NOTICE TO ALL CONTRACTORS AND SUB-CONTRACTORS – February 11th, 2020

KWU Nursing School Remodel and Addition, Salina KS – Project 14-2650

Bid Date: Thursday February 13th, 2019 at 2:00pm. Bids are to be delivered to the office of Jones Gillam Renz Architects, 730 N. Ninth St. Salina, KS 67401

ADDENDUM NO. 2
YOU ARE INSTRUCTED TO READ AND TO NOTE THE FOLLOWING DESCRIBED CHANGES, CORRECTIONS, CLARIFICATIONS, OMISSIONS, DELETIONS, ADDITIONS, APPROVALS AND STATEMENTS PERTINENT TO THE CONTRACT AND CONSTRUCTION DOCUMENTS. THIS ADDENDUM IS A PART OF THE CONTRACT AND CONSTRUCTION DOCUMENTS AND SHALL GOVERN IN THE PERFORMANCE OF THE WORK.

ARCHITECTURAL – Specifications

1. Section 01019 – Special Provisions – Paragraph 17: This project is Sales Tax Exempt as stated in the specifications. Sales tax exemption applies to all material and labor. The Owner will issue a sales tax exemption certificate to the contractor upon award of contract.

2. Section 01030 – Alternates – Paragraph 3.1 Schedule of Alternates, Delete the Alternate 4 narrative as described in Addendum 1. Replace with the following:

   4. ALTERNATE NO. 4: The Contractor shall state the amount of dollars to be added to the Base Bid for all work, materials associated with the installation of TRAXX-SHIELD 100 Rolled Moisture Barrier. Located at all basement areas scheduled to receive carpet or LVT flooring. Install per Manufacturer’s instructions, including but not limited to all floor leveling, surface preparation, cleaning, adhesive, sheet membrane and joint finishing. The contractor shall remain responsible for all floor leveling and additional prep for installation of the final flooring material per the Base Bid.

3. Section 02810 – Irrigation: Add the attached specification section in its entirety.

4. Section 02920 – Lawns and Grasses: Add the attached specification section in its entirety.

5. Section 02930 – Exterior Plants: Add the Attached specification section in its entirety.

6. Section 10850 Building Specialties: Paragraph 1.04 Cast Metal Letters – Clarification, Cast Metal letters shall be 1” and 1 1/2” deep with cavity back to receive LED light strips. Provide offset anchors for 2” offset from face of wall. Font Styles to be:

   “KWU” – Times Bold, 20” tall 1 1/2” deep
   “NURSING EDUCATION CENTER” – Times New Roman 8”

   Product equivalent to Halo/Backlit cast letters as manufactured by Signworld. 1-(844) 900-7446 Color – Black.

CIVIL – Drawings

1. Sheet C.3 – Utility Plan: Note F – Clarification – The new communications service conduit from Memorial Library shall be 4” in lieu of 2”.

ARCHITECTURAL – Drawings

1. Sheet L1 – Landscape Plan: Clarification – All new trees shall be a minimum of 2” caliper. All new shrubs shall be 3 gallon.

2. Sheet L1 – Landscape Plan: Clarification – at the planting bed in front of the south entry sidewall/plaza, the finish grade is to slope at the planting area so that the upper finish grade matches the sidewalk/plaza elevation, approximately elevation 34.5.

3. Sheet D2.2 – Basement Plan Demolition & Existing Structure – At the basement floor, contractor shall be responsible for all floor saw cutting and removal of existing slab as required for new underground plumbing and electrical. Contractor shall backfill and patch floor at all exposed areas. Where patching concrete, dowel new concrete to existing slab @ 16” o.c. w/ 12” long #4 rebar placed in ½” drilled hole. Install #4 @ 12” o.c., lengthwise of infilled floor areas (2 continuous bars, minimum). Concrete shall be placed over 4” granular fill and 15mil vapor barrier.


5. Sheet A1.2 – Detail K – Proposed Fiber Optic Aerial Plan: Note 2 – Clarification – The new conduit from Memorial Library shall be 4” in lieu of 2”.

6. Sheet A4.2 – Details B and C: At the existing brick walls receiving new cast stone wainscot, reference revised section B, identifying requirement for anchoring and flashing at top and bottom of cast stone. Reference attached revised sheet A4.2. Detail C has been added as a contractor option to remove existing brick and installing cast stone over existing foundation wall.
ELECTRICAL – Specifications

1. Substitutions – Subject to compliance with requirements, the following manufacturers may provide Light Fixtures as indicated
   B. Type ‘B’ – Finelite
   C. Type ‘E’, ‘E1’, ‘X1’, ‘X2’ – Mule Lighting
   D. Type ‘G1’, ‘G2’, ‘G3’ – Focal Point
   E. Type ‘L’ - Kelvix
   F. Type ‘P1’ – Lumark
   G. Type ‘R’ – U.S. Architectural Lighting

ELECTRICAL – Drawings

1. Sheet E2.3 – First Floor Power Plan: Added circuitry for convenience receptacles in Halls 108, 116 and 117. See revised sheet E2.3.
2. Sheet E6.2 – Panel Schedule for Panelboard ‘B’: Wiring for circuit #56/58/60 should read 3#12, #12G, 1/2"C.
3. Sheet ME1.1 – M/E Site Plan: Homerun circuit tag for ‘DOAS’ HVAC unit on roof should read “MDP-3”.

Receipt of this Addendum shall be noted on the Bid Form.

END OF ADDENDUM NO. 2

Attachments:
   Specification Section 02810 Irrigation
   Specification Section 02920 Lawns and Grasses
   Specification Section 09230 Exterior Plants
   Revised Sheet A4.2
   Revised Sheet E2.3
PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY
A. This Section includes a complete irrigation system including but not limited to; wells, pumps, piping, valves, sprinklers, heads, specialties, controls, and wiring for pumps and automatic control of the well pumps and irrigation system.
B. Include all submittals, permits, and requirements associated with federal, state and local requirements and regulations.

1.3 DEFINITIONS
A. Retain abbreviations and definitions that remain after this Section has been edited.
B. Circuit Piping: Downstream from control valves to sprinklers, specialties, and drain valves. Piping is under pressure during flow.
C. Drain Piping: Downstream from circuit-piping drain valves. Piping is not under pressure.
D. Irrigation Main Piping: Downstream from point of connection to water distribution piping to, and including, control valves. Piping is under water-distribution-system pressure.
E. The following are industry abbreviations for plastic materials:
2. FRP: Fiberglass-reinforced plastic.
3. PA: Polyamide (nylon) plastic.
4. PE: Polyethylene plastic.
5. PP: Polypropylene plastic.
6. PTFE: Polytetrafluoroethylene plastic.
7. PVC: Polyvinyl chloride plastic.
8. TFE: Tetrafluoroethylene plastic.

1.4 PERFORMANCE REQUIREMENTS
A. Test, Locate and drill all wells, consistent with federal, state and local authorities and regulations. Design and size piping, controls and pumps consistent with federal, state and local authorities and regulations. Provide shop drawings for approval.
B. Design 100 percent water-coverage irrigation system for lawns and exterior plants indicated.
C. Retain paragraph below if complete system design and calculations are in the Contract Documents.
D. Location of Sprinklers and Specialties: Provide shop drawings for approval. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Maintain 100 percent water coverage of turf and planting areas indicated.
E. Retain paragraph and subparagraphs below with either paragraph above.
F. Minimum Working Pressures: The following are minimum pressure requirements for piping, valves, and specialties, unless otherwise indicated:
   1. Irrigation Main Piping: 200 psig.
   2. Circuit Piping: 150 psig.
   3. Drain Piping: 100 psig.

1.5 SUBMITTALS
A. Product Data: Include pressure ratings, rated capacities, and settings of selected models for the following:
   1. Water wells, pumps, regulators.
   2. Water hammer arresters.
   4. Specialty valves.
   5. Control-valve boxes.
   7. Irrigation specialties.
   9. Control cables. Include splice kits and conduit.
B. Shop Drawings: Show well locations, pumps, irrigation system piping, including plan layout, and locations, types, sizes, capacities, and flow characteristics of irrigation system piping components. Include water meters, backflow preventers, valves, piping, sprinklers and devices, accessories, controls, and wiring. Show areas of sprinkler spray and overspray. Show wire size and number of conductors for each control cable.

C. Coordination Drawings: Show piping and major system components. Indicate interface and spatial relationship between piping, system components, adjacent utilities, and proximate structures.

D. Field quality-control test reports.

E. Operation and Maintenance Data: For irrigation systems, to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section "Closeout Procedures Operation and Maintenance Data," include data for the following:
1. Automatic-control valves.
2. Sprinklers.
3. Controllers.
4. Pumps and wells

1.6 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.7 DELIVERY, STORAGE, AND HANDLING
A. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
B. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.8 COORDINATION
A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.

1.9 EXTRA MATERIALS
A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Sprinkler Units: 2 Each
   2. Emitter Units: 2 Each
   3. Drip Tube Units: 2 Each
   4. Valve Keys: 2 Each

PART 2 - PRODUCTS

2.1 MANUFACTURERS
A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
   2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 PIPES, TUBES, AND FITTINGS
   1. PVC Socket Fittings, Schedule 40: ASTM D 2466.
B. Transition Fittings: Refer to Division 2 Section "Piped Utilities -- Basic Materials and Methods" for transition fittings.
C. Dielectric Fittings: Refer to Division 2 Section "Piped Utilities -- Basic Materials and Methods" for dielectric fittings.

2.3 JOINING MATERIALS
A. Refer to Division 2 Section "Piped Utilities -- Basic Materials and Methods" for commonly used joining materials.
2.4 GENERAL-DUTY VALVES
A. AWWA, Cast-Iron Gate Valves, nonrising-stem, gray- or ductile-iron body and bonnet gate valve; with bronze stem and stem nut.
2. End Connections: Mechanical joint.
B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," bottom section with base of size to fit over valve, and approximately 5-inch diameter barrel.
1. Operating Wrenches: Furnish total of two steel, tee-handle operating wrench(es) with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.
C. MSS, Cast-Iron, Nonrising-Stem Gate Valves: MSS SP-70, Type I, Class 125, with solid wedge and flanged ends. Include all bronze trim, cast-iron body, and handwheel.
D. MSS, Cast-Iron, Rising-Stem Gate Valves: MSS SP-70, Type I, Class 125, with solid wedge and flanged ends. Include all bronze trim, cast-iron body, and handwheel.
E. Curb Valves: AWWA C800. Include bronze body, ball or ground-key plug, and wide tee head, with inlet and outlet matching piping material.

2.5 SERVICE BOXES FOR CURB VALVES: Similar to AWWA M44 requirements for cast-iron valve boxes. Include cast-iron telescoping top section of length required for depth of burial of valve, plug with lettering "WATER," bottom section with base of size to fit over curb valve, and approximately 3-inch diameter barrel.
1. Shutoff Rods: Furnish total of two steel, tee-handle shutoff rod(s) with one pointed end, stem of length to operate deepest buried valve, and slotted end matching curb valve.

2.6 CONTROL-VALVE BOXES
A. Plastic Control-Valve Boxes: Box and cover, with open bottom and openings for piping; designed for installing flush with grade. Include size as required for valves and service.
B. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3/4 inch minimum to 3 inches maximum.

2.7 PIPING SPECIALTIES
A. Water Regulators: ASSE 1003, single-seated, direct-operated, water-pressure regulators, rated for 150-psig minimum initial-inlet working pressure, with size, flow rate, and inlet and outlet pressures indicated. Include integral factory-installed or separate field-installed Y-pattern strainer that is compatible with unit for size and capacity.
B. Water Hammer Arresters: ASSE 1010 or PDI WH 201, with bellows or piston-type pressurized cushioning chamber and in sizes complying with PDI WH 201, Sizes A to F.
C. Pressure Gages: ASME B40.1. Include 4-1/2-inch-diameter dial, dial range of 2 times system operating pressure, and bottom outlet.

2.8 SPRINKLERS
A. Description: Brass or plastic housing and corrosion-resistant interior parts designed for uniform coverage over entire spray area indicated, at available water pressure.
1. Flush, Surface Sprinklers: Fixed pattern, with screw-type flow adjustment.
2. Bubblers: Fixed pattern, with screw-type flow adjustment.
4. Pop-up, Spray Sprinklers: Fixed pattern, with screw-type flow adjustment and stainless-steel retraction spring.
5. Pop-up, Rotary, Spray Sprinklers: Gear drive, full-circle and adjustable part-circle types.
2.9 AUTOMATIC-CONTROL SYSTEM
   A. Exterior Control Enclosures: NEMA 250, Type 4, weatherproof, with locking cover and two matching keys; include provision for grounding.
   B. Control Transformer: 24-V secondary, with primary fuse.
   C. Controller Stations for Automatic Control Valves: Each station is variable from approximately 5 to 60 minutes. Include switch for manual or automatic operation of each station.
   D. 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 2 or more times daily.
      1. Manual or Semiautomatic Operation: Allows this mode without disturbing preset automatic operation.
      3. Surge Protection: Metal-oxide-varistor type on each station and primary power.
   E. Wiring: UL 493, Type UF-B multiconductor, with solid-copper conductors and insulated cable; suitable for direct burial.
      1. Feeder-Circuit Cables: No. 12 AWG minimum, between building and controllers.
      2. 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.
      3. Splicing Materials: Manufacturer's packaged kit consisting of insulating, spring-type connector or crimped joint and epoxy resin moisture seal; suitable for direct burial.
   F. Concrete Base: Reinforced precast concrete with opening for wiring.

PART 3 - EXECUTION

3.1 EARTHWORK
   A. Refer to Division 2 Section "Earthwork" for excavating, trenching, and backfilling.
   B. Install warning tape directly above pressure piping, 12 inches below finished grades, except 6 inches below subgrade under pavement and slabs.
   C. Install piping and wiring in sleeves under sidewalks, roadways, parking lots, and railroads.
      1. Install piping sleeves by boring or jacking under existing paving if possible.
   D. 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.
   E. Provide minimum cover over top of underground piping according to the following:
      1. Irrigation Main Piping: Minimum depth of 36 inches below finished grade, or not less than 18 inches below average local frost depth, whichever is deeper.
      2. Circuit Piping: 12 inches.
      3. Drain Piping: 12 inches.

3.2 PREPARATION
   A. Set stakes to identify locations of proposed irrigation system. Obtain Architect's approval before excavation.

3.3 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 valves and to final connections to other components with NPS 2 or smaller pipe connection.
   G. Install flanges adjacent to valves and to final connections to other components with NPS 2-1/2 or larger pipe connection.
   H. Install dielectric fittings to connect piping of dissimilar metals.
   I. Install underground thermoplastic piping according to ASTM D 2774.
   J. Lay piping on solid subbase, uniformly sloped without humps or depressions.
   K. Install ductile-iron piping according to AWWA C600.
L. Install PVC piping in dry weather when temperature is above 40 deg F 5 deg C. Allow joints to cure at least 24 hours at temperatures above 40 deg F 5 deg C before testing unless otherwise recommended by manufacturer.
M. Install water regulators with shutoff valve and strainer on inlet and pressure gage on outlet. Install shutoff valve on outlet.
N. Water Hammer Arresters: Install between connection to building main and circuit valves in valve box.

3.4 JOINT CONSTRUCTION
A. Refer to Division 2 Section "Piped Utilities -- Basic Materials and Methods" for basic pipe joint construction.

3.5 VALVE INSTALLATION
A. Underground Gate Valves: Install in valve box with top flush with grade.
  1. Install valves and PVC pipe with restrained, gasketed joints.
B. Underground Curb Stops: Install in service box with top flush with grade.
D. Control Valves: Install in control-valve box.
E. Drain Valves: Install in control-valve box.

3.6 SPRINKLER INSTALLATION
A. Flush circuit piping with full head of water and 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.

3.7 AUTOMATIC-CONTROL SYSTEM INSTALLATION
A. Install freestanding controllers on precast concrete bases not less than 36 by 24 by 4 inches thick, and not less than 6 inches greater in each direction than overall dimensions of controller.
B. Install control cable in same trench as irrigation piping and at least 2 inches below piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas if irrigation piping is installed in sleeve.

3.8 CONNECTIONS
A. Drawings indicate general arrangement of piping, fittings, and specialties.
B. Ground equipment according to Division 16 Section "Grounding and Bonding."
C. Connect wiring according to Division 16 Section "Conductors and Cables."
D. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.9 LABELING AND IDENTIFYING
A. 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.
B. Refer to Division 2 Section "Piped Utilities -- Basic Materials and Methods" for equipment nameplates and signs.
C. Warning Tapes: Arrange for installation of continuous, underground, detectable warning tape over underground piping, during backfilling of trenches.
D. Refer to Division 2 Section "Earthwork" for warning tapes.

3.10 FIELD QUALITY CONTROL
A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connection, and to assist in field testing. Report results in writing.
B. Perform the following field tests and inspections and prepare test reports:
  1. Leak Test: After installation, charge system and test for leaks. 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.
   C. Remove and replace units and retest / reinspect as specified above.

3.11 STARTUP SERVICE
   A. Engage a factory-authorized service representative to perform startup service.
   B. Verify that controllers are installed and connected according to the Contract Documents.
   C. Verify that electrical wiring installation complies with manufacturer's submittal and installation requirements in Division 16 Sections.
   D. Complete startup checks according to manufacturer's written instructions.

3.12 ADJUSTING
   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 sprinklers so they will be flush with, or not more than 1/2 inch above, finish grade.

3.13 CLEANING
   A. Flush dirt and debris from piping before installing sprinklers and other devices.

3.14 DEMONSTRATION
   A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain controller and automatic control valves.

END OF SECTION 02810
SECTION 02920

LAWNS AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY
A. This Section includes the following:
   1. Seeding.
   2. Sodding.
B. Related Sections include the following:
   1. Division 2 Section "Site Clearing" for topsoil stripping and stockpiling.
   2. Division 2 Section "Earthwork" for excavation, filling and backfilling, and rough grading.

1.3 DEFINITIONS
A. Finish Grade: Elevation of finished surface of planting soil.
B. Manufactured Soil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
C. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.
D. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

1.4 SUBMITTALS
A. Product Data: For each type of product indicated.
B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
C. Qualification Data: For landscape Installer.
D. Planting Schedule: Indicating anticipated planting dates for each type of planting.
E. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of lawns during a calendar year. Submit before expiration of required maintenance periods.

1.5 QUALITY ASSURANCE
A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn establishment.
   1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
B. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of topsoil.

1. Report suitability of topsoil for lawn growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Seed: Deliver seed in original sealed, labeled, and undamaged containers.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in TPI's "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in its "Guideline Specifications to Turfgrass Sodding."

1.7 SCHEDULING

A. Planting Restrictions: Plant according to manufacturer’s recommendations. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

1.8 LAWN MAINTENANCE

A. Begin maintenance immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:
   1. Seeded Lawns: 60 days from date of Substantial Completion.
      a. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.

B. Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn.
   1. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch. Anchor as required to prevent displacement.

C. Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawn uniformly moist to a depth of 4 inches.
   1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch.
      Lay out temporary watering system to avoid walking over muddy or newly planted areas.
   2. Water lawn at a minimum rate of 1 inch per week.
D. Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet.

E. Lawn Postfertilization: Apply fertilizer after initial mowing and when grass is dry.
   1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. to lawn area.

PART 2 - PRODUCTS

2.1 SEED AND SOD

A. Grass Seed: Premium Blend. Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.

B. Sod: Premium Fescue Blend

2.2 TOPSOIL

A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 2 percent organic material content; free of stones 1/2 inch or larger in any dimension and other extraneous materials harmful to plant growth.

   1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

      a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

   2. Topsoil Source: Import topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

   3. Topsoil Source: Amend existing in-place surface soil to produce topsoil. Verify suitability of surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

      a. Surface soil may be supplemented with imported or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

2.3 PLANTING ACCESSORIES

A. Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.

2.4 FERTILIZER
A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 4 percent nitrogen and 10 percent phosphoric acid.

B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.5 MULCHES

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

B. Peat Mulch: Sphagnum peat moss, partially decomposed, finely divided or granular texture, with a pH range of 3.4 to 4.8.

C. Peat Mulch: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.

D. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: 50 to 60 percent of dry weight.
2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

E. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic; free of plant-growth or germination inhibitors; with maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.

F. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

G. Asphalt Emulsion: ASTM D 977, Grade SS-1; nontoxic and free of plant-growth or germination inhibitors.
3.1 EXAMINATION

A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
   1. Protect adjacent and adjoining areas from hydroseeding overspray.

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

3.3 LAWN PREPARATION

A. Limit lawn subgrade preparation to areas to be planted.

B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches. Remove stones larger than 1/2 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
   1. Apply fertilizer directly to subgrade before loosening.
   2. Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.
      a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
      b. Mix lime with dry soil before mixing fertilizer.
   3. Spread planting soil mix to a depth of 4 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
      a. Spread approximately one-half the thickness of planting soil mix over loosened subgrade.
      b. Mix thoroughly into top 2 inches of subgrade. Spread remainder of planting soil mix.

C. Unchanged Subgrades: If lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface soil stripping operations, prepare surface soil as follows:
   1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
   2. Loosen surface soil to a depth of at least 6 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches of soil. Till soil to a homogeneous mixture of fine texture.
   3. Remove stones larger than 1/2 inch in any dimension and sticks, roots, trash, and other extraneous matter.
   4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.

D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future.

E. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

F. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

3.4 SEEDING
A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
   1. Do not use wet seed or seed that is moldy or otherwise damaged.

B. Sow seed at the rate of 3 to 4 lb/1000 sq. ft..

C. Rake seed lightly into top 1/8 inch of topsoil, roll lightly, and water with fine spray.

D. Protect seeded areas with slopes exceeding 1:6 with erosion-control fiber mesh and 1:4 with erosion-control blankets installed and stapled according to manufacturer's written instructions.

E. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose depth over seeded areas. Spread by hand, blower, or other suitable equipment.
   1. Anchor straw mulch by crimping into topsoil with suitable mechanical equipment.
   2. Bond straw mulch by spraying with asphalt emulsion at the rate of 10 to 13 gal./1000 sq. ft.
      Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

F. Protect seeded areas from hot, dry weather or drying winds by applying any compost mulch, peat mulch, planting soil, or topsoil within 24 hours after completing seeding operations. Soak and scatter uniformly to a depth of 3/16 inch and roll to a smooth surface.

3.5 SATISFACTORY LAWNS

A. Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.

B. Satisfactory Sodded Lawn: At end of maintenance period, a healthy, well-rooted, even-colored, viable lawn has been established, free of weeds, open joints, bare areas, and surface irregularities.

C. Satisfactory Plugged Lawn: At end of maintenance period, the required number of plugs has been established as well-rooted, viable patches of grass; and areas between plugs are free of weeds and other undesirable vegetation.

D. Satisfactory Sprigged Lawn: At end of maintenance period, the required number of sprigs has been established as well-rooted, viable plants; and areas between sprigs are free of weeds and other undesirable vegetation.

E. Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

3.6 CLEANUP AND PROTECTION

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

B. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.

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

END OF SECTION 02920
SECTION 02930
EXTERIOR PLANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Trees.
2. Shrubs.
3. Ground cover.
4. Plants.
5. Edgings.
6. Planters.

B. Related Sections include the following:
1. Division 2 Section "Site Clearing" for protection of existing trees and planting, topsoil stripping and stockpiling, and site clearing.
2. Division 2 Section "Earthwork" for excavation, filling, and rough grading and for subsurface aggregate drainage and drainage backfill materials.
3. Division 2 Section "Subdrainage" for below-grade drainage of landscaped areas, paved areas, and wall perimeters.
4. Division 12 Section "Interior Plants" for interior plants, trees, and vines.
5. Division 12 Section "Interior Planters" for pots and urns for interior plantings.

1.3 DEFINITIONS

A. Balled and Burlapped Stock: Exterior plants dug with firm, natural balls of earth in which they are grown, wrapped, tied, rigidly supported, and drum-laced as recommended by ANSI Z60.1.

B. Balled and Potted Stock: Exterior plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container.

C. Bare-Root Stock: Exterior plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than minimum root spread according to ANSI Z60.1 for kind and size of exterior plant required.

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

E. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted exterior plants established and grown in-ground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume required by ANSI Z60.1 for type and size of exterior plant.

F. Finish Grade: Elevation of finished surface of planting soil.
G. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

H. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.

I. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

1.4 SUBMITTALS

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

B. Samples for Verification: For each of the following:
   1. 5 lb of mineral mulch for each color and texture of stone required, in labeled plastic bags.
   2. Edging materials and accessories, of manufacturer's standard size, to verify color selected.

C. Product Certificates: For each type of manufactured product, signed by product manufacturer, and complying with the following:
   1. Manufacturer's certified analysis for standard products.
   2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

D. Qualification Data: For landscape Installer.

E. Material Test Reports: For existing surface soil and imported topsoil.

F. Planting Schedule: Indicating anticipated planting dates for exterior plants.

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

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of exterior plants.
   1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when exterior planting is in progress.

B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of topsoil.
   1. Report suitability of topsoil for plant growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

D. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."
   1. Selection of exterior plants purchased under allowances will be made by Architect, who will tag plants at their place of growth before they are prepared for transplanting.
E. Tree and Shrub Measurements: Measure according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches above ground for trees up to 4-inch caliper size, and 12 inches above ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.

F. Observation: Architect may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
   1. Notify Architect of sources of planting materials seven days in advance of delivery to site.

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver exterior plants freshly dug.
   1. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.

B. Do not prune trees and shrubs before delivery, except as approved by Architect. Protect bark, branches, and root systems from sun scald, drying, 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 exterior plants during delivery. Do not drop exterior plants during delivery.

C. Handle planting stock by root ball.

D. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants trees in shade, protect from weather and mechanical damage, and keep roots moist.
   1. Heel-in bare-root stock. Soak roots in water for two hours if dried out.
   2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
   3. Do not remove container-grown stock from containers before time of planting.
   4. Water root systems of exterior plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.

1.7 COORDINATION

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
   1. Spring Planting: As recommended for area, soil, and climate.
   2. Fall Planting: As recommended for area, soil, and climate.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

C. Coordination with Lawns: Plant trees and shrubs after finish grades are established and before planting lawns, unless otherwise acceptable to Architect.
   1. When planting trees and shrubs after lawns, protect lawn areas and promptly repair damage caused by planting operations.

1.8 WARRANTY

A. Special Warranty: Warrant the following exterior plants, for the warranty period indicated, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, or incidents that are beyond Contractor's control.
   1. Warranty Period for Trees and Shrubs: One year from date of Substantial Completion.
   2. Warranty Period for Ground Cover and Plants: Six months from date of Substantial Completion.

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3. Remove dead exterior plants immediately. Replace immediately unless required to plant in the succeeding planting season.
4. Replace exterior plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
5. A limit of one replacement of each exterior plant will be required, except for losses or replacements due to failure to comply with requirements.

1.9 MAINTENANCE

A. Trees and Shrubs: Maintain for the following maintenance period by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required to keep trees and shrubs free of insects and disease. Restore or replace damaged tree wrappings.
   1. Maintenance Period: Six months from date of Substantial Completion.

B. Ground Cover and Plants: Maintain for the following maintenance period by watering, weeding, fertilizing, and other operations as required to establish healthy, viable plantings:
   1. Maintenance Period: Six months from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 TREE AND SHRUB MATERIAL

A. General: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

B. Grade: Provide trees and shrubs of sizes and grades complying with ANSI Z60.1 for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

C. Label each tree and shrub with securely attached, waterproof tag bearing legible designation of botanical and common name.

D. Label at least one tree and one shrub of each variety and caliper with a securely attached, waterproof tag bearing legible designation of botanical and common name.

E. If formal arrangements or consecutive order of trees or shrubs is shown, select stock for uniform height and spread, and number label to assure symmetry in planting.

2.2 SHADE AND FLOWERING TREES

A. Small Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1.

B. Multistem Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1.

2.3 DECIDUOUS SHRUBS

A. Form and Size: Deciduous shrubs with not less than the minimum number of canes required by and measured according to ANSI Z60.1 for type, shape, and height of shrub.

2.4 CONIFEROUS EVERGREENS

A. Form and Size: Normal-quality, well-balanced, coniferous evergreens, of type, height, spread, and shape required, complying with ANSI Z60.1.
2.5 BROADLEAF EVERGREENS
   A. Form and Size: Normal-quality, well-balanced, broadleaf evergreens, of type, height, spread, and shape required, complying with ANSI Z60.1.

2.6 GROUND COVER PLANTS
   A. Ground Cover: Provide ground cover of species indicated, established and well rooted in pots or similar containers, and complying with ANSI Z60.1.

   B. Dichondra: Provide dichondra seed with 99 percent minimum pure seed, not less than 85 percent germination, and not more than 0.25 percent weed seed.

   C. Dichondra: Provide dichondra plants grown in flats and suitable for cutting into plugs.

2.7 PLANTS
   A. Annuals: Provide healthy, disease-free plants of species and variety shown or listed. Provide only plants that are acclimated to outdoor conditions before delivery and that are in bud but not yet in bloom.

   B. Perennials: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown or listed.

   C. Fast-Growing Vines: Provide vines of species indicated complying with requirements in ANSI Z60.1 as follows:
      1. Two-year plants with heavy, well-branched tops, with not less than 3 runners 18 inches or more in length, and with a vigorous well-developed root system.
      2. Provide field-grown vines. Vines grown in pots or other containers of adequate size and acclimated to outside conditions will also be acceptable.

2.8 TOPSOIL
   A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 4 percent organic material content; free of stones 1/2 inch or larger in any dimension and other extraneous materials harmful to plant growth.
      1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
         a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.
      2. Topsoil Source: Import topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.
      3. Topsoil Source: Amend existing in-place surface soil to produce topsoil. Verify suitability of surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
         a. Surface soil may be supplemented with imported or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

2.9 ORGANIC SOIL AMENDMENTS
   A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings.

   B. Peat: Sphagnum peat moss, partially decomposed, finely divided or granular texture, with a pH range of 3.4 to 4.8.
C. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.

D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.

E. 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, and material harmful to plant growth.

2.10 FERTILIZER
A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 4 percent nitrogen and 10 percent phosphoric acid.

B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
1. Composition: 1 lb/1000 sq. ft of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorous, and potassium in the following composition:
1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.11 MULCHES
A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs.

B. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings.

2.12 WEED-CONTROL BARRIERS
A. Polyethylene Sheeting: ASTM D 4397, black, 0.006-inch- minimum thickness.

B. Nonwoven Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. minimum.

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

2.13 STAKES AND GUYS
A. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, redwood, or pressure-preservative-treated softwood, free of knots, holes, cross grain, and other defects, 2 by 2 inches by length indicated, pointed at one end.

B. Guy and Tie Wire: ASTM A 641/A 641M, Class 1, galvanized-steel wire, 2-strand, twisted, 0.106 inch in diameter.
C. Guy Cable: 5-strand, 3/16-inch diameter, galvanized-steel cable, with zinc-coated turnbuckles, a minimum of 3 inches long, with two 3/8-inch galvanized eyebolts.

D. Hose Chafing Guard: Reinforced rubber or plastic hose at least 1/2 inch in diameter, black, cut to lengths required to protect tree trunks from damage.

E. Flags: Standard surveyor's plastic flagging tape, white, 6 inches long.

2.14 LANDSCAPE EDGINGS

A. Wood Edging: Of sizes shown, and wood stakes.

B. Steel Edging: Standard commercial-steel edging, rolled edge, fabricated in sections of standard lengths, with loops stamped from or welded to face of sections to receive stakes.

C. Aluminum Edging: Standard-profile extruded-aluminum edging, ASTM B 221, alloy 6063-T6, fabricated in standard lengths with interlocking sections with loops stamped from face of sections to receive stakes.


PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

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

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

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

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

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

3.3 PLANTING BED ESTABLISHMENT

A. Loosen subgrade of planting beds to a minimum depth of 4 inches. Remove stones larger than 1/2 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

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

C. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.
3.4 TREE AND SHRUB EXCAVATION

A. Pits and Trenches: Excavate circular pits with sides sloped inward. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation.
   1. Excavate approximately three times as wide as ball diameter for balled and burlapped stock.
   2. Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
   3. If drain tile is shown or required under planted areas, excavate to top of porous backfill over tile.

B. Subsoil removed from excavations may be used as backfill.

C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
   1. Hardpan Layer: Drill 6-inch diameter holes into free-draining strata or to a depth of 10 feet, whichever is less, and backfill with free-draining material.

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

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

3.5 TREE AND SHRUB PLANTING

A. Set balled and burlapped stock plumb and in center of pit or trench with top of root ball flush with adjacent finish grades.
   1. Remove burlap and wire baskets from tops of root balls and partially 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.
   2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

B. Set balled and potted stock plumb and in center of pit or trench with top of root ball flush with adjacent finish grades.
   1. Carefully remove root ball from container without damaging root ball or plant.
   2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

C. Set fabric bag-grown stock plumb and in center of pit or trench with top of root ball flush with adjacent finish grades.
   1. Carefully remove root ball from fabric bag without damaging root ball or plant. Do not use planting stock if root ball is cracked or broken before or during planting operation.
   2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

D. Set and support bare-root stock in center of pit or trench with root collar or trunk flare, flush with adjacent finish grade. Spread roots without tangling or turning toward surface, and carefully work backfill around roots by hand. Puddle with water until backfill layers are completely saturated. Plumb before backfilling, and maintain plumb while working backfill around roots and placing layers above roots. Tamp final layer of backfill. Remove injured roots by cutting cleanly; do not break.

E. Organic Mulching: Apply 2-inch average thickness of organic mulch extending 12 inches beyond edge of planting pit or trench. Do not place mulch within 3 inches of trunks or stems.

F. Wrap trees of 2-inch caliper and larger with trunk-wrap tape. Start at base of trunk and spiral cover trunk to height of first branches. Overlap wrap, exposing half the width, and securely attach without
causing girdling. Inspect tree trunks for injury, improper pruning, and insect infestation; take corrective
measures required before wrapping.

3.6 TREE AND SHRUB PRUNING
A. Prune, thin, and shape trees and shrubs as directed by Architect.
B. Prune, thin, and shape trees and shrubs according to standard horticultural practice. Prune trees to retain
required height and spread. Unless otherwise indicated by Architect, do not cut tree leaders; remove
only injured or dead branches from flowering trees. Prune shrubs to retain natural character. Shrub
sizes indicated are sizes after pruning.

3.7 GUYING AND STAKING
A. Upright Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch
caliper only as required to prevent wind tip-out. Use a minimum of 2 stakes of length required to
penetrate at least 18 inches below bottom of backfilled excavation and to extend at least 72 inches
above grade. Set vertical stakes and space to avoid penetrating root balls or root masses. Support trees
with two strands of tie wire encased in hose sections at contact points with tree trunk. Allow enough
slack to avoid rigid restraint of tree. Use the number of stakes as follows:
1. Use 2 stakes for trees up to 12 feet high and 2-1/2 inches or less in caliper; 3 stakes for trees less
   than 14 feet high and up to 4 inches in caliper. Space stakes equally around trees.
B. Guying and Staking: Guy and stake trees exceeding 14 feet in height and more than 3 inches in caliper,
   unless otherwise indicated. Securely attach no fewer than 3 guys to stakes 30 inches long, driven to
grade.
1. For trees more than 6 inches in caliper, anchor guys to pressure-preservative-treated deadmen 8
   inches in diameter and 48 inches long buried at least 36 inches below grade. Provide turnbuckles
   for each guy wire and tighten securely.
2. Attach flags to each guy wire, 30 inches above finish grade.
3. Paint turnbuckles with luminescent white paint.

3.8 PLANTERS
A. Planters: Place a layer of gravel at least 4 inches thick in bottom of planters, cover with nonwoven
   fabric, and fill with planter soil mix. Place soil in lightly compacted layers to an elevation of
   1-1/2 inches below top of planter, allowing natural settlement.
1. Planter Soil Mix: One part topsoil, one part coarse sand, one part peat, and 3 lb of dolomitic
   limestone per cubic yard of mix.

3.9 GROUND COVER AND PLANT PLANTING
A. Set out and space ground cover and plants as indicated or recommended.
B. Dig holes large enough to allow spreading of roots, and backfill with planting soil.
C. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to
   hold water.
D. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
E. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from
   transplanting shock.

3.10 PLANTING BED 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.
B. Mulch backfilled surfaces of planting beds and other areas indicated.
1. Organic Mulch: Apply 2-inch average thickness of organic mulch, and finish level with adjacent
   finish grades. Do not place mulch against plant stems.
2. Mineral Mulch: Apply 2-inch average thickness of mineral mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.

3.11 EDGING INSTALLATION

A. Wood Edgings: Install wood headers or edgings where indicated. Anchor with wood stakes spaced up to 36 inches apart, driven at least 1 inch below top elevation of header or edging. Use 2 galvanized nails per stake to fasten headers and edging; length as needed to penetrate both members and provide 1/2-inch clinch at point. Predrill stakes if needed to avoid splitting.

B. Steel Edging: Install steel edging where indicated according to manufacturer's written instructions. Anchor with steel stakes spaced approximately 30 inches apart, driven below top elevation of edging.

C. Aluminum Edging: Install aluminum edging where indicated according to manufacturer's written instructions. Anchor with aluminum stakes spaced approximately 36 inches apart, driven below top elevation of edging.

D. Plastic Edging: Install plastic edging where indicated according to manufacturer's written instructions. Anchor with steel stakes spaced approximately 36 inches apart, driven through upper base grooves or V-lip of edging.

3.12 TREE GRATE INSTALLATION

A. Tree Grates: Set grate segments flush with adjoining surfaces as shown on Drawings. Shim from supporting substrate with soil-resistant plastic. Maintain a 3-inch (75-mm) minimum growth radius around base of tree; break away units of casting, if necessary, according to manufacturer's written instructions.

3.13 CLEANUP AND PROTECTION

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

B. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior planting.

3.14 DISPOSAL

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

END OF SECTION 02930
CONTRACTOR OPTION AT EXISTING WALLS IN LIEU OF BRICK STAIN
GENERAL POWER NOTES

1. ALL ELECTRICAL POWER TO BE SUPPLIED BY 240V, 3 PHASE, 3-WIRE, 4 conduction, 200A service panel.

2. PROVIDE SINGLE- PHASE CENTRAL INVERTER FOR EMERGENCY POWER TO AREA DRAIN PUMP, 1000VA, 120V-INPUT/120V-OUTPUT, 15A INPUT BREAKER, DUAL-LITE INVERTER SHALL HAVE 9 YEAR PRO-RATED BATTERY WARRANTY.  FLOOR MOUNT ON CLG.

3. PROVIDE WEATHERPROOF J-BOX AND 120V POWER FOR OWNER FURNISHED SECURITY ALARM SAFETY INTERFACE RELAY, KEY TEST SWITCH, GREEN PILOT LIGHT, AUXILIARY RECEPTACLE TO PROVIDE GFI PROTECTION FOR DRINKING FOUNTAIN RECEPTACLE.

4. PROVIDE FINAL ELECTRICAL CONNECTION TO ELEVATOR CONTROLLER.

5. PROVIDE POWER CONNECTION TO SEWAGE EJECTOR CONTROL PANEL.  COORDINATE REQUIREMENTS WITH PLUMBING CONTRACTOR.

6. PROVIDE SINGLE-PHASE CENTRAL INVERTER FOR EMERGENCY POWER TO AREA DRAIN PUMP, 1000VA, 120V-INPUT/120V-OUTPUT, 15A INPUT BREAKER, DUAL-LITE INVERTER SHALL HAVE 9 YEAR PRO-RATED BATTERY WARRANTY.  FLOOR MOUNT ON CLG.

7. PROVIDE SINGLE PHASE CONTROL RELAY FOR EMERGENCY POWER TO AREA DRAIN PUMP, 1000VA, 120V-INPUT/120V-OUTPUT.  PROVIDE WITH BATTERIES SIZED FOR 90 MINUTE RUN TIME.  (HUBBELL #S1R4PTFIT WITH #S1R4SP2X2DUPLEX SUB-PLATE).  PROVIDE  WITH ALUMINUM SURFACE COVER SUITABLE FOR CARPET INSERT (#24GCCVR___C), COLOR TO BE SELECTED BY ARCHITECT.  VERIFY EXACT BOX LOCATION WITH OWNER PRIOR TO COMMENCING WORK WITH FIRE SPRINKLER SYSTEM INSTALLER.

8. PROVIDE 3/4" CONDUIT WITH PULL STRING FROM HEAT PUMP UNIT TO BUILDING OWNER.

9. PROVIDE PEDESTAL PANEL FOR FIRE SPRINKLER SYSTEM FLOW SWITCH(ES) AND BELL.  COORDINATE REQUIREMENTS WITH PLUMBING CONTRACTOR.

10. PROVIDE FINAL FLEXIBLE CONNECTION.  COORDINATE WITH PLUMBING CONTRACTOR.

11. PROVIDE WEATHERPROOF J-BOX AND 120V POWER FOR OWNER FURNISHED SECURITY ALARM SAFETY INTERFACE RELAY, KEY TEST SWITCH, GREEN PILOT LIGHT, AUXILIARY RECEPTACLE TO PROVIDE GFI PROTECTION FOR DRINKING FOUNTAIN RECEPTACLE.

12. PROVIDE SINGLE-PHASE CENTRAL INVERTER FOR EMERGENCY POWER TO AREA DRAIN PUMP, 1000VA, 120V-INPUT/120V-OUTPUT, 15A INPUT BREAKER, DUAL-LITE INVERTER SHALL HAVE 9 YEAR PRO-RATED BATTERY WARRANTY.  FLOOR MOUNT ON CLG.

13. PROVIDE SMALL PHASE CONTROL RELAY FOR EMERGENCY POWER TO AREA DRAIN PUMP, 1000VA, 120V-INPUT/120V-OUTPUT.  PROVIDE WITH BATTERIES SIZED FOR 90 MINUTE RUN TIME.  (HUBBELL #S1R4PTFIT WITH #S1R4SP2X2DUPLEX SUB-PLATE).  PROVIDE  WITH ALUMINUM SURFACE COVER SUITABLE FOR CARPET INSERT (#24GCCVR___C), COLOR TO BE SELECTED BY ARCHITECT.  VERIFY EXACT BOX LOCATION WITH OWNER PRIOR TO COMMENCING WORK WITH FIRE SPRINKLER SYSTEM INSTALLER.

14. PROVIDE PEDESTAL PANEL FOR FIRE SPRINKLER SYSTEM FLOW SWITCH(ES) AND BELL.  COORDINATE REQUIREMENTS WITH PLUMBING CONTRACTOR.

15. PROVIDE FINAL FLEXIBLE CONNECTION.  COORDINATE WITH PLUMBING CONTRACTOR.