PART I - GENERAL ENGINEERING PLAN REQUIREMENTS

The following criteria has been established by the City of Redwood City to guide Consulting Engineers in preparing and processing maps, plans, studies, reports processing and documents for subdivisions and developments, and shall apply to both public and private improvements. Conformance to these Standards is required, and these criteria should be considered as minimum requirements.

The following City ordinances and regulations apply:

Redwood City Code, Chapter 30, Subdivisions
Ordinance No. 1130 ...............Zoning
Ordinance No. 2163..............Building Codes/Grading
Ordinance No. 1967 ............Floodplain Management
Ordinance No. 939.............Streets, Sidewalks & Driveways
Ordinance No. 2090...........Stormwater Management and Discharge Control

Copies of Ordinances and Codes can be purchased at the office of the City Clerk.

A. Preliminary Investigation

1. Upon request from the Consulting Engineer, the Engineering Division will furnish the Consulting Engineer with prints of base maps showing existing water and sanitary sewer lines, "As-Built" plans of adjoining streets (if available), storm drain, bench mark locations, monument locations, and these Design Criteria. The locations and elevations of existing utilities shall be verified in the field by the Engineer and shown on the plans.

2. If there are facilities in the street whose depth and/or location cannot be determined without excavation, and if the knowledge of those depths and locations are critical to the design, the Design Engineer shall engage a private contractor, obtain permits, and make necessary investigations.

3. Submittals are made only after a Registered Civil Engineer has completed and signed the plans. Submittals shall include a cover letter, along with the plans and the design calculations for review and approval by the City Engineer. Incomplete plans will be returned without being reviewed.

4. The design engineer shall also obtain information on utilities from PG&E, SBC PacBell, Cable, Comcast, RCN, and any other known public utility company.
B. **Submittal Requirements**

1. For the initial submittal, the Design Engineer should use the following checklist for submitting material to the City of Redwood City Engineering Division. **Submittals will be rejected unless they are complete**, and as a minimum include the following items:

   a) For All Projects:
   
   i. Improvement Plans & Specifications (4 copies)
   ii. Landscape and Irrigation Plans (3 copies)
   iii. Soils and Geotechnical Report
   iv. Detailed Cost Estimate
   v. Right-of-Way or Easement Plats and Legal Descriptions
   vi. Hydrology Calculations & Drainage Area Master Plan
   vii. Deposit for Plan Checking and Map Checking *(Attachment "I")*
   viii. Statement of which flood zone the site is located and whether it is subject to flooding.

   b) In Addition to the Above Information, for Projects Involving Subdivision of Land:
   
   i. Subdivision Map (2 copies)
   ii. Covenants, Conditions & Restrictions (CC&R'S) (3 copies)
   iii. Subdivision Maps of the Surrounding Areas
   iv. Map Calculations and Lot Closures
   v. Preliminary Title Report
   vi. Architectural Plans (for condominium projects)
   vii. *Erosion Control Plan*
   viii. *Water System Analysis*
   ix. *Sewer System Analysis*
   x. *Structural Calculations for retaining walls*
   xi. Tree Protection Plan

   (*) These Items may or may not be required, depending on site conditions, and as determined by the Engineering Division.

2. Engineering will review the plans and return "redlined" checkprints. Subsequent submittals shall be accompanied by the City's "redlined" plans and may include a separate, written response.

3. Final submission shall include the signed original plans, and for subdivisions shall include the executed subdivision map. *(See Attachment "K" for material to accompany the subdivision map.)*
C. Improvement Plans

1. All plans shall be on City Standard 24" x 36" sheets (30" x 42" for Redwood Shores projects) of good quality mylar with a one-and-a-half (1-1/2) inch margin on the left side and a one-half inch margin on the top, bottom and right side. All profiles shall be at the bottom of the sheet. Plan and profile paper shall be used for the sheets containing water, sanitary sewer facilities, and storm drains. The title blocks in electronic format are available at Engineering and Construction.

2. Plans shall be in ink. At the discretion of the Engineering Division plans may be rejected for poor quality.

3. The scale for improvement plans shall be 1" = 20' for the horizontal, and 1" = 2' for the vertical for slopes up to 5%; 1" = 4' vertical scale may be used for slopes greater than 5%. (1" = 40' for the horizontal may be allowed depending on the complexities of the job and upon prior approval.) Larger scales may be used (i.e., 1" = 10") only if required to show more detailed information, and then on a limited area.

4. All lettering shall be a minimum height of 0.1".

5. No shading will be allowed.

6. All plans must show the following information, and for multiple sheets of plans, the drawings shall have a cover sheet. That cover sheet shall contain the following items:

   a. Location map, and vicinity map with north arrow.
   b. Typical Street Sections, including Design "R" Value and Traffic Index with type of curb and sidewalk for each street.
   c. Project benchmark and its location referenced to City Datum.
   d. Title block indicating name of project, name of consultant, scale and date. (See Attachment "H").
   e. Approval blocks to be signed by City of Redwood City.
   f. Those parts of the Standard City Legend, (Standard Detail AA-1) and of the Standard City Abbreviations, (Standard Detail AA-2) that are applicable to the project.
   g. A list of City of Redwood City Standard Details Referred to in the Improvement Plans.
   h. A composite map showing an overview of the project. Utilities should be shown on the composite maps, but need not be dimensioned.
   i. General Notes (See Attachment "A").
   j. Sheet Index.
k. Certifications by Soils Engineer and Civil Engineer (See Attachment "C").

l. Design Engineer's signature and stamp (including date of expiration). Each additional sheet of the plans shall have an approval block for the City and a title block.

m. Design Engineer's business name and address.

7. Details shall be put on a separate sheet and cross-referenced on the appropriate plan sheet:

<table>
<thead>
<tr>
<th>Detail No.</th>
<th>Sheet No.</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>4</td>
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References to City Standard Detail drawings shall be by appropriate drawing number. As follows:

<table>
<thead>
<tr>
<th>M-1 Standard Drawing No.</th>
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<tbody>
<tr>
<td>RCS</td>
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8. Drawing number. The following information shall be shown on the plans:

a. Design Data:
   1) North Arrow and Scale
   2) Right-of-Way Lines
   3) Lot Lines
   4) Boring Locations
   5) Structures
   6) Street Names
   7) Size, Material and Length of Each Run of Pipe
   8) Match Lines
   9) Limit of Work & Conforms
   10) Coordinate Values on Control Line Monuments Where Available
   11) Trees 6” in Diameter and above (existing & proposed)

b. Existing topographic information, including property up to at least 50 feet beyond the project boundary of the property; or as required on adjoining streets to establish existing drainage patterns.

c. Plan and profiles of proposed public and private streets and utilities.

d. Grading, including both existing and proposed contours, and supplemental cross sections as required.

e. Traffic control sign and striping.
9. Profile Items Shown When Applicable.

a. Conventional street cross-sections shall include three-line street profiles: top(s) of curb, centerline and original ground line. Raised median will have top of median curbs in addition to the normal three-line profile. Irregular street sections may use other profiles as required by the City Engineer.

b. One line profiles (centerline) will be accepted if the following note is added: "Top of curb elevations are (dimension) feet (above/below) the centerline elevations." Where this standard crown or curb height cannot be maintained, the curb profiles are required.

c. Curb return profiles.

d. Vertical curb lengths.

e. Curb inlet size, type and station.

f. For cul-de-sacs, top of curb profiles around the sac.

g. The size, material, slope, strength (D-load or wall thickness) on each run of pipe.

h. Existing improvement profiles being joined.

i. Show all existing driveways, structures, pipelines, etc., which affect the profile.

j. For storm drains, show the energy grade line and elevations at each structure.

10. Where a partial street is being constructed to widen an existing street, provide working cross sections at 50-foot intervals up to 100 feet past the conforms, more frequently as required to show the conforms with existing pavement.

11. All proposed improvements shall be located on the drawings by one of the following methods:

a. Stationing and offset (from west increasing easterly, from south increasing northerly.)

b. Coordinates

c. Dimensions

Whichever of the methods is chosen, the basis of the method must be clear and referenced to some existing feature which will remain.

D. Specifications

Redwood City Standard Technical Specifications and Standard Details are available, at a cost, from the Engineering Division.
E. Utility Systems

1. New electrical distribution system, gas, telephone and Cable T.V. facilities shall be placed underground according to the standards of the utility companies.

2. The alignment of these installations shall be approved by the Engineering Division, and shown on the improvement plans.

F. Street Trees - Landscaping and Irrigation

1. Street trees and landscaping shall be designed and built to the satisfaction of the Public Works Services Department and the Engineering Division. The landscaping includes the common areas and the frontage along the public streets adjacent to the development or subdivision.

2. For common area landscaping, soil samples shall be taken off the existing on-site soil, or the imported material, and recommendations shall be submitted for soil amendments.

G. Covenants, Conditions and Restrictions (CC&R's)

1. Where it is applicable for the maintenance of the common areas, the private street system, the sewer facilities, the storm drain facilities, the street lighting and traffic control and the landscaping, a Homeowners Association shall be established prior to the recordation of the Planned Development Permit and the final subdivision map.

2. The CC&R's shall be submitted to the Engineering Division, for coordination and approval.

H. Improvement Security

1. Installation of all improvements shown on the plans as approved by City Engineer for a development shall be secured by bonds or certificates of deposit.

2. Provide a detailed cost estimate prepared by the design engineer for review and approval by the City Engineer. The estimate shall include 10% for contingencies and 5% for construction engineering.

3. Security for Faithful Performance and for payment of Labor and Materials are each to be 100% of the approved Engineer's Estimate.

I. Fees

1. Prior to approval of the subdivision map, the developer shall deposit all City plan checking fees and inspection fees and any other fees to be paid according to City ordinance. (See Attachment "I")

2. Prior to obtaining a building permit, the developer shall pay the necessary sewer and water fees according to the latest City Ordinance.
J. Condominium Plans

1. The condominium plan shall include, but shall not be limited to, the following information: site plan with the private access road layout; parking areas layout with designations; building layout. The site plan shall be dimensioned with bearings, setback distances, etc.

2. The condominium plans shall include all building plans, all or typical unit plans, fully dimensioned, including ceiling heights, etc.

3. Condominium plans shall be on 18” x 26” sheets as part of the Final Map.

K. Final Map

1. Follow the checklist in Attachment "K" for completing the Final Map.

2. Building permits will not be issued and construction shall not start, until the Final Map has been recorded.

L. Construction Permits

1. Construction Permits are required for installing facilities within any public right-of-way or within an easement, where such construction is not covered by a subdivision agreement. Examples would be, permits to extend water, sewer, or storm drain facilities; construction of facilities under a use permit or a building permit.

2. Submit three (3) sets of plans, an engineer’s estimate of cost, and a deposit for plan checking and inspection, in accordance with the schedule shown on Attachment "I".

3. The applicant will be required to fill out an application for the Construction Permit, post bonds and insurance as required, before plans can be approved.

4. When a construction permit is approved, the following note will be put on each sheet where it applies.

"For (description of private facility) within the (public right-of-way, drainage easement, etc.), see Construction Permit # ______.

5. Some typical examples of construction permits are private drains, fire lines, sewer lines tying into public mains; sidewalk and driveway reconstruction in public right-of-way.
M. Reference Standards for Design

The following texts are some of the references to be used as a minimum requirement in determining the performance standards for improvements designed in this section.

1. **Handbook of Hydraulics**, King & Brater.
3. **Pipeline Design for Water & Wastewater**, Committee on Pipeline Planning, American Society of Civil Engineers.
5. **Sewer Design And Construction**, Manual No. 37, American Society of Civil Engineers.
12. **Lighting Handbook**, by Illuminating Engineering Society (IES)
14. **The Publications of the Portland Cement Association and the Asphalt Institute**.