

**ADDENDUM NO. 1**

**TO CONTRACT DOCUMENTS FOR CITY OF PATEROS WELL #4 PUMP STATION  
PROJECT (REBID)**

**THIS ADDENDUM IS DATED March 4, 2019**

**TO ALL PLANHOLDERS:**

The following modifications, additions, deletions, clarifications and/or information are hereby made a part of the Contract Documents and shall be fully binding upon the Contractor and the City of Pateros. **THIS ADDENDUM MUST BE ACKNOWLEDGED ON THE BID FORM (Page 2 of the pink sheets).**

**INDEX TO CONTRACT DOCUMENTS**

- Delete **Section 07610 Metal Roofing and Siding** from the index

**DIVISION 2 – SITE WORK**

- Add **Section 02810 Planting Irrigation** attached to this addendum
- Add **Section 02870 Site Furnishings** attached to this addendum
- Add **Section 02920 Turf and Grasses** attached to this addendum
- Add **Section 02923 Soil Preparation** attached to this addendum
- Add **Section 02930 Plants** attached to this addendum

**\*\*\* END ADDENDUM 1 \*\*\***

**1.00 GENERAL**

**1.01 SUMMARY**

- A. Section Includes:
1. Piping.
  2. Manual valves.
  3. Automatic control valves.
  4. Control valve decoders
  5. Sprinklers.
  6. Quick couplers.
  7. Controllers.
  8. Boxes for automatic control valves.

**1.02 PERFORMANCE REQUIREMENTS**

- A. Irrigation zone control shall be automatic operation with controller and manual operation with manual valves.
- B. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Maintain 100 percent irrigation coverage of areas indicated. Adjust or add additional outlets if needed.
- C. Retain first paragraph below if Contractor is required to assume responsibility for design.

**1.03 INFORMATIONAL SUBMITTALS**

- A. Field quality-control reports.
- B. Contractor and Product Data: Prior to starting any work, the contractor shall present for approval by the owner's representative, one packages of the following information. The submittals shall be neatly bound with a cover letter on the company's letterhead, indicating the contents and purpose of the submittals. All items shall be provided within one submittal package.
1. Project name and location.
  2. Job site foreman's name that will be responsible for the project at all times.
  3. Table of Contents listing all material and equipment to be used on the project indicating brand names, model numbers and or shop drawings. Cut sheets of all the following landscape irrigation items are required.
    - a. Automatic Controller
    - b. Backflow preventer
    - c. Quick coupler
    - d. Isolation gate valve
    - e. Pipe
    - f. Mainline
    - g. Lateral
    - h. Sleeves
    - i. Unions and fittings
    - j. Irrigation outlets
    - k. Automatic control valves

- l. Control wire
  - m. Wire connectors
  - n. Valve boxes
  - o. Metallic identification ribbon
- C. NOTE: all substitutions for proposed products shall be called out in the Table of Contents.
- D. Operation/Maintenance Manuals:
- 1. Provide the Owner with two final copies of the Operation and Maintenance Manual for the system. One preliminary copy of the manuals shall be submitted to the Landscape Architect for review and approval prior to issuing the two final copies to the Owner. Manuals shall be provided to the Owner prior to the instruction/training session.
  - 2. Manuals shall include as a minimum.
    - a. A master index at the beginning of the manual. Provide tab index sheets separating sections within the manual; correlated to the index.
    - b. A section containing the name, address, and phone number of the Landscape Architect, General Contractor, all subcontractors, and all material Suppliers. The listing enclosed shall be numbered or otherwise keyed to the other sections of the manual so that each system component or material item can easily be associated with the appropriate supplier and installer.
    - c. A section containing a general description of the system, the intended sequence of operation, and the "Record Drawings".
    - d. A section containing the operational procedures such as Winterization and spring start-up, and recommended spare parts listings.
    - e. A section containing technical information about each and every component of the system. This information shall include catalog data clearly marked as to specific model number and/or style device used, exploded parts diagrams for assembled components such as control valves and sprinkler heads, and wiring/control diagrams for all parts of the system.
    - f. A section containing all manufacturer's and contractors warranties, test reports, and inspection certificates.
- E. Record Documents
- 1. Record accurately and legibly on a daily basis, all changes, additions, deletions, substitutions, discovered utilities and irrigation system components and other irrigation system modifications on a clean set of Construction Documents. Update and review record documents with Architect during each site observation meetings/visit.
  - 2. Provide the completed original markup drawings to the Owner and a copy to the Architect at the completion of the work, prior to application for final payment. Record drawings are required in hardcopy, electronic and PDF format on CD, at the same scale as the original design drawings.
    - a. Indicate locations, sizes and kinds of equipment installed.

- b. Dimension from 2 permanent points of reference (building corners, side walk, or road intersections, etc.) the location of the following items:
  - 1 Connection to water lines.
  - 2 Connection to electrical power.
  - 3 Gate/Isolation valves.
  - 4 Routing of sprinkler pressure lines (dimension max. 100' along routing).
  - 5 Significant changes in routing of lateral lines from those indicated on Drawings.
  - 6 Sprinkler control valves.
  - 7 Routing of control wiring.
  - 8 Quick coupling valves.

3. Controller Charts:

- a. Record Drawings shall be approved by the Owner representative/Landscape Architect before controller charts are prepared.
- b. Submit 1 complete set of controller charts for each controller.
- c. Contractor shall supply two hermetically sealed reproductions of record drawings to fit an eleven by seventeen format. All zones will be color coded for ease of identification. One copy shall be mounted on the wall next to the controller and one copy given to SPS plumbing dept.
- d. Chart shall be a reproducible print, or legible 'type' copy. Use a different color to indicate different zones and its respective area of coverage.

- E. When approved, hermetically seal chart between 2 pieces of plastic (20mil) and securely mount to wall near controller enclosure

1.04 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.05 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

**2.00 PRODUCTS**

**PIPES, TUBES, AND FITTINGS**

- A. Comply with requirements in the piping schedule for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.
- B. Galvanized-Steel Pipe: ASTM A53/A53M, Standard Weight, Type E, Grade B.
  - 1. Galvanized-Steel Pipe Nipples: ASTM A733, made of ASTM A53/A53M or ASTM A106/A106M, Standard Weight, seamless-steel pipe with threaded ends.
  - 2. Galvanized, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.
  - 3. Malleable-Iron Unions: ASME B16.39, Class 150, hexagonal-stock body with ball-and-socket, metal-to-metal, bronze seating surface, and female threaded ends.
  - 4. Cast-Iron Flanges: ASME B16.1, Class 125.
- C. PVC Pipe: ASTM D1785, PVC 1120 compound, Schedules 40 and 80.
  - 1. PVC Socket Fittings: ASTM D2466, Schedules 40 and 80.
  - 2. PVC Threaded Fittings: ASTM D2464, Schedule 80.
  - 3. PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tail piece shall be PVC with socket ends.
- D. PVC Pipe, Pressure Rated: ASTM D2241, PVC 1120 compound, SDR 21 and SDR 26.
  - 1. PVC Socket Fittings: ASTM D2467, Schedule 80.
  - 2. PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tail piece shall be PVC with socket or threaded ends.

**2.02 PIPING JOINING MATERIALS**

- A. Solvent Cements for Joining PVC Piping: ASTM D2564. Include primer according to ASTM F656.
- B. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.

**2.03 MANUAL VALVES**

- A. Bronze Ball Valves:
  - 1. Description:
    - a. Standard: MSS SP-110.
    - b. SWP Rating: 150 psig.
    - c. CWP Rating: 600 psig.
    - d. Body Design: Two piece.
    - e. Body Material: Bronze.
    - f. Ends: Threaded or solder joint if indicated.
    - g. Seats: PTFE or TFE.
    - h. Stem: Bronze.
    - i. Ball: Chrome-plated brass.
    - j. Port: Full or regular, but not reduced.

2.04 AUTOMATIC CONTROL VALVES

A. Plastic, Automatic Control Valves:

1. Description: Molded-plastic body, normally closed, diaphragm type with manual-flow adjustment, and operated by 24-V ac solenoid.

2.05 CONTROL VALVE DECODERS

- A. Decoder: Water proof decoder compatible with specified or approved controller and valve. Decoded shall be constructed for use in underground irrigation and for wet locations. One decoder per valve.

2.06 SPRINKLERS

- A. General Requirements: Designed for uniform coverage over entire spray area indicated at available water pressure.

B. Plastic, Pop-up, Gear-Drive Rotary Sprinklers:

1. Description:
  - a. Body Material: ABS.
  - b. Nozzle: ABS.
  - c. Retraction Spring: Stainless steel.
  - d. Internal Parts: Corrosion resistant.
2. Capacities and Characteristics:
  - a. Flow: as indicated on drawings
  - b. Pop-up Height: 4 inches aboveground to nozzle.
  - c. Arc: as indicated on drawings.
  - d. Radius: as indicated on drawings
  - e. Inlet: NPS 1/2 or NPS 3/4.

C. Plastic, Surface Spray Sprinklers on riser:

1. Description:
  - a. Body Material and Flange: ABS.
  - b. Pattern: Fixed, with flow adjustment.
  - c. Nozzle attached to riser with manufacturer's nozzle adapter
  - d. Riser: PVC gray threaded sch 80 nipple 18" min. height above grade
2. Capacities and Characteristics:
  - a. Nozzle: ABS
  - b. Flow: as indicated on drawings.
  - c. Arc: as indicated on drawings.
  - d. Radius: as indicated on drawings.
  - e. Inlet: NPS 1/2.

D. Plastic, Surface, Pop-up Spray Sprinklers:

1. Description:

- a. Body Material and Flange: ABS.
  - b. Pattern: as indicated on drawings
2. Capacities and Characteristics:
- a. Pop-up Height: 4 inches.
  - b. Nozzle: ABS
  - c. Flow: as indicated on drawings.
  - d. Arc: as indicated on drawings.
  - e. Radius: as indicated on drawings
  - f. Inlet: NPS 1/2 .

## 2.07 QUICK COUPLERS

- A. Description: Factory-fabricated, bronze or brass, two-piece assembly. Include coupler water seal valve; removable upper body with spring-loaded or weighted, rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.
1. Locking-Top Option: Vandal-resistant locking feature. Include two matching key(s).

## 2.08 CONTROLLERS

- A. Description: Provide Controller as indicated on drawings or approved equal. Controller shall comply with following.
1. Controller Stations for Automatic Control Valves: Each station is variable from approximately 0 to 99 minutes. Include switch for manual or automatic operation of each station.
  2. Controller shall two wire communications to control valves. Coordinate controller and decoders for complete operation of automatic control valves.
  3. Exterior Control Enclosures: NEMA 250, Type 4, weatherproof, with locking cover and two matching keys; include provision for grounding.
    - a. Body Material: Metal Case, w/ locking mechanism.
    - b. Mounting: Surface type for wall.
  4. Control Transformer: 24-V secondary, with primary fuse.
  5. Timing Device: Adjustable, 24-hour, 14-day clock, with automatic operations to skip operation any day in timer period, to operate every other day, or to operate two or more times daily.
    - a. Manual or Semiautomatic Operation: Allows this mode without disturbing preset automatic operation.
    - b. Nickel-Cadmium Battery and Trickle Charger: Automatically powers timing device during power outages.
    - c. Surge Protection: Metal-oxide-varistor type on each station and primary power.

6. Moisture Sensor: Adjustable from one to seven days, to shut off water flow during rain.
7. Wiring: UL 493, Type UF multiconductor, with solid-copper conductors; insulated cable; suitable for direct burial.
  - a. Feeder-Circuit Cables: No. 12 AWG minimum, between building and controllers.
  - b. Low-Voltage, Branch-Circuit Cables: No. 14 AWG minimum, between controllers and automatic control valves; color-coded different from feeder-circuit-cable jacket color; with jackets of different colors for multiple-cable installation in same trench.
  - c. Splicing Materials: Manufacturer's packaged kit consisting of insulating, spring-type connector or crimped joint and epoxy resin moisture seal; suitable for direct burial.

## 2.09 BOXES FOR AUTOMATIC CONTROL VALVES

- A. Plastic Boxes:
  1. Description: Box and cover, with open bottom and openings for piping; designed for installing flush with grade.
    - a. Size: As required for valves and service.
    - b. Shape: Rectangular.
    - c. Sidewall Material: Fiber reinforced plastic FRP.
    - d. Cover Material: FRP
- B. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3/4 inch minimum to 3 inches maximum.

## 3.00 EXECUTION

### 3.01 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Section 2300 "Earth Work."
- B. Install warning tape directly above pressure piping, 12 inches below finished grades, except 6 inches below subgrade under pavement and slabs.
- C. Drain Pockets: Excavate to sizes indicated. Backfill with cleaned gravel or crushed stone, graded from 3/4 to 3 inches, to 12 inches below grade. Cover gravel or crushed stone with sheet of asphalt-saturated felt and backfill remainder with excavated material.
- D. Provide minimum cover over top of underground piping as indicated on drawings.

### 3.02 PIPING INSTALLATION

- A. Location and Arrangement: Drawings indicate location and arrangement of piping systems. Install piping as indicated unless deviations are approved on Coordination Drawings.
- B. Install piping at minimum uniform slope of 0.5 percent down toward drain valves.
- C. Install piping free of sags and bends.
- D. Install groups of pipes parallel to each other, spaced to permit valve servicing.
- E. Install fittings for changes in direction and branch connections.



- F. Install unions adjacent to and on each side of valves and to final connections to other components with NPS 2 or smaller pipe connection.
- G. Install underground thermoplastic piping according to ASTM D2774 and ASTM F690.
- H. Install expansion loops in control-valve boxes for control wire.
- I. Lay piping on solid subbase, uniformly sloped without humps or depressions.
- J. Install PVC piping in dry weather when temperature is above 40 deg F. Allow joints to cure at least 24 hours at temperatures above 40 deg F before testing.

### 3.03 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
  - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- D. PE Piping Fastener Joints: Join with insert fittings and bands or fasteners according to piping manufacturer's written instructions.
- E. PVC Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
  - 1. Comply with ASTM F402 for safe-handling practice of cleaners, primers, and solvent cements.
  - 2. PVC Pressure Piping: Join schedule number, ASTM D1785, PVC pipe and PVC socket fittings according to ASTM D2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D2855.
  - 3. PVC Nonpressure Piping: Join according to ASTM D2855.

### 3.04 VALVE INSTALLATION

- A. Below Ground Valves: Install as components of connected piping system.
- B. Shutoff Valves: Install in underground piping in boxes for automatic control valves.

3.05 SPRINKLER INSTALLATION

- A. Install sprinklers after hydrostatic test is completed.
- B. Install sprinklers at manufacturer's recommended heights.
- C. Locate part-circle sprinklers to maintain a minimum distance of 4 inches from walls and 2 inches from other boundaries unless otherwise indicated.

3.06 AUTOMATIC IRRIGATION-CONTROL SYSTEM INSTALLATION

- A. Equipment Mounting: Install controller on wall.
  - 1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
- B. Install control cable in same trench as irrigation piping and at least 2 inches below or beside piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas.

3.07 IDENTIFICATION

- A. Identify system components. Comply with requirements for identification specified in Section 02080 "Identification for Plumbing Piping and Equipment."
- B. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplates and signs on each automatic controller.
  - 1. Text: In addition to identifying unit, distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.
- C. Warning Tapes: Arrange for installation of continuous, underground, detectable warning tapes over underground piping during backfilling of trenches. See Section 312000 "Earth Moving" for warning tapes.

3.08 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
  - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
    - a. Mainline Pressure Test: After installation of mainline and electronic valves, and prior to backfilling any pipe joints, charge system to 100 psi for one hour and test for leaks under the supervision of either the Landscape Architect and/or Owner Representative

2. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
  3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Perform the following field tests and inspections and prepare test reports:
1. Mainline Pressure Test: After installation of mainline and electronic valves, and prior to backfilling any pipe joints, charge system to 100 psi for one hour and test for leaks under the supervision of both the Landscape Architect and an Owner Representative (Doug McArthur & Brad Wolfrum – District No. 81 (354-7172)). Provide a minimum of 24 hours notice prior to test. If any pipe connections have been buried, testing will be rescheduled once all joints are visible. Repair leaks and retest until no leaks exist.
  2. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
  3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and Equipment
- D. Any irrigation product will be considered defective if it does not pass tests and inspections
- E. Prepare test and inspection reports.

### 3.09 ADJUSTING

- A. Adjust settings of controllers.
- B. Adjust automatic control valves to provide flow rate at rated operating pressure required for each sprinkler circuit.
- C. Adjust sprinklers and devices, except those intended to be mounted aboveground, so they will be flush with, or not more than 1/2 inch above, finish grade.

### 3.10 PIPING SCHEDULE

- A. Install components having pressure rating equal to or greater than system operating system.
- B. Piping in control-valve boxes and aboveground may be joined with unions instead of joints indicated.
- C. Aboveground irrigation main piping, NPS 2 and smaller, shall be Galvanized-steel pipe and galvanized steel pipe nipples, galvanized threaded fittings and joints.
- D. Underground irrigation main piping, NPS2 shall be one of the following:
  1. Schedule 40, PVC pipe and socket fittings, and solvent-cemented joints.
  2. Schedule 80, PVC pipe; Schedule 80, threaded PVC fittings; and threaded joints.

- E. Circuit piping, NPS 2, shall be one of the following:
  - 1. Schedule 40, PVC pipe and socket fittings; and solvent-cemented joints.
  - 2. SDR 26, PVC, pressure-rated pipe; Schedule 40, PVC socket fittings; and solvent-cemented joints.
- F. Underground Branches and Offsets at Sprinklers and Devices: Schedule 80, PVC pipe; threaded PVC fittings; and threaded joints.
  - 1. Option: Plastic swing-joint assemblies, with offsets for flexible joints, manufactured for this application.
- G. Risers to Aboveground Sprinklers and Specialties: Schedule 80, PVC pipe and threaded fittings; and solvent-cemented joints.

### 3.11 VALVE SCHEDULE

- A. Underground, Shutoff-Duty Valves: Use the following:
  - 1. NPS 2 and Smaller: Curb valve, curb-valve casing, and shutoff rod.
- B. Aboveground, Shutoff-Duty Valves:
  - 1. NPS 2 and Smaller: Brass or bronze ball valve.

### 3.12 COMMISSIONING

- A. Selected equipment and systems are to be commissioned per Section 01 9113 – General Commissioning Requirements. The contractor has specific responsibilities for scheduling, coordination, startup, test development, testing and documentation. Coordinate all commissioning activities with city staff.

### 3.13 ADJUSTING AND MAINTENANCE

- A. Adjust settings of controllers.
- B. Adjust automatic control valves to provide flow rate of rated operating pressure required for each sprinkler circuit.
- C. Adjust pop up sprinklers so they will be above, nor more than 1/2 inch (13 mm) below finish grade.
- D. Adjust shrub heads on risers so the riser is vertical and up right, adjust nozzle for coverage as necessary.
- E. Maintenance Service: Maintenance Period: Landscape and irrigation maintenance shall be performed for 30days from date of substantial completion.
- F. Contractor shall include coordination with irrigation controller manufacturer for the commissioning and scheduling and training prior to final completion.

3.14 CLEAN UP

- A. Upon completion of coverage test and installation of landscape plantings, mulch, and other features, re-adjust irrigation outlets for full coverage.
- B. Clean all adjacent surfaces of excess material, trash and discards generated from the installation of the irrigation system.
- C. Coordinate with other trades and set automatic control as needed for newly planted landscapes.
- D. At end of maintenance period or as necessary for climate conditions adjust controller to maintain and provide healthy growing conditions for plant growth.

**\*\*END OF SECTION 02810\*\***

1.00 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Trash Receptacle
2. Drift Wood
3. Flag Pole

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified.

1.03 CLOSEOUT SUBMITTALS

A. Maintenance data.

2.00 PRODUCTS

2.01 TRASH RECEPTACLES

A. Trash receptacle: Owner furnished contractor installed.

2.02 DRIFT WOOD

A. Drift Wood: Shall consist of weathered stumps and weathered logs. Owner shall furnish contractor shall install as indicted on plans. Drift wood shall be procured from the local Dept. of Natural Resources located near the Wells Dam. The owner representative shall select from the recovered storage location. Contractor shall assist in the loading, hauling and placement of drift wood pieces.

2.03 FLAG POLE

A. 35' Tapered Aluminum pole with internal halyard and gold anodized aluminum ball flag pole:

1. Basis of Design; Flag Pole Titan Series Model IRW35C71 by the American Flagpole Co. or approved equal.
  - a. Gold Anodized Aluminum Ball
  - b. Internal revolving truck
  - c. Two stainless steel snap hooks with Neoprene Covers
  - d. Halyard Stainless Steel Wire Cable
  - e. Counter weight and beaded retainer sling
  - f. Flush door compression lock, reinforced door frame, manually operated winch.
  - g. Spun aluminum collar
  - h. Ground sleeve assembly with lightening spike

**3.00 EXECUTION**

**3.01 INSTALLATION**

- A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.
- B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.
- C. Install site furnishings, level, plumb, true, and securely anchored positioned at locations indicated on drawings.
- D. Coordinate with owner representative for location and placement of owner furnished contractor installed site furnishings. Coordination shall include the loading hauling and unloading of furnishings as indicated.
- E. Place and field adjust per direction of owner on owner furnished equipment. All other site furnishings shall comply with manufacturer's requirements.
- F. Protect all adjacent finished work during installation.
- G. Remove manufacturer's packaging slips, tags or temporary stickers. Clean all newly manufactured components to new condition prior to final acceptance.

**\*\*END OF SECTION 02870\*\***

1.00 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Sodding.
2. General Conditions

1.02 DEFINITIONS

- A. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- B. Planting Soil: Imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329115 "Soil Preparation and drawing designations for planting soils.

1.03 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
- B. Coordinate the placement of sod with owner desired schedules see General Conditions.

1.04 INFORMATIONAL SUBMITTALS

- A. Certification of grass seed.
1. Certification of each seed mixture for turfgrass sod.
- B. Product certificates from sod grower.
- C. Sod placement schedule: provide a schedule indicating the anticipated start date and end date for sod placement that has been coordinated with project construction schedule.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful turf establishment.
1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
  2. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the National Association of Landscape Professionals:
    - a. Landscape Industry Certified Technician - Exterior.
    - b. Landscape Industry Certified Lawn Care Manager.
    - c. Landscape Industry Certified Lawn Care Technician.



3. Pesticide Applicator: State licensed, commercial.

1.06 DELIVERY, STORAGE, AND HANDLING

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

2.00 PRODUCTS

2.01 TURFGRASS SOD

A. Turfgrass Sod: Certified, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.

B. Turfgrass Species: Sod of generally Kentucky Blue Grass, *Poa pratensis* and other desired turf grass species.

2.02 FERTILIZERS

A. Commercial 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. General application rate: 1 lb/1000 sq. ft. of actual nitrogen.

2.03 PESTICIDES

A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

3.00 EXECUTION

3.01 TURF AREA PREPARATION

A. General: Prepare planting area for soil placement and mix planting soil according to Section 02923 "Soil Preparation".

B. Reduce elevation of planting soil to allow for soil thickness of sod.

C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

- D. Before planting, obtain Owner's representative or Landscape Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.02 SODDING

- A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
  - 1. Lay sod across slopes exceeding 1:3.
  - 2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.
- C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.03 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, re planting, aeration, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and mulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
- B. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings.
  - 1. Turf area maintenance min. 60 days from placement and or substantial acceptance.

3.04 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Architect:
  - 1. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

**\*\*END OF SECTION 02920\*\***

1.00 GENERAL

1.01 SUMMARY

- A. Section includes landscape berms and planting soils specified according to performance requirements of the mixes.
- B. Related Requirements:
  - 1. Section "Earth work" for site grading.
  - 2. Section "Planting irrigation" for irrigation piping.
  - 3. Section "Plants" for Landscape plants and mulch.
  - 4. Section "Turf and Grasses" for sodded lawn.

1.02 DEFINITIONS

- A. CEC: Cation exchange capacity.
- B. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.
- C. General fill material: Subsoil material taken below the topsoil horizon, containing stones, sand and loess material. Stone sizes shall not exceed 4" and be no greater than 35%.
- D. Imported Soil: Surface soil either topsoil or general fill that is transported to Project site for use.
- E. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.
- F. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."
- G. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- H. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.
- I. SSSA: Soil Science Society of America.
- J. 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.
- K. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- L. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.

M. Topsoil: Surface soil that is present at the top layer of a natural soil profile. Topsoil may be manufactured using standard blending techniques and shall be classified as Sandy Loam by the USDA soil classification triangle.

N. USCC: U.S. Composting Council.

### 1.03 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

### 1.04 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each bulk-supplied material in sealed containers labeled with content, source, and date obtained; providing an accurate representation of composition, color, and texture.

C. Soils Test Report: Provide written soils test report of proposed imported sub soil and topsoil. Test report shall in accordance with part 1.6. Soils report at minimum shall include the following:

1. Soil classification according to USDA classification.
2. Soils pH
3. Soils fertility including: NPK as a percentage.
4. Cation Exchange Capacity CEC
5. Permeability
6. Organic Content as a percentage
7. Recommendation from the testing laboratory for amendments that will improve general plant growth.

### 1.05 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

### 1.06 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed.

## 2.00 PRODUCTS

### 2.01 MATERIALS

A. Regional Materials: manufactured planting soil and soil amendments and fertilizers shall be manufactured within 200 miles of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 200 miles of Project site.

2.02 SOILS SPECIFIED ACCORDING TO PERFORMANCE REQUIREMENTS

- A. Sub-Soil Type, imported subsoil soil using preconstruction soil analyses and materials specified in part 1 of this Section, import or screen borrow from off site locations that comply with subsoil as defined in part 1.
  - 1. Particle Size Distribution by USDA Textures: Classified as gravelly loam according to USDA textures.
  - 2. Soil Reaction: pH of 6 to 7.5.
  - 3. Total Porosity: Minimum 45-55 percent at 85 percent compaction.
- B. Macro Porosity: Minimum 5 percent at 85 percent compaction
- C. Planting-Soil Type, imported surface soil, with the duff layer, if any, modified to produce viable planting soil. Using preconstruction soil analyses and materials specified in other articles of this Section, amend imported surface soil to become planting soil complying with the following requirements:
  - 1. Particle Size Distribution by USDA Textures: Classified as sandy loam according to USDA textures.
  - 2. Percentage of Organic Matter: Minimum 4 percent by volume.
  - 3. Soil Reaction: pH of 6 to 7.5.
  - 4. CEC of Total Soil: Minimum 7 meq/100 mL at pH of 7.0.
  - 5. Soluble-Salt Content: 5 to 10 dS/m measured by electrical conductivity.
  - 6. Total Porosity: Minimum 45-55 percent at 85 percent compaction.
  - 7. Macro Porosity: Minimum 5 percent at 85 percent compaction.

2.03 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent.
- B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent elemental sulfur, with a minimum of 99 percent passing through a No. 6 sieve and a maximum of 10 percent passing through a No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through a No. 50 sieve.
- E. Sand: Clean, washed, natural or manufactured, free of toxic materials, and according to ASTM C33/C33M.

2.04 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:
  - 1. Feedstock: Limited to naturally occurring organic matter.
  - 2. Reaction: pH of 5.5 to 8.
  - 3. Soluble-Salt Concentration: Less than 4 dS/m.
  - 4. Moisture Content: 35 to 55 percent by weight.
  - 5. Organic-Matter Content: 50 to 60 percent of dry weight.
  - 6. Particle Size: Minimum of 98 percent passing through a 1/2-inch sieve.
- B. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or of granular texture, a pH of 3.4 to 4.8, and a soluble-salt content measured by electrical conductivity of maximum 5 dS/m.
- C. Wood Derivatives: Shredded and composted, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.
- D. 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.

2.05 FERTILIZERS

- A. Superphosphate: Commercial, phosphate mixture, soluble.
- B. 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.
- C. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium.

3.00 EXECUTION

3.01 GENERAL

- A. Place soil in locations and to the elevations shown on plan drawings.

- B. 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 on earthwork surface soil.
- C. Scarify initial earthwork surfaces prior to placement of subsoil material.
- D. Place and shape subsoil to the elevations and contours shown on civil and landscape drawings. Lightly compact subsoil to 85-87% modified proctor.
- E. 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 planting soil.

### 3.02 PLACING MANUFACTURED PLANTING SOIL OVER EXPOSED SUBGRADE

- A. General: Apply manufactured soil on-site in its final, blended condition. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Subgrade Preparation: Till subgrade to a minimum depth of 12 inches. Remove stones larger than 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
- C. Application: Spread planting soil to total indicated on Drawings, but not less than required to meet finish grades after natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.
  - 1. Lifts: Apply planting soil in lifts not exceeding 8 inches in loose depth for material compacted by placement equipment, and not more than 4 inches in loose depth for material compacted by hand backfilling.
- D. Coordinate the installation of soil amendments as recommended in the soils test report or directed by the Owner Representative/Landscape Architect. Amendments shall be integrated into the top-soil profile.
- E. Compaction: Compact each lift of planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM.
- F. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

### 3.03 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform the following tests and inspections:
  - 1. Compaction: Test planting-soil compaction after placing each lift and at completion using a densitometer or soil-compaction meter calibrated to a reference test value based on laboratory testing according to ASTM D698. Space tests at no less than one for each 1000 sq. ft. of in-place soil or part thereof.

2. Performance Testing: For each amended planting-soil type, demonstrating compliance with specified performance requirements. Perform testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.

- C. Soil will be considered defective if it does not pass tests[ and inspections].
- D. Prepare test[ and inspection] reports.
- E. Label each sample and test report with the date, location keyed to a site plan or other location system, visible conditions when and where sample was taken, and sampling depth.

3.04 PROTECTION AND CLEANING

- A. Protection Zone: Identify protection zones according to Section 015639 "Temporary Tree and Plant Protection."
- B. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
  - 1. Storage of construction materials, debris, or excavated material.
  - 2. Parking vehicles or equipment.
  - 3. Vehicle traffic.
  - 4. Foot traffic.
  - 5. Erection of sheds or structures.
  - 6. Impoundment of water.
  - 7. Excavation or other digging unless otherwise indicated.
- C. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.
  - 1. Dispose of excess subsoil and unsuitable materials on-site where directed by Owner.

**\*\*END OF SECTION 02923\*\***



1.00 GENERAL

1.01 SUMMARY

1. Section Includes:
  - 2 Plants.
  3. Tree-watering devices.
  4. Landscape edgings.
  5. Landscape mulch

A. Related Requirements:

1. Section 02923 Soil Preparation
2. Section 02920 Turf and Grasses
3. Section 02810 Planting Irrigation

1.02 DEFINITIONS

- A. Backfill: The earth used to replace or the act of replacing acceptable earth in an excavation.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.
- C. Planting Soil: Imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329115 "Soil Preparation" for drawing designations for planting soils.
- D. 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.

1.03 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples of each type of mulch.
  1. Mineral Mulches – as indicated on plan drawings
  2. Wood chip – ¾" Red Fir Fines

1.05 INFORMATIONAL SUBMITTALS

- A. Product certificates.
- B. Sample warranty.

1.06 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of plants during a calendar year.

1.07 QUALITY ASSURANCE

- A. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
  - 1. Pesticide Applicator: State licensed, commercial.
- B. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. 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.
- B. Handle planting stock by root ball.
- C. 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.

1.09 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.
    - b. Structural failures including plantings falling or blowing over.
  - 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.

2.00 PRODUCTS

2.01 PLANT MATERIAL

- A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
- B. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

2.02 FERTIIZERS

- A. 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: 10-gram tablets.
  - 2. Nutrient Composition: 20 percent nitrogen, 10 percent phosphorous, and 5 percent potassium, by weight plus micronutrients.

2.03 MULCHES

- A. Mineral Mulch: Rounded riverbed gravel.
  - 1. Size Range: as indicated on drawings.
  - 2. Color: Washed river stones varying in color, locally sourced or indigenous to the area.
- B. Organic Mulch: ¾' Ground or shredded bark Red Fir with minimal fines.

2.04 WEED-CONTROL BARRIERS

- A. Composite Fabric: Woven, needle-punched polypropylene substrate bonded to a nonwoven polypropylene fabric, 4.8 oz./sq. yd.

2.05 PESTICIDES

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

2.06 LANDSCAPE EDGINGS

- A. Concrete Edging: 4" profile extruded or cast in place concrete edging. Concrete shall be rated at min. 2500 psi @ 28 days.

3.00 EXECUTION

3.01 PLANTING AREA ESTABLISHMENT

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 02923 "Soil Preparation."
- B. Placing Planting Soil: Place manufactured planting soil over placed and shaped subgrade.
- C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.02 EXCAVATION FOR TREES AND SHRUBS

- A. Planting Pits and Trenches: Excavate circular planting pits.
  - 1. Excavate planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are unacceptable. 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.
  - 2. Excavate approximately three times as wide as ball diameter.
  - 3. Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
  - 4. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
- B. Backfill Soil: Subsoil and topsoil removed from excavations may be used as backfill soil unless otherwise indicated.

3.03 TREE, SHRUB, AND VINE PLANTING

- A. Inspection: At time of 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. Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.
- C. Set each plant plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.
  - 1 Backfill: Planting soil.
  - 2 Balled and Burlapped Stock: 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. Container-Grown Stock: Carefully remove root ball from container without damaging root ball or plant.
4. 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.
5. Place planting tablets equally distributed around each planting pit when pit is approximately one-half filled. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.
  - A. Quantity: Two per plant.
6. Continue backfilling process. Water again after placing and tamping final layer of soil.  
Slopes: 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.

#### 3.04 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.

#### 3.05 GROUND COVER AND PLANT PLANTING

- A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated on Drawings in even rows with triangular spacing.
- B. Use planting soil for backfill.
- C. Dig holes large enough to allow spreading of roots.
- D. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
- E. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- F. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.06 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.
- B. Mulch backfilled surfaces of planting areas and other areas indicated.
  - 1. Trees in Turf Areas: Apply organic mulch ring of 2-inch average thickness, with 36-inch radius around trunks or stems. Do not place mulch within 3 inches of trunks or stems.
  - 2. Mineral Mulch in Planting Areas: Apply mulch in necessary depths to fully cover over whole surface of planting area. Inter mix or randomize various size stones as indicted on plans and finish level with adjacent finish grades. Do not place mulch within 3 inches of trunks or stems.

3.07 EDGING INSTALLATION

- A. Concrete edging. Placer concrete edging upon completion of subgrade shaping. Compact sub grade base as indicated in plans. Finish all concrete as indicated and allow necessary time to cure before placing topsoil.

3.08 INSTALLING SLOW-RELEASE WATERING DEVICE

- A. Provide one device for each tree.

3.09 PLANT MAINTENANCE

- A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.
- B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.
- C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.
- D. Apply pesticides and other chemical products and biological control agents according to 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.
- E. 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.

F. At time of Substantial Completion, verify that tree-watering devices are in good working order and leave them in place. Replace improperly functioning devices.

3.10 MAINTENANCE SERVICE

A. Maintenance Service: Provide maintenance by skilled employees of landscape Installer. Maintain as required in "Plant Maintenance" Article. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below:

1. Maintenance Period for Trees and Shrubs: 30 day or 1 months from date of Substantial Completion.

**\*\*END OF SECTION 02930\*\***