations. An as-built grading plan is still a proposal, but is based on a more accurate field survey of key points such as property concerns and structures.

BEDROCK is the solid, naturally formed aggregate or mass of mineral matter, whether or not coherent, which underlies soil or is exposed where soil does not conceal it.

BENCH is a relatively level step excavated into earth material on which fill is to be placed (see Figure 1).

DRAINAGE PLAN is a plan appended to a proposed building plan that depicts site drainage patterns prior and post development. Contours and/or spot elevations, flow lines, outlet structures, subdrains, etc. must clearly be shown when a separate grading permit is not required by the Building Official.

EARTH MATERIAL is any rock, natural soil, fill, substance, or any combination thereof that makes up or originates from the Earth.

FAULT is a fracture in the earth's crust along which movement has occurred. A fault is considered active if movement has occurred within the last ± 11,000 years (Holocene Epoch, geologic time).

FLATLAND SITE is any site which does not fit the definition of a hillside site.

HILLSIDE SITE is a site which entails a cut and/or fill grading of three (3) feet or more in vertical height below or above natural ground; or a combination fill-over-cut slope equal to or greater than five (5) feet in vertical height; or where the existing grade is 20 percent or greater; and which may be adversely affected by drainage and/or stability conditions within or from outside the site, or which may cause an adverse effect on the adjacent property.

KEY/KEYWAY is a designed, excavated trench into competent earth materials in which compacted, engineered fill is placed to resist lateral pressure.

NPDES is an acronym for National Pollutant Discharge Elimination System; a Federal pro- gram that controls water pollution by regulating point sources that discharge pollutants into U.S. waters. These pollutants originated from the action of erosion, sediment transport, and chemical discharge.

RETAINING STRUCTURE is a Wall, a Segmental Retaining Wall System (SRW) a Gabion System, or other structural devices designed to resist lateral pressure of soil or other material.

SEISMICITY is the susceptibility of earth materials to earthquake induced motion and sur- face rupture.

SLOPE STABILITY ANALYSIS is the mathematical measure of the relative factor of safety against both deep-seated and surficial failure of slope earth material. *Gross or deep-seated failure* involves either rotational or translational failure along planes or surfaces of weakness. *Surficial failure* involves the outer portion of the slope soil (normally three to four feet, measured perpendicular to the slope face) which is affected by erosion, weathering, and seepage forces.

SPECIAL CIRCUMSTANCES mean the following: 1) site conditions that would otherwise render the property unbuildable; 2) development in accordance with prior entitlement approval that has duly considered site specific factors related to excavation, grading, and earthwork as applicable within the larger land use context; and/or 3) other factors unique to the property that warrant deviation from standard requirements. Special circumstances exclude previous grading or development that present constraints on the desired ultimate site development. Approval of exceptions to standard requirements due to the presence of special circumstances are contingent upon demonstrating slope and structural stability to the satisfaction of the Building Official.

SULFATE (S04) is a chemical compound occurring in some soils which, above certain levels of concentration, has a corrosive effect on ordinary Portland cement concrete and some metals.

SUBARTICLE 3. PERMITS REQUIRED – RESERVED

SUBARTICLE 4. ORGANIZATION AND ENFORCEMENT – RESERVED

SUBARTICLE 5. GRADING PERMIT REQUIREMENTS

5.1 Grading Permit Application

The submittal items necessary to file a grading permit are provided below. These filing instructions are intended to assist you in assembling a complete application packet. Please review each section and make sure to complete all necessary forms that apply to your situation. Please note that incomplete submittals will not be accepted. All documents are to be submitted in PDF format to and fees paid at the City of Laguna Niguel Planning Counter, or online as specified by the instructions posted on the City of Laguna Niguel Grading webpage.

a. Completed Grading Permit Application.

b. Grading Plans prepared by a registered Civil Engineer.

c. Erosion/Sediment Control Plans prepared by a registered Civil Engineer (see Subarticle 13 in this Grading Manual) in compliance with current NPDES regulations and California State Water Boards. May be combined with Grading Plans for minor projects).

d. Geotechnical/Soil Engineering Geology Report, if required (see Appendix A for report requirements).

e. Grading Permit plan check fee/deposit based on the latest City of Laguna Niguel Community Development Department Fee Schedule.

f. Preliminary Title Report (less than six months old).

g. Stormwater Pollution Prevention Plan (SWPPP) and/or Water Quality Management Plan (WQMP), if required.

h. Hydrology Report and hydraulic calculations, if required.

If determined necessary based on the scope of the project, additional items and/or technical studies may be required.

5.2 Grading Plan Clearances

Prior to issuance of a grading permit, written clearance will be required from other Departments and Divisions within the City of Laguna Niguel and may be required from other agencies. The majority of permit applications require clearances from the following:

a. Laguna Niguel Public Works Department
b. Laguna Niguel Planning Division

Depending on site conditions and location, written clearance or permits may be required from, but not be limited to, the following agencies:

a. Orange County Fire Authority
b. Orange County Health Care Agency (Vector Control)
c. California Regional Water Quality Control Board
d. California Department of Fish and Wildlife
e. California Coastal Commission
f. California Division of Industrial Safety

The applicant shall be responsible for: (1) submitting to the respective agencies copies of the grading plans and information required by those divisions or agencies; and (2) obtaining the required clearances or permits.

Written notarized permission must be obtained from the adjacent property owner where grading or drainage is proposed on the adjacent property not owned by the applicant/permittee.

No clearing or grubbing shall be allowed without a valid grading permit.

5.3 Grading Plan Check

Plans submitted for plan check shall be drawn to scale (drawn to scale of 1/16" = 1' or 1'= 40' or larger) and shall be of sufficient clarity to indicate the nature and extent of the grading work proposed. Plans must show in detail that they will conform to the provisions of the Grading Manual, the Grading and Excavation Code, and all relevant laws, ordinances, rules, and regulations, including currently adopted State Building Codes and the Laguna Niguel Zoning Code.

The first sheet of each set of plans shall give the location of the grading work and the name, address and telephone number of the following: the owner, the person by whom they were prepared, the project soil engineer, the engineering geologist and, when applicable, the project paleontologist and archaeologist. Additional details may be required where necessary. No plan sheet shall exceed 36 x 42 inch dimensions.

a. Preliminary Grading Permit (Rough or Mass Grading Permit):

The plans shall include but not be limited to the following:

1. Vicinity map of the site.

2. Property limits clearly labeled or otherwise identified with accurate contours of existing ground, details of terrain, and area drainage a minimum of fifteen (15) feet beyond property limits or grading limits adjacent to areas of grading (spot elevations may be used on flatland sites).

3. Prominent or natural terrain features.

4. Limiting dimensions including setbacks between property lines, top and toe of slopes, elevations of finish contours to be achieved by the grading, proposed drainage devices and related construction.

5. Details (plan and section views) of all surface and subsurface drainage devices, walls, cribbing, dams, Best Management Practices (BMP) measures, and other protective devices to be constructed with, or as a part of the proposed grading work.

6. Location of any existing building or structures on the property where the grading work is to be performed and the location of any building or structure on land of adjacent owners, which are within fifteen (15) feet of the limits of grading, or which may be adversely affected by the proposed grading operations.

7. If the grading project includes the movement of earth material to or from the site in an amount considered substantial by the Public Works Director, the permittee shall submit the haul route for review and approval by the City of Laguna Niguel Public Works Department, prior to the issuance of a grading permit.

   The Laguna Niguel Public Works Department may suggest alternate routes or special requirements in consideration of possible effects on the adjacent community environment, or on the public right-of-way, which shall be prescribed as a condition of the grading permit.

8. Earthwork quantities, including remedial grading and any proposed import and export on the plan cover sheet.

9. Additional plans, drawings, calculations, environmental impact information, or other reports required by the Building Official.

b. Precise Grading Permit:

The precise plans shall include the following in addition to the above items listed for preliminary grading permit:

1. The footprint or allowable building area of all proposed structures (including columns, overhangs, air conditioner pads, and architectural projections), shown in relationship to top and toe of slopes.

2. Detailed finished grade elevations, finished floor elevations, and pad elevations.

3. Flowlines for lot drainage and invert elevations for all area drains, etc.

4. Details for building footing and side-yard swale relationship (including extra height of depth of footing).

5. All proposed concrete flatwork, hardscape, and/or driveways.

6. Sight distance diagrams at intersections.

7. The Precise Grading Plan shall identify all previous preliminary grading permits issued for the project site. Sheets from the preliminary grading plan which show original topography shall be submitted with the precise grading plan.

8. Grading work required under a preliminary grading permit must be completed before the last increment of the site if converted to precise permit. The remaining grading work shall also be included with a precise permit.

5.4 Geotechnical/Soil and Engineering Geology Report Content

Guidelines are provided in Appendix A, "Technical Guidelines for Geotechnical/Soil and Engineering Geology/Geology Reports."

Recommendations contained in the approved reports shall be incorporated into the grading plans and specifications and shall become conditions of the grading permit. For the purposes of this subsection, this manual considers soil engineer and geotechnical engineer to be synonymous.

a. Preliminary Soil Report:

Geotechnical/soil engineering reports shall be required for all subdivisions, commercial/industrial, multi-residential, and similar developments involving structures and/or earthwork for which a grading permit is required. Geotechnical/Soil Reports shall also be required for grading or building permits on single lot projects when specified by the Building Official.

The preliminary geotechnical/soil engineering report shall include:

- Information and data regarding the nature, distribution, and the physical and chemical properties of existing soils;

  Conclusions as to the adequacy of the site for the proposed grading;

- Recommendations for general and corrective grading procedures;
- Foundation and pavement design criteria;
- Design of subsurface drainage required for the stability and protection of adjacent properties from the influence of groundwater; and
- Other recommendations, as necessary, commensurate with the project grading and development.

b. Preliminary Engineering Geology Report:

Engineering geology reports shall be required for all developments on hillside sites where geologic conditions may have a substantial effect on existing and/or future site stability. This requirement may be extended to other sites suspected of being adversely affected by faulting.

The preliminary engineering geology report shall include:

- Comprehensive description of the site topography and geology;
- Conclusions as to the adequacy of the proposed development from an engineering geologic standpoint and conclusions as to the extent that instability on adjacent properties may adversely affect the project;
- Description of the field investigation and findings;
- Conclusions regarding the effect of geologic conditions on the proposed development;
- Specific recommendations for plan modification, corrective grading, and/or special techniques and systems to facilitate a safe and stable development, if applicable, and
- Other recommendations, as necessary, commensurate with the project grading and development.

The preliminary engineering geology report may be combined with the geotechnical/soil engineering report.

c. Seismicity Report/Fault Study:

Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code (PRC) § 2621 et seq.

A seismicity report/ fault study shall be required as a condition for issuance of a grading permit and/or Building Permit for all subdivisions (tracts), all sites for critical structures (fire stations, nursing homes, etc.), and major structures, as determined by the Building Official. Additionally, sites containing earthquake sensitive earth

materials and/or sites that are located on or near potentially active or active faults shall also require a seismicity/fault study report, as determined by the Building Official.

The report shall be prepared by a Certified Engineering Geologist, licensed in the State of California, with expertise in earthquake technology and its application to buildings and other civil engineering works. A Professional Geologist, licensed in the State of California, may also prepare a seismicity/fault study report. The Scope of the report shall be commensurate with the proposed development and shall reflect the state of the art. The seismicity report/fault study may be combined with the Geotechnical/Soil and Engineering Geology reports.

d. Seismic Hazard Report:

Seismic hazard reports shall be required to address liquefaction and earthquake induced landslide potential in accordance with the requirements of SP117A for development of sites located within the limits of State of California defined Seismic Hazard Zones (SHZ's), or as determined by the Building Official.

SHZ reports should be prepared in accordance with the guidelines for evaluating and mitigating seismic hazards in California as presented in SP117A and the Southern California Earthquake Center (SCEC) referenced publications included on the Additional Resources listings presented in Appendix A and Appendix D.

SHZ reports may be combined with the geotechnical/soil engineering and engineering geology reports.

e. Final Reports:

Rough Grade Compaction, Final Soil, and Engineering Geology reports shall be submitted in accordance with Subarticle 15 of this Grading Manual.

5.5 Permit Issuance

A preliminary or precise grading permit may not be issued until after approval of a Tentative Tract or Tentative Parcel Map unless otherwise provided in zoning regulations or approved by the Building Official.

5.6 Permit Expiration

The time limitations and provisions relating to the expiration of grading permits are included in Laguna Niguel Municipal Code (Grading and Excavation Code) Section 8-1-820.

5.7 Plan Revision

Proposed revisions to the grading plans shall be submitted to the Community Development Department for review and approval prior to starting any revised work. Revised plans shall be submitted along with a redline set of plans displaying the revisions and a Geotechnical review (Memo or Report) addressing the revised plans and their effect on the geotechnical recommendations. A review deposit will be required to be paid at the time of submittal based on

the project scope.

5.8 Transfer of Responsibility for Approval

If the civil engineer, the soil engineer, the engineering geologist, the testing agency, or the grading contractor of record are changed during the course of the work, the work shall be stopped unless: (1) the owner submits a letter of notification verifying the change of the responsible professional; and (2) the new responsible professional submits in writing that that person has reviewed all prior reports and/or plans (specified by date and title) and work performed by the prior responsible professional and that the professional concurs with the findings, conclusions, and recommendations, and is satisfied with the work performed. The professional person may modify or revise recommendations, specifications or work performed if accompanied by supporting data and approved by the Director. The professional must state that the professional assumes all responsibility within that person's professional purview as of a specified date. All exceptions must be justified to the satisfaction of the Director.

Exception: Where clearly indicated that the firm, not the individual engineer and/or geologist, is the contracting party, the designated engineer or geologist may be reassigned and another engineer and/or geologist within the firm may assume responsibility.

5.9 Conditional Approval; Indemnification

Grading permits shall be issued subject to such conditions as may be deemed appropriate by the Building Official in order to ensure compliance with the provisions of the Grading and Excavation Code, this Grading Manual and as otherwise required in order to preserve the public health and safety with regard to the work which is the subject of the permit. In addition to the security described in Subarticle 6 of this Grading Manual, the Building Official may require the applicant to enter into an agreement, approved as to form by the City Attorney, indemnifying the City against any costs, liability or damages when, in the opinion of the Building Official, there is a potential risk of damage to adjacent property or persons or property in the vicinity of the work.

SUBARTICLE 6. FEES

6.1 Grading Plan Check Fee

The amount of the grading plan check fees/deposit shall be as specified by resolution of the Laguna Niguel City Council or modified by the Building Official (Refer to the City's website for the current fee schedule at https://www.cityoflagunaniguel.org/1089/Applications-and-Handouts).

6.2 Grading Permit Fee

The amount of the grading permit fee/deposit shall be as specified by resolution of the Laguna Niguel City Council or modified by the Building Official (Refer to the City's website for the current fee schedule at https://www.cityoflagunaniguel.org/1089/Applications-and-Handouts).

6.3 Emergency Work - Cost Recovery Fees

Per Laguna Niguel Municipal Code (Grading and Excavation Code) Section 8-1-828, if the Building Official performs or causes the performance of emergency or other work on private property, the Building Official shall charge the property owner all direct and indirect costs which are necessary to complete the work to the Building Official's satisfaction. In addition, the Building Official may charge a mobilization cost equal to ten (10) percent of the cost for performing the work.

SUBARTICLE 7. SECURITY

7.1 Security Bonds

A grading permit shall not be issued unless the permittee first posts with the Building Official a grading bond in accordance with Laguna Niguel Municipal Code (Grading and Excavation Code) Section 8-1-829. The bond is required to ensure that the work, if not completed in accordance with approved plans and specifications, will be corrected to eliminate hazardous conditions and/or correct conditions that pose a threat to environmental resources including but not limited to a threat to water quality.

The applicant may file a surety bond, a cash bond, a time certificate of deposit, or a letter of credit. The instrument and method of security will be subject to approval by the Building Official with the concurrence of City Attorney, when necessary. Examples of security forms/documents are found in Appendix B.

7.2 Security Amount

The amount of a grading security shall be based on 30% of the cost of the project cut or fill volume, whichever is greater, and 50% of the cost of the drainage improvements and erosion, sediment, and chemical control facilities being constructed or installed under the permit; plus a 10% contingency, rounded up to the nearest $1,000.00 dollar amount. Pavement areas (i.e., driveways, parking areas, sidewalks, etc.) controlled through the grading permit process shall be considered as drainage devices, and shall be incorporated into the cost estimate. The amount of the security may be reduced by the Building Official to the extent that (s)he determines that potential hazards or the nature of the project do not justify the full amount.

The amount of the security may be reduced by the Building Official, but not by more than 50%, to the extent that (s)he determines that potential hazards or the nature of the project do not justify the full amount.

The amount of the security may also be increased by the Building Official up to 100% of the cost of the larger of the cut or fill volume and 100% of the drainage improvements and erosion and sediment control facilities if the potential hazards or nature of the project justifies such an increased amount; plus a 10% contingency, rounded up to the nearest $1,000.00 dollar amount.

7.3 Term and Release of Security

The term of each security shall begin upon the date of permit issuance and shall remain in effect until the completion of the work to the satisfaction of the Building Official. For completion of work requirements, see Subarticle 15. Security release shall be accomplished by written notification to the permittee from the Building Official. In the case of a preliminary permit where maintenance of erosion, sediment, and chemical control is required, this will not occur until the entire site has been converted to precise permit. A permittee may, as an alternative, obtain a new permit and security issued specifically for erosion, sediment, and chemical control purposes. If this is done, the preliminary permit security will be released upon completion of preliminary permit work and issuance of the new permit.

7.4 Substitution and Reduction

A substitute security may be filed in lieu of the above-mentioned security, and the Building Official may accept the same if it is suitable to ensure completion of the work remaining to be performed and is in proper form and substance.

SUBARTICLE 8. CUTS

8.1 Cut Slopes

Cut slopes shall be no steeper than two (2) horizontal to one (1) vertical (2:1). In special circumstances where no evidence of previous instability exists, when recommended in the geotechnical/soil engineering or engineering geology report, and when approved by the Building Official, slopes may be constructed steeper than 2:1. The issuance of a grading permit for plans showing slopes steeper than 2:1 shall constitute specific approval of said slopes provided that a note to this effect is clearly shown on the plans and all such slopes are referenced in the note. In no case shall slopes steeper than 2:1 be approved if 2:1 or flatter slopes are required as a condition of approval of any project or one designated on any map approved by the Laguna Niguel Planning Commission, Laguna Niguel Subdivision Committee, or the Laguna Niguel City Council without appropriate revision of said condition by the approving body.

Recommendations in the geotechnical engineering and/or engineering geology report for cut slopes to be steeper than 2:1 shall be accompanied by a slope stability analysis for all slopes greater than five (5) feet in height. The geotechnical/soil engineer shall consider both gross (static and pseudostatic) and surficial stability of the slope and provide a written opinion as to the slope stability.

Excavation below the ground surface for the purpose of subterranean construction shall be performed so as to not impact adjacent property, structures, or the public right-of-way. Proposed temporary slopes shall be analyzed for stability by the geotechnical engineer. Where shoring is used to protect adjacent property, structures, or the public right-of-way, a separate building permit is required.

SUBARTICLE 9. FILLS

9.1 Fill Location

Fill slopes shall not be constructed on natural slopes steeper than two (2) horizontal to one (1) vertical (2:1) or where the fill slope toe is within twelve (12) feet measured horizontally from the top of an existing or planned cut slope outside the permit area boundary. An exception may be made in the case of slopes of minor height when recommended by the Geotechnical Consultants of Record and approved by the Building Official.

9.2 Preparation of Ground

The ground surface shall be prepared to receive fill by removing vegetation, noncomplying fill, topsoil, and other unsuitable materials, and by scarifying to provide a bond with the new fill. Where existing slopes exceed five (5) feet in height and/or are steeper than five (5) horizontal to one (1) vertical (5:1), the ground shall be prepared by benching into competent material, as determined by the geotechnical/ soil engineer and/or engineering geologist and approved by the Building Official. The lowermost bench beneath the toe of a fill slope shall be a minimum ten (10) feet in width. The ground surface downgrade from the toe of fill shall be compatible with sheet flow runoff, or a paved drain shall be provided, see Figure 1 of the Grading Manual.

Where fill is to be placed upgrade from a cut slope, the bench of the toe of the fill shall be at least fifteen (15) feet wide. The cut slope must be made prior to placing fill and shall meet the approval of the geotechnical/soil engineer and/or engineering geologist, as a suitable foundation for fill, see Figure 1.

Unsuitable soil shall be removed prior to placement of fill and disposed of properly.

9.3 Fill Material

Detrimental amounts of organic material shall not be permitted in fills; except as outlined below, no rock or similar irreducible material with a maximum dimension greater than twelve (12) inches shall be buried or placed in fills.

The Building Official may permit placement of larger rock when the geotechnical/soil engineer properly devises a method of placement, continuously inspects placement, and approves the fill stability and competency. The following conditions shall also apply:

a. Prior to issuance of the grading permit, potential rock disposal area(s) shall be delineated on the approved grading plan.

b. Rock sizes greater than twelve (12) inches in maximum dimension shall be ten (10) feet or more below final grade, measured vertically, and fifteen (15) feet measured horizontally from slope faces. This depth may be reduced upon recommendation of the Geotechnical Engineer of Record and approval of the Building Official providing that the permitted use of the property will not be impaired.

c. Rocks greater than twelve (12) inches shall be placed as to be surrounded by soils; no nesting of rocks will be permitted.

9.4 Compaction

All fills shall be compacted to a minimum of ninety (90) percent of maximum density as determined by American Society of Testing Materials (ASTM) Active Standard ASTM D1557 or equivalent, as approved by the Building Official. Field density shall be determined in accordance with the Active Standard ASTM D1556 (Sand Cone Method), or Active Standard ASTM 06938 (Nuclear Gauge Method) or equivalent, as approved by the Building Official.

Locations of field density tests shall be determined by the Geotechnical Engineer of Record or approved testing agency and shall be sufficient in both horizontal and vertical placement to provide representative testing of all fill placed. Testing in areas of a critical nature or special emphasis shall be in addition to the normal representative samplings.

Exceptions:

a. Fills excepted in Laguna Niguel Municipal Code (Grading and Excavation Code) Section 8-1-805 and where the Building Official determines that compaction is not a necessary safety measure to aid in preventing saturation, settlement, slipping, or erosion.

b. Where lower density and very high potential expansion characteristics as defined by Active Standard ASTM 04829 or equivalent, and on swell potential of cohesive soils, use Active Standard ASTM 04546 or approved equivalent; lesser compaction may be granted by the Building Official, upon justification and recommendation by the Geotechnical/Soil Engineer of Record.

Fill slopes shall be compacted to the finish slope face as specified above. The Geotechnical/Soil Engineer of Record shall provide specifications for the method of placement and compaction of the soil within the zone of the slope face (see Figure 1 of this Grading Manual).

Sufficient maximum density determinations by test method, Active Standard ASTM D1557, or approved equivalent, shall be performed during the grading operations to verify that the maximum density curves used are representative of the material placed throughout the fill.

Placement of fill materials greater than 50 feet in thickness will require settlement monitoring. The settlement monitoring data must be submitted, reviewed and approved by the Building Official prior to issuance of project building permits/commencement of construction at the subject site.

9.5 Slope

Fill slopes shall be no steeper than two (2) horizontal to one (1) vertical (2:1). In special circumstances, where no evidence of previous instability exists and when recommended in the geotechnical engineering report, the Building Official may consider approving slopes constructed steeper than 2:1. The issuance of a grading permit for plans showing slopes steeper than 2:1 shall constitute specific approval of said slopes provided that a note to this effect is clearly shown on the plans and all such slopes are referred to in the note. In no case shall fill slopes steeper than 2:1 be approved if 2:1 or flatter slopes are required as a condition of approval of any project or are designated on any map approved by the City Planning Commission, City Subdivision Committee, or the City Council without appropriate revision of said condition or map by the approving body.

Recommendations in the soil engineering report for fill slopes to be steeper than 2:1 shall be accompanied by a slope stability analysis for all slopes greater than five (5) feet in height. The Geotechnical/Soil Engineer and the Certified Engineering Geologist shall consider both the gross and surficial stability of the slope and provide a written opinion of the slope stability. In addition, the Geotechnical Engineer of Record and the Certified Engineering Geologist shall recommend alternative methods of construction of compaction requirements, if necessary to obtain surficial stability.

9.6 Utility Line Backfill

Utility line backfill beneath and adjacent to structures, beneath pavements, adjacent and parallel to the toe of a slope, or in and in sloping surfaces steeper than ten horizontal to one vertical (10:1) shall be compacted and tested in accordance with Section 9.4, Compaction, of this Subarticle. Alternately, relatively self- compacting material may be used when ap- propriate. The material specification and method of placement shall be recommended and inspected by the geotechnical/soil engineer and approved by the Building Official prior to backfilling.

Utility line backfill in areas other than those stated above need no specified placement method of compaction criterion, but shall require approval by the Geotechnical/Soil Engineer and the Certified Engineering Geologist, when necessary. The final utility line backfill report from the project Geotechnical/Soil Engineer of Record shall include a statement of opinion that the backfill is suitable for intended use.

Figure 1

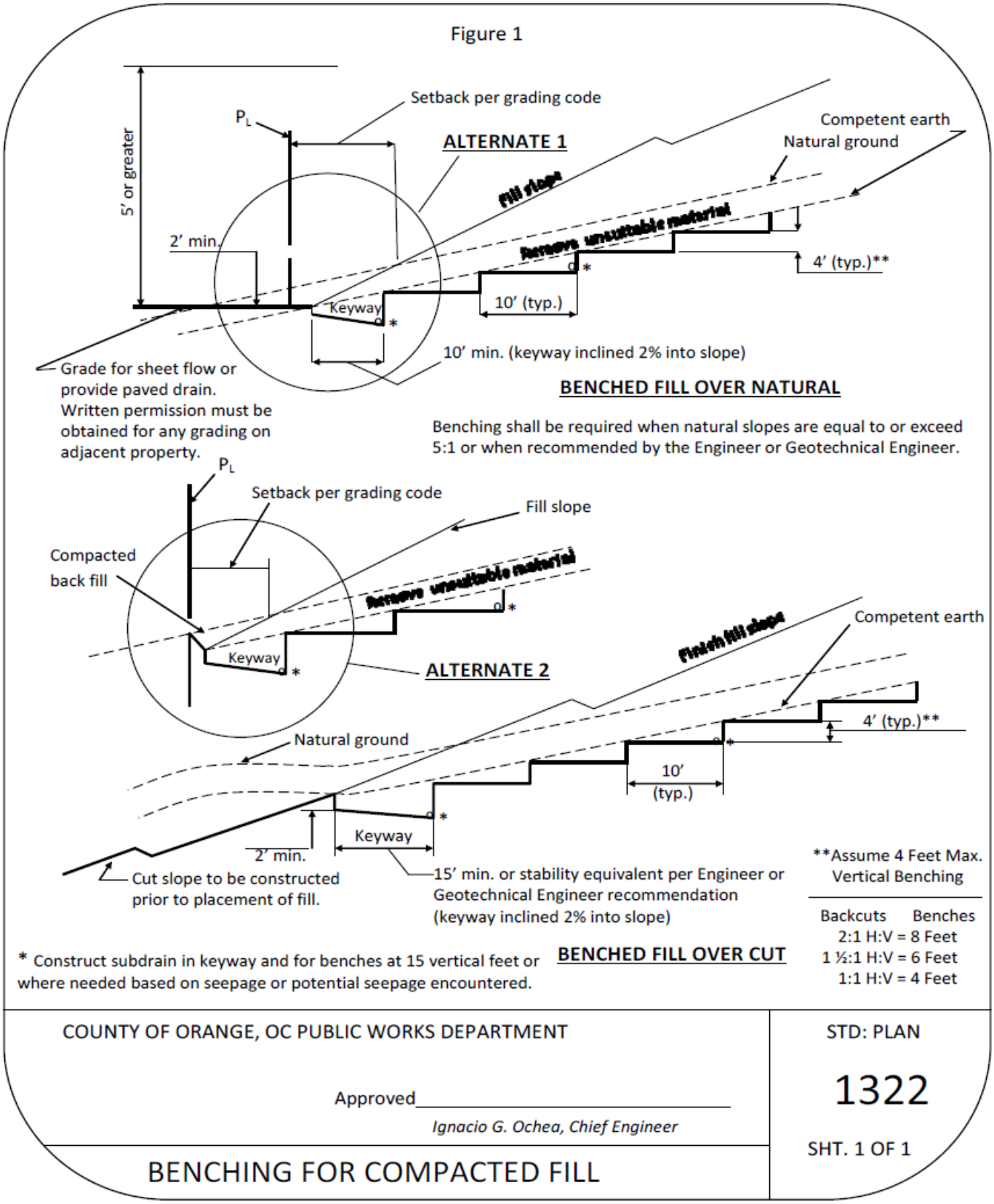
Figure 1
5' or greater
P_L
Setback per grading code
ALTERNATE 1
Competent earth
Natural ground
Fill slope
Remove unsuitable material
2' min.
4' (typ.)**
Keyway
10' (typ.)
10' min. (keyway inclined 2% into slope)
Grade for sheet flow or provide paved drain. Written permission must be obtained for any grading on adjacent property.
BENCHED FILL OVER NATURAL
Benching shall be required when natural slopes are equal to or exceed 5:1 or when recommended by the Engineer or Geotechnical Engineer.
P_L
Setback per grading code
Fill slope
Compacted back fill
Remove unsuitable material
Keyway
ALTERNATE 2
Finish fill slope
Competent earth
4' (typ.)**
Natural ground
10' (typ.)
Keyway
2' min.
Cut slope to be constructed prior to placement of fill.
15' min. or stability equivalent per Engineer or Geotechnical Engineer recommendation (keyway inclined 2% into slope)
**Assume 4 Feet Max. Vertical Benching
Backcuts Benches
2:1 H:V = 8 Feet
1 ½:1 H:V = 6 Feet
1:1 H:V = 4 Feet
* Construct subdrain in keyway and for benches at 15 vertical feet or where needed based on seepage or potential seepage encountered.
BENCHED FILL OVER CUT
COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT
Approved
Ignacio G. Ochea, Chief Engineer
STD: PLAN
1322
SHT. 1 OF 1
BENCHING FOR COMPACTED FILL

SUBARTICLE 10. SETBACKS

10.1 Setbacks from Permit Area Boundary

The tops of cut and toes of fill slopes shall be set back as far as necessary from the outer property boundaries of the permit area, including slope easements, and in accordance with Figure 2 of this Grading Manual, or the latest version of the California Building Code, whichever is more restrictive.

10.2 Design Standards for Setbacks

The tops and the toes of cut and fill slopes shall be set back from structures as far as necessary for adequacy of foundation support and to prevent damage as a result of water runoff, erosion, or maintenance of the slopes and not less than shown in Figure 2 of this Grading Manual, or the latest version of the City's adopted building codes, whichever is more restrictive. Structures shall be set back from tops and toes of slopes no less than shown in Figure 2 of this Grading Manual, or the latest version of the City's adopted building codes, whichever is more restrictive.

10.3 Retaining Walls

Retaining walls may be used to reduce the required setback in accordance with Figure 2 of this Grading Manual when approved by the Building Official. Retaining wall systems consisting of Segmental Retaining Wall (SRW) walls, crib walls, tie-back walls, etc., may have differing setback requirements. The design civil, structural, geotechnical/soil engineers, and a certified engineering geologist, shall provide setback recommendations, approved by the Building Official (refer to Appendix E for SRW Design Criteria List). In all cases, retaining walls shall comply with adopted building and zoning standards adopted in the Laguna Niguel Municipal Code.

Figure 2

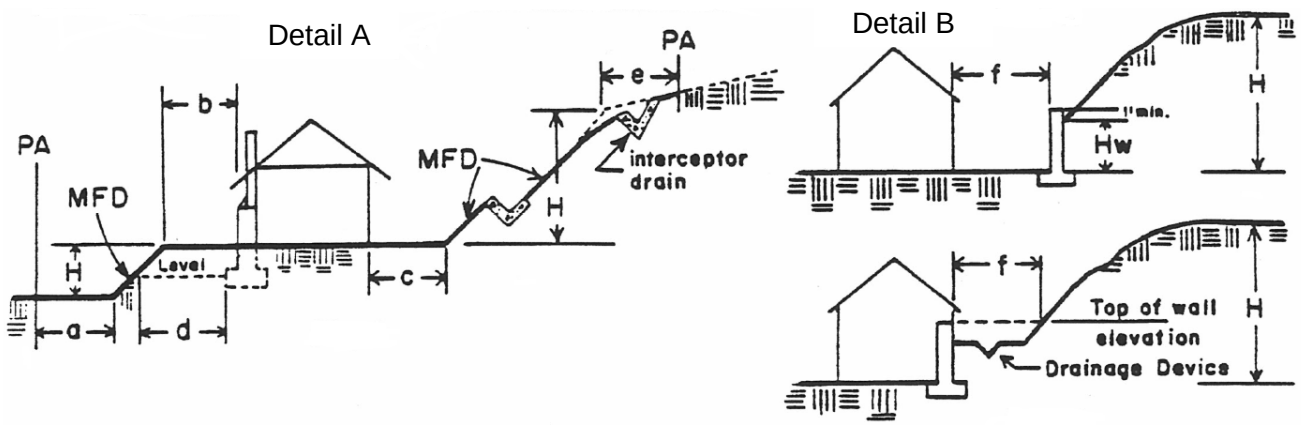

Table A: Min Setback from Adjacent Slope					
H (Height)	**a**	**b**	**c**	**d**	**e**
0-6’	3’	7’	3’	5’	1’
6’-14’	5’	7’	H/2	H/2 5’ Min	H/5
14’-30’	5’	H/2 10’ Max	H/2	H/2 10’ Max	H/5
+30’	5’	10’	15’	H/3 40’ Max	6’

Table B: Min Setback		
H (Height)	**Max Hw**	**f**
0-6’	3’	3’ Min
6’-12’	H/2	H/2
12’-30’	6’	H/2
+30’	6’	15’

NOTES:

1. “PA” means permit area boundary and/or property line. “MFD” means manufactured slope. “HW” means wall height.
2. Setbacks and retaining walls shall also comply with applicable zoning and building regulations.
3. Table A applies to 2:1 manufactured slopes or 2:1 or steeper natural slopes that are 10’ in height or taller. Setback requirements from slopes that are flatter than 2:1 or less than 10’ in height shall meet the approval of the Building Official.
4. If the slope between levels “a” and ”b” is replaced by a retaining wall, “a” may be reduced to zero and “b” remains as shown in Table A. The height of the retaining wall shall comply with applicable zoning and building regulations.
5. “b” is measured from the face of the structure or any ground surface building protrusion to the top of the slope[1].
6. “d” is measured from the lower outside edge of the footing along a horizontal line to the face of the slope[1].
7. “c” is measured from the bottom of the footing along a horizontal line to the face of the slope.
8. The use of retaining walls to reduce setbacks (Detail B) shall be approved by the Building Official and comply with applicable zoning and building regulations.
9. “f” may be reduced if the slope is composed of sound rock that is not likely to erode or deteriorate easily and is recommended by the soils engineer or engineering geologist and approved by the Building Official.
10. “a” and “e” shall be 2' minimum. when PA coincides with street right-of-way and when improved sidewalk is adjacent to right-of-way. “e” shall be increased as necessary for interceptor drains.

[1] *In accordance with the Grading and Excavation Code, slope setbacks and other restrictions specified may be increased by the Building Official or by the recommendation of a civil engineer, soil engineer, or engineering geologist, when deemed necessary for safety, stability, or to prevent damage to structures or adjacent properties. Minimum slope setbacks may only be reduced in special circumstances, subject to the approval of the Building Official. Qualifying special circumstances consist of the following: 1) site conditions that would otherwise render the property unbuildable; 2) development in accordance with prior entitlement approval that has duly considered site specific factors related to excavation, grading, and earthwork as applicable within the larger land use context; and/or 3) other factors unique to the property that warrant deviation from standard requirements. Special circumstances exclude previous grading or development that present constraints on the desired ultimate site development. Approval of exceptions to standard requirements due to the presence of special circumstances are contingent upon demonstrating slope and structural stability to the satisfaction of the Building Official.*

SUBARTICLE 11. DRAINAGE AND TERRACING

11.1 Adoption of Orange County Local Drainage Manual and Orange County Hydrology Manual

Hydrology and hydraulic design criteria shall be per the current Orange County Hydrology Manual and the Orange County Local Drainage Manual, respectively. Per the Orange County Local Drainage Manual, all building pads shall be protected from the 100-year storm inundation.

11.2 Terraces

Terraces at least six (6) feet in width shall be established at no more than thirty (30) foot vertical intervals on all cut or fill slopes steeper than five (5) feet horizontal to one (1) foot vertical to control surface drainage and debris, except where only one (1) terrace is re- quired, it shall be at approximately mid-height. If the slope is turf-covered, then terraces shall be required as above on slopes steeper than four (4) feet horizontal to one (1) foot vertical. For cut or fill slopes greater than 60 feet and up to 120 feet in vertical height, one terrace shall be 12 feet in width. Terrace widths and spacing for cut and fill slopes greater than 120 feet in vertical 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 whenever practical.

Swales or ditches on six (6) feet and twelve (12) feet wide terraces shall have a minimum gradient of six (6) percent and must be paved with reinforced concrete gunite or approved equal, not less than three (3) inches in thickness. They shall have a minimum depth at the deepest point of eighteen (18) inches and a minimum paved width of five (5) feet.

A single run of swale or ditch shall not collect runoff from a tributary area exceeding 13,500 square feet (projected) without discharging into a down drain.

11.3 Subsurface Drainage

Cut and fill slopes shall be provided with approved subsurface drainage as necessary for stability and protection of adjacent properties from the influence of groundwater. The design of such facilities shall be contained in the approved preliminary (initial) geotechnical/soil engineering or engineering geology report and/or shall appear on the approved grading plan pursuant to the approval of the Geotechnical/Soil Engineer of Record and/or the Certified Engineering Geologist of Record.

Subsurface drainage facilities shall be installed where natural and/or artificially introduced groundwater affects or is likely to affect the project in a potentially unstable, hazardous, or otherwise deleterious manner.

11.4 Disposal

All drainage facilities shall be designed to carry runoff to the nearest point of discharge ap- proved by the Building official and/or other appropriate jurisdictional authority as a safe place to deposit such water. Erosion of ground in the area of discharge shall be prevented by installation of non-erosive down drains, riprap, energy dissipaters, or other approved de- vices including a return of flow to a natural sheet flow condition. On private property, this discharge must be minimum of five (5) feet from the property lines or greater depending on site conditions, to reduce the concentrated flow to an acceptable non-eroding sheet flow.

Where surface waters are to be conducted or directed onto adjacent property in an unnatural manner, the Building Official may require the applicant, prior to issuance of a grading permit, to obtain written permission from the owner of said property, accepting the surface waters. Ground adjacent to the building foundation shall have a drainage gradient of five (5) percent and impervious surfaces shall have a drainage gradient of (2) percent within 10 feet of the structure toward approved swales and/or drainage facilities, unless otherwise waived by the Building Official or per the latest adopted California Building Code. The maximum drainage gradient of an earth swale shall be four (4) percent.

Grading of nearly horizontal surfaces under a preliminary grading permit shall have a sheet flow drainage gradient of two (2) percent toward approved drainage facilities. The Building Official may reduce this minimum gradient upon the written request of the applicant or his agent, providing the applicant demonstrates the following:

a. Finish grades for drainage of building sites can be constructed in accordance with the requirements of this subsection without importing additional fill, and

b. Sufficient approved swales and/or drainage facilities are constructed to prevent water from ponding on any lot within a distance equal to the height of a supporting natural slope, or cut slope, or fill slope.

Finish grades, other than above, shall conform to the following minimum drainage gradient standards:

	Minimum Gradients
Earth Swales	1.0%
Earth (sheet flow)	1.0%
Asphalt pavement (sheet flow)	1.0%

11.5 Interceptor Drains

Paved interceptor drains shall be installed along the top of all manufactured slopes where the tributary drainage area flows toward the slope and has a drainage path to the top of slope greater than forty (40) feet measured horizontally. Interceptor drains shall be paved with a minimum of three (3) inches of reinforced concrete or gunite. They shall have a minimum depth of eighteen (18) inches and a minimum paved width of thirty-six (36) inches measured horizontally across the drain. The slope of the drain shall be approved by the Building Official, refer to Figure 1 of this Grading Manual for details.

11.6 Pipe Specifications

Pipe material specifications shall be shown on the approved plans or in the approved soil report by the civil engineer or geotechnical/soil engineer and approved by the Building Official. The pipe shall conform to the currently adopted Orange County Local Drainage Manual and Standard Specifications for Public Works Construction, unless otherwise recommended by the civil engineer or geotechnical/soil engineer and approved by the Building Official.

11.7 Area Drain Grates

Use of grate type inlets in sumps within streets is not allowed. Grated inlets are covered by OC public Works Standard Plan 1304. The main considerations in hydraulic design of grated inlets are the geometry of the grate, width of street flooding and the flow-through areas of the openings.

Inlet grates act as a strainer, catching debris that obstructs the grate openings. However, bicycle safety design required closely spaced bars and precludes increased spacing of the bars, Following are general grate/bicycle design criteria considerations:

- Openings shall consist of at least 50% of total area of the grate.
- Grated inlets shall not be used in bicycle lanes.
- Bicycle safety cross-bars shall be provided at a maximum spacing of 9” perpendicular to direction of travel) a 24” diameter bicycle wheel will not drop down more than about 1”).
- Minimum clear spacing between longitudinal bars shall be 1”.
- Grates shall be cast-iron or galvanized steel.

11.8 Conduits Beneath Structures

Drainage conduits i.e., subdrain or dewatering pipes, placed beneath structures shall con- form to the requirements of currently adopted California Plumbing Code (CPC). Storm water shall flow away from the building and storm drainpipes outside the building footprint shall not drain into or through the building unless otherwise approved by the Building Official.

11.9 Pipe Installation

Pipe shall be installed in accordance with the manufacturer's recommendations and with the requirements of the currently adopted Standard Specifications for Public Works Construction unless otherwise recommended by the Civil Engineer of Record or the Geotechnical/Soil Engineer of Record and approved by the Building Official.

11.10 Hydraulic Capacity

With the exception of standard terrace and down drains, drainage conveyance devices shall comply with the design criteria in the current edition of the OC Local Drainage Manual.

SUBARTICLE 12. ASPHALT CONCRETE PAVEMENT

12.1 Asphalt Concrete and Untreated Base Standards

When asphalt concrete pavement is proposed for surfacing of private parking lots, private streets or other similar use, this paving, including the tack coat, prime coat, seal coat, and base course, shall conform to the current County of Orange Standard Plan 1805 for asphalt concrete and untreated base materials, unless otherwise approved by the Building Official.

Exception: The provisions of this section shall not apply when (1) another governmental agency is designated to assume the responsibility for plan check and inspection of private streets; and (2) a private asphalt concrete driveway providing access to a single residence is proposed.

Prime coat shall be placed on subgrade or untreated base when the base will be subjected to substantial construction traffic or long periods of time, before asphalt concrete is place, as determined by the soil engineer and approved by the Building Official.

Untreated base may require testing by an approved testing agency to ensure its compliance with the applicable specifications and special provisions when determined necessary by the Building Official. Tests may include but shall not be limited to the following:

a. Sieve analysis
b. Sand equivalent
c. Percent of crushed particles retained by a No. 4 screen

12.2 Subgrade Compaction

The top six (6) inches of the subgrade material shall be compacted to a relative compaction of 90 percent of maximum density as determined by ASTM Standard 01557 or ap- proved equivalent unless otherwise recommended by the Geotechnical/Soil Engineer of Record in the preliminary geotechnical/soil report and approved by the Building Official.

12.3 Soil Sterilization

Appropriate environmentally acceptable weed killer shall be required on subgrade if no aggregate base is used.

12.4 Surface Drainage

All concentrated drainage in asphalt-paved areas shall be carried by approved concrete drainage devices.

12.5 Pavement Structural Section

The project geotechnical/soil engineer or design civil engineer shall determine the pavement structural section(s) for parking lots/service roads and private streets based on: (1) soil tests of the subgrade soil(s) performed by an approved soil testing laboratory; and (2) anticipated traffic and/or loading conditions. The methods used for soil testing and pavement design shall be those currently in use by the Laguna Niguel Public Works Department for construction of public roadways, or methods acceptable to the Building Official. Unless otherwise specified by the geotechnical/soil engineer, the relative compaction of each layer of compacted base material shall

be no less than 95 percent. When private street improvement plans are required to be approved by the Laguna Niguel Public Works Department, the pavement structural section may be determined by the Public Works Director. In lieu of a recommended structural section from the soil engineer or civil engineer for parking lots/service roads, the following standards may be used:

		Minimum Pavement Structural Sections
a.	Parking stall areas	3" AC/6" UB
b.	Commercial Driveways, perimeter drives and loading areas	3" AC/10" UB
c.	Industrial driveways, perimeter drives and loading area	3" AC/12" UB

12.6 Driveways

Driveway grades are regulated by Laguna Niguel Municipal Code Section 9-1-61(f), provided below for reference.

Whenever access is taken from a street, alley or driveway to an offstreet parking area serving four or less dwelling units, the driveway or other vehicular accessway shall have a maximum grade of plus 15 percent (+15%) or minus six percent (-6%), measured from the street, alley or driveway grade along the driveway centerline, for a distance of not less than 18 feet from the street, alley or driveway right-of-way line.

Whenever access is taken from a street, alley or driveway to an offstreet parking area serving industrial, commercial or professional uses, public or community facilities, or five or more dwelling units, the driveway or other vehicular accessway shall have a maximum grade of plus 15 percent 15 percent (+15%) or minus two percent 15 percent (-2%), measured from the street, alley or driveway grade along the driveway centerline, for a distance of not more than eighteen (18) feet from the street, alley or driveway right-of-way line. On a case by case basis, minor adjustments may be approved by the Planning Division, in accordance with Section 9-1-114, where physical design or topography preclude compliance and extreme grade breaks are avoided and safe sight distances are provided.

Offstreet parking spaces and the abutting parking aisles shall have a maximum grade of two percent (2%) for retail commercial and five percent (5%) for all other uses. The grade shall be measured across the parking space and the abutting parking aisle in any direction.

For both residential and non-residential uses, ramps or driveways providing vehicular access within the interior of an offstreet parking area located beyond eighteen (18) feet from the ultimate right-of-way line of a street, alley or driveway shall have a maximum slope of plus or minus twenty percent (+/-20%). When such ramp or driveway slopes exceed plus or minus ten percent (+/-10%), the ramp or driveway design shall include transitions, not less than eight (8) feet in length, having a slope equal to one-half the ramp slope. When parking is provided on a ramp, the maximum slope shall not exceed six percent (6%).

SUBARTICLE 13. EROSION, SEDIMENT, AND CHEMICAL CONTROL

13.1 Information on Erosion, Sediment, and Chemical Control Plans

The plan shall include but not be limited to:

a. The name and twenty-four (24) hour telephone number (work and cell numbers) of the person responsible for performing emergency erosion, sediment, and chemical control work.

b. The signature of the civil engineer or other qualified design professional who prepared the grading plan, and who is responsible for inspection and monitoring of the erosion, sediment, and chemical control work.

c. All desilting, erosion, and sediment protection facilities necessary to protect adjacent property from erosion and sedimentation.

d. The streets and drainage devices shall be protected from sediment deposition and illicit discharge.

e. The placement of gravel bags (which are required), slope planting, or other measures to control erosion and sediment from all slopes above and adjacent to roads open to the public.

f. The plan shall indicate how access will be provided to maintain desilting facilities during wet weather and throughout the year.

13.2 Approval of Erosion, Sediment, and Chemical Control Plans

Effective erosion, sediment, and chemical control shall have taken place during the construction. Thee determination of effectiveness shall be made by the assigned grading inspector.

13.3 Approval of Erosion Control Landscaping

Effective planting for erosion control shall be deemed to have occurred when the landscape architect submits an acceptable written verification that (s)he has observed the completed erosion control landscaping and is satisfied that sufficient growth has taken place to be effective in controlling erosion on all erodible manufactured slope laces. Where no condition of approval requires a landscape plan, the determination of effectiveness shall be made by the grading inspector.

SUBARTICLE 14. GRADING INSPECTION

14.1 Site Inspection by the Building Official

Prior to any grading, brushing, or clearing, there shall be a pregrading meeting held on the site. Prior to placement of curb and gutter or of pavement base material, there shall be a prepaving meeting held on the site. The permittee, or his agent, shall notify the Building Official at least two (2) working days prior to the meetings and shall be responsible for notifying all principals responsible for grading and/or paving related operations. It shall be the duty of the person doing the work authorized by a permit to notify the Building Official at least one (1) working day prior to the grading work being ready for the following inspections.

a. Cut and Fill Inspection(s):

1. Site Clearing: After all brush and unsuitable material has been removed, and an acceptable base has been exposed, but before any fill is placed.

2. Toe Bench and Key: After suitable natural ground or bedrock is exposed, the bench or key must be excavated to design specifications, survey stakes are required to locate the toe of slope.

3. Overexcavation: After an area has been excavated to remove unsuitable material, and prior to any fill placement, any planned structures requiring overexcavation must be staked for location.

4. Cut: After the cut is started, but before the vertical depth of the cut exceeds ten (10) feet, and every ten (10) foot interval thereafter. Continuation of this cut operation need not await the arrival of the grading inspector provided that proper notification has been made to the Building Official. Exporting of soil may require traffic controls, flagman, and/or haul route clearance and/or permitting from the Laguna Niguel Public Works Department or other cities. All exported soil must be taken to another site having a current Grading Permit, or to a County dump/landfill.

5. Fill: After the fill has started, but before the vertical height of the fill exceeds ten (10) feet, and every ten (10) feet interval thereafter. Continuation of this fill operation need not await the arrival of the grading inspector provided that proper notification has been made to the Building Official. Importing of soil may require traffic controls, flagman, and/or haul route clearance and/or permitting from the Laguna Niguel Public Works Department or other cities.

6. For items 1 to 5, the assigned grading inspector shall receive proper field memos from the Geotechnical/Soil Consultants of Record, approving the cleanouts, keyways, competent bottoms, canyon subdrains, and outlets, etc.

b. Concrete or Gunite Drainage Device Inspection(s):

1. Alley gutter and/or concrete device draining asphalt:

(a) Subgrade (prior to placement of concrete) is to be prepared and required reinforcement placed. The Design Civil Engineer of Record shall provide a field memo that line and grade is set in accordance with the approved plans.

(b) Concrete placement: Concrete placement need not await the arrival of the grading inspector provided proper notification has been made to the Building Official.

2. Curb and gutter (private property):

(a) Subgrade (prior to placement of concrete): Subgrade is to be made; forms and reinforcement are to be placed. The Design Civil Engineer of Record shall provide a field memo that line and grade is set in accordance with the approved plans.

(b) Concrete Placement: Concrete placement need not await the arrival of the grading inspector provided proper notification has been made to the Building Official.

3. Terrace drains, down drains, brow ditches, and all other paved drainage devices:

(a) Subgrade: Prior to placement of welded wire mesh or reinforcing steel, the Design Civil Engineer of Record, shall provide a field memo that line and grade is set in accordance with the approved plans.

(b) Reinforcement: Thickness control wire and reinforcing steel or welded wire mesh are to be installed but prior to placement of gunite or concrete.

(c) Concrete placement: Concrete placement need not await the arrival of the grading inspector provided proper notification has been made to the Building Official.

4. Sidewalks used as drainage devices:

Subgrade: prior to placement of concrete, subgrade is to be made and forms are to be in place with the required reinforcement. The Design Civil Engineer of Record shall provide a field memo that line and grade is set in accordance with the approved plans.

c. Drainage Device Other than Concrete or Gunite Inspection(s):

1. Subdrains:

(a) After excavation but prior to placement of filter material and pipe; the subdrain pipe and filter material shall be on-site for inspection.

(b) After filter material and subdrain has been placed but prior to covering with backfill.

2. Storm drains and inlets:

(a) After placement of storm drains but prior to covering with backfill, the Design Civil Engineer of Record shall provide a field memo that line and grade is set in accordance with the approved plans.

(b) After placement of inlet forms but prior to placing concrete, the Design Civil Engineer of Record shall provide a field memo that line and grade is set in accordance with the approved plans.

3. Earthen Swales:

(a) Prior to rough grading approval or lumber drop

(b) Prior to final grading approval

d. Rough Grade Inspection(s):

This inspection may be called for at the completion of rough grading without the necessity of the Building Official having previously reviewed and approved the required reports if the grading was performed under a precise grading permit. Under normal circumstances, all subdrains and slope drains shall be in place and approved as a condition for rough grading approval.

e. Paving Inspection(s):

1. Subgrade:

After subgrade has been established, tested, and approved by the Geotechnical/Soil Engineer of Record, or his qualified representative, the Geotechnical/Soil Engineer of Record shall provide a field memo of compaction test results. The Design Civil Engineer of Record shall provide a field memo that line and grade is set in accordance with approved plans.

2. Untreated Base:

After untreated base course has been placed, tested, and approved by the Geotechnical/Soil Engineer of Record, or his qualified representative, but prior to prime coat and asphalt placement. The Geotechnical/Soil Engineer of Record shall provide a field memo of compaction test results. The Design Civil Engineer of Record shall provide a field memo that line and grade is set in accordance with the approved plans. Material invoices may be required.

3. Asphalt:

(a) During asphalt lay down, to verify continuous inspection by the Geotechnical/Soil Engineer of Record, or his qualified representative, or a special inspector when authorized. Material invoices may be required. Asphalt placement need not await the arrival of the assigned grading inspector if proper notification has been made to the Building Official.

(b) Prior to application of seal coat, the paved surface shall be water tested to reveal any irregularities and shall be patched where required. Material invoices may be required after placement of seal coat.

f. Final Inspection:

After all work, including installation of all drainage structures and other protective devices has been completed and all written professional approvals and the required reports have been submitted. An as-built plan will be required if, in the opinion of the Building Official, the finished site significantly deviates from the approved grading plan.

g. Siltation Control Facilities (are to be installed year round)

1. After excavation of desilting basins but prior to fill placement, prefabricated devices are to be available on- site for inspection, (e.g., Type V Inlet, Riprap, etc.).

2. After fill placement for desilting basins but prior to placement of concrete or other non-erosive materials.

3. After completion of an erosion, sediment, and chemical control system in accordance with an approved erosion, sediment, and chemical control plan and the requirements of the Building Official.

14.2 Special Inspections

The responsibilities and duties of a certified special inspector as provided in the currently adopted State Building Codes, Section 1701, Special Inspections, or currently adopted State Building Codes or Adopted City Codes, as Amended.

14.3 Alternate Materials and Methods of Construction

a. The provisions of this grading manual are not intended to prevent the use of any material or method of construction not specifically prescribed by the Grading Code or this Grading Manual provided any such alternate has been approved pursuant to this section and approved by the Building Official.

b. The Building Official may approve any such alternate provided he finds that the proposed design is satisfactory and complies with the provisions of the Grading Code and this Grading Manual and that the material, method, or work offered is, for the purpose intended, at least the equivalent of that prescribed in quality, strength, effectiveness, and safety.

c. The Building Official shall require that sufficient evidence or proof be submitted to substantiate any claims that may be made regarding its use.

d. Whenever there is insufficient evidence of compliance with the provisions of this Grading Manual or evidence that any material or any construction does not conform to the requirements of this Grading Manual or in order to substantiate claims for alternate material or methods of construction, the Building Official may require tests as proof of compliance to be made at the expense of the owner or his agent by an approved testing agency.

e. Test methods shall be as specified by this Grading Manual for the material in question. If there are no appropriate test methods specified, the Building Official shall approve the test procedure. Copies of the results of all such tests shall be retained for a period of no less than two (2) years after the acceptance of the grading.

SUBARTICLE 15. COMPLETION OF WORK

15.1 Final Reports

Upon completion of the rough grading work and at the final completion of the grading work under the grading permit, but prior to the issuance of building permits, release of grading bonds, or issuance of a certificate of use and occupancy, the Building Official may require:

a. An as-graded grading plan prepared by the Design Civil Engineer of Record, the Design Architect of Record, or other licensed California Qualified Professional, which shall include corrected original ground surface elevations, if necessary, graded ground surface elevations, lot drainage patterns, manufactured slope inclination, and location of all drainage facilities and subdrains.

b. A written approval by the Design Civil Engineer of Record approving the grading as being substantially in conformance with the approved grading plan and which specifically approves the following items as appropriate to the project and stage of grading:

1. Construction of line and grade for all engineered drainage devices and retaining walls (rough and final grading).

2. Staking of temporary property corners which may be at offsets for proper building location (rough grading).

3. Setting of all monuments and property boundaries in accordance with the recorded tract map (rough or final grading) and set by a licensed California Civil Engineer authorized to practice professional surveying, or by a licensed California Land Surveyor.

4. Location of permanent walls or structures on property corners or property lines where monumentation is not required (final grading).

5. Location and inclination of all manufactured slopes (rough and final grading).

6. Construction of earthen berms and positive building pad drainage (rough and final grading).

When the approved grading plan is **not** prepared by a Licensed California Civil Engineer, or a Licensed California Architect, or another Licensed California Qualified Professional, the person who prepared the plan, shall provide written approval of the grading as being substantially in conformance with the approved grading plan.

c. A geotechnical/soil engineering report prepared by the Geotechnical/Soil Engineer of Record, including type of field testing performed, suitability of utility trench and retaining wall backfill, summaries of field and laboratory tests and other substantiating data, and comments on any changes made during grading and their effect on the recommendations made in the geotechnical/soil engineering investigation report. Each field density test shall be identified, located on a plan or map, the elevation of test and finish grade elevation shown, and the method of obtaining the in-place density described, either Active Standard ASTM D1556 (Sand Cone Method), Active Standard ASTM D6938 (Nuclear Gauge Method) or equivalent, or the approved equal shall be so noted. The Geotechnical/Soil Engineer of Record shall provide a written opinion as to the adequacy of the site for the intended use, as affected by the soil engineering factors. The Building Official may require that the soil tests or testing be performed by an approved testing agency.

d. A geology report prepared by the engineering geologist, including a final description of the geology of the site including any new information disclosed during the grading, and effect of it on recommendations incorporated in the approved grading plan. The engineering geologist shall provide a written approval as to the adequacy of the site for the intended use as affected by geologic factors and when required by the Building Official, shall submit an as-built geologic map.

e. A statement prepared by the grading contractor on a City form describing the volume of excavation and fill moved on the project. In addition, if the grading plan was not prepared by a registered civil engineer or registered professional authorized to prepare grading plans and perform inspections, the grading contractor shall submit a written statement that the work was completed in accordance with the approved plans.

f. A statement prepared by the soils engineer on a City form certifying to the supervision of the testing and inspection under their purview during the project.

APPENDIX A

Technical Guidelines for Geotechnical/Soil Engineering and Engineering Geology Reports

City of Laguna Niguel
Community Development Department
30111 Crown Valley Parkway
Laguna Niguel, CA 92677
949-362-4300
www.cityoflagunaniguel.org

LAGUNA NIGUEL
TECHNICAL GUIDELINES FOR GEOTECHNICAL/SOIL ENGINEERING AND ENGINEERING GEOLOGY REPORTS

The ultimate responsibility for a safe design, construction and maintenance of any grading project rests with the consulting engineers, geologists, contractors, and the owner. Since site conditions and proposed development plans vary so greatly between projects, the City of Laguna Niguel recognizes the discretion and judgments that must be used by the consulting professionals. It is, therefore, essential to enhance the general understanding between the permit applicants, consultants, and City staff and the City's third-party geotechnical consultant(s). The purpose of these technical guidelines is to inform grading permit applicants and their professional consultants of the basic information looked for in reviewing in reviewing preliminary (initial) geotechnical/soil engineering and engineering geology reports for grading permit applications and rough grade compaction reports. The guidelines presented below are minimum report requirements. Additional resources that may be useful for report research and preparation are presented at the end of this Appendix.

The technical guidelines are divided into four parts to distinguish geotechnical/soil engineering and engineering geology report content for project sites to be developed by grading located within different topographic areas and with respects to geologic/geotechnical hazard zones. The more involved grading projects will encompass, but not be limited to, several parts listed below:

1. **Flatland Grading Projects** – Identifies the geotechnical/soil engineering report content for grading projects located within flatland areas.

2. **Hillside Grading Projects** – Identifies the geotechnical/soil engineering and engineering geology report content for grading projects located within hillside areas (additive to the requirements of Part I).

3. **Geotechnical/Geologic Hazard Zones (flatland and hillside projects)** – Identifies the geotechnical/soil engineering and engineering geology report content for grading projects located within Seismic Hazard Zones (SHZ) for liquefaction or earthquake induced landslide potential and/or the Alquist-Priolo Earthquake Fault Zoning (AP) Act as defined by the State of California (additive to the requirements of Part I and Part II as applicable).

4. **Rough Grade Compaction Reports** – Identifies the geotechnical/soil engineering report content for grading permit compaction reports.

1. FLATLAND GRADING PROJECTS

General:

(1) Signature and GE or RCE number of the Geotechnical/Soil Engineer of Record.

(2) Job address.

(3) Location description and/or location index map with reference north arrow, scale, etc.

(4) Description of site conditions (topography relief, vegetation, man-made features, drainage, watershed, etc.).

(5) Proposed grading (general scope, amount, special equipment and/or methods if applicable).

(6) Planned construction (type of structure and use, type of construction and foundation/floor system, number of stories, estimated structural loads).

(7) Proposed grading: special grading equipment or methods needed for resistant, saturated, or other unusual materials or situations.

(8) Proposed rock disposal methods (for clasts and residuals larger than 12 inches) and disposal areas (include on geotechnical plan if disposal areas is on site with complete details).

(9) References to publications and other reports cited.

Field Investigations:

(1) Scope (date work done, investigative methods, sampling methods, logs of borings/test pits, elevations of borings/test pits for reference of materials and samples to finished grade or footing elevations, identify real or assume elevations).

(2) Plan with legend showing: site limits, terrain features, man-made features, boring/test pit lo- cations, proposed improvements (including slopes with ratios, soil limits, daylight lines, paving areas, retaining walls, earth retention systems, (e.g. segmental walls, MSE walls, etc.), retaining wall systems, subdrains, and limits of overexcavation, cleanouts, uncertified fill areas, etc.

(3) Location of all samples taken, surface and subsurface.

Groundwater Conditions:

Existing and historic high groundwater, future natural and artificial groundwater seepage impacts on proposed grading/project.

Engineering/Material Characteristics, Competency, Strength and Testing:

(1) Include all test methods used, type or condition of samples used, applicable engineering graphics and calculations, results of all tests, and locations of all test samples [Use Current ASTM Standard Test Method or approved alternative].

(2) Unified Soil Classification of Materials.

(3) Field densities (and relative compactions where pertinent) and moisture content.

(4) Maximum density-optimum moisture parameters of proposed fill material per Active Standard ASTM D 1557 or approved equivalent.

(5) Shear strength of foundation material (drained or undrained conditions, effective stress or total stress analysis, in-situ or remolded samples must be identified).

(6) Consolidation or settlement potential.

(7) Expansion potential analyses of foundation material (see Active Standard ASTM D4829 or approved equivalent and classify potential.

(8) Soluble sulfate content of soils in contact with concrete (test by ASTM Active Standard C1580 or approved equivalent).

(9) Gradation/size analyses by ASTM Active Standard D422 or approved equivalent.

(10) Atterberg limit analysis and parameters by ASTM Active Standard D4318 or approved equivalent.

(11) Geophysical survey, if appropriate – graphic and results.

(12) Material densities and/or penetration tests (Standard Penetration Test (SPT), Cone Penetrometer Test (CPT) or other methods of known correlation to earth material density).

(13) Shrinkage and/or bulking factors.

Foundation Design Criteria:

(1) Footing depth and width.

(2) Criteria for foundation material preparation

(3) Allowable bearing values based on testing.

(4) Lateral pressures (active, passive, or at rest conditions) and coefficient of friction.

(5) Settlement – total, differential and rate of settlement

Foundation Design Criteria/Special Provision for Expansive Earth Materials:

(6) Footing design and placement criteria.

(7) Slab thickness, reinforcement; separation and expansion joints, construction joints, doweling, or ties.

(8) Bridging; grade beam specifications and recommendations, when applicable.

(9) Pre-stressed (post-tensioned) floatation slab specifications and recommendations, if this system is proposed.

(10) Exterior flatwork recommendations.

(11) Moisture barriers and/or selective grading (aggregate or sand base or other sub- base.

(12) Soil moisture measures.

i. Treatment prior to concrete placement: “pre-placement moistening,” “pre-soaking,” or “pre-saturation”.

ii. Drainage/irrigation controls to maintain moisture content in foundation materials (including increased positive drainage, paving, cut-off walls, sealed planters, gutters and downspouts, etc.).

Foundation Design Criteria/Additional Special Provisions:

(13) Soluble sulfate content specifications and recommendations.

(14) Effects of adjacent loads when footings are at differing elevations.

(15) Deep foundation systems

i. Allowable bearing values.

ii. Foundation design criteria, parameters and calculation when applicable.

iii. Additional loads or potential loads caused by geologic conditions (parameters and calculations).

Engineering calculations with supporting data and applicable parameters are used as a basis for recommended values. These will be needed depending on the values presented relative to the foundation materials, groundwater table, proposed improvements and imposed loads B.

Reference:

In supplemental or grading plan review reports referencing earlier reports, supply copies of those referenced reports or applicable portions as required by the Building Official. Geotechnical consultant will be required to review and sign/stamp all approved plans and/or plan revisions prior to permit issuance.

Earthwork Conclusions and Recommendations:

Ground Preparation:

(1) Clearing/Grubbing.

(2) Existing improvement/facility abandonment.

(3) Unsuitable material removal/overexcavation (including lateral extension of removal/overexcavation beyond edge of grading limits/improvements).

Fill Support:

(1) Suitability and pre-compaction of in-situ materials (describe test results and other pertinent data to be used to determine suitability).

(2) Densification and moisture conditioning or dewatering measures (equipment, surcharge, settlement monitoring, etc.).

Placement of Fill:

(1) Material approval (on-site, imported).

(2) Testing (minimum 90% relative compaction by Active Standard ASTM D1556 or approved equivalent) and frequency of field density testing by vertical intervals and/or volume of fill.

(3) Elimination of cut/fill or other differential transitions beneath improvements.

Utility Trenches:

(1) Backfill specifications and recommendations under structures, pavements and slopes (minimum 90% relative compaction using native materials) vs. landscape and other areas.

(2) Provisions for approval inspections and necessary testing during and on completion of grading. Opinion as to adequacy of site for the proposed development. (This opinion should also be summarized in the first part of the geotechnical report).

(3) Other pertinent geotechnical information for the safe development of the site.

Pavement Design:

Indicate area and type of pavement on geotechnical report plan.

(1) AC Pavement Design Criteria:

i. R-value testing: method, results, sample location(s); or provide minimum AC sections per Grading and Excavation Code.

ii. Traffic indices or projected loading conditions.

iii. AC structural sections: parking areas, service areas, heavy vehicle areas.

iv. Untreated base compaction recommendations (minimum 95% relative compaction).

v. Subgrade recommendations: minimum depth, compaction (minimum 90% relative compaction); special recommendations for bridging, or founding, e.g., soil cement or lime treatment, over-excavation, selective grading, etc.

(2) Concrete Pavement Design Criteria:

i. Minimum thickness and reinforcement.

ii. Size of poured or sawed sections; expansion joints.

iii. Untreated base specifications and recommendations.

iv. Subgrade recommendations.

Percolation/Infiltration:

Impact of proposed percolation/infiltration improvement on site conditions/proposed development must be addressed. Exploration/testing to determine site specific percolation/infiltration rates must be completed in accordance with County guidelines or approved equivalent.

2. HILLSIDE GRADING PROJECTS

All guidelines listed in Part I for preliminary geotechnical/soil reports are applicable in addition to the following:

General:

(1) Engineering geology report with signature, seal and CEG number of the Certified Engineering Geologist of Record (generally needed depending on site conditions and proposed developments).

(2) Source of base map with date.

(3) Engineering Geologist performing mapping (if different than signing CEG).

(4) Geological setting including general description, index of site on portion of recent large scale geologic map (if available) and references to previous geotechnical re- ports (or published papers) and aerial photo data on site area.

(5) Topographic features and relationship to site geology (outcrop distribution, slope height

and angles and/or ratios, dip slopes, cliffs, faults, contacts, erosion pattern, etc.).

(6) Site conditions: distress on existing improvements in area (expansive, soil/bedrock, settlement/subsidence, or slope creep/lateral fill extension areas).

Field Investigations:

(1) Geologic map showing: site geology, location of proposed keyways (with dimensions), proposed buttresses, proposed or existing subdrains, seeps or springs, etc., and be suitable for the general purpose in its size, scale and manifestation and contains an adequate legend. The map should have highlighted representative geologic data of sufficient amount and location for evaluation of: general rock or soil unit distribution, geologic structure, downslope movement features (including soil/rock creep and slope creep/lateral fill extension), groundwater conditions, subsidence/settlement features or potential, and other pertinent site characteristics.

(2) Substantiation of any known gross differences of opinion with recently available geo- logic reports or published data or maps on site area.

Earth Materials (bedrock and Surficial Units):

(1) Unit classification, general lithologic type, geologic age, origin.

(2) Unit description and characteristics (in sequence for relative age) including (but not limited to):

i. Composition, texture, fabric, lithification, moisture, etc.

ii. Pertinent engineering geologic attributes (clayey, weak, loose; alignments, fissility, planar boundaries; pervious or water-bearing parts; susceptibility to mass-wasting, erosion, piping, or compressibility).

iii. Distribution, dimensions, or occurrence (supplemental to data furnished on illustrations).

iv. Suitability as construction and foundation material.

v. Effects and extent of weathering (existing and relationship to project design and future site stability, material strength, etc.).

Geologic Structure:

(1) Distribution of structural features including position, attitude, pattern and frequency of:

- Fissures, joints, shears, faults and other features of discontinuity.
- Bedding, folds, and other planar features.

(2) Character of structural features including: continuity, width of zones and activity, dominant vs. subordinate, planar nature, plunge, depth, open vs. closed (degree of cementation or infilling), gouge

- Structural or cross-sections (one or more appropriately positioned and referenced on map; especially through critical areas, slopes and slides) of suitable size and engineering scale; with labeled units, features and structures; and a geologic legend. These sections should correlate with surface and subsurface data showing representative dip components, projects, and stratigraphic/structural relationships.

Foundation Design Criteria/Special Provisions:

(1) Footing setback from face of slopes and other setbacks (faults, fracture zones, contacts, etc.).

(2) Creep load for foundation design, impact of slope creep/lateral fill extension on foundation design and construction.

Stability Features and Conditions:

(1) Adequate mapping, sections and description showing position, dimensions and type of existing downslope movement features including soil/rock creep, flows, falls, slumps, slides, if any.

(2) Activity, cause or contributing factors of downslope movement features.

(3) Recent erosion, deposition, or flooding features.

(4) Subsidence/settlement, piping, solution or other void features or conditions.

(5) Groundwater and surface drainage characteristics or features.

(6) Surface expression (past and present); permeability/porosity of near surface materials.

(7) Actual or potential aquifers or conduits, perching situations, barriers or other controls to percolation and groundwater movement and fluctuation of groundwater levels at the site.

Earthwork Conclusions and Recommendations (including slope and site stability):

(1) Unsuitable material removal (canyon cleanout, overexcavation, etc.).

(2) Keyways (with dimensions) and benching details for existing slopes steeper than 5:1 (H:V).

(3) Specifications for the method or placement and compaction of soil within the zone of the slope face.

(4) Slope Stability susceptibility to mass-wasting (creep to rapid failure potential).

(5) Favorable or unfavorable inter-relationships of fractures (joints, shears, faults or zones) to planar structures (bedding, contacts, folds, plunges, weathered zones, etc.) and to each other forming potential failure planes, veneers, masses, or blocks.

(6) Favorable or unfavorable inter-relationships of geologic structures, conditions and potential failure planes to natural and/or man-made topography forming actual or potential adverse dips and contacts, adverse fractures (jointing, shearing, faulting), ad- verse fold limbs or synclinal axes, adverse earth masses or blocks.

(7) Favorable or unfavorable inter-relationships of height existing or proposed slopes to present and future (weathering effects; rate, depth, etc.) strength of earth materials.

(8) Slope stability effects onto or from developed natural, or proposed slopes of adjacent properties.

(9) Statement of site stability and summary of actual and potential unstable situations relative to the proposed site configuration and necessary stabilization or remedial measures for downslope movements, erosion, groundwater or settlement/subsidence effects. Opinion and recommendations of surficial and gross stabilities of natural and manufactured slopes.

(10) Provisions for necessary inspections of excavations to competent material by the Certified Engineering Geologist of Record and/or Geotechnical/Soil Engineer of Record and their approval and/or testing of material competency.

(11) Geologic feasibility of the site for the proposed development. (This opinion should also be summarized in the first part of the geotechnical report).

(12) Slope stability analysis (dependent on slope height and ratios, strength of earth materials, internal structure, susceptibility to weathering, actual or potential groundwater, surficial covering, proximity to site improvements or structures, and proposed landscaping and maintenance).

- Gross stability (static and pseudostatic) of natural or man-made slopes with calculations, graphics and supporting data and applicable parameters.

- Surficial stability of slopes with calculations, graphics, supporting data and applicable parameters.

- Slope stability of temporary excavations with calculations, graphics, supporting data and applicable parameters.

(13) Seismic evaluation should include regional seismicity: potential for strong shaking, ground rupture, liquefaction and earthquake induced movement/sliding; applicable parameters (peak and/or design ground acceleration, duration of strong shaking site period) and the currently adopted State Building Codes (CBC) for Earthquake Design Criteria and current edition of ASCE 7 for earthquake design.

NOTE: General guidelines for slope stability analyses are provided in “Minimum Standards for Slope Stability Analysis” (Appendix D).

3. GEOTECHNICAL/GEOLOGIC HAZARD ZONES (FLATLAND AND HILLSIDE PROJECTS)

Identifies the geotechnical/soil engineering and engineering geology report content for grading projects located within Seismic Hazard Zones (SHZ) for liquefaction or earthquake induced landslide potential and/or the Alquist-Priolo Earthquake Fault Zoning (AP) Act as defined by the State of California (additive to the requirements of Part I and Part II as applicable).

General:

(1) Seismic Hazard reports shall be required to address liquefaction potential in accordance with the requirements of SP117A (most current edition) for development of sites located within the limits of the State of California defined Seismic Hazard Zones (SHZ's), or as determined by the Building Official.

(2) Seismic Hazard reports shall be required to address earthquake induced landslide potential in accordance with the requirements of SP117A (most current edition) for development of sites located within the limits of the State of California defined Seismic Hazard Zones (SHZ's), or as determined by the Building Official.

Seismicity/Fault Study reports shall be required to address the hazard of surface fault rupture in accordance with the requirements of the Alquist-Priolo Earthquake Fault Zoning (AP)Act and CGS Special Publication 42 (most current edition) for the development of sites located within State of California defined Earthquake Fault Zones (EFZ's), or as determined by the Building Official.

Reference:

(1) Seismic Hazard Reports for liquefaction and earthquake induced landslide potential shall be prepared in accordance with the guidelines for evaluating and mitigating seismic hazards as presented in SP117A (most current edition) and the Southern California Earthquake Center (SCEC) referenced publications (1999 and 2002/most current editions) included on the Additional Resources listing presented at the end of this Appendix.

(2) Seismicity/Fault Study reports shall be prepared in accordance with the guidelines for evaluating the hazard of surface fault rupture as presented in California Geological Survey (CGS) Note 49 (most current edition) included on the Additional Resources history presented at the end of this Appendix.

4. ROUGH GRADE COMPACTION REPORTS

General:

(1) Signature and RCE number of Geotechnical Engineer of Record.

(2) Signature and CEG number of Certified Engineering Geologist of Record (Hillside areas only, or as determined by Building Official).

(3) Job address, lot, and tract number.

(4) Grading Permit Number.

Placement of fill:

(1) Purpose for which fill was placed.

(2) Preparation of natural grade to receive fill.

(3) Placement of fill (depth of layers, watering, etc.).

(4) Equipment used for compaction.

(5) Method of compacting outer slope area.

Testing (Compaction):

(1) Test procedure (field and laboratory).

(2) Plot plan with the location of all density tests.

(3) Summary of test results:

- Test identification number
- Date test performed
- Maximum dry density
- Optimum moisture
- Field dry density
- Field moisture
- Relative compaction
- Approximate elevation of test

- Approximate finish grade elevation at test site

Testing (Utility Trench Compaction):

(1) Location of test.

(2) Depth of trench and test.

(3) Method of backfill and compaction equipment.

(4) Summary of test results.

Testing (Other):

(1) Summary of expansion test results (identify lots or areas with swelling potential, plot test locations on plot plan).

(2) Summary of soluble sulfate test results.

(3) Summary of “R” value tests for asphalt concrete design where applicable.

As-Built Conditions:

(1) Plot plan showing limits of the approved compacted fill area (approximate pad elevation, depth of fill, areas of overexcavation, canyon cleanouts, keys, and subdrains).

(2) Treatment of “daylight” or cut/fill transition zones (extent of overexcavation outside of and below the footings).

(3) Type of soil encountered daring grading (fill, in-situ, imported borrow).

(4) Groundwater conditions identified and subdrains or other methods used to mitigate adverse effects.

(5) Geologic conditions encountered.

(6) Geotechnical cross-sections (as necessary).

(7) Comments on changes made during grading and their effect on the recommendations made in the approved geotechnical report.

Recommendations:

(1) Footing recommendations and bearing value on compacted fill.

(2) Footing and floor slab recommendations based on results of expansion and soluble sulfate tests and construction details of footings.

(3) Pavement structural section design recommendations and specifications.

(4) The suitability of natural soil to support the fill or structure.

(5) Approval as to the adequacy of the site for the intended use, as affected by soil engineering and/or engineering geologic factors.

(6) The gross (static and pseudostatic) and surficial stability of all slopes.

(7) The suitability of utility trench and retaining wall backfill.

(8) A statement that the geotechnical/soil engineering and the engineering geologic aspects of the grading have been inspected and are in compliance with the applicable conditions of the grading permit and the geotechnical/soil engineer's and engineering geologist's recommendations.

Additional Resources for Preparation of Geotechnical/Soil Engineering and Engineering Geology Reports

- The Laguna Niguel Grading and Excavation Code, the Laguna Niguel Zoning Code and the adopted California Building Code Standards.

- American Concrete Institute, Building Code Requirements For Structural Concrete (Aci 318) And Commentary.

- California Board for Professional Engineers, Land Surveyors, and Geologists California Department of Conservation, California Geological Survey, California Department for Conservation, California Geological Survey, Fault-Rupture Hazard Zones in California, Special Publication 42, (Interim Revision) Dated 2007.

- California Department of Conservation, California Geological Survey, Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117a, Dated 2008 (Revised March 2009).

- California Department of Conservation, California Geological Survey, Guidelines for Evaluating the Hazard of Surface Fault Rupture, Note 49, Dated 2002.

- California Department of Consumer Affairs, Board For Geologists and Geophysicists, Geologic Guidelines for Earthquake and/or Fault Hazard Reports, Released 1998.

- California Department of Consumer Affairs, Board For Geologists and Geophysicists, Guidelines for Engineering Geologic Reports, Released 1998.

- Southern California Earthquake Center (SCEC), Recommended Procedures for Implementation of Dmg Special Publication 117 Guidelines for Analyzing and Mitigating Landslide Hazards in California, Dated June 2002.

- Southern California Earthquake Center (SCEC), Recommended Procedures for Implementation of Dmg Special Publication 117 Guidelines for Analyzing and Mitigating Liquefaction in California, Dated June 1999.

- United States Geological Survey, Probabilistic Seismic Hazard Analysis.

APPENDIX B

Security Forms and Related Instructions

City of Laguna Niguel
Community Development Department
30111 Crown Valley Parkway
Laguna Niguel, CA 92677
949-362-4300
www.cityoflagunaniguel.org

GRADING PERMIT - SURETY BOND

KNOWN ALL PERSONS BY THESE PRESENT: That we_____, as Principal, and_____, a corporation organized and existing under the laws of the State of _____, and duly authorized to transact a surety business in the State of California, as Surety, are held and firmly bound unto the City of Laguna Niguel in the just and full sum of _____ DOLLARS, for the payment of which, well and truly to be made, said Principal and Surety bind themselves, their heirs, administrators, successors and assignee, jointly and severally, firmly by these presents

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, the said Principal above named is the applicant under Grading Permit No. _____ of the City of Laguna Niguel, California, for grading, on the real property located at:_____, Laguna Niguel.

NOW, THEREFORE, IT IS AGREED that if the Principal shall:

a. Comply with all the provisions of the City of Laguna Niguel Grading and Excavation Code and other applicable laws and ordinances; and
b. Comply with all the terms and conditions of the permit to the satisfaction of the Building Official; and
c. Complete all of the work contemplated under the said permit within the time limit specified in the permit, and any extension or extensions thereof; and
d. Reimburse the City of Laguna Niguel for any work required by the permit that the City Building Official deems necessary to complete, correct or otherwise undertake for the public safety, because of failure on the part of Principal, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

PROVIDED, HOWEVER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or modification of the permit or of the work to be performed thereunder shall in any way affect its obligation on this bond and it does hereby waive notice of any such change, extension of time, alteration or modification of the permit or of work to be performed thereunder, and

PROVIDED FURTHER, that in case suit is brought upon the bond by the City of Laguna Niguel or any other person who may bring an action on this bond, a reasonable attorney's fee, to be fixed by the court, shall be paid by the Principal or Surety.

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Community Development Department
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949-362-4300
www.cityoflagunaniguel.org

IN WITNESS WHEREOF, the said Principal and said Surety have caused these presents to be duly signed and sealed this_____day of _____, 20_____.

_____
Principal

(Attach notary acknowledgement)

By: _____

By: _____

_____
Surety

(Attach notary acknowledgement)

By: _____
Attorney-in-Fact

Address: _____

_____

(This bond must be acknowledged both as to principal and surety before a Notary Public)

City of Laguna Niguel
Community Development Department
30111 Crown Valley Parkway
Laguna Niguel, CA 92677
949-362-4300
www.cityoflagunaniguel.org

GRADING PERMIT SECURITY REQUIREMENTS
SURETY BOND FORM

Use of this form requires Surety and Attorney-in Fact to be registered with the probate Department of the Superior Court, County of Orange.

1. **Instructions for completing Grading Permit Surety Bond Form:**

   a. Fill in name of principal, surety company, state of surety company incorporation and bond amount in designated spaces.

   b. Fill in project address including tract and lot number or parcel map number and parcel if applicable.

   c. Date form is signed and sealed.

   d. Attach acknowledgements (see above).

2. **Acknowledgements Required:**

   a. Notarization for signature of Principal and/or signature of authorized officer of Principal.

   b. Notarization for signature of Attorney-in-Fact of Surety.

3. **Definitions:**

Principal -	Person or corporation applying for grading permit.
Surety -	Corporation authorized to transact surety business in the State of California.
Grading Permit -	To be entered by the City.
Property -	Property identification indicating the job address were proposed work is to be performed under the grading permit.
Building Official -	Community Development Director or his designee authorized to enforce the provisions of the Grading Code.

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GRADING PERMIT SECURITY REQUIREMENTS
SURETY BOND FORM

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1. **Instructions for completing Grading Permit Surety Bond Form:**

   a. Fill in name of principal, surety company, state of surety company incorporation and bond amount in designated spaces.

   b. Fill in project address including tract and lot number or parcel map number and parcel if applicable.

   c. Date form is signed and sealed.

   d. Attach acknowledgements (see above).

2. **Acknowledgements Required:**

   a. Notarization for signature of Principal and/or signature of authorized officer of Principal.

   b. Notarization for signature of Attorney-in-Fact of Surety.

3. **Definitions:**

Principal -	Person or corporation applying for grading permit.
Surety -	Corporation authorized to transact surety business in the State of California.
Grading Permit -	To be entered by the City.
Property -	Property identification indicating the job address were proposed work is to be performed under the grading permit.
Building Official -	Community Development Director or his designee authorized to enforce the provisions of the Grading Code.

City of Laguna Niguel
Community Development Department
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www.cityoflagunaniguel.org

5. Principal agrees that if the City brings suit to collect for the work provided for by the plans, that the reasonable attorney's fees as fixed by the court, shall be paid by the Principal.

* **Note:** Monies paid shall be in form of a Cashier's Check. No personal checks will be accepted.

IN WITNESS WHEREOF, the above named Principal has executed, or caused to be executed, this instrument with all of the formalities required by law on this _____ day of _____, 20_____.

Principal:

_____
Notarized Signature

(Attach notary acknowledgement)

_____
Print Name

_____
Title

_____
Address

_____

_____
Phone

City of Laguna Niguel
Community Development Department
30111 Crown Valley Parkway
Laguna Niguel, CA 92677
949-362-4300
www.cityoflagunaniguel.org

GRADING PERMIT SECURITY REQUIREMENTS
CASH BOND FORM

1. **Instruction for Completing Cash Bond Form:**

   a. Use of this form requires deposit of cash or cashier's check made payable to the City of Laguna Niguel. Personal checks are not acceptable.

   b. Attach notary acknowledgements (see above).

   c. After Grading Counter Representative has approved completed bond form, submit cash or cashier's check and cash bond form to cashier.

2. **Acknowledgments Required:**

   a. Notarization for signature of Principal.

3. **Definitions:**

Principal -	Person depositing cash or providing casher's check.
Grading Permit No. -	Grading permit number issued by the City of Laguna Niguel.
Address -	The job address where work is to be performed under the grading permit.
Amount -	U.S. dollar bond amount.

Principal (Notarized Signature) - Signature of principal. Signature must be notarized. See Item No. 2 above, acknowledgments required).

APPENDIX C

Not Used

APPENDIX D

Minimum Standards for Slope Stability Analysis

City of Laguna Niguel
Community Development Department
30111 Crown Valley Parkway
Laguna Niguel, CA 92677
949-362-4300
www.cityoflagunaniguel.org

LAGUNA NIGUEL MINIMUM STANDARDS FOR SLOPE STABILITY ANALYSIS

The following minimum standards for slope stability analysis will generally be required for all cut, fill and natural slopes steeper than 2:1 (H:V) and/or any gradient when the slope height exceeds 30 feet. A more detailed field and laboratory investigation combined with a seismic stability analysis utilizing such information may be required. Additional resources that may be useful for slope stability analysis are presented at the end of this Appendix.

1) Separate calculations shall be performed for static and seismic conditions.

2) The pseudo static slope stability analysis shall be the minimum seismic analysis accepted for design.

3) Conventional static methods of slope stability analysis based upon principles of mechanics may be used to analyze the stability of slopes under both static and pseudo static loads.

4) The minimum acceptable factor of safety on shear strength is 1.5 for static loads, and 4.1 for pseudo static loads. The factor of safety on strength is defined as the ratio of the shearing resistance force to the actual driving force acting along the potential failure surface.

5) The static analysis shall include the effect of expected maximum moisture conditions, soil weight and seepage or pore pressure where applicable. Saturated moisture conditions shall be utilized unless it can be shown that other moisture contents will rep- resent worst possible conditions for the project.

6) Pseudostatic analysis shall include the effect of static loads combined with a horizontal inertial force acting out of the slope and through the center of gravity of the potential sliding mass.

7) Slope stability analysis should be performed in accordance with SP117A where applicable. Liquefaction related impacts on slope stability (e.g., reduced strength of supporting soils, lateral spreading, etc.) shall be accounted for as necessary based on site specific conditions.

8) The appropriate critical potential failure surface (e.g., circular or block-type failure) used in the analysis must be determined based on the site specific geologic conditions. Wedge failure analysis for permanent cut slopes exposing adverse bedrock conditions should be provided when applicable. In cohesive soils, a vertical tension crack extending down from the top of the slope to the potential failure surface may be used to limit the lateral extent of the potential sliding mass.

9) The critical potential failure surface having the lowest factor of safety on strength shall be sought for the static case. This same static surface and sliding mass may be assumed critical for the pseudo static case.

10) Soil properties including unit weight and strength parameters (cohesion and internal friction angle) may be based on conventional field and laboratory tests and/or field performance. Where appropriate, laboratory tests for long-term residual strengths shall be performed. Shear resistance along bedding planes normally requires estimation of bedding-strength value of the weakest unsupported plane. It is expected that the engineer and engineering geologist will use considerable judgment in the se- lection of appropriate shear test and interpretation of the results in arriving at strength characteristics fitting the present and anticipated future slope conditions. Dynamic strengths used in a pseudo static analysis shall not exceed peak point static strengths, unless supported by dynamic test results or other convincing physical evidence.

11) Each slope stability analysis shall be accompanied by a geotechnical report including a summary of the results of field exploration and laboratory investigation. This report should minimally include the following items:

a) Boring logs and plan locations relative to the proposed grading.

b) Geotechnical description of soil and/or bedrock encountered in the proposed cut slope and/or expected to be used in the proposed fill. Soil description should include engineering classification with moisture and density of stiffness. Rock description should include, but not be limited to: engineering geologic assessment of hardness, degree of weathering, strata thickness, clay surfaces, and oriented planar discontinuities such as strike and dip of bedding, joint spacing, joint thickness, fracture and fault surfaces based on input from the project engineering geologist.

c) Geotechnical cross-sections depicting the critical failure surface and geotechnical data utilized for slope stability analysis.

d) Groundwater conditions encountered at the site as well as anticipated future groundwater conditions that may affect the design.

e) Description of laboratory tests performed with summary of laboratory test results. Both the moisture and drainage conditions during any shear strength tests should be clearly defined.

f) Shear strength parameters for design which are based on field experience should be properly referenced or explained.

12) All design parameters shall be verified during construction. This includes applicable geologic structures such as bedding attitudes, joint orientation and existing shear surface-fill strength, and groundwater conditions. If any significant variation from the design values is discovered, revised calculations shall be made and submitted, to the building official for review and approval.

13) Surficial stability calculations shall be performed for fill or natural slopes steeper than 2:1

(H:V), any gradient slope greater than 30 feet in height, or when necessary due to the height or geologic conditions.

14) Surficial stability calculations shall be performed under saturated conditions. Calculations shall be based on infinite-slope failure model analysis with seepage parallel to the slope surface or another failure mode results in the lowest factor of safety.

15) The minimum vertical depth of material saturation for surficial stability analysis shall be 4 feet, unless determined otherwise by site specific data.

16) Surficial slope stability analysis shall utilized residual shear strength parameters (cohesion and friction) angle. Parameters must be representative of the surficial slope materials.

17) The minimum acceptable factor of safety for surficial stability is 1.5.

18) Surficial stability analysis resulting in factors of safety less than 1.5 shall be considered subject to debris flow hazard and will require appropriate mitigation measures be provided and shown on the approved project plans. Proposed debris impact or diversion walls/structures included as a part of any mitigation recommendations must be designed for a minimum of 125 pcf equivalent fluid pressure.

19) Slope stability analysis shall be performed for temporary excavations and utilize static shear strength parameters. Peak shear strength parameters may be utilized for temporary excavation stability analysis when justified due to very short duration, no potential impact to adjacent properties/existing improvements or other special circumstances.

20) The minimum acceptable factor of safety for temporary excavation slope stability is 1.25.

21) Slope stability analysis is required for all basins. Basins designed with interior slopes steeper than 3:1 (H:V) and include outlet structures shall also include slope stability analysis for rapid drawdown condition. The minimum factor of safety for the rapid drawdown condition is 1.5.

Additional Resources for Slope Stability Analysis:

- The Adopted Laguna Niguel Grading and Excavation Code
- The Adopted California Building Standards Code
- The Laguna Niguel Zoning Code
- California Department of Conservation, California Geological Survey,
- California Department of Conservation, California Geological Survey, Guidelines for Evaluating And Mitigating Seismic Hazards In California, Special Publication 117a, Dated 2008 (Revised March 2009).
- Southern California Earthquake Center (SCES), Recommended Procedures for Implementation of Dmg Special Publication 117 Guidelines for Analyzing and Mitigating Landslide Hazards in California, Dated June 2002

APPENDIX E

Segmental Retaining Walls (SRW) Design Criteria

City of Laguna Niguel
Community Development Department
30111 Crown Valley Parkway
Laguna Niguel, CA 92677
949-362-4300
www.cityoflagunaniguel.org

SEGMENTAL RETAINING WALLS (SRW) DESIGN CRITERIA

The Civil Engineer of Record must provide a signed and stamped letter to the district grading inspector stating that he/she will inspect and monitor construction of the segmental retaining wall system, and shall provide a final line and grade certification upon completion. Information required by the Building Official for grading plan check reviews, of proposed SRW systems are listed below, but not limited to the following:

1. Provide design calculations for the SRW system:

   Calculations shall include an analysis of internal and external stability under both seismic and static conditions. Design shall also establish adequate factors of safety against sliding, overturning, bearing capacity, global stability (for external stability) and tensile over-stressing, pullout, and connection over-stressing (for internal stability).

2. The Approved Grading Plan shall include:

   - A detailed critical cross section of the SRW system, [see items listed in # 4 below].
   - Plan view (with designated stationing) and Profile of the proposed SRW system.
   - Design shall include any impact of groundwater on the proposed SRW system.

3. Provide typical drawings to scale including:

   - SRW system geometry and any surcharge(s).
   - Soil type, soil properties, select import, retained soil, etc.
   - Type of block facing proposed, block geometry, block weights, pins, tiebacks, etc.
   - Facing blocks must be approved by an approved listing agency (e.g., www.icc-es.org) and by the Building Official.
   - Geogrid reinforcement used, i.e., type of geogrids manufactured, with long-term design strength, Geogrid layout with overlaps, show Geogrid elevations, lengths, layers, etc.
   - County of Orange uses an additional factor of safety of 1.5 over the manufacturers design.
   - Include any additional assumptions used in your SRW system design.

4. Provide drainage for the SRW system against erosion and hydrostatic pressure:

   Show on the approved Grading Plan a drainage system including:

   - V-ditch at the top of the SRW [creating a low point at the top of SRW is not recommended] shall be designed in a manner where runoff discharges at the ends of the SRW system.

   - Drainage pipe and filter materials behind the SRW (within the reinforced soil), shall conform to the Laguna Niguel Grading and Excavation Code and the Grading Manual.

   - Drainage pipe behind the reinforced soil zone (i.e., at the heel) shall connect to an approved outlet structure or an on-site storm drain system with appropriate hydraulic head.

   - Call out on the approved grading plan, any restricted use or non-structural area(s), include an Influence Line in plan view.

APPENDIX F

Standard Grading Notes

City of Laguna Niguel
Community Development Department
30111 Crown Valley Parkway
Laguna Niguel, CA 92677
949-362-4300
www.cityoflagunaniguel.org

LAGUNA NIGUEL STANDARD GRADING NOTES

Standard Grading Notes to be included on the Title Sheet of the Grading Plans.

1. All work shall be in accordance with the Grading Code of the City of Laguna Niguel and any special requirements of the permit. A copy of the Grading Code and Manual shall be retained on the job site while work is in progress. When referenced on the plans, a copy of OC Public Works Standard Plans shall also be retained on the site.

2. Grading shall not be started without first notifying the City Grading Inspector, a Pre-Grade Meeting on the site is required before start of grading with the following people present: Owner, Grading Contractor, Civil Engineer, Soil Engineer, Geologist, City Grading Inspector and when required the Archaeologist, Biologist, Paleontologist, and Orange County Fire Authority (OCFA). The required inspections for grading will be explained at this meeting.

3. An approved copy of the Grading Plan shall be on the permitted site while work is in progress.

4. Cut and fill slopes shall be no steeper than 2' horizontal to 1' vertical (2:1).

5. Fills shall be compacted throughout to a minimum of 90% relative density. Aggregate base for asphaltic areas shall be compacted to minimum of 95% relative density. Maximum density shall be determined by California Building Code Standard No. 70-1 or approved equivalent, and field density by California Building Code Standard No. 70-2 or approved equivalent.

6. Areas to receive fill shall be properly prepared and approved in writing by the Soil Engineer and the Building Official prior to placing fill.

7. Fills shall be benched into competent material per OC Public Works Standard Plan No. 1322.

8. All existing fills shall be approved by the Building Official or removed prior to placing additional fills.

9. Any existing irrigation lines and cisterns shall be removed, or crushed in place, and approved by the Building Official and Soil Engineer.

10. Stockpiling of excess material shall be approved by the Building Official prior to excavation.

11. The Civil Engineer, as a condition of rough grade approval, shall provide blue top with accompanying witness stake, set at the center of each pad reflecting the pad elevation for precise permits and a blue top with witness stake set at the drainage swale high point reflecting the high point elevation.

12. All trench backfills shall be tested and approved by the Soil Engineer per the Grading Code.

13. After clearing and prior to the placement of fill in canyons, the Engineering Geologist and Soil Engineer shall inspect each canyon for areas of adverse stability and to determine the presence or absence of subsurface water or spring flow. If needed, subdrains will be designed and constructed prior to the placement of fill in each respective canyon.

14. Subdrain outlets shall be completed at the beginning of the subdrain construction.

15. The exact location of the subdrains shall be surveyed in the field for line/grade and reflected on as-graded plans.

16. All cut slopes shall be investigated both during and after grading by the Engineering Geologist to determine if any slope stability problems exist. Should excavation disclose any geological hazards or potential geological hazards, the Engineering Geologist shall submit recommended treatment to the Building Official for approval.

17. Where support or buttressing of cut and natural slopes is determined to be necessary by the engineering Geologist and Soil Engineer, the Soil Engineer shall submit design, locations, and calculations to the Building Official prior to construction. The Engineering Geologist and Soil Engineer shall inspect and control the construction of the buttressing and certify to the stability of the slope and adjacent structures upon completion.

18. When cut pads are brought to near grade, the Engineering Geologist shall determine if the bedrock is extensively fractured or faulted and will readily transmit water. If considered necessary by the Engineering Geologist and Soil Engineer, a compacted fill blanket will be placed.

19. The Engineering Geologist shall perform periodic inspections and submit a complete report and map upon completion of the rough grading.

20. The compaction report and approval from the Soil Engineer shall indicate the type of field-testing performed. Each test shall be identified with a method of obtaining the in-place density, whether sand cone or drive ring and shall be so noted for each test. Sufficient maximum density determinations shall be performed to verify the accuracy of the maximum density curves used by the Field Technician.

21. The Soil Engineer and Engineering Geologist shall perform sufficient inspections and be available during grading and construction to verify compliance with the plans, specifications, and the code within their purview.

22. The Civil Engineer shall be available during grading to verify compliance with the plans, specifications, code and any special conditions of the permit within their purview.

23. The permittee is responsible for dust control measures.

24. Sanitary facilities shall be maintained on the site.

25. The location and protection of all utilities is the responsibility of the permittee.

26. Approved protective measures and temporary drainage provisions shall be used to protect adjoining properties during grading.

27. Any existing water wells shall be abandoned in compliance with the specifications approved by County of Orange, Human Services Agency, Division of Environmental Health.

28. Any existing oil wells shall be abandoned in compliance with the Orange County Oil Code to the approval of OC Public Works/Regulations Special Service Section.

29. Any existing cesspools and septic tanks shall be abandoned in compliance with the California Plumbing Code to the approval of City Planning/Building & Safety Divisions.

30. Prior to final approval, the Civil Engineer shall certify to the Building Official the amount of earth moved during the grading operation.

31. The permittee shall comply with the Grading Code requirements when an excess of 5,000 cubic yards of each is transported to or from a permitted site on public roadways.

32. Asphalt concrete shall be constructed per the requirements of OC Public Works Standard Plan No. 1805.

33. Aggregate base section shall be constructed per OC Public Works Standard No. 1804.

34. All concrete structures that come in contact with the on-site soils shall be constructed with type V cement, unless deemed unnecessary by soluble sulphate-content tests conducted by the Soil Engineer.

35. Export soil must be transported to a legal dump or to a permitted site approved by the City Grading Inspector.

36. Slopes exceeding 5’ in height shall be planted with approved plant material. In addition, slopes exceeding 15’ in height shall be provided with an approved irrigation system, unless otherwise approved by the Planning Division.

37. The Grading Contractor shall submit a statement of compliance to the approved Grading Plan prior to final approval.

38. Asphalt sections must be per Code: Parking stalls = 3" A/C over 6" A/C, Drives 3" A/C over 10" (Comm.) 12" (Industrial). Or: Prior to rough grade release for Building Permits by the City Grading Inspector, the Soil Engineer shall submit for approval, pavement section recommendations based on 'R' Value analysis of the sub-grade soils, and expected traffic indices.

39. Preliminary soil and geology reports and all subsequent reports as approved by the City Grading Division are considered a part of the approved grading plan.

40. All existing drainage courses through this site shall remain open until facilities to handle storm water are approved and functional; however, in any case, the permittee shall be held liable for any damage due to obstructing natural drainage patterns.

41. Grading operations including maintenance of equipment within one-half mile of a human occupancy shall not be conducted between the hours of 8 p.m. and 7 a.m. daily, on Sunday or on a Federal Holiday.

42. Roof gutters shall be installed to prevent roof drainage from falling on manufactured slopes.

43. The permittee shall be given reasonable notice to the owner of adjoining lands and buildings prior to beginning excavations which may affect the lateral and subjacent support of the adjoining property. The notice shall state the intended depth of excavation and when the excavation will commence. The adjoining owner shall be allowed at least 30 days and reasonable access of the permitted property to protect his structure, if he so desires, unless otherwise protected by law.

EROSION CONTROL

44. In case of emergency, call: _____ Work Phone: _____
(Name) Home Phone: _____

45. Sediments from areas disturbed by construction shall be retained on-site using an effective combination of erosion and sediment controls to the maximum extent practicable, and stockpiles of soil shall be properly contained to minimize sediment transport from the site to streets, sidewalks, gutters, drain inlets or adjacent properties via runoff, vehicle tracking or wind.

46. All sediment and construction debris which is tracked or deposited onto public or private sidewalks, gutters or paved roads shall be removed on a daily basis by sweeping or vacuuming and disposed of properly. Sediment and construction debris **shall not** be washed into the storm drain system, including the gutter and storm drain inlets.

47. Sandbags, gravel bags or other effective filter or trap-type barriers shall be used where appropriate to intercept and slow the flow of runoff from the construction site and to trap sediment before it enters the storm drain system, including gutters and inlets. All on-site storm drain inlets shall be protected and off-site inlets shall be protected in areas where construction activity tracks sediment on paved areas or where inlets receive runoff from disturbed areas.

48. Equipment and workers for emergency work shall be made available at all times during the rainy season. Necessary materials shall be available on site and stockpiled at convenient locations to facilitate rapid construction of temporary devices when rain is imminent.

49. Erosion control devices shall not be moved or modified without the approval of the Building Official.

50. During the wet season, between October 1st and April 30th, erosion control protective devices and measures shall be in place at the end of each working day when the 5-Day probability-of-rain exceeds 40%. During the remainder of the year, the erosion control protective devices and measures shall be onsite and ready for installation when the 5-Day probability-of-rain exceed 50% and in place at the end of each day when the 48 hour probability-of-rain exceeds 50%.

51. After a rainstorm all silt and debris shall be removed from streets, check berms and basins.

52. Graded areas on the permitted area perimeter must drain away from the face of slopes at the conclusion of each working day. Drainage to be directed toward de-silting facilities.

53. All bare slopes, including manufactured slopes, shall be provided with protective erosion control measures.

54. Erosion control systems are dynamic and will change based on changes in site development and weather conditions. Therefore, upon inspection, additional erosion and sediment control measures maybe required by the City Grading Inspector to minimize erosion and sediment transport from areas of the site to streets, sidewalks, gutters, drain inlets or adjacent properties.

55. The permittee and contractor shall be responsible and shall take necessary precautions to prevent public trespass onto areas where impounded water creates a hazardous condition.

56. The permittee and contractor shall inspect the erosion control work and insure that the work is in accordance with the approved plans.

UNDERGROUND STORAGE TANK REMOVAL

57. In the event that soil contamination is discovered during excavation and removal of an existing tank, work shall be stopped until a site assessment and mitigation plan has been prepared, submitted and approved by HCA/Environmental Health and the Grading section.

58. Issuance of a grading permit does not eliminate the need for permits from other agencies with regulatory responsibilities for construction activities associated with the work authorize on this plan.

SPECIAL NOTE

59. Survey monuments shall be preserved and referenced before construction and replaced after construction pursuant to Section 8771 of the Business and Professional Code."

WATER QUALITY

60. Sediments from areas disturbed by construction shall be retained on site using an effective combination of erosion and sediment controls to the maximum extent practicable; and stockpiles of soil shall be properly contained to minimize sediment transport from the site to streets, sidewalks, gutters, drain inlets or adjacent properties via runoff, vehicle tracking or wind.

61. All sediment and construction debris which is tracked or deposited onto public or private sidewalks, gutters or paved roads shall be removed on a daily basis by sweeping or vacuuming and disposed of properly. Sediment and construction debris shall not be washed into the storm-drain system, including the gutter and storm-drain inlets.

62. Sandbags, gravel-bags or other effective filter or trap-type barriers shall be used where appropriate to intercept and slow the flow of runoff from the construction site and to trap sediment before it enters the storm-drain system, including gutters and inlets. All on-site storm-drain inlets shall be protected and off-site inlets shall be protected in areas where construction activity tracks sediment on paved areas or where inlets receive runoff from disturbed areas.

63. Water and/or other dust palliative and stabilization methods should be used to prevent or alleviate dust nuisances (dust control) generated by construction activities. Covering small stockpiles of soil and debris or areas with un-stabilized soil is an alternative to applying water or other dust palliatives.

64. Construction-related materials, wastes, spills or residues shall be retained on site to minimize transport from the site to streets, sidewalks, gutters, drain inlets or adjoining properties by wind or runoff.

65. To prevent the discharge of pollutants from material delivery and storage to the storm-water system or watercourses, all materials shall be properly stored to prevent soil contamination and contact with storm-water runoff, which may include appropriate covers, containment areas or surfaces and indoor storage.

66. Stockpiles of soil, paving materials, and pressure-treated wood shall be managed to prevent air and water pollution. Stockpiles should be located 50’ away from concentrated flows of storm water, watercourses and drain inlets. Prior to the onset of precipitation, stockpiles shall be covered and protected by a temporary perimeter sediment barrier at all times.

67. Hazardous-material waste, including but not limited to petroleum products, roofing tar, paints, solvents, stains, acids, wood preservatives, septic wastes and asphalt products, shall not be allowed to enter the storm-drain system or watercourses and shall be properly transported, used, stored and disposed as required by federal and state law. Paint brushes and equipment for water- and oil-based paints shall be cleaned within a contained area and shall not be allowed to contaminate site soil, watercourses or storm-drain systems. Water-based paints shall be rinsed into the sanitary-sewer system; and thinners, solvents, excess oil-based paints and sludge shall be disposed as hazardous waste.

68. Cementaceous products such as concrete, mortar or stucco from concrete trucks, potable mixers and miscellaneous containers shall not be washed-out into the storm-drain system or watercourses. Designated washout areas shall be located at least 50’ from concentrated flows of storm water, watercourses and storm-drain inlets, and runoff from washout-areas shall be contained by constructing a temporary pit or berm area large enough to capture the liquid and solid waste materials.

69. Saw-cut-cement concrete and asphalt-concrete slurry shall not be allowed to enter the storm-drain system or watercourses. Residue from grinding operations shall be picked up by means of a vacuum attachment to the grinding machine and not allowed to flow across the pavement or be left on the surface of the pavement.

70. Prior to discharge of groundwater and associated waste, the discharger shall make application to the San Diego Regional Water Quality Control Board and obtain coverage under Order No. R9-2008-0002, Discharges From Groundwater Extraction to Surface Waters in the San Diego Region Except San Diego Bay.

APPENDIX G

California Civil Code, Section 832 - Protection of Adjacent Property

City of Laguna Niguel
Community Development Department
30111 Crown Valley Parkway
Laguna Niguel, CA 92677
949-362-4300
www.cityoflagunaniguel.org

CALIFORNIA CIVIL CODE, SECTION 832
PROTECTION OF ADJACENT PROPERTY

Lateral and subjacent support; excavations; degree of care; damages; protection of other structures.

Each coterminous owner is entitled to the lateral and subjacent support which his land receives from the adjoining land, subject to the right of the owner of the adjoining land to make proper and usual excavations on the same for purposes of construction or improvement, under the following conditions:

1. Any owner of land or his lessee intending to make or to permit an excavation shall give reasonable notice to the owner or owners of adjoining lands and of buildings or other structures, stating the depth to which such excavation is intended to be made, and when the excavating will begin.

2. In making any excavation, ordinary care and skill shall be used, and reasonable precautions taken to sustain the adjoining land as such, without regard to any building or other structure which may be thereon, and there shall be no liability for damage done to any such building or other structure by reason of the excavation, except as otherwise provided or allowed by law.

3. If at any time it appears that the excavation is to be of a greater depth than are the walls or foundations of any adjoining building or other structure, and is to be so close as to endanger the building or other structure in any way, then the owner of the building or other structure must be allowed at least 30 days if he so desires, in which to take measures to protect the same from any damage, or in which to extend the foundations thereof, and he must be given for the same purposes reasonable license to enter on the land on which the excavation is to be or is being made.

4. If the excavation is intended to be or is deeper than the standard depth of foundations, which depth is defined to be a depth of * * * nine (9) feet below the adjacent curb level, at the point where the joint property line intersects the curb and if on the land of the coterminous owner there is any building or other structure of the wall or foundation of which goes to standard depth or deeper than the owner of the land on which the excavation is being made shall, if given the necessary license to enter on the adjoining land, protect the said adjoining land and any such building or other structure thereon without cost to the owner thereof, from any damage by reason of the excavation, and shall be liable to the owner of such property for any such damage, excepting only for minor settlement cracks in buildings or other structures