

## SECTION 10

# GRADING (GR)

**10-1 INTRODUCTION** - The City's authority to regulate grading on private property is provided by the CBC and the Development Code. The CBC and the Development Code requires that a Grading Permit be obtained from the City prior to beginning any grading work unless the work meets certain exemptions specified in the CBC and in the Development Code. This is necessary to ensure that on-site drainage is adequately accommodated, off-site drainage is conveyed through the project, the proposed grading is compatible with adjacent property topography and adequate erosion and sedimentation control measures are addressed.

This Section specifies design and plan submittal requirements of Grading Plans for private developments. It includes items pertinent for the City's review and reflects established professional engineering practice for preparation of Grading Plans. Grading Plans shall be submitted as part of the Improvement Plans for a project. Questions and clarifications regarding this Section should be directed to the Engineering Division of the Public Works Department.

The industry standard Best Management Practices (BMP's) shall be implemented to the extent possible.

**10-2 FEES AND SECURITY** - Plan review and permit fees for grading shall be in accordance with the latest adopted fee schedule. Public Improvements Performance Security shall be required as specified in the General Requirements section of these Standards.

**10-3 PREPARATION** - All Grading Plans shall be prepared by or under the direction of a Registered Civil Engineer. All sheets shall be stamped and signed by a Registered Civil Engineer.

**10-4 FINISHED GRADING PLAN REQUIREMENTS** - Grading Plans for subdivisions and all developments located within Planned Development zones shall be submitted as part of the Improvement Plans and shall detail the following:

- A. Slope symbols for all slopes 3:1 or steeper.
- B. Typical lot grading details.
- C. Proposed spot and/or pad elevations. All lot corner elevations shall be shown on the Grading Plan.
- D. Flow directional arrows, both on-site and off-site, and perimeter elevations at the property line.
- E. Existing spot elevations and or contour lines on-site and off-site around the perimeter of the development. Where the existing terrain is not relatively flat, contour lines shall be shown. Contour lines shall be in maximum increments of 2-feet. The spot elevations or contour lines shall be extended off-site for a minimum distance of 25-feet (flat terrain - 50-feet minimum).
- F. Existing trees (variety, size and elevation at base of all trees 8-inches in diameter or larger).
- G. A Certificate of Compliance of Grading with signature blocks for both the Registered Civil Engineer and the Geotechnical Engineer shall be provided stating the following:

**CERTIFICATE OF COMPLIANCE**

I hereby certify that the grades shown on these plans and accepted by the Engineering Division, have been constructed to within 1/10<sup>th</sup> of one (1) foot of their indicated elevation for all lot pads and improvements shown.

\_\_\_\_\_  
Project Engineer

\_\_\_\_\_  
PE Number

\_\_\_\_\_  
Date

I hereby certify that the pads for the following lots for this project have been tested for compaction in accordance with generally accepted test methods, and based upon the results of these tests, the compaction of said pads conforms to the recommendations of this projects' geotechnical report:

Lots: \_\_\_\_\_

I also state that our firm observed the grading operation to a sufficient extent to evaluate conformance with the project's geotechnical report as approved by the City, and further state that, based upon our observations, the grading for this subdivision conforms to the recommendations of said soil report.

\_\_\_\_\_  
Geotechnical Engineer

\_\_\_\_\_  
PE Number

\_\_\_\_\_  
Date

- H.** Back of sidewalk elevations at property lines, curb returns, high and low points, and other areas deemed necessary by the City Engineer.
- I.** All existing and proposed surface and subsurface drainage facilities including drain inlets, underground pipes, surface swales, and any other drainage improvement proposed to be constructed with, or as a part of, the proposed work.
- J.** Location of existing and proposed buildings or structures on the site, including proposed pad and/or finished floor elevation. Proposed residential plot plans should not be shown on the Grading Plans.
- K.** Location of existing and proposed buildings or structures on the land of adjacent owners which are within 15-feet of the property line and which may be impacted by the proposed grading operations.
- L.** Location of all existing and proposed retaining walls.
- M.** Typical sections across side yard property lines where the difference in finish pad elevations exceeds 1-foot.
- N.** Names of adjacent subdivisions.
- O.** Off-site intersecting property lines.
- P.** For all projects involving the export of soil material; the location of spoiled disposal. Spoil areas shall meet all the requirements of these standards.
- Q.** Silt retention and erosion control details as necessary and specified in these Improvement Standards.

- R. Location of temporary protective fencing for environmentally sensitive areas such as: creeks, wetlands, vernal pools, perennial streams, and preserve areas.

#### 10-5 DESIGN REQUIREMENTS -

A. **Rolling Terrain Grading** - Grading of rolling terrain shall be accomplished in a manner whereby the effect of the rolling terrain is maintained as close to that which exists, to the extent practicable. Every effort shall be made to keep grading of rolling terrain to an absolute minimum.

B. **Boundary Grading** - Special attention shall be given to grading adjacent to the exterior perimeter property line of a development. All adverse effects to off-site properties adjacent to new developments shall be kept to an absolute minimum. Fills and cuts adjacent to the exterior perimeter property line shall be designed in accordance with the following:

1. When grading along existing residential property, the grade should be, if at all possible, held equal to or lower than the existing property grades. When grades are to be raised higher than existing adjacent residential lots a retaining wall may be required. The wall shall be located as close to the property line as is feasible for construction. If permission can be obtained from the adjacent property owner(s), the wall should be placed on the property line or onto the lower lot and the fence relocated to the top of the wall.
2. If possible, all exterior slopes, fill or cut, shall be constructed off-site, with the property line being situated a minimum of 2-feet inside the higher elevation. If a slope easement cannot be obtained a retaining wall may be required at the property line.
3. A recorded notarized right of entry shall be required for all off-site fills and grading prior to plan approval.
4. Maximum slope shall be 2:1 or as specified by the Geotechnical Engineer.
5. All slopes steeper than 4:1 adjacent to the public right-of-way and private streets shall be protected with permanent erosion control measures.
6. All fill material shall achieve 90 percent relative compaction certified by a Registered Geotechnical Engineer.
7. When a drainage swale or ditch is proposed to run adjacent to the property line, a level area, minimum width of 5-feet is required between the property line and the top of the slope bank.
8. A specific haul route shall be approved by the City Engineer when a large quantity of imported or exported soil is required. Where a haul route has not been determined at the time of plan approval, the permit shall be conditioned stating that no grading activities shall occur until a haul route has been approved by the City Engineer.

C. **Interior Grading** - Differences in elevations across interior property lines within a development, such that slopes or retaining walls are required, shall conform to the following:

1. Cross lot drainage is not allowed unless specifically approved by the City Engineer for tree preservation. All single-family residential lots shall have grading per the Standard Drawings unless approved otherwise by the City Engineer. When a lot grading plan is proposed as part of a tentative map application for a single-family residential subdivision, the tentative grading plan

showing rear lot drains shall be supplemented with an alternative plan showing the effect on the subdivision if rear lot drains are not utilized.

2. Retaining walls shall be required whenever adjacent side lot elevations differ by more than ½-foot, unless otherwise approved by the City Engineer.
3. Property lines shall be situated inside of the top of any cut or fill slopes in accordance with the provisions in the latest edition of the California Building Code, but in no case less than a minimum of 1.0-foot.
4. The maximum earth slopes allowed shall be 2:1 (horizontal to vertical). Minimum asphalt concrete surface slopes shall be 1 percent and minimum concrete cement surface slopes shall be 0.25 percent. All proposed slopes that are 3:1 or steeper shall be shown on the plans by some type of slope symbol delineation.
5. Lots on the low side of streets at sag points shall have pad elevations a minimum of 1-foot above the 100-year water surface elevation assuming failure of all subsurface drainage systems.

**D. Retaining Walls** - Retaining walls, when required, shall be shown on the plans and shall include all necessary information and details for construction. All retaining walls adjacent to the public right-of-way or along the exterior boundary of the project shall be masonry. Other retaining walls less than or equal to 2-foot, 6-inches in height may be redwood. Walls higher than 2-foot, 6-inches shall be masonry. Stamped structural calculations by a Registered Civil Engineer and a Building Permit shall be obtained if any of the following conditions exist:

- a. Total wall height is in excess of 4 feet measured from bottom of footing to top of wall
- b. Earth slope is equal to or greater than 2 feet horizontal to 1 foot vertical (2:1 slope)
- c. Unique surcharge loading conditions exist (buildings, roads, and terraced or tiered slopes)
- d. Solid fences are attached (or directly adjacent) to the proposed retaining wall
- e. Unusual groundwater or drainage problems exist

**E. Stormwater Pollution Prevention Plan (SWPPP)** - A site specific SWPPP shall be submitted concurrently with the Improvement and/or Grading Plans when a project disturbs 1-acre or more of land. The preparation of a SWPPP is required by the State of California (General Permit for Storm Water Discharges Associated with Construction Activity, Order 99-08-DWQ).

SWPPPs are not required for projects under 1-acre, unless they are part of a larger development encompassing over 1-acre. For projects less than 1-acre, an erosion and sediment control plan shall be submitted with the improvement plans to the City for approval. This is generally part of the Grading Plan for the development. The Engineering Division will approve the erosion and sediment control plan upon review of the project. All erosion and sediment control devices shall be identified and implemented in the same fashion as projects with SWPPPs over 1-acre. Enforcement will be conducted similarly, with exception to SWPPP administrative requirements.

1. The purpose of the SWPPP is to ensure protection of the following:
  - a. Measures shall be provided to prevent siltation of streams, rivers, etc; avert instream degradation due to turbidity and pollutant load; and prevent toxic materials from leaving construction sites.
  - b. Methods shall be provided to prevent sediment from entering the storm drainage system.
  - c. Methods shall be employed to prevent any damage to adjacent properties.

2. SWPPP site plan(s) shall be submitted along with other SWPPP documents. The following information can be combined onto one plan if all facilities and measures can be shown without obscuring the clarity of the SWPPP site plan. The SWPPP site plan(s) shall contain the following:
  - a. SWPPP site plan(s) shall show the construction project in detail, including; the existing and planned paved areas and buildings, general topography both before and after construction, drainage patterns across the project area, and anticipated stormwater discharge locations (i.e. the receiving water, a conduit to receiving water, and/or drain inlets).
  - b. The location of all existing and proposed stormwater containment and/or conveyance systems shall be shown, which also includes proposed BMPs (Best Management Practices). Examples of such include diversion dikes, swales, grade stabilization structures (temporary pipe or slope drains), ditches, and sediment basins or traps. Sufficient calculations and supporting material to demonstrate the adequacy of such measures shall be provided.
  - c. The Engineering Division may require phasing of the SWPPP plan(s) to ensure that all necessary erosion control measures are taken during separate phases of construction. As an example, this may require the Developer to construct sediment traps and basins during the first phase of grading.
3. The following is a list of requirements for erosion and sediment general notes control measures, also referred to as BMPs (Best Management Practices) that shall be followed. The following erosion and sediment control requirements shall be part of the site specific SWPPP.
  - a. All erosion and sediment control measures shall be implemented by October 1, or as approved by the City Engineer. Grading during the wet season should be minimized.
  - b. All erosion and sediment control materials (fiber rolls, blankets, mats, straw bales, silt fencing, etc.) shall be delivered to the site by September 15<sup>th</sup>. Sufficient spare control materials shall be stockpiled on-site and available for maintenance and repair work.
  - c. Straw slopes greater than 10:1 shall be covered with broadcasted straw, or hand distributed, at a rate of 50 bales or 4,000 pounds per acre. For slopes 4:1 or steeper, Straw shall be anchored to soil surface by “punching”, “pressing”, pressing in place, or by tacking down using a tackifier
  - d. Slopes steeper than 4:1 and adjacent to the City right-of-way, flood plains, natural drainages, park land or designated open space shall be broadcast seeded and covered with straw matting. Alternative methods shall be approved by the Engineering Division.
  - e. All bare areas of disturbed soil, regardless of slope, within 50-feet of natural drainages shall be protected for erosion control.
  - f. Where required, broadcast seed shall be applied as follows:

Blando Brome	12 lbs/acre
Rose Clover	9 lbs/acre

Areas with sandy, dry soil shall be:

Zorro Annual Fescue	6 lbs/acre
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Rose Clover                      9 lbs/acre

16-20-0 fertilizer or equivalent shall be applied at a rate of 500 pounds per acre. If hydro-seeding/mulching is used, seed quantities shall be increased by 30 percent.

- g.** No grading or trenching, except as required for erosion or sediment control, shall occur within 35-feet from the edge of perennial streams, creeks or environmentally sensitive areas between October 15 and April 15 unless approved by the Engineering Division.
  - h.** All erosion and sediment control measures shall be checked following all storms to ensure that all measures are functioning properly.
  - i.** Sediment and trash accumulated in drainages or detention basins shall be removed as soon as possible. In addition, oil and material floating on water surface must be skimmed weekly and the debris properly disposed of.
  - j.** Construction activities occurring between October 15 and April 15 shall have erosion and sediment control measures in place or capable of being placed within 24 hours. The Contractor shall ensure that the construction site is prepared prior to the onset of any storm.
  - k.** The Contractor shall establish a specific site within the development for maintenance and storage of equipment or any other activity that may adversely contribute to the water quality of the runoff. This area shall have a berm located around its perimeter. This area shall be restored to acceptable condition upon completion of project.
  - l.** Hydroseeding and hydromulching may be considered as alternatives to broadcast straw subject to the Engineering Division’s approval based on a review of the existing site conditions (location, slopes, proximity to streams) and time of year.
  - m.** SWPPP shall define erosion and sediment control measure objectives, and clearly identify control measure selections.
- F. Mitigation Monitoring Requirement** - All mitigation measures and mitigation monitoring measures as required to mitigate environmental impacts shall be complied with. The Developer is responsible for monitoring all mitigation measures and shall submit to the Planning Department a letter certifying compliance with such measures.
- G. Certifying Pad Elevations** - Upon completion of the grading and prior to acceptance of the subdivision improvements or issuance of building permits by the City, the Consulting Engineer shall verify the final pad elevations. The elevations shall be verified at the center and the corners of each pad. Pad grades shall be certified to an accuracy of 0.10-feet.
- A signature block, certifying that final graded elevations in the field are the same as those shown on the plans, shall be included on the drawings of the subdivision grading plans. The Consulting Engineer shall sign the signature block, certifying to the above, and shall provide one set of “record drawing” Grading Plans to the City Engineer.
- H. Maintenance of Access to Utility Facilities** - Continuous, suitable access shall be maintained during all stages of construction to any facility owned or operated by a utility/district providing essential services (i.e. sanitary sewer, water, drainage, electricity, gas, telephone, etc.).