

This is a guidance document with sample specification language intended to be inserted into project specifications on this subject as appropriate to the agency's environmental goals. Certain provisions, where indicated, are required for U.S. federal agency projects. Sample specification language is numbered to clearly distinguish it from advisory or discussion material. Each sample is preceded by identification of the typical location in a specification section where it would appear using the SectionFormat™ of the Construction Specifications Institute; the six digit section number cited is per CSI Masterformat™ 2004 and the five digit section number cited parenthetically is per CSI Masterformat™ 1995.

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SECTION 32 90 00 (SECTION 02900) - PLANTING

SPECIFIER NOTE:

resource management: Specify plants based on a xeriscaping approach, preferably one that utilizes indigenous plants appropriate to the local ecosystems. Where possible, specify appropriate companion planting, seasonal mixes, and habitat vegetation. Companion planting is an art practiced by most gardeners that takes advantage of complementary relationships between some plants such as carrots and tomatoes or parsley and roses. Seasonal mixes utilize plants that thrive at various times of the year. Seasonal mixes are closely related to providing habitat vegetation. Many birds, animals and insects - especially migratory creatures - depend upon certain plants flowering or seeding at specific times of the year and in certain regions.

toxicity/IEQ: Specify an integrated pest management approach to plant establishment. 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. Specify use of native beneficial insects. Specify use of appropriate companion plants, such as those with natural pyrethrums.

performance: Xeriscaping utilizes indigenous plants, and low maintenance plants which are tolerant of site's existing soils and climate without supplemental irrigation or fertilization once established. Native plants typically will perform better than imported species and require less maintenance. Where plants are imported to a region, it is advisable to monitor sufficiently to determine the relative invasiveness of the imported species. 'Exotic' plants, plants not indigenous to a region, can blend into the local ecosystem; but, they can also overrun it, suffocating indigenous plants and crippling habitats.

The American Society of Landscape Architects (ASLA) outlines sustainable approaches to landscaping in the ASLA Code of Environmental Ethics and ASLA Public Policies. For additional information, refer to www.asla.org

EPA GreenScapes provides a Resource Conserving Cost Calculator available online that compares the cost of converting conventional landscapes to xeriscape landscapes. The calculator demonstrates that converting to a water saving landscape is often cost competitive due to savings on water bills and landscaping maintenance, and provides many environmental benefits.

<http://www.epa.gov/epawaste/conserv/rrr/greenscapes/tools/index.htm>

In November 2009, the Sustainable Sites Initiative released a rating system for the design, construction and maintenance of sustainable landscapes, with or without buildings. Sustainable Sites Initiative is an interdisciplinary partnership led by the American Society of Landscape Architects, the Lady Bird Johnson Wildflower Center at The University of Texas at Austin and the United States Botanic Garden. The rating system can apply to projects ranging from corporate campuses, transportation corridors, public parks and single-family residences.

<http://www.sustainablesites.org/report/>

To test the rating system, the Sustainable Sites Initiative opened a call for pilot projects in conjunction with the release of the rating system. The call will remain open until February 15, 2010, and the initiative will work with and oversee the projects during the two-year process. The Sustainable Sites Initiative anticipates refining the 2009 rating system after the completion of the pilot project program.

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes:
1. Planting materials, including: trees, plants, shrubs, ground covers and grasses.
 2. Topsoil and soil amendments.
 3. Accessories.

SPECIFIER NOTE:

Coordinate requirements specified under this section with work specified under related sections. Edit below to suit project.

- B. Related Sections:
1. Section 10 81 50 (10295) – Integrated Pest Management (IPM).
 2. Section 31 25 73 (02635) - Stormwater Management By Compost.
 3. Section 32 84 00 (02810) – Planting Irrigation.

1.2 SUBMITTALS

- A. Product data. Unless otherwise indicated, submit the following for each type of product provided under work of this Section:

SPECIFIER NOTE:

Green building rating systems often include credit for materials of recycled content. USGBC-LEED™ v3, for example, includes credit for materials with recycled content, calculated on the basis of pre-consumer and post-consumer percentage content, and it includes credit for use of salvaged/recovered materials. Green Globes US also provides points for reused building materials and components and for building materials with recycled content.

1. Recycled Content:
 - a. Indicate recycled content; indicate percentage of pre-consumer and post-consumer recycled content per unit of product.
 - b. Indicate relative dollar value of recycled content product to total dollar value of product included in project.
 - c. If recycled content product is part of an assembly, indicate the percentage of recycled content product in the assembly by weight.
 - d. If recycled content product is part of an assembly, indicate relative dollar value of recycled content product to total dollar value of assembly.

SPECIFIER NOTE:

Specifying local materials may help minimize transportation impacts; however it may not have a significant impact on reducing the overall embodied energy of a building material because of efficiencies of scale in some modes of transportation. Green building rating systems frequently include credit for local materials. Transportation impacts include: fossil fuel consumption, air pollution, and labor. USGBC-LEED™ v3 includes credits for materials extracted/harvested and manufactured within a 500 mile radius from the project site. Green Globes US also provides points for materials that are locally manufactured.

2. Local/Regional Materials:

- a. Sourcing location(s): Indicate location of extraction, harvesting, and recovery; indicate distance between extraction, harvesting, and recovery and the project site.
- b. Manufacturing location(s): Indicate location of manufacturing facility; indicate distance between manufacturing facility and the project site.
- c. Product Value: Indicate dollar value of product containing local/regional materials; include materials cost only.
- d. Product Component(s) Value: Where product components are sourced or manufactured in separate locations, provide location information for each component. Indicate the percentage by weight of each component per unit of product.

SPECIFIER NOTE:

The Food, Conservation, and Energy Act of 2008 (also known as the 2008 U.S. Farm Bill) largely continues programs of the Farm Security and Rural Investment Act of 2002 ([2002 Farm Bill](http://www.usda.gov/farmbill/)) <http://www.usda.gov/farmbill/>. Section 9002 requires each Federal Agency to develop a procurement program which will assure 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. USDA designates biobased products for preferred Federal procurement and recommends biobased content levels for each designated product.

USGBC-LEED™ v3, for example, includes credits for use of rapidly renewable materials, which USGBC describes as plants harvested within a ten-year cycle.

Green Globes – US, provides credit for integration of materials from renewable sources that have been selected based on life-cycle assessment.

3. Biobased materials:
 - a. Indicate type of biobased material in product.
 - b. Indicate the percentage of biobased content per unit of product.
 - c. Indicate relative dollar value of biobased content product to total dollar value of product included in project.

SPECIFIER NOTE:

The U.S. Composting Council (USCC) certifies compost products under its Seal of Testing Assurance (STA) Program. Compost producers whose products have been certified through the STA Program provide customers with a standard product label that allows comparison between compost products. Refer to the USCC; <http://www.compostingcouncil.org/index.cfm>

4. Compost:
 - a. Evidence of certification under the U.S. Composting Council (USCC) Seal of Testing Assurance (STA) Program.
- B. Planting schedule indicating anticipated dates and locations for each type of planting.
- C. Landscape Commissioning Submittals:
 1. Material Test Reports: For existing surface soil and imported topsoil.
 2. Plant list: Documenting soil, nutrients, amendments, and plants installed.

SPECIFIER NOTE:

The national goal of implementing integrated pest management (IPM) methods on 75 percent of the nation's cropland was jointly announced by the U.S. Department of Agriculture, the U.S. Environmental Protection Agency, and the Food and Drug Administration 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. For additional information, refer to the National Information System for USDA's Regional IPM Centers at www.ipmcenters.org/.

- D. Integrated Pest Management Plan: As specified in Section 10 81 50 (10295) – Integrated Pest Management (IPM).
- E. Operation and Maintenance Manuals Submittals:
 - 1. Instructions indicating procedures during one typical year including variations of maintenance for climatic conditions throughout the year. Provide instructions and procedures including:
 - a. Watering. **[Include recommendations on soil management and potential erodibility as determined per assessment under field quality control.]**
 - b. Promotion of growth, including fertilizing, pruning, and mowing.
 - c. Integrated pest management.
 - 2. Pictures of planting materials cross referenced to botanical and common names. Describe normal appearance in each season.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer with minimum 3 years experience with landscaping work similar in material, design, and extent to that indicated for this Project and with a record of successful landscape establishment.
- B. Pre-Installation Meetings:
 - 1. Convene a pre-installation meeting minimum one week prior to commencing work of this Section.
 - 2. Require attendance of parties directly affecting Work of this Section.
 - 3. Review conditions of operations, procedures and coordination with related Work.
 - 4. Agenda:
 - a. Tour, inspect, and discuss conditions of planting materials.
 - b. Review planting schedule and maintenance.
 - c. Review required inspections.
 - d. Review environmental procedures.
- C. Coordinate installation of planting materials during normal planting seasons for each type of plant material required.
- D. Label each tree and shrub with securely attached, waterproof tag bearing legible designation of botanical and common name. Do not remove tag unless approved in writing by **[Architect] [Owner]**.
- E. Certification: Provide compost products that are certified to specified product parameters in accordance with the U.S. Composting Council (USCC) Seal of Testing Assurance (STA) Program.
- F. Landscape Commissioning:
 - 1. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio' deleterious material; pH; and mineral and plant-nutrient content of topsoil.
 - a. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
 - b. Perform the soil analysis within 10 calendar days of planting. If planting is delayed, re-perform tests.
 - 2. Material Test Reports: For existing surface soil and imported topsoil, report suitability of topsoil for plant growth. State recommended quantities of nitrogen,

- phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil as appropriate to each plant type and location.
3. Verify soil conditions are appropriate for plants indicated; provide recommended nutrients and amendments as necessary.
 4. Plant list: Submit list of plants in alphabetical order. Indicate type, size, location, and number of plants installed. Indicate the nutrients and amendments recommended from soil analysis and the nutrients and amendments provided.

1.4 MAINTENANCE

- A. Minimum one year from date of **[Substantial Completion]** **[initial acceptance]** **[xxxx]**.
- B. Promotion of growth: Weed, water, and perform other operations necessary to promote growth and as approved by **[Owner]** **[Architect]** and consistent with approved Integrated Pest Management Plan.
 1. Inspection: Inspect plants at least once a week and perform needed maintenance promptly.
 2. Herbicides and pesticides are not permitted; use organic/natural matter for pest and disease control.
 3. Remove noxious weeds common to the area from planting areas by mechanical means.

SPECIFIER NOTE:

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

Following are examples.

- C. Mowing of groundcover and grass areas:
 1. Wildflowers: Mow three times per season above height of the wildflowers (approximately 12 to 15 inches).
 2. Native Grasses: Mow above height of native grass seedlings (approximately 3-1/2 to 4 inches). Mow during spring or early summer. Do not mow after early summer during the second growing season.
- D. Chemical controls:
 1. Wildflowers, groundcover, and grasses: Do not fertilize.
 2. Trees, plants, and shrubs: Fertilize exterior planting materials to promote healthy plant growth without encouraging excessive top foliar growth.
- E. At end of maintenance period, request End of Maintenance Period Inspection by **[Owner]** **[Architect]**.
 1. Final acceptance of wildflower and grass areas will be based upon a satisfactory stand of groundcover and grasses. Stand of groundcover and grass is 95 percent ground cover of established species. Replant areas which do not have a satisfactory stand of groundcover and grasses.
 2. Final acceptance of exterior plants will be based upon satisfactory health and growth of plants.
 3. Complete Operation and Maintenance Manuals submittals for planting materials.
- F. When work is found to be unsatisfactory, maintenance period will be extended at no additional cost to Owner until work has been completed, inspected and accepted by **[Owner]** **[Architect]**.

1.5 WARRANTY

- A. Warranty: Warrant the following living planting materials for a period of one year after date of Substantial Completion, against defects including death and unsatisfactory

growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, abnormal weather conditions unusual for warranty period.

1. Trees.
2. Shrubs.
3. Ground covers.
4. Plants.
5. Grasses.

- B. Remove and replace dead planting materials immediately unless required to plant in the succeeding planting season.
- C. Replace planting materials that are more than 25 percent dead or in an unhealthy condition at end of warranty period.

PART 2 - PRODUCTS

SPECIFIER NOTE:

EO 13423 includes requirements for Federal Agencies to use "sustainable environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products"

Specifically, under the Sustainable Building requirements per Guiding Principle #5 Reduce Environmental Impact of Materials, EO13423 directs Federal agencies to "use products meeting or exceeding EPA's recycled content recommendations" for EPA-designated products and for other products to "use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (based on cost) of the total value of the materials in the project."

Additionally, for USDA-designated biobased products, Federal agencies must use products meeting or exceeding USDA's biobased content recommendations; and for other products, biobased products made from rapidly renewable resources and certified sustainable wood products.

EO 13423 directs Federal Agencies "... beginning in FY 2008, reduce water consumption intensity, relative to the baseline of ... year 2007 ... by 2 percent annually through the end of fiscal year 2015 or 16 percent by the end of fiscal year 2015"

Specifically, under the Sustainable Building requirements per Guiding Principle #3 Protect and Conserve Water, EO 13423 directs Federal agencies to "Use water efficient landscape and irrigation strategies, including water reuse and recycling, to reduce outdoor potable water consumption by a minimum of 50 percent over that consumed by conventional means (plant species and plant densities)."

Executive Order 13514; *Federal Leadership in Environmental, Energy, and Economic Performance*; was signed on October 5, 2009. <http://www.ofee.gov/execorders.asp> It expands upon the environmental performance requirements of EO 13423.

http://www1.eere.energy.gov/femp/regulations/printable_versions/eo13423.html

EO 13514 sets numerous federal requirements in several areas, including sustainable buildings and communities. Federal agencies must implement high performance sustainable federal building design, construction, operation and management, maintenance, and deconstruction, including:

- Ensuring all new Federal buildings, entering the design phase in 2020 or later, are designed to achieve zero net energy by 2030.
- Ensuring all new construction, major renovations, or repair or alteration of Federal buildings comply with the Guiding Principles of Federal Leadership in High Performance and Sustainable Buildings <http://www1.eere.energy.gov/femp/pdfs/mouhighperfsustainfedfacs.pdf>
- Ensuring at least 15% of existing agency buildings and leases (above 5,000 gross square feet) meet the Guiding Principles by fiscal year 2015 and that the agency makes annual progress towards 100% compliance across its building inventory.

Additionally, EO 13514 Federal requirements for water stewardship, including:

- Reducing potable water consumption intensity 2% annually through fiscal year 2020, or 26% by the end of fiscal year 2020, relative to a fiscal year 2007 baseline.
- Reducing agency industrial, landscaping, and agricultural water consumption 2% annually, or 20% by the end of fiscal year 2020, relative to a fiscal year 2010 baseline.
- Identifying, promoting, and implementing water reuse strategies consistent with state law that reduce potable water consumption.

2.1 PLANTING MATERIALS

SPECIFIER NOTE:

Typically native plants will require less maintenance than non-native plants. Additionally, slow growing native plants require even less time, water, and maintenance.

A. As indicated on the Drawings and as follows:

1. Renewable Resources: Plants specified are **[indigenous,] [slow-growing,]** low maintenance varieties, tolerant of site's existing soils and climate without supplemental irrigation or fertilization once established.

2.2 MULCHES

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

B. Inert Mulch Materials: Crushed concrete or blast furnace slag complying with ASTM D692; Recycled porcelain or other non-traditional aggregate material complying with ASTM D6155.

SPECIFIER NOTE:

Green building rating systems often include credit for materials of recycled content and may distinguish allowable credit for post-consumer and post-industrial (or pre-consumer) recycled content. USGBC-LEED™ v3, for example, factors 100 percent of post-consumer recycled content but only 50 percent of pre-consumer (post-industrial) recycled content into calculations for its recycled content materials credit. LEED v3 grants one credit to a project for using materials with recycled content such that the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 10 percent of the total value of the materials in the project; 10% (post-consumer + 1/2 post-industrial). It grants an additional point for 20% (post-consumer + 1/2 post-industrial).

Green Globes US also provides points for reused building materials and components and for building materials with recycled content.

Recycled content is typically determined by calculating the weight of the recycled material divided by the total weight of the product and expressed as a percentage by weight. (The recycled content "value" of a product as assessed under LEED is determined by multiplying the recycled content percentage and the cost of the product.)

Verify with manufacturer for product availability and recycled content.

1. Recycled Content: Minimum **[5] [10] [xxxx]** percent post-consumer recycled content, or minimum **[20] [40] [xxxx]** percent pre-consumer recycled content at contractor's option.

C. Organic Mulch Materials:

SPECIFIER NOTE:

US-EPA Comprehensive Procurement Guidelines (CPG) recommend 100 percent post-consumer content for paper-based hydraulic mulch and 100 percent total recovered content for wood-based hydraulic mulch.

1. Mulch from recycled site debris: Coordinate with Section 31 10 00 (02230) - Site Clearing to identify and prepare suitable organic debris for use as mulch on site.
2. Wood Cellulose Fiber:

- a. Toxicity: 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.
- b. Recycled content:
 - 1) Paper-based hydraulic mulch: Minimum **[100] [xxxx]** percent post-consumer recycled content.
 - 2) Wood-based hydraulic mulch: Minimum **[100] [xxxx]** recycled material.

SPECIFIER NOTE:

For current designations under the Federal Biobased Products Preferred Procurement Program (FB4P), refer to www.biobased.oce.usda.gov. As of January 4, 2010, the Federal Register includes designations for approximately 60 product types. The requirements for purchasing biobased items apply to those items directly purchased by the federal agency. Under a construction contract, the contractor's use of hydraulic fluid in its bulldozers and backhoes is incidental to the purpose of its contract, so the contractor is not required to use biobased hydraulic fluids. The Office of the Federal Environmental Executive (OFEE) recommends that agencies encourage the use of these items, however.

Currently designated items that affect construction include:

- Roof Coatings
- Water Tank Coatings
- Adhesive and Mastic Removers
- Composite Panels
- Fertilizers
- Plastic Insulating Foam
- Carpet and Upholstery Cleaners
- Carpets
- Dust Suppressants
- Packaging Films
- Glass Cleaners
- Hydraulic Fluids – Stationary Equipment
- Wood and Concrete Sealers
- Cleaners

The USDA currently has identified about 150 items for which it is collecting test data needed for the additional designations of items that will extend preferred procurement status to include all qualifying biobased products.

3. Biobased Content: Minimum **[100] [xxxx]** percent.

2.3 EROSION CONTROL MATERIAL

- A. Biodegradable twisted jute or spun-coir mesh: Minimum 0.92 lb per sq. yd., with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches long.
 1. Biobased Content: Minimum **[100] [xxxx]** percent.
- B. Unit Paver System: As specified in Section 32 12 43 (02795) Porous Paving.
- C. Compost: As specified in Section 31 25 73 (02635) - Stormwater Management By Compost.

2.4 TOPSOIL

- A. Topsoil: Evaluate soil for use as topsoil in accordance with ASTM D 5268.
 1. Reuse surface soil stockpiled on the site. Verify suitability of surface soil to produce topsoil meeting requirements and amend as necessary. Clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth. Coordinate with Section 31 1 0 00 (02230) – Site Clearing.

2. Supplement with imported topsoil when quantities of stockpiled soil are insufficient.
3. Composted topsoil used for erosion control: As specified in Section 31 25 73 (02635) - Stormwater Management By Compost.

2.5 WATER

SPECIFIER NOTE:

USGBC-LEED™ v3 includes credit for water efficient landscaping and for water use reduction. Limiting or eliminating the use of potable water for landscape irrigation can earn credit.

Green Globes – US also includes credit for strategies for minimal use of water for irrigation. Points are awarded for landscaping that integrates plants that are able to withstand extreme local weather conditions and that require minimal irrigation. And, water-efficient irrigation system (e.g. high efficiency technology, rain sensors) are also recognized.

- A. Water: **[Potable] [Rainwater] [Grey water]**.
- B. Irrigation Systems: **[Irrigation systems shall not be permitted.] [Provide high efficiency irrigation systems as specified in Section 32 84 00 (02810) – Planting Irrigation.]**

2.6 PESTICIDES AND HERBICIDES

- A. Pesticides: Not permitted.
- B. Herbicides: Not permitted.
- C. Sheet Polyethylene: Black, conforming to ASTM D2103, minimum thickness 4 mils.
- D. Biological Pest Controls: As approved in the Integrated Pest Management Plan.

2.7 SOIL CONDITIONERS

- A. Soil Conditioners: Nontoxic. Use singly or in combinations required to meet requirements for topsoil.
- B. Peat: [Peat humus](#) derived from a freshwater site and conforming to ASTM [D5539](#) and as follows.
 1. Biobased Content: Minimum **[100] [xxxx]** percent.
- C. Sand: Clean and free of materials harmful to plants.
- D. Perlite: Horticultural grade for planters.
- E. Vermiculite: Horticultural grade for planters.
- F. Rotted Manure: Well rotted horse or cattle manure containing maximum 25 percent by volume of straw, sawdust, or other bedding materials; free of seeds, stones, sticks and soil.
- G. Compost: Well decomposed, stable, weed free organic matter source; derived from: agricultural, food, or industrial residuals; biosolids (treated sewage sludge); yard trimmings; source-separated or mixed solid waste. The product shall contain no substances toxic to plants and shall be reasonably free (< 1% by dry weight) of man-made foreign matter. The compost shall possess no objectionable odors and shall not resemble the raw material from which it was derived. Coordinate with Section 31 10 00

(02230) – Site Clearing, Section 01 74 19 (01351) – Construction Waste Management, and Section 31 25 73 (02635) - Stormwater Management By Compost.

SPECIFIER NOTE:

US-EPA Comprehensive Procurement Guidelines (CPG) recommend the use compost made from yard trimmings, leaves, grass clippings, and/or food wastes in landscaping applications.

1. Biobased Content: Minimum **[100] [xxxx]** percent.

SPECIFIER NOTE:

The product parameters below are derived from the US Composting Council's *Landscape Architecture/Design Specifications For Compost Use*. Refer to <http://www.epa.gov/epaoswer/non-hw/green/pubs/la-specs.pdf>

It should be noted that the pH and soluble salt content of the amended soil mix is more relevant to the establishment and growth of a particular plant, than is the pH or soluble salt content of a specific compost (soil conditioner) used to amend the soil. Each specific plant species requires a specific pH range. Each plant also has a salinity tolerance rating, and maximum tolerable quantities are known. Most ornamental plants and turf species can tolerate a soil/media soluble salt level of 2.5 dS/m and 4 dS/m, respectively. Seeds, young seedlings and salt sensitive species often prefer soluble salt levels at half the afore mentioned levels. When specifying the establishment of any plant or turf species, it is important to understand their pH and soluble salt requirements, and how they relate to existing soil conditions.

Stability/Maturity rating is an area of compost science that is still evolving, and as such, other various test methods could be considered. Also, never base compost quality conclusions on the result of a single stability/maturity test.

Landscape architects and project (field) engineers may modify the allowable compost specification ranges based on specific field conditions and plant requirements.

Edit to suit project:

2. Product Parameters: Provide compost products with the following product parameters; certified in accordance with the U.S. Composting Council (USCC) Seal of Testing Assurance (STA) Program:

Parameters	Reported as (units of measure)	Allowable Range
pH	pH units	6.0 - 8.5
Soluble Salt Concentration (electrical conductivity)	dS/m (mmhos/cm)	Maximum 10
Moisture Content	%, wet weight basis	30 – 60
Organic Matter Content	%, dry weight basis	30 – 65
Particle Size	% passing a selected mesh size, dry weight basis	98% pass through 3/4" screen or smaller
Stability Carbon Dioxide Evolution Rate	mg CO ₂ -C per g OM per day	< 8
Maturity (Bioassay) Seed Emergence and Seedling Vigor	%, relative to positive control %, relative to positive control	Minimum 80% Minimum 80%
Physical Contaminants (inerts)	%, dry weight basis	< 1
Chemical Contaminants	mg/kg (ppm)	Meet or exceed US EPA Class A standard, 4 CFR § 503.13, Tables 1 and 3 levels

Biological Contaminants Select Pathogens Fecal Coliform Bacteria, or Salmonella	MPN per gram per dry weight MPN per 4 grams per dry weight	Meet or exceed US EPA Class A standard, 4 CFR § 503.32(a) levels
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SPECIFIER NOTE:

Waste gypsum board should be pulverized and spread evenly over the entire site area. Do not deposit it in areas that lack adequate drainage. Verify appropriate application rates with a landscaping consultant. Studies conducted through the Gypsum Association indicate that application rates may be as high as 22 tons per acre. However, in some areas, there may be regulatory restrictions on the disposal of construction waste on site and a variance may be required.

- H. Soil amendment from recycled scrap gypsum: Coordinate with Section 09 29 00 (09250) - Gypsum Board to prepare scrap gypsum board for use as soil amendment.

2.8 FERTILIZER

- A. Fertilizer for groundcover, wildflowers and grasses: Not permitted.
- B. Fertilizer for trees, plants, shrubs: As recommended by plant supplier and as follows:
 - 1. No synthetic chemical fertilizers.
 - 2. Biobased content:
 - a. Fertilizers: Products formulated or processed to provide nutrients for plant growth and/or beneficial bacteria to convert nutrients into plant usable forms. Provide minimum 71% biobased content.

2.9 ACCESSORIES

- A. Edging: **[Rot and Insect Resistant Wood Lumber as specified in Section 06 05 73 (06070) – Wood Treatment.] [Plastic lumber as specified in Section 06 60 00 (06600) – Plastic Fabrications]**
- B. Plastic Fabrications: As specified in Section 06 60 00 (06600) – Plastic Fabrications.
 - 1. Site Furnishings: **[tree grates] [benches] [xxxx].**
 - 2. Temporary compostable plastic accessories: **[ties] [markers] [xxxx].**

PART 3 - EXECUTION

3.1 PREPARATION

- A. Erosion Control:
 - 1. Biodegradable twisted jute or spun-coir mesh: Verify that mesh does not include invasive species.
- B. Soil Conditioners:
 - 1. Peat: Verify that peat does not include invasive species, including seeds.
 - 2. Rotted Manure: Verify that manure does not include invasive species, including seeds.
 - 3. Compost: Verify that compost does not include invasive species, including seeds. Coordinate with Section 31 25 73 (02635) - Stormwater Management By Compost. **[Unless otherwise indicated, uniformly apply over the entire planting area at a rate of 25% - 30% compost by volume for planting areas; 15% compost by volume for turf areas.] [Unless otherwise indicated, uniformly apply over the entire planting area at a rate of 2” – 4” of compost**

into upper 8” – 12” of soil.] [Unless otherwise indicated, uniformly apply over the entire planting area at a rate of xxxx]

3.2 ALTERNATIVE HERBICIDE TREATMENT (SOLARIZING SOIL)

- A. Within 48 hours of subsoil preparation, saturate soil with water to a depth of 3 feet. Immediately stake polyethylene sheeting over area to be planted. Stake tightly to surface of soil. Maintain sheeting in place for a minimum of 6 weeks.
- B. Immediately after removing sheeting, cover area to be planted with topsoil. Do not till soil prior to applying topsoil.

3.X FIELD QUALITY CONTROL

- A. Water: Coordinate with work specified in Section 01 57 19.13 (01354) – Environmental Management to provide water monitoring for surface and groundwater.

SPECIFIER NOTE:

The erosion potential of a soil is of concern in vegetated channels, road embankments, dams, levees, spillways, construction sites, etc.

- 1. Assess potential effects of soil management practices on soil loss in accordance with ASTM D6629. Assess erodibility of soil with dominant soil structure less than 7 to 8 cm in accordance with ASTM D5852.

END OF SECTION