

Appendix 7.4:

Guidance on Specifications for Interim Control of Soil Lead Hazards¹

Guidance on suggested language that may be helpful in drafting specifications for methods and products used in interim controls of soil lead hazards is provided below, as mentioned in Chapter 11, section VI.E. This language should be adapted as needed to fit each particular site and each plan or design. Landscape contractors may be unfamiliar with the issue of lead in soil. Their standard practices may not be in line with lead-safe treatment methods. It is advisable to work closely with contractors on their first few lead-safe jobs to ensure that they are clear on how to properly implement interim controls. If abatement of soil lead hazards is planned, specifications should be written by a person certified in accordance with regulations of EPA or an EPA-authorized state or tribe.

1. Methods

Edging. Edge with any application of bark mulch, pea gravel, crushed stone, or concrete pavers. Edging type and location should be specified on drawings.

Fencing. Where noted on plans, new stockade fencing shall be spruce stockade fencing or equivalent, 6-8 feet high. Chain link fencing shall be 4 feet high when running adjacent to a driveway and 6 feet high around the remainder of the yard. Height changes are noted on plans. Posts for any type of fence shall be leveled and anchored in a concrete footing at the frost line (4' below grade).

Finish Grading. Do finish grading in conjunction with all surface alteration methods, including grass seeding, sod, mulch, asphalt paving, crushed stone, or pea gravel. Unless drawings show otherwise, spread topsoil on all lawn and planting beds to a 6" minimum (settled) depth and 1/2" below adjacent paved surfaces. Provide positive drainage away from buildings at a slope of not less than 2% (that is, when going a horizontal distance away from the building for some distance, the ground drops by 2% of that distance, for example, a 2½ inch drop over a 10 foot distance). Rototill areas where specified with lead free soil to reduce lead concentration. Add soil as necessary to bring to minimum depth and proper elevation.

Grass Seeding. Prepare seed bed with lime and fertilizer at specified rates. Seed at specified rate and rake lightly. Water thoroughly. Successful growth must be achieved in order to establish the seeded lawn. The owner or other responsible party will monitor and determine when seeded lawns have "taken". Reseed any wash outs or sparse areas larger than one square foot that appear up to the second mowing.

Grass Sodding. Remove old turf and safely discard off site. Remove remaining rocks or debris. If soil is dry, dampen with spray from a garden hose to keep dust down. Establish a rough grade by safely removing leaded soil or add enough lead free soil to bring the soil surface to the height and slope

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necessary for proper drainage. Prepare the soil by tilling to a depth of approximately 8 inches. Add 3" lead free soil (or more if required) to bring down the lead level to less than 1,000 parts per million (ppm). Add amendments (including phosphate) and fertilizer according to sod company recommendations. Work in lead free soil, amendments, and fertilizer. Rake, level, and smooth with a roller. Water soil thoroughly 12 to 24 hours before laying sod. String a line and begin laying sod on either side of line. Place each roll tightly against the previous strip. Do not stretch, overlap, or leave voids. Joints in the sod should be staggered. Cut sod around sprinkler heads, trees, and curves. Roll to press roots against soil. Immediately after installation, water thoroughly. Keep the finished lawn moist until the sod knits with the soil beneath.

Lattice. Barricade all exposed soil under a porch or deck using (alkaline copper quaternary) ACQ pressure-treated wood framing, lattice, and pine trim. Prep, prime and paint pine trim or apply two coats of wood sealant. Install framed access door of like material. Include galvanized steel hasps and hinges.

Mulching. Cover bare soil with a water permeable landscape fabric. Apply to a settled depth of 3" in planting beds or 4" in play areas, unless specified otherwise.

Pea Gravel/Crushed Stone. Parking areas are to have a 6"–8" compacted crushed stone base followed by a 1 1/2" to 2" top cover of 3/8"–1/2" crushed stone. Maintain a minimum of 2% pitch across the surface to ensure positive drainage.

In dripline areas, sandwich landscape fabric between a 3"–4" settled depth of clean pea gravel (type should be indicated on plan) and the compacted subgrade. Spread the stone evenly over the landscape fabric. Slope the subgrade away from the foundation (1% minimum, 3% maximum).

In pathway areas, install landscape fabric under a 3"–4" settled depth of 3/8" crushed stone. Spread the stone evenly over the compacted subgrade and fabric. Use edge restraints to contain the stone.

Raised Beds/Planters/Sand Boxes. These products require some carpentry skills. All wood for raised beds, planters and sand boxes must be ACQ pressure-treated wood, sized according to plans and details. All wood should be secured with hot dipped galvanized steel spikes as per drawings. All raised beds, planters, and sand boxes must be lined with water permeable filter fabric. Raised beds and planters shall be filled with clean topsoil only, to the minimum depth specified on the drawings. Sand boxes shall be filled with "play" sand only, to the minimum depth specified on the drawings. If plantings are to be placed in the raised bed, install 4" of rich soil and 2" of mulch over a filter fabric weed barrier. If no plantings are planned, as in the drip zone near the foundation wall, install 3" of soil and 3" of crushed stone over a filter fabric weed barrier (EPA, 2001a).

Additional specifications for consideration by the designer: Joints and corners of the frame should be mechanically fastened with 3" galvanized wood screws to a 1" square stake driven into the ground to a minimum of 12". Corners of the box should be braced with triangular exterior grade plywood mechanically fastened directly to the wood frame with 3" galvanized wood screws

Tilling. For soil with high lead concentrations (noted on plans), wet the existing soil and till it with additional lead free soil to reduce the concentration of lead. Rototill soil to an 8"–10" depth and add phosphate, lime, and other amendments as necessary. Tilling should be done in conjunction with other surface alteration methods.

Tree and Shrub Planting. Set plants to match finished grade or slightly higher after settling. Provide lead free topsoil backfill for new plantings. Settle backfill thoroughly in planting holes by watering, firming, and tamping. Form saucers to retain water by placing ridges of soil around each plant.

Thoroughly water all plants at time of installation and as many times thereafter as conditions warrant to sustain healthy growing conditions. Saturate the soil around each plant thoroughly at each watering. Remove dead or unacceptable plant materials immediately. Cover beds with landscape fabric and top

with 3 to 4 inches (settled depth) of bark mulch. *Guarantee: Plant materials are to be guaranteed to remain in healthy condition for one year. All dead or unsatisfactory plants shall be replaced and replanted by the contractor free of charge. Make any replacements as soon as the planting season permits.*

Asphalt Paving/Concrete Pavers. (Note: This is considered an abatement method but is included here for completeness.) Paving shall be either asphalt or concrete pavers. The location and type of paving should be indicated on the landscape plan.

When using asphalt, excavate areas to be paved and remove excess material. Apply 4"–6" of crushed aggregate to excavated areas and grade to achieve proper pitch for water control. Fine grade and power roll for maximum compaction. Apply 2" of asphalt binder course to newly graded areas and power roll application for maximum compaction. Apply 1 1/2" of asphalt finish course to new binder then power roll entire area for maximum compaction. Emulsify and sand all joints upon completion for proper adhesion. Final grade is to have a minimum pitch of 2% across the surface to ensure that water will not puddle or flow toward the foundation.

For concrete pavers, the subgrade shall consist of a 4" compacted gravel sub base covered by landscape fabric and a 2" setting bed of crushed stone screenings. Install the pavers "hand tight" to achieve uniform joints of approximately 1/8" between pavers. Sweep joints with stone dust. Use edge restraints to prevent lateral creep by sand and pavers. Edge restraints may be plastic, steel, or concrete.

2. Products and Materials

A notice regarding products and materials should be included in a specification in order to ensure that a quality product is received. There is a wide range of quality among landscape materials.

All new soils and other materials incorporated into the work should meet local standards for lead, oil, and other substances. New materials include but are not limited to play sand, topsoil, fills, gravel, wood, safety surfacing, bark mulch, etc. Reserve the right at any time to test for lead and other hazardous substances (such as arsenic and cadmium). Levels of contamination should not exceed acceptable limits for exposure for the different soil categories as outlined by EPA or state regulatory authorities. If levels are found to be unacceptable through testing, the contractor should completely excavate, remove, and dispose of said materials off-site in a safe and legal manner and replace with clean materials at his/her own expense. All related work necessary to restore disturbed areas shall also be at the contractor's expense. This provision should apply to all new soils and other materials trucked to the site from other sources. A sample products and materials list is shown below.

Asphalt. Asphalt shall be comprised of crushed aggregate, asphalt binder, and asphalt finish.

Bark mulch. Bark mulch shall be tree bark from pine, hemlock or equivalent, aged a minimum of 6 months and no more than 18 months. The bark shall be shredded so that the resulting pieces are no more than 1/4" thick and no longer than 2". The mulch shall be free of stringy material and shall not contain an excess of fine particles. The mulch shall be deep brown in color, free of leaves, twigs, sod, weeds, shavings, and other foreign materials injurious to healthy plant growth.

Concrete pavers. Pavers shall be 2" thick concrete pavers. Pavers are available in various sizes (12" x 12", 6" x 9", 6" x 6", etc.), colors and shapes. Plan should specify color, shape, and size.

Edging. The edge restraints used shall be of three types: 1) the rolled plastic type; 2) 1" x 4" ACQ (Alkaline Copper Quaternary) pressure-treated wood furring strips anchored with 18' long stakes secured to the edging with 1 1/4" galvanized exterior wood screws; or 3) a paving edge restraint system installed per manufacturer's specifications.

Fertilizer. Fertilizer shall be complete fertilizer in granular form with 10-20-10 analysis. Apply to grass seeded areas at a rate of 2.5 – 5 pounds per 1000 square feet.

Gravel. Gravel shall be 3/4" crushed stone.

Landscape fabric. Landscape fabric shall be water permeable.

Landscape timbers. Landscape timbers shall be 6" x 6" x 8' or 6" x 8" x 8' pressure-treated ACQ timbers to retention 40/CCA guarantee for 40 years.

Lawn seed. Lawn seed shall be a triplex general or equivalent Kentucky bluegrass, chewings fescue, perennial rye grass mix. Apply at a rate of 5 pounds per 1000 square feet.

Lime. Lime shall consist of dolomitic limestones in granular form. Apply at a rate of 25 pounds per 1000 square feet.

Concrete pavers. Pavers shall be 12" x 12" concrete pavers or equivalent, in brick or tan as per Section I, Paving.

Pea gravel. Pea gravel shall be a combination of salmon, buff, and off white in color and between 3/4" and 3/8" in size. Gravel shall be free of loam, clay, vegetable matter, and elongated pieces of rock.

Plant materials. All plant material shall conform to the current issue of the American Standard for Nursery Stock (as of 2012, this was ANSI Z60.1–2004), published by the American Nursery & Landscape Association (www.anla.org). All plant materials shall be balled and burlapped, container grown, or nursery grown in areas with climatic conditions similar to those in the project area. Consult local garden center or nursery to develop a list of readily available and appropriate plant materials for your area. Include this plant list as part of the specification.

Sod. Sod shall be improved varieties Kentucky bluegrass, red fescue mix. Sod shall be harvested, delivered and installed within 24 hours. Keep cool and moist.

Soil additives. Additives shall consist of rock phosphate 0-4-0 or equivalent at a rate of 2 pounds per 100 square feet, and organic composted cow manure 1-1-1 or equivalent, at a rate of two 40 pounds bags per 100 square feet.

Topsoil (loam). The material to be furnished shall consist of screened loose, friable, fine sandy loam, or sandy loam, and should be free of subsoil, refuse, stumps, roots, rocks, cobbles, stones, brush, noxious weeds, litter, and other materials which are larger than 1" in any dimension. Organic matter shall constitute at least 5 percent and no more than 20 percent of the loam as determined by loss-on-ignition of oven dried samples (unless otherwise specified). The loam's pH range shall be 5.5 to 7.6. All new topsoil shall not exceed 200 ppm for lead.

References

ANSI Z60.1-2004. *American Standard for Nursery Stock*. American Nursery & Landscape Association, Washington, DC. 2004. ISBN 1-890148-06-7. Approved by the American National Standards Institute (<http://www.ansi.org>). <http://www.anla.org/docs/About%20ANLA/Industry%20Resources/ANLAStandard2004.pdf>

EPA, 2001a. U.S. Environmental Protection Agency, *Lead safe Yards: Developing and Implementing a Monitoring, Assessment, and Outreach Program for Your Community*, EPA. National Risk Management Laboratory, Office of Research and Development, Cincinnati, Ohio, January 2001 (EPA/625/R-00/012). <http://www.epa.gov/region1/leadsafe/tool2.html>