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32 9310 – Trees, Shrubs and Groundcovers

PART 1. - GENERAL

1.01 Section Includes

- A. Provide trees, shrubs, and groundcovers as shown and specified. The work includes:
 - 1. Soil preparation.
 - 2. Trees, shrubs, and groundcovers.
 - 3. Mulch and planting accessories.
 - 4. Existing tree care.
 - 5. Tree relocation.
 - 6. Tree set-backs and placement.
 - 7. Maintenance until acceptance.

1.02 Definitions

- A. Topsoil: Fertile, friable, natural soil of loamy character without admixture or subsoil material, obtained from a well-drained arable site, reasonably free from clay, lumps, coarse sand, stones, plants, roots, sticks, and other foreign material, with acidity range of between PH 6.0 and 6.8.
- B. Pulverized Topsoil: Topsoil crushed and screened to be free of clumps, rocks and debris.
- C. Amended Topsoil: Soil produced by homogeneously blending and thoroughly incorporating 60% topsoil, 20% coarse sand and 20% mushroom compost.
- D. Planting Soil Mix: A thorough mixture of specified soil amendments. Specific materials for planting soil mixes are specified within the plans and specifications.
- E. Soil Amendments: Any material mixed with topsoil including but not limited to peat moss, perlite, fertilizers, vermiculite, manures, sand or mushroom compost. Specific materials for soil amendments are specified within the plans and specifications.
- F. Finish Grade: Elevation of finished surface of topsoil.
- G. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before topsoil is placed.
- H. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

- I. Backfill: The earth used to replace or the act of replacing earth in an excavation.
 - J. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.
 - K. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.
 - L. Set-backs: Allowable distance between planting and roadways, walks, pavements, lighting fixtures and buildings to allow landscape maintenance and/or prevent damage to plantings from salt/chemical applications.
- 1.03 Submittals
- A. Product Data and Certificate: For each type of product.
 - B. Samples of each type of mulch and planting accessory.
- 1.04 Quality Assurance
- A. Plant names indicated shall comply with "Standardized Plant Names" as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature. Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legibly tagged.
 - B. Comply with sizing and grading standards of the latest edition of "American Standard for Nursery Stock" (ANSI Z60.1). A plant shall be dimensioned as it stands in its natural position.
 - C. All plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of 2 years.
 - D. Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable, at no additional cost, providing that the larger plants will not be cut back to size indicated.
 - E. Plants are subject to inspection by the University's Representative or Landscape Architect at the nursery or jobsite. The Owner's Representative or Landscape Architect reserves the right to personally select any or all nursery stock prior to digging.

F. The Landscape Contractor shall maintain an experienced full-time supervisor on the project site when work is in progress.

1. Pesticide Applicator: State licensed, commercial.

1.05 Delivery, Storage, and Handling

A. Deliver fertilizer materials in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. Store in manner to prevent wetting and deterioration.

B. Take all precautions customary in good trade practices in preparing plants for moving. Workmanship that fails to meet the highest standards will be rejected. Spray deciduous plants in foliage with an approved “Anti-Desiccant” before digging to prevent dehydration. Dig, pack, transport, and handle plants with care to ensure protection against injury. Inspection certificates required by law shall accompany each shipment invoice or order to stock and on arrival, the certificate shall be filed with the Owner’s Representative. Protect all plants from drying out. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss, or in a manner acceptable to the University’s Representative or Landscape Architect. Water heeled-in plantings daily. No plant shall be bound with rope or wire in a manner that could damage or break the branches, bark or destroy the plant's natural shape.

C. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape.

D. Plants transported to the site in open vehicles shall be covered with tarps or other suitable covers securely fastened to the body of the vehicles and adequately ventilated to prevent overheating and or wind burn. Do not drop plants during delivery and handling. Handle planting stock by root ball.

E. Deliver plants after preparations for planting have been completed, and install immediately. All plants that cannot be planted immediately on delivery shall be set on the ground or in a trench and the balls well covered with soil, mulch or other acceptable material to prevent freezing, drying or over watering conditions. All plants shall be kept moist, fresh and protected for the entire period during which the plants are being handled in transit or in temporary storage.

F. Provide dry, loose topsoil for planting bed mixes. Frozen or muddy topsoil is not acceptable.

1.06 Project Conditions

- A. Work notifications: The Contractor shall notify the University’s Representative or Landscape Architect at least two (2) working days or 48 hours in advance of the anticipated delivery and subsequent plant material installation for on-site approval.
 - B. J.U.L.I.E. notification: Landscape Contractor shall be responsible for contacting J.U.L.I.E. (Joint Utility Locating Information for Excavators) prior to digging operations.
 - C. Protect existing utilities, paving, and other facilities from damage caused by landscaping operations.
 - D. A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the drawings. In the event that quantity discrepancies or material omissions occur in the plant material list, the planting plans shall govern.
- 1.07 Maintenance Service
- A. Plant Maintenance Services: Will be performed under a separate contract. Provide full maintenance by skilled experienced employees of Landscape Maintenance Contractor. Maintenance service shall be performed as required in Part 3. Begin maintenance immediately after final acceptance on the initial project by the University’s Representative or Landscape Architect.
- 1.08 Warranty
- A. Warrant plant material to remain alive and be in a healthy, vigorous condition for a period of one (1) year after completion and final acceptance of all work.
 - 1. Inspection of plants will be made by the University’s Representative or Landscape Architect at completion of planting.
 - B. Replace, in accordance with the drawings and specifications, all plants that are dead or, as determined by the Representative or Landscape Architect, are in an unhealthy or unsightly condition, and have lost their natural shape due to dead branches, or other causes due to the Contractor’s negligence. The cost of such replacement(s) is at contractor’s expense. Warrant all replacement plants for one (1) year after installation. Replacement plants which are dead or unacceptable within one (1) year of installation may be replaced with unguaranteed plants or removed at the discretion of the University’s Representative or Landscape Architect.
 - C. Warranty shall not include damage or loss of trees, plants, or groundcovers caused by fires, floods, freezing rains, lightning storms, winds over 75 miles per hour,

winter kill caused by extreme cold and severe winter conditions not typical of planting area; or acts of vandalism.

- D. Remove and immediately replace all plants, as determined by the University's Representative or Landscape Architect to be unsatisfactory during the initial planting installation.
- E. Warranty shall not include on-site relocation of existing plants.
- F. Special Warranty: Landscape Contractor / Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified one year warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Death and unsatisfactory growth, except for defects resulting from vandalism.
 - b. Structural failures including plantings falling or blowing over.
 - c. Plants 1/3 dead or more.

PART 2. - PRODUCTS

2.01 Materials

- A. Plants: Furnish freshly dug nursery-grown plants true to genus, species, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings; with normal, densely-developed branches and vigorous, fibrous root systems developed by transplanting or root pruning. Provide only sound, well-shaped, fully branched, healthy, vigorous stock, free from defects such as disfiguring knots, sunscald injuries, frost cracks, abrasions of the bark, plant disease, insect eggs and larvae, borers, and all forms of infestation. All plants shall have a fully developed form without voids and open spaces. Plants held in storage will be rejected if they show signs of growth during storage.
- B. Balled and burlapped (BB) plants shall be dug with firm natural balls of earth, with sufficient diameter and depth to include all fibrous and feeding roots. No plants moved with a ball will be accepted if the ball is cracked, mushroomed or broken before or during planting operations.
 - 1. Provide ball sizes complying with the latest edition of the "American Standard for Nursery Stock". Tree spade transplanting is not acceptable.
 - 2. Container-grown stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm and whole.
 - a. No plant shall be loose in the container.
 - b. Container stock shall not be pot bound.

3. Provide tree species with a single main trunk unless otherwise specified on the Plant List or accepted.
 4. Provide plant matched in form when arranged in groups.
 5. Provide plants free from pruning wounds with diameters of more than one (1) inch. Acceptable wounds must show vigorous bark on all edges.
 6. Provide evergreen trees branched to the ground unless otherwise specified or accepted.
 7. Provide shrubs and groundcover meeting the requirements for spread, height and spacing indicated in the Plant List or Plant Schedule.
 - a. The measurement for height shall be taken from the ground level to the average height of the top of the plant and not the longest branch.
 - b. Single stemmed or thin plants will be rejected.
 - c. Side branches shall be generous, well-twigged, and the plant as a whole well-bushed to the ground.
 - d. Plants shall be in a moist, vigorous condition, free from dead wood, bruises, or other root or branch injuries.
- C. All plants shall have been grown in Northern Illinois under climatic conditions similar to those in the locality of the project for at least two years. Plants shall have been transplanted or root pruned at least once in the past three years. No heeled-in plants or plants from cold storage will be accepted unless approved by the University's Representative or Landscape Architect.
- D. Substitutions will only be permitted by the University's Representative or Landscape Architect. If proof is submitted that specified plants or sizes are unobtainable, a proposal will be considered for the nearest equivalent size or variety.
- E. When size substitutions are necessary, the contractor shall request approval from the University's Representative or Landscape Architect in writing. It is up to the University's Representative or Landscape Architect to approve in writing requested substitutions.

2.02 Accessories

- A. Topsoil: Fertile, friable, natural soil of loamy character without admixture or subsoil material, obtained from a well-drained arable site, reasonably free from clay, lumps, coarse sand, stones, plants, roots, sticks, and other foreign material, with acidity range of between PH 6.0 and 6.8.
- B. Amended Topsoil: Soil produced by homogeneously blending and thoroughly incorporating 60% topsoil, 20% coarse sand and 20% mushroom compost.
- C. Peat Moss: Brown to black in color, weed and seed free granulated raw peat or baled peat, containing not more than 9% mineral on a dry basis.

- D. Mulch: 6 month old well-rotted shredded native hardwood bark mulch not larger than 4” in length and ½” in width, free of woodchips and sawdust.
- E. Water: Free of substances harmful to plant growth. Hoses or other methods of transportation furnished by contractor.
- F. Slow-release Watering Bags: “Treegator” Bags or approved equal.
 - 1. Standard product manufactured for drip irrigation of plants and emptying its water contents over an extended time period; manufactured from 10 mil polyester reinforced polyethylene sheet, PVC, or HDPE plastic with 20 gallon capacity minimum.
- G. Steel Posts for Guying: Standard 7 foot, “T” shaped steel fence post, or steel screw anchors.
- H. Guying Wires: Double strand No. 12-gauge galvanized wire.
 - 1. Turnbuckles: Galvanized steel of size and gauge required to provide tensile strength equal to that of the wire. Turnbuckle openings shall be at least three (3) inches.
 - 2. Safety Ribbon: Bright yellow ribbon securely fastened to all guying wires at least thirty six (36) inches above the ground. Yellow “EMCO” plastic guy guards #70-7y, covering 75% of guying wire obtained from Electrical materials company may be used.
- I. Guying Hose: Two-ply, reinforced garden hose not less than ½” inside diameter.
- J. Tree Wrap: Standard burlap tree wrapping, four (4) inch wide or standard waterproofed tree wrapping paper 2-1/2” wide, made of 2 layers of crepe Kraft paper weighing not less than 30 lbs. per ream.
- K. Twine: Two-ply jute material.
- L. Drainage Tile: ASTM F405 corrugated polyethylene drainage tubing, perforated.
- M. Drainage Fill: AASHTO M43 #6 (3/8” to 3/4”) clean uniformly graded stone or gravel.
- N. Sand: Coarse “torpedo” sand.
- O. Fertilizers:
 - 1. Bonemeal with an approximate analysis of 4% nitrogen, and 20% phosphorous.
 - 2. Commercial 10-10-10 fertilizer.

- P. Pesticides: Herbicides and insecticides registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

PART 3. - EXECUTION

3.01 Inspection

- A. Examine proposed planting areas and conditions of installation. Do not start planting work until unsatisfactory conditions are corrected.

3.02 Preparation

A. Time of planting:

1. Evergreen material: Plant evergreen materials between September 1 and November 1 or in Spring before new growth begins. If project requirements require planting at other times, plants shall be sprayed with anti-desiccant prior to planting operations.
2. Deciduous material: Plant deciduous materials in a dormant condition. If deciduous trees are planted in-leaf, they shall be sprayed with an anti-desiccant prior to planting operations.
3. Planting times other than those indicated must receive the University Representative's or Landscape Architect's approval prior to commencing work.

B. Spade-Cut Edging:

1. Separate mulched areas from turf areas with a 90-degree, 4 to 6 inch deep, spade-cut edge.

- C. Install plants using only experienced workmen familiar with planting procedures under the supervision of a qualified supervisor.

- D. Locate plants as indicated and approved in the field by the University's Representative or Landscape Architect. If obstruction are encountered that are not shown on the drawings, do not proceed with planting operations until alternate plant locations have been selected.

- E. Excavate or auger circular plant pits with tapered sides, except for plants specifically indicated to be planted in beds. Provide shrub pits at least 12" greater than the diameter of the root system and 24" greater for trees. Depth of pit shall accommodate the root system. Scarify the bottom of the pit to a depth of 4". Remove excavated materials from the site.

- F. **Set Backs:** Plant set-backs are to be of sufficient distance from edge of walks and pavements to allow for landscape maintenance, snow storage and removal and the prevention of damage from salt or other anti-ice applications. If any proposed plant location has an insufficient set-back, contact the University's Representative or Landscape Architect for relocation.

3.03 Installation

- A. Trees and Shrubs: Before planting, obtain Landscape Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.
- B. The University's Representative or Landscape Architect will stake and space trees, shrubs, and vines as indicated on Drawings. If the Contractor stakes, sets out or spaces the plant material the University's Representative or Landscape Architect will approve final plant locations.
1. Dig or auger plant holes or pits large enough to allow spreading of roots.
 2. Set plant material in center of the planting pit to proper grade and alignment. **The top of the root ball shall be at the same elevation as the surrounding finish grade.** Allow for settlement. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure. Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break. No filling will be permitted around trunk or stems. Backfill the pit with topsoil or specified planting mixture in layers to eliminate voids and air pockets. Do not use frozen or muddy mixture for backfilling. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
 3. All excavated material not used in the soil mixture as backfill or watering saucer shall be removed and legally disposed of off-site.
 4. Form a shallow ring shaped basin or saucer of soil around the edge of each planting pit to retain water during future watering's.
 5. All burlap, ropes and wires shall be removed from the sides and top of balls. No wire or wire baskets shall remain at the top 1/3 of the root ball after planting.
 6. Mix bonemeal or approved commercial fertilizer at 10 lbs. per cubic yard of backfill.
 7. When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.
 8. The Contractor is responsible for stripping sod from proposed planting areas and leveling soil according to drawings and specifications.

9. Potted and Container-Grown Stock: Carefully remove root ball from container without damaging root ball or plant. Loosen root system gently and thoroughly in root balls that are bound solid.
 10. Water thoroughly after planting, taking care not to cover plant crowns with wet soil. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.
 11. All rhododendron and hydrangea species shall be backfilled with amended topsoil having an acidity range between 4.5 and 5.5.
- C. Groundcovers: Where groundcovers are specified on the plans, rototill entire plant bed to 6” depth using a mixture of 60% topsoil, 20% mushroom compost, 20% torpedo or coarse sand. Incorporate commercial 10-10-10 fertilizer into prepared soil mixture at an approximate rate of 1 lb. per square yard.
1. Space plants as specified. Fill entire bed to within 6” of edge.
 2. Apply commercial pre-emergent herbicide (Preen or equal) per manufacturer’s directions to entire groundcover bed before mulch is applied.
 3. Mulch with 2” of specified mulching material using care to keep foliage exposed.
- D. Mulching: Mulch tree and shrub planting pits, beds and areas indicated on the plans with required mulching material 3” deep immediately after planting. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.
1. Individual tree mulch rings shall be a minimum of 4’ radius from the tree trunk or 8’ diameter. The tree mulch ring edge shall be a uniform circular cut the full depth of sod. Refer to Mulch Ring Guide on drawings for exact mulch ring diameters.
- E. Wrapping: Inspect trees for injury to trunks, evidence of insect infestation, and improper pruning before wrapping.
- F. Guying: Guy all trees immediately after lawn seeding or sodding operations and prior to acceptance. When high winds or other conditions which may affect tree survival or appearance occur, the University’s Representative or Landscape Architect may require immediate guying.
1. Guy deciduous trees over 2” caliper and over. Guy evergreen trees 6’ tall and over. See planting detail for method.
- G. Pruning: Prune out dead branches, suckers, and crossing branches of deciduous stock, after planting. Remove or cut back broken, damaged, and unsymmetrical growth of new wood. Cut branches flush with the branch collar, at a point beyond a lateral shoot or bud a distance of not less than ½ the diameter of the supporting branch. Make cut on and angle.

1. Multiple leader plants: Do not remove multiple leaders unless directed by University's Representative or Landscape Architect. Preserve the leader which will best promote the symmetry of the plant.
 2. Prune trees and shrubs in accordance with standard horticultural practice to preserve the natural character of the plant.
 3. Evergreens: Prune evergreens only to remove broken or damaged branches.
 4. Flowering Trees: Prune flowering trees to remove dead and broken branches or branches that rub only.
 5. Pruning shall be done with clean, sharp tools.
 6. Do not apply pruning paint to wounds.
- H. Care of Existing Trees: Selectively prune existing trees in construction limits, under University Representative's or Landscape Architect's direction. Remove sucker shoots, dead, rubbing, and damaged branching.
1. Clean up miscellaneous organic debris within construction limits.
- I. Slow-release Watering Bag: Provide a minimum of one bag for each tree and fill with water. Use watering tanks or other form of watering system where hose bibs and hydrants are inoperable or inaccessible.
- J. Tree Relocation: Dig, ball and burlap, and move designated trees for relocation to the designated plant storage area for heeling-in of materials until final planting areas are prepared.
1. Maintain plants in storage areas by bracing plants in vertical position and setting balls in an enclosed berm of topsoil or bark. Water as required to maintain adequate root moisture.
 2. Re-burlap plant balls if required before final transplanting operations.
 3. Move to final locations shown on the drawings and plant in accordance with specified tree planting requirements.
- K. Weather Conditions: Planting shall be done under favorable weather conditions or as authorized by the University's Representative or Landscape Architect.

3.04 Maintenance

- A. Maintain plant material for a period of at least 30 days after all work in this section has been installed and prior to receiving final acceptance by the University's Representative or Landscape Architect. Continue the required maintenance in this section until all work in the entire project receives final acceptance by the University's Representative or Landscape Architect. If final plant installation is not complete by September 15 and final acceptance made before October 15, continue the required maintenance beyond the prescribed period until at least April 30 of the following year or until all work in the entire

project receives **written** final acceptance by the University's Representative or Landscape Architect.

- B. Maintenance shall include pruning, cultivating, weeding, watering, fertilizing, mulching, performing other operations as required to establish healthy, viable plantings and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease.
 - 1. Reset settled plants to proper grade and vertical position. Restore plant saucer and adjacent material and remove dead material.
 - 2. Tighten and repair guy wires and stakes as required.
 - 3. Correct defective work as soon as possible after deficiencies become apparent and weather and season permit.
 - 4. Water trees, shrubs, and groundcover beds within the first 24 hours of initial planting, and not less than twice per week until final acceptance.
- C. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.
- D. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.
- E. Apply pesticides and other chemical products and biological control agents according to authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with University's operations and others in proximity to the Work. Notify University before each application is performed.
- F. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.
- G. Provide maintenance by skilled employees of Landscape Contractor / Installer. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established.
- H. Where hose bibs or hydrants exists, the Contractor shall utilize the systems in the manner they were intended.
- I. Contractor shall water plant material from the point of installation, 30 days after and until final acceptance for the entire project. Watering shall take place so that no less than 1" of water is applied to each plant within any seven day period.

- J. Prior to final acceptance of the project, the Contractor shall inspect the plantings throughout the growing season and take necessary steps to control insect and blight attack. The Contractor shall also inspect the plantings after severe storm and exercise all corrective measures required to maintain finished quality appearance and good plant vigor.
 - K. Care shall be taken in watering plant material so as not to over water or in any way damage the plants. The Contractor is encouraged to monitor the soil moisture condition frequently and water when necessary to improve the percentage of plant survival. The University will take over watering of plant material if necessary following final acceptance.
- 3.05 Acceptance
- A. Planted areas will be inspected during and upon completion of installation and accepted subject to compliance with specified materials and installation requirements
 - 1. Planted areas will be accepted provided all requirements, including maintenance, have been complied with and plant materials are alive and in a healthy, vigorous condition.
- 3.06 Cleaning
- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from planting operations.

End of Division 32 9310

**This section of the NIU Design Requirements establishes minimum requirements only.
It should not be used as a complete specification.**