PART II - SURVEYING AND GRADING CRITERIA

A. Surveying Procedures

1. Unless a temporary benchmark is approved in advance by the City Engineer, all submitted civil plans, including but not limited to grading, drainage, and topographical plans shall be done on the North American Vertical Datum 1988 (NAVD88).

2. The City of Redwood City upgraded the previously approved NGVD29 datum to the NAVD88 datum during the 2007 Elevation Modernization Project. The history of this new datum source is available on the City’s website.

3. Data is available in EXCEL format or as a digital KML file for use with “Google Earth”. Hard copies of specific benchmarks are available at the Maps & Records County at City Hall.

B. Soils Investigation and Foundation Report

1. Unless waived by the City Engineer, a soils report shall be prepared by a registered Professional Engineer and shall comply with Chapter 18 of the Building Code, including (among others) the following.

   a. A foundation investigation and recommendation for all proposed structures.

   b. Investigation and recommendation for excavation and grading.

   c. Investigation and recommendations for trench backfill for all soils encountered in the work to assure proper compaction.

   d. Soil test on "R" values of soil for determining street structural sections.

   e. 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.

   f. Recommendations for slope protection for proper drainage and erosion control.

2. 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)

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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 Appendix J of the Building Code. The following general grading requirements shall govern.

3. Engineered grading includes any of the following.
   a. Excavations greater than 2 feet in depth.
   b. Cut slopes greater than 5 feet in height.
   c. Where fill is to be placed on natural grade steeper than 20% (1:5 ratio).
   d. Where fill supports a structure.
   e. Where more than 50 cubic yards of fill is placed.

4. The soils engineer must be present during all engineered grading operations and he shall file a "Geologists Final Report" per Attachment S upon request by the City.

5. See Attachment D-2 for slope requirements, building set backs, and minimum floor elevations.

D. 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 twelve (12) inches above the referenced flood plain plus predicted settlement. See Attachment D-2.
   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.

E. 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.

F. 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.

G. Storm Water Pollution Prevention

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 of one acre or more must file a “Notice of Intent”, and be covered by a General Construction Activity Storm Water Permit, issued by the State Water Resources Control Board.
3. Developers/Contractors must complete a “NPDES Permits Compliance Construction Checklist” with their project plans indicating which Source Controls Measures are being implemented.

4. Engineers shall adhere to the "C3 Technical Guidance Manual”, available on the website for the San Mateo Countywide Water Pollution Prevention Program.

5. Sites which are within 200 feet of wetland, stream, pond, lake, river or bay are considered sensitive areas and will require even more stringent controls, as described in the Manual.