

**STANDARD CONSTRUCTION SPECIFICATIONS
LANDSCAPING IMPROVEMENTS
DIVISION 75
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**STANDARD CONSTRUCTION SPECIFICATIONS FOR
LANDSCAPING IMPROVEMENTS
DIVISION 75**

SECTION 75.01 GENERAL

Article 1.1 Scope of Work

The Work covered by these Specifications consists of providing all plants, labor, equipment, supplies, material, transportation, handling and storage, and performing all operations in connection with the construction of the landscaping improvements as provided for in this Division.

Article 1.2 Glossary of Terms

Reference the following for terminology

Appendix A. - *American National Standards for Nursery Stock, ANSI Z60.1*, latest edition. American Nursery and Landscape Association, 1250 I Street N.W., Suite 500, Washington, D.C., 20005.

Plant Establishment Period – From Acceptance of Initial Planting Operations the Contractor shall be responsible for maintaining the accepted plantings for one year. During the Plant Establishment Period, the Contractor shall also, upon receipt of written notification by the Engineer, repair or replace damaged trees, shrubs, and perennials.

Propagule – A structure with the capacity to give rise to a new plant, for example a seed, a spore, or a part of the vegetative body capable of independent growth if detached from the parent.

Article 1.3 Payment - General

Payment for all Work (including the Plant Establishment Period) included in this Division shall be paid for in accordance with the Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described.

SECTION 75.02 LANDSCAPING

Article 2.1 General

A. Scope of Work

The work under this Section consists of providing all operations pertaining to the planting and maintenance of trees, shrubs, ground cover, perennials and annuals. The Work shall also include all operations pertaining to removing and replacing trees and protecting existing trees in place.

B. Agency Standards: Nomenclature

All operations shall meet industry consensus on the planting and care operations and all plant materials used shall be true to name and size in conformity with the following standards:

1. *American Standard for Nursery Stock*, ANSI Z60.1 American Nursery and Landscape Association, Washington, D.C., latest edition.
2. *Sunset New Western Garden Book*, Lane Publishing Company, Menlo Park, California, latest edition.
3. *Landscape Plants for Alaska*, University of Alaska Fairbanks Cooperative Extension Publication, latest edition.
4. *ANSI Standard A300 – American National Standards for Tree Care Operations – Tree, Shrub, and other Woody Plant Maintenance – Standard Practices*. American National Standards Institute, New York, New York, latest edition.
5. *ANSI Standard Z133 – Safety Requirements for Arboriculture American National Standard for Tree Care Operations*. American National Standards Institute, New York, New York.
6. *Manual of Woody Landscape Plants*, Michael A. Dirr, Stipes Publishing, LLC, 5th Edition, Champaign, Illinois.

C. Definition

The term "planting areas" as used in this Specification, shall mean all areas to be planted with trees, shrubs, ground cover, annuals, perennials, bulbs, native plant materials and/or seeded areas.

Article 2.2 Materials

A. Plant Materials

1. Plant Schedule

A complete schedule of plants, including names, quantities, sizes, and other requirements, is shown on the Landscape Drawings. The Contractor shall furnish a report listing the proposed sources of the plants and location grown. In the event of plant count discrepancy between the Plant Schedule and the plants counted on the Drawings, the Drawings shall prevail. Discrepancies between the quantity shown on the Plant Schedule and those required by the Drawing shall not entitle the Contractor to claim any additional compensation, nor relieve him of the obligation to complete the Work shown on the Drawings.

No substitutes shall be accepted, except with the written permission of the Engineer. The Contractor shall submit all substitution requests, noting the source of plants, location, size, and condition, within thirty (30) days of receiving the Notice to Proceed. Substitutes shall be inspected by the Engineer prior to installation.

Each plant shall have a durable legible label with plant size and name (genus, species, variety, cultivar) securely attached when delivered and in place until after acceptance. Labels shall not girdle or damage plants. Contractor shall remove label from plant material at time of acceptance.

2. Plant Quality

a. Species and Culture

All plants shall be true to species and variety specified and in accordance with the American Standard for Nursery Stock and good horticultural practices.

Plants shall be so trained in development and appearance as to be compact and symmetrical. They shall be sound, healthy, vigorous, well-branched, and densely foliated when in leaf. Plants shall be free of disease and insect adults, eggs, pupa, or larvae. They shall have healthy, well developed root systems and shall be free from physical damage or other conditions that would prevent growth.

All plant material shall be free of contamination by any plant not specified, including non-native invasive plants, seeds, and plant parts.

b. Tree Trunk Specifications

Tree trunks shall be straight and well-tapered. Trees with multiple leaders, unless specified, will be rejected. Damaged, cut, or crooked leaders; included bark, bark abrasions, sunscald, disfiguring knots, mold, and prematurely opened buds, or cut limbs over three-quarter inch (3/4") diameter that are not completely callused are cause for rejection.

Trunk diameter and taper shall be sufficient so that tree remains vertical without support.

c. Crown Configuration Specification

Crown ratio (distance from bottom of canopy to tree top/tree height) should be at least sixty-six percent (66%) of total tree height.

One-half (1/2) or more of the foliage should be on branches originating on the lower two-thirds (2/3) of the trunk, and one-half (1/2) or less should originate on the upper one third (1/3).

Where formal arrangements of consecutive order of trees are shown, select stock for uniform height, structure, and spread.

d. Branch Specifications

All branches shall be less than two thirds (2/3) the diameter of the trunk measured one inch (1") above the branch.

The attachment of branches shall contain no bark inclusions.

There shall be one dominant leader straight to the top of the tree. Larger branches shall be spaced at least six inches (6") apart and arranged radially and vertically along the stem.

There shall be live buds or foliage to the ends of all twigs.

All pruning cuts shall comply with ANSI A300 Standards and shall be made outside the branch collar and branch bark ridge. Branches shall not be pruned immediately prior to delivery. Needled evergreens shall not have been sheared.

e. Root Flare and Root Ball Specifications

No root in the root ball larger than one-quarter inch (1/4") diameter shall circle more than one-third around the root ball. There shall be no roots in the root ball that make an abrupt turn of ninety degrees (90°) or more. There shall be no roots in the root ball that are 'J' roots, kinked, stem girdling, or potentially stem girdling. For all plants, including bare root, roots shall exhibit healthy, well-branched root systems characteristic of the species with adequate spread.

Roots in ball-in-burlap root balls or in containers shall be well-rooted and uniform throughout soil mix or growth media. Roots shall not be pot bound.

Major roots shall be less than two inches (2") from the top of root flare. The root flare (trunk flare, root collar) shall be at the surface of the root ball (container media). As defined by ANSI Z60.1, root ball depth measurement is from the top of the ball, which in all cases shall begin at the root flare. Soil above the root flare shall not be included in ball depth measurement and should be removed.

Root ball size shall meet ANSI Z60.1.

Nursery Stock root balls shall be of sufficient depth to include absorbing roots. Balls shall be securely wrapped in burlap and tightly bound with rope or twine. Trees may be wire baskets lined with burlap and tightly bound with rope or twine. Balled-in-burlap plants with manufactured balls or container plants that are dry, cracked, or broken before the plant operation will be rejected.

The Engineer reserves the right to inspect root system of trees and shrubs and to reject any material found to be non-compliant.

3. Size and Grading Standards

Plants shall have a standard balance between height, crown spread, diameter and root ball size according to the ANSI Z60.1. All plants shall be typical of their species or variety.

Plants shall conform to the measurements specified except that plants larger than those specified may be used, if approved by the Engineer. If larger plants are approved, the root ball, root spread, or container shall be increased in proportion of the size of the plant.

Caliper measurements shall be taken six inches (6") above the trunk flare for trees up to four inches (4") in caliper, and 12 inches (12") above the trunk flare for trees over four inches (4") in caliper. Plants shall be measured when

branches are in their normal position. If a range of size is given, no plant shall be less than the minimum size, and no less than fifty percent (50%) of the plants shall be as large as the maximum size specified. Plants that meet measurements but do not possess a normal balance between height and spread shall be rejected.

Plants shall not be altered by pruning or other means to meet specifications.

4. Plant Certification

All plants shall comply with State and Federal laws governing the shipping, selling and handling of plant stock and inspection for plant diseases and pest infestations. Plants shall be certified free from disease and infestation and invasive weeds. Any inspection certificates required by law shall accompany each shipment invoiced or order of stock, and on arrival, the certificate shall be filed with the Engineer before acceptance.

5. Delivery, Storage, and Handling

All plants shall be packed, transported, and handled with utmost care to ensure adequate protection against injury or damage to the root ball, and desiccation. Plants must be protected from excessive vibrations. Plants shall not be thrown or bounced off a truck or loader to the ground. Plants shall not be dragged, lifted, or pulled by the trunk or branches in a manner that will damage the branches or loosen the roots in the ball.

Plants material transported in vehicles shall be protected from wind whipping either by use of covered vehicle or secure tarps. Failure to protect plant material during transport to the site will result in rejection of plant material.

6. Inspection

The Engineer shall make periodic inspections prior to and during the installation and maintenance periods of the Work. All plants shall be inspected upon delivery to the job site whereupon the Engineer has the right to reject unacceptable plant material. Should plant materials, installation procedures, or other conditions be observed not in keeping with the Drawings, details, and these Specifications, the Engineer will direct the Contractor to correct by repair, and/or replacement as appropriate. The Engineer shall be the sole judge of the conditions of quality and acceptability and will direct all corrections in writing to the Contractor. All rejected materials shall be immediately removed from the site and replaced with specified materials at no additional cost to the Owner.

B. Mulch

Mulch shall consist of shredded bark mulch, wood chips or rock mulch as specified on the Drawings. Material shall be uniform in size, color, quality and overall appearance. Mulch shall be free of material injurious to plant growth. Sources of mulch should be free of weeds and invasive plant parts or seeds. Sawdust, dirt, garbage, or other debris mixed in the mulch is not acceptable. Contractor shall submit two pounds of proposed mulch for inspection by Engineer.

1. Wood Chips

Wood chips shall consist of wood products having a size of two and one-half inch (2-1/2") minus with a thickness not greater than three-eighths inch (3/8"). Wood chips shall be uniform in overall appearance, color, quality, and size and are subject to approval by the Engineer. Wood chips are to be free of sawdust, dirt, twigs, excessive bark, or any other debris.

2. Shredded Bark Mulch

Shredded bark mulch shall consist of shredded bark and wood. Maximum length of any individual component shall be two inches (2") and a minimum of seventy-five percent (75%) of the mulch shall pass through a one inch (1") screen. Mulch shall be free of invasive weeds, seeds, or propagules. The bark mulch shall have the characteristics of retaining moisture, forming a mat not susceptible to spreading by wind or rain, and providing a good growth medium for plants. Shredded bark mulch may contain up to fifty percent (50%) shredded wood material. Wood chips are not acceptable. Bark mulch containing shredded wood shall be aged a minimum of one year prior to installation. Bark mulch shall be free of soil, rocks, and weeds.

3. Rock Mulch

Rock mulch shall be three to four inch (3" to 4") washed river rock, uniform in size. All fines shall be screened from the aggregate within a one-quarter inch (1/4") tolerance. Rock mulch shall be composed of round rocks that may be varied in color. The material shall be free of organic and inorganic debris and trash.

C. Anti-desiccants

Anti-desiccants shall consist of "Wilt-Pruf" or approved equal.

D. Topsoil

Refer to Section 75.03, Article 3.2 - Materials.

E. Fertilizer/Lime

Refer to Section 75.05, Article 5.2, SubArticles B - Fertilizer and C - Limestone.

F. Water

Water used for the planting, establishment, and all operations of maintenance shall be potable. The water shall be suitable for irrigation, free from substances harmful to plants. The Contractor shall supply a water source unless waived by written authorization from the Engineer.

G. Wood Stakes and Ties

Deciduous Trees: Contractor shall provide two (2) stakes that are six feet (6') in length and are two by two inches (2" x 2") around. Stakes shall be pointed at one end.

Evergreen Trees: Contractor shall provide three (3) stakes that are twenty-four inches (24") in length and are two by two inches (2" x 2") around. Stakes shall be pointed at one end.

Ties: Ties shall be of three-quarter inch (3/4") or wider bands of polypropylene, elasticized or webbed strapping, or horticultural tape. Ties shall have a smooth surface and be flexible to allow some movement of the trunk without damaging the bark.

Article 2.3 Construction

A. Notification

Contractor shall notify Engineer at least 5 (five) working days prior to delivery of plant material to the site. Engineer shall inspect plant material prior to off-loading.

B. Planting Season

Planting shall be done when temperatures are above freezing, the ground is frost free, and the soil is in a workable condition. Unless otherwise specified in writing by the Engineer, planting of trees shall be done between May 1 and October 1.

C. Layout and Coordination

The Contractor shall mark all planting areas with stakes or paint. The Engineer shall approve the layout before planting begins. Contractor shall not stage planting operations on trails or sidewalks.

The Contractor shall obtain a utility locate and ensure that utility marking is complete before any excavation begins. The Contractor shall locate any subsurface improvements such as sprinkling system or conduits. The Contractor shall be

responsible for all damage resulting from neglect or failure to comply with this requirement.

Shrubs and small trees with mature height less than fifteen feet (15') shall be planted at least ten feet (10') from overhead power lines. Trees with a mature height greater than fifteen feet (15') but less than twenty-five (25') shall be planted at least fifteen feet (15') from overhead power lines. Trees with a mature height greater than twenty-five feet (25') shall be planted at least twenty feet (20') from overhead power lines.

The Contractor shall be responsible for moving trees if planted closer than the specified distance. The Engineer reserves the right to relocate plant materials based on utility locations.

D. Protection of Existing Trees

Contractor shall protect existing trees that are not designated for removal on the Drawings. Contractor shall identify a Tree Protection Zone (TPZ) in which activities are restricted around each existing tree that is not designated for removal on the Drawings. The TPZ shall be submitted and approved by the Engineer. The TPZ shall measure as one foot of root area per one inch Diameter Breast Height (DBH). The TPZ shall be defined with fencing materials that prohibit disturbance, excavation, trenching material storage, including soil or grade changes. The tree shall be protected to the drip line. The Contractor shall not stage or store materials within the TPZ. Contractor shall ensure that all land disturbance, excavation, trenching and grade changes, directional boring, routing of utilities and irrigation systems, sidewalks, driveways, construction access roads, changes to street lighting, fire hydrants and utility boxes takes place outside of the TPZ.

Contractor shall thoroughly water exposed root systems and cover them with a waterproof sheet until backfilled. Contractor shall ensure bark, branches, roots, and balls of plants are adequately protected at all times from damage including sun, drying winds and frost.

Contractor shall ensure tree branches, trunk, and roots of existing trees are protected during construction. Measures for protection may include effective barrier fencing, branch and/or root pruning, protective mulch, supplementary water, soil aeration and information signage.

Contractor shall replace trees damaged beyond repair with trees of equivalent value based on the Guide for Plant Appraisal (latest edition) as appraised by a qualified International Society of Arboriculture Certified Arborist, at no additional cost to the Owner. Contractor shall remove and dispose of damaged trees, and install replacement trees in accordance with this Section. Payment for this Work is incidental to the Contract.

E. Existing Plant Relocation:

Existing trees and shrubs designated for relocation as shown on the Drawings shall be dug according to the applicable standards for the plant type. Plants shall be dug, balled and burlapped, containerized, or dug bare root, moved and planted in accordance with specified tree planting requirements.

Trees designated for relocation may be stored in a designated plant storage area for heeling-in of materials until final planting areas are prepared. Contractor shall maintain plants in storage areas by bracing plants in vertical position and setting balls in an enclosed berm of topsoil or bark. Contractor shall water as required to maintain adequate root moisture. Contractor shall re-burlap plants balls if required before final transplanting operations.

F. Setting and Planting

Contractor shall set balled and burlapped plants, which are not planted immediately upon delivery, on the ground and protect them with soil, moist shredded bark, mulch or other acceptable material. Contractor shall protect plants, if possible, from direct sun until they are planted. Contractor shall keep the soil in the containers and root balls in a moist condition.

Planting pit will be a minimum radius of three (3) times the root ball diameter. The sides of the hole will be sloped at forty-five degrees (45°) and scarified. The depth of the planting pit will vary but shall match root ball depth.

Plants shall be gently removed from containers before planting.

Each plant shall be planted straight and plumb per standard planting details. Trees shall be planted so that the root flare is at the soil surface of the ultimate finished grade. Plants planted lower than the surrounding grade will be replanted to specified grade before final inspection/approval is granted.

Plants shall be set on firm soil (undisturbed or compacted) so that plant will be at the same depth one year after planting. Any repositioning of trees shall be done by supporting and moving the root ball, not lifting by the trunk. Plants shall be set with the top of the root flare at or slightly above finished grade. Any soil above the root flare must be carefully removed. The root flare shall be at the soil surface. At least two roots must emerge from the trunk within one to three inches (1" to 3") of the soil surface, measured four inches from the trunk.

Roots that are circling the bottom, sides or surface of the root ball shall be gently separated and directed away from the trunk. Roots of bare root plants shall be spread into a natural position, over a pedestal of firm soil if necessary, free of bunching, kinking or circling. Soil shall be worked firmly into and around the roots so that there are no air pockets. All broken or damaged roots shall be cut back to the point where they are clean and free of rot. No other root pruning shall be done.

After the plant has been set, all ropes, wire, stakes, burlap, plant labels and wrapping around the trunk or branches shall be removed.

Contractor shall remove wire baskets and burlap from the planting area. If a pulp nursery pot is used, it shall be removed from the planting area.

Staking is not recommended as a routine practice. Exceptions include very windy sites, areas where vandalism is expected, or when planting large bare root trees in light soil. Roots must remain stationary but the trunk shall be able to sway in the wind to develop trunk taper and strength. The Contractor shall remove staking and guying material no later than one (1) year after installation.

G. Backfilling Planting Pits and Planting Beds

Backfill shall be from existing soil excavated from planting pits or approved topsoil per Section 75.04 - Topsoil. When holes are approximately two-thirds (2/3) full, soil shall be thoroughly watered to eliminate air pockets. Planting pits and beds shall be backfilled carefully as specified to fill all voids and to avoid breaking root ball or bruising roots. If settling of the backfill occurs after watering, add more backfill to bring to finish grade.

H. Trees

A continuous six inch (6") soil saucer shall be formed around the extent of the planting pit of each tree planted on lower side of the slope to act as a watering basin, except where noted on the Drawings and/or details. This saucer shall be repaired as necessary to continue functioning throughout the maintenance period.

I. Shrubs

A continuous four inch (4") soil saucer shall be formed around the extent of the planting pit of each shrub on the downhill side of a slope to form a watering basin; except where noted on the Drawings and/or details. This saucer shall be repaired as necessary to continue functioning throughout the maintenance period.

J. Ground Cover

Excavate a hole sufficient to receive the root spread and backfill around plants with topsoil and tamp soil to hold plant in place. The ground cover shall be planted in alternate rows, unless otherwise specified.

K. Watering

Thoroughly water each plant immediately following planting. Under no condition shall plants not be watered in the same day as planting. The Contractor shall water per maintenance specifications, Article 2.4, SubArticle B – Watering. The Contractor shall assume full responsibility for plant failure as a direct result of

insufficient watering. Upon directive from the Engineer, the Contractor shall remove the affected plants and replace them immediately. Replacement of plants is considered incidental to the Contract and no separate payment shall be made.

L. Mulching

After planting has been approved by the Engineer, mulch materials as specified shall be placed and spread where and to the depth indicated on the Drawings. The boundaries of this mulch shall include planting-saucers around the trees and shrubs unless otherwise indicated. Mulch shall be pulled back four to six inches (4" to 6") from the tree trunk.

M. Pruning and Repair

The only pruning allowed at planting shall be removal of dead, damaged, or broken branches and roots. Pruning shall conform to the American National Standard for Tree Care Operation, ANSI A300. No pruning paint or other wound dressing shall be used.

N. Staking

The Contractor shall stake only if necessary. Ties made of approved material shall be attached directly to the stakes or attached to the stakes by wire. In no case shall the wire extend around the tree trunk, even if covered by a hose.

Ties shall be attached loosely enough to allow the trunk to sway in the wind without allowing movement to the roots. Ties shall be secured at the lowest point on the trunk at which the root ball remains stationary, approximately one-third up the tree. Stakes shall be driven outside the root ball and eighteen inches (18") into solid ground. Tops of stakes shall be cut off above ties so they do not damage the branches.

For trees larger than three inches (3") in caliper, ties shall be attached to three guy wires and ground anchors or stakes as detailed in the Drawings. Anchors or stakes shall be driven at a forty-five degree (45°) angle to the ground and placed at one hundred and twenty degree (120°) intervals around the trunk. Staking and guying shall conform to the Drawings.

The Contractor shall remove all stakes, ties, and guy wires one year after installation. The stakes, ties and wires are the property of the Contractor.

O. Clean-up

The Contractor shall keep the project site and all roads and trails utilized during the project, clean and free of trash, excess equipment, materials, and rubbish, including sweeping and washing of trails and pedestrian facilities. Cleanup will be one of the conditions to be met prior to all phases of planting acceptance.

P. Winter Shut-down

Winter shut-down of all installation work shall occur between October 1 and May 1 of the following spring. During winter shutdown periods or work suspensions, the Contractor shall comply with Division 10 – Standard General Provisions regarding responsibilities and protection of all Work under the Contract.

Q. Plant Replacement

A tree is considered dead when the main leader has died back or when twenty-five (25%) of the crown is dead. Contractor shall provide plant material replacements of the same size and type as specified on the plant schedule. The Contractor shall repair to the satisfaction of the Engineer, or replace dead or damaged plant materials at no additional cost to the Owner within five (5) working days after receiving written notice to do so by the Engineer. If Work is not completed to the Engineer's approval within the time limitation, the Engineer may exercise the option to have a contractor of the Owner's choosing to perform the Work. If this option is exercised, the cost of that Work will be the responsibility of the Contractor and the Owner shall withhold payment to the Contractor in sufficient amount to recover those costs.

R. Acceptance of Initial Planting Operations

Upon completion of all initial planting operations (planting and seeding), the Contractor shall, per Division 10, Section 10.05, Article 5.26 – Final Inspection, submit a written request for an inspection of plant material.

Initial planting operation ends when:

1. All plants are installed, mulched and watered as specified;
2. Stakes and guys are in place;
3. All construction material and excess excavated material is removed and clean-up is completed;
4. Planting area is free of weeds or any unspecified plants; and
5. Plant material is healthy and vigorous.

Upon written acceptance of all Work by the Engineer, the one year Plant Establishment Period shall begin.

Article 2.4 Maintenance

A. General

The Contractor shall furnish all labor, materials, supplies and equipment required to establish, maintain, and protect the planted and seeded areas, for a one year Plant

Establishment Period from date of acceptance of the initial planting operations. However, maintenance activities shall commence immediately after each item is planted or when areas have been seeded.

The Contractor shall supply a maintenance schedule to the Engineer, thirty (30) days prior to the landscape inspection. The Contractor shall also be responsible for protection of his work during the maintenance period, and shall repair and replace all materials and seeded areas damaged or destroyed within the scope of the Work, regardless of cause.

The Contractor's staff shall include supervisory personnel experienced in landscape maintenance. The Work Force is to be experienced and familiar with maintaining plant material in subarctic conditions.

Contractor shall replace any tree or shrub damaged by vandalism, a lawnmower, weed whip or other equipment at no additional cost to the Owner.

B. Watering

A proposed watering schedule shall be submitted to the Engineer thirty (30) days prior to installation of plant materials. The Contractor shall deep water all trees and shrubs, providing water penetration throughout the root zone to the full depth of the planting pits.

The Contractor shall deep water all trees and shrubs twice each week during the maintenance period. Watering shall cease at first hard frost in the fall and shall resume upon ground thaw in the spring.

If at any time during the maintenance period weather conditions (such as extended period with no rain or continuous drying winds) cause the plant root zone to dry out, the Engineer may direct the Contractor to deep water all trees and shrubs. Contractor shall provide supplemental watering immediately and at no additional cost to the Municipality.

Water application shall be applied at a rate that will provide moisture penetration throughout the entire root zone with a minimum of water run-off. Should soil conditions be encountered that are not conducive to water absorption, the Contractor shall take whatever corrective actions that may be required to correct this condition, without additional cost to the Owner.

Turf, seeded, bulb areas, and annual flower beds shall be watered at such frequency as weather conditions require to maintain soil moisture within the root zone. When establishing turf and seeded areas, the soil shall be watered often enough to maintain a moist seedbed to promote healthy seed germination resulting in an even and uniform coverage. If the Contractor does not provide adequate watering as required by the Engineer, the Engineer will hire others to perform this task and deduct costs from final payment to the Contractor.

C. Pruning

Pruning shall only be conducted for repair or as specified by the Engineer. Pruning shall conform to ANSI 300 Standards and shall be done under the supervision of a certified arborist. Dead, broken, or damaged branches may be pruned at any time. Pruning for form shall begin no sooner than two years after installation. No tree shall be topped. Any tree damaged by improper pruning shall be replaced by the Contractor.

D. Staking and Guying

Stakes and guys, where used, are to be inspected and adjusted as necessary throughout the maintenance period to prevent girdling of trunks or branches, and to prevent rubbing that causes bark wounds. Damaged or missing tree stakes shall be immediately replaced by the Contractor at no additional cost to the Owner. Contractor shall remove staking after the first year, unless the Engineer requests them to be left on longer. Unless otherwise specified, stakes shall be removed at the end of warranty.

E. Plant Repair and Replacement

The Contractor shall repair/replace damaged plant materials, regardless of cause, immediately upon notification by the Engineer. Repair shall include pruning, guying, staking, etc., as necessary. Should repair of plant materials reduce their acceptance to less than minimum specified conditions, the Contractor shall replace plants with specified plant replacements at no additional cost to the Owner.

F. Fertilization

If the construction or maintenance period extends into a second growing season, representative soil tests from the project site shall be taken by the Contractor and submitted to an approved testing lab no later than May 5 for fertility testing. The results of these tests and recommendations for fertilization and limestone application shall be provided to the Engineer and will be the basis for establishing required application rates. All necessary applications shall be completed prior to June 15 or before the end of the maintenance period, whichever occurs first.

Formulations will vary according to soil tests.

G. Diseases and Pests

The Contractor shall coordinate with the Engineer in the event that disease, invasive plant infestation, or pest problems are observed on plants within a Project area. The Contractor and the Engineer shall formulate an Integrated Pest Management program to control the disease, invasive plants, or pests. The IPM program can use biological, physical, cultural, mechanical, behavioral, and chemical methods to resolve the issue. Chemical pesticides are to be used only when other options are

not feasible or effective. If pesticides are used, the least toxic pesticide to accomplish the task shall be used.

The Contractor shall apply all materials in complete compliance with all State, Federal, and local regulations, and shall supply the Engineer written proof of their safety and acceptability by State, Federal and Local jurisdictions.

In the event a "restricted use" pesticide is to be applied, the Contractor shall obtain appropriate permits and certifications (according to current 18 AAC 90 Pesticide Control) from the State of Alaska, Department of Environmental Conservation. Proof of certification shall be transmitted to the Engineer prior to application of the chemicals.

H. Weeding

The Contractor shall maintain all areas in a weed-free condition. Weed removal shall be a routine maintenance activity. Chemical application must be in compliance with State of Alaska rules and regulations and Anchorage Municipal Code 15.75.

I. Cleanup

The Contractor shall keep the project site clean and free of all trash and excess equipment, materials, rubbish, including plant tags, wire, burlap, ribbon, and all debris found within the Project limits, including all roads and trails utilized during Construction. Cleanup will be one of the conditions to be met prior to acceptance of landscape installation and Final Acceptance.

J. Other Tree and Shrub Maintenance

To protect coniferous trees during the winter from excessive desiccation, apply an anti-desiccant such as "Wilt-Pruf" (or approved equal) prior to the winter shut-down period. Complete coverage of all foliage is required.

K. Inspection

The Engineer shall make periodic maintenance inspections of the work. All deficiencies noted shall be corrected within five (5) calendar days from written notice, at no additional cost to the Owner. All delays beyond the five-day period shall result in an equal number of days added to the one year Plant Establishment Period.

L. The final mowing of the grass in the fall should be left at a height of two inches (2").

Article 2.5 Final Acceptance

A Final Acceptance Inspection of the project will occur after completion of the one year Plant Establishment Period. Conditions governing final acceptance of the planted and

seeded areas are that, in the opinion of the Engineer, all plants are in a live, uniform, and sound and healthy and flourishing condition; free of disease, insect infestation and physical damage, and free of weeds, rubbish and construction debris. If the Engineer does not accept the improvements, the Contractor shall correct all deficiencies until acceptance is received from the Engineer. All costs associated with correcting the deficiencies shall be paid by the Contractor without additional cost to the Owner.

Should required corrections not be made within thirty (30) days after the initial Final Maintenance Acceptance Inspection, the Contractor shall be assessed liquidated damages per Division 10, Section 10.05, Article 5.27 – Liquidated Damages, until all Work is complete and accepted by the Engineer.

Article 2.6 Measurement

The quantity of plants to be paid for shall be by individual plant count, or by area as specified.

Article 2.7 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section. Payment for all trees, shrubs, and perennials includes payment for the one year Plant Establishment Period. Owner will pay the accepted quantity of trees, shrubs and perennials after the Acceptance of Initial Planting Operations, based on seventy percent (70%) of the Contract unit price for the respective pay items.

Owner will make two payments for the remaining thirty percent (30%) of the Contract price. One-half of the remaining thirty percent (30%), fifteen percent (15%), shall be paid halfway through the one-year Plant Establishment Period. The second half shall be paid upon Final Acceptance except as noted below.

If damaged trees, shrubs, and perennials are not repaired or replaced as required within fourteen (14) days of written notice, the Engineer may replace or have replaced the damaged items and deduct the cost of said repair or replacement work from the remaining payments. The cost of said repair or replacement work is based on receipts for replacement plants, shrubs, or trees plus ten percent (10%) administrative markup.

Payment shall be made on the following basis:

ITEM	UNIT
Trees (by species and size as indicated on Drawings)	Each
Shrubs (by species and size as indicated on Drawings)	Each
Ground Cover (by species and size)	Each
Perennials (by species and size)	Each

SECTION 75.03 TOPSOIL

Article 3.1 General

The Work under this Section consists of providing all operations pertaining to furnishing, transporting, and spreading of topsoil.

Article 3.2 Materials

Topsoil furnished by the Contractor shall consist of a natural friable surface soil without admixtures of undesirable subsoil, refuse, or foreign materials. It shall be shredded and free from roots, hard clay, rocks larger than one inch (1") in any dimension, noxious weeds, seeds or plant propagules, tall grass, brush, sticks, stubble, or other litter, and shall have indicated by a healthy growth of crops, grasses, trees, or other vegetation that it is free-draining and non-toxic. Topsoil shall contain not more than ten percent (10%) gravel by dry weight of total sample. For the purposes of this specification gravel is defined per ASTM D422 modified to include only material passing one inch (1") and retained on the No. 4 sieve.

Topsoil shall conform to the following requirements, as tested using the procedures included in ASTM D422, ASTM D2974 and AASHTO T267. The topsoil shall be inspected and tested by the Engineer before approval will be granted for its use.

	<u>Topsoil Mix</u>	<u>Athletic / Sports Field</u>	<u>Sports Field / Infield Loam</u>
Organic Material *	15-25% by dry weight of total sample	Not less than 15% nor more than 25% by volume	0.0%
Silt	25% to 45% by dry weight:	Not less than 20% nor more than 35% by volume	75% to 85% by volume
Sand	35% to 55% by dry weight:	Not less than 50% nor more than 55% by volume	15% to 25% by volume
		Required depth of the field is six inches (6") after settling.	

* Organic matter is to be determined by loss-on-ignition of oven-dried material in accordance with ASTM D2974.)

Limestone and Fertilizer: Fertilizer shall be of standard commercial types supplied separately or in mixtures, and furnished in moisture-proof containers. Each container shall be marked with the weight and the manufacturer's guaranteed analysis of the contents showing the percentage for each ingredient contained therein.

The proportion of chemical ingredients furnished shall be a mixture that provides the total available nitrogen, phosphoric, and potassium as required by the soil analysis or as specified in the Special Provisions.

Tolerances of the chemical ingredient shall be plus or minus two percent ($\pm 2\%$).

No cyanamid compounds or hydrated lime will be permitted in mixed fertilizers.

Limestone shall contain not less than eighty-five percent (85%) of calcium and magnesium carbonates. Agricultural ground limestone suitable for application by a fertilizer spreader shall conform to the following gradation:

<u>Sieve Designation</u>	<u>Minimum Percent Passing, by Weight</u>
# 10	100
# 20	90
# 100	50

Pelletized limestone may be used subject to approval by the Engineer.

Sufficient fertilizer and limestone shall be applied to the topsoil such that the total natural and applied chemical constituents are within the following ranges:

Nitrogen	30-50 PPM
Phosphoric Acid	60-110 PPM
Potassium	76-150 PPM
Limestone	Sufficient to attain a pH of 6.0 to 7.0

The Contractor shall furnish soil analysis test reports to the Engineer ten (10) days prior to final placement for Engineer comment or acceptance. Fertilizer and limestone shall be applied at the rates indicated by the soil tests and worked into the topsoil to a uniform depth of two inches (2").

Organic material for incorporation into topsoil, shall be partially decomposed peat moss. Organic material shall be from a source above the water table. Peat moss may require chopping or shredding to insure thorough mixing with the topsoil.

Article 3.3 Placing

The topsoil shall be evenly spread on the designated areas to a depth of four inches (4") after settlement unless otherwise specified on the Drawings. Contractor shall not place or

spread topsoil when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to the Work.

Settlement for seeded areas shall be achieved by rolling the topsoil with a water-filled drum approved by the Engineer. The Engineer may direct that topsoil placed on slopes be track-walked perpendicular to the slope with a small track dozer. Track walking shall be incidental to this bid item and no separate payment shall be made.

Topsoil in planting beds shall be at the depth shown on the Drawings, but no less than twelve inches (12").

Contractor shall keep roadway surfaces within the project and on haul routes clean during hauling and spreading operations.

Article 3.4 Measurement

Measurement shall be the number of 1,000 square foot units measured to the nearest 0.1 unit on the ground surface. Stockpiling and rehandling of topsoil during stripping operations, or during placement, shall not be measured for payment. Topsoil placed in planting beds is incidental to Work described in Section 75.02 and no payment shall be made under this Section.

Article 3.5 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Unit cost payment shall be made on the following basis:

ITEM	UNIT
Topsoil (Depth)	1,000 Square Feet (MSF)

SECTION 75.04 SEEDING

Article 4.1 General

The Work under this Section shall consist of providing all labor, equipment, and materials for the preparation of ground surfaces for the application and maintenance of seeded areas, fertilization, lime application (if necessary), watering, and mulching at locations shown on the Drawings or established by the Engineer.

All seeding shall be performed between May 1 and September 1. Seeding any other time will only be allowed upon written approval from the Engineer. Seeding shall not be done during windy conditions or when climatic or ground conditions would hinder placement or proper germination of seed mixes.

Article 4.2 Materials

A. Seed

The Contractor shall submit to the Engineer a certification tag for the seed mixes provided listing species, proportion by weight, percent purity, and percent germination. The certification tag shall come from the specified seed mixes and be removed from the unopened bags in the presence of the Engineer. Contractor shall deliver seed to the site in its original unopened container, which shall bear the vendor's guarantee of analysis.

Seed shall conform to one of the following seed mix types and application rates:

Schedule A: Movable Seed Mix
Application Rate: 5 lbs./1,000 s.f.

<u>Name</u>	<u>Proportion By Weight</u>	<u>Purity</u>	<u>Germination</u>
Annual Ryegrass (<i>Lolium multiflorum</i>)	5%	90%	85%
Kentucky Bluegrass Alpine (<i>Poa alpine</i>)	30%	90%	85%
Alene (<i>Poa pratensis</i>)	25%	90%	85%
Boreal Fescue (<i>Festuca rubra</i> 'Boreal')	40%	90%	85%

Schedule B: Wildflower Seed Mix
Application Rate: 3 lbs./1,000 s.f.

<u>Name</u>	<u>Proportion By Weight</u>	<u>Purity</u>	<u>Germination</u>
Red Fescue (Arctared) (<i>Festuca rubra</i> 'Arctared')	25%	80%	98%
Egan American Sloughgrass (<i>Beckmannia syzigachne</i> 'Egan')	20%	85%	90%
Wideleaf Polargrass (<i>Arctagrostis latifolia</i>)	20%	85%	90%
Western Columbine (<i>Aquilegia formosa</i>)	5%	85%	85%
Siberian Aster (<i>Aster sibiricus</i>)	5%	80%	85%
Tall Larkspur (<i>Delphinium exaltatum</i>)	5%	70%	85%
Nootka Lupine (<i>Lupinus nootkatensis</i>)	15%	85%	95%
Jacob's Ladder (<i>Polemonium pulcherrimum</i>)	5%	85%	85%

Schedule C: Wetland Seed Mix
Application Rate: 3 lbs./1,000 s.f.

<u>Name</u>	<u>Proportion By Weight</u>	<u>Purity</u>	<u>Germination</u>
Red Fescue (Arctared) (<i>Festuca rubra</i> 'Arctared')	30%	90%	85%
Bering Hairgrass (<i>Deschampsia beringensis</i>)	30%	90%	85%
Polargrass (<i>Arctagrostis latifolia</i>)	10%	90%	85%
Egan American Sloughgrass (<i>Beckmannia syzigachne</i> 'Egan')	30%	90%	85%

Schedule D: Unmowable Seed Mix
Application Rate: 5 lbs./1,000 s.f.

<u>Name</u>	<u>Proportion By Weight</u>	<u>Purity</u>	<u>Germination</u>
Red Fescue (Arctared) (<i>Festuca rubra</i> 'Arctared')	30%	90%	85%
Kentucky Bluegrass: Alpine (<i>Poa alpine</i>)	30%	90%	85%
Alene (<i>Poa pratensis</i>)	20%	90%	85%
Hard Fescue (Durar) (<i>Festuca ovina</i> 'Durar')	20%	90%	85%

Schedule E: Athletic Field Seed Mix
Application Rate: 4 lbs./1,000 s.f.

<u>Name</u>	<u>Proportion By Weight</u>	<u>Purity</u>	<u>Germination</u>
Fescue (Arctared) (<i>Festuca rubra</i> 'Arctared')	60%	90%	85%
Kentucky Bluegrass (Alpine) (<i>Poa alpine</i>)	25%	30%	90%
Rye Grass (Pinstripe Perennial) (<i>Lolium perenne</i>)	15%	90%	85%

B. Fertilizer

Fertilizer shall be of standard commercial types supplied separately or in mixtures, and furnished in moisture-proof containers. Each container shall be marked with the weight and the manufacturer's guaranteed analysis of the contents showing the percentage for each ingredient contained therein. The proportion of chemical ingredients furnished shall be a mixture such as to provide the total available nitrogen, phosphoric, and potassium as required by the soil analysis or as specified in the Special Provisions.

Tolerances of the chemical ingredients shall be plus or minus two percent ($\pm 2\%$).

No cyanamid compounds or hydrated lime will be permitted in mixed fertilizers.

C. Limestone

Limestone shall contain not less than eighty-five percent (85%) of calcium and magnesium carbonates. Agricultural ground limestone suitable for application by a fertilizer spreader shall conform to the following gradation:

<u>Sieve Designation</u>	<u>Minimum Percent Passing, by Weight</u>
# 10	100
# 20	90
# 100	50

Fertilizer and limestone for use in a hydraulic sprayer shall be soluble or ground to a fineness that will permit complete suspension of insoluble particles in water.

D. Mulch

Shall be dried shredded peat moss; or cellulose wood or paper fiber such as "Astromulch," "Silvafibre," "Conwed," or approved equal.

E. Water

Water used in all operations shall be of potable quality.

Article 4.3 Application

A. Soil Preparation

After grading of areas has been completed in conformity with the lines and grades shown on the Drawings, and before beginning seeding operations, the areas to be seeded shall be cultivated to provide a reasonably firm but friable seedbed. Cultivation shall be carried to a depth of two inches (2"). On slopes steeper than 3:1, depth of cultivation may be reduced as directed by the Engineer. All cultivated areas shall be raked or cleared of stones (one inch [1"] in diameter and larger), weeds, plant growth, sticks, stumps, and other debris or irregularities which might interfere with the seeding operation, germination of seed, or subsequent maintenance of the seed-covered areas. Contractor may be required to track-walk slopes 2:1 or over as directed in the Drawings or by the Engineer.

B. Fertilizer

Fertilizer shall be applied at a rate to provide two (2) pounds actual Nitrogen per thousand (1,000) square feet of area. In the absence of soil tests and direction from the Engineer, the Contractor shall apply 16-16-16 at the rate of twelve and

one-half (12.5) pounds per thousand (1,000) square feet. Fertilizer shall be in accordance with Section 75.04 - Topsoil.

C. Limestone

Limestone, whether in liquid or dry form, shall be applied at a sufficient rate to attain a soil pH between 6.0 and 7.0.

D. Application Methods

All machinery shall be free of invasive weeds, seeds, or plant propagules. Apply seed mixtures as specified under Article 5.2, SubArticle A - Seed at rates as specified and/or as directed by the Engineer. Seed, fertilizer, limestone, mulch, and water may be applied by the following methods:

1. Hydraulic Method

Seeding by hydraulic methods shall consist of furnishing and placing a slurry made of seed, fertilizer, dried peat moss or cellulose wood fiber and water.

The dried peat moss or cellulose wood fiber shall be added to the water slurry in the hydraulic seeder after the proportionate amounts of seed and fertilizer have been added. The slurry mixture shall then be combined and applied in such a manner that the rate of application will result in an even distribution of all materials.

Hydraulic seeding equipment shall be capable of maintaining a continuous agitation so that a homogeneous mixture can be applied through a spray nozzle. The pump shall be capable of producing sufficient pressure to maintain a continuous, non-fluctuating spray capable of reaching the extremities of the seeding area with the pump unit located on the roadbed. Sufficient hose shall be provided to reach areas not practical to seed from the nozzle unit situated on the roadbed.

2. Dry Method

Mechanical spreader, seed drills, landscape seeder, cultipacker seeder, fertilizer spreader, or other approved mechanical spreading equipment may be used when seed and fertilizer are to be applied in dry form.

Fertilizer shall be spread separately at the specified rates, and then incorporated in one operation to a minimum depth of two inches (2"). Seeded areas shall be compacted within twenty-four (24) hours from the time the seeding is completed, weather and soil conditions permitting, by cultipacker, roller or other equipment satisfactory to the Engineer. Compacting equipment shall be operated at right angles to the slope. Compaction shall not be performed when the soil is in such condition that it

will be picked up by the equipment, nor shall heavy soils be compacted unless directed by the Engineer.

3. Hand Method

Hand broadcasting by means of portable, hand operated mechanical spreaders or "by hand" may be substituted for the preceding two (2) methods provided that the application rate is twice that of the dry method, and that the application is applied in a minimum of two (2) passes over the areas to be seeded (at ninety degrees [90°] to one another in order to assure uniform and even coverage to all seeded surfaces).

Article 4.4 Maintenance

All maintenance shall be in accordance with Section 75.02, Article 2.4 – Maintenance.

The Contractor shall protect seeded areas from damage from all traffic, whether people, animals, on or off road vehicles, or any other causes which may damage newly seeded and maintained surfaces. Contractor shall maintain a minimum coverage of 90%. Surfaces damaged shall be repaired by regrading, reseeding (including all specified amendments), as directed by the Engineer, at no additional cost to the Owner. The Contractor shall otherwise maintain seeded areas in a satisfactory condition until Final Acceptance of the Work.

On the fortieth (40th) day of the maintenance period, the Contractor shall apply one application of fertilizer (16-16-16) at the rate of seven (7) pounds per thousand (1,000) square feet.

Article 4.5 Measurement

The quantity of seeding to be paid for shall be the number of thousand (1,000) square foot units, measured to the nearest 0.1 unit on the ground surface. The quantity of seeding specified shall include all cultivating, seed, limestone, if required, fertilizer and mulch material of the type specified, complete and accepted.

Article 4.6 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment for all seeding includes payment for the forty-five day establishment period. Owner will pay the accepted quantity of seeding after it is acceptably planted, based on seventy percent (70%) of the Contract unit price for the respective pay items.

The remaining thirty percent (30%) shall be paid upon Final Acceptance except as noted below.

If damaged seeded areas or areas with insufficient coverage are not repaired or replaced as required within fourteen (14) days of written notice, the Engineer may replace or have replaced the damaged items and deduct the cost of said repair or replacement work from the remaining payments. The cost of said repair or replacement work is based on receipts for replacement seeding, excavation or earthwork as required, and ten percent (10%) administrative markup.

Payment shall be made on the following basis:

ITEM	UNIT
Seeding (Type)	1,000 Square Feet

When more than one type of seeding is specified for any pay item, letter suffixes shall be included in order to differentiate between different types.

SECTION 75.05 SOD

Article 5.1 General

- A. The Work under this Section consists of performing all operations pertaining to furnishing, installing, and maintaining sod.

- B. Agency Standards: Nomenclature

All plant materials used shall be true to name and size conforming to the *Guideline Specifications to Turfgrass Sodding*, American Sod Producers Association.

- C. Submittals

Sod: Provide sales slip or certificate describing original seed blend.

Article 5.2 Materials

- A. Sod shall be:

<u>Name</u>	<u>Proportion by Weight</u>
Kentucky Bluegrass:	
Nugget	50-100%
Merion	0-50%

- B. Sod shall be deep green in color, free of chlorotic conditions or signs of disease, weeds, or infestation. Sod shall be grown in an area of well-drained, loamy soils.
- C. Sod shall be #1 Quality/Premium as described in "Guideline Specifications to Turfgrass Sodding." It shall be grown on cultivated agricultural lands and grown specifically for sod purposes.

Article 5.3 Construction

- A. Sod Bed Preparation

After grading of areas has been completed in conformity with the lines and grades shown on the Drawings or as directed by the Engineer, scarify and till to a depth of two inches (2") all areas designated to receive topsoil. All cultivated areas shall be raked or cleared of stones one inch (1") in diameter and larger; all debris or irregularities that might interfere with the placement of sod, or subsequent maintenance shall be removed from the site. The Work shall be approved by the Engineer prior to placement of topsoil.

B. Placement of Topsoil in Sod Areas

Following the grading and cultivation of all areas to receive sod, place a uniform layer of topsoil. Topsoil shall be evenly spread on all designated areas to a finish depth of four inches, plus or minus one-half inch ($4" \pm 1/2"$) after being lightly rolled with a water-filled roller. Spreading shall not be done when the ground is frozen, excessively wet, or otherwise in a condition detrimental to the Work. The Work shall be accepted by the Engineer prior to continuing other Work.

C. Soil Amendments for Sod Areas

Topsoil shall incorporate fertilizer and lime as necessary to meet topsoil chemical constituents. Contractor shall provide a soil test to verify nutrient deficiencies and soil pH.

D. Sod Placement

1. General

- a. Sod shall be cut no more than twenty-four (24) hours before placement. It shall be stored in a manner that protects sod from moisture loss and from extremes in temperature. Soil shall be kept moist.
- b. Sod shall be cut with sharp blades by mechanized equipment designed for the cutting of sod.

2. Harvest

- a. Within twenty-four (24) hours of harvest, sod shall be mowed to a height of one to one and one-half inches ($1"$ to $1-1/2"$).
- b. Sod shall be cut so as to leave a full intact root mass. It shall be machine cut with a uniform soil thickness of five-eighths inch, plus or minus one-quarter inch ($5/8" \pm 1/4"$) at the time of cutting. Sod that is dry or without soil firmly attached to roots shall be removed from the project site.
- c. Sod shall be cut in straight lines. Cuts shall be of a width between twelve and twenty-four inches ($12"$ and $24"$), with all cuts to be the same width, plus or minus one-half inch ($\pm 1/2"$), regardless of the width chosen. Each roll of sod shall be no more than eight feet ($8'$) in length nor shorter than four feet ($4'$).

3. Placement

- a. The ground surface shall be wet before placement of sod, to the extent that soil is damp to a six inch (6") depth.
- b. Existing sod areas adjacent to areas to be installed shall have a clean, straight edge and shall be cut with clean, sharp tools. Existing sod edge shall be cut exactly perpendicular to soil surface.
- c. Sod shall be laid perpendicular to the slope of the ground and anchored as appropriate. Where curves are necessary, the sod shall be cut to provide edges in full contact with adjacent sod. There shall be no gaps between adjacent pieces of sod. No sod pieces shall be less than three feet (3') in length, or as approved by the Engineer.
- d. The first row of sod shall be laid in an even line commencing on lowest portion of slopes with subsequent rows placed parallel to and tightly against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Care shall be exercised to ensure that the pieces are not stretched or overlapped and that all joints are butted tightly.

4. Finishing

Water the sod immediately after transplanting to prevent drying. As sodding is completed in any one section, the area shall be lightly rolled. The new sod shall then be thoroughly watered to a depth sufficient that the underside of the new sod pad and soil immediately below the pad are thoroughly wet. Contractor is responsible for having adequate water available at the site prior to and during installation.

Article 5.4 Maintenance

Maintenance of sod shall conform to Section 75.02, Article 2.4 - Maintenance.

Article 5.5 Measurement

Sod shall be measured per 1,000 square feet and shall be placed in all areas disturbed by construction, or as directed by the Engineer. The measurement of sod shall include all cultivating, materials, limestone, if required, and fertilizer.

Article 5.6 Basis of Payment

Payment of this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment shall be made under the following unit:

ITEM

UNIT

Sod

1,000 S.F.

|

SECTION 75.06 LANDSCAPE EDGING

Article 6.1 General

The Work under this Section consists of all labor, equipment, and materials necessary to place landscape edging. All Work shall be in accordance with these Specifications and shall be placed at the locations shown on the Drawings.

Article 6.2 Materials

Landscape edging shall be "Permaloc Aluminum Edging," black, aluminum, one-eighth inch (1/8") thickness by four inch (4") depth with twelve inch (12") standard aluminum stakes. Comparable products by other manufacturers will be considered provided complete supporting data from the manufacturer is submitted to the Engineer. Comparable products must be architecturally similar in size, type, and grading of materials, dimensions, finishes, and textures.

Permaloc Corporation
13505 Barry Street
Holland, Michigan 49424

Article 6.3 Construction

Landscape edging shall be installed per manufacturer's specifications, in all locations shown on Drawings.

Article 6.4 Measurement

Landscape edging shall be measured per linear foot, delivered and accepted in place.

Article 6.5 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment shall be made under the following unit:

ITEM	UNIT
Furnish and Install Landscape Edging	Linear Foot

SECTION 75.07 LANDSCAPE FABRIC

Article 7.1 General

The Work under this Section consists of all labor, equipment, and materials necessary to place landscape fabric. All Work shall be in accordance with these Specifications and shall be placed at the locations shown on the Drawings.

Article 7.2 Materials

Landscape fabric shall be black polypropylene polyester blend, 28 mills, 3.33 ounces/sq. yard, Mullen burst strength: 250 lbs. Permeability is 28 gals/s.f./min. per fallen head method. Landscape fabric shall be DeWitt Pro 5 Weed Barrier (1-800-325-0950) or approved equal.

Article 7.3 Construction

Landscape fabric shall be installed per manufacturer's specifications in all plant bed areas, tree wells, and as called out on Drawings. Landscape fabric shall not be visible under bark mulch and all loose ends shall be cut off, tucked under, or otherwise covered with three inches (3") of wood chips by the Contractor. Landscape fabric shall be in direct contact with soil.

Article 7.4 Measurement

Landscape fabric shall be measured per square yard, delivered and accepted in place.

Article 7.5 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment shall be made under the following unit:

ITEM	UNIT
Landscape Fabric	Square Yard

SECTION 75.08 WILLOW STAKING

Article 8.1 General

The Work under this Section consists of providing all operations pertaining to the gathering, planting and establishing willow vegetation using willow stakes.

For additional reference, see the document "Stream Bank Revegetation and Protection – A Guide for Alaska" published by the Alaska Department of Fish & Game.

Article 8.2 Materials

Feltleaf willow cuttings shall be used and no substitutions shall be accepted without the written permission of the Engineer. Contractor shall be responsible for obtaining dormant cuttings and necessary permits for the collection of willow stakes.

The technique for using dormant cuttings relies on cuttings of stems taken from plants in the wild during late winter and requires proper storage and care of the cuttings between the time of collection and the time of planting.

Dormant cuttings are live stakes taken in the late winter or early spring before buds have opened. Live stakes should be ten to eighteen inches (10" to 18") long and one-half to one and one-half inches (1/2" to 1.5") in diameter, with visible buds. Place cuttings in plastic and keep frozen or refrigerated until the site is ready to plant. Stakes must not be allowed to dry out, nor should they be kept too moist. If cold storage facilities are not available, cuttings can be stored in a snowbank along the north side of a building or some other location that will remain cold until planting. Cuttings may be taken directly from storage to the site for planting. Plant in early spring, after the ground has thawed, and no later than July 1.

Article 8.3 Construction

A. Planting

To plant the cuttings, stick a shovel or three-quarter inch (3/4") or less rebar into the ground as far vertically as possible, push the shovel forward and place the cutting right side up in the ground behind the shovel so that at least three-fourths (3/4) of the length will be buried. Leave a maximum of two leaf buds exposed above ground. Remove the planting implement and step lightly around the cutting to firm the soil. Create a small depression around the planting to collect water.

Willow stakes shall be planted as vertically as possible.

B. Spacing

Dormant cuttings shall be planted one to three feet (1' to 3') on center unless otherwise shown on the Drawings..

C. Watering

Thoroughly water each plant immediately following planting to remove air pockets and increase contact between the soil and the stake. Under no condition shall plants not be watered in the same day as planting. The Contractor shall maintain moist soil conditions for four to six (4 to 6) weeks to establish plants. Water shall be supplied by the Contractor unless otherwise specified. The Contractor shall assume full responsibility for plant failure as a direct result of insufficient watering.

D. Inspection

The Engineer shall make periodic inspections during the installation and maintenance periods of the Work. Should plant materials, installation procedures, or other conditions be observed not in keeping with the Drawings, details, and these Specifications, the Engineer will direct the Contractor to correct by repair, and/or replacement, as appropriate. The Engineer shall be the sole judge of the conditions of quality and acceptability and will direct all corrections in writing to the Contractor. All rejected materials shall be immediately removed from the site and replaced with specified materials at no additional cost to the Owner.

E. Time of Planting

Spring planting and maintenance shall not begin before May 1, and planting operations may commence as soon as the ground is frost free. Planting and maintenance shall not occur later than July 1, unless otherwise specified or approved in writing by the Engineer.

F. Winter Shut-down

Winter shut-down of all installation work shall occur between October 1 and May 1 of the following spring. During winter shut-down periods or work suspensions, the Contractor shall comply with Division 10 – Standard General Provisions regarding responsibilities and protection of all Work under the Contract.

G. Landscape Inspection

Upon completion of all planting operations, the Contractor shall, per Division 10, Section 10.05, Article 5.26 – Final Inspection, submit a written request for an inspection of planted areas. Upon written acceptance of all Work by the Project Engineer, the sixty (60) day maintenance period shall begin.

Article 8.4 Maintenance

A. General

The Contractor shall furnish all labor, materials, supplies and equipment required to establish, maintain, and protect the planted areas, for a one year Plant Establishment Period from date of acceptance of the initial planting operations. However, maintenance activities shall commence immediately after each item is planted.

The maintenance period shall consist of the time from initial planting through acceptance after the one year Plant Establishment Period.

The Contractor shall supply a maintenance schedule to the Engineer, thirty (30) days prior to the landscape inspection. The Contractor shall also be responsible for protection of his work during the maintenance period, and shall repair and replace all materials and seeded areas damaged or destroyed within the scope of the Work, regardless of cause.

The Contractor's staff shall include supervisory personnel experienced in landscape maintenance. The Work Force is to be experienced and familiar with maintaining plant materials in subarctic conditions.

Contractor shall replace any willow stake damaged during maintenance at no additional cost to the Owner.

B. Watering

A proposed watering schedule shall be submitted to the Engineer thirty (30) days prior to installation of plant materials. The Contractor shall deep water all planted areas, providing water penetration throughout the root zone.

The Contractor shall maintain soil around willow stakes in a moist condition during the maintenance period. Watering shall cease at first hard frost in the fall and shall resume upon ground thaw in the spring.

If at any time during the maintenance period, weather conditions (such as extended period with no rain or continuous drying winds) cause the plant root zone to dry out, the Engineer may direct the Contractor to deep water all plantings. Any supplemental watering is to be done immediately and at no additional cost to the Owner.

Water application shall be applied at a rate that will provide moisture penetration throughout the entire root zone with a minimum of water run-off. Should soil conditions be encountered not conducive to water absorption, the Contractor shall take whatever corrective actions that may be required to correct this condition, without additional cost to the Owner. If the Contractor does not provide adequate

watering as required by the Engineer, the Engineer will hire others to perform this task and deduct costs from final payment to the Contractor.

C. Plant Repair and Replacement

The Contractor shall repair/replace damaged plant materials, regardless of cause, upon notification by the Engineer. Should repair of plant materials reduce their acceptance to less than minimum specified conditions, the Contractor shall replace plants with specified plant replacements at no additional cost to the Owner.

D. Inspection

The Engineer shall make periodic maintenance inspections of the Work. All deficiencies noted shall be corrected within five (5) calendar days from written notice to do so, at no additional cost to the Owner. All delays beyond the five day period, shall result in an equal number of days added to the one year Plant Establishment Period.

Article 8.5 Final Maintenance Acceptance

A Final Acceptance Inspection of the project will occur after completion of the one year Plant Establishment Period. Conditions governing final acceptance of the planted areas are that, in the opinion of the Engineer, all willow stake areas are in a live, uniform, and sound and healthy and flourishing condition; free of disease, insect infestation and physical damage, and free of weeds, rubbish and construction debris. If the Engineer does not accept the improvements, the Contractor shall correct all deficiencies until acceptance is received from the Engineer. All costs associated with correcting the deficiencies shall be paid by the Contractor without additional cost to the Owner.

Should required corrections not be made within thirty (30) days after the initial Final Maintenance Acceptance Inspection, the Contractor shall be assessed liquidated damages per Division 10, Section 10.05, Article 5.27 – Liquidated Damages, until all Work is complete and accepted by the Engineer.

Article 8.6 Measurement

The quantity of plants to be paid for shall be by square yard as specified.

Article 8.7 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment for all willow plantings includes payment for the one year Plant Establishment Period. Owner will pay the accepted quantity of willow stakes after they are acceptably planted, based on seventy percent (70%) of the Contract unit price for the respective pay items.

Owner will make two payments for the remaining thirty percent (30%) of the Contract price. One-half of the remaining thirty percent (30%), fifteen percent (15%), shall be paid halfway through the one-year Plant Establishment Period. The second half shall be paid upon Final Acceptance except as noted below.

If damaged willows are not repaired or replaced as required within fourteen (14) days of written notice, the Engineer may replace or have replaced the damaged items and deduct the cost of said repair or replacement work from the remaining payments. The cost of said repair or replacement work is based on receipts for replacement cuttings plus ten percent (10%) administrative markup.

Payment shall be made on the following basis.

ITEM	UNIT
Willow Staking	Square Yard

SECTION 75.09 SITE FURNISHINGS

Article 9.1 General

Work under this Section consists of providing all operations pertaining to the removal, disposal, relocation, pickup, delivery, assembly, and installation of Owner-supplied Transit or Park site furnishings, including the labor, equipment, and materials. Work may include relocation of bus stop signs, removal and/or installation of bus shelters, trash receptacles, bear-proof trash cans, benches, poop stations, playground equipment, picnic tables, and other transit, park, or urban street furnishings.

Article 9.2 Materials

Contractor shall provide anchor bolts and other mounting hardware required for the complete installation of the site furnishings. Cost for these anchor bolts and mounting hardware is incidental to this pay item.

The Contractor is solely responsible for loading, transporting, unpacking, and assembly of site furnishings.

A. Transit Materials

Transit related materials for benches, trash receptacles, and bus shelters shall be furnished by the Owner and shall be the type shown on the Drawings. The Contractor shall contact Anchorage Transit System to pickup materials. The Contractor shall notify Transit Staff within forty-eight (48) hours in the event parts are missing.

B. Park Furnishings

Owner supplied park furnishings shall be the type shown on the Drawings. The Contractor shall contact Anchorage Parks and Recreation to pickup materials.

Park furnishings not Owner supplied must be consistent with current park standards. Contractor shall contact Anchorage Parks and Recreation for specific standards per location.

Article 9.3 Construction

Contractor shall load and transport the owner-supplied site furnishings to the site. Contractor shall assemble and install materials in accordance with the Drawings and the manufacturer's specifications.

Contractor shall repair paint finishes that are damaged during transportation to the site.

Method of measurement for the installation of the Owner-supplied furnishings is for each unit complete in place.

Method of measurement for the removal and relocation of the bus stop sign is for unit relocated and complete in place.

Article 9.5 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment shall be made under the following unit:

ITEM	UNIT
Install Owner-supplied Furnishing (Type)	Each
Remove and Relocate Bus Sign	Each
Remove Furnishing (Type)	Each

SECTION 75.10 MODULAR CONCRETE BLOCK WALL

Article 10.1 Description

Work under this Section consists of furnishing all labor, equipment, and materials to complete the construction of a modular concrete block wall and steps. Accomplish all work as shown on the Drawings and as described herein.

Article 10.2 Materials

Wall units shall be eight inch (8") Allan Block Retaining Wall System or an approved equal. Capstones and corner blocks are required.

Color: Grey

Size: 8"H x 12"D x 18L

Style: AB Classic

All materials required for proper installation of the retaining wall system, including specified backfill, are incidental to this Section.

Article 10.3 Manufacturer and Local Representative

Manufacturer:

Allan Block Corporation
7400 Metro Boulevard, Suite 185
Edina, MN 55439
800-899-5309
952-835-0013 (fax)

Local Representative:

Anchorage Sand and Gravel Co., Inc.
1040 O'Malley Road
Anchorage, AK 99515
907-267-5163
907-344-2844 (fax)

Article 10.4 Construction

Contractor shall install wall in accordance with manufacturer's specifications and as shown on Drawings. Contractor shall install wall to match the geometric layout shown on Drawings, including corners. Any changes in the layout require Engineer's approval. Contractor shall ensure the tops of wall elevations are continuous.

Contractor shall secure capstone with Type P1 Premium Water Proof Construction adhesive per the manufacturer's specifications.

Article 10.5 Method of Measurement

Measurement is the area in square feet based on the above-grade vertical face of complete units in place. Blocks, specified backfill or other items shown on the Drawings, are not measured separately for payment and are incidental to this bid item.

Article 10.6 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 – Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment shall be made under the following unit:

ITEM	UNIT
Modular Concrete Block Wall	Square Foot

SECTION 75.11 BOULDERS

Article 11.1 General

Work under this Section includes furnishing the labor, equipment, and materials necessary for the furnishing and placing of Contractor-supplied boulders.

Article 11.2 Materials

Contractor shall furnish boulders similar in appearance, color, type, and approximate size as shown on Drawings or specified in the Contract Documents. No evidence of drilling, scrapes, large flakes, or cracks shall be visible after the boulder is set in place.

Article 11.3 Construction

The Contractor shall coordinate with the Engineer prior to setting boulders to ensure desired face and orientation is achieved. Boulders shall be placed on site as directed by the Engineer.

The Contractor shall form a pocket for boulder installation, ensuring that the boulder is even and true to line, buried one-third to one-half ($1/3$ to $1/2$) of the boulder depth, and in accordance with the Standard Detail, or as shown on the Drawings.

Article 11.4 Method of Measurement

Boulders will be measured as units of the specified size complete in place.

Article 11.5 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 – Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment shall be made under the following unit:

<u>ITEM</u>	<u>UNIT</u>
Boulder (Size)	Each

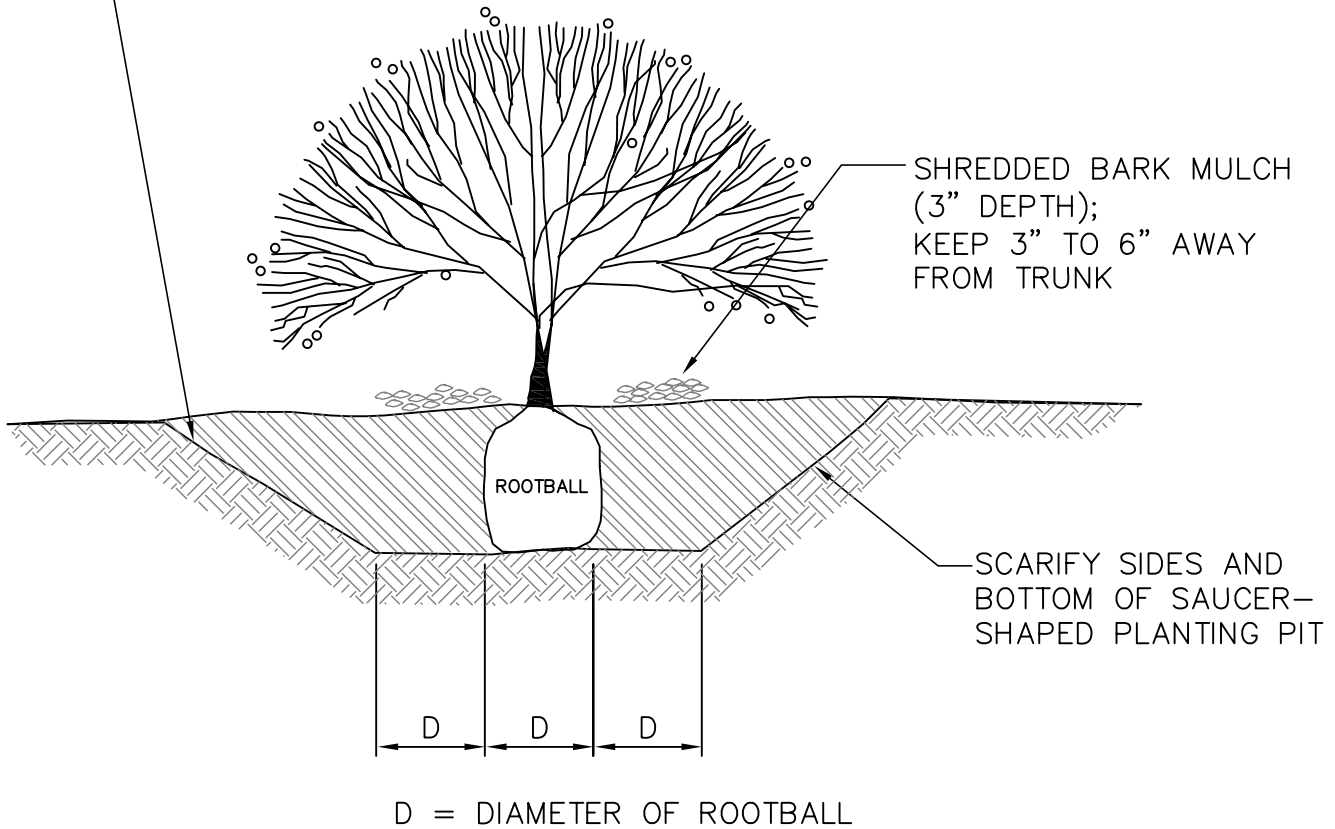
**MUNICIPALITY OF ANCHORAGE
STANDARD SPECIFICATIONS**

**DIVISION 75
LANDSCAPING IMPROVEMENTS
STANDARD DETAILS**

**STANDARD CONSTRUCTION SPECIFICATIONS
MISCELLANEOUS
DIVISION 75
INDEX OF STANDARD DETAILS**

75-1	Shrub Planting Detail
75-2	Conifer Planting Detail
75-3	Deciduous Tree Planting Detail
75-4	Boulder

BACKFILL WITH TOPSOIL;
THOROUGHLY WATER BACKFILL
AS TO PREVENT AIR POCKETS. DO
NOT TAMP OR COMPACT. DO NOT
FERTILIZE AT TIME OF PLANTING.



NOTES:

1. DEPTH VARIES DEPENDING ON ROOTBALL THICKNESS.
2. SOIL SHALL BE LOOSENED AND SUITABLE FOR ROOT GROWTH. TOP WIDTH OF PLANT PIT SHALL BE 4-5 TIMES ROOTBALL DIAMETER.

MUNICIPALITY



OF ANCHORAGE

SCALE:
NTS

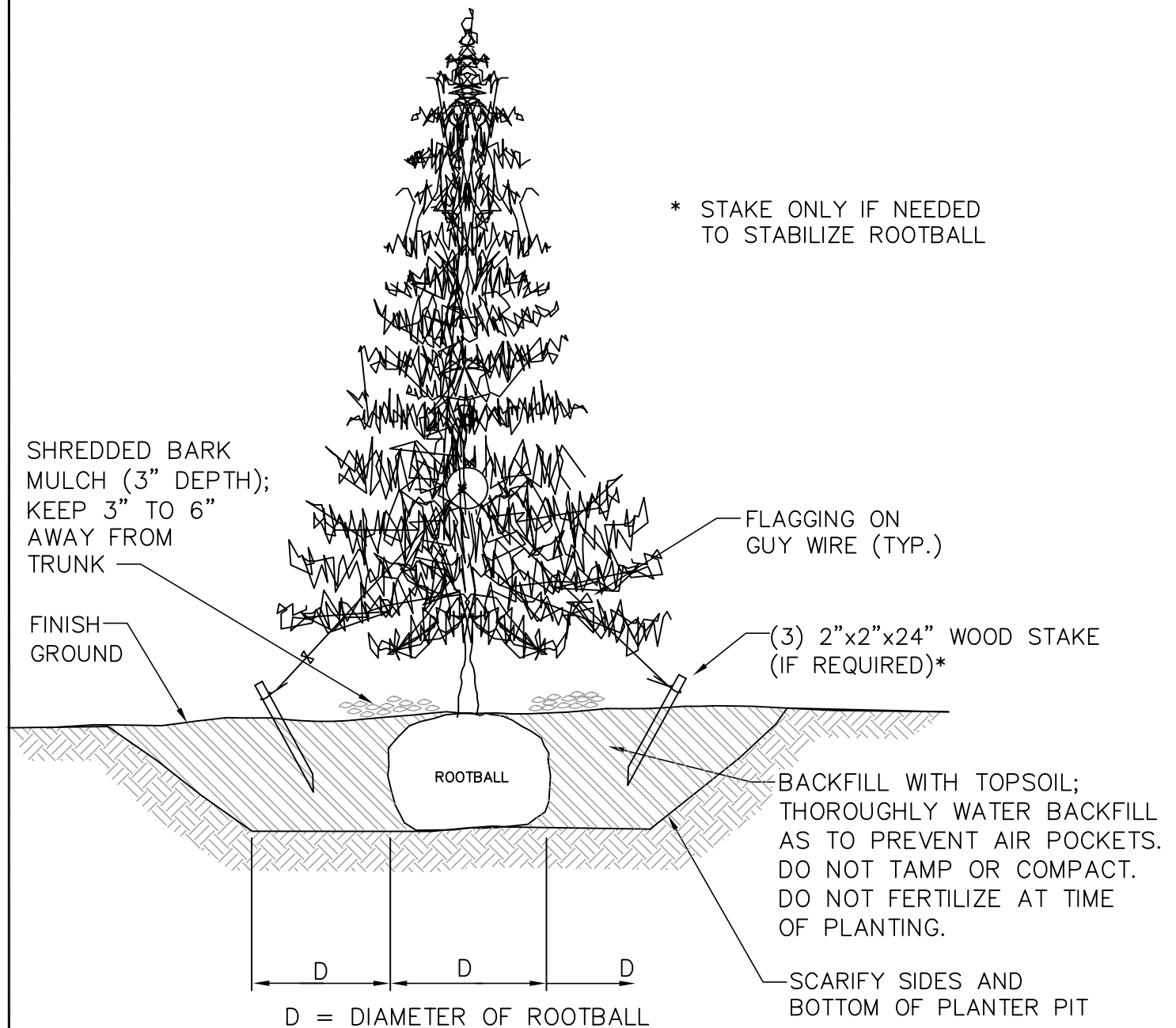
APPROVED:

REVISED:
10/08

SHRUB PLANTING DETAIL

SECTION #
75.02

DETAIL #
75-1



NOTES:

1. CONTRACTOR SHALL CUT BURLAP AND REMOVE A MINIMUM OF 1/2 FROM PLANTING PIT. CONTRACTOR SHALL COMPLETELY REMOVE WIRE BASKETS.
2. DEPTH OF PLANT PIT VARIES DEPENDING ON ROOTBALL THICKNESS. SOIL SHALL BE LOOSENED AND SUITABLE FOR ROOT GROWTH. TOP WIDTH OF PLANT PIT SHALL BE 4-5 TIMES ROOTBALL DIAMETER. SET ROOTBALL ON SOLID GROUND TO PREVENT SETTLING. PLANT TREE TRUNK WITH TRUNK FLARE AT OR UP TO 1" ABOVE FINISHED GROUND.
3. USE THREE 2"x2"x24" WOOD STAKES WHEN SPECIFIED ON DRAWINGS OR REQUIRED BY THE ENGINEER. EMBED AT ANGLE. DO NOT PENETRATE ROOTBALL. USE SOFT, FLEXIBLE MATERIAL FOR TIES. GUY AT APPROXIMATELY 1/3 TREE HEIGHT. REMOVE GUY AFTER ONE YEAR. DO NOT STAKE TREE RIGID, IT MUST MOVE IN THE WIND.

MUNICIPALITY



OF ANCHORAGE

SCALE:
NTS

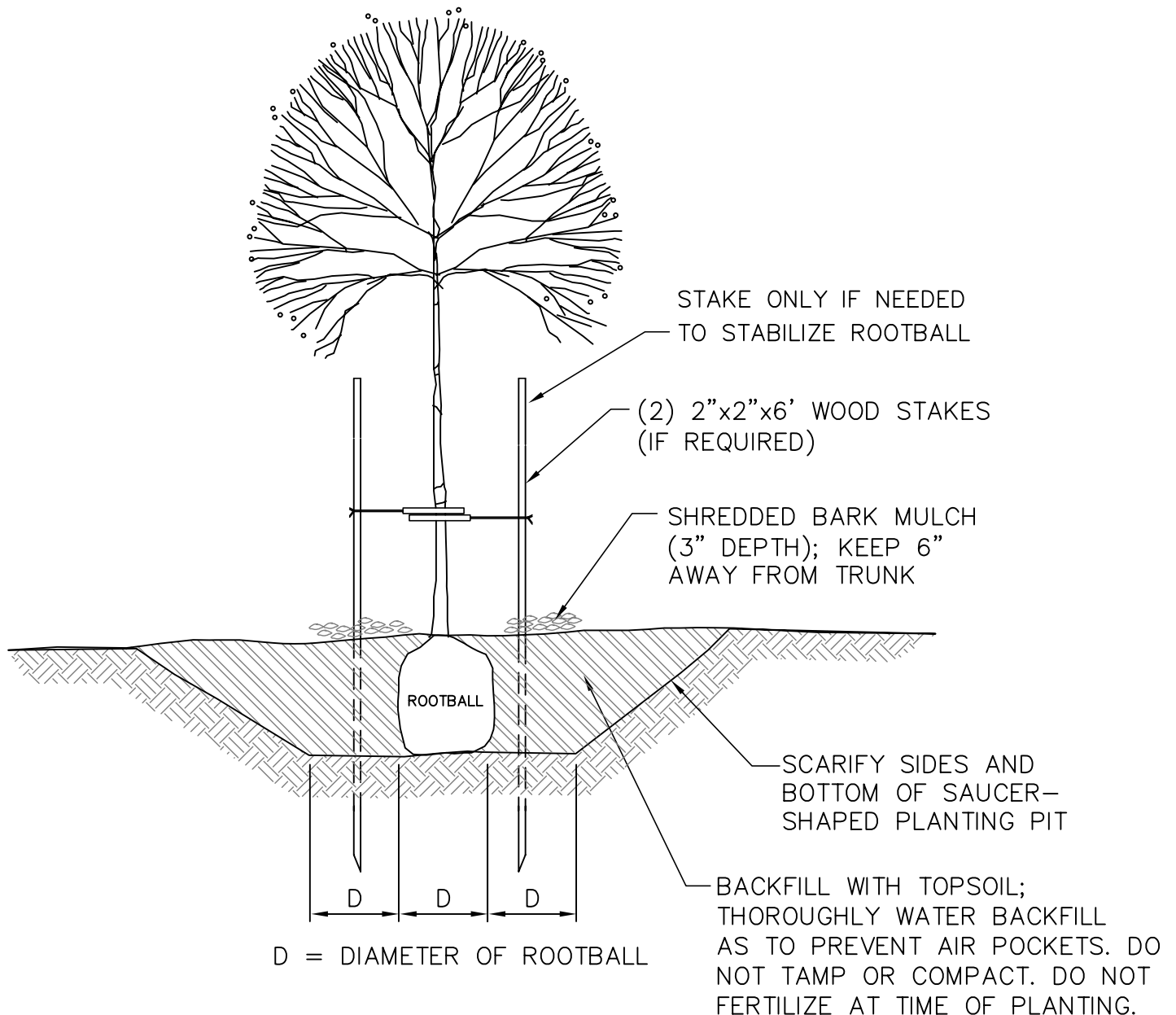
APPROVED:

REVISED:
2/10

CONIFER PLANTING DETAIL

SECTION #
75.02

DETAIL #
75-2



NOTES:

1. CUT BURLAP AND WIRE BASKET, PEEL DOWN, REMOVE OR LAY FLAT IN BOTTOM OF PLANT PIT. REMOVE CONTAINERS.
2. DEPTH OF PLANT PIT VARIES DEPENDING ON ROOTBALL THICKNESS. SOIL SHALL BE LOOSENEED AND SUITABLE FOR ROOT GROWTH. TOP WIDTH OF PLANT PIT SHALL BE 4-5 TIMES ROOTBALL DIAMETER. SET ROOTBALL ON SOLID GROUND TO PREVENT SETTLING. PLANT TREE TRUNK WITH TRUNK FLARE AT OR UP TO 1" ABOVE FINISHED GROUND.
3. USE TWO 2"x2"x6' WOOD STAKES WHEN SPECIFIED ON DRAWINGS OR REQUIRED BY THE ENGINEER. EMBED 24" DO NOT PENETRATE ROOTBALL. USE SOFT, FLEXIBLE MATERIAL FOR TIES. GUY AT APPROXIMATELY 1/3 TREE HEIGHT. REMOVE GUY AFTER ONE YEAR. DO NOT STAKE TREE RIGID, IT MUST MOVE IN THE WIND.

MUNICIPALITY



OF ANCHORAGE

SCALE:
NTS

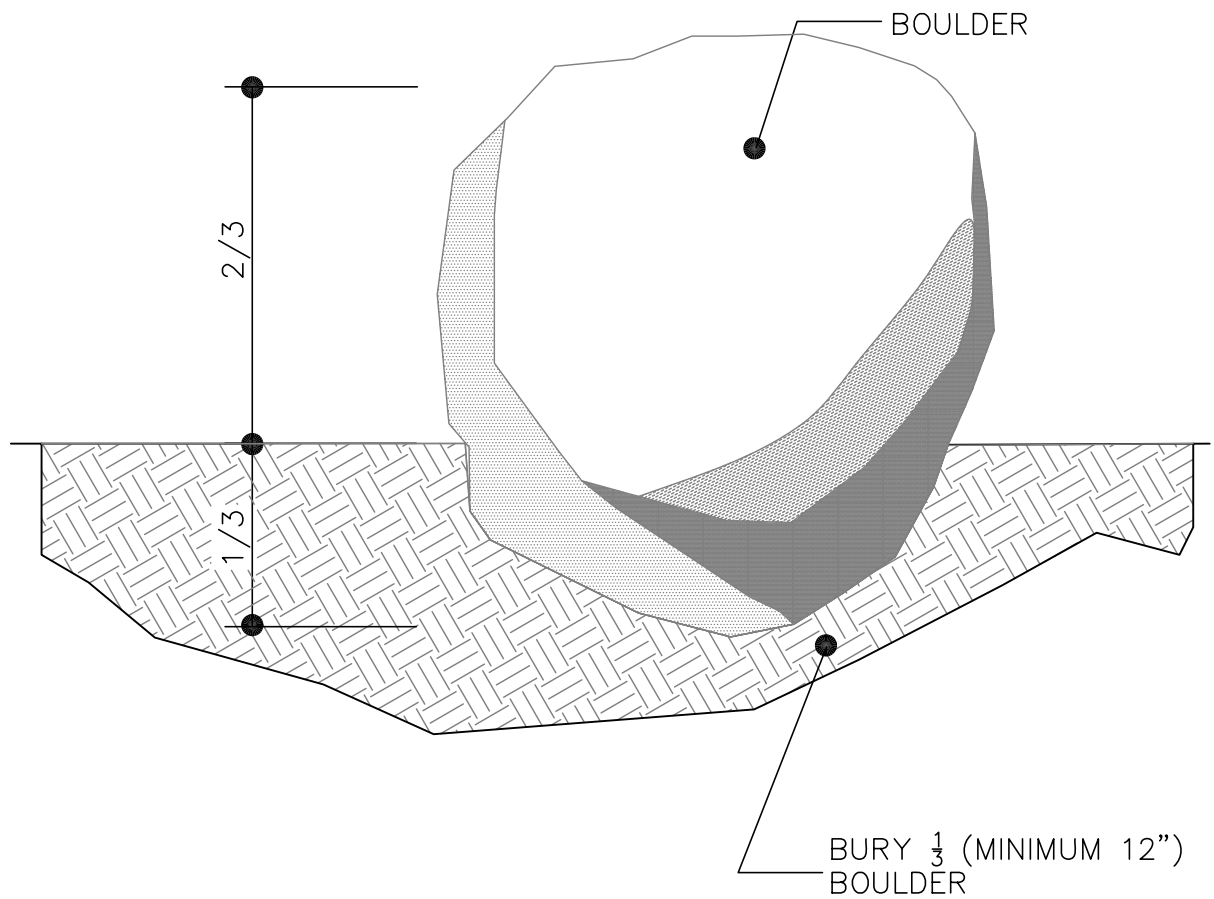
APPROVED:

REVISED:
10/08

DECIDUOUS TREE PLANTING DETAIL

SECTION #
75.02

DETAIL #
75-3



BOULDER

NOTES:

1. ORIENTATION OF BOULDERS DETERMINED ON-SITE BY THE ENGINEER.

MUNICIPALITY



OF ANCHORAGE

SCALE:
NTS

APPROVED:

REVISED:
10/08

BOULDER

SECTION #
75.11

DETAIL #
75-4