SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Protecting existing vegetation to remain.
   2. Removing existing vegetation.

1.3 DEFINITIONS

A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.

D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.

E. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and indicated on Drawings.

F. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 MATERIAL OWNERSHIP

A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.
1.5 INFORMATIONAL SUBMITTALS

A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
   1. Use sufficiently detailed photographs or videotape.
   2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site.

1.7 PROJECT CONDITIONS

A. Regulatory and Safety Requirements: Coordinate emergency access with local emergency services before and during construction.

B. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

C. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

D. Utility Locator Service: Notify New Jersey One Call for area where Project is located before site clearing.

E. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place. Comply with Gloucester County Soil Conservation District Certified Plans.

F. The following practices are prohibited within protection zones:
   1. Storage of construction materials, debris, or excavated material.
   2. Parking vehicles or equipment.
   3. Foot traffic.
   4. Erection of sheds or structures.
   5. Impoundment of water.
   6. Excavation or other digging unless otherwise indicated.
   7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

G. Do not direct vehicle or equipment exhaust towards protection zones.
H. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.
I. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 (NO CONTENT)

PART 3 - EXECUTION

3.1 GENERAL
A. Comply with Limit of Disturbance in the field as indicated on the Drawings and on the approved Soil Erosion and Sediment Control Plans. Do not disturb areas outside the Limit of Disturbance without written permission from the Owner and Soil Conservation District.

3.2 PREPARATION
A. Protect and maintain benchmarks and survey control points from disturbance during construction.
B. Locate and clearly identify trees, shrubs, and other vegetation to remain. Flag each tree trunk at 54 inches above the ground.
C. Protect existing site improvements to remain from damage during construction.
   1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.3 TREE AND PLANT PROTECTION
A. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.

3.4 EXISTING UTILITIES
A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing, when requested by Contractor.
   1. Verify that utilities have been disconnected and capped before proceeding with site clearing.
B. Locate, identify, disconnect, and seal or cap utilities indicated to be removed.
   1. Arrange with utility companies to shut off indicated utilities.
   2. Owner will arrange to shut off indicated utilities when requested by Contractor.
C. Locate, identify, and disconnect utilities indicated to be abandoned in place.
D. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
1. Notify Architect not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.

E. Excavate for and remove underground utilities indicated to be removed.

3.5 TREE REMOVAL

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
   1. Conduct a walkthrough with Landscape Architect and Owner to assess removals.
   2. Chip removed tree branches up to 8 inches in diameter and dispose of or store where indicated by Owner.

3.6 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
   1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
   2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 311000
SECTION 311321 – INVASIVE PLANT CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Protecting existing vegetation to remain.
   2. Control of secondary establishment and resprouts.

B. Related Sections:
   1. Section 311000 "Site Clearing" for tree removal.

1.3 DEFINITIONS

A. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

B. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to this Project.

B. Qualification Data: For Ecologist.

C. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of forests and meadows during a calendar year. Submit before expiration of required initial maintenance periods.

D. Monitoring Reports: Documentation of removal and control techniques and their effectiveness. Indicate specific problems to be addressed in subsequent maintenance.
1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful management of forests and meadows.
   1. Experience: Five years’ experience, and successful completion of a minimum of five similar projects in forest and meadow management, in addition to requirements in Division 1 Section "Quality Requirements."
   2. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
      a. Supervisor shall be licensed Landscape Architect with current registration in the State of New Jersey.
   3. Personnel Certifications:
      a. Ecologist: Ecologist for field supervision of invasive plant removal with a minimum of five years’ experience and successful completion of five similar projects in invasive plant removal and forest restoration work, including expertise in plant identification and applied habitat restoration techniques.
      b. Installer’s field supervisor shall have certification from the Society for Ecological Restoration:
         1) Certified Ecological Restoration Practitioner, designated CERP.


B. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Weather Limitations: Apply products during favorable weather conditions according to manufacturer's written instructions.

1.7 SEQUENCE AND SCHEDULING

A. Schedule removals for the most effective seasonal timing, in consideration of treatment method, target species, and reduced risk for adjacent native plants.

1.8 MAINTENANCE SERVICE

A. Initial Maintenance Service: Provide full maintenance by skilled employees of Installer. Maintain as required in Part 3. Begin maintenance immediately after the initial work in each area is completed and continue until acceptance, but not less than 1 year from date of completion of initial work.

B. Continuing Maintenance Proposal: From Installer to Owner, in the form of a standard yearly (or other period) maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.
PART 2 - PRODUCTS

2.1 PESTICIDES & HERBICIDES

A. General: Pesticide, registered and approved by EPA for use near aquatic habitats, 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.

B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

PART 3 - EXECUTION

3.1 INVASIVE SPECIES LIST

A. Remove invasive species of trees, shrubs, vines and herbaceous plants as follows:

1. Trees;
   c. Princess Tree (Pawlowia tomentosa).
   d. White Mulberry (Morris alba).

2. Shrubs:
   a. Amur Honeysuckle (Lonicera maackii).
   b. Morrow’s Honeysuckle (Lonicera morrow).
   c. Tartarian Honeysuckle (Lonicera tatarica).
   d. Chinese Privet (Ligustrum sinense).
   e. Multiflora Rose (Rosa multiflora).
   f. Japanese Barberry (Berberis thunbergi).
   g. Autumn Olive (Elaeagnus umbellata).
   h. Common Buckthorn (Rhamnus cathartica).

3. Vines:
   a. Porcelain Berry (Ampelopsis brevipedunculata)
   b. Oriental Bittersweet (Celastrus orbiculatus)
   c. Japanese Honeysuckle (Lonicera japonica)
   d. English Ivy (Hedera helix)
   e. Mile-a-Minute (Polygonum perfoliatum)

4. Herbaceous Plants:
   a. Garlic Mustard (Alliaria petiolata)
   b. Japanese Stilt grass (Microstefium vimineum)
   c. Phragmites (Phragmites aurtralis)
d. Japanese Knotweed (Polygonum cuspidatum)
e. Soda Apple (Solanum viarum)
f. Giant Hogweed (Heracleum mantegazzianum)

5. Other Plants:
   a. Bamboo (Phyllostachys spp.)

3.2 INVASIVE PLANT REMOVAL

A. Trees, Shrubs and Vines:
   1. Cut and remove above-ground portions of trees, shrubs and vines as indicated on Drawings.
   2. Paint cut trunks and stems with herbicide.

B. Herbaceous Plants: Treat with selective herbicide.

C. Treat invasive plant resprouts and secondary establishment.

D. Monitor areas monthly for:
   1. Effectiveness of prior removals. Adapt future management as appropriate.
   2. Resprouts from previously treated stumps and rootstocks. Control as appropriate.
   3. Invasive non-native seedling emergence in managed areas. Control as appropriate.
   4. Successful native plant re-establishment in managed areas.

3.3 PESTICIDE APPLICATION

A. Apply pesticides and other chemical products and biological control agents in accordance with requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.4 FIELD QUALITY REPORTS

A. Monitoring Reports: Prepare monthly monitoring reports documenting effectiveness of removal methods and modifications to removal techniques.

3.5 CLEANUP AND PROTECTION

A. Dispose of debris that has the potential to re-root, including vine and shrub cuttings, in landfills.

END OF SECTION 311321
PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
A. Section Includes:
   1. Seeding.
B. Related Requirements:
   1. Section 329300 "Plants" for trees, shrubs, ground covers, and other plants.

1.3 DEFINITIONS
A. Finish Grade: Elevation of finished surface of planting soil.
B. Nurse Grass: A fast germinating temporary grass included in grass seed mixtures to provide soil stabilization until permanent grasses get established.
C. 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.
D. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
E. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329115 “Soil Preparation (Performance Specification)” and drawing designations for planting soils.

1.4 PREINSTALLATION MEETINGS
A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS
A. Product Data: For the following:
   1. Seed mixes.
1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data:
1. For qualified landscape Installer. Include list of similar projects with three to five institutional clients completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.
2. For Installer's Field Supervisor.

B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
1. Certification of each seed mixture for turfgrass sod. Include identification of source and name and telephone number of supplier.

C. Product Certificates: For fertilizers, from manufacturer.

D. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.
1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
2. Experience: Five years' experience and successful completion of five similar projects in turf installation in addition to requirements in Section 014000 "Quality Requirements."
3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
   a. Supervisor shall be licensed Landscape Architect with current registration in the State of New Jersey.
4. Personnel Certifications:
   a. Installer's field supervisor shall have certification in one of the following categories from the Professional Landcare Network:
      1) Landscape Industry Certified Technician - Exterior.
      2) Landscape Industry Certified Lawncare Manager.
      3) Landscape Industry Certified Lawncare Technician.
   b. Installer’s field supervisor shall have certification from the Society for Ecological Restoration:
      1) Certified Ecological Restoration Practitioner, designated CERP.
5. Pesticide Applicator: State licensed, commercial.
1.9 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.

C. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Accompany each delivery of bulk materials with appropriate certificates.

1.10 FIELD CONDITIONS

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.

2. Fall Planting: August 1 to October 15.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MEADOW GRASSES AND WILDFLOWERS

A. Wildflower and Native-Grass Seed: Fresh, clean, and dry new seed, of mixed species as follows:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the following, or approved equal:

   a. Ernst Seeds: “Right-of-Way Native Woods Mix w/ Annual Ryegrass – ERNMX-132-1”, with nurse crop. (Landscape Architect, in conjunction with Contractor may adjust mix to suit field conditions)

B. Seed Carrier: Inert material, sharp clean sand or perlite.
2.2 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

2.3 PESTICIDES

A. General: Pesticide, 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.

B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.

2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.

3. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.

2. Protect grade stakes set by others until directed to remove them.

3.3 MEADOW

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.
1. Before sowing, mix seed with seed carrier at a ratio of not less than three parts seed carrier to one part seed.
2. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
3. Do not use wet seed or seed that is moldy or otherwise damaged.

B. Sow seed at a total rate of 1 lb./1000 sq. ft.

C. Brush seed into top 1/16 – 1/8 inch of soil, roll lightly, and water with fine spray.

D. Protect seeded areas by spreading straw mulch. Spread uniformly at a minimum rate of 1 ton/acre to form a continuous blanket 3/4 inch in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.

E. Water newly planted areas and keep moist until meadow is established.

3.4 MEADOW MAINTENANCE

A. Maintain and establish meadow by watering, weeding, mowing, trimming, replanting, and performing other operations as required to establish a healthy, viable meadow. Roll, regrade, and replant bare or eroded areas and remulch. Provide materials and installation the same as those used in the original installation.

1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and meadow damaged or lost in areas of subsidence.
2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
3. Apply treatments as required to keep meadow and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

B. Watering: Install and maintain temporary piping, hoses, and meadow-watering equipment to convey water from sources and to keep meadow uniformly moist.

1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.

3.5 Water meadow with fine spray at a minimum rate of 1/2 inch per week for eight weeks after planting unless rainfall precipitation is adequate.

3.6 PESTICIDE APPLICATION

A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.
3.7 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

3.8 MAINTENANCE SERVICE

A. Meadow Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Meadow Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable meadow is established, but for not less than maintenance period below.

1. Maintenance Period: 1 year from date of planting completion.

END OF SECTION 329200
100% SCHEMATIC DESIGN DOCUMENTS
FEBRUARY 27, 2018

Assumed Sequence of Work:
1. Initial Site Conditions & Stakes
2. Utility Cave-ins Excluded from Planting Areas
3. Owner Cuts Down Trees to Remain on Site
4. Contractor Captures & Proposes New Placement of Trees & Shrubs by Contractor
5. Contractor Shafted Trees with дерево для урна
6. Invasive Planting Strategy with Landscaping Architect
7. Hardscape & Softscape Hardscape with Landscaping Architect and Owner
8. Owners Propose Shortest Route

Base Bid Assumptions:
1. All Invasive Material Captured by Contractor & Proposed by Contractor & Owner
2. Contractor to Pay and Be Responsible for New Placement of Trees & Shrubs
3. Contractors Shafted Trees with дерево для урна
4. Contractor Shafted Trees with дерево для урна
5. Contractors Shafted Trees with дерево для урна
6. Contractor Shafted Trees with дерево для урна

Add Alternatives:
A1. Invasive Treatment & Removal
A2. See Seeded Area Maintenance
A3. Source from Ernst Seed
A4. Monthly/10 Visits in 24 Months (To Begin After Initial 12 Months)
A5. Landscape Architect and Owner
A6. Flag Each Invasive Woody Plant
A7. Project is Design-Build in Nature with Drawings Representing Representations as to the Means and Methods
A8. Under Ground Utilities
A9. Contact Utility Companies as Required by State
A10. Inconsistencies Promptly to Landscape Architect

General Notes:
1. All Contact Notes Documented and Field Condition Issues, Separately but Also Note on the Site. Report Incidents, Issues, or Incidents Basis Promptly to Landscape Architect...
2. Contact Utility Companies as Required by State and Local Regulations Before Designing/Calculating Service Locations...
3. Fairness and Fairness to Project Hostings/Undertakings/Other Projects...
4. Base and/or Information was Supplied by Financial Analysis...
5. Three Project Conditions

Schematic Design

Contractor to Provide Stakes & Flags at Station Points

Assumed Sequence of Work:
1. Initial Site Conditions & Stakes
2. Utility Cave-ins Excluded from Planting Areas
3. Owner Cuts Down Trees to Remain on Site
4. Contractor Captures & Proposes New Placement of Trees & Shrubs by Contractor
5. Contractor Shafted Trees with дерево для урна
6. Invasive Planting Strategy with Landscaping Architect
7. Hardscape & Softscape Hardscape with Landscaping Architect and Owner
8. Owners Propose Shortest Route

Base Bid Assumptions:
1. All Invasive Material Captured by Contractor & Proposed by Contractor & Owner
2. Contractor to Pay and Be Responsible for New Placement of Trees & Shrubs
3. Contractors Shafted Trees with дерево для урна
4. Contractor Shafted Trees with дерево для урна
5. Contractors Shafted Trees with дерево для урна
6. Contractor Shafted Trees with дерево для урна

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A9. Contact Utility Companies as Required by State
A10. Inconsistencies Promptly to Landscape Architect

General Notes:
1. All Contact Notes Documented and Field Condition Issues, Separately but Also Note on the Site. Report Incidents, Issues, or Incidents Basis Promptly to Landscape Architect...
2. Contact Utility Companies as Required by State and Local Regulations Before Designing/Calculating Service Locations...
3. Fairness and Fairness to Project Hostings/Undertakings/Other Projects...
4. Base and/or Information was Supplied by Financial Analysis...
5. Three Project Conditions
SECTION 329300 - PLANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Plants.
2. Tree-watering devices.

B. Related Sections:

1. Section 311000 "Site Clearing" for tree removal.
2. Section 329200 "Turf and Grasses" for seeding.

1.3 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.

C. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.

D. Finish Grade: Elevation of finished surface of planting soil.

E. Moist Soil: The condition of the soil when it maintains its shape when formed into a ball. Deformation of the soil is difficult under hand pressure. Free water is not visible. The condition also is considered the point between the wilting point and field capacity of the soil.

F. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and mollusccicides. It also includes substances or mixtures intended for use as a plant regulator, defoliator, or desiccant.

G. Pests: Living organisms that occur where they are not desired, or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

H. Planting Area: Areas to be planted.
I. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

J. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

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. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.

M. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

N. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

O. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

P. Wet Soil: The condition of the soil at which point it maintains its shape when formed into a ball but easily deforms under hand pressure. Free water is visible within the pore spaces. The water content in this soil condition is considered at field capacity or wetter.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

2. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to the Project.
3. Plant Photographs: Include color photographs in digital format of each required species and size of plant material as it will be furnished to the Project. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species where more than 20 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Identify each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.
4. Tree grates

B. Samples for Verification: For each of the following:

1. Organic Mulch: 1-pint volume of each organic mulch required; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.
2. Slow-Release, Tree-Watering Device: One unit of each size required.

C. Certification of Root Pruning: From grower for trees and tree-like shrubs, stating the plants have been root pruned at each step in the plant production process to remove stem-girdling roots and kinked roots, or the previous liner production system used other practices that
produce a root system throughout the root ball that complies with these specifications, and the plants are reasonably free of root defects as described in these specifications.

1.5  INFORMATIONAL SUBMITTALS

A. Qualification Data:
   1. For qualified landscape Installer. Include list of similar projects with three to five institutional clients completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.
   2. For Installer's Field Supervisor.

B. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:
   1. Manufacturer's certified analysis of standard products.

C. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before start of required maintenance periods.

D. Warranty: Sample of special warranty.

1.6  QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful establishment of plants.
   1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
   2. Experience: Five years' experience and successful completion of five similar projects in landscape installation in addition to requirements in Section 014000 "Quality Requirements."
   3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
      a. Supervisor shall be licensed Landscape Architect with current registration in the State of New Jersey.
   4. Personnel Certifications:
      a. Installer's field supervisor shall have certification in one of the following categories from the Professional Landcare Network:
         1) Certified Landscape Technician - Exterior, with installation specialty area(s), designated CLT-Exterior.
         2) Certified Ornamental Landscape Professional, designated COLP.
      b. Installer's field supervisor shall have certification from the Society for Ecological Restoration:
         1) Certified Ecological Restoration Practitioner, designated CERP.
   5. Pesticide Applicator: State licensed, commercial.

B. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

C. Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.
1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches above the root flare for trees up to 4-inch caliper size, and 12 inches above the root flare for larger sizes.

2. Other Plants: Measure with stems, petioles, and foliage in their normal position.

D. Plant Material Observation: Architect will observe plant root systems, and select plant material either at place of growth or observe at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

1. Root System Observation: Architect may make invasive observation of the root ball as needed to verify the plant root system complies with the requirements for root condition. Observation of trees grown in containers may require random cutting into the interior root ball of a maximum of 2 percent, but no fewer than two trees of each type of tree in a container at each nursery source. Such cutting and observation may render the plant unsuitable for planting. Findings of these observations will be considered as representative of plants of that type and source.

2. Arrange with Architect a time for selecting plant materials in nurseries.

3. For distant plants that cannot be selected by Architect, submit photographs for pre-observation review.

4. Architect will attach seals to selected plants as a means of establishing the quality standard for the plant species and size to be provided.

E. Substitutions: Substitutions will only be considered after review of availability with Architect. If a plant is not obtainable, consideration will be given to nearest available size or similar species or variety.

F. Stake-out Observation: Architect will review Installer’s stake-out of individual trees and shrubs, and outlines of areas of multiple plantings. Architect retains the right to adjust final locations.

G. Preinstallation Conference: Conduct conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.

2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.

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. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.
D. Handle planting stock by root ball.

E. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

1. Set balled stock on ground and cover ball with soil, compost, sawdust, or other acceptable material.
2. Do not remove container-grown stock from containers before time of planting.
3. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly-wet condition.
4. If planting occurs in summer, arrange for nursery to dig plants in late spring and place in storage. Protect from weather and mechanical damage. Cover root ball with soil or mulch, and water to keep roots moist. Untie crown bindings to allow branches to return to natural shape. Space plants far enough apart to avoid touching. Rewrap root ball before moving.

1.8 PROJECT CONDITIONS

A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

B. Interruption of Existing Services or Utilities: Do not interrupt services or utilities to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary services or utilities according to requirements indicated:

1. Notify Construction Manager no fewer than two days in advance of proposed interruption of each service or utility.
2. Do not proceed with interruption of services or utilities without Construction Manager's written permission.

C. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.

2. Fall Planting:
   a. Deciduous Plants:
      1) B&B: October 15 to November 30.
      2) Container: September 1 to November 30.
   b. Evergreen Plants: August 1 to September 15.
   c. Herbaceous Plants: September 1 to October 15.

D. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.
E. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.

1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.9 WARRANTY

A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

1. Failures include, but are not limited to, the following:

   a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner, or incidents that are beyond Contractor's control.
   b. Structural failures including plantings falling or blowing over.
   c. Faulty performance of tree stabilization and tree grates.
   d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Periods from Date of Substantial Completion:

   a. Trees, Shrubs, and Other Plants: 12 months.

3. Include the following remedial actions as a minimum:

   a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
   b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
   c. A limit of one replacement of each plant will be required except for losses or replacements due to failure to comply with requirements.
   d. Provide extended warranty for period equal to original warranty period, for replaced plant material. If replacement is not accepted at end of warranty period, the Architect may elect subsequent replacement or credit for item.

1.10 MAINTENANCE SERVICE

A. Initial Maintenance Service for Trees, Shrubs and Other Plants: Provide maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established but for not less than maintenance period below.

1. Maintenance Period: 12 months from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock,
densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

1. Grade: "Quality Grade;" well-shaped, fully and evenly branched and densely foliated when in leaf, unless indicated otherwise on Plant Schedule.
2. Trees with 3-Inch Caliper and Greater: Provide crown with diameter equal to minimum 40 percent of height. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant Schedule or Plant Legend shown on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
3. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots will be rejected.
4. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.
5. Species: Provide straight species unless indicated otherwise on Plant Schedule.
6. Trees and shrubs grown at latitude not more than 200 miles north or south of latitude of project unless provenance of trees or shrubs can be documented to be compatible with latitude and cold hardiness of project location.
7. Inspection for Mite and Scale: Inspect trees in March immediately preceding digging for mite eggs and scale.

B. Root System for Trees and Tree-Like Shrubs: Provide plants having roots complying with the following:

1. A minimum of three structural roots reasonably distributed around the trunk. Plants with structural roots on only one side of the trunk are unacceptable.
2. The root crown a maximum of two inches below the soil line; the top two structural roots a maximum of three inches below the soil line at a distance of 4 inches from the trunk; and the top of other structural roots a maximum of 5 inches at a distance of 4 inches from the trunk. The grower may request a modification to this requirement for species with roots that rapidly descend, providing the grower removes all circling roots above the structural roots across the top of the structural roots.
3. The root system reasonably free of root defects including potentially stem-girdling roots above the root collar and main structural roots, vertical roots, and/or kinked roots from nursery production practices, including roots on the interior of the root ball.

C. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

1. Overwinter herbaceous plants.

D. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

E. Labeling: Label at least one plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant as shown on Drawings.
F. If formal arrangements or consecutive order of plants is shown on Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.

2.2 MULCHES

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:

1. Type: Ground or shredded bark.
2. Size Range: 3 inches maximum, 1/2 inch minimum.

2.3 PESTICIDES

A. General: Pesticide registered and approved by 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.

B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.4 TREE-WATERING DEVICES

A. Slow-Release Watering Device: Standard product manufactured for drip irrigation of plants and emptying its water contents over an extended time period; manufactured from UV-light-stabilized nylon-reinforced polyethylene sheet, PVC, or HDPE plastic.


2.5 MISCELLANEOUS PRODUCTS

A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.

B. Burlap: Non-synthetic, biodegradable.

C. Soil Bags: Non-synthetic, biodegradable, new or used bags of size indicated on Drawings.

D. Mycorrhizal Fungi: Dry, granular inoculant containing at least 5300 spores per lb of vesicular-arbuscular mycorrhizal fungi and 95 million spores per lb of ectomycorrhizal fungi, 33 percent hydrogel, and a maximum of 5.5 percent inert material.

E. Root-Dip: Soluble inoculant containing live spores of endomycorrhiza and ectomycorrhiza fungi and biostimulants.

1. Basis-of-Design Product: Subject to compliance with requirements, provide the following, or approved equal:

   a. Lebanon Seaboard Corp.; PHC Root Dip.
F. Mycorrhizal Inoculant: Mycorrhizal inoculant containing live spores of endomycorrhiza and ectomycorrhiza fungi for wet or dry application.

1. Basis-of-Design Product: Subject to compliance with requirements, provide the following, or approved equal:
   a. Lebanon Seaboard Corp.; PHC Tree Saver.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive plants for compliance with requirements and conditions affecting installation and performance.

   1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
   2. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
   3. Uniformly moisten excessively dry soil that is not workable and which is too dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Architect's acceptance of layout before excavating or planting. Make minor adjustments as required.

D. Lay out plants at locations directed by Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

E. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

   1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.
F. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.

3.3 PLANTING AREA ESTABLISHMENT

A. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

B. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are not acceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.

1. Excavate to dimensions indicated on Drawings.
2. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
3. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
4. Maintain required angles of repose of adjacent materials as shown on the Drawings. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
5. Maintain supervision of excavations during working hours.
6. Keep excavations covered or otherwise protected when unattended by Installer's personnel.

B. Subsoil and topsoil removed from excavations shall be used as planting soil as indicted on Drawings.

C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

1. Hardpan Layer: Drill 6-inch-diameter holes, 24 inches apart, into free-draining strata or to a depth of 10 feet, whichever is less, and backfill with free-draining material.

D. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

3.5 TREE, SHRUB, AND VINE PLANTING

A. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

B. Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

C. Set balled and burlapped stock plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.
1. Use existing soil for backfill.
2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
4. Apply mycorrhizal inoculant into backfill according to manufacturer’s written instructions.
5. Continue backfilling process. Water again after placing and tamping final layer of soil.

D. Set container-grown stock plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.
1. Use existing soil for backfill.
2. Carefully remove root ball from container without damaging root ball or plant.
3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
4. Apply mycorrhizal inoculant into backfill according to manufacturer’s written instructions.
5. Continue backfilling process. Water again after placing and tamping final layer of soil.

E. When planting on slopes, set the plant so the root flare on the downhill side is flush with the surrounding soil on the slope; and as indicated on Drawings.

F. When planting in riprap, adjust stones to permit planting as indicated on Drawings.

3.6 TREE, SHRUB, AND VINE PRUNING
A. Prune to remove dead, dying, or broken branches and to shape trees, shrubs, and vines as directed by Architect. Do not cut tree leaders or prune to thin.
B. Do not apply pruning paint to wounds.

3.7 HERBACEOUS PLANT PLANTING
A. Set out and space herbaceous plants as indicated in even rows with triangular spacing.
B. Use planting soil for backfill.
C. Dig holes large enough to allow spreading of roots.
D. Dip plant root ball in solution of root dip. Comply with manufacturer’s written instructions.
E. For rooted cutting plants supplied in flats, plant each in a manner that will minimally disturb the root system but to a depth not less than two nodes.
F. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
G. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
H. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.
3.8 PLANTING AREA MULCHING

A. Mulch backfilled surfaces of planting areas and other areas indicated.
   1. Trees and Tree-like Shrubs in Turf Areas: Apply organic mulch ring of 3-inch average thickness, with 24-inch radius, or as indicated on Drawings, around trunks or stems. Do not place mulch within 3 inches of trunks or stems.
   2. Organic Mulch in Planting Areas: Apply 3-inch average thickness of organic mulch over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 3 inches of trunks or stems.

3.9 EDGING INSTALLATION

A. Shovel-Cut Edging: Separate mulched areas from turf areas with a 45-degree, 4- to 6-inch-deep, shovel-cut edge as shown on Drawings.

3.10 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease.

B. 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.

C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.11 PESTICIDE APPLICATION

A. Apply pesticides and other chemical products and biological control agents in accordance with authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Pre-Emergent Herbicides (Selective and Non-Selective): Apply to tree, shrub, and ground-cover areas in accordance with manufacturer's written recommendations. Do not apply to seeded areas.

C. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.12 CLEANUP AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition.

B. 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.
C. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

1. Do not remove Architect's seals from trees.

D. At end of maintenance period, remove Architect's seals, and built-up earth saucers around plants. Redistribute mulch.

3.13 DISPOSAL

A. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

END OF SECTION 329300
**Invasive - Tree Removal**

- Remove invasive trees and vines to prevent their spread into adjacent areas.

- **Preparation:**
  - Top of root ball set at or 1" max. above prepared subgrade.
  - Tamped backfill - original soil.
  - Tampered McHaul - original soil.
  - Tampered McHaul - original soil.

- **Notes:**
  1. This is only for correction.
  2. At end of warranty period, replace MC haul with non-biodegradable rope, twine, rope, burlap, & wire removed.

**Invasive - Shrub Removal**

- Remove invasive shrubs and vines to prevent their spread into adjacent areas.

- **Preparation:**
  - Top of root ball set at or 1" max. above prepared subgrade.
  - Tamped backfill - original soil.
  - Tampered McHaul - original soil.
  - Tampered McHaul - original soil.

- **Notes:**
  1. This is only for correction.
  2. At end of warranty period, replace MC haul with non-biodegradable rope, twine, rope, burlap, & wire removed.

**Restoration Tree Planting**

- Plant restoration trees in accordance with site conditions and specifications.

- **Preparation:**
  - Top of root ball set at or 1" max. above prepared subgrade.
  - Tamped McHaul - original soil.
  - Tampered McHaul - original soil.
  - Tampered McHaul - original soil.

- **Notes:**
  1. This is only for correction.
  2. At end of warranty period, replace MC haul with non-biodegradable rope, twine, rope, burlap, & wire removed.

**Deciduous Tree Planting**

- Plant deciduous trees in accordance with site conditions and specifications.

- **Preparation:**
  - Top of root ball set at or 1" max. above prepared subgrade.
  - Tamped McHaul - original soil.
  - Tampered McHaul - original soil.
  - Tampered McHaul - original soil.

- **Notes:**
  1. This is only for correction.
  2. At end of warranty period, replace MC haul with non-biodegradable rope, twine, rope, burlap, & wire removed.

**Herbaceous Planting**

- Plant herbaceous plants in accordance with site conditions and specifications.

- **Preparation:**
  - Top of root ball set at or 1" max. above prepared subgrade.
  - Tamped McHaul - original soil.
  - Tampered McHaul - original soil.
  - Tampered McHaul - original soil.

- **Notes:**
  1. This is only for correction.
  2. At end of warranty period, replace MC haul with non-biodegradable rope, twine, rope, burlap, & wire removed.

**Herbaceou s Species Removal**

- Remove invasive species from site.

- **Preparation:**
  - Top of root ball set at or 1" max. above prepared subgrade.
  - Tamped McHaul - original soil.
  - Tampered McHaul - original soil.
  - Tampered McHaul - original soil.

- **Notes:**
  1. This is only for correction.
  2. At end of warranty period, replace MC haul with non-biodegradable rope, twine, rope, burlap, & wire removed.

**Shrub Planting**

- Plant shrubs in accordance with site conditions and specifications.

- **Preparation:**
  - Top of root ball set at or 1" max. above prepared subgrade.
  - Tamped McHaul - original soil.
  - Tampered McHaul - original soil.
  - Tampered McHaul - original soil.

- **Notes:**
  1. This is only for correction.
  2. At end of warranty period, replace MC haul with non-biodegradable rope, twine, rope, burlap, & wire removed.

**Vine Removal**

- Remove invasive vines from site.

- **Preparation:**
  - Top of root ball set at or 1" max. above prepared subgrade.
  - Tamped McHaul - original soil.
  - Tampered McHaul - original soil.
  - Tampered McHaul - original soil.

- **Notes:**
  1. This is only for correction.
  2. At end of warranty period, replace MC haul with non-biodegradable rope, twine, rope, burlap, & wire removed.
PLANTING NOTES

1. PROVIDE "QUALITY GRADE" PLANTS OF STRAIGHT SPECIES UNLESS INDICATED OTHERWISE ON PLANT SCHEDULE.

2. PROVIDE SLOPES IN PLANTING AREAS AS INDICATED ON PLANTING PLANS.

3. STAKE LOCATIONS OF NEW PLANT MATERIALS BEFORE EXCAVATING PLANT PITS FOR REVIEW IN FIELD WITH LANDSCAPE ARCHITECT.

4. COORDINATE LOCATIONS OF NEW PLANT MATERIALS WITH UTILITIES. OBTAIN DETAILED PLANS OF UTILITIES BEFORE BEGINNING PLANTING. REVIEW WITH LANDSCAPE ARCHITECT.

5. PROVIDE RESTORATION COVERAGE ON UTILITIES TRAVERSABLE BY APPLICATION OF CHESTNUT BRANCH TREE SPECIES TO MATCH EXISTING CONDITIONS.

6. PROVIDE THE QUANTITY OF EACH PLANT INDICATED ON DRAWING WITH THE QUANTITIES SHOWN IN THE PLANT SCHEDULE.

7. KEEP SEALS ON PLANTS UNTIL SUBSTANTIAL COMPLETION.

8. EXISTING CONDITIONS ARE VARIABLE AND MAY NOT BE ACCURATELY SHOWN. REVIEW IDENTIFICATIONS PRIOR TO COMMENCING WORK AND NOTIFY LANDSCAPE ARCHITECT OF ANY ISSUES.

9. EXACT PROPOSED PLANTING LOCATION WILL VARY. REVIEW WITH LANDSCAPE ARCHITECT PRIOR TO PLANTING.
### Path Zone (PA)

**Canopy Trees**

<table>
<thead>
<tr>
<th>KEY</th>
<th>PERCENTAGE</th>
<th>QTY</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>ROOT</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100%</td>
<td>1</td>
<td>Carya ovata</td>
<td>Honey Locust</td>
<td>30'-36'</td>
<td>One</td>
<td>High-growing</td>
</tr>
</tbody>
</table>

**Shrub**

<table>
<thead>
<tr>
<th>KEY</th>
<th>PERCENTAGE</th>
<th>QTY</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>ROOT</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>100%</td>
<td>2</td>
<td>Staphylea trifolia</td>
<td>American Spirea</td>
<td>3'-6'</td>
<td>One</td>
<td></td>
</tr>
</tbody>
</table>

**Herbaceous**

<table>
<thead>
<tr>
<th>KEY</th>
<th>PERCENTAGE</th>
<th>QTY</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>ROOT</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>100%</td>
<td>3</td>
<td>Stachys byzantina</td>
<td>Korean Spirea</td>
<td>12&quot;-18&quot;</td>
<td>One</td>
<td></td>
</tr>
</tbody>
</table>

### Evergreen Zone (E)

**Evergreen Trees (Restoration Grade)**

<table>
<thead>
<tr>
<th>KEY</th>
<th>PERCENTAGE</th>
<th>QTY</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>ROOT</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25%</td>
<td>3</td>
<td>Pinus taeda</td>
<td>Eastern White Pine</td>
<td>30'-36'</td>
<td>One</td>
<td></td>
</tr>
</tbody>
</table>

**SCHEDULE**

- Path Zone (PA)
- Evergreen Zone (E)
- Canopy Trees
  - Carya ovata
  - Staphylea trifolia
  - Stachys byzantina
- Shrub
  - Staphylea trifolia
- Herbaceous
  - Stachys byzantina
- Evergreen Trees (Restoration Grade)
  - Pinus taeda

### Riparian Zone (RI)

**Canopy Trees**

<table>
<thead>
<tr>
<th>KEY</th>
<th>PERCENTAGE</th>
<th>QTY</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>ROOT</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100%</td>
<td>1</td>
<td>Acer saccharinum</td>
<td>Sugar Maple</td>
<td>10'-12'</td>
<td>One</td>
<td>Multi-year</td>
</tr>
</tbody>
</table>

**Shrub**

<table>
<thead>
<tr>
<th>KEY</th>
<th>PERCENTAGE</th>
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<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>100%</td>
<td>2</td>
<td>Cornus alternifolia</td>
<td>Red Osier Dogwood</td>
<td>4'-6'</td>
<td>One</td>
<td></td>
</tr>
</tbody>
</table>

**Herbaceous**

<table>
<thead>
<tr>
<th>KEY</th>
<th>PERCENTAGE</th>
<th>QTY</th>
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<th>ROOT</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>100%</td>
<td>3</td>
<td>Solidago virgaurea</td>
<td>Goldenrod</td>
<td>1'-2'</td>
<td>One</td>
<td></td>
</tr>
</tbody>
</table>

**SCHEDULE**

- Canopy Trees
  - Acer saccharinum
- Shrub
  - Cornus alternifolia
- Herbaceous
  - Solidago virgaurea

### Pond Edge - Sun (PSU)

**Canopy Trees**

<table>
<thead>
<tr>
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<td>Sugar Maple</td>
<td>10'-12'</td>
<td>One</td>
<td>Multi-year</td>
</tr>
</tbody>
</table>

**Shrub**

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<tr>
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<tbody>
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<td>2</td>
<td>100%</td>
<td>2</td>
<td>Cornus alternifolia</td>
<td>Red Osier Dogwood</td>
<td>4'-6'</td>
<td>One</td>
<td></td>
</tr>
</tbody>
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**Herbaceous**

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>100%</td>
<td>3</td>
<td>Solidago virgaurea</td>
<td>Goldenrod</td>
<td>1'-2'</td>
<td>One</td>
<td></td>
</tr>
</tbody>
</table>

**SCHEDULE**

- Canopy Trees
  - Acer saccharinum
- Shrub
  - Cornus alternifolia
- Herbaceous
  - Solidago virgaurea