

CITY OF FONTANA

ENGINEERING DEPARTMENT

STANDARD LANDSCAPE

SPECIFICATION MANUAL

FOR CITY MAINTAINED

STREETSCAPES, CFD's, AND PARKS

DECEMBER 2019

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SPECIFICATION MANUAL
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*(On City of Fontana Website www.fontana.org, Departments-Engineering-
Document Library-Park Design Standards)*

PART 1 – 1**1.01 RELATED DOCUMENTS**

- A. *Review the General Conditions, Standards Specifications and Special Provisions which contain information and requirements that apply to this section.*

1.02 WORK INCLUDED

- A. *The Contractor shall supply all material, pipe, pipe fittings, automatic valves, wiring, and all labor to install a fully **Reclaimed Water** automatic sprinkler system. Restore any existing landscaping that may be disturbed during the installation.*

1.03 RELATED SECTIONS

- A. *Lawns & Grasses - Section 02930*
- B. *Trees, Shrubs, Vines and Groundcover - Section 02950*
- C. *Landscape Maintenance - Section 02970*
- D. *Electrical - Section 16000*

1.04 QUALITY ASSURANCE AND REQUIREMENTS

- A. *Permits and Fees: The Contractor shall obtain and pay for any and all permits and all inspections as required.*
- B. *Manufacturer's Directions: Manufacturer's directions and detailed drawings shall be followed in all cases where the manufacturer of articles used in this contract furnishes directions covering points not shown in the drawings and specifications.*
- C. *Ordinances and Regulations: All local, municipal and state laws, and rules and regulations governing or relating to any portion of this work are hereby incorporated into and made a part of these specifications, and their provisions shall be carried out by the contractor. Anything contained in these specifications shall not be construed to conflict with any of the above rules and regulations or requirements of the same. However, when these specifications and drawings call for or describe materials, workmanship, or construction of a better quality, higher standard of larger size than is required by the above rules and regulations, the provisions of these specifications and drawings shall take precedence.*

- D. Applicable Standards: *General Conditions, Special Provisions, City of Fontana's Landscape Ordinance No. 1734, and Landscape construction standards Section 5000.*
- E. Superintendent:
1. *A superintendent satisfactory to Agency's Authorized Representative who understands and SPEAKS ENGLISH FLUENTLY shall be present on the site at all times during progress of the work.*
 2. *The Superintendent shall not be changed except with the consent of the Agency's Authorized Representative.*
 3. *The Superintendent shall be authorized to represent the Contractor.*
- F. Explanation of Drawings:
1. *Due to the scale of drawings, it is not possible to indicate all offsets, fittings, sleeves, etc. which may be required. The Contractor shall carefully investigate the structural and finished conditions affecting all of his work and plan his work accordingly, furnishings such fittings, etc., as may be required to meet such conditions. Drawings are generally diagrammatic and indicative of the work to be installed. The work shall be installed in such a manner as to avoid conflicts between irrigation systems, planting and architectural features.*
 2. *All work called for on the drawings by notes or details shall be furnished and installed whether or not specifically mentioned in the specifications.*
 3. *The irrigation system as shown on the drawings shall not be installed when it is obvious in the field that obstructions, grade differences or discrepancies in area dimensions exist that might not have been considered in engineering. Such obstructions or differences should be brought to the attention of the Landscape Architect and City's Authorized Representative. In the event this notification is not performed, the irrigation Contractor is responsible for any revision necessary.*
 4. *No materials are to be purchased or installed as noted in legend on the drawing when it is obvious there is an error or discrepancy. In addition, failure to obtain prior material approval, risks rejection by the Agency's Authorized Representative. By failing to bring material discrepancies to the attention of the Agency's Authorized Representative or by failure to comply with materials submittals, the Contractor is responsible for any revisions necessary.*
 5. *Work of this Section which is associated with the work of other trades shall be coordinated as necessary.*

6. *It is the intent of the drawings and specifications to provide an irrigation system with head to head coverage. The contractor is responsible for any misinterpretation of the drawings prior to or during construction. Should any discrepancy arise as to the interpretation of the drawings or specifications, the final decisions in the matter will rest with the Agency's Authorized Representative.*
- G. *Underwriters Laboratories: Electrical wiring, controls, motors, and devices shall be U.L. listed, and so labeled.*

1.05 SUBMITTALS

A. Material List:

1. *The Contractor shall furnish the articles, equipment, materials, or processes specified by name in the drawings and specifications. No substitution will be allowed without prior written acceptance by the Agency's Authorized Representative.*
2. *Complete material list shall be submitted prior to performing any work. Material list shall include the manufacturer, model number and description of all materials and equipment to be used.*
3. *Equipment or materials installed or furnished without prior approval of the Agency's Authorized Representative may be rejected and the Contractor is required to remove such materials from the site at his own expense.*
4. *Approval of any item, alternate or substitute indicates only that the product or products apparently meet the requirements of the drawings and specifications on the basis of the information or samples submitted.*
5. *Manufacturer's warranties shall not relieve the Contractor of his liability under the guarantee. Such warranties shall only supplement the guarantee.*
6. *If equipment is as specified, no manufacturer descriptive catalogs are necessary in submittal.*

B. Record Drawings:

1. *The Contractor shall provide and keep up to date and complete "record" set of red line drawings which shall be corrected daily and show every change from the original drawings and specifications and the exact "as-built" locations, sizes, and kinds of equipment. Prints for these purposes shall be the contractor's responsibility. This set of drawings shall be kept on the site and shall be used only as a record set.*

2. *The drawings shall also serve as work progress sheets and shall be the basis for measurement and payment for work completed. These drawings shall be available at all times for site reviews and shall be kept in a location designated by the Agency's Authorized Representative.*
3. *The Contractor shall make neat and legible notations on the As-built's progress sheets daily as the work proceeds, showing the work as actually installed. For example, should a piece of equipment be installed in a location that does not match the plan, the Contractor must indicate that equipment has been relocated in a graphic manner so as to match the original symbols as indicated in the irrigation legend. The relocated equipment and dimensions will then be transferred to the original record drawings at the proper time.*
4. *Before the date of the final site review, the Contractor shall transfer the As-built's set of red line drawings to the Agency's or developers Authorized Representative who will deliver them to the Landscape Architect of record. The Landscape Architect shall transfer all information from the As-built's set of prints to a sepia Mylar or similar Mylar material. All work shall be in water-proof India ink and applied to the Mylar by a technical pen made expressly for use on Mylar material. Such pen shall be similar to those manufactured by Rapidograph, Kueffel & Esser, or Faber Castell. The dimensions shall be made so as to be easily readable even on the final controller chart (see Section 1.05C). **The original Mylar "record" plan shall be submitted to the Agency's Authorized Representative for approval prior to the making of controller charts.***

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. *Handling of P.V.C. Pipe and Fittings: The Contractor is cautioned to exercise care in handling, loading, unloading, and storing of P.V.C. pipe and fittings. All P.V.C. pipe shall be transported in a vehicle which allows the length of pipe to lie flat so as not to subject it to undue bending or concentrated external load at any point. Any section of pipe that has been dented or damaged will be discarded and, if installed, shall be replaced with new piping.*
- B. *When pipe is stored outdoors, it shall be covered to protect it from sunlight.*

1.07 SUBSTITUTIONS

- A. *If the Irrigation Contractor wishes to substitute any equipment or materials for those equipment or materials listed on the Irrigation drawings and specifications, he may do so by providing the following information to the Agency's Authorized Representative for approval:*

1. *Provide a statement indicating the reason for making the substitution. Use a separate sheet of paper for each item to be substituted.*
 2. *Provide descriptive catalog literature, performance charts and flow charts for each item to be substituted.*
 3. *Provide the amount of cost savings if the substituted item is approved.*
 4. *Approval of any item as a substitution or alternate is for design only, based on information or samples provided by the Contractor.*
 5. *Contractor shall be responsible for the total performance of such substitution to equal or surpass the original in every respect.*
 6. *If the substitution proves to be unsatisfactory in the opinion of the Agency's Authorized Representative, Contractor shall remove such work and replace it with originally specified item (including installation) as part of the work of this section.*
- B. *The Agency's Authorized Representative shall have the sole responsibility for accepting or rejecting any substituted item as an approved equal to equipment and materials listed on the irrigation drawings and specifications.*

1.10 CONNECTIONS TO UTILITIES

1. *Source of Water and Power Supply: Verify and be familiar with the location, size and detail of stub-outs provided as the source of water and electrical supply to the sprinkler system, as shown on the plans. Source of water supply and point of connection shall be new water meters or stub-outs at approximate locations as shown on plans. (Unless otherwise noted).*
2. *Appropriately sized gate valves that match the size of the irrigation system will be provided by the contractor to the appropriate water company at time of meter install.*
3. *Utilities Service Charges: The contractor is responsible for all utilities service charges related to the work during the course of construction and construction maintenance periods until the project has been accepted by the Agency. Payment for the utilities service charges shall be considered as included in the prices paid for various items of work and no additional compensation will be made therefore.*
4. *Existing Utilities and Conditions: Prior to any excavation, call Dig Alert or USA (800-422-4133) to locate all cables, conduits, sewer septic tanks, and other utilities that are commonly encountered underground, and take proper precautions not to damage or disturb such improvements. If a*

conflict exists between the construction plan location of facilities and existing facilities promptly notify the Agency, who will arrange for relocations. Proceed in the same manner if rock layer or any other conditions encountered underground make changes advisable.

5. *Subsurface Condition: Where investigation of subsurface conditions has been made by a qualified Geotechnical and Environmental Sciences consultant in areas in which local materials may be obtained, the Contractor may request the use of such information, but will be directly responsible for its verification and accuracy.*

1.11 CONSTRUCTION OBSERVATION

1. *Notification and Access: At all times permit the Agency or its authorized agents to visit and observe the work or any part thereof. Maintain proper facilities and provide safe access for such observations to all parts of the work. Where the specifications require work to be tested, it shall not be covered up until tested or approved by the Agency and governing agencies. The Contractor shall be solely responsible for notifying the Agency's Authorized Representative forty-eight (48) hours notice minimum required, where and when such work is in readiness for approval, it shall, if so ordered, be uncovered at the Contractor's expense.*
2. *Observations required:*
 - a. *Preconstruction meeting.*
 - b. *Layout of control equipment and heads (All concrete headers to be installed prior to head layout).*
 - c. *Monitor grading to insure proper drainage prior to sod and plant installation.*
 - d. *Main line pressure test, sleeves and trench depth check. Mainline pressure test-150 PSI for 3 hours (prior to valve installation)*
 - e. *Lateral trench depth check, lateral lines and head assemblies.*
 - f. *Controller pedestal install and layout (Building and Safety inspects the actual meter pedestal)*
 - g. *Irrigation Controller unit install operation and certification.*
 - h. *Coverage test and prefinal observation. (The Agency's Authorized Representative and a City of Fontana Operation & Maintenance Inspector must be present. The Agency's authorized representative*

who will provide in writing the approval to proceed with the planting operation.)

- i. Finish grade should be 1 ½ “below all surrounding hardscapes.*
- j. All heads should be 1 ½ “above the finish grade.*
- k. Any heads in swales need to be removed.*
- l. No fixed risers in any traffic areas, they are only allowed against buildings and walls.*
- m. Inspect the installation of the sod to insure that there are no gaps between the pieces of sod.*
- n. Inspect plant material before it is installed into the ground, trees, shrubs, etc.*
- o. Check plant material and sod areas for any issues with settling dirt, missing or dead plants, and missing mulch.*
- p. When hydro seeding finish grade should be 1” below all hardscapes.*
- q. Inspect for root barriers along sidewalks.*
- r. Check root-ball location on all trees, the root ball should be at ground level.*
- s. Trees are required to have 4 ties each interlocking each other and every tree in the turf area must have an arbor guard. Also make sure trees are tied as the specifications state on the plans with two stakes at a 45° Angle toward the prevailing wind direction.*
- t. Inspect for concrete mow curbs, mow curb shall be placed between all grass and planter areas unless otherwise noted*
- u. All boxes should be set to surrounding grade to allow for easy maintenance and the box and valves need to be tagged properly.*
- v. Gravel needs to be in all irrigation boxes.*
- w. Inspect backflow cages and make sure that they have a secure lock box installed and a backflow certification has been completed.*

x. *Final observation.*

1. Make sure the whole job site is rid of any hazards that may pose a risk to the public.

2. Developer/contractor to perform a head to head coverage test on the turf and in all irrigation areas in the planters on final walk thru with the Engineering Public works inspector and a Landscape Technician from the Public Works Department.

1.12 COMPLETION

- A. *In judging the work, no allowance for deviation from the original plans and specifications will be made unless previously approved by the Agency.*
- B. *When any item appears on the plans and not in the specifications, or in the specifications and not on the plan, it shall be considered in both.*
- C. *The Agency or its authorized representative shall have the final authority on all items of the project.*

1.14 SERVICE BY THE CONTRACTOR

- A. *The Contractor shall service the system at the Agency's request during the guarantee period and shall be paid for work performed which is not covered by the guarantee. If requested by the Agency, the Contractor shall furnish the Agency with a schedule of service fees.*

PART 2 - PRODUCTS

2.01 MATERIALS

- A. *General: Use only new materials of brands and types noted on drawings, specified herein, or approved equals.*

2.02 PIPES AND FITTINGS

- A. ***Reclaimed Purple Pipe Shall be Used for All Applications to Make A Complete Reclaimed Water system***
- B. *Pressure Main Line Piping and Fittings: Pipe sizes two (2) inches or larger shall be P.V.C. Class 315 solvent weld type.*
- C. *Pressure Main Line Piping and Fittings: Pipe sizes smaller than two (2) inches shall be Scheduled 40 P.V.C.*
- D. *Sleeves or conduit lines: Shall be installed under all paving (asphalt concrete or concrete); shall be P.V.C. Schedule 40; shall be two times diameter of the pipe enclosed; shall be installed under paving a minimum 24 inches depth; shall have*

*separate sleeves for control wire, pressure mainline and non-pressure lateral line. Control wire sleeve size shall be as required to allow ample room for any future wire installation. (Twice the diameter of the wires to be sleeved, 1" diameter minimum sized sleeve). **Main line shall have a tracing wire for future locating and a plastic box at finish grade housing the tracing wire.***

E. *All pipe fittings shall conform to specific requirements as follows:*

1. *P.V.C. (Solvent Weld)*
 - a. *Reclaimed Purple Pipe: Manufactured from virgin polyvinyl chloride compound in accordance with ASTM D 1784 or ASTM D 2241, cell classification 12454B, hydrostatic design stress rating not less than two thousand (2,000) p.s.i.*
 - b. *Fittings (solvent weld or thread): Standard weight, Schedule 40, side gated, injected molded P.V.C. complying with ASTM D 1784, cell classification 13454B, including threads when required.*
2. *P.V.C. nipples shall be scheduled 80 with molded threads.*
3. *All P.V.C. pipe must bear the following markings:*
 - a. *Manufacturer's name*
 - b. *Nominal pipe size*
 - c. *Schedule or class*
 - d. *Pressure rating in A.S.T. (not required on drip tubing)*
 - e. *NSF (National Sanitation Foundation) approval (not required on drip tubing)*
 - f. *Date of extrusion*
4. *Brass Pipe & Fittings:*
 - a. *Brass pipe shall be eighty-five (85) percent red brass, American National Standard Institute (ANSI), Schedule 40 screwed pipe.*
 - b. *Fittings shall be medium brass, screwed 125-pound class.*
5. *Solvent cement and primer for P.V.C. solvent-weld pipe and fittings shall be of type and installation method prescribed by the manufacturer.*
6. *Where called for on drawings, pipe shall be bell end, conforming to ASTM D-2672. Install concrete thrust blocks as recommended in Johns-Manville installation guide no. TR-624, where conditions dictate.*

2.03 ELECTRIC (HIGH VOLTAGE)/ METER ENCLOSURE

- A. *All high voltage electrical service required for automatic controller and other equipment noted on drawing for irrigation system will be provided by Contractor.*
- B. *Enclosure and irrigation controller to be purchased from the approved contractor shown on the plans or the Construction specifications Provide approved type enclosure for meter, similar to that manufactured by V.I.P. Strong Box as specified on drawing. Enclosure shall be of adequate size to house automatic controller specified on drawing. Enclosure shall be stainless steel, minimum twelve (12) gauge in thickness. Exterior covers to be minimum fourteen (14) gauge steel and shall have padlocking provisions. All factory installed components shall be U.L. listed. All factory installed conductors shall be copper, size and type conform to NEC and U.L. requirements. Enclosure shall be furnished with a detachable sub-base with one-half (2) inch diameter bolts. Mounting bolts shall consist of one (1) zinc chromate primer and two (2) coats baked enamel paint.*
- C. *Electrical equipment installed outside building shall be NEMA 4 type.*
- D. *Pump starter. Provide flow switch of type as noted on drawing and connect to time delay switch and magnetic starter.*
- E. *All connections between electrical services and equipment shall be in rigid PVC or galvanized electrical conduit, with conduit and wiring size as required.*

2.04 ELECTRICAL (LOW VOLTAGE)

- A. *Connections between controller and remote-control valves shall be made with direct burial A WG-UF, 600-volt wire, insulation thickness three-sixty-fourths (3/64) inch, utilizing low density high molecular weight polyethylene insulation.*
- B. *Splices, where permitted, shall be waterproofed using Rain Bird, Pen-Tite Connectors or fusible heat shrinking tubing, and housed in a box. Boxes for other irrigation use may be utilized for this purpose.*
- C. *Wire sizing shall be a minimum of #14 "UF" 600-volt underground wiring, unless a shielded cable is used in which case #18 wire may be used. Common wire to be white in color, and all others a different color.*

Electrical control wire shall be AEF 14 AWG Type UP 600 volt (U.L.) direct burial. The wire shall be bundled, taped every ten (10) linear feet, placed adjacent to the main line. An eighteen (18") inch expansion loop will be provided for every change of direction greater than 45E.

The common wire shall be white, and the valve control wires shall be black and marked with numbered tags at both ends to identify the valve zones and controller.

The control wire shall be installed at a depth of 18" minimum below finish grade and sidewalk and sleeved 24" minimum below hard surfaces (i.e. driveways, parking lots, and 36" for streets) and backfilled with grey sand. At each electric control valve an expansion coil of twenty-four (24") inches minimum per wire shall be provided. The coil can be achieved by coiling (winding) the wire around a piece of 3/4 PVC pipe. At the controller pedestal, each control wire shall be twenty-four (24") inches longer than the required connection. The installed wire shall be neatly organized with the excess wire looped and secured to the bottom of the controller cabinet. The control wire shall be sleeved separately in SCH 40 PVC pipe sized to the number of wires to be sleeved (minimum 1" inch) under all hard surfaces.

When valve control wiring from two (2) different controllers is located within the same trench, the second controllers wiring shall be as follows:

Common Wire: White with a colored strip

Pilot Wire: Red with tags at each end identifying the controller with valve number and controller I.D.

Additional controller wiring in the same trench from a third, fourth, or more controllers shall be different in color for the pilot wires and the common wire shall be white with a different colored strip. The pilot wires shall be tagged identifying the valve and controller.

***4 Extra control pilot wires** will be installed at each controller to the terminal end. The extra wire(s) shall be looped a minimum of 48" up into each valve box. The extra wires will be identified as extra and numbered with tags at each valve box.*

All valve control wiring shall be continuous runs. Splicing of wire is unacceptable and will be rejected, unless otherwise approved by the City Landscape Inspector.

2.05 GATE VALVES

- A. *Three (3) inches and smaller (unless otherwise noted on Drawings): ASTM B-62 brass body, 150-pound saturated steam rated; with screwed joints; non-rising stem; screwed bonnet, solid disc. Provide with hand wheel.*

- B. *Four (4) inches and larger (unless otherwise noted on Drawings): ASTM A126 Class B, iron body 150-pound w.o.g. with flanged joints, non-rising stem, bolted bonnet, and double disc. Provide with hand wheel.*
- C. *Gate valves shall be NIBCO or Hammond brands or approved equal.*

2.06 QUICK COUPLING VALVES

- A. *Brass body, 150-pound class, with three-fourths (3/4) inch female threads opening at base, permitting operation with a special connecting device (coupler) designed for this purpose. [Rain Bird #33DNP or equal].*
 - 1. *Coupler threads: lug type*
 - 2. *Hinge cover: Provide with rubber-like vinyl cover.*
- B. *Quick coupler(s) shall be installed within a ten (10) inch round lockable plastic valve box placed a maximum of 150 lineal feet apart.*
- C. *Quick coupler(s) shall be supported with a SCH 40 PVC pipe stake or equal of adequate length. The quick coupler shall be attached to the metal stake with two (2) stainless steel hose clamps.*
- D. *The quick coupler shall be attached to the main line via a triple swing assembly.*

2.07 BACKFLOW PREVENTION UNITS

- A. *Backflow preventer design to operate on a "reduced pressure" principle; equipped with gate valves and field test cock.*
- B. *Wye strainers in backflow prevention units shall be 125# class cast brass with forty (40) mesh Monel screen, unless otherwise noted on drawing.*
- C. *The backflow unit shall be housed in a protective housing as noted on drawing or equal as approved by the City.*
- D. *Backflow device shall be Per City Std Plan Number 5007*

Wilkins 375XL lead free Plastic Backflow Preventer

Wilkins 500XL Pressure Regulator Low Range for pressures from 0 PSI to 75 PSI led free

Wilkins 600XL Pressure Regulator High Range for pressures from 75 PSI to 120 PSI led free

Install EZ-Flo fertilizing system EZ0XX-HC install directly in the irrigation mainline after the backflow preventer. SIZED PER STD 5007.

2.08 AUTOMATIC CONTROLLER

- A. Toro Sentinel controller installed in an approved stainless-steel Edison meter box enclosure. Contact **Imperial Sprinkler Supply** with the following numbers for the City of Fontana meter/controller.

Fontana part # for a 48 station controller

SBW48SS5U

Contact: **Imperial Sprinkler Supply** Phone # (714) 696-7535

2.09 REMOTE CONTROL VALVES

- A. Valve type: spring-loaded, pack less diaphragm activated, normally closed type with brass body, equipped with flow control and pressure regulation. Electric valves shall be Rain Bird with pressure regulator capabilities or approved equal.
- B. Valve solenoid: 24-volt a.c. 4.5 watt maximum, 500 mili-amp maximum surge, corrosion-proof, stainless steel construction, epoxy encapsulated to form a single integral unit.
- C. Provide bleeder valve to permit operation in the field without power at the controller.
- D. Valves shall be installed a minimum of six (6) feet from all fixed objects and twenty-four (24) inches apart. [One (1) valve per box; valve boxes shall be installed a minimum of twelve (24) inches apart].
- E. Valves shall not be installed in a manifold configuration unless otherwise noted on approved plans.
- G. Valves for planted annual color beds shall be on a separate valve
- F. FLOMEC Flow sensors that detect flow conditions created by system damage or malfunction are required for all on non-residential landscapes, residential landscapes of 5000 sq. ft. or larger, and CFD's and must be connected to the controller. See Std Dwg# 5010 for details
- H. To greatly reduce any water loss due to a leaking station valve. Rain bird, master shut-off valves are required to be installed at the irrigation supply point which controls water flow into the irrigation system and must be connected to the controller. See Std Dwg# 5010 for details

2.10 SMALL LAWN SPRINKLER HEADS – RAIN BIRD 1800

- A. *Sprinklers shall be similar in all respects to type noted in legend on drawing.*
- B. *Nozzle shall rise a minimum of 6 inches.*
- C. *All sprinkler bodies or nozzles shall be equipped with a built-in check valve for eliminating low head drainage.*
- D. *The sprinkler heads shall be attached to the lateral lines via a triple swing assembly.*

2.11 SMALL SHRUBBERY SPRINKLER HEADS – RAIN BIRD 1800

- A. *Sprinklers shall be similar in all respects to type noted on drawing.*

2.12 ROTARY SPRINKLER HEADS Rain Bird Falcon 5000

- A. *Type: gear driven, with pop-up sprinkler heads equipped with built-in check valves.*
- B. *Part circle heads shall have variable arc setting.*
- C. *Rotary sprinkler heads shall be attached to the lateral lines via a triple swing assembly.*

2.13 VALVE BOXES

- A. *Carson Brand Valve boxes shall be fabricated from a durable plastic material resistant to weather, sunlight and chemical action of soils with **Purple** covers.*
- B. *Remote control valve and flow sensor boxes shall be **Purple** rectangular lockable plastic boxes (12" x 18") AMETEK or approved equal, with hinged snap covers.*
- C. *Gate valve boxes shall be **Purple** ten (10) inch round lockable plastic boxes with exterior as required to properly protect valve, AMETEK or approved equal.*

2.14 TREE IRRIGATORS (DRIP/BUBBLERS)

- A. *Provide assemblies as indicated on drawings, including vents.*

2.15 PUMPS (All Pumps to be Variable Speed)

- A. *Provide pump with capacity and total dynamic head as noted on drawing.*

- B. *Booster package shall be mounted on a common steel base with all interconnecting piping and wiring completed prior to shipment.*
- C. *Booster station shall be complete with a flange, suction and discharges. Bronze fitted close coupled centrifugal pump with HP, voltage, and cycle as noted on drawing. Unit to be completed with a Simplex UL listed control panel in NEMA 3 weather proof enclosure with magnetic starter. Fusible disconnect switch, HOA selector switch, control transformer, and relays as required.*
- D. *Booster pump station shall be completely enclosed in a 14 gauge enclosure, of a size to fit pump, fittings, and control panel as shown in detail. If not stainless steel the unit will be painted with two coats of Rust-o-leum, HUNTER green color. Mechanical hinges shall be installed for support of lid.*
- E. *Pumps shall be controlled by the following:*
 - 1. *Pressure switch with minimum run timer mounted inside electrical panel with two contact points Mercoïd DP Series.*
 - 2. *Flow switch.*
- F. *The pump shall be equipped with the following additional controls:*
 - 1. *Low suction pressure shut down.*
 - 2. *High discharge pressure shut down.*
- G. *Retain a factory-trained representative to check installation and perform start-up services, including adjustment of all equipment.*

2.16 RAIN BIRD XF SERIES DRIP IRRIGATION

- A. *Provide all labor, materials, supplies, equipment, tools, and transportation, and perform all operations in connection with and reasonably incidental to the complete installation of the XF SERIES drip irrigation system that is applicable to the application, as shown on the drawings, the installation details, and as specified within the manufactures requirements and specifications for the applicable applications for the type of drip system chosen.*

PART 3 - EXECUTION

3.01 SITE CONDITIONS

- A. *All scaled dimensions are approximate. The Contractor shall check and verify all size dimensions and receive Agency's Authorized Representative's approval prior to proceeding with work under this section.*
- B. *USA/Dig Alert (1-800-422-4133) shall be contacted, and all utility lines marked prior to excavating. Exercise extreme care in excavating and working near existing utilities. Contractor shall be responsible for damages to utilities which are caused by his operations or neglect. Check existing utilities drawings for existing utility locations.*
- C. *Coordinate installation of sprinkler irrigation materials including pipe, so there will be No interference with utilities or other construction or difficulty in planting trees, shrubs, and ground covers.*
- D. *The Contractor shall carefully check all grades to satisfy themselves that they may safely proceed before starting work on the sprinkler irrigation system.*
- E. *Discrepancies:*
 - 1. *In the event of discrepancy, immediately notify the Agency's Authorized Representative.*
 - 2. *Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.*

3.02 PREPARATION

- A. *Water Supply:*
 - 1. *The Contractor will provide new meters and is responsible for obtaining all permits and the installation of the meters.*
 - 2. *Sprinkler irrigation system shall be connected to water supply points of connection as indicated on the drawings.*
 - 3. *Connections shall be made at approximate locations as shown on drawings. Contractor is responsible for minor changes (plus or minus 20 feet) caused by actual site conditions.*
- B. *Observation Schedule:*
 - 1. *Contractor shall be responsible for notifying the Agency's Authorized Representative in advance for the following observation meetings, according to the time indicated:*

- a. *Pre-Construction Meeting - five (5) days.*
 - b. *Pressure supply line installation, sleeves and testing - seventy-two (72) hours.*
 - c. *Control wire installation and sleeves - seventy-two (72) hours.*
 - d. *Lateral line, sleeves and sprinkler installation - seventy-two (72) hours.*
 - g. *Final site review - five (5) days.*
2. *When observations have been conducted by other than the Agency's Authorized Representative, show evidence in writing and photos of when and by whom these observations were made.*
 3. *At all times maintain a current and updated set of plans on the job site. No site observations will commence without record drawings. In the event the Contractor calls for a site visit without preparing the system for said visit, he shall be responsible for reimbursing the Agency's Authorized Representative at his current billing rates per hour, portal to portal, (plus transportation costs) for inconvenience. No further site visits will be scheduled until this charge has been paid and received.*

C. Physical Layout:

1. *All piping or equipment shown diagrammatically on drawings outside planting areas shall be installed inside planting area whenever possible and to exact dimensions as noted in construction details.*

3.03 INSTALLATION

A. General:

1. *All plastic pipe and fittings shall be installed in complete accord with manufacturer instructions for same.*
2. *If gasket type pipe and/or any pipe is larger than two and one half (2-1/2) inches is used, provide concrete thrust blocks at each change of direction and at terminal points of all rubber gasket piping. Block in accord with pipe manufacturer's instructions.*

3. *Line Clearance: All lines shall have a minimum clearance of six (6) inches from each other and from lines of other trades. Parallel lines shall not be installed directly over one another.*

B. Trenching:

1. *Depth of trenches shall be sufficient to provide a minimum cover above the top of the pipe as follows:*
 - a. *Fourteen (14) inches over non-pressure rotor pop-up lines (minimum).*
 - b. *Twelve (12) inches over non-pressure lateral lines (minimum).*
 - c. *Eighteen (18) inches over potable sprinkler mainline.*
 - d. *Twenty-four (24) inches cover minimum over pipe serving a drinking fountain or pressure sprinkler mainline three (3) inches and larger.*
 - e. *Where pipe and/or control wiring crosses under paving, it shall be sleeved separately twenty-four (24) inches below sub grade. **All crossings shall have trace wires and 3" Letters IX for irrigation crossing etched on the curb as well as an 8" round box with the tracing wire coiled in the box. Location to be approved by the City inspector.***
 - f. *Surplus earth remaining after backfilling shall be disposed of on/off the premises as directed by the Agency.*
 - g. *Eighteen (18) inches cover over control wires (minimum).*
2. *Trench bottom shall be flat to ensure piping is supported continuously on an even grade with **3"** sand bedding.*
3. *Where lines occur under paved areas, consider dimension to be below the subgrade.*
4. *Excavate trenches to required depths. Follow approved layout for each system.*

C. Backfilling:

1. *Buried pipe in trenches shall be center loaded only until all required tests are performed. Trenches shall be carefully backfilled with the excavated materials approved for backfilling, consisting of earth, loam, sandy clay, sand, or other approved materials, free from large clods of earth or stones. Backfill shall be mechanically compacted in landscaped areas to a dry density equal to adjacent undisturbed soil in planting areas. Backfill will conform to adjacent grades without dips, sunken areas, humps or other surface irregularities.*
2. *A fine granular material backfill will be initially placed on all lines. No foreign matter larger than one half (2) inch in size will be permitted in the initial 6" of backfill measured from the top of the pipe. Two (2) inch rock screening of backfill material is acceptable.*
3. *Flooding of trenches will be permitted only with approval of the Agency's Authorized Representative.*
4. *If settlement occurs and subsequent adjustments in pipe, valves, sprinkler heads, lawn or planting areas, or other construction are necessary, the Contractor shall make all required adjustments without cost to the Agency.*

D. Trenching and Backfill Under Paving:

1. *Trenches located under areas where paving, asphaltic concrete or concrete will be installed shall be backfilled with sand (a layer three (3) inches below the pipe and six (6) inches above the pipe), and compacted in layers to (95) percent compaction using manual or mechanical tamping devices. Trenches for piping shall be compacted to equal the compaction of the existing adjacent undisturbed soil and shall be left in a firm unyielding condition. All trenches shall be left flush with the adjoining grade. The Sprinkler Irrigation Contractor shall set in place sleeves, cap and pressure test all piping under paving prior to paving work.*
2. *Piping under existing walks is generally done by jacking, boring or hydraulic driving. Any cutting or breaking of sidewalks and/or concrete necessary shall be performed by the Contractor, and paving replaced in kind as a part of the contract cost. Permission to cut or break sidewalks and/or concrete shall be obtained from the Agency's Authorized Representative. No hydraulic driving will be permitted under asphaltic concrete paving.*
3. *Coordinate installation of sleeves for piping and wires under paved areas with General Contractor.*
4. *The installing contractor will install sleeves for future installation of water lines and wires unless otherwise noted.*

E. Assemblies:

1. *Routing of sprinkler irrigation lines as indicated on the drawings is diagrammatic. Install lines (and various assemblies) in such a manner as to conform to the details per plans.*
2. *Install NO multiple assemblies in plastic lines. Provide each assembly with its own outlet.*
3. *Install all assemblies specified herein in accordance with respective detail. In absence of detail drawings or specification pertaining to specific items required to complete work, perform such work in accordance with best standard practice, with prior approval from Agency's Authorized Representative.*
4. *P.V.C. pipe and fittings shall be thoroughly cleaned of dirt, dust and moisture before installation. Installation and solvent welding methods shall be as recommended by the pipe and fitting manufacturer.*
5. *On P.V.C. to metal connections, the Contractor shall work the metal connections first. Teflon tape or approved equal shall be used on all threaded P.V.C. to P.V.C., and on all threaded P.V.C. to metal joints. Light wrench pressure is all that is required. Where threaded P.V.C. connections are required, use the threaded P.V.C. adapters into which the pipe may be welded.*
6. *Quick coupling valves: Unless otherwise indicated, locate valves within twelve (12) inches of hardscape.*
7. *Install backflow assemblies in shrub areas at minimum height permitted by local codes, unless otherwise approved.*
8. *All major equipment shall be verified for exact location with the Agency's Authorized Representative.*

F. Automatic Controller:

1. *Install as per manufacturer's instructions. Remote control valves shall be connected to controller in numerical sequence as shown on drawings.*
2. *Controller shall be mounted inside the electrical pedestal.*

G. Flushing System:

1. *After all new sprinkler pipe lines and risers are in place and connected, all necessary diversion work has been completed, and prior to installation of sprinkler heads, the control valves shall be opened, and full head of water used to flush out the system.*

2. *Sprinkler heads shall be installed only after flushing of the system has been accomplished to the complete satisfaction of the Agency's Authorized Representative.*

H. *Sprinkler Heads:*

1. *Install the sprinkler heads as designated on the drawings and in accordance with their respective detail.*
2. *Spacing of heads shall not exceed the maximum indicated on the drawings. In no case shall the spacing exceed the maximum recommended by the manufacturer.*
3. *The Contractor is responsible for the placement of heads to achieve head to head coverage.*

I. *Valve Boxes:*

1. *All buried valves and equipment shall be installed with a proper box.*
2. *Fill area under box with a minimum of three (3) cubic feet of three-fourths (3/4) inch gravel before box is installed.*
3. *Identification tags shall be attached to each remote-control valve, showing number that corresponds with controller sequence. Tags shall be manufactured of polyurethane Behr Desopaid, purple in color with black letters two and three-fourths (2-3/4) inches by two and one-fourth (2-1/4) inches.*
4. *Brand valve box covers in four (4) inch high numbers that corresponds to sequencing shown on drawings.*

J. *Electrical Supply:*

1. *220-volt electrical service for pump shall be provided for by Contractor.*
2. *Low voltage wiring shall be placed in the same trench and along side of main lines unless otherwise approved.*
3. *When more than one wire is placed in a trench, tape wires together at a maximum ten (10) feet on center.*
4. *Provide an eighteen (18) inch expansion loop at each directional change, and a twenty-four (24) inch coil at each connection.*
5. *Use a continuous wire between controller and remote-control valves. Except as otherwise approved, do not splice at any point. All approved splices shall be enclosed in an acceptable box.*
6. *Each controller shall be provided with separate ground wire.*

K. Control Wires:

1. *All electrical equipment and wiring shall comply with local and state codes and be installed by those skilled and licensed in the trade. Unless the governing code specifies otherwise, low voltage control wire may be installed by the sprinkler irrigation Contractor.*
2. *Connecting and splicing of wire at the valves shall be made using Pen-Tite Connectors, Scotch-Lok, or approved equal. No other splices will be allowed.*
3. *Tape all control wire to the side of all mains at ten (10) foot intervals.*

3.04 FIELD QUALITY CONTROL

A. Adjustment of the System:

1. *The Contractor shall adjust all sprinkler heads and valves for optimum performance and to prevent as much as possible any overspray onto walks and roadways. No spray is permitted on buildings.*
2. *If it is determined that adjustments in the irrigation equipment will provide proper and more adequate coverage, the Contractor shall make such adjustments prior to planting. Adjustments may include changes in nozzle sizes, trajectory of spray or degrees of arc, as required.*
3. *All sprinkler heads shall be set perpendicular to finished grades unless otherwise designated on the plans and at height and distance from walks, buildings, etc., as noted.*

B. *The Contractor is responsible for protecting all existing landscaping. Any existing landscaping removed shall be properly replaced, including any sod.*

C. Testing of Irrigation System:

1. *Test all pressure lines under hydrostatic pressure at one hundred fifty (150) pounds per square inch or fifty (50) pounds per square inch more than the normal static pressure (whichever is greater) and prove watertight. Note: This test must be performed prior to paving and must hold pressure on a pressure gauge for **three (3) hours**.*
2. *Testing of pressure main lines occur prior to installation of electrical control valves, quick couplers or any other equipment that might prevent a proper test from being performed.*
3. *All piping under paved main lines shall be tested under hydrostatic pressure of one hundred fifty (150) pounds per square inch or fifty (50) pounds per square inch more than normal static pressure (whichever is greater) and*

*proved watertight. Note: This test must be performed prior to paving and must hold pressure on a pressure gauge for **three (3) hours**.*

- 4. Sustain pressure in lines for not less than three (3) hours. If leaks develop, replace joints and repeat test until entire system is proved watertight.*
- 5. All hydrostatic tests shall be made only in the presence of the Agency's Authorized Representative, or other duly authorized representative of the Agency. No pipe shall be completely backfilled until it has been inspected, tested and approved in writing.*
- 6. Furnish necessary pressure force pump and all other test equipment.*
- 7. When the sprinkler irrigation system is completed, perform a coverage test in the presence of the Agency's Authorized Representative, to determine if the water coverage for planting areas is complete and adequate. Furnish all materials and perform all work required to correct any inadequacies of coverage due to deviations from plans, or where the system has been willfully installed as indicated on the drawings when it is obviously inadequate, without bringing this to the attention of the Agency's Authorized Representative. This test shall be accomplished and passed before any ground cover of turf is planted.*
- 8. Upon completion of each phase of work, entire system shall be tested and adjusted to meet site requirements.*
- 9. Low voltage wiring under paving shall be tested for continuity, prior to paving when over fifty (50) feet.*
- 10. No planting of trees, shrubs, ground cover or turf shall be installed prior to approval of the irrigation coverage test by the Agency's Authorized Representative.*

3.05 MAINTENANCE

- A. The entire sprinkler irrigation system shall be under fully automatic operation for a period of seven days prior to any planting.*
- B. The Agency's Authorized Representative reserves the right to waive or shorten the operation period.*
- C. After the maintenance period, the Contractor shall demonstrate in the presence of the Agency's Authorized Representative the system is in perfect operating order.*

3.06 CLEAN-UP

- A. Clean-up shall be performed as each portion of the work progresses. Refuse and excess dirt shall be removed from the site, all walks and paving shall be washed*

down, and any damage sustained to the work of others shall be repaired and work of others shall be repaired, and work returned to its original condition.

3.07 OPERATING INSTRUCTIONS

- A. *The Contractor shall be required to train Agency's maintenance personnel in proper operation of all major equipment. Provide written evidence of the person or persons so trained to the Agency's Authorized Representative.*

3.08 EXISTING TREES

- A. *When it is necessary to excavate adjacent to existing trees, use all possible care to avoid injury to tree trunk, branches and tree roots. Excavation in areas where two (2) inch and larger roots occur shall be done by hand. All roots two (2) inches and larger in diameter shall be tunneled under and shall be heavily wrapped with burlap, to prevent scarring or excessive drying. Where a ditching machine is run close to trees having roots smaller than two (2) inches in diameter, the wall of the trench adjacent to the tree shall be hand trimmed, making clean cuts. Roots one (1) inch and larger in diameter shall be painted with two (2) coats of Tree Seal, or approved equivalent. Trenches adjacent to tree should be backfilled within twenty-four (24) hours. Where this is not possible, the side of the trench adjacent to the tree shall be kept shaded with burlap or canvas.*

END OF IRRIGATION SYSTEM SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Related Requirement: Review the General Conditions, Standard Specifications, Special Provisions, and the City of Fontana Park Design Standards which contain information and requirements that apply to this Section.
- a. Refer to the City Of Fontana Park Design Standards Manual. Please contact City of Fontana's Public Works Department's Landscape Division for the current up to date information as it pertains to your project.
- Public Works Department Contact Info: Luis Villalobos at 909-350-6776 or lvillalobos@fontana.org
- B. Work Included: Provide site and street furnishings complete, as shown, and as specified.
- C. Related Work in Other Sections:

1.02 QUALITY ASSURANCE

- A. Applicable Standards: Any reference to the "Standard Specifications" or "ASTM" shall mean the current or latest editions as described below:
1. "Standard Specifications" - "Standard Specifications for Public Works Construction": 2015 Edition; Southern California Chapter, American Public Works Association and Southern California Districts Associated General Contractors of California.
 2. "ASTM" - American Society for Testing and Materials
- B. Compatibility With Adjacent Materials: Verify that all site furnishings are compatible with adjacent site improvements by others, and that their installation shall not adversely affect either the site furnishings of existing or proposed site improvements.

1.03 SUBMITTALS

- A. Samples and Product Data: Submit samples or manufacturer's current literature for the following items:
1. Color and finish for each type of furnishing.
 2. Installation instructions and recommendations for general maintenance.

- B. Test Data: Copies of all applicable laboratory test data and reports.
- C. Shop Drawings: All site furnishings being installed or fabricated by Contractor.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Labeling: Furnish all materials in manufacturer's unopened, original containers, bearing original labels showing quantity, description and name of manufacturer.
- B. Delivery: Deliver and unload at the site on pallets and bound in such a manner that no damage occurs to the product.
- C. Storage: Store products in a manner which will preclude all damages. Damaged materials will be rejected. Remove all damaged materials from the job site immediately and replace at no cost to the Agency.
- D. Handling: Furnish suitable equipment to locate all site furnishing materials carefully and efficiently. Lift materials using lifting inserts provided by manufacturer where applicable.

PART 2 - PRODUCTS

2.01 PREFABRICATED MATERIALS

A. Refer to the City of Fontana Park Design Standards Manual. Please contact City of Fontana's Public Works Department's Landscape Division for the current up to date information as it pertains to your project.

Public Works Department Contact Info: Luis Villalobos at 909-350-6776
Lvillalobos@fontana.org

PART 3 - EXECUTION

3.01 GENERAL

- A. Acceptance: Do not install site and street furnishings prior to acceptance by Agency's Authorized Representative of area to receive such materials.
- B. Locations: Install as directed and as shown on the Drawings.
- C. Special Precautions: Guard against staining or damaging of existing pavements and plantings where site furnishings are to be installed.

3.02 CONCRETE PADS AND FOOTINGS

- A. Layout: Accurately layout all pads and footings as called for in the Drawings.

- B. Installation: Excavation form as required and fill for pads and footings as specified

3.03 CLEAN-UP

- A. Keep all areas of work clean, neat and orderly at all times.
- B. Clean up and remove all debris from the entire work area to satisfaction of Agency's Authorized Representative prior to Final Acceptance.

END OF SITE AND STREET FURNISHINGS SECTION

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Related Requirements: Review the General Conditions, Standard Specifications and Special Provisions, which contain information and requirements that apply to this Section.
- B. Work Included: Provide all products and execute all labor to achieve soil preparation, complete as shown and as specified.
- C. Related Work in Other Sections:
 - Irrigation System - Section 02810
 - Lawns and Grasses - Section 02930
 - Trees, Shrubs, and Ground Covers - Section 02950
 - Landscape Maintenance - Section 02970

1.02 QUALITY ASSURANCE

- A. Applicable Standards: General Conditions, Special Provisions,
- B. Provide certificates of inspection required by law for transportation with invoice. File copies of certificates with Agency's Authorized Representative after acceptance of material. Inspection by governmental officials at point of origin does not preclude rejection of materials at project site.

1.03 SUBMITTALS

SOILS MANAGEMENT PLAN REQUIREMENTS:

1. IN ORDER TO REDUCE RUNOFF AND ENCOURAGE HEALTHY PLANT GROWTH, A SOIL MANAGEMENT REPORT SHALL BE COMPLETED BY THE PROJECT APPLICANT, OR HIS/HER DESIGNEE, AS FOLLOWS:
 - A. SUBMIT SOIL SAMPLES TO A LABORATORY FOR ANALYSIS AND RECOMMENDATIONS.
 - B. SOIL SAMPLING SHALL BE CONDUCTED IN ACCORDANCE WITH LABORATORY PROTOCOL, INCLUDING PROTOCOLS REGARDING ADEQUATE SAMPLING DEPTH FOR THE INTENDED PLANTS.

2. THE SOIL ANALYSIS SHALL INCLUDE:
 - A. SOIL TEXTURE
 - B. INFILTRATION RATE DETERMINED BY LABORATORY TEST OR SOIL TEXTURE INFILTRATION RATE TABLE
 - C. PH
 - D. TOTAL SOLUBLE SALTS
 - E. SODIUM
 - F. PERCENT ORGANIC MATTER
 - G. AND RECOMMENDATIONS.

3. IN PROJECTS WITH MULTIPLE LANDSCAPE INSTALLATIONS (I.E. PRODUCTION HOME DEVELOPMENTS) A SOIL SAMPLING RATE OF 1 IN 7 LOTS OR APPROXIMATELY 15% WILL SATISFY THIS REQUIREMENT. LARGE LANDSCAPE PROJECTS SHALL SAMPLE AT A RATE EQUIVALENT TO 1 IN 7 LOTS.

4. THE PROJECT APPLICANT, OR HIS/HER DESIGNEE, SHALL COMPLY WITH ONE OF THE FOLLOWING:
 - A. IF SIGNIFICANT MASS GRADING IS NOT PLANNED, THE SOIL ANALYSIS REPORT SHALL BE SUBMITTED TO THE CITY AS PART OF THE LANDSCAPE DOCUMENTATION PACKAGE

 - B. OR IF SIGNIFICANT MASS GRADING IS PLANNED, THE SOIL MANAGEMENT REPORT SHALL BE MADE AVAILABLE TO THE CITY INSPECTOR DESIGNATED BY THE CITY ENGINEER, AND TO THE LANDSCAPE CONTRACTOR PRIOR TO THE INSTALLATION OF ANY PLANT MATERIAL, AND SUBMITTED WITH THE CERTIFICATE OF COMPLETION

5. Samples and Product Data: Prior to delivery to site, submit samples and manufacturer's literature to the Agency Authorized Representative for the following items:
 1. Organic Amendments: One (1) pint for each type
 2. Topsoil: One-half (2) pound
 3. Soil Mixes: One-half (2) pound for each type
 4. Sand: One-half (2) pound
 5. Chemical Additives: One (1) pint for each type
 - B. Test Data: Submit all laboratory test data for all materials.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Labeling: Furnish standard products in unopened manufacturer's standard containers bearing original labels showing quantity, analysis and name of manufacturer.
- B. Storage: Store products with protection from weather or other conditions which would damage or impair the effectiveness of the product.

1.05 ANALYSES OF SAMPLES AND TESTS

- A. Sampling: Agency's Authorized Representative reserves the right to take and analyze samples of materials for conformity to specifications at any time. Furnish samples upon request by Agency's Authorized Representative.
- B. Rejected Materials: Remove rejected materials immediately from the site at Contractor's expense.
- C. Testing: Pay cost of testing of materials not meeting specifications.

1.06 PRE-PLANT REVIEW

- A. Acceptance: Work will be accepted by the Agency's Authorized Representative upon satisfactory completion of all soil preparation work.
- B. Notification: Notify Agency's Authorized Representative forty-eight (48) hours in advance for review of soil preparation prior to proceeding with planting operations.

PART 2 - PRODUCTS

2.01 TOPSOIL

- A. General Qualifications: Soil Preparation

1. Prior to planting **compacted** soil SHALL be transformed to a friable condition

2. In addition to the required soil amendments Install Compost at a minimum rate of four cubic yards per 1,000 square feet of permeable area SHALL be incorporated to a depth of 6 inches into soil
3. Composition: Use only fertile, friable, well-drained soil, of uniform quality, free of stones over 1 in. diameter, sticks, oils, chemicals, plaster, concrete and other deleterious materials, as a planting medium for the project and as per the Public Works Inspectors direction.
 2. Testing:
 - a. Parasites: Test all soils which have been previously used for agriculture forenmatodes. It shall be acceptable if the parasites nematode population is less than two hundred (200) per five (5) cubic centimeters of soil. Do not artificially dry soil prior to testing.
 - b. Herbicide: Perform a radish/ryegrass growth trial if herbicide contamination is suspected. Consult with Agency's Authorized Representative prior to testing.
 - B. Existing Soil to be Amended: Inspect existing soil and do all work necessary to bring it to standards specified under "General Qualifications" above. Amend as specified herein.

2.02 ORGANIC AMENDMENTS

- A. Nitrogen-Treated Sawdust: Derived from redwood, fir, or cedar sawdust.

1. Physical Properties:

<u>Percent Passing</u>	<u>Sieve Size</u>
95-100	6.35 mm (1/4")
80-100	2.38 mm (#8, * mesh)
0-30	500 microns (#35, 32 mesh)

2. Chemical Properties:

Nitrogen Content (dry weight basis):

Wood of Redwood - 0.4-0.6%

Wood of Fir/Cedar - 0.56-0.84%

Iron Content (dry weight basis):

Minimum 0.08% iron as metallic

Soluble Salts: Maximum 3.5 milliohms/am twenty-five (25) degrees Celsius as determined by saturation extract method.

Ash (dry weight basis): 0.6.0%

3. Wettability:

- a. The air-dry product shall, when applied to a cup or smaller beaker of water at seventy (70) degrees Fahrenheit in the amount of 1 teaspoon, become completely wet in a period not exceeding two (2) minutes.
- b. Guarantee all wetting agents added to accomplish this to be non-phytotoxic at rate used.

2.03 COMMERCIAL FERTILIZERS

A. Pre-Plant Fertilizer: Mixed by a commercial fertilizer supplier and consisting of the following percent by weight:

Six (6) Percent	Nitrogen
Twenty (20) Percent	Phosphorus
Twenty (20) Percent	Potash

2.04 CHEMICAL ADDITIVES

A. Ground Limestone: Agricultural limestone containing not less than eighty-five (85) percent of total carbonates, ground to such fineness that fifty (50) percent will pass #100 sieve and ninety (90) percent will pass #20 sieve.

B. Dolomite Line: Agricultural grade mineral soil conditioner containing thirty-five (35) percent minimum magnesium carbonate and forty-nine (49) percent minimum calcium carbonate, one hundred (100) percent passing \$65 sieve. "Kaiser Dolomite 65 AG" as manufactured by Kaiser, Inc., Mineral Products Department, or equal.

C. Gypsum: Agricultural grade product containing eighty (80) percent minimum calcium sulfate.

D. Iron Sulfate: (Ferric or Ferrous): Supplied by a commercial fertilizer supplier, containing twenty (20) percent to thirty (30) percent iron and thirty-five (35) percent to forty (40) percent sulphur.

- E. Sulfate of Potash: Agricultural grade containing (50) percent to fifty-three percent of water-soluble potash.
- F. Single Superphosphate: Commercial product containing approximately twenty (20) percent to twenty-five (25) percent available phosphoric acid
- G. Ammonium Sulfate: Commercial product containing approximately twenty-one (21) percent ammonia.
- H. Ammonium Nitrate: Commercial product containing approximately thirty-four (34) percent ammonia.
- I. Calcium Nitrate: Agricultural grade containing fifteen and one-half (15-1/2) percent nitrogen.
- J. Urea Formaldehyde: Granular commercial product containing thirty-eight (38) nitrogen.
- K. I.B.D.U. (iso Butyldiene Diurea): Commercial product containing thirty-one (31) percent nitrogen.
- L. Soil Sulfur: Agricultural grade sulfur containing a minimum of ninety-six (96) percent sulfur.
- M. Iron Sequestrene: Geigy Iron Sequestrene 330 Fe.

2.05 WATER

- A. Clean, fresh and potable, furnished and paid for by the **contractor** until Final City Acceptance. Applications must be filled out with the subsequent water company within the project area.

PART 3 - EXECUTION

3.01 SOIL PREPARATION

- A. General:
 - 1. Moisture Content: Do not work soil when moisture content is so dry that dust will form in air that clods will not break readily. Apply water, if necessary, to bring soil to an optimum moisture content of tilling and planting.
- B. Preparation of Existing Soil:

1. Verification of Existing Grades: Verify that grades are within plus or minus one tenth of one foot of the required finished grades. Report all variations immediately to the Agency's Authorized Representative.
2. Prior to planting **compacted** soil SHALL be transformed to a friable condition
3. **Install Compost at a minimum rate of four cubic yards per 1,000 square feet of permeable area SHALL be incorporated to a depth of 6 inches into soil**
4. Cultivation: Rip or cultivate all planting areas to a depth of six (6) inches immediately prior to amending existing soil, except for slope areas 2:1 or greater.
5. Cleaning of Debris: After installing trees, shrubs and finish grading, but prior to the installation of the turf clear areas of stones $\frac{3}{4}$ " inches diameter and larger from the surface. Also, remove all weeds, debris and other extraneous materials prior to amending existing soil.
6. Trees to Remain: Hand cultivate within the drip line of existing trees to remain. Depth of cultivation shall not exceed two (2) inches. Cultivate immediately prior to amending existing soil.
7. All rocks and debris generated in the preparation of soil shall be disposed of in a legal manor by the contractor at the contractor's expense.

3.02 SOIL CONDITIONING

A. Amending of Existing Soil (all areas less than 2:1 slopes):

1. Prior to planting **compacted** soil SHALL be transformed to a friable condition
2. **Install on all projects Compost at a minimum rate of four cubic yards per 1,000 square feet of permeable area SHALL be incorporated to a depth of 6 inches into soil**
3. Areas to Receive Hydro seeding: Delete pre-plant fertilizer.
4. Incorporation of Amendments: Incorporate thoroughly within top six (6) inches of soil layer and bring amended soil to finish grades and elevation shown on drawings. Do not work soils under muddy conditions.

B. Backfill Mix for On-Grade Plant Pits:

1. Composition:
 Sixty (60) percent Native Soil excavated from plant pit
 Forty (40) percent Nitrogen-treated sawdust

One (1) lb. 12-12-12 cubic yard of mix

Two (2) lbs. Iron Sulfate per cubic yard of mix

One (1) lb. Urea Formaldehyde per cubic yard of mix

2. *Intent: The above amendments and quantities are approximate and are for bidding purposes only. Following on site topsoil analysis for agricultural suitability (paid for by Contractor) by an approved Soils and Plant Laboratory, composition of amendments may change. Contract price will be adjusted accordingly.*

3.03 DRAINAGE OF PLANTING AREAS

- A. *Surface Drainage: All planting areas shall have positive drainage towards drains and/or street curbs. Contractor shall verify that no standing water will occur.*
- B. *Detrimental Drainage, Soils, and Obstructions:*
 1. *Notification: Submit in writing all soils or drainage conditions considered detrimental to growth of plant materials. State condition and proposal and cost estimate for correcting condition.*
 2. *Correction: Submit for acceptance a written proposal and cost estimate for the correction before proceeding with work.*

3.04 CLEAN-UP

- A. *Keep all areas of work, clean, neat and orderly at all times.*
- B. *Clean up and remove all deleterious materials and debris from the entire work area prior to Final Acceptance to the satisfaction of the Agency's Authorized Representative.*

END OF SOIL PREPERATION SECTION

PART 1 - GENERAL**1.01 DESCRIPTION**

- A. Related Requirements: Review the General Conditions, Standard Specifications and Special Provisions, which contain information and requirements that apply to this Section.
- B. Work Included: Provide lawns, complete as shown on drawings and as specified.
- C. Turf in parkways must be irrigated by subsurface drip or technology that produces no overspray or runoff
- D. No turf where slope is greater than 25% (1 to 4-foot change)
- E. Related Work in Other Sections:
 - Irrigation System - Section 02810
 - Soil Preparation - Section 02920
 - Trees, Shrubs, and Ground Covers - Section 02950
 - Landscape Maintenance - Section 02970

1.02 QUALITY ASSURANCE

- A. Certificates of Inspection: Provide as required by law for transportation of each shipment of seed along with invoice. Submit copies of certificates after acceptance of material. Inspection by Federal or State Governments at place of growth does not preclude rejection at proper site.
- B. Applicable Standards: Apply standards for seed and sod as described in the following:
 - 1. General Conditions, Special Provisions, Exhibit "A" and Appendix 1.
 - 2. Hortus III - Latest edition, Bailey Horatorium, Cornell University.

1.03 SUBMITTALS

- A. Samples and Product Data: Submit samples and manufacturer's literature for the following items:
 - 1. Seed Mix (es): One half (2) pound for each type.
 - 2. Mulch: One half (2) pound
 - 3. Soil Stabilizer: One half (2) pound
 - 4. Mulch and Soil Stabilizer: One half (2) pound
- B. Test Data: Submit all laboratory test data for all materials.
 - 1. Seed Varieties: Guaranteed statement of composition, mixture and percentage of purity and germination of each variety.

1.04 WORK SCHEDULE

- A. Proceed with the work as rapidly as the site becomes available, consistent with normal seasonal limitations for planting work.

1.05 SELECTION AND ORDERING OF PLANT MATERIAL

- A. Documentation: Submit documentation within fifteen (15) days after award of contract that all seed has been ordered.
- B. Unavailable Materials: If proof is submitted that any seed specified is not obtainable, a proposal will be considered for use of the nearest equivalent variety with corresponding adjustment Contract price. Substantiate such proof in writing no later than fifteen (15) days after award of contract.
- C. Special Conditions: The above provisions shall not relieve contractor of the responsibility for obtaining specified seed in advance if special growing conditions or other arrangements must be made in order to supply specified materials.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Seed:
 - 1. Delivery: Furnish standard seed in unopened manufacturer's standard containers bearing original certification labels showing quantity, analysis and name of manufacturer.
 - 2. Storage: Store seed with protection from weather or other conditions which would damage or impair the effectiveness of the project.

- B. Mulch: Store with protection from weather or other conditions which would damage or impair the effectiveness of the product.

1.07 ANALYSES OF SAMPLES AND TESTS

- A. Samples: Agency's Authorized Representative reserves the right to take and analyze samples of materials for conformity to specifications at any time.
- B. Rejected Materials: Remove rejected materials immediately from the site at Contractor's expense. Pay cost of testing of materials not meeting specifications.

1.08 MAINTENANCE PERIOD AND FINAL ACCEPTANCE

- A. See Section 02970 - Landscape Maintenance.

PART 2 - PRODUCTS

2.01 LAWN SEED

- A. Composition: Fresh, clean, certified, new crop seed of the following varieties mixed in the proportions as shown:

<u>Marathon II</u>	or	<u>Triple Crown Dwarf</u>
Marathon	52%	Empress Dwarf 34% or equal
Mustang	22%	Pixie Dwarf 33% or equal
Rebel	11%	Pixie Dwarf 33% or equal
Olympic	15%	El Dorado Dwarf 33% or equal

Or equal approved by Agency's Authorized Representative.

- B. Weed Seed: Do not exceed twenty-five one hundredths percent (0.25%).

2.02 ORGANIC AMENDMENTS:

- A. See Section 02920 - Soil Preparation

2.03 TOP-DRESS FERTILIZER

- A. *Complete fertilizer, fifty (50) percent of the nitrogen to be derived from natural organic sources or urea-form. Available phosphoric acid shall be from superphosphate, bone or tankage. Potash shall be derived from muriate of potash containing sixty (60) percent potash:*

Sixteen (16) percent Nitrogen

Six (6) percent Phosphorus

Eight (8) percent Potash

2.04 HYDROSEED MULCH

- A. *General:*

1. *Composition: Green-colored, fibrous, virgin wood cellulose mulch containing no growth or germination-inhibiting factors.*
2. *Dispersion in Slurry: Mulch shall be manufactured in such manner that after addition to and agitation in slurry tanks with fertilizer, seed, water and other approved additives, fibers in the material will become uniformly suspended to form a homogeneous slurry.*
3. *Absorption Capacity: When hydraulically sprayed on the ground, the material will form a blotter-like ground cover impregnated uniformly with seed which will allow the absorption of moisture and allow rainfall to percolate to the underlying soil.*

- B. *Specifications:*

1. *Weight: Weight Specifications of this material from suppliers, and for all applications, shall refer only to air dry weight of the fiber material. Absolute air-dry weight is based on the normal standards of the Technical Association of the Pulp and Paper Industry for wood cellulose and is considered equivalent to ten (10) percent moisture.*
2. *Labeling: Each package of the cellulose fiber shall be marked by the manufacturer to show the air-dry weight content.*

2.05 SOIL STABILIZER

- A. *Composition: Totally organic substance, supplied in power form and at least 90% of which is ninety-two (92) percent pure muciloid derived from ground plantago*

ovata-insularis husks. Stabilizer shall be water-soluble, non- toxic hydrophilic and shall not inhibit germination.

- B. *Product: "Ecology Controls M-binder" as distributed by Stover Company, Los Angeles, CA, or equal approved by Agency's Authorized Representative.*

2.06 HYDRAULIC EQUIPMENT FOR HYDROSEEDING

- A. *Mixer: Use a commercial type hydro-seeder for the application of slurry. Equipment shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend and homogeneously mix slurry.*
- B. *Distribution Lines: Large enough to prevent stoppage and to provide even distribution of the slurry over the ground.*
- C. *Pump Capacity: One hundred fifty (150) psi at the nozzle.*
- D. *Slurry Tank: Minimum capacity of one thousand (1,000) gallons shall be mounted on a traveling unit which will place the slurry tank and spray nozzles within sufficient proximity to the areas to be seeded so as to provide uniform distribution without waste.*

2.07 WATER

- A. *Potable water is furnished by the Contractor. Transport as required.*

2.08 HYDROSEEDING MIX PER ACRE

- A. *Lawn Areas: Marathon II, Triple Crown Dwarf or equal.*

PART 3 - EXECUTION

3.01 GENERAL

- A. *Areas to Receive Hydro seeding: All turf areas.*

3.02 SOIL PREPARATION

- A. *Refer to Soil Preparation - Section 02920/*

3.03 HYDROSEEDING LAWN

- A. Turf Area Preparation: Culti-pak or roll all hydro seeded turf areas prior to hydro seeding so as to settle soil. Re-grade low areas and re-roll.
- B: Weed Abatement Prior to Hydro seeding Lawn: Begin watering immediately to activate fertilizer and chemicals.
1. Water all areas thoroughly and uniformly. Continue watering at the frequency and duration necessary to germinate all residual weed seeds, and as directed by the Agency's Authorized Representative.
 2. Unless otherwise directed, maintain watering for not less than three (3) weeks.
 3. If perennial weed appear, apply approved contact herbicide over affected areas. Apply in accord with manufacturer's instructions.
 4. If annual weeds appear, apply approved contact herbicide over affected areas. Apply in accord with manufacturer's instructions.
 5. Do not water affected areas for a period of four (4) days minimum, following application of contact herbicides.
 6. Follow manufacturer's instructions relating to time required for chemicals to effectively destroy weed growth.
 7. Resume watering and continue for a period of three (3) weeks.
 - a. A shorter watering period may be permitted by the Agency's Authorized Representative, as determined by project conditions.
 8. Discontinue watering for one (1) day prior to second application of herbicide spraying.
 - a. Reapply straight contact weed killer in accord with manufacturer's instructions.
 - b. Do not water treated areas for a period of four (4) days minimum following application of herbicide.
 9. Remove all desiccated weeds from the slopes to the finish grade.
 10. Water planting areas thoroughly and continuously for three (3) consecutive days. Saturate upper soil layers.
 11. Allow soil surface to dry for one (1) day immediately prior to hydro seeding.
 - a. Exercise care not to allow the soil surface to become over-saturated with water prior to hydro seeding; do not permit soil to become bone dry.

b. *The top quarter (1/4) inch of soil surface shall show evidence of residual moisture at time of hydro seeding.*

C. *Preparation: Do all slurry preparation at the job site.*

1. *Water: Add water to tank when the engine is at half throttle. When the water level has reached the height of the agitator shaft, establish good recirculation and add seed.*

2. *Seed: Do not allow seed to remain more than thirty (30) minutes in slurry.*

3. *Fertilizer: Add fertilizer, followed by the mulch. The mulch shall only be added to the mixture after the seed, and when the tank is at least one third (1/3) filled with water.*

4. *Mixing: Open the engine throttle to full speed when the tank is half-filled with water. Add all the mulch by the time the tank is two-thirds (2/3) to three-fourths (3/4) full. Commence spraying immediately when the tank is full.*

D. *Application:*

1. *General: Apply specified slurry mix in a sweeping rate. Keep hydro seeding within designated areas and keep from contact with other plant materials.*

2. *Unused Mix: Do not use slurry mixture which has not been applied within four (4) hours of mixing. Promptly remove from the site.*

3. *Protection: After application, do not operate any equipment over the hydro seeded areas.*

4. *Reseeding: Reseed all areas and parts of areas which fail to show a uniform stand of lawn until areas are covered with a satisfactory stand of lawn.*

3.04 CLEAN-UP

A. *General: Keep all areas of work clean, neat and orderly at all times. Keep all paved areas clean during planting operations.*

B. *Overspray: Immediately after application, thoroughly wash off any plant materials, planting areas, or paved areas not intended to receive slurry mix.*

C. *Debris: Clean up and remove all deleterious materials and debris from the entire work area prior to Final Acceptance.*

END OF LAWNS AND GRASSES SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Related Requirements: Review the General Conditions, Standard Specifications and Special Provisions, City Of Fontana Online Tree Policy Manual, which contain information and requirements that apply to this section.
- B. Work Included: Provide planting of trees, shrubs, and ground covers, complete as shown and specified.
- C. Related Work in Other Sections:
 - Irrigation System - Section 02810
 - Soil Preparation - Section 02920
 - Lawns and Grasses - Section 02930
 - Landscape Maintenance - Section 02970

1.02 QUALITY ASSURANCE

- A. Certificates:
 - 1. Provide certificates of inspection required by law for transportation of each shipment of plants along with invoice.
 - 2. File copies of certificates after acceptance of material. Inspection by Federal or State Government at place of growth does not preclude rejection of plants at project site.
- B. Applicable Standards: Apply standards for plant materials as described in the following:
 - 1. General Conditions, Special Provisions, Exhibit "A" and Appendix 1.
 - 2. "American Standard for Nursery Stock", latest edition, American Association of Nurseryman, Inc.
 - 3. Hortus III - Latest edition, Bailey Horatorium, Cornell University.

1.03 SUBMITTALS

- A. Samples and Product Data: Prior to delivery to site, submit samples and manufacturer's current literature for the following items:
 - 1. Tree and Shrub Planting Fertilizer: Four (4) tablets each.
 - 2. Mulch: One (1) pint
- B. Test Data: Submit all laboratory test data for all materials.
 - 1. Mulch: One (1) pint

1.04 WORK SCHEDULE

- A. Proceed with the work as rapidly as the site becomes available, consistent with normal seasonal limitations for planting work.

1.05 SELECTION, TAGGING AND ORDERING OF PLANT MATERIAL

- A. Documentation: Submit documentation within fifteen (15) days after award of Contract that all plant materials have been ordered. Arrange procedure for review of plant materials at time of submission.
- B. Review: Submit a written list and request for review of tagged plant materials and quantity at place of growth at least ten (10) working days prior to shipment to site. Agency's Authorized Representative reserves the right to refuse review at this time, if, in his judgment, a sufficient quantity of plants is not available.
- C. Transportation: Contractor shall provide transportation for review of plant materials from Agency's Authorized Representative's Office to the nursery. The Agency's Authorized Representative will review the tagged plants at place of growth and upon delivery for conformity to specifications.
- D. Distant Material: Submit photographs with a person adjacent to plants for preliminary review. Such review shall not impair the right of review and rejection during the progress of the work.
- E. Unavailable Material: If proof is submitted that any plant specified is not obtainable, a proposal will be considered for use of the nearest equivalent size of variety with corresponding adjustment of contract price. Substantiate such proof in writing no later than fifteen (15) days after award of contract.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Labeling: Furnish standard products in manufacturer's standard containers bearing original labels legibly showing quantity, analysis, genus/species and name of manufacturer/grower.
- B. Storage: Store products with protection from weather or other conditions which would damage or impair the effectiveness of the product. Protect metal containers from sun during summer months with temperatures above eighty (80) degrees Fahrenheit.
- C. Handling: Do not lift or handle container plants by tops, stems or trunks at any time. Do not bind or handle plants with wire or rope at any time.
- D. Anti-Desiccant: At Contractor's option, spray all evergreen or deciduous plant material in full leaf immediately before transporting with anti-desiccant. Apply an adequate film over trunks, branches, twigs and foliage.

1.07 ANALYSES OF SAMPLES AND TESTS

- A. Sampling: Agency's Authorized Representative reserves the right to take and analyze samples of materials for conformity to specifications at any time. Furnish samples upon request.
- B. Rejected Materials: Remove rejected materials immediately from the site at Contractor's expense. Pay cost of testing of materials not meeting specifications.

PART 2 - PRODUCTS

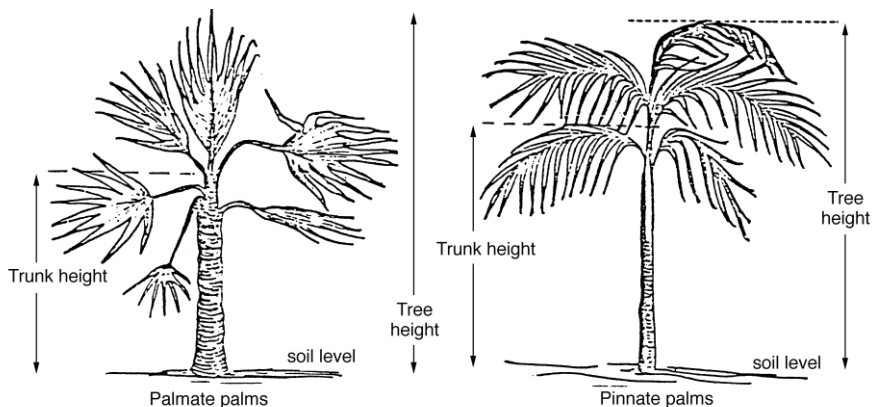
2.01 PLANT MATERIALS

- A. General:
 - 1. Growing Conditions: Plants shall be nursery-grown in accordance with good horticultural practices under climatic conditions similar to those or project for at least two years unless otherwise specifically authorized by the Agency's Authorized Representative.
 - 2. Appearance: All plants shall be symmetrical, tightly knit, so trained or factored in development and appearance as to be superior in form, number of branches, compactness and symmetry.

3. Vigor: Plants shall be sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pest, eggs, or larvae. They shall have healthy, well-developed root systems. Plants shall be free from physical damage or adverse conditions which would prevent thriving growth.
4. Container Stock: Verify that all container stock has been in the containers in which they were delivered for at least six (6) months, but not over two (2) years. Samples must prove to be free of kindled, circling or girdling roots and with no evidence of a pot-bound condition. Do not install container plants that have cracked or broken balls of earth when taken from container.

B. Measurements:

1. General: Measure plants when branches are in their normal upright position. Height and spread dimensions specified refer to main body of plant and not branch tip to tip. Take caliper measurement at a point on the trunk six (6) inches above natural ground line for trees up to four (4) inches in caliper and at a point twelve (12) inches above the natural ground line for trees over four (4) inches in caliper.
2. Palm Tree Measurements
 - a. In size grading palm trees, the specified height of the trunk itself shall take precedence. Trunk height is measured from the ground line, which should be at or near the top of the root zone, to the base of the heart leaf.



2. Size Range: If a range of size is given, do not use plant materials less than the minimum size. The measurements specified are the minimum size acceptable and are the measurements after pruning, where pruning is required. Plants that meet the measurements specified, but do not possess a normal balance between height and spread shall be rejected by the Agency's Authorized Representative.

3. Substitutions: Plants shall be true to species and variety and shall conform to measurements specified except that plants larger than specified may be used if accepted by Agency's Authorized Representative. Use of such plants shall not increase contract price. If larger plants are accepted, increase the ball of earth in proportion to the size of the plant.
- C. Pruning: Do not prune plants before delivery. For pruning after installation, see Section 02970 - Landscape Maintenance.
- D. Condition: Trees which have multiple leaders, unless specified, or damaged or crooked leaders, will be rejected. Trees with abrasions of the bark, sunscalds, disfiguring knots, or fresh cuts of limbs over three-quarters (3/4) inches which have not completely calloused, will be rejected by the Agency's Authorized Representative.

2.02 BACKFILL MIX FOR PLANT PITS

- A. See Section 02920 - Soil Preparation.

2.03 COMMERCIAL FERTILIZERS

- A. Top-dress Fertilizer: Complete fertilizer, fifty (50) percent of the nitrogen to be derived from natural organic sources or urea-form. Available phosphoric acid shall be from super phosphate, bone or tankage. Potash shall be derived from muriate of potash containing sixty (60) percent potash:

Sixteen (16) percent Nitrogen

Six (6) percent Phosphorus

Eight (8) percent Potash
- B. Tree and Shrub Planting Fertilizer: "Agriform" twenty-one (21) gram tablets with 20-10-5 (N-P-K) Formula as manufactured by Sierra Chemical Co., Milpitas, California, (408) 263-8080, or equal approved by Agency's Authorized Representative.

2.04 STAKING MATERIALS

- A. Tree Stakes: Lodge pole Pine two (2) inch diameter; ten (10) feet long) with ten (10) inches. Tapered driving point and chamfered top, treated with copper naphthanate or pentachlorophenol to heartwood, green color, as manufactured by C & E Lumber Company, Pomona, CA. Tel. (909) 626-3591, or equal approved by Agency's Authorized Representative.

- B. Ties: *Wonder tree-tie or other tie as accepted by Agency's Authorized Representative.*

2.05 GUYING MATERIALS

- A. Dead Men: *Cedar or redwood, with one (1) three-quarter (3/4) inch x four (4) inch galvanized eyebolt centered and secured on its side; screw-type galvanized steel ground anchor, or Universal ground anchors, as manufactured by Laconia Malleable Iron Company, Laconia, New Hampshire.*
- B. Hardware:
 - 1. Guying Cable: *1 x 19 Air cord, size as specified.*
 - 2. Turnbuckles: *Galvanized or dip-painted and weld less.*
 - 3. Cable Clamps: *Galvanized or copper, size as required.*
 - 4. Plastic Guy Covers: *One half (2) inch diameter x four (4) to five (5) foot long white PVC SCH. 40 piping.*

2.06 ROOT BARRIERS

- A. *Barriers to deflect tree roots downward shall be installed when the tree is planted within five (5) feet of City improvements (i.e. sidewalks, curb & gutter, storm drain structures, wall structures...).*
- B. *Root barriers shall be Deep Root Corp. or equal.*

2.07 WATER

- A. *Clean, fresh and potable, furnish and paid for by the contractor until Final City acceptance.*
- B. *Transport required.*

2.08 ANTI-DESICCANT

- A. *Anti-desiccants for retarding excessive loss of plant moisture and inhibiting wilt shall be spray able, water insoluble vinyl-vinylethane complex which will produce a moisture retarding barrier not removable by rain.*

- B. *Wilt-proof Formula NCF as manufactured by Nursery Specialty Products, Greenwich, CN. or equal approved by Agency's Authorized Representative.*

PART - EXECUTION

3.01 PREPLANT REVIEW

- A. *General: Do not commence planting work prior to acceptance by Agency's Authorized Representative of soil preparation.*
- B. *Finish Grades: Finish grades for all planting areas shall have been established in another section. Verify that all grades are within one (1) inch plus or minus of required finish grade, and that all soil amendments have been installed as specified under Section on Soil Preparation.*
- C. *Notification: Submit written notification of all conditions inconsistent with specifications for soil preparation and mixing as described in Section 02920 - Soil Preparation.*

3.02 DRAINAGE OF PLANTING AREAS

- A. *Surface Drainage: Maintain positive surface drainage of planted areas as established under Section 300-11 Finish and Rough Grading.*
- B. *Discrepancies: Submit in writing, all discrepancies in the Drawings or Specifications, obstructions on the site, or prior work done by others, which Contractor feels precludes maintaining proper drainage; include description of all work required for correction or relief of said discrepancies.*
- C. *Detrimental Drainage, Soils and Obstructions:*
 - 1. *Notification: Supply written notification of all conditions detrimental to growth of plant material. State condition and submit proposal and cost estimate for correcting condition.*
 - 2. *Testing: Test drainage of five (5) plant beds and pits identified in field by Agency's Authorized Representative by filling with water twice in*

succession. Notify Agency's Authorized Representative of conditions where retention of water in planting beds occurs for more than twenty-four (24) hours.

3. Correction: Submit for acceptance a written proposal and cost estimate for the correction before proceeding with work.

3.03 LAYOUT AND EXCAVATION OF PLANTING AREAS

- A. Layout and Staking: Lay out plants at locations shown on Drawings. Stake each tree location with lath, color coded for each species. Outline shrub and ground cover beds with lime. Agency's Authorized Representative will check location of plants in the field and shall adjust to exact position before planting begins. Agency's Authorized Representative reserves the right to refuse review at this time, if in his opinion, a sufficient quantity of plants is not available.
- B. Plant Pits: Excavate container-grown tree, shrub, and vine pits to the following dimensions:

	<u>Width</u>	<u>Depth</u>
Boxed Trees		Two (2) times box width One Times Box Height
Container Trees	Two (2) times diameter	One Times Container Height
Container Shrubs	Two (2) times diameter	One Times Container Height

3.04 PLANTING OPERATIONS

- A. General:
 1. Protect plants at all times from sun or drying winds.
 2. Keep plants that cannot be planted immediately upon delivery in the shade, well-protected and well-watered.
- B. Handling of Plant Materials:
 1. Remove container stock carefully after containers have been cut on two sides with accepted cutter. Do not use spade to cut containers.

C. Installation:

1. Positioning: After removing plant from container, scarify side of root ball to prevent root-bound condition and position plant in planting pit.
2. Backfilling: Use backfill mix to backfill plant pits. Set each plant plumb and brace rigidly in position until planting soil has been tamped solidly around the ball and roots. When plant pits have been backfilled approximately two-thirds (2/3) full, water thoroughly and saturate root ball, before installing remainder of the backfill mix to top of pit, eliminating all air pockets.
3. Staking and/or Guying: Stake or guy as outlined in Section 3.05 below.
4. Fertilizer Tablets: Place evenly distributed in plant pits when backfilled two-thirds (2/3) to finish grade according to the following schedule.

Fifteen (15) gallon can - Three (3) tablets

- D. Adjustment: Adjust plants to that after full settlement has occurred, the natural grade at the base of the plants is one (1) inch above the adjacent planting finish grade.
- E. Watering Basin: Form saucer with four (4) inches high berm centered around tree and shrub pits twelve (12) inches wider than ball diameter. Do not form saucer around trees in lawn areas.
- F. Watering: Water all plants immediately after planting.
- G. Labels: Remove all nursery-type plant labels from plants.

3.05 STAKING AND GUYING

A. General:

1. Trees shall be able to stand upright without support, and shall return to the vertical after their tops have been deflected horizontally and released. Stake or guy trees which do not meet this qualification. All plant materials shall remain plumb and straight for all given conditions from installation through the guarantee period.
2. Use either staking or guying method per planting details and planting legend.

B. Staking:

1. *Locate stakes in a line with trunk of tree, perpendicular to prevailing wind, and as close to the main trunk is practical, avoiding root injury. Drive stakes at least thirty (30) inches into firm ground.*
2. *Remove tree from nursery-supplied stake and tie to new stakes using four (4) accepted tree ties. Find proper height for point of tree ties and attach as follows:*
 - a. *Hold trunk in one hand, pull top to one side and release. Height at which trunk will just return to upright is Base Height. Attach tree ties to trunk approximately twenty-four (24) inches above Base Height.*
 - b. *Nail tree ties to stakes using two (2) galvanized roofing nails at each end of tie.*

C. Guying:

1. *Guy trees at points of branching with guys spaced equally around and outside perimeter of ball. Cover guys with rubber hose at points of contact with bark. Position guys at crotches and fasten to a dead man.*
2. *Install 2 x 3' or 4' or 5' SCH. 40 P.V.C. pipe or approved white coated wire.*
3. Guys: *Provide one turnbuckle for each guy. Use two (2) cable clamps at each cable connection.*

3.07 PRUNING

- A. See Section 02970 - Landscape Maintenance

3.08 GROUND COVER PLANTING

- A. Planting: *Plant ground cover plants at optimum depth for proper growth. Avoid air pockets. Equally space triangularly, at distances called for in the Drawings.*
- B. Fertilizers: *Apply top-dress fertilizer at the rate of five (5) pounds per one thousand (1,000) square feet.*
- C. Watering: *Water bed thoroughly after fertilizer application. Wash all fertilizer from leaves of plant materials.*

3.09 CLEAN-UP

- A. *Keep all areas of work clean, neat and orderly at all times.*
- B. *Clean up and remove all deleterious materials and debris from the entire work area prior to Final Acceptance.*

END OF TREES, SHRUBS, AND GROUND COVERS SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Related Requirements: Review the General Conditions, Standard Specifications and Special Provisions, which contain information and requirements that apply to this Section.
- B. Work Included: Provide Landscape Maintenance, complete as specified.
- C. Related Work in Other Sections:
 - Irrigation System - Section 02810
 - Soil Preparation - Section 02920
 - Lawns and Grasses - Section 02930
 - Trees, Shrubs, and Ground Covers - Section 02950

1.02 QUALITY ASSURANCE

- A. Applicable Standards: Apply as described in the following:
 - 1. General Conditions, Special Provisions
 - 2. Guide for Fertilizing Shade and Ornamental Trees.
 - 3. Pruning Standards for Shade Trees.
- B. Requirements of Regulatory Agencies:
 - 1. Perform all work in accordance with all applicable laws, codes and regulations required by authorities having jurisdiction over such work.
 - 2. Provide for all inspections and permits required by Federal, State, or local authorities in furnishing, transporting, and installing of all agricultural chemicals.
 - 3. The County Agricultural Commissioner's Office must by law, be given a monthly record of all herbicides, insecticides and disease control chemicals used.

C. Work Force:

1. Experience: *The landscape maintenance firm shall have a full time foreman assigned to the job for the duration of the contract. He shall have a minimum of four (4) years experience in landscape maintenance supervision, with experience or training in turf management, entomology, pest control, soils, fertilizers and plant identification. HE MUST SPEAK ENGLISH FLUENTLY.*
2. Labor Force: *The landscape maintenance firm's labor force shall be thoroughly familiar and trained in the work to be accomplished and perform the task in a competent, efficient manner acceptable to the Agency.*
3. Supervision: *The foreman shall directly employ and supervise the work force at all times. Notify Agency of all changes in supervision.*
4. *Contractors employees shall wear nice clean company uniforms with proper safety equipment and provide all necessary traffic control to complete the maintenance.*

1.03 SUBMITTALS

- A. *Submit to Agency's Authorized Representative for approval, two (2) copies each of the following items:*
 1. *Schedule of maintenance operations and monthly status report including list of all equipment and materials proposed for the job.*
 2. *Written application recommendation by a licensed agricultural pest control advisor for all weed, pest and disease controls restricted by the Director of Agriculture proposed for this work.*
 3. *All licenses and insurances required by the City of Fontana, the State or Federal government pertaining to this work.*
 4. *Monthly record of all herbicides, insecticides and disease control chemicals used for the project.*

1.04 PROJECT CONDITIONS

- A. Site Visit: *At beginning of maintenance period, visit and walk the site with the Agency's representative to clarify scope of work and understand existing project/site conditions.*

- B. Documentation of Conditions: Document general condition of existing trees, shrubs, ground covers and lawn, recording all plant materials which are damaged or dying, if any.
- C. Irrigation System: Document general condition of existing irrigation system, making sure that faulty electrical controllers, broken or inoperable sprinkler heads (or emitters) are reported.

1.05 SCHEDULING

- A. Perform all maintenance during hours mutually agreed upon between Agency and Contractor.
- B. Work force shall be present at the project site at least once a week and as often as necessary to perform specified maintenance in accordance with the approved maintenance schedule.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Fertilizers:
Sierra Chemical Company
1001 Yosemite Drive
Milpitas, California 95035
(408) 263-8080
- B. Herbicides:
Chevron Chemical Company
575 Market Street
San Francisco, California 94105
(415) 894-0880

Rhone-Poulenc Chemical Company
Agro Chemical Division
P.O. Box 125

Monmouth Junction, New Jersey 08852

(201) 297-0100

Ciba-Geigy Corporation

Agricultural Division

P.O. Box 1830

Greensboro, North Carolina 27419

(919) 292-7100

Elanco Products Company

740 S. Alabama Street

Indianapolis, Indiana 46285

(317) 261-3638

The Dow Chemical Company

P.O. Box 1706

Midland, Missouri 48640

(517) 636-0236

3M Company-Agri Chemicals Project

3M Center, Building 223-6SE

St. Paul, Minnesota 55144

(317) 261-3000

2.02 MATERIALS

- A. General: All materials and equipment, unless otherwise indicated, shall be provided by the Contractor.
- B. Water: Clean, potable and fresh, furnished and paid for by the Contractor.

- C. Fertilizers:
1. *Tightly compressed, slow-release and long-lasting complete fertilizer tablets bearing manufacturer's label of guaranteed analysis of chemicals present.*
 2. *Balanced, once-a-season application controlled-released fertilizers with a blend of coated pills which supply controlled-release nitrogen, phosphorus and potassium, and phosphorus.*
- D. Herbicides, Insecticides, and Fungicides:
1. *Obtain best quality materials with original manufacturer's containers, properly labeled with guaranteed analysis.*
 2. *Use non-staining materials.*
- E. Lawn Seed for Reseeding: *Match existing lawn mix.*
- F. Replacement Tree Guys, Stakes, Ties and Wires: *Match existing materials on the site.*

PART 3 - EXECUTION

3.01 GENERAL

- A. Duration: *Continuously maintain each plant and each portion of ground cover area after installation, during progress of work, and for a **Minimum** period of ninety (90) days after completion of all planting work until Final Acceptance by the Agency's Authorized Representative.*
- B. Protection:
1. *Protect all planting areas from damage of all kinds from beginning of work until Final Acceptance by the Agency's Authorized Representative.*
 2. *Replacement plants shall be of a size, condition and variety acceptable to Agency's Authorized Representative.*

3.02 TREES AND SHRUBS

- A. Watering Basins:

1. *Maintain all watering basins around plants so that enough water can be applied to establish moisture through major root zones.*
 2. *In rainy season, open basins to allow surface drainage away from the root crown where excess water may accumulate. Restore watering basins at end of rainy season.*
 3. *For supplement hand watering of watering basins, use a water wand to break the water force. Do not permit crown roots to become exposed to air through dislodging of soil and mulch.*
- B. Resetting: *Reset plants to proper grades or upright position.*
- C. Weed Control:
1. *All areas between plants, including watering basins shall be weed free.*
 2. *Use only recommended and legally approved herbicides to control weed growth.*
 3. *Avoid frequent soil cultivation that destroys shallow roots and breaks the seal of pre-emergent herbicides.*
- D. Pruning:
1. *Prune trees to select and develop permanent scaffold branches that are smaller in diameter than the trunk or branch to which they are attached, and which have vertical spacing of eighteen (18) inches to forty-eight (48) inches and radial orientation so as not to overlay one another.*
 2. *Prune trees to eliminate diseased or damaged growth, and narrow V-shaped branched forks that lack strength. Reduce toppling and wind damage by thinning out crowns.*
 3. *Prune trees to maintain growth within space limitations, maintaining a natural appearance and balancing crown with roots.*
 4. *No stripping of lower branches ("raising up") of young trees will be permitted.*
 5. *Retain lower branches in a "tipped back" or pinched condition to promote caliper trunk growth (tapered trunk). Do not cut back to fewer than six buds or leaves on such branches. Only cut lower branches flush with the trunk after the tree is able to stand erect without staking or other support.*
 6. *Thin out and shape evergreen trees when necessary to prevent wind and storm damage. Do primary pruning of deciduous trees during the dormant*

season. Do not permit any pruning of trees prone to excessive "bleeding" during growth season.

7. *Prune damaged trees or those that constitute health or safety hazards at anytime of year as required.*

8. *Make all cuts clean and close to the trunk, without cutting into the branch collar. "Stubbing" will not be permitted. Cut smaller branches flush with trunk or lateral branch. Make larger cuts (one (1) inch in diameter or larger) parallel to shoulder rings, with the top edge of the cut at the trunk or lateral branch.*

9. *Branches too heavy to handle shall be pre-cut in three stages to prevent splitting or peeling of bark. Make the first two (2) cuts eighteen (18) inches or more from the trunk to remove the branch. Make the third cut at the trunk to remove the resulting stub.*

10. *Do not prune or clip shrubs into balled or boxed forms unless specifically called for by design.*

E. Staking and Guying of Trees:

1. *Inspect stakes and guys at least one month to check for rubbing that causes bark wounds.*

2. *Conform to the recommended procedures of staking and guying as outlined in the University of California Publications AXT-311, "Staking Landscape Trees".*

3.03 GROUND COVERS

A. Watering:

1. *Check for moisture penetration throughout the root zone at least two (2) times a month.*

2. *Water as frequently as necessary to maintain healthy growth of ground covers.*

B. Weed Control:

1. *Control weeds, preferably with pre-emergent herbicides and with selective systemic herbicides.*

2. *Minimize hoeing of weeds in order to avoid plant damage.*

3.04 LAWNS

A. Watering:

1. Water lawns at such frequency as weather conditions require, to replenish soil moisture to six (6) inches below root zone.
2. Provide a total of one and one-half (1-1/2) inches of water weekly during hot summer weather, in five (5) applications per week.
3. Water at night if irrigation system is electrically controlled. Otherwise watering shall be done during early mornings.

B. Weed Control For Weed Free Lawns:

1. Control broad leaf weeds with selective herbicides.
2. In areas where crabgrass has infested the lawn, apply a selective post-emergent herbicide as soon as possible and prior to flowering.
3. Apply pre-emergent herbicides such as Dacthal, Balan, or Betasan prior to crabgrass germination.
4. Do not irrigate for forty-eight (48) hours after application of all herbicide sprays.
5. Coordinate application of herbicides with thatch control and reseeding schedule as described below.
6. Weeds are defined as any plant that is not on the approved plant pallet list or within the hydro seeding mix.
7. All herbicides shall be applied by a licensed applicator per the manufacturer's instructions.

C. Mowing and Edging:

1. **Contractors shall mow lawns and trim edges on a weekly basis, and provide a mowing and maintenance schedule to the inspector prior to the 90 day maintenance period beginning.**

D. Reseeding of Lawn Areas: Match existing seed mix of adjacent areas.

E. Top Dress Fertilizer:

1. See Section 02930 - Lawns and Grasses for type of fertilizer to be used.

2. *Contractor shall apply top dress fertilizer to all lawn areas in two (2) complete and separate applications during the 90-day Maintenance Period unless otherwise recommended by the fertilizer manufacturer or a certified horticulturist employed by the contractor.*
3. *The first application shall take place no later than the end of the second week of the ninety (90) day period. The second application shall occur just prior to the end of the ninety (90) day Maintenance Period and Final Acceptance.*

3.05 INSECTS, PESTS, AND DISEASE CONTROL

- A. *Inspection:* *Inspect all plant materials for signs of stress, damage and potential trouble from the following:*
 1. *Presence of insects, moles, gophers, ground squirrels, snails and slugs in planting areas.*
 2. *Discolored or blotching leaves or needles.*
 3. *Unusually light green or yellowish green color inconsistent with normal green color of leaves.*
- B. *Personnel:* *Perform spraying for insect, pest and disease control only by qualified, trained personnel.*
- C. *Application:* *Spray with extreme care to avoid all hazards to any person or pet in the area or adjacent areas.*

3.06 IRRIGATION SYSTEM

- A. *General:*
 1. *Repair without charge to Agency all damages to system caused by Contractor's operations or vandalism. Perform all repairs within one (1) watering period.*
 2. *Report promptly to Agency all accidental damage not resulting from Contractor's negligence or operations.*
 3. *Do not run the irrigation system during rainy periods. Set and program automatic controllers for seasonal water requirements.*
- B. *Cleaning and Monitoring the System:*
 1. *Continually monitor the irrigation systems to verify that they are functioning properly as designed. Make program adjustments required by changing field conditions.*

2. *Clean pump filter and strainer as often as necessary to keep the irrigation systems free of sand and other debris.*
 3. *Prevent spraying on windows, building walls, by balancing the throttle control on the remote-control valves and the adjustment screws on the sprinkler heads. Do not allow water to atomize and drift.*
- C. *Air Blow-Out:*
1. *Set automatic control stations to two and one half (2-1/2) minutes timing.*
 2. *Attach hose from portable air compressor to one (1) inch air inlet installed on main line at backflow preventer.*
 3. *Operate compressor at one hundred (100) cubic feet per second at 60-80 PSI.*
- D. *Manual Drain Valves:* *Open manual drain valves located at low points on the main line to drain completely after air blow-out has been completed.*
- E. *Backflow Preventer:* *Rotate backflow unit at unions and open pet cocks and drain. Reverse operation and tighten unions to resume irrigation.*

3.07 THE NINETY (90) DAY MAINTENANCE PERIOD

- A. *Preliminary Review:* *As soon as all plantings are completed per Contract Documents, hold a preliminary review to determine the condition of the work.*
- A1. ***Schedule a meeting with the Engineering Public Works Inspector and the Public Works Maintenance Division to inspect all tree and plant depths prior to starting the 90 day Maintenance Period.***
- B. *Date of Review:* *Submit a written request to the Agency's Authorized Representative at least five (5) working days prior to anticipated date of review.*
- C. *Beginning of the **Minimum** Ninety (90) Day Maintenance Period:* *The date on which the Agency's Authorized Representative issues a letter of Preliminary Acceptance to the Contractor. By this date, all plant materials shall be planted and all areas requiring hydro seeded lawns shall be completed.*

3.08 PRE-FINAL AND FINAL ACCEPTANCE

- A. *Conditions for Pre-Final Acceptance of Work at End of Maintenance Period:*

1. *Each plant shall be alive and thriving, showing signs of growth and no signs of stress, disease, or any other.*
2. *All plants not meeting these conditions shall be replaced and a Ninety (90) Day Maintenance Period commenced for such plants.*
3. *Lawn areas shall be 100% weed free unless otherwise approved by the Agency's Authorized Representative.*
4. *Lawn areas shall have 100% germination and establishment of turf.*

B. Corrective Work:

1. *Work requiring corrective action or replacement is the judgment of the Agency's Authorized Representative and shall be performed within ten (10) calendar days after the Pre-Final Review.*
2. *Perform corrective work and materials replacement in accordance with the Drawings and Specifications and shall be made by the Contractor at no cost to the Agency.*
3. *After corrective work is completed, the Contractor shall again request a Pre-Final Review for Pre-Final Acceptance as outlined above.*
4. *Continue maintenance of all landscaped areas until such time as all corrective measures have been completed and accepted by the Agency's Authorized Representative.*

END OF LANDSCAPE MAINTENANCE SECTION

PART 1 - GENERAL**1.01 DESCRIPTION**

- A. Related Requirements: Review the General Conditions, Standard Specifications and Special Provisions which contain information and requirements that apply to this Section.
- B. Work Included: Provide all electrical work for a complete and operable system as shown on the drawings and as specified in this section including, but not limited to the following:
1. Site investigations prior to bidding to establish existing conditions.
 2. Temporary power and lighting facilities for construction.
 3. Electrical underground service at 120/240-volt, single phase, three (3) wire service.
 4. Service metering and distribution system for lighting power connections to one hundred-twenty (120) volt irrigation controller.
 5. Lighting fixtures, mounting hardware, poles, foundations and pull boxes.
 6. Provide wire, **anti-theft** pull boxes and conduit extensions as required.
 7. Adjustment and test of the electrical work.
 8. Guarantee.
- C. Related Work in other Sections:
- Irrigation - Section 02810 (1.10 Connections to Utilities)

1.02 QUALITY ASSURANCE

- A. All products and equipment herein specified or indicated on the drawings shall be new with UL label and in accordance with the National Electrical Code, state and local codes.
- B. Applicable Standards:
1. General Conditions, Special Provisions,

1.03 SITE VISITATIONS

- A. *Prior to the submission of the bid, the contractor shall visit the site and make a thorough examination of the existing conditions and thereby include allowances for this work in this bid.*

1.04 PERMITS AND LICENSES

- A. *Contractor shall pay for and obtain all necessary permits, inspections, insurance and licenses required for the Electrical work.*

1.05 COORDINATION

- A. *Contractor to coordinate the electrical work with other trades. Review drawings and specifications of all equipment requiring electrical connections prior to installation of the electrical system. Verify space, ventilation and clearances required to install electrical equipment.*

1.06 SUBMITTALS

- A. *Product data sheets for meter pedestal, meter, panel board, lighting fixtures poles, wiring devices, and material list. Make all submittals at one time in booklet form.*
- B. *Record Drawings:*
 - 1. *Installation Record: During the course of installation, carefully show in red line on a print of the electrical system drawings all changes made to the electrical system during installation.*
 - 2. *Dimension Standards: Dimension from easily identifiable permanent features (buildings, monuments, sidewalks, pavements, etc.) points of connection, wiring routing, conduit locations, all stub-up locations and other related equipment as directed by the Agency's Authorized Representative.*
 - 3. *Deliverables: Upon completion of the electrical system installation, submit two (2) sets of redlined record data prints to the Agency's Authorized Representative for approval prior to transferring information onto the signed original Mylar's.*
 - 4. *Submittal of Record Set: Upon completion of the electrical system installation, and as a condition of its acceptance, deliver to the Agency's Authorized Representative, in Record Drawings referred to above. The delivery of the Record Drawings shall not relieve the Contractor of the responsibility of furnishing required information that may have been omitted.*

1.07 SUBSTITUTIONS

- A. *Where manufacturer's name and catalog number are called out, the phrase "or approved equal" can be assumed except the burden of proving equality is on the bidder.*

1.08 GUARANTEE

- A. *All electrical work and equipment shall be guaranteed for one year from the date of acceptance on contractor's letterhead and turned over to the Agency at the completion and final acceptance of the job.*

PART 2 – PRODUCTS

2.01 UNDERGROUND SERVICE PEDESTAL

- A. *Meter pedestal "MP" shall be NEMA 3R 120/240-volt, single phase, three (3) wire with one hundred (100) amp, two-pole main circuit breaker rated forty-two thousand (42,000) AIC. The service shall be a free-standing pre-wired pedestal assembly. Pedestal shall have underground pull section meter (without test blocks) and main disconnect. Pedestal shall comply with the requirements of the serving utility. Install black on white micarta nameplates on all sections, switches and spaces. Provide rodent screens. Pedestal shall be Meyers or approved equal, model numbers are indicated on the drawings. Bolt to concrete pad.*

2.02 SWITCHES

- A. *Switches shall be quick-make, quick-break type QMB rated six hundred (600) volts with frame size, number of poles and fuses as shown.*

2.03 CIRCUIT BREAKERS

- A. *Circuit breakers shall be bolt-on molded case type with thermal magnetic trips. Provide with rated voltage, frame size, number of poles and trip setting as shown. NEMA interrupting capacity shall be 42,000 AIC at 120/240 volts unless otherwise noted on plans.*

2.04 PANELBOARDS

- A. *Panel boards shall be surface mounted in pedestal, with bolt-on circuit breakers type NQOB, with hinged lockable doors and typewritten directories. All multi-pole breakers shall be single handle common type. Use "SWD" circuit breakers for lighting circuits controlled from panels. Manufacturer shall be G.E., Square D, Westinghouse or Challenger.*

2.05 WIRE

- A. *Conduit shall be six hundred (600) volt insulation type THWN/THHN copper.*

2.06 CONDUIT

- A. *Conduit shall be rigid steel galvanized for exposed or in damp locations. Conduit underground shall be PVC schedule 40 with ground wire, minimum twenty-four (24) inches below grade unless noted otherwise.*

2.07 CONDUCTORS

- A. *Conductors shall be six hundred (600) volt insulation, type THHN/THWN copper.*

2.08 SPLICES

- A. *Splices on conductor's #8 or smaller shall be Skotch-lok spring connectors and for larger size cables use solder less connectors.*
- B. *Splices below grade shall be epoxy encapsulated "3M" or approved equal.*

2.09 AREA LIGHTING

- A. ***Refer to the City Of Fontana Park Design Standards Manual. Please contact City of Fontana's Public Works Department's Landscape Division for the current up to date information as it pertains to your project.***

Public Works Department Contact Info: Luis Villalobos at 909-350-6776 or by email at Lvillalobos@fontana.org

- C. *Refer to drawing for concrete pole base.*

PART 3 - EXECUTION

3.01 EXCAVATION

- A. *Obstructions: The contractor's attention is directed to the existence of pipe and other underground improvements which may or may not be shown on plans. All reasonable precautions shall be taken to preserve and protect any such improvements whether shown improvements in order to prosecute the work, they shall be removed, maintained in operation, and permanently replaced by the contractor at his expense.*
- B. *Trenching: Trenches shall be excavated to the lines and grades established by the engineer. Bottom of trenches graded and prepared to provide a firm and uniform bearing throughout the entire length of conduit runs.*
 - 1. *Trench Bottoms: Made more stable by wetting and tramping where fills are required and brought to a uniform grade.*
 - 2. *Minimum Trench Depth: Sufficient to provide a minimum cover twenty-four (24) inches above topmost portions of conduits.*

3.02 CONDUIT AND WIRING

- A. *All conduit and wiring shall be installed underground in accordance with applicable regulations and the electrical drawings. Conduit runs are shown diagrammatically. Exact routing and location of the equipment to be determined in the field by the Agency's representative. Provide one thousand-two hundred (1,200) lb. test pull cord in each empty conduit and cap both ends.*

3.03 EXTERIOR EQUIPMENT

- A. *All equipment and wiring to be weatherproof, including rodent screens.*

3.04 GROUNDING

- A. *All metallic conduits supports and enclosures shall be grounded in compliance with the National Electrical Code.*

3.05 ELECTRICAL SERVICE FACILITIES

- A. *Electrical service and metering facilities shall be installed in compliance with all requirements of the Southern California Edison Company.*

3.06 TESTING

- A. *All new circuits shall be tested for short and open circuit to ground with a megger; resistance to ground shall be in compliance with the requirements of the National Electrical Code.*
- B. *All lighting fixtures with adjustable aiming shall be verified at night in the presence of the Agency's Authorized Representative to comply with the manufacturer's aiming diagram to the satisfaction of the Agency's Authorized Representative.*
- C. *Fontana Police Department requires a minimum of one (1) foot candle for all areas within parking lots, walkways, and structures.*

END OF ELECTRICAL SECTION

A. PRE-FINAL AND FINAL ACCEPTANCE

1. Conditions for Pre-Final Acceptance of Work at End of Maintenance Period:
 - a. *Each plant shall be alive and thriving, showing signs of growth and no signs of stress, disease, or any other.*
 - b. *All plants not meeting these conditions shall be replaced and a Ninety (90) Day Maintenance Period commenced for such plants.*
 - c. *Lawn areas shall be 100% weed free unless otherwise approved by the Agency's Authorized Representative.*
 - d. *Lawn areas shall have 100% germination and establishment of turf.*

2. Corrective Work:
 - a. *Work requiring corrective action or replacement is the judgment of the Agency's Authorized Representative and shall be performed within ten (10) calendar days after the Pre-Final Review.*
 - b. *Perform corrective work and materials replacement in accordance with the Drawings and Specifications and shall be made by the Contractor at no cost to the Agency.*
 - c. *After corrective work is completed, the Contractor shall again request a Pre-Final Review for Pre-Final Acceptance as outlined above.*
 - d. *Continue maintenance of all landscaped areas until such time as all corrective measures have been completed and accepted by the Agency's Authorized Representative.*

3. Final Observation Prior to Acceptance:
 - a. *The Contractor shall operate each system in its entirety for the Agency's Authorized Representative at time of final observation. Any items deemed not acceptable, or not in compliance with these specifications and drawings, shall be reworked to the complete satisfaction of the Agency's Authorized Representative. **If the City will be maintaining the project projects will only be taken over on the 1st or the 15th of the month.***
 - b. *The Contractor shall show evidence to the Agency's Authorized Representative that the Agency has received all accessories, charts, record drawings, and equipment as required before final observation can occur.*

4. *Final Acceptance:* *Final approval and acceptance of the work will be given when the following conditions, as determined by the Agency's Authorized Representative have been met:*
 - a. *At completion of the ninety (90) day maintenance period, and when one hundred (100) percent germination and plant establishment is obtained.*
 - b. *All planting areas shall be weed free unless otherwise approved by the Agency's Authorized Representative.*
 - c. *After final inspection and acceptance by the Agency's Authorized Representative.*
 - d. *The Agency's Authorized Representative reserves the option to extend the maintenance period beyond (90) days specified, if they determined that further maintenance is necessary to provide the one hundred (100) percent establishment required by the Contract Documents.*
 - e. *Approval and acceptance for operation and maintenance will be given in writing by the Agency's Authorized Representative.*
 - f. *Final acceptance is done through a City Council meeting at the next available meeting once all items are complete to the satisfaction of the Public Works Inspector assigned to the project.*

5. *Record Drawings*
 - a. *Before the date of the final site review, the Contractor shall transfer the As-built's set of red line drawings to the Agency's or developers Authorized Representative who will deliver them to the Landscape Architect of record. The Landscape Architect shall transfer all information from the As-built's set of prints to a sepia Mylar or similar Mylar material. All work shall be in waterproof India ink and applied to the Mylar by a technical pen made expressly for use on Mylar material. Such pen shall be similar to those manufactured by Rapidograph, Kueffel & Esser, or Faber Castell. Or make all the corrections electronically and submit them by email. The dimensions shall be made so as to be easily readable even on the final controller chart (see Section 1.05C). **The original Mylar "record" plan and a digital copy shall be submitted to the Agency's Authorized Representative for approval prior to the making of controller charts.***

6. Controller Charts

- a. **Record drawing shall be approved by the Agency's Authorized Representative before controller charts are prepared.**
 - b. *Provide one (1) laminated hard copy and one (1) PDF version of the controller chart for each controller supplied once redlines are approved.*
 - c. *The chart shall show the area controlled by the automatic controller and shall be the maximum size which the controller door will allow.*
 - d. *The chart is to be a reduced drawing of the actual record drawing, of a maximum size that will fit inside the controller housing. Double sided charts at a larger scale maybe required for readability if the single sided drawing is not legible.*
 - e. *The chart shall be a black-line print and a different color shall be used to indicate the area of coverage for each station, using pastel or transparent colors. Designate all crossings and sleeves on the chart. The Contractor shall dimension from two permanent points of reference, building corners, sidewalk, or road intersections, etc., the location of the following items:*
 1. *Connection to existing water lines.*
 2. *Connection to existing electrical power.*
 3. *Gate valves.*
 4. *Routing and/or directional turns of sprinkler pressure lines (dimension maximum one hundred (100) feet along routing).*
 5. *Sprinkler control valves.*
 6. *Routing of control wiring.*
 7. *Quick coupling valves.*
 8. *Other related equipment as directed by the Agency's Authorized Representative.*
 9. *Show all domestic lines*
7. *When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each being a minimum twenty (20) mils.*
 8. *These charts shall be completed and approved prior to final acceptance of the irrigation system.*

9. Operation and Maintenance Manuals:

- a. Prepare and deliver to the Agency's Authorized Representative within ten (10) calendar days prior to completion of construction, two hard cover binders, with three rings containing the following information:
1. Index sheet stating Contractor's address and telephone number, list of equipment with name and address of local manufacturer's representative.
 2. Maintenance Manual Catalog and part sheets on every material and equipment installed under this contract.
 3. Complete operating and maintenance instruction on all major equipment.
 4. In addition to the above-mentioned maintenance manuals, provide the Agency's maintenance personnel with instructions for major equipment and show evidence in writing to the Agency's Authorized Representative at the conclusion of the project that this service has been rendered.

10. Equipment to Be Furnished

- a. Supply as part of this contract the following tools:
1. Two (2) keys for each automatic controller including all operations and maintenance manuals.
 2. One (1) Kenwood SHRR hand held remote and charger with correct City frequency. **1 PER** controller installed.
 3. One (1) extra SB-TFRMR-120-60-50-50VA 24VAC Transformer
 4. **One (1) extra** W48-XB Toro Sentinel 48 station wireless output board, level 3 surge protection with XB-Spread Spectrum Radio
 5. One (1) laminated hard copy and one (1) PDF version of the controller chart for each controller supplied.
- b. The above-mentioned equipment shall be turned over to the Agency at the conclusion of the project. Before final acceptance can occur, evidence that the Agency has received material must be shown to the Agency's Authorized Representative.

11. GUARANTEE / WARRANTY LETTERS

- a. *Guarantee/Warranty statements.*
 1. *One (1) for each listed below*
 2. *Irrigation Controller Certification*
 - a. **SHALL** *be provided prior to starting the 90 day Maintenance period from the approved supplier of the irrigation controller.*
 3. *Irrigation*
 - i. *Backflow Certificates*
 1. **SHALL** *be provided for each backflow prior to starting the 90 day Maintenance period from a certified backflow tester*
 4. *Plant Material*
 5. *Electrical*
 6. *Playground Equipment and Surfacing (If applicable)*
 7. *Playground and Playground Surfacing Certification (If Applicable)*
- b. *The **GURANTEE STATEMENTS** for the **ABOVE ITEMS** shall be made in accordance with the following forms. The general conditions and supplementary conditions of these specifications shall be filed with the Agency or its representative prior to acceptance of project.*
- c. *A copy of the guarantee forms shall be included in the operations and maintenance manual.*
- d. **All guarantee forms shall be retyped onto the Contractor's letterhead and contain the following information for each subsequent item. See all letters below.**

12. TEMPORARY REPAIRS

- a. *The Agency reserves the right to make temporary repairs as necessary to keep any of the items in operating condition. The exercise of this right by the Agency shall not relieve the Contractor of their responsibilities under the terms of the guarantee as herein specified.*

GUARANTEE FOR IRRIGATION SYSTEM

*We hereby guarantee that the irrigation system we have furnished and installed is free from defects in materials and workmanship including settling of backfill areas below grade, and the work has been completed in accordance with the drawings and specifications, ordinary wear and tear and unusual abuse or neglect excepted. The flow sensor and master valve have been installed and are working properly and on the City's frequency. We agree to repair or replace any defect in material or workmanship which may develop during the period of **(1) one** year from the date of acceptance and also to repair or replace any damage resulting from the repairing of such defects at no additional cost to the Agency. We shall make such repairs or replacements within three days, after receipt of written notice. In the event of our failure to make such repairs or replacements within a reasonable time after receipt of written notice from the Agency, we authorized the Agency to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.*

PROJECT:

CONTRACTOR: _____ PHONE NO.: _____

ADDRESS: _____ BY: _____ DATE

OF ACCEPTANCE: _____ BY: _____

GUARANTEE FOR LAWNS AND GRASSES

*We hereby guarantee that the Lawns and Grasses we have furnished and installed is free from defects in materials and workmanship including settling of backfill areas below grade, and the work has been completed in accordance with the drawings and specifications, ordinary wear and tear and unusual abuse or neglect excepted. We agree to repair or replace any defect in material or workmanship which may develop during the Warranty Time Period: Warrant that all lawns and grasses shall be in a healthy and flourishing condition of active growth **(6) six** months from date of Final Acceptance, and repair or replace any damage resulting from the repairing of such defects at no additional cost to the Agency. Appearance During Warranty: Lawns shall be free of dead or dying patches, and all areas shall show foliage of a normal density, size and color. Delays: All delays in completion of planting operations which extend the planting into more than one planting season shall extend the Warranty Period correspondingly. Coverage: Warrant growth and coverage of hydro seeded planting to the effect that one hundred (100) percent of the area planted shall be covered with specified planting after one growing season with no bare spots. We shall make such repairs or replacements within three days, after receipt of written notice. In the event of our failure to make such repairs or replacements within a reasonable time after receipt of written notice from the Agency, we authorized the Agency to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.*

PROJECT:

CONTRACTOR: _____ PHONE NO.: _____

ADDRESS: _____ BY: _____ DATE

OF ACCEPTANCE: _____ BY: _____

GUARANTEE FOR ALL PLANTS AND TREE MATERIAL

We hereby guarantee that the PLANT'S AND TREE MATERIAL we have furnished and installed is free from defects in materials and workmanship including settling of backfill areas below grade, and the work has been completed in accordance with the drawings and specifications, ordinary wear and tear and unusual abuse or neglect excepted. We agree to repair or replace any defect in material or workmanship which may develop during the Warranty Time Period: Warrant that all trees, planted under this Contract will be healthy and in flourishing condition of active growth **(1) one** year from date of Final Acceptance and also to repair or replace any damage resulting from the repairing of such defects at no additional cost to the Agency. Similarly warrant shrubs, and ground covers for a period of 90 days after Final Acceptance. Delays: All delays in completion of planting operations which extend the Warranty Period correspondingly. Condition of Plants: Plants shall be free of dead or dying branches and branch tips, with all foliage of a normal density, size and color. Replacements: As soon as weather conditions permit, replace, without cost to the Agency, all dead plants and all plants not in a vigorous, thriving condition, as determined by Agency's Authorized Representative during, and at the end of Warranty Period. Plant materials exhibiting conditions which are determined as being unacceptable due to workmanship by the Contractor shall be repaired and/or replaced at no additional cost to the Agency. Closely match replacements to adjacent specimens of the same species. Apply all requirements of this Specification to all replacements. Replacement Quantities: Contractor shall be held responsible for a maximum of two (2) replacements for each tree, shrub, and same area of ground cover planting during warranty period. We shall make such repairs or replacements within three days, after receipt of written notice. In the event of our failure to make such repairs or replacements within a reasonable time after receipt of written notice from the Agency, we authorized the Agency to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.

PROJECT:

CONTRACTOR: _____ PHONE NO.: _____

ADDRESS: _____ BY: _____ DATE

OF ACCEPTANCE: _____ BY: _____

GUARANTEE FOR ELECTRICAL SYSTEM

*We hereby guarantee that the Electrical system we have furnished and installed is free from defects in materials and workmanship including settling of backfill areas below grade, and the work has been completed in accordance with the drawings and specifications, ordinary wear and tear and unusual abuse or neglect excepted. We agree to repair or replace any defect in material or workmanship which may develop during the period of **(1) one** year from the date of acceptance and also to repair or replace any damage resulting from the repairing of such defects at no additional cost to the Agency. We shall make such repairs or replacements within three days, after receipt of written notice. In the event of our failure to make such repairs or replacements within a reasonable time after receipt of written notice from the Agency, we authorized the Agency to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.*

PROJECT: _____

CONTRACTOR: _____ PHONE NO.: _____

ADDRESS: _____ BY: _____ DATE _____

OF ACCEPTANCE: _____ BY: _____

GUARANTEE FOR PLAYGROUND EQUIPMENT AND PLAYGROUND SURFACING

*We hereby guarantee that the Playground Equipment and Playground Surfacing we have furnished and installed is free from defects in materials and workmanship and the work has been completed in accordance with the drawings and specifications, ordinary wear and tear and unusual abuse or neglect excepted. We agree to repair or replace any defect in material or workmanship which may develop during the period of **(1) one** year from the date of acceptance and also to repair or replace any damage resulting from the repairing of such defects at no additional cost to the Agency. We shall make such repairs or replacements within three days, after receipt of written notice. In the event of our failure to make such repairs or replacements within a reasonable time after receipt of written notice from the Agency, we authorized the Agency to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.*

PROJECT: _____

CONTRACTOR: _____ PHONE NO.: _____

ADDRESS: _____ BY: _____ DATE _____

OF ACCEPTANCE: _____ BY: _____

GURANTEE AND PLAYGROUND AND PLAYGROUND SURFACING CERTIFICATION

We hereby guarantee that the PLAYGROUND AND PLAYGROUND SURFACING has been inspected and CERTIFIED by a Certified Playground Safety Inspector. All items have furnished and installed and are free from defects in materials and workmanship, and the work has been completed in accordance with the drawings and specifications. Provide proper documentation and the Summary of Approval from the Inspector with this Guarantee.

PROJECT: _____

CONTRACTOR: _____ PHONE NO.: _____

ADDRESS: _____ BY: _____ DATE _____

OF ACCEPTANCE: _____ BY: _____

ORDINANCE NO. 1734

**AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF
FONTANA, CALIFORNIA AMENDING ARTICLE IV OF CHAPTER
28 OF THE FONTANA MUNICIPAL CODE REGARDING
LANDSCAPING AND WATER CONSERVATION**

WHEREAS, the City of Fontana, California (the "City") is a municipal corporation, duly organized under the constitution and laws of the State of California; and

WHEREAS, pursuant to Chapter 28 of the Fontana Municipal Code, the City regulates vegetation and, in particular, Article IV of that Chapter relates to Landscaping and Water Conservation; and

WHEREAS, the State Legislature has found: (1) that the waters of the State are of limited supply and are subject to ever increasing demands; (2) that the continuation of California's economic prosperity is dependent on the availability of adequate supplies of water for future uses; (3) that it is the policy of the State to promote the conservation and efficient use of water and to prevent the waste of this valuable resource; (4) that landscapes are essential to the quality of life in California by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development; (5) that landscape design, installation, maintenance and management can and should be water efficient; and (6) that Section 2 of Article X of the California Constitution specifies that the right to use water is limited to the amount reasonably required for the beneficial use to be served and the right does not and shall not extend to waste or unreasonable method of use; and

WHEREAS, the City Council of the City of Fontana concurs with the State Legislature's findings and further finds that the conservation of water is an important goal of the City; and

WHEREAS, the Water Conservation in Landscaping Act of 2006 (AB 1881) required cities and counties to adopt ordinances that required efficiency of water use in new and existing urban irrigated landscapes in California; and

WHEREAS, the requirements of the Water Conservation in Landscaping Act of 2006 were recently amended by the Department of Water Resources and have been codified at California Code of Regulations, Title 23, Division 2, Chapter 2.7, Section 490 et seq.; and

WHEREAS, the City Council of the City of Fontana wishes to implement comprehensive regulations related to water efficient landscaping in order to comply with the Governor's Executive Order B-29-15 and the provisions of the California Code of Regulations adopted in conformity therewith; and

WHEREAS, the City Council, therefore, wishes to amend certain provisions of Article IV of Chapter 28 of the Fontana Municipal Code regarding Landscaping and Water Conservation in order to comply with State of California Model Water Efficient Landscape Ordinance (codified at California Code of Regulations, Title 23, Division 2, Chapter 2.7, Section 490 et seq.) to promote water efficiency measures, to promote water conservation and to protect the public health, safety, and welfare; and

WHEREAS, under California law, if a city does not adopt an ordinance that is at least as restrictive as the Model Water Efficient Landscape Ordinance, the State Model Water Efficient Landscape Ordinance becomes effective in the City; and

WHEREAS, on November 10, 2015 the City Council introduced this Ordinance; and

WHEREAS, all other legal prerequisites to the adoption of this Ordinance have occurred.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF FONTANA, CALIFORNIA DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. Incorporation of Recitals. The above recitals are true and correct and are incorporated herein by this reference.

SECTION 2. Article IV of Chapter 28 of the Fontana Municipal Code is hereby amended to read in its entirety as follows:

“ARTICLE IV. – LANDSCAPING AND WATER CONSERVATION

Sec. 28.91. – Purpose.

- (a) The City finds that:
- (1) Landscaping enhances the physical appearance of the community, improves the physical performance of new development by contributing to the abatement of heat, glare, erosion and noise, and by promoting natural percolation of water and improving air quality and thereby conserving the value of property and neighborhoods within the City;
 - (2) The limited supply of city and state waters are subject to ever increasing demands;
 - (3) The economic prosperity of the City and the State depends on adequate supplies of water;
 - (4) City and state policy promotes the conservation and efficient use of water and to prevent the waste of this valuable resource;
 - (5) Landscapes are essential to the quality of life in California by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development;

- (6) Landscape design, installation, and maintenance can and should be water efficient; and
 - (7) Section 2 of Article X of the California Constitution specifies that the right to use water is limited to the amount reasonably required for the beneficial use to be served and the right does not and shall not extend to waste or unreasonable method of use.
- (b) Consistent with these findings, the purpose of this Article is to:
- (1) Promote the values and benefits of landscaping practices that integrate and go beyond the conservation and efficient use of water;
 - (2) Establish a structure for designing, installing, and maintaining, and managing water efficient landscapes in new construction and rehabilitated projects by encouraging the use of a watershed approach that requires cross-sector collaboration of industry, government and property owners to achieve the many benefits possible;
 - (3) Establish provisions for water management practices and water waste prevention for existing landscapes;
 - (4) Use water efficiently without waste by setting a Maximum Applied Water Allowance as an upper limit for water use and reduce water use to the lowest practical amount; and
 - (5) Establish, procedures and guidelines for the administration of plan check submittal and the subsequent approval of plans.
- (c) Landscapes that are planned, designed, installed, managed and maintained with the watershed-based approach can improve the City's environmental conditions and provide benefits and realize sustainability goals. Such landscapes will make the urban environment resilient in the face of climatic extremes. Consistent with the legislative findings and purpose of this Article, conditions in the urban setting will be improved by:
- (1) Creating the conditions to support life in the soil by reducing compaction, incorporating organic matter that increases water retention, and promoting productive plant growth that leads to more carbon storage, oxygen production, shade, habitat and esthetic benefits;
 - (2) Minimizing energy use by reducing irrigation water requirements, reducing reliance on petroleum-based fertilizers and pesticides, and planting climate appropriate shade trees in urban areas;
 - (3) Conserving water by capturing and reusing rainwater and gray water wherever possible and selecting climate appropriate plants that need minimal supplemental water after establishment;
 - (4) Protecting air and water quality by reducing power equipment use and landfill disposal trips, selecting recycled and locally sourced materials, and using compost, mulch and efficient irrigation equipment to prevent erosion; and
 - (5) Protecting existing habitat and creating new habitat by choosing local native plants, climate adapted non-natives and avoiding invasive plants. Utilizing integrated pest management with least toxic methods as the first course of action.

Sec. 28-92. - Applicability.

- (a) After December 1, 2015, and consistent with Executive Order No. B-29-15, this Article shall apply to all of the following landscape projects:
 - (1) New development projects with an aggregate landscape area equal to or greater than 500 square feet requiring a building permit, plan check or design review;
 - (2) Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 square feet requiring a building permit, plan check, or design review;
 - (3) Existing landscapes limited to Sections 28-106 and 28-115; and
 - (4) Cemeteries. Recognizing the special landscape needs of cemeteries, new and rehabilitated cemeteries are limited to Sections 28-98, 28-105 and 28-106 of this Article. Existing cemeteries are limited to Sections 28-106 and 28-115 of this Article.
- (b) Any project with an aggregate landscape area of 2,500 square feet or less may comply with the performance requirements of this Article or conform to the prescriptive measures contained in Section 28-120.
- (c) For projects using treated or untreated gray water or rainwater captured on site, any lot or parcel within the project that has less than 2500 sq. ft. of landscape and meets the lot or parcel's landscape water requirement (Estimated Total Water Use) entirely with treated or untreated gray water or through stored rainwater captured on site is subject only to Section 28-120 (b) (5).
- (d) This Article does not apply to:
 - (1) Registered local, state or federal historical sites;
 - (2) Ecological restoration projects that do not require a permanent irrigation system;
 - (3) Mined-land reclamation projects that do not require a permanent irrigation system; or
 - (4) Existing plant collections, as part of botanical gardens and arboretums open to the public.

Sec. 28-93. – Definitions.

The terms used in this Article have the meaning set forth below:

- (a) "Applied water" means the portion of water supplied by the irrigation system to the landscape.
- (b) "Automatic irrigation controller" means timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers are able to self-adjust and schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data.
- (c) "Backflow prevention device" means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.
- (d) "Certificate of Completion" means the document required under Section 28-103.

- (e) “Certified irrigation designer” means a person certified to design irrigation systems by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency’s Water Sense irrigation designer certification program and Irrigation Association’s Certified Irrigation Designer program.
- (f) “Certified landscape irrigation auditor” means a person certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency’s Water Sense irrigation auditor certification program and Irrigation Association’s Certified Landscape Irrigation Auditor program.
- (g) “Check valve” or “anti-drain valve” means a valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.
- (h) “Common interest developments” means community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351.
- (i) “Compost” means the safe and stable product of controlled biologic decomposition of organic materials that is beneficial to plant growth.
- (j) “Conversion factor (0.62)” means the number that converts acre-inches per acre per year to gallons per square foot per year.
- (k) “Distribution uniformity” means the measure of the uniformity of irrigation water over a defined area.
- (l) “Drip irrigation” means any non-spray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.
- (m) “Ecological restoration project” means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.
- (n) “Effective precipitation” or “usable rainfall” (Eppt) means the portion of total precipitation which becomes available for plant growth.
- (o) “Emitter” means a drip irrigation emission device that delivers water slowly from the system to the soil.
- (p) “Established landscape” means the point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.
- (q) “Establishment period of the plants” means the first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are established after one or two years of growth. Native habitat mitigation areas and trees may need three to five years for establishment.
- (r) “Estimated Total Water Use” (ETWU) means the total water used for the landscape as described in Section 28-98.
- (s) “ET adjustment factor” (ETAF) means a factor of 0.55 for residential areas and 0.45 for nonresidential areas, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape. The ETAF for new and existing (non-rehabilitated) Special

Landscape Areas shall not exceed 1.0. The ETAF for existing non-rehabilitated landscapes is 0.8.

- (t) "Evapotranspiration rate" means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.
- (u) "Flow rate" means the rate at which water flows through pipes, valves and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.
- (v) "Flow sensor" means an inline device installed at the supply point of the irrigation system that produces a repeatable signal proportional to flow rate. Flow sensors must be connected to an automatic irrigation controller, or flow monitor capable of receiving flow signals and operating master valves. This combination flow sensor/controller may also function as a landscape water meter or sub-meter.
- (w) "Friable" means a soil condition that is easily crumbled or loosely compacted down to a minimum depth per planting material requirements, whereby the root structure of newly planted material will be allowed to spread unimpeded.
- (x) "Fuel Modification Plan Guideline" means guidelines from a local fire authority to assist residents and businesses that are developing land or building structures in a fire hazard severity zone.
- (y) "Gray water" means untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Gray water" includes, but is not limited to, wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers. Health and Safety Code Section 17922.12.
- (z) "Hardscapes" means any durable material (pervious and non-pervious).
- (aa) "Hydro zone" means a portion of the landscaped area having plants with similar water needs and rooting depth. A hydro zone may be irrigated or non-irrigated.
- (bb) "Infiltration rate" means the rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).
- (cc) "Invasive plant species" means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species. Lists of invasive plants are maintained at the California Invasive Plant Inventory and USDA invasive and noxious weeds database.
- (dd) "Irrigation audit" means an in-depth evaluation of the performance of an irrigation system conducted by a Certified Landscape Irrigation Auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule. The audit must be conducted in a manner consistent with the Irrigation Association's Landscape Irrigation Auditor Certification

- program or other U.S. Environmental Protection Agency “Water sense” labeled auditing program.
- (ee) “Irrigation efficiency” (IE) means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates irrigation system characteristics and management practices. The irrigation efficiency for purposes of this Article is 0.75 for overhead spray devices and 0.81 for drip systems.
 - (ff) “Irrigation survey” means an evaluation of an irrigation system that is less detailed than an irrigation audit. An irrigation survey includes, but is not limited to: inspection, system test, and written recommendations to improve performance of the irrigation system.
 - (gg) “Irrigation water use analysis” means a review of water use data based on meter readings and billing data.
 - (hh) “Landscape architect” means a person who holds a license to practice landscape architecture in the state of California Business and Professions Code, Section 5615.
 - (ii) “Landscape area” means all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).
 - (jj) “Landscape contractor” means a person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems.
 - (kk) “Landscape Documentation Package” means the documents required under Section 28-95.
 - (ll) “Landscape project” means total area of landscape in a project as defined in “landscape area” for the purposes of this ordinance, meeting requirements under Section 28-92.
 - (mm) “Landscape water meter” means an inline device installed at the irrigation supply point that measures the flow of water into the irrigation system and is connected to a totalizer to record water use.
 - (nn) “Lateral line” means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.
 - (oo) “Local agency” means a city or county, including a charter city or charter county, that is responsible for adopting and implementing the ordinance. The local agency is also responsible for the enforcement of this ordinance, including but not limited to, approval of a permit and plan check or design review of a project.
 - (pp) “Local water purveyor” means any entity, including a public agency, city, county, or private water company that provides retail water service.
 - (qq) “Low volume irrigation” means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines, and bubblers. Low volume irrigation systems are

- specifically designed to apply small volumes of water slowly at or near the root zone of plants.
- (rr) “Main line” means the pressurized pipeline that delivers water from the water source to the valve or outlet.
 - (ss) “Master shut-off valve” is an automatic valve installed at the irrigation supply point which controls water flow into the irrigation system. When this valve is closed water will not be supplied to the irrigation system. A master valve will greatly reduce any water loss due to a leaky station valve.
 - (tt) “Maximum Applied Water Allowance” (MAWA) means the upper limit of annual applied water for the established landscaped area as specified in Section 28-98. It is based upon the area’s reference evapotranspiration, the ET Adjustment Factor, and the size of the landscape area. The Estimated Total Water Use shall not exceed the Maximum Applied Water Allowance. Special Landscape Areas, including recreation areas, areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas irrigated with recycled water are subject to the MAWA with an ETAF not to exceed 1.0. $MAWA = (ET_o) (0.62) [(ETAF \times LA) + ((1 - ETAF) \times SLA)]$.
 - (uu) “Median” is an area between opposing lanes of traffic that may be unplanted or planted with trees, shrubs, perennials, and ornamental grasses.
 - (vv) “Microclimate” means the climate of a small, specific area that may contrast with the climate of the overall landscape area due to factors such as wind, sun exposure, plant density, or proximity to reflective surfaces.
 - (ww) “Mined-land reclamation projects” means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.
 - (xx) “Mulch” means any organic material such as leaves, bark, straw, compost, or inorganic mineral materials such as rocks, gravel, or decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.
 - (yy) “New construction” means, for the purposes of this ordinance, a new building with a landscape or other new landscape, such as a park, playground, or greenbelt without an associated building.
 - (zz) “Non-residential landscape” means landscapes in commercial, institutional, industrial and public settings that may have areas designated for recreation or public assembly. It also includes portions of common areas of common interest developments with designated recreational areas.
 - (aaa) “Operating pressure” means the pressure at which the parts of an irrigation system are designed by the manufacturer to operate.
 - (bbb) “Overhead sprinkler irrigation systems” means systems that deliver water through the air (e.g., spray heads and rotors).
 - (ccc) “Overspray” means the irrigation water which is delivered beyond the target area.
 - (ddd) “Permit” means an authorizing document issued by local agencies for new construction or rehabilitated landscapes.
 - (eee) “Pervious” means any surface or material that allows the passage of water through the material and into the underlying soil.

- (fff) “Plant factor” or “plant water use factor” is a factor, when multiplied by ETo, estimates the amount of water needed by plants. For purposes of this ordinance, the plant factor range for very low water use plants is 0 to 0.1, the plant factor range for low water use plants is 0.1 to 0.3, the plant factor range for moderate water use plants is 0.4 to 0.6, and the plant factor range for high water use plants is 0.7 to 1.0. Plant factors cited in this ordinance are derived from the publication “Water Use Classification of Landscape Species”. Plant factors may also be obtained from horticultural researchers from academic institutions or professional associations as approved by the California Department of Water Resources (DWR).
- (ggg) “Project applicant” means the individual or entity submitting a Landscape Documentation Package required under Section 28-95 to request a permit, plan check, or design review from the local agency. A project applicant may be the property owner or his or her designee.
- (hhh) “Rain sensor” or “rain sensing shutoff device” means a component which automatically suspends an irrigation event when it rains.
- (iii) “Record drawing” or “as-builts” means a set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.
- (jjj) “Recreational area” means areas, excluding private single family residential areas, designated for active play, recreation or public assembly in parks, sports fields, picnic grounds, amphitheaters or golf courses tees, fairways, roughs, surrounds and greens.
- (kkk) “Recycled water”, “reclaimed water”, or “treated sewage effluent water” means treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and water features. This water is not intended for human consumption.
- (III) “Reference evapotranspiration” or “ETo” means a standard measurement of environmental parameters which affect the water use of plants. ETo is expressed in inches per day, month, or year as represented in Section 28-121, and is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowance so that regional differences in climate can be accommodated.
- (mmm) “Regional Water Efficient Landscape Ordinance” means a local Ordinance adopted by two or more local agencies, water suppliers and other stakeholders for implementing a consistent set of landscape provisions throughout a geographical region. Regional ordinances are strongly encouraged to provide a consistent framework for the landscape industry and applicants to adhere to.
- (nnn) “Rehabilitated landscape” means any re-landscaping project that requires a permit, plan check, or design review, meets the requirements of Section 28-92, and the modified landscape area is equal to or greater than 2,500 square feet.
- (ooo) “Residential landscape” means landscapes surrounding single or multifamily homes.

- (ppp) “Runoff” means water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a slope.
- (qqq) “Soil moisture sensing device” or “soil moisture sensor” means a device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.
- (rrr) “Soil texture” means the classification of soil based on its percentage of sand, silt, and clay.
- (sss) “Special Landscape Area” (SLA) means an area of the landscape dedicated solely to edible plants, recreational areas, areas irrigated with recycled water, or water features using recycled water.
- (ttt) “Sprinkler head” means a device which delivers water through a nozzle.
- (uuu) “Static water pressure” means the pipeline or municipal water supply pressure when water is not flowing.
- (vvv) “Station” means an area served by one valve or by a set of valves that operate simultaneously.
- (www) “Swing joint” means an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.
- (xxx) “Sub meter” means a metering device to measure water applied to the landscape that is installed after the primary utility water meter.
- (yyy) “Turf” means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermuda grass, Kikuyu grass, Seashore Paspalum, St. Augustine grass, Zoysia grass, and Buffalo grass are warm-season grasses.
- (zzz) “Valve” means a device used to control the flow of water in the irrigation system.
- (aaaa) “Water conserving plant species” means a plant species identified as having a very low or low plant factor.
- (bbbb) “Water feature” means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high water use hydro zone of the landscape area. Constructed wetlands used for on-site wastewater treatment or storm water best management practices that are not irrigated and used solely for water treatment or storm water retention are not water features and, therefore, are not subject to the water budget calculation.
- (cccc) “watering window” means the time of day irrigation is allowed.
- (dddd) “WUCOLS” means the Water Use Classification of Landscape Species published by the University of California Cooperative Extension and the Department of Water Resources in 2014.

Sec. 28-94. – Landscape Documentation Package - Process.

- (a) A copy of the landscape documentation package conforming to this Article shall be submitted to the City's Department of Engineering as part of an application for review and approval of landscaping and irrigation at the time of landscape plan check submittal. No certificate of occupancy or other final City approval shall be issued until the City Engineer or designee reviews and approves the landscape documentation package and confirms that the landscaping and irrigation has been installed in accordance with approved plans.
- (b) The City's Department of Engineering shall review the landscape documentation package submitted by the project applicant at the time of plan submittal for building and safety permits;
- (c) The City's Department of Engineering shall approve or deny the landscape documentation package;
- (d) Arborists' permits. If required by Article III, Sections 28-61 et seq., arborist reports and plans must be submitted to City Engineer or designee. Thereafter, the report and plans shall be reviewed to ensure conformity both with this Article and Article III, Sections 28-61 et seq. The recommendation of the arborist report shall be incorporated into the landscape plans.

Sec. 28-95. – Landscape Documentation Package – Contents.

- (a) The Landscape Documentation Package shall include the following elements:
 - (1) Project information
 - a. Date
 - b. Project applicant, property owner, and/or property owner's representative (address and contact information)
 - c. Project address, assessor's parcel number(s), tract number (lots and phase), and, if available, cross streets
 - d. Vicinity Map
 - e. Site Plan
 - f. Total landscape area (square feet)
 - g. Project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed, industrial, and developer installed front yard, side, and rear per Chapter 30 of this Code)
 - h. Water supply type (e.g., potable, recycled, well) and identify the local retail water purveyor if the applicant is not served by a private well
 - i. Checklist of all documents in Landscape Documentation Package
 - j. Applicant signature and date with statement, "I agree to comply with the requirements of the water efficient landscape ordinance and submit a complete Landscape Documentation Package".
 - (2) Water Efficient Landscape Worksheet
 - a. Water budget calculations
 - 1. Maximum Applied Water Allowance (MAWA)
 - 2. Estimated Total Water Use (ETWU)

- (3) Soil management report
 - (4) Landscape design plan
 - (5) Irrigation design plan
 - (6) Grading design plan, if applicable
 - (7) Any other documents required by the City including, but not limited to, the following: hardscape plan; arborist report; preliminary landscape plan; landscape construction plans; and Plan check fees
- (b) Drawing standards. All sheets except the title sheet shall comply with the City's specifications on file with the Department of Engineering

Sec. 28-96. – Enforcement and Penalties.

- (a) For the purposes of ensuring that persons comply with the provisions of this Article, the City Engineer, or designee may, following written notice to subject property owner, initiate enforcement action against such property owner or designee, which enforcement action may include, but not limited to, the following:
- (1) Revocation of a landscape documentation package;
 - (2) Revocation of an approved conditional use permit;
 - (3) Withholding issuance of a certificate of use and occupancy or building permit; and
 - (4) Issuance of a stop work order.
- (b) In addition to any other remedies available for any violation of this Code, including but not limited to administrative citations, the City may bring and maintain any action permitted by law to restrain, correct, or abate any violation of this Article.

Sec. 28-97. – Appeals.

- (a) Right of appeal. Any action taken by the City Engineer or designee in the administration and/or enforcement of the provisions of this Article may be appealed by an applicant, property owner or designee of any applicable project to the Planning Commission. An appeal stays proceedings until a determination of the appeal has been made. If the Planning Commission fails to make its decision within the time limit specified in section 28-97(d), the applicant may file an appeal with the City Council requesting a decision by that body. Such an appeal must be made within ten days after the expiration of the time limit specified in section 28-97(d).
- (b) Application for appeal. The notice of appeal shall be in writing and shall be filed with the Department of Engineering upon forms provided by the City. An appeal of any action in the administration and/or enforcement of this Article shall indicate specifically the reasons for appeal.
- (c) Time for filing. Any appeal shall be filed within ten calendar days from the date of notification of a decision from which the appeal is made. Upon the filing of appeal, the department of engineering shall transmit a copy of the appeal to the clerk of the body hearing the appeal and to the Department of Community Development for the processing of such appeal.

- (d) Hearing date and notice. Upon receipt of the notice of appeal, the body hearing the appeal shall set a date for hearing of the matter and give notice of the date, time and place of the hearing to the appellant at least ten days prior to the date of the hearing. Prior to such hearing, the community development department shall transmit to the clerk of the body hearing the appeal a report of the findings and shall present all documents on file at the hearing. The appeal hearing shall be scheduled no sooner than 21 days nor no later than 51 days from the date the appeal application has been deemed to be complete. This time limit may be extended by mutual agreement of the City and the applicant.

Sec. 28-98. – Water Efficient Landscape Worksheet

- (a) A project applicant shall complete the Water Efficient Landscape Worksheet, which contains information on the plant factor, irrigation method, irrigation efficiency, and area associated with each hydro zone. Calculations are then made to show that the evapotranspiration adjustment factor (ETAF) for the landscape project does not exceed a factor of 0.55 for residential areas and 0.45 for non-residential areas, exclusive of Special Landscape Areas. The ETAF for a landscape project is based on the plant factors and irrigation methods selected. The Maximum Applied Water Allowance is calculated based on the maximum ETAF allowed (0.55 for residential areas and 0.45 for non-residential areas) and expressed as annual gallons required. The Estimated Total Water Use (ETWU) is calculated based on the plants used and irrigation method selected for the landscape design. ETWU must be below the MAWA.
 - (1) In calculating the MAWA and ETWU, a project applicant shall use the ETo values from the Reference Evapotranspiration Table in Section 28-121.
- (b) Water budget calculations shall adhere to the following requirements:
 - (1) The plant factor used shall be from WUCOLS or from horticultural researchers with academic institutions or professional associations as approved by the California Department of Water Resources (DWR). The plant factor ranges from 0 to 0.1 for very low water using plants, 0.1 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.
 - (2) All water features shall be included in the high water use hydro zone and temporarily irrigated areas shall be included in the low water use hydro zone.
 - (3) All Special Landscape Areas shall be identified, and their water use calculated as shown on the Sample Water Efficient Landscape Worksheet kept on file with the City's Department of Engineering.
 - (4) ETAF for new and existing (non-rehabilitated) Special Landscape Areas shall not exceed 1.0.

Sec. 28-99. – Soil Management Report

- (a) In order to reduce runoff and encourage healthy plant growth, a soil management report shall be completed by the project applicant, or his/her designee, as follows:
- (1) Submit soil samples to a laboratory for analysis and recommendations.
 - a. Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.
 - b. The soil analysis shall include:
 1. Soil texture;
 2. Infiltration rate determined by laboratory test or soil texture infiltration rate table;
 3. PH;
 4. Total soluble salts;
 5. Sodium;
 6. Percent organic matter; and
 7. Recommendations.
 - c. In projects with multiple landscape installations (i.e. production home developments) a soil sampling rate of 1 in 7 lots or approximately 15% will satisfy this requirement. Large landscape projects shall sample at a rate equivalent to 1 in 7 lots.
 - (2) The project applicant, or his/her designee, shall comply with one of the following:
 - a. If significant mass grading is not planned, the soil analysis report shall be submitted to the City as part of the Landscape Documentation Package; or
 - b. If significant mass grading is planned, the soil analysis report shall be submitted to the City as part of the Certificate of Completion.
 - (3) The soil analysis report shall be made available, in a timely manner, to the City Landscape Inspector or inspector designated by the City Engineer, and to the landscape contractor prior to the installation of any plant material.
 - (4) The project applicant, or his/her designee, shall submit to an inspection by a City Landscape Inspector or inspector designated by the City Engineer, verifying implementation of soil management report recommendations. .

Sec. 28-100. – Landscape Design Plan

- (a) For the efficient use of water, a landscape shall be carefully designed and planned for the intended function of the project. A landscape design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.
- (1) Plant Material
 - a. Any plant may be selected for the landscape providing the ETWU in the landscape area does not exceed the MAWA.

Methods to achieve water efficiency shall include one or more of the following:

1. Protection and preservation of native species and natural vegetation;
 2. Selection of water-conserving plant, tree and turf species, especially local native plants;
 3. Selection of plants based on local climate suitability, disease and pest resistance;
 4. Selection of trees based on applicable local tree ordinances or tree shading guidelines, and size at maturity as appropriate for the planting area; and
 5. Selection of plants from local and regional landscape program plant lists.
 6. Selection of plants from local Fuel Modification Plan Guidelines.
- b. Each hydro zone shall have plant materials with similar water use, with the exception of hydro zones with plants of mixed water use, as specified in Section 28-101 (a)(2)(d).
- c. Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. Methods to achieve water efficiency shall include one or more of the following:
1. Use the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate;
 2. Recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure [e.g., buildings, sidewalks, power lines]; allow for adequate soil volume for healthy root growth and
 3. Consider the solar orientation for plant placement to maximize summer shade and winter solar gain.
- d. Turf is not allowed on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape and where 25% means 1 foot of vertical elevation change for every 4 feet of horizontal length (rise divided by run x 100 = slope percent).
- e. High water use plants, characterized by a plant factor of 0.7 to 1.0, are prohibited in street medians.
- f. A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4291(a) and (b). Fire-prone plant materials and highly flammable mulches shall be avoided.
- g. The use of invasive plant species, such as those listed by the California Invasive Plant Council, is strongly discouraged.

- h. The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group.
- (2) Water Features
 - a. Recirculating water systems shall be used for water features.
 - b. Where available, recycled water shall be used as a source for decorative water features.
 - c. Surface area of a water feature shall be included in the high water use hydro zone area of the water budget calculation.
 - d. Pool and spa covers are highly recommended.
 - (3) Soil Preparation, Mulch and Amendments
 - a. Prior to the planting of any materials, compacted soils shall be transformed to a friable condition. On engineered slopes, only amended planting holes need meet this requirement.
 - b. Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected (see Section 28-99).
 - c. For landscape installations, compost at a rate of a minimum of four cubic yards per 1,000 square feet of permeable area shall be incorporated to a depth of six inches into the soil. Soils with greater than 6% organic matter in the top 6 inches of soil are exempt from adding compost and tilling.
 - d. A minimum three-inch (3") layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated. To provide habitat for beneficial insects and other wildlife, up to 5 % of the landscape area may be left without mulch. Designated insect habitat must be included in the landscape design plan as such.
 - e. Stabilizing mulching products shall be used on slopes that meet current engineering standards.
 - f. The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.
 - g. Organic mulch materials made from recycled or post-consumer shall take precedence over inorganic materials or virgin forest products unless the recycled post-consumer organic products are not locally available. Organic mulches are not required where prohibited by local Fuel Modification Plan Guidelines or other applicable local ordinances.
- (b) The landscape design plan, at a minimum, shall:
 - (1) Delineate and label each hydro zone by number, letter, or other method;
 - (2) Identify each hydro zone as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscape shall be

included in the low water use hydro zone for the water budget calculation;

- (3) Identify recreational areas;
- (4) Identify areas permanently and solely dedicated to edible plants;
- (5) Identify areas irrigated with recycled water;
- (6) Identify type of mulch and application depth;
- (7) Identify soil amendments, type, and quantity;
- (8) Identify type and surface area of water features;
- (9) Identify hardscapes (pervious and non-pervious);
- (10) Identify location, installation details, and 24-hour retention or infiltration capacity of any applicable storm water best management practices that encourage on-site retention and infiltration of storm water. Project applicants shall refer to the local agency or regional Water Quality Control Board for information on any applicable storm water technical requirements. Storm water best management practices are encouraged in the landscape design plan and examples are provided in Section 28-111.
- (11) Identify any applicable rain harvesting or catchment technologies as discussed in Section 28-111 and their 24-hour retention or infiltration capacity;
- (12) Identify any applicable gray water discharge piping, system components and area(s) of distribution;
- (13) Contain the following statement: "I have complied with the criteria of the ordinance and applied them for the efficient use of water in the landscape design plan";
- (14) Bear the signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agriculture Code); and
- (15) Identify and include any additional items required by the City's Department of Engineering, at its discretion.

Sec. 28-101. – Irrigation Design Plan

- (a) This Section applies to landscaped areas requiring permanent irrigation, not areas that require temporary irrigation solely for the plant establishment period. For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturers' recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.
 - (1) System
 - a. Landscape water meters, defined as either a dedicated water service meter or private sub meter, shall be installed for all

non-residential irrigated landscapes of 1,000 sq. ft. but not more than 5,000 sqft. (the level at which Water Code 535 applies) and residential irrigated landscapes of 5,000 sq. ft. or greater. A landscape water meter may be either:

1. A customer service meter dedicated to landscape use provided by the local water purveyor; or
 2. A privately-owned meter or sub meter.
- b. Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data utilizing non-volatile memory shall be required for irrigation scheduling in all irrigation systems.
- c. If the water pressure is below or exceeds the recommended pressure of the specified irrigation devices, the installation of a pressure regulating device is required to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
1. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices shall be installed to meet the required dynamic pressure of the irrigation system.
 2. Static water pressure, dynamic or operating pressure and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.
- d. Sensors (rain, freeze, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather or during rain.
- e. Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency (such as a main line break) or routine repair.
- f. Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system. A project applicant shall refer to the applicable local agency code (i.e., public health) for additional backflow prevention requirements.
- g. Flow sensors that detect high flow conditions created by system damage or malfunction are required for all on non-

- residential landscapes and residential landscapes of 5000 sq. ft. or larger.
- h. Master shut-off valves are required on all projects except landscapes that make use of technologies that allow for the individual control of sprinklers that are individually pressurized in a system equipped with low pressure shut down features.
 - i. The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.
 - j. Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.
 - k. The design of the irrigation system shall conform to the hydro zones of the landscape design plan.
 - l. The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria as described in Section 28-98 regarding the MAWA.
 - m. All irrigation emission devices must meet the requirements set in the American National Standards Institute (ANSI) standard, American Society of Agricultural and Biological Engineers'/International Code Council's (ASABE/ICC) 802-2014 "Landscape Irrigation Sprinkler and Emitter Standard, All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.
 - n. It is highly recommended that the project applicant inquire with the local water purveyor about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.
 - o. In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.
 - p. Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.
 - q. Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
 - r. Swing joints or other riser-protection components are required on all riser's subject to damage that are adjacent to hardscapes or in high traffic areas of turf grass.
 - s. Check valves or anti-drain valves are required on all sprinkler heads where low point drainage could occur.
 - t. Areas less than ten (10) feet in width in any direction shall be irrigated with subsurface irrigation or other means that produces no runoff or overspray.

- u. Overhead irrigation shall not be permitted within 24 inches of any non-permeable surface. Allowable irrigation within the setback from non-permeable surfaces may include drip, drip line, or other low flow non-spray technology. The setback area may be planted or unplanted. The surfacing of the setback may be mulch, gravel, or other porous material. These restrictions may be modified if:
 - 1. The landscape area is adjacent to permeable surfacing and no runoff occurs; or
 - 2. The adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or
 - 3. The irrigation designer specifies an alternative design or technology, as part of the Landscape Documentation Package and clearly demonstrates strict adherence to irrigation system design criteria in Section 28-101 (a) (1) (i). Prevention of overspray and runoff must be confirmed during the irrigation audit.
 - v. Slopes greater than 25% shall not be irrigated with an irrigation system with an application rate exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology, as part of the Landscape Documentation Package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during the irrigation audit.
- (2) Hydro zone
- a. Each valve shall irrigate a hydro zone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.
 - b. Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydro zone.
 - c. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf to facilitate the appropriate irrigation of trees. The mature size and extent of the root zone shall be considered when designing irrigation for the tree.
 - d. Individual hydro zones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:
 - 1. Plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or
 - 2. The plant factor of the higher water using plant is used for calculations.
 - e. Individual hydro zones that mix high and low water use plants shall not be permitted.
 - f. On the landscape design plan and irrigation design plan, hydro zone areas shall be designated by number, letter, or

other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the Hydro zone Information Table (see the Sample Water Efficient Landscape Worksheet kept on file with the City's Department of Engineering, Section A). This table can also assist with the irrigation audit and programming the controller.

- (b) The irrigation design plan, at a minimum, shall contain:
- (1) Location and size of separate water meters for landscape;
 - (2) Location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices;
 - (3) Static water pressure at the point of connection to the public water supply;
 - (4) Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;
 - (5) Recycled water irrigation systems as specified in Section 28-108;
 - (6) The following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the irrigation design plan";
 - (7) The signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized to design an irrigation system. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agricultural Code); and
 - (8) Any additional information required by the City's Department of Engineering, at its discretion.

Sec. 28-102. – Grading Design Plan

- (a) For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package or as otherwise approved by the City Engineer or designee. A comprehensive grading plan prepared by a civil engineer for other City permits satisfies this requirement.
- (1) The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including:
 - a. height of graded slopes;
 - b. drainage patterns;
 - c. pad elevations;
 - d. finish grade; and
 - e. storm water retention improvements, if applicable.

- (2) To prevent excessive erosion and runoff, it is highly recommended that project applicants:
 - a. grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable hardscapes;
 - b. avoid disruption of natural drainage patterns and undisturbed soil; and
 - c. avoid soil compaction in landscape areas.
- (3) The grading/landscape design plan shall contain the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of a licensed professional as authorized by law.

Sec. 28-103. – Certificate of Completion.

- (a) The Certificate of Completion (a sample certificate is kept on file with the City's Department of Engineering) shall include the following six (6) elements:
 - (1) Project information sheet that contains:
 - a. Date;
 - b. Project name;
 - c. Project applicant name, telephone, and mailing address;
 - d. Project address and location; and
 - e. Property owner name, telephone, and mailing address;
 - (2) Certification by either the signer of the landscape design plan, the signer of the irrigation design plan, or the licensed landscape contractor that the landscape project has been installed per the approved Landscape Documentation Package;
 - a. Where there have been significant changes made in the field during construction, these "as-built" or record drawings shall be included with the certification;
 - b. A diagram of the irrigation plan showing hydro zones shall be kept with the irrigation controller for subsequent management purposes.
 - (3) Irrigation scheduling parameters used to set the controller (see Section 28-104);
 - (4) Landscape and irrigation maintenance schedule (see Section 28-105);
 - (5) Irrigation audit report (see Section 28-106); and
 - (6) Soil analysis report, if not submitted with Landscape Documentation Package, and documentation verifying implementation of soil report recommendations (see Section 28-99).
- (b) The project applicant shall:
 - (1) Submit the signed Certificate of Completion to the City for review;
 - (2) Ensure that copies of the approved Certificate of Completion are submitted to the local water purveyor and property owner or his or her designee.

- (c) The City shall:
 - (1) Receive the signed Certificate of Completion from the project applicant;
 - (2) Approve or deny the Certificate of Completion. If the Certificate of Completion is denied, the City shall provide information to the project applicant regarding reapplication, appeal, or other assistance.

Sec. 28-104. – Irrigation Scheduling.

- (a) For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:
 - (1) Irrigation scheduling shall be regulated by automatic irrigation controllers.
 - (2) Overhead irrigation shall be scheduled between 8:00 p.m. and 10:00 a.m. unless weather conditions prevent it. If allowable hours of irrigation differ from the local water purveyor, the stricter of the two shall apply. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
 - (3) For implementation of the irrigation schedule, particular attention must be paid to irrigation run times, emission device, flow rate, and current reference evapotranspiration, so that applied water meets the ETWU. Total annual applied water shall be less than or equal to MAWA. Actual irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data (e.g., CIMIS) or soil moisture sensor data.
 - (4) Parameters used to set the automatic controller shall be developed and submitted for each of the following:
 - a. The plant establishment period;
 - b. The established landscape; and
 - c. Temporarily irrigated areas.
 - (5) Each irrigation schedule shall consider for each station all of the following that apply:
 - a. irrigation interval (days between irrigation);
 - b. irrigation run times (hours or minutes per irrigation event to avoid runoff);
 - c. number of cycle starts required for each irrigation event to avoid runoff;
 - d. amount of applied water scheduled to be applied on a monthly basis;
 - e. application rate setting;
 - f. root depth setting;
 - g. plant type setting;
 - h. soil type;
 - i. slope factor setting;
 - j. shade factor setting; and
 - k. irrigation uniformity or efficiency setting.

Sec. 28-105. – Landscape and Irrigation Maintenance Schedule.

- (a) Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the Certificate of Completion.
- (b) A regular maintenance schedule shall include, but not be limited to, routine inspection; auditing, adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; topdressing with compost, replenishing mulch; fertilizing; pruning; weeding in all landscape areas and removing and obstructions to emission devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
- (c) Repair of all irrigation equipment shall be done with the originally installed components or their equivalents or with components with greater efficiency.
- (d) Project applicants are encouraged to implement established landscape industry sustainable Best Practices for all landscape maintenance activities.

Sec. 28-106. – Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis – New and Rehabilitated Landscapes.

- (a) All landscape irrigation audits shall be conducted by a City landscape irrigation auditor or a third-party certified landscape irrigation auditor. Landscape audits shall not be conducted by the person who designed the landscape or installed the landscape
- (b) In large projects or projects with multiple landscape installations (i.e. production home developments) an auditing rate of 1 in 7 lots or approximately 15% will satisfy this requirement.
- (c) For new construction and rehabilitated landscape projects installed after December 1, 2015, as described in Section 28-92:
 - (1) The project applicant shall submit an irrigation audit report with the Certificate of Completion to the City that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting overspray or run off that causes overland flow, and preparation of an irrigation schedule, including configuring irrigation controllers with application rate, soil types, plant factors, slope, exposure and any other factors necessary for accurate programming;
 - (2) The local agency shall administer programs that may include, but not limited to, irrigation water use analysis, irrigation audits, and irrigation surveys for compliance with the Maximum Applied Water Allowance.

Sec. 28-107. – Irrigation Efficiency.

- (a) For the purpose of determining ETWU, average irrigation efficiency is assumed to be 0.75 for overhead spray devices and 0.81 for drip system devices.

Sec. 28-108. – Recycled Water.

- (a) The installation of recycled water irrigation systems shall allow for the current and future use of recycled water.
- (b) All recycled water irrigation systems shall be designed and operated in accordance with all applicable local and State laws.
- (c) Landscapes using recycled water are considered Special Landscape Areas. The ET Adjustment Factor for new and existing (non-rehabilitated) Special Landscape Areas shall not exceed 1.0.

Sec. 28-109. – Gray water Systems.

- (a) Gray water systems promote the efficient use of water and are encouraged to assist in on-site landscape irrigation. All gray water systems shall conform to the California Plumbing Code (Title 24, Part 5, and Chapter 16) and any applicable local ordinance standards. Refer to Section 28-92 (c) for the applicability of this ordinance to landscape areas less than 2,500 square feet with the ETWU met entirely by gray water.
- (b)

Sec. 28-110. – Backflow Preventer Certification.

- (a) Prior to final acceptance of any City maintained landscape areas by the City, the project proponent shall submit a backflow preventer certificate which has been prepared by a person licensed by the state to perform such certifications. Such certificate shall state that the backflow prevention devices at the project shall prevent backflow of irrigation system water into the public water system.

Sec. 28-111. – Storm water Management and Rainwater Retention.

- (a) Storm water management practices minimize runoff and increase infiltration which recharges groundwater and improves water quality. The implementation of storm water best management practices into the landscape and grading design plans to minimize runoff and to increase on-site rainwater retention and infiltration is encouraged.

- (b) Project applicants shall refer to the City's Department of Public Works, Environmental Control Division, or Regional Water Quality Control Board for information on any applicable storm water technical requirements.
- (c) All planted landscape areas are required to have friable soil to maximize water retention and infiltration. Refer to § 28-100 (a) (3).
- (d) It is strongly recommended that landscape areas be designed for capture and infiltration capacity that is sufficient to prevent runoff from impervious surfaces (i.e. roof and paved areas) from either: the one inch, 24-hour rain event or (2) the 85th percentile, 24-hour rain event, and/or additional capacity as required by any applicable local, regional, state or federal regulation.
- (e) It is recommended that storm water projects incorporate any combination of the following elements to improve on-site storm water and dry weather runoff capture and use:
 - (1) Grade impervious surfaces, such as driveways, during construction to drain to vegetated areas;
 - (2) Minimize the area of impervious surfaces such as paved areas, roof and concrete driveways;
 - (3) Incorporate pervious or porous surfaces (e.g., gravel, permeable pavers or blocks, pervious or porous concrete) that minimize runoff;
 - (4) Direct runoff from paved surfaces and roof areas into planting beds or landscaped areas to maximize site water capture and reuse;
 - (5) Incorporate rain gardens, cisterns, and other rain harvesting or catchment systems;
 - (6) Incorporate infiltration beds, swales, basins and drywells to capture storm water and dry weather runoff and increase percolation into the soil; or
 - (7) Consider constructed wetlands and ponds that retain water, equalize excess flow, and filter pollutants.

Sec. 28-112. – Reserved.

Sec. 28-113. – Public Education.

- (a) Publications. Education is a critical component to promote the efficient use of water in landscapes. The use of appropriate principles of design, installation, management and maintenance that save water is encouraged in the community.
 - (1) The City will make available to the public information regarding the use of appropriate principles of design, installation, management, and maintenance of water efficient landscapes to promote the efficient use of water in landscapes. .
- (b) Model Homes. All model homes shall be landscaped and shall use signs and written information to demonstrate the principles of water efficient landscapes described in this ordinance.
 - (1) Signs shall be used to identify the model as an example of a water efficient landscape featuring elements such as hydro zones, irrigation equipment, and others that contribute to the overall water

efficient theme. Signage shall include information about the site water use as designed per the local ordinance; specify who designed and installed the water efficient landscape; and demonstrate low water use approaches to landscaping such as using native plants, gray water systems, and rainwater catchment systems.

- (2) Information shall be provided about designing, installing, managing, and maintaining water efficient landscapes.

Sec. 28-114. – Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis – Existing Landscapes.

- (a) This Section shall apply to all existing landscapes that were installed before December 1, 2015 and are over one acre in size.
 - (1) For all landscapes subject to this Section that have a water meter, the City shall administer programs that may include, but not be limited to, irrigation water use analyses, irrigation surveys, and irrigation audits to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the MAWA for existing landscapes. The MAWA for existing landscapes shall be calculated as follows: $MAWA = (0.8) (ET_o) (LA) (0.62)$.
 - (2) For all landscapes subject to this Section that do not have a meter, the City shall administer programs that may include, but not be limited to, irrigation surveys and irrigation audits to evaluate water use and provide recommendations as necessary in order to prevent water waste.
- (b) All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.

Sec. 28-115. – Water Waste Prevention.

- (a) No water shall be permitted to leave the target landscape due to low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, parking lots, or structures.
- (b) Exceptions. It shall not be considered a violation of this Section if:
 - (1) Water leaves the target landscape to adjacent permeable surfacing and no runoff occurs; or
 - (2) Water leaves the target landscape to adjacent non-permeable surfaces in a manner designed and constructed to drain entirely to landscaping.

Sec. 28-116. – Effective Precipitation.

- (a) A local agency may consider Effective Precipitation (25% of annual precipitation) in tracking water use and may use the following equation to calculate Maximum Applied Water Allowance:

- (1) For residential areas: $MAWA = (E_{To} - E_{ppt}) (0.62) [(0.55 \times LA) + (0.45 \times SLA)]$
- (2) For non-residential areas: $MAWA = (E_{To} - E_{ppt}) (0.62) [(0.45 \times LA) + (0.55 \times SLA)]$

Sec. 28-117. – Verification of Landscape Installation.

- (a) No certificate of occupancy shall be issued until a city landscape inspector has verified that all irrigation, grading and planting have been completed in accordance with the approved plans and specifications of this article.
- (b) Where project conditions of approval require the landscape architect/landscape designer to perform onsite inspections and final certification of completion, the landscape architect/landscape designer shall be required to perform the inspections and verifications described in subsection (a) of this section. The city landscape inspector shall perform a city final landscape inspection for the purpose of issuance of occupancy, following receipt of the landscape certification and inspection form completed by the landscape architect/landscape designer. Required inspections by another person other than the actual designer of the project shall require approval by the department of engineering. Under no circumstances may required inspections of the work be carried out by the installer of the work. Certificate of completion forms are available from the department of engineering.

Sec. 28-118. - Special landscape maintenance district requirements.

- (a) With regards to landscape maintenance districts or public landscape, it shall be the responsibility of the developer to incur all energy charges on all water meters and electrical meters until acceptance by council action of all public landscape areas. Landscape maintenance districts require the following items to be turned over to the city as outlined in the format in subsection (b) of this section:
- (b) Land maintenance district acceptance turn-over items shall be required pursuant to the City's specification package on file with the Department of Engineering.

Sec. 28-119. – Fees for Initial Review.

- (a) For purposes of meeting its obligations under this article and chapter, the following fees are deemed necessary to review landscape documentation packages and shall be imposed on the subject applicant, property owner or designee:

- (1) A landscape documentation package review fee shall be due at the time of the initial project application submission to the department of engineering.
- (b) The City Council by resolution shall establish the amount of the fees described in subsection (a) of this Section in accordance with applicable law.

Sec. 28-120. – Prescriptive Compliance Option.

- (a) This Section contains prescriptive requirements which may be used as a compliance option for this Article.
- (b) Compliance with the following items is mandatory and must be documented on a landscape plan in order to use the prescriptive compliance option:
 - (1) Submit a Landscape Documentation Package which includes the following elements:
 - a. date
 - b. project applicant
 - c. project address (if available, parcel and/or lot number(s))
 - d. total landscape area (square feet), including a breakdown of turf and plant material
 - e. project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed)
 - f. water supply type (e.g., potable, recycled, well) and identify the local retail water purveyor if the applicant is not served by a private well
 - g. contact information for the project applicant and property owner

 - h. applicant signature and date with statement, "I agree to comply with the requirements of Section 28-120 of the Fontana Municipal Code, also known as the prescriptive compliance option of the State Model Water Efficient Landscape Ordinance".
 - (2) Incorporate compost at a rate of at least four cubic yards per 1,000 square feet to a depth of six inches into landscape area (unless contra-indicated by a soil test);
 - (3) Plant material shall comply with all of the following;
 - a. For residential areas, install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 75% of the plant area excluding edibles and areas using recycled water; For non-residential areas, install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 100% of the plant area excluding edibles and areas using recycled water;
 - b. A minimum three-inch (3") layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas,

- creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated.
- (4) Turf shall comply with all of the following:
 - a. Turf shall not exceed 25% of the landscape area in residential areas, and there shall be no turf in non-residential areas;
 - b. Turf shall not be planted on sloped areas which exceed a slope of 1-foot vertical elevation change for every 4 feet of horizontal length;
 - c. Turf is prohibited in parkways less than 10 feet wide, unless the parkway is adjacent to a parking strip and used to enter and exit vehicles. Any turf in parkways must be irrigated by sub-surface irrigation or by other technology that creates no overspray or runoff.
 - (5) Irrigation systems shall comply with the following:
 - a. Automatic irrigation controllers are required and must use evapotranspiration or soil moisture sensor data and utilize a rain sensor.
 - b. Irrigation controllers shall be of a type which does not lose programming data in the event the primary power source is interrupted.
 - c. Pressure regulators shall be installed on the irrigation system to ensure the dynamic pressure of the system is within the manufacturers recommended pressure range.
 - d. Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be installed as close as possible to the point of connection of the water supply.
 - e. All irrigation emission devices must meet the requirements set in the ANSI standard, ASABE/ICC 802-2014. "Landscape Irrigation Sprinkler and Emitter Standard," All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.
 - f. Areas less than ten (10) feet in width in any direction shall be irrigated with subsurface irrigation or other means that produces no runoff or overspray.
 - (6) For non-residential projects with landscape areas of 1,000 sq. ft. or more, a private sub meter(s) to measure landscape water use shall be installed.
 - (c) At the time of final inspection, the permit applicant must provide the owner of the property with a certificate of completion, certificate of installation, irrigation schedule and a schedule of landscape and irrigation maintenance.

Sec. 28-121. – Reference Evapotranspiration (ET_o).

<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>Jun.</i>	<i>Jul.</i>	<i>Aug.</i>	<i>Sep.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Annua l ET_o</i>
2.0	2.7	3.8	4.6	5.7	6.9	7.9	7.4	5.9	4.2	2.6	2.0	55.6

NOTE: In the absence of specific Fontana ETo rates, the above ETo rates are set at the level reported for San Bernardino in Appendix A to the State Model Water Efficient Landscape Ordinance. Of the options available, the City of San Bernardino has the most similar climate and is closest geographically to the City of Fontana.”

SECTION 3. CEQA. This Ordinance is not a project within the meaning of Section 15378 of the State of California Environmental Quality Act (“CEQA”) Guidelines, because it has no potential for resulting in physical change in the environment, directly or indirectly. The City Council further finds, under Title 14 of the California Code of Regulations, Section 15061(b)(3), that this Ordinance is nonetheless exempt from the requirements of CEQA in that the activity is covered by the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA. The City Council, therefore, directs that a Notice of Exemption be filed with the County Clerk of the County of San Bernardino in accordance with CEQA Guidelines.

SECTION 4. Custodian of Records. The documents and materials that constitute the record of proceedings on which this Ordinance is based are located at the City Clerk’s office located at 8353 Sierra Avenue, Fontana, CA 92335. The custodian of these records is the City Clerk.

SECTION 5. Severability. If any section, sentence, clause or phrase of this Ordinance or the application thereof to any entity, person or circumstance is held for any reason to be invalid or unconstitutional, such invalidity or unconstitutionality shall not affect other provisions or applications of this Ordinance which can be given effect without the invalid provision or application, and to this end the provisions of this Ordinance are severable. The people of the City of Fontana hereby declare that they would have adopted this Ordinance and each section, sentence, clause or phrase thereof, irrespective of the fact that any one or more section, subsections, sentences, clauses or phrases be declared invalid or unconstitutional.

SECTION 6. Effective Date. This Ordinance shall become effective thirty (30) days following its adoption.

SECTION 7. Publication. The City Clerk shall certify to the adoption of this Ordinance. Not later than fifteen (15) days following the passage of this Ordinance, the Ordinance, or a summary thereof, along with the names of the City Council members voting for and against the Ordinance, shall be published in a newspaper of general circulation in the City of Fontana.

APPROVED AND ADOPTED 24th day of November, 2015.