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USACE / NAVFAC / AFCESA / NASA **UFGS-32 05 33 (February 2010)**

Preparing Activity: NAVFAC **Superseding UFGS-32 05 33 (July 2006)**

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated April 2013
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DIVISION 32 - EXTERIOR IMPROVEMENTS

SECTION 32 05 33

LANDSCAPE ESTABLISHMENT

02/10

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SECTION 32 05 33

LANDSCAPE ESTABLISHMENT
02/10

****
NOTE: This guide specification covers the requirements for plant material and irrigation during the establishment period.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable items(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).
****

PART 1 GENERAL

1.1 REFERENCES

****
NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D2103	(2010) Standard Specification for Polyethylene Film and Sheeting
ASTM D5851	(1995; R 2011) Planning and Implementing a Water Monitoring Program
ASTM D6155	(2006) Nontraditional Coarse Aggregate for Bituminous Paving Mixtures

TREE CARE INDUSTRY ASSOCIATION (TCIA)

TCIA Z133.1	(2006) American National Standard for Arboricultural Operations - Pruning, Repairing, Maintaining, and Removing Trees, and Cutting Brush - Safety Requirements

U.S. GREEN BUILDING COUNCIL (USGBC)

LEED NC	(2009) Leadership in Energy and Environmental Design(tm) New Construction Rating System

1.2 DEFINITIONS

1.2.1 Pesticide

Any substance or mixture of substances, including biological control agents, that may prevent, destroy, repel, or mitigate pests and are specifically labeled for use by the U.S. Environmental Protection Agency (EPA). Also, any substance used as a plant regulator, defoliant, disinfectant, or biocide. Examples of pesticides include fumigants, herbicides, insecticides, fungicides, nematicides, molluscicides and rodenticides.

1.2.2 Stand of Turf

[100] [95] percent ground cover of the established species.

1.2.3 Planter Beds

A planter bed is defined as an area containing one or a combination of the following plant types: shrubs, vines, wildflowers, annuals, perennials, ground cover, [and a mulch topdressing] excluding turf. Trees may also be found in planter beds.

1.3 RELATED REQUIREMENTS

[Section 32 84 24 IRRIGATION SPRINKLER SYSTEM applies to this section for installation of irrigation equipment requirements, with additions and modifications herein.]

[Section 32 92 19 SEEDING][Section 32 92 23 SODDING][Section 32 92 26 SPRIGGING] applies to this section for installation of [seed][sod][sprigging] requirements, with additions and modifications herein.

[Section 32 93 00 EXTERIOR PLANTS applies to this section for installation of [trees,] [shrubs,] [ground cover,] [vines,] and [wildflower,] with additions and modifications herein.]

[Section 32 96 00 TRANSPLANTING EXTERIOR PLANTS applies to this section for transplanting of [trees,] [shrubs,] [ground cover,] [vines,] and [wildflower,] with additions and modifications herein.]

1.4 SUBMITTALS

****

NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project.

The Guide Specification technical editors have designated those items that require Government approval, due to their complexity or criticality, with a "G". Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item, if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

****

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for

the Government.] The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Integrated Pest Management Plan[; G][; G, [_____]]

SD-03 Product Data

[Local/Regional Materials; (LEED NC)

Submit documentation indicating distance between manufacturing facility and the project site. Indicate distance of raw material origin from the project site. Indicate relative dollar value of local/regional materials to total dollar value of products included in project.]

[Fertilizer[; G][; G, [_____]]]

Hose; (LEED NC)
Mulches Topdressing; (LEED NC)

Submit documentation indicating percentage of post-industrial and post-consumer recycled content per unit of product. Indicate relative dollar value of recycled content products to total dollar value of products included in project.

[Organic Mulch Materials

Submit documentation indicating type of biobased material in product and biobased content. Indicate relative dollar value of biobased content products to total dollar value of products included in project.]

SD-07 Certificates

Maintenance inspection report

[Plant quantities[; G][; G, [_____]]
]

SD-10 Operation and Maintenance Data

Maintenance

SD-11 Closeout Submittals

Tree, staking and guying removal

1.5 DELIVERY, STORAGE AND HANDLING

1.5.1 Delivery

Deliver fertilizer, [gypsum,] [iron] to the site in original containers bearing manufacturer's chemical analysis, name, trade name, or trademark, and indication of conformance to state and federal laws. Instead of containers, fertilizer, [gypsum] may be furnished in bulk with a certificate indicating the above information.

1.5.2 Storage

1.5.2.1 Fertilizer, [Lime], [Iron,] [Mulch] Storage

Material shall be stored in designated areas. [Lime and] fertilizer shall be stored in cool, dry locations away from contaminants.

1.5.2.2 Antidessicants Storage

Do not store with fertilizers or other landscape maintenance materials.

1.5.3 Handling

Do not drop or dump materials from vehicles.

1.6 SUSTAINABLE DESIGN REQUIREMENTS

1.6.1 Local/Regional Materials

****
NOTE: Using local materials can help minimize transportation impacts, including fossil fuel consumption, air pollution, and labor. Using materials harvested and manufactured within a 500 mile radius from the project site contributes to the following LEED credit: MR5. Coordinate with Section 01 33 29 LEED(tm) DOCUMENTATION. Use second option if Contractor is choosing local materials in accordance with Section 01 33 29 LEED(tm) DOCUMENTATION. Use second option for USACE projects. Army projects shall include option only if pursuing this LEED credit.
****

[Use materials or products extracted, harvested, or recovered, as well as manufactured, within a [800][_____] kilometer [500][_____] mile radius from the project site, if available from a minimum of three sources.][See Section 01 33 29 LEED(tm) DOCUMENTATION for cumulative total local material requirements. Landscaping materials may be locally available.]

1.7 MAINTENANCE

Submit Operation and Maintenance (O&M) Manuals for planting materials. Include instructions indicating procedures during one typical year including variations of maintenance for climatic conditions throughout the year. Provide instructions and procedures for watering; promotion of growth, including fertilizing, pruning, and mowing; and integrated pest management. O&M Manuals shall include pictures of planting materials cross referenced to botanical and common names, with a description of the normal appearance in each season.

Develop a water monitoring program for surface and ground water on the project site in accordance with ASTM D5851 and consistent with the water management program utilized during construction operations.

PART 2 PRODUCTS

2.1 POST-PLANT FERTILIZER

****
NOTE: Check with the local Agriculture County Extension Service Office for recommended fertilizer mixture for local conditions.
****

Fertilizer for groundcover, wildflowers, and grasses is not permitted. Fertilizer for trees, plants, and shrubs shall be as recommended by plant supplier, except synthetic chemical fertilizers are not permitted. Fertilizers containing petrochemical additives or that have been treated with pesticides or herbicides are not permitted.

2.1.1 Granular Fertilizer

Organic, granular controlled release fertilizer containing the following minimum percentages, by weight, of plant food nutrients:

[_____] percent available nitrogen
[_____] percent available phosphorus
[_____] percent available potassium
[_____] percent sulfur
[[_____] percent iron]

2.2 WATER

****
NOTE: When water is Government furnished, locate the source. Recycled or reclaimed irrigation water may be available through a tertiary treatment plant on or off site. It is preferred that this type of water be used for irrigation whenever possible. Check project specific conditions.

Unless otherwise directed, water shall be the responsibility of the Contractor. Water source shall be potable or non-potable. Non-potable is preferred. If non-potable edit specification accordingly. Source of water shall be approved by the Contracting Officer and shall be of suitable quality for irrigation, containing no elements toxic to plant life.

Coordinate information presented here with Section 01 50 00 TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS
****

****
NOTE: Reduction of potable water consumption for irrigation contributes to the following LEED credit: WE1.
****

Source of water shall be approved by the Contracting Officer, and be of suitable quality for irrigation. Use collected storm water or graywater

when available.

2.2.1 Hose

****
NOTE: Garden and soaker hoses are EPA designated products for recycled content. See Section 01 62 35 RECYCLED/RECOVERED/BIOBASED MATERIALS and include recycled content options unless designer determines that justification for non-use exists. Use of materials with recycled content, calculated on the basis of post-industrial and post-consumer percentage content, contributes to the following LEED credit: MR4. Coordinate all recycled content products with Section 01 33 29 LEED(tm) DOCUMENTATION.
****

Hoses used for watering shall be a minimum of [60][65][70][_____] percent post-consumer rubber or plastic.

2.3 MULCHES TOPDRESSING

****
NOTE: Check with the local Agriculture County Extension Service Office for recommended and locally available mulch material. Specify only one type of mulch for the project.
****

Free from noxious weeds, mold, pesticides, or other deleterious materials.

2.3.1 Inert Mulch Materials

****
NOTE: Use inert mulch materials only when organic mulch is not available, or when site is located in a dry climate.
****

****
NOTE: Designer must verify that products meeting the indicated minimum recycled content are available, preferably from at least three sources, to ensure adequate competition. If not, write in suitable recycled content values that reflect availability and competition. Use second recycled content option if Contractor is choosing recycled content products in accordance with Section 01 33 29 LEED(tm) DOCUMENTATION.
****

[Recycled porcelain, concrete, stone, or other recycled material complying with ASTM D6155] [riverbank stone] [crushed pit-run rock] [granite chips] [marble chips] [crushed bricks] [volcanic rock] [_____] ranging in size from [_____] to [_____] mm inches. Provide materials from site and construction waste to the greatest extent possible. [Mulch shall contain a minimum of [5][10][_____] percent post-consumer recycled content, or a minimum of [20][40][_____] percent post-industrial recycled content.][See

Section 01 33 29 LEED(tm) DOCUMENTATION for cumulative total recycled content requirements. Mulch may contain post-consumer or post-industrial recycled content.]

2.3.2 Organic Mulch Materials

****
NOTE: For projects at Camp Lejeune and New River, use pine straw mulch only. Delete all other options.
****

****
NOTE: The 2002 Farm Bill - Section 9002, Federal Procurement of Biobased Products, requires each Federal Agency to develop a procurement program which will ensure that items composed of biobased products will be purchased to the maximum extent practicable and which is consistent with applicable provisions of Federal procurement law.
****

****
NOTE: Hydraulic mulch is an EPA designated product for recycled content. See Section 01 62 35 RECYCLED/RECOVERED/BIOBASED MATERIALS and include recycled content options unless designer determines that justification for non-use exists.
****

[Wood cellulose fiber] [wood chips] [ground or shredded bark] [shredded hardwood] [bark peelings] [pine straw mulch] [pine needles][recycled] [_____] from site when available. Biobased content shall be a minimum of [100][_____] percent. Wood cellulose fiber shall be processed to contain no growth or germination-inhibiting factors, dyed with non-toxic, biodegradable dye to an appropriate color to facilitate visual metering of materials application. Paper-based hydraulic mulch shall contain a minimum of [100][_____] percent post-consumer recycled content. Wood-based hydraulic mulch shall contain a minimum of [100][_____] percent recycled material.

2.3.3 Recycled Organic Mulch

Recycled mulch may include compost, tree trimmings, or pine needles with a gradation that passes through a 65 by 65 mm 2-1/2 by 2-1/2 inch screen. It shall be cleaned of all sticks a minimum 25 mm 1 inch in diameter and plastic materials a minimum 75 mm 3 inch length. The material shall be treated to retard the growth of mold and fungi.

2.4 PESTICIDES

****
NOTE: Integrated pest management, according to the U.S. Department of Agriculture - Agricultural Research Service, is the judicious use and integration of various pest control tactics of the associated environment of the pest in ways that complement and facilitate the biological and other natural controls of pests to meet economic, public health, and environmental goals. The national goal

of implementing integrated pest management methods on 75 percent of the nation's cropland was jointly announced by USDA, the U.S. EPA, and the FDA in September 1993. This goal represents a commitment by the federal government to work with its state and private sector partners to develop and implement ecologically-based pest management approaches that rely less on synthetic chemical pest controls and are more sustainable. Specify use of native beneficial insects and appropriate companion plants, such as those with natural pyrethrums.

****

Pesticides and herbicides are not permitted. [Use black sheet polyethylene conforming to ASTM D2103, minimum thickness 4 mm 5/32 inch.] Submit an Integrated Pest Management Plan, including [weed and pest management strategies] [proposed alternatives to herbicides and pesticides]. Use biological pest controls as approved in the Plan.

PART 3 EXECUTION

3.1 EXTENT OF WORK

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NOTE: Typically native plants will require less maintenance than non-native plants and turf. Verify maintenance requirements appropriate to the species and climate.

****

Provide landscape construction maintenance to include [irrigation equipment cleaning and adjustments,] [mowing,] [edging,] [overseeding,] [aeration,] [fertilizing,] [watering,] [weeding,] [pruning,] [stake and guy adjusting,] [and] [_____] for all [newly installed] [renovated] landscape areas [and existing plant material], unless indicated otherwise, and at all areas inside or outside the limits of the construction that are disturbed by the Contractor's operations.

3.1.1 [Policing

The Contractor shall police all landscaped areas. Policing includes removal of leaves, branches and limbs regardless of length or diameter, dead vegetation, paper, trash, cigarette butts, garbage, rocks or other debris. [Policing shall extend to both sides of fencing or walls.] Collected debris shall be promptly removed and disposed of at an approved disposal site.

]3.1.2 [Drainage System Maintenance

The Contractor shall remove all obstructions from surface and subsurface drain lines to allow water to flow unrestricted in [swales,] [gutters,] [catch basins,] [storm drain curb inlets,] [and] [yard drains]. Remove grates and clear debris in catch basins. Open drainage channels are to be maintained free of all debris and vegetation at all times. Edges of these channels shall be clear of any encroachment by vegetation.

][3.2 IRRIGATION ESTABLISHMENT PERIOD

The irrigation establishment period will commence on the date that

inspection by the Contracting Officer shows that the [new] [repaired] irrigation equipment furnished under this contract have been satisfactorily installed and is functional and shall continue for a period of [365] [_____] days.

3.2.1 Maintenance During the Irrigation Establishment Period

Begin maintenance immediately after irrigation equipment has been installed and is functional. Inspect irrigation equipment at least [once a week][_____] during the installation and establishment period and perform needed maintenance promptly. Automatic controllers not equipped with rain shut-off sensors shall be turned off during periods of rain that exceed twelve hours of continuous rainfall in one day or during rain storms of one day or more. Once the rain has subsided timers shall be reactivated. Irrigation controllers shall be inspected and reprogrammed after power outages. Contractor shall be responsible for winterization and startup. Sprinkler heads shall direct water away from buildings and hard surfaced areas.

3.2.2 Water Restrictions

The Contractor shall abide by state, local or other water conservation regulations in force during the establishment period. Automatic controller shall be adjusted to comply with the water conservation regulations schedule.

3.2.3 Fire Hydrants

****
NOTE: Coordinate information presented here with Section 01 50 00 TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS
****

To use a fire hydrant for irrigation, the Contractor shall obtain prior clearance from the Contracting Officer and provide the tools and connections approved for use on fire hydrants. If a fire hydrant is used, Contractor shall provide a reduced pressure backflow preventer for each connection between hose and fire hydrant. Backflow preventer used shall be tested once per month by a certified backflow preventer tester.

3.2.4 Final Acceptance

[Upon completion of the irrigation establishment period and final acceptance of groundcover and exterior plants, irrigation equipment shall be removed.][Operation and coverage test is acceptable if system operates through at least one complete cycle for areas to be irrigated and all leaks or repairs have been completed.]

3.2.5 Controller Charts

Provide one chart for each controller supplied. Indicate in chart area controlled by the automatic controller. The chart is a reduction of the actual plan[s] that will fit the maximum dimensions inside the controller housing. Use a black line print for the chart and a different pastel or transparent color to indicate each station zone of coverage. After chart is completed and approved for final acceptance, seal chart between two 0.5 mm 20 mil pieces of clear plastic.

]3.3 GROUNDCOVER ESTABLISHMENT PERIOD

Groundcover establishment period will commence on the date that inspection by the Contracting Officer shows that the [new] [renovated] turf furnished under this contract has been satisfactorily installed to a [_____][[95 percent][100 percent] stand of coverage. The establishment period shall continue for a period of [365] [_____] days.

3.3.1 Frequency of Maintenance

Begin maintenance immediately after turf has been [installed] [fully renovated]. Inspect area[s] [once a week][_____] during the installation and establishment period and perform needed maintenance promptly.

3.3.2 Promotion of Growth

Groundcover shall be maintained in a manner that promotes proper health, growth, natural color.Turf shall have a neat uniform manicured appearance, free of bare areas, ruts, holes, weeds, pests, dead vegetation, debris, and unwanted vegetation that present an unsightly appearance. Mow, remove excess clippings, eradicate weeds, water, fertilize, [overseed,] [aerate,] [topdress] and perform other operations necessary to promote growth, as approved by Contracting Officer and consistent with approved Integrated Pest Management Plan. Remove noxious weeds common to the area from planting areas by mechanical means.

3.3.3 Mowing

****
NOTE: Check with the local Agriculture County Extension Service for turf mowing heights as this requirement may vary due to local conditions and species specified.
****

3.3.3.1 Turf

Turf shall be mowed at a uniform finished height. Mow turfed area[s] to a minimum average height of [76][102][_____] mm [3][4][_____] inches when average height of grass becomes [_____] mm inches for spring/summer maintenance and to a minimum average height of [76][102][_____] mm [3][4][_____] inches when the average height of grass reaches [_____] mm inches for fall [winter] maintenance. The height of turf is measured from the soil. Mowing of turf shall be performed in a manner that prevents scalping, rutting, bruising, uneven and rough cutting. Prior to mowing, all rubbish, debris, trash, leaves, rocks, paper, and limbs or branches on a turf area shall be picked up and disposed. Adjacent paved areas shall be swept/vacuumed clean.

3.3.3.2 Native Grasses

[Mow above height of native grass seedlings (approximately 89 to 102 mm 3.5 to 4 inches). Mow during spring or early summer. Do not mow after early summer during the second growing season.]

3.3.3.3 Wildflowers

[Mow three times per season above height of the wildflowers (approximately 305 to 381 mm 12 to 15 inches).]

3.3.4 Turf Edging and Trimming

Perimeter of planter bed edges, sidewalks, driveways, curbs, and other paved surfaces shall be edged. Uniformly edge these areas to prevent encroachment of vegetation onto paved surfaces and to provide a clear cut division line between planter beds, turf, and ground cover. Edging is to be accomplished in a manner that prevents scalping, rutting, bruising, uneven and rough cutting. Edging shall be performed on the same day that turf is mowed. Use of string line trimmers is permitted in "soft" areas such as an edge between turfgrass and a planter bed. Care shall be exercised to avoid damage to any plant materials, structures, and other landscape features.

Trimming around [trees,] [fences,] [poles,] [walls,] [irrigation valve boxes] and other similar objects is to be accomplished to match the height and appearance of surrounding mowed turf growth. Trimming shall be performed on the same day the turf's mowed. Care shall be exercised to avoid "Girdling" trees located in turf areas. The use of protective tree collars on trees in turf areas may be utilized as a temporary means to avoid injury to tree trunks. At the end of the plant establishment period Contractor will be responsible for removing all protective tree collars.

3.3.5 Post-Fertilizer Application

****
NOTE: Check with the local Agriculture County Extension Service for type of fertilizer, time intervals, and application rate as these requirements may vary due to local conditions and specie specified.
****

Do not fertilize wildflowers, groundcover, and grasses. Apply turf fertilizer in a manner that promotes health, growth, vigor, color and appearance of cultivated turf areas. The method of application, fertilizer type and frequencies shall be determined by the laboratory soil analysis results the requirements of the particular turf species. [Organic fertilizer shall be used. In the event that organic fertilizer is not producing the desired effect, the Contractor shall contract the Contracting Officer for approval prior to the use of a synthetic type of fertilizer.] Fertilizer shall be applied by approved methods in accordance with the manufacturer's recommendations.

3.3.6 Turf Watering

The Contractor shall perform irrigation in a manner that promotes the health, growth, color and appearance of cultivated vegetation and that complies with all Federal, State, and local water agencies and authorities directives. The Contractor shall be responsible to prevent over watering, water run-off, erosion, and ponding due to excessive quantities or rate of application. The Contractor shall abide by state, local or other water conservation regulations or restrictions in force during the establishment period. [Irrigation controllers shall be adjusted to comply with the water conservation regulations schedule].

3.3.7 [Turf Aeration

Upon completion of weed eradication operations and Contracting Officer's

approval to proceed, aerate turf areas by approved device. Core, by pulling soil plugs, to a minimum depth of [_____] mm inches. Leave all soil plugs that are produced in the turf area. [After aeration operations are complete, topdress entire area [6.35] [12.70] mm [1/4] [1/2] inch depth with the following mixture:

[[_____] percent sand]
[[_____] percent humus]
[[_____] percent gypsum]
[[_____] percent lime]

Blend all parts of topdressing mixture to a uniform consistency throughout.] Keep clean at all times at least one paved pedestrian access route and one paved vehicular access route to each building. Clean all soil plugs off of other paving when work is complete. This work shall commence [_____] days prior final acceptance of the maintenance establishment period.

]3.3.8 [Turf Clearance Area

Trees located in turf areas shall be maintained with a growth free clearance of[450 mm 18 inches][_____] from the tree trunk base. The use of mechanical weed whips to accomplish the turf growth free bed area is prohibited.

]3.3.9 Replanting

Replant in accordance with [Section 32 92 19 SEEDING][Section 32 92 23 SODDING][Section 32 92 26, SPRIGGING] and within specified planting dates areas which do not have a satisfactory stand of turf. Replant areas which do not have a satisfactory stand of other groundcover and grasses.

3.3.10 Final Inspection and Acceptance

Final inspection will be make upon written request from the Contractor at least 10 days prior to the last day of the turf establishment period. Final turf acceptance will be based upon a satisfactory stand of turf. Final acceptance of wildflower and grass areas will be based upon a stand of 95 percent groundcover of established species.

3.3.11 Unsatisfactory Work

When work is found to not meet design intent and specifications, maintenance period will be extended at no additional cost to the Government until work has been completed, inspected and accepted by Contracting Officer.

]3.4 EXTERIOR PLANT ESTABLISHMENT PERIOD

****
NOTE: It is advisable to coordinate the Planter Bed Establishment Period Time Frame with the Guarantee Period.
****

The exterior plant establishment period will commence on the date that inspection by the Contracting Officer shows that the [new plants][transplanted plants] furnished under this contract [has][have] been satisfactorily installed and shall continue for a period of [365] [_____]

days.

3.4.1 Frequency of Maintenance

Begin maintenance immediately after plants have been installed. Inspect exterior plants at least [once a week][_____] during the installation and establishment period and perform needed maintenance promptly.

3.4.2 Promotion of Plant Growth and Vigor

Water, prune, fertilize, mulch, adjust stakes, guys and turnbuckles, eradicate weeds and perform other operations necessary to promote plant growth, and vigor.

3.4.3 Planter Bed Maintenance

Planter beds shall be weeded, fertilized, irrigated, kept pest free, turf free, pruned, and mulch levels maintained. Planter beds will not be allowed to encroach into turf areas. A definite break shall be maintained between turf areas and planter beds. Fertilize exterior planting materials to promote healthy plant growth without encouraging excessive top foliar growth. Remove noxious weeds common to the area from planting areas by mechanical means.

3.4.3.1 Shrub Selective Maintenance

In addition to the above requirements, shrubs shall be selectively pruned, and shaped for health and safety when the following conditions exist: Remove growth in front of windows, over entrance ways or walks, and any growth which will obstruct vision at street intersections or of security personnel; Remove dead, damaged or diseased branches or limbs; where shrub growth obstructs pedestrian walkways; where shrub growth is found growing against or over structures; where shrub growth permits concealment of unauthorized persons. All pruning debris shall be disposed of in a proper manner.

3.4.3.2 Tree Maintenance

Tree maintenance shall include adjustment of stakes, ties, guy supports [and turnbuckles], watering, fertilizing, pest control, mulching, pruning for health and safety [and fall leaf cleanup]. Fertilize exterior trees to promote healthy plant growth without encouraging excessive top foliar growth. Stakes, ties, guy supports [and turnbuckles] shall be inspected and adjusted to avoid girdling and promote natural development. All trees within the project boundaries, regardless of caliper, shall be selectively pruned for safety and health reasons. These include but are not limited to removal of dead and broken branches and correction of structural defects. Prune trees according to their natural growth characteristics leaving trees well shaped and balanced. Pruning of all trees including palm trees shall be accomplished by or in the presence of a certified member of the International Society of Arboriculture and in accordance with TCIA Z133.1. All pruning debris generated shall be disposed of in a proper manner.

3.4.4 [Slope Erosion Control Maintenance

The Contractor shall provide slope erosion control maintenance to prevent undermining of all slopes in [newly landscaped] [and] [natural growth areas]. Maintenance tasks include immediate repairs to weak spots in sloped areas, [and] [maintaining clean, clear [culverts,] and graded

[berms,] [and] [terraces] to intercept and direct water flow to prevent development of large gullies and slope erosion] [and] [during periods of extended rainfall, irrigation systems shall be secured.] Eroded areas shall be filled with amended topsoil and replanted with the same plant species. [Erosion control [netting] [blankets] damaged due to slope erosion shall be reinstalled.]

]3.4.5 Removal of Dying or Dead Plants

Remove dead and dying plants and provide new plants immediately upon commencement of the specified planting season, and replace [stakes,] [guys,] mulch and eroded earth mound water basins. No additional plant establishment period will be required for replacement plants beyond the original warranty period. A tree shall be considered dying or dead when the main leader has died back, or a minimum of 20 percent of the crown has died. A shrub or ground cover shall be considered dying or dead when a minimum of 20 percent of the plant has died. This condition shall be determined by scraping on a branch an area 2 mm 1/16 inch square, maximum, to determine the cause for dying plant material and shall provide recommendations for replacement. The Contractor shall determine the cause for dying plant material and provide recommendations for replacement.

3.4.6 Tracking of Unhealthy Plants

Note plants not in healthy growing condition, as determined by the Contracting Officer, and as soon as seasonal conditions permit, remove and replace with plants of the same species and sizes as originally specified. Install replacement plantings in accordance with Section 32 93 00 EXTERIOR PLANTS.

3.4.7 Final Inspection

Final inspection will be made upon written request from the Contractor at least 10 days prior to the last day of the establishment period. Final inspection will be based upon satisfactory health and growth of plants and on the following:

3.4.7.1 Total Plants on Site

Plants have been accepted and required number of replacements have been installed.

3.4.7.2 Mulching and Weeding

Planter beds and earth mound water basins are properly mulched and free of weeds.

3.4.7.3 [Tree Supports

[Stakes] [guys] guys and turnbuckles are in good condition.

]3.4.7.4 Remedial Work

Remedial measures directed by the Contracting Officer to ensure plant material survival and promote healthy growth have been completed.

3.4.8 Unsatisfactory Work

When work is found to not meet design intent and specifications,

maintenance period will be extended at no additional cost to the Government until work has been completed, inspected and accepted by Contracting Officer.

3.5 FIELD QUALITY CONTROL

3.5.1 Maintenance Inspection Report

Provide maintenance inspection report to assure that landscape maintenance is being performed in accordance with the specifications and in the best interest of plant growth and survivability. Site observations shall be documented at the start of the establishment period, then quarterly following the start, and at the end of establishment period. Results of site observation visits shall be submitted to the Contracting Officer within 7 calendar days of each site observation visit.

[3.5.2 Plant Quantities

The Contractor shall provide Contracting Officer with the number of plant quantities. In addition, provide total exterior area of hardscape and landscaping such as turf and total number of shrubs.

]3.5.3 Tree Staking and Guying Removal

The Contractor shall provide a certified letter that all stakes and guys are removed from all project trees at the end of the establishment period.

-- End of Section --