



Arboriculture Specifications for Existing Tree Root Compaction Reduction:

- 9.0 Radial trenching
- 10.0 Vertical mulching
- 11.0 Tree root collar excavation

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9.0 Radial Trenching Procedure Soil compaction reduction for existing tree root zones through soil replacement with STALITE *PermaTill*® expanded slate aggregates for available root zone areas beneath the tree canopy from drip-line to drip-line:

9.1 Remove all materials, equipment and debris from the soil surface of these areas.

9.2 Identify any subsurface irrigation lines, utility lines or other obstacles within 24 inches of the soil surface and plan to avoid these during the procedure.

9.3 From the perspective of a top view looking down on the tree and its available root zone from drip-line to drip-line, plan to locate the trenches in a star or wheel spoke pattern, starting from 1-2 feet outside of the edge of the drip-line and working toward the trunk of the tree.

9.4 Using the pattern described above, allowing 8-10 feet between the start of each trench at the edge of the drip-line for large trees (30 inch DBH or larger) and less distance between the start of the trenches for smaller trees (less than 30 inch DBH) proportionate to their trunk diameter down to no less than 2-3 feet between the start of the trenches, prepare trenches at least 6-8 inches in diameter and 16-18 inches in depth. As you “trench” toward the trunk of the tree, pay close attention to the diameter of any roots being severed and stop when you encounter roots 1 inch in diameter or larger. The ideal and preferred tool recommended for this procedure is an air spade to avoid severance of and minimize injury to roots, but the procedure could also be performed with a trenching machine, shovel or mattock.

9.5 After creation of the trenches and especially if an air spade was not used, identify any severed roots between ¼ to 1 inch in diameter and use a sharp bladed hand pruning tool to make a cut behind the severed or shredded area back in to the wall of the trench.

9.6 Fill the bottom one half of the trenches with Stalite ¾ inch to 3/8 inch Expanded Slate Aggregate and lightly tamp to enable the particles to lock together to create pore spaces in between.

9.7 Repeat the above procedure for the upper one half of the trenches and allow 3-4 inches beneath the soil surface to, depending on the desired or specified finished appearance, distribute a well draining soil for turf seeding or sodding, or distribution of a layer not to exceed 6-8 inches of organic mulch, or, if turf or mulch is not desired or specified, fill to the soil surface with the Stalite Aggregate.

9.8 Remove the poor quality and/or compacted soil which had been in the areas where the trenches were created from the site and finish the available root zone areas beneath the canopy of the tree as desired or specified, preferably or ideally with a layer of organic mulch not to exceed 6-8 inches in depth.

OPTIONAL CONSIDERATIONS

9.9 As part of Procedures 9.6 and 9.7, apply Mycorrhizal Fungi in granulated or liquid form as specified by the product brand you choose to enhance new root development.

9.10 Additionally, same as above Procedure 9.9 – Apply a granulated or liquid fertilizer product having an analysis of 3-1-1 (Nitrogen-Phosphorus-Potassium) and at least 50% of the Nitrogen source as W.I.N. (Water Insoluble Nitrogen) or slow release and long residual as specified by the product brand you choose to replenish macronutrient levels for use by future root development.

10.0 Vertical Mulching Procedure Soil compaction reduction for existing tree root zones through soil replacement with STALITE *PermaTill*® expanded slate aggregates

for available root zone areas beneath the tree canopy from drip-line to drip-line:

10.1 Remove all materials, equipment and debris from the soil surface of these areas.

10.2 Identify any subsurface irrigation lines, utility lines or other obstacles within 24 inches of the soil surface and plan to avoid these during the procedure.

10.3 From the perspective of a top view looking down on the tree and its available root zone from drip-line to drip-line, plan to locate holes in a grid pattern over the entire available root zone area from the edge of the drip-line in to within 1-2 feet of the trunk.

10.4 Using the pattern as described above, prepare holes at least 2 inches in diameter, 16-18 inches in depth and 18-24 inches apart. The ideal and preferred tools for this procedure are a gas or electric powered drill with an earth auger at least 2 inches in depth and at least 18-24 inches in length. Other less efficient tools to perform this procedure could be a manually powered soil auger or a mattock, but the soil must be removed from the holes. Otherwise, performing the procedure incorrectly will further compact the soil.

10.5 After creating the holes in the root zone areas as described above, fill them completely and entirely with only PermaTill 3/8 inch Expanded Slate Aggregate, also available in 40 pound bags. Do not mix the PermaTill with the soil just removed from the holes or use any of the original soil for back filling, this exercise would be inefficient and subject the root zone to recompaction.

10.6 Remove the soil extracted during Procedure 10.4 above from the site or root zone area. There is no need to top dress the root zone area, the small diameter holes will close up in time, and avoid distribution of soil over the holes which will block air movement for the benefit of the newly developing roots. Distribution of a layer of organic mulch not to exceed 6-8 inches over top of the holes and the root zone area would be advisable.

OPTIONAL CONSIDERATIONS

10.7 As part of Procedure 10.5 above, apply Mycorrhizal Fungi in granulated or liquid form as specified to enhance new root development.

10.8 Additionally, same as Procedure 10.7 above – Apply a granulated or liquid fertilizer product having an analysis of 3-1-1 (Nitrogen-Phosphorus-Potassium) and at least 50% of the Nitrogen source being W.I.N. (Water Insoluble Nitrogen) or slow release and long residual as specified to replenish macronutrient levels for use by future root development.

Root Collar Excavation

Introduction:

It has been documented by arboricultural research over the past 20 or more years that excessive soil, mulch or vegetation covering the sensitive root area known as the root collar at the base of established or newly planted trees will lead to disorders such as root rot, stem cankering or invasive pests and eventually decline and death. Root collars can be “buried” as they are grown in nurseries or tree farms before they are even transplanted, during the transplanting procedure if installed below the soil surface level, during maintenance practices after planting (i.e., mulch “volcanoes”), when flower or ornamental beds are installed around the base of an established tree, or piling of backfill soil at the base of native or established tree trunks during construction projects. Astute Landscape Professionals and Arborists now recognize this phenomenon and routinely perform what have become known as “Root Collar Excavations”.

Depending on the size of the base of the tree, the depth of the “burial” and the amount of excavation necessary to expose the original root flares, trenches of varying widths and depths result. These holes or pits then become tripping hazards or subject to re-filling from erosion over time and returning the tree to the risks of decline and death from disorders as mentioned above. Root collar excavations are best performed by an air spade tool to efficiently remove the excessive soil, mulch or vegetation without damaging the sensitive under bark of the lower stem or viable feeding roots in the area. When done manually without an air spade; shovels, trowels, Mason’s hammers and brushes are used with care.

11.0 Backfilling Trenches Created by Root Collar Excavation at the trunk bases of existing trees with STALITE *PermaTill*® expanded slate aggregates:

11.1 After Root Collar Excavations resulting in trenches as described above, especially if the size or depth of the trench has created a hazard, is unsightly to the owner of the tree or poses the risk of re-fill from erosion – Backfill with Stalite ¾ inch to 3/8 inch Expanded Slate Aggregate the entire volume of the trench, hole or pit from the edge away from the tree trunk to the trunk of the tree and to the original soil surface level.

11.2 Lightly tamp or compress to lock the aggregates in to place to properly create pore spaces for air movement.

11.3 Absolutely do not distribute the materials just excavated over top of the Stalite Aggregate or any poorly draining material which will restrict air movement. If a top dressing is desired or specified, distribute a layer of organic mulch not to exceed 6-8 inches. If the excavated area is large and turf must be placed on top, do so only with a sandy, well draining soil base for the seed or sod.

11.4 Remove the excavated materials from the site or root collar area to prevent erosion back down in to the excavated areas.

NOTE: Use of the Stalite Expanded Slate Aggregate for the backfilling procedure as described above is critical for short and long term success of the project. It will prevent erosion /compaction of materials in the excavated areas, allow for the aeration and drainage to reduce the risk of previously mentioned disorders, reduce the hazard potential for accidents, and create an aesthetically pleasing finished appearance.