Chapter 16 Hillside Protection

16.010 – Purpose

This chapter establishes the regulations for development and alteration of properties in hillside and ridgeline areas in order to preserve the essential scenic and natural resources that define the character of Petaluma, and to implement the following General Plan goals and policies:

A. General Plan: Land Use, Growth Management and the Built Environment Element

1. Preserve the essential scenic and natural resources of the open ridgelines and hillsides that help define the character of Petaluma. Goal 2-G-2

2. Allow development in hillside areas that preserve ridgelines and are site sensitive. Policy 2-P-16

    a. Protect unique natural features, including landforms, mature trees and their surrounding habitat, and ridgelines, by requiring location of structures away from these assets.

    b. Requiring architectural design that reflects the natural form of the hillside setting in order to minimize visual and environmental impacts.

    c. Prevent the significant alteration of hillside topography through grading and paving.

    d. Use visually unobtrusive building materials.

3. Retain ridgelines and prominent hillsides as open space through appropriate clustering and/or transfer of density to other parts of a development site. Policy 2-P-17

B. General Plan: Community Design, Character and Sustainable Building Element

1. Allow for clustering of residential units in the hills, permitting smaller lot sizes where clustering and common space is maintained and proposed development corresponds to stipulated density ranges. Policy 3-P-71

2. Reinforce the existing character of the hillside neighborhoods, preserving topography and ridgelines. Goal 3-G-12

3. Minimize grading, to all extent possible, stepping development into and with the natural topography. Policy 3-P-80

4. Preserve trees and enhance the natural woodland ecology of the South Hills subarea. Policy 3-P-81

C. General Plan: Health and Safety Element

1. On sites with slopes greater than 30 percent, require all development to be clustered outside of the 30 percent slope areas (and preferably on land less than 15 percent in slope) where possible. Policy 10-P-1

2. Ensure that new development on hillsides is constructed to reduce erosion and landslide hazards and in compliance with any hillside regulations, including but not limited to: Policy 10-P-2

    a. Limit cut slopes to 3:1, except where an engineering geologist can establish that a steeper slope would perform satisfactorily over the long term.

    b. Encourage the use of retaining walls or rock-filled crib walls as an alternative to high cut slopes.

c. Ensure revegetation of cut-and-fill slopes to control erosion. Plant materials for revegetation should not be limited to hydro-seeding and mulching with annual grasses. Trees add structure to the soil and take up moisture while adding color and diversity.

d. Ensure blending of cut-and-fill slopes within existing contours, and provision of horizontal variation, in order to mitigate the artificial appearance of engineered slopes.

e. Ensure structural integrity of sites previously filled before approving redevelopment.

16.020 - Objectives

The following objectives are intended to ensure that all hillside development is in compliance with the goals, policies, and implementing strategies of Petaluma's General Plan.

A. Ensure high quality projects.

B. Ensure that projects are designed to fit with and avoid site constraints.

C. Minimize the potential for geologic failures, fires, and floods that result from or adversely impact new development.

D. Maintain the natural, open space character of the hillsides.

E. Promote public enjoyment of the hillsides, including the creation of hillside hiking/biking trails and open space.

F. Maintain consistent visual character of Petaluma's hillside backdrop, for the community as a whole, by discouraging developments of excessive visual prominence.

G. Ensure that development does not dominate, but rather visually blends and achieves harmony between the natural and built environment.

H. Conserve the natural features of the site such as topography, natural drainage, vegetation (including native and significant trees), wildlife habitats, movement corridors, and other physical features.

I. Promote sustainability.

16.030 – Applicability

This chapter applies to properties zoned RR, R1, R2, R3, R4, R5, and P.U.D. that are covered by the provisions of this Chapter. Section 16.060(B) prescribes the applicability of this Chapter to property proposed for New Development, as defined by the Chapter. Section 16.070(B) prescribes the applicability of this Chapter to property proposed for subdivision.

16.040 – Definitions

The following definitions apply to this chapter. Where there is a conflict between other definitions in this Ordinance and the definitions in this section, the definitions in this section shall apply to this Chapter.

A. Contour. A line drawn on a plan which connects points of equal elevation.

B. Cut. The mechanical removal of earth material.

C. Cut and fill. The excavating of earth material in one place and the depositing of it as fill in an adjacent place.

D. Demolition. The removal of 50% or more of the exterior walls of a building or structure. Demolition includes the relocation of a building from one parcel of land to another, and also includes the raising of an existing structure beyond what is required for a new foundation.

E. Density. The number of dwelling units per net acre.

F. Fill. A deposit of earth material placed by artificial means.

G. Grading. To bring an existing surface to a designed form by excavating, filling, or smoothing operations.

H. Major Subdivision. The subdivision of a parcel into more than four (4) parcels.

I. Minor Subdivision. The subdivision of a parcel of land into 4 or fewer parcels or 4 parcels and a remainder parcel.

J. Natural Grade. The contour of the ground surface before grading.

K. New Development. Includes the development of a vacant parcel, new construction of a primary building on a developed parcel, and the construction of a primary building when the primary building on a parcel has been demolished.

L. Opportunities and Constraints Map. A graphic characterization of the parcel and the immediately adjacent properties that includes the physical and natural amenities and limitations of the site including, but not limited to, unique natural site features, landforms, woodlands, landslides, drainage patterns, creeks, mature trees and their surrounding habitat, ridgelines, areas with a slope of more than 30 %, roads or trails, structures, and property lines and a topographic description of the site using contours at 1', 2' or 5' intervals as appropriate.

M. Ridgeline. A line connecting the highest points along a ridge separating drainage basins or small scale drainage systems from one another.

N. Slope. An inclined ground surface, the inclination of which is expressed as a ratio of the vertical distance (rise), or change in elevation, to the horizontal distance (run). The percent of any given slope is determined by dividing the rise by the run, multiplied by one hundred.

O. Slope density formula. The size of lots allowed in a new subdivision based on a formula that increases the minimum lot size allowed as the slope of the site increases.

P. South Hills. The South Hills is the area identified as the South Hills subarea on the General Plan Subareas Map (General Plan Figure 2-1, Planning Subareas).

Q. View Platform. The following specific locations selected as vantage points from which field observations are made to assess the visual impact of development within the City:

- B Street easternmost (nearest the Petaluma River) terminus
- C Street easternmost (nearest Petaluma River) terminus
- D Street at the Petaluma River Drawbridge
- Lakeville Street at the Rail Depot
- Caulfield Lane Overpass
- Corona Road Overpass
- Bodega Avenue from the City limit to the urban growth boundary
- D Street in the vicinity of the City limit/urban growth boundary
- I Street from the City limit to the urban growth boundary
- Penry Park
- Schollenberger Park
- Steamer Landing Park
- Roof of the "C" Street parking garage
- Terminated Vistas as identified in the Central Petaluma Specific Plan (shown on SMART Code Thoroughfare Map)

R. Visual Analysis. A visual representation of the proposed project that includes the modifications and improvements to the site that would result from the project. The visual analysis is prepared from the vantage point of an identified

view platform. A visual analysis may be prepared using the following methods:

- Photographic exhibit
- Computer simulation
- Story poles
- Street elevations or other means of graphic representation that takes into account enough of the neighboring structures or site characteristics to provide a sense of massing and scale.
- Other methods may be approved by the decision making authority.

S. West Hills. The West Hills is the area identified as the West Hills subarea on the General Plan Subareas Map (General Plan Figure 2-1, Planning Subareas).

16.050 - General Provisions

A. Purpose. The purpose of this Section is to provide design direction for hillside projects in order to create development that is compatible with and appropriate for the hillside setting, and is consistent with the objectives of this chapter and the goals and policies of the General Plan.

B. Applicability. Section 16.050 applies to new development as defined by this Chapter and the subdivision of property subject to the requirements of this Chapter. Section 16.060 provides specific requirements that apply to Single Lot Development. Section 16.070 provides specific requirements that apply to Hillside Subdivisions.

C. Opportunities and Constraints Map. An Opportunities and Constraints Map should be prepared prior to siting any proposed improvements (structures, roads, driveways, utilities, fencing, etc.). An opportunity and constraints map includes, but is not limited to, the location of landslides, drainage patterns, creeks, trees with a trunk diameter of 4" or more and their surrounding habitat, ridgelines, existing roads and/or trails, structures, areas with a slope of more than 30 %, and property lines. The purpose of the Map is to assist in the following:

- Identifying the site features that should be preserved and retained;
- Determining the best location for the building(s);
- Determining the location for the road and/or driveway;
- Determining how best to site improvements to work with the natural topography and reduce grading; and
- Determining the best use of retaining walls to reduce the amount of grading.

D. Visual Analysis. The purpose of the visual analysis is to simulate the impact of the proposed project within the context of its surroundings. When siting and designing the improvements for the project, consideration should be given to the potential visual impact of the project on community views of hillsides and ridgelines. In order to evaluate the potential impact of a project on community views, specific view platforms have been identified. When selecting a view platform(s) for the visual analysis, priority should be given to those platforms that provide the greatest community view of the project. Depending on the location and visibility of the project, a visual analysis may need to be prepared from more than one view platform. A visual analysis includes site improvements (structures, roads, driveways, etc.) and site modifications (tree removal, grading, retaining walls, fences, etc.).

E. Site Design. The following should be considered in order to minimize grading, reduce the potential visual impact, and to maintain the existing features of the site.

1. Site buildings and other improvements (i.e., roads and driveways) to conform to topography and take advantage of existing site features (see Figures 16.1 and 16.2).

2. Limit building pads to the area immediately beneath buildings or driveways, or as required by the geotechnical report or Building Code.

3. Reduce the visual prominence of development as viewed from identified community "viewing platforms."

4. Site buildings to allow adequate space for tree plantings or other screening.

5. Avoid fence lines that daylight ridgelines, are highly visible from a distance, and/or separate development parcels from open space (see Figure 16.3). Fences should be transparent (wire mesh, deer fencing, etc.). If chain link or wire mesh finer than 4" is used, it should be finished with a dark colored coating material.

Figure 16.1

Recommended

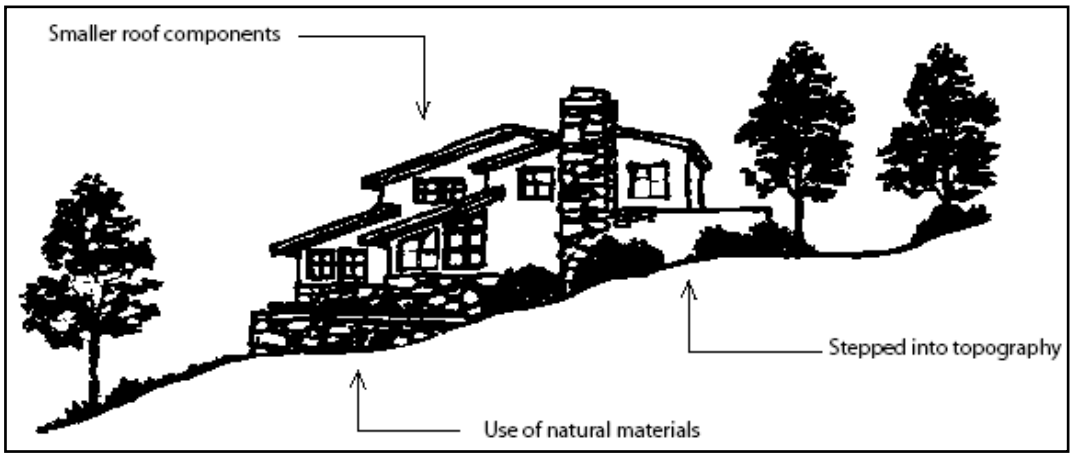


Figure 16.2

Recommended

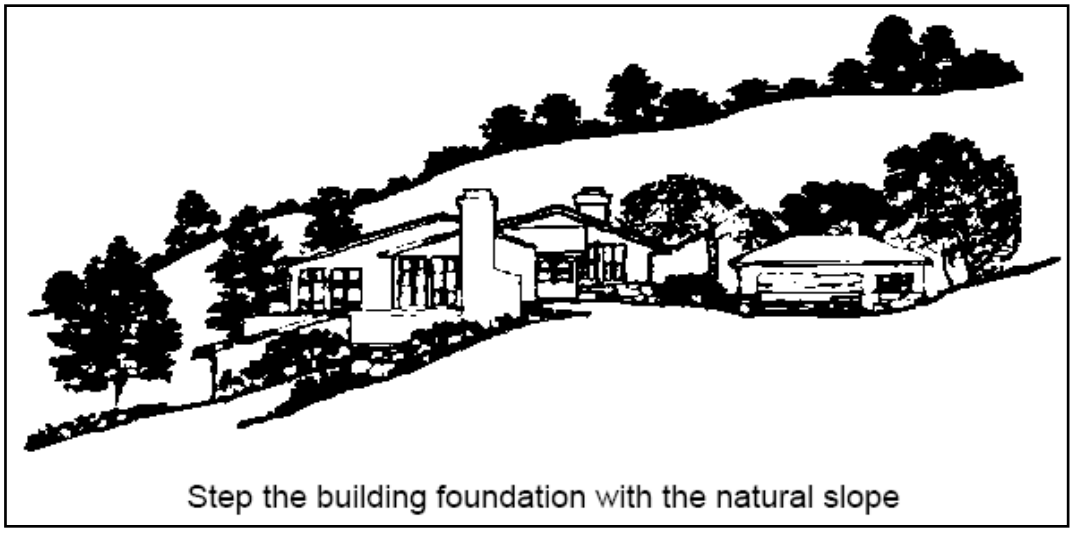


Figure 16.3

Not Recommended

F. Grading and Retaining Walls. The following should be considered in order to minimize grading and to preserve the natural topography of the site.

1. Design grading to conserve natural topographic features and appearances by minimizing the amount of cut and fill and by means of land form grading to blend graded slopes and benches with the natural topography; straight graded cut and fill slopes are discouraged.

2. Design grading to retain major natural topographic features (i.e., canyons, knolls, ridgelines, and prominent landmarks rock outcroppings, and drainage ways).

3. Discourage building pads created on fill (see Figure 16.5). Cut pads are preferred (see Figure 16.3).

4. Utilize grading to help set structures and roads into the hillside, not to create elevated pads (see Figures 16.1 and 16.2).

5. The limited use of retaining walls may be allowed when it can be demonstrated that their use will substantially reduce the amount of grading.

6. Retaining walls should not be used to create large, flat yard areas.

7. Retaining walls should blend with the natural topography, follow existing contours, and be curvilinear to the greatest extent possible.

8. Retaining walls should not be higher than five feet. Where an additional retained portion is necessary due to unusual or extreme conditions (e.g., lot configuration, steep slope, or road design), the use of multiple-terraced, lower retaining structures is preferred.

9. Terraced retaining walls should be separated by at least a three foot planting pocket and should include appropriate landscaping.

10. Retaining walls that are visible from a public street should have a veneer of natural stone, stained concrete, or earth toned textured surface to help blend the wall with the natural hillside environment and to promote a rural character.

G. Roads and Driveways

1. Roads should be designed to minimize excessive cutting.

2. Driveway lengths should be minimized and common driveways should be planned for in subdivision and single lot site planning.

3. Roads should be pedestrian-friendly where feasible, with trails to open spaces at ridgetops, so long as the sidewalk or improvement does not create excessive grading or conflict with Fire Department or Public Works requirements.

H. Landscape Planting and Tree Preservation.

1. Compliance with Chapter 17 (Tree Preservation).

2. Submittal of an arborist's report and/or tree preservation and protection plan as required by Section 17.055 (Project Arborist Requirements).

3. Provide landscape planting adjacent to retaining walls. Such planting should include a combination of non-invasive trees, shrubs, and vines to screen the wall.

4. Avoid the use of invasive species.

5. Utilize plant materials to screen structures, frame views, disguise building edges and understories, break up expansive walls, connect structures to the land and reduce the apparent bulk of structures.

6. Shade potentially reflective surfaces with tree canopies where appropriate, except when needed as solar access for rooftop solar panels

7. Revegetate cut and fill slopes.

8. Encourage the planting of water conserving and erosion control plant materials.

16.060 - Single Lot Development

A. Purpose. To ensure that the development of parcels subject to the requirements of this Chapter is consistent with the General Plan goals and policies related to hillside development, and is not visually prominent when viewed from a community "viewing platform".

B. Applicability. Section 16.060 applies to New Development, as defined by this chapter, on any parcel located in the South Hills and West Hills, as defined by this Chapter.

C. Site Plan and Architectural Review. Planning Commission approval is required for new development in the South Hills and West Hills.

D. Development Standards. Any parcel subject to this Chapter is also subject to the requirements of the zoning district in which the parcel is located. Where the requirements of the underlying zoning district conflict with the requirements of this chapter, the requirements of this Chapter shall control.

1. Building Height. 30 vertical feet from grade to the uppermost point of the roof as calculated below (see Figures 16.3, 16.4 and 16.5). No point of any structure shall be more than 30' above the grade directly beneath that point.

Figure 16.3

Height Limit when Graded for Foundation Only

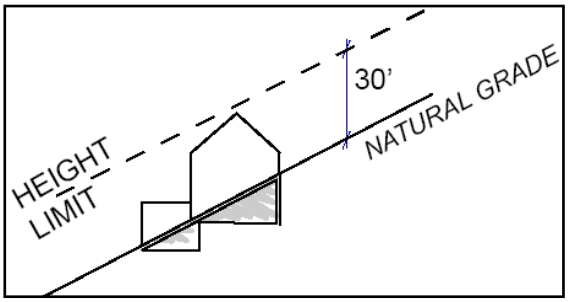
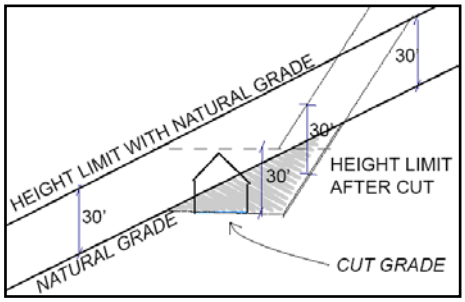


Figure 16.4

Height Limit when Graded for Flat Pad



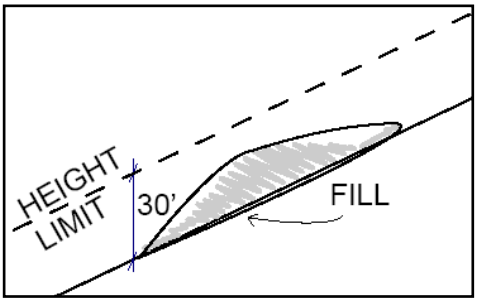


Figure 16.5

Height Limit when Adding Fill

2. Setbacks. As prescribed by the underlying zoning district in Tables 4.6 through 4.9.

E. Exception to Required Setback. An exception to the setback required by the underlying zoning district may be provided for as follows:

1. Primary Structure. A primary structure may encroach into a required setback for a distance of not more than one-half of the required setback, subject to approval by the Planning Commission, if it can be found that the decrease minimizes the impact of hillside development and grading and is consistent with the guidelines contained in this chapter. If such a reduction is granted, a compensating increase in setback is required in the opposing setback. For example, a five-foot (5') reduction in a front setback would increase the rear setback by five feet (5').

2. Required Covered Parking. Required covered parking may encroach into a required front and/or side yard setback if the decrease minimizes the impact of hillside development and grading and is consistent with the guidelines contained in this chapter.

Findings Required. When the Planning Commission approves a reduction in the required setback, findings to support the granting of the exception shall be provided.

F. Additional Setback Required. In order to protect significant natural resources or to reduce visual prominence of a proposed development, the Planning Commission may require building setback(s) that exceed(s) the required setback of the underlying zoning district.

G. Exception to Retaining Wall Height (Section 13.050). For projects subject to Section 16.060, a maximum exposed retaining wall height of five feet (5') may be permitted with Planning Commission approval.

H. Site Design. The following site design guidelines shall be taken into consideration and incorporated into the design of a hillside lot whenever possible. Conformance with these guidelines will be determined by the Planning Commission.

1. Development patterns that form visually protruding or steeply cut slopes for roads or lots should be avoided.

2. Building pads, including spaces leveled for foundations and the grading for driveways and yards, should be as small as possible.

3. Building construction and related site grading should not significantly disturb any ephemeral or perennial watercourse on the site.

4. Buildings should be located to take advantage of existing vegetation for screening.

I. Architectural Design. The following architectural design guidelines shall be taken into consideration and incorporated into the design of a hillside lot whenever possible. Conformance with these guidelines will be determined by Planning Commission as part of project review.

1. Design buildings to conform to the natural topography and hillside setting of the site; to follow the contours of the site; and to blend with the existing terrain in order to reduce bulk and mass.

2. Scale structures to fit the surroundings, and not visually dominate the landscape. The apparent size of exterior wall surfaces visible from off site may be minimized through the use of single story elements, split level foundations, varying setbacks and structure heights, and landscaping, all designed to break up massive forms.

3. Design buildings to minimize bulk, mass and volume.

4. Bulk and Mass. Bulk and mass should be minimized when developing a hillside parcel. The following methods may be used to minimize the bulk and mass of a building.

    a. Keep building forms simple (see Figures 16.1 and 16.2).

    b. Avoid architectural styles that are inherently viewed as massive and bulky.

    c. Utilize grading cuts, rather than fills, to create building pads.

    d. Excavate or use below-grade rooms to reduce effective bulk. The visual area of the building can be minimized through a combined use of grading and landscaping techniques. Earth sheltered buildings and "living roofs" are encouraged.

    e. Exposed understory stem walls should not exceed 5' and should be finished with visually recessive, earth-toned materials.

    f. Step the building foundation and roofs with the natural slope (see Figures 16.1 and 16.2).

    g. Use horizontal and vertical building components to reduce bulk.

    h. Avoid two story wall planes.

    i. Step back the second story so the difference in wall planes is visible from a distance.

    j. Vary elevations, such as stepping back second stories, to conform with topography.

    k. Avoid overhanging decks, large staircases, and patios formed by retaining walls that make buildings appear more massive (see Figure 16.3).

    l. Avoid use of solid wall railings that add to the mass of the design.

    m. Create light and shadow by providing modest overhangs, projections, alcoves, and plane offsets.

    n. Use a combination of siding materials and articulate walls to reduce expansive, continuous planes.

    o. Use vaulted ceilings rather than high walls and ceilings to attics above to achieve a feeling of volume.

5. Colors and Materials. The following methods may be used to reduce the visibility of hillside development:

    a. Use subdued and unobtrusive exterior finish materials and colors for all structures.

    b. Minimize the use of reflective material.

    c. Earth tones and colors that occur naturally in the Petaluma hills are encouraged.

    d. Structures should not call undue attention to themselves when viewed from a public vantage point.

6. Roofs.

a. Break roof forms and rooflines into smaller building components to reflect the irregular forms of surrounding natural features (see Figures 16.1 and 16.2).

b. Generally orient the slope of the main roof in the same direction as the natural slope of the terrain (see Figures 16.1 and 16.2).

c. Avoid large gable ends on downhill elevations.

d. Light colored and reflective roofing materials are discouraged.

J. Process. As prescribed by Section 24.010 (Site Plan and Architectural Review)

K. Findings. In addition to the considerations for review identified in Section 24.010(G) (Standards for Review of Applications), the following findings, where applicable, are also required:

1. The project meets or exceeds the objectives, standards, and guidelines of the Hillside Ordinance.

2. The design, scale, massing, height and siting of development is compatible and complementary with the character and scale of the surrounding, developed neighborhood.

3. The design and site layout of the hillside project is respective of and protects the natural environment to the maximum extent feasible.

4. Site grading has been designed to be as minimal as possible to achieve sensitive hillside design, minimize tree removal and provide safe site access and required parking.

L. Submittal Documents. In addition to the submittal requirements identified on the Development Permit Application Submittal Requirements Matrix the following shall be provided as indicated:

1. Opportunities and Constraints Map/Site Analysis is required for all projects.

2. Visual Analysis as required at the discretion of Planning staff or the decision making authority.

3. Arborist Report and/or Tree Preservation and Protection Plan as required by Section 17.055.

16.070 - Hillside Subdivisions

A. Purpose. To create appropriately sized, located, and configured parcels that can be developed in a manner consistent with this chapter and the General Plan goals and policies related to hillsides and ridgelines.

B. Applicability. Section 16.070 applies to any subdivision of property proposed for a parcel or group of parcels located in the South Hills and West Hills, as defined by this Chapter, and any parcel of land located within the City that has an average slope of 10% or greater as determined using the Average Slope Formula contained in Section 16.070 (C1).

C. Minimum Parcel Size. The minimum parcel size shall be determined by the underlying zoning district or as calculated by the slope density formula and/or table contained in Section 16.070(C2), whichever is greater.

1. Average Slope Formula. The average slope of the parcel shall be computed on the natural slope of the site before grading, as calculated using the following formula:

$$S = \frac{0.0023 \quad (I)(L)}{A}$$

I. The contour interval measured in feet.

L. The sum of the length of all contour lines contained within a subject parcel measured in scale feet.

A. The area of the parcel in acres.

S. The average cross slope of a specific parcel of land expressed in percent as determined by the "Average Slope" formula.

2. Slope Density Formula. The minimum parcel size shall be determined by the following formula, or the table below:

$$\text{Minimum Parcel Size} = \frac{1}{11.433 - .417\,(S)}$$

TABLE 16.1

SLOPE	MINIMUM LOT SIZE (SQ. FT.)	SLOPE	MINIMUM LOT SIZE (SQ. FT.)
10%	6,000	18%	11,092
11%	6,636	19%	12,410
12%	6,776	20%	14,083
13%	7,246	21%	16,278
14%	7.786	22%	19,283
15%	8,413	23%	23,648
16%	9,149	24%	30,568
17%	10,028	25%	43,560

3. Above 25% slope, one additional acre or portion thereof per dwelling unit will be required for each additional 5% increase in slope.

4. Calculations of the average slope and the minimum parcel size shall be calculated by a registered civil engineer or a licensed land surveyor using the formulas provided in Section 16.070(C1 and C2).

5. Modifications to Minimum Parcel Size. In a residential Planned Unit District (PUD), the minimum parcel size may be flexible in order to respond to site conditions and to comply with General Plan goals and policies related to the clustering of development. The maximum number of dwelling units or lots shall remain as prescribed in Section 16.070(D).

D. Density. The maximum number of dwelling units or lots is calculated by dividing the size of the lot to be subdivided by the minimum parcel size required by Section 16.070 (C2). No project is guaranteed the maximum density. The actual density yield shall be determined by the decision making authority. When calculating density, any fraction shall be rounded down to the next whole unit. The density shall be consistent with the General Plan density range for the site and the density as calculated by this section.

E. Development Standards. Any parcel subject to this Chapter is also subject to the requirements of the zoning district in which the parcel is located. Where the requirements of the underlying zoning district conflict with the requirements of this chapter, the requirements of this chapter shall control.

1. Exception to Retaining Wall Height (Section 13.050). For projects subject to Section 16.070, a maximum exposed retaining wall height of 5 feet (5') may be permitted with approval of the review authority.

F. Process. The process for the subdivision of land shall be as *prescribed* in the City's Subdivision Ordinance (Municipal Code Title 20).

G. Submittal Documents. In addition to the submittal requirements identified on the Development Permit Application Submittal Requirements Matrix the following are required as part of an application for a subdivision of land:

1. Topographic Survey

2. Opportunities and Constraints Map/Site Analysis

3. Slope Analysis: at a minimum delineating areas with slopes of 0-10%, 10%-15%, 15%-30%, >30%

4. Soils Report

5. If Buildings are proposed with subdivision, include the following:

    a. Architectural drawings

    b. Visual analysis

    c. Landscape planting plans for common areas, tree mitigations, cut/fill slope revegetation, and typical front yards

H. Appeal. As prescribed in the City Subdivision Ordinance (Municipal Code Title 20).

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