



CITY OF LAGUNA BEACH

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FIRE DEPARTMENT MEMORANDUM

DATE: February 19, 2020

TO: Landscape Designers, Architects and Developers

FROM: James Brown, Fire Marshal

SUBJECT: **Application of Fuel Modification Standards to Development Projects.**

On December 17, 2019, the City Council adopted Ordinance Nos. 1640 and 1641, which amended the Fire Code and Building Code provisions of the Municipal Code, and included the establishment of fuel modification guidelines for development projects. These ordinances went into effect on January 1, 2020. In 1989, the City Council adopted Resolution No. 89.104 to approve the South Laguna Specific Plan, which included six pages of a "Fuel Modification Guidelines" (*attached as Exhibit A*). The California Coastal Commission has determined that while this "Fuel Modification Guidelines" was originally intended for South Laguna only, it is contained in the certified Local Coastal Program as a Guideline for the entire city (LCP-FMG).

The Fire Department has been receiving questions on the application of the LCP-FMG in relation to development, so we are providing this Memorandum to clarify the issue.

The Fire Department staff has closely reviewed the LCP-FMG and notes that it directs project designers to use the 1976 Orange County Fire Protection Planning Task Force Report and the Monarch Point subdivision Fuel Modification Program (in Laguna Niguel) as the basis for fire prevention, subject to the requirements of the LCP-FMG.

All three of those documents provide general guidance on the design of a fuel modification plan/program. The general guidance addresses the need to reduce wildland fire hazard potential by utilizing graduated fuel modification zones, and also directs the Fire Department to work in conjunction with the project landscape designer.

The 2019 LBFD Landscape/Fuel Modification Standards and Maintenance Program (L/FMSMP) (*attached as Exhibit B*) provide the specific information needed to actually design and build an effective fuel modified landscape. The L/FMSMP is based on extensive fire service experience and is in alignment with Ordinance Nos. 1640 and 1641, Resolution No. 89.104, the Task Force Report and the Monarch Point Fuel Modification Program. It is also consistent with previous LBFD fuel modification standards and guidelines, and is based on standards and guidelines utilized by neighboring jurisdictions.

The LBFD will be utilizing the 2019 Landscape/Fuel Modification Standards and Maintenance Program document as our policy for review and approval of landscape fuel modification designs.

Please contact the Fire Department with any questions concerning this matter.

Exhibit A

Resolution 89.104, Fuel Modification Guidelines

Fire Hazard

The Safety Elements of the Orange County General Plan and Aliso Creek Corridor Specific Plan include major portions of the canyon and hillsides within a high fire hazard classification.

Major criteria utilized to establish the classification include (1) slopes over 30 percent; (2) medium to heavy fuel loading, predominantly of the coastal sage scrub and chaparral variety; and (3) frequent critical fire hazard weather conditions. The high fire hazard designation is based on the State Division of Forestry's Fire Hazard Classification System for California's Wildlands.

POLICIES

Geologic Hazards

1. In areas of new development along the ocean front, structures should be set back a sufficient distance from the bluff edge to be safe from the threat of bluff erosion for a minimum of 50 years. A geologic report could be required by the City in order to make this determination.
2. Within the required blufftop setback, drought-tolerant vegetation should be required.
3. Development and activity of any kind beyond the required bluff top setback should be constructed in a manner to insure that all surface and subsurface drainage will not contribute to the erosion of the bluff face or the stability of the bluff itself.
4. No development should be permitted on the bluff face, except for staircases or accessways to provide public beach access. Drainpipes should be allowed only where no other less environmentally damaging drain system is feasible and the drainpipes are designed and placed to minimize impacts to the bluff face, toe, and beach. Drainage devices extending over the bluff face should not be permitted if the property can be drained away from the bluff face.

Fire Hazards

5. Provide appropriate fire protection for structures in high fire-potential areas by using fire-resistant building materials and adequate setbacks when required on natural slopes. The Fire Prevention Planning Task Force Report and Fuel Modification Program developed for the Monarch Point subdivision should be used as the basis for fire-prevention,

subject to the following guidelines and as described on the Fuel Modification exhibits.

6. Fuel Modification shall be included within the development boundary edge shown on Figure 3.

Fuel Modification Guidelines

The following Section is intended to provide guidelines for required and proposed fuel modification.

a. Hillside Areas

Fire hazard potentials shall be determined for projects proposed within the hillside areas by the Fire Department working in conjunction with a landscape architect. Factors such as types and moisture content of existing vegetation, prevailing winds, and topography shall be used to determine areas of fire hazard potential. Areas shall be ranked and mapped to identify fire prevention treatments and fuel modification zones.

For example, low fire hazard areas are typically located where existing vegetation has a year round high moisture content and the topography is relatively flat. Steep narrow canyons have a much higher fire hazard potential because heat and winds concentrate to drive the fire upwards, thereby creating a "chimney effect".

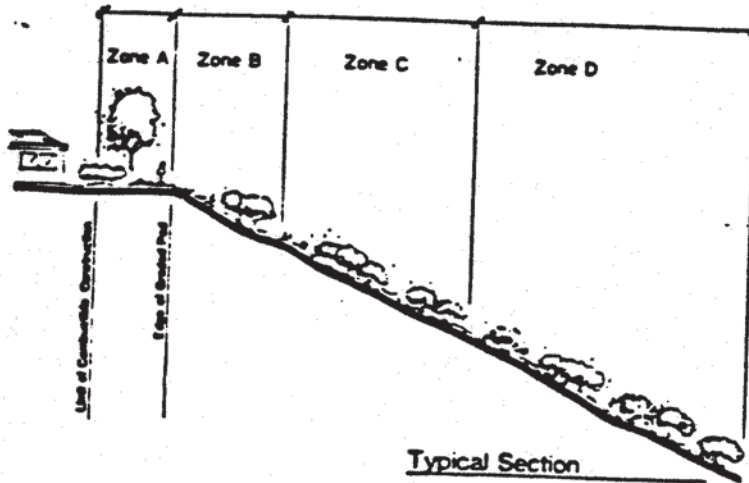
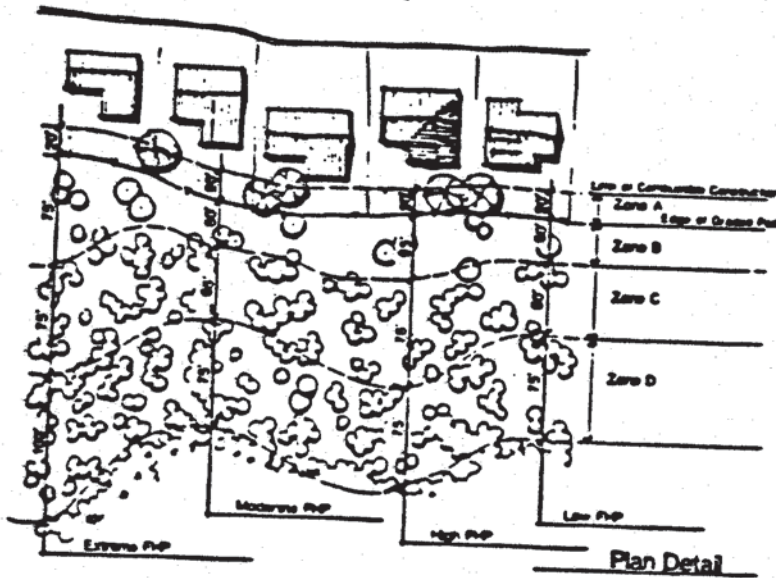
It is recommended that new development include a combination of required building material such as tile roof treatments, setback restrictions for combustible construction, irrigated buffer zones, and graduated fuel modification zones which entail selective thinning to control the heat and intensity of wildland fires. The minimum amount of native vegetation shall be selectively thinned to control the heat and intensity of wildland fires as they approach a residential area while preserving to the maximum extent feasible the quality of the natural areas surrounding the site.

- (1) No combustible structures including, but not limited to, houses, wood decks, sheds, gazebos, and wood fences should be located within the 20-foot minimum width of Zone A. Irrigation systems must be installed and operated within this setback to ensure a reasonable moisture content in planted areas. Woody plants and tall trees should be discouraged.

Fuel Modification Zone Dimensions

FHP Rating	Zone A	Zone B	Zone C	Zone D
Low FHP	20'	50'	50'	75'
Moderate FHP	20'	50'	65'	75'
High FHP	20'	65'	75'	75'
Extreme FHP	20'	75'	75'	100'

All measurements are to be made horizontally



- (2) Fuel Modification Plans, substantially in compliance with the Fuel Modification Exhibits, should be prepared, when appropriate, as a condition of development to protect as much of the existing native vegetation as possible while providing reasonable protection for residential structures from fire hazards. Thinning of no more than 30% of native vegetation should extend beyond 170 feet from the outward edge of residential structures (or 150 feet from the 20-foot backyard setback) in extreme fire hazard potential areas. Fuel modification should not occur beyond 250 feet from the 20-foot backyard setback in the extremely hazardous zones. Fuel modification in low fire hazard potential areas should not extend more than 175 feet. Minimal irrigation during dry periods and fire repressant sprinklers for native vegetation are preferred methods to reduce the width or area of fuel modification.

The intent of the Fuel Modification area is not to become a static 250-foot wide band surrounding development, but rather an undulating width that reflects topography and fire hazard potential. The band should be as narrow as possible to protect proposed structures, but should not be wider than 250 feet in extremely hazardous areas.

- (3) A Fuel Modification Plan should be subject to City review and approval prior to obtaining any building or grading permits. The Plan should identify appropriate setbacks and widths of fuel modification, amounts and types of vegetation to be removed and retained, and specify proposed irrigation methods to reduce the risk of fire in hillside areas.
- (4) Access roads, trails or fire roads may be located within the fuel modification areas to reduce alteration of native vegetation.
- (5) Where appropriate, as a condition of development, project developers shall record deed restrictions that acknowledge the fire hazard potential and assume responsibility for maintenance of fuel modification zones and programs.

b. Urban Fringe

The risk of fire at the base of hills adjacent to the existing urban area tends to be substantially less than that at the tops and upper slopes of ridges because fire normally accelerates upslope. Therefore, a limit for fuel modification in this area should be 150 feet from any habitable structure. In no event shall grading occur in the "Open Space" area and any vegetative thinning and/or replanting should be limited to within 150 feet of the structure. Likewise, this is the preferred maximum distance for fuel modification, but flexibility for narrower widths is appropriate.

POLICIES

1. Where native specimen vegetation is retained within fuel modification areas, these areas should be properly maintained to minimize fire risk.
2. Provide fuel breaks necessary for the protection of life and property as determined by the Fire Chief for community areas. Fuel modification should be limited to zones established adjacent to proposed or existing development. Graduated clearing and trimming should be utilized within these zones to provide a transition between undisturbed wildland areas and the development edge. Clearing or removal of native vegetation for fuel modification purposes should be minimized by placement of roads, trails, and other such man-made features between the development and wildland areas. To minimize fuel modification area, other techniques (such as perimeter roads, techniques using fire resistant materials, elimination of wood balconies and decks, fire retardant siding and tile roofs) should be incorporated in the design and development of projects.

Exhibit B

City of Laguna Beach Fire Department

Landscape/Fuel Modification Standards and Maintenance Program



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Landscape/Fuel Modification Standards and Maintenance

PURPOSE

The purpose of these standards is to provide information on how landscape and fuel modification zones are to be integrated, designed, installed, and maintained in order to meet safety requirements. The many variables involved with landscape and fuel modification make specific, uniform regulations impractical. The Laguna Beach Fire Department (LBFD) will not require supporting data if these standards are followed to the satisfaction of the LBFD. Compliance with these standards does not guarantee that homeowner's insurance may be secured. Furthermore, compliance with these standards may not prevent the loss of life and or real and personal property due to fire.

SCOPE

A fuel modification zone is an area of land where combustible vegetation is removed and/or modified and partially or totally replaced with more adequately spaced, drought-tolerant, fire-resistant plants in order to provide a reasonable level of protection to structures from a wildland fire. Development contiguous to or within an undeveloped vegetated area (wildland urban interface) requires modification of natural vegetation at the urban interface and an integrated landscape plan. Parcels meeting this profile are designated "FM" in the City's GIS software (accessible on the City website).

The Landscape/Fuel Modification Standards are completely applicable, per the Laguna Beach Municipal Code, where the project meets the following conditions:

- A. There is a proposed new structure, and the parcel is designated "FM" in the City's GIS.
- B. Where a "Major Remodel", as defined by municipal code, is being proposed to an existing structure, and the parcel is designated "FM".

The Landscape/Fuel Modification Standards are applicable for all vegetation up to 100 feet from any structure in every direction, but not to extend off property, per the Laguna Beach Municipal Code and Government Code Section 51182, where the project meets the following conditions:

- A. There is a proposed new structure, the parcel is *not* designated "FM", but is within the Very High Fire Hazard Severity Zone (as mapped by CAL Fire). The CAL Fire map is accessible on the LBFD website.
- B. There is a proposed "Major Remodel" to an existing structure, the parcel is *not* designated "FM", but is within the Very High Fire Hazard Severity Zone (as mapped by CAL Fire).

An integrated landscape and fuel modification plan varies in complexity and is dependent upon the type, quantity, and spacing of vegetation. Other important factors include topography, degree/type of exposure, local weather conditions, and the construction, design, and placement of structures. A typical landscape/fuel modification installation consists of a 20-foot setback zone (Zone A), a minimum 50-foot zone typically irrigated (Zone B), with an additional 125-foot minimum of vegetation thinning zones (Zones C and D). The minimum width of a fuel modification area is 195 feet and in some cases the width increases due to type of terrain and/or type of vegetation. The exception is when a structure is at the bottom of a slope. In that upslope situation, the maximum fuel modification zone width required is 150 feet as measured from the wildland exposed side of the building.

The necessity of implementing a landscape/fuel modification plan does not release the owner from the responsibility to mitigate the impact of such modifications (e.g., erosion control, endangered species, etc.).

SUBMITTAL REQUIREMENTS

1. Landscape/Fuel Modification Plans

Landscape/fuel modification plans show the area and location of all hardscape/softscape improvements and fuel modification necessary to achieve the minimum acceptable level of risk to structures from combustible vegetation. Submit three sets of plans prepared by a licensed landscape architect or other design professional with equivalent credentials to the City of Laguna Beach Community Development Department for review. One set will be routed internally to the Fire Department for review.

The following shall be included on the fuel modification plan (also refer to Attachment 1):

- A. Identify the design of the proposed development, showing all property lines, contour lines, and the proposed location of all new and existing structures including all hardscape/softscape improvements and the fuel modification area.
- B. Delineation of each zone (setback, irrigated, and thinning) with a general description of each zone's dimensions and character; i.e., 50-foot – 70-foot Zone B, with existing vegetation removed, irrigated, and planted with adequately spaced plant material that is more drought-tolerant and fire-resistant (See Attachment 2).
- C. Location and detail of permanent zone markers (See Attachment 4).
- D. Identify the removal of undesirable plant species in accordance with the LBFD Fire Prone Plant Species List (See Attachment 7).
- E. Plant palette to be installed in accordance with approved guidelines. Include a plant matrix for all trees, tree-form shrubs, shrubs, and shrub-like plants in irrigated zones

showing the maximum height and width of mature plants and proposed spacing. NOTE: Care should be taken to select plants that provide limited habitat to rats and other rodents that may detract from the health and safety of residents. Contact Orange County Vector Control for further information.

- F. Photographs of the area which show the type of vegetation that currently exists, including height and density, and the topography of the site.
- G. Description of the methods to be used for vegetation removal, i.e., mechanical or manual.
- H. Location of emergency and maintenance access easements within every 500 lineal feet of the fuel modification area. Access easements shall have a minimum 10-foot width; alternatively, 5-foot wide easements provided every 250 feet may be acceptable. Gates, if installed within the easement, shall be a minimum of 36 inches wide. The easements shall be maintained free of vegetation or any structures greater than 5 inches in height.
- I. General description of what exists 300 feet beyond the development property lines in all directions; i.e., reserve lands, structures, natural vegetation, roads, parks, etc. (Note: LBFD may require additional information on a project-specific basis).
- J. Identify any proposed off-site fuel modification areas and provide appropriate legal agreements with adjacent property owners.
- K. Irrigation plans and specifications, as requested.
- L. All applicable maintenance requirements and assignment of responsibility (See Section 6).
- M. Tract or project conditions, CC&R and/or deed restrictions relative to fuel modifications (See Attachment 5).
- N. The integrated landscape/fuel modification plan shall be reviewed by LBFD and approved by the Design Review Board (DRB) prior to issuance of the building permit.
- O. For large developments, fuel modification zones (especially zones B, C, and D) should be located within common lettered lots owned and maintained by associations representing common ownership; e.g., homeowners' associations. The integrity and longevity of the fuel modification zones shall be maintained with sufficient tract/project conditions and CC&Rs to specifically identify the restrictions within the fuel modification areas. Likewise, when fuel modification zones are located on private property, deed restrictions are required to specifically identify the restrictions on any portion of the property subject to fuel modification. (See Sections 6 and 8 and Attachments 2 and 5).

2. LBFD Plant Palette Information

The plant palette must be submitted containing both the botanical and common names of all plant materials that are to be used. In the irrigated zone areas (which commonly serve as a screening buffer between development and open space/park land), plants must be fire resistant and drought-tolerant. Plant materials used outside of the irrigated zones must also be fire resistant and drought tolerant. There is no such thing as a plant that will not burn, so the term fire resistant may be misleading. All plants will burn given sufficient heat and low moisture content. Vegetative fire resistance may be enhanced through adequate irrigation. **Note:** All plants in Zones A-D shall be specified for appropriate fuel modification zones.

The undesirable plant (target) species approved by LBFD and various resource agencies responsible for environmental protection are provided in Attachment 7. Specific planting criteria are included for various plant materials. If alternate plant materials are proposed, the landscape architect shall provide a photograph, as well as data on the fire resistive characteristics and proposed uses (zones, number, spacing, etc.) and LBFD will make a case-by-case determination as to acceptability of the proposed material. The proposed plant must be spaced based on size and characteristics. If the plant materials are proposed to be planted within 300 feet of reserve lands (except plants on the interior of the tract), concurrence from the applicable following agencies would be required: US Fish and Wildlife Service, California Department of Parks and Recreation, The Nature Conservancy, the Department of Fish and Wildlife, Orange County Public Facilities and Resource Department, and the Orange County Vector Control District. If the proposed plants have received previous resource agency approval, no concurrence letter will be required.

3. Zone A – Setback Irrigated Zone (See Attachments 2 & 3)

The purpose of the setback zone is to provide a defensible space for fire suppression forces and to protect structures from radiant and convective heat. **No combustible construction shall be allowed within the 20-foot setback zone (Zone A). In no case shall Zone A be less than 20-foot minimum. This measurement shall be made horizontally from the point of the structure closest to Zone A.** This zone is located between Zone B and the structure and extends in all directions (360°) surrounding the structure.

Zone A – Specific Requirements

- A. Automatic irrigation systems to maintain healthy vegetation with high moisture content.
- B. Irrigation maintained outside the drip line of native oak trees.
- C. Pruning of foliage to reduce fuel load, vertical continuity, and removal of plant litter and dead wood.
- D. Complete removal of fire prone plant species (See Attachment 7), minimal allowance for retention of selected native vegetation.

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- E. Trees and tree form shrub species are not allowed within 10 feet of combustible structures (measured from the edge of a full growth crown).
 - F. Trees and tree form shrub species are not allowed to extend beyond the property line (measured from the edge of a full growth crown).
 - G. Tree and tree from shrub species are not allowed within 10 feet of adjacent tree species as measured from the edge of a full growth crown (see Attachment 6).
 - H. Special consideration should be given for rare and endangered species, geologic hazards, tree ordinances, or other conflicting restrictions.
 - I. Maintenance including ongoing removal and/or thinning of undesirable combustible vegetation, replacement of dead/dying fire resistant plantings, maintenance of the operations integrity and programming of the irrigation system, regular trimming to prevent ladder fuels.
 - J. A minimum of 36" of horizontal clearance and unlimited vertical clearance around the exterior of the structure (360°) shall be provided for Firefighter access. Firefighter access shall be made without the need for special tools (ladders) or ability and have permanent improvements installed when ascending or descending from street level (e.g., stairs).
 - K. No combustible construction shall be allowed in Zone A.
 - L. No permanent or portable barbeques/grills, fire pits, fireplaces or other flame generating device shall be permitted within 30' of non-fire resistive plants/vegetation.
 - M. No vines shall be permitted on combustible structures (e.g., Type V non-rated structure).

4. Zone B – Irrigated Zone

This portion of landscape/fuel modification should be irrigated and planted with drought-tolerant, deep-rooted, moisture retentive plants. The plans must delineate that portion of the fuel modification area that will be permanently irrigated. Plant material selection, irrigation, system design, and the landscape maintenance management plan shall sensitively address water conservation practices and include methods of erosion control to protect against slope failure. All irrigation shall be kept a minimum of 20 feet from the drip line of any existing native *Quercus* (oak) species. This irrigated zone is 50 feet to 75 feet in width. Zone B shall be cleared of all undesirable plant species, irrigated, and planted with plants from the approved Lbfd or OCFA Plant List. Exceptions to save desirable species may be submitted for approval by the Fire Chief on a site-specific basis. As in Zone A, combustible construction (i.e., gazebos, trellis, shade covers, etc.) is not allowed in Zone B.

Zone B – Specific Requirements

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- A. Groundcover shall be maintained at a height not to exceed 18 inches.
 - B. In order to maintain proper coverage, native grasses should be allowed to go to seed. Native grasses shall be cut after annual seeding. Cut heights should not exceed 8 inches.
 - C. Irrigation shall be designed to supplement native vegetation and establish and maintain planted natives and ornamentals.
 - D. Planting will be in accordance with planting guidelines and spacing standards established in this guideline (See Attachments 6 and 7).
 - E. In Zone B sensitive and/or protected plant species shall be identified on the landscape/fuel modification plans and dealt with per the City's Open Space/Conservation Plan.
 - F. Tree and tree-form shrub pruning and spacing will be in conformance with Attachment 6. Tree form shrubs are defined as shrubs that naturally exceed 4 feet in height.
 - G. Shrubs shall be spaced such that they do not create an excessive fuel mass and can be maintained in accordance with specified spacing as indicated on the plan.
 - H. Special consideration should be given for rare and endangered species, geological hazards, tree submitted for project approval, upon further review.
 - I. Removal of undesirable plant species (see Attachment 7).

5. Zones C & D – Thinning Zones – Non-Irrigated

Zone C is 50 to 75 feet in width and requires 50% thinning and removal of all dead and dying vegetation and undesirable species. Zone D is 75 to 100 feet in width and requires 30% thinning with removal of all dead and dying vegetation and undesirable species. Thinning zones are utilized to reduce the fuel load of wildland area adjacent to urban developments, thereby reducing the radiant and convective heat of wildland fires. Thinning zones are located adjacent to the irrigated zone and can extend 125 feet or more into wildland areas. All dead and dying vegetation shall also be removed from the thinning zones. Additionally, undesirable plant species shall be removed from the thinning zones due to their susceptibility to wildland fire. As in Zones A and B, combustible construction (i.e., gazebos, trellis's, shade covers, etc.) is not allowed in Zones C and D.

Zone C and D – Specific Requirements

- A. Removal of all dead and dying vegetation, all fine fuels reduced to a maximum of 8-12 inches in height.
- B. In order to maintain proper coverage, native grasses shall be allowed to go to seed. Native grasses shall be cut after annual seeding. Cut heights shall not exceed 8 inches.

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- C. Special consideration will be given for rare and endangered species, geologic hazards, tree ordinances, or other conflicting restrictions as identified in the environmental documents submitted for project approval review.
 - D. Reduce fuel loading by reducing the fuel in each remaining shrub or tree without a substantial decrease in the canopy cover or removal of tree holding root systems.
 - E. In Zones C and D, sensitive and/or protected plant species shall be identified on the fuel modification plans and tagged in the field for further disposition.
 - F. Tree and tree-form shrub pruning and spacing will be in conformance with Attachment 6. Tree form shrubs are defined as shrubs that naturally exceed four feet in height.
 - G. Shrubs less than 4 feet in height shall be spaced such that they do not create an excessive fuel mass and can be maintained in accordance with specified spacing as indicated on the plan.
 - H. Maintain sufficient cover to prevent erosion without requiring planting.

6. Off-Site Fuel Modification Requirements

Due to the variable and sometimes considerable amount of land necessary for fuel modification, development proposals often include a request to have the required fuel modification zones extend onto adjacent properties. However, off site fuel modification is not recommended due to problems inherent with enforcement of regulations on adjacent property and the potential for confusion regarding responsibility for fuel modification on areas outside of legal ownership. Proper on-site modification design should determine where development can safely be located and should be an integral part of the development proposal.

Should off-site fuel modification be deemed a necessity, appropriate legally recorded instruments must be established that clearly state the responsibilities and rights of the parties involved relative to the establishment and maintenance of the fuel modification area. Appropriate recorded documents must include a recorded agreement between all parties and a grant of easement for the establishment and maintenance of the fuel modification area. It should be understood that the allowance of off-site fuel modification by an adjacent property owner may affect the rights and/or use of the off-site property. All agreements for any off-site fuel modifications shall be integrated into fuel modification plans with a letter from adjoining property owner giving rights to maintain fuels.

The City of Laguna Beach may grant fuel modification easements on city property to property owners in need of such agreements to complete the requirements of their fuel modification plan. City financed/maintained fuel modification programs (i.e. goat grazing, hand crews) may not be utilized as a component of a fuel modification plan. The City of Laguna Beach shall not guarantee the continuation of current or future City sponsored fuel modification programs. Property owners shall remain responsible for maintaining their fuel modification plan regardless of the status of the City financed/maintained fuel modification programs.

7. Non-Compliant Properties

If the requirements of these guidelines cannot be met for any reason, documentation supporting the reason(s) shall be required at plan submittal. Alternate materials and methods may be considered in lieu of a complete landscape/fuel modification plan at the discretion of the Fire Chief and DRB. A Fire Protection Plan (CFC Section 4902) shall be submitted by a recognized fire protection engineer or individual with similar qualifications (subject to the Fire Chief's approval) when alternate materials and methods are proposed to meet the requirements of this guideline.

8. Fuel Modification Plan Revisions

Revisions to previously approved fuel modification plans shall follow procedures as established by the agency having jurisdiction. Note: Revisions to plans will not be reviewed without a copy of the original stamped LBFD approved plan for reference.

9. Fuel Modification Implementation & Required Inspections

This following information shall be placed on precise fuel modification plans, verbatim:

- A. **Prior to Issuance of Utility Release:** The landscape and fuel modification zones adjacent to structures must be installed, irrigated, and inspected. This includes physical installation of features identified in the approved landscape/fuel modification plan (including, but not limited to, hardscape, softscape, plant establishment, thinning, irrigation, zone markers, access easements, etc). An LBFD Fire Inspector or designee will provide written approval to the Building Division after completion after this final inspection. The CC&R language for maintenance must also be provided and approved by LBFD.
- B. **Prior to Home Owner Association (HOA) Acceptance (if applicable):** This activity must include an LBFD Fire Inspector and the following representatives:
- Landscape design professional
 - Installing landscape contractor
 - HOA management representative
 - HOA landscape maintenance contractor

The fuel modification shall be maintained as originally installed and approved. A copy of the approved plans must be provided to the HOA representatives at this time. Landscape professionals must convey ongoing maintenance requirements to HOA representatives.

- C. **Annual Inspection and Maintenance:** The Property owner is responsible for all maintenance of the fuel modification. All areas must be maintained in accordance with approved fuel modification plans. This generally includes a minimum of two growth reduction maintenance activities throughout the fuel modification areas each year (spring and fall). Other activities include maintenance of irrigation systems, replacement of dead or dying vegetation with approved materials, removal of dead plant material, and removal

of undesirable species. The LBFD conducts regular inspections of established fuel modification areas. Ongoing maintenance shall be conducted regardless of the date of these inspections. Disclosure of all landscape/fuel modification requirements shall be the responsibility of the property owner and or the agent upon transfer of ownership.

10.Fees

No additional fees are currently charged for plan reviews and site inspections. This is subject to change at the discretion of the Fire Chief.

No fees are currently charged for maintenance inspections of existing fuel modification areas. However, non-compliance fees may be applied if identified deficiencies are not corrected within required time frames.

11.Glossary

CHARACTERISTICS OF FIRE-RESISTIVE VEGETATION – Growth with little or no accumulation of dead vegetation (either on ground or upright); non-resinous plants; low volume of total vegetation (e.g. grass vs. forest or shrub covered land); high live fuel moisture; drought tolerant; stands without ladder fuels (small limbs/branches between ground and canopy); low maintenance (slow-growing, require little care when maintained); plants with woody stems and branches that require prolonged heating to ignite.

CONDUCTION – Direct transfer of heat by objects touching each other.

CONVECTION HEAT – Transfer of heat by atmospheric currents and is most critical under windy conditions and in steep terrain.

CROWN – Upper part of tree or other woody plant carrying the main branch system and foliage.

CANOPY – More or less continuous cover of branches and foliage formed collectively by the crowns of adjacent trees or other woody growth.

DEFENSIBLE SPACE – An area around the perimeter of structures or developments in the wildland which are key points of defense/attack against encroaching wildfires or escaping structure fires.

DESIRABLE PLANT LIST – List of plants exhibiting characteristics of low fuel volume, fire resistance, and drought tolerance which make them desirable for planting in areas of high fire danger.

DRIPLINE – Ground area at the outside edge of the canopy.

DROUGHT TOLERANCE – The ability of a plant or tree to survive on little water.

FIRE FUELS – Fuels such as grass, leaves, and draped pine needles which, when dry, ignite readily and are consumed rapidly (also called flash fuels).

FIRE BREAK – Removal of growth, usually in strips, around housing developments to prevent a fire from spreading to the structures from open land or vice versa.

FIRE PROTECTION PLAN – A Fire Protection Plan (FPP) shall include mitigation measures consistent with the unique problems resulting from the location, topography, geology, flammable vegetation, and climate of proposed site. The FPP shall address water supply, access, building ignition and fire resistance, fire protection systems and equipment, defensible space and vegetation management.

FIRE RESISTANT – All plants will burn under extreme fire weather conditions such as drought. However, plants burn at different intensities and rate of consumption. Fire-resistive plants burn at a relatively low intensity, slow rates of spread and with short flame lengths.

FIRE RETARDANCE – Relative comparison of plant species related to differences in fuel volume, inherent flammability characteristics, and ease of fire spread.

FUEL BREAK – A wide strip or block of land on which the native or pre-existing vegetation has been permanently modified so that fires burning into it can be more readily extinguished.

FUEL LOAD – The weight of fuels in a given areas, usually expressed in tons per acre.

FUEL MODIFICATION ZONE – An area of land where combustible native or ornamental vegetation has been modified and partially or totally replaced with drought tolerant, fire resistant, plants.

FUEL MOISTURE CONTENT – The amount of water in a fuel, expressed as a percentage of the oven dry weight of that fuel.

FUEL VOLUME – The amount of fuel in a plant in a given area of measurement. Generally, an open-spaced plant will be low in volume.

HORIZONTAL CONTINUITY – The extent or horizontal distribution of fuels at various levels or planes.

LADDER FUELS – Fuels which provide vertical continuity between strata. Fire is able to carry from surface fuels by convection into the crowns with relative ease.

LANDSCAPE – Any improvement made to the property not classified as a structure.

LITTER – The uppermost layer of loose debris composed of freshly fallen or slightly decomposed organic material such as dead sticks, branches, twigs, leaves or needles.

LONG TERM – In perpetuity of the fuel modification plan requirement.

PROBABILITY OF IGNITION – A rating of the probability that a firebrand (glowing or flaming) will cause a fire, providing it lands on receptive fuels. It is calculated from air temperature, fuel shading, and fuel moisture.

RADIANT HEAT – Transfer of heat by electromagnetic waves and can, therefore, travel against the wind. For example, it can preheat the opposite side of a burning slope in a steep canyon or a neighboring home to the ignition point.

RESERVE LANDS – As defined by the Central Coastal and Southern Natural Communities Conservation Plan.

SUBDIVISION – A parcel of land that is subdivided to create multiple individual lots in accordance with the State of California Subdivision Map Act.

SPECIAL FIRE PROTECTION AREA – See Very High Fire Hazard Severity Zone.

STRUCTURE – That which is built or constructed, an edifice or building of any kind or any piece of work artificially built up or composed or parts joined together in some manner.

TARGET SPECIES – Undesirable species that are generally removed as part of the fuel modification plan (see undesirable species).

UNDESIRABLE SPECIES – Those species of plants with inherent characteristics which make them highly combustible. These characteristics can be either physical or chemical. Physical properties include large amounts of dead material retained within the plant, rough or peeling bark, and the production of large amounts of litter. Chemical properties include the presence of volatile substances such as oils, resins, wax, and pitch. These plants are sometimes referred to as target species.

URBAN INTERFACE – That line, area, or zone where structures and other human development meet or intermingles.

VERTICAL CONTINUITY – The proximity of fuels to each other that governs the fire's capability to sustain itself. Vertical continuity applies to the relationship of aerial fuels to surface fuels or fuels low to the ground.

VERY HIGH FIRE HAZARD SEVERITY ZONE – Any geographic area designated pursuant to Government code Section 51178 and/or local ordinance to contain the type and condition of vegetation, topography, weather, and structure density due to increased possibility of conflagration fires. See 2019 CFC Section 4904.

ATTACHMENT 1

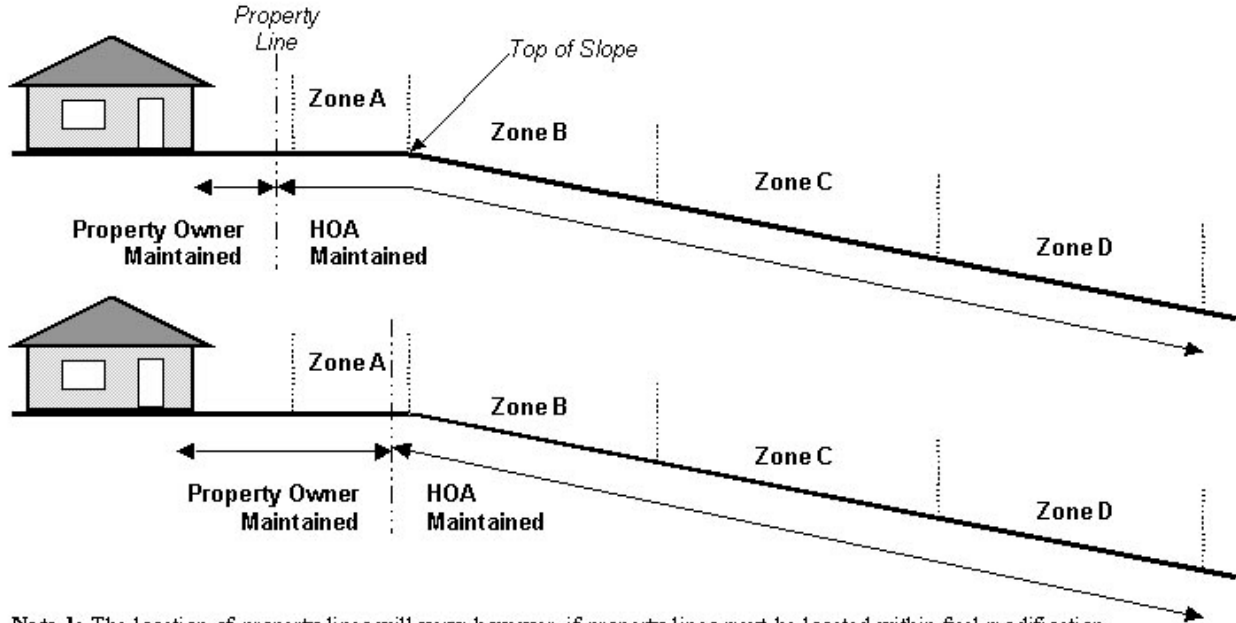
LANDSCAPE/FUEL MODIFICATION PLAN SUBMITTAL CHECKLIST

SUBMITTAL AND APPROVAL

	PRECISE PLANS
<input type="checkbox"/> Prior to issuance of building	
<input type="checkbox"/> Minimum plan size 18" x 24". Maximum plan size 24" x 36". Scale to be 1/8" = 1'0"	X
<input type="checkbox"/> Number of plans sets to the Zoning Department	2 sets
PLAN REQUIREMENTS	
<input type="checkbox"/> Delineation of each fuel modification zone – line indicating limit of combustible construction (start of Zone A)	X
<input type="checkbox"/> Scale Dimensions	X
<input type="checkbox"/> Site Characterization	X
<input type="checkbox"/> Photographs of area with emphasis on existing vegetation and topography	X
<input type="checkbox"/> Indication of permanent zone marker locations and detail	X
<input type="checkbox"/> Delineation of impacted existing vegetation	X
<input type="checkbox"/> Description of vegetation removal methodology	X
<input type="checkbox"/> Firefighter access routes around structure	X
<input type="checkbox"/> Plant palette & specifications, including a plant legend (botanical & common names) for existing and proposed plants. A matrix of typical spacing requirements, as well as the following information: planting lines, topography, wind direction, neighboring lot lines.	
<input type="checkbox"/> Designation of irrigated area	X
<input type="checkbox"/> Irrigation plans and specifications (engineer scale) shall be provided upon request	X
<input type="checkbox"/> Removal of undesirable species (Attachment 7)	X
<input type="checkbox"/> Property lines	X
<input type="checkbox"/> Contour lines	X
<input type="checkbox"/> Location of all new and existing improvements to include landscape (hardscape and softscape)	X
<input type="checkbox"/> Maintenance access easements (if required)	X
<input type="checkbox"/> Generally describe characteristics, existing improvements, land uses, wetland and riparian areas & vegetation for 300 feet beyond property lines in all directions	X
<input type="checkbox"/> Statement, on the plans, of ultimate maintenance responsibility requirement	X
<input type="checkbox"/> On title sheet, indicate tract/project conditions, CC&Rs, and/or deed restrictions relative to fuel modification	X
<input type="checkbox"/> Location of all proposed offsite fuel modification areas with easements	X

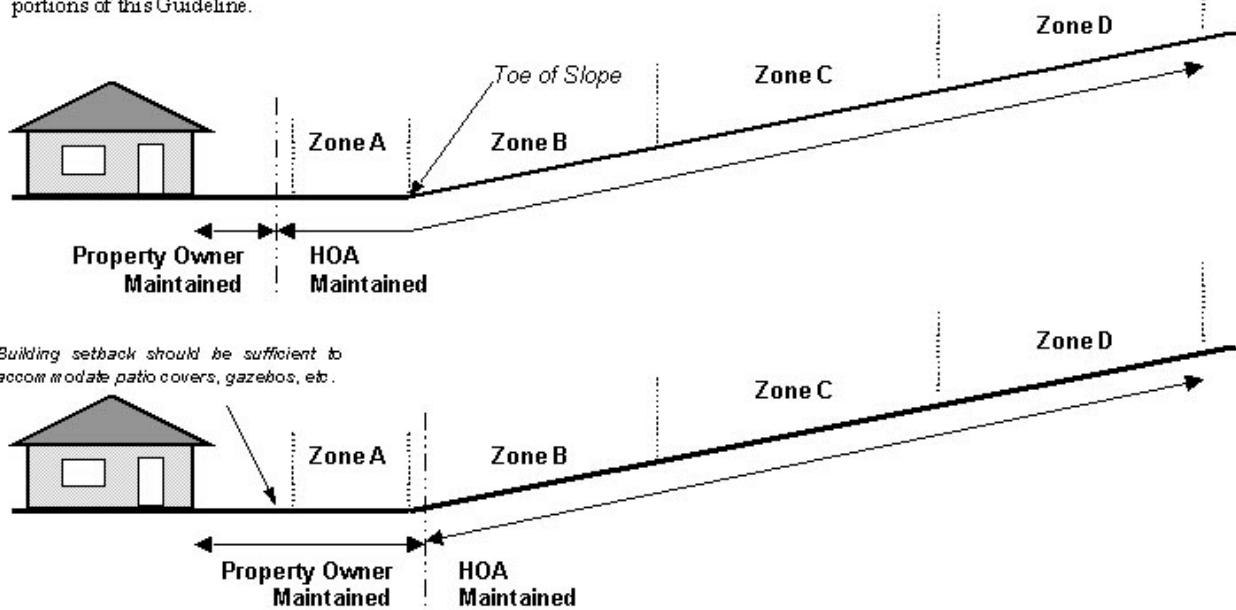
ATTACHMENT 2

FUEL MODIFICATION CONFIGURATION OPTIONS



Note 1: The location of property lines will vary, however, if property lines must be located within fuel modification areas, appropriate documentation (e.g., Maintenance easements and/or deed restrictions) shall be established to: 1) restrict certain activities and uses on those portions of any private property within the fuel modification area, and 2) identify those responsible for the establishment and continued maintenance of the fuel modification area located on private property.

Note 2: Regardless of the entity responsible for fuel modification maintenance, the continued maintenance shall be in accordance with Section 10 "Fuel Modification Implementation & Required Inspections" and other applicable portions of this Guideline.



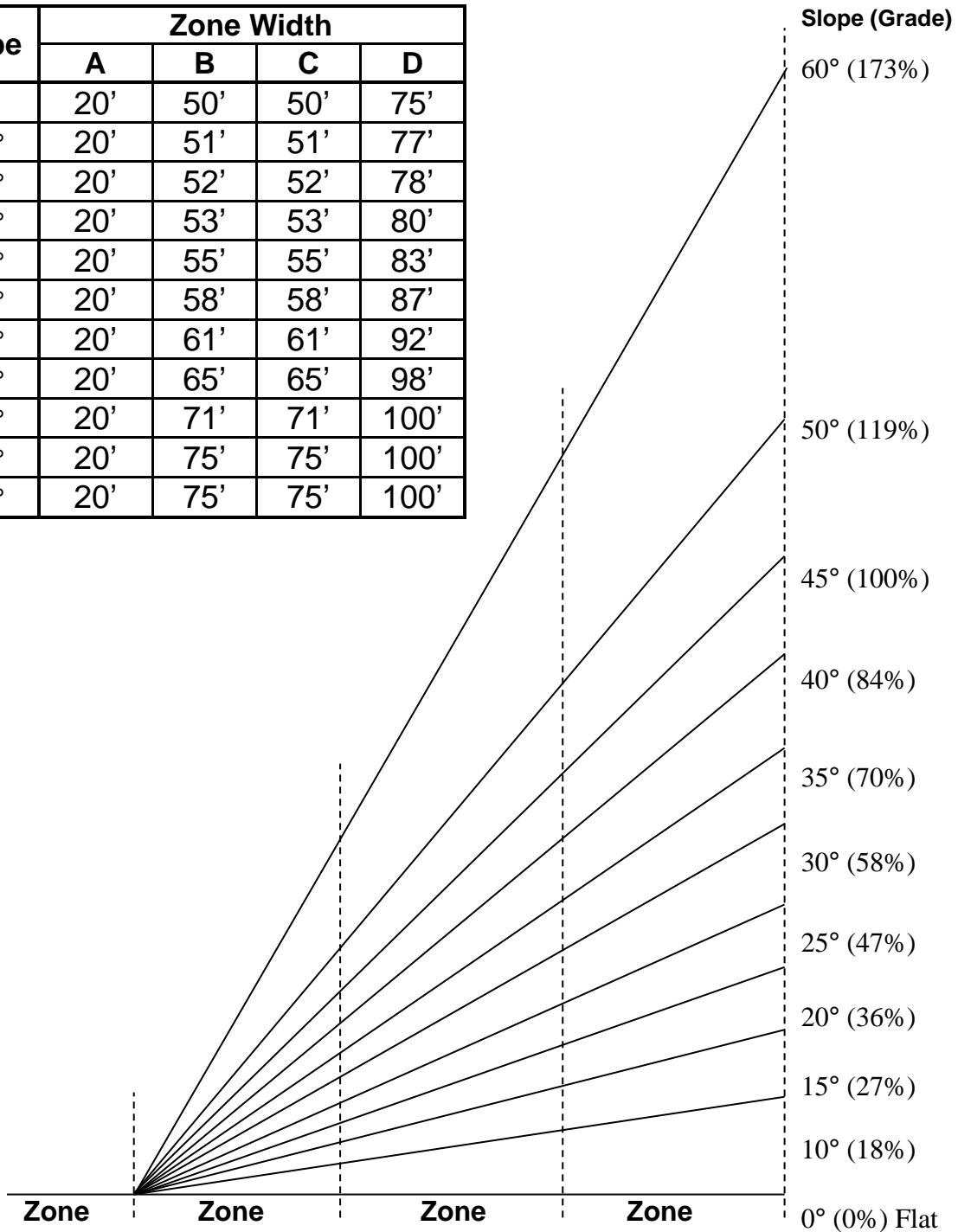
NOTE: When a structure is at the bottom of an upslope, the maximum total fuel modification zone width required is 150 feet.

Attachment 3

INCLINE MEASUREMENT FOR SELECTED SLOPES (Measured Horizontal to Surface)

*****Upslope conditions need not exceed 150 feet total width*****

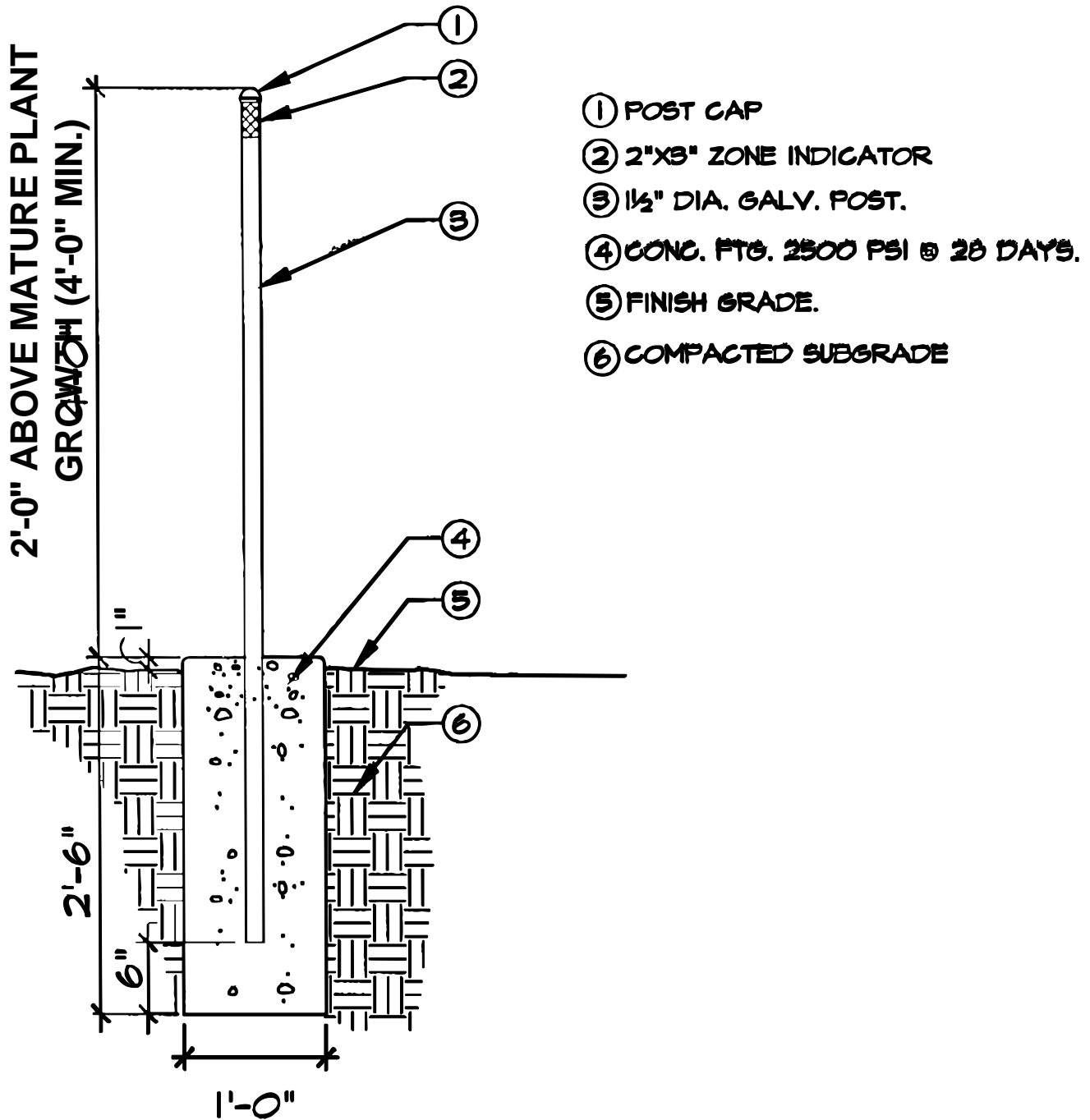
Slope	Zone Width			
	A	B	C	D
0°	20'	50'	50'	75'
10°	20'	51'	51'	77'
15°	20'	52'	52'	78'
20°	20'	53'	53'	80'
25°	20'	55'	55'	83'
30°	20'	58'	58'	87'
35°	20'	61'	61'	92'
40°	20'	65'	65'	98'
45°	20'	71'	71'	100'
50°	20'	75'	75'	100'
60°	20'	75'	75'	100'



Attachment 4

ZONE MARKER DETAILS

Zone markers shall identify each zone with min. 2" contrasting lettering (e.g. Zone A) and placed every 50 lineal feet along each zone. A minimum of two markers per zone shall be required. Zone markers shall be maintained and serviceable at all times.



Attachment 5

SAMPLE CC&R MAINTENANCE LANGUAGE

It is recommended that the following language be included in the CC&Rs recorded for a common interest development:

The duty of the homeowners' association to perform "Fire Prevention Maintenance" (as defined below) for all Fuel Modification Zones and manufactured interior slopes within the development shall be included as an express obligation in the recorded CC&Rs for the development. Similarly, each Owner whose Lot (or Condominium) is subject to Fuel Modification Zone restrictions (e.g., non-combustible structure setback, etc.) shall be obligated to comply with such restrictions.

1. LBFD will be designated as a third party beneficiary of a homeowners' association's duty to perform "Fire Prevention Maintenance" (as defined below) for all portions of the Association Property (or Common Area) that constitute Fuel Modification Zones and designated interior/manufactured slopes to be maintained by the homeowners' association, and of any Owner's duty to comply with any Fuel Modification Zone restrictions applicable to his Lot (or Condominium). Additionally, LBFD shall have the right, but not the obligation, to enforce the homeowners' association's duty to perform such Fire Prevention Maintenance, and to enforce compliance by any Owner with any Fuel Modification Zone restrictions applicable to his Lot (or Condominium). In furtherance of such right, LBFD shall be entitled to recover its costs of suit, including its actual attorneys' fees, if it prevails in an enforcement action against a homeowners' association and/or an individual Owner. (A sample third party beneficiary provision to be incorporated into the CC&Rs is attached hereto as Addendum "1").

2. As used herein, "Fire Prevention Maintenance" shall mean the following:
 - (i) All portions of the Association Property (or Common Area) that constitute Fuel Modification Zones or designated interior/manufactured slopes shall be regularly maintained by the homeowners association on a year round basis in accordance with the Fuel Modification Plan on file with the property manager for the development.

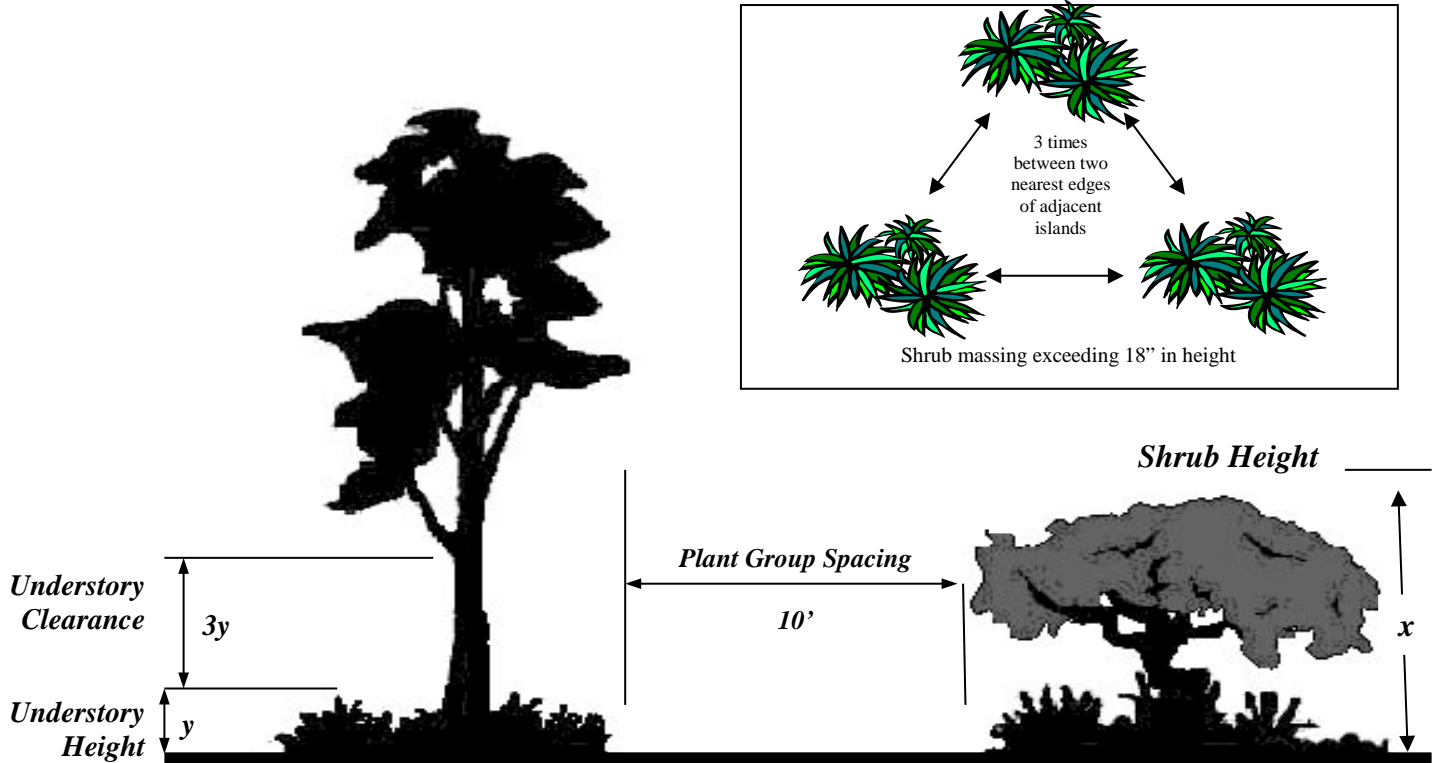
 - (ii) The irrigation system for Fuel Modification Zones or designated interior/manufactured slopes shall be kept in good condition and proper working order at all times. The irrigation system shall not be turned off except for necessary repairs and maintenance.

ADDENDUM “1”

Enforcement by the City of Laguna Beach: The City of Laguna Beach (City) is hereby designated as an intended third party beneficiary of the Association’s duties to perform Fire Prevention Maintenance for all portions of the Association Property (or Common Areas) consisting of Fuel Modification Zones or designated interior/manufactured slopes in accordance with the Fuel Modification Plan, and of each Owner’s duty to comply with any Fuel Modification Zone or designated interior/manufactured slopes restrictions applicable to his Lot (or Condominium) as set forth in the Fuel Modification Plan. In furtherance thereof, the City shall have the right, but not the obligation, to enforce the performance by the Association of its duties and any other fire prevention requirements, which were imposed by the City or other Public Agency as a condition of approval for the Development (e.g. , prohibition of parking in fire lanes, maintenance of the blue reflective markers indicating the location of fire hydrants, etc.) and shall also have the right, but not the obligation, to enforce compliance by any Owner with any Fuel Modification Zone or designated interior/manufactured slopes restrictions applicable to his Lot (or Condominium) as set forth in the Fuel Modification Plan. If, in its sole discretion, the City shall deem it necessary to take legal action against the Association or any Owner to enforce such duties or other requirements, and prevails in such action, the City shall be entitled to recover the full costs of said action, including its actual attorneys' fees, and to impose a lien against the Association Property, or an Owner’s Lot (or Condominium), as the case may be, until said costs are paid in full.

Attachment 6

TREE AND TREE-FORM SHRUB PRUNING AND SPACING FOR NEW PLANTINGS AND THINNING ZONES



NOT TO SCALE

1. Vertical Continuity. New and existing trees and tree-form shrubs (naturally reaching 4' and taller), which are being retained with the approval of the Laguna Beach Fire Department, shall be pruned to provide clearance of three times the height of the understory plant material or 10 feet, whichever is greater (see figure above). New trees and tree-form shrubs may comply with the lesser if sufficient height is not available to achieve 10 feet. Dead and excessively twiggy growth shall be removed.
2. Plant Group Spacing.
 - a) Trees and tree-form shrubs shall be single specimens or in a maximum grouping of three plants. Groupings shall be separated by a distance of 10' (see figure above). Other limited grouping arrangements and spacing may be acceptable if approved by Lbfd.
 - b) Trees shall be single specimens or in a maximum grouping of three plants. Groupings shall be separated by a distance of 10 feet (see figure above). Other limited grouping arrangements and spacing may be acceptable if approved by Lbfd.
 - c) Plant specimens listed in the Lbfd "Defensible Space and Home Guideline; Suggestions for Plants and Vegetation" (accessible on the Lbfd website) shall comply with plant groupings and spacing requirements specified in this Guideline.

Attachment 7

UNDESIRABLE PLANT SPECIES (Target Species)

Certain plants are considered to be undesirable in the landscape due to characteristics that make them highly flammable. Plants with these characteristics may not be planted in fuel modification zones, as listed below. Should these species already exist within these areas, they must be removed.

Plans should be submitted to the City for review without the target plants listed below. In cases where undesirable plants are included in a submittal for new planting or preservation, the Applicant must submit a request for use of alternative materials and methods. The request will be evaluated by the Fire Department for acceptability.

The list of undesirable plants is comprehensive, but *not* complete. Closely related species and varieties having substantially similar flammable characteristics as the identified target species may also not be acceptable.

Applicants are encouraged to maximize fire safety by using plants with high water content, low fuel volume, succulent leaves and stems, low litter, and low amounts of flammable oils and resins. Avoidance of target species alone does not confer maximum fire safety.

Spacing requirements of Attachment 6 apply to all species and must be reflected in the planting design plan submitted to the City.

Vines are not allowed on combustible structures.

Extensive massing of grasses with heights greater than 12” high may not be acceptable.

Additional factors to consider when selecting plants for wildland interface areas include: deer and rabbit resistance, aesthetic compatibility with hillside character, erosion control, and drought tolerance.

TARGET SPECIES UNACCEPTABLE FOR USE IN ALL FUEL MODIFICATION ZONES (A, B, C, D):

Botanical Name	Common Name	Form
Acacia longifolia	Sydney Golden Wattle	Shrub
Acacia redolens	NCN	Shrub
Adenostoma fasciculatum	Chamise	Shrub
Artemisia californica	California Sagebrush	Shrub
Arundo donax	Giant Reed	Grass

<i>Atriplex lentiformis</i>	Quail Bush	Shrub
<i>Bambusa species</i>	Bamboo	Grass
<i>Brassica nigra</i>	Black Mustard	Annual
<i>Brassica rapa</i>	Yellow Mustard	Annual
<i>Caprobotus edulis</i>	Hot N Tot Fig	Groundcover
<i>Cedrus species</i>	Cedar	Tree
<i>Cortaderia selloana</i>	Pampas Grass	Grass
<i>Cupressus sempervirens</i>	Italian Cypress	Tree
<i>Cynara cardunculus</i>	Artichoke Thistle	Perennial
<i>Cytisus species</i>	Broom	Shrub
<i>Delospermum species</i>	Iceplant	Groundcover
<i>Drosanthemum species</i>	Iceplant	Groundcover
<i>Eriogonum fasciculatum</i>	Buckwheat	Shrub
<i>Eucalyptus species</i>	Gums	Tree
<i>Fargesia species</i>	Bamboo	Grass
<i>Hedera canariensis</i>	Algerian Ivy	Groundcover
<i>Juniperus species (shrubs and trees)</i>	Juniper	Shrub/Tree
<i>Lampranthus species</i>	Iceplant	Groundcover
<i>Melaleuca linariifolia</i>	Flaxleaf Paperbark	Tree
<i>Melaleuca quinquenervia</i>	Cajeput Tree	Tree
<i>Nicotiana glauca</i>	Tree tobacco	Perennial
<i>Otatea acuminata</i>	Mexican Weeping Bamboo	Grass
<i>Pennisetum setaceum</i>	Fountain Grass	Grass
<i>Phyllostachys species</i>	Bamboo	Grass
<i>Pinus species</i>	Pine	Tree
<i>Ricinus communis</i>	Castor Bean Plant	Perennial

Salvia (native species and varieties)	Sage	Shrub
Sascola autails	Russian Thistle/Tumbleweed	Annual
Semiarundinara fastuosa	Narihira Bamboo	Grass
Schinus terebinthifolius	Brazilian Pepper	Grass
Thuja species	Arborvitae	Shrub
Umbellularia californica	California Bay	Tree
Vinca major	Periwinkle	Groundcover
Washingtonia species	Fan Palm	Palm

ADDITIONAL TARGET SPECIES UNACCEPTABLE FOR USE IN FUEL MODIFICATION ZONE A (Zone closest to combustible structures):

Unacceptable species for Zone A include those listed above for all zones plus the following:

Botanical Name	Common Name	Form
Acacia species	Acacia/Wattle	Various
Arctostaphylos species (shrubs and trees)	Manzanita	Shrub/Tree
Atriplex species	Saltbush	Shrub
Bougainvillea species	Bougainvillea	Shrub/Vine
Callistemon species	Bottlebrush	Tree
Cinnamomum camphora	Camphor	Tree
Cotoneaster species (shrubs and trees)	Cotoneaster	Shrub/Tree
Dodonea viscosa	Hopseed	Shrub
Hakea suaveolens	Sweet Hakea	Shrub
Heteromeles arbutifolia	Toyon	Shrub/Tree
Laurus nobilis	Bay/Grecian Laurel	Shrub/Tree
Malosma laurina	Sugarbush	Shrub/Tree
Melaleuca nesophila	Pink Melaleuca	Tree
Miscanthus sinensis	Silver Grass	Grass

Muhlenbergia rigens	Deer Grass	Grass
Pennisetum rubrum	Purple Fountain Grass	Grass
Phoenix canariensis	Canary Island Date Palm	Palm
Phoenix dactylifera	Date Palm	Palm
Rhus integrifolia	Lemonade Berry	Shrub
Rosmarinus officianalis	Upright rosemary	Shrub
Schinus molle	California Pepper	Tree