

**DIVISION VIII
LANDSCAPING AND RESTORATION**

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**DIVISION VIII
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1. LANDSCAPING

1A. Staking Proposed Planting And Transplanting Locations

The Contractor shall field stake proposed locations of all plant material for the Public Services Director's approval prior to transplanting or planting. The requirement of tree staking may be waived at the discretion of the City Forester. The Contractor shall schedule the work and arrange bi-weekly site meetings with the Public Services Director for the purpose of reviewing work which has taken place in the prior two weeks and approval of the staking for the next two weeks. The Contractor shall notify the Public Services Director in writing at least one week prior to the desired date for inspection of staking.

The Contractor shall accurately field stake proposed locations of plant material according to the Plans. Stakes shall be 18-24 inches high above grade and painted a different color for each type of plant material, i.e., evergreen tree, canopy tree, flowering tree, shrubs. Stakes shall also be labeled as to the specific species of each plant, using standard species abbreviations or as shown on the Plans.

Minor changes and deviations from the Plans or staking may be required by the Public Services Director, and shall be done by the Contractor before such affected work other than staking is started, at no additional cost to the City.

1B. Planting Operations

Tree pits, trenches and beds shall be excavated as shown on the Plans, and shall be at least 1-1/2 times the size of the root ball. Soil dug from pits, trenches, and beds shall be disposed of by the Contractor, at the Contractor's expense, and shall not be used in the planting mixture unless specifically authorized by the Public Services Director.

The sides and bottoms of all planting beds, trenches and pits shall be scarified and shall receive a minimum of 6" of topsoil.

The Contractor shall plant to correct grade and alignment, all plants such that when settled, they will bear the same relation to finish grade as they did before being transplanted. No filling will be permitted around trunks or stems before or after settling.

All non-biodegradable materials shall be removed from the root balls prior to planting. Burlap and string shall be removed from the top half of the root ball only.

When plants have been properly set, the pits, trenches and beds shall be backfilled with the planting mixture as specified in **Division III, Materials** of these Specifications, and shall be gradually filled, tamped and settled with water. No frozen or muddy soil shall be used for backfilling. A ridge or ring of soil shall be formed around the edge of each plant to hold water.

The Contractor shall make adjustments to the location of plants as directed by the Public Services Director.

All plantings shall be mulched with a 3-4 inch thick cover of shredded bark mulch. This includes all tree pits, hedgerows and beds, unless otherwise indicated on the Plans or directed by the Public Services Director.

All plantings shall be thoroughly watered after planting.

As part of the planting process, all trees and shrubs shall be pruned and shall have injuries repaired. Pruning shall be limited to the minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots from transplanting. Pruning shall be performed so as not to change the natural habit or shape of the plant, and as directed by the Public Services Director. All cuts shall be made flush, leaving no stubs.

Guying and staking shall be performed immediately after planting. Trees up to and including 2" caliper shall be staked with 2 stakes. Trees between 2" and 4" caliper shall be staked with 3 stakes. Trees of 4" or larger caliper shall be guyed with 3 guys. The Contractor shall maintain all guys and stakes until the end of the guarantee period.

The trunks of all deciduous trees taller than eight feet shall be wrapped with tree wrap from the first branch down to the ground, and secured at every second wrap.

Where shown on the Plans, edging shall be installed in straight lines and smooth curves with the top of edging flush with surrounding grades. Layout of the edging shall be approved by the Public Services Director prior to installation.

All planting areas shall be raked and left in a completed and finished condition.

1C. Transplanting Operations

Trees to be moved with a "Vermeer Spade" (or other approved tree mover) are limited to the following sizes:

- 30" Vermeer - 3" caliper trees maximum
- 44" Vermeer - 4-1/2" caliper trees maximum
- 50" Vermeer - 5" caliper trees maximum
- 65" Vermeer - 6-1/2" caliper trees maximum
- 78" Vermeer - 8" caliper trees maximum
- 90" Vermeer - 9" caliper trees maximum

A slurry of peat moss and bonemeal shall be placed in each tree hole prior to planting. The slurry shall be mixed on-site as follows:

- 30" Vermeer: 1 cubic foot of peat, 1/2 pound bonemeal, 5 gallons water
- 44" Vermeer: 2 cubic feet of peat, 1 pound bonemeal, 10 gallons water
- 50" and 65" Vermeer: 3 cubic feet of peat, 1-1/2 pounds bonemeal, 15 gallons water
- 78" and 90" Vermeer: 4 cubic feet of peat, 2 pounds bonemeal, 20 gallons of water

The holes excavated to accept trees to be moved with a tree mover shall be the same size (diameter and depth) as the root plug of the tree to be moved, except as noted below. Excess soil dug from pits, trenches, and beds shall be disposed of by the Contractor at the Contractor's expense.

When, in the opinion of the Public Services Director, undesirable sub-soil, rock, gravel, or heavy clay with less

than 4% organic materials occur within an excavation for a new planting, the tree hole shall be excavated a minimum of 2 feet larger diameter (wider and deeper) than the "Vermeer Spade" used. The hole shall then be scarified and backfilled with the backfill mixture specified in **Division III, Materials**. No frozen or muddy soil shall be used in backfilling.

The Contractor has the option to hand dig and transplant plant materials by conventional balled and burlapped methods. The Contractor shall submit proposed methods in writing to the Public Services Director for approval.

The Contractor shall plant to correct grade and alignment, all plants such that when settled, they will bear the same relation to finish grade as they did before being transplanted. No filling will be permitted around trunks or stems before or after settling. All broken or frayed roots shall be pruned off. A ring or ridge of soil shall be formed around the edge of each plant to hold water.

Guying and staking shall be performed immediately after planting. Trees up to and including 2" caliper shall be staked with 2 stakes. Trees between 2" and 4" caliper shall be staked with 3 stakes. Trees of 4" or larger caliper shall be guyed with 3 guys. The Contractor shall maintain all guys and stakes until the end of the guarantee period.

The trunks of all deciduous trees taller than eight feet shall be wrapped with tree wrap from the first branch down to the ground, and secured at every second wrap.

Where shown on the Plans, edging shall be installed in straight lines and smooth curves with the top of edging flush with surrounding grades. Layout of the edging shall be approved by the Public Services Director prior to installation.

All plantings shall be mulched with a 3-4 inch thick layer of shredded bark mulch.

Upon completion of planting, all transplants (or plants) shall have been pruned and injuries repaired. Pruning shall be limited to the minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots from transplanting. Pruning shall be performed so as not to change the natural habit or shape of the plant and as directed by the Public Services Director. All cuts shall be made flush with the branch collar, leaving no stubs.

All holes resulting from the removal of transplants shall be backfilled and compacted with approved soil.

All plantings shall be thoroughly watered after planting.

All planting areas shall be raked and left in a completed and finished condition.

1D. Protection and Maintenance

The Contractor is responsible to maintain the work throughout the guarantee period. During this period, the Contractor shall perform maintenance at least once every two weeks during the growing season, and more if necessary to keep all plantings in a thriving condition.

The Contractor shall notify the Public Services Director at least two working days prior to each maintenance trip and shall send a written report to the Public Services Director detailing what maintenance was performed within two days after each maintenance trip.

The Contractor shall protect all plants, lawns, existing paving, curbs, sidewalks, and all surface and subsurface features within the project limits from damage at all times. Any damage by the Contractor shall be replaced or remedied by the Contractor at the Contractor's expense to the satisfaction of the Public Services Director.

All plant material not installed (or not to be installed) within 24 hours of delivery to the site shall be "healed-in" to protect bare root stock and shall be staked and watered as necessary.

Maintenance of plants shall include but not be limited to; pruning; cultivating; weeding; watering; fertilizing; keeping guying and staking taut and trees erect; raising and/or adjusting trees that list or that settle below grade; and furnishing and applying such sprays and other treatments as necessary to keep all plantings free of insects and diseases.

The Contractor shall water trees, shrubs and ground cover at least twice each month from May 15 to September 25, or as directed by the Public Services Director. Watering shall be performed using the probe method as described in MDOT Specification Section 6.50.11.

The Contractor shall maintain all planting beds and tree saucers free from weeds, to the satisfaction of the Public Services Director.

The Contractor shall apply sprays and treatments as necessary for scale insects, leaf eating insects, and fireblight control. These shall be applied in accordance with the manufacturer's recommendations, and in accordance with the City Pesticide Ordinance.

The Contractor shall refertilize in accordance with MDOT Specification Section 6.50.11, and as follows. Provide fertilizer as necessary in the 1st and 2nd waterings of the second growing season with a nitrogen enriched solution providing 8.3 lbs. available nitrogen per 1000 gallons water, and with sufficient phosphorous to promote root growth.

Application of herbicides, pesticides and fertilizers in wetlands, watercourses and buffer areas shall meet the requirements of the City Wetlands and Watercourses Preservation Ordinance.

The Contractor shall adjust trees and shrubs to keep them erect, and shall raise trees and shrubs that settle below grade back to the proper elevation.

The Contractor shall maintain tree wrap in a neat condition, and shall remove all tree wrap at the completion of the guarantee period unless otherwise directed by the Public Services Director.

The Contractor shall prune dead or broken branches from all deciduous trees and shrubs during the guarantee period. All cuts shall be made flush, leaving no stubs.

The Contractor shall maintain areas around all plantings, and areas where trees have been removed, such that the grades are maintained. This shall include filling all settled areas and reseeding or resodding as necessary throughout the guarantee period.

The Contractor shall perform winter protection including late fall spraying of all evergreen trees and evergreen shrubs with Foligard, Wilt-Pruf or approved equal at the manufacturer's recommended rate to prevent winter desiccation. This shall also include late fall watering of all plantings as directed by the Public Services Director.

1E. Guarantee

The Contractor shall guarantee all furnished plant material for a minimum of one year, or more as may be specified on the Plans or in the Detailed Specifications, from the date of preliminary acceptance. The guarantee shall provide for the furnishing of new plants as well as all necessary labor and material for their installation. Replacement plantings shall meet or exceed all requirements for plant material quality as specified elsewhere herein.

The Contractor shall not be responsible for damages or loss of plantings after preliminary acceptance caused by fire, flood, lightning storms, freezing rains, winds over 60 miles per hour, or vandalism.

Inspections for both preliminary and final acceptance of the plantings shall be made jointly by the Contractor and the Public Services Director at the completion of planting and at the end of the guarantee period. All plants not in a healthy growing condition shall be removed and replaced with plants of like kind, size, and quality as originally specified, before the close of the current or next planting season at the Contractor's expense.

At the end of the guarantee period, the Contractor may be required to remove all guy staking, wrapping, and saucers from the site.

1F. Acceptance

At the completion of planting and transplanting, preliminary acceptance will be made by the Public Services Director provided all requirements of the Specifications have been fulfilled.

At the end of the maintenance and guarantee period(s), final acceptance will be made by the Public Services Director provided all requirements of the Specifications have been fulfilled.

2. RESTORATION

2A. General

The Contractor shall permanently prepare, fertilize and sod or seed, the areas specified on the Plans and all areas disturbed by the Contractor. Where not specified on the Plans, sod shall be placed on areas having a slope of 1:3 (vertical to horizontal) or steeper, and grass seed shall be placed on areas having a slope flatter than 1:3. Sod may be placed in other areas at the Contractor's option and expense.

Topsoil shall be placed on top of the finished subgrade to a settled depth of four inches, and shall meet the final grades indicated on the Plans or directed by the Public Services Director. The topsoil shall be raked until there is a smooth, even surface free from clay balls, stones, roots, sod clumps, and any other debris over two inches in diameter.

Fertilizer as specified in **Division III, Materials** shall be spread evenly with a mechanical spreader such that the fertilizer will be thoroughly incorporated into the topsoil to a depth of two inches. For areas to be sodded, the fertilizer shall be placed at a rate of 10 lbs. per thousand square feet; for areas to be seeded, the rate shall be 20 lbs. per thousand square feet.

2B. Sodding

Before cutting the sod, the grass shall be cut to leave a length of 3 to 4 inches above the surface of the ground. The sod shall be cut to such a thickness that after it has been transported and placed on the prepared bed, but before it has been compacted, it shall have a uniform thickness of not less than 2 inches. The sod shall be cut in strips of a uniform width, not less than 10 inches, and in lengths of not less than 18 inches.

The sod shall be moist and shall be placed on a moist earth bed. Sod shall be laid within 24 hours after cutting and shall be properly protected until placed. The sod shall be carefully placed by hand in rows at right angles to the slopes, commencing at the base of the area to be sodded and working upward. Pitch forks shall not be used to handle sod, and dumping from vehicles will not be permitted. The bottom edge of sodded areas shall extend at least 2 inches into the ground or ditch bottom. All other edges of sodded areas shall be turned into the ground and covered with a layer of topsoil at least 2 inches in depth, which shall be thoroughly compacted so as to conduct the surface water over the edge of the sod. The transverse joints of sod strips shall be broken and the sod carefully laid to produce tight joints. All spaces between sod strips shall be filled with top soil. When the sod may be displaced during sodding operations, the workmen shall work from ladders or treaded planks. The sod shall be firmly compacted by tamping with an approved tamper immediately after it is placed. After tamping, the sod shall present a smooth, even surface free from bumps and depressions.

On slopes steeper than 1 vertical to 3 horizontal, the sod shall be pegged with wooden pegs or wire stakes. Wooden pegs shall be at least 12 inches long and have a cross-sectional area of not less than three-fourths square inches. The pegs shall be spaced not over 2 feet apart in any direction and shall be driven flush with the surface of the sod. Wire stakes shall be driven into the ground at right angles to the surface of the sod so that the head of the stake is flush with the surface of the sod.

Sod which washes out when it has not been properly pegged or for other reasons attributable to the Contractor's activities or failure to take proper precautions, shall be replaced by the Contractor at the Contractor's expense.

The Contractor shall have equipment for watering available when sod is being placed during the period from June 1 to August 15. The sod beds and sodded areas shall be sprinkled at the locations and in the amount directed by the Public Services Director. Sodding may be suspended during a drought when directed by the Public Services Director. Frozen sod shall not be placed, nor shall any sod be placed upon frozen soil.

The sodded area shall be kept moist for three weeks by the Contractor. At the end of that period, the Public Services Director will accept the work if the roots of the sod are firmly knit to the soil base.

2C. Seeding and Mulching

The approved dates for seeding are from April 1 to May 15, and from August 15 to September 15. The Contractor must make every effort to seed within these dates.

Seed shall be sown following or in conjunction with the fertilizer application and while the seed bed is in a friable condition. Seeds shall not be sown through mulch.

Grass seed as specified shall be evenly sown at the rate of four pounds per thousand square feet and lightly worked into surface using a mechanical seeder such as a lawn maker or brillion. Areas in which visual inspection fails to reveal an average of two seeds or greater per square inch shall be resown by the Contractor at the Contractor's expense.

The seed shall be covered to a depth of approximately 1/4-inch immediately following sowing or by use of a cultipacker or approved similar equipment in one operation.

Seeded areas shall be covered with a loosely applied layer of clean grain-free straw at the rate of two tons per acre; or 3,000 pounds of straw treated with 100 gallons of asphalt emulsion per acre. The emulsion shall be uniformly distributed through the straw in such manner that the asphalt will not drift to buildings, vehicles or other property. The Contractor is liable for all damages which may occur from this activity and will take all necessary corrective action.

The Contractor shall be responsible for providing barricading (snow fence or the like) as necessary in high traffic areas until such time as the turf has fully established. At the Contractor's option and expense, high traffic areas may be sodded to facilitate turf establishment.

2D. Maintenance and Acceptance

It is the responsibility of the Contractor to establish a dense lawn of permanent grasses, free from mounds and depressions. Any portion of a sodded area that "browns-out" or does not firmly knit to the soil base, or any portion of a seeded area that fails to show a uniform germination, shall be resodded or reseeded. Such resodding or reseeding shall be at the Contractor's expense and shall continue until a dense lawn is established.

The Contractor shall maintain all lawn areas until they have been accepted by the Public Services Director. Lawn maintenance shall begin immediately after the grass seed or sod is in place and continue until provisional acceptance with the following requirements:

Lawns shall be protected and maintained by watering, mowing, and reseeding as necessary for at least thirty days or longer as necessary to establish a uniform weed-free stand of the specified grasses and until specific lawn acceptance has been made. Maintenance includes deposition of additional topsoil and resodding as may be required to correct all settlement and erosion until the date of final acceptance.

At the time of the first cutting the lawn shall be 2-1/2 to 3-1/2 inches high, and the mower blades shall be set at 2-1/2 inches high. All lawns shall receive at least three mowings, with a minimum of 1 week between mowings, before acceptance.

Damage to seeded areas resulting from erosion shall be repaired by the Contractor at the Contractor's expense. Scattered bare spots in seeded areas will not be allowed over three (3) percent of the area nor greater than 6"x6" in size.

When the above requirements have been fulfilled, the Public Services Director will accept the lawn.

2E. Clean-Up

All surplus materials furnished by the Contractor, tools, temporary structures, dirt, rubbish and excess excavated earth shall be removed from the site by the Contractor. The construction site shall be left clean by the Contractor to the satisfaction of the Public Services Director.

3. CHAIN LINK FENCE INSTALLATION

3A. General

Fence installation shall be in accordance with ASTM F567, except as modified herein. The fence shall be installed at the height indicated on the Plans.

All vinyl coated materials shall be handled with care. Any damage to the vinyl coating shall be repaired by the Contractor to the satisfaction of the Public Services Director, or at the Public Services Director's direction the damaged item(s) shall be replaced by the Contractor, all at the Contractor's expense.

The fence shall be stepped at all grade changes.

3B. Framework

Terminal, turning, gate, and line posts shall be set plumb in concrete footings as indicated on the Details. Plumb shall mean one inch in six feet. The top of the concrete footing shall be 2" above the adjacent finish grade, and shall be sloped so as to direct water away from the post. Terminal, turning, and gate posts shall be braced back to adjacent line posts with horizontal brace rails and diagonal truss rods.

The top rail shall be installed through the line post loop caps, and fastened at the terminal posts. Sections shall be connected with sleeves to form a continuous rail between terminal posts. The sleeves shall be spaced 20' center-to-center, with every fifth sleeve containing a heavy spring to take up expansion and contraction of the top rail.

The middle and bottom rails shall be joined to the line posts with boulevard clamps. The brace rails and truss rods shall be installed and adjusted prior to the stretching of the fabric.

3C. Tension Wire

A top and bottom tension wire shall be provided, and stretched between the terminal, turning, and gate posts, 6" above the finish grade (bottom wire), and threaded through the top row of the fabric diamonds (top wire). They shall be securely fastened to the outside of all line and terminal posts. The top and/or bottom tension wire may be omitted when a top or bottom rail is provided, respectively, unless otherwise specified.

3D. Fabric

The fabric shall be pulled taut to provide a smooth, uniform appearance, free from sag. The bottom selvage shall be 2" above the finish grade. The fabric shall be fastened to the terminal, turning, and gate posts with tension bars threaded through the fabric and secured with tension bands at maximum 15" intervals, including one at the top and bottom of the fabric. The fabric shall also be tied to the line posts with tie wires spaced at maximum 12" intervals, including one at the top and bottom of the fabric. The fabric shall be tied to all horizontal rails with tie wires spaced at maximum 24" intervals. The fabric shall be attached to the bottom tension wire (if applicable) with hog rings at maximum 24" intervals.

3E. Fasteners

Nuts for fittings, bands and hardware bolts shall be installed on the inside of the fence. The ends of the bolts shall be peened, or the threads scored, to prevent their removal.

3F. Gates

Gates shall be hung and adjusted to operate properly. The bottom of the gate frame shall be 2" above the finish grade. The top of the gate shall align with the top rail of the fence.

3G. Condition of Finished Fence

The finished fence shall be substantially true to line, taut, and solid at all points. All surplus excavated material and other debris resulting from the construction shall be disposed of as specified in **2E. Clean-Up** of this division.