

PART II - SOILS AND GRADING CRITERIA

A. Soils and Foundation Report

1. Unless waived by the City Engineer, a soils report shall be prepared by a registered Professional Engineer, which shall include the results of an investigation of the following, based upon adequate test borings.
2. A structural foundation investigation and recommendation for all proposed facilities.
3. Report on investigation and recommendation for excavation and grading.
4. Report on investigation and recommendations for trench backfill for all soils encountered in the work to assure proper compaction.
5. Soil test on "R" values of soil for determining street sections.
6. For areas west of El Camino Real, and east of the Alameda de las Pulgas, the soils shall be tested for corrosivity using the procedures described in Appendix "A" of AWWA C-105. Any soil having a soil-test evaluation of 10 points or more shall require the use of cathodic protection.
7. Recommendations for landscaping to maintain adequate slopes for proper drainage and erosion control.
8. For Redwood Shores and other areas in Bay Mud, report on a review and recommendations for expected differential settlement, and recommendations for design to assure adequate slopes for underground utilities subsequent to settlement. (See PART IX of these Criteria)

B. Final Soils Report

1. At the completion of a project, the soils engineer shall submit a "Final Report" to the Engineering Division.
2. The Final Report shall include a map showing the locations of all compaction tests, a summary of all compaction tests performed, a certification that the work was substantially completed in accordance with the plans and specifications, comments on any unusual or problem situations which occurred during construction.

C. Grading Plans, General

1. The developer's geotechnical engineer shall review the grading plans prior to City approval and certify that the plans are in compliance with his recommendations.

2. Grading shall conform to the requirements of the Grading Ordinance and Chapter 70 of the UBC. The following general grading requirements shall govern:
 - a. Continuous soils inspection shall be provided by the developer's geotechnical engineer during the grading operation. Compaction reports shall be submitted and approval obtained prior to start of the next phase of the work. Reports shall be signed by a registered Professional Engineer.
 - b. The developer shall submit the compaction test results for review by the City Engineer.

D. Rough Grading Plans

1. Rough grading plans shall be of adequate scale to show all the site information on one sheet.
2. Information to be shown on the rough grading plan shall include, but is not limited to:
 - a. Pad elevation for each building;
 - b. Rough grade at each property corner and at the front yard slope;
 - c. Street grade at each property line;
 - d. Rough street section at subgrade elevation;
 - e. Site drainage pattern and inlet structures;
 - f. Existing and proposed contours;
 - g. Areas of cut and fills, and
 - h. Earthwork quantities, for a balanced site.

E. Plot and Finish Grading Plans

1. There is no set format for the plot and finish grading plan. It should be on a separate sheet from the sheets showing the on-site utilities. The format will depend on (a) the scale, (b) the size of the project, and (c) the detail needed to show the required information clearly. Follow the checklist shown on Attachment "D". The information needed is as follows:
 - a. Top of curb and gutter flowline elevations of the City street to which the project is draining.
 - b. The "finished floor" and "pad" elevations of the buildings. The minimum finished floor elevation shall be set at six inches above the referenced flood plain plus predicted settlement.
 - c. Design finished grade elevations at all lot corners.
 - d. A section showing the relationship between the building foundation and the ground outside the foundation and the sideyard swales.
 - e. Any walls, fences or structures whether existing (if they will remain), or proposed.

- f. Surface swales, at 2% minimum slope, except that 1.5% slopes on swales are adequate if area drains are provided, and if downspouts are connected to the drainage system.
 - g. Existing contours and proposed elevations (or contours) clearly showing how the site will drain and the depth of cut and fill.
 - h. Existing elevations on adjacent property and up to 50 feet beyond the property, sufficient to show the effect of the new development on those properties.
 - i. On-site and off-site storm drainage system, as necessary to indicate existing and proposed drainage patterns.
 - j. "Grading certificates" (see Attachment "C" for the wording of these items).
2. Each street intersection shall be shown with contours every 0.2' to show proper drainage patterns.
 3. All street and on-site areas shall be provided with an adequate drainage system, as required by Part V, "Storm Drainage Design".
 4. In hillside areas, the plans shall include an erosion control plan satisfactory to the Engineering Division. Such plan shall contain the following information:
 - a. A delineation and brief description of the measures to be undertaken to retain sediment on the site, including, but not limited to, the designs and specifications for berms, sediment detention basins, dikes, mulches and erosion control planting, and a schedule for their maintenance and upkeep.
 - b. Special consideration may have to be given to providing flow diverters or backfill stabilizers for steep streets and utility trenches.
 5. All trees located on the property or affected by the development.

F. Retaining Walls

1. All retaining walls greater than 4 feet in height, as measured from the bottom of the footing to top of the wall, and walls supporting surcharge or supporting sloping backfill, shall be designed by a registered professional engineer, and supporting calculations shall be submitted along with the improvement plans.
2. Walls shall be designed in accordance with Section 2308 of the Uniform Building Code, or more restrictive criteria as recommended by the project soils engineer.
3. Walls supporting traffic loads within a horizontal distance equal to their height shall be designed with a two-foot earth surcharge.

4. Retaining walls which fall within this category shall be constructed of reinforced concrete or reinforced cement masonry.
5. Walls less than four (4) feet in height may be built out of pressure-treated timber, provided that the material shall be stamped or tagged with the appropriate seal from the American Wood Preservative Board (AWPP) Standard LP-22 or better.
6. Provisions shall be made for draining the water behind the wall to prevent build-up of fluid pressure.
7. Retaining walls in marine environment will require special design considerations as required by the City Engineer.

G. Trenching and Backfill

1. Utility trenches shall be designed to provide five feet of horizontal clearance between respective facilities.
2. Where the depth of cover over any utility is less than three feet or greater than 20 feet, the Design Engineer must provide load calculations, special trench designs, or both, to justify inadequate trench depths.
3. In existing public streets the standard "Tee" trench is to be used with no trenches left open overnight; temporary paving or plating is required.
4. The utility trench must be clear of the influence line from the bottom of the footing on adjacent structures (See Attachment "F").
5. Backfill material is imported and must meet the requirements of the Standard Technical Specifications and Standard Details.
6. In bay mud conditions, trenches will require continuous sheet pile shoring designed by a Registered Civil Engineer. See the Standard Technical Specifications and Standard Details for special requirements for trenching and backfilling in bay mud conditions.
7. Utilities shall be designed to provide 12" of vertical clearance between other utilities.

H. Storm Water Discharge Permit

1. The San Mateo Countywide Storm Water Pollution Prevention Program (SWPPP) has implemented a program to investigate and eliminate the illegal discharges of deleterious, toxic, or hazardous substances into the public storm water system. Redwood City is a co-permittee to the "San Mateo County Storm Water Management Plan, 1993-1998", dated June 21, 1993. On September 15, 1993, the California Regional Water Quality Control Board (San Francisco Bay Region) issued Order No. 93-106, NPDES Permit No. CA 0029921, regulating inter alia, storm water discharges by the City of Redwood City. All construction activity related to grading requires conformance to the SWPPP.

2. All construction activity where clearing, grading, and excavation results in a land disturbance must be covered by a General Construction Activity Storm Water Permit, issued by the State Water Resources Control Board.
3. Developers/Contractors must complete a "Checklist for Construction Requirements" and follow construction "Best Management Practices (BMP)" to prevent illicit discharges to the Storm Drainage System.
4. Engineers shall prepare erosion and sedimentation control plans and specifications to prevent erosion and to control sediment transport. Such plans shall follow the guidance of the "Erosion and Sediment Control Field Manual", published by the California Regional Water Quality Control Board
5. Sites which are within 200 feet of wetland, stream, pond, lake, river or bay will require even more stringent controls, as described in the Checklist for Construction Requirements.