



SPECIFICATIONS
FOR THE PLAYGROUND RENOVATION
AT
LOKKER PARK
848 VISTA COTO VERDE
CAMARILLO, CALIFORNIA 93010

FOR:
PLEASANT VALLEY RECREATION & PARK DISTRICT
1605 BURNLEY STREET
CAMARILLO, CA 93010

PREPARED BY:
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LOKKER PARK

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**SECTION 01 56 26
FENCING AND PROTECTION**

PART 1 GENERAL

1.01 SECTION INCLUDES

This section includes requirements for temporary fencing and protection of the work area.

1.02 SUBMITTALS

Submit for approval, all catalog cuts and or specification sheet for all fencing products.

1.03 QUALITY ASSURANCE

Fencing shall be installed by a qualified fence company with experience in the installation of temporary fencing.

PART 2 PRODUCTS

2.01 TEMPORARY FENCING

Temporary fencing shall be 6 feet high chain link fence fabric attached to post and frames in a secure manner. Barb wire and or razor wire is not allowed. Fencing shall be kept in place during the construction period and maintenance period. Fencing shall be removed only when written authorization is provided by the District.

PART 3 EXECUTION

3.01 FENCE LAYOUT

Contractor shall submit to the District for approval, a schematic fence layout showing the location of fence panels and method of attachment of panels and post. This plan must be approved by the District prior to start of the work.

3.02 FENCE INSTALLATION

- A. Install fencing and post so that no damage occurs to the existing underground conduits or paving. Immediately repair all damage to the existing conditions that may occur as a result of the fence installation.
- B. If fencing panels have post with a horizontal support frame, make sure they are visually apparent to prevent any trip hazard.

3.03 FENCE REPAIR

Immediately repair any damage to the fencing that may occur.

END OF SECTION 01 56 26

**SECTION 02 41 10
EXISTING CONDITIONS AND REMOVALS**

PART 1 GENERAL

1.01 SECTION INCLUDES

This section includes general requirements for the removal of the existing concrete paving, asphalt paving, landscaping, and miscellaneous items.

1.02 IMPORT SOIL

The source of any required imported soil shall be tested and approved by the District prior to any delivery.

1.03 DISPOSAL OF MATERIALS

Remove items such as landscape materials, concrete paving, asphalt paving, and all other miscellaneous items scheduled to be removed and properly dispose of these items as they accumulate. Do not store or permit debris to accumulate on the site.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

3.01 INSPECTION

- A. Prior to starting, inspect the site with the District Inspector to verify all removals required to complete the work.
- B. Examine surfaces for conditions that will adversely affect execution, permanence, and quality of work of this Section.
- C. Do not proceed with work until unsatisfactory conditions have been corrected.
- D. Locate existing active utility lines and provide for their protection.

3.02 CLARIFICATION

Drawings do not indicate all objects existing on site. Before commencing work, verify with the District any existing items that may affect the work.

3.03 PROTECTION OF UTILITIES

- A. There are existing electrical, signal, systems within the work area. Preserve and maintain, in working condition, all active utilities traversing the site.

- B. There are existing irrigation main line and irrigation valves that traverse the work area. Protect the irrigation system during the removals work. The existing irrigation main lines and valves will be relocated; however, they service planting areas out of the work area. Coordinate this work with the District Inspector.
- B. When required to verify location of existing utilities to avoid conflicts pot-hole and field verify the existing utility line prior to excavation work.

3.04 PROTECTION OF EXISTING PLANTS

Protect existing trees, not otherwise indicated to be removed, against unnecessary cutting, breaking, skinning, and bruising of bark. Avoid smothering of trees with stockpile building materials or excavated materials within drip line.

3.05 SAWCUTTING

When removing concrete and/or asphalt, first mark with paint and receive approval from the District Inspector then sawcut a clean straight line for removal work.

3.06 EXISTING PAVING

Existing concrete and asphalt paving scheduled to be removed throughout the work area shall be removed completely including any base material. Sawcut where paving joins existing paving to be protected.

3.07 EXISTING TREE AND SHRUB REMOVALS

- A. Before removing any trees and shrubs review in the field with the District Inspector and the Landscape Architect to verify that tree and shrub removal designation is correct.
- B. Remove trees and shrubs in its entirety including stump and roots within 12" of surface.
- C. Depression and voids caused by plants, trees and stump and root removal shall be returned to natural grade with clean topsoil.

3.08 DISPOSAL

- A. All debris resulting from demolition and removals shall become the property of the Contractor to dispose of or salvage. Debris shall not be allowed to accumulate on site unless the District specifies a site location and security requirement. The Contractor shall be responsible for its prompt removal from the site and disposal in a legal manner.
- B. Prevent debris from migrating outside of construction areas.

END OF SECTION 02 41 10

**SECTION 11 68 16
PLAY AREA EQUIPMENT**

NOT IN CONTRACT – FOR REFERENCE PURPOSES ONLY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section covers the general requirements for the installation of the play equipment.
- B. Make use of all information as necessary for proper installation. Manufacturer's shop drawings, specifications, and installation instructions are a part of these special provisions.
- C. The District pre-purchased play equipment for this project from Play + Park Structures, Inc. (Kathy Wiggins; (661) 964-7626). Contractor shall submit his bid based on the installation of the above equipment. No other Manufacturers will be considered.

1.02 QUALIFICATIONS

The play equipment Manufacturer has a certified installer program and the Contractor for this work must hold that certification. Submit certification letter to the District for approval.

1.03 COMPLIANCE

Comply with all applicable provisions of the ASTM F-1487 and the U.S. Consumer Product Safety Commission.

1.04 PROTECTION

- A. Protect all existing features from damage as a result of the Work.
- B. Coordinate play equipment delivery to avoid storage time. When stored the equipment must be kept in secure location. Protect all play equipment from any damage that may occur during the progress of the work until final acceptance by the city. Any damaged equipment or stolen equipment shall be replaced by the Contractor at his own expense.

1.05 INSPECTIONS

- A. Concrete footings shall require inspections prior to concrete placement.
- B. Equipment installation shall require inspection prior to Resilient Surface installation.
- C. When play equipment installation is complete, the Contractor shall notify the District for inspection.

- D. The District shall conduct an independent safety audit of the playground equipment for compliance with the current CPSC guidelines, ASTM F-1487 and ADA requirements.
- E. Any non-compliance items shall be corrected by the Contractor at no additional cost to the District.

1.06 MAINTENANCE MANUAL

- A. A maintenance Manual shall be included with the play structure and must include the following:
 - 1. Frequency of inspections. Description of preventive maintenance and repair procedures
 - 2. Plan specific inspection report form for each component. Complete plan, installation instructions and parts list including color chips and numbers.

1.07 SUBMITTALS

Submit copies of the Manufacturer's play equipment layout, shop drawings, installation instructions and Play Equipment Manufacturer's warranties.

PART 2 PRODUCTS

2.01 PLAY EQUIPMENT

- A. Play equipment shall include all play structures and components as indicated on the plan. Provide all miscellaneous items necessary to complete the work. Contractor shall obtain copies of all Play Equipment Plans, Bill of Materials, installation instructions, and any other requirement from the Manufacturer's Representative. Provide all miscellaneous parts, bolts, and apparatus to assemble the components as required and specified in the Manufacturer's installation Drawings.
 - 1. Furnish to the District all tools required to adjust or replace special vandal resistant fasteners.

2.02 PLAYGROUND SURFACING

Resilient surface for this project shall be Engineered Wood Fiber 'Fibar'.

PART 3 EXECUTION

3.01 CONCRETE FOOTINGS

The subgrade for all footings shall be compacted to a relative compaction of 95 percent. Allow for installation of the required thickness of the 12" thick Fibar resilient surface entirely over the top of concrete footings. All concrete footings shall be installed as per the Manufacturer's layout drawings and details.

3.02 PLAY EQUIPMENT ASSEMBLY

Assembly shall comply with the Manufacturer's specification complete and structurally sound with all required bolts, fasteners, and connectors properly assembled and tightened.

3.03 PLAYGROUND SURFACING

- A. Engineered Wood Fiber 'Fibar' shall be installed to a depth of 12" thick throughout entire playground limits.
- B. Install engineering fabric Mirafi Model 'MScape E' between soil and Fibar resilient surface. Wrap engineering fabric on sides of pit and over bottom of pit. Secure in place with 6" long galvanized soil staples spaced 5'-0" o.c., in a triangular pattern.

END OF SECTION 11 68 16

**SECTION 11 90 10
FITNESS EQUIPMENT**

NOT IN CONTRACT – FOR REFERENCE PURPOSES ONLY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section covers the general requirements for the installation of the fitness equipment.
- B. Make use of all information as necessary for proper installation. Manufacturer's shop drawings, specifications, and installation instructions are a part of these special provisions.
- C. The District pre-purchased fitness equipment for this project from Play + Park Structures, Inc. (Kathy Wiggins; (661) 964-7626). Contractor shall submit his bid based on the installation of the above equipment. No other Manufacturers will be considered.

1.02 QUALIFICATIONS

The fitness equipment Manufacturer has a certified installer program and the Contractor for this work must hold that certification. Submit certification letter to the District for approval.

1.03 COMPLIANCE

Comply with all applicable provisions of the ASTM F-1487 and the U.S. Consumer Product Safety Commission.

1.04 PROTECTION

- A. Protect all existing features from damage as a result of the Work.
- B. Coordinate play equipment delivery to avoid storage time. When stored the equipment must be kept in secure location. Protect all play equipment from any damage that may occur during the progress of the work until final acceptance by the city. Any damaged equipment or stolen equipment shall be replaced by the Contractor at his own expense.

1.05 INSPECTIONS

- A. Concrete footings shall require inspections prior to concrete placement.
- B. Equipment installation shall require inspection prior to Resilient Surface installation.
- C. When play equipment installation is complete, the Contractor shall notify the District for inspection.

- D. The District shall conduct an independent safety audit of the playground equipment for compliance with the current CPSC guidelines, ASTM F-1487 and ADA requirements.
- E. Any non-compliance items shall be corrected by the Contractor at no additional cost to the District.

1.06 MAINTENANCE MANUAL

- A. A maintenance Manual shall be included with the play structure and must include the following:
 - 1. Frequency of inspections. Description of preventive maintenance and repair procedures
 - 2. Plan specific inspection report form for each component. Complete plan, installation instructions and parts list including color chips and numbers.

1.07 SUBMITTALS

Submit copies of the Manufacturer's play equipment layout, shop drawings, installation instructions and Play Equipment Manufacturer's warranties.

PART 2 PRODUCTS

2.01 FITNESS EQUIPMENT – **NOT IN CONTRACT**

- A. Fitness equipment shall include all fitness structures and components as indicated on the plan. Provide all miscellaneous items necessary to complete the work. Contractor shall obtain copies of all Fitness Equipment Plans, Bill of Materials, installation instructions, and any other requirement from the Manufacturer's representative. Provide all miscellaneous parts, bolts, and apparatus to assemble the components as required and specified in the Manufacturer's installation Drawings.
 - 1. Furnish to the District all tools required to adjust or replace special vandal resistant fasteners.

2.02 FITNESS EQUIPMENT SURFACING – **NOT IN CONTRACT**

For fitness equipment requiring a fall zone, resilient surfacing shall be Engineered Wood Fiber 'Fibar'. Refer to plans and details.

PART 3 EXECUTION

3.01 CONCRETE FOOTINGS

The subgrade for all footings shall be compacted to a relative compaction of 95 percent. Allow for installation of the required thickness of the 12" thick Fibar resilient surface entirely over the top of concrete footings. All concrete footings shall be installed as per the Manufacturer's layout drawings and details.

3.02 FITNESS EQUIPMENT ASSEMBLY

Assembly shall comply with the Manufacturer's specification complete and structurally sound with all required bolts, fasteners, and connectors properly assembled and tightened.

3.03 FITNESS EQUIPMENT SURFACING – **NOT IN CONTRACT**

- A. Engineered Wood Fiber 'Fibar' shall be installed to a depth of 12" thick throughout fitness equipment that has a required fall zone.
- B. Install engineering fabric Mirafi Model 'MScape E' between soil and Fibar resilient surface. Wrap engineering fabric on sides of pit and over bottom of pit. Secure in place with 6" long galvanized soil staples spaced 5'-0" o.c., in a triangular pattern.

END OF SECTION 11 90 10

**SECTION 31 13 13
TREE REMOVAL AND ROOT PRUNING**

PART 1 GENERAL

1.01 SECTION INCLUDES

This section includes requirements for the removal of trees and tree stumps.

1.02 QUALIFICATIONS

- A. Work crews shall be trained according to tree care standards accepted by the International Society of Arboriculture.
- B. Provide qualified tree workers, trained to Work around primary electrical lines when performing Work in trees underneath primary power lines. The Contractor shall comply with the "Electrical Safety Orders" of the State of California, including all amendments and revisions.

1.03 PUBLIC SAFETY AND COOPERATION

- A. All tree Work shall be conducted in a manner as to cause the least possible interference with, or annoyance to others. Pedestrian and vehicular traffic shall be allowed to pass through the Work areas only under conditions of safety and with as little inconvenience and delay as possible. Unless the Work area is totally barricaded or otherwise kept safe, at least one representative of the Contractor shall serve to coordinate safe operations on the ground at all times when Work operations are in progress.
- B. Whenever larger tree sections are being cut in a treetop which may endanger persons or property, such sections shall be secured by ropes and lowered safely to the ground in a controlled manner.
- C. Contractor shall ensure that all fire hydrants, meter vaults, water and gas shut off valves and similar facilities are accessible during the course of Work. Contractor shall maintain clear passage and least amount of inconvenience to public traffic ways, businesses, and residences.
- D. Contractor shall strive to keep noise levels, resulting from his operations to a minimum at all times, especially during the school hours.
- E. The Contractor shall comply with all tree pruning related safety requirements as stated in the safety standards ANSI Z133.1 of the American National Standards Institute, Inc.

1.04 DAMAGE TO PUBLIC OR PRIVATE PROPERTY

Should any structure or property be damaged during the operations of the Contractor, immediately notify PVRPD. Repairs to property damaged by the Contractor shall be made within 48 hours, except utility lines which shall be repaired the same working day. Repairs on private property shall be made in accordance with the appropriate building code under permits issued by the City. Any damage caused by the Contractor shall be repaired or restored by the Contractor at his expense to a condition similar or equal to that existing before such damage or injury, or he shall repair such damage in a manner acceptable to PVRPD.

PART 2 PRODUCTS

2.01 TOPSOIL

Imported fill, if necessary, shall be sandy loam Class "A" soil free of weeds, rocks, debris and shall be suitable for normal plant growth. Soil material shall be approved by the Landscape Architect prior to delivery and conform to Section 212-1.1.2 of the SSPWC.

PART 3 EXECUTION

3.01 TREE REMOVAL

- A. Before removing any trees, review in the field with PVRPD and the Landscape Architect to verify that tree removal designation is correct.
- B. Comply with all safety requirements of Paragraph 1.04 herein.
- C. Remove tree in its entirety including stump and roots within 12" of surface.
- D. Depression and voids caused by tree stump and root removal shall be returned to natural grade with clean Class 'A' topsoil.

3.02 STUMP REMOVALS

Remove all tree stumps and major anchor roots with grinding machine to a minimum depth of 12".

3.03 ROOT PRUNING

- A. Evaluate the existing tree root surface conditions with PVRPD Staff to determine the exact layout desired to cut surface roots. Each tree will require individual review.
- B. Evaluate the existing tree root conditions to determine the desired depth to sever tree roots with PVRPD Staff. Each tree will require individual review.

- C. Allowable root pruning techniques shall be a combination of hand trimming with a sharp saw or lopper for individual root pruning situations. Areas requiring a more indiscriminate pruning effort can be accomplished using a mechanical Dosko or Vermeer root pruner machine. A chain trencher or similar equipment will not be used to prune roots.
- D. PVRPD Staff shall review and approve all root pruning activities prior to any cut roots being backfilled with soil.
- E. Remove and dispose of all root segments and miscellaneous debris created during the root pruning process. Remove all severed root segments causing direct conflict with new concrete work.

3.04 SITE REVIEW

Prior to start of work, walk the site with the Landscape Architect and inspector to verify all removals within the designated areas.

3.05 CLEARING AND GRUBBING

- A. Clearing and grubbing prior to fine grading.
- B. Grub out all roots 2" in diameter and larger to a depth of at least 12" below finish grade.

3.06 DISPOSAL OF MATERIALS

Remove debris and rubbish resulting from the Work and properly dispose of it as it accumulates. Do not store or permit debris to accumulate on the site. Do not burn debris and rubbish at the site.

3.07 SITE CLEAN-UP

Clean-up of branches, limbs, logs, or any other debris resulting from any tree operations shall be promptly and properly accomplished. The Work area shall be kept safe at all times until all operations are completed. Under no circumstances shall the accumulation of brush, limbs, logs, or other debris be allowed in such a manner as to result in a hazard to the public. All debris from tree operations shall be cleaned up each day before the Work crew leaves the site unless permission is given by PVRPD to do otherwise. All lawn areas shall be raked, all streets and sidewalks shall be swept, and all brush, branches or other debris shall be removed from the site. Areas are to be left in a condition equal to or better than that which existed prior to the commencement of tree operations.

3.08 FIBAR MULCH INSTALLED OVER TREE PLANTER SURFACE

Install Fibar mulch, to match play equipment resilient surface, over tree planters created after new concrete work has been completed. Depth of Fibar will replace removed concrete. Fill this void with 5" thick layer of Fibar.

END OF SECTION 31 13 13

**SECTION 32 33 43
SITE AMENITIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

This section includes specifications for the furnishing and installation of the site amenities.

1.02 SUBMITTALS

Submit to the District for approval, 15-days after award of contract, catalog sheets, Manufacturer's brochures, and specifications for all furniture and miscellaneous items indicated on the plans and specifications.

1.03 HANDLING AND STORING

Site furnishings and miscellaneous items shall be delivered and unloaded at the job site in such a manner that no damage occurs. Deliver items same day as installation to avoid storage, unless otherwise approved by the District.

PART 2 PRODUCTS

2.01 BENCHES – PLAYGROUND AREA

Two (2) benches for the playground area shall be Kirby Built Model 'Victory Bench – Wood Grain Naturals', 6 feet long, color Teak.

2.02 BENCHES – BETWEEN PLAYGROUND AREA AND BASKETBALL COURTS

Four (4) benches for the area between the playground and the basketball courts shall be Ultra Site "Recycled Bench without Back," 952-Natural, 6 feet long, inground mount, recycled plastic, 4" x 4" Cedar planks, hot dipped galvanized frame.

PART 3 EXECUTION

3.01 BENCHES

- A. Install two (2) Kirby Built 'Victory Bench' per plans and details.
- B. Install four (4) Ultra Site 'Recycled Bench without Back' per plans and details.
- C. Install all benches as indicated on the drawings and per Manufacturer's specifications.

END OF SECTION 32 33 43

**SECTION 32 84 00
IRRIGATION SYSTEM**

PART 1 GENERAL

1.01 SECTION INCLUDES

This section includes requirements for the installation of the Irrigation System.

1.02 RELATED SECTIONS

32 93 33 – Lawn Planting

1.03 REQUIREMENTS OF REGULATORY AGENCIES

Secure all permits and licenses necessary for the work. Give all notices and comply with all laws, ordinances, rules and regulations concerning the installation of the sprinkler system as drawn and specified.

1.04 SITE CONDITIONS

- A. Prior to beginning any work, the Contractor and the Inspector shall participate in a thorough irrigation system review of the project site. All remote control valves shall be turned on and observed in operation by both the Contractor and Inspector. Any existing defects will be listed in detail identifying the specific valve station number and describing the exact broken or non-functioning irrigation component noted during the site review. At the conclusion of the irrigation review, the Contractor shall generate a summary of the items identified by both parties listing all remote control valves operated, identifying if the valve performed without any defects or specifically identifying any observed defects or non-functioning components, such as broken heads, clogged nozzles, non-operating valve solenoids, broken piping, or other noted defects. The completed summary of items noted shall be listed on a document called 'Existing Irrigation System Observations'. This document shall be signed by the Contractor and submitted to the Inspector for a confirming signature. The mutually signed 'Existing Irrigation System Observations' document shall be sent to the attention of the Landscape Architect for inspection purposes at the conclusion of the construction work. If requested by the Inspector, the Contractor shall provide a list of the existing defective irrigation components noted with a detailed written proposal to repair each item identified on the list. A copy of this proposal will be sent to the Landscape Architect. This additional work proposal must be reviewed and approved in writing by the Inspector and formally presented to the General Contractor before the Landscape Subcontractor can begin any additional repair work. The mutually signed 'Existing Irrigation System Observation' document shall be used as a guide to identify any collateral damage caused to the existing irrigation system as a result of new construction performed on site by the Contractors. Any damage caused to the existing irrigation system not specifically identified on the 'Existing Irrigation System Observation' document shall be repaired or replaced at the Contractor's expense. In the event that the Contractor does not participate or perform the existing irrigation site review, any existing irrigation equipment or components damaged on the project site noted by

the Landscape Architect during the final irrigation system review shall be repaired or replaced by the Contractor at their expense to the satisfaction of the Inspector.

- B. Do not willfully install the sprinkler system as indicated on the drawing when it is obvious in the field that unknown obstructions or grade differences exist that might not have been considered in the engineering. Such obstructions or differences should be brought to the attention of the Inspector.
- C. Before excavating for sprinkler lines, locate all underground utility lines so that the proper precautions may be taken to avoid damage to such utilities. In the event of a conflict between underground lines, promptly notify the Inspector who will arrange for the relocation of one or the other. Failure to follow this procedure places the responsibility upon the Contractor for making any and all repairs for damage of any kind at his own expense.
- D. Provide necessary safeguards and exercise caution against injury or defacement of any existing site improvements. Contractor shall be responsible for any damage resulting from his operations and shall repair or replace such damage at his own expenses. No trucks or vehicles of any kind shall be allowed to pass over sidewalks, curbs, etc., unless adequate protection is provided.
- E. Existing Trees
 1. Exercise all possible care and precautions to avoid injury to tree roots, trunks and branches. All excavating within drip line of trees shall be done very carefully and by hand pick and shovel if it appears that large roots are within trenching zones.
 2. Alter alignment of pipe to avoid large tree roots, 2-inch and larger in diameter.
 3. Wrap exposed and bridging tree roots with several layers of burlap and keep moist. Close all trenches within drip lines, within 24 hours.
 4. All severed roots 1-inch and larger shall be hand pruned with sharp tools and painted with acceptable horticultural seal.

1.05 MATERIAL LIST

Submit to PVRPD for acceptance, three (3) copies of all materials and equipment, including Manufacturer's names and catalog numbers, to be furnished and installed under this contract within 10 days after the award of the contract.

1.06 RECORD DRAWINGS

- A. Provide and record daily a complete record set of prints on bond which shall be corrected to show changes from the original drawings and specifications and the exact installed locations, sizes and kinds of equipment. Prints for this purpose may be obtained from PVRPD. Keep this set of drawings on the site and use only as a record set.
- B. Use these drawings as work progress sheets. Make neat and legible annotations thereon as the work proceeds, showing the work as actually installed. Keep these drawings available at all times for inspection and in a location designated by PVRPD.

- C. Before the date of the final inspection, transfer all information from the record prints to a clean set of prints procured from PVRPD. Make work neat, in ink and subject to review and acceptance of PVRPD. PVRPD will scan final drawings into a permanent electronic record document.
- D. Dimension from two permanent points of reference such as building corners, sidewalks or road intersections, the location of:
 - 1. Connection to existing water lines.
 - 2. Connection to existing electrical power.
 - 3. Gate valves or ball valves.
 - 4. Routing of sprinkler pressure lines and control wiring.
 - 5. Electric control valves.
 - 6. Quick coupling valves.
 - 7. Other related equipment as directed by PVRPD.

1.07 TESTS AND SITE OBSERVATIONS

- A. All tests shall be made in the presence of PVRPD; at least forty-eight (48) hours' notice shall be given for tests.
- B. Record drawings must be current and shall be verified by PVRPD at the time of all observations.
- C. Site observations for all items pertaining to the work of this Section shall be performed by PVRPD.
- D. Specific site observations for valve assemblies, sprinkler coverage, control wires and splices and any other observations deemed necessary shall be performed by PVRPD.
- E. An open trench main line check for pipe quality and depths shall be performed by PVRPD.
- F. Head Layout - using flag marker layout all drip emitter, tree flood bubblers, and spray heads in field prior to trenching. Review head layout with PVRPD and Landscape Architect and perform adjustments in field as directed prior to installing irrigation.
- G. Center load pipe with small amount of backfill to prevent arching and whipping under pressure. Leave joints exposed for observation during pressure test. No water shall be permitted in the pipe until the above has been accomplished and a period of at least 24 hours has elapsed for solvent weld setting and curing.

Main lines to be tested up to valve at 125 pounds pressure and there shall be no leaks. Furnish force pump and pressure gauge. Lateral lines of system to be tested at line pressure with risers capped. Tests to be for 2 hour period and verified by PVRPD.
- H. Backfill quality and compaction of trenches shall be verified by PVRPD. Do not backfill trenches until all tests have been completed and accepted.

- I. Perform a coverage test in the presence of PVRPD to determine if the water coverage for planting areas is complete and adequate. Furnish materials and perform all work required to correct any inadequacies of coverage due to deviations from drawings, or where the system has been willfully installed as indicated on the drawings when it is obviously inadequate, without bringing this to the attention of PVRPD.
- J. The coverage test shall be completed, and the irrigation system modified if necessary and accepted, prior to the start of the planting operations.
- K. The entire system shall be checked out thoroughly and completely by the Contractor, five (5) days prior to the final observation. All heads shall be properly aligned and adjusted for coverage and cleared of any foreign materials. All valves shall be properly adjusted. Sprinkler controller valve chart shall be checked for accuracy.
- L. At the end of the Maintenance Period, a final observation shall be made by the Contractor and District to check out the entire system.
- M. Final inspection prior to acceptance:
 - 1. Operate each system in its entirety for PVRPD at time of final inspection. Rework any items deemed not acceptable to PVRPD.
 - 2. Deliver all accessories, charts, record drawings, and equipment as required before final inspection.

1.08 GUARANTEE

- A. The entire sprinkler system shall be guaranteed for a period of one (1) year from date of final acceptance.
- B. Should any portion of the irrigation system malfunction due to poor workmanship or defective materials, corrections shall be promptly made by the Contractor at his own expense.
- C. Any damage to paving, plating, or other developments due to the settlements of improperly compacted trench soil, shall also be promptly repaired at the Contractor's expense, to the satisfaction of PVRPD.

PART 2 PRODUCTS

2.01 GENERAL

- A. Irrigation materials shall be in accordance with Subsection 212-2 in the SSPWC "Greenbook" and as specified herein.
- B. The irrigation products specified on the drawings in these specifications are selected to match existing products in use. Substitutions are permitted only when product name is followed by or equal.

- C. Use only new materials of brands and types as noted on the drawings and as specified.

2.02 CONTROL WIRES

24 volt conductors shall be U.F. type, solid wire, U.L. approved for direct burial. Minimum size shall be 14 Ga. or as noted on drawings, used to connect remote control valve solenoids to sprinkler auto controller.

2.03 PVC MAIN LINE FITTINGS

Main line fittings for all pipe sizes shall be Schedule 80 PVC solvent weld fittings.

2.04 LATERAL NON-PRESSURE LINE FITTINGS

Lateral Non-Pressure Line Fittings shall be Schedule 40 PVC, Type 1, Grade 1, Cell Classification 1244-B, side gated, Lasco or equal.

2.05 PVC FLANGE FITTINGS

Flange Fittings shall be PVC Schedule 80, Type 1, Grade 1, Loose Ringer, ANSI Class 150 Flange, Lasco series 954 or approved equal, with full face $\frac{1}{8}$ " thick elastomeric gasket, 5-70 Shore A hardness.

2.06 QUICK COUPLING VALVES

Quick Coupling Valves shall be Red Brass body and bonnet, 1" size, locking thermoplastic cover, colored yellow, Rain Bird 44RCP. No known equal.

2.07 NIPPLES AND RISERS

Nipples and Risers shall be PVC Schedule 80.

2.08 MAIN LINE PIPE

- A. Mainline pipe sized 4" to 2", shall be Class 315 PVC, solvent weld pipe, white in color, conforming to ASTM D-1785; Pacific Plastics, JM Eagle, Crestline, or equal.
- B. Mainline pipe, 1 $\frac{1}{2}$ " size or less, shall be Schedule 40 PVC pipe, solvent weld, white in color, conforming with ASTM D-1785; Pacific Plastics, JM Eagle, Crestline, or equal.

2.09 LATERAL PIPE

Lateral pipe shall be Schedule 40 PVC pipe, solvent weld, white in color, conforming with ASTM D-1785; Pacific Plastics, JM Eagle, Crestline, or equal.

PART 3 EXECUTION

3.01 GENERAL

Irrigation materials shall be in accordance with Subsection 308-5 in the SSPWC "Greenbook" and as specified herein.

3.02 WORKMANSHIP AND INSTALLATION.

A. Layout and Adjustments

1. The drawings are diagrammatic to the extent that many offsets, special fittings and exact locations of the equipment are not shown. The locations of all valves, heads, lines, etc., shall be installed, however, as accurately as possible to the locations that are indicated on the drawings.
2. The locations of main lines are indicated as bordering walks, curbs and fences shall be placed as close as possible. Locate lines within planting areas wherever possible.
3. All indicated locations of heads and equipment are placed with careful consideration to overlap, protection of the premises, lights, proposed tree locations and general layout. Coordinate installation of sprinkler irrigation materials, including pipe, so there is no interference with utilities, other construction, or difficulty in planting trees and shrubs. Layout sprinkler heads and make any minor adjustments required due to differences between site and drawings. Adjustments shall be accomplished, maintaining proper sprinkler head coverage and overlap of sprinkler throws.

B. Connections

1. All connections shall be made into existing lines as indicated on the drawings.
2. Field verify existing line types in the field.

C. Cutting and Patching

1. When piping crosses concrete paving and asphalt paving, sawcutting is required. Cut AC paving and/or concrete with concrete sawcutting tools straight and in those locations approved by PVRPD.
2. Remove concrete and/or AC, base and soil to the required depth for mainlines.
3. Concrete walks shall be backfilled entirely with compacted sand. Compact to 95% and patched with new concrete.
4. AC paving shall be backfilled entirely with a 1-sac sand slurry mix. Compact to 95% and patch with new AC paving.
5. Concrete paving shall be received medium broom finish.
6. Remove from site any excavated soil.

D. Trenching and Backfilling

1. Trench and excavate as necessary to install the system. Excavated material shall be neatly arranged so as to cause a minimum of inconvenience to pedestrian and vehicular traffic. No soil shall be placed on concrete paving without an adequate moisture proof membrane to protect paving.

2. Trenches for all pipe shall be open vertical construction with firm level bottom and sufficiently wide to provide free working space around the work installed and to provide ample space for backfilling and tamping.
3. Depth of trenches shall be sufficient to provide a minimum cover above the top of the pipe as follows:
 - a) Mains and control wires: 24-inches minimum cover.
 - b) PVC laterals: 12-inches minimum cover.
4. When two (2) pipes are to be placed in the same trench, provide a minimum of 6-inch horizontal clearance. Place pipe side by side; do not install one pipe on top of another.
5. After the installation is complete and the required tests and inspections have been made and approved, the excavations and trenches shall be backfilled with clean soil, free of rubbish, rocks, and pebbles larger than one-half inch.

E. Plastic Pipe

1. Do not install multiple assemblies on plastic lines. Provide each assembly with its own outlet.
2. Install assemblies specified herein in accordance with respective detail. In absence of detail drawings or specifications pertaining to specific items required to complete work, perform such work in accordance with best standard practice.
3. Clean PVC pipe and fittings before installation. For solvent weld pipe use installation and solvent welding methods as recommended by the pipe and fitting manufacturer. For gasketed pipe installation follow detailed assembly instructions furnished by the manufacturer.
4. On PVC to metal connections, work the metal connections first. Use non-hardening sealant on all threaded joints. Screw hand tight and $\frac{1}{2}$ turn by wrench. Where threaded PVC connections are required, use threaded PVC adapters into which the pipe may be welded.
5. Pipe shall have a firm, uniform bearing, for the entire length of each pipeline, to prevent uneven settlement. Pipe shall be snaked from side to side of trench bottom to allow for expansion and contraction. One additional foot per 100 foot of pipe is the minimum allowance for snaking. Never lay PVC pipe when there is water in the trench or when the temperature is 32° F or below.
6. Use 45° fittings at all changes in depth of pipe. Coupling to be of same materials and wall thickness as pipe.

F. Sprinkler Controller

1. Sprinkler automatic controller is existing. Protect in place.
2. When installing additional 14-gauge wires, attach to auto controller as per Manufacturer's specifications.

G. Sprinkler Heads

1. Prior to installing heads, flush laterals and risers with full line pressure. Repeat whenever system is opened up for repairs or replacements. Start flushing operation at the highest point of delivery and work to the lowest.
2. Align all part circle heads so that no spray shall hit building walls or concrete paving.

3. Adjust all spray nozzles so that there will be no amount of overspray, and so that the entire set will be as evenly balanced as possible.
4. Install with each lawn area sprinkler head, a "Triple Swing" joint with Schedule 80 PVC nipples and threaded ells.
5. Install all tree bubblers and drip emitters on PVC flexible hose with two (2) solvent weld male adapters.

3.03 CONTROL WIRES AND CABLES

- A. Unless otherwise specified, connections between controller and remote control valves shall be made with direct burial 14-gauge wire, manufactured by Paige Electrical, or equal.
- B. Between controller and remote control valves, use a continuous cable. All cable splices shall be made with 3M Model DBR-Y6 waterproof wire connectors, or approved equal.
- C. Wiring shall occupy the same trench and shall be installed along the same route as the pressure supply line wherever possible or as indicated on Plan.
- D. An expansion loop of twelve inches shall be provided at each wire connection and/or directional turn, with all wire pull boxes.

3.04 PIPE RESTRAINTS

Mainline piping 4" to 2" in size shall be provided with concrete thrust blocks to support all directional turn fittings. Install per AWWD Standards.

3.05 FIELD QUALITY CONTROL

- A. Adjustment to System
 1. Flush and adjust all sprinkler heads for optimum performance and to prevent overspray onto walk, roadways, and buildings wherever possible.
 2. Select the best degree of arc to fit existing site conditions.
 3. Set all sprinkler heads perpendicular to finished grades unless other designated on the drawings.

3.06 TESTING AND INSPECTION

- A. Do not allow or cause any work of this section to be covered up or enclosed until it has been inspected, tested, and approved by PVRPD. Before backfilling the main line, and with all control valves in place, but before lateral pipes are connected, completely flush and test the mainline, and repair all leaks. Flush out each section of lateral pipe before emitters are attached.
- B. Make all necessary provisions for thoroughly bleeding the line of air and debris. Before testing, fill the line with water for a period of at least 24 hours.

3.07 FINAL INSPECTION

Thoroughly clean, adjust and balance all systems. Demonstrate the entire system to PVRPD proving that all remote control valves are properly balanced, that all emitters are properly flowing, and that the entire system is installed and is workable, clean, and efficient.

END OF SECTION 32 84 23