- 1. Landecape Architect: Enviro Design, 7424 Greenville Avenue, Suite 200, Dallas, Texas 75231, and/or their authorized representatives.
- Approved: Approved by the Owner and the Landscape Architect. Any variation from these specifications or substitutions of materials specified must be approved in writing.
- Drawings: Any plan, elevation, section, detail or other drawing under the title of this project.
- 4. Specifications: All of the specifications bound in this volume, and addenda
- thereto which may be issued, and such descriptive data as may be incorporated in approved work orders or change orders.
- 5. Contractor: The bidder who is awarded this contract, his representatives, and his subcontractors and their representatives.
- 6. Initial Acceptance: Owner acceptance of the initially completed landscape and irrigation installation at the start of the one (1) year warranty period.
- 7. Final Acceptance: Owner acceptance of the completed landscape and irrigation installation at the end of the one (1) year warranty period.

CHANGES IN THE WORK

The Landscape Architect or General Contractor shall have authority to order minor changes in the work not involving an adjustment in the contract sum or an extension of the contract time, and not inconsistent with the intent of the contract documents.

The Owner, without invalidating the contract, may order changes in the work consisting of additions, deletions or other revisions, the contract sum and the contract time being adjusted accordingly. All such changes in the work shall be authorized by change order and shall be executed under the applicable conditions of the contract document

While no new or unforeseen items are anticipated, they shall be classed as extra work when they cannot be covered by any of the contract documents. The Contractor shall submit detailed prices for any extras to the Landscape Architect, and shall perform extras upon written acceptance from the Owner or Landscape Architect. In the absence of such written order, he shall not be entitled to payment for such extra work. All bills for extra work shall be submitted monthly.

COOPERATION

The Owner shall have the right to do other work or to let other contracts for work to be done on the same site as specified for the work to be done under this contract. The Owner's arrangements as to precedence of work and the relationship between the Contractor and the Owner shall be decisive.

The Landscape Architect is the representative of the Owner.

LANDSCAPE ARCHITECT'S STATUS

As the Landscape Architect is the interpreter of the contract documents, he shall side neither with the Owner nor with the Contractor, but shall endeavor to enforce faithful performance by both

DAMAGES

The Contractor shall be responsible for all damage that may occur to the adjoin Improvements or strests, or any accidents to any person or persons in and about the site or adjacent strests, and for all damage done to adjoining property or the work of others during the progress of the work under the contract, and caused by any act or omission of the Contractor or his employees.

The Contractor shall be responsible for damage to the site improvements thereon, including underground improvements, incurred through his execution of this work, and shall agree to have such damage repaired by qualified workmen. However, the cost of changing underground lines, unless otherwise specified, shall not be included in this contract.

DIRECTION OF THE WORK

The Contractor shall be held responsible for the full direction and supervision of all work under this contract and shall follow all instructions or directions from the Land-

The Contractor shall have a competent Supervisor or Foreman on the job at all times while the work is in progress. This Foreman, acceptable to the Owner, shall direct operations and receive instructions in the absence of the Contractor. The Foreman shall correlate the work of the various subcontractors.

DRAWINGS AND SPECIFICATIONS

The Contractor shall keep one (1) copy of all drawings and specifications, memoranda and shop drawings at the job at all reasonable times, available to the Owner or Land-

These specifications and accompanying drawings are to be interpreted to their full intent, meaning and apirit, whether taken asparately or together. Taken together, they shall be desired mutually to explain each other and to be descriptive of the work

Should there be any discrepancy between the drawings and specifications, the drawings shall govern: between the descriptive writing on the drawings and the plant list designating the materials, the descriptive writings shall govern. The large-scale details shall be followed in preference to the smaller-scale drawings.

Should there be anything shown on the drawings and not described in the specifications, or not shown on the drawings and described in the specifications, the same shall be fully executed and carried out as if drawn, shown or described in both: and the Contractor is not to make any alterations or corrections on the drawings or in the specifications. Should any error appear, the same is to be referred to the Landscape Architect before the bids are submitted or the work is commenced, or as otherwise specified

EXAMINATION OF THE SITE

All Contractors submitting proposals for this work shall first examine the site and all conditions at the site. All proposals shall take into consideration all such conditions as may effect the work under this contract.

The Contractor and subcontractors shall be responsible for verifying all quantities shown on the irrigation list and plans. Any discrepancies shall be brought to the attention of the Landscape Architect prior to bidding.

Extra charges or compensation will not be allowed due to differences between actual measurement and the dimensions shown on the drawings after the work is initiated. UNIT COST SUBMITTAL

As part of his bid, the Contractor shall submit a unit cost schedule of all products, including labor, for the purpose of additions or deductions to the project.

GUARANTEE-WARRANTY The Contractor shall, and hereby does, warrant all materials and all work performed by

him for a period of (1) one year after initial acceptance as set out in the various sections and for which guarantees are required. INSURANCE

The Contractor and his subcontractor shall carry Property Damage and Public Liability Insurance, and Workmen's Compensation and Employers Liability Insurance in the amount required by the Owner. He shall furnish the Owner certificates of compliance

before starting work on the job. All fixtures, equipment, and materials supplied by the Contractor shall remain his prop-

erty until such time as accepted in writing or paid for by the Owner, and the Contractor shall protect them with appropriate insurance against theft or other loss. The Contractor shall not cause any insurance to be cancelled or permit any insurance to lapse. All insurance policies shall include a clause to the effect that the policy shall not be cancelled or reduced, restricted, or limits changed until thirty (30) days after the Owner has received written notice as evidenced by return receipt of registered or

Certificate of insurance shall contain transcripts from the proper office of the insurer, evidencing in particular those insured, the extent of the insurance, location and opera-

tions to which the insurance applies, the expiration date, and the above mentioned

MATERIAL INSPECTION

The Contractor shall inspect all materials upon their arrival at the Job and see that they conform to the requirements of these specifications and prevent the unloading of unsatisfactory material or promptly remove same from the premises without awaiting in-structions to do so. The Landscape Architect shall have the right to inspect all mater-ials prior to and after delivery to the site and shall reserve the right to accept or reject said materials at any time before initial acceptance.

MATERIAL AND WORKMANSHIP

their respective areades

Materials shall be new. Both workmanship and materials shall be the best quality of

The Contractor shall submit samples of materials, etc., when required by the Landscape Architect as spelled out in other sections of these specifications. All samples shall be approved by the Landscape Architect before proceeding with the work. The Contractor shall be responsible for satisfactory completion of all work and shall provide, without extra charge, all incidental items required as a part of the work, even though every such item may not be specifically prescribed or indicated, but is neces-eary for proper and complete installation of the work. The Contractor shall submit evidence, if required by the Landscape Architect, that each item of material furnished under this contract fulfills the requirements of the specifications for such materials.

PERMITS AND REGULATIONS

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the work of this contract.

The Contractor shall obtain all permits and pay all fees, licenses and deposits required by law or ordinances to comply with the work of these specifications. SUBSTITUTION OF MATERIALS

The Contractor, before submitting bid, shall locate all necessary materials as called for in the plans and specifications, and shall be assured of their availability for uses on the job.

The Contract bide shall be based upon providing the specified materials, processes, products, etc., identified in this specification and/or indicated on the drawings, or as provided in the Alternates.

In the event substitutions are proposed by the Contractor to the Landscape Architect after the contract has been awarded, the Landscape Architect will record all time and substitution. Whather or not the Landscape Architect approves a proposed substitution, the Contractor, promptly upon receipt of the Landscape Architect's billing, shall reimburse the Landscape Architect and his consultant for time and materials spent by them in evaluating the proposed substitution.

RELATIONS OF CONTRACTOR AND SUBCONTRACTOR

The Contractor agrees to bind every subcontractor to the terms of the drawings and specifications and wherever practicable, to the agreement and General Conditions, as far as applicable to the subcontractor's work

The Landscape Architect will not engage in any way to superintend or relieve the Contractor of responsibility for the complete and proper execution of the work, nor for the consequences of neglect or carelessness by him or his subordinates.

The Contractor shall include all applicable taxes. STORAGE

The Contractor shall verify, prior to bidding, whether or not he will be allowed to store materials on the site at a location approved by Owner for use at a later date. Owner will not be responsible or liable for loss of stored materials.

All necessary utilities may not be available at all areas of work. Owner may be

Water will be available on the site at no expense to the Contractor. Tap, meter fee. hose and other watering equipment required for the work shall be furnished by this Contractor at his expense. Additional water will be available as the irrigation system is

TERMS OF THE CONTRACT

A copy of the Owner's standard contract form or General Contractor's subcontract form will be available to the bidder upon request, and will generally outline the terms of the

UNCOVERING AND CORRECTION OF WORK

If any work should be covered contrary to the request of the Landscape Architect, it must, if required by the Landscape Architect, be uncovered for his observation and

If any other work has been covered which the Landscape Architect has not specificall requested to observe prior to being covered, the Landscape Architect may request see such work, and it shall be uncovered by the Contractor. If such work is found to be in accordance with the contract documents, the cost of uncovering and replacemen shall, by apporopriate change order, be charged to the Owner. If such work is found not in accordance with the contract documents, the Contractor shall pay such costs unless it is found that this condition was caused by a separate contractor employed by the Owner under a separate contract: and in that event, the Owner shall be responsible for the payment of such costs.

The Contractor shall promptly correct all work rejected by the Owner or Landscape Architect as defective or as falling to conform to the contract documents whether observed before or after substantial completion and whether or not fabricated, installed, or completed. The Contractor shall bear all costs of correcting such rejected work.

The Contractor agrees to begin the on-site work not later than ten (10) calendar days after the date of written notice from the Owner or General Contractor authorizing the Contractor to proceed with the work, and that he will work continuously, barring bad weather, until the job is completed and as noted herein. Actual gathering of material, etc., may start after the contract is executed and the Owner issues any necessary purchase orders for the contract amount.

INITIAL COMPLETION AND ACCEPTANCE

Upon receipt of written notice that the work is ready for initial inspection and acceptance, the Landscape Architect or his representative will promptly make an observation visit to the Project and, when he finds the work acceptable under the Contract Documents, he will promptly declare in writing that to the best of his knowledge and on the basis of his observations, the work has been completed in accordance with the terms and conditions of the contract documents.

TECHNICAL SPECIFICATIONS

PART ONE - GENERAL

GENERAL PROVISIONS

Applicable requirements of the General Conditions and other sections of the specification SCOPE

Provide complete landscape irrigation installation as shown.

RELATED WORK

Coordinate with work of other trades. QUALITY ASSURANCE

Irrigation material is specified. The irrigation sytem has been designed according to the operation characteristics of the specified equipment. Therefore, substitutions will not be allowed from the equipment specified or its equal.

The irrigation Contractor is cautioned to defend the hydraulics of this system by following the plans and specifications carefully. Particular attention should be given to operating controllers properly, operating the system after flow controls or section valves have been adjusted to designed operating pressure, and following the manufacturer's recommendations for installation of all items, etc.

REFERENCES

ASTM - American Society of Testing and Materials

D2241 - Poly Vinyl Chloride (PVC) Plastic Pipe (SDR-PR)
 D2287 - Flexible PVC
 D2466 - Poly Vinyl Chloride (PVC) Plastic Pipe Fittings, Threaded, Schedule 40
 F 438 - Poly Vinyl Chloride (PVC) Plastic Pipe Fittings, Socket Type, Schedule 40
 D2464 - Solvent Cements for Poly Vinyl Chloride (PVC) Plastic Pipe and Fittings
 D2855 - Standard Recommended Fractice for: Making Solvent-Cemented Joints with Poly Vinyl Chloride (PVC) Pipe and Fittings

SUBMITTALS

Prior to start of the work, the Contractor is to provide the following: . Five copies of catalog cut sheets indicating the material to be used. 2. Five copies of any required shop drawings.

Prior to initial acceptance of the completed work and payment, the Contractor is to provide the following:

1. Record drawings on reproducible bases. Information to be included will be the dimensional location of irrigation equipment from permanent fixed points such as building walls or corners, sidewalks, curbs, flagpoles, etc. Provide a minimum of two dimensions from permanent fixed points so that the location can be triangulated.

2. Warranties and guarantees provided by the manufacturer on all equipment used.

Printed copies of such warranties and guarantees will be provided of the Owner, with request for final payment.

3. Service and maintenance manuals on all the major items in the installation along with request for final payment.

4. Instruction and maintenance information to the Owner's designated representative.

SEQUENCING

Coordinate installation of system with all other trades on site.

WARRANTY AND MAINTENANCE

Material and workmanship shall have a full warranty for one (1) year after initial acceptance of the system by the Owner. Replacement of defective material or repair of work shall be done at no expense to the Owner during the first year, except for repairs or replacements necessitated by damage of any kind not of the Contractor's making. Any reimbursement for repairs must have prior approval of the Owner.

Raising and lowering heads to proper height, filling trenches that have settled, packing the earth firmly around the heads and quick couplers will all be considered part of the warranty work and done at no charge to the Owner for one (1) year after acceptance

Maintenance and guarantee as stated above does not include alterations necessitated by relandscaping, addition of trees, regrading, or the addition and changes in walks, walls, driveways, or the like. Furthermore, maintenance does not include trimming grass around heads or any service required due to lack of the Owner's maintenance of lawr and plants. It is also expressly understood that the quarantee and maintenance, after initial acceptance, does not cover any mechanical damage, breakage or any repairs or service needed for causes beyond the control of the Contractor.

PART TWO - PRODUCTS

Sprinkler mains are that portion of piping from water source to operating valves. Quick coupling valve lines are considered a part of the sprinkler main.

Lateral piping is that portion of the piping from operating valves to the sprinkler heads. POLY VINYL CHLORIDE PIPE

Poly vinyl chloride pipe, hereinafter referred to as PVC pipe, shall have been manufactured in accordance with the product standards as follows:

Product standard P8-22-70 shall apply and be the governing authority as applicable to mainline piping and shall be per class 200 specification.
 Product standard P8-22-70 shall apply and be the governing authority as applicable to lateral piping and shall be per class 200 specification except for 1/2" which is

3. Marking and identification: All PVC pipe shall be continuously and permanently marked

with the following information: manufacturer's name, pipe size, type of pipe and material, 9DR number, commercial standard number and the NSF-pw (National PYC PIPE AND FITTINGS

All PVC pipe fittings to be Schedule 40, as manufactured by the Sloan Manufacturing Company, Lasco, or Spears.

All PVC fittings shall be of the same material as the PVC pipe specified and shall be compatible with the PVC pipe furnished.

Flexible PVC tubing shall be IPS Flexible Vinyl Pipe as manufactured by Agricultural Products, inc. Flexible pipe should be assembled using standard Schedule 40 PVC fittings and rigid PVC adhesive. Contractor to prime the fitting and the flexible PVC. SOLVENT CEMENT AND PRIMER

Solvent Cement and purple tinted primer to be NSF approved. All solvent joints to be primed prior to applying coment.

Flexible PVC tubing to be welded only with IPS-795 solvent. Assemble pipe and fittings according to manufacturer's directions.

Copper tube to be Type 'M', hard, straight lengths, of domestic manufacturer. No copper tube of foreign extrusion or any so-called irrigation tubing, thin wall,

COPPER TUBE FITTINGS

Copper tube fittings to be cast brass or wrought copper, sweat-solder type. Fittings to be attached to the tubing in an approved manner, using 50-50 acid core lead free soft solder.

All valve wiring shall be 14 gauge minimum (or as required by length of run) copper single-conductor wire with 4/64 vinyl insulation as approved for direct underground burial in 30 volt AC or less service by the National Electrical Code.

Wires are to be bundled and taped together every ten (10) feet. System common wire to be white and signal wires are to be color coded for each

Expansion coils, which are to consist of approximately ten (10) wraps of wire around

fest, at each splice and at each corner. MECHANICAL CONNECTORS

Bu Weathermatic or King Brother WATERPROOF WIRE CONNECTORS

Wire splices to be made with a mechanical connector according to the manufacturer's specifications. All splices are to be permanent and waterproof.

BACKFLOW PREVENTION DEVICE

This assembly, as required by local ordinance, shall conform to all local and state

ELECTRICAL POWER

Permanent 120 volt AC power into the automatic controller(s) will be furnished by

Permanent 120 volt AC power will be hardwired to the controller by the site electrician. irrigation Contractor to coordinate hookup.

ELECTRICAL SOLENOID VALVES

Plastic valves with isolation PVC ball valves by Weathermatic, or Rainbird, sized as Valve types: 1. Weathermatic 11000 CR 2. Rainbird PEB Series

Valve boxes - Ametek plastic fiber unit. Solenoid valves - 12" x 17"

QVC Units - 10' round Main line isolation valves - 2 1/2" and smaller: 10" round

CONTROLLER:

Shall be as specified on plans.

Controller shall be housed in a weatherproof cabinet. All controllers shall be equipped with a key lock or hasp.

Shrub Spray Heads: Brass, full or part circlet by Rainbird or Weathermatic. Heads to be installed on copper risers.

Bubbler Heads: Pressure compensating type: by Weathermatic or Rainbird. Pop Up Spray Heads: Brass nozzle, a pop-up of four (4) inches with plastic poly carbonate body: by Weathermatic or Rainbird.

12 Inch Pop Up Spray Heads: By Weathermatic or Rainbird. Rotary Heads: Gear drive, minimum three (3) inch pop-up and constructed in such a way that the head may be repaired, cleaned, or serviced without removing from piping by Hunter.

Quick Coupler: Brass one-piece unit: by Weathermatic or Rainbird. RAIN SENSORS

Provide model rain sensor as specified on the plan. Contractor to provide any labor and material necessary to permanently install the rain sensor. Any exposed wiring will be installed in EMT electrical conduit. Exact location of sensor to be approved by Owner.

Provide model freeze sensor as specified on the plan. Contractor to provide any labor and material necessary to pemanently install the freeze sensor. Any exposed wiring will be installed in EMT electrical conduit. Exact location of the sensor to be approved by

SLEEVES Shall be installed by the General Contractor - minimum 24" below vehicular paving

PART THREE - EXECUTION

All material shall be installed in strict accordance to the manufacturer's installation specifications, which shall be considered a supplement to these specifications.

Piping layout indicated is diagrammatic only. Route piping to avoid plants and

Review layout requirements with other affected work. Coordinate locations of sleeves under paving to accommodate system.

Protect landscaping and other features remaining as final work All material shall be installed in strict accordance to the manufacturer's installation

specifications, which shall be considered a supplement to these specifications. Verify underground utility locations prior to commencing work Contractor to keep premises clean and free of trash during construction.

Material storage not to interfere with work of other trades. EXCAYATION, BACKFILL & PROTECTION OF SHRUBBERY, GENERAL

All excavation in this contract shall be unclassified and is to include earth, loose rock, rock, or any combination thereof, in wet or dry state. All trenches shall be backfilled with the material removed, except where special backfill specifications of certain pipe may specify otherwise. In this case, the special backfill specifications shall take precedence over this general specification.

All trench backfill shall be water settled and compacted in order to return to existing

Where the area is not sodded, all trenches and adjoining areas shall be hand-raked to leave grade in as good or better condition than before installation. Strubs shall not be moved or damaged, except in cases where it is impossible to make the installation otherwise. Then shrubs may be moved, provided ample precautions are

taken to prevent damage to the shrubs, and replaced as originally installed.

Trees shall not be moved or damaged. In the case of newly planted trees, no diggin shall be done within the ball of the tree. Where existing tree roots are encountered, root over 3/4 inch in diameter shall be cut. No mechanical trenchers are to be used within the drip line of existing trees. ELECTRICAL WORK

All labor and material to connect controllers to electrical service are to be furnished by

Power shall be hard wired into the controller by the General Contractor. PIPE INSTALLATION

All pipe is to be inspected prior to the installation. Pay particular attention to mechanical damage resulting from shipment, storage, and to defects which occur during extrusion. Such defective pipe shall be removed from the site at the end of each day. The Landscape Architect shall have the option to accept or reject pipe that does not appea to be of good and uniform quality.

Mainline Piping: All four (4) inch and smaller PVC mainline shall be solvent-weld type Pips shall be installed in a six (6) inch minimum wide trench with a minimum cover of eighteen (18) inches. Lay pipe side to side, do not stack in trench.

Slesves: To be two (2) times diameter of pipe to be slesved 24" below paving. Electrical conduit for control wires to be sized as required.

Trenching: Remove all lumber, rubbish and rocks larger than one (1) inch in diameter from the trenches. Provide a firm, uniform bearing surface for the entire length of each pipe line to prevent uneven settlement. Wedging or blocking of pipe will not be permitted. Pad the trenches with two (2) inches of sand or clean backfill around the pipe if the soil is extremely rocky.

large solid clode of one (1) inch diameter or larger. Compact mainline trenches to 30

PYC PIPE INSTALLATION

Piping Layout: Piping layout is diagrammatic. Route piping around existing and planned trees and strubs in such a manner as to avoid damage to, or interference with, plantings. Where shown under paving for graphic purposes, locate in planting areas. Verify with Landscape Contractor. Do not dig within ball of newly planted trees or

All foreign matter or dirt shall be removed from inside of the pipe before welding

Piping shall be kept clean by approved means during and after laying of pipe. Handling of PVC pipe: The Contractor is cautioned to exercise care in handling, loading

PYC PIPE AND FITTING ASSEMBLY

Contractor shall use only the solvent supplied and recommended by the FVC pipe manufacturer to make solvent-welded joints. The pipe and fittings shall be thoroughly cleaned of dirt, dust and moisture before applying solvent. The Contractor shall make solvent welds with a non-synthetic bristle brush in the following sequence:

- 1. Apply an even coat of solvent to the outside of the pipe. Then, apply solvent to the inside of the fitting and reapply a light coat of solvent to the outside of the pipe, making sure that coated area on the pipe is equal to the depth of the
- 2. Insert pipe quickly into the fitting and turn the pipe approximately 1/4 turn to distribute the solvent and remove air bubbles. Check all tees and ells for
- correct position, then hold joint for approximately 15 seconds so that pipe does not bush out from the fitting. 3. Allow at least 15 minutes set-up time for each welded joint before moving.
- 4. On PVC to metal connection, the Contractor shall work the metal connect first. A non-hardening pipe dope such as Permatex *2, or equal, shall be used on all threaded PYC to metal joints, and light wrench pressure is all that should

in close coordination with Landscape Architect or Owner. The controller shall be firmly

be used (or use Teflor tape with light wrench pressure).

5. Where threaded PVC connections are required, use threaded PVC adapters into which the pipe may be welded. Teflon tape will be used on threads.

AUTOMATIC CONTROLLERS The automatic controller(s) shall be installed in the location as shown on the plan and

mounted on the wall with anchors or with mechanical expander-type bolts. Valve wiring from the controller to 12" below grade shall be run in metal conduit firmly mounted to wall. Buried end of conduit shall be sealed with silicone or foam insulation sealer after all valve wiring has been installed.

All wall penetrations shall be sealed with a silicone or foam insulation sealer. ELECTRIC SOLENOID VALVES

Electric solenoid valves shall be supplied in accordance with the specifications and sized according to the plan. Valves shall be installed in a level position and deep enough so that there will be at least ten (10) inches of cover. Locate 12' minimum from paving or buildings--locate

in bed areas where possible. Manufacturer's specifications and installation instructions for the valve supplied shall become a part of these specifications.

Each valve shall be housed in a valve box as previously specified. QUICK COUPLING VALVES

Joints. Draw all Joints tight enough to prevent leaking.

Each quick coupler valve is to be staked with rebar and clamped with a stainless Quick couplers shall be installed on a swing joint riser consisting of not less than three (3), 90 degree threaded PVC ells and nipples with Teflon tape on all threaded

Quick coupler valves shall be housed in a valve box as previously specified. COPPER TUBE FITTINGS

All copper tube fittings shall be cast brass or wrought copper, sweat-solder type.

Fittings shall be attached to the tubing in an approved manner, using 50-50 soft solder, except where special application may require another method of attachment. These special applications will be covered by the specifications elsewhere. HEAD INSTALLATION

Backfill shall be specially tamped under the head flange and around the head for a

-GEAR DRIVEN MOTOR AS SPECIFIED

· VALVE BOX FLUSH WITH FINISH GRADE

not to scale

PEA GRAYEL

FINISH GRADE

3/4" STREET ELL SCH. 40

3/4" FLEX PVC TEE

STREET ELL (S X MIPT)

(10" - 12" LONG)

SCH. 40 PVC TEE

distance of one (1) foot by a suitable means, after trench backfill has dried from

HEAD ADJUSTMENT/OPERATING PRESSURE

All irrigation heads shall be checked for proper operation and proper alignment for

After system is thoroughly flushed and ready for operation, each section of irrigation heads must be adjusted to control pressure at heads. Use the following method, one section per time: Remove last head on section and install a temporary riser above grade. Install tee with pressure gauge attached on top and reinstall head with nipple onto tee. Correct operating pressure per manufacturer's recommendation.

All nozzling shall be checked for proper arc of spray. Prevailing wind conditions and area to be covered will determine correct arc of spray of all nozzles. In case the nozzle arc of epray is not correct, nozzles shall be changed to provide correct

SHRUB SPRAY HEADS

Strub spray heads to be supplied in accordance with the specifications. Nozzling shall be in accordance with the plan and specifications. The correct degree of arc of nozzle shall be determined by the area to be covered and by the wind conditions that

Strub heads shall be installed on risers sufficiently high to water over strubs and plants when they have reached their ultimate growth, except those strub heads which are indicated on risers two (2) inches above grade in order that they will spray under

BUBBLER HEADS

Bubbler heads to be placed alongside the tree ball inside the water basin.

A PVC flexible nipple of a length not less than twelve (12) inches shall be used to install the head onto the lateral piping.

Pipelines for sections of spray heads must be flushed with nozzles removed. Replace heads, being careful not to get dirty water or debris in the riser. POP-UP ROTARY SPRINKLERS

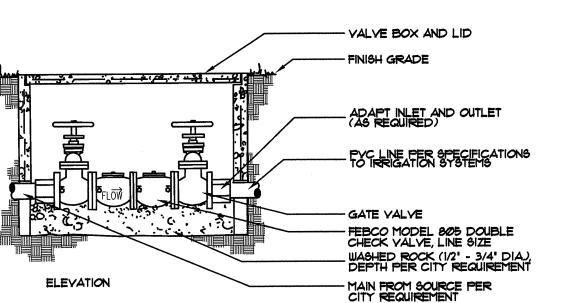
threaded joints. Draw joints snug. Pipe lines for sections of rotary heads must be flushed with heads removed. Replace heads, being careful not to get dirty water or debris in the riser.

The Contractor is cautioned to provide adequate protection to those using the site. Provide barricades as necessary over holes and trenches and install caution signs in

Pressurize to 75 PSI (static water pressure) for twenty four (24) hours.

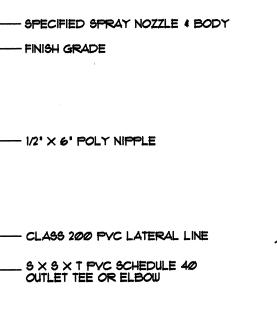
FINAL CLEAN UP

IRRIGATION DETAILS



BACKFLOW PREVENTER

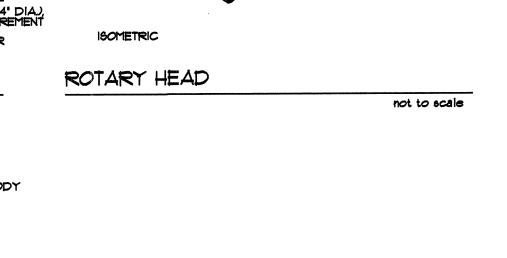
4" POP-UP LAWN HEAD



not to scale

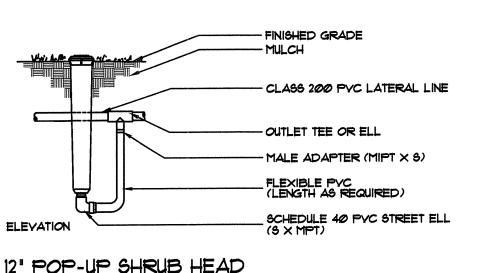
not to scale

(SXSXFIPT) LATERAL LINE (CLASS 200 PVC) ISOMETRIC



REMOTE CONTROL VALVE WITH 24' LONG LOOP OF CONTROL WIRE - SCHEDULE 40 PVC FITTINGS ISOMETRIC

ELECTRIC CONTROL VALVE



not to scale

LAG BOLTS OR EXPANSION BOLTS
AS REQUIRED - WALL (EXTERIOR OR INTERIOR) - CONTROLLER HARD WIRE 117 YOLT A.C. BEHIND CONTROLLER IN FLUSH BOX - CONTROLLER AS SPECIFIED - KEYED LOCK OR PADLOCK - HARD WIRE 117 VOLT A.C. POWER TO TO FLUSH OUTLET BEHIND CONTROLLER - STEEL MALE CONNECTOR --- 1 1/4" RIGID STEEL CONDUIT --- STEEL SPLICE BOX WITH FRONT ACCESS PANEL RIGID STEEL CONDUIT (SAME SIZE AS CONDUIT BELOW GRADE) CONDUIT SHALL BE PLUMB. - STEEL COUPLING (AS REQUIRED) - FINISH FLOOR ---- Steel Sweep eli - RIGID STEEL CONDUIT BELOW FLOOR OR GRADE

WALL MOUNTED CONTROLLER

REFERENCE SHEET 35 FOR IRRIGATION NOTES AND LEGEND

not to scale

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08/19/11

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REVISIONS

SCALE N/A

DATE 19 AUG 2011

IRRIGATION

TITLE

SHEET

45 of 4

Sleeves shall be sized by the irrigation designer and located on the plan to coincide with the irrigation plans. Irrigation Contractor to coordinate the installation and size of sleeves with the General Contractor. Lateral Piping: Install in four (4) inch minimum wide trench deep enough to allow for installation of sprinkler heads and valves, but in no case with less than twelve (12)

Backfilling of trenches: Because of the expansion and contraction of PVC pipe, proper backfilling is essential. Water flooding of trenches may be necessary before and during backfill. Selected fill dirt or sand shall be used if soil conditions are rocky or contain

Never lay PVC pips when there is water in the trench. Never lay PVC pips when the temperature is below 45 degrees.

coverage at the Contractor's expense. and storing of PVC pipe. Any section of pipe that has been dented or damaged will

may affect coverage.

POP-UP SPRAY HEADS

Underside of flange shall be flush with the finish grade to no more than 1/4 inch

install pop-up rotary heads with a suitable and functional swing joint consisting of not less than three (3), 30 degree threaded PVC ells and nipples with Teflon tape on all

TESTING - MAINS

Owner or Landscape Architect.

lipon completion of the work and before acceptance and final payment will be made, the Contractor shall clean and remove from the site his surplus and discarded materials temporary structures, and debris of every kind. He shall leave the site of the work in a neat and orderly condition equal to that which originally existed. Surplus and waste materials removed from the site shall be disposed of at locations satisfactory to the