

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 32 • EXTERIOR IMPROVEMENTS

32 90 00 • LANDSCAPING

SECTION INCLUDES

Soils
Sod, Seed and Mulches
Plant Materials

RELATED SECTIONS

03 30 00 Concrete
31 00 00 Earthwork
32 12 00 Asphalt Paving
32 30 00 Site Improvements
32 80 00 Site Irrigation

SOILS

INVESTIGATION

Conduct testing to determine acidity (pH) level, permeability and moisture content of existing soil. Minimum of 1 test per 4,000 SF.

Determine depth of topsoil and whether it can be stockpiled and reused.

Assess suitability of soil for healthy plant growth.

Determine any soil amendments that may be required.

Investigate any local regulations relating to soil removal and disposal.

REFERENCE STANDARDS

Standard Specifications for Highways and Bridges, Mass. Department of Public Works, latest edition

AASHTO, various material designations for soils

ASTM D-1556 or D-1557 for compaction

DESIGN

Coordinate the application of soil amendments with the nutritional requirements of proposed plantings.

MATERIALS

Reuse existing loam where possible. Screen to eliminate stones, roots, weeds, clay lumps and other debris. Provide unit prices for stockpiling and reusing existing loam and spreading additional material if necessary.

Topsoil should not contain less than 4% or more than 10% organic matter.

Topsoil borrow should conform as closely as possible to the characteristics of the on site topsoil.

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In extremely acid soils (pH levels below 4.5) add lime in sufficient quantity to raise the pH level to the neutral range (between 6.0 and 7.5 in mineral soils, 5.5 and 6.0 in peats). Where low acid soils occur (pH above 8.5, rarely in the northeast), add iron sulfate or aluminum sulfate.

Add sandy loam to heavy, organic soils to improve drainage. Add humus or sphagnum peat moss to sandy or excessively drained soils to improve water retention. Humus also improves drainage in clay soils and aids root growth.

Use varying proportions of Nitrogen, Phosphoric Acid and Potash as fertilizer to suit the needs of the plant materials proposed. Modify nitrogen levels according to the amount of stem and foliage growth desired.

Comply with local regulations regarding the application of nitrogen (e.g. Cape Cod is a nitrogen sensitive area)

EXECUTION

Loosen subgrade to 4 in min prior to placement of topsoil (6 in in planting beds). Rototill subgrade that has been compacted where pavements and other structures have been removed.

Place topsoil at a minimum depth of 6 in and add soil amendments just prior to installation of plant materials. For shrub planting beds, increase depth to a minimum of 18 in.

Compact topsoil to 83% to 88% of dry maximum density.

Add soil amendments within one week of planting.

Comply with local regulations regarding soil removal and disposal.

SEED, SOD AND MULCHES

REFERENCE STANDARDS

ISTA (International Seed Testing Association) International Rules for Seed Testing

DESIGN

Apply seed to all designated lawn areas and portions of existing lawn that have been disturbed by construction operations. Apply only during specified seasonal germination periods (see Installation).

Apply hydroseed to lawn areas where site conditions, excessive slopes or seasonal limitations prevent normal germination of grass seed.

Apply sod only to selected lawn areas that require immediate grass coverage or when seasonal conditions do not allow proper germination of seed.



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Apply 2 to 4 inches of mulch to groundcover and shrub beds to control weed growth and retain moisture. Mulch may also be applied at the bases of tree trunks where grass will not germinate.

Use at least three varieties of grass seed in all lawn applications to avoid monocultures.

Anchor mats may be needed for steep slopes.

MATERIALS

- Seed:
 - Newly seeded lawns: mix of Kentucky Bluegrass, Red Fescue and Perennial Ryegrass. Supplement with creeping red fescue in shaded areas.
 - Restored lawns: mix of Kentucky Bluegrass, Tall Fescue and Perennial Ryegrass
- Hydroseed:
 - Dyed, pulverized wood cellulose fiber mulch mixed in water slurry with seed blend and fertilizer
- Sod:
 - blends of Kentucky Bluegrass, Fine Fescue and Perennial Ryegrass not less than 2 years old
 - uniform pad sizes machine cut to 3/4in thick
- Mulch:
 - Treated, aged tree bark of natural color, containing no shredded pieces larger than 4in.

INSTALLATION

Seed new lawns in early spring or mid September for best germination and growth.

Sow seed into loosened topsoil using a seed slicing machine at a coverage of 6lbs seed per 1,000SF. Reseed bare spots in existing lawn areas with a seed spreader according to seed supplier's recommended settings.

Protect newly seeded slopes from erosion. Use geotex fabric anchor mat such as burlap on slopes greater than 8% and plant groundcover or low spreading shrubs where grass cannot germinate.

Water newly seeded areas with 3 to 4 light applications per day until germination occurs. Water should total 1/2" per day. Best times for watering are in the morning and early afternoon.

Lay sod within 24 hours from time of stripping.

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Do not mow newly seeded, hydroseeded or sodded areas until grass reaches a height of 3 in. Maintain a 1½ to 2in grass height during turf establishment period (60 days).

PLANT MATERIALS

INVESTIGATION

Conduct Site Analysis to determine appropriate locations and growing environments for tree, shrub and groundcover plantings. Analysis should include the effects of solar exposure, soil types, landforms, drainage, existing vegetation, utilities and hardscape/structural elements present on the site.

Analyze existing and proposed uses of the site, including pedestrian and vehicular circulation, location of building entries, views, noise, service access, security, lighting, recreational activities and resident populations served.

Review local planning ordinances and guidelines that relate to landscaping requirements for new construction.

Determine if any pruning of existing trees is necessary. Comply with any local tree preservation regulations.

REFERENCE STANDARDS

ANSI Z60.1 American Nurserymen and Landscape Association's Standard for Nursery Stock

DESIGN

Where possible retain existing trees. Analyze individual trees for shape fullness and proximity to buildings as well as the presence of damaged, undesirable or dead wood in order to determine the necessity for pruning.

Select plant materials that require as little care and maintenance as possible.

Native plant species are preferred since they are generally more adaptable to local environmental conditions.

Specify a variety of plant materials that are compatible with the conditions found on the site. Avoid monocultures.



As a general rule, locate deciduous plants on the east, south and west sides of buildings where they can offer shade in the summer but not block sun in the winter. Locate evergreen plantings on the north side to protect against prevailing winter winds.

Anticipate the size of plantings at maturity when choosing locations and spacings. Do not locate tree plantings less than 10 feet, and shrub plantings less than 2 feet, from buildings. Allow more space for larger

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varieties of trees and shrubs. Avoid situations where tree branches at maturity will overhang roofs. Do not plant trees where their root system will interfere with pavements, sewer lines or septic fields.

Maintain a minimal 4ft distance from car bumpers when installing trees adjacent to parking areas.

Avoid installing trees with shallow, spreading root systems adjacent to walkways and roadways where root growth will damage pavement.

Avoid fruit-producing tree varieties.

Coordinate location of new tree plantings with site lighting design.

Height of tree canopy should be at least 6ft above grade.

Locate trees and shrubs where they will not obstruct signs, entrances or windows. Maintain an unobstructed view of at least 4ft above grade at all vehicular turning and maneuvering points and at pedestrian crossings.

Avoid curbside "tree pit" plantings at sidewalks. For best growth, keep pavement clear of the drip line of the tree or install plantings in unpaved areas. Where sidewalk plantings are used allow a clear area of at least 6ft around the base of the tree or provide a 6ft wide tree belt between sidewalk and curb where possible.

Avoid steel or aluminum edging around planting beds because of problems encountered in mowing and maintenance.

Pay attention to adjacency of below grade foundations or structures that may affect plant root development, or that may be subject to damage from root growth.

Where possible, route underground and overhead utility lines away from existing trees. Do not plant new trees and shrubs where they will interfere with existing and/or new utility lines.

MATERIALS

Use only nursery-grown plant stock selected and tagged by the project's designer/landscape architect. Tagging should be limited to one tagging visit by the Designer to a nursery designated by the Contractor. Any changes by the Contractor in the selection of tagged plant materials must be approved by the Designer, and any associated cost absorbed by the Contractor.

All trees and shrubs must be balled and burlapped, and delivered to the site undamaged with the root ball intact. Groundcovers must be container grown stock. Root bound container stock is not acceptable.

Only trees greater than 3½in caliper should be specified.

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Native species of plant materials are preferred.

Install only male or sterile varieties of certain tree species such as Honey Locust and Ginkgo. Fruit and seed pods from female varieties of these trees cause litter problems.

Avoid specifying invasive plant species, such as:

Norway Maple (*Acer platanoides*)
Bradford Pear (*Pyrus calleryana* "Bradford")
Tree of Heaven (*Ailanthus altissima*)
Siberian Elm (*Ulmus pumila*)
Burning Bush (*Euonymus alata*)
Japanese Barberry (*Berberis thunbergii*)
Japanese Spiraea (*Spiraea japonica*)
Bamboo (*Phyllostachys* spp.)

EXECUTION

EXISTING PLANTINGS

Survey existing trees for overhanging branches, dead branches, or signs of physical decline that may require pruning or removal. For roof and siding replacement projects, prune back all branches within 6 feet of the work surface.

Survey foundation plantings and carefully cut back or remove plant materials that are overgrown or interfere with access to the work area.

Identify personal landscaped areas that are maintained by tenants, and coordinate work operations with the LHA that may require protection or removal.

Existing trees should be pruned, if necessary, before construction only by an arborist certified by the International Society of Arboriculture (ISA).

Where existing trees are to be removed, they should be removed completely and the stump ground down to 12in below grade. Stump shavings should be removed and properly disposed of offsite.

Protect existing trees and shrubs within the limit of work line that are designated to remain. Install barriers of high visibility plastic mesh fence around the drip line of each individual or cluster of trees and grouping of shrubs. Provide more substantial protection barriers (battens, fencing, etc.) where required by construction operations.

Stockpile construction materials as far as possible from protected trees and shrubs to avoid soil compaction and root damage.

Do not attach signs, wires, pulleys, or any other devices requiring mechanical fasteners to trees. Use temporary posts instead.

Use tarps or other protection over soil when mixing concrete, cleaning brushes, cutting sheetrock or doing similar exterior work.

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Avoid cut/fill operations around tree roots.

NEW PLANTINGS



The Contractor is responsible for bringing water on site for plantings and lawn even when a local water ban is in effect. Water may be available from LHA, verify with LHA and local water department before committing LHA. Provide water meters where municipal hydrants are used as a water source.

Complete all rough grading operations and verify location of all utility lines and structures prior to installation of plant materials.

Stake location of all trees and shrubs for designer's approval prior to installation.

Plant materials are best installed in the spring (mid-April to mid-June) or fall (mid-August to mid-October). The designer should verify growth requirements of each type of tree and shrub to determine the best time to install and include any seasonal limitations and other restrictions in the specifications.

Do not allow plant materials to dry out between delivery to the site and installation.

Excavate pits, beds and trenches to a point slightly less than the depth of the root ball to allow for settling. Width of excavation should be no less than three times the diameter of the root ball. Fill excavation with water and allow to percolate fully into the soil prior to planting. Place root ball at base of excavation so that base of trunk (after settling) is even with surrounding landscape grade, and loosen the soil around it for drainage. Completely remove any wire baskets, plastic netting or other non-biodegradable root ball containments. Cut and peel back top third of burlap ball covering and prune any unusually long or broken roots prior to backfilling. Backfill excavation with topsoil and water thoroughly when two-thirds full. Repeat watering when backfilling is complete.

Final grade at base of trunk should allow for 3in settlement of soil. Dish top of backfill for installation of bark mulch.

Thin crowns of all plant materials by approx. one third after installation.

Apply antidessicant within 24 hours after installation using power spray to ensure complete coverage over trunk, branches, stems and foliage.

Under normal circumstances, stakes and guy wires are not necessary to support newly planted trees. Where trees over 6 ft in height are subject to abuse or severe conditions, however, stakes and guy wires may be installed at third points around the diameter of the tree. Stakes should not penetrate the root ball, and may be vertical or set at an angle as site conditions permit. Provide rubber hose for guy wires at all contact points with trunk. Flag wires with bright colors for visibility. Tree wrap may also be installed on trunk at the discretion of the Designer.

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Water all plant materials thoroughly twice during the first 24-hour period after installation, and weekly thereafter during the first growing season. Provide for additional waterings during dry spells. Observe any local regulations and restrictions governing water use.

All tree wrap, stakes and guy wires must be removed one year after installation.

LHAs are encouraged to involve residents in the ongoing maintenance of lawns and plant materials.

GUARANTEES

Lawn and planting guarantees can be troublesome if LHA cannot take care of new landscaping. Review capacity of LHA before writing Guarantee section

One year guarantee should include complete replacement (materials and labor) of all plant materials that do not survive the first growing season. The designer shall inspect the installation at the end of this period to determine the nature and quantity of any replacements that may be required.

Substitution of replacement plant materials other than those originally specified may be made only with the approval of the designer. Otherwise, replacements must be of the same species and size as the materials originally specified.