

SECTION 329300
PLANT MATERIAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Backfill Mixes.
 - 2. Drain Rock.
 - 3. Fertilizers.
 - 4. Plant Materials.
 - 5. Rock Mulch.
 - 6. Cobble Splashpad
 - 7. Root Barriers.
 - 8. Root Ball Anchors.
 - 9. Steel Header and Stakes
 - 10. Angle Iron Header
 - 11. Wood Chip Mulch.
- B. For Earthwork, see Division 31.
- C. For Landscape Maintenance Period, see Section 320100.
- D. For Irrigation, see Section 328400.
- E. For Planting Soil Preparation, see Section 329113.
- F. For Planting Area Finish Grading, see Section 329119.
- G. For Landscape Drainage, see Section 334101.

1.2 DEFINITIONS

- A. Acceptance: Wherever the terms "acceptance", "accepted", or "acceptable" are used herein, they mean acceptance of Owner's representative in writing, unless indicated otherwise.
- B. Tie Height: Lowest Height at which tree trunk will snap back to upright position when pulled to one side and released.
- C. Plant Height: Measurement of main body height, not measurement to top branch tip.

- D. Plant Spread: Measurement of main body diameter, not measurement from branch tip to tip.
- E. Caliper: Trunk diameter measured at a point 6 inches (150 mm) above natural ground surface for trees up to 4 inches (100 mm) in caliper, and measured at a point 12 inches (300 mm) above natural ground surface for trees over 4 inches (100 mm) in caliper.

1.3 REFERENCES

- A. ANSI — American National Standards Institute:
 - 1. Z60.1 — American Standard for Nursery Stock. Most current edition.
- B. ICBN — International Code of Botanical Nomenclature. Most current edition.
- C. ICNCP — International Code of Nomenclature of Cultivated Plant. Most current edition.
- D. NAAPS — National Arborist Association Pruning Standards. Most current edition.
- E. UC DAS — University of California Division of Agricultural Sciences.
 - 1. Leaflet 2576 — Staking Landscape Trees. Most current edition.

1.4 SUBMITTALS

- A. Product Data:
 - 1. Fertilizer Tablets.
 - 2. Geotextile Fabric.
 - 3. Root Barriers.
 - 4. Steel Header and Stakes
 - 5. Angle Iron Header
 - 6. Tree Stakes.
 - 7. Tree Tie.
 - 8. Wetting Agent and Soil Penetrant.
 - 9. Root Ball Anchors
- B. Samples:
 - 1. Auxiliary Stake — 6-inch length.
 - 2. Cross-tie — 6-inch length.
 - 3. Rock Mulch — 1/2 pound bag.

4. Wood Mulch — 1/2 pound bag.
5. Angle Iron Header – 12” length
6. Cobble Splashpad — 1/2 pound bag.

C. Plant Material Photographs:

1. At least 14 days prior to submittal of plant material location data, submit three color photographs each of representative plants of each type of plant material.
2. Include a scale object in each photograph such as a tape measure or person.

D. Plant Material Location Data:

1. Quantities and sizes of each plant material type at each nursery or other place of growth.
2. Address, phone number, and contact person for each nursery or other place of growth.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Meet requirements of applicable laws, codes, and regulations required by authorities having jurisdiction over Work.
2. Provide for inspections and permits required by federal, state and local authorities in furnishing, transporting, and installing materials.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Handling Plants:

1. Do not lift or handle container plants by tops, stems or trunks.
2. Do not bind or handle plants with wire or rope.
3. Pad trunk and branches where hoisting cables or straps contact.

B. AntiDesiccant:

1. Spray plant material in full leaf immediately before transporting with antidesiccant.
2. Meet requirements of anti-desiccant manufacturer’s current printed application instructions.

C. Digging Plants: Dig ball and burlap plants with firm, natural balls of earth of diameter meeting or exceeding requirements of ANSI Z60.1 and of sufficient depth as required to include the fibrous and feeding roots.

D. Plant Storage Prior to Installation:

1. Protect plant root balls from sun and drying winds.

2. Keep root balls moist.
3. Keep sun-sensitive plants shaded.
4. Anchor plants to prevent damage from strong winds.

1.7 SITE CONDITIONS

- A. Environmental Requirements:
 1. Protect plant material being stored on site from sun and drying winds.
- B. Existing Conditions:
 1. Prior to Work commencement, review and clearly mark in field horizontal and vertical locations of public existing underground utilities and structures with respective utility companies.
 2. Prior to Work commencement, review and clearly mark in field horizontal and vertical locations of private underground utilities and structures with Owner.

1.8 WARRANTY

- A. Warranty Period: Warrant that plant material, except annuals, will be healthy and in vigorous, flourishing condition of active growth one year from date of Final Completion.
- B. Annuals: Warrant that annuals will be in a vigorous, flourishing condition of active growth until end of last annual change season.
- C. Delays: Delays in completion of planting operations which extend the planting into more than one planting season shall extend the Warranty Period correspondingly.
- D. Condition of Plants: Plants shall be free of dead or dying branches and branch tips, with foliage of a normal density, size and color.
- E. Incorrect Materials:
 1. During Warranty Period, replace at no cost to Owner, plants revealed as being untrue to name.
 2. Provide replacements of a size and quality to match the planted materials at the time the mistake is discovered.
- F. Replacements:
 1. As soon as weather conditions permit, replace, without cost to Owner, dead plants and plants not in a vigorous, thriving condition, as determined by the Owner's representative during and at the end of Warranty Period.
 2. Apply requirements of this Section to replacements.
- G. Exceptions: Contractor shall not be held responsible for failures due to neglect by Owner, vandalism and other causes outside the Contractor's control.

1.9 MAINTENANCE

- A. For Landscape Maintenance Period, see Section 32 01 00.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Fertilizer Tablets:
 - 1. Gro Power, Inc. – www.gropower.com.
 - 2. Grow Better – www.growbetter.com.
 - 3. Agri Tab Corporation – www.agritab.com.
 - 4. Or equal.
- B. Anti-Desiccant:
 - 1. Aquatrols Corporation – www.aquatrols.com.
 - 2. Or equal.
- C. Stress Reducing Agent: (DM – we need more manufacturers)
 - 1. EarthWorks – www.soilfirst.com.
 - 2. Or equal.
- D. Wetting Agent and Soil Penetrant:
 - 1. Aquatrols – www.aquatrols.com.
 - 2. Harell's – www.harrells.com.
 - 3. Or equal.
- E. Drain Rock
 - 1. American Soils Products, www.americansoil.com
 - 2. Or equal.
- F. Wood Chip Mulch:
 - 1. Lyngso – www.lyngsogarden.com
 - 2. American Soil Products – www.americansoil.com.
 - 3. Or equal.
- G. Rock Mulch:
 - 1. Lyngso – www.lyngsogarden.com
 - 2. American Soil Products – www.americansoil.com.

3. Or equal.
- H. Deep Root / Aeration System:
1. Rootwell, Union Lake, MI., (888) 766-8935.
 2. Or equal.
- I. Geotextile Fabric:
1. Carthage Mills – www.carthagemills.com.
 2. Mirafi – www.tcmirafi.com.
 3. Or equal.
- J. Steel Header:
1. The J.D. Russell Company – www.jdrussellco.com
 2. Or equal.
- K. Root Barriers:
1. Deep Root – www.deeproot.com.
 2. Century Products – www.centuryrootbarrier.com.
 3. Or equal.
- L. Root Ball Anchors
1. Platipus Earth Anchoring Systems – www.platipus-anchors.com.
 2. Or equal.
- M. Cobble Splashpad: (*Addendum 03*)**
1. Lyngso – www.lyngsogarden.com
 2. American Soil Products – www.americansoil.com.
 3. Or equal.

2.2 SUBSTITUTIONS

- A. Plant Material: Accepted substitute plants shall be true to species and variety and shall meet requirements of this Section except that plants larger than specified may be used if accepted.

2.3 MATERIALS

- A. Plants:
1. Growing Practices: Nursery grown in accordance with best horticultural industry practices.

2. Nomenclature: Plant nomenclature shall meet requirements of ICBN and ICNCP.
 3. Climatic Growing Conditions: Grown under climatic conditions similar to those of project for at least two years unless otherwise accepted.
 4. Container Growth Limitations: Container stock excluding annuals shall have been grown in the containers in which delivered for at least six months, but not over two years.
 5. Root Ball Size: Meet or exceed requirements of ANSI Z60.1.
 6. Branching: Structurally strong, able to stand upright without stakes or guys on a windless day; exceptionally heavy, symmetrical, tightly knit, so trained or favored in development and appearance as to be superior in form, number of branches, compactness and symmetry.
 7. Vigor: Sound, healthy and vigorous, well branched and densely foliated when in leaf.
 8. Disease and Pests: Free of disease, insect pests, eggs, or larvae.
 9. Root System: Healthy well-developed root systems, free of kinked, circling, girdling and center roots, rootbound condition and cracked or broken root balls.
 10. Measurements: Measure plants when branches are in their normal upright position.
 11. Pruning: Do not prune, thin or shape plants before delivery without acceptance.
 12. Unacceptable Conditions: Multiple leaders, unless specified, damaged or crooked leaders, bark abrasions, sun-scalds, disfiguring knots, or fresh cuts of limbs over 3/4-inch diameter which have not completely callused.
- B. Fertilizer Tablets:
1. Grow-Power 21 gram tablets, 20-10-5 (NPK) formula.
 2. Grow-Power 7 gram ADS tablets, 12-8-8 (N-P-K) formula.
 3. Agri Tab Aquatic fertilizer, 12-20-8 in compressed spike form.
 4. Agri Tab Aquatic fertilizer, 20-5-10 5 gram tablets.
 5. Or equal.
- C. Water: Clean, fresh and potable.
- D. Drain Rock: ¾ inch round.
- E. Wood Chip Mulch:
1. Match existing
 2. Or equal.
- F. Rock Mulch:
1. 3/8" crushed black basalt.

2. Anti-Desiccant: Commercially available spray protective coating, designed to reduce plant transpiration loss, which produces a moisture retarding barrier not removable by rain or snow.
- G. Stress Reducing Agent:
1. Roots Concentrate.
 2. Or equal.
- H. Wetting Agent and Soil Penetrant:
1. AquaGro 2000M.
 2. AquaGro 2000G.
 3. Or equal.
- I. Geotextile Fabric:
1. Mirafi Filterweave 140 NC non-woven geotextile composed of polypropylene fibers.
 2. Carthage FX-300MF
 3. Or equal.
- J. Steel Header:
1. Flexible carbon steel, ¼ inch by 5 inches by minimum 16 feet minimum length pieces, black factory paint finish, double staked overlap joints and designed to receive tapered steel stakes.
- K. Steel Header Stakes:
1. Steel, tapered, 16-inch minimum length, with black paint finish, designed specifically to anchor steel header in place, manufactured by manufacturer of the steel header for which they will be used.
- L. Angle Iron Header
1. Material: A36 Steel Angle
 2. Finish: Galvanized
 3. Size: 4" x 4"
- M. Root Barrier
1. UB 24-2
 2. Deep Root, www.deeproot.com
 3. Or equal.
- N. Root Ball Anchoring
1. Platipus Earth Anchoring Systems, www.platipus-anchors.com.
 2. Duckbill Model 68-RBK for trees up to 1 inches caliper.

3. Deadman System – Plati-Mat RF2RDMP for trees 1.5 to 6 inches caliper.
4. Or equal.

O. Cobble Splashpad: (Addendum 03)

1. 3"-6" angular black basalt.

2.4 MIXES

- A. For Plant Pit Backfill, see Section 02920.

2.5 SOURCE QUALITY CONTROL

A. Plant Material Review and Tagging:

1. Trees will be reviewed, photographed and tagged by the Owner's representative at the nursery, or other place of growth prior to delivery of trees to site.
2. At Owner's representative's discretion, shrubs may or may not be reviewed, photographed, and tagged by the Owner's representative at the nursery or other place of growth.
3. Tagging of plant material at the nursery or place of growth does not cancel the right of the Owner's representative to reject plant material at the site, if damage or unacceptable conditions are found that were not detected at the nursery, place of growth or in the submitted photographs.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. General: Examine site and verify that conditions are suitable to receive Work and that no defects or errors are present which would cause defective installation of products or cause latent defects in workmanship and function.
- B. Fine Grading and Soil Preparation: Verify that fine grading and soil preparation Work is complete.
- C. Verification Surface Drainage: Verify positive surface drainage of planted areas.
- D. Notification: Before proceeding with Work, notify Owner and Owner's representative in writing of unsuitable conditions.

3.2 PREPARATION

A. Protection of Existing Conditions:

1. Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities, plant materials and walks on or adjacent to the site of the Work.
2. Provide barricades, fences or other barriers to protect existing conditions to remain from damage during construction.

3. Do not store materials or equipment, permit burning, or operate or park equipment under the branches of existing plants to remain.
4. Submit written notification of damaged plants and structures to Owner and Owner's representative immediately.

3.3 SUBSURFACE OBSTRUCTIONS

- A. Plant Pit Excavation: If rock, underground utilities, structures, tree roots or other obstructions are encountered in the excavation of plant pits, alternate locations may be accepted by the Owner's representative.
- B. Cost for Removal of Obstructions: Where locations cannot be changed, submit cost estimate for Work to remove the obstructions to a depth of not less than 6 inches below the required pit depth, and proceed with Work after Owner's approval.
- C. Irrigation Piping: Reroute around the plant root ball.

3.4 PLANT LAYOUT

- A. Trees:
 1. Stake location of trees where indicated on Drawings.
 2. Scale tree locations where no dimensions are given.
 3. Drive a 3-foot long wood lath stake at each tree location and mark each tree type with different color survey tape.
 4. Contact Owner's representative to review locations in field prior to excavating plant pits.
 5. Do not excavate plant pits until Owner's representative has accepted locations.
- B. Shrubs and Groundcover.
 1. Layout according to Drawings.
 2. Contact Owner's representative if there are any conflicts that would prevent plants from being laid out according to Drawings.
 3. Contact Owner's representative to determine if a review of locations in field, prior to excavating plant pits, is required.

3.5 EXCAVATION OF PLANT PITS

- A. Equipment:
 1. Excavate pits with a backhoe or hand digging.
 2. Do not use an auger.

B. Dimensions:

1. Excavate plant pits to a depth equal to the root ball height minus the amount needed to account for settlement and to install the root balls at the specified elevation relative to adjacent finished grade.
2. Install top of plant root balls 1-inch above adjacent finished grade except where indicated otherwise.
3. Excavate pits to a diameter which is 3 times the root ball diameter, except where indicated otherwise on the Drawings.
4. Center plant pits on plant locations where possible.
5. Where plant pits cannot be excavated to specified dimensions nor centered on plants due to obstructions such as paving, walls, curbs, or other structures excavate pits in directions without obstructions until pit volume equals the specified plant pit volume, except where indicated otherwise.
6. Do not undercut adjacent obstructions unless accepted by the Owner's representative.
7. Excavate plant pit sides along adjacent elements such as paving, walls, curbs, and other structures at a 45 degree angle sloping away from the bottom surfaces of the adjacent elements, except where indicated otherwise.

3.6 ROOT BARRIERS INSTALLATION

- A. Locations: Install root barriers where shown on Drawings and according to manufacturer's current printed instructions.

3.7 STEEL HEADER INSTALLATION

- A. Locations: Install where indicated on Drawings.
- B. Horizontal Alignment:
1. Install straight sections free of "wiggles" using string lines as guides.
 2. Install curved sections as smooth curves free of small "wiggles" following alignment marked with paint by Owner's representative in field.
- C. Vertical Alignment: Install parallel with finished grade.
- D. Stakes:
1. Install stakes in solid undisturbed soil.
 2. Recompact loose disturbed soil to at least 85 percent relative compaction before installing stakes.
 3. Install stakes at every location in header sections designed to attach stakes to headers.

- E. Damaged headers: Replace header sections damaged by construction operations.

3.8 PLANTING AND BACKFILL OPERATIONS

A. Protection of Plants Prior to Installation:

1. Protect plant root balls from sun or drying winds.
2. Keep root balls of plants that cannot be planted immediately upon delivery in the shade, well protected and well watered.

B. Removal of Containers:

1. Remove canned stock carefully after cans have been cut on two sides with accepted cutter.
2. Do not use spade to cut containers.

C. Root Ball Scarification:

1. After removing plant from container, scarify side of root ball to prevent root-bound condition.
2. Loosen root ball soil surface to depth of 1/8 to 1/4 inch without damaging roots or breaking root ball.

3. Cutting Circling Roots:

4. If circling roots are encountered at root ball sides, notify Owner's representative for field review.
5. Upon Owner's representative's acceptance, cut roots on 4 sides of root ball 90 degrees apart at no extra cost to Owner.
6. Use a 4-inch wide sharp straight blade.
7. Cut roots by pushing spade or knife down sides of root ball 90 degrees to root ball surface and 2 inches into root ball.
8. Keep spade or knife sharp to cut roots cleanly.

D. Plant Placement:

1. Handling plant carefully, set plant root ball on pit bottom centered on accepted horizontal location.
2. Install plant root ball vertically so that top of root ball is 1 inch above adjacent finished grade after settlement except where indicated otherwise.

- E. Removal of Root ball Wrapping Materials: Remove and dispose of burlap, nylon cord, wire baskets, twine and other materials prior to backfilling.

F. Backfill Mix Placement:

1. Place mix carefully as not to damage the plant root ball, trunk, branches, or foliage.
 2. Fill pit until top of backfill mix is even with top of root ball.
 3. Settle mix by watering evenly.
 4. Fill settled backfill mix with additional soil mix as required to bring it even with top of root ball.
 5. Continue filling and watering settled areas until settlement stops.
- G. Settled Plant Adjustment: Raise plant root balls which settle so that top of root balls are at the specified elevation relative to adjacent finished grade.
- H. Final Compaction: Compact soil mix by saturating with water.
- I. Fertilizer Tablets:
1. Place maximum quantities recommended by the manufacturer's current printed instructions.
 2. Place tablets between bottom of root ball and 1/3 way up root ball, 2 inches away from root ball.
 3. Do not place tablets higher than 1/3 way up root ball.
 4. Space tablets equally around root ball.
 5. Install tablets at trees, shrubs, ground cover, ornamental grasses, and ferns.
- J. Stress Reducing Agent:
1. After backfilling plant pits, drench backfill at rates recommended by manufacturer.
 2. Drench backfill same day backfill is placed.
- K. Wetting Agent and Soil Penetrant:
1. After backfilling plant pits, drench backfill at rates recommended by manufacturer.
 2. Drench backfill same day backfill is placed.

3.9 ROOT BALL ANCHOR INSTALLATION

- A. Manufacturer's Requirements: Meet requirements of manufacturer's current printed instructions.
- B. Root Ball Characteristics:
1. Install anchors only on firm root balls.
 2. Do not install anchors on trees grown in sand, sawdust or other loose growing mixes.

3.10 WOOD CHIP MULCH INSTALLATION

- A. Depth: Install geotextile fabric and rock mulch at depths and locations shown on the Drawings.
- B. Surface: Rake mulch surface smooth.
- C. Woody Plant Stems: Slope mulch away from woody plant stems so that mulch does not touch stems.

3.11 ROCK MULCH INSTALLATION

- A. Depth: Install geotextile fabric and rock mulch at depths and locations shown on the Drawings.
- B. Surface: Rake mulch surface smooth.
- C. Woody Plant Stems: Slope mulch away from woody plant stems so that mulch does not touch stems.

3.12 FIELD QUALITY CONTROL

- A. Field Observation Reviews by Owner’s representative: Coordinate and schedule with Owner’s representative.

3.13 SCHEDULES

- A. Root Ball Anchor Schedule:

<i>Tree Caliper at 12 Inches Above Grade</i>	<i>No. of Guys</i>	<i>Cable Size</i>	<i>Turn-buckle Size</i>	<i>Ground Anchors</i>
3 - 6 inches	3	1/8 inch 7 × 7	1/4 × 4 inches	4 × 4 × 24 × 18 inches deep deadmen (or) Laconia LA-4-40 SM (or) Duckbill 68
6 - 8 inches	3	3/16 inch 7 × 7	5/16 × 4-1/2 inches	6 × 6 × 30 × 30 inches deep deadmen (or) Laconia LA-6-60 (or) Duckbill 88

END OF SECTION