

ADDENDUM NO.: 3

DATE OF ADDENDUM: February 11, 2016

**SITE IMPROVEMENTS
QUINEBAUG VALLEY COMMUNITY COLLEGE
742 UPPER MAPLE STREET
DANIELSON, CT
BI-CTC-490**

Original Bid Due Date / Time:

February 17, 2016

1:00 PM

Previous Addendums: Addendum #2 dated 2/2/2016, Addendum #1 dated 1/20/2016

TO: Prospective Bid Proposers:

This Addendum forms part of the "Contract Documents" and modifies or clarifies the original "Contract Documents" for this Project dated October 1, 2015. Prospective Bid Proposers shall acknowledge receipt of the total number the Addenda issued for this Project on the space provided on Section 00 41 00 Bid Proposal Form. Failure to do may subject Bid Proposers to disqualification.

The following clarifications are applicable to drawings and specifications for the project referenced above.

Item 1

DRAWINGS

Add the following Drawings, attached to this Addendum:

L-100 "Planting Plan" (print size 30" x 42")

L-101 "Details" (print size 30" x 42")

Item 2

SPECIFICATIONS

Delete the following Specification Section: Section 000110 "Table of Contents".

Replace with Section 000110 "Table of Contents" (revised) (8 pages) attached

Item 3

SPECIFICATIONS

ADD the following Specification Section: Section 32-9000 "Planting" (26 pages) attached

Item 4

SPECIFICATIONS

Delete the following Specification Section: Section 32-9220 "Turf and Grasses".

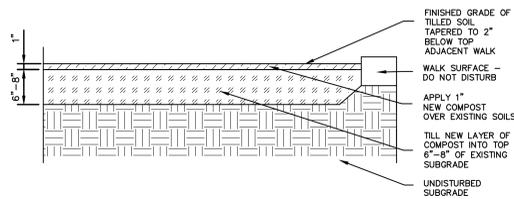
Replace with Section 32-9220 "Turf and Grasses" (revised) (12 pages) attached

All questions must be in writing (not phone or e-mail) and must be forwarded to the consulting Architect (Silver/Petrucci & Associates, William Silver fax 203-230-8247) with copies sent to the DCS Project Manager (Rob Dexter fax 860-770-2970) and Construction Manager (Downes Construction Co, Jeffery Anderson fax 860-225-3617)

End of Addendum #3

Mellanee Walton

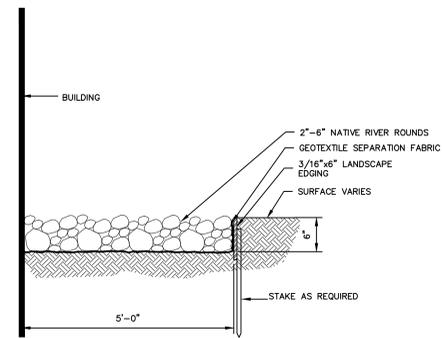
Mellanee Walton, Associate Fiscal Administrative Officer
Department of Administrative Services
On Behalf of the Division of Construction Services



- NOTES:
1. CONTRACTOR SHALL USE CAUTION WHEN PERFORMING SOIL TILLING NEAR EXISTING OR NEW UTILITIES. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE CAUSED BY SOIL TILLING OPERATIONS.
 2. EXTENT OF AREA TO BE AMENDED INCLUDES PLANT BEDS AND LAWN AREAS.
 3. SEE PLANTING SPECIFICATION FOR ADDITIONAL REQUIREMENTS.

1 MODIFIED EXISTING SOILS - TILLING

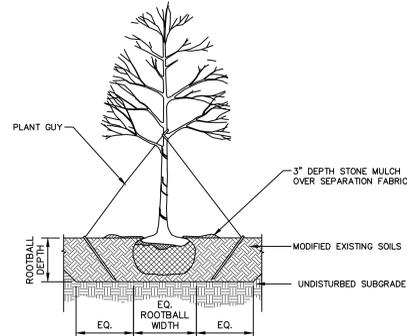
SCALE: NONE



2 STONE SPLASH PAD

SCALE: NONE

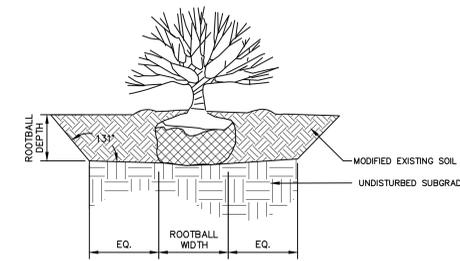
- NOTES:
1. PLANT TREE WITH ROOT FLARE 1" ABOVE FINISHED GRADE AFTER SETTLEMENT
 2. ALL PLANTING AREAS SHALL RECEIVE SEPARATION FABRIC PRIOR TO ADDING 3" DEPTH STONE MULCH (KEEP MULCH 1" FROM TRUNK).
 3. TREE SHALL HAVE STRAIGHT TRUNK AND SINGLE LEADER, TREES WITH DOUBLE LEADER TRUNKS WILL NOT BE ACCEPTED.
 4. DO NOT CUT LEADER
 5. SET TREE PLUMB
 6. FLOOD SAUCER TWICE DURING FIRST 24 HOURS AFTER PLANTING.
 7. TREE PIT TO BE 3 TIMES WIDTH OF ROOT BALL OR 10' DIA. MINIMUM
 8. SYNTHETIC BURLAP IS UNACCEPTABLE
 9. LOOSE OR CRACKED ROOTBALLS WILL NOT BE ACCEPTED FOR PLANTING
 10. REMOVE TOP 2/3 OF WIRE BASKETS



3 DECIDUOUS TREE PLANTING TYP.

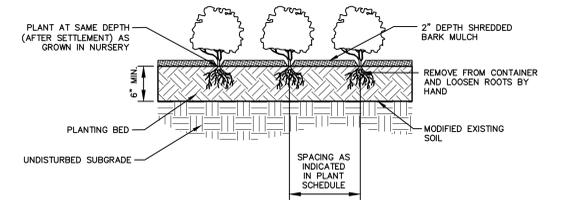
SCALE: NONE

- NOTES:
1. LOOSE OR CRACKED ROOT BALLS ARE UNACCEPTABLE.
 2. EXCAVATE TO REQUIRED DEPTH AND DO NOT EXCAVATE BELOW ROOT BALL DEPTH.
 3. SET SHRUBS PLUMB WITH ROOT FLARE 1" ABOVE FINISHED GRADE, BACKFILL WITH PLANTING MIX.
 4. FLOOD WATERING SAUCERS TWICE IN FIRST 24 HOURS AFTER PLANTING.
 5. RAISE AND REPLANT ANY SHRUBS THAT SETTLE AFTER PLANTING & WATERING.
 6. REMOVE 1/3 BURLAP PRIOR TO BACKFILL. SYNTHETIC BURLAP UNACCEPTABLE
 7. ALL PLANTING AREAS SHALL RECEIVE SEPARATION FABRIC PRIOR TO ADDING 3" DEPTH STONE MULCH (KEEP MULCH 1" AWAY FROM SHRUB BASE) 3" HIGH EARTH WATERING SAUCER 1'-0" BEYOND ROOT BALL PLANTING MIXTURE.
 8. FOR CONTAINERIZED PLANTS: REMOVE CONTAINER PRIOR TO PLANTING, SCARIFY ROOT BALL BELOW EDGE 1/2" DEEP IN FOUR LOCATIONS.



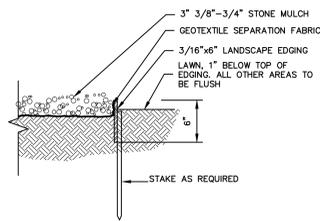
4 SHRUB PLANTING TYP.

SCALE: NONE



5 GROUNDCOVER PLANTING TYP.

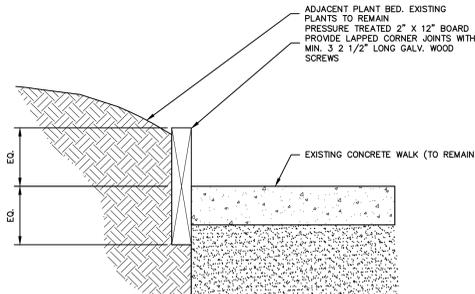
SCALE: NONE



- NOTE:
1. LANDSCAPE EDGE IS REQUIRED AT ALL EDGES BETWEEN LAWN AND GROUNDCOVER AREAS AND PLANT BED THAT ARE TO RECEIVE STONE MULCH.

6 STEEL LANDSCAPE EDGE

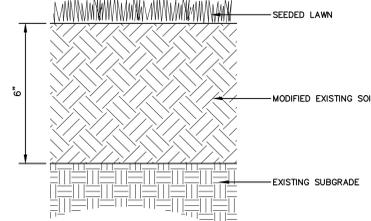
SCALE: NONE



- NOTE:
1. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING WOOD EDGE.
 2. HAND DIG TRENCH TO RECEIVE NEW WOOD EDGING. BACKFILL WITH EXISTING SOIL.

7 WOOD EDGE

SCALE: NONE



8 LAWN

SCALE: NONE



drawing title		STATE OF CONNECTICUT	
LANDSCAPE DETAILS		DEPARTMENT OF ADMINISTRATIVE SERVICES	
REVISIONS			
mark	date	description	
DRAWING PREPARED BY		date	
BSC GROUP		10.01.2015	
300 Winding Brook Drive		scale	
Glastonbury, CT 06033		AS NOTED	
project		drawn by	
Quinebaug Valley Community College		approved by	
Site Improvements		drawing no.	
DANBROOK, CONNECTICUT		L-101	
CAD no.	project no.		
	BI-CTC-490		

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PROCUREMENT AND CONTRACTING REQUIREMENTS

Section No.	Title	Page Count	Not Used
00 01 01	Project Title Page	1	<input type="checkbox"/>
00 01 07	Seals Page	1	<input type="checkbox"/>
00 01 10	Table of Contents	8	<input type="checkbox"/>
00 01 15	List of Drawing Sheets	1	<input type="checkbox"/>
00 11 16	Invitation to Bid	Insert	<input type="checkbox"/>
00 21 19	Notice To Bidders	8	<input type="checkbox"/>
00 30 00	Available Information	-	<input type="checkbox"/>
00 31 19.26	Existing Conditions Survey	15	<input type="checkbox"/>
00 31 24.13	Soil Contamination Report	-	<input checked="" type="checkbox"/>
00 31 26.23	General Survey for Asbestos Containing Material & Lead-Based Paint	-	<input checked="" type="checkbox"/>
00 31 26.29	Existing PCB Information	-	<input checked="" type="checkbox"/>
00 31 32.13	Subsurface Geotechnical Report	-	<input checked="" type="checkbox"/>
00 31 33.11	Elevator Agreement	-	<input checked="" type="checkbox"/>
00 40 14	Certificate (of Authority) (submit with Bid Proposal)	1	<input type="checkbox"/>
00 40 15	DAS Pre-qualification Forms (Not Used for <\$500,000)	Insert	<input type="checkbox"/>
00 41 00	Bid Proposal Form	Insert	<input type="checkbox"/>
00 43 16	Standard Bid Bond Form (submit with Bid Proposal)	1	<input type="checkbox"/>
00 45 14	General Contractor Bidder's Qualification Statement (submit with Bid Proposal)	4	<input type="checkbox"/>
00 45 15	Objective Criteria for Evaluating Qualifications of Bidders	2	<input type="checkbox"/>
00 45 17	Named Subcontractor Bidder's Qualification Statement (Not Used for <\$500,000)	Insert	<input type="checkbox"/>
00 52 03	Contract	2	<input type="checkbox"/>
00 52 73	Subcontract Agreement Form (Not Used for <\$500,000)	Insert	<input type="checkbox"/>
00 62 16	Certificate of Insurance	1	<input type="checkbox"/>
00 62 16.1	Asbestos Attachment to Acord Form	1	<input type="checkbox"/>
00 72 13	General Conditions of the Contract for Construction – For Design-Bid-Build	25	<input type="checkbox"/>
00 72 13.1	Supplementary Conditions	1	<input type="checkbox"/>
00 73 27	Set-Aside Contractor Schedule (Not Used for <\$500,000)	Insert	<input type="checkbox"/>
00 73 38	CHRO Contract Compliance Regulations	8	<input type="checkbox"/>
00 73 44	Prevailing Wage Rates/Contractor's Wage Certification/Payroll Certification	Insert	<input type="checkbox"/>
00 73 63	Security Requirements	2	<input type="checkbox"/>
00 92 10	Additional Forms To be Submitted After Bond Commission Funding Approval	8	<input type="checkbox"/>
00 92 20	Executive Orders	1	<input type="checkbox"/>
00 92 30	Procedures Regarding Taxation for Nonresident General/Prime Contractor and Subcontractors	13	<input type="checkbox"/>

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DIVISION 01 GENERAL REQUIREMENTS

Section No.	Title	Page Count	Not Used
01 10 00	SUMMARY	6	<input type="checkbox"/>
01 11 00	Summary of Work	1	<input type="checkbox"/>
01 11 13	Work Covered By Contract Documents	1	<input type="checkbox"/>
01 12 16	Work Sequence - Phase(s);	2	<input type="checkbox"/>
01 12 19	Contract Interface	3	<input type="checkbox"/>
01 14 00	Work Restrictions	4	<input type="checkbox"/>
01 14 16	Coordination With Occupants	5	<input type="checkbox"/>
01 14 23	Subcontractor Evaluations	5	<input type="checkbox"/>
01 20 00	CONTRACT CONSIDERATIONS	16	<input type="checkbox"/>
01 21 00	Allowances	1	<input checked="" type="checkbox"/>
01 22 00	Unit Prices - General	1	<input type="checkbox"/>
01 22 13	Unit Price Schedules - Earth And Rock Excavation	2	<input type="checkbox"/>
01 22 16	Unit Price Schedule - Miscellaneous	4	<input type="checkbox"/>
01 22 19	Unit Price Schedule - Alterations	4	<input type="checkbox"/>
01 23 00	Supplemental Bids	5	<input type="checkbox"/>
01 25 00	Substitution Procedures	5	<input type="checkbox"/>
01 26 00	Contract Modification Procedures	9	<input type="checkbox"/>
01 29 76	Progress Payment Procedures	11	<input type="checkbox"/>
01 30 00	ADMINISTRATIVE REQUIREMENTS	18	<input type="checkbox"/>
01 31 13	Project Coordination	1	<input type="checkbox"/>
01 31 19	Project Meetings	2	<input type="checkbox"/>
01 32 16	Construction Progress Schedules	4	<input type="checkbox"/>
01 32 33	Photographic Documentation	6	<input type="checkbox"/>
01 33 00	Submittal Procedures	6	<input type="checkbox"/>
01 35 16	Alteration Project Procedures	14	<input type="checkbox"/>
01 35 19	Confined Space Entry	17	<input type="checkbox"/>
01 35 53	Security Procedures	18	<input type="checkbox"/>
01 40 00	QUALITY REQUIREMENTS	8	<input type="checkbox"/>
01 42 16	Definitions	1	<input type="checkbox"/>
01 42 19	Reference Standards	2	<input type="checkbox"/>
01 45 00	Quality Control	3	<input type="checkbox"/>
01 45 23	Testing For Indoor Air Quality, Baseline IAQ, & Materials	-	<input checked="" type="checkbox"/>

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Section No.	Title	Page Count	Not Used
01 50 00	TEMPORARY FACILITIES AND CONTROLS	10	<input type="checkbox"/>
01 51 13	Temporary Electricity And Lighting	1	<input type="checkbox"/>
01 51 16	Temporary Fire Protection	1	<input type="checkbox"/>
01 51 23	Temporary Heating, Cooling And Ventilating	-	<input checked="" type="checkbox"/>
01 51 33	Temporary Telecommunications	2	<input type="checkbox"/>
01 51 36	Temporary Water	2	<input type="checkbox"/>
01 52 13	Field Offices And Sheds	2	<input type="checkbox"/>
01 52 19	Temporary Sanitary Facilities	3	<input type="checkbox"/>
01 54 00	Construction Aids	4	<input type="checkbox"/>
01 55 13	Temporary Access Roads	4	<input type="checkbox"/>
01 55 16	Haul Routes	4	<input type="checkbox"/>
01 56 00	Temporary Barriers And Enclosures	5	<input type="checkbox"/>
01 56 43	Temporary Protection	5	<input type="checkbox"/>
01 57 19	Temporary Environmental Controls	6	<input type="checkbox"/>
01 57 21	Environmental Management	6	<input type="checkbox"/>
01 57 23	Temporary Storm Water Control	9	<input type="checkbox"/>
01 57 30	Indoor Environmental Control	-	<input checked="" type="checkbox"/>
01 57 40	Construction Indoor Air Quality Management Plan	-	<input checked="" type="checkbox"/>
01 58 13	Temporary Project Signage	9	<input type="checkbox"/>
01 60 00	PRODUCT REQUIREMENTS	1	<input type="checkbox"/>
01 60 00	Product Requirements	1	<input type="checkbox"/>
01 70 00	EXECUTION AND CLOSEOUT PROCEDURES	21	<input type="checkbox"/>
01 71 23	Field Engineering	1	<input type="checkbox"/>
01 73 29	Cutting and Patching	1	<input type="checkbox"/>
01 74 13	Progress Cleaning	2	<input type="checkbox"/>
01 74 19	Construction Waste Management & Disposal	3	<input type="checkbox"/>
01 75 00	Starting And Adjusting	7	<input type="checkbox"/>
01 77 00	Closeout Procedures	8	<input type="checkbox"/>
01 78 23	Operation And Maintenance Data	13	<input type="checkbox"/>
01 78 30	Warranties And Bonds	18	<input type="checkbox"/>
01 80 00	PERFORMANCE REQUIREMENTS	-	<input checked="" type="checkbox"/>
01 81 13	Sustainable Design Requirements	-	<input checked="" type="checkbox"/>
01 90 00	LIFE CYCLE ACTIVITIES	3	<input type="checkbox"/>
01 91 00	Commissioning	1	<input type="checkbox"/>

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TECHNICAL SPECIFICATIONS

DIVISION 02 **EXISTING CONDITIONS** **Not Used**

Section No.	Title	Page Count
02 32 19	Exploratory Excavations	4
02 41 23	Site Demolition	5
02 41 27	Stormwater General Permit	5
02 57 13	Temporary Erosion and Sedimentation Controls	8
02 57 14	Temporary Dust Control	3

DIVISION 03 **CONCRETE** **Not Used**

Section No.	Title	Page Count
03 32 00	Site Cast-in-Place Concrete	19

DIVISION 04 **MASONRY** **Not Used**

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DIVISION 05 **METALS** **Not Used**

Section No.	Title	Page Count

DIVISION 06 **WOOD, PLASTICS AND COMPOSITES** **Not Used**

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DIVISION 07 **THERMAL AND MOISTURE PROTECTION** **Not Used**

Section No.	Title	Page Count

DIVISION 08 **OPENINGS** **Not Used**

Section No.	Title	Page Count

DIVISION 09	FINISHES	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count

DIVISION 10	SPECIALTIES	Not Used <input type="checkbox"/>
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Section No.	Title	Page Count
10 14 53	Traffic Signage	5

DIVISION 11	EQUIPMENT	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count

DIVISION 12	FURNISHINGS	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count

DIVISION 13	SPECIAL CONSTRUCTION	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count

DIVISION 14	CONVEYING SYSTEMS	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count

DIVISION 15	RESERVED	
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DIVISION 16	RESERVED	
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DIVISION 17	RESERVED	
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DIVISION 18	RESERVED	
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DIVISION 19	RESERVED	
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DIVISION 20	RESERVED	
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DIVISION 21	FIRE SUPPRESSION	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count

DIVISION 22	PLUMBING	Not Used <input checked="" type="checkbox"/>
Section No.	Title	Page Count

DIVISION 23	HEATING, VENTILATING AND AIR CONDITIONING	Not Used <input checked="" type="checkbox"/>
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DIVISION 24	RESERVED	
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DIVISION 25	INTEGRATED AUTOMATION	Not Used <input checked="" type="checkbox"/>
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DIVISION 26	ELECTRICAL	Not Used <input type="checkbox"/>
Section No.	Title	Page Count
260500	Common Work Results for Electrical	4
260509	Electrical Demolition Requirements	2
260519	Low Voltage Electrical Power Conductors and Cables	5
260523	Control Voltage Electrical Power Cables	12
260526	Grounding and Bonding for Electrical Systems	8
260529	Hangers and Supports for Electrical Systems	6
260533	Raceways and Boxes for Electrical Systems	12
260543	Underground Ducts and Raceways for Electrical Services	17
260553	Identification for Electrical Systems	9
260923	Lighting Control Devices	5
265613	Lighting Poles and Standards	9
265619	LED Exterior Lighting	11

DIVISION 27	COMMUNICATIONS	Not Used <input checked="" type="checkbox"/>
Section No.	Title	Page Count

DIVISION 28	ELECTRONIC SAFETY AND SECURITY	Not Used <input checked="" type="checkbox"/>
Section No.	Title	Page Count

DIVISION 29	RESERVED	
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DIVISION 30	RESERVED	
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DIVISION 31	EARTHWORK	Not Used <input type="checkbox"/>
Section No.	Title	Page Count
311000	Clearing and Grubbing	4
312310	Earthwork	20

DIVISION 32	EXTERIOR IMPROVEMENTS	Not Used <input type="checkbox"/>
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Section No.	Title	Page Count
320116	In-Place Pavement Reclaim	3
321216	Bituminous Concrete Pavement	59
321623	Curbing	8
321723	Pavement Markings	11
329000	Planting	26
329220	Turf and Grasses	10

DIVISION 33	UTILITIES	Not Used <input type="checkbox"/>
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Section No.	Title	Page Count
334000	Storm Drainage System	13

DIVISION 34	TRANSPORTATION	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count

DIVISION 35	WATERWAYS AND MARINE	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count

DIVISION 36	RESERVED	
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DIVISION 37	RESERVED	
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DIVISION 38	RESERVED	
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DIVISION 39	RESERVED	
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DIVISION 40	PROCESS INTEGRATION	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count

DIVISION 41	MATERIAL PROCESSING	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count

DIVISION 42	PROCESS HEATING, COOLING, AND DRYING	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count

DIVISION 43	PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE EQUIPMENT	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count
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DIVISION 44	POLLUTION CONTROL EQUIPMENT	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count
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DIVISION 45	INDUSTRY SPECIFIC MANUFACTURING EQUIPMENT	Not Used <input checked="" type="checkbox"/>
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Section No.	Title	Page Count
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DIVISION 46	RESERVED	
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DIVISION 48	RESERVED	
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DIVISION 49	RESERVED	
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SECTION 32 9000

PLANTING

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. Includes:

1. Locate, purchase, delivery and installation of all plants specified.
2. Modifying existing soils for Planting soils.
3. Tree stabilization.
4. Watering of all specified plants.
5. Clean up and disposal of all excess and surplus materials.
6. Maintenance of all specified plants during the warranty period.

B. Related Sections:

1. Division 31 Section "Clearing and Grubbing" for protection of existing trees and plantings, topsoil stripping and stockpiling, and site clearing.
2. Division 31 Section "Earth Moving" for excavation, filling, and rough grading.
3. Division 32 Section "Turf and Grasses" for turf (lawn), hydroseeding, and erosion-control materials.

1.3 REFERENCES

A. American National Standards Institute

1. ANSI Z60.1 – American Standard for Nursery Stock, latest edition.
2. ANSI A300 – Standard Practice for Tree, Shrub and other Woody Plant Maintenance, latest edition.

B. Pruning practices shall conform to recommendations “Structural Pruning: A Guide for the Green Industry”, latest edition.

C. Glossary of Arboricultural Terms, International Society of Arboriculture, Champaign IL, latest edition.

1.4 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 sizes indicated; 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. Balled and Potted Stock: Plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than sizes indicated.
- D. Bare-Root Stock: Plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than minimum root spread according to ANSI Z60.1 for type and size of plant required.
- E. 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.
- F. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
- G. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted plants established and grown in-ground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume required by ANSI Z60.1 for type and size of plant.
- H. Finish Grade: Elevation of finished surface of planting soil.
- I. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- J. 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.
- K. 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.
- L. Planting Area: Areas to be planted.
- M. 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.
- N. 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.

- O. 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.
- P. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.
- Q. 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.
- R. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- S. 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.

1.5 VERIFICATION

- A. All scaled dimensions on the drawings are approximate. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions and quantities, and shall immediately inform the Owner's Representative of any discrepancies between the information on the drawings and the actual conditions, refraining from doing any work in said areas until given approval to do so by the Owner's Representative.
- B. In the case of a discrepancy in the plant quantities between the plan drawings and the plant call outs, list or plant schedule, the number of plants or square footage of the planting bed actually drawn on the plan drawings shall be deemed correct and prevail.

1.6 SUBMITTALS

- A. Product Data: For each type of product indicated, including soils.
 - 1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
 - 2. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to the Project.
 - a. Contractor shall follow all Connecticut DEEP regulations for pesticide and herbicide applications.
 - 3. Plant Photographs: Include color photographs in 3- by 5-inch print 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. Samples: Submit samples of each product and material where required by the specification to the Owner's Representative for approval. Label samples to indicate product, characteristics, and locations in the work. Samples will be reviewed for appearance only. Compliance with all other requirements is the exclusive responsibility of the Contractor.

5. 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.
6. Mineral Mulch: 2 lb of each mineral mulch required, in sealed plastic bags labeled with source of mulch. Sample shall be typical of the lot of material to be delivered and installed on the site; provide an accurate indication of color, texture, and makeup of the material.
7. Weed Control Barrier: 12 by 12 inches.
8. Edging Materials and Accessories: Manufacturer's standard size, to verify color selected.
- B. Qualification Data: For qualified landscape Installer. Include list of similar projects 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.
- C. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:
 1. Manufacturer's certified analysis of standard products.
 2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
- D. Material Test Reports: For standardized ASTM D 5268 topsoil existing native surface topsoil existing in-place surface soil and imported or manufactured topsoil.
- E. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before start of required maintenance periods.
- F. Warranty: Sample of special warranty.
- G. Soil testing for Imported and Existing Topsoil, existing site soil to be modified as Planting Soil and Planting Soil Mixes.
 1. Topsoil, existing site soil and Planting Soil Mix testing: Submit soil test analysis report for each sample of Topsoil, existing site soil and Planting Soil from an approved soil-testing laboratory and where indicated in Part 2 of the specification as follows:
 - a. Submit Topsoil, Planting Soil, Compost, for testing at least 4 weeks before scheduled installation of Planting Soil Mixes. Submit Planting Soil Mix test no more than 2 weeks after the approval of the Topsoil, and Compost.
 2. Provide the following other soil properties:
 - a. pH and buffer pH.
 - b. Percent organic content by oven dried weight.

- c. Nutrient levels by parts per million including: phosphorus, potassium, magnesium, manganese, iron, zinc and calcium. Nutrient test shall include the testing laboratory recommendations for supplemental additions to the soil for optimum growth of the plantings specified.
 - d. Soluble salt by electrical conductivity of a 1:2 soil water sample measured in Milliohm per cm.
 - e. Cation Exchange Capacity (CEC).
3. Based upon the test results, state recommendations for soil treatments and soil amendments to be incorporated. State recommendations in weight per 1000 sq. ft. or volume per cu. yd. for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.
 4. Report presence of problem salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, provide additional recommendations for corrective action.

1.7 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 in landscape installation in addition to requirements in Division 01 Section "Quality Requirements."
 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the Professional Landcare Network:
 - a. Certified Landscape Technician - Exterior, with installation maintenance specialty area(s), designated CLT-Exterior.
 - b. Certified Landscape Technician - Interior, designated CLT-Interior.
 - c. Certified Ornamental Landscape Professional, designated COLP.
 5. Pesticide Applicator: State licensed, commercial.
- B. Soil-Testing Laboratory Qualifications: An independent or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- C. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

1. Selection of plants purchased under allowances will be made by Architect, who will tag plants at their place of growth before they are prepared for transplanting.
- D. 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.
- E. Plant Material Observation: Architect may observe plant material either at place of growth or 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. Notify Architect of sources of planting materials seven days in advance of delivery to site.
- F. Preinstallation Conference: Conduct conference at Project site.

1.8 MOCK-UP OF STONE MULCH

- A. At a project location selected by Engineer, place stone mulch in a 3 foot x 3 foot section for the mulch types listed in Part 2, for examination and final selection.
- B. Construct mockup using processes and techniques intended for use on permanent work. Mockup shall be produced by the individual workers who will perform the work for the Project.
- C. Accepted mockup provides visual standard for the work of this Section.

1.9 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.
 3. Accompany each delivery of bulk fertilizers, lime, and soil amendments with appropriate certificates.

- C. Deliver bare-root stock plants freshly dug. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.
- D. 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.
- E. Handle planting stock by root ball.
- F. Store bulbs, corms, and tubers in a dry place at 60 to 65 deg F until planting.
- G. 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. Heel-in bare-root stock. Soak roots that are in dry condition in water for two hours. Reject dried-out plants.
 - 2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
 - 3. Do not remove container-grown stock from containers before time of planting.
 - 4. 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.

1.10 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 seven 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.
 - 1. Spring:
 - a. Deciduous materials: April 1 to June 15

- b. Evergreen Materials: April 1 to June 15
- 2. Fall:
 - a. Deciduous materials: September 1 - October 15
 - b. Evergreen Materials: September 1 - 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.

1.11 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.
 - d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 2. Warranty Periods from Date of Substantial Completion:
 - a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
 - b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.
 - c. Annuals: Three 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.
 - e. The warranty of all replacement plants shall extend for an additional one-year period from the date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at the end of the said extended warranty period, the Owner's Representative may elect one more replacement items or credit for each item. These tertiary replacement items are not protected under a warranty period.
4. When the work is accepted in parts, the warranty periods shall extend from each of the partial Substantial Completion Acceptances to the terminal date of the last warranty period. Thus, all warranty periods for each class of plant warranty, shall terminate at one time.

1.12 MAINTENANCE SERVICE

- A. Initial Maintenance Service for Trees and Shrubs: Provide maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after plants are installed and continue until substantial completion but for not less than maintenance period below if substantial complete comes earlier.
 - 1. Maintenance Period: Three months from date of planting completion.
- B. Initial Maintenance Service for Ground Cover 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 substantial completion but for not less than maintenance period below if substantial completion comes earlier.
 - 1. Maintenance Period: Three months from date of planting completion.
- C. 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.

1.13 PLANTING AROUND UTILITIES

- A. Contractor shall carefully examine the civil, record, and survey drawings to become familiar with the existing underground conditions before digging.
- B. Determine location of underground utilities and perform work in a manner that will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until parties concerned mutually agree upon removal.
- C. Notification of Local Utility Locator Service, CALL BEFORE YOU DIG" (1-800-922-4455), is required for all planting areas: The Contractor is responsible for knowing the location and avoiding utilities that are not covered by the Local Utility Locator Service.

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 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.
 - 1. 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.
 - 2. 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.
- B. 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.
- C. 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.
- D. Labeling: Label at least one plant of each variety, size, and caliper in each planting bed 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.
- E. 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.
- F. Annuals: Provide healthy, disease-free plants of species and variety shown or listed, with well-established root systems reaching to sides of the container to maintain a firm ball, but not with excessive root growth encircling the container. Provide only plants that are acclimated to outdoor conditions before delivery and that are in bud but not yet in bloom.

2.2 SPADE HARVESTED AND TRANSPLANTED PLANTS

- A. Spade Harvested and Transplanted Plants shall meet all the requirements for field grown trees. Root ball diameters shall be of similar size as the ANSI Z60.1 requirements for Balled and Burlapped plants.
- B. Trees shall be harvested prior to leafing out (bud break) in the spring or during the fall planting period except for plants know to be considered as fall planting hazards. Plants that are fall planting hazards shall only be harvested prior to leafing out in the spring.
- C. Trees shall be moved and planted within 48 hours of the initial harvesting and shall remain in the spade machine until planted.

2.3 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
 - 1. Class: T, with a minimum of 99 percent passing through No. 8 sieve and a minimum of 75 percent passing through No. 60 sieve.
 - 2. Class: O, with a minimum of 95 percent passing through No. 8 sieve and a minimum of 55 percent passing through No. 60 sieve.
 - 3. Provide lime in form of ground dolomitic limestone or calcitic limestone depending on recommendations from soil analysis.
- B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent sulfur, with a minimum of 99 percent passing through No. 6 sieve and a maximum of 10 percent passing through No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Aluminum Sulfate: Commercial grade, unadulterated.
- E. Perlite: Horticultural perlite, soil amendment grade.
- F. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 sieve.
- G. Sand: Clean, washed, natural or manufactured, and free of toxic materials.
- H. Diatomaceous Earth: Calcined, 90 percent silica, with approximately 140 percent water absorption capacity by weight.
- I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.4 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1/2-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 - 1. Organic Matter Content: 50 to 60 percent of dry weight.
 - 2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.
- B. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.
 - 1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with ammonium nitrate at a minimum rate of 0.15 lb/cu. ft. of loose sawdust or ground bark, or

with ammonium sulfate at a minimum rate of 0.25 lb/cu. ft. of loose sawdust or ground bark.

- C. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, debris, and material harmful to plant growth.

2.5 FERTILIZERS

- A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 1 percent nitrogen and 10 percent phosphoric acid.
- B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
- C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.
- D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.
- E. Planting Tablets: Tightly compressed chip type, long-lasting, slow-release, commercial-grade planting fertilizer in tablet form. Tablets shall break down with soil bacteria, converting nutrients into a form that can be absorbed by plant roots.
1. Size: 5-gram tablets.
 2. Nutrient Composition: 20 percent nitrogen, 10 percent phosphorous, and 5 percent potassium, by weight plus micronutrients.
- F. Chelated Iron: Commercial-grade FeEDDHA for dicots and woody plants, and commercial-grade FeDTPA for ornamental grasses and monocots.

2.6 PLANTING SOILS

- A. Planting Soil: ASTM D 5268 topsoil, with pH range of 5.5 to 7, a minimum of 6 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth. Mix ASTM D 5268 topsoil with the soil amendments and fertilizers as recommended by the soil analysis to produce planting soil.

- B. Modified existing soil – compacted surface soil with low organics (Tilling Option)
 - 1. Description of condition to be modified: Surface soil compaction to a maximum of 6 inches deep from traffic or light grading. Original A horizon may be previously removed or graded but lower profile intact with acceptable compaction levels and limited grading. The soil organic matter, pH and chemistry in the A horizon may not be suitable for the proposed plants and may need to be modified as required.
 - 2. Modifications:
 - a. Till top 6 inches or deeper of the soil surface, with a roto tiller, spade tiller, ripper or agricultural plow. Spread 1 – 2 inches of Compost on the surface of the tilled soil and make any chemical adjustment as recommended by the soil test.
 - b. Till or disk the Compost into the loosened soil. Smooth out grades with a drag rake or drag slip.

2.7 LANDSCAPE EDGING

- A. Heavy Duty Straight Profile Edging: 3/16" x 6" high, extruded aluminum, 6063 alloy, T-6 hardness, landscape edging for straight-line and curvilinear applications in corrugated straight profile.
- B. Section shall have loops on side of section to receive stakes spaced approximately 2 to 3 feet apart along its length.
- C. Thickness: 3/16 inch gage section at 0.116 inch minimum thick with 0.187 inch exposed top lip.
- D. Connection Method: Section ends shall splice together with an interlocking stakeless snap-down design.
- E. Stake: 12" extruded aluminum stake. Stakes to interlock into section loops.
- F. Finish: Mill Finish. Paint finish shall comply with AAMA 2603 for electrostatically baked on paint.

2.8 MULCHES

- A. Inorganic Mulch: Mulch shall be uniformly graded, rounded or crushed, washed stone.
 - 1. Color: Barn Red or Connecticut Blend
 - 2. Size: ¾ inch – 1 inch
- B. Bark Mulch shall be "Walk on" grade, coarse, shredded, from tree and woody brush sources. The size range shall be a minimum (less than 25% or less of volume) fine particles 3/8 inch or less in size, and a maximum size of individual pieces (largest 20% or less of volume) shall be approximately 1 to 1-1/2 inch in diameter and maximum length approximately 4 to 6".

2.9 WEED-CONTROL BARRIERS

- A. Woven polypropylene fabric, needle punched, 4 oz./sq. yd. minimum, composed of fibers formed into a stable network so that fibers retain their relative position. Fabric shall be inert to biological degradation and resist naturally-encountered chemicals, alkalis, and acids.
- B. Physical properties:

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value
Weight	ASTM D3776	oz/yd ²	4
Grab Tensile Strength, Ultimate	ASTM D 4632	Pounds	95
Grab Tensile Strength, Elongation at Ultimate	ASTM D 4632	Percent (%)	12
Trapezoid Tear Strength	ASTM D 4533	Pounds	35
Mullen Burst Strength	ASTM D 3786	psi	240
Puncture Strength	ASTM D 4833	Pounds	55
Flow Rate	ASTM D 4491	gal/min/ft ²	15
UV Resistance (at 2500 hours)	ASTM D 4355	% strength retained	70
Thickness	ASTM D 5199	Mils (mm)	24

- C. To be installed in all planting beds and in tree rings between soil and mulch except groundcover areas.

2.10 WATERING BAGS

- A. Plastic tree watering bags holding a minimum of 15 gallons of water and with a slow drip hole(s) water release system, specifically designed to water establishing trees. Water should release over a several day period, not within a few hours
- B. Watering bags shall be:
 1. Treegator Irrigation Bags sized to the appropriate model for the requirements of the plant, manufactured by Spectrum Products, Inc., Youngsville, NC 27596.
 2. Ooze Tube sized to the appropriate model for the requirements of the plant, manufactured by Engineered Water Solutions, Atlanta, GA.
 3. Or approved equal.
- C. Submit manufacturer's product data for approval.

2.11 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.

2.12 TREE STABILIZATION MATERIALS

A. Stakes and Guys:

- 1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood or softwood with specified wood pressure-preservative treatment, free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal by length indicated, pointed at one end.
- 2. Wood Deadmen: Timbers measuring 8 inches in diameter and 48 inches long, un-treated wood.
- 3. Flexible Ties: Wide rubber of length required to reach stakes or turnbuckles.
- 4. Tree-Tie Webbing: Flat, woven UV-resistant polypropylene material, 3/4 inch wide, 900 lb. break strength. Color: Green.

2.13 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. 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.

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. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.

3. 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.

4. 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 EXISTING SOIL MODIFICATION

A. Follow the requirements for modifying existing soil as indicated in Part 2 for the different types of soil modifications. The extent of the areas of soil modification shall include both planting areas and lawn areas.

3.4 COMPACTION REQUIREMENTS FOR MODIFIED PLANTING SOIL

A. Existing soil that is modified by tilling, ripping or fracturing shall have a density to the depth of the modification, after completion of the loosening, such that the penetrometer reads approximately 75 to 250 psi at soil moisture approximately the mid-point between wilting point and field capacity. This will be approximately between 75 and 82% of maximum dry density standard proctor.

- B. Provide adequate equipment to achieve consistent and uniform compaction of the Planting Soils. Use the smallest equipment that can reasonably perform the task of spreading and compaction. Use the same equipment and methods of compaction used to construct the Planting Soil mockup.
- C. Do not pass motorized equipment over previously installed and compacted soil except as authorized below.
 - 1. Light weight equipment such as trenching machines or motorized wheel barrows is permitted to pass over finished soil work.
 - 2. If work after the installation and compaction of soil compacts the soil to levels greater than the above requirements, follow the requirements of the paragraph "Over Compaction Reduction" below.

3.5 PLANTING AREA ESTABLISHMENT

- A. Following the installation of each soil and prior to fine grading and installation of the Compost till layer, apply chemical additives as recommended by the soil test, and appropriate to the soil and specific plants to be installed.
- B. Types, application rates and methods of application shall be approved by the Owner's Representative prior to any applications.
- C. Loosen subgrade of planting areas to a minimum depth of 8 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
- D. 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.
- E. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.
- F. Application of Mycorrhizal Fungi: As recommended by manufacturer.

3.6 INSTALLATION OF COMPOST TILL LAYER

- A. Prior to the installation of shrub or groundcover plantings, spread 1 – 2 inches of Compost over the beds and roto till into the top 4 - 6 inches of the existing soil. This step will raise grades slightly above the grades required. This specification anticipates that the raise in grade due to this tilling will settle within a few months after installation as Compost breaks down.

3.7 LAYOUT AND PLANTING SEQUENCE

- A. Relative positions of all plants and trees are subject to approval of the Owner's Representative or Landscape Architect.
- B. Notify the Owner's Representative, one (1) week prior to layout. Layout all individual tree and shrub locations. Place plants above surface at planting location or place a labeled stake at planting location. Layout bed lines with paint for the Owner's Representative's approval. Secure the Owner's Representative's acceptance before digging and start of planting work.

- C. When applicable, plant trees before other plants are installed.
- D. It is understood that plants are not precise objects and that minor adjustments in the layout will be required as the planting plan is constructed. These adjustments may not be apparent until some or all of the plants are installed. Make adjustments as required by the Owner's Representative including relocating previously installed plants.

3.8 SOIL PROTECTION DURING PLANT DELIVERY AND INSTALLATION

- A. Protect soil from compaction during the delivery of plants to the planting locations, digging of planting holes and installing plants.
 - 1. Where possible deliver and plant trees that require the use of heavy mechanized equipment prior to final soil preparation and tilling. Where possible, restrict the driving lanes to one area instead of driving over and compacting a large area of soil.
 - 2. Till to a depth of 6 inches, all soil that has been driven over during the installation of plants.

3.9 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 approximately three times as wide as ball diameter for balled and burlapped stock.
 - 2. Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
 - 3. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
 - 4. 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.
 - 5. 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.
 - 6. Maintain supervision of excavations during working hours.
 - 7. Keep excavations covered or otherwise protected when unattended by Installer's personnel.
 - 8. If drain tile is shown on Drawings or required under planting areas, excavate to top of porous backfill over tile.
- B. Subsoil and topsoil removed from excavations may not be used as planting soil.

- 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.
- E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.10 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 flush with adjacent finish grades.
 - 1. Use planting 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. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.
 - 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 flush with adjacent finish grades.
 - 1. Use planting 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. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.
 5. Continue backfilling process. Water again after placing and tamping final layer of soil.
- E. Set and support bare-root stock in center of planting pit or trench with root flare flush with adjacent finish grade.
1. Use planting soil for backfill.
 2. Spread roots without tangling or turning toward surface, and carefully work backfill around roots by hand. Puddle with water until backfill layers are completely saturated. Plumb before backfilling, and maintain plumb while working backfill around roots and placing layers above roots.
 3. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside soil-covered roots about 1 inch from root tips; do not place tablets in bottom of the hole or touching the roots.
 4. Continue backfilling process. Water again after placing and tamping final layer of soil.
- F. 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.

3.11 SPADE HARVESTED AND TRANSPLANTED PLANTS

- A. After installing the tree, loosen the soil along the seam between the root ball and the surrounding soil out to a radius from the root ball edge equal to the diameter of the root ball to a depth of 8 - 10 inches by hand digging to disturb the soil interface.
- B. Fill any gaps below this level with loose soil.
- C. After installing the tree, loosen the soil along the seam between the root ball and the surrounding soil out to a radius from the root ball edge equal to the diameter of the root ball to a depth of 8 - 10 inches by hand digging to disturb the soil interface.

3.12 TREE, SHRUB, AND VINE PRUNING

- A. Remove only dead, dying, or broken branches. Do not prune for shape.
- B. Prune, thin, and shape trees, shrubs, and vines as directed by Architect.
- C. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.
- D. Do not apply pruning paint to wounds.

3.13 TREE STABILIZATION

- A. Do not stake or guy trees unless specifically required by the Contract Documents, or in the event that the Contractor feels that staking is the only alternative way to keep particular trees plumb.
- B. Trees that are guyed shall have their guys and stakes removed after one full growing season or at other times as required by the Owner's Representative.
- C. Install trunk stabilization as follows unless otherwise indicated:
 - 1. Upright Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip out. Use a minimum of two stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend to the dimension shown on Drawings above grade. Set vertical stakes and space to avoid penetrating root balls or root masses.
 - 2. Use two stakes for trees up to 12 feet high and 2-1/2 inches or less in caliper; three stakes for trees less than 14 feet high and up to 4 inches in caliper. Space stakes equally around trees.
 - 3. Tree guying shall utilize the tree staking and guying materials specified. Guying to be tied in such a manner as to create a minimum 12-inch loop to prevent girdling. Refer to manufacturer's recommendations and the planting detail for installation.
 - 4. Support trees with two strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
- D. Staking and Guying: Stake and guy trees more than 6 feet in height and more than 2 1/2 inches in caliper unless otherwise indicated. Securely attach no fewer than three guys to stakes 30 inches long, driven to grade.
 - 1. Site-Fabricated Staking-and-Guying Method:
 - a. For trees more than 6 inches in caliper, anchor guys to wood deadmen buried at least 36 inches below grade. Provide turnbuckle for each guy wire and tighten securely.
 - b. Support trees with bands of flexible ties at contact points with tree trunk and reaching to turnbuckle. Allow enough slack to avoid rigid restraint of tree.
 - c. Support trees with strands of cable or multiple strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk and reaching to turnbuckle. Allow enough slack to avoid rigid restraint of tree.
 - d. Attach flags to each guy wire, 30 inches above finish grade.
 - e. Paint turnbuckles with luminescent white paint.
 - 2. Proprietary Staking and Guying Device: Install staking and guying system sized and positioned as recommended by manufacturer unless otherwise indicated and according to manufacturer's written instructions.

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- E. **Root-Ball Stabilization:** Install at- or below-grade stabilization system to secure each new planting by the root ball unless otherwise indicated.
1. **Wood Hold-Down Method:** Place vertical stakes against side of root ball and drive them into subsoil; place horizontal wood hold-down stake across top of root ball and screw at each end to one of the vertical stakes.
 - a. Install stakes of length required to penetrate at least to the dimension shown on Drawings below bottom of backfilled excavation. Saw stakes off at horizontal stake.
 - b. Install screws through horizontal hold-down and penetrating at least 1 inch into stakes. Pre-drill holes if necessary to prevent splitting wood.
 - c. Install second set of stakes on other side of root trunk for larger trees as indicated.
 2. **Proprietary Root-Ball Stabilization Device:** Install root-ball stabilization system sized and positioned as recommended by manufacturer unless otherwise indicated and according to manufacturer's written instructions.

3.14 GROUND COVER AND PLANT PLANTING

- A. Set out and space ground cover and plants other than trees, shrubs, and vines 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. 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.
- E. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
- F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- G. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.15 LANDSCAPE EDGING

- A. **Preparation:** Ensure that all underground utility lines are located and will not interfere with the proposed edging installation before beginning work. Locate border line of edging with string or other means to assure border straightness and curves as designed. Dig trench 1 inch deeper than set of edging bottom.
- B. Set edging into trench with top at 1/2 inch above compacted finish grade on turf side with side having loops for stakes placed on opposite side of turf. Drive stakes through edging loops until locked in place. Requires 3 stakes evenly spaced for each 8 foot section with a total of 8 stake loops available in each 16 foot section if necessary. Provide additional stakes at approximately 24 inches apart, longer stakes, heavier gage stakes, or any combination of previously mentioned as necessary to firmly secure edging for permanent intended use.

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- C. Where edging sections turn at corners and at angled runs, cut edging partially up through its height from bottom and turn back to desired angle to form rounded exposed radius.
 - D. Backfilling and Cleanup: Backfill both sides of edging, confirm and adjust if necessary that sections are securely held together, and compact backfill material along edging to provide top of edging at 1 inch above turf finish grade. Cleanup and remove excess material from site.

3.16 PLANTING AREA MULCHING

- A. Install weed-control barriers before mulching according to manufacturer's written instructions. Completely cover area to be mulched, overlapping edges a minimum of 6 inches and secure seams with galvanized pins. Omit weed-control barrier where bark mulch is called for.
- B. Apply type and depth of mulch as called for before settlement, covering the entire planting bed area. Install no more than 1 inch of mulch over the top of the root balls of all plants. Taper to 2 inches when abutting pavement.
- C. For trees planted in lawn areas the mulch shall extend to a 5 foot radius around the tree or to the extent indicated on the plans.
- D. Lift all leaves, low hanging stems and other green portions of small plants out of the mulch if covered.

3.17 WATERING

- A. The Contractor shall be fully responsible to ensure that adequate water is provided to all plants from the point of installation until the date of Substantial Completion Acceptance. The Contractor shall adjust the automatic irrigation system, if available, and apply additional or adjust for less water using hoses as required.
- B. Hand water root balls of all plants to assure that the root balls have moisture above wilt point and below field capacity. Test the moisture content in each root ball and the soil outside the root ball to determine the water content.
- C. The Contractor shall install 15 gallon watering bag for each tree to be maintained and used for tree watering during the warranty period.
- D. The watering bags shall remain the property of the Owner at the completion of the work.

3.18 PLANT MAINTENANCE PRIOR TO SUBSTANTIAL COMPLETION ACCEPTANCE

- A. During the project work period and prior to Substantial Completion Acceptance, the Contractor shall maintain all plants.
- B. Maintenance during the period prior to Substantial Completion Acceptance shall consist of pruning, watering, cultivating, weeding, mulching, removal of dead material, repairing and replacing of tree stakes, tightening and repairing of guys, repairing and replacing of damaged tree wrap material, resetting plants to proper grades and upright position, and furnishing and applying such sprays as are necessary to keep plantings reasonably free of damaging insects and disease, and in healthy condition. The threshold for applying insecticides and herbicide shall follow established Integrated Pest Management (IPM) procedures. Mulch areas shall be kept reasonably free of weeds, grass.

3.19 SUBSTANTIAL COMPLETION ACCEPTANCE

- A. Upon written notice from the Contractor, the Owners Representative shall review the work and make a determination if the work is substantially complete.
 - 1. Notification shall be at least 7 days prior to the date the contractor is requesting the review.
- B. The date of substantial completion of the planting shall be the date when the Owner's Representative accepts that all work in Planting, Planting Soil, and Irrigation installation sections is complete.
- C. The Plant Warranty period begins at date of written notification of substantial completion from the Owner's Representative. The date of substantial completion may be different than the date of substantial completion for the other sections of the project.

3.20 MAINTENANCE DURING THE WARRANTY PERIOD BY THE PLANT INSTALLER

- A. During the warranty period, provide all maintenance for all plantings to keep the plants in a healthy state and the planting areas clean and neat.
- B. General requirements:
 - 1. All work shall be undertaken by trained planting crews under the supervision of a foreman with a minimum of 5 years' experience supervising commercial plant maintenance crews.
 - 2. All chemical and fertilizer applications shall be made by licensed applicators for the type of chemicals to be used. All work and chemical use shall comply with all applicable local, provincial and federal requirements.
 - 3. Assure that hoses and watering equipment and other maintenance equipment does not block paths or be placed in a manner that may create tripping hazards. Use standard safety warning barriers and other procedures to maintain the site in a safe manner for visitors at all times.
 - 4. All workers shall wear required safety equipment and apparel appropriate for the tasks being undertaken.
 - 5. The Contractor shall not store maintenance equipment at the site at times when they are not in use unless authorized in writing by the Owner's Representative.
 - 6. Maintenance vehicles shall not park on the site including walks and lawn areas at any time without the Owner's Representative's written permission.
 - 7. Maintain a detailed log of all maintenance activities including types of tasks, date of task, types and quantities of materials and products used, watering times and amounts, and number of each crew. Periodically review the logs with the Owner's Representative, and submit a copy of the logs at the end of each year of the maintenance agreement.
 - 8. Meet with the Owner's Representative a minimum of three times a year to review the progress and discuss any changes that are needed in the maintenance program. At the end of the warranty period attend a hand over meeting to formally transfer the responsibilities of maintenance to the Owner's Representative. Provide all information on past

maintenance activities and provide a list of critical tasks that will be needed over the next 12 months. Provide all maintenance logs and soil test data.

- C. Provide the following maintenance tasks:
1. Watering; Provide all water required to keep soil within and around the root balls at optimum moisture content for plant growth.
 2. Maintain all watering systems and equipment and keep them operational.
 3. Monitor soil moisture to provide sufficient water. Check soil moisture and root ball moisture with a soil moisture meter on a regular basis and record moisture readings. Do not over water.
 4. Plant pruning: Remove cross over branching, shorten or remove developing co dominant leaders, dead wood and winter-damaged branches. Unless directed by the Owner's Representative, do not shear plants or make heading cuts.
 5. Restore plants: Reset any plants that have settled or are leaning as soon as the condition is noticed.
 6. Guying and staking: Maintain plant guys in a taught position. Remove tree guys and staking after the first full growing season unless directed by Owner's Representative.
 7. Plant replacement: Replace all plants that are defective as defined in the warranty provisions, as soon as the plant decline is obvious and in suitable weather and season for planting as outlined in above sections. Plants that become defective during the maintenance period shall be covered and replaced under the warranty provisions.
 8. Mulch: Refresh mulch once a year to maintain complete coverage but do not over mulch. At no time shall the overall mulch thickness be greater than 4 inches. Do not apply mulch within 6 inches of the trunks or stems of any plants. Replacement mulch shall meet the requirements of the original approved material. Mulch shall be no more than one inch on top of the root ball surface.
 9. Bed edging: Check and maintain edges between mulch and lawn areas in smooth neat lines as originally shown on the drawings.
- 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 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.

3.21 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.

3.22 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.

3.23 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

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Modifying existing soils for Planting soils.
 - 2. Seeding.
 - 3. Hydroseeding.

1.2 DEFINITIONS

- A. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
- B. Finish Grade: Elevation of finished surface of planting soil.
- C. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- D. 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.
 - 1. All use of pesticides shall conform with the Connecticut DEEP requirements.
- E. 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.
- F. 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.
- G. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil 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. 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.

1.3 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. 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. Qualification Data: For qualified landscape Installer.
- D. Product Certificates: For soil amendments and fertilizers, from manufacturer.
- E. Material Test Reports: For standardized ASTM D 5268 topsoil.
- F. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required initial maintenance periods.

1.4 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 in turf installation in addition to requirements in Division 01 Section "Quality Requirements."
 - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the Professional Landcare Network:
 - a. Certified Landscape Technician - Exterior, with installation maintenance specialty area(s), designated CLT-Exterior.
 - b. Certified Turfgrass Professional, designated CTP.
 - c. Certified Turfgrass Professional of Cool Season Lawns, designated CTP-CSL.
 - 5. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.
 - 6. Pesticide Applicator: State licensed, commercial.

1.5 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 conformance 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" in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod in time for planting within 24 hours of harvesting. 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. 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.
 - 3. Accompany each delivery of bulk fertilizers, lime, and soil amendments with appropriate certificates.

1.6 PROJECT CONDITIONS

- A. Planting Restrictions: Plant during one of the following periods. Contractor responsible for all maintenance until Substantial Completion.
 - 1. Spring Planting: April 1 - June 15.
 - 2. Fall Planting: August 15 - October 1.
- 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.

1.7 MAINTENANCE SERVICE

- A. Initial Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable turf is established but for not less than the following periods:
 - 1. Seeded Turf: 90 days from date of planting completion.
 - a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.
- B. Initial Meadow Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable lawn is established (determined by Landscape Architect and Construction Manager), but for not less than 90 days from date of planting completion.

PART 2 PRODUCTS

2.1 TOPSOIL

- A. Shall be clean, fertile, friable and well draining; not to contain materials harmful to plant life. All topsoil to be free of any subsoil earth clods, sods, stones over the specified size in any dimension, sticks, roots, weeds, litter and other deleterious material. Topsoil shall be uniform in quality and texture, and contain specified organic matter and mineral elements necessary for sustaining healthy plant growth. Rock fragments over one-inch in diameter shall not exceed two-percent by volume. Topsoil shall be free of any toxic chemical, waste or any material or condition that would prevent the establishment of suitable lawn. All imported off-site topsoil shall be obtained from a single source. Topsoil shall have a pH of 6.0 to 8.0. Organic matter contents shall be 4 to 8%. Soil texture shall meet the USDA Soils Texture Classification percentages for sand, silt and clay for 'Sandy Loam' with not less than 75% sand.

2.2 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species: State-certified seed of grass species as follows:

Seed Variety	Percent
Kentucky Bluegrass	33.33%
Perennial Ryegrass	33.33%
Chewings Fescue	33.33%

- C. Seed Species: Seed of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:
1. Manhattan 5 Seed Mix.

2.3 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
1. Class: T, with a minimum of 99 percent passing through No. 8 sieve and a minimum of 75 percent passing through No. 60 sieve.
 2. Class: O, with a minimum of 95 percent passing through No. 8 sieve and a minimum of 55 percent passing through No. 60 sieve.
 3. Provide lime in form of ground dolomitic limestone or calcitic limestone depending on recommendation from soil analysis.

- B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, and with a minimum of 99 percent passing through No. 6 sieve and a maximum of 10 percent passing through No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Aluminum Sulfate: Commercial grade, unadulterated.
- E. Perlite: Horticultural perlite, soil amendment grade.
- F. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 sieve.
- G. Sand: Clean, washed, natural or manufactured, and free of toxic materials.
- H. Diatomaceous Earth: Calcined, 90 percent silica, with approximately 140 percent water absorption capacity by weight.
- I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.4 ORGANIC SOIL AMENDMENTS

- A. Amendments, fertilizers, and conditioners shall be recommended in the Topsoil Test Report.
- B. Compost: The compost shall be a stable, humu-like material produced from the aerobic decomposition of organic residues. The Carbon/nitrogen ration shall be in the range of 10:1 to 25:1. The organic matter shall be at least 40% on an oven dry basis. 100-percent of the material shall pass a ½ inch screen. Soluble salts shall not exceed 0.4 mmhos cm-1. The pH shall be between 5.5 to 8.0. No man-man inert debris such as glass, metal, wood, masonry shall be visible and shall not exceed 1% dry weight.
 - 1. Heavy metals regulated by the EPA measured in the parts per million shall not exceed the allowable limits.
- C. Organic fertilizers are derived from several sources. Bonemeal in first paragraph below is organic and primarily phosphorous, has an alkaline reaction, and is nonburning. Other organic fertilizers include blood meal, cottonseed meal, seaweed meal, soybean meal, alfalfa meal, and blends of these materials.
- D. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 1 percent nitrogen and 10 percent phosphoric acid.
- E. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
- F. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
 - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

- G. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.5 MODIFIED EXISTING SOIL – COMPACTED SURFACE SOIL WITH LOW ORGANICS (TILLING OPTION)

- A. Description of condition to be modified: Surface soil compaction to a maximum of 6 inches deep from traffic or light grading. Original A horizon may be previously removed or graded but lower profile intact with acceptable compaction levels and limited grading. The soil organic matter, pH and chemistry in the A horizon may not be suitable for the proposed plants and may need to be modified as required.
- B. Modifications:
 - 1. Till top 6 inches or deeper of the soil surface, with a roto tiller, spade tiller, ripper or agricultural plow. Spread 1 – 2 inches of Compost on the surface of the tilled soil and make any chemical adjustment as recommended by the soil test.
 - 2. Till or disk the Compost into the loosened soil. Smooth out grades with a drag rake or drag slip.

2.6 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.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting 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. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.

3. 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.
 4. 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 COMPACTION REQUIREMENTS FOR MODIFIED PLANTING SOIL

- A. Existing soil that is modified by tilling, ripping or fracturing shall have a density to the depth of the modification, after completion of the loosening, such that the penetrometer reads approximately 75 to 250 psi at soil moisture approximately the mid-point between wilting point and field capacity. This will be approximately between 75 and 82% of maximum dry density standard proctor.
- B. Provide adequate equipment to achieve consistent and uniform compaction of the Planting Soils. Use the smallest equipment that can reasonably perform the task of spreading and compaction. Use the same equipment and methods of compaction used to construct the Planting Soil mockup.
- C. Do not pass motorized equipment over previously installed and compacted soil except as authorized below.
- D. Light weight equipment such as trenching machines or motorized wheel barrows is permitted to pass over finished soil work.
- E. If work after the installation and compaction of soil compacts the soil to levels greater than the above requirements, follow the requirements of the paragraph "Over Compaction Reduction" below.

3.3 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.
- 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.

3.4 INSTALLATION OF COMPOST TILL LAYER

- A. Prior to the installation of shrub or groundcover plantings, spread 1 – 2 inches of Compost over the beds and roto till into the top 4 - 6 inches of the existing soil. This step will raise grades slightly above the grades required. This specification anticipates that the raise in grade due to this tilling will settle within a few months after installation as Compost breaks down.

3.5 TURF AREA PREPARATION

- A. Limit turf subgrade preparation to areas to be planted.
- B. Verify topsoil placement has been completed and accepted. Verify required permeability has been tested and approved. All disturbed areas not developed otherwise shall be developed as lawn as indicated on the Drawings and as specified. Provide additional topsoil where and as required to properly meet all proposed finish grades. Remove weeds, debris, foreign matter and stones having any dimensions greater than ¾”.
- C. Fine grade to a smooth uniform surface Grades shall be within specified tolerances. The entire area shall present an even grade with no depressions where water will stand. Topsoil shall be smooth blended to existing finish grades around trees, erosion control devices and adjacent existing conditions, maintain exiting surface drainage patterns. Smoothly round-off all top and toe of slopes. Reinstall erosion control devices and protective fencing as required.
- D. For spring seeding provide sidurn for pre-emergence crabgrass control. Repeat applications as needed and in accordance with the manufacturer’s recommendation.
- E. Determine the bulk density of the topsoil prior to approval of finish grade, using an approximate method outlined in C.A. Black (ed) Methods of Soil Analysis, Part 1, American Society of Agronomy, 1965. Final bulk density of the topsoil shall have a mean value of approximately 1.35 g cm-3 (85 lbs. per cu. ft) taken from 5 samples from each field with no value exceeding 1.40 g cm-3 (88 lbs. per cu. ft.).
- F. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches (6” in areas used for staging, parking or construction activity. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Apply superphosphate fertilizer directly to subgrade before loosening.
 - 2. Thoroughly blend planting soil off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil.
 - a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
 - b. Mix lime with dry soil before mixing fertilizer.
 - 3. Spread planting soil to a depth of 6 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
 - a. Spread approximately 1/2 the thickness of planting soil over loosened subgrade. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil.
 - b. Reduce elevation of planting soil to allow for soil thickness of sod.
- G. Unchanged Subgrades: If turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:
 - 1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.

2. Loosen surface soil to a depth of at least 6 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 6 inches of soil. Till soil to a homogeneous mixture of fine texture.
 - a. Apply superphosphate fertilizer directly to surface soil before loosening.
 3. Remove stones larger than 1 inch in any dimension and sticks, roots, trash, and other extraneous matter.
 4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.
- H. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Final smoothing is to leave a firm and level surface with no soft spots. Limit finish grading to areas that can be planted in the immediate future.
- I. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- J. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.6 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 1. Do not use wet seed or seed that is moldy or otherwise damaged.
 2. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- B. Sow seed at a total rate of 3 to 4 lb/1000 sq. ft..
- C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas with slopes exceeding 1:4 with erosion-control blankets and 1:6 with erosion-control fiber mesh installed and stapled according to manufacturer's written instructions.
- E. Protect seeded areas with erosion-control mats where shown on Drawings; install and anchor according to manufacturer's written instructions.
- F. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.
 1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.

2. Bond straw mulch by spraying with asphalt emulsion at a rate of 10 to 13 gal./1000 sq. ft.. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.
- G. Protect seeded areas from hot, dry weather or drying winds by applying compost mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.

3.7 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
1. Mix slurry with nonasphaltic tackifier.
 2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.
 3. Apply slurry uniformly to all areas to be seeded in a two-step process. Apply first slurry coat at a rate so that mulch component is deposited at not less than 500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate. Apply slurry cover coat of fiber mulch (hydromulching) at a rate of 1000 lb/acre.

3.8 TURF MAINTENANCE

- A. Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. 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 turf 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 turf 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 turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches. The contractor shall provide all irrigation equipment and water as necessary to irrigate the seeded areas daily with ¼ acre inch of water per day using 3 sets to keep the surface moist and to maintain soil moisture at or near field capacity so that the seedbed does not dry out and adequate rooting takes place. The amount of water per dy and the number of sets may be adjusted at the request of the Owner. The irrigation schedule shall further be adjusted after the seedling plants and sod are rooted. The quantity of water used per day shall be recorded and reported daily to the Construction Manager for the first three week from seeding and weekly thereafter.

- C. Mow turf at 5 day intervals commencing as soon as the seedlings in the seeded areas reach 2 inches in height. Repeat mowing to maintain specified height without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
 - 1. Mow bentgrass to a height of 1/2 inch or less.
 - 2. Mow bermudagrass to a height of 1/2 to 1 inch.
 - 3. Mow carpetgrass perennial ryegrass to a height of 1 to 2 inches.
 - 4. Mow Kentucky bluegrass annual ryegrass chewings red fescue to a height of 1-1/2 to 2 inches.
 - 5. Mow turf-type tall fescue to a height of 2 to 3 inches.
- D. Turf Post Fertilization: Apply fertilizer after initial mowing and when grass is dry.
 - 1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

3.9 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Architect:
 - 1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 2 by 2 inches.
- B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

3.10 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.

3.11 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. On a daily basis.
- B. 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.

- C. Remove nondegradable erosion-control measures after grass establishment period.

END OF SECTION