CITY OF VISALIA

LANDSCAPE STANDARD SPECIFICATIONS

PARKS AND RECREATION DEPARTMENT
PARKS DIVISION

AUGUST 5, 2013

Approved By: _____
Parks and Recreation Director

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LANDSCAPE STANDARD SPECIFICATIONS

SECTION 1 INTRODUCTION

These Landscape Standard Specifications in conjunction with the City of Visalia Landscape Standard Plans apply to and regulate all landscaping, irrigation, and other related improvements to be placed in the public rights-of-way and/or to be maintained by the City of Visalia. The intent of these documents is to provide and promote adequate, coordinated, and modern development to enhance the aesthetics of the City.

SECTION 2 GENERAL PROVISIONS

A. These Landscape Standard Specifications are meant to work in direct line with the City of Visalia Engineering Standard Specifications, hereinafter referred to as Standard Specifications, Engineering Design and Improvement Standards, hereinafter referred to as Standard Drawings, and the City of Visalia Landscape Standard Plans, hereinafter referred to as Landscape Standard Plans. These documents function together and are part of the Contract Documents. The Landscape Architect and Contractor shall comply with all of the provisions and requirements of all documents.

B. The Contractor shall arrange for, secure, and pay for all permits for water service points, electrical connections, and fees during the course of the construction and/or maintenance period until the work is accepted by the City.

C. The Contractor shall determine location of underground utilities and perform work in a manner which will avoid possible damage. Call Underground Service Alert (USA) 1-800-227-2600 at least three (3) days before excavation to secure location of underground utilities. Hand excavate as required. Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned. It is the Contractor's responsibility to verify the location of all on site and off site utilities, either existing or new, and to take appropriate measures to accommodate for all such encounters without extra charge to the City.

D. Landscape Architect and Contractor to adhere to all City of Visalia standards and requirements.

E. Landscape Architect and Contractor to comply with CA AB1881 MWELO in its entirety.

F. The City of Visalia defines "Project Manager" as any person whom is authorized to act on behalf of the City of Visalia.

G. All materials used and work performed for Landscape Construction Systems shall be done in accordance with the Landscape Specifications and Landscape Standard Plans, the Standard Specifications, Plans, and other Contract Documents. Copies of the Landscape Standard Specifications and Landscape Standard Plans may be obtained from the City of Visalia website at the following address: http://www.ci.visalia.ca.us/depts/parks_n_recreation/urban_forestry/default.asp or by contacting the Urban Forestry Department at (559) 713-4384. Copies of the Standard Specifications and Standard Drawings may be obtained from the City of Visalia website at: http://www.ci.visalia.ca.us/depts/engineering/engineering_documents/default.asp or from City Hall East, 315 E. Acequia Ave., Visalia, California, 93291, for a nominal fee.

H. Measurement and Payment: Landscape Construction Systems will be measured on a lump sum basis. The lump sum price paid for Landscape Construction Systems shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in Landscape Construction Systems as shown on the Plans, set forth in the

Landscape Standard Specifications and Landscape Standard Plans, the Contract Documents, and as directed by the Project Manager. Refer to the Contract Documents and the Bid Proposal to determine if items of work are broken down further into more detailed unit price and lump sum bid items. Where no bid item for Landscape Construction Systems is provided, all costs for providing Landscape Construction Systems shall be included in the various bid items of work; no additional payment will be made therefore.

SECTION 3 OVERALL PLAN PREPARATION

All Landscape Improvement Plans shall be completed, developed in AutoCAD, and prepared by a Licensed Landscape Architect.

All sheets shall contain the following information:

1. Submitted plans shall be drawn on a standard size sheet (24" x 36")
2. Plan scale shall be at least 1" = 20' or larger
3. North arrow shall be shown on each sheet.
4. Match lines shall be labeled to provide adequate reference.
5. Streets within and adjacent to the project shall be labeled by name.
6. The graphic presentation of the design shall include clear and concise drawings with all of the components symbol and key.
7. Signature Block
8. Limit of Work
9. Date
10. Contact information for each Consultant
11. Sheet index key
12. USA logo and contact information

A. Title Sheet

Title sheets shall contain the following:

1. Site location map
2. Consultants names and contact information
3. Project type
4. Water purveyor name and contact information
5. Water source type
6. Sheet index
7. Landscape Square Footages
8. Landscape documentation package:
    a. Certificate of Completion by the registered Landscape Architect
    b. Soils management report

c. Maintenance schedule
d. Irrigation schedule

B. Construction Plan

1. The objective of the Plans and Specifications is to provide an assembled and installed landscape construction plan which when successfully built will operate in an efficient and satisfactory manner. The Contractor shall not willfully install the construction, irrigation or planting facilities as indicated on the Plans when it is obvious in the field that obstructions or grade differences exist that might not have been considered in the design, or existence of utilities not shown on the plans. Such obstructions or differences shall be brought to the attention of the City of Visalia Project Manager, in writing by the Contractor, for consideration of adjustment in proposed facility locations prior to installation of facilities.
2. Elevations shown on Plans are not specified in this section. Coordinate all work with the earthwork/rough grading Contractor and the Grading and Drainage Plan in order to arrive at rough grades that will allow tolerance for topsoil (if needed) that will ultimately affect the depth of irrigation piping and the final placement of heads and emitters, as called for on the plans.
3. Construction legend shall indicate materials, symbols, callouts, furniture, or site amenities found on the plans.
4. Clean and precise dimensions to the even inch.
5. Make and model of all furniture and lighting referenced on plans.
6. Contact number and information for all material suppliers.

C. Construction Details

1. Construction Details need to be present in order for Contractor to successfully build the site.
2. Details need to be shown in a manner which is clean, concise and legible for Contractor to build the project components.

D. Irrigation plan sheet shall include and illustrate the following:

1. Sprinkler head location, type, make and model. Arrange from meter to bubbler.
2. Pipe size and location.
3. Electronic Control Valves and box.
4. Reduce Pressure Principle (RPP) backflow device and enclosure with freeze protection blanket and cage.
5. Irrigation controller pedestal or wall mount.
6. Water meter size and location (Point of Connection).
7. Quick – coupler valves.
8. Static Water Pressure and sprinkler/bubbler operating pressure.
9. 2-E box (point of electrical service).
10. Overhead utility line, power poles, pull boxes, light standards.

11. Cross reference water and electrical points of connections with Civil and Electrical Plans.
12. Electrical conduit and irrigation sleeves.
13. Booster pump.
14. Master valve.
15. Flow sensor.
16. Ball valve.
17. Sleeving.
18. Irrigation calculations shall be shown in the plans. Calculations shall consist of Maximum Applied Water Allowance (MAWA) calculation, the Estimated Total Water Use (ETWU) calculation, and pressure loss calculation sheet. The irrigation system must be designed to cycle through in a six (6) hour period, three (3) times a week when the evapotranspiration rate is at its highest during the year.
19. Hydrozone information.
20. For further information see CA AB 1881 MWELO

E. Irrigation Details and Notes

1. Irrigation Details need to be present in order for Contractor to successfully build the site.
2. Details need to be shown in a matter which is clean, concise and legible for Contractor to build the project components.

F. Trees and Groundcover Plan

1. Provide tree botanical names and common names.
2. Provide tree sizes and quantities
3. Provide square footages for all areas (turf, planting area, decomposed granite, and playground area)
4. Provide location for all overhead utilities within the project as defined by the limit of work. Trees planted underneath utility lines shall at full maturity not come into conflict with overhead utility lines.
5. Provide linear root barriers make, model, and location.
6. List City of Visalia tree quality requirements.
7. Provide tree tags indicating size(s) and quantity(s) per sheet
8. Provide watering requirements per the Water Use Classification of Landscape Species document (WUCOLS).

G. Shrub Plan

1. Provide shrub botanical name(s) and common name(s).
2. Provide shrub sizes and quantities.
3. Provide watering requirements (per WUCOLS).

4. Provide shrub tags indicating size(s) and quantity(s) of each species per sheet

H. Planting Details and Notes

1. Planting details need to be shown in the plans in order to relay proper installation techniques to Contractor, including but not limited to trees, shrubs, vines, staking, groundcover, etc.
2. Planting notes need to be shown on the sheet distinctly, all the necessary steps the Contractor must follow from site preparation to the end of the maintenance period.

I. Specifications

1. All plans shall have, as part of the landscape construction drawings, specification sheets for each component of the associated plans in lieu of specifications books.

SECTION 4 SUBMITTALS

A. Submit manufacturer's or vendor's certified analysis for construction furniture and materials, including irrigation parts and materials, filters, backflow units, valve boxes, pressure regulators, pumps, and all other materials and equipment as described on the Plans. Samples shall be provided to the City of Visalia for approval for all hardscape colors & textures, mulch, and decomposed granite to be used on the project. Submit other data substantiating that materials comply with specified requirements. Such certificates may be tags, labels, and/or manufacturer's literature, ***and all submittals shall be reviewed and stamped as accepted by the City of Visalia before Contractor attempts to purchase the materials or begins work on the project. The City will not be responsible for materials and labor expended or secured by the Contractor prior to approval of the submittals.*** Submit three (3) copies of submittals to City of Visalia for review. Any material purchased by the Contractor without prior approval by the City of Visalia shall be removed and replaced at no cost to the City.

B. Submit proposed work schedule, indicating dates for each type of work in areas of the site. Correlate with specified maintenance periods to provide maintenance from date of substantial completion. Do not begin work until such schedule is reviewed and stamped as accepted by the City of Visalia and returned to the Contractor. Such work schedule, once accepted, may not be revised except for reasons beyond the landscape contractor control. A revised work schedule shall only be accepted after documentation for the delay has been submitted and approved by the City.

C. Substitution of materials, equipment, or methods from those given in these Specifications or shown on the Plans must be accepted in writing by the City of Visalia before delivered to the job site for use. Where the Specifications indicate "or accepted equal" the Contractor shall provide the City of Visalia with literature for one or two alternative products for review. All submittals shall be made well before that item of work is scheduled for installation. Three (3) copies of the literature shall be supplied for review and acceptance or rejection. Written acceptance for an "accepted equal" product by the City of Visalia is required prior to installation. The City of Visalia shall govern as to what name brands and/or substitutes of materials are an "equal" to the specified product on the plans. ***This decision shall be final.*** Any substitute accepted by the City resulting in a credit shall be given back to the City of Visalia.

D. Throughout progress of the work, maintain an accurate record of changes in the Contract Documents.

E. Promptly, following authorization of construction, designate one (1) complete set of the Contract Documents, to be used only as the "Job Record Set". Do not use the Job Record Set for any

purpose other than to record changes occurring in the Contract Documents during progress of the work. Make entries within twenty-four (24) hours after receipt of information that the change has occurred.

F. Upon completion of the work, and as a condition of its acceptance, deliver the properly annotated Job Record Set to the City of Visalia for review. The Contractor shall submit the reductions and reproducibles' to the City of Visalia before the final inspection.

G. It shall be the Contractors responsibility to prepare "As-Built" plans which are professionally drafted and accepted by the City of Visalia before full acceptance of the project is given by the City of Visalia. Final "As-Built" plans shall be professionally drafted by the Contractor onto a medium acceptable by the City of Visalia. From the Job Record set, an "As-Built" drawing shall be prepared by the Contractor as follows:

1. Three (3) sets of full size prints.
2. One set of the reduced prints shall be marked so that each lateral and main irrigation line is delineated with a different color so as to clearly distinguish the individual irrigation lines from one another. The colored set shall then be laminated by the Contractor before delivery to the City. The originals and copies shall clearly be marked with the words "As-Built" Plans, and marked with the date of preparation.
3. Digital copy in PDF format
4. As-Built Dimensions: The Contractor shall dimension from two (2) permanent points of reference, the location of the following:
    a. Master valve.
    b. Flow sensor
    c. Irrigation valves.
    d. Controller location
    e. Isolation valves.
    f. Connections to existing water lines and size connections.
    g. Pressurized main lines.
    h. Pressure relief valves.
    i. Pressure main line connections.
    j. The final routing and location of the pressure mainlines and non-pressurized lateral lines under pavement.
    k. Routing of control wires.
    l. Automatic flush and air vacuum relief valves.
    m. Quick-coupler valves.
    n. "Stub-offs" for future use.
    o. Low voltage electrical splice boxes
    p. Sleeving

SECTION 5 TESTS AND INSPECTIONS

A. Pre-Construction Meeting: General Contractor and all Subcontractors in the project shall attend this mandatory pre-project meeting before beginning construction of the project. ***The Chief Inspector and managing City division shall be established at the Pre-Construction Meeting.***

B. Inspections shall be done on an ongoing basis by the various City divisions involved in the project. Whenever "City of Visalia" is noted within these Specifications it is also construed to imply a duly authorized representative of the City, including Inspectors and Consultants acting on behalf of the City's interest.

C. Inspections shall include but not be limited to :

1. Finished grading
2. Concrete flatwork
3. Mainline & valve installation
    a. Prior to backfilling trenches, the City of Visalia project manager shall review and approve the mainline and valve installation. Inspection shall include, but not be limited to, mainline depth, electrical conduit, quick coupler and isolation valve installation, irrigation valve installation, low voltage splice boxes, locator tape, and thrust blocks.
    b. PVC main lines (upstream of control valves) shall be tested under a gauge pressure of one hundred twenty-five pounds per square inch (125 psi), said pressure to be maintained for a period of not less than four (4) hours. PVC lateral lines (downstream of control valves) shall be tested under a gauge pressure of seventy-five pounds per square inch (75 psi), and pressure to be maintained for a period of not less than one (1) hour. Such tests shall be performed prior to final backfill. All leaks shall be repaired and all defective materials replaced to the satisfaction of the Project Manager, and the testing and repairs repeated until the system is accepted.
4. Irrigation coverage test
    a. A coverage test shall be performed on all irrigation areas in the presence of a City Inspector. Coverage test(s) shall include, but not be limited to, the testing of rotors, spray heads, bubbler lines, booster pump, irrigation controller, and any other irrigation system component as desired by the City of Visalia project manager. The Contractor shall furnish all material and labor required to achieve the irrigation coverage acceptable to the City.
5. Soil preparation and amendment
    a. After rough grade is accepted by the City, the Contractor shall provide agronomic soils testing by a laboratory accepted by the City for public landscape areas. The Contractor shall submit test results with soil amendment recommendation to the City for review and approval.
    b. After soil preparation is complete. Contractor to submit receipts of soil amendments for the entire project site.
6. Tree and shrub inspection
    a. Upon arrival of all the trees and shrubs on the project site the City of Visalia will be notified for inspection and approval. Contractor to give the project manager a minimum of two (2) working days notice prior to the plant arrival.
    b. All trees and shrubs shall be of quality as prescribed in the Guidelines and Specifications for Nursery Tree Quality 2009 document.
    c. City of Visalia project manager has the right to reject any and or all, plant material not meeting such specification. Plants that are rejected shall be removed and replaced at no cost to the City.
7. Tree and shrub installation

a. Prior to the installation of mulch, City of Visalia project manager shall inspect and approve plant locations and installation. For bubbler systems only, Contractor will cap irrigation bubblers at the PVC connection for any and all plants removed by the project manager.

8. Final Inspection

   a. After completion of the project and prior to the beginning of the Maintenance Period, Contractor to notify the City of Visalia project manager and schedule a final inspection. Upon completion of the work, and as a condition of its acceptance, deliver the properly annotated Job Record Set to the City of Visalia for review. The Contractor shall submit the reductions and reproducables to the City of Visalia before the final inspection.

   b. Seven (7) working days after the final inspection, the project manager shall present a written punch list to the Contractor of items that are to be addressed by the Contractor and his subs before final acceptance and the beginning of the Maintenance Period.

   c. After completion of the punch list, Contractor shall schedule another inspection with the City of Visalia project manager for final approval. If the project is accepted by the project manager it shall be recommended for acceptance to the City Council. After the City Council has accepted the project the Maintenance Period shall begin the following day. If acceptance of the landscape is rejected Contractor to complete punch list items and reschedule an inspection with the City until project is accepted.

   d. Unless stated otherwise the Maintenance Period for all projects shall be one-hundred and eighty days (180). Landscape and Lighting Districts shall have a one (1) year Maintenance Period. Parks shall have a ninety (90) day Maintenance Period.

9. Maintenance Period Inspection

   a. Just prior to the Maintenance Period being completed the Contractor shall schedule an inspection with the City for project turnover.

   b. All dead plant material shall be removed and replaced by the Contractor prior to final project turnover

   c. All trash and debris shall be removed from the project site

   d. Any broken and or damaged irrigation component shall be replaced

   e. If the project site is deemed unacceptable, the City of Visalia project manager reserves the right to reject project turnover. If the project turnover is rejected the original Maintenance Period shall begin again starting the following day.

10. All overtime inspection charges incurred by City personnel shall be paid by the Contractor when inspection services are required outside of normal working hours. Work requiring inspection before or after the normal eight (8) hour working day or taking place on holidays Saturdays and Sundays will be considered overtime inspection.

11. A final inspection of the work shall be made by the City Inspector in the presence of the Contractor, at the time when all landscaping and irrigation work is completed. The Contractor shall provide two (2) working days notification in advance of such inspection. Prior to the final inspection, the Contractor shall have prepared and transmitted to the City a record set of "As-Built" drawings of the landscaping and irrigation work. No final inspection will commence without the "As-Built" drawings of the landscaping and irrigation work.

12. In the event that the Contractor schedules an inspection and has not completed the work that is to be inspected, the Contractor will be billed for the cost of the inspection and must remit the cost prior to final approval and inspection of the work.

SECTION 6 MATERIALS

6-1 Concrete flatwork

Concrete flatwork shall be furnished and installed in accordance with the applicable section of the Standard Specifications, Plans, and other Contract Documents.

6-2 Asphalt trail

Asphalt work shall be furnished and installed in accordance with the applicable sections of the Standard Specifications, Plans, and other Contract Documents.

6-3 Irrigation

Upon completion of final grading, Contractor is responsible for coordinating the landscape meter installation with California Water Services Company (Cal Water). Contractor is responsible for permits and any and all fees associated with the meter installation.

1. Piping material used in landscape irrigation systems shall conform to the following requirements:
   a. Mainline Irrigation Pipe: All mainline or pressure supply line plastic pipe shall be standard weight class 315 polyvinyl chloride (PVC), 1120 high impact solvent weld pipe. [Pipe Two inches (2") or less shall be Schedule 40 PVC, solvent weld]. The Contractor is to properly thrust-block all changes of direction in the mainline pipe.
   b. Lateral-line Irrigation Pipe: All lateral-line or non-pressure line plastic pipe shall be standard weight class 200 polyvinyl chloride (PVC), 1120 normal impact. All plastic pipe shall conform to current National Sanitation Foundation (NSF), Iron Pipe Size (IPS) Standards and American Society for Testing & Materials (ASTM) requirements. Pipe shall be of accepted white rigid PVC compound.
   c. Pipe Identification: All pipe shall be continuously and permanently marked with the following information:
      1) Manufacturer's name or trademark
      2) Nominal pipe size
      3) Schedule and type of pipe
      4) Pressure rating in PSI
      5) NSF seal of approval
2. Plastic Pipe Fittings and Connections: All plastic fittings shall be white rigid PVC combination type I and II, grade I, standard weight schedule 40 and/or have a working pressure rating no lower than that of the pipe. The sockets must conform to the outside diameter of the pipe, as recommended by the pipe manufacturer.
   a. All plastic fittings and connectors shall be injection molded of an improved PVC compound featuring high tensile strength, high chemical resistance and high impact strength in term of current ASTM Standards. Where threads are required in plastic fittings, these shall be injection molded also. All fittings to PVC mainline pipe larger than three inches (3") in size shall be made using steel fittings.
   b. Fittings Identification: All fittings shall bear the manufacturer's name or trademark, material designation, size applicable (IPS schedule, and NSF) seal of approval.
   c. Plastic-to-Steel Connections: The Contractor shall complete the steel connection first at all PVC pipe to steel pipe connections. Teflon tape shall be used on all threaded PVC to

steel pipe joints applied to the male threads only, and light wrench pressure to be applied. A minimum of three (3) wraps of Teflon tape shall be required on Schedule 40 & 80.

d. Plastic Pipe Cement: Solvent cement joints for plastic pipe and fittings will be made as prescribed by the manufacturer. The high chemical resistance of the pipe and fitting compounds specified in the foregoing sections makes it mandatory that an aggressive colored primer, which is a true solvent for PVC, be used in conjunction with a solvent cement designed for the fit of pipe and fittings of each size range specified.

e. Galvanized Pipe: Pipe shall be hot dip galvanized continuous welded, seamless, schedule 40 steel pipe conforming to applicable current ASTM Standards.

f. Galvanized Fittings: All fittings shall be galvanized malleable iron ground joint schedule 40 conforming to applicable current ASTM Standards.

g. Sprinkler Heads: Sprinkler heads shall be of the type and performance as listed in the sprinkler head legend on the Plans. Heads shall be a minimum six inch (6") pop-up with check valves.

h. Drip Emitters: Low flow emitters shall be of the type and performance as listed in the sprinkler head legend on the Plans. Trees shall have no less than one-fourth of one gallon per minute (¼ gal/min) bubblers, unless accepted by the City of Visalia project manager. Trees and shrubs shall be separated onto different valves. Bubbler heads shall be color coordinated accordingly.

i. Control Wiring: Connections between the controller and remote control valves shall be continuous, made with direct burial wire AWG-UF Type, single conductor, installed in accordance with valve manufacturer's wire chart and Specifications. Valve "hot" wire to be no smaller than AWG No.14 Valve "common" wire to be no smaller than AWG No. 14. For irrigation controller 2-wire systems refer to manufacturer's specifications and recommendations.

3. Automatic Controller: Controllers shall be Toro Sentinel or Rainmaster Controller for **public projects only**. At a minimum Irrigation controllers shall be installed with an evapotranspiration sensor for irrigation scheduling. Controllers shall be contained in a front entry or wall mounted cabinet. Landscape Architect to coordinate with manufacturer regarding controller location. Controller location, make & model, and electrical power source shall be as specified on the Irrigation Plans. See Landscape Standard Plans.

   a. Each controller shall have the capacity to operate the amount of valve stations indicated on the Plans.

   b. Controllers shall be of the type and performance as specified on the Plans.

   c. For 2-wire irrigation controllers install per manufacturer's specifications and recommendations. All parts and components for the 2-wire system shall be of the make and model as prescribed by the controller manufacturer. Any component of the irrigation controller installed that is not per the manufacturer's specifications shall be removed and replaced at no cost to the City of Visalia.

4. Gate Valves: Gate valves shall be of the type and performance as specified on the Irrigation Plans.

5. Backflow Prevention Unit: The backflow prevention unit shall be of the type and performance as specified on the Irrigation Plans. The backflow prevention unit shall be accepted by the City of Visalia and Cal Water. The backflow prevention unit shall be of an accepted type and be installed downstream to water meters, in a location accepted by the City. Installation must be per Cal Water requirements.

6. After being installed at the project site, the backflow prevention location must be accepted by a Cal Water representative. Upon Cal Water approval, the unit must be tested and accepted as functioning properly by an accepted AWWA certified tester within five (5) days of installation with the result sent to Cal Water. Approval of the backflow prevention unit must precede any final inspection of the irrigation system.
7. A protective steel cage shall be installed in all locations as designated on the Plans (if designated). The caging shall be constructed to allow space for the entire piping assembly associated with the RPB unit, controller, and all associated equipment.
    a. A commercially manufactured insulating blanket shall be placed around the backflow preventer assembly to protect the unit from freezing. The blanket shall extend over all piping, the RPB unit, hose bibs, pressure gauges, and all other equipment above ground associated with the RPB. The controller housing shall not be included in blanket if the controller is an ambient light powered unit. The insulating blanket shall be manufactured by Hydro Peripherals (Polar Parka), World Wide Canvas (Backflow Blanket) or accepted equal.
8. Pressure Regulating and Pressure Sustaining Valve: The pressure regulating and pressure sustaining valve shall be of the type and performance as specified on the Irrigation Plans and of domestic manufacture.
9. Booster Pump: Pump shall provide high efficiency, reliability and stable operating pressures. Pump Submittals shall be accepted by the City, in writing. Pumps must be UL accepted.
    a. Minimum control provisions shall incorporate phase failure (low and high voltage) protection, time-delayed start, and low discharge pressure safety and/or flow control circuits.
    b. Concrete pump pad shall surround entire mechanical package (all piping and appurtenances) by a minimum of twelve inches (12") in both length and width.
    c. Pump shall be installed on elevated pump base constructed of reinforced concrete or fabricated steel; motor base shall be a minimum of six inches (6") above concrete equipment pad.
    d. Welded or grooved steel or brazed/soldered copper tube piping systems shall be provided. Flanged iron piping is not allowed. Threaded connections are allowed only at the interface of threaded mechanical appurtenances.
    e. All above-grade piping shall be sized to maintain velocities below five feet per second (5 ft/sec).
    f. Piping shall be isolated from pump through use of bolted flexible couplings or non-rigid grooved couplings so as to allow for minor misalignment and to avoid imposing stress loads on the pump volute or motor frame.
    g. Valves shall be two hundred pounds per square inch (200 psi) rated, lug style, lever operated domestic butterfly valves two and one-half inches (2 ½") or greater or full port, bronze-bodied ball valves two inches (2") or less.
    h. Bypass check valve shall be flanged or wafer-style silent check valve in order to minimize water hammer during pump cycling.
    i. Inlet and discharge pressure gauges shall be 2 inches (2")stainless chased, glass faced, liquid filled and installed with gauge cocks, range to be a minimum of fifty percent (50%) greater than normal operating pressure.
10. Electrical Pump Control Panel: Weather proof enclosure shall have start push button and H-O-A selector switch suitable for a 120/240V, single or 3-phase booster pump. This unit shall

be remote-operated by automatic irrigation controllers through the installation of a 24-volt AC relay of sufficient amperage rating for the system.

11. Master Valve: Master valve shall be make and model as prescribed by the controller manufacturer. Master valve shall be a "normally" closed master valve.
12. Flow Sensor: Flow sensor shall be of make and model as prescribed by the controller manufacturer. At a minimum the flow sensor body shall be Sch. 80.
13. Quick Coupler Valve: QCV valves are to be 1" Buckner double lugged quick coupler valves or accepted equal.
14. For mainlines four inches and larger (4") reductions in pipe size, irrigation valves, and quick couplers shall be done using saddles. Saddles shall be double bale with ductile iron body work per ASTM-A536. All nuts and washers shall be carbon steel with a di-chromate seal ASTM-B633. For all other mainline connections steel fittings shall be used. Install per manufacturer's specifications and recommendations.
15. Remote Control Valves: Electric remote control valves shall be Irritrol 100-Series, Hunter ICV Remote Control irrigation valves, or accepted equal. Remote control irrigation valves shall have a Sch. 80 ball valve on the inflow side of the valve and a Sch. 80 union on the downflow side of the valve. See Irrigation Plans for valve size.
16. DC Latching Solenoids: Irrigation systems requiring the use of DC latching solenoids shall be of make and model as required by the controller manufacturer
17. Valve Decoders: Valve decoders for irrigation controller 2-wire systems shall be of make and model as required by the controller manufacturer for 1,2,3, & 4 station decoder modules.
18. Grounding Rod: Grounding rods shall be 3/8" wide by 8' in length copper grounding rods. Install per the manufacturer's specifications.
19. Grease Packs: All electrical wire connections shall be made using 3M DBR-Y/6 grease packs or accepted equal. Install per manufacturer's specifications.
20. Valve Box
    a. Valve Box: The following plastic valve box sizes shall be utilized when the box is installed in landscape areas:
    b. Single Valves Less Than Two Inches (2") Size: 14" x 19" x 12" rectangular box.
    c. Single Valves Greater Than One Inch (2") Size: 19" x 25" x 12" rectangular box.
    d. Automatic Flush/Air Vacuum Relief Valves: 10" round.
    e. Wire Splice Boxes: 10" round.
    f. Isolation Valves: 14"x 19"x 12" rectangular box.
    g. Quick-Couplers: 10" round.
    h. Valve boxes located in concrete areas such as sidewalks, driveways, concrete parkway strips, and other paved areas shall be manufactured from concrete with concrete lids. Valve boxes subjected to vehicular traffic shall be rated appropriately type for traffic. Sizes as noted above.
    i. Contractor shall place one (1) full sized clay or concrete brick under the corner of each rectangular valve box, and minimum of two (2) full sized bricks under each round valve box. Wrap valve box with min. 3 mil. thick plastic and secure it to the valve box with duct tape.

21. Valve Box Cover: Plastic marked "Irrigation Control Valve" with stainless steel lockable (bolt down) lids. Each valve box lid shall be permanently marked with a metal tag (rigid aluminum, stainless steel, or brass) bolted to the top of the valve box lid with brass or stainless steel nuts/bolts with the final accepted valve sequencing/designation. The metal tag shall be minimum two inches by three inches (2"x3") in size. The valve box lids shall be labeled as follows:
    a. Master valves for each area: The designation MV.
    b. Flow sensor for each area: The designation FS
    c. Quick Coupler valve: The designation QCV.
    d. Automatic flush valves: The designation AFV followed by the automatic valve number that the AFV is attached to.
    e. Air vacuum relief valve: The designation AVR followed by the valve number that the AVR is attached to.
    f. Isolation Valves: The designation ISO/V.
    g. Wire splice box: The designation SPLICE.
    h. Extra wires for future use shall be marked with the words FUTURE and terminal location where the wire is hooked up back at the controller
22. Lighting: All wire for lighting shall be located in lockable Christy boxes or accepted equal. Any and all material that is damaged or stolen ,during construction or the maintenance period, shall be replaced by the Contractor at no cost to the City.
23. Operations and Maintenance Manuals: Within ten (10) calendar days prior to completion of the construction, the Contractor shall prepare and deliver to the City all required and necessary descriptive material in complete detail and sufficient quantity, properly prepared in two (2) individually bound sets of Operating and Maintenance Manuals. These manuals shall describe the material installed and shall be in sufficient depth to permit operating personnel to understand, operate and maintain all equipment. Spare parts(s) lists and related manufacturer identification shall be included for each installed equipment item. Each complete, bound manual shall also contain the following information:
24. Index sheet, stating Contractor's address and telephone number, duration of guarantee period, and list of equipment, with names and addresses of local manufacturer representatives.
25. Complete operating and maintenance instructions on all major equipment.
26. The Contractor shall be responsible for correct procedures in loading, unloading, stacking, transporting, and handling all materials to be used in the system. The Contractor shall avoid rough handling which could affect the useful life of equipment. Pipe shall be handled in accordance with the manufacturer's recommendations on loading, unloading and storage.

6-4 Trees and Groundcover

1. Trees
    a. Trees shall be of size and species as indicated on the Landscape Plans
    b. Trees shall be at least a #15 gallon in size. Smaller size may be used only after written approval has been given by the City of Visalia project manager.
    c. Plants shall conform to the Guidelines and Specifications for Nursery Tree Quality 2009 document. Any tree not meeting such specification shall be removed from the job site and replaced by the Contractor at no cost to the City.
2. Linear Root Barriers

a. Linear root barriers shall be used when any tree is located within six feet (6') of hardscape in any direction.
b. Twelve inch (12") root barriers shall be used when located adjacent to any concrete flatwork. Eighteen inch (18") root barriers shall be used when located adjacent to any curbs, gutters, buildings, or architectural features.
c. Root barriers shall have a minimum thickness of .085"
d. Root barriers shall be installed according to manufacturer's specifications and recommendations. See Landscape Standard Plans.

3. Tree stakes
   a. Tree stakes shall be required by the City of Visalia project manager. See Landscape Standard Plans.
   b. For all **public projects** the Reddy Stake or an accepted equal shall be used on all single trunk trees.
   c. Tree stakes shall be installed per manufacturer's specifications and recommendations
   d. Two (2) 2" x 8' lodgepole pines shall be installed for all single trunk trees.
4. Mulch
   a. A 5" thick layer of decorative walk on bark mulch shall be used in all planting areas.
   b. Mulch shall be free of any trash or debris.
   c. Mulch shall be a mixture of large, medium, and fines and consist of the following ratios:

      60% Large- Size (6"-9")

      30% Medium- Size (3"-6")

      10% Fines- Size (1"-3")

   d. For all **public projects**, a sample of mulch shall be submitted and accepted by the City of Visalia project manager prior to delivery. Any mulch installed onsite not meeting the accepted sample shall be completely removed and replaced by the Contractor at no cost to the City.
5. Turf
   a. Turf shall be of quantity and species as shown on the Landscape Plans.
   b. Turf shall be free from any pests or diseases
   c. All turf shall be drought-tolerant warm-season grass and must be accepted by the City of Visalia.
   d. For **all public projects** with turf, type shall be used as indicated below

      Landscape and Lighting Districts: AG-1 hybrid sod.

      Parks: Improved Bermuda

      All turf areas that are to be hydroseeded shall have the seed mix approved by the City of Visalia project manager prior to installation.

6-5 Shrubs

1. Shrubs shall be of size, species, and quantity as shown on the Landscape Plans.
2. City of Visalia project manager reserves the right to reject any and all shrubs not meeting such standard. Any rejected plant shall be removed and replaced by the Contractor at no cost to the City.

SECTION 7 CONSTRUCTION

7-1 Grading

All grading shall be done in accordance with the applicable sections of the Standard Specifications, Plans, and other Contract Documents.

7-2 Flatwork

All concrete flatwork shall be done in accordance with the applicable sections of the Standard Specifications, Plans, and other Contract Documents.

7-3 Trenching

1. Excavations shall be open vertical construction, sufficiently wide to provide free working space around the work installed and to provide ample space for backfilling and tamping.
2. The use of a vibratory plow or methods other than open vertical trenching will not be allowed without the written approval of the City of Visalia project manager. To obtain such approval, a field test must be performed, at the proposed site, with the equipment to be used in the presence of the Project Manager. The field test is to indicate if the proposed site is favorable to the plowing method. Approval for plowing at one location does not allow the use of plowing at another location. Approval for plowing must be obtained for each location where the use of plowing is proposed. If, at previously accepted plowing locations, conditions for plowing become unfavorable as determined by the Engineer, plowing shall be terminated.
3. Trenches for pipe and equipment shall be cut to required grade lines, and compacted to provide an accurate grade and uniform bearing for the full length of the line.
4. When two (2) pipes are to be placed in the same trench, a four inch (4") space between pipes must be maintained laterally.
5. The depth of the trenches shall be sufficient to provide a minimum cover above the top of the pipe as follows:
   a. 18 inches minimum over main lines.
   b. 12 inches minimum over non-pressure (rotary pop-up) lateral lines.
   c. 12 inches minimum over non-pressure (pop-up spray head) lateral lines.
   d. 36 inches minimum over lines located in paved areas or where vehicular traffic is located.
6. For **all public projects**, detectable locator tape shall be placed six inches (6") above the irrigation mainline for its entire run.

7-4 Irrigation installation

1. Water Supply: The Contractor shall connect to water supply line as indicated on the Plans. Connections to the existing water supply shall be made at approximately the location shown on the Plans. Minor changes caused by actual site conditions may be required. Connection

from the mainline to the outflow side of the water meter shall be made to Cal Water standards and specifications.

2. Layout: The Contractor shall be responsible for layout of proposed facilities and any minor adjustments required due to differences between the site and Plans. Any such deviations in layout shall be within the intent of the original Plans.
3. Grades: Before starting work on the system, the Contractor shall carefully check all grades to ensure the work may safely proceed and keep within the specified material depth.
4. Standard of Installation: Material and workmanship shall be in accordance with local codes and ordinances of legally constituted authorities; except where provisions of these Specifications exceed such requirements, these Specifications shall govern.
5. General Installation: Any equipment installed by the Contractor and deemed to be for the use of the City in various situations (i.e., control valves, control panels, etc.) shall be so installed to be readily accessible and quickly operable. Two (2) keys for lockable equipment shall be supplied to the City upon installation. Equipment deemed by the City to be inoperable for its intended purpose shall be reinstalled by the Contractor in an operable position before approval will be given. Routing of pressure supply lines as indicated on the Plans is diagrammatic. Install lines (and various assemblies) in such a manner as to conform to details on Plans.
6. Assemblies: Install all assemblies specified herein according to the respective detail Plans or Specifications pertaining to specific items required to complete the work. Perform work according to best standard practice, with prior approval.
    a. All brass pipe and fittings shall be assembled using Teflon tape, or equivalent, applied to the male threads only. A minimum of three (3) wraps of Teflon tape will be required.
    b. All plastic and galvanized steel threaded pipe and fittings shall be assembled using Teflon tape applied to the male threads only. A minimum of three (3) wraps of Teflon tape will be required.
7. Line Clearance: All lines shall have a minimum four inches (4") of clearance.
8. Pipe and Fittings, Galvanized Steel Pipe: All pipe shall be reamed and rough edges or burrs removed so that a smooth and unobstructed flow can be obtained.
    a. Reducing fittings shall be used where any change in pipe size occurs. Bushings shall not be used unless specifically authorized by the City. No fitting shall be joined closer than six inches, unless authorized by the City.
    b. Teflon tape shall be best quality, and shall be carefully and smoothly placed on the male threads only. All threaded joints must be tightened with wrenches. No caulking or joint compound of any kind will be permitted.
    c. Immediately upon installation of lines, all openings shall be capped or plugged to prevent the entrance of materials that would obstruct the pipe. Caps shall remain in place until removal is necessary for completion of installation.
    d. Thrust blocks shall be installed as recommended by the pipe manufacturer, or as shown on the detail Plans. See Landscape Standard Plans.
    e. All mainline and lateral pipe traversing paved concrete or hardscape areas is to be installed in schedule 40 sleeves that are at least two times the size of the pipe being sleeved. Also, all wire is to be sleeved in schedule 40 PVC pipe that allows a generous amount of room for the wires present and allows for pulling additional wire in the future. See Landscape Standard Plans.

9. Joining of Pipe: It is the responsibility of the Contractor to be familiar with any and all methods of assembling, joining, and installation of the various types of pipe and fittings to be used. The Contractor shall strictly adhere to recommendations in the manufacturer's guide. If during any phase of the work, the Contractor or any of the workers are not familiar with the recommended procedures, the Contractor shall arrange with the manufacturer of the particular product for the services of a qualified manufacturer's representative to instruct the workers in the proper recommended procedures.

10. Plastic Pipe: The Contractor shall exercise care in handling, loading, unloading, and storing plastic pipe and fittings. All plastic pipe and fittings shall be stored under a weatherproof roofed structure before using and shall be transported in a vehicle with a bed long enough to allow the length of pipe to lie flat so as to avoid undue bending or concentrated external load at any point.

    a. All lumber, rubbish, and rocks shall be removed from the trenches by the Contractor. Pipe shall have a firm uniform bearing for the entire length of each pipe line to prevent uneven settlement. Wedging or blocking under riser tees shall be done only if specified on the Plans. Pad trenches with soil as necessary to provide uniform bearing surfaces.

    b. Where extensive lengths of pipe are installed, snake pipe in trench from side to side to allow for expansion and contraction. One (1) inch per 100 feet of pipe is the minimum allowance for snaking. Never lay pipe when there is water in the trench or when the temperature is (32° F) or below.

    c. All changes in the direction of the pipe shall be made with fittings, not by bending.

    d. Make solvent joints with a non-synthetic bristle brush in the following sequence:

        1) Make sure pipe is cut square and all connecting surfaces are properly cleaned and dry.
        2) Apply an even coat of colored primer to pipe prior to application of solvent on Sch. 40 mainline connections only one and one-half inches (1-1/2") in size or larger.
        3) Apply an even coat of solvent to the inside of the fitting.
        4) Apply a liberal, even coat of solvent to the outside of the pipe, making sure that the coat area is equal to the depth of the fitting socket.
        5) Insert the pipe quickly into the fitting and turn the pipe approximately one-quarter turn to distribute the solvent and remove air bubbles. Hold the joint for approximately fifteen seconds so the fittings do not push off the pipe.
        6) Using a clean rag, wipe off all excess solvent to prevent weakening at the joint.
        7) Exercise care of going to the next joint so that the pipe is not twisted, thereby disturbing the last completed joint.
        8) Allow at least fifteen minutes setup time for each welded joint before moving.
        9) Repair damaged plastic pipe by replacing the damaged segment.
        10) Mainline pipe four inch (4") or larger in size shall use slow setting solvent.
        11) Mainline pipe connections on pipe larger than four inches (4") shall be made using steel fittings.
        12) Mainline pipe reductions on pipe four inches (4") or larger for valves, quick couplers, or sub-mains shall be made using steel saddles.

11. Backflow Prevention Devices: Backflow prevention devices (BFPD) will be installed in a protective cage with a protective freeze blanket. The device shall be a Wilkins reduced pressure backflow prevention device or accepted equal. The cage will be constructed from V.I.T. products or an accepted equal

    a. The backflow prevention device shall be of size, make, and model as shown on the Irrigation Plans. Install per the manufacturer's specifications and recommendations.

After the device is installed, the Contractor is to have the backflow device tested by a certified third party and coordinate its location with Cal Water for approval. See Landscape Standard Plans.

b. The cage shall be constructed of stainless steel and vandal resistant. The dimensions of the cage will vary depending on the size and type of device required. Consult the enclosed manufacturer's Specifications to determine the appropriate model number. See Landscape Standard Plans.

c. Freeze blankets shall be installed on all BFPD's. Freeze blankets shall be sized to fit comfortably over the device without turning the system on or off.

12. Master Valves: Normally closed master valves shall be installed on all landscape irrigation systems.

    a. Master valves shall be of make and model as required by the Controller manufacturer

    b. Master valve layout/dimension shall be per the Controller manufacture's specifications. See Landscape Standard Plans.

    c. Master valve wire shall be a min. 14 AWG in size and black in color.

    d. Install master valve per the manufacturer's specifications and recommendations. See Landscape Standard Plans.

13. Flow Sensors: Flow sensor shall be installed on all landscape irrigation systems.

    a. Flow Sensor shall be of make and model as required by the Controller manufacturer

    b. Flow Sensor layout/dimension shall be per the Controller manufacturer's specifications. See Landscape Standard Plans.

    c. Flow Sensor wire shall be per the manufacturer's specifications

    d. Install flow sensor per the manufacturer's specifications and recommendations. See Landscape Standard Plans.

14. Quick Coupler Valves: Quick coupler valves shall be installed as shown on the Irrigation Plans. At a minimum quick coupler valves are to be installed once (1) every four-hundred feet (400').

    a. Quick coupler valves shall be 1" double lugged quick coupler valve.

    b. Install quick coupler valve per the manufacturer's specifications. See Landscape Standard Plans.

    c. Quick coupler valves shall be installed using Sch. 80 swing joints.

    d. Quick coupler valve shall be installed a minimum of 18" from the mainline.

    e. For all public projects quick coupler valves shall be 1" Buckner, double lugged quick coupler valves or accepted equal.

15. Ball Valves/Isolation Valves: Isolation valves shall be installed along the main line as shown on the Irrigation Plans. Isolation valves shall be installed so that sections of the irrigation system may be able to shut down while the remainder of the system is active. Valves shall be of make and model as shown on the Irrigation Plans.

    a. Ball valves three inches (3") and smaller shall be Sch. 80 PVC. Ball valves larger than three inches (3") shall be brass. See Landscape Standard Plans.

    b. All changes in elevation shall be made using PVC 45□ elbows

    c. Ball valves shall be centrally located within the valve box so that the device can be easily turned on/off without obstruction from the valve box.

d. Install ball valve per manufacturer's specifications and recommendations. See Landscape Standard Plans.

16. Control Wiring:

a. All electrical work shall be done in accordance with the governing codes and regulations.

b. Wiring shall occupy the same trench and shall be installed along the same route as the pressure supply lines whenever possible. Irrigation wire shall be placed in electrical conduit unless otherwise directed in writing by the City of Visalia project manager. Irrigation wire that is direct buried in the irrigation trench shall be between four inches (4") and six inches (6") away from the side of the mainline pipe.

c. Where more than one (1) wire is placed in a trench, the wiring shall be taped together at intervals of 10 feet

d. All wiring shall be installed inside PVC Schedule 40 Type II pipe sleeve unless directed in writing otherwise from the Project Manager. Sleeving shall be of adequate sizes to permit convenient threading of all bundles, as shown on the plans. The conduit shall extend at least 12" beyond the edges of the paved walks or road. See Landscape Standard Plans.

e. Wire sizes shall be determined by the distance from the controller to the farthest valve, as specified by the charts furnished by the remote control valve manufacturer. Valve wire may be red or blue. No splices are permitted. Common ground wire must be white and splices are permitted only at remote control valves.

f. Each remote control valve is to have a dedicated individual 14 GA direct burial wire or larger that is continuous in length to the automatic controller. The common wire is to be 14 GA direct buria, or larger, and is to be dedicated to the controller it serves and sized according to manufacturer's specifications. No cross connection of common wires between different controllers will be allowed.

g. A separate common wire shall be installed for each controller.

h. 2-Wire Irrigation Controller Systems

1) Controller wire shall be of make and type as required by the irrigation controller manufacturer
2) Wire connections shall be made with 3M DBR-Y/6 grease packs or accepted equal
3) Each irrigation valve shall be a dedicated decoder. Decoders shall be of make and model as required by the controller manufacturer
4) All 2-wire systems shall be installed in electrical conduit.

i. All wire connections shall be made using 3M DBR-Y/6 grease packs or accepted equals

j. Control wires will be identified at the controller and at the remote control valve using metal tags stamped with the valve number and attached to the wire.

k. All wire splices in field runs will be located in valve boxes, and indicated on "As-Built" Plans.

17. Remote Control Irrigation Valves: Remote control irrigation valves shall be Hunter ICV, Irritrol 100 Series valves, or accepted equal.

a. Remote Control Valves: Remote control valves shall be adjusted so that all heads operate within the pressure range recommended by the head manufacturer. Remote control valves shall be adjusted so a uniform distribution of water is applied by the heads to the planting areas for each individual valve system. Make all connections for operation.

b. Irrigation valves shall be installed according to manufacturer's specifications and recommendations. See Landscape Standard Plans.

c. Valve Boxes: Carson Industries, Brooks or accepted equal, valve boxes shall be set to finished grade with stainless steel locking lids.

d. Remote control valves shall be connected and aligned to provide the most efficient flow of water to the irrigation heads. Each valve is to be enclosed in the specified valve box. The valve box shall be secured on firm soil clear of valves and wiring connections.

e. Backfill carefully to prevent settlement and subsequent damage. Each valve box comer is to be set on a brick to prevent settling.

f. For all public Landscape and Lighting Districts and Waterways and Trails projects, 3/8" welded wire mesh shall be installed along the base of the valve box to prevent wire damage.

g. 2-Wire Systems

1) Irrigation Controller 2-wires have separate requirements than traditional systems based upon manufacturer specifications.
2) All irrigation valves are to be connected to a programmed decoder.
3) Solenoids are to be per the manufacturer specification.
4) Install surge protectors as required by the controller manufacturer.
5) Install grounding rods as required by the controller manufacturer.

18. Flushing of Lines: After all new piping is in place and connected, and all necessary diversion work has been completed, the control valves shall be opened and a full head of water used to flush out the system. Repeat the process as necessary until water is coming out clear, without any debris, from each location.

19. Pressure Test: The Contractor shall notify all necessary parties forty-eight (48) hours prior to pressure testing.

a. The Contractor is to center load pipe with small amounts of backfill to prevent arching or slipping of pipe under pressure.

b. All solvent welded pipe joints shall be allowed to set at least twenty-four (24) hours before any pressure testing can be performed.

c. All pressure lines shall be tested under hydrostatic pressure of (125psi) after installation. The Contractor shall provide all equipment for such tests. Pressure tests will not be required for non-pressure lateral lines with swing joints.

d. Pressure shall be sustained in the lines for not less than four (4) hours. If leaks develop, the joints shall be replaced and the tests repeated until the entire system is proven watertight.

e. Tests shall be observed and accepted by the City Inspector prior to backfill. If irrigation lines are plowed into place, all pipe joints are to be exposed for the pressure test.

f. Upon completion of each phase of the work, the Contractor shall check and adjust each sprinkler head to meet the site requirements and plan.

20. Automatic Controllers: Locate controllers in general locations shown, with exact placement to be determined at the job site by the City's representative and verified by the Controller Manufacturer.

a. Connect to 120 volt source(s) provided at the site. Install electrical service pedestal at the connection.

b. Use rigid metal conduit above grade, slab, or floor.

c. Provide and install rechargeable battery backup in controllers per manufacturer's recommendations.

d. Connect control wires to controllers in sequential arrangement according to assigned identification numbers on Plans.

e. Controllers shall be properly grounded per Article 250 aof the National Electric Code and conform to local regulations.

f. Controllers shall be programmed so as not to apply excess water. Care shall be taken to prevent runoff and slope/soil erosion caused by prolonged applications of water.

Note: If the Contractor fails to keep sprinklers nozzles properly adjusted/aligned to prevent water waste, repair or replace malfunctioning, broken or missing sprinklers heads and/or sprinkler head risers and water waste results, the City of Visalia reserves the right to bill the contractor for excess amount in addition to assessing a penalty of $100 per occurrence

g. Solar and battery powered controllers shall be installed per manufacturer's recommendation only where accepted by the City of Visalia project manager.

21. Automatic Controller Schedule: Install automatic controller schedule in laminated plastic or a watertight plastic envelope inside controller cover showing which valves are connected to which stations on controller.

22. Controller Charts: The Contractor shall provide one controller chart for each controller supplied.

    a. The chart shall show the area controlled by automatic controller and shall be the maximum size controller door will allow.

    b. The chart may be a reduced drawing of the actual "As-Built" system. However, in the event the controller sequence is not legible when the drawing is reduced, it shall be enlarged to a size that will be legible when reduced.

23. Electrical and Lighting Systems: The Contractor shall be responsible for providing an electrical service in a service panel accepted by the Project Manager. Power will be provided to the irrigation controller, booster pump (if required), lighting system, or any other electrical component as described on the plans. All circuits will be identified at the service panel.

    a. All electrical work shall conform to local codes, ordinances, and regulations.

    b. Wires shall not be taped together inside conduit.

    c. Lighting systems installed as a component of a landscape design shall conform to all design and materials Specifications on the plans.

    d. Unless otherwise noted on the plans, security lights along roadways, alleys, walkways, and in parking areas are to be controlled by a single photo cell, which is to be installed at the control panel and according to manufacturer's recommendations. For most installations, the photo cell should be installed facing north.

    e. For maintenance purposes, a test switch that bypasses the photo cell is to be installed in the control panel. The switch is to be identified as the "test". All lighting is to be installed using both time clock and photo cell controls. In larger parks, the security lighting system may be split, having some lights controlled strictly by photo cell and some by time clock/photo cell. Installation shall follow the plans for the specific system design Specifications.

    f. Ornamental or landscape lighting (including low voltage systems) shall be installed using a time clock/photo cell control. These lights are required to have relay switches that are separate from the security lighting system.

g. Electrical outlets located at picnic areas or at the base of light poles are to be "hot" at all times. No more than two double-receptacles are to be on a single 30-amp circuit.

h. Each of the above, as well as any other components of electrical/lighting system are to have individual, labeled circuit breakers **(i.e. irrigation controller is not to share a breaker with security lighting).**

24. Sprinkler Heads: Sprinkler heads located in areas where ground cover planting or turf is indicated shall be set on permanent risers with top of head located at finished grade per detail, rotary pop-up sprinkler heads adjacent to walks or roads shall be set twenty four inches (24") from edge of walk or road, and pop-up spray heads adjacent to walks or roads shall be set twenty four inches (24") from edge of walk or roads unless the adjacent hardscape is directed to drain into the project.

    a. All pop-up sprinklers, rotors, or bubblers shall be made using swing joints. See Landscape Standard Plans.

        1) Manufacturer made swing joints may be used if accepted by the City.

    b. All pop-ups shall be installed with check valves.

    c. Upon completion of the installation, the Contractor shall adjust sprinkler heads to properly distribute water flow and shall place entire irrigation system in correct operating condition

    d. Adjust sprinkler heads that spray toward fences or walls so that water spray does not contact side of buildings or hardscape

    e. Sprinkler heads are to be installed per the manufacturer's specifications and recommendations. See Landscape Standard Plans.

    f. Before the backfilling of trenches can occur, the Contractor is to have an independent third party Certified Irrigation Auditor (CIA) perform an audit as required by CA AB 1881 MWELO. Contractor is to submit a copy of the water audit to the Landscape Architect and City. Any changes recommended by the CIA shall be completed and the appropriate documentation submitted to the City.

25. Cathodic (Insulation) Protection: Protection shall be installed as follows:

    a. Between wrapped galvanized steel pipe and unwrapped galvanized steel or cast iron pipe in ground using couplings or flanges.

    b. Between pipes and equipment, except at sprinkler heads and backflow preventer.

    c. Between old and new steel piping.

    d. Wherever brass, copper, or bronze is installed in contact with or adjacent to steel buried in the ground, and also at insulated fittings, junction shall be wrapped with minimum of two overlapping layers of specified tape. Tape shall follow the contours of the junction and extend 15cm (6") or more over the steel and over the brass fittings or valve as far as practical.

    e. Galvanized steel pipe under a concrete slab.

26. Concrete Equipment Pads: Concrete pads will be provided for all irrigation and electrical equipment in a location accepted by the City Inspector. All pads will be installed at finished grade and will be a minimum of 4" thick. All pads shall be installed with the slab extending 1/2" above finish grade. All pads shall be sloped to drain to matching drainage patters at 1/4" per foot. Unless otherwise directed by the City Inspector, the installer will locate the irrigation controller, backflow preventer, and electrical service panel on a common pad.

PUBLIC PROJECTS ONLY

1. Upon completion of work, the Contractor shall provide to the City:
   a. Two (2) additional keys to each enclosure and controller box.
   b. Two (2) each of any specialized tools required for the operation and/or maintenance of each type of component installed in the system.
   c. Other items as specified in the Plans, these Specifications, and the Special Provisions.

SYSTEM GUARANTEE

2. The entire irrigation and lighting system shall be guaranteed by the Contractor to give satisfactory service, and the Contractor shall guarantee the quality of material, equipment and workmanship, including settling of backfilled areas below finish grade, for a period of one (1) year following the date of the filing of the "Notice of Completion" for all the work, by the City.
3. If, within one (1) year from the date of the filing of the "Notice of Completion" for all of the work, problems develop resulting from inferior or faulty materials or workmanship, or settlement occurs requiring adjustments in pipes, valves, emitters, heads, sod, or paving to the proper level of the permanent grades, the Contractor, as part of the work under his Contract, shall make all adjustments and corrections without extra cost to the City, including the complete restoration of all damaged planting, paving, or other improvements of any kind.

7-5 Backfill and compaction

Backfill shall not be placed until the installed system has been inspected and accepted by the City. If backfill occurs without prior city approval, Contractor will be responsible for all costs incurred in order for inspection to be accepted by the City.

1. After mainline depth, pressure test, and installation has been accepted by the City of Visalia inspector the contractor shall proceed with backfilling.
2. Backfill material shall be accepted soil. Unsuitable material, such as pipe remnants, wire, clods, rocks or rubble two inches (2") in size, shall be removed from the premises and disposed of legally. Backfill around the mainline pipe and control wires shall be native soil.
3. All backfilling shall be done carefully and shall be properly tamped. All trenches shall be settled to remove any voids.
4. Surplus earth remaining after backfilling shall be removed from the site and properly disposed of.
5. Backfilling for all pipe shall be carried out in two (2) basic stages:
   a. Stage One – Backfilling Mainline

      This shall be accomplished as soon as possible after the pipe is laid and pressure test has been completed and accepted by the City of Visalia. The Contractor shall backfill the trench to a uniform depth with no voids along the entire length of the pipe to a depth of six inches (6") over the top of the pipe. The backfill shall be placed in the trench and tamped into the areas under the pipe, using a suitable tool. After tamping, Contractor to water in the trenches to a depth of two inches (2") below finish grade to eliminate air pockets. After the trenches have settled, contractor to install detectable locator tape six inches (6") above the mainline along the entire mainline run.

b. Stage Two - Backfilling

After the lateral lines have been installed Contractor is to continue to add backfill soil to a depth of two inches (2") below finished grade and hand tamp to achieve a density similar to adjacent soil. Contractor to water in trenches again to a depth of two inches (2") below finished grade to eliminate remaining air pockets. After the trenches have settled, Contractor to inspect all of irrigation trenches for any additional settling and repeat the process if necessary. Contractor to backfill the trenches to a level even with the surrounding finish grade. Once backfilling has been completed, Contractor to rototill along the irrigation trench to break up any additional clods and level the soil so that adjacent grades are equal. Backfilling operations will not be considered complete until the top surface has been graded to conform to the adjacent soil. All rocks must be collected and removed from the site. Any settling which occurs during the Maintenance Period must be backfilled by the contractor prior to the end of the Maintenance Period.

6. PVC piping and fittings shall not be backfilled during periods of extreme heat or when a sudden lowering of the temperature of the pipe may cause separation of joints or fittings.

7-6 Earthwork

1. Site Protection: The Contractor shall adequately protect the site, and the work, erecting barricades, construction fences, or implementing other protective methods as needed for protection of the job site during both the construction and maintenance periods. Replacement and/or repair of any materials, including the labor to effect the work, shall be completed at the Contractor's sole cost, at no additional cost to the City. The Contractor shall also protect the adjacent property, and the public, from operations or acts that may damage or harm either, and shall be responsible for any damage, injury or loss due to the Contractor's acts or negligence as determined by the City.
2. Before soil preparation is to begin, the entire area that is to be planted shall be finish graded to lines and grades established by the City or as indicated in the Construction Plans or Special Provisions. Filled area shall be sufficiently compacted to prevent settlement when watered. Areas to be cut, or to receive fill, shall have the topsoil stripped and stockpiled before grading operations begin. After completion of the grading operations, the topsoil is to be replaced in planted areas (lawn and planters). Topsoil stripped from areas to be paved is to be stockpiled and replaced in planted areas. The Contractor is responsible to remove excess soil from the site, or import additional topsoil if needed, at no cost to the City
3. Top soil: A certificate of origin shall be required for offsite soil. All non commercial soil shall require analytical testing prior to delivery. All top soil shall be fertile, friable, natural loam, free of subsoil, clay lumps, brush, weeds and other litter, roots, stumps, stones larger than one inch (1") in any dimension, and other extraneous or toxic matter harmful to plant growth. Contractor shall submit a soils analysis of the proposed top soil to be imported for the work for review and acceptance by the City **BEFORE** delivery to the job site.
4. Fill soil: Upon approval by the City, soil from the job site, free of subsoil, clay lumps, brush, weeds and other litter, roots, stumps, stones larger than one inch (1") in any dimension, and other extraneous or toxic matter harmful to plant growth may be used as fill soil in the project landscape areas. Contractor shall compact all landscape fills to a maximum of eighty-five percent (85%) after grading, in areas designated for planting only. All other areas shall be compacted per the plans, specifications, and other contract documents. Imported fill soil shall be pre-tested and accepted by the City as described above.

   a. Placement of top soil and fill soil:

1) Top soil (if required to be imported for the job): Minimum depth in lawn areas shall be an even depth of six inches (6", or ½ of one foot) deep in all landscape areas to be turfed.
2) All other landscape areas: May be graded and built up with fill soil as needed to achieve proper grades and lines as denoted on the project grading plans.
3) Landscape mounds and berms: If called for, may be formed with fill soil or top soil as described in.

5. The soil shall not be worked when the moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in the air or that clods will not break readily. Water shall be applied if necessary to provide ideal moisture for filling and for planting as herein specified.

6. Soil sampling shall occur after all soil has been imported to the site and rough grade accepted by the City, but prior to soil preparation. The Contractor shall obtain a Soils Management Report prepared by an accepted soil testing laboratory. The report shall contain recommendations for soil preparation and backfill mix. Copies of the report shall be furnished to the City, Owner, and project Landscape Architect. Two (2) samples shall be taken at each location, (1) Ground level to a depth of 10", (2) to a depth between 24" to 36". Each sample shall contain approximately one quart of soil and be labeled per depth and location.

   a. In order to reduce runoff and encourage plant growth, a soils management report shall be completed by the Contractor

   b. A soil analysis shall test for the following

      1) Soil texture
      2) Infiltration rate
      3) pH
      4) Total soluble salts
      5) Sodium
      6) Percentage of organic matter
      7) Recommendations

7. Soil preparation

   a. Once backfilling of all irrigation trenches and finish grading has been completed, Contractor to rip all areas specified for planting to a depth of twelve inches (12") in order for the soil to be loose and permeable. Contractor to avoid ripping the soil over any and all irrigation lines.

   b. Contractor shall legally dispose of all debris. In turf areas, the top three inches (3") of the surface soil shall be cleared of all concrete, stones, roots and similar objects larger than one inch (1") in length, wire, sticks and other foreign material. Areas to be seeded shall be evenly graded to present a smooth and even surface free of humps and hollows. Immediately prior to seeding, the surface of the area to be planted shall be sufficiently loose and friable to receive the seed.

   c. Based upon recommendations from the soil management report, contractor to amend all of the planting area per those recommendations. Copies of the amendment receipts shall be provided to the City, Client, and the projects Landscape Architect. Amendment shall be licensed with the California Department of Food and Agriculture (CDFA) and shall be certified as an organic compound under the California Organics Food Act of 1990 and shall be defined as a Class A material as defined by the US EPA 40 CFR 503.

Contractor shall submit laboratory analysis for review and approval by the City before delivering any material proposed as "Amendment" to the job site.

d. Spread fertilizer and other macro/micro-nutrients over all planting areas designated for planting along with the amendment (where applicable) and incorporate into the soil during the tilling process

e. Tilling and Incorporation of Amendments: Amendment and fertilizer shall be thoroughly tilled into the soil by rototilling, discing, or other means to a minimum depth of twelve inches (12"). **This tilling/incorporation process shall be completed separately and after the soil ripping process, and after all major site work has been completed in order to minimize further compaction of the planting areas.**

f. The Contractor shall finish grade all planting areas below the surfaces of all adjacent walks, curbs, mow strips, paved areas, etc., to the depth of 2" below, in all cases without abrupt changes in gradient:

7-7 Weed control

1. The Contractor shall notify the City of site conditions prior to planting. All existing weeds shall be removed and/or eradicated as determined by a licensed Pest Control Advisor (PCA) in writing. The Contractor shall verify the method of weed control employed whether by fumigation, chemical methods, mechanical methods or others as determined by a licensed PCA in writing. The Contractor shall use and apply weed control materials in accordance with manufacturers' recommendations and all local codes and ordinances. The materials shall be applied by a licensed applicator.

2. The Contractor shall consistently use recommended weed control methods throughout the construction period. The Contractor will not allow weeds to become established or persist in any portion of the project.

3. Prior to beginning the Maintenance Period, the Contractor shall apply pre-emergent herbicide at the recommended rate on all non-turf areas. The City may require an application of pre-emergent herbicide to turf areas if it is determined to be necessary.

7-8 Planting

1. Seeding/Planting shall not commence until all construction work, clearing and grubbing, grading soil preparation and irrigation system installation is complete. In addition, the functioning irrigation/sprinkler system shall be connected to a permanently installed water meter prior to any seeding/planting work.

2. No planting activities are to proceed until the irrigation system, backfilling, and soil preparation is one hundred percent (100%) complete and accepted by the City.

3. Planting pits shall be dug as required for the individual plant. In general all planting pits shall be two (2) time as wide as the rootball. No plant material shall be planted if the rootball is damaged either before or during the process of planting. Root pruning may be required at planting if circling roots are present. See Landscape Standard Plans..

4. Plants shall be set so that each plant shall have its root crown be at finished grade. Each plant shall be placed in the center of the plant pit. Each plant pit shall be backfilled with the soil on site:

   a. Backfill material in planting pits shall be tamped firm and a shallow basin or berm formed around the plant to hold enough water to saturate the rootball and backfill. The Contractor shall water the plants immediately after planting. Continue to settle soil around the plant rootball prior to mulching. Repeat process as necessary.

5. Mulch as top dressing all planting areas with "Walk-on-Bark" or "Orchard Mulch" to a depth of five inches (5"). Mulched planting basins shall be two inches (2") in depth. Do not engulf the stems of any plant with mulch. City of Visalia Project Manager shall approve the mulch sample prior to ordering. Any mulch installed that has not been accepted by the City of Visalia ,or in any way is different than the sample provided, will be removed and replaced by the Contractor at no cost to the City.

7-9 Turf

1. Lawn Seed Mixture shall be of the quality and mixture specified. Before packaging, the seeds shall be mixed together in a mechanical mixer to obtain thorough dispersion of the various types of seeds. Date on certification tag shall be within five (5) months of the planting date.
2. Two (2) lawn seed mixtures shall be used (determined by planting season) and are designated as Winter Mix and Summer Mix. City shall specify mix.
3. Sod shall be AG-1 hybrid Bermuda for Pocket Parks and Landscape and Lighting Districts
4. Trees planted in turf areas shall be free of any turf or weeds eighteen inches (18") around, from the centerline of the tree.
5. Turf seed
   a. Hydro-seeding is the preferred method for planting turf seed.
   b. Hydraulic equipment used for the application of the fertilizer seed and slurry of prepared wood mulch shall be of the "Super Hydro-seeded" type. The equipment shall have a built-in agitation system and operating capacity sufficient to agitate, suspend and homogeneously mix a slurry. Application rate for hydro-mulching is as follows:
   c. Wood Mulch two-tenths of one kilogram per square meter (0.2 kg/m2, or 40 pounds per 1,000 square feet).
   d. Long Lasting Fertilizer (14-7-3) five-hundredths of one kilogram per square meter (0.05 kg/m2, or 10 pounds per 1,000 square feet).
   e. Seed Mixture (Summer Mix, COV variety seed mixture) one-tenth of one kilogram per square meter (0. 1 kg/m2, or 20 pounds per 1,000 square feet).
   f. Seed Mixture (Winter Mix) four-hundredths of one kilogram per square meter (0.04 kg/m2, or 8 pounds per 1,000 square feet).
   g. Mulch Binder (Mulch Tackifier) one-hundredths of one kilogram per square meter (0.01 kg/m2, or 2 pound per 1000 square feet).
   h. For some projects, direct sowing of turf seed may be accepted by the City. In these instances, the soil is to be moistened prior to seeding. The turf seed will be distributed in an even, uniform manner. Combinations of turf seed varieties will be prepared and evenly mixed prior to the application of the seed. The seed will be planted using a mechanical seeder such as a "Brillion" drill or a Culti-Pack type device. Broadcast-type equipment may be used only for over seeding in established turf areas.
   i. The seed beds shall be kept continually moist after turf seed planting. The time interval between "water off" and "water on" irrigation is to be governed strictly by the amount of surface moisture.
6. Sod
   a. Turf areas may be planted by the installation of sod when accepted by the City. The variety of sod will be a premium quality, AG-1 Hybrid Bermuda unless otherwise

specified by the City. The variety of sod is to be submitted to the City in writing for approval.

b. Procedure for installation of Sod will be as follows:

c. Sod must be installed within eight (8) hours of delivery to the job site. Protect stored or unused sod from damage by heat, sunlight, or any other adverse condition.

d. Handle sod with care. Torn pieces must have ends cut straight. Pieces smaller then twenty-four inches (24") in length are to be used only for patching or repairs.

e. Lay sod evenly in a staggered pattern of strips, so that the roll ends are consistently at different locations. Lay and fit sod so that all end joints and cuts are free of voids. Sod will be flush with finished grade of adjacent walkways, curbs or other hardscape areas.

f. Tamp each roll into position against adjacent strips to eliminate gaps, openings or uneven joints.

g. Trim sod to conform to turf area shapes. Expose all sprinklers and valve boxes. Provide a clean straight edge.

h. Roll all sod areas immediately after installation to remove air pockets and provide complete contact between sod and soil.

i. After installation, irrigate sod completely to provide optimum moisture throughout the period of establishment.

7. Watering

   a. After approval of the turf planting operations by the City, the Contractor shall, without flooding, maintain moisture in all planted areas. The areas shall not be watered to the extent of saturating the soil and causing seed "flotation" or "flowing" of the top surface of the soil. After water has once been applied, no portion of the seeded areas shall be allowed to dry out during the entire germination period. The Contractor shall be responsible to alter the watering times and frequencies to meet site conditions. Irrigate sod thoroughly, so that moisture penetrates through the sod into the soil. Use of a penetrating agent is advised.

8. Turf grass establishment period:

   a. The turf grass establishment period begins with the first mowing. The first mowing shall not commence until the grass is generally at two inches (2") but less than three inches (3") high. For the second mowing and all subsequent mowings, the mower shall be set to cut at the height of one and one-half (1½").

   b. Between the fifteenth (15th) day and the twentieth (20th) day of the establishment period, the Contractor shall reseed the spots or areas in which normal germination of the seed is not evident. At the end of thirty (30) days of the establishment period, the Contractor shall do the following: reseed all sparse areas that would constitute a hindrance to subsequent mowings; repair all damage done by his operations; fill all depressions and eroded channels with sufficient top soil to raise to the proper grade, compact lightly and reseed the filled areas; and roll all seeded and reseeded areas with one hundred and twenty-five pounds (125 lbs.) weight roller to firm the soil around the grass roots and to provide a smooth and even mowing surface. Following the thirtieth (30th) day and the ninetieth (90) day of the establishment period, the lawn shall be maintained by mowing at least once every seven (7) calendar days. Maintenance shall also include repairing and reseeding damaged areas, as directed by the Project Manager. Upon satisfactory completion of the above points, reseeded areas will be accepted by the Project Manager provided all other provisions of these specifications have been complied with by the Contractor. Turf shall be maintained in a weed free condition. Weeds in turf areas will be

removed and/or eradicated as recommended by a licensed Pest Control Advisor (PCA) in writing. The turf grass establishment period may overlap with the ninety (90) day maintenance period.

7-10 Trees

1. Street Tree Requirements
    a. Residential - One to two (1-2) street trees shall be planted per residential lot (depending on lot size) and three to five (3-5) per corner lot.
    b. Commercial - One (1) street tree shall be planted for every thirty feet (30') of lot frontage along the transportation corridor(s).
    c. Along streets in concrete cut outs in the sidewalks in commercial areas.
    d. In parkways on residential streets and in the landscaped area surrounding a development.
    e. In a front yard within ten feet (10') to twelve feet (12') of the edge of the right of way and/or easement that extends into private property.
    f. In street medians (which are in the center of a roadway separating the lanes of traffic).
    g. Tree spacing
        1) Small trees – Twenty feet (20') to twenty-five feet (25') apart. Small tree shall be used when planting under the utility lines. Small trees should be considered in the area between the wall and the back of sidewalk in the landscaped area surrounding the development. Small tree will generally not be accepted for uses as street trees unless overhead utility lines are present.
        2) Medium size trees – Twenty-five feet (25') to thirty-five feet (35') apart. Medium size trees can be used as street trees in parkways in front of homes and the back of sidewalk in the landscaped area surrounding the development.
        3) Large trees – Thirty feet (30') to forty-five feet (45') apart. Large trees can be used as street trees in parkways in front of homes and in the landscaped area surrounding the development.
2. The Contractor is to ensure that the spacing of trees conforms with the following minimum spacing guidelines. Where a utility company requires larger spacing, the utility company spacing requirements shall govern. The Contractor shall verify spacing requirements with the utility company's prior to planting. Trees shall be planted:
    a. Thirty feet (30') from street corners, stop signs, and traffic signals.
    b. Fifteen feet (15') from alleys.
    c. Six feet (6') from driveways.
    d. Twenty feet (20') from light poles.
    e. Fifteen feet (15') from power poles.
    f. Ten feet (10') from fire hydrants.
    g. Eight feet (8') from sewer lines.
    h. Five feet (5') from gas, electrical, and telecommunication lines.
    i. Six feet (6') from water meters and laterals.
    j. Fifteen feet (15') from other acceptable trees.
3. Trees planted underneath utility lines shall at full maturity not come into conflict with overhead utility lines. Any tree that is planted underneath utility lines which at mature growth

does come into conflict with utility lines requiring ongoing pruning for clearance shall be removed and replaced by the Contractor at no cost to the City.

4. Tree staking

   a. Stake coniferous evergreen trees with one (1) Lodge Pole Pine specified stake on the NW (windward) side of the tree. Stake deciduous and broadleaf trees with two (2) Lodge Pole Pine stakes, one NW and one SE (perpendicular to the wind) from the tree. Stakes should be vertical, approximately twelve inches (12") from the tree, and at twelve inches (12") into native soil below bottom of tree pit. Stake top should be below crown of the tree.

   b. Provide soft rubber hose tree ties with an enclosed spring loaded action as manufactured by Alden Enterprises "Wonder Tree Ties", V.I.T. Products "Cinch Tie" or accepted equal. Ties shall be attached to tree stake as shown in staking detail on the Plans, with the wire portion of the tie securely attached to the stake (to prevent slippage) via staples, nails, or other means. Ties shall hold tree loosely, and not bind tree too rigidly to the stake, allowing an average of three inches (3") of movement in any direction after tree has been tied. Ties shall also be installed so as to straighten trunks to a perpendicular position (to the ground plane) so they are vertically straight. Place all stakes as directed by the City, or if not directed, place parallel to typical wind direction for the area.

   c. Reddy Stake Tree Stakes or accepted equal shall be installed **on all Public Projects** as required by the City of Visalia. Stakes are to be installed per the manufacturer's specifications and recommendations. See Landscape Standard Plans.

5. Tree guards shall be provided in turf areas. If not designated on the Plans, and reference is made to these Specifications, tree guards shall be placed around the base of all tree trunks/stems in both lawn, ground cover, and shrub areas to protect the tree from mechanical damage. Guards shall be of a flexible, expandable, self opening type, a minimum nine inches (9") high, and have the capacity to protect a tree with a minimum basal trunk diameter of four inches (4").

6. Mulch as top dressing all tree basin areas with "Walk-on-Bark" or "Orchard Mulch" to a depth of two inches (2"). Tree basins shall be a minimum of two times the size of the rootball. Do not engulf the trunks of the trees with mulch.

7. Linear root barriers shall be installed when any tree is located within six feet (6') of any hardscape. Rootbarriers shall be eighteen inches when located adjacent to curbs and gutters. In all other cases, linear root barriers are to be twelve inches (12") in length. Rootbarriers shall be placed when the tree is located within six feet (6') of any hardscape in all directions. Rootbarriers shall have a minimum thickness of .085. Install per manufacturer's specifications and recommendations. See Landscape Standard Plans.

8. Establishment period

   a. Immediately after planting, Contractor shall flood each tree basin to a height of two inches (2") below the top of the berm to settle the soil around the berm and rootball. After water has subsided, Contractor to level any areas within the berm that have settled. Repeat the process as many times as necessary so that once the berm is filled, water shall percolate through the entire rootball.

   b. Maintain all berms around trees at six inches (6") inches in height.

   c. Tree stakes that for any reason are damaged or rendered inadequate for support shall be replaced to their original condition.

d. Maintain trees in their natural shapes. Tall or scraggly branches shall be thinned out where necessary. In no case shall trees be trimmed by heading or shearing. Any plants severely pruned in this manner shall be removed and replaced at Contractor's expense.

e. In all turf areas, maintain an eighteen inch (18") clear radius, free of turf or weeds, around each tree. Install arbor guard trunk protective device, or accepted equal on each tree.

9. Tree transplanting

   a. Tree preparation

      1) Root pruning: All root pruning shall be performed in accordance with International Society of Arboriculture. Prune all roots to a depth of twenty-four inches (24"). Pruning location shall be six inches (6") inside the tree spade circumference. Pruning shall be performed at least thirty (30) days prior to anticipated spading date, or as directed by the approved City Arborist. All pruning cuts shall be clean cut. Any torn root endings shall be trimmed back to create clean cuts.
      2) Rootball: The soil shall be moderately moist; damp enough to encourage root tip development, but not so wet as to be unnecessarily heavy.
      3) A chalk mark (or in the event of expected rain, an inconspicuous dot of marking paint) shall indicate due north.

10. New Site Preparation:

   a. Requirements for Backfill: A hole shall be excavated to a depth of three feet (3') and to a diameter so as to create a planting hole extending three feet (3') beyond the spaded rootball. Any loose hardpan shall be removed from the planting hole. If different layers of soil exist, each stratum shall be loosened and replaced at the same level.

   b. Native soil shall be used for all backfill during site preparation. Backfill shall be watered in, and allowed to settle for minimum of twenty (20) days. Additional native soil shall be added as necessary to maintain ground level during the settling period.

   c. Contractor shall spade rootball hole on day of transplanting.

   d. Add peat moss to receiving hole in the quantity listed on the chart below. The peat moss should be mixed thoroughly in the new hole with enough water such that when the rootball is inserted the peat moss will be forced up around the rootball.

11. Transplanting

   a. Spade shall be centered around the tree. Cuts made by spade shall be clean: spades shall close at base of rootball; twisting shall be avoided during the removal of the rootball. Any torn roots shall be trimmed such as to create a clean cut.

   b. The rootball shall be protected from drying during holding and transported to the new site. Protection shall be accomplished by clear plastic shielded from the sun, or by regularly wet burlap. Provision shall be made to dampen the rootball should holding conditions threaten to allow it to dry out.

   c. Limbs shall be tied from the top down as required to prevent injury during handling.

   d. Tree shall be oriented at new location such that the original north orientation is maintained. It is especially important to avoid reorienting trees that have been grafted.

   e. Tree shall be placed at original soil depth.

   f. Evergreen trees, or deciduous trees in leaf, shall be sprayed with an anti-desiccant as directed and accepted by the City.

   g. Staking and Guying:

Tree shall be staked and guyed from three (3) different equidistant points, one of which should be in line with prevailing winds. The tree shall be protected from direct contact with the cable.

1) Smaller trees – thirty inch (30") to fifty inch (50") inch rootball, shall be anchored with wooden stakes and soft wire.
2) Larger trees – Greater than fifty inch (50") rootball, shall be anchored with one-eighth inch (⅛") cable and earth anchors. Tie white surveyor's tape at breast height to each cable.

7-11 Groundcover

1. Where plant material is shown in an informal pattern, the Contractor shall space the material as shown at all times, maintaining spacing as shown on the Plans and as desired by the City. Ground cover material shall be planted in a random pattern and not in straight rows.
2. Ground cover shall be planted sufficiently deep to cover all roots, and spaced as specified in ground cover list on Landscape Planting Plan. At the time of planting all ground cover plants, the earth around each plant shall be firmed sufficiently to force out all air pockets. Alternate procedures in the planting of ground covers shall be accepted by the Project Manager, but shall not release the Contractor from the noted guarantee described herein.

7-12 Shrubs

1. When shrubs are spaced in rows, the total dimension shall be verified and the plants equally spaced within the designated area. Where shrubs are shown in an informal pattern, the Contractor shall space the material as shown on the Plans, and as desired by the City of Visalia Project Manager.
2. A minimum three foot (3') of clearance for all shrubs at mature size shall be maintained between shrubs and hardscaped features such as sidewalks, curbs, fences, or any such fixture.
3. Shrub pits shall be dug with level bottoms, width twice the diameter of rootball and level with the size of the container. See Landscape Standard Plans.
4. Position the plant in the hole and backfill halfway up the rootball.
5. Shrubs shall be maintained in their natural shapes. Overlong or scraggly branches shall be thinned out where necessary. In no case shall shrubs be trimmed by heading or shearing. Any plants severely pruned in this manner shall be removed and replaced at the Contractor's expense.
6. Immediately after planting, Contractor shall water in the area around each shrub to settle the soil around the rootball. After water has subsided, Contractor to level any areas around the rootball of the shrub that have settled. Repeat the process as many times as necessary so that once the berm is filled, water shall percolate evenly through the entire rootball.

7-13 Maintenance period

1. The Contractor shall continuously maintain all areas included in the work during the progress of the work, through all establishment periods and until acceptance of the work by the City for maintenance.
2. After all irrigation/landscape work indicated on the drawings or herein specified has been completed, inspected, and accepted by the Project Manager, the Project Manager will recommend that the City Council accept the project. After the City Council has accepted the project and the "Notice of Completion" document is recorded, the Contractor's maintenance period begins.

3. Maintenance period work includes, at a minimum on a weekly basis, all litter pickup and removal, watering, mowing, edging, weeding, plant replacement, mulching, cultivating, pest and disease control, and trimming necessary to bring the planted areas to a healthy growing condition and any additional work needed to keep the areas neat and attractive. During the maintenance period, the Contractor shall be charged prevailing rates for all water used.

Inspection Intervals & Rejection of Work: During the progress of the maintenance period, the Contractor and the City shall conduct inspections at no less than thirty (30) day intervals to determine that ongoing maintenance activities have been conducted by the Contractor. If in the opinion of the City, ongoing maintenance has not been conducted by the Contractor in a satisfactory manner, the work shall be rectified and/or completed by the Contractor and the maintenance period shall begin over again. When reviewed, if landscape maintenance work does not comply with requirements, replace rejected work and continue specified maintenance until reviewed by City and found to be accepted. Remove rejected plants and other materials promptly from project site. Contractor is fully responsible for coordinating with the City closely so that work passes re-inspection.

4. Prior to the final inspection, the Contractor will apply a pre-emergent herbicide at the recommended rate. **The maintenance period will cease and begin anew any time the Contractor fails to adequately water, replace unsuitable plants, control weeds or perform other work necessary for the proper establishment of all new landscaping.**
5. During the maintenance period, any plant indicating weakness or probability of dying shall be replaced at the Contractor's expense. Constant diligence shall be maintained to prevent disease, insects, and/or rodent infestations and proper preventative or control measures shall be taken. All areas included in the work shall be substantially clean and free of debris and weeds. All plant materials shall be live, healthy and free of infestations.
6. Any erosion or slipping of soil caused by watering shall be repaired at the Contractor's expense.
7. All walks, curbs and gutters shall be kept clear of debris, mud, dust and standing water by sweeping, mopping or hosing down as required for complete cleanliness.

SECTION 8 PARKS & URBAN FORESTRY

8-1 Parks

1. Pocket Park Development Standards

   City of Visalia Pocket Park Development Standards can be found on the City of Visalia website at http://www.ci.visalia.ca.us/depts/parks_n_recreation/urban_forestry/default.asp

8-2 Landscape and Lighting Districts

1. Retention and Detention Basins

   Visalia's basins are created to serve the community in its ongoing efforts at managing stormwater and increasing groundwater recharge. In addition to those two primary functions these stormwater basins also shall provide passive recreation for the surrounding residents.

   a. When possible basins shall be designed to have a walking path around the perimeter of the basin for passive and or active recreation. Path shall be an asphalt concrete pavement section as approved by the City of Visalia Project Manager.

b. All plants shall be irrigated using flood bubblers. Bubblers shall be pressure compensating at a minimum flow of .25 gallons per minute.

c. Planting design shall be natural in its layout utilizing trees, shrubs, and groundcovers. Plants are to be located to allow for enough space between plants at mature size for access in and around by maintenance personnel.

d. All plants shall be California natives from Sunset Zones 7-9. All plants selections must be accepted by the City of Visalia.

e. Shrubs shall be a minimum of 1 gallon in size, Trees shall be a minimum of 15 gallon. Substitution in sizes may be allowed if accepted by the City of Visalia project manager.

f. No Turf will be allowed to be planted.

2. Waterways

See the City of Visalia's Waterways and Trails Master Plan

SECTION 9 ENGINEERING

9-1 Medians

1. Irrigation

a. Irrigation mainline and lateral lines shall be located on the south side for medians running east and west, and on the west side for medians running north and south. Lines shall be six inches (6") from the back side of the curb. Contractor to verify the location of the electrical lines for the street lights prior to the beginning of construction. Contractor to notify the City of Visalia Project Manager of any discrepancy.

b. All plants shall be irrigated using flood bubblers. Bubblers shall be at a minimum, have a flow of .25 gallons per minute. Bubblers shall be manufactured by Toro, Hunter, or accepted equal.

c. Irrigation controllers shall be Toro Sentinel's or accepted equal. Controllers shall be installed per manufacturer's specifications

d. Irrigation controller hook up to City of Visalia street lights shall be done in accordance with all federal, state, and local regulations.

2. Planting

a. Medians shall be planted with Trees only. Trees shall be from the City of Visalia accepted Street Tree list. Selected species shall be accepted by the City of Visalia Project Manager prior to the beginning of construction.

b. All planting areas shall have a five inch (5") thick layer of Orchard Bark mulch installed. Mulch shall be installed in all planting areas regardless if plants exist.

SECTION 10 PLANNING

All projects that are submitted for site plan review shall follow CA AB 1881, the Model Water Efficient Landscape Ordinance. It is the responsibility of the project owner, project Landscape Architect, and project Contractor to follow and adhere to that ordinance. See the Landscape Standard Specifications and Standard Plans for design guidelines.

SECTION 11 APPENDICES

All of the information below is available on the City of Visalia website under the Parks and Urban Forestry Division.
http://www.ci.visalia.ca.us/depts/parks_n_recreation/urban_forestry/default.asp

11-1 Forms

1. MWELO Forms
2. Irrigation Calculations
3. Landscape Documentation Package
    a. Certificate of Completion by a registered Landscape Architect
    b. Soils Management Report
    c. Maintenance Schedule
    d. Irrigation Schedule
4. Project Closeout

11-2 Landscape Standard Plans

1. Construction
2. Irrigation
3. Planting

11-3 Supporting Documents

1. CA AB 1881 MWELO
2. WUCOLS III
3. Guidelines and Specifications for Nursery Tree Quality 2009
4. City of Visalia Street Tree List
5. Waterways and Trails Master Plan
6. City of Visalia Oak Tree Ordinance

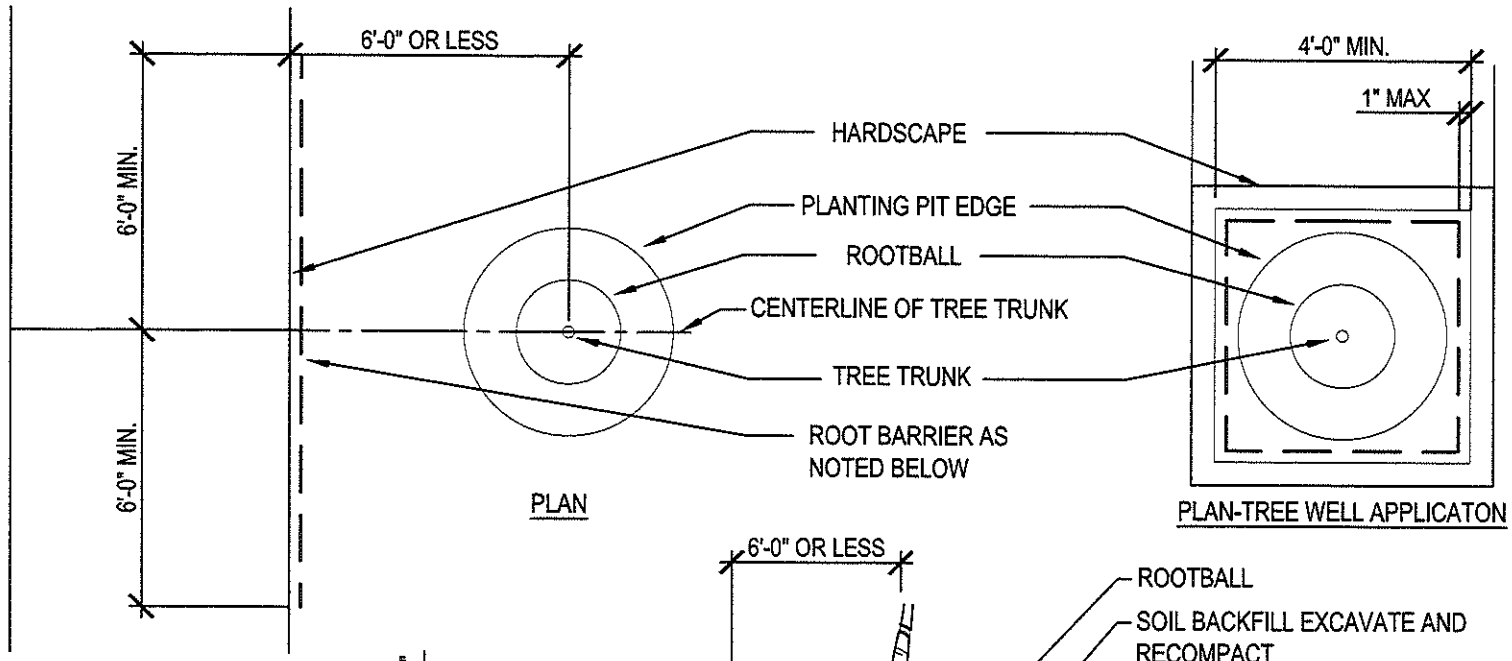
LINEAR ROOT BARRIER

APPROVED BY: _____ 04/29/13
PARKS AND RECREATION DIRECTOR — DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

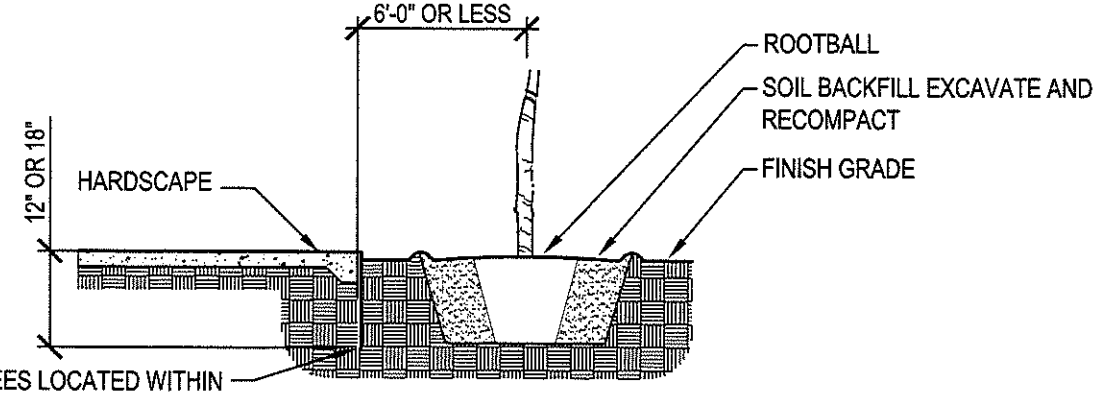
REVISIONS
04/20/13

LP—1



PLAN

PLAN-TREE WELL APPLICATON



ROOT BARRIER REQUIRED FOR ALL TREES LOCATED WITHIN 6'-0" OF ANY HARDSCAPE. INSTALL ROOT BARRIER 6'-0" MIN. LATERALLY FROM TRUNK OF THE TREE ALL WAYS ADJACENT TO HARDSCAPE

SECTION

NOTE:
- ROOTBARRIER MATERIAL TO BE .085" MIN. THICK POLYETHLENE/POLYPROPYLENE COPOLYMER OR APPROVED EQUIVALENT, WITH MOLDED 90 DEGREE
- VERTICAL RIBS @ 6" MAX. O.C. NO SOLVENT-WELDED RIBS OR CONNECTIONS. RIBS FACING TOWARDS ROOTBALL. CONNECTION BETWEEN PANELS
- SHALL PROVIDE NON-BREAKABLE BARRIER FOR ROOTS. INSTALL SO THAT TOP OF BARRIER IS A 1/2" BELOW ADJACENT HARDSCAPE
- ROOT BARRIERS ADJACENT TO HARDSCAPE SHALL BE 12". ROOT BARRIERS ADJACENT TO HARDSCAPE WITH CURB, GUTTER, OR FOOTING SHALL BE 18"

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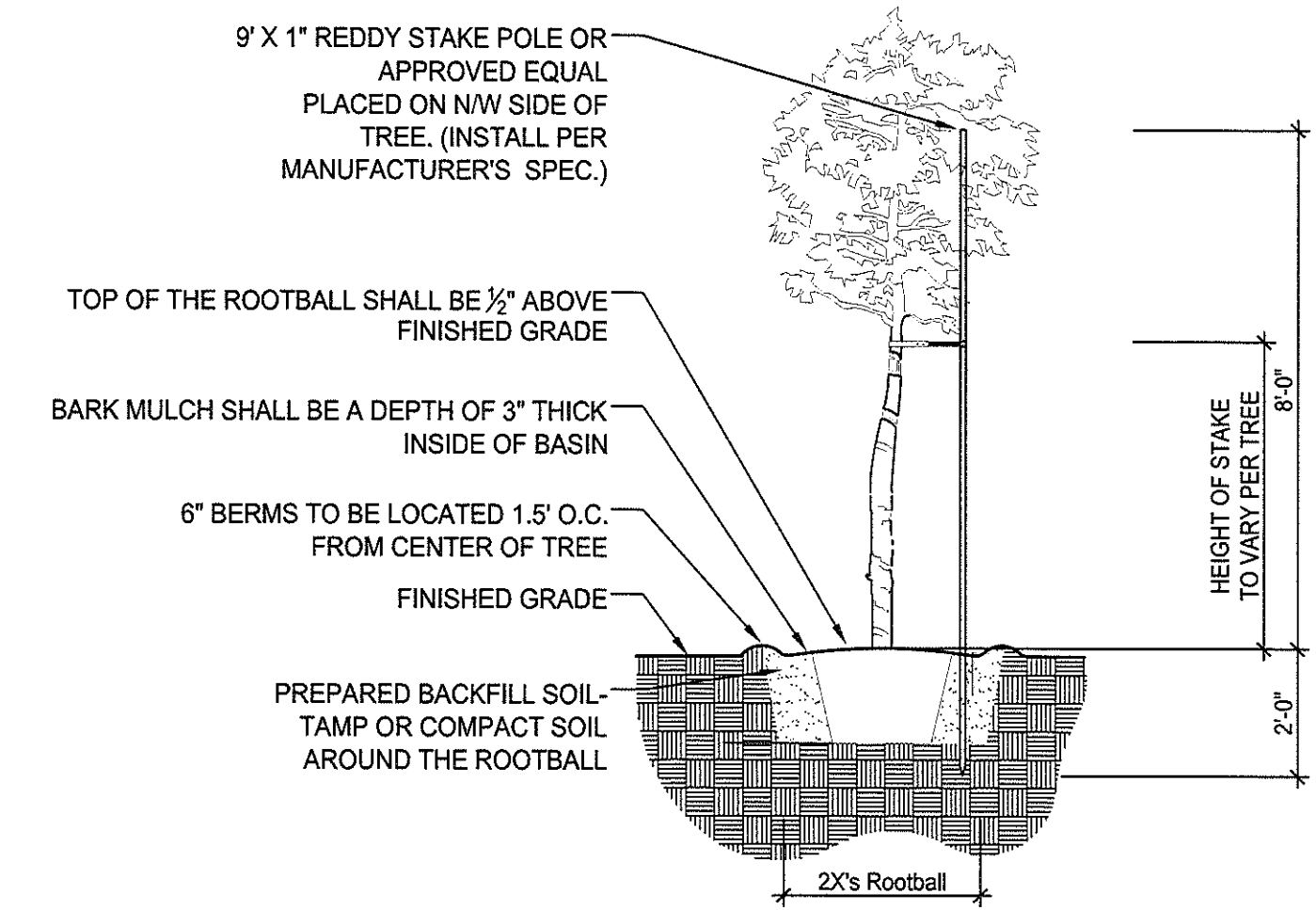
TREE PLANTING & REDDY STAKING



NOTES:
- ROOTBALL TO BE EXAMINED FOR ANY DEFECTS PRIOR TO PLANTING
- IF ANY DEFECTS ARE FOUND SHAVE THE EXTERIOR AND BOTTOM OF THE ROOTBALL BEFORE PLANTING
- ALL TREES TO BE APPROVED BY CITY PRIOR TO PLANTING
- STAKING TAB SHALL BE FACED AWAY FROM THE TREE AS SHOWN ON THE DETAIL

TREE PLANTING & STAKING(LODGEPOLE)

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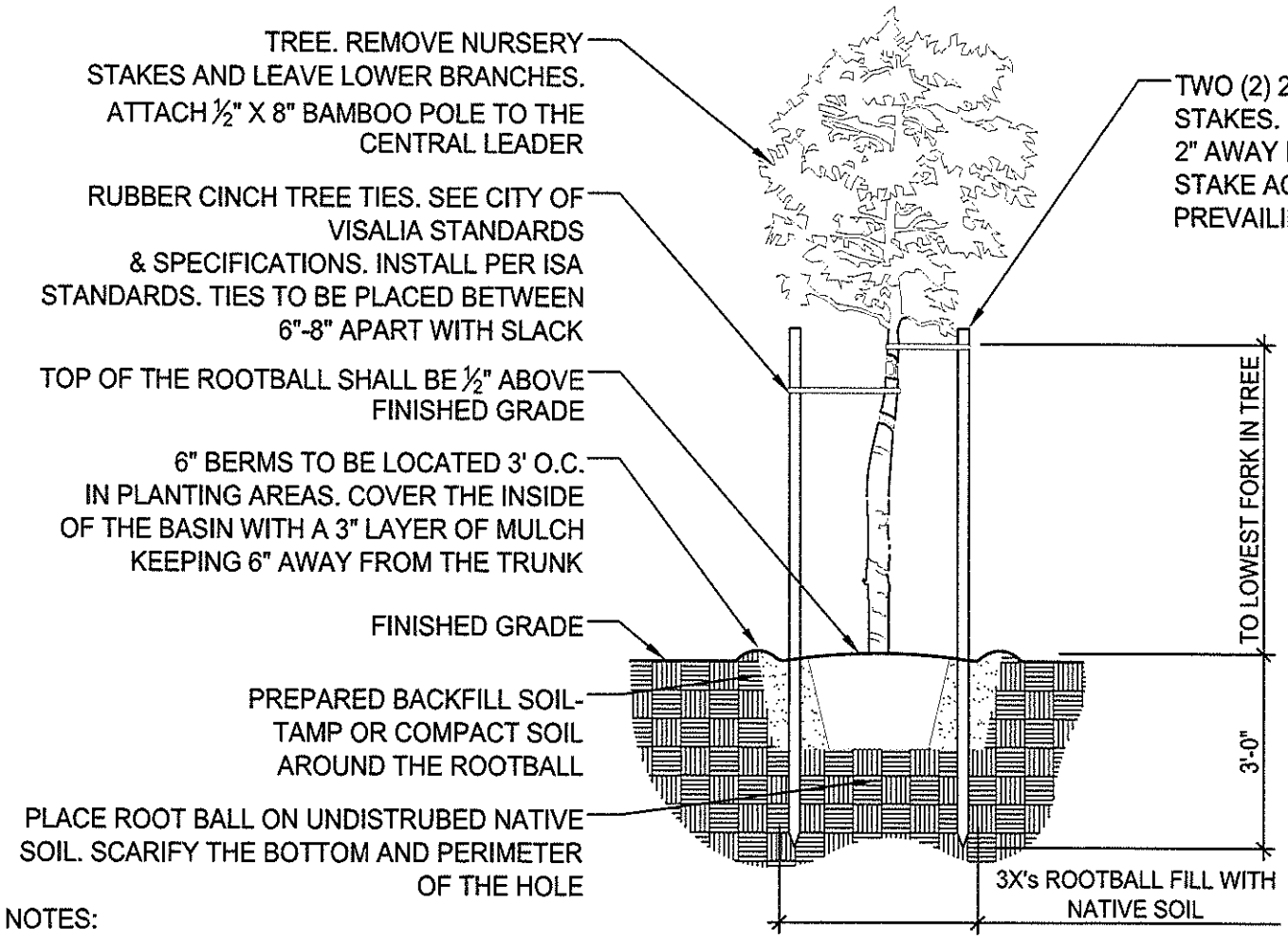
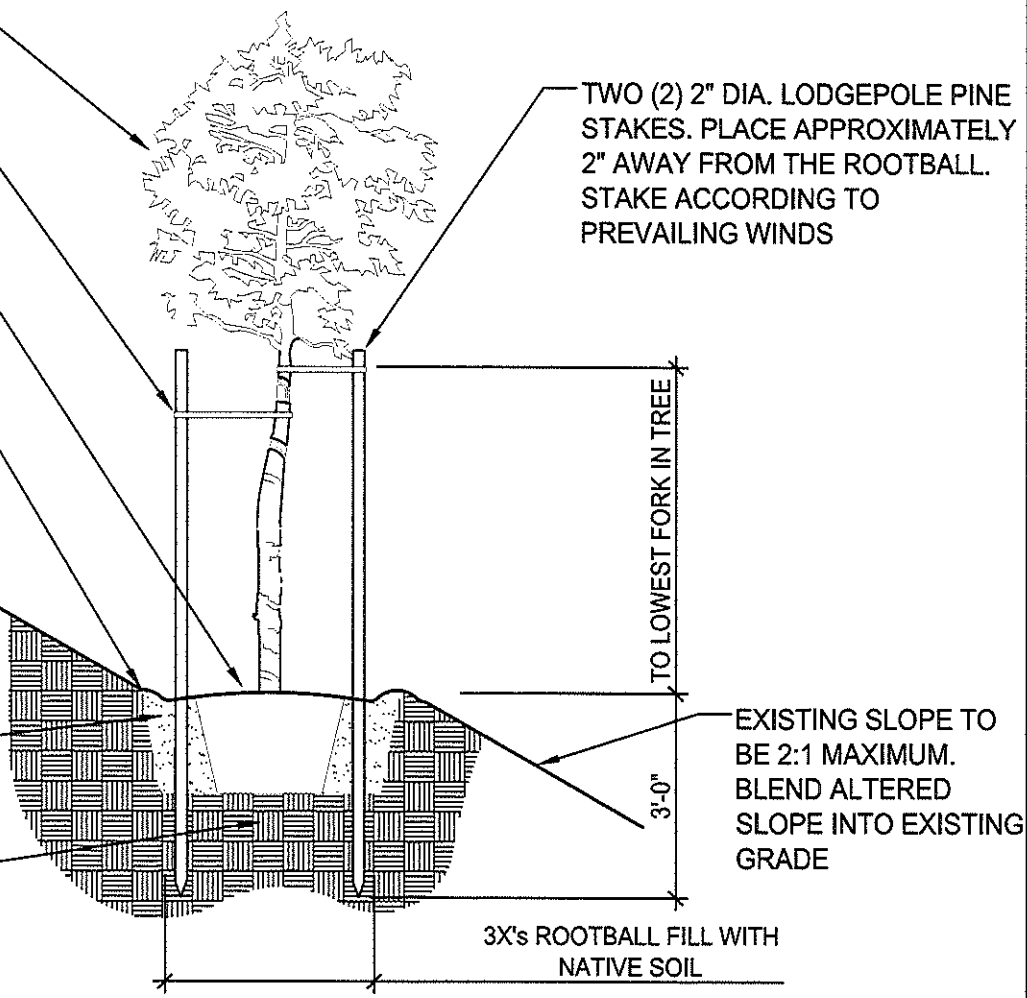
LP-3



NOTES:

- TREE QUALITY SHALL BE OF STANDARD AS REQUIRED BY THE CITY: SEE LANDSCAPE STANDARDS AND SPECIFICATIONS
- ANY SUCH TREE NOT MEETING THAT STANDARD SHALL BE REMOVED FROM THE SITE AND REPLACED AT THE EXPENSE OF THE CONTRACTOR
- ROOT BARRIERS ARE REQUIRED IF TREE IS LOCATED WITHIN 6' OF HARDSCAPE. SEE ROOTBARRIER DETAIL
- FOR TREES IN LAWN AREAS, PROVIDE A 3' DIA. FREE OF TURF

TREE PLANTING ON SLOPE



NOTES:
-ALL TREES SHALL BE APPROVED BY THE CITY PRIOR TO PLANTING
- ANY SUCH TREE NOT MEETING THAT STANDARD SHALL BE REMOVED FROM THE SITE AND REPLACED AT THE EXPENSE OF THE CONTRACTOR
- ROOTBARRIER REQUIRED IF TREE IS LOCATED WITHIN 6' OF HARDSCAPE. SEE ROOTBARRIER DETAIL
- FOR TREES IN LAWN AREAS, PROVIDE A 3' DIA. FREE OF TURF

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CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

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LP—4

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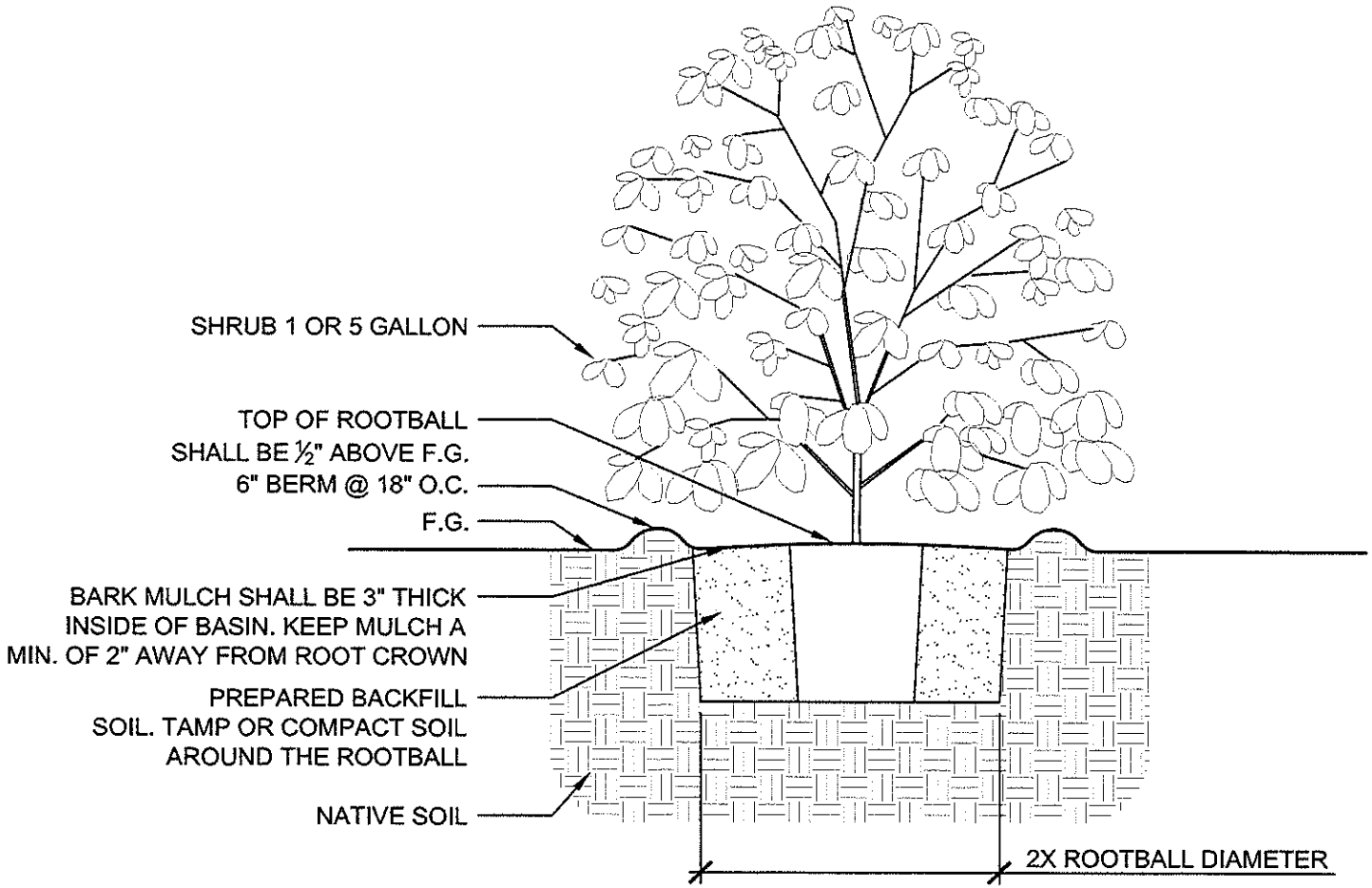
CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

SHRUB



NOTES:
- AMENDMENT SHALL BE CONSISTENT WITH SOILS FERTILITY TEST
- SHAVE EXTERIOR AND BOTTOM OF THE ROOTBALL REMOVING ANY ROOT DEFECTS PRIOR TO PLANTING
- ALL PLANTS SHALL BE OF STANDARDS AS PRESCRIBED IN THE CITY OF VISALIA SPECIFICATIONS FOR PLANT MATERIAL
- ALL PLANTS SHALL BE APPROVED BY THE CITY PRIOR TO PLANTING

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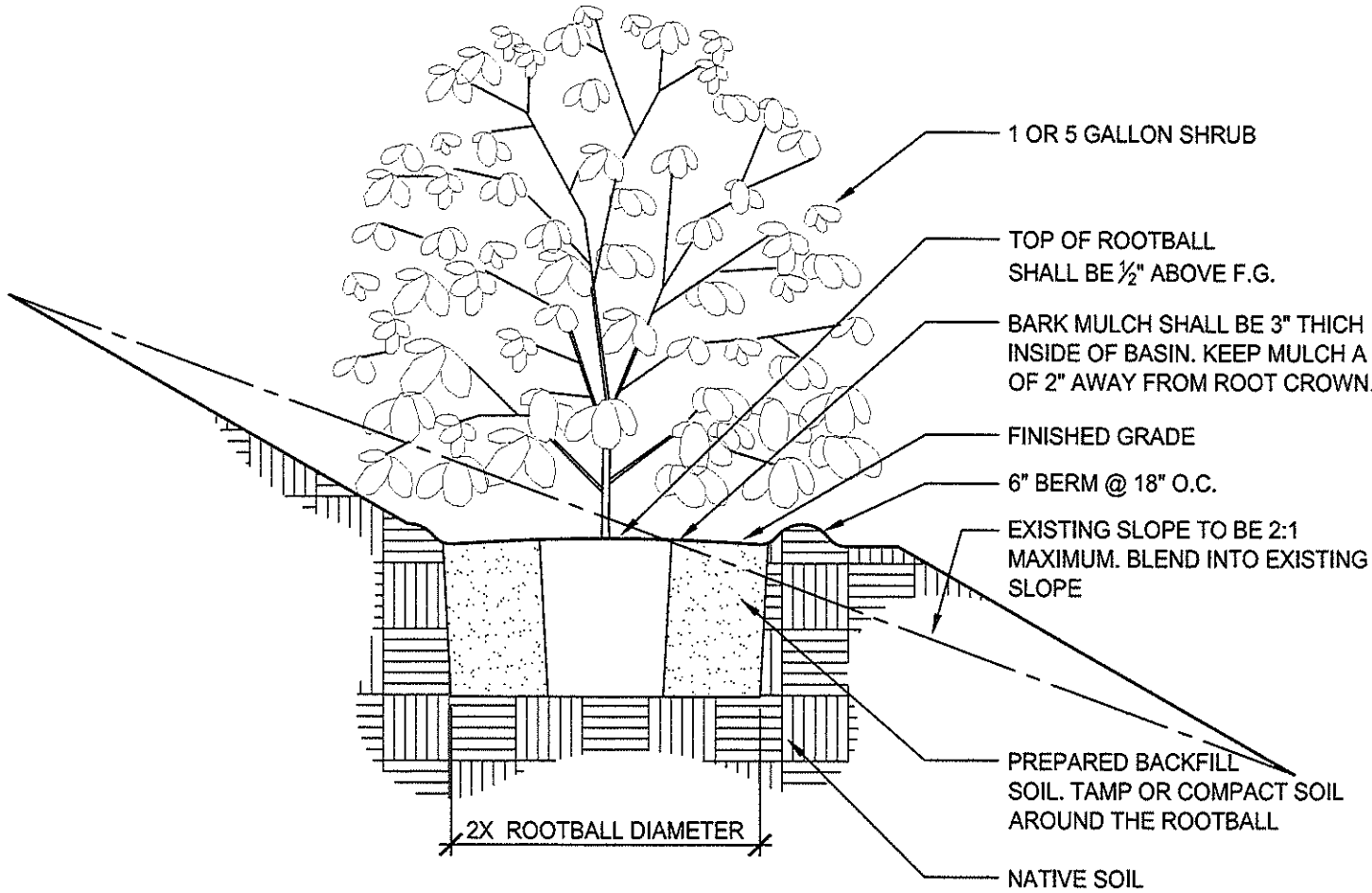
04/20/13

LP-6

SHRUB ON SLOPE



NOTES:
- AMENDMENT SHALL BE CONSISTENT WITH SOILS FERTILITY TEST
- SHAVE EXTERIOR AND BOTTOM OF THE ROOTBALL REMOVING ANY ROOT DEFECTS PRIOR TO PLANTING
- ALL PLANTS MUST BE APPROVED BY THE CITY PRIOR TO PLANTING

NOTES:
- SEE PLANTING LEGEND FOR GROUNDCOVER SIZE AND GROWTH HABIT
- GROUNDCOVER TO BE A MIN. 6" AWAY FROM HARDSCAPE AT FULL MATURITY

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LANDSCAPE & IMPROVEMENT STANDARDS

GROUNDCOVER

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LP – 7

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DATE

VINE W/ STEEL TRELLIS

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS
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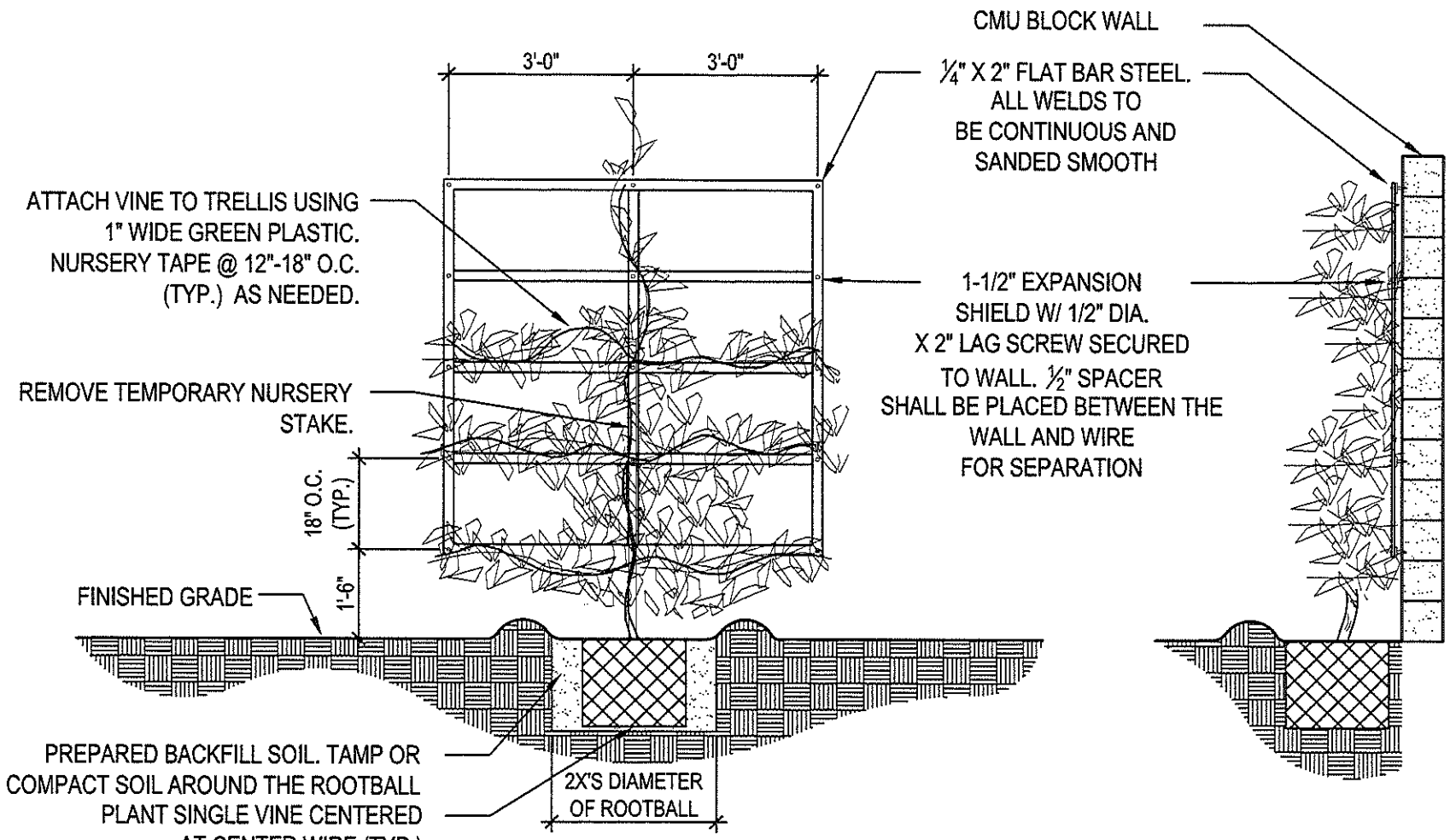
LP-8



NOTES:
- AMENDMENT SHALL BE CONSISTENT WITH SOILS FERTILITY TEST
- SHAVE EXTERIOR AND BOTTOM OF THE ROOTBALL REMOVING ANY ROOT DEFECTS PRIOR TO PLANTING
- IF ROOT DEFECTS ARE SEVERE REPLACE PLANT PRIOR TO PLANTING.
- BERM TO BE 6" HIGH @ 12" O.C.
- MULCH TO BE 2" THICH INSIDE OF THE BASIN

RP BACKFLOW PREVENTION DEVICE

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LANDSCAPE & IMPROVEMENT STANDARDS

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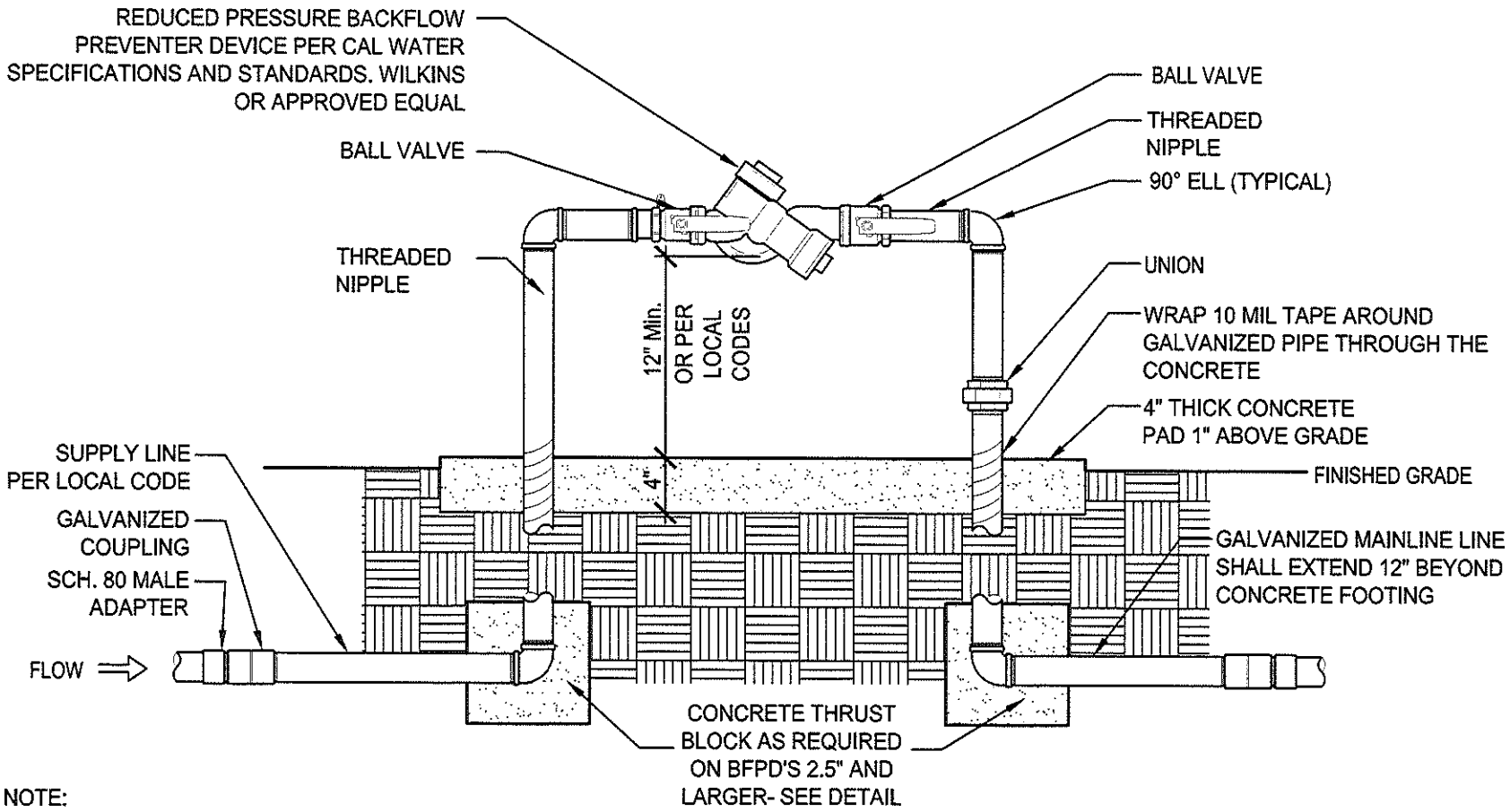
LI—1



NOTE:
- ALL ASSEMBLY PARTS (THREADED NIPPLES, FITTINGS & ETC.) SHALL BE GALVANIZED OR BRASS PER LOCAL CODES AND REQUIREMENTS
- MAINLINE TO BE A GALVANIZED NIPPLE AND EXTEND 12" PAST THE EDGE OF THE CONCRETE FOOTING. SCH. 80 MALE ADAPTER TO BE USED IN THE CONNECTION FROM GALVANIZED TO SCH. 40 MAINLINE.
- BACKFLOW PREVENTION DEVICE TO BE LOCATED AS CLOSE AS POSSIBLE TO THE LANDSCAPE METER AS REQUIRED BY CAL WATER
- SEE DETAIL FOR BACKFLOW PREVENTION CAGE INSTALLATION
- ALL BACKFLOW PREVENTION DEVICES TO HAVE A FREEZE BLANKET INCLUDED UPON INSTALLATION
- ALL THREADED CONNECTIONS TO BE MADE WITH TEFLON TAPE

BACKFLOW CAGE

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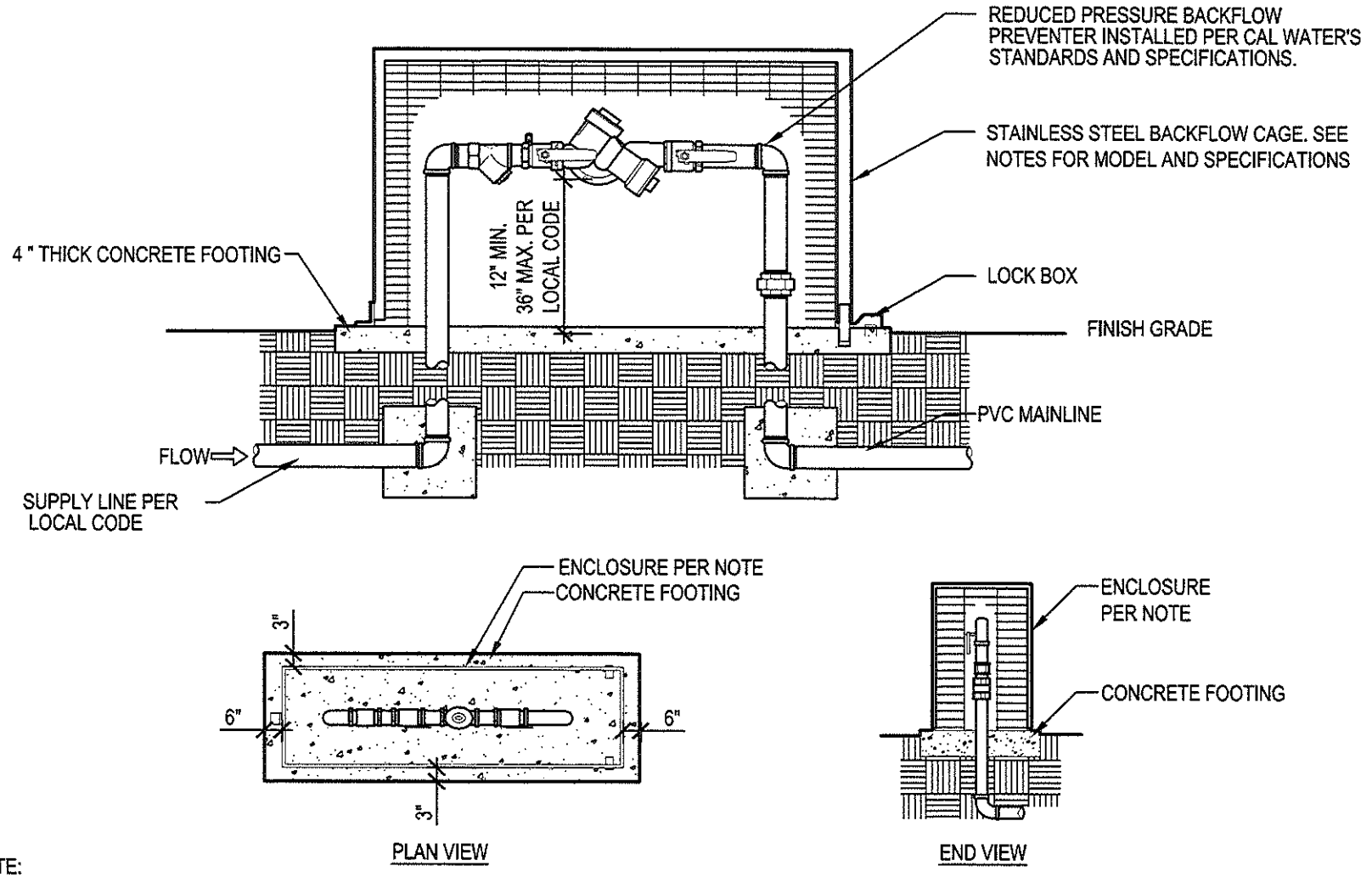
LI – 2



NOTE:
- STAINLESS STEEL BACKFLOW ENCLOSURE 'STRONG BOX'. MODEL NO. SBBC-45SS (46.5" x 18" x 29.5") HINGED AT ONE END FOR BACKFLOWS PREVENTION DEVICES 1-1/4" OR LARGER. MODEL NO. SBBC-30SS (31.5" X 28" X 17.75") FOR BACKFLOW PREVENTION DEVICES 1" OR SMALLER. INSTALL PER MANUFACTURER'S SPECIFICATIONS. AVAILABLE FROM V.I.T. PRODUCTS (800) 729-1314 www.vitproducts.com
- SEE BACKFLOW PREVENTION DEVICE DETAIL FOR INSTALLATION SPECIFICATIONS
- LOCK BOCK TO BE LOCATED ABOVE CONCRETE FOOTING

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LI – 3

THRUST BLOCKS

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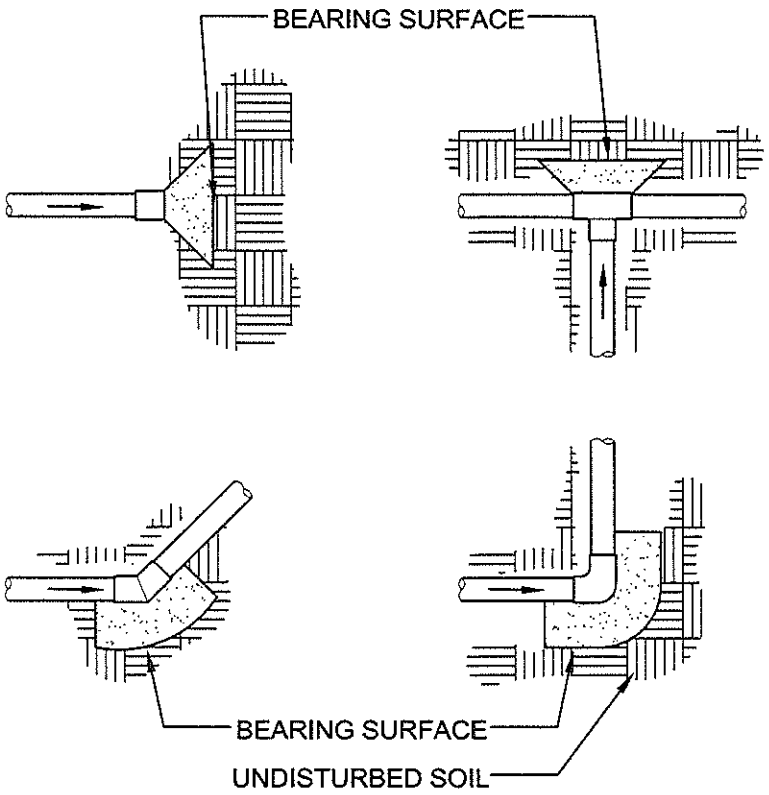
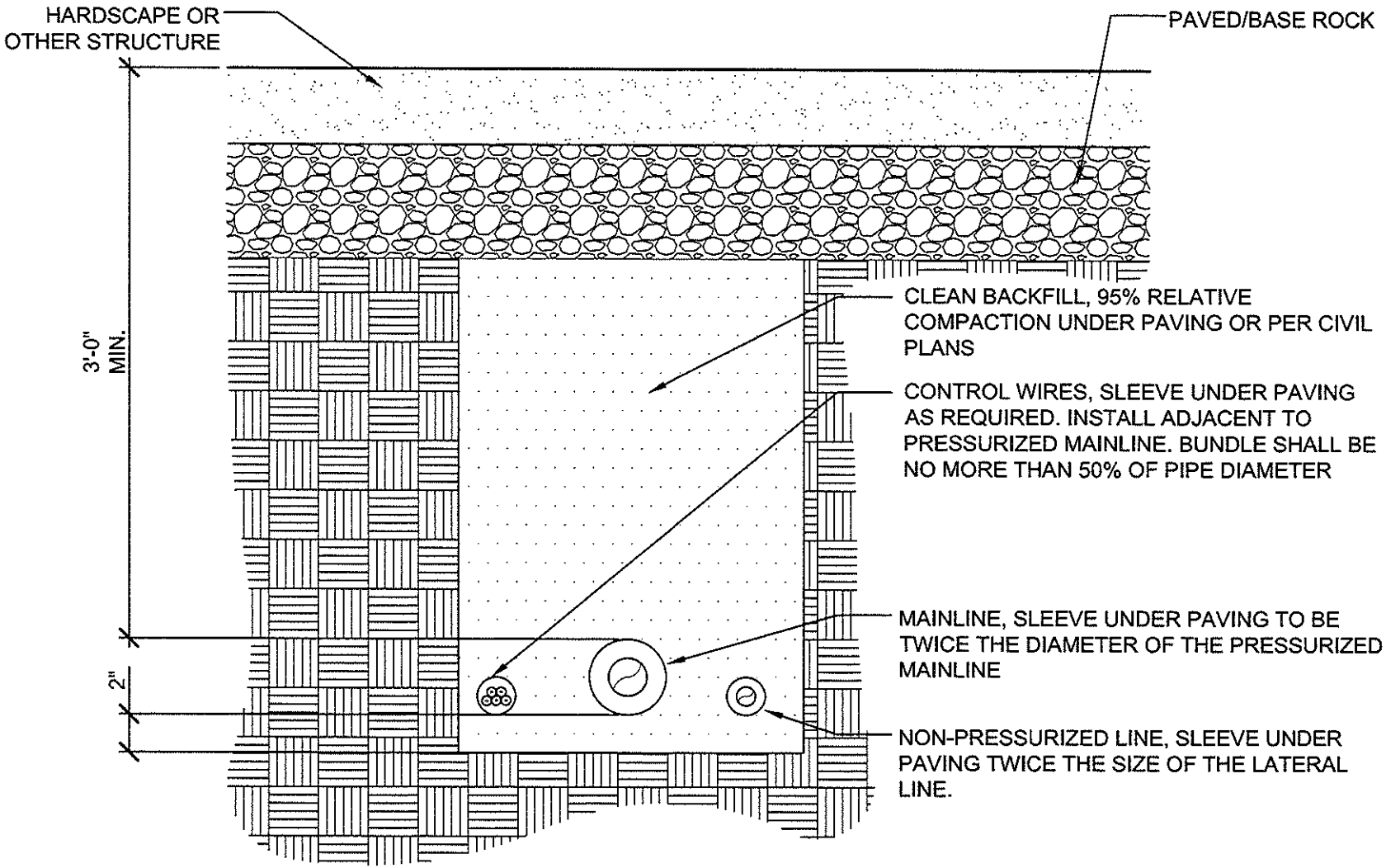
LI – 4



MINIMUM BEARING SURFACE AREA

PIPE SIZE	TEE AND PLUG	90° BEND	45° BEND
1-1/2"	0.45 FEET ^{2}	0.63 FEET ^{2}	0.34 FEET ^{2}
2"	0.69 FEET ^{2}	0.97 FEET ^{2}	0.53 FEET ^{2}
2-1/2"	1.0 FEET ^{2}	1.41 FEET ^{2}	0.77 FEET ^{2}
3"	1.48 FEET ^{2}	2.10 FEET ^{2}	1.14 FEET ^{2}
4"	2.43 FEET ^{2}	3.45 FEET ^{2}	1.87 FEET ^{2}
6"	5.25 FEET ^{2}	7.41 FEET ^{2}	4.02 FEET ^{2}
8"	9.08 FEET ^{2}	12.83 FEET ^{2}	6.96 FEET ^{2}
10"	14.93 FEET ^{2}	21.07 FEET ^{2}	11.44 FEET ^{2}

NOTES:
- SIZE THRUST BLOCKS AS SPECIFIED ABOVE
- DO NOT ENCASE CONTROL WIRES IN THE CONCRETE
- ALL FITTINGS MUST BE WRAPPED WITH POLYETHYLENE TO PREVENT CONCRETE FROM ADHERING TO BOLTS OR PIPES
- JOINTS AND BOLTS SHALL BE ACCESSIBLE FOR REPAIRS
- THRUST BLOCKS SHALL BE A MINIMUM OF 6" IN THICKNESS
- ONE (1) 80 LBS. SACK OF CONCRETE WILL COVER .6 FT. ^{3}



NOTES:
- SEE IRRIGATION LEGEND FOR MAINLINE AND LATERAL LINE PIPE SIZES AND TYPE
- ALL SLEEVES TO BE SCH. 40 PVC PIPE
- EXTEND ALL SLEEVES 12" BEYOND EDGE OF HARDSCAPE
- CAP BOTH ENDS OF ALL SPARE SLEEVES AND MARK BOTH ENDS WITH 3M LOCATOR BALLS

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PIPE UNDER PAVEMENT

LI-5

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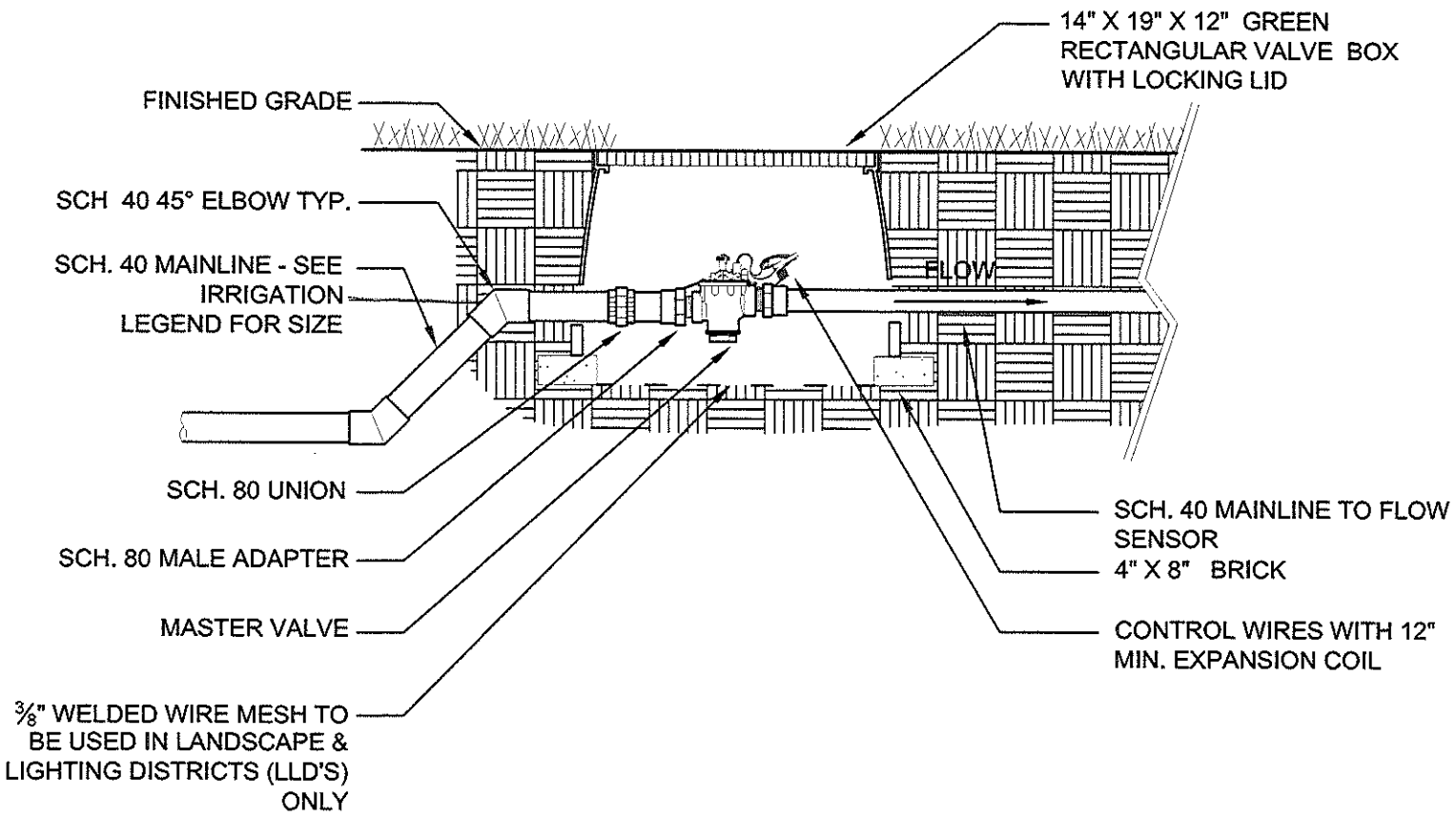
CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

MASTER VALVE



NOTES:
- MASTER VALVE SHALL BE MAKE AND MODEL NUMBER SHALL BE PER THE CONTROLLER MANUFACTURER'S SPECIFICATIONS
- MASTER VALVE WIRE SHALL BE DIRECT BURIAL 14 AWG WIRE OR LARGER. COLOR: BLACK
- ALL WIRE RUNS SHALL BE CONTINUOUS WITHOUT ANY SPLICES. WIRE CONNECTIONS SHALL BE MADE USING DBR-Y/6 CONNECTORS OR APPROVED EQUAL
- WRAP VALVE BOX WITH MIN. 3 MIL THICK PLASTIC AND SECURE IT USING DUCT TAPE OR ELECTRICAL TAPE
- INSTALL MASTER VALVE PER MANUFACTURER'S SPECIFICATIONS
- SEE MASTER VALVE/FLOW SENSOR LAYOUT DETAIL FOR LINEAR DIMENSIONS

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FLOW SENSOR

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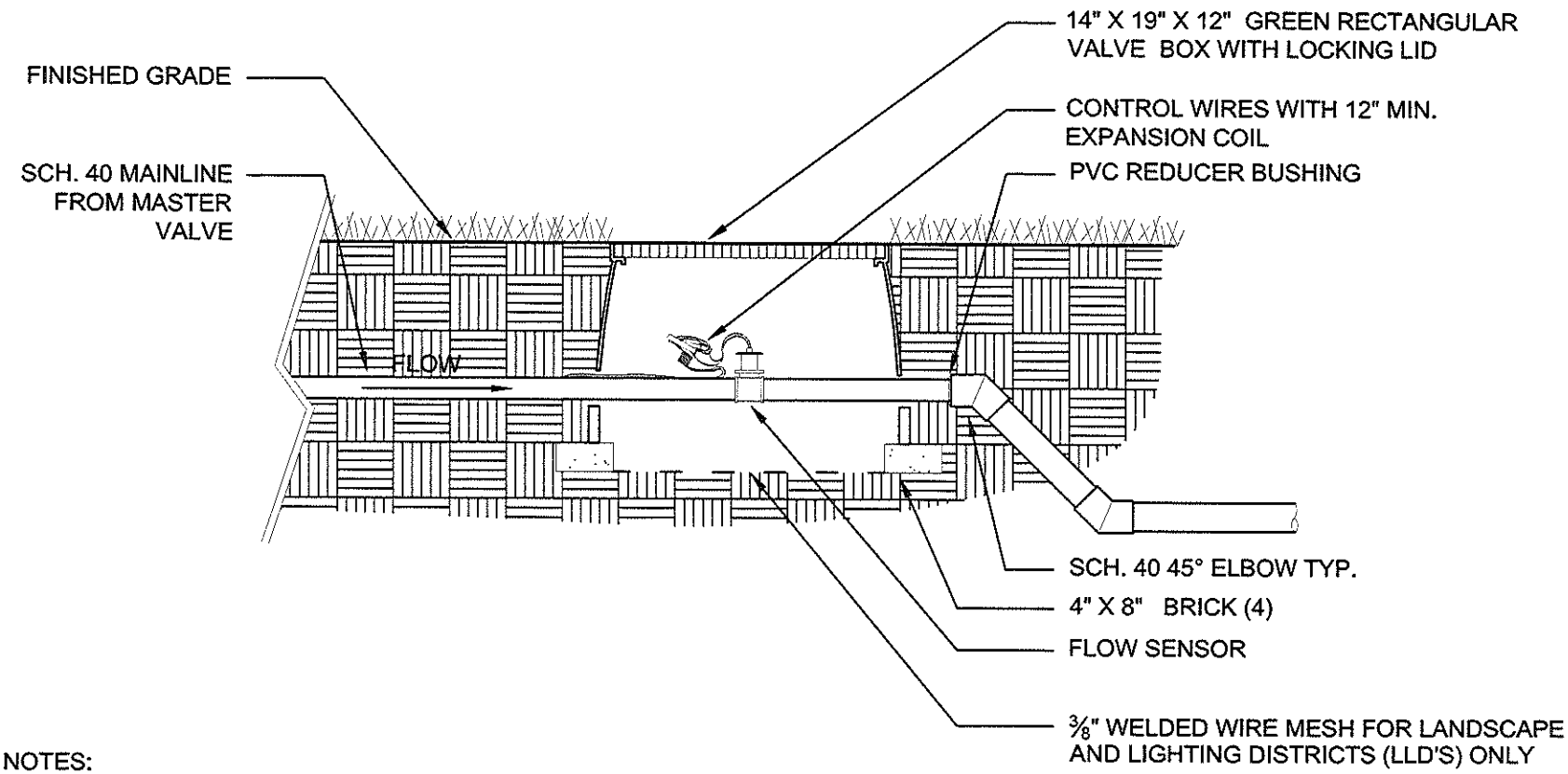
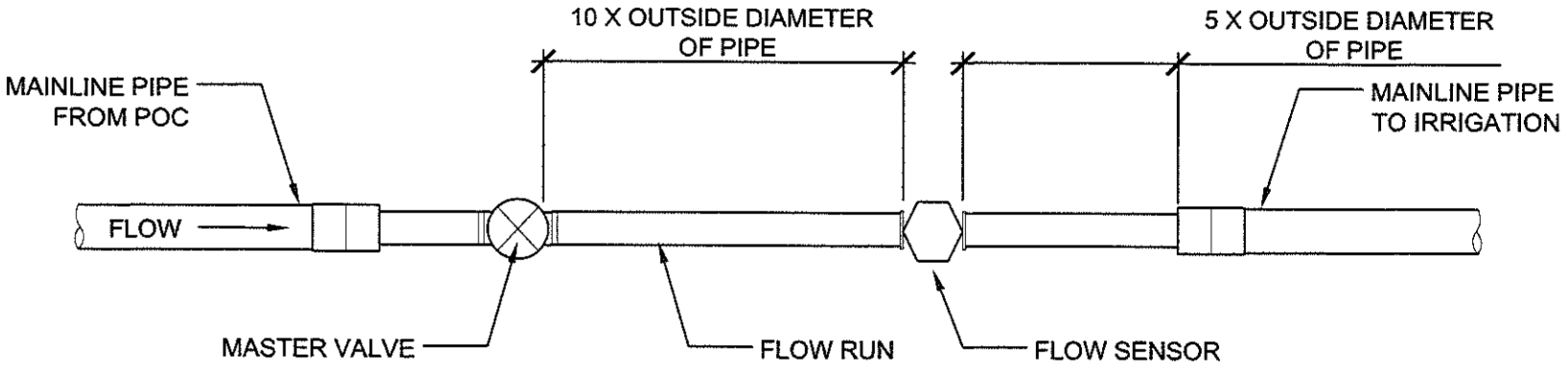
LI – 7



NOTES:
- FLOW SENSOR MAKE AND MODEL NUMBER SHALL BE PER CONTROLLER MANUFACTURER'S SPECIFICATIONS
- FLOW SENSOR WIRE SHALL BE PER CONTROLLER MANUFACTURER'S SPECIFICATIONS
- ALL WIRE RUNS SHALL BE CONTINUOUS WITHOUT ANY SPLICES. WIRE CONNECTIONS SHALL BE MADE USING DBR/Y-6 CONNECTORS OR APPROVED EQUAL
- WRAP VALVE BOX WITH MIN. 3 MIL THICK PLASTIC AND SECURE IT USING DUCT TAPE OR ELECTRICAL TAPE
- INSTALL FLOW SENSOR PER MANUFACTURER'S SPECIFICATIONS
- SEE MASTER VALVE/FLOW SENSOR LAYOUT DETAIL FOR LINEAR DIMENSIONS



NOTES:
- FLOW SENSOR SHALL BE OF MAKE AND MODEL AS REQUIRED BY THE CONTROLLER MANUFACTURER
- FLOW SENSOR WIRE SHALL BE PER MANUFACTURER'S SPECIFICATIONS
- MASTER VALVE WIRE SHALL BE DIRECT BURIAL 14 AWG WIRE OR LARGER.COLOR: BLACK
- ALL WIRE RUNS SHALL BE CONTINUOUS WITHOUT ANY SPLICES. WIRE CONNECTIONS SHALL BE MADE USING DBR/Y-6 CONNECTORS OR APPROVED EQUAL
- INSTALL BOTH MASTER VALVE AND FLOW SENSOR PER MANUFACTURER'S SPECIFICATIONS
- FLOW RUN PIPE SIZE SHALL BE REDUCED DOWN ONE (1) SIZE COMPARED WITH THE MAINLINE

EXAMPLE:
3" MAINLINE = 2-1/2" FLOW RUN
2-1/2" MAINLINE = 2" FLOW RUN
2" MAINLINE = 1-1/2" FLOW RUN

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MASTER VALVE/FLOW SENSOR LAYOUT

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BALL VALVE 3" OR SMALLER

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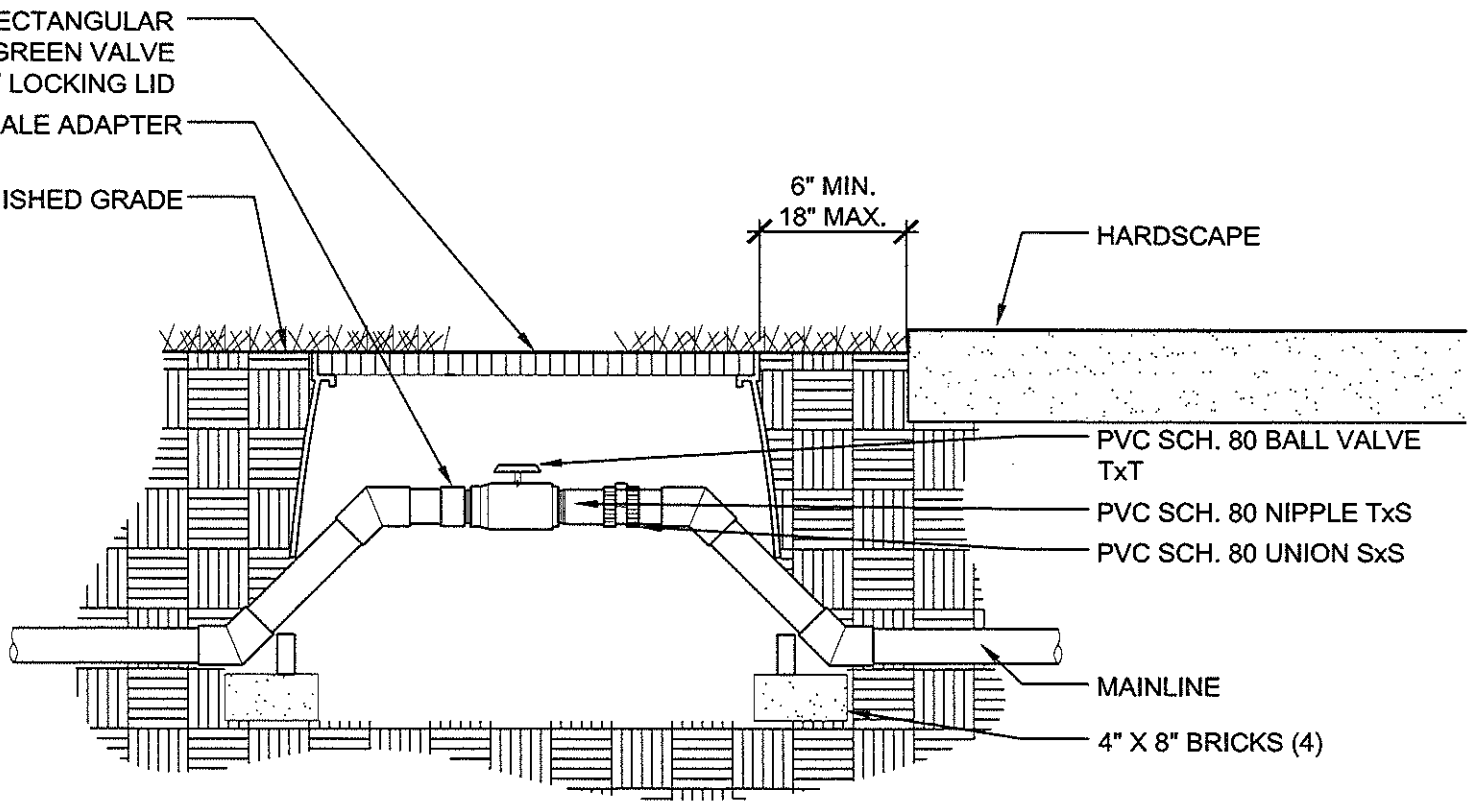

NOTES:
- LOCATE VALVE BOXES WITHIN 6" OF HARDSCAPE EDGE/SIDEWALK WHERE EASILY ACCESSIBLE IN SHRUB/GROUNDCOVER PLANTING AREA
- WRAP VALVE BOX WITH MIN. 3 MIL THICK PLASTIC AND SECURE IT USING DUCT TAPE OR ELECTRICAL TAPE
- ALL THREADED CONNECTIONS TO BE MADE USING TEFLON TAPE
- ALL CHANGES IN ELEVATION TO BE ACCOMPLISHED USING SCH. 40 45° ELBOWS

BALL VALVE 4" OR LARGER

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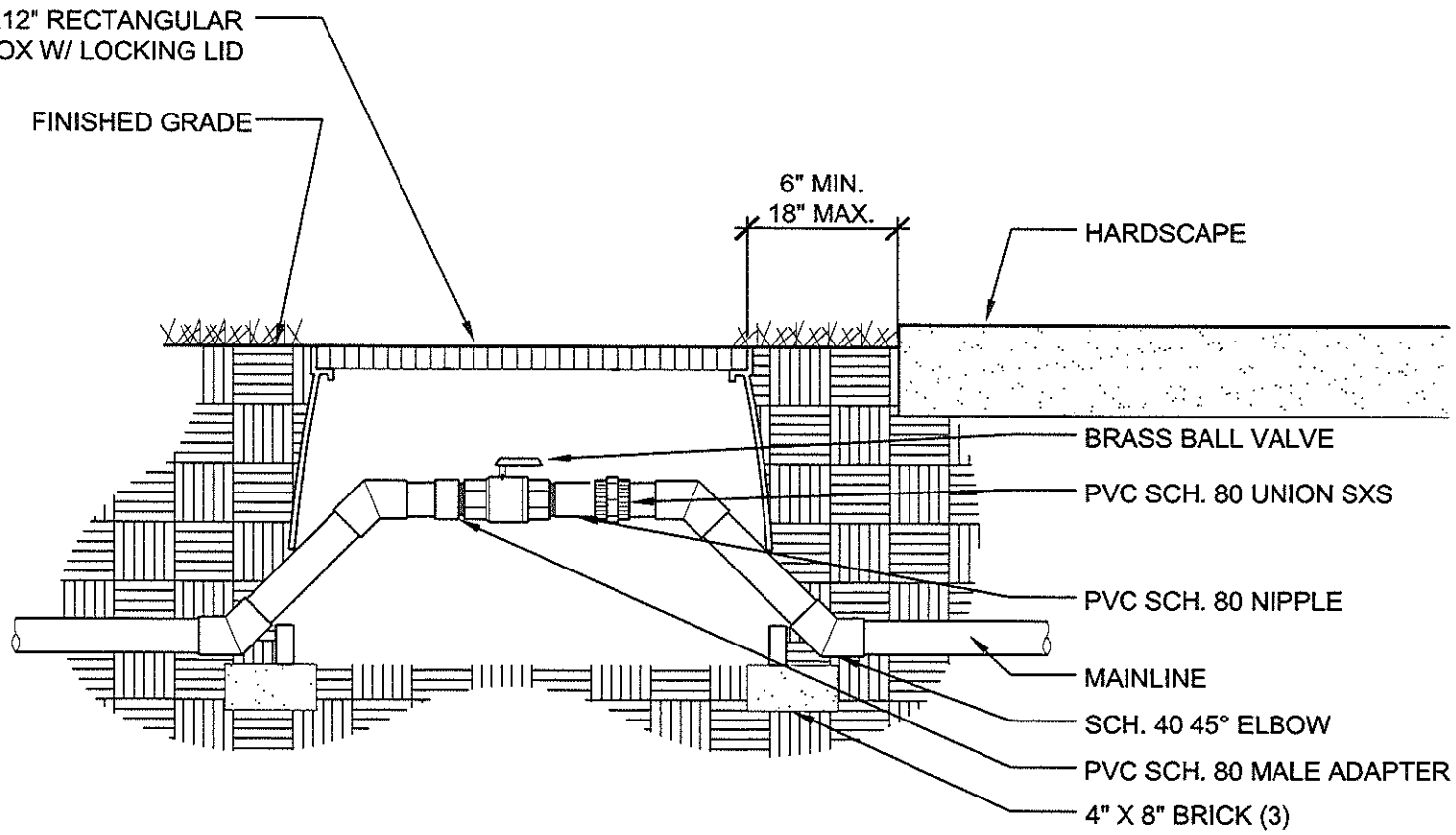
LI – 10



NOTES:
- LOCATE VALVE BOXES WITHIN 6" OF HARDSCAPE EDGE/SIDEWALK WHERE EASILY ACCESSIBLE IN SHRUB/GROUNDCOVER PLANTING AREA
- WRAP VALVE BOX WITH MIN. 3 MIL THICK PLASTIC AND SECURE IT USING DUCT TAPE OR ELECTRICAL TAPE
- ALL THREADED CONNECTION TO BE MADE USING TEFLON TAPE
- ALL CHANGES IN ELEVATION TO BE MADE USING SCH. 40 45° ELBOWS

GATE VALVE W/ FLANGED EDGES

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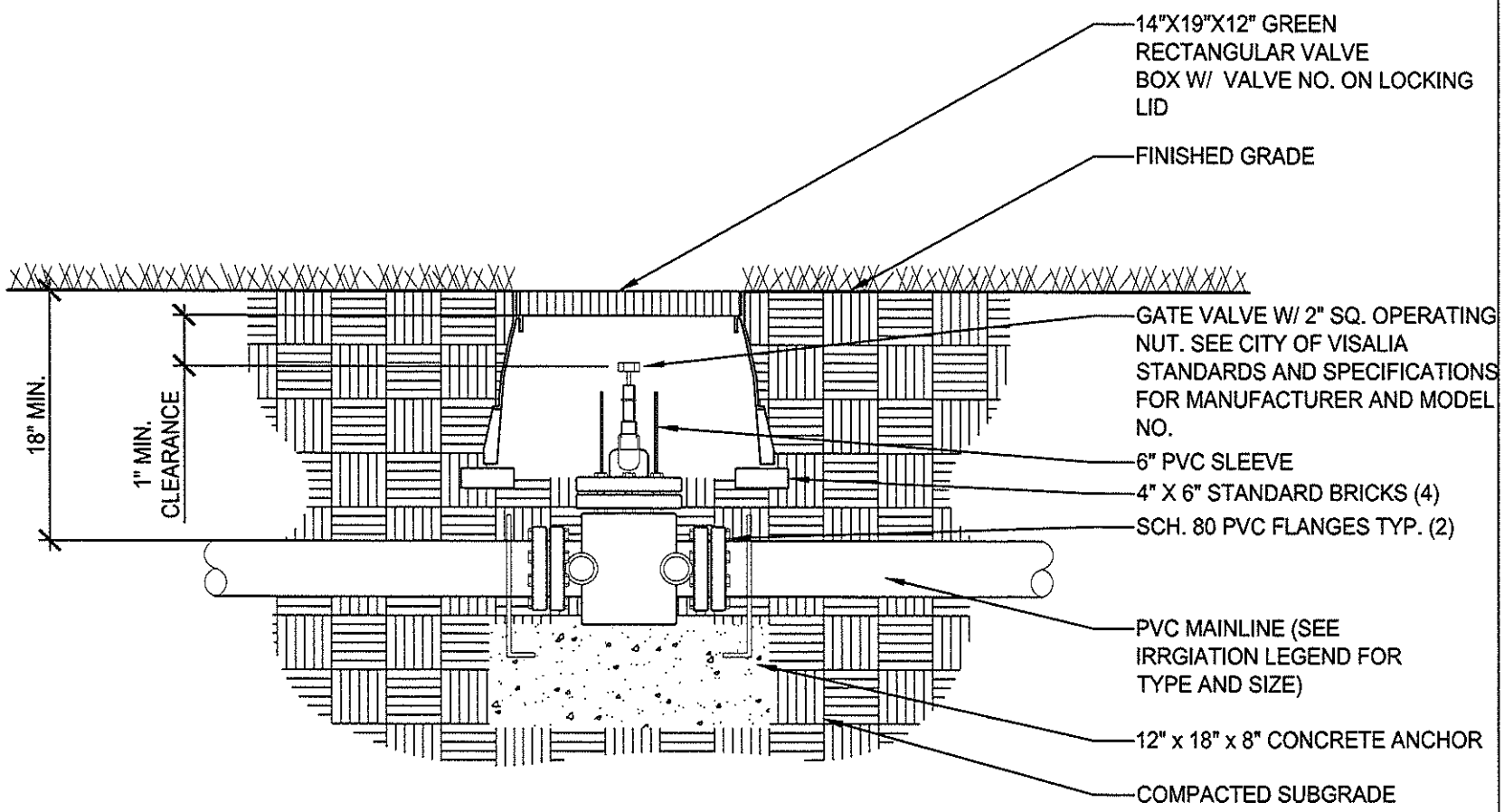
LI—11



NOTES:
- INSTALL GATE VALVE A MINIMUM 24" FROM STRUCTURES OR HARDSCAPE
- INSTALL GATE VALVES IN PLANTING BEDS WHENEVER POSSIBLE
- INSTALL VALVE BOX FLUSH WITH FINISHED GRADE
- INSTALL GATE VALVE PER MANUFACTURER'S SPECIFICATIONS
- WRAP VALVE BOX WITH MIN. 3 MIL THICK PLASTIC AND SECURE IT USING DUCT TAPE OR ELECTRICAL TAPE

MAINLINE GATE VALVE AND ANCHOR

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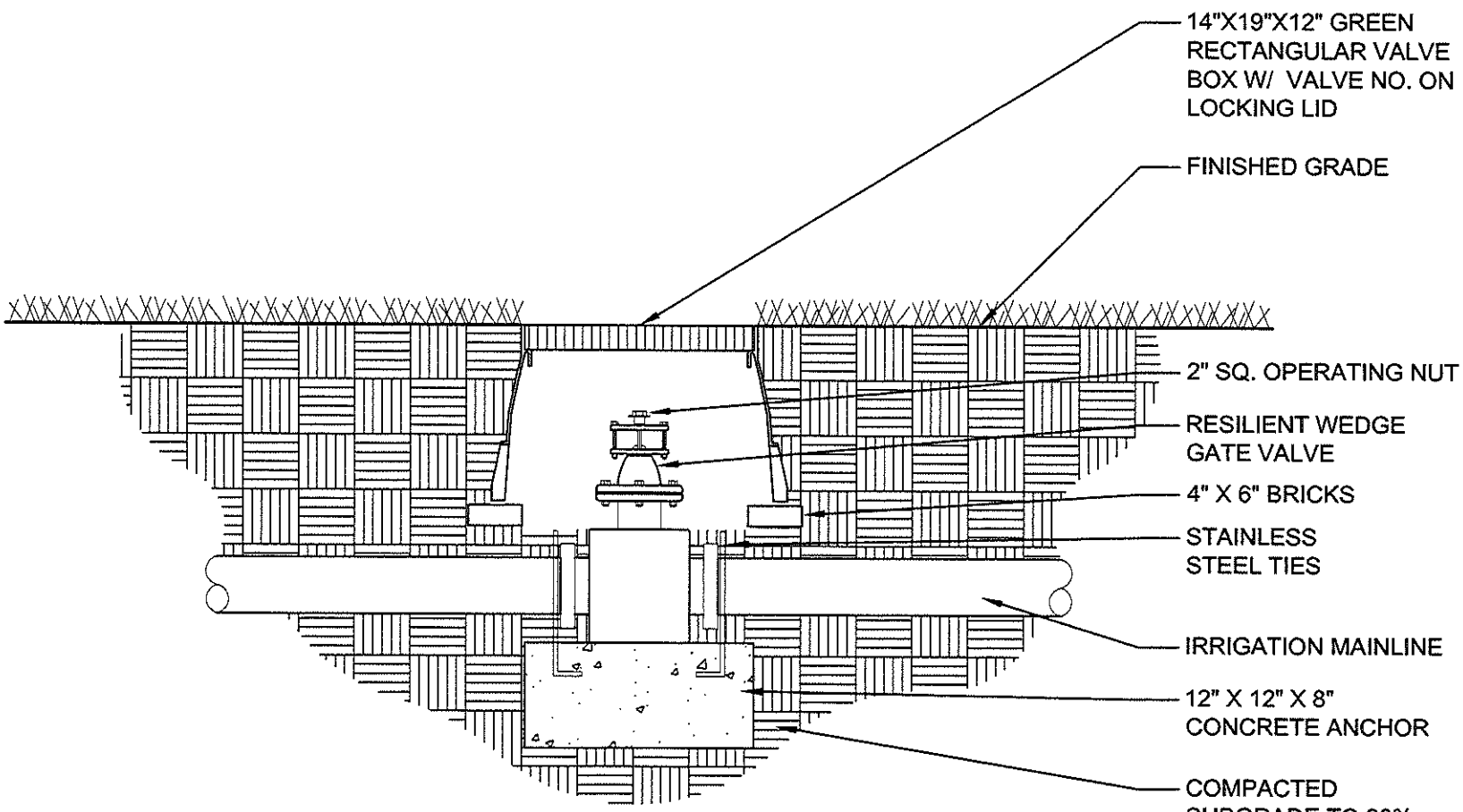
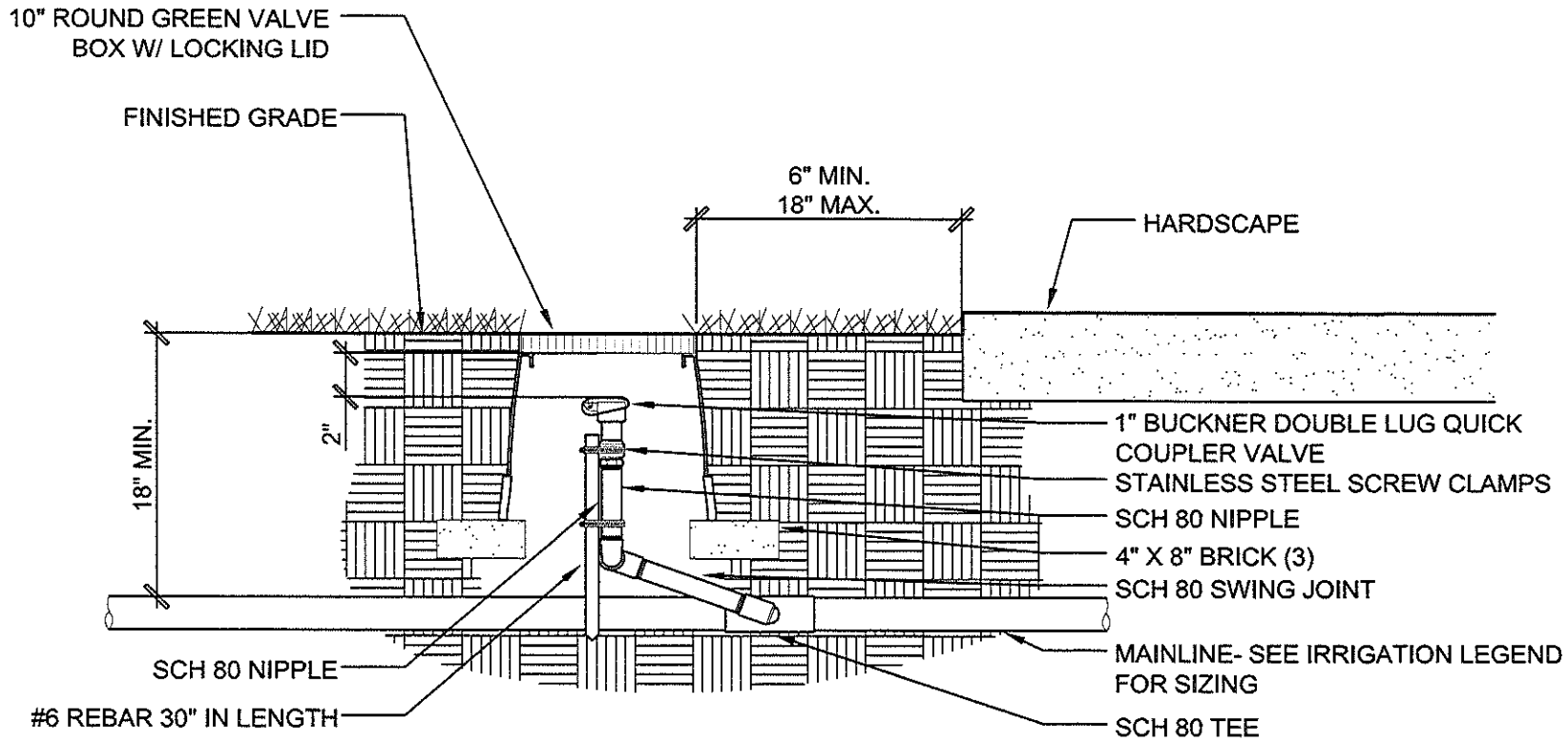
LI—12



NOTES:
- WRAP VALVE BOX WITH MIN. 3 MIL THICK PLASTIC AND SECURE IT USING DUCT TAPE OR ELECTRICAL TAPE
- VALVE BOX TO BE FLUSH WITH FINISH GRADE
- LOCATE VALVE BOXES WITHIN 6" OF HARDSCAPE EDGE/SIDEWALK WHERE EASILY ACCESSIBLE, IN SHRUB/GROUNDCOVER PLANTING AREA WHERE POSSIBLE.

QUICK COUPLER VALVE



NOTES:
- ALL THREADED CONNECTION POINTS INSTALL USING TEFLON TAPE
- LOCATE VALVE BOXES WITHIN 6" OF HARDSCAPE EDGE/SIDEWALK WHERE EASILY ACCESSIBLE IN SHRUB/GROUNDCOVER PLANTING AREA
- WRAP VALVE BOX WITH MIN. 3 MIL THICK PLASTIC AND SECURE IT USING DUCT TAPE OR ELECTRICAL TAPE
- ALL QUICK COUPLERS TO BE INSTALLED A MIN. 18" OFF OF THE MAINLINE

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REMOTE CONTROL IRRIGATION VALVE

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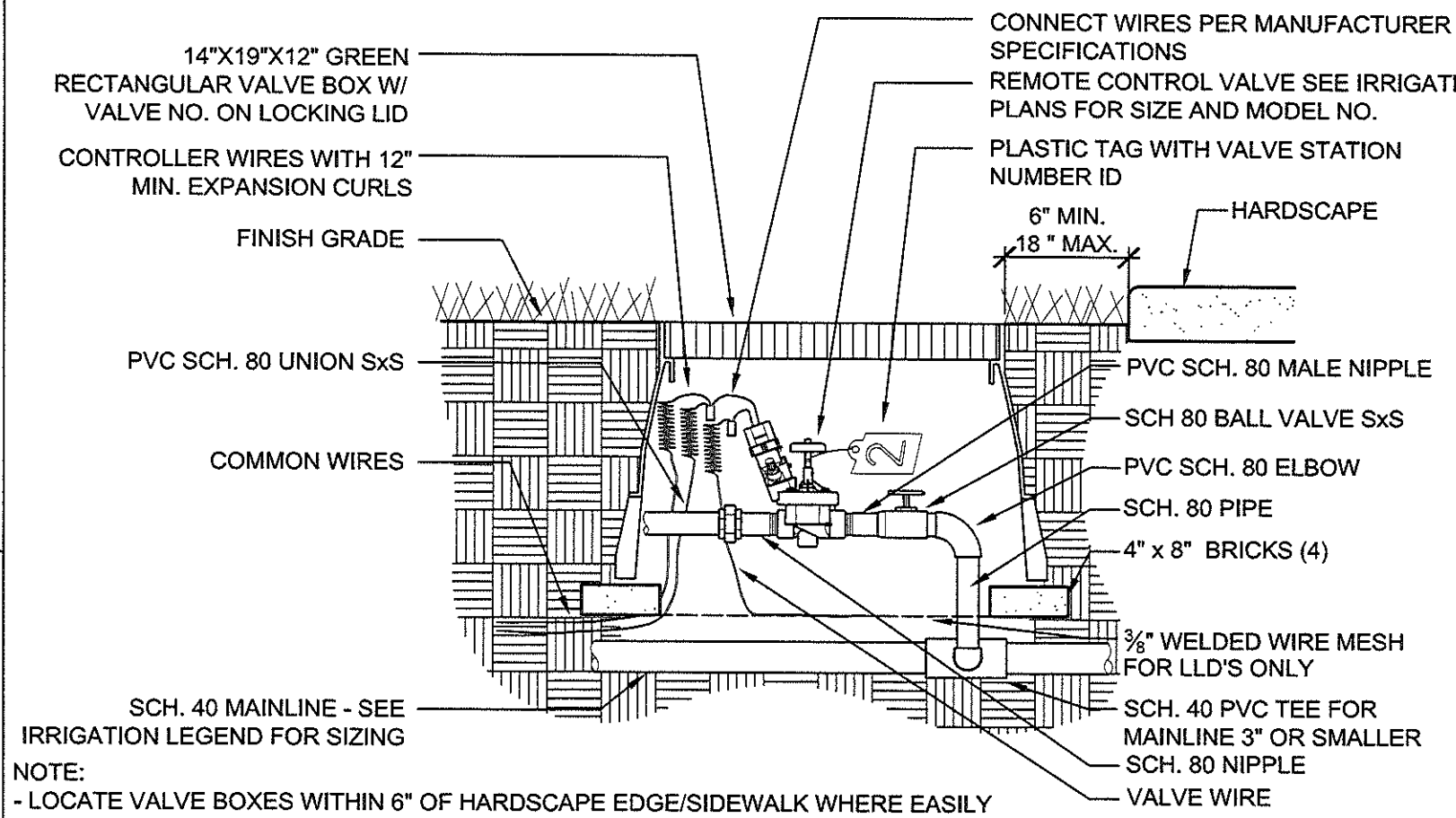
LI — 14



NOTE:
- LOCATE VALVE BOXES WITHIN 6" OF HARDSCAPE EDGE/SIDEWALK WHERE EASILY ACCESSIBLE, IN SHRUB/GROUNDCOVER PLANTING AREA WHERE POSSIBLE
- COMMON WIRE AND CONTROLLER WIRE SHALL BE DIRECT BURIAL 14 AWG WIRE OR LARGER. COLOR: COMMON (WHITE) CONTROLLER WIRE (RED)
- ALL WIRE RUNS SHALL BE CONTINUOUS WITHOUT ANY SPLICES. WIRE CONNECTIONS SHALL BE MADE USING DBR-Y/6 CONNECTORS OR APPROVED EQUAL
- WRAP VALVE BOX WITH MIN. 3 MIL THICK PLASTIC AND SECURE IT USING DUCT TAPE OR ELECTRICAL TAPE
- MAINLINES 4" OR LARGER SHALL USE SADDLES AT CONNECTION POINTS
- SEE CITY OF VISALIA STANDARDS FOR SADDLE MANUF. & SPECIFICATIONS
- SEE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS FOR A 2-WIRE CONTROLLER SYSTEM
- ALL SCH. 80 TO SCH. 40 THREADED CONNECTION SHALL BE MADE USING TEFLON TAPE

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LANDSCAPE & IMPROVEMENT STANDARDS

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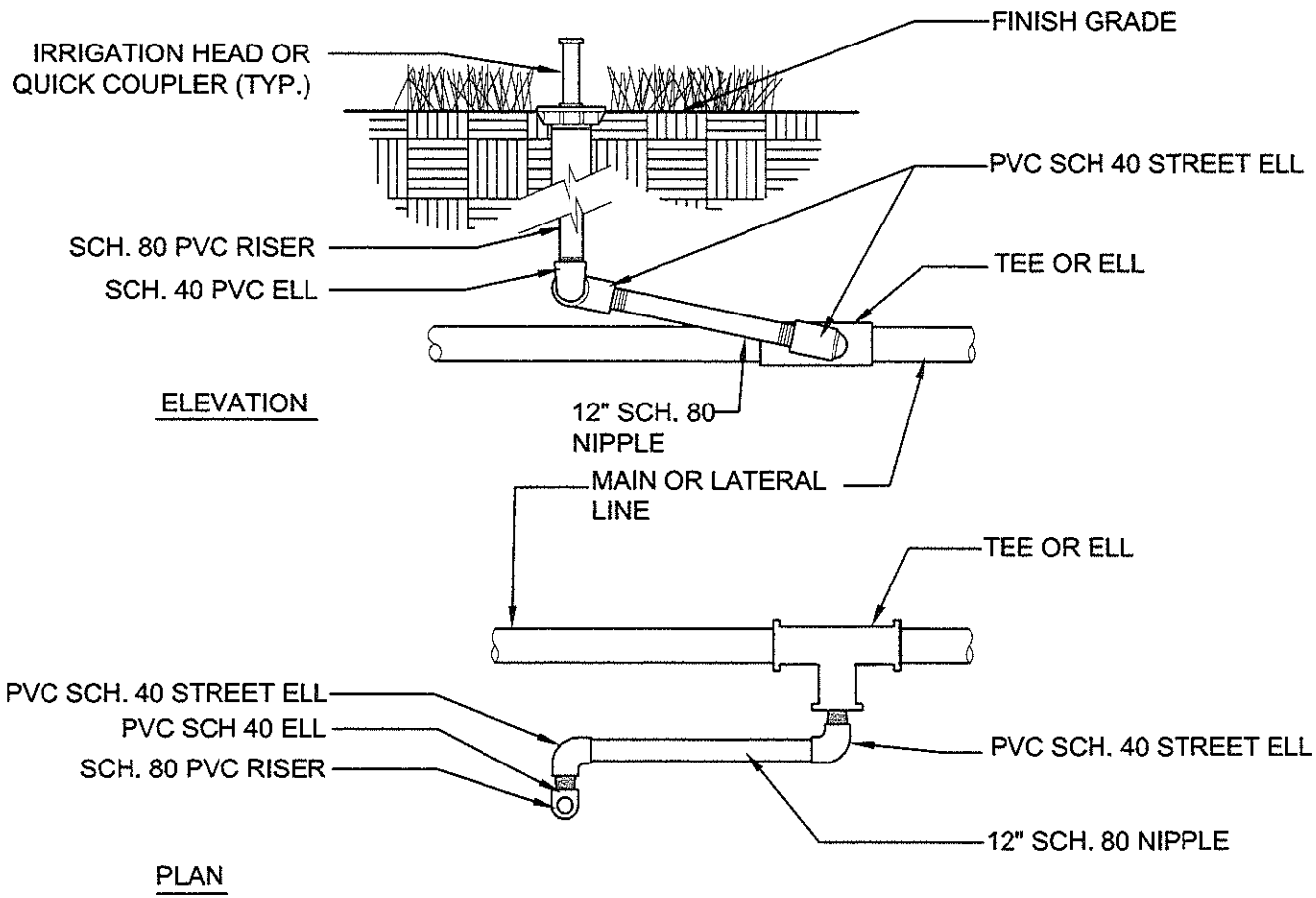
LI – 15



NOTE:
- ALL THREADED CONNECTIONS FROM SCH. 80 TO SCH. 40 TO BE MADE USING TEFLON TAPE
- ALL SWING JOINTS FOR QUICK COUPLERS SHALL BE PVC SCH. 80
- SEE QUICK COUPLER DETAIL FOR INSTALLATION
- PRE ASSEMBLED SWING JOINTS CAN BE USED PER CITY APPROVAL

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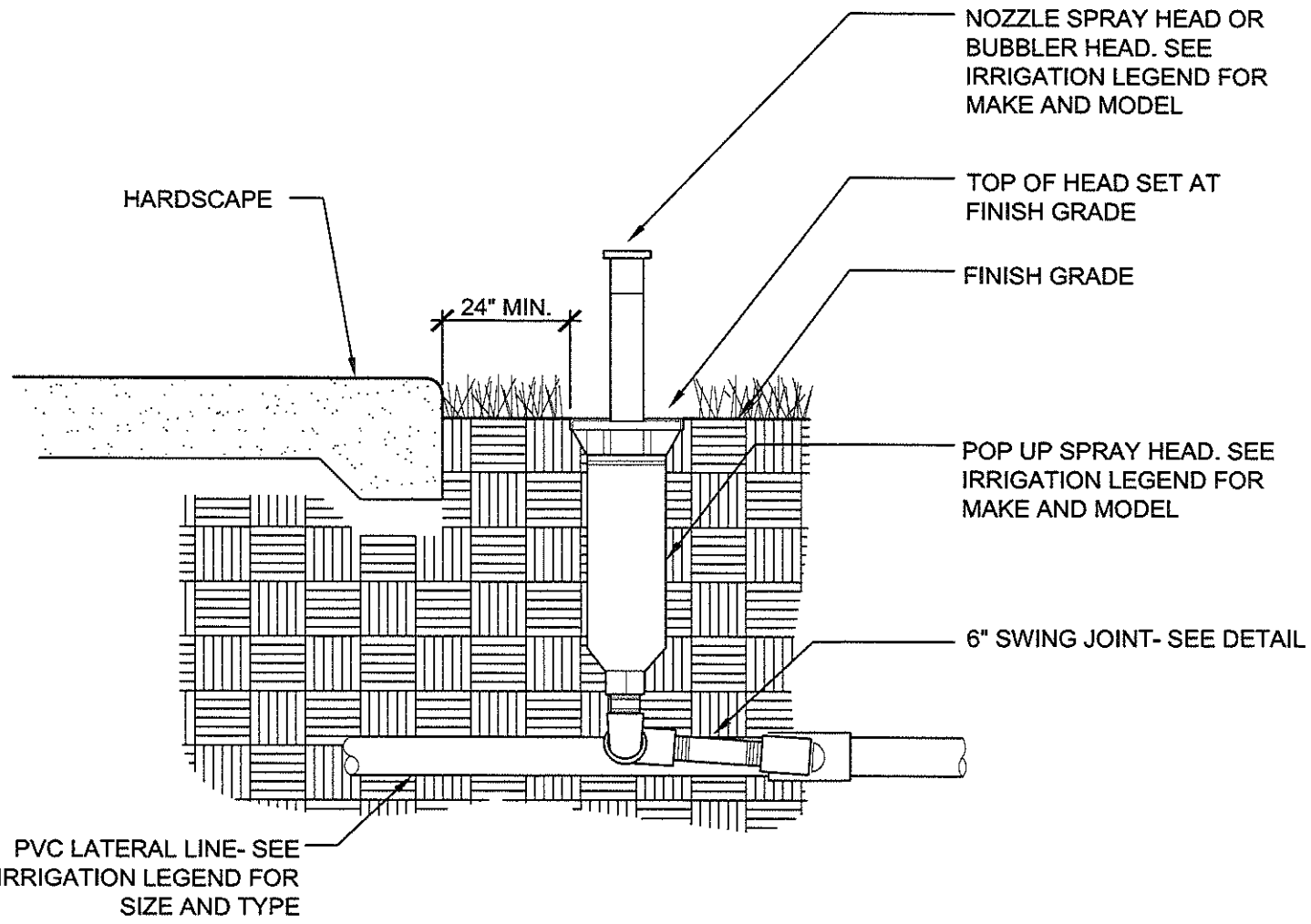
PARKS AND RECREATION DIRECTOR DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS
04/20/13

LI – 16

POP–UP SPRAYHEAD



NOTE:
- 6" POP UPS SHALL BE USED IN TURF AREAS.
-12" POP UPS SHALL BE USING IN SHRUB BEDS
- CONTRACTOR TO COMPACT SOIL AROUND POP UP PRIOR TO PLANTING
- ALL POP-UP SPRAY HEADS SHALL HAVE CHECK VALVES
- ALL SCH. 40 TO SCH. 80 CONNECTIONS SHALL BE MADE USING TEFLON TAPE

APPROVED BY: _____ PARKS AND RECREATION DIRECTOR

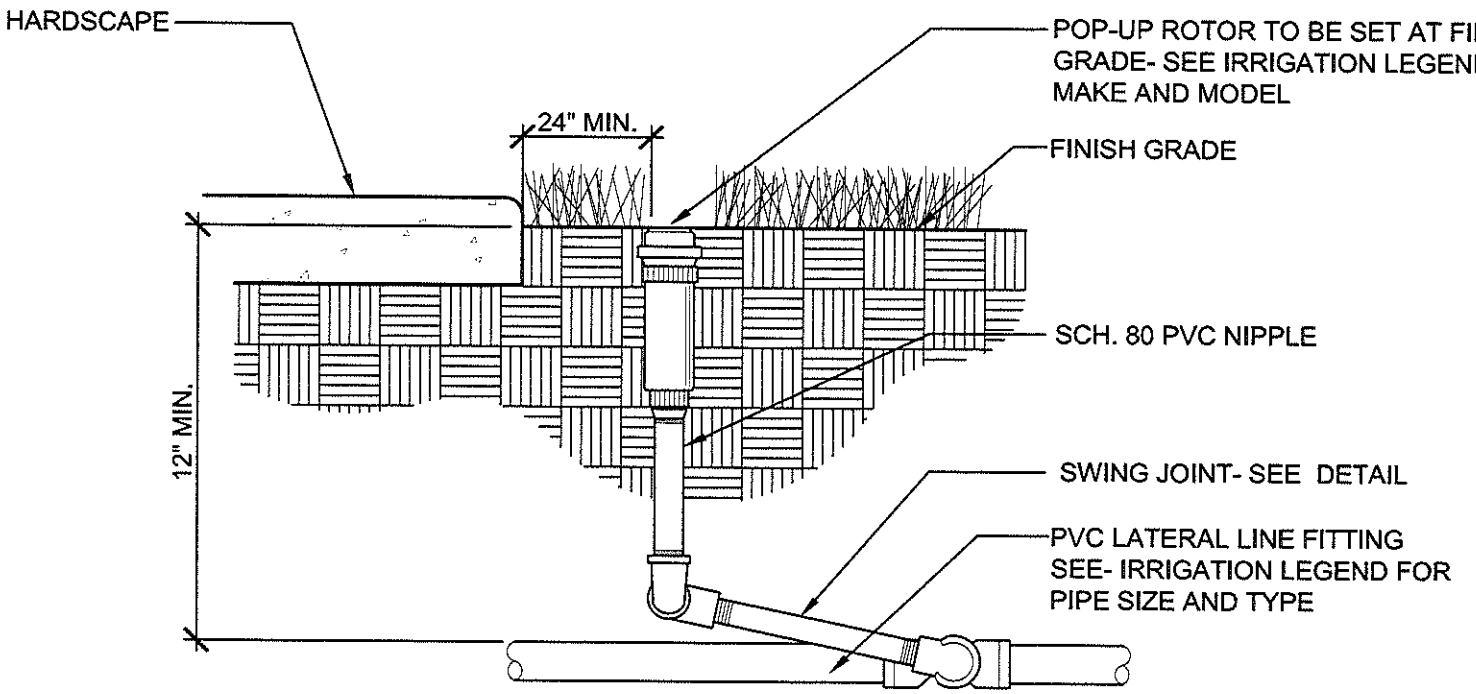
04/29/13 DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS
04/20/13

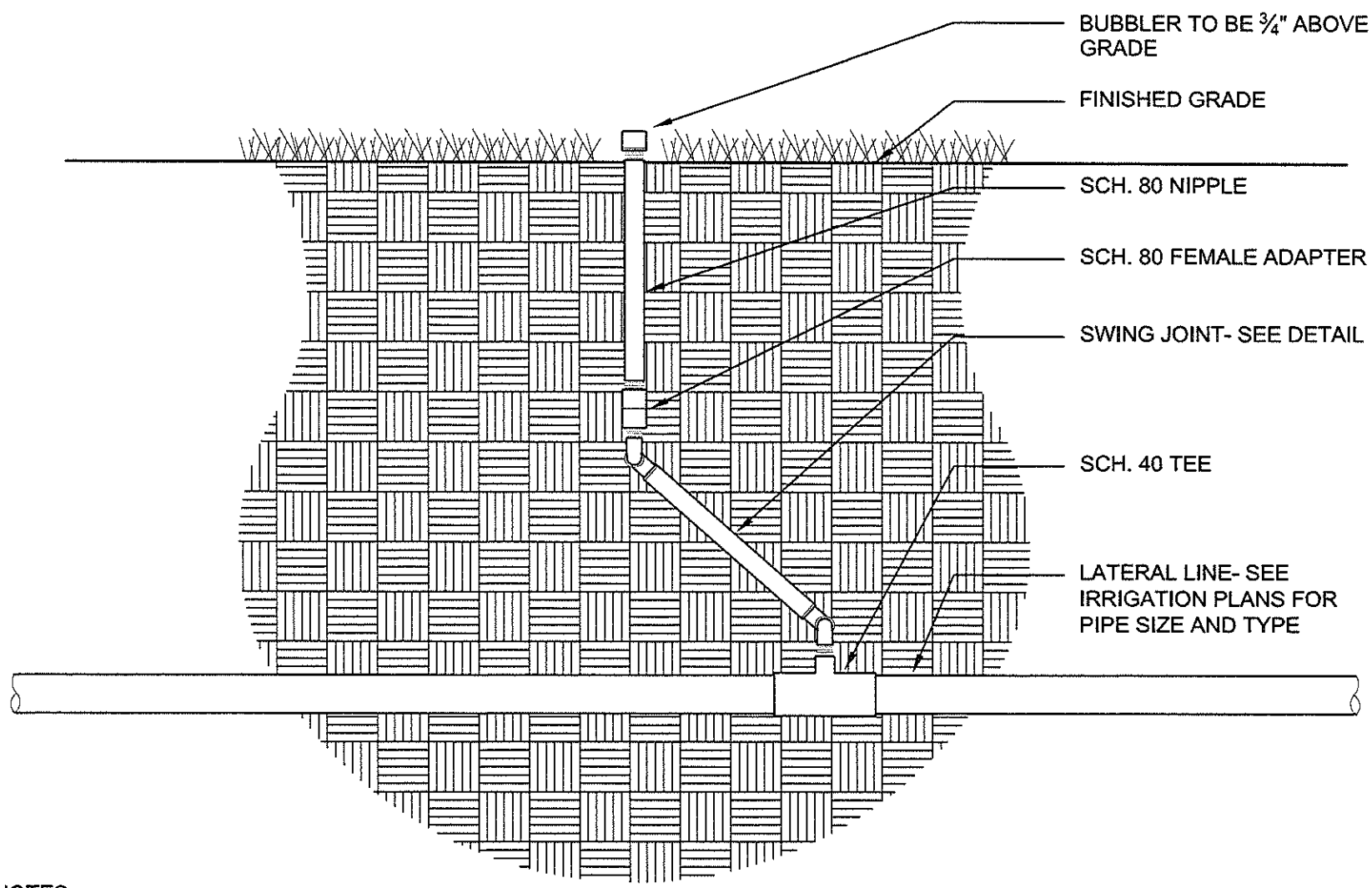
LI—17

ROTOR SPRAY HEAD



NOTES:
- ALL THREADED CONNECTION POINTS BETWEEN SCH. 40 AND SCH. 80 FITTINGS SHALL BE INSTALLED USING TEFLON TAPE
- CONTRACTOR TO COMPACT SOIL AROUND ROTOR AND RISER PRIOR TO PLANTING OR SEEDING

BUBBLER



NOTES:
- SEE IRRIGATION LEGEND FOR LATERAL LINE SIZE AND TYPE
- ALL IRRIGATION FITTINGS SHALL BE SCH. 40 UNLESS SPECIFIED OTHERWISE
- ALL THREADED CONNECTIONS FROM SCH. 80 TO SCH. 40 SHALL BE MADE USING TEFLON TAPE
- CONTRACTOR TO COMPACT THE AREA AROUND THE BUBBLER AND RISER PRIOR TO PLANTING

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04/29/13
DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS
04/20/13

LI – 18

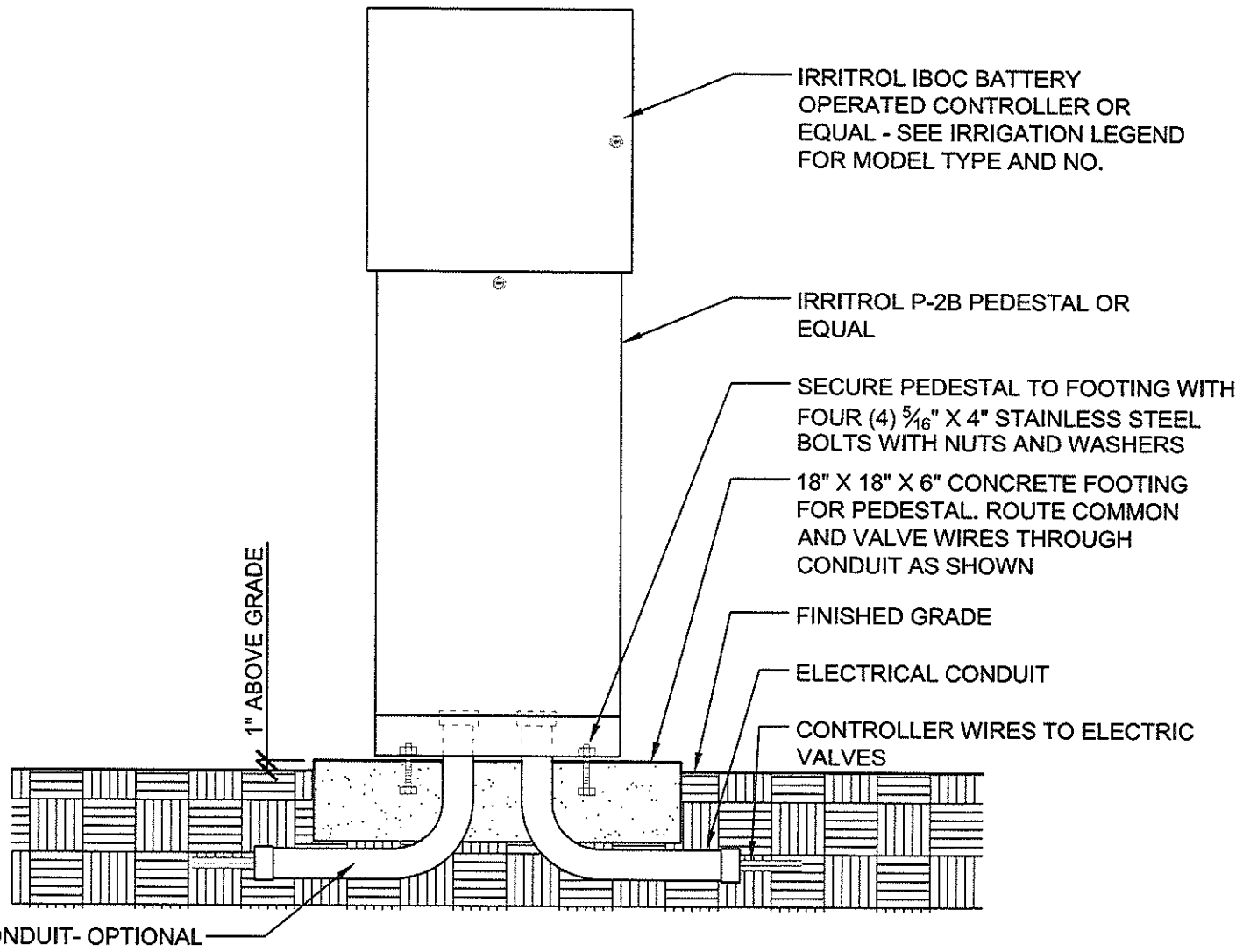
PEDESTAL CONTROLLER– BATTERY

APPROVED BY: _____ 04/29/13
PARKS AND RECREATION DIRECTOR — DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS
04/20/13

LI–19



NOTE:
- ELECTRICAL CONDUIT SHALL EXTEND 4" BEYOND CONCRETE FOOTING
- BATTERY TO BE 6 VOLT DURACEL LONG LIFE LANTERN BATTERY W/ SCREW TO CONNECTORS

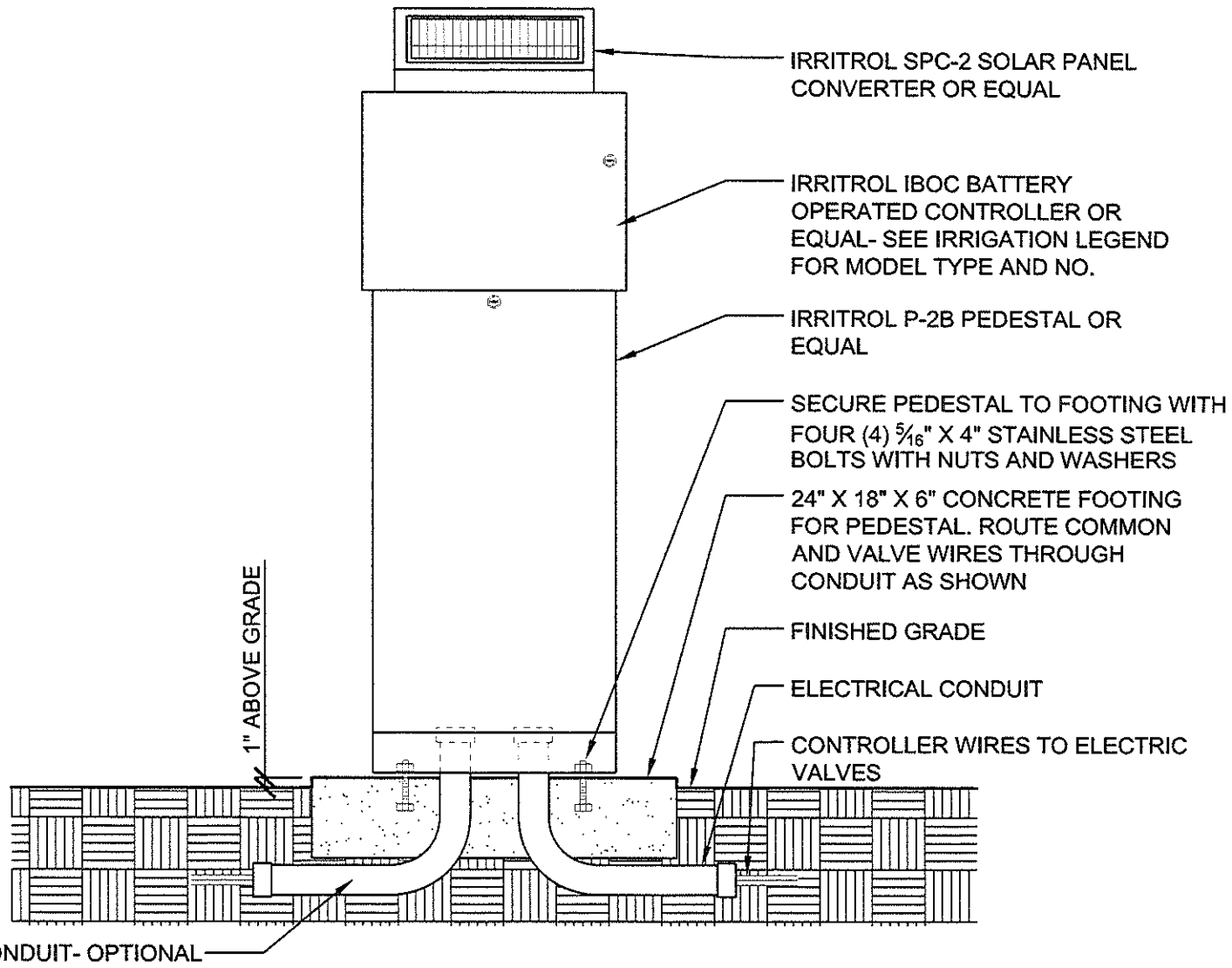
SOLAR PEDESTAL CONTROLLER

APPROVED BY: _____ 04/29/13
PARKS AND RECREATION DIRECTOR — DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT
STANDARDS

REVISIONS
04/20/13

LI – 20



NOTE:
- ELECTRICAL CONDUIT SHALL EXTEND 4" BEYOND CONCRETE FOOTING
- ALL VALVES SHALL HAVE DC LATCHING SOLENOIDS

TORO WALL MOUNT CONTROLLER

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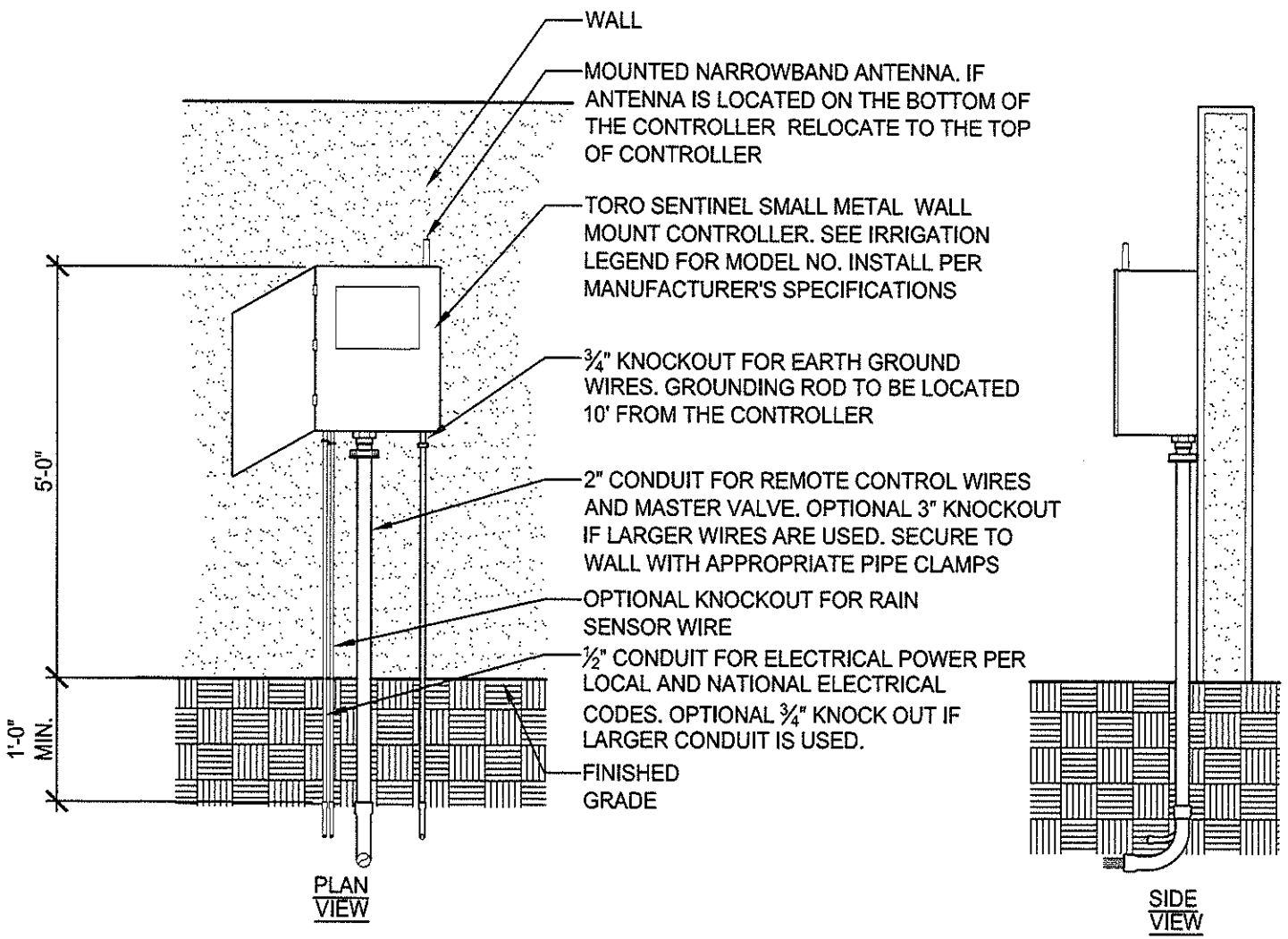
04/29/13 DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS 04/20/13

LI — 21



NOTES:
- COMMON AND CONTROLLER WIRE TO BE BUNDLED USING ELECTRICAL TAPE @ 10'-0" MAX
- GROUNDING ROD TO BE ¾" X 8' IN LENGTH. CONNECT GROUNDING ROD TO CONTROLLER USING 6 GA. BARE COPPER OR PER MANUFACTURER'S SPECIFICATIONS
- LANDSCAPE ARCHITECT TO VERIFY CONTROLLER LOCATION WITH MANUFACTURER PRIOR TO BIDDING

TORO PEDESTAL MOUNT CONTROLLER

APPROVED BY: _____ PARKS AND RECREATION DIRECTOR

04/29/13 DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT
STANDARDS

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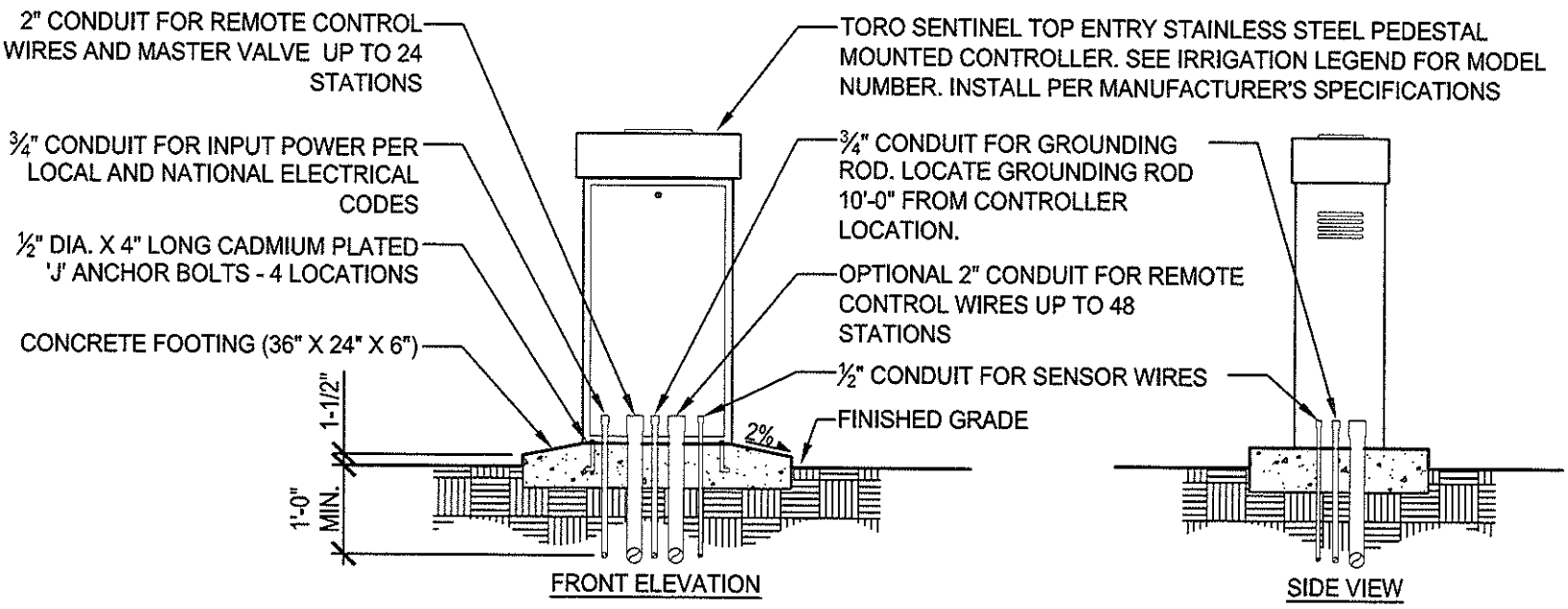
04/20/13

LI – 22



NOTES:
- COMMON AND CONTROLLER WIRE TO BE BUNDLED USING ELECTRICAL TAPE @ 10'-0" MAX
- GROUNDING ROD TO BE ⅜" X 8' IN LENGTH. CONNECT GROUNDING ROD TO THE CONTROLLER USING 6 GA. BARE COPPER WIRE OR PER MANUFACTURER'S SPECIFICATIONS
- LANDSCAPE ARCHITECT TO VERIFY CONTROLLER LOCATION WITH MANUFACTURER PRIOR TO BIDDING

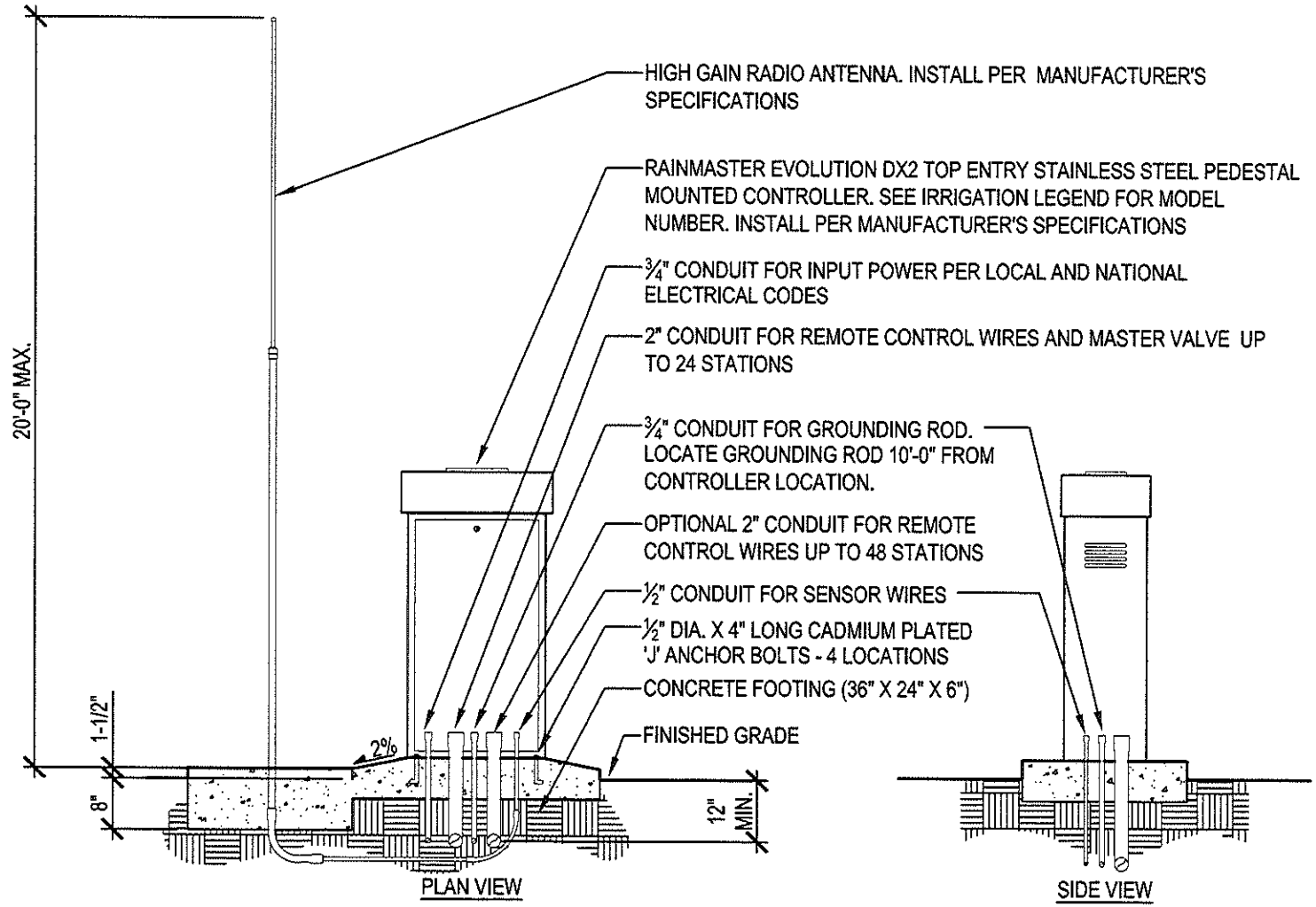
RAINMASTER PEDESTAL CONTROLLER

APPROVED BY: _____ 04/29/13
PARKS AND RECREATION DIRECTOR — DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS
04/20/13

LI-23



NOTES:
- COMMON AND CONTROLLER WIRE TO BE BUNDLED USING ELECTRICAL TAPE @ 10'-0" MAX
- GROUNDING ROD TO BE ¾" X 8' IN LENGTH. CONNECT GROUNDING ROD TO THE CONTROLLER USING 6 GA. BARE COPPER WIRE OR PER MANUFACTURER'S SPECIFICATIONS
- ELECTRICAL CONDUIT SWEEP FOR RADIO ANTENNA TO BE ENCASED IN CONTROLLER CONCRETE FOOTING
- LANDSCAPE ARCHITECT TO VERIFY CONTROLLER LOCATION W/ MANUF. PRIOR TO BIDDING

LOW VOLTAGE SPLICE BOX

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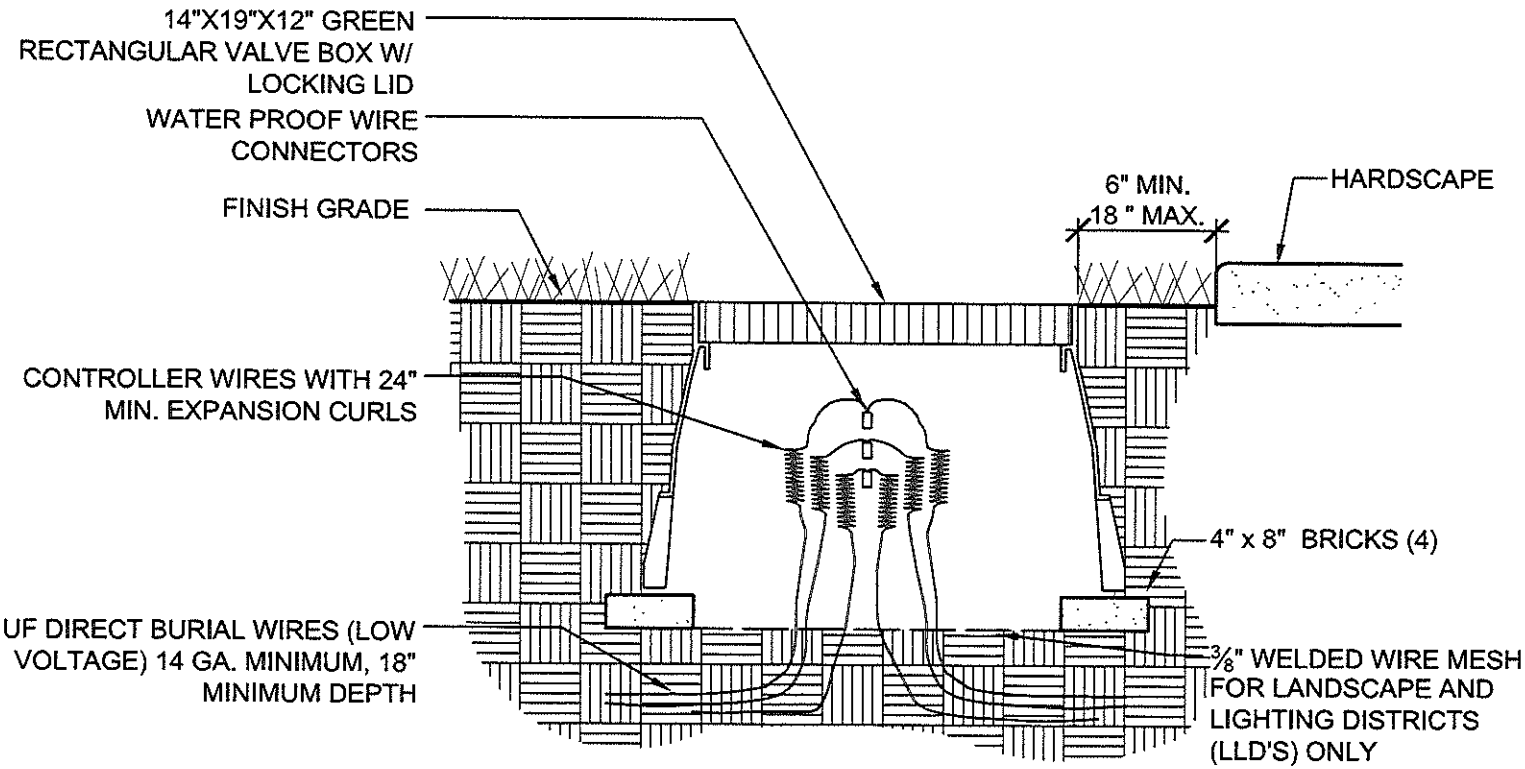
CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS 04/20/13

LI – 24



NOTE:
- LOCATE VALVE BOXES WITHIN 6" OF HARDSCAPE EDGE/SIDEWALK WHERE EASILY ACCESSIBLE, IN SHRUB/GROUNDCOVER PLANTING AREA WHERE POSSIBLE
- COMMON WIRE AND CONTROLLER WIRE SHALL BE DIRECT BURIAL 14 AWG WIRE OR LARGER. COLOR: COMMON (WHITE) CONTROLLER WIRE (RED)
- SPLICES TO BE MADE ONLY AT PULL BOXES
- LOW VOLTAGE WIRES UNDER ROADWAYS MUST BE IN CONTINUOUS CONDUIT WITH 90° SWEEPS TERMINATING IN PULL BOXES
- DIRECT BURIAL WIRES TO BE IN CONDUIT IF REQUIRED BY THE CITY
- ALL WIRE CONNECTIONS SHALL BE MADE USING DBR/Y-6 CONNECTORS OR APPROVED EQUAL
- WRAP VALVE BOX WITH MIN. 3 MIL THICK PLASTIC AND SECURE IT USING DUCT TAPE OR ELECTRICAL TAPE

DRINKING FOUNTAIN

APPROVED BY: _____ 04/29/13
PARKS AND RECREATION DIRECTOR — DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

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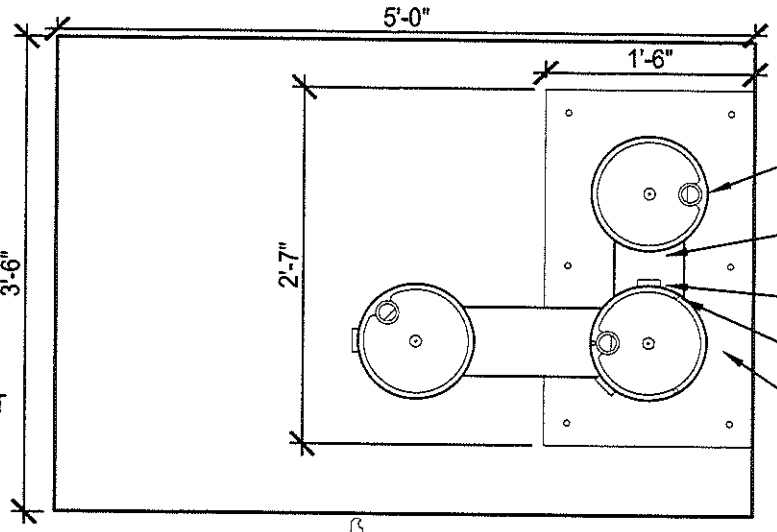
LI – 25

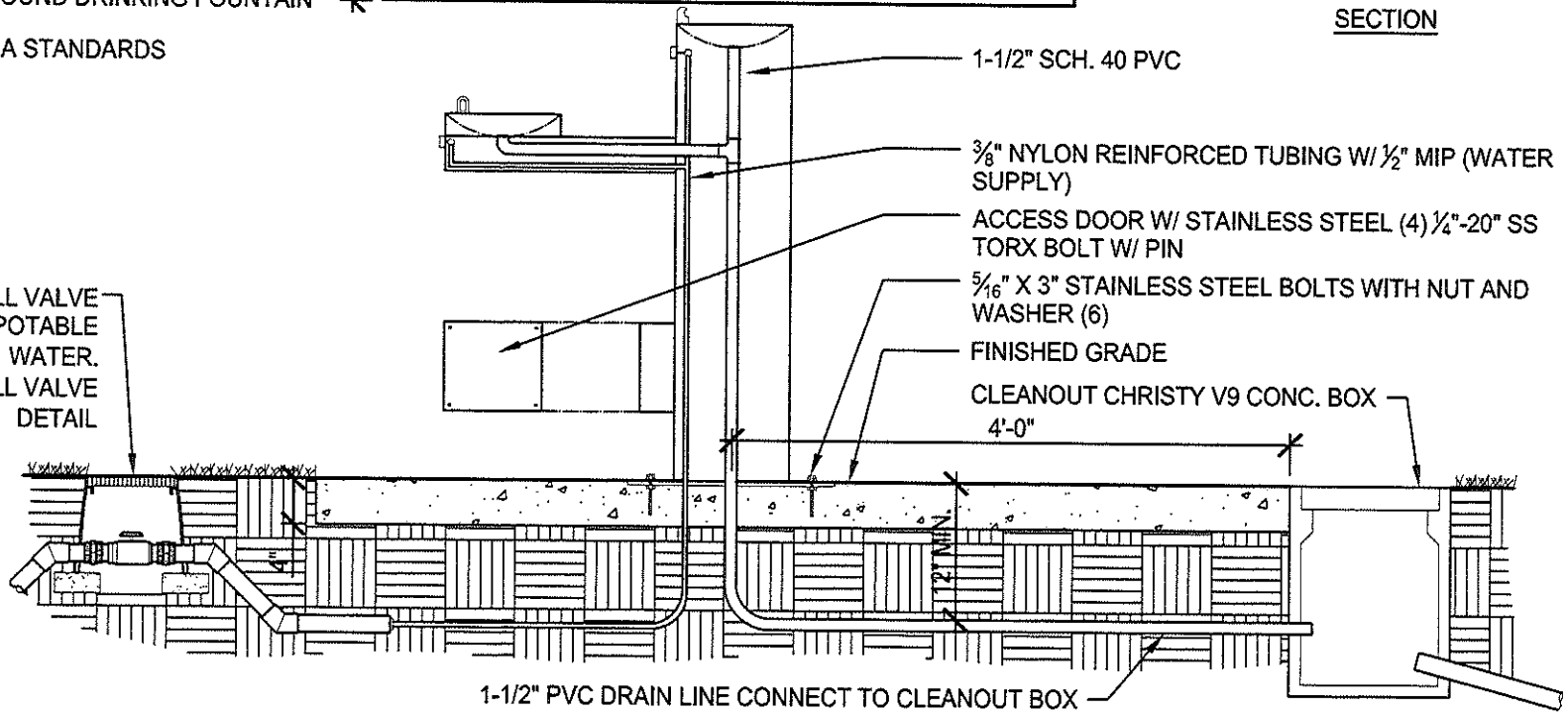
NOTES:
- WATER LINE TO BE PRESSURE TESTED, FLUSHED, AND CHLORINATED
- SHOWN WITH PET FOUNTAIN,RECESSED HOSE BIB, WITH LOCK DOOR,AND STAINLESS STEEL SURFACE
- FOUNTAIN TO BE INSTALLED PER CITY OF VISALIA DOMESTIC WATER AND HEALTH CODES
- FOUNTAIN TO INCLUDE SAND SCREEN
- FOUNTAIN MAKE AND MODEL: MOST DEPENDABLE OR ACCEPTED EQUAL
- INSTALL PER MANUFACTURER'S SPECIFICATIONS
- PAD AROUND DRINKING FOUNTAIN MUST MEET ADA STANDARDS



PLAN VIEW

ATTACHED PET FOUNTAIN
3" OPEN HUB DRAIN OR RIGID CONNECTION
PET FOUNTAIN CONTROL
⅝" HOLE
⅜" STEEL PLATE MOUNTED TO CONCRETE

SECTION



BUBBLER ON SWING JOINT

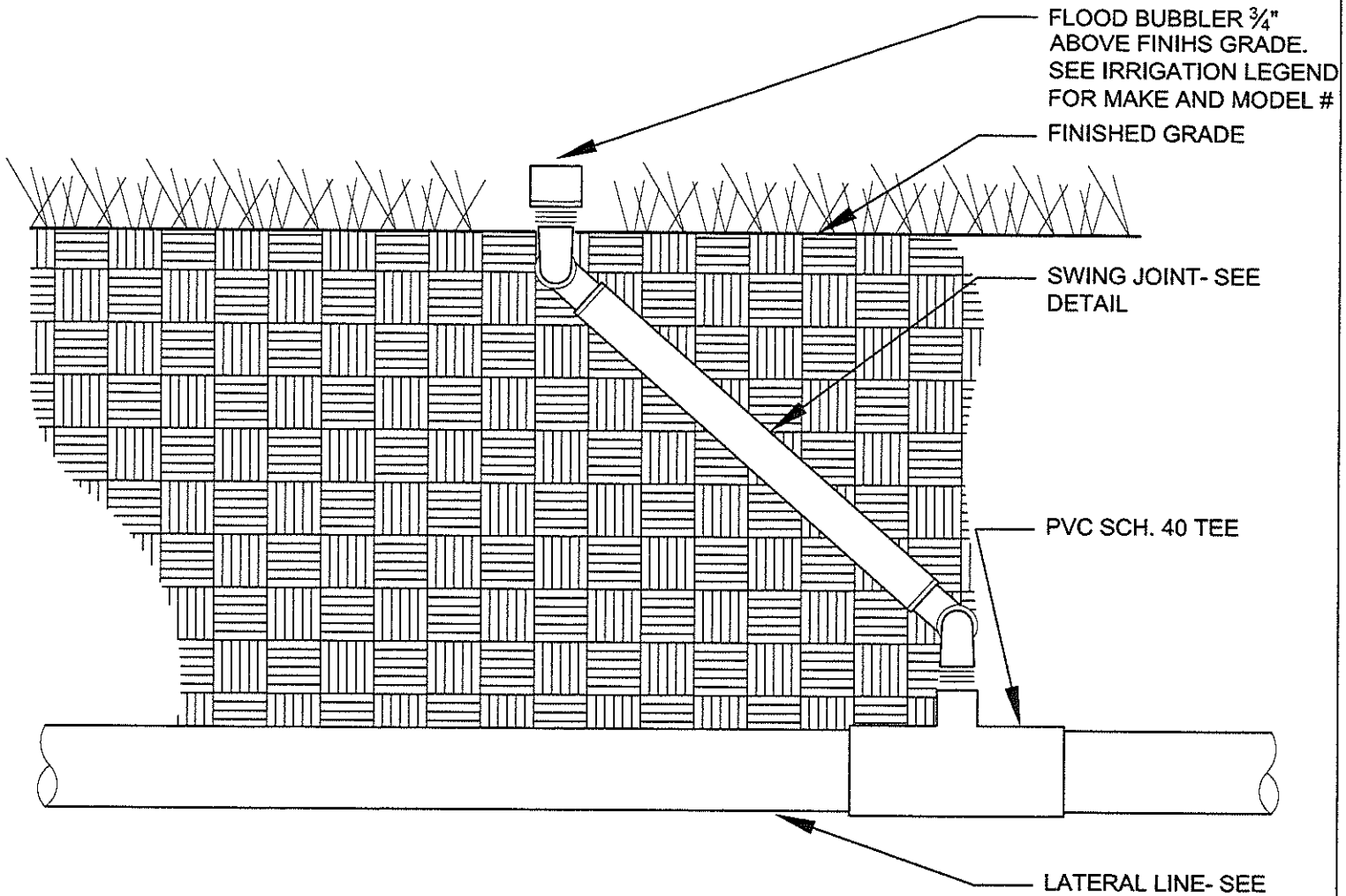
APPROVED BY: _____ PARKS AND RECREATION DIRECTOR

04/29/13 DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS
04/20/13

LI – 26



NOTES:
- SEE IRRIGATION LEGEND FOR LATERAL LINE SIZE AND TYPE
- ALL IRRIGATION FITTINGS SHALL BE SCH. 40 UNLESS SPECIFIED OTHERWISE
- ALL THREADED CONNECTIONS FROM SCH. 80 TO SCH. 40 SHALL BE MADE USING TEFLON TAPE
- CONTRACTOR TO COMPACT THE AREA AROUND THE BUBBLER AND SWING JOINT PRIOR TO PLANTING

POST AND CABLE FENCE

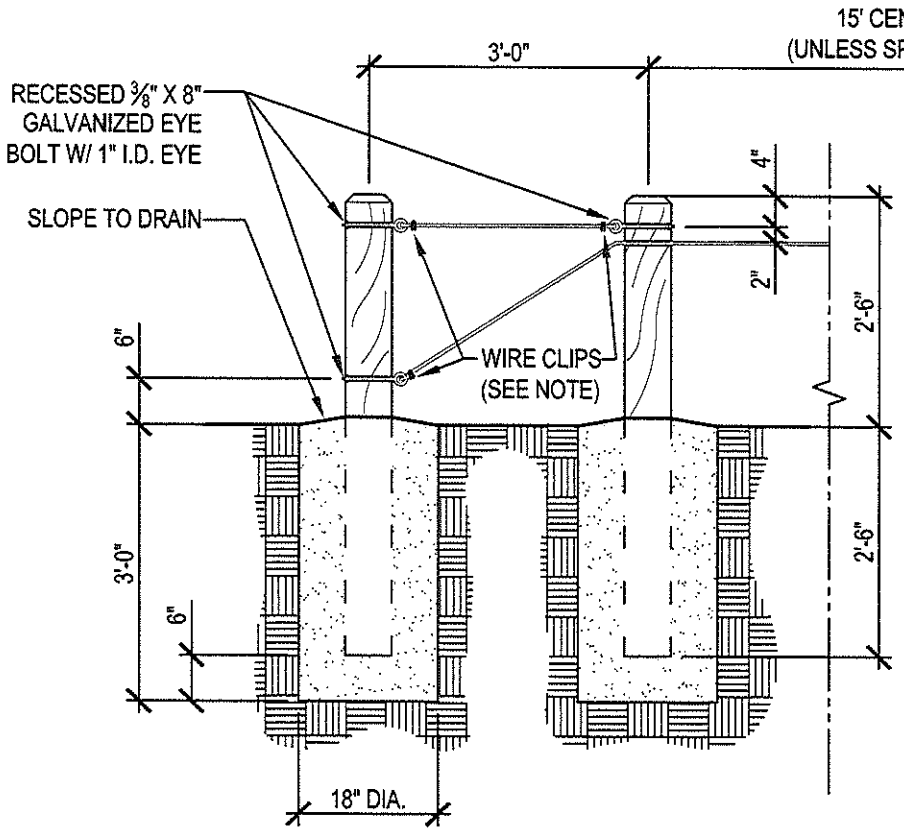
APPROVED BY: _____ PARKS AND RECREATION DIRECTOR

04/29/13 DATE

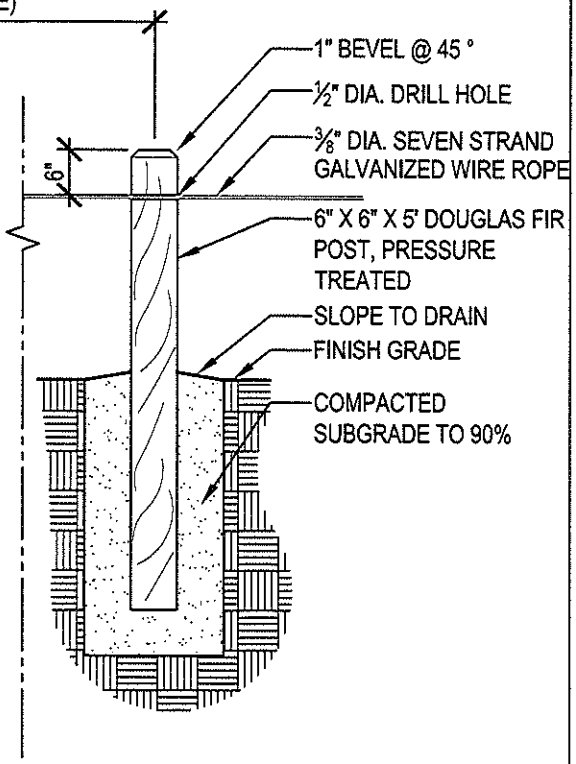
CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS
04/20/13

LC—1

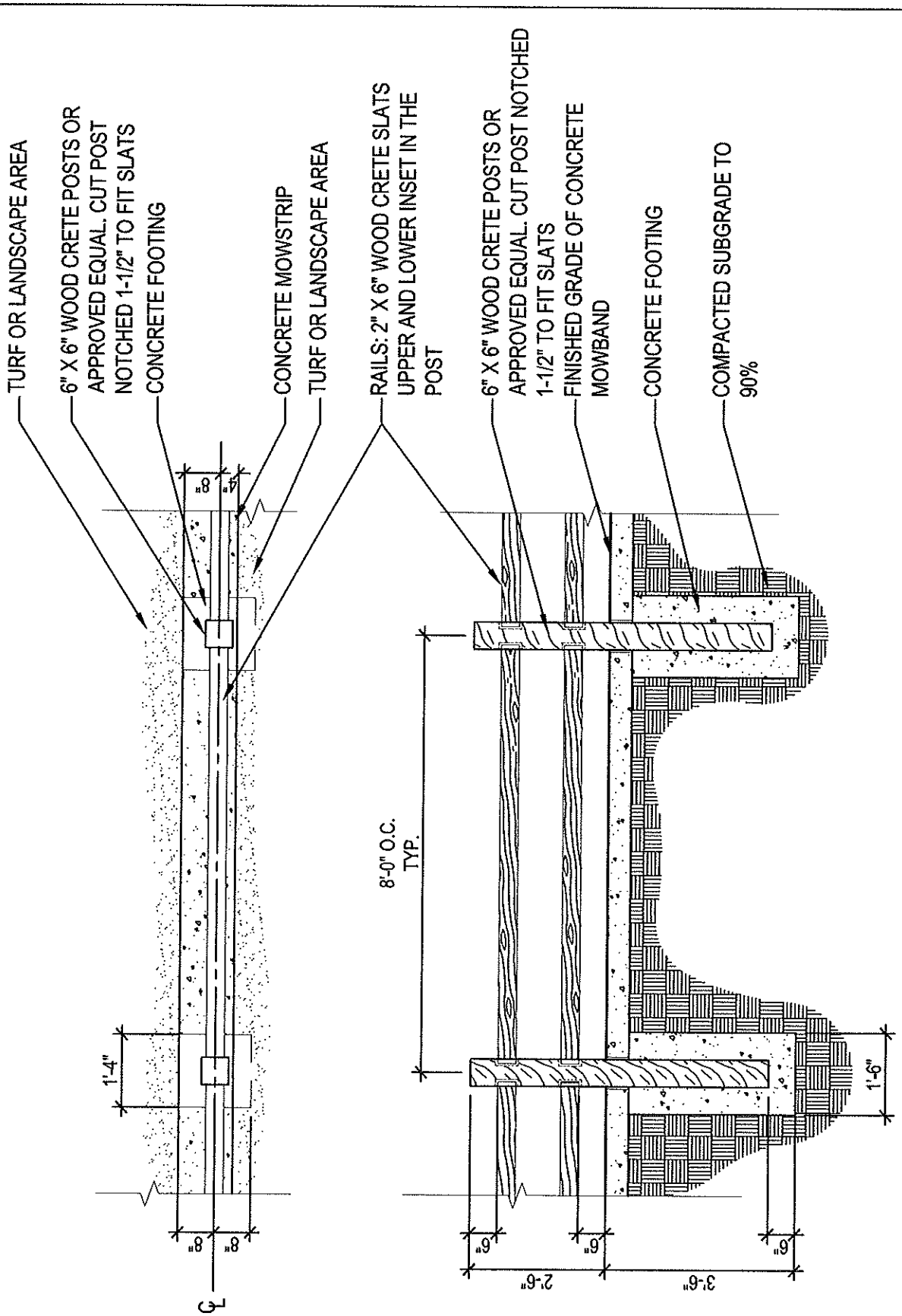


TERMINAL POST ANCHOR



LINE POST

NOTES:
- PROVIDE CONCRETE FOOTINGS AT ALL END POSTS AS SPECIFIED ON APPROVED PLANS
- USE ⅜" X 2" GALVANIZED WIRE ROPE CLIPS FOR CONNECTIONS AND SPLICES. ALL CLIPS SHALL BE PLACED WITH NUTS FACING DOWNWARD AND SPOT WELD
- WHERE REQUIRED, USE WHITE PVC COATED CABLE IN LIEU OF GALVANIZED CABLE EXCEPT IN FIRE ACCESS LOCATION
- DO NOT INSTALL IN TURF AREAS



APPROVED BY: O. A. Elizalde 04/29/13
PARKS AND RECREATION DIRECTOR — DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

SPLIT RAIL FENCE

REVISIONS 04/20/12

LC – 2

PARK RULES SIGN + DISTANCE SIGN

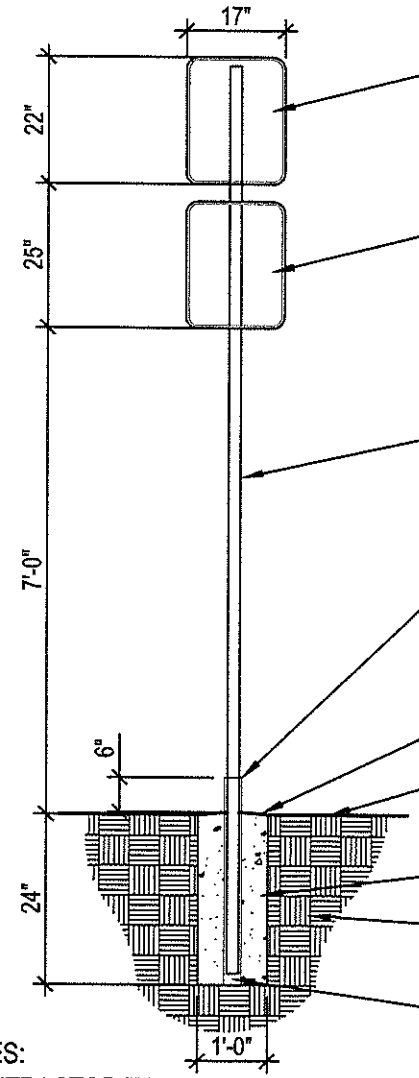
APPROVED BY: _____ PARKS AND RECREATION DIRECTOR

04/29/13 DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS 04/20/13

LC-3



PARK OR TRAIL DISTANCE SIGN (ONLY LOCATED AT PARK ENTRANCES)

PARK RULES SIGN

DISTANCES SHALL VARY PER INSTALLATION

TELESPAR 2" SQ. X 13'-2" 14 GAUGE PERFORATED SIGN POST, COLOR: GREEN

TELESPAR 2-1/4" SQ. X 30" 12 GAUGE PERFORATED SLEEVE. SECURE POST TO COLLAR USING THEFT PROOF NUTS & BOLTS OR RIVETS

SLOPE FOOTING AWAY TO DRAIN

FINISH GRADE

CONCRETE FOOTING

SUBGRADE COMPACTED TO 90% UNDER FOOTING

EXTEND SLEEVE TO BOTTOM OF FOOTING FOR DRAINAGE

NOTES:
- CONTRACTOR TO FABRICATE & INSTALL SIGNS
- CONTRACTOR TO PROVIDE SUBMITTAL OF SIGN FOR APPROVAL PRIOR TO FABRICATION
- SEE CITY OF VISALIA SPECIFICATIONS FOR SIGN MATERIAL
- ALL HARDWARE SHALL BE THEFT PROOF AND STAINLESS STEEL OR RIVETS

Parks & Recreation

PARK TRAIL DISTANCE

.33 MILES

Parks & Recreation

PARK RULES

FOR THE ENJOYMENT OF OTHER THE FOLLOWING ACTIVITIES ARE PROHIBITED

- CONSUMPTION OF ALCOHOLIC BEVERAGE WITHOUT A PERMIT
- DRIVING OF A VEHICLE BEYOND THE DESIGNATED PARKING AREAS
- SMOKING WITHIN 25 FEET OF A PLAYGROUND
- LOUD MUSIC OR AMPLIFIED SOUND OVER 60 DECIBELS
- GOLFING OR OTHER HAZARDOUS GAMES
- ALL PETS MUST BE ON A LEASH

PARK HOURS: 5:00 AM TO 10:00 PM

FOR INFORMATION CONTACT PARKS AND RECREATION DEPARTMENT
(559) 713 - 4304

THANK YOU FOR YOUR COOPERATION
PLEASE DO NOT LITTER

CITY OF VISALIA MUNICIPAL CODE 12.32.010 TO 12.32.270

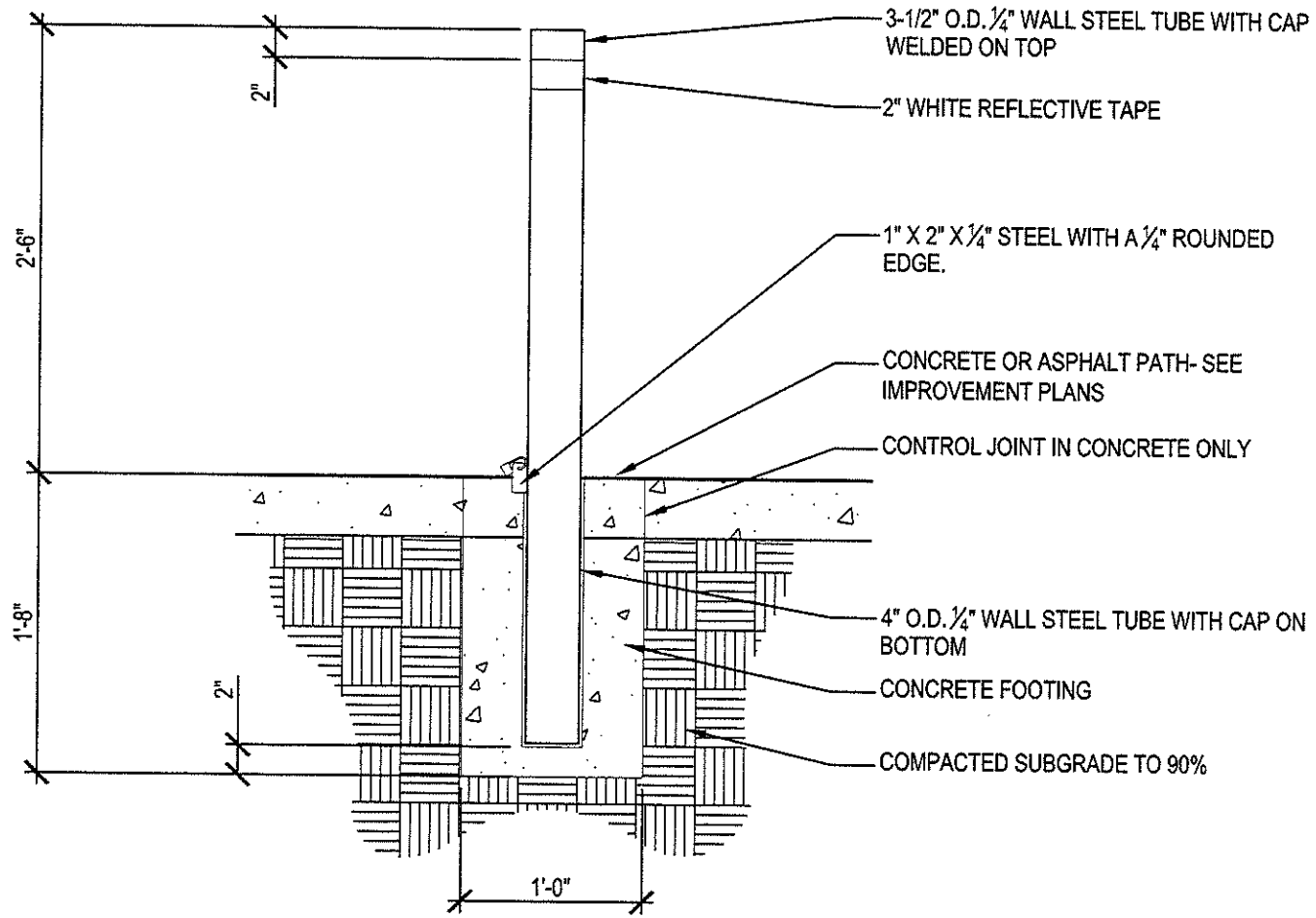
REMOVABLE BOLLARD

APPROVED BY: _____ 04/29/13
PARKS AND RECREATION DIRECTOR — DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS
04/20/13

LC – 4



NOTES:
- ALL TUBING SHALL BE BLACK STEEL PIPE
- ALL JOINTS SHALL BE WELDED IN ACCORDANCE WITH CA STATE STANDARDS AND SPECIFICATIONS FOR WELDING STRUCTURAL STEEL
- ALL PARTS (EXCEPT PADLOCK) SHALL BE PAINTED WITH TWO (2) COATS OF ZINC CHROMATE PRIMER AND TWO (2) COATS EXTERIOR ENAMEL. COLOR: SAFETY YELLOW
- PADLOCK SHALL BE PROVIDED BY THE CITY, CONTRACTOR TO CONNECT LOCK AND BOLLARD WITH A ¼" X 12" HEAVY DUTY CHAIN
- SEE CITY OF VISALIA LANDSCAPE STANDARDS AND SPECIFICATIONS FOR MODEL # AND TYPE.

FOLDING BOLLARD

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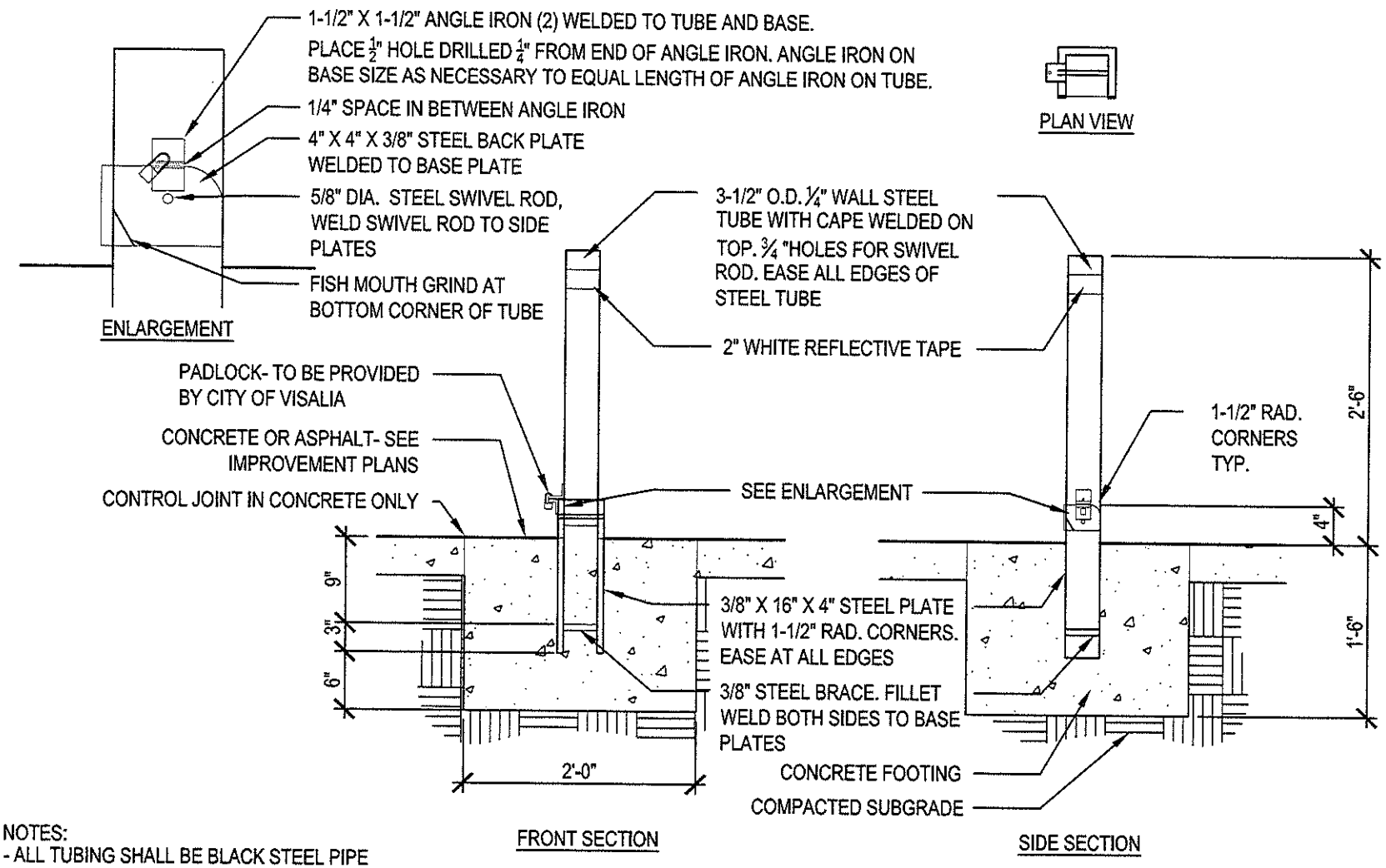
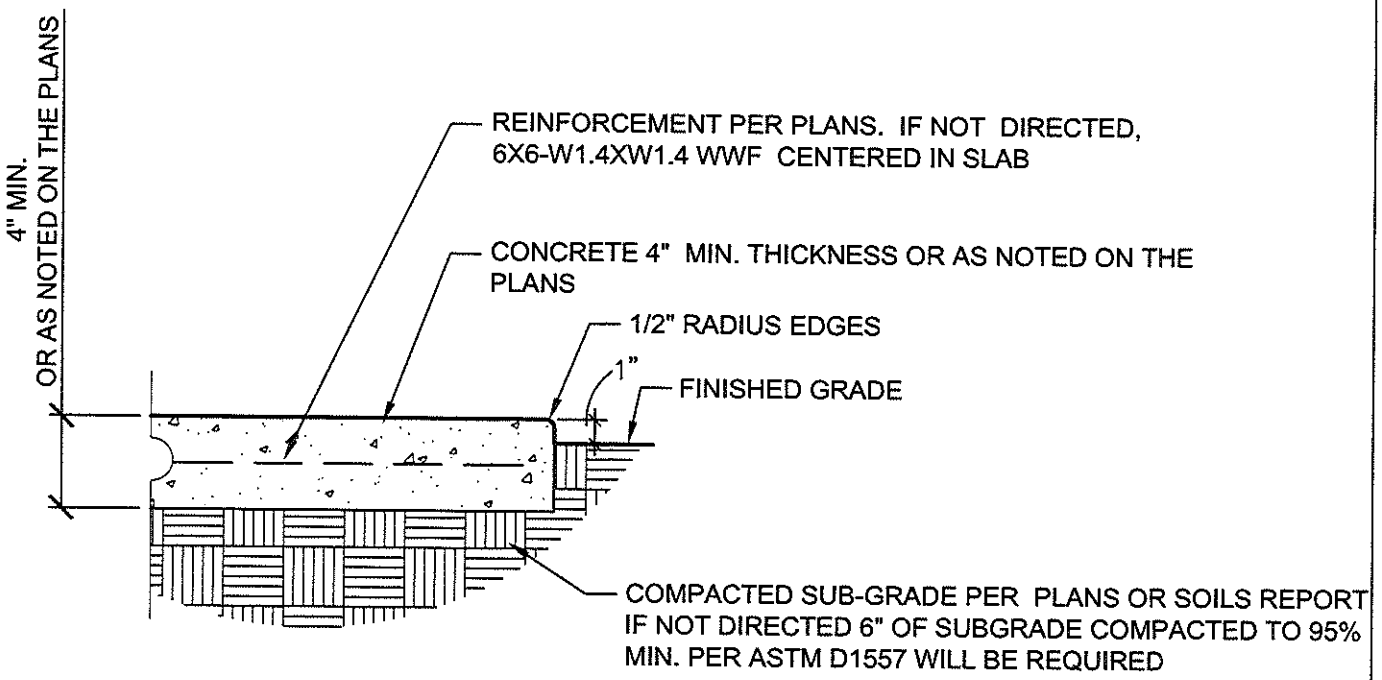
CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS 04/20/13

LC – 5



NOTES:
- ALL TUBING SHALL BE BLACK STEEL PIPE
- ALL JOINTS SHALL BE WELDED IN ACCORDANCE WITH CA STATE STANDARDS AND SPECIFICATIONS FOR WELDING STRUCTURAL STEEL
- ALL PARTS (EXCEPT PADLOCK) SHALL BE PAINTED WITH TWO (2) COATS OF ZINC CHROMATE PRIMER AND TWO (2) COATS EXTERIOR ENAMEL. COLOR: SAFETY YELLOW
- BOLLARD SHALL BE INSTALLED SUCH THAT IT LAYS FLAT WHEN FOLDED.
- PADLOCK TO BE SECURED TO ANGLE IRON WITH A ¼" X 12" HEAVY DUTY CHAIN
- SEE CITY OF VISALIA LANDSCAPE STANDARDS AND SPECIFICATIONS FOR MODEL # AND TYPE



NOTES:
-SEE CONSTRUCTION LEGEND FOR COLOR AND FINISH
-SEE CONSTRUCTION NOTES FOR INTEGRAL CONCRETE COLOR WHERE APPLIES
-PROVIDE SCORE LINES PER PLAN & NOTES
-PROVIDE DEEP CUT JOINT PER PLAN & NOTES WHERE PAVING ABUTS WALLS, CURB OR OTHER PAVING
- REFER TO CIVIL PLANS FOR CONCRETE PAVING SECTION(S) AT DRIVE AISLES
- CONCRETE SHALL BE CLASS 3 OR AS NOTED ON THE PLANS

APPROVED BY: _____ 04/29/13
PARKS AND RECREATION DIRECTOR DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

CONCRETE PAVING

REVISIONS
04/20/13

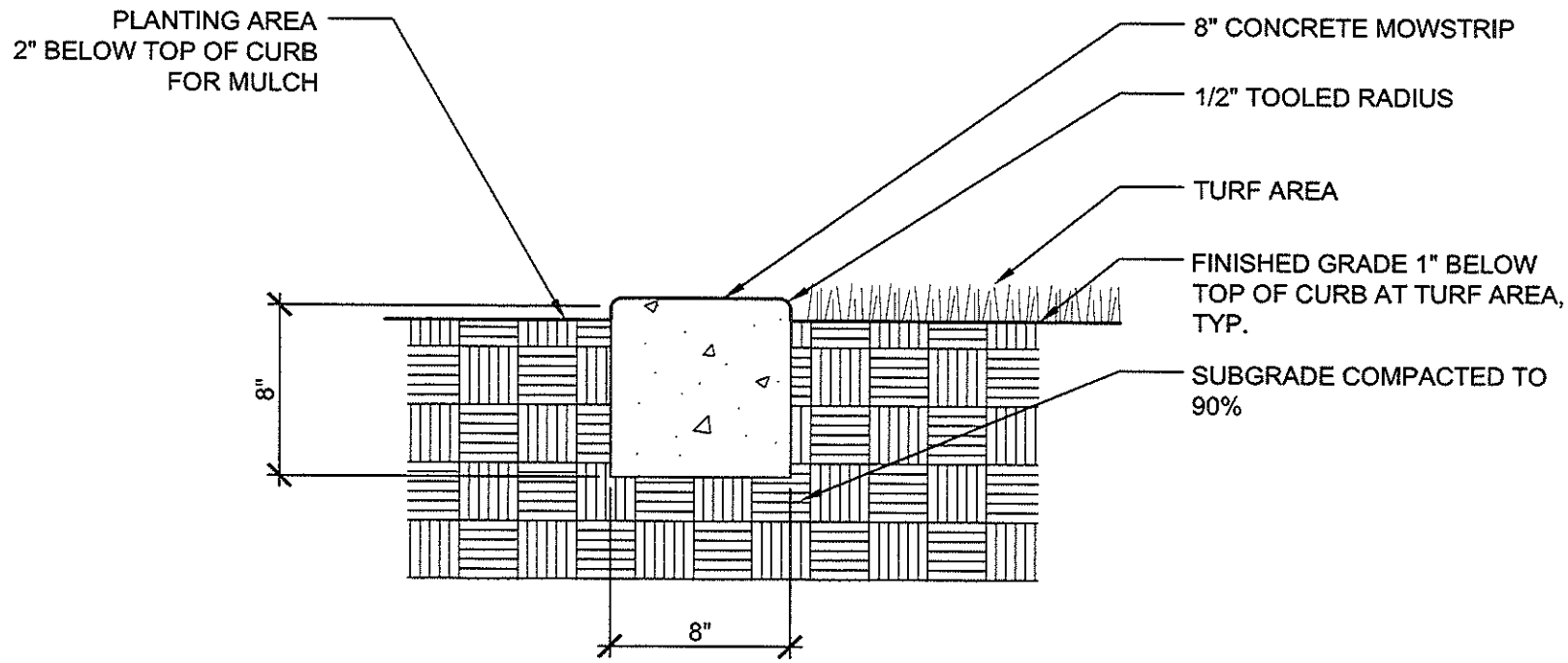
LC-6

APPROVED BY: _____ PARKS AND RECREATION DIRECTOR

04/29/13
DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

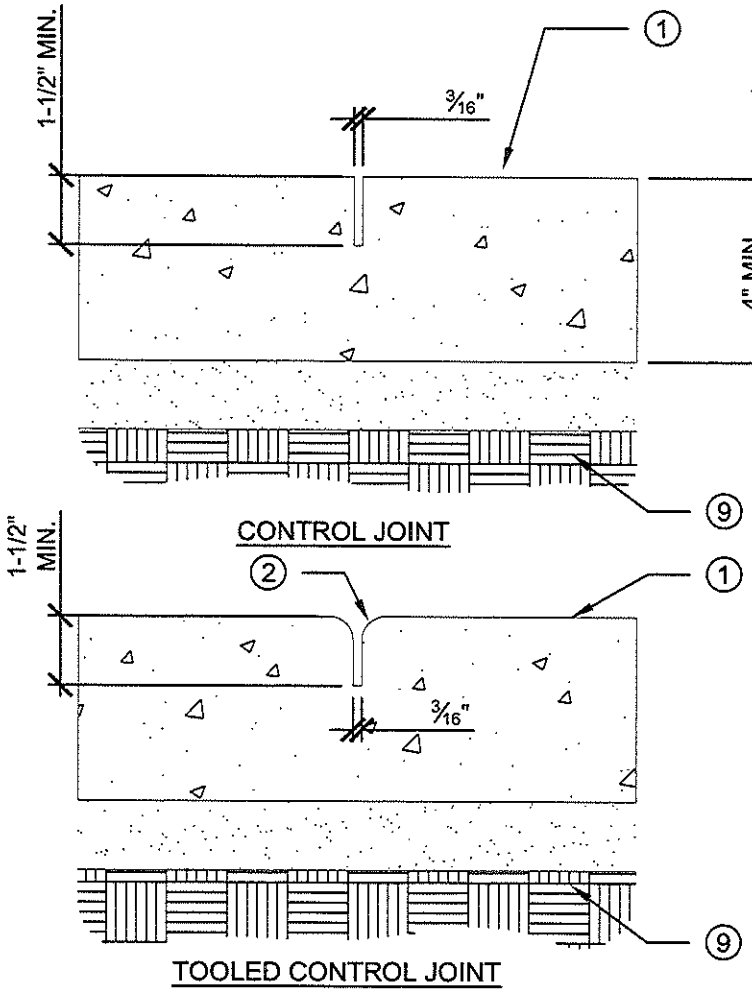
MOW CURB



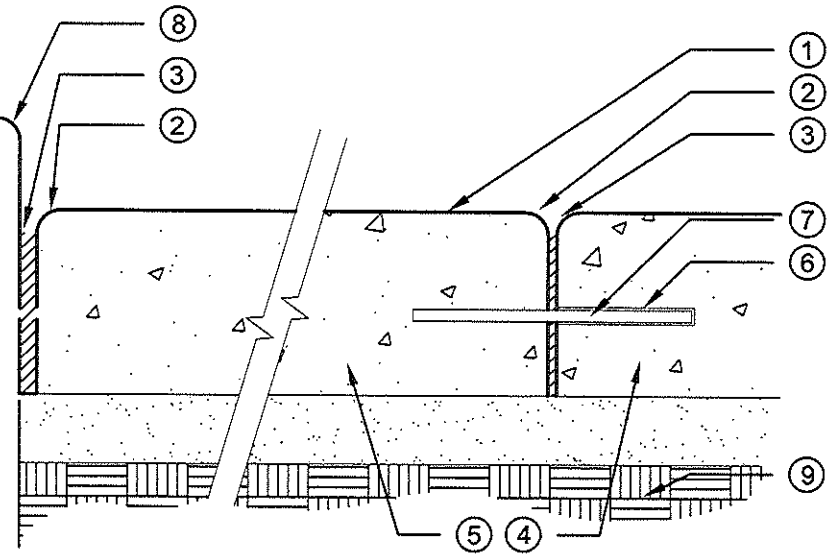
NOTES:
- PROVIDE SCORE JOINTS @ 10'-0" O.C.
- CONCRETE SHALL BE CLASS B SACK MIX
- DEEP JOINTS SHALL BE PROVIDED AT CORNERS OR WALLS, AND EVERY 30' O.C. MAXIMUM

REVISIONS
11/25/12

LC-7



TOOLED CONTROL JOINT



EXPANSION JOINT(S)

LEGEND

1. FINISH SURFACE OF CONCRETE PAVING
2. ¼" RADIUS EDGE
3. WATERPROOF CAULKING: COLOR TO MATCH PAVING DUST WITH SILICA SAND
4. CONCRETE POUR #1
5. CONCRETE POUR #2
6. PLASTIC DOWEL SLEEVE OR PAPER WRAP
7. #4 BAR DOWEL @ 18" O.C. TYP. CENTER IN SLAB
8. BUILDING CURB, COLUMN, OR STRUCTURE
9. COMPACTED SUBGRADE PER CITY PLANS AND SPECIFICATIONS

NOTES:
- REINFORCING AND OTHER STRUCTURAL REQUIREMENTS PER PLANS
- CONTROL JOINTS SHALL NOT DIVIDE CONCRETE INTO SHAPES CONTAINING INTERIOR ANGLES OF 45° OR LESS
- CONTROL JOINTS SHALL BE PLACED EQUAL TO THE WIDTH OF THE PATH
- ALL JOINT PATTERNS SHALL BE VERIFIED WITH THE PROJECT MANAGER PRIOR TO CONSTRUCTION.

APPROVED BY: PARKS AND RECREATION DIRECTOR — DATE 04/29/13

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS 11/25/12

CONTROL & EXPANSION JOINTS

LC—8

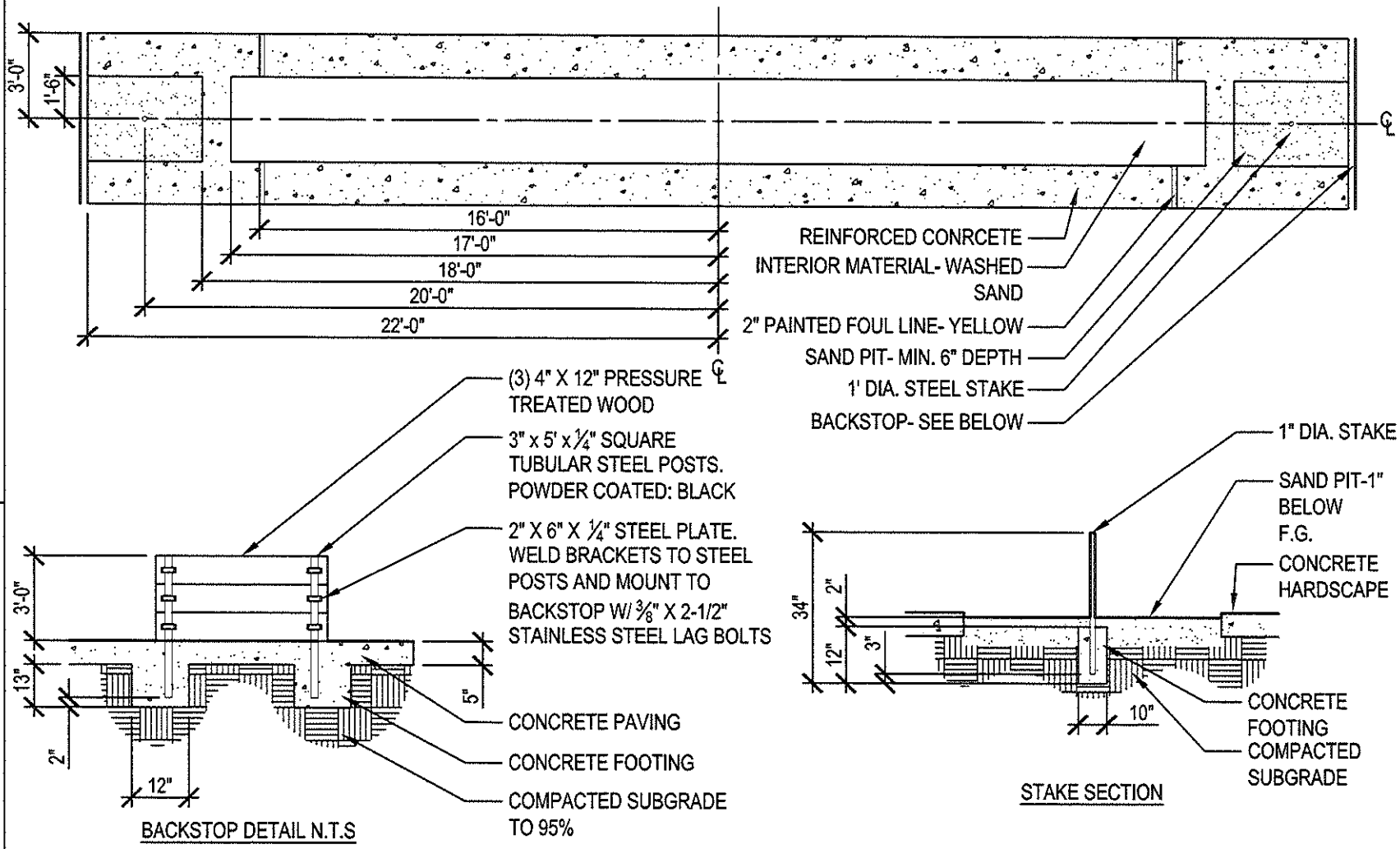
HORSESHOE COURT LAYOUT

APPROVED BY: _____ 04/29/13
PARKS AND RECREATION DIRECTOR — DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS 11/25/12

LC – 9



NOTES:
- FOUL LINE SHOULD BE 2" IN WIDTH
- SAND IN THE PIT SHOULD BE UTILITY SAND. SAMPLE TO BE APPROVED BY THE CITY OF VISALIA.
- CONCRETE WALKS TO BE NATURAL GREY WITH A LIGHT BROOM FINISH.

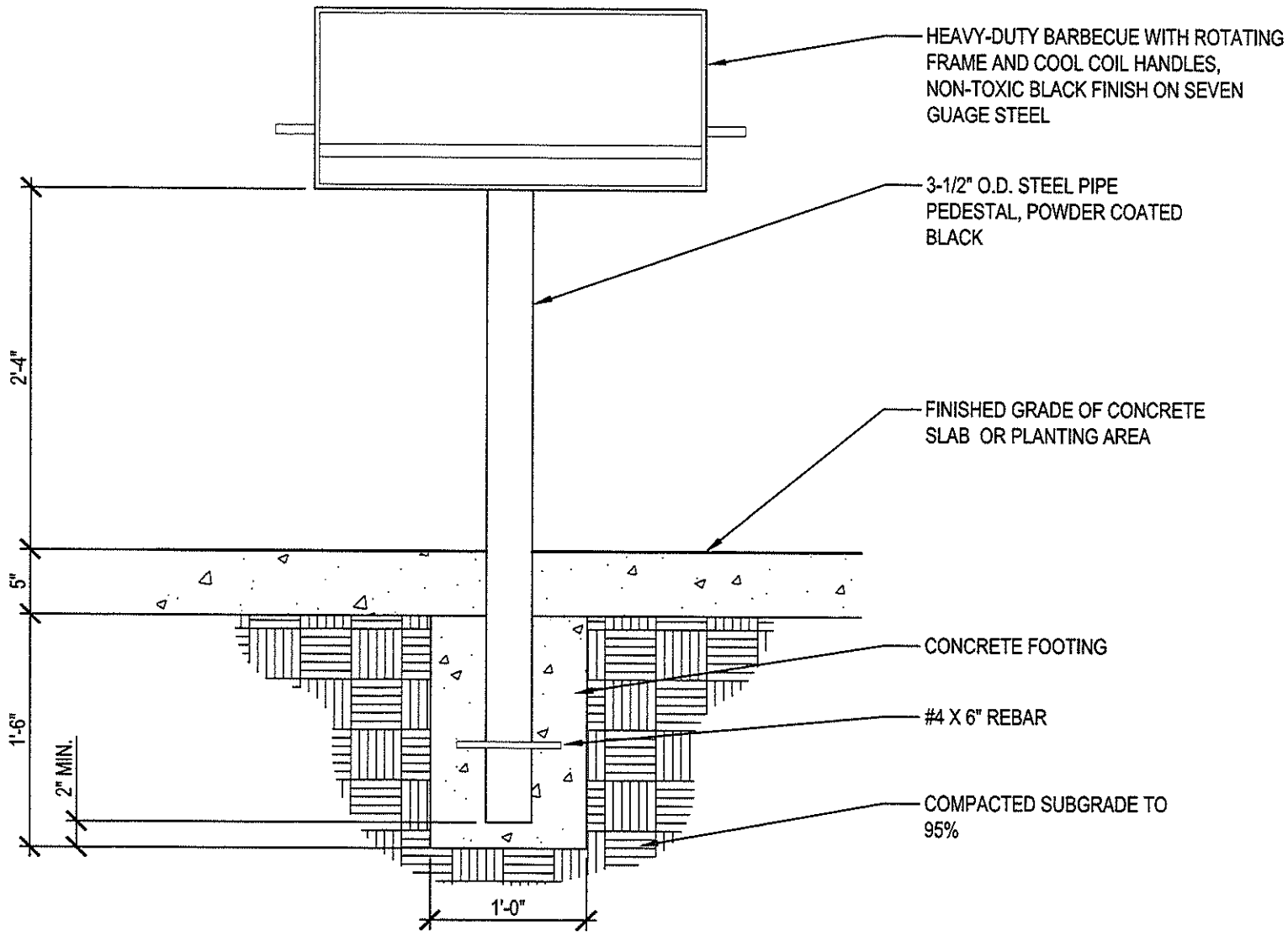
BARBECUE

APPROVED BY: _____ 04/29/13
PARKS AND RECREATION DIRECTOR — DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT
STANDARDS

REVISIONS
04/20/13

LC—10

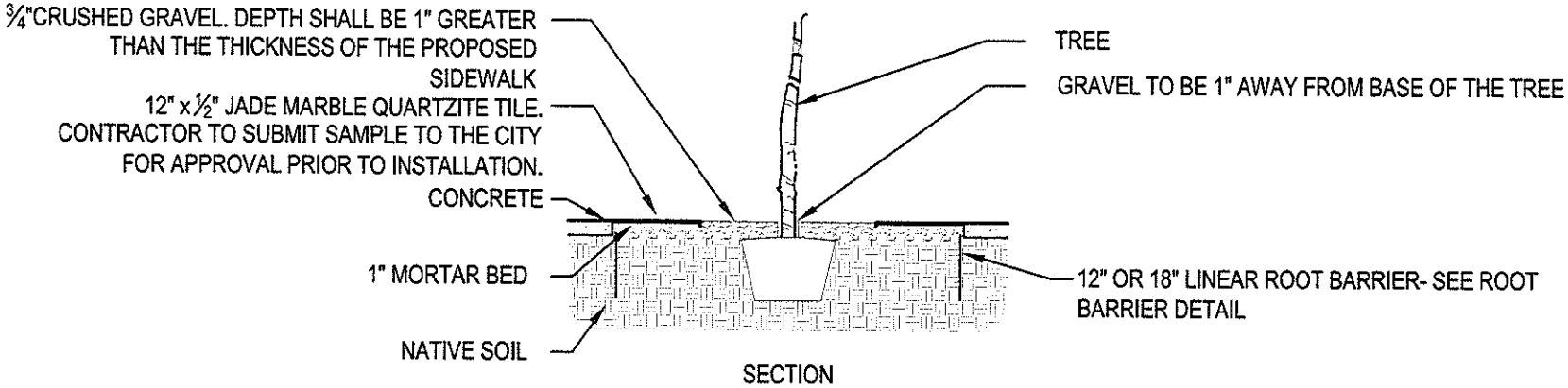


NOTES:
- INSTALL FOOTING PER MANUFACTURER'S SPECIFICATIONS
- SEE CITY OF VISALIA STANDARDS AND SPECIFICATIONS FOR MODEL NUMBER AND TYPE
- LOCATE MIN. OF 8' FROM STRUCTURES AND TREES

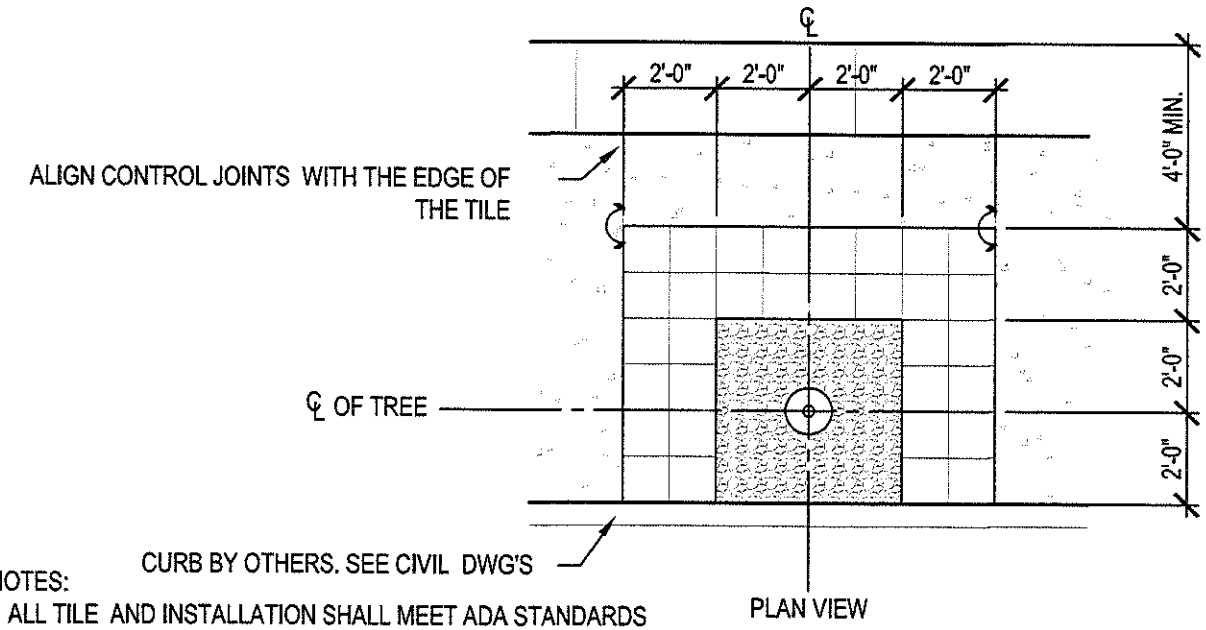
APPROVED BY: _____ 04/29/13
PARKS AND RECREATION DIRECTOR — DATE

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

TREE WELL W/ TILE



SECTION



PLAN VIEW

NOTES:
- ALL TILE AND INSTALLATION SHALL MEET ADA STANDARDS
- GRAVEL TO BE COMPACTED TO 85% IN ORDER TO PREVENT SETTLING
- PLANTING AREA TO BE LEVELED FLAT PRIOR TO PLANTING
- THE FINISH GRADE SHALL BE LEVEL WITH THE BOTTOM OF THE ADJACENT CONCRETE
- SEE ROOT BARRIER DETAIL FOR INSTALLATION AND SPECIFICATIONS

REVISIONS
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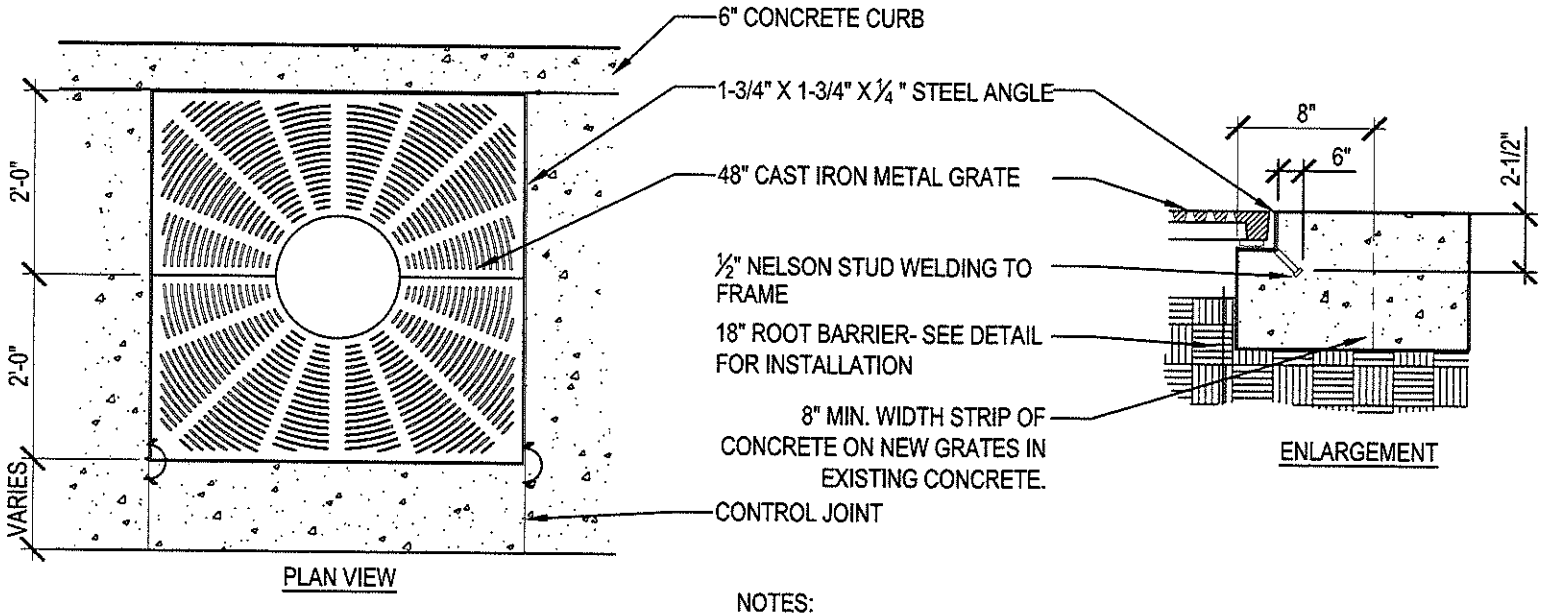
TREE WELL W/ CAST IRON GRATE

APPROVED BY: PARKS AND RECREATION DIRECTOR — DATE 04/29/13

CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

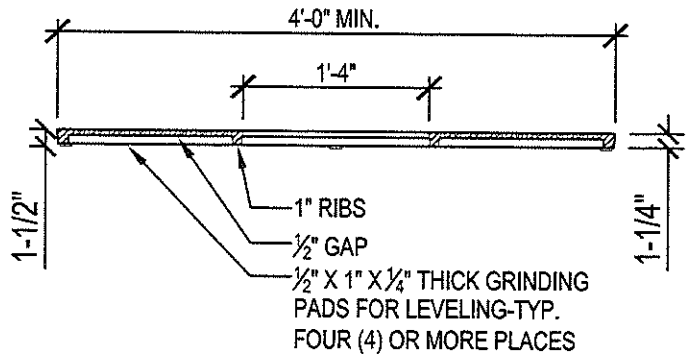
REVISIONS 04/20/13

LC-12



PLAN VIEW

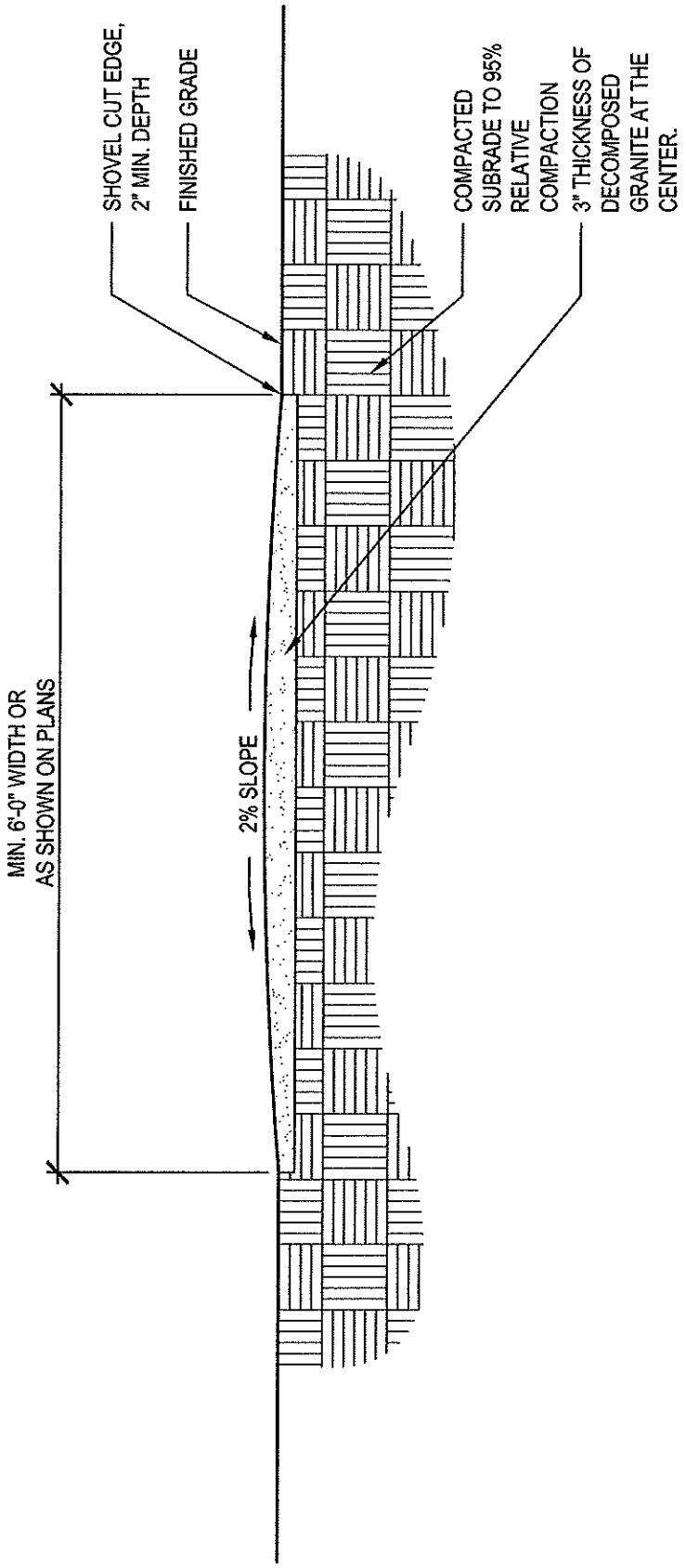
ENLARGEMENT



SECTION ENLARGEMENT

NOTES:

- GRATE SLOT WIDTHS ARE A MAXIMUM OF ¼" IN WIDTH FOR ADA COMPLIANCE
- GRATE SHALL BE MADE FROM CAST IRON
- GRATE SIZE AND PATTERN SHALL BE SPECIFIED BY THE CITY
- TREE OPENING SIZES- 16", 20", OR 24"
- STEEL ANGLE FRAME REQUIRED
- NEW GRATES BEING INSTALLED IN EXISTING CONCRETE SHALL HAVE A MINIMUM 8" BAND POURED BACK IN PLACE
- SAWCUT OVERRUNS SHALL BE CLEANED AND FILLED WITH A CITY APPROVED EPOXY AND FINISHED SIDEWALK TO GRADE
- ANY ADDITIONAL CONCRETE DAMAGED BY CONTRACTOR SHALL BE REPLACED AT NO COST TO THE CITY
- SEE CITY OF VISALIA STANDARDS AND SPECIFICATIONS ON TREE PLANTING AND INSTALLATION
- TREE WELLS SHALL HAVE LINEAR ROOT BARRIERS INSTALLED ON ALL FOUR (4) SIDES OF THE HARDSCAPE. SEE ROOTBARRIER DETAIL FOR INSTALLATION AND SPECIFICATIONS
- SEE CITY OF VISALIA STANDARDS AND SPECIFICATIONS FOR TREE GRATE MODEL # AND TYPE. TREE GRATE TO BE POWDER COATED: COLOR- TO BE DETERMINED BY CITY



NOTES:

- CONTRACTOR TO SUBMIT SAMPLE OF DECOMPOSED GRANITE TO THE CITY FOR APPROVAL
- DECOMPOSED GRANITE TRAIL TO BE CROWNED IN THE MIDDLE WITH A 2% SLOPE FOR RUNOFF
- CONTRACTOR TO MOISTEN AND COMPACT THE DECOMPOSED GRANITE TO 95% RELATIVE COMPACTION

APPROVED BY: _____ 04/29/13
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CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

DECOMPOSED GRANITE TRAIL

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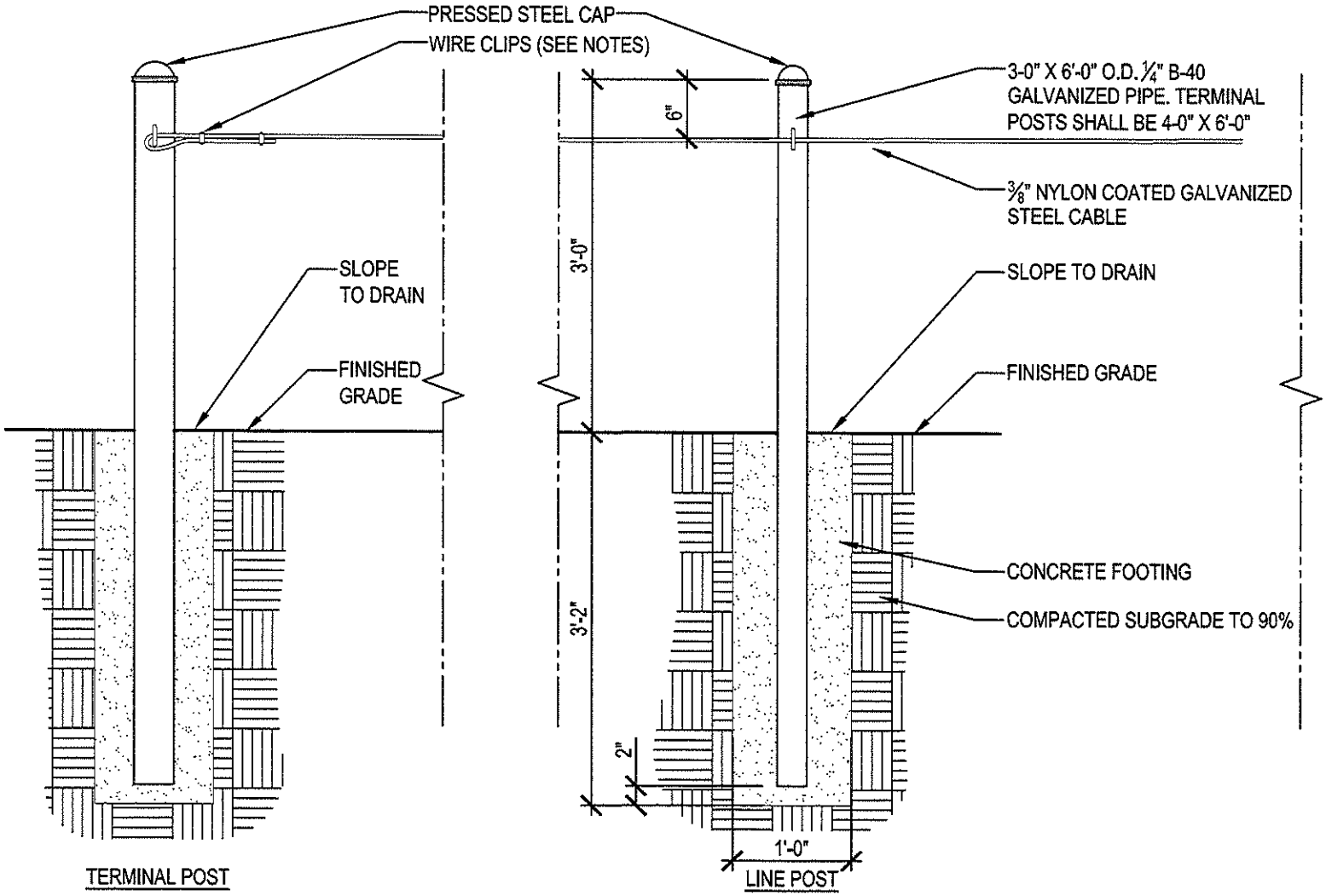
CITY OF VISALIA
LANDSCAPE & IMPROVEMENT STANDARDS

REVISIONS
04/20/13

LC—14

POST AND CABLE METAL FENCING



NOTES:
- ALL TUBING SHALL BE GALVANIZED STEEL POSTS
- LINE POSTS SHALL BE 3" IN WIDTH, TERMINAL POSTS SHALL BE 4" IN WIDTH
- PROVIDE CONCRETE FOOTINGS AT ALL END POSTS AS SPECIFIED ON APPROVED PLANS
- USE ⅜" X 2" GALVANIZED WIRE ROPE CLIPS FOR CONNECTIONS AND SPLICES. ALL CLIPS SHALL BE PLACED WITH NUTS FACING DOWNWARD AND SPOT WELD
- WHERE REQUIRED, USE WHITE PVC COATED CABLE IN LIEU OF GALVANIZED CABLE EXCEPT IN FIRE ACCESS LOCATION
- DO NOT INSTALL IN TURF AREAS