



Los Angeles
Department
of City Planning



PLANNING GUIDELINES

land- form *grading* MANUAL

Adopted by the City Council, June 1983



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I. planning guidelines landform grading

STATEMENT OF POLICY

It is the policy of the City Council and the Advisory Agency **to promote hillside development projects that reflect the hillside environment as closely as possible.** Toward this end, however, safety shall always remain the most salient issue, and shall never be compromised for aesthetic considerations.

In order to improve the aesthetic quality of hillside development projects, the City Council and the Advisory Agency shall encourage the use of site planning techniques and landform grading, when safety considerations permit. When landform grading is not feasible because of safety conflicts, special attention shall be given to landscape materials as an alternative means of creating a natural appearance in the hillsides.

The Department of Building and Safety shall determine when conditions permit or preclude the use of landform grading, and shall approve grading plans on the basis of existing ordinances,

policies and guidelines established in the Rule of General Application (see Appendix “B”).

The Council seeks to incorporate landform grading techniques on all slopes in the Hillside District. Where physically feasible, consideration shall be required primarily on prominent slopes, on slopes which are visible from scenic corridors and other major public ways.

The City Council further recognizes that conflicts may arise between the costs of landform grading and the production of affordable housing. It is the policy of the Council that a higher priority shall be given to the production of affordable housing than to landform grading. It is further recognized that the Horsekeeping District requires large flat areas due to the unique nature of the land use. It shall be the policy of the Council to assign a higher priority to the preservation of the required horsekeeping area than to landform grading.

II. process

In order to assure that developments in the hillsides are visually compatible with the hillsides, and that specific site concerns and problems are identified at the earliest possible stage, pre-design meetings will be available with appropriate City staff representatives. These meetings are at the option of the developer for each project; they are not essential, but are encouraged to avoid delays at later approval stages. They will be most effective if held during the preparation of the Draft EIR and/or prior to the filing of each subdivision tract map for the following types of projects:

- Projects involving major changes to the existing topography.
- Large projects with several alternative lot and roadway design possibilities.
- Projects within known geological problem areas.
- Projects with potential drainage problems requiring diverters, dissipaters, debris basins, etc.
- Projects needing substantial off-site roadway or utility improvements.

Each City agency would reserve the right to determine if a member of their staff should or should not attend or otherwise respond to any schedule pre-design meeting. Some City agencies may respond by written comment only. It must be understood that no commitments will be made by the City agencies at the pre-design meeting, nor any assurance given that a project will be approved if designed according to the recommendations provided. Recommendations are given solely to provide direction and convey City goals and objectives. The City has created a Land Development Counseling Center to facilitate such meetings. Projects will benefit from such pre-design meetings by:

1. Identifying major problem areas early in the design process, to help reduce the chances of such problems causing delays later in the approval process.
2. Identifying which slopes should be considered for landform grading, and, if possible, where geological conditions preclude the use of landform grading.
3. Providing developers with direction from the various City agencies as to the City's basic design concepts and concerns prior to the investment of large commitments of time and money in designing a project later found unacceptable to the City.

4. Providing early contact with the various City agencies involved in the map approval process to make the developer aware of their areas of concern.

5. Facilitating the coordination of actions by the involved City agencies.

At least three weeks before the proposed meeting date, along with a written request, the Advisory Agency should be provided with copies of the following information if available:

1. Location - outline of project boundaries.
2. Location “key” map showing site and its relationship to surrounding environment, including roads and scenic corridors.
3. Existing and proposed zoning.
4. Proposed density.
5. Proposed street widths and alignment and secondary access.
6. Conceptual layout plan over the existing topography shown in not less than 5-foot contour intervals.
7. Conceptual grading plan with cut and fill areas colored, over the existing topography that is at least at 5-foot contour intervals.
8. Composite site analysis map prepared by or in conjunction with a site planner such as a licensed landscape architect which identifies

site features, such as significant views, ridgelines, mature vegetation, topographic character, natural drainage ways, rock outcroppings, etc.

9. Design sketches, photographs, site sections or view analysis.

10. Three copies of all available geological and soil information, including the preliminary soils and geology report (Building and Safety, Engineering and Advisory Agency).

11. Any other pertinent information that may be available such as other environmental data.

The Advisory Agency and/or the Land Development Counseling Center will reserve the right upon receipt of the above information to determine if a pre-design meeting is justified for each particular project. The response will depend on the amount of information available. The two-week minimum period between the developer’s request and the meeting will be necessary in order to distribute the above information to the involved City agencies and to allow ample time to research the project prior to the meeting. The meeting should be limited to only those items believed critical to the project design. The tract will be reconsidered if subsequent submittals reveal

situations that should have been known and revealed to the Advisory Agency at the time of tentative tract approval.

The subdivider is encouraged to contact and meet with local homeowner associations as early as possible in the project design process.

The purpose of the review process is for the convenience of the applicant. It is recommended, but not a mandatory procedure.

III. design guidelines

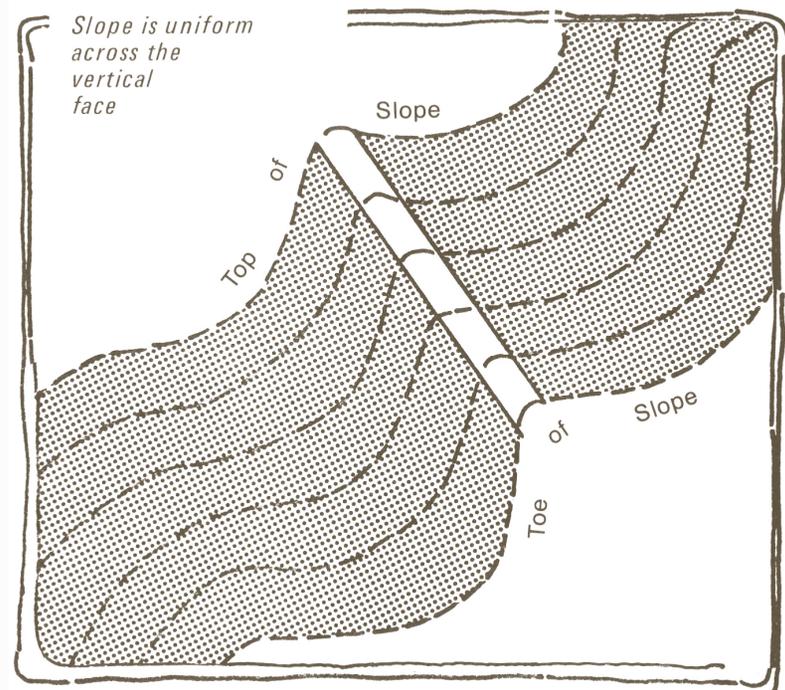
SITE LAYOUT AND DESIGN

General

Landform grading is both an approach to subdivision design, as well as a series of design techniques for grading. As an approach to subdivision design, landform grading seeks to make new developments compatible with the intrinsic characteristics and suitabilities of the land. It is an approach which systematically identifies the real variables of a site (such as steep slopes, views, streams, etc.) and attempts to design a plan which visually and physically responds to these variables.

To carry out this approach, landform grading incorporates the following design details and techniques which help to give manufactured hillsides a more natural-looking appearance. It is recognized that these listed techniques are not finites, and that the extent to which proposed site development takes advantage of existing site features is only limited by the imagination of the design professionals.

Horizontal Grading



Specific Techniques

1. Varying Slope Ratios. In order to create slopes which reflect as closely as possible surrounding natural hills, and to avoid the regularity and linearity of consistent 2:1 slopes, graded hillsides may have a variety of slope ratios. These ratios may vary in the horizontal planes. Steeper or flatter gradients may be permitted under the approval procedures of the Department of Building and Safety (see Appendix B).

2. Drainage Devices. Drainage devices (terrace drains, benches and intervening terraces) should be placed on a graded slope as inconspicuously as possible. Downdrains should be placed in swales. The side of any drain which is visible from a public way should be bermed so as to conceal the drain as much as possible.

The concrete in any drain which is visible from a public way should be tinted with an appropriate earth tone or treated so as to more closely blend with surrounding materials. Landscape materials should be placed along any drain in a manner which will most effectively conceal the drain from public view.

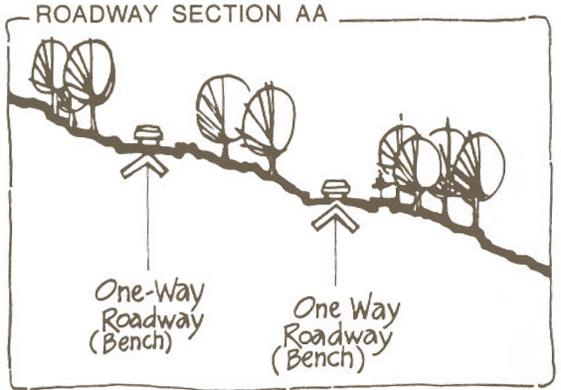
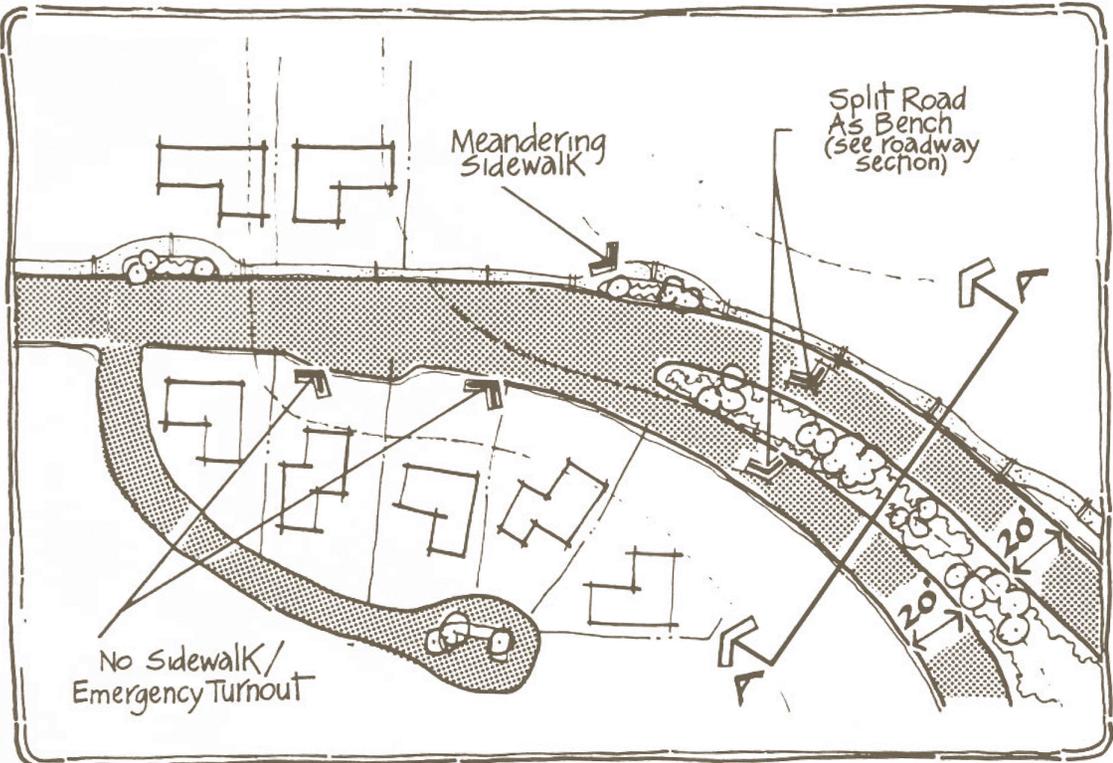
Drain slope gradients should become steeper as the drain moves down the slope. The Department of Building and Safety shall approve gradients.

3. Streets and Sidewalks. Consideration should be given to split roadways wherever such a technique will reduce grading impacts. Two 20-foot-wide one-way roadways can be designed to simultaneously perform the function of a drainage bench or terrace.

Where appropriate, such as where lots do not front on a street, there should be minimal sidewalks (4 feet wide) with no parkways and/or no sidewalks, provided that periodic concrete landings are incorporated to serve as passenger drop-offs. Priority should be given to safe routes for school-age children.

4. Hillside Maintenance Plan. In order to assure that common drainage facilities, landscape materials, irrigation systems, catch basins, sumps, fire buffer zones and any open space lots not maintained by the City are properly and adequately maintained, the subdivider of each project shall be required to record with the County Recorder,

Streets and Sidewalks



prior to the final map, a declaration of covenants, conditions and restrictions to run with the land providing for the following:

a. The establishment of a property owners association which shall cause a yearly inspection to be made by a private engineer of all slope areas and drainage devices. Any necessary maintenance and corrective measure will be undertaken by the association. Each future property owner shall automatically become a member of the association or organization required above and is automatically subject to a charge of a proportionate share of the cost.

b. A plan or program should be prepared by the landscape architect for the homeowner's association which outlines how to properly maintain the planted areas in order to reduce first hazard potential, maintain visual quality, control rodents and avoid the higher costs of deferred maintenance. The plan should describe how and where to:

1. Clear thatch.
2. Selectively thin shrubs.
3. Selectively prune trees.
4. Control rodents.
5. Fertilize, and eradicate weeds.
6. A fire buffer easement (to be measured on a horizontal plane from the level graded portion of the outermost lots) to the satisfaction of the Fire Department. The Brush Clearance Unit of the Fire Department should be consulted for their assistance.
7. Systematically check clock, valves, main and lateral lines, sprinkler heads and all connection points, etc., of the irrigation system.

c. The future owners of affected lots with drainage devices shall be informed of their responsibility for the maintenance of the devices on their lots. The future owner and all successors will be presented with a copy of the drainage maintenance program for their lots.



Any amendment of modification that would defeat the obligation of said associate as required herein above must be approved in writing by the Advisory Agency after consultation with the Department of Building and Safety and the City Attorney's Office.

d. In the event the property owner's association fails to maintain the common property and easements as required by the CC&R's, the individual property owners shall be responsible for their proportional share of the maintenance.

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PLANT MATERIALS

General

1. The total number of plants should average one shrub per 100 square feet and one tree per 400 square feet of planting area, and may be placed in any configuration or physical arrangement, the intent of which is to create vertical relief on the slope (see Planting Guidelines for Conventionally Graded Slopes or Landform Planting, page 17). Uniform spacing is not encouraged.

2. Drought tolerant plant materials from similar climates also should be utilized in planting plans, provided however that foliage color matches the colors of native materials and are fire resistant.

3. **Plant Materials.** The choice of plant materials should be based on effectiveness for erosion control, fire resistance and drought resistance. The attached Appendix "A" supplements the plant list provided by the Department of Building and Safety by including a number of native species which are fire resistant and drought resistant. Landscape materials should be selected from this list.

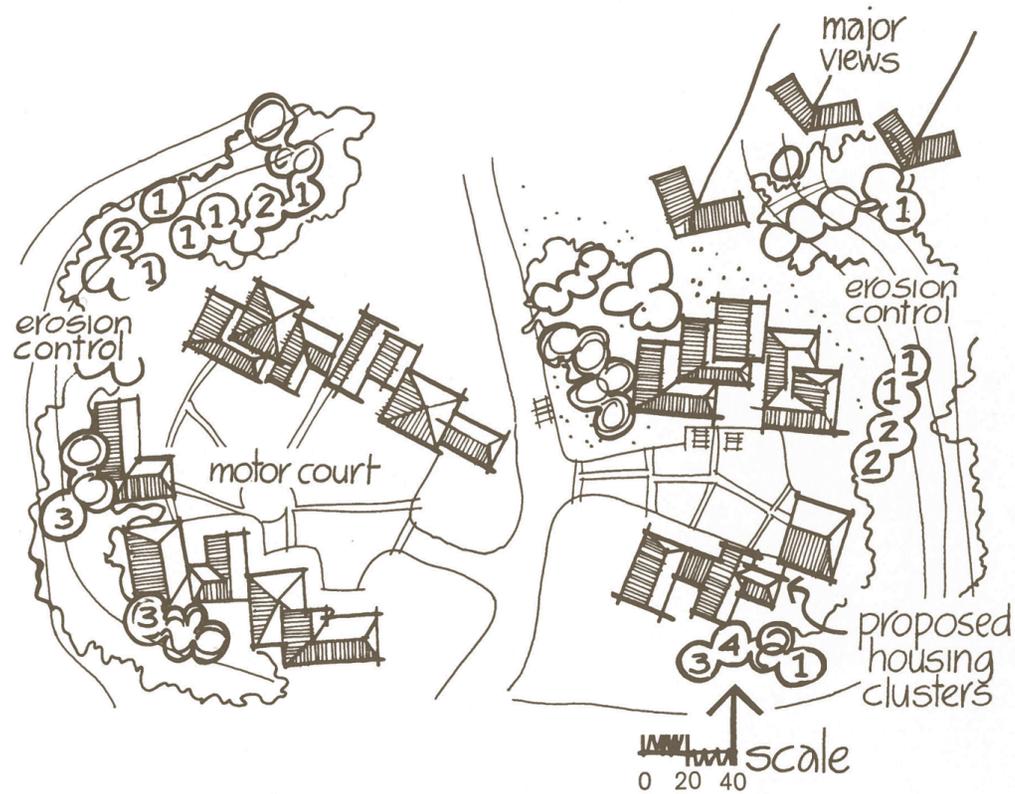
As listed in the *Sunset Western Garden Book*, the planting zone for the hills ringing the western half of the San Fernando Valley is designated Zone 19; the Valley floor, Zone 18; eastern hills, Zone 21; Bel Air-Beverly Crest area, Zone 22; and Hollywood Hills area, Zone 23. Native and drought resistant plants are listed in *Trees and Shrubs for Dry California Landscapes* by Bob Perry. These references should also be utilized in the development of landscape design plans.

Environmental
Zones



Source: *Sunset Western Garden Book*,
Lane Publishing House, 1983

Conceptual Planting Plan



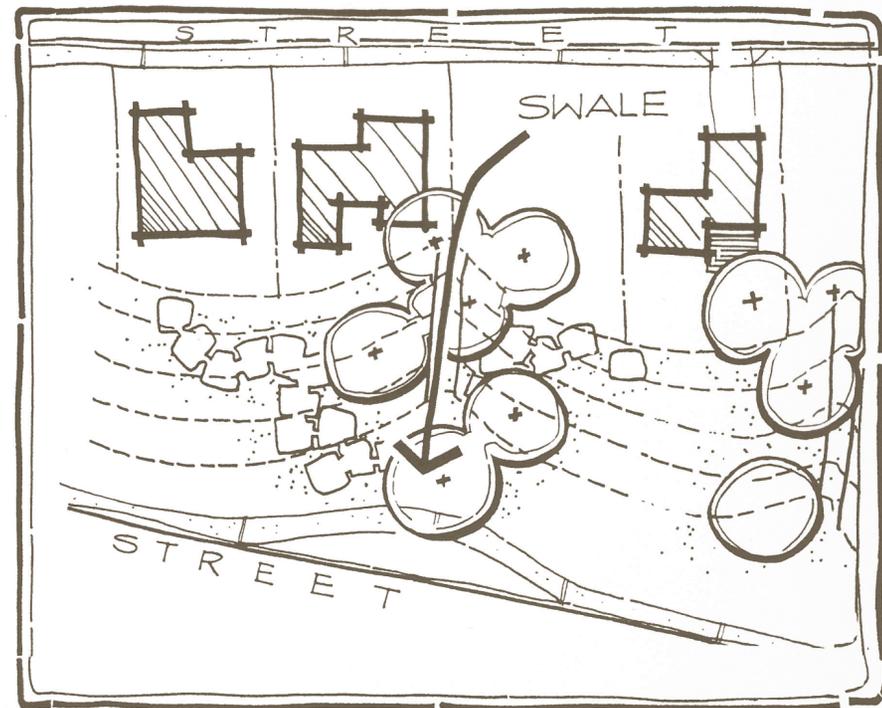
Plant Key	Common	Botanical	Height/Spread	Color
1	Bailey Acacia	A. Baileyana	20/20 Feet	Blue-grey
2	Western Redbud	Cercis Occidentalis	18/15 Feet	Light green
3	Summer Holly	Comarostaphylis Diversifolia	15/20 Feet	Dark green
4	Gazania	Gazania Perennialis	6/10 Inches	Dark green

4. When landform planting is utilized in lieu of landform grading, a conceptual planting plan should be submitted at the time a tract map is filed, for evaluation of the design as it relates to the prominent viewpoints. The planting plan should generally identify the common and botanical plant names, indicate foliage color and size at maturity.

Specific Techniques

1. Planting Guidelines For Landform Graded Slopes. The purpose of this type of planting design is to reinforce the visual appearance of landform graded slopes consistent with the characteristics of the surrounding hillsides.

Required trees to be placed on landform graded slopes should be grouped within swale areas to more closely reflect natural conditions. The swales are areas of greatest moisture concentration, and the portion of hillside where trees naturally group.



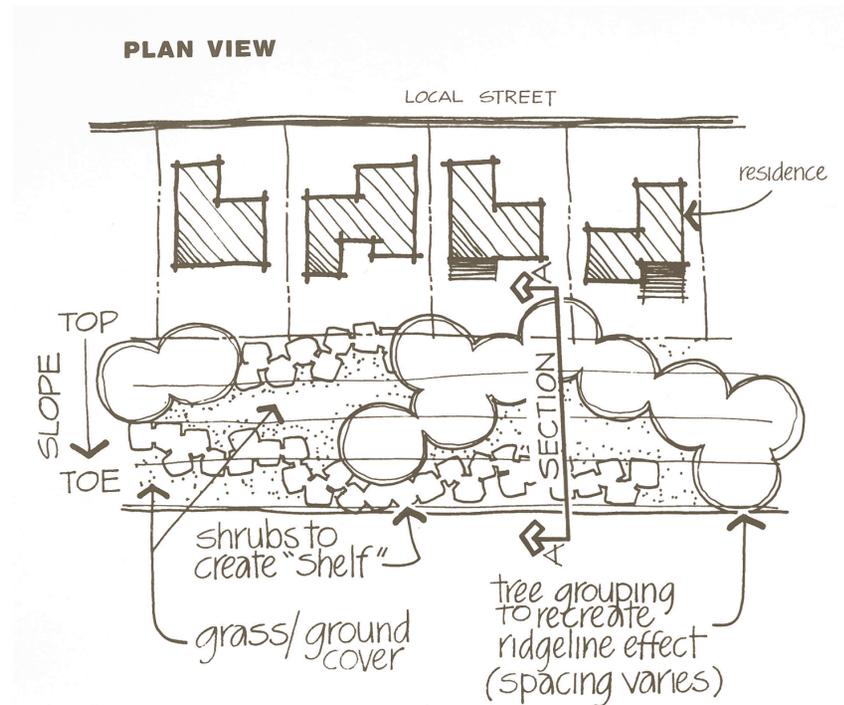
2. Landform Planting Guidelines For Conventional Slopes. In situations where slopes are to be conventionally graded, a landscape plan shall be designated for the purpose of obscuring the linearity and regularity of the conventional slope.

Special landscape design treatment, landform planting, should be utilized to create a sense of undulation and visual relief along the vertical planes consistent to the characteristics of the surrounding hillsides.

The purpose of landform planting is to provide an alternative whereby conventionally graded slopes are given the appearance of having been landform graded. The placement, selection and design of plant materials should create a visual undulating appearance.

Horizontal Relief: Plane materials in plan view should be grouped to create the appearance of ridgeline and “shelf” configurations.

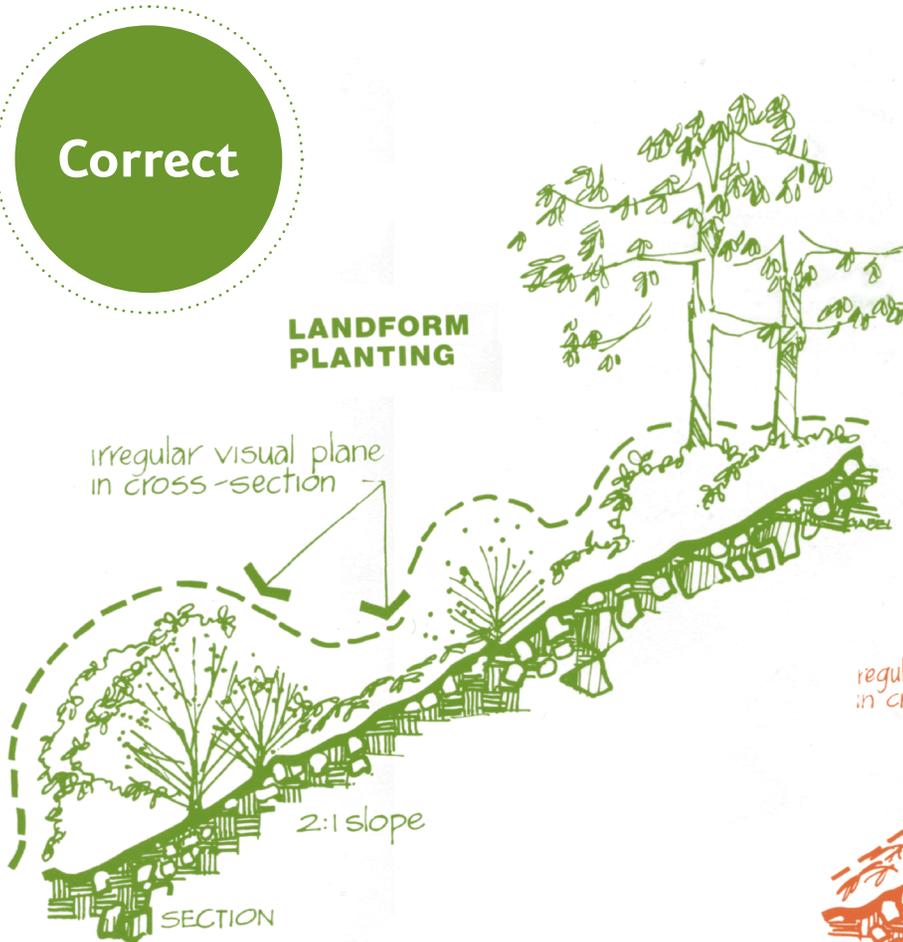
Vertical Relief: The pattern and variety of height of plant materials on the slope should create an irregular, visual plane in cross-section.



Correct

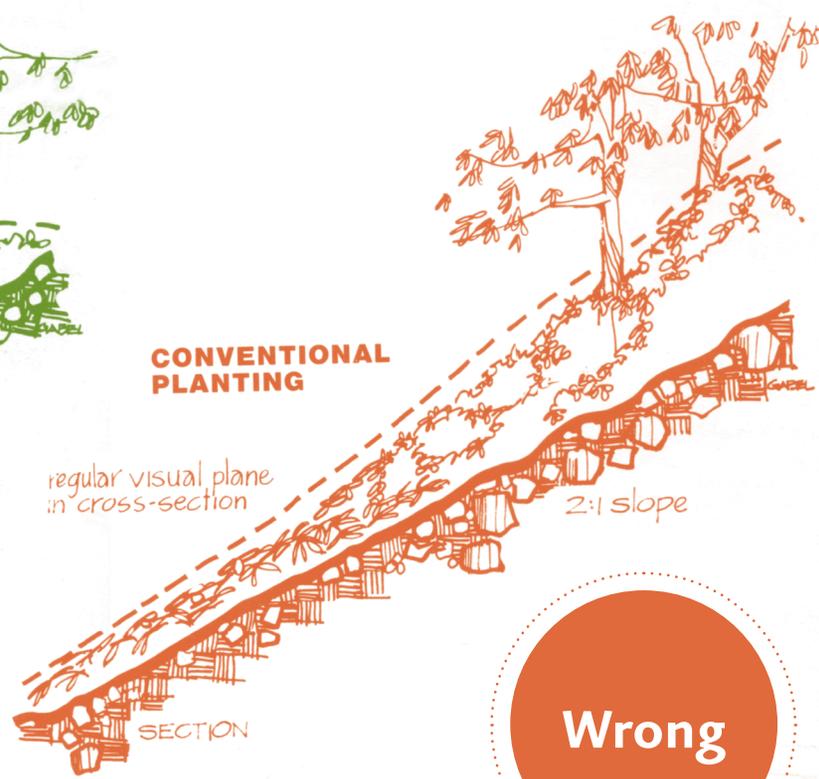
**LANDFORM
PLANTING**

irregular visual plane
in cross-section



**CONVENTIONAL
PLANTING**

regular visual plane
in cross-section



Wrong





Appendix A

supplementary
plant list



Supplementary Plant List		Drought Resistant	Fire Resistant	Slope Retention/ Erosion Control	Color	Zone¹
Ground Cover						
Arctostaphylos "edmundsil"	<i>Little Sur Manzanita</i>	•		•	Light green, White flowers	6-9; 14-24
Arctostaphylos hookeri "Monterey Carpet"	<i>Monterey Manzanita</i>	•		•	Bright Green, Pale pink flowers	6-9; 14-24
Arctostaphylos uvaursi "Point Reyes" and "Radiant"	<i>Bear Berry</i>	•		•	Green, Pink flowers	1-9; 14-24
Atriplex glauca	<i>Grayleaf creeping saltbush</i>	•		•	Grey-green White flowers	12-24
Atriplex semibaccata	<i>Australian creeping saltbush</i>	•	•	•	Grey-green	8, 9; 12-24
Baccharis Pulularis "Twin Peaks II"	<i>Dwarf Coyote Bush</i>	•	•	•	Dark green Yellow-green flowers	5-11; 14-24
Carpobrotus edulis	<i>Long-leafed ice plant</i>	•	•	•	Green Pale-yellow to rose flowers	12-24
Ceanothus griseus	<i>Carmel Ceanothus</i>		•	•	Deep blue flowers	4-7; 14-24
Delosperma alba	<i>White Australian ice plant</i>	•	•	•	Green	12-24
Ficus pumila	<i>Creeping fig (vine)</i>	•		•	Green	8-24
Gazania Hybrid	<i>Gazania</i>	•	•	•	Varies	8-24
Gazania Rigans	<i>Gazania</i>	•	•	•	Varies	8-24
Grindelia stricta	<i>Gum-plant (perennial)</i>			•	Grey-green Yellow flowers	N.L.
Justicia californica	<i>Chuparosa</i>	•			Grey-green	10-13

Supplementary Plant List		Drought Resistant	Fire Resistant	Slope Retention/ Erosion Control	Color	Zone ¹
Ground Cover						
Pennisetum setaceum	<i>Fountain grass</i>	•			Rose White flowers	All Zones
Santolina virens	<i>Lavender Cotton</i>	•	•		Bright green Pale-yellow flowers	All Zones
Zauscheneria Californica	<i>California Fuschia</i>	•			Grey-green	4-10; 12-24
Small Shrubs (3-5 Feet)						
Acacia "Ongerup"	<i>Acacia</i>	•	•		Grey-green Yellow Flowers	18-24
Acacia "Pecoffverde"	<i>Acacia</i>	•	•		Grey-green Yellow Flowers	18-24
Achillea millefolium	<i>Common Yarrow</i>	•		•	Grey-green White or yellow flowers	All Zones
Achillea tomentosa	<i>Wolly Yarros</i>	•	•		Grey-green White or yellow flowers	All Zones
Artemesia monsperma		•	•		Grey-green	All Zones
Artemesia pycnocephala	<i>Coast Sagebrush</i>	•	•		Grey Pale yellow flowers	All Zones
Atriplex undulate	<i>Saltbush</i>	•	•	•	Grey-green	N.L.
Cassia acuta	<i>Senna</i>	•			Grey-green Bold yellow flowers	N.L.
Cassia armata	<i>Senna</i>	•			Grey-green Bold yellow flowers	N.L.
Cassia coquiembensis	<i>Senna</i>		•		Grey-green Bold yellow flowers	N.L.

Supplementary Plant List		Drought Resistant	Fire Resistant	Slope Retention/ Erosion Control	Color	Zone ¹
Small Shrubs (3-5 Feet)						
Cassia italica	<i>Senna</i>	•			Grey-green Bold yellow flowers	N.L.
Ceanothus gloriosus var porrectus	<i>Dwarf Pt. Reyes Ceanothus</i>	•			Dark green Striking blue flowers	4-7; 14-24
Ceanothus purpureus	<i>Holly leaf Ceanothus</i>	•		•	Dark green Blue-purple flowers	4-7; 14-24
Cistus corbariensis	<i>White Rockrose</i>	•	•	•	Grey-green White flowers	16-17; 23-24
Cistus corsicus	<i>Corsican Rockrose</i>	•	•	•	Grey-green White flowers	16-17; 23-24
Cistus landanifera	<i>Crimson Spot Rockrose</i>	•	•	•	Dark green White flowers	16-17; 23-24
Cistus salvifolius	<i>Sageleaf Rockrose</i>	•	•	•	Grey-green White flowers	16-17; 23-24
Cistus villosus	<i>Rockrose</i>	•	•	•	Dull green Purple-rose flowers	16-17; 23-24
Encelia farinose	<i>Desert Encelia</i>	•	•		Grey Yellow flowers	N.L.
Eriogonum crocatum	<i>Saffron Buckwheat</i>	•		•	Grey Bright yellow flowers	14-24
Eriogonum fasciculatum	<i>Common Buckwheat</i>			•	Grey White-pink flowers	8-9; 14-24
Eriogonum giganteum	<i>St. Catherine's Lace</i>	•		•	Grey White-pink flowers	N.L.
Eriogonum parvifolium	<i>Seacliff Buckwheat</i>		•	•	Dark green White to pink flowers	N.L.

Supplementary Plant List		Drought Resistant	Fire Resistant	Slope Retention/ Erosion Control	Color	Zone ¹
Small Shrubs (3-5 Feet)						
Grindelia stricta	<i>Prostate Gum Plant</i>		•		Grey Yellow flowers	N.L.
Helianthemum nummularium	<i>Sun Rose</i>	•	•		Grey-green range Red to white flowers	N.L.
Limonium axilarius	<i>Sea Lavendar</i>	•	•		Grey lavender	N.L.
Limonium pectinatum	<i>Sea Lavendar</i>		•		Grey Purple flowers	N.L.
Limonium vulgarius	<i>Sea Lavendar</i>	•			Grey-green Purple-white flowers	N.L.
Mimulus longiflorus	<i>Southern Monkey Flower</i>	•	•		Green Yellow flowers	18-24
Salvia clevelandii	<i>Cleveland Sage</i>	•		•	Grey-green Blue-purple flowers	10-24
Salvia leucophylla	<i>Purple Sage California</i>	•		•	Grey-green Purple flowers	10-24
Salvia melifera	<i>Black Sage</i>			•	Dark Green Pale blue flowers	10-24
Medium Shrubs (5-10 Feet)						
Arctostaphylos densiflora "Howard McMinn"	<i>Vine Hill Manzanita</i>	•		•	Dark Green Pale pink flowers	7-9; 14-21
Atriplex canescens	<i>Four-Wing Saltbush</i>	•	•	•	Grey Pale yellow flowers	2-24
Atriplex lentiformis var breweri	<i>Brewer Saltbush</i>	•	•	•	Grey-green Pale yellow flowers	N.L.
Atriplex nummularia	<i>Giant Saltbush</i>	•		•	Grey-green Pale flowers	N.L.

Supplementary Plant List		Drought Resistant	Fire Resistant	Slope Retention/ Erosion Control	Color	Zone ¹
Medium Shrubs (5-10 Feet)						
Atriplex rhagodioides	<i>Saltbush</i>	•	•	•	Grey-green	N.L.
Ceanothus griseus "Santa Ana"	<i>Santa Ana ceanothus</i>	•		•	Dark green Blue flowers	4-7; 14-24
Echium Fastuosum	<i>Pride of Madeira</i>	•	•		Grey-green Purple-blue flowers	14-24
Eriodictyon trichocalyx crassifolia	<i>Yerba Santa</i>		•		Grey-blue Blue flowers	N.L.
Isomeris arborea	<i>Bladder Pod</i>	•	•		Pale grey-green Pale yellow flowers	18-24
Rhamnus californica	<i>California Coffee Berry</i>	•		•	Pale olive green Red berries	4-24
Rhamnus crocea v. ilicifolia	<i>Reberry</i>	•		•	Dard green Red berries	7-16; 18-21
Salvia apiana	<i>White sage</i>				Grey Light purple flowers	18-24
Viguera deltooides parishia	<i>Desert Sunflower</i>	•	•		Bright yellow daisy-like flowers	N.L.
Large Shrubs (10-18 Feet)						
Acacia graffiana	<i>Acacia</i>	•			Yellow-green Yellow flowers	18-24
Acacia notabilia	<i>Acacia</i>	•			Yellow-green Yellow flowers	18-24
Acacia pycnantha	<i>Golden Wattle</i>	•		•	Yellow-green Bright yellow flowers	18-24
Baccharis emoryi	<i>Mulefat</i>	•			Grey-green	N.L.
Baccharis pilularis consanguinea	<i>Chapparai Broom</i>	•	•	•	Green white flowers	5-11; 14-24

Supplementary Plant List		Drought Resistant	Fire Resistant	Slope Retention/ Erosion Control	Color	Zone ¹
Large Shrubs (10-18 Feet)						
Cercidium floridum	<i>Blue Palo Verde</i>	•			Blue-green	10-14; 18-20
Prosopis glandulosa	<i>Mesquite</i>				Light lacy green	5-14
Rhus integrifolia	<i>Lemonade Berry</i>	•		•	Green Pink-white flowers	15-17; 20-24
Rhus laurina	<i>Sugar Bush</i>	•		•	Green Snowy white flowers	20-24
Rhus ovata	<i>Sugar Bush</i>	•		•	Dark green Showy white flowers	7-24
Simmondsia chinensis	<i>Jojoba</i>	•	•		Pale green	10-13; 19-24
Tecomaria capensis	<i>Cape Honeysuckle</i>	•	•		Dark green Scarlet-yellow flowers	16; 18-23
Parkinsonia aculeata	<i>Mexican Palo verde</i>	•	•		Yellow-green	11-24
Small Trees (15-25 Feet)						
Caesalpinia gilliesii	<i>Bird of Paradise Bush</i>				Green Bright yellow flowers	8-16; 18-23
Cercus occidentalis	<i>Western Red Bud</i>				Light green Magenta flowers	2-24
Eucalyptus lehmanli	<i>Fingerstall Gum</i>				Medium green	21-24
Eucalyptus spathulata	Narrow-leafed gimlet				Grey green	19-24
Ficus pseudosycamoros	<i>Sycamore Fig</i>				Medium green	20-24
Ficus salicifolia					Green	N.L.



Supplementary Plant List		Drought Resistant	Fire Resistant	Slope Retention/ Erosion Control	Color	Zone ¹
Small Trees (15-25 Feet)						
Ficus infectorius		•			Green	N.L.
Heteromeles arbutifolia	<i>Toyon</i>	•	•	•	Dusty green red berries	5-24
Melaleuca nesophila	<i>Pink melaleuca</i>	•			Pale olive green	9, 13; 16-24
Rhus lancea	<i>African Sumac</i>	•			Medium green	8, 9; 12-24
Stenolobium stans	<i>Yellow-elder</i>	•			Green yellow flowers	12, 13; 21-24
Medium Trees (25-40 Feet)						
Juglans californica	<i>Black Walnut</i>	•			Dark green	18-24
Tamarix aphyllia	<i>Athel Tree</i>		•		Grey to blue-green	7-24
Eucalyptus Cornuta	<i>Yate Tree</i>	•			Green	17, 19-24
Olea europea	<i>Olive</i>	•			Pale olive-green	4-7; 14-19
Ziziphus spina-christi	<i>Jujube</i>	•			Bright green to yellow; red fruits	4-16; 18-24
Large Trees (40+ Feet)						
Aesculus californica	<i>California Buckeye</i>			•	Dark green; fragrant	4-7; 14-19
Cupressus arizonica	<i>Smooth Arizona Cypress</i>	•			Green	8-24
Eucalyptus camaldulensis	<i>Red Gum</i>			•	Green	8, 9; 12-24
Eucalyptus leucoxydon rosea	<i>Pink Ironbark</i>	•		•	Grey-green; cream flowers	9, 12-24
Eucalyptus viminali	<i>Manna Gum</i>			•	Medium green	8, 9; 12-24
Quercus agrifolia	<i>Coast Live Oak</i>	•			Rich, shy green	7-10; 12- 14-24

Footnotes:

1. Corresponds to zones identified in the **Sunset Western Garden Book**, Lane Publishing.
Actual site could be modified by microclimate.

N.L. = Not Listed. Sunset Zone not established, check locally.



Department of Building and Safety

rule of general
application

DEPARTMENT OF BUILDING AND SAFETY

Rule of General Application

No. *Proposed*

landform grading concept

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A. Purpose: This Rule of General Application (RGA) serves to define the concept of landform grading and to establish needed guidelines for the implementation of the concept within the framework of Division 30 of the Los Angeles Municipal Code.

B. Definition: For this RGA, the term “Landform Grading” shall mean a contour grading method which creates artificial slopes with curves and varying slope ratios in the horizontal plane designed to simulate the appearance of surrounding natural terrain. The concept of Landform Grading incorporates the created ravine and ridge shapes with protective drainage control systems and integrated landscaping designs.

C. Application: The Landform Grading concept may be adaptable to the various terrain and slope conditions throughout the City of Los Angeles. However, it is the primary intent of the Code and this RGA to place safety in grading above all other considerations. Therefore, it is recognized that certain areas of observed geologic hazard or potential problems are best mitigated by the more conventional grading methods utilizing linear-shaped slopes to best complement the required stabilization devices. In such cases, the Landform Grading concept is not an acceptable design alternative to conventional grading.

landform grading guidelines

D. Landform Grades Slopes

1. **Slope ratio.** Slope ratio may vary in the horizontal directions provided no portion of the slope exceeds 2:1 in slope ratio in accordance with Code Sections 91.3005 and 91.3006 of the Code.

EXCEPTION: The Department or the Board, in case an appeal is made to it under Section 91.0304, may permit an exposed surface steeper in slope than two horizontal to one vertical, provided the steeper slope is limited to a 1½:1 slope ratio, and reports from both a soils engineer and an engineering geologist attest to the stability of the slope.

2. **Slope stability.** All existing and proposed graded slopes shall be analyzed for surface and subsurface conditions in accordance

Figure 1

Drainage Devices

Figure 1 (a) code “standard” 8’ bench

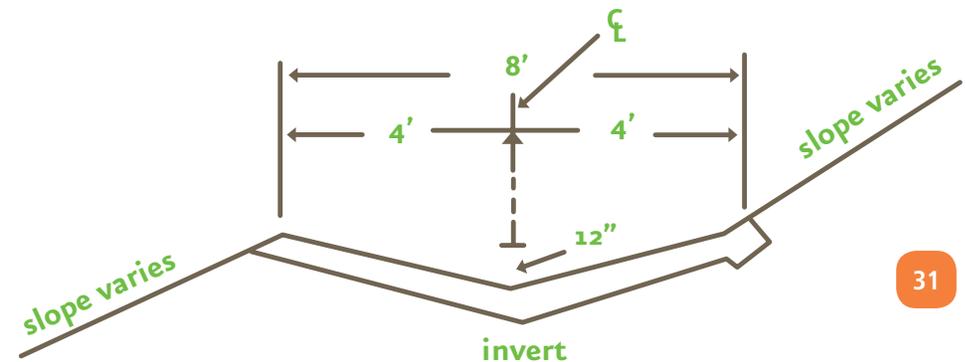


Figure 1 (b) suggested “landform” 8’ bench

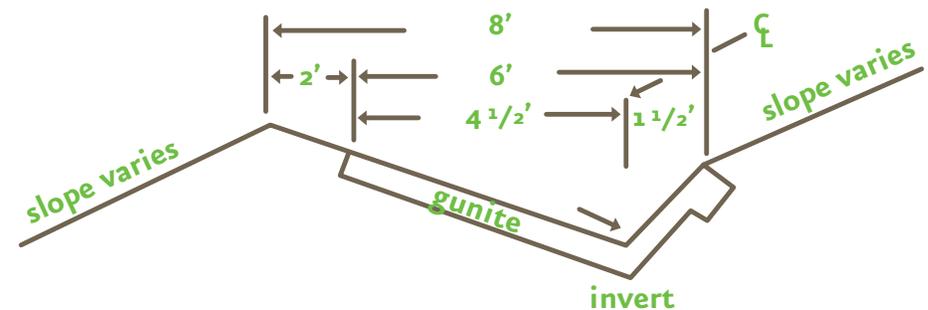
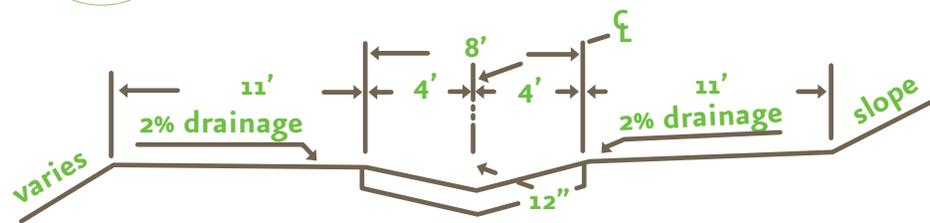


Figure 2

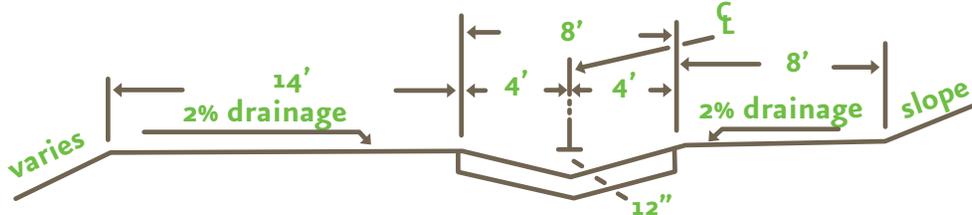
Drainage Devices

Figure 2 (a) code "standard" 30' bench



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Figure 2 (b) suggested "landform" 30' bench



with Department policy and the Los Angeles Municipal Code. The minimum accepted factor of safety for permanent cut, fill and stabilized slopes shall be 1.5.

E. Natural Slopes

1. **Natural slopes** on and adjacent to proposed landform grading projects shall be evaluated where the slopes exceed 2:1 in gradient or exhibit evidence of past instability. The minimum factor of safety of 1.5 shall apply to natural slopes.

2. **Debris flow and soil-slip.** Natural slopes adjoining the development areas shall be analyzed for surficial stability. All needed corrective grading or protective devices shall be provided in a manner acceptable to the Department and private consultants.

3. **Transition zone.** The zone where landform graded slopes blend with the natural terrain must be evaluated by the geologist and/or soil engineer, prior to grading. Based upon this evaluation, the landform slope shall be transitioned to the natural slope in a manner which will produce the most natural appearance and still provide the needed safety factor for the resultant slope configuration.

4. Fill over natural slope. Landform graded fill slopes shall be benched and keyed into firm ground to provide structural support below potential surface creep and saturated zones of the natural slope.

F. Drainage Control Systems

1. Contoured interceptor drains. Standard slope drains shall be provided at the Code required 25-foot and 100-foot vertical spacing, in accordance with Section 91.3008 of the Code and Figures 1a and 2a, attached. For the purpose of reducing visual impact of the interceptor drains on landform graded slopes, alternative channel designs are suggested in Figures 1b and 2b, attached.

2. Flow distance. The maximum length of interceptor drainage flow to a downdrain shall be limited to 150 feet.

3. Downdrains. Downdrains on the landform configured slope shall be located within the flowline of artificial swales. The design of the slope shall be in observance of this requirement and to provide the proper location of the downdrain at the maximum flow distances stipulated in Subsection C-2. Where a swale cannot be designed to provide the required flow distances to a downdrain, alternate downdrain locations or flow distances will be considered, provided a request for

modification is submitted along with adequate justification to support the requested change. The alternate downdrain location shall be designed to provide an alignment normal (right angles) to the slope contours. The downdrain shall not be located on the ridge axis. (See Figure 3).

4. Aesthetic treatment. The treatment of standard drainage devices for the purpose of mitigating visual impact from public areas shall be limited to the nonrestricting flow types. Any treatment that increases turbulent flow or restricts channel capacity shall require a corresponding design increase in channel capacity.

G. Planting and Irrigation

1. Landform planting requirements. The concepts of landform grading require a minor departure from the uniform spaces planting requirements of Section 91.3007 in order to create a natural effect through cluster locations of selected plants. Accordingly, plant and planting patterns may be varied upon recommendation of a licensed landscaped architect and approved by the Department.

2. Simulated landform effects. The contoured effects of landform grading may be simulated through the use of landscaping techniques which



rely on the location and blending of selected plant varieties of appropriate and varying height needed to create the effects of a curved slope terrain.

3. Native plants. Native plant varieties may be used on graded slopes provide the type of plants are recommended by a landscape architect as being fire retardant and suitable for the project climate, terrain and soil type.

4. Irrigation. All graded slopes shall be planted and irrigated in accordance with the Code. On graded slopes where native plants have been recommended, the required slope irrigation system may be modified upon recommendation of a licensed landscape architect and approved by the Department.

5. Special conditions

a. Rodent Control. Due to the increased slope areas created by landform grading, the problem of rodent burrowing and disturbance to slopes become more severe. The landscape architect shall investigate various rodent control methods and select the most suitable for use at the project location. The above recommendation

shall be submitted to the Department in report form and the report filed with the Office of the County Recorder.

b. Root damage. Trees and shrubs located within created swale areas of landform graded slopes shall be planted at a sufficient depth and distance to concrete downdrains to avoid root damage from the mature plants.

H. Code Standards

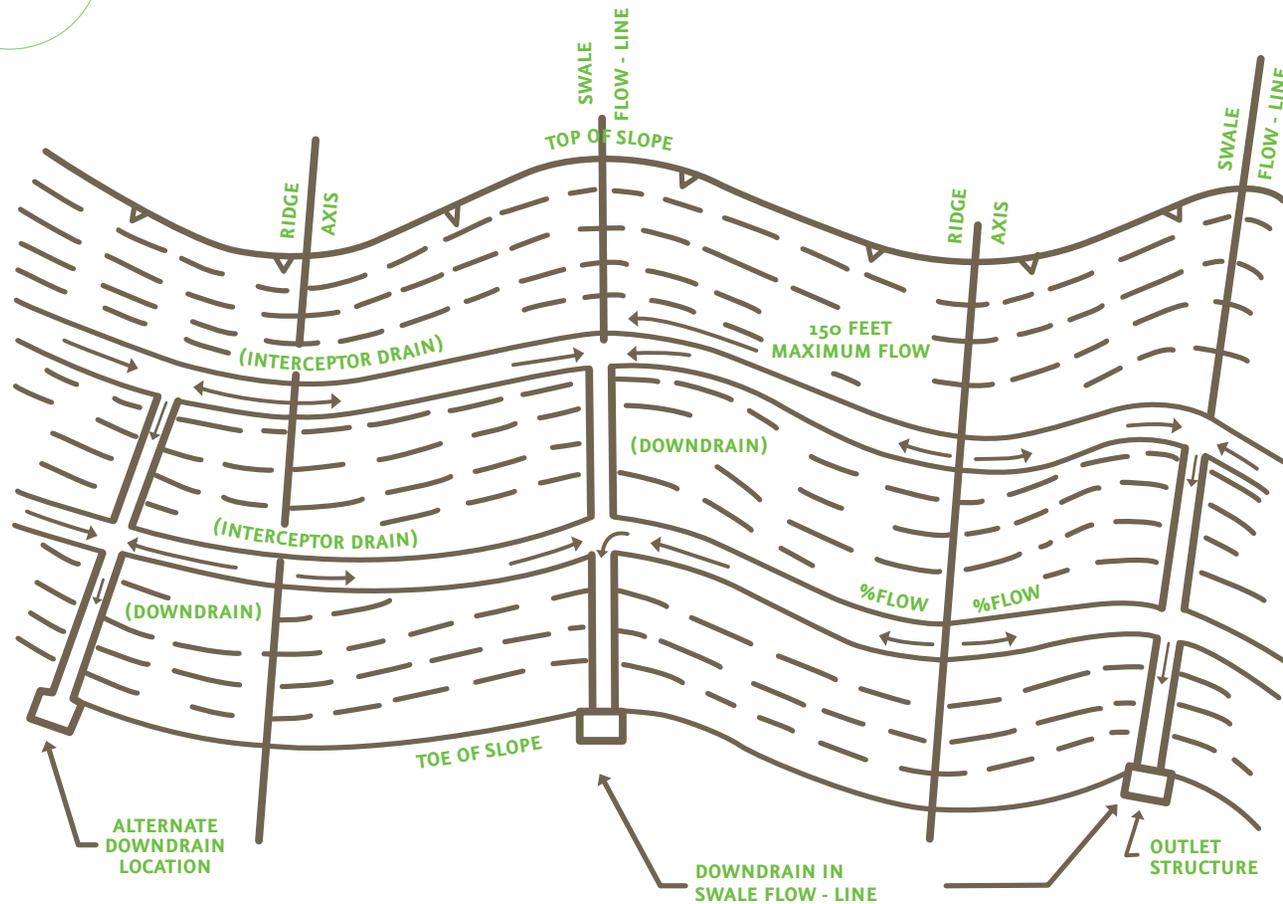
All standard design criteria of the Code shall be applicable to landform graded projects. Any necessary variation to the Code shall be in accordance with Code modification procedures, this Rule of General Application, and good engineering practice.

Figure 3
Not to Scale

Landform Grading - Drainage Control

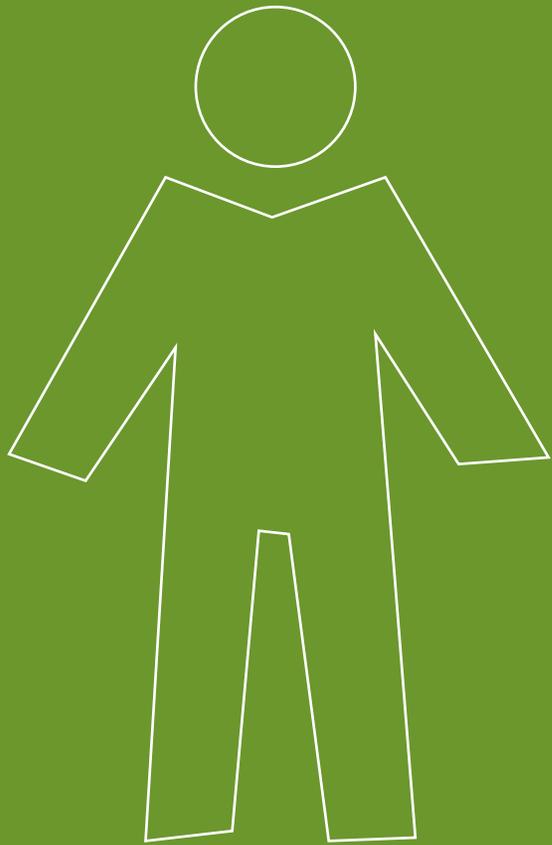
Devices and Alternate Locations

-2:1 (H:V) Average Slope Ratio

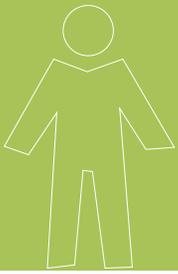




Appendix C



city agencies and
*resource
people*



city agencies and *resource people*

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