



Addendum #2 - Bid Package #6929-08

Project Name: Lincoln Public Schools District Office
5901 'O' Street
Lincoln, NE
Project No.: 11065
Issued: September 20, 2012

This Addendum is issued by Hampton Construction to all known sub-contractors working on the preparation of proposals associated with the Bid Documents dated September 7, 2012. This Addendum is to authorize the use of the following information in preparing proposals for the above named project.

GENERAL QUESTIONS AND CLARIFICATIONS

- ADD 2-1.** All bids are to include a Bid Bond from the Surety Company.
- ADD 2-2.** Contractors are responsible for Performance & Payment Bonds, the costs of which shall be included within their bid.
- ADD 2-3.** Scope clarification for **Summary 08A Gypsum Board Systems**: Product found in Section 098413 shall be part of the work scope for Summary 08A.
- ADD 2-4.** Scope clarification for **Summary 08N Interior Glazing**: The art film associated with the glazing is NOT to be part of this scope. The glazing and connectors associated with the support of the art glass ARE part of the scope.
- ADD 2-5.** Landscaping:
- Question:** *Is there edging required between the lawn and landscape?*
- Response:** Additional information will be provided to the plans for clarification that a natural edge will be provided where turf grass and landscape beds abut.
- ADD 2-6.** Landscaping:
- Statement:** *Vinca is indicated on the project. Please let us know if they are plugs or potted and if potted, what size.*
- Response:** 4" plugs as per grasses and perennial schedule.
- ADD 2-7.** Landscaping:
- Question:** *The legend on the landscape plan lists 3"-4" River Jack. Is this the same as river rock? Is landscape fabric required in this area?*
- Response:** Yes, it is the same and the specifications dictate the type of fabric required.
- ADD 2-8.** Landscaping:

Question: *The perennial planting details state “till topsoil with amendment to 8”-10” minimum depth.” How many inches of soil amendment are to be incorporated? Are there specifications for the amendment or is any type of amendment acceptable?*

Response: Specifications dictate a mixture for “Planting Soil” (Part 2,2.6). The amount is also specified for Island and raised planter sections (Part 3, 3.1 H & I). The intent was to only use the soil amendment in areas where conditions were traditionally harshest. The 4” of top soil should suffice for all other areas (notably the south/southwest landscape buffer and all turf areas). The detail is updated with the appropriate nomenclature and the specifications have been altered to specifically include those planting beds adjacent to walks and buildings as part of this addendum.

ADD 2-9. Landscaping:

Question: *On the southeast corner of the anchor, on the south side of the retail/shops and on the southeast corner of the district office building the symbol for evening primrose is shown. Happy returns daylily is listed in the same area that the evening primrose symbol is listed. Are both plants to be intermixed in the same area?*

Response: The callout note has been adjusted to correctly reflect the hatch pattern shown and is included as part of this addendum.

ADD 2-10. Landscaping:

Question: *What is the timeline for installation of the landscape?*

Response: Late Spring to Early Summer 2013.

ADD 2-11. Landscaping:

Question: *Will the landscape for the entire site be installed at once or will the landscapes for the anchor, retail shops and district office be in different phases? If they are in different phases can you provide a timeline for each and what portion of the project will be installed?*

Response: Landscape for retail and anchor are not included (refer to revised sheets).

ADD 2-12. Landscaping:

Question: *Landscape Note #1 states “all landscaped areas are to receive a minimum of 4” of topsoil.” Is this the responsibility of the contractor doing the fine grading or is this part of the landscape bid?*

Response: Landscape contractor is responsible for the 4” of topsoil.

ADD 2-13. Landscaping:

Question: *Landscape Note #3 states “all plant material shall be container grown or balled and burlapped as indicated in the plant list.” Deciduous trees and coniferous trees are listed as 1.5” Cal. Are these to be container grown or balled and burlapped?*

Response: Further clarification is provided on the revised plans included as part of this addendum.

ADD 2-14. Landscaping:

Question: *Landscape Note #6 states “ all trees must be guyed or staked as shown in the details.” The planting details do not show any staking. Does this mean staking is not required?*

Response: This note has been removed from the revised drawings issued as part of this addendum.

ADD 2-15. Landscaping:

Statement: *Landscape Note #11 states “the contractor shall be responsible for fully maintaining (including but not limited to: watering, spraying, mulching, fertilizing, etc.) all of the plant materials and lawn until final project acceptance.” Please provide further direction to the following questions.*

1. **Question:** *When is the “final project acceptance”? Is this after we complete our portion of work?*

Response: After all work is completed and punch list items have been addressed.

2. **Question:** *Is care of the lawn the responsibility of the sodding contractor or the landscaping contractor?*

Response: Sodding contractor is responsible for the sod and landscaping contractor is responsible for the landscaping.

3. **Question:** *Is follow-up watering the responsibility of the irrigation contractor or the landscaping contractor?*

Response: Landscaping contractor. Irrigation contractor is only responsible for installing the irrigation system and insuring that it is operating as intended.

4. **Question:** *Will there be irrigation on this site? An irrigation plan is listed in the index of drawings for the bid plans but is not located in the plan set.*

Response: Irrigation sheets are being issued as part of this addendum.

5. **Question:** *Is there maintenance required beyond the “final project acceptance”? Many projects often have a 1 year maintenance contract.*

Response: Yes. It is included within the specifications.

ADD 2-16. Interior blocking / backing:

Question: *Is blocking required at the attachments for the art glass panels?*

Response: Yes. Blocking is required at all locations where products require attachment back to the GWB stud wall construction. Provide blocking as necessary for securement of product hung from wall assembly.

ADD 2-17. Section 092900 “Gypsum Board”:

Question: *What is the install height of the glass mat drywall at walls (092900 3.3, A.3)?*

Response: Glass-Mat Interior Type board to be installed to height of finished ceiling. Standard Type X board may be installed the remainder of the wall height if

required by wall type. If no ceiling is required in the space, the Glass-Mat board shall continue the full height of the wallboard as indicated by wall type.

ADD 2-18. Section 092900 "Gypsum Board":

Question: *Please provide additional clarification on the location of the tile and tile backer board in 081D and 081F.*

Response: On the east side of the "shower stall" there is a wall that runs north/south. Off of that wall, running north/south is a curtain rod and curtain. The tile backer board is to be installed on all walls west of this location.

ADD 2-19. Fire Caulking at Rated Partitions:

Question: *Who is responsible for providing the fire caulking at the top of the fire rated drywall partitions?*

Response: That work should fall within Scope 8A.

MODIFICATIONS TO THE SPECIFICATIONS

ADD 2-20. Refer to Section 064023, "Interior Architectural Woodwork", Article 2.3, Paragraph A; Add the following additional information.

1. Provide at all plastic laminate counter locations.

ADD 2-21. Refer to Section 088000, "Glazing", Article 2.16, Paragraph B.2; Change the glass thickness to 10.0mm

ADD 2-22. Refer to Section 328400 "Planting Irrigation"; This section has been added to the contract documents and is **attached as part of this addendum.**

ADD 2-23. Refer to Section 329300 "Plants"; This section has been added to the contract documents and is **attached as part of this addendum.**

MODIFICATIONS TO THE DRAWINGS

ADD 2-24. Refer to the Master Keynote Legend on the Cover Sheet. Modify the following keynotes:

088000.K DG-2: 3/8" FULLY TEMPERED FILM-FACED ART GLASS ASSEMBLY

ADD 2-25. Sheet IR100 was not issued with the original document and is **now included** as part of this addendum.

ADD 2-26. Sheet IR101 was not issued with the original documents and is **now included** as part of this addendum.

ADD 2-27. Sheet L100 has been **revised** to provide additional clarifications and to exclude landscape work between the Whole Foods and Retail Buildings and back of curb.

ADD 2-28. Sheet L101 has been **revised** to provide additional clarifications.

- ADD 2-29.** Refer to Sheet A100, Rooms 003 and 008, west wall along Grid A.5; Change the “2g” wall type reference to “2f”.
- ADD 2-30.** Refer to Sheet A101, Vestibule 182A; The west, south and east walls currently identified as “2b” and “2e” wall types need to be changed to a “6a” wall type. This Vestibule is required to have a 2-hour rating around it.
- ADD 2-31.** Refer to Sheet A103, Conference 326; Add elevation callout N4/A504 Sim. for the west elevation.
- ADD 2-32.** Refer to Sheet A503, Detail A4;
1. Change keynote 064023.B to 064023.A2
 2. Add keynote 064023.A6
- ADD 2-33.** Refer to Sheet A503, Detail A6;
1. Change keynote 064023.B to 064023.A2
 2. Add keynote 064023.A6
- ADD 2-34.** Refer to Sheet A503, Detail C4;
1. Change keynote 064023.B2 to 064023.A2
 2. Keynote 096513.A should be pointing to the wall base.
- ADD 2-35.** Refer to Sheet A503, Detail N4;
1. Add keynote 064023.A2 pointing to the counter.
 2. Add keynote 064023.A6 pointing to the backsplash.
- ADD 2-36.** Refer to Sheet A503, Detail J13; Keynote 064023.B2 should be replaced with keynote 064023.A2.
- ADD 2-37.** Refer to Sheet A504, Detail N4;
1. Change keynote 064023.B2 to 064023.A2
 2. Add keynote 064023.A6 pointing to the backsplash.
- ADD 2-38.** Refer to Sheet A601, Detail D10; This work surface is to be changed to a solid surface counter as indicated in the specifications.
1. Change keynote 064023.B2 to 064023.A2
 2. Eliminate keynote 064023.P. The edge detail for the surface will be similar to what is shown at other solid surface work surfaces.

End of Addendum #2, Bid Package #6929-08

SECTION 328400 - PLANTING IRRIGATION**PART 1 GENERAL**

1.01 SECTION INCLUDES

- A. Installation of underground, automatically controlled lawn and shrub bed irrigation system, complete, including electrical connections, connections to water mains, and necessary accessories.

1.02 RELATED SECTIONS

- A. Section 02222 - Excavation, Backfill, and Compacting for Utilities
- B. Section 02660 - Water Distribution Systems
- C. Section 02900 - Landscaping, Seeding, and Sodding
- D. Local governing authority and code requirements
- E. Construction Drawings

1.03 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM) latest edition
 - D 2239 Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled I. D.
 - D 2241 Polyvinyl Chloride (PVC) Pressure-Rated Pipe (SDR-Series)
 - D 2609 Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe
 - D 1784 Plastic Fittings for Polyvinyl Chloride (PVC) Plastic Pipe

1.04 QUALITY ASSURANCE

- A. Following installation, make final adjustments of lawn irrigation system prior to Owner's Representative's final inspection.
 - 1. Flush system completely to remove debris, with nozzles removed.
 - 2. Verify sprinkler operation and alignment for direction of throw.
 - 3. Check pop-up spray nozzling for proper arc of spray.
 - 4. Determine whether uniform distribution exists over all areas.
- B. Following final adjustment, operate the entire installation to demonstrate the complete and successful operation of equipment.

1.05 SUBMITTALS

- A. Submittals:
 - 1. Required for items specified herein. Provide 5 copies of each to Owner for review.
 - 2. Do not proceed with purchase or installation of materials prior to receipt of approved submittals from Owner.

3. Prior to installation of any work, prepare a detailed list of all materials proposed for use in this project and submit to Owner for approval. Prepare typewritten material list using the following format.

<u>Item No.</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model</u>
1.	Mainline	ABC, Inc.	CL-200 PVC
2.	Drip pipe	XYZ Co.	506B
3.	Etc.	Etc.	Etc.

- B. Substitutions shall be made only with the written approval of the Owner. Substitutions will not be considered prior to opening of bids.
 1. Substitution of a specified irrigation head after awarding the bid shall require piping diagram noting revised pipe sizes, pressure loss calculations, and head locations necessary to achieve the desired watering provided by system as shown on construction drawings.
 2. Provide 5 copies each of product data for requested substitutions to owner for review.

1.06 PROJECT RECORD DRAWINGS

- A. General: Furnish the following instructions and maintenance data as required herein. Final Acceptance will not be made until items have been reviewed and approved by Owner.
- B. As-built Drawings: 2 sets, noting exact locations of elements and changes to Construction Drawings.
- C. Operation Manual: 2 copies, bound in 1 inch diameter three ring binders, indexed and tabbed for easy reference, and labeled on spine and cover. Manual to include:
 1. Approved submittals as specified herein.
 2. Installation instructions, including mounting details for control valves.
 3. Operating Instructions:
 - a. Winterization procedures. Irrigation contractor shall winterize the irrigation system/systems the first year of operation under warranty.
 - b. Provide information on how many minutes to run each zone in the system and provide ½-inch of water. Also indicate the maximum runtime for pop-up spray heads (7 minutes) and the use of repeat cycles. Indicate the approximate irrigation frequency based on the time of year.
 4. Maintenance Instructions:
 - a. Items requiring manufacturer's product data, installation, and maintenance instructions.
 - b. Complete warranty information, complete and mail to manufacturer, and provide copies to Owner.
- D. Controller Chart: Prepare a color coded chart, reduced in size, containing the same plan information as the As-Built drawings, and laminated in plastic (both sides), with the following specific information:
 1. Note routing of control wires,
 2. Identify valves as to size, station number (on controller), and type of irrigation head on each valve.

- 3. Delineate each station's limits of coverage by color coding, with each station having a different color noting it's area of coverage.

1.07 PROJECT CONDITIONS

- A. If irrigation work is part of a General Construction Contract, and/or the plans indicate that the meter is "by others", then the meter shall be provided by the Plumbing Subcontractor in accordance with Section 02660.
- B. If irrigation work is not part of General Construction Contract, Irrigation Contractor shall contract with and pay a plumbing subcontractor to install the tap, service, and meter and to pay all fees and costs required.
- C. Visit site and become familiar with nature and location of work, existing conditions and conditions that will exist during installation.

1.08 QUALIFICATIONS

- A. Minimum of five consecutive years experience in this area of work and having installed other jobs of similar size and scope. Contractor must have five years experience installing subsurface drip irrigation (SDI) in turf applications. Submit at least three references of completed Nebraska projects. Sub-contractors can be utilized to fulfill this requirement.
- B. Contractor to provide a minimum of three references and a list of similar projects with the owner's names, addresses, and telephone numbers, when requested by Owner.

PART 2 PRODUCTS

2.01 GENERAL

- A. Materials shall be new and without flaws or defects, and of quality and performance as specified. Overages at completion are property of the Contractor, to be removed from the site.
- B. Materials and equipment specified by "Proprietary Specification" as manufactured by a particular company, etc., shall be used, unless substitutions are approved according to Section 1.05.

2.02 PIPE AND PIPE FITTINGS

- A. Piping:
 - 1. Main line to be CL-200 polyvinyl chloride pipe or as indicated on drawings.
 - a. Pipe up to and including 3 inches in diameter shall have bell and socket joints.
 - b. Pipe greater that 3 inches in diameter shall have snap connections with rubber gasket joints.
 - c. Thrust blocks as shown on detail drawings shall be required in conjunction with rubber gasket joint pipe.
 - 2. Lateral lines to be #80 commercial grade polyethylene pipe or CL-200 PVC pipe or as indicated on drawings.
 - 3. SDI lateral lines to be #80 commercial grade polyethylene pipe or CL-200 PVC pipe or as indicated on drawings.

- B. Sleeves: Minimum diameter of 2 times larger than the pipe or pipe(s) scheduled to pass through them, and shall be a minimum of 3-inch diameter and shall be CL-200 PVC pipe.
- C. Plastic Fittings:
 - 1. Utilized throughout the system (mains and laterals) in warm climates and main lines in colder climates: Standard weight, Schedule 40, injection molded PVC. Comply with ASTM D1784 and D2466, cell classification 12454-B.
 - a. Threads, where required, injection molded type.
 - b. Tees and ells: side gated.
 - c. Threaded nipples: ASTM D2464, Schedule 80 with molded threads.
 - 2. Utilized for laterals of flexible polyethylene pipe, Type 1 PVC insert fittings designed for use with this type of pipe conforming to ASTM D 2609.
 - a. Pipe and fittings shall be joined with stainless steel locking pinch clamps or stainless steel screw clamps; all polyethylene pipe insert fittings shall be double clamped.
- D. PVC Solvent Cement and Primer: As per ASTM specification D 2564-67.
- E. Swing Joint connections between heads and laterals:
 - 1. MP Rotator heads with 1/2-inch IPS connection with flow rates no greater than 4.0 GPM:
 - a. Thick wall, flexible, polyethylene swing pipe, with fittings that have male spiral barbs on one end and either male or female screw ends opposite (glue fittings and female barb adapters not allowed). Pipe shall be Irritrol blue stripe or equal.
 - 2. Rotor heads:
 - a. Pre-manufactured schedule 40 swing joints as manufactured by Lasco or Spears.

2.03 VALVES

- A. Manual valves:
 - 1. Resilient seat valves for use as cut off or isolation valve on lines up to 3 inches in diameter shall be Schedule 40 PVC ball valves as manufactured by Spears, or approved equal.
 - 2. Mechanical joint valve for use as cut off or isolation valve on lines greater than 3 inches shall be of cast iron and bronze construction and have a fusion bonded epoxy coated (exterior and interior) finish as the Resilient Wedge Valve, manufactured by the Clow Valve Co., Oskaloosa, Iowa, or approved equal.
 - a. Provide with each valve a valve key, and cast iron cylindrical valve box with top.

2.04 QUICK COUPLER VALVES

- A. Hunter Quick-Coupler Valve HQ5-RC with model HK-55 Key and HS-2 hose swivel ell, or approved equal.

2.05 ELECTRIC CONTROL VALVES

- A. Hunter ICV Series electric remote control valves.
- B. Wiring connections at electric valves shall be waterproof, using 3M DBY and 3M DBR (for splicing more than

two wires) splice kit for connections or King wire connectors.

2.06 SPRINKLER HEADS

A. Full or Part Circle Pop-up Rotor Sprinkler:

1. Full or Part Circle Pop-up Hunter MP-Rotator installed on a Hunter PRS40-06-CV Sprinkler Head.

2.07 VALVE BOX

A. Valve boxes shall be as manufactured by Ametek, Carson or an approved equal.

2.08 MANUAL DRAINS

A. Buckner 22001, or approved equal.

2.09 AUTOMATIC CONTROLLER

A. All controllers shall be installed per detail drawings, with all new hardware.

B. Type: Fully automatic operation, capable of operating the number of stations and remote control valves indicated on drawings.

C. Controller size and type shall be as indicated on the drawings. Where drawings call for multiple zones to be operated simultaneously, controller must be able to operate number of zones indicated simultaneously.

2.10 ELECTRICAL WIRE

A. High voltage.

1. Owner will provide the necessary 110 volt electrical supply and connections to irrigation equipment.

B. Low voltage:

1. Number 14 size (minimum) copper wire, U. L. approved for underground direct burial for common wire, with multi-stranded 18-gauge copper wire for control wire.
2. Splices, where permitted, shall be waterproof, using 3M DBY and 3M DBR (for splicing more than two wires) splice kit for connections. All splices shall be placed inside a valve box, no splices outside of valve boxes will be permitted.
3. Common wire shall be white in color.

2.11 BACKFLOW PREVENTER

A. Comply with the requirements and codes of the local governing authority regarding backflow prevention.

B. Provide the necessary materials, insulation/draining capabilities, and acceptable concealment to satisfy the requirements and codes of the local authority and aesthetic needs of Owner. Concealment techniques may range from painting of exposed piping to providing a plant material screen, or providing a painted metal enclosure around unit.

C. Backflow Preventers shall be a type suitable for use in a high hazard cross connection to a potable water system as manufactured by Wilkins or Febco, or approved equal:

2.12 RAINFALL/FREEZE SENSOR

- A. Provide a rainfall and freeze sensor to cancel the operation of the controller during substantial rainfall or freezing temperature. Rain sensor shall have a bypass switch, and shall be the Mini-Clik and Freeze-Clik as manufactured by Hunter Industries, or approved equal.

2.13 METER

- A. With meter box, shall meet or exceed the requirements set forth by the local water utility.

2.14 SUBSURFACE DRIP SYSTEM

- A. Drip tubing shall be Netafim Techline CV series with integral and evenly spaced pressure compensating drippers at specified intervals in one discharge rate (0.4) in gallons per hour (GPH). Fittings shall be Netafim Techline molded plastic fittings with 0.57-inch inside diameter.
- B. All systems shall be equipped with a Netafim pressure reducing valve or a control valve with a pressure reducing feature, and a line strainer on the upstream side of the electric control valve. Strainer shall have a 100 PSI pressure rating, 140 mesh screen, a 1/2" outlet for flushing, and shall be installed in a plastic valve box.
- C. SDI laterals shall be #80 commercial grade polyethylene pipe or CL-200 PVC or approved equal. Fittings shall be the same as specified for pipe used.
- D. All Netafim Techline CV not installed subsurface shall be held in place by Netafim TLS6 Staples; one every three feet in sand, every four feet in loam and every 5 feet in clay. Use two staples at each tee, elbow or cross.

2.15 OPERATING AND MAINTENANCE TOOLS

- A. Deliver the following items to the owner when work is completed and prior to final acceptance of work.
 - 1. Two 30" sprinkler keys for operation of manual drain valves.
 - 2. Two keys for each automatic controller.
 - 3. One coupler and matching hose swivels with globe valves.
 - 4. Two keys for opening valve boxes.

PART 3 EXECUTION

3.01 PREPARATION

- A. Pressure/Flow Test: conduct tests at the beginning tap or meter and provide written results to Owner for the following information:
 - 1. Static pressure in PSI
 - 2. Residual pressure in PSI
 - 3. Flow in GPM
- B. Layout of sprinkler heads: Stake locations of each sprinkler in accordance with the Construction Drawings. If discrepancies in drawings become apparent, notify Owner of discrepancies.
- C. Prior to installation, receive approval from Owner to proceed with construction along with proposed revisions required due to test results or discrepancies on Construction Drawings.

3.02 EXCAVATION

- A. Excavate trench to proper depth.
- B. Minimum trench width shall be 3 1/2-inch.
- C. Backfill and hand tamp over-excavation prior to installing piping.
- D. Excavate trenches deeper than required in soils containing rock or other hard material that might damage pipe. Backfill to pipe grade with selected fine earth or sand.
- E. Keep trenches free of obstructions and debris that would damage pipe.
- F. Avoid heating trenches, electric ducts, storm and sanitary sewer lines, water and gas mains when trenching for piping.
- G. Do not cut walks, drives, or curb and gutter when trenching for piping.
 - 1. Provide sleeves under paving prior to installation of paving.
 - 2. Under existing paving, auger bore or tunnel.

3.03 PIPING SYSTEM

- A. Minimum cover:
 - 1. Lawn and planting areas:
 - a. Mains - minimum 12 inches below finish grade.
 - b. Laterals and Control Valves - minimum 8 inches below finish grade.
 - 2. Roadways or parking areas: minimum 24 inches below finish grade.
- B. Clearances: Minimum of 3-inches between parallel lines in the same trench or vertical clearance between lines crossing at angles.
- C. Special Requirements - PVC and PE pipe:
 - 1. Snake in trench at least 1 foot per 100 feet of pipe to allow for thermal expansion.
 - 2. Mainline pipe to drain to low point drains located at low points of the mainline.

3.04 SLEEVING

- A. Provide sleeves for both piping and control wiring where each passes under paved surfaces:
 - 1. Depths of sleeves shall be the same as that required for piping per location/ condition.
 - 2. Extend sleeves 12 inches beyond paving at each end.
 - 3. Install permanent benchmark at top of curbs for reference to sleeve locations.

3.05 PIPING INSTALLATION

- A. Do not lay pipe on unstable material or blocking, or when in the opinion of Owner conditions are unsuitable.
- B. Rest full length of pipe section on bed of trench, excavating recesses to accommodate joints.
- C. Hold pipe securely while joints are being made.
- D. Threaded Plastic Pipe:
 - 1. Do not use solvent cement on threaded joints.
 - 2. Wrap joints with Teflon tape or utilize virgin Teflon lubricant.
 - 3. When threaded pipe is used, material shall be Schedule 80 PVC.
- E. Cemented joints for PVC bell end pipe and PVC pipe with socket fittings: ASTM D 2855-70.

3.06 VALVES

- A. Do not locate beneath paved surfaces.
- B. Install plumb to within 1/16 inch.
- C. Locate within valve box with 6-inch deep layer of coarse gravel beneath bottom of valve.
 - 1. Top of quick coupler valves shall be as close to the top of the valve box as possible. Top of gravel layer shall be 3 inches below top of valve.
- D. Master Valve:
 - 1. Locate immediately downstream of backflow preventer.
 - 2. Valve shall be energized by the master valve circuit on the automatic controller.

3.07 SUBSURFACE DRIP

- A. Do not install drip tubing until 5 gallon and larger plant materials are in place, and finish grade is established.
- B. Protection:
 - 1. Tape all open ends of drip tubing during installation to prevent entry of debris into system.
 - 2. Cut all drip tubing with pliers-type Victor pipe cutter to prevent entry of debris into the system. Do not use saw.
- C. For subsurface Netafim drip tubing to have 4-inches of soil cover in turf and planting beds. Distribution tubing to have 8-inches of cover.
- E. Provide flush valves as indicated on drawings.

3.08 ELECTRICAL CONNECTIONS / CONTROL WIRE

- A. Shall be in strict accordance with the latest edition of National Electrical Code and local electrical codes.
- B. Provide the electrical connection to the system as designated on the Construction Drawings and as specified herein.

- C. General:
 - 1. Do not run control wiring and power supply wiring in the same conduit.
 - 2. Provide continuous runs of wire between the controller and valves. Splices shall be made with one of the following:
 - a. Watertight below ground electrical junction boxes.
 - b. Watertight connectors, such as utilized for valves, and located within valve box for ease of locating.
 - 3. Bury control wire beside pipe in same trench and bundle and tape together at not less than 10 foot intervals.
- D. Expansion Loops: Constructed by wrapping wire around a 1/2 inch diameter pipe to create a coil. A 3 foot section of wire shall be used to create a 12 inch coil, and a 6 foot section is required to create a 24 inch coil.
 - 1. Provide 12 inch expansion loops at each wire splice (not including valves) and at each change of wire direction.
 - 2. Provide 24 inch expansion loops at each control valve and where each valve enters the conduit for the automatic controller.

3.09 BACKFILL

- A. Sand or fine grained soils should be used for cover to a sufficient depth to prevent damage to the pipe from rocks or other debris in backfill during the compacting operation.
- B. Fill trench to within 3 in. of top with excavated soil and compact.
- C. Fill top 3 in. with existing topsoil in planting or turf areas and wheel roll until compaction of backfill is same as surrounding soil.
- D. Grade backfilled trench uniform with surrounding grades.

3.10 BACKFLOW PREVENTER

- A. Comply with local codes for the installation of the backflow preventer. In the absence of local codes, minimum requirements shall be to set in accordance with the manufacturer's written instructions.
- B. Provide a combination of drains and quick coupler valves to accommodate winterization of the entire system by forced air. Submit materials/ methods to Owner for consideration and receive approval prior to installation of work.

3.11 AUTOMATIC CONTROLLER

- A. Location and installation shall be as per drawings, and approved by Owner prior to installation.
- B. Provide separate, rigid conduits for both power supply and control wiring.
 - 1. Control wire conduit shall extend to 24 inches below grade.
 - 2. Secure conduit to wall in a manner acceptable to Owner.

- C. Provide electrical grounding for controller in accordance with the manufacturer's written instructions.

3.12 FINAL ACCEPTANCE

- A. Contractor shall provide an on-site walk through of the system and fully describe its operation with Owner.
- B. Contractor shall achieve final acceptance when:
 - 1. Systems are fully operational, and
 - 2. Approved by Owner, and
 - 3. As-built drawings and project manuals have been accepted and approved.

WARRANTY

Guarantee Site Irrigation System for a period of twelve months following the Final Acceptance Date; see above.

This Warranty shall include all and any defects in material, equipment and workmanship. This Warranty also shall include repair of damage to premises resulting from leaks or other defects in material, equipment and workmanship to satisfaction of Owner. Copies of all material warranty/guarantees shall be given to the owner along with copies of any submissions or registration of those warranty/guarantees. This Warranty is part of Section 3.12 FINAL ACCEPTANCE.

END OF SECTION 328400

SECTION 329300 – PLANTS**PART 1 - GENERAL**

1.1 SUMMARY

A. Section Includes:

1. Planting of trees, shrubs, sod, perennials, and associated materials.

B. Related Requirements:

1. Section 02300 - Earthwork.
2. Section 02810 - Site Irrigation System.

1.2 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. Publications are referenced within the text by the basic designation only.

B. American National Standards Institute (ANSI):

1. ANSI Z60.1 - American Standard for Nursery Stock.

C. ASTM International (ASTM):

1. ASTM D5268 - Topsoil used for Landscaping Purposes.
2. ASTM C602 - Agricultural Liming Materials.

D. Erosion Control Technology Council (ECTC):

1. Standard Specification for Rolled Erosion Control Products.

1.3 QUALITY ASSURANCE

A. Plant Measurements: Measure according to ANSI Z60.1. Spread, height, or container sizes shown on the drawings are minimum acceptable sizes. Do not prune to obtain required sizes. If range of sizes is given, no plant shall be less than minimum size, and at least 50 percent of plants shall be as large as upper half of range specified.

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.

1.4 MEETING AND EVENT NOTIFICATIONS

A. Provide the following notifications to the Owner's Representative within the time period listed below. Representative will notify Owner, landscape architect, and other necessary sub consultants:

1. Planting Operations: 14 calendar days prior to commencing planting operations.
2. Substantial Completion Inspection: 7 calendar days prior to substantial completion date.
3. Final Completion Inspection: 7 calendar days prior to final completion date.
4. Warranty Inspection: 14 calendar days prior to inspection date.

B. Provide notifications by email or other written means to show proof of delivery.

1.5 PROJECT CONDITIONS

- A. Perform work only during weather conditions favorable to landscape construction and to health and welfare of plants and pursuant to approved horticultural standards.

1.6 WARRANTY

- A. Guarantee plant material for a period of 12-19 months following the Substantial Completion Date in accordance with the Warranty period.
 - 1. Remove from site any plant that is dead or unsatisfactory to Owner, Jurisdiction having Authority, or Landscape Architect. All replacements shall be of the same type, size, and character as specified. They shall be furnished and planted as specified under Tree and Shrub Planting.
 - 2. The cost shall be borne by the Contractor except for possible replacements resulting from loss or damage due to the occupancy of the project in any part, vandalism, civil disobedience, or acts of neglect on the part of others; physical damage by animals vehicles, fire, etc.; losses due to curtailment of water by local authority; or to "Acts of God".
 - 3. Plantings missing due to the Contractor's negligence shall be replaced in a manner defined under the warranty period.
 - 4. A sum sufficient to cover the estimated cost of possible replacements, including materials and labor, may be retained by the Owner and paid to the Contractor only after all replacements have been made and approved.

PART 2 - PRODUCT

2.1 WOODY PLANT MATERIALS

- A. Furnish nursery-grown trees and shrubs complying with ANSI Z60.1 and the following requirements:
 - 1. Provide plants with healthy root systems developed by transplanting or root pruning.
 - 2. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as disfiguring knots, sun scald, injuries, abrasions, and disfigurement.
 - 3. Provide selected specimen quality plants being exceptionally heavy, symmetrical, tight knit, so trained or favored in their development and appearance as to be superior in form, number of branches, compactness and symmetry.
 - 4. Do not prune plants before delivery.
 - 5. Trees with fresh cuts of limbs over 1 1/4-inch, which have not completely calloused, shall be rejected.
 - 6. Provide plants typical of their species or variety and exhibiting a normal habit of growth and be legibly tagged with proper name. Provide plants grown under climatic conditions similar to those of site or have been acclimated to such condition for at least 2 years.
 - 7. Root system of each plant shall be well-provided with fibrous roots. Parts shall be sound, healthy, vigorous, well-branched, and densely foliated when in leaf.
 - 8. Plants designated ball and burlap shall be moved with root systems as solid units with balls of earth firmly wrapped with burlap and comply with the following:
 - a. Diameter and depth of balls of earth shall be sufficient to encompass fibrous root feeding systems necessary for healthy development of plant.
 - b. No plant shall be accepted when ball of earth surrounding its roots has been cracked or broken preparatory to or during process of planting. Balls shall remain intact during all operations.
 - c. Heel-in plants that cannot be planted immediately by setting in ground and covering balls with soil or mulch and then watering.
 - d. Hemp burlap and twine is preferable to treated. If treated burlap is used, twine shall be cut from around trunk and burlap shall be removed.
 - 9. Provide single trunk trees growing from single unutilized crown of roots. No part of trunk shall be conspicuously crooked as compared with normal trees of same variety.
 - 10. Provide shrubs with thickness corresponding to trade classification "No.1". Single-stemmed or thin plants shall not be accepted. Side branches shall be generous, well-twigged, and plant as whole well-branched to ground. Plants shall be in moist condition, free from dead wood, bruises, or other root or branch injuries.

2.2 SOD

- A. Provide sod species suitable as lawn turf for the region. Sod shall be strongly rooted, weed, disease, pest free and uniform in thickness.

2.3 TOPSOIL

- A. ASTM D5268, natural, friable, fertile, fine loamy soil possessing characteristics of representative topsoil in the vicinity that produces heavy growth. Topsoil shall have a pH range of 5.5 to 7.4 percent, free from subsoil, objectionable weeds, litter, sods, stiff clay, stones larger than 1-inch in diameter, stumps, roots, trash, herbicides, toxic substances, or any other material which may be harmful to plant growth or hinder planting operations. Top soil shall contain a minimum of three percent organic material.
- B. Salvaged or Existing Topsoil: Reuse suitable topsoil stockpiled on-site or existing topsoil undisturbed by grading or excavation operations. Clean topsoil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
- C. Verify amount of suitable topsoil stockpiled if any, and supply additional imported topsoil as needed.
- D. Imported Topsoil: Supplement salvaged topsoil with imported topsoil from off-site sources when existing quantities are insufficient.
 - 1. Obtain topsoil displaced from naturally well-drained sites where topsoil occurs at least 6 inches deep; do not obtain from agricultural land, bogs, or marshes.
 - 2. Verify borrow and disposal sites are permitted as required by state and local regulations. Obtain written confirmation that permits are current and active.
 - 3. Obtain permits required by state and local regulations for transporting topsoil. Permits shall be current and active.
- E. Amend existing and imported topsoil as indicated in part 3 below.

2.4 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C602, Class O agricultural limestone containing a minimum of 80 percent calcium carbonate equivalent with a minimum of 95 percent passing No. 8 sieve and minimum of 55 percent passing No. 60 sieve.
- B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum of 99 percent passing No. 6 sieve and a maximum of 10 percent passing No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.
- E. Sand: Clean, washed, natural or manufactured, free of toxic materials.

2.5 PLANTING ACCESSORIES

- A. Non Selective Herbicide: Roundup-Pro, Finale or equivalent.
- B. Selective Post Emergent Herbicide: EPA registered and approved, of type recommended by manufacturer for application.
- C. Selective Pre-Emergent Herbicide: EPA registered and approved, of type recommended by manufacturer for application.

2.6 PLANTING SOIL MIX

- A. Planting medium containing 75 percent specified topsoil mixed with 15 percent organic soil amendments and 10 percent sharp washed sand.

2.7 FERTILIZER

- A. 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.
 - 1. Composition: Nitrogen, phosphorous, and potassium in amount required to remedy deficiencies identified in the results of the existing topsoil and in-place topsoil test performed by the geotechnical engineering company and the CTL.
- B. Slow-Release Fertilizer: Use one of the following:
 - 1. Osmocote Standard Granular fertilizer by Scotts Company composed of 13 percent nitrogen, 13 percent phosphorous, and 13 percent potassium, by weight.
 - 2. Multi-Cote All Purpose by Schultz composed of 17 percent nitrogen, 17 percent phosphorous, and 17 percent potassium, by weight.
- C. Deliver fertilizer, mixed as specified, in original unopened standard size bags showing weight, analysis and name of manufacturer. Containers shall bear manufacturer's guaranteed statement of analysis, or manufacturer's certificate of compliance covering analysis shall be furnished to Owner. Store fertilizer in such manner that it shall be kept dry.

2.8 MULCH

- A. Wood Mulch: Wood mulch shall be shredded hardwood mulch obtained from a local source harvested in a sustainable manner and salt free and free from deleterious materials and suitable as a top dressing of trees and shrubs. Mulch shall have the characteristics of retaining moisture, forming a mat not susceptible to spreading by wind or rain, and providing a suitable growth medium for plants and shall be free of soil, rocks, weeds, sawdust, dirt, garbage, or other debris.
 - 1. Hardwood Mulch: Shredded hardwood mulch shall consist of long fibrous interlocking strands.
 - 2. Color: Natural.
- B. Rock Mulch: Rock mulch shall consist of decomposed granite. Mulch shall be hard, durable stone, washed free of loam, sand, clay, and other foreign substances.
 - 1. Size Range: 4 inch maximum 3 inch minimum.
 - 2. Color: Readily available natural gravel color range.
 - 3. Depth to provide full coverage of weed mat.

2.9 WATER

- A. Potable water, hose, and other watering equipment.

2.10 WEED MAT

- A. 4.1 oz., woven polypropylene, needle-punched fabric, weed barrier.

2.11 EROSION CONTROL BLANKET

- A. Rolled Erosion Control Products shall have current QDOR™ (Quality Data Oversight and Review) status issued by the Erosion Control Technology Council and shall meet state or agency specific requirements. Evidence of QDOR™ approval shall accompany the product shipped to the job site for ready identification by the contractor or an agency inspector.

PART 3 - EXECUTION**3.1 PREPARATION**

- A. If project completion date prohibits in-season planting, prepare for out-of-season seeding or sodding so that lawns shall be completed and ready for acceptance at time of project completion.
- B. Unsuitable Subsoils: Locations containing unsuitable subsoil shall be treated by one or more of the following:
1. Where unsuitability is deemed by Owner to be due to excessive compaction caused by heavy equipment and where natural subsoil is other than AASHTO classification of A6 or A7, loosen such areas with spikes, discing, or other means to loosen soil to condition acceptable to Owner. Loosen soil to minimum depth of 12 inches with additional loosening as required to obtain adequate drainage. Contractor may introduce peat moss, sand, or organic matter into the subsoil to obtain adequate drainage. Such remedial measures shall be considered as incidental, without additional cost to Owner.
 2. Where unsuitability is deemed by Owner to be due to presence of boards, mortar, concrete, or other construction materials in sub-grade and where natural subsoil is other than AASHTO classification of A6 or A7, remove debris and objectionable material. Such remedial measures shall be considered as incidental, without additional cost to Owner.
 3. Where unsuitability is deemed by Owner to be because natural subsoil falls into AASHTO classification of A6 or A7 and contains moisture in excess of 30 percent, then installation of sub-drainage system or other means described elsewhere in Specifications shall be used. Where such conditions have not been known or revealed prior to planting time and they have not been recognized in preparation of The Drawings and Specifications, then Owner shall issue pricing order to install proper remedial measures.
- C. Unsuitable Topsoil: Locations containing unsuitable topsoil shall be treated by one or more of the following:
1. Where unsuitability is deemed by Owner to be because of presence of objectionable weeds; litter; sods; stiff clay; toxic substances; herbicides or other material which may be harmful to plant growth, then topsoil shall be removed from the site and disposed of in a legal manner.
 2. Where unsuitability is deemed by Owner to be because of presence of the stumps, roots; stones larger than 1 inch in diameter; less than 3 percent organic material; low or high pH range, remove objectionable material and amend topsoil to meet the requirements specified in part 2 above. Such remedial measures shall be considered as incidental, without additional cost to Owner.
- D. Perform planting operations at steady rate of work unless weather conditions make it impossible to work. No plant material shall be planted in frozen ground.
- E. Tree and Shrub Preparation
1. Dig ball and burlap plants with firm natural balls of earth of diameter and depth to include fibrous roots.
 2. Protect roots or balls of plants at all times from sun and drying winds.
 3. Ball and burlap plants which cannot be planted immediately upon delivery shall be set on ground and protected with soil, wet moss, or other acceptable material. All shall be kept moist.
 4. Plants shall not be bound with wire or rope which will result in damage to bark or branches.
- F. Sod and Seed Bed Preparation
1. Newly Graded Subgrades:
 - a. Do not place topsoil until subgrade has been approved in accordance with Section 02300.
 - b. Before placing topsoil, rake subsoil surface clear of stones, debris, and roots. Disk, drag, harrow, or hand rake subgrade to depth of 4 inches and remove stones larger than 1-1/2 inches to provide bond for topsoil.
 - c. Spread topsoil to a depth of 4 inches but not less than required to meet finish grades after light rolling and natural settlement. Adjust depth of topsoil in areas adjacent to paved surfaces or curbs to allow for the placement of sod or seed.

2. Unchanged Subgrades: If lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface as follows:
 - a. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
 - b. Disk, drag, or harrow surface soil to a depth of at least 6 inches.
 - c. Remove stones larger than 1-1/2 inch in any dimension and sticks, roots, trash, and other extraneous matter.
 - d. Legally dispose of waste material, including grass, vegetation, and turf.
 - e. Adjust depth of topsoil in areas adjacent to paved surfaces or curbs to allow for the placement of sod or seed.
 3. Incorporate soil amendments and commercial fertilizer into the top 4 inches of topsoil to achieve the specified topsoil requirements. Till soil to a homogenous mixture of fine texture.
 4. Grade areas to finish grades, filling as needed or removing surplus topsoil. Float areas to smooth, uniform grade as indicated on the Drawings. Lawn areas shall slope to drain.
 5. Where no grades are shown, areas shall have a smooth and continual grade between existing or fixed controls, such as walks, curbs, catch basin, steps, or buildings. Roll, scarify, rake, and level as necessary to obtain true, even lawn surfaces. Finish grades shall meet approval of Owner.
 6. Sod beds shall be firmed by rolling before sodding begins.
- G. Landscape Bed Preparation:
1. Grade areas to finish grades, filling as needed or removing surplus topsoil. Float areas to smooth, uniform grade as indicated on the Drawings.
 2. Set out and space plants as indicated by plans.
 3. Dig holes large enough to allow spreading of roots, and backfill with planting soil.
 4. Remove plants from pots.
 5. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
 6. Water thoroughly after planting taking care not to cover plant crowns with wet soil.
 7. Protect plants from hot sun and wind; remove protection when plants show evidence of recovery from transplanting shock.
- H. Island Preparation:
1. Island landscape beds include all planting areas surrounded by improvements including sidewalks, foundations, and walls.
 2. Excavate compacted soil to a depth of 24 inches.
 3. Maintain required angles of repose of adjacent materials. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
 4. Scarify sides of excavation pit smeared or smoothed during excavation.
 5. Subsoil and topsoil removed from islands shall not be used in planting soil mix.
 6. Notify Owner's Representative if subsoil conditions evidence unexpected water seepage or retention within excavation area.
 7. Backfill islands in 9 inch lifts with planting soil mix specified herein. Tamp each lift lightly to prevent settling.
 8. Grade areas to finish grades, filling as needed to allow positive drainage. Float areas to a smooth, uniform grade as indicated on the Drawings.
- I. Raised Planter Preparation:
1. Excavate compacted soil and construction debris within raised planter to minimum 12 inches below finish grade of adjacent sidewalk.
 2. Notify Owner's Representative if subsoil conditions evidence unexpected water seepage or retention within the excavation area.
 3. Scarify bottom of excavation and provide positive drainage to drainage pipe.
 4. Install drainage pipe as shown in the drawings.
 5. Backfill raised planter in 9 inch lifts with specified planting soil mix to within 1 inch of bottom edge of wall cap. Tamp each lift lightly to prevent settling. If settling occurs prior to planting add additional planting soil mix.

6. Grade areas to finish grades, filling as needed to allow positive drainage. Float areas to a smooth, uniform grade as indicated on the Drawings.

3.2 PROTECTION

- A. Topsoil and Planting soil which must be transported across finished sidewalks shall be delivered in such manner that no damage will be done to sidewalks.
- B. Before commencing work, trees and shrubs that are to be saved shall be protected from damage by placement of fencing flagged for visibility or some other suitable protective procedure approved by Owner.
- C. Trucks or other equipment shall not be driven or parked within drip line of any tree unless tree overspreads paved area.
- D. Use precautionary measures when performing work around trees, sidewalks, pavements, utilities, and other features either existing or previously installed.
- E. Adjust depth of earthwork and topsoil when working immediately adjacent to aforementioned features in order to prevent disturbing tree roots, undermining sidewalks and pavements, and damage in general to other features either existing or previously installed.
- F. Cover plants transported to project in open vehicles with tarpaulins or other suitable covers securely fastened to body of vehicle to prevent injury to plants. Closed vehicles shall be adequately ventilated to prevent overheating of plants. Evidence of inadequate protection following digging, carelessness while in transit, or improper handling or storage shall be cause for rejection. Plants shall be kept moist, fresh, and protected. Such protection shall encompass entire period during which plants are in transit, being handled, or are in temporary storage.
- G. Plants shall not be delivered to the site more than seven days prior to planting. Plants not planted within 48 hours of delivery, shall be heeled in (covered with sawdust, soil or mulch), and the containers or balls protected from wind and temperature and kept moist until planting.
- H. Where excavation, fill, or grading is required within drip line of trees that are to remain, work shall be performed as follows:
 1. Trenching: When trenching occurs around trees to remain, tree roots shall not be cut but trench shall be tunneled under or around roots by careful hand digging without injury to roots.
 2. Raising Grades:
 - a. Where fill not exceeding 16 inches is required, clean, washed gravel graded from 1 inch to 2 inches in size shall be placed directly around tree trunk. Extend gravel out from trunk on all sides minimum of 18 inches and finish approximately 2 inches above finished grade at tree. Install gravel before any earth fill is placed. New earth fill shall not be left in contact with trunks of trees requiring fill.
 - b. Where fill exceeding 16 inches is required, construct dry-laid tree well around trunk of tree. Tree well shall extend out from trunk on all sides minimum of 3 feet and to 3 inches above finish grade. Place coarse-graded rock directly around tree well extending out to drip line of tree. Place clean, washed gravel graded from 1 inch to 2 inches in size directly over coarse rock to depth of 3 inches. Place approved backfill material directly over washed gravel to desired finish grade.
 3. Lowering Grades: Existing trees in areas where new finish grade is to be lowered shall have regrading work done by hand to elevation indicated on The Drawings. Roots as required shall be cut cleanly 3 inches below finished grade and scars covered with tree paint.
 4. Trees marked for preservation that are more than 6 inches above proposed grades shall stand on broad rounded mounds and graded smoothly into lower level. Trees located more than 16 inches above proposed grades shall have dry-laid stone wall or other retaining structure as detailed on The Drawings constructed minimum of 5 feet from trunk. Exposed or broken roots shall be cut clean and covered with topsoil.

3.3 PLANTING BED ESTABLISHMENT

- A. Prior to preparing planting beds, the area shall conform to the lines and grades shown on the plans and the condition of the subsoil shall be approved by the Owner.
- B. Contractor shall verify the location of any underground utilities on site.
- C. Planting beds where existing subsoil is determined by Owner to be unsuitable for plant growth in accordance paragraph Unsuitable Subsoil herein shall be excavated to a depth of 24 inches or as needed to provide adequate drainage. Replace excavated soil with planting soil mix.
- D. Planting beds where existing subsoil is acceptable by Owner shall be prepared as follows:
 - 1. Seven days prior to commencing establishment of the planting areas, apply non selective herbicide. Remove dead vegetation.
 - 2. Loosen subsoil to a depth of 12 inches. Remove stones larger than 1 inch in any dimension, sticks, roots, rubbish, and other extraneous matter and legally dispose of them off site.
 - 3. Till planting soil mix to a homogenous mixture of fine texture.
 - 4. Float areas to smooth, uniform grade providing positive drainage out of planting beds and away from structures or as indicated on the Drawings.
- E. Apply slow release fertilizer at a rate of 1-1/2 pounds per 100 square feet for beds areas or as recommended by manufacturer and incorporate into the top 8 inches.

3.4 TREE AND SHRUB PLANTING

- A. Plants too large for 2 persons to lift in and out of holes shall be placed with sling. Do not rock trees in holes to raise.
- B. If rock or other underground obstruction is encountered, Owner may require plant pits to be relocated, pits enlarged, or plants deleted from project.
- C. Make adjustments in locations as directed. In event that pits or areas for planting are prepared and backfilled with planting soil mix or topsoil to grade prior to commencement of lawn operations, they shall be so marked that when planting proceeds, they can be readily located. In case underground obstructions such as ledges or utilities are encountered, change location under direction of Owner without charge.
- D. Holes for trees shall be at least 3 times the diameter of the spread of root system. Holes for shrubs shall be at least 3 times the diameter of the spread of root system. Holes for perennials shall be at least 12 inches greater in diameter than the spread of rootball.
- E. Backfill tree holes and shrub beds with planting soil mix. Apply slow release fertilizer at a rate of 1/4 pounds per caliper inch for trees. Incorporate fertilizer into the planting soil mix.
- F. Plants shall be planted at same depth as they had previously grown or as shown on the drawings. Backfill planting soil mix in layers of not more than 8 inches and each layer watered sufficiently to settle before next layer is placed. Use enough planting soil mix to bring surfaces to finish grade when settled.
 - 1. Provide saucer around each plant as shown on The Drawings.
 - 2. Soak plants with water twice within first 24 hours after time of planting. Apply water with low pressure so as to soak in thoroughly without dislodging topsoil.

3.5 MISCELLANEOUS INSTALLATIONS

- A. Weed Mat: Place weed mat under rock mulch areas that will not be planted. Cover weed mat to concealment with rock mulch and secure in place with soil staples.
- B. Mulch: Place 4 inches of mulch as a top dressing in planting beds. Mulch single trees or shrubs to outside edge of saucer.

- C. Peg sodded slopes greater than 3:1 to hold in place.
- D. Areas to be covered with erosion control blankets shall be properly prepared, fertilized, and seeded before blanket is applied. When blanket is unrolled, netting shall be on top and fibers in contact with soil. In ditches, apply blanket in direction of flow of water. On slopes, apply blankets vertically on slope. Overlap ends and sides 6 inches and staple per manufacturer's written instructions.

3.6 AREAS TO BE TURFED

- A. Unless otherwise shown on the plans, disturbed areas including out-lots shall be permanently sodded.
- B. Place 16-24 inch wide strip of solid slab sod adjacent to paved surfaces including sidewalks, curbs, walls, drainage structures, and vehicular pavement as shown on the drawings.

3.7 SODDING

- A. Cut and lay sod on same day. Only healthy vigorous growing sod shall be laid.
- B. Lay sod across slope and tightly together to result in solid coverage free of gaps.
- C. Roll or firmly but lightly tamp new sod with suitable wooden or metal tamper sufficiently to set or press sod into underlying soil.
- D. All finished sodding shall be smooth and free of lumps and depressions.
- E. After sodding has been completed, clean up and thoroughly water newly-sodded areas.

3.8 MAINTENANCE DURING CONSTRUCTION

- A. Begin maintenance operations immediately after each plant is planted and continue as required until acceptance. Water, mulch, weed, prune, spray, fertilize, cultivate, and otherwise maintain and protect plants. Reset settled plants to proper grade and position, restore planting saucers, and remove dead, diseased, or unhealthy plant material. Correct defective work as soon as possible after it becomes apparent and weather and season permit.
- B. Upon completion of the planting operations, clean up landscaped areas to be free of stones, containers, trash, and other waste and debris to leave area in a neat and well groomed appearance.
- C. Supplement rainfall as required to provide an equivalent of 1 inch of water per week until the plants have rooted and are established.
- D. Maintain all plant material in a healthy, vigorous growing condition.
- E. Make weekly inspections to determine moisture content of soil and adjust watering schedule established by irrigation system installer to fit conditions.
- F. After grass growth has started, sod areas that fail to show uniform stand of grass in accordance with The Drawings and as specified herein. Continue sodding such areas repeatedly until areas are covered with satisfactory growth of grass. Perform removal and replacement or topsoil conditioning if required to facilitate establishment of grass.
- G. Water in such manner and as frequently as is deemed necessary by Owner to assure continued growth of healthy grass. Water areas of site in such a manner as to prevent erosion due to excessive quantities applied over small areas and to avoid damage to finished surface due to watering equipment.
- H. Provide water for execution and maintenance at no expense to Owner. Furnish portable tanks, pumps, hose, pipe, connections, nozzles, and any other equipment required to transport water from available outlets and apply it to sodded areas in approved manner.

- I. Mowing:
 - 1. Initiate mowing of turf grass areas when grass has attained height of 3 inches and roots are firmly established. Maintain turf grass height at 2 1/2 to 3 inches at subsequent cuttings depending on time of year. Remove no more than 1/3 of grass leaf at any cutting and cutting shall not occur more than 10 days apart.
- J. Remove heavy cuttings to prevent destruction of underlying turf. If weeds or other undesirable vegetation threaten to smother planted species, such vegetation shall be mowed or, in case of rank growths, shall be uprooted, raked and removed from area by methods approved by Owner.
- K. Remove weeds and other undesirable vegetation by applying herbicides as recommended by the manufacturer or by uprooting. Rake and remove uprooted vegetation from area by methods approved by Owner.
- L. Protect sodded area from pedestrian or vehicular trespassing while grass is rooting. Repair damage resulting from trespass, erosion, washout, settlement, or other causes.
- M. Remove and replace diseased, distressed, dead, or rejected plants prior to Substantial Completion Date.
- N. Replacements shall be plants of same variety and size specified on The Drawings. Furnish and plant as specified herein. Replacements resulting from removal, loss, or damage due to occupancy of project in any part, vandalism, physical damage by animals, vehicles, etc., and losses due to curtailment of water by local authorities will be approved and paid for by Owner.
- O. Grassed areas damaged during process of work shall be restored or repaired to condition satisfactory to the Owner. Fill, grade, re-fertilize, replant, or mulch as required to restore to contract requirements.

3.9 WARRANTY

- A. Provide landscape warranty for the site as specified below.
- B. Contractor shall provide warranty for the entire site including existing lawns and landscape materials not installed as part this contract, but remaining in place during and after completion of the project.
- C. Commence warranty immediately after Substantial Completion Date and continue as indicated on the following chart:
- D.

WARRANTY CHART		
Substantial Completion Date	Warranty Expiration	Duration
December	July	19 months
January	July	18 months
February	July	17 months
March	July	16 months
April	July	15 months
May	July	14 months
June	July	13 months
July	July	12 months
August	August	12 months
September	September	12 months
October	October	12 months
November	November	12 months

END OF SECTION 329300