NF
Rec Dept
Scott Morgan

FILED
NO. 96.142

'96 OCT 24 A10 :08

BARBARA REED
CLERK

BY _____ DEPUTY

PARK CONSTRUCTION AGREEMENT

THIS AGREEMENT made and entered into this 17th day of OCT., 1996, by and between SUNRIDGE CORPORATION, a Nevada Corporation, as Developer of that certain project known as SUNRIDGE HEIGHTS, located in Douglas County, Nevada, hereinafter referred to as "SUNRIDGE," and DOUGLAS COUNTY, a political subdivision of the State of Nevada, hereinafter referred to as "COUNTY," and the Indian Hills General Improvement District a quasi-municipal corporation formed pursuant to Chapter 318 of the Nevada Revised Statutes.

R E C I T A L S:

1. SUNRIDGE HEIGHTS, is a development encompassing real property located in the northern portion of Douglas County, Nevada, previously the subject of a Tentative Subdivision Map and Special Use Permits for a Planned Unit Development approved, subject to certain conditions, by the Douglas County Board of Commissioners on September 17, 1992 and December 17, 1992.

2. A Development Agreement and Amendment to Development Agreement with regard to the Sunridge Project have been previously made and entered into by the parties hereto. The Development Agreement was recorded in the office of the Douglas County Recorder on the 1st day of June, 1993, as Document No. 308428. The Amendment to the Development Agreement was recorded in the office of the Douglas County Recorder on the 11th day of August, 1993, as Document No. 314844.

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3. The purpose of this agreement is to provide for the construction of a park in the Sunridge project commonly known as Sunridge Park, South and for the reimbursement to SUNRIDGE of residential construction tax revenues collected by COUNTY within the Sunridge Project only. Reimbursement will be based on 67 units and 498 units for a total of 565 units as detailed in the Development Agreements.

4. COUNTY and SUNRIDGE desire to have the construction of the Sunridge Park, South and the payment for that construction to be governed by the terms and conditions of this Agreement.

For good and valuable consideration, and the mutual covenants, conditions, and promises herein contained, the parties do agree as follows:

I.

Construction of Park

SUNRIDGE shall construct improvements on the site of Sunridge Park, South in accordance with the site plan attached as Exhibit "A" and incorporated by this reference. The improvements shall be constructed and completed in accordance with the specifications attached as Exhibit "B" and incorporated by this reference. The specifications for all other improvements and materials not detailed in Exhibit "B" shall be consistent with the improvements and materials utilized in the construction and improvement of the Sunridge Park, North and must be approved by the Parks and Recreation Department.

The Indian Hills General Improvement District Manager

shall be responsible for the construction inspection, management and administration of this agreement to make sure that Sunridge complies with plans and specifications set forth in Exhibits A and B respectfully. All other inspections required by the County as part of the permitting process shall be performed by the Douglas County Building Department.

II.

Reimbursement of Residential Construction Tax

In accordance with the Inter-Local Agreement between the County and Indian Hills General Improvement District entered into concurrently, the COUNTY through Indian Hills General Improvement District, shall pay to SUNRIDGE following completion of the park improvements, certain residential construction tax revenues collected from building permits issued for residences in the Sunridge Heights and Sunridge Heights II subdivisions. The maximum amount of money that is to be reimbursed to SUNRIDGE for the improvement of Sunridge Park, South will not exceed the total residential construction tax revenue collected from the Sunridge Heights and Sunridge Heights II subdivisions less the $267,000.00 previously allocated for improvement of the Sunridge Park, North. Reimbursement shall be made and based on a mutually agreed appraiser's value of improvements only for Sunridge Park, South, land value shall not be included. The appraisal may be performed before the construction of the park so long as it is based upon the improvements set forth in Exhibit B. Following the completion of the Sunridge Park, south and acceptance by Indian

Hills General Improvement District an updated appraisal may be performed to determine the actual value of all park improvements. The appraisal and any updated appraisal shall be paid for by the Developer. Reimbursement shall be made in the amount of the appraisal or the maximum amount of RCT collected from Sunridge Heights and Sunridge Heights II subdivision less the payments made for Sunridge Park, North, whichever is less. In accordance with Douglas County Code chapter 3.26 reimbursement will not occur until the entire Park project is complete (100%) as determined by Indian Hills General Improvement District and an appraisal is completed of park improvements. The County will make payments every six months from RCT collected in the subdivision until reimbursement is completed.

III.

Douglas County Code

The improvements of Sunridge Park, South shall comply with all state and Federal laws, prevailing wage requirements for publicly funded projects, Douglas County Code and the requirement of D.C.C. chapter 3.26 and all ordinances and fees adopted by Douglas County and Indian Hills General Improvement District applied on a uniform basis. The Developer must meet all requirements placed on it by the Community Development Department which are a standard part of the design review and the permitting process.

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IV.

Applicable Law and Attorneys' Fees

This Agreement shall be construed and enforced in accordance with the laws of the State of Nevada. Should any legal action be brought by either party relating to this Agreement or to enforce any provision herein, the prevailing party of such action shall be entitled to reasonable attorneys' fees, court costs and such other costs as may be fixed by the court.

V.

Successors and Assigns

The parties hereto agree that the terms and conditions of this Agreement shall bind and inure to the benefit of the parties' successors and assigns.

VI.

Title to Property

Indian Hills General Improvement District must hold title to the property and by this agreement commits to payment of the full cost of operation and maintenance with no reimbursement or assistance from the County.

VII.

Entire Agreement

This Agreement, together with the Development Agreement and its amendment constitutes the entire understanding between the parties with respect to the subject matter hereof, and supersedes all other agreements, written or oral, between the

parties with respect to this subject matter.

VIII.

Hold Harmless and Indemnification

SUNRIDGE hereby agrees to, and shall hold COUNTY, Indian Hills General Improvement District, their elective and appointive boards, commissions, officers, agents and employees harmless from any liability for damage or claims for property damage which may arise from SUNRIDGE's or SUNRIDGE's contractors', subcontractors', agents', or employees' operations under this Agreement, whether such operations by SUNRIDGE or by any of SUNRIDGE's contractors, subcontractors, or by any one or more person directly or indirectly employed by, or acting as agent for SUNRIDGE or any of SUNRIDGE's contractors or subcontractors. SUNRIDGE agrees to, and shall defend COUNTY, Indian Hills General Improvement District and their elective and appointive board, commissions, officers, agents and employees, from any suits or actions at law or in equity for damage caused or alleged to have been caused by reason of the aforesaid operations.

IX.

Execution of Interlocal Agreement

This agreement and its effect is conditioned upon the execution of an Interlocal Cooperative Agreement between Douglas County and Indian Hills General Improvement District. In accordance with NRS 277.180, one or more public agencies may contract with any one or more other public agencies to perform

any governmental services, activity, or undertaking, which any of the public agencies entering into the contract is authorized by law to perform. Given the effect of this Park Construction Agreement it is necessary that the Indian Hills General Improvement District and Douglas County enter into an Interlocal Cooperative Agreement before the instant agreement takes effect.

X.

Further Assurances

In the event of any legal action instituted by any third party or other government entity or official challenging this Agreement, COUNTY and SUNRIDGE shall cooperate and use their best efforts in defending any such action.

Effective this 17th day of Oct., 1996.

"DEVELOPER"

SUNRIDGE CORPORATION

By: _____
BILL WELLMAN, President

DOUGLAS COUNTY, a political subdivision of the State of Nevada

By: _____
ROBERT L. ALLGEIER, Chairman
DOUGLAS COUNTY BOARD OF COMMISSIONERS

INDIAN HILLS GENERAL IMPROVEMENT DISTRICT

By: _____

* * * * *

STATE OF NEVADA)
) ss.
COUNTY OF DOUGLAS)

On this 17th day of October, 1996, before me, a notary public, personally appeared ROBERT ALLGEIER, personally known (or proved to me to be the person who executed the foregoing instrument, who acknowledged to me that he executed the same freely and voluntarily, and for the uses and purposes therein mention.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year hereinabove written.

CHRISTINA M. CURTIS
Notary Public - State of Nevada
Appointment Recorded in Douglas County
No: 96-3453-5 - EXPIRES SEPT. 17, 2000

Christina M. Curtis
Notary Public

STATE OF NEVADA)
) ss.
COUNTY OF DOUGLAS)

JUDY A. COCLICH
Notary Public - State of Nevada
Appointment Recorded in Douglas County
No: 95-00930-5 - EXPIRES OCT. 3, 1999

On this 17th day of October, 1996, before me, a notary public, personally appeared BILL WELLMAN, personally known (or proved to me to be the person who executed the foregoing instrument, who acknowledged to me that he executed the same freely and voluntarily, and for the uses and purposes therein mention.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year hereinabove written.

Notary Public

STATE OF NEVADA)
) ss.
COUNTY OF DOUGLAS)

On this 5th day of July, 1996, before me, a notary public, personally appeared J. STEPHEN WEAVER, personally known (or proved to me to be the person who executed the foregoing instrument, who acknowledged to me that he executed the same freely and voluntarily, and for the uses and purposes therein mention.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year hereinabove written.

Hazel D. Boudreau-Stone
Notary Public

HAZEL D. BOUDREAU
NOTARY PUBLIC - NEVADA
Appt. Recorded in DOUGLAS CO.
My Appt. Exp. June 25, 1999

400505

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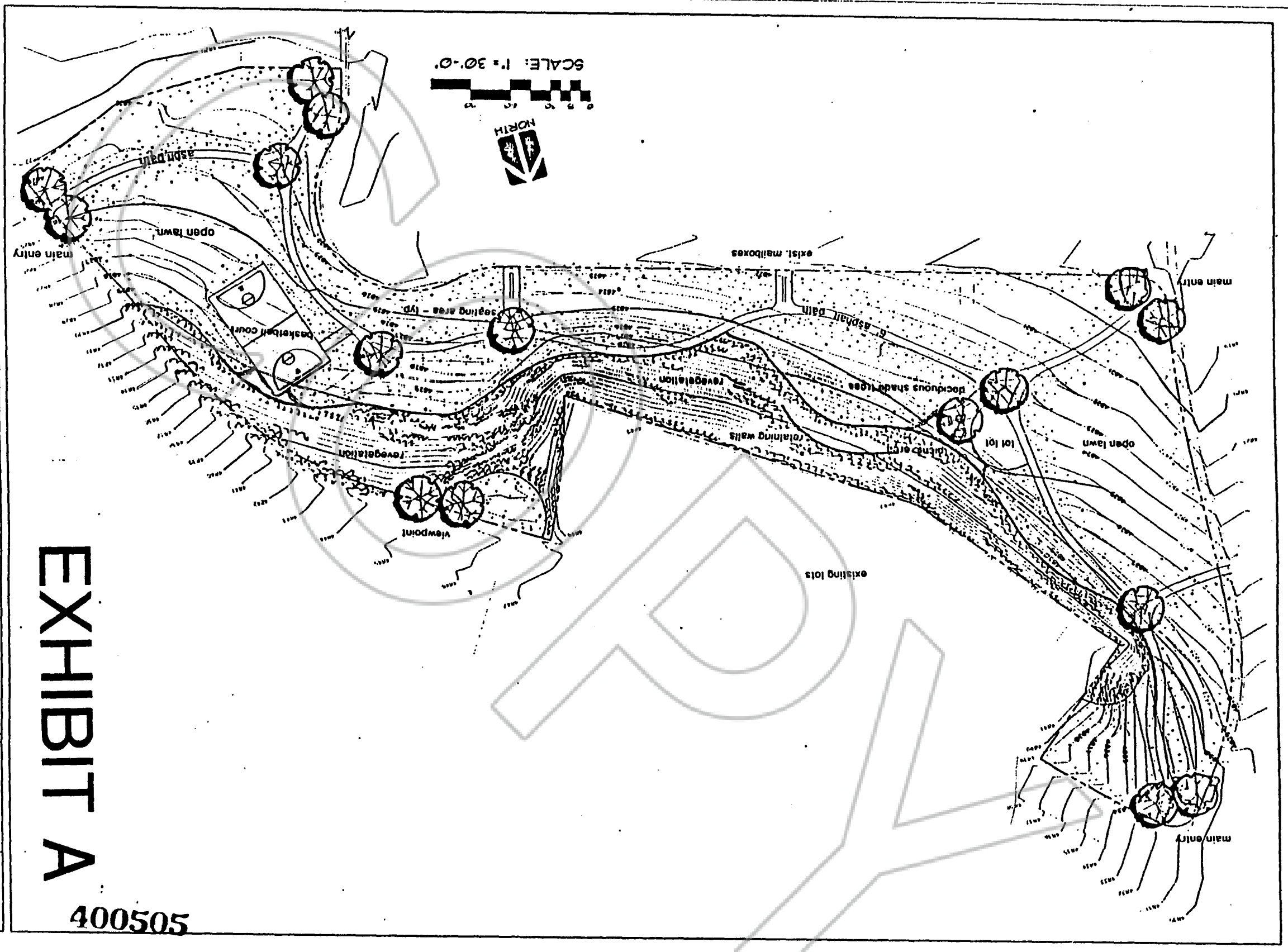
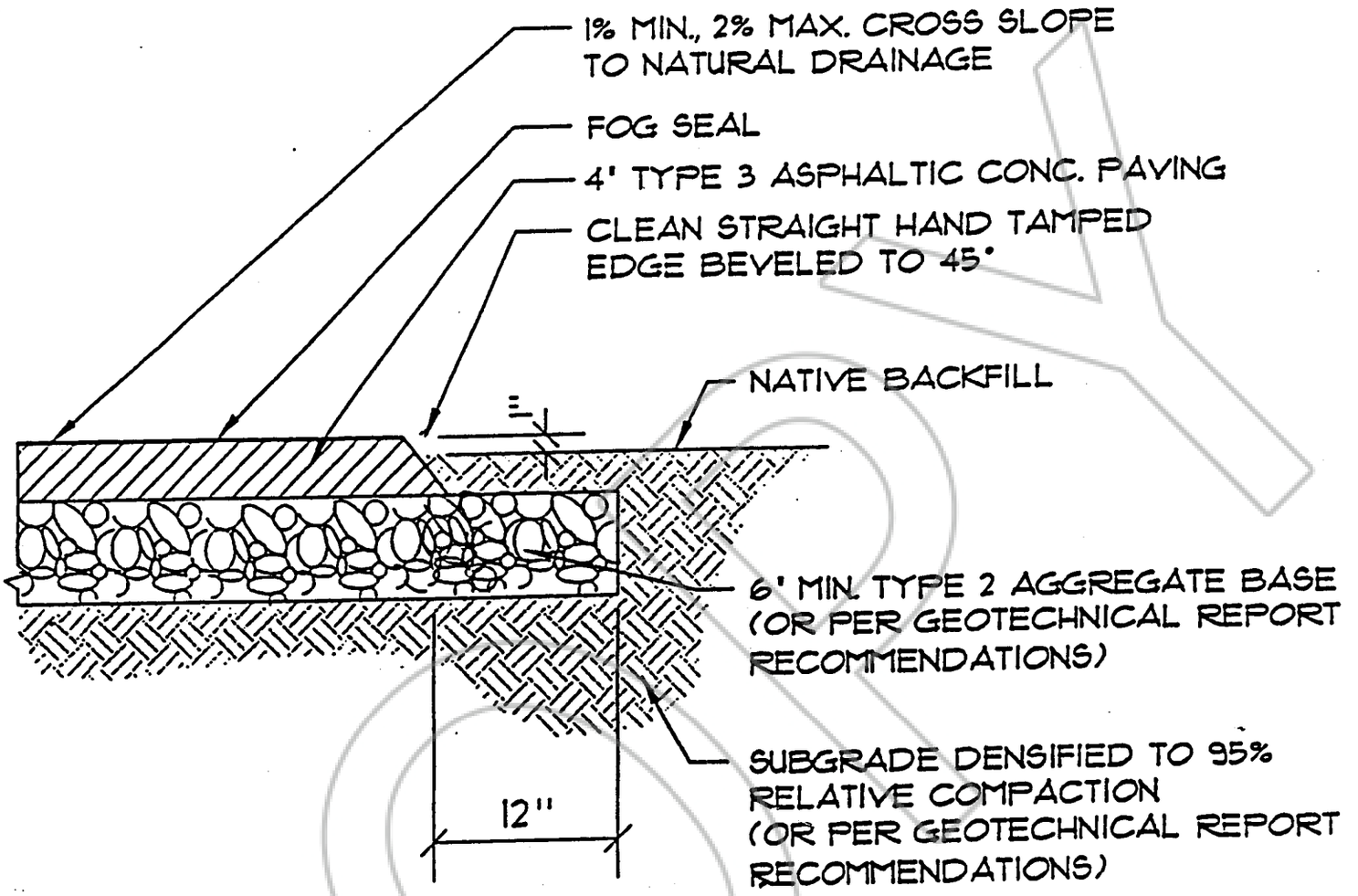


EXHIBIT B

SUNRIDGE SOUTH - NEIGHBORHOOD PARK

Items	Mfg./model#	Approx. quantity	Unit
ITEM 3 - Landscape Elements Irrigation:			
Water meter	Sensus SR	1	each
Gate valve	American 500 series	1	each
Reduced pressure back flow preventer	Febco 825Y	1	each
Automatic controller	Rainbird Turfmaster	1	each
Quick coupler	Rainbird 44 LRC	6	each
Remote control valves	Rainbird EFB-CP	30	each
Rotor pop up sprinkler	Rainbird Falcon	35	each
Rotor pop up sprinkler	Rainbird T-Bird (12"pop up)	50	each
Rotor pop up sprinkler	Rainbird R50C	115	each
Rotor pop up sprinkler	Rainbird T-Bird (4"pop up)	45	each
Drip valve assembly	Rainbird XCZ-100	2	
Drip emitters	Rainbird XB Series	80	
PVC pipe	Cantex schedule 40	-	-
ITEM 4 - Site Furnishings			
8' picnic table	Wabash Valley #S535 w/surface mounts	2	each
6' bench	Wabash Valley #S565 w/surface mounts	3	each
6' hexagon bench	Wabash Valley #GBH721 w/surface mounts	2	each
Barbecue grill	Kay Park #SB1635 w/inground mount	1	each

Items	Mfg./model#	Approx. quantity	Unit
Trash container	Wabash Valley #LRD32 w/ flat top lid, rigid plastic liner and inground mount.	3	each
Revegetation material	Seed Mixture Equal percent per pound of: California Poppy Silvery Lupine Idaho Fescue Pine Bluegrass Bottlebrush Squirreltail Sulphur-Flowered Buckwheat	7 lbs.	acre
Deciduous shade trees	Robinia a. 'Purple Robe' 24" Box	16	each
Tot lot structure	Miracle #CD19939	1	each
Rubber matting for ADA pathway and slide protection	Miracle 'Playsafe' protective surfacing	235	s.f.
Play area surface	Sof Fall playground safety surface	1585	s.f.
ITEM 5 - Hardscape Elements			
Basketball goal	Miracle #360-127 6' offset support w/rectangular board, twin rim goal and chain set	2	each
ITEM 6 - Utilities			
Light standard	Architectural Area Lighting #SLYG PT5-150HPS-120-PR4-4R10	7	each



BASKETBALL COURT AND ASPHALT PATHWAY SECTION

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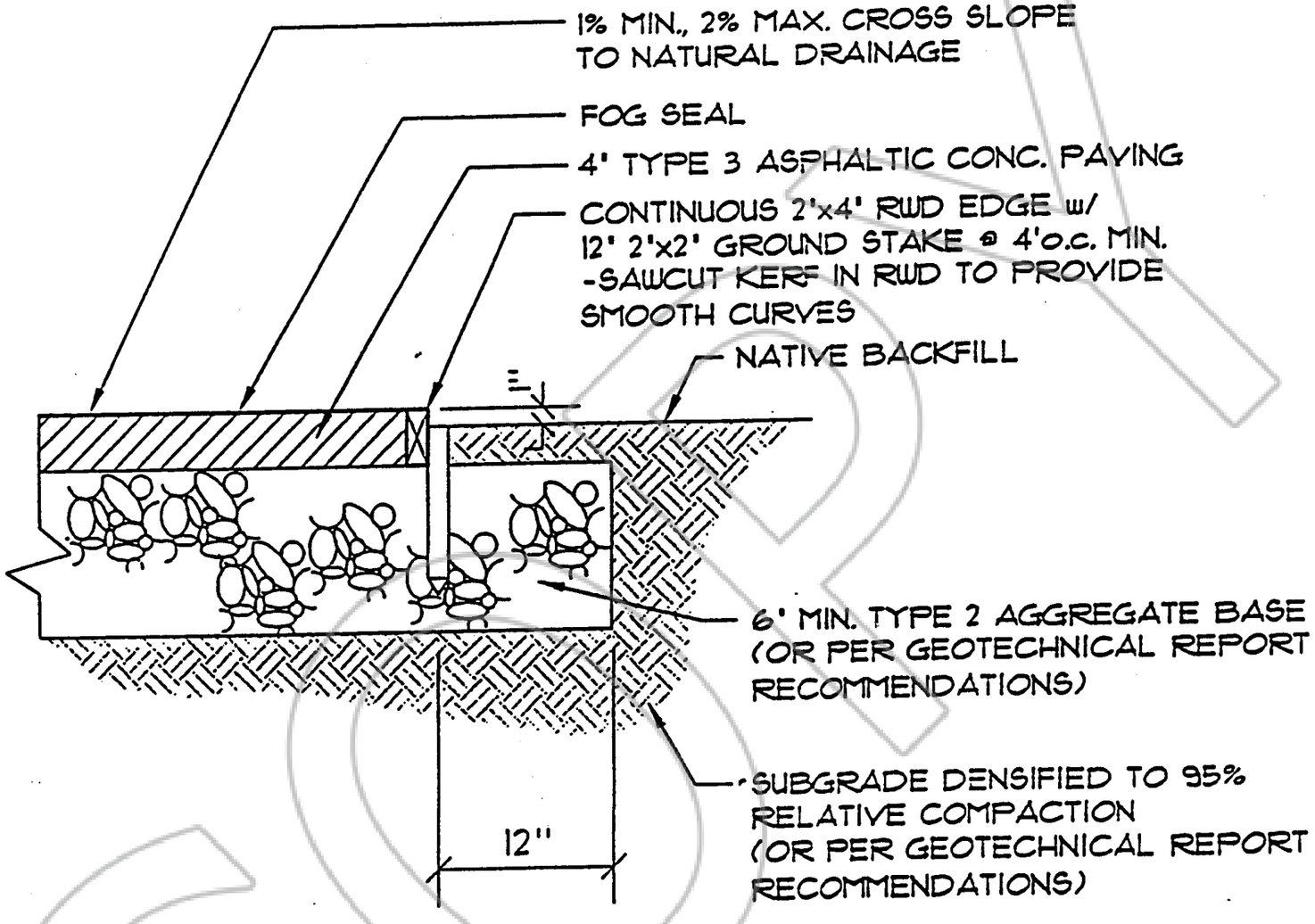
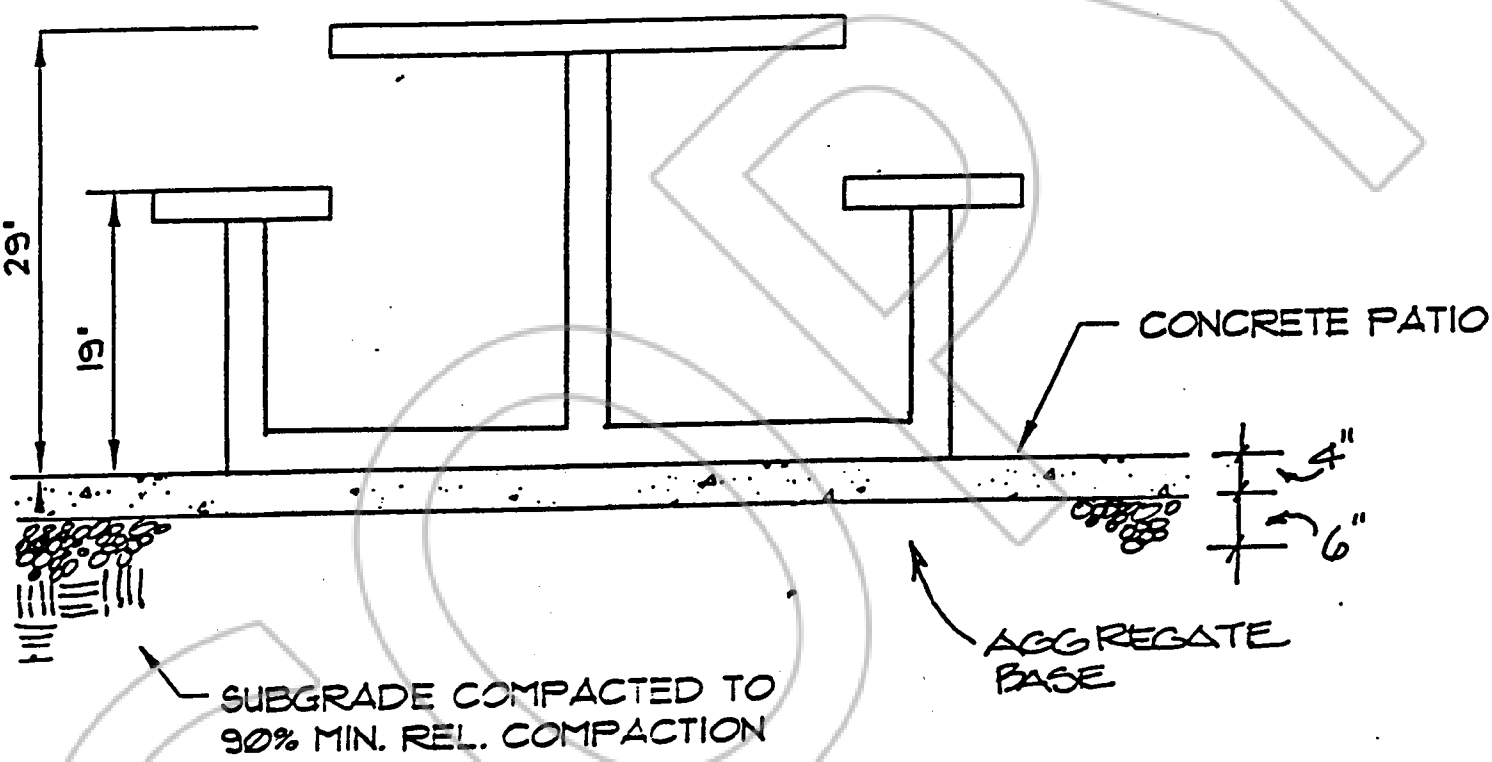
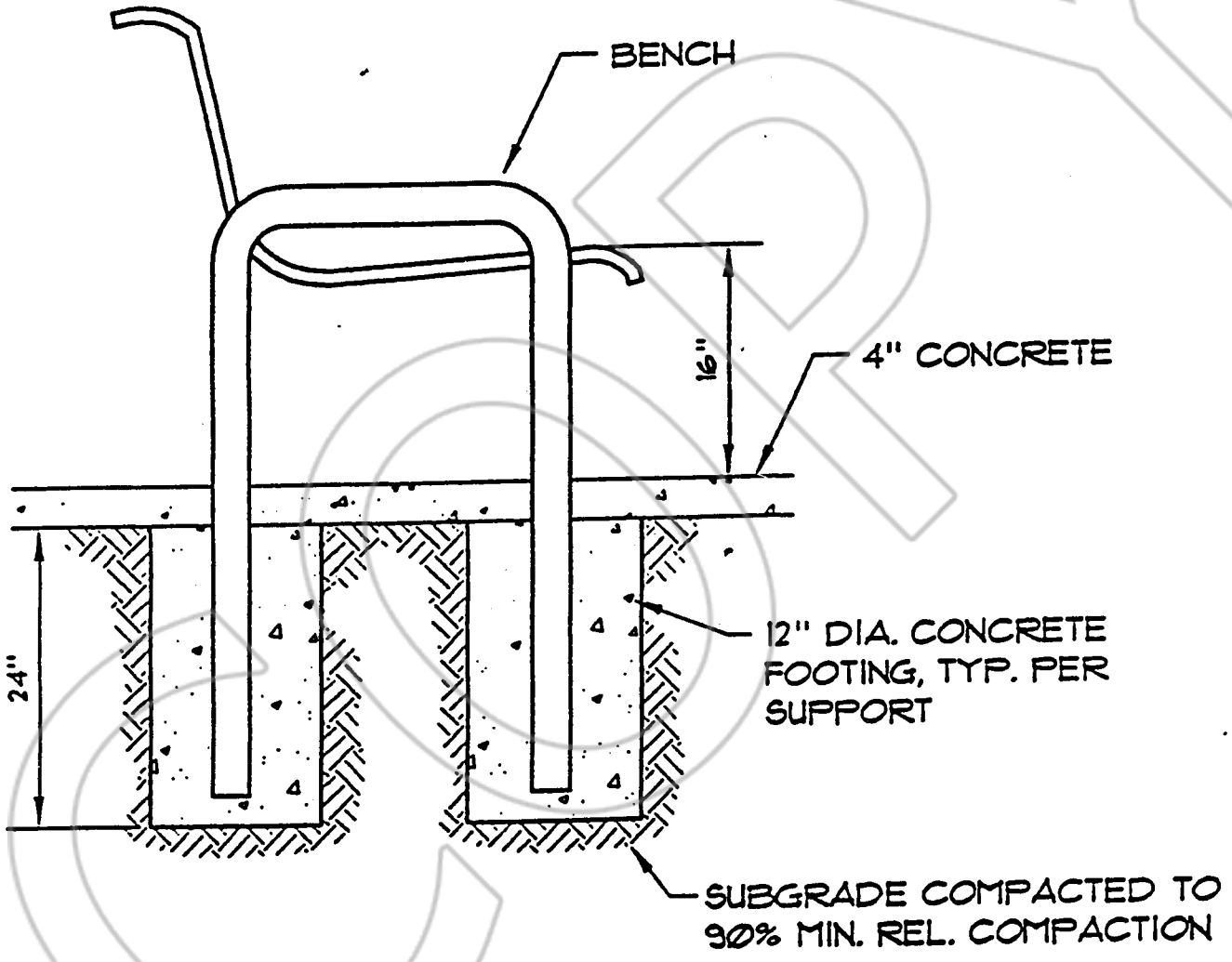


ASPHALT PATHWAY SECTION W/REDWOOD EDGE



PICNIC TABLE



BENCH

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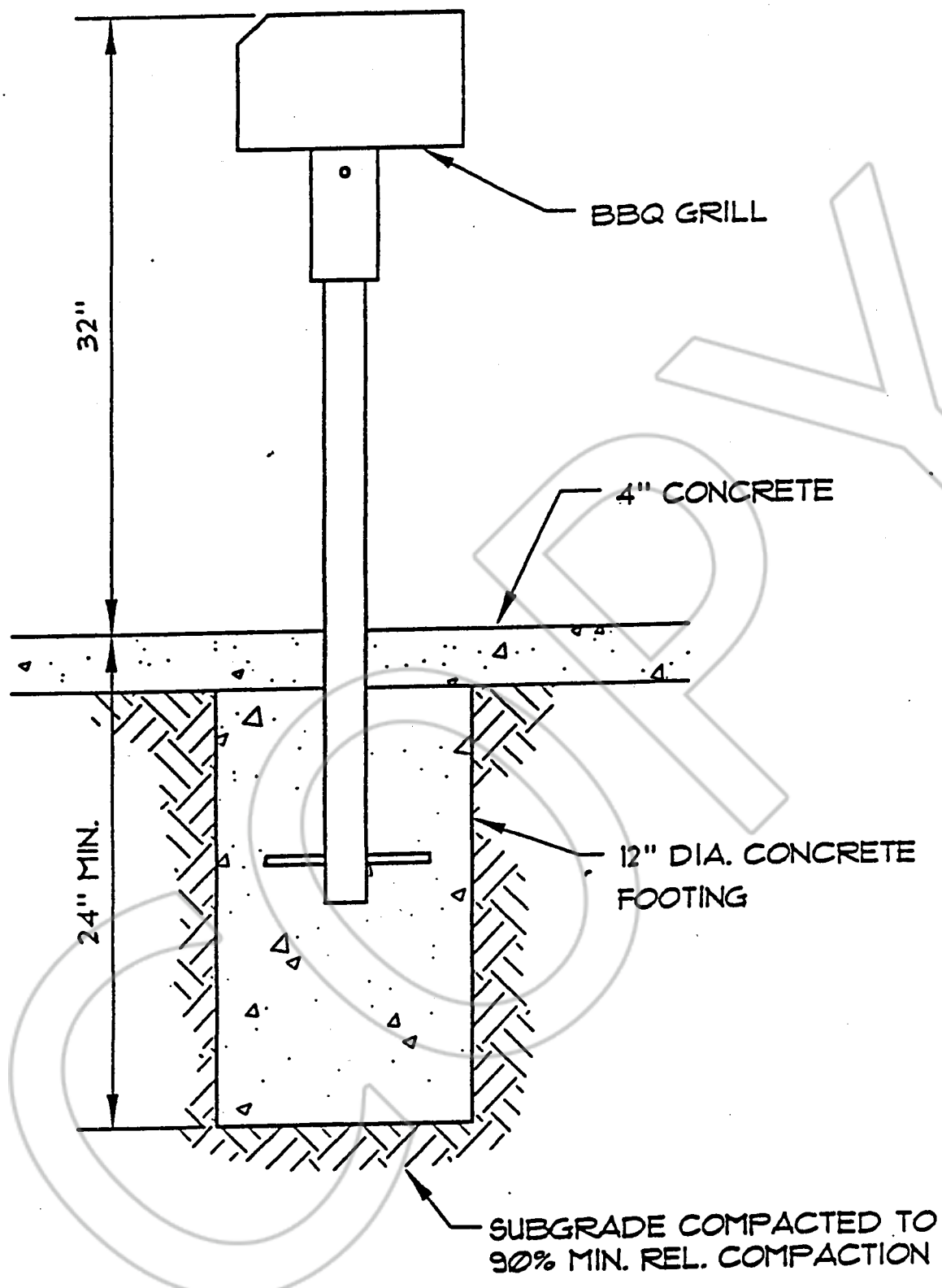

BAR-B-QUE GRILL

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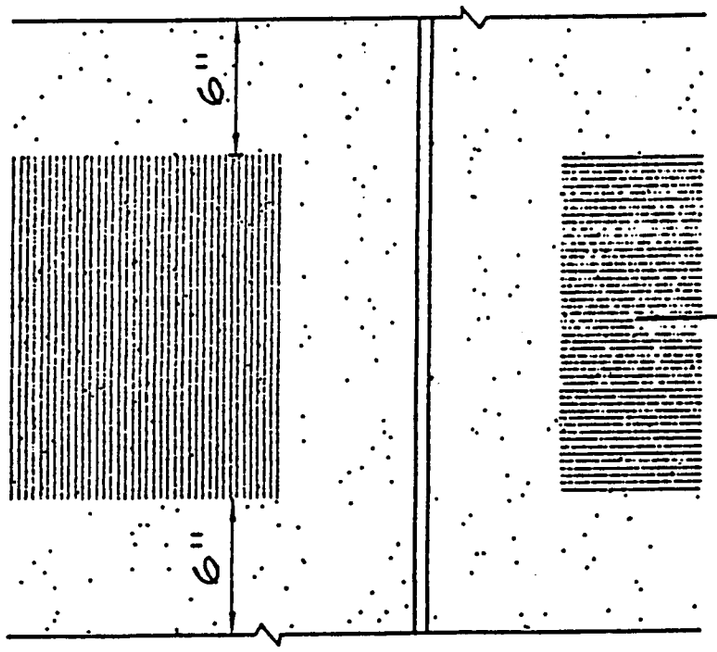
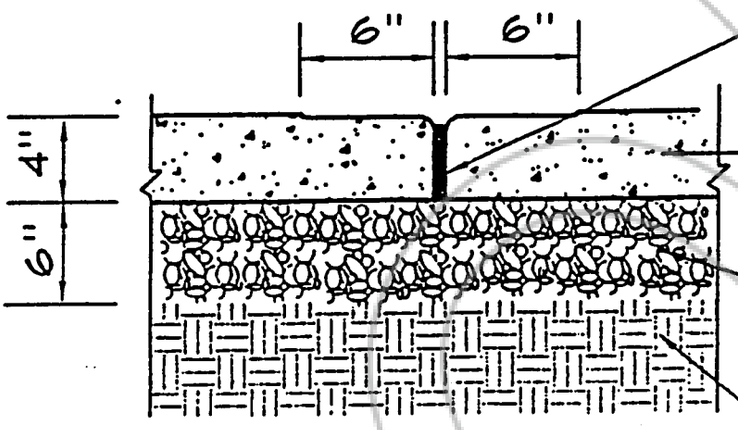


PLAN

FINISH WITH A MEDIUM BROOMED FINISH and WITH 6" SMOOTH TROWELED EDGES (PICTURE FRAME STYLE) - ALTERNATE FINISH DIRECTION



SECTION

1/2" FIBER EXPANSION JOINT, PLACE @ 20'O.C. MAX. - RECESS 1/2" BELOW FINISH GRADE

4" PORTLAND CEMENT CONCRETE 4000 PSI @ 28 DAY DESIGN STRENGTH - MIN. 6.25 SACK CEMENT PER CUBIC YARD OF CONCRETE

6" TYPE 2 AGGREGATE BASE DENSIFIED TO 95% RELATIVE COMPACTION (ASTM D1557)

SUBGRADE COMPACTED TO 90% MIN. RELATIVE COMPACTION (FOLLOW RECOMMENDATIONS OF GEOTECHNICAL REPORT)

NOTE: 1. CONCRETE REINFORCING SHALL CONSIST OF COLLATED, FIBRILLATED POLYPROPYLENE FIBERS AS MFD. BY FIBERMESH OR APPROVED EQUAL. ADD 1½ LBS. FIBERMESH PER CUBIC YARD OF CONCRETE.

CONCRETE SIDEWALK

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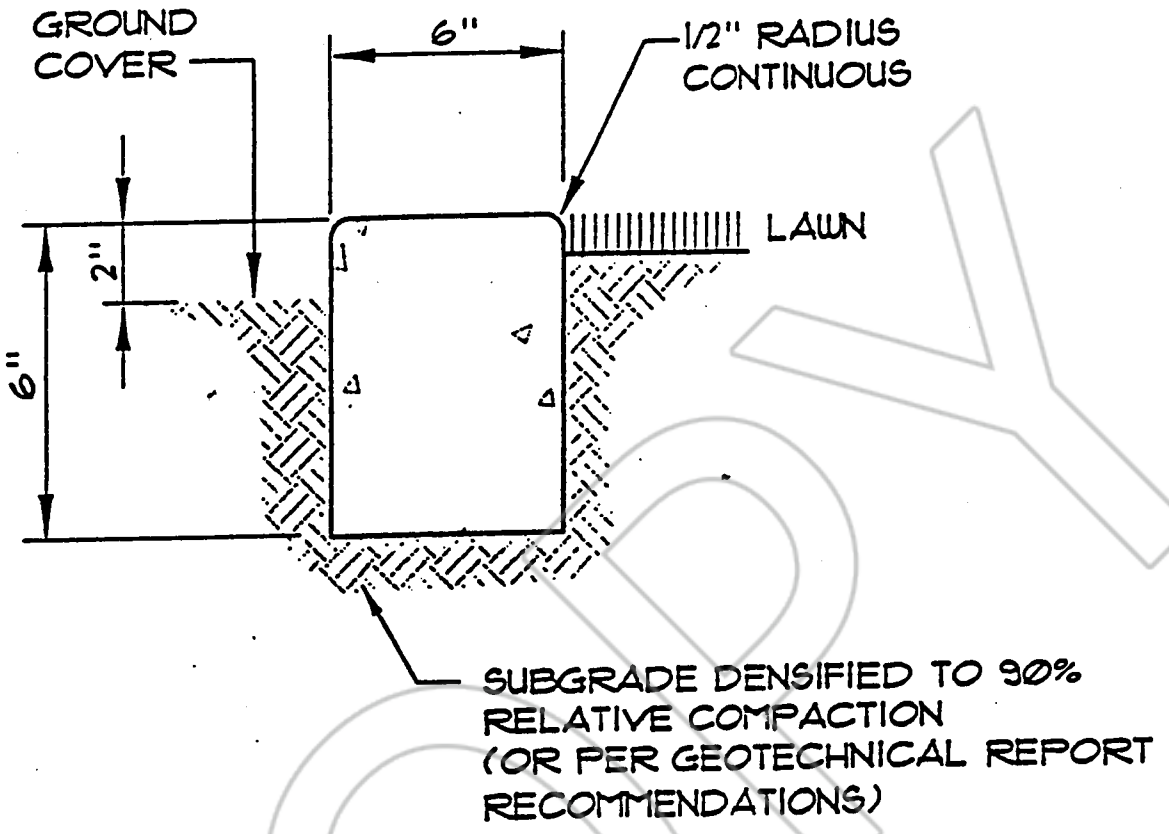

NOTES:

1. PROVIDE EXPANSION JOINTS EVERY 30', WEAKENED PLANE JOINTS EVERY 10'

2. CONCRETE REINFORCING SHALL CONSIST OF COLLATED, FIBRILLATED POLYPROPYLENE FIBERS AS MFD. BY FIBERMESH OR APPROVED EQUAL. ADD 1½ LBS. FIBERMESH PER CUBIC YARD OF CONCRETE.

CONCRETE MOW STRIP

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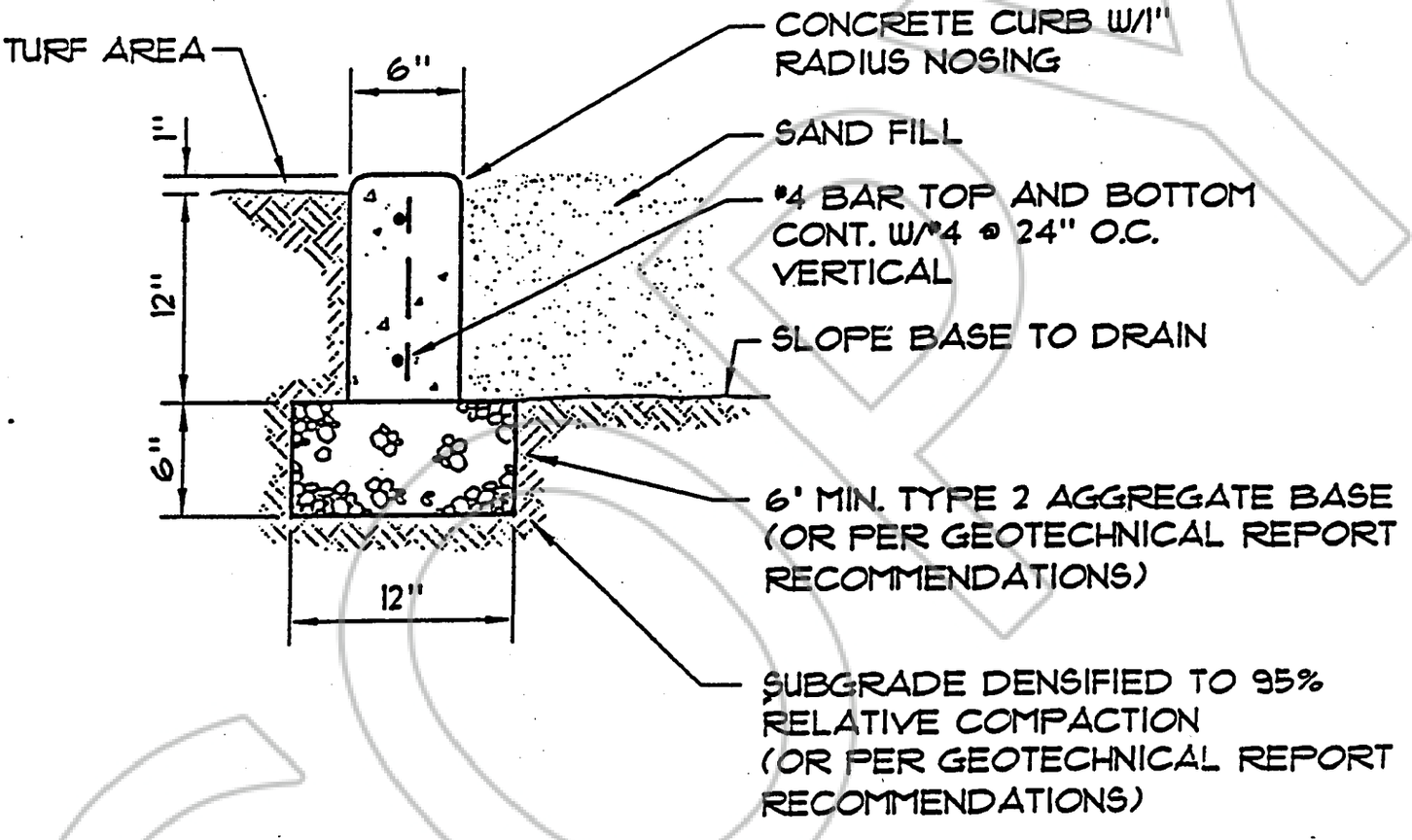

PLAY AREA CURB

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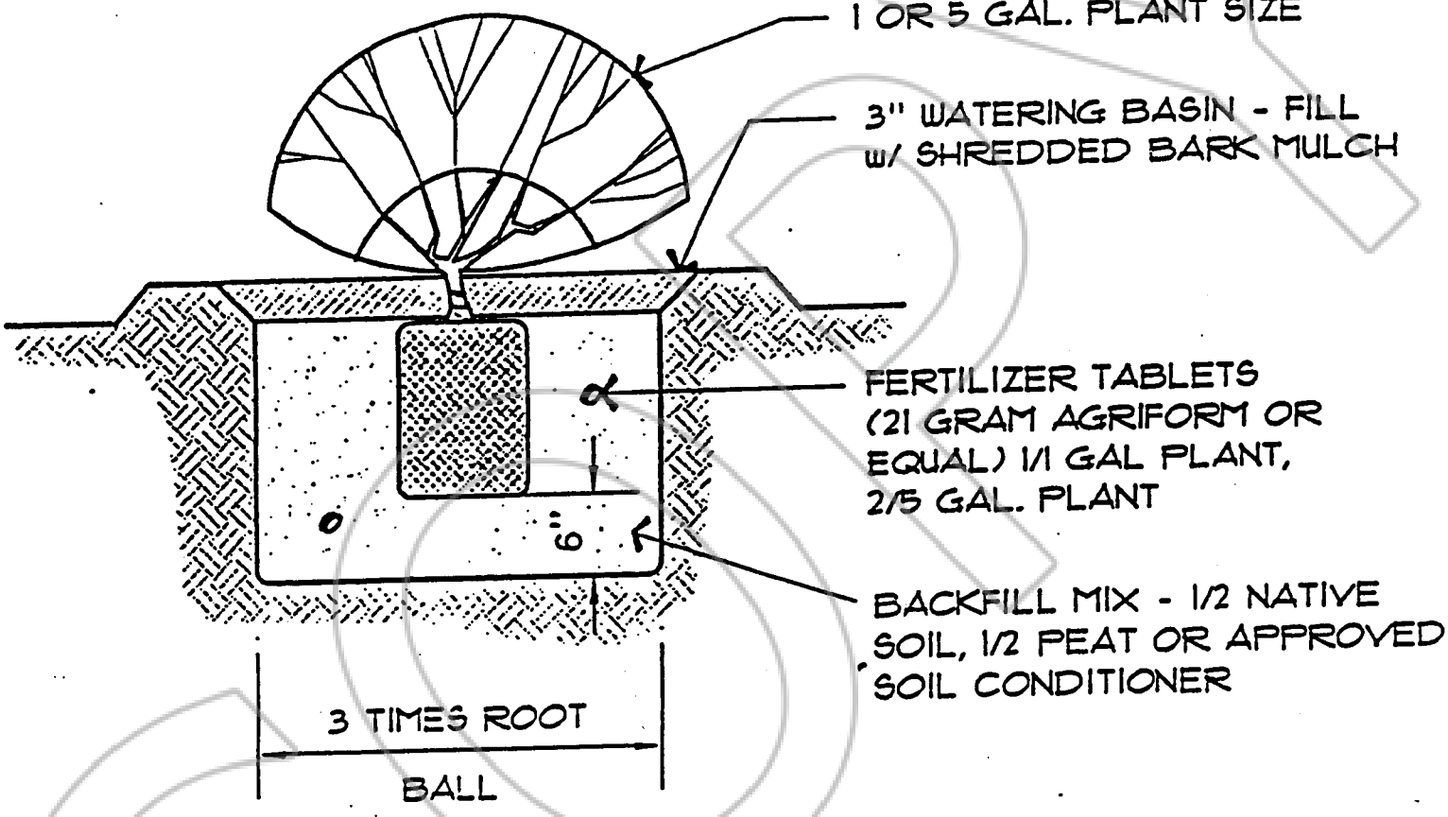

SHRUB PLANTING DETAIL

NOT TO SCALE

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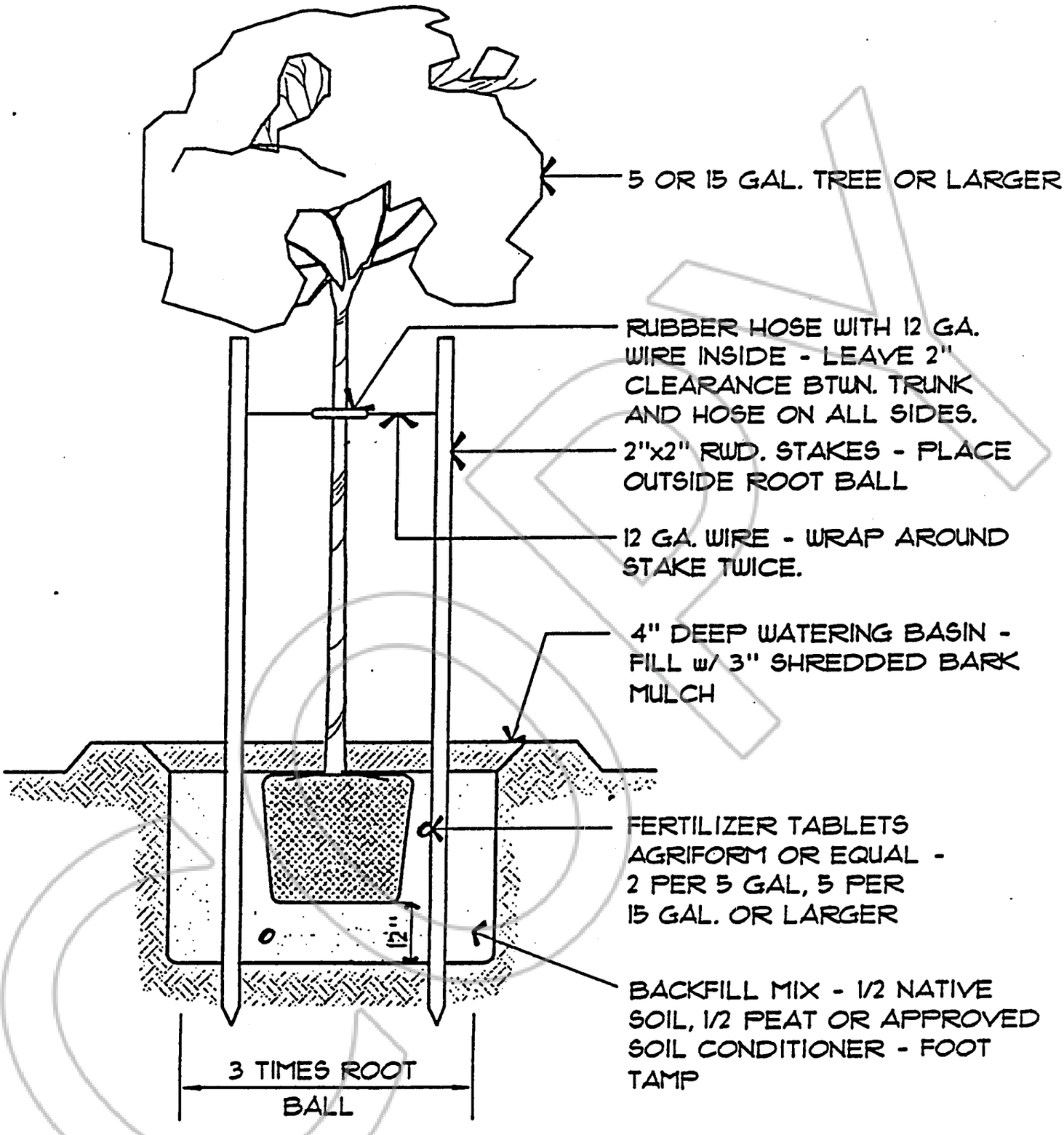

TREE PLANTING DETAIL

NOT TO SCALE

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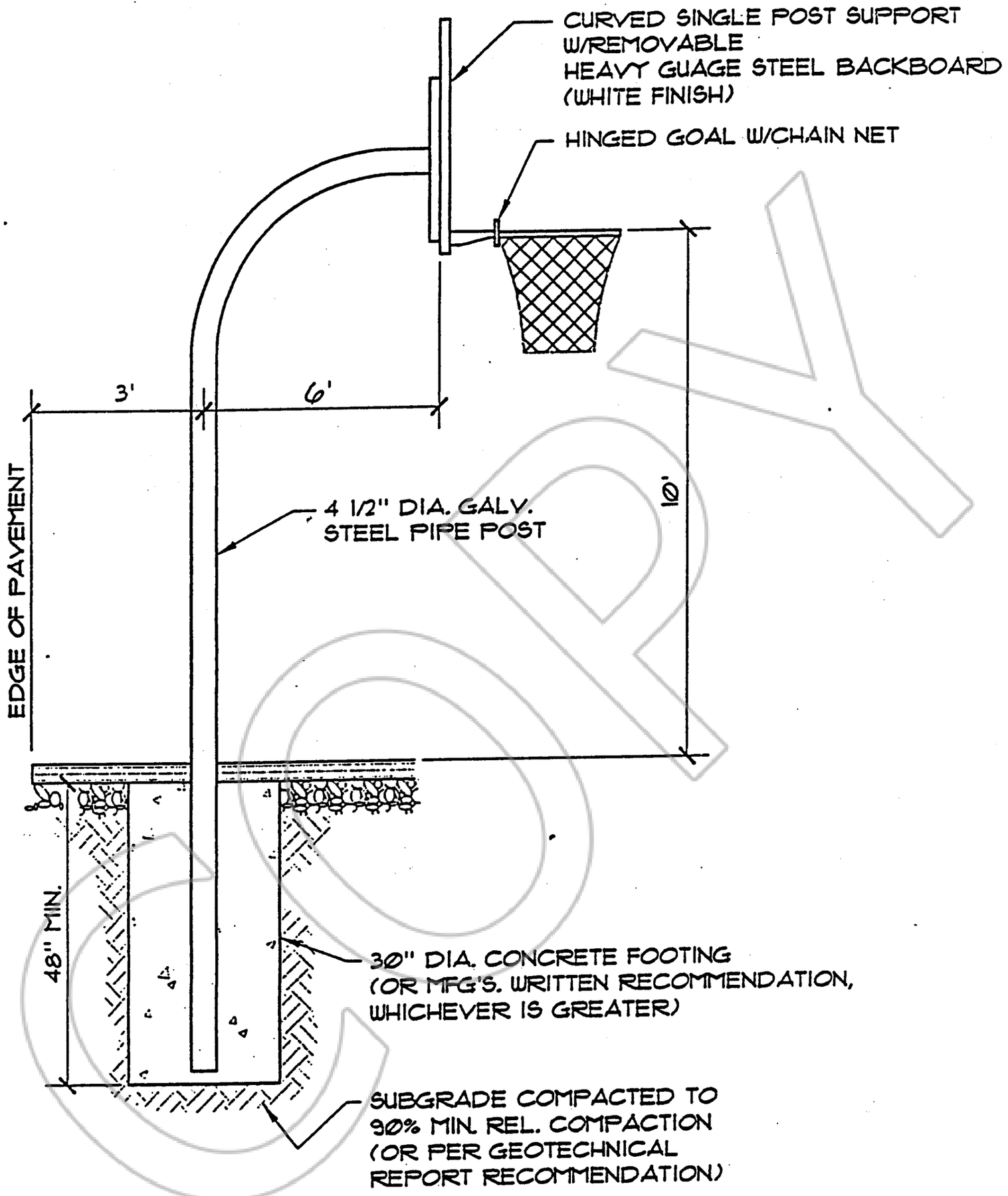

BASKETBALL GOAL

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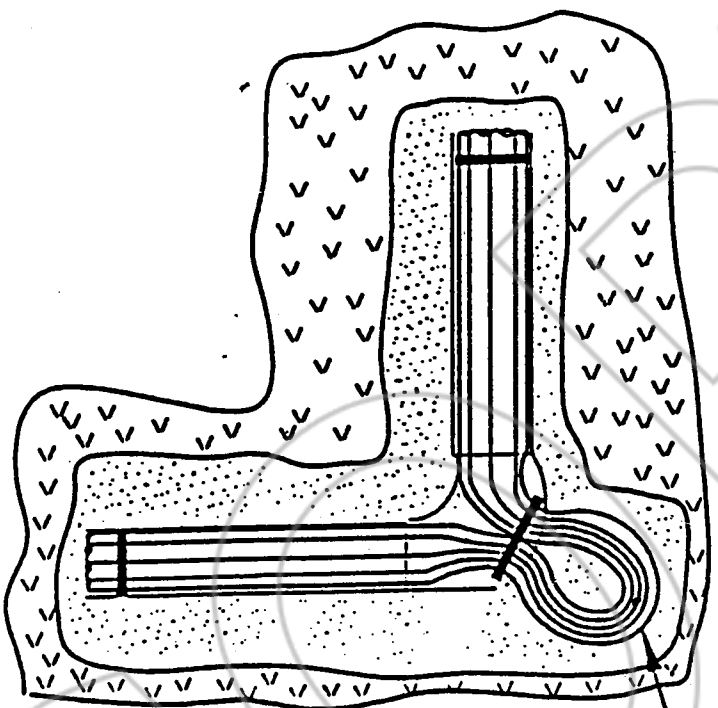

TIE A SURPLUS 36" LOOP IN ALL WIRING AT CHANGES OF DIRECTION GREATER THAN 30°. UNTIE ALL LOOPS AFTER ALL CONNECTIONS HAVE BEEN MADE.

CONTROLLER WIRING

NOT TO SCALE

400505

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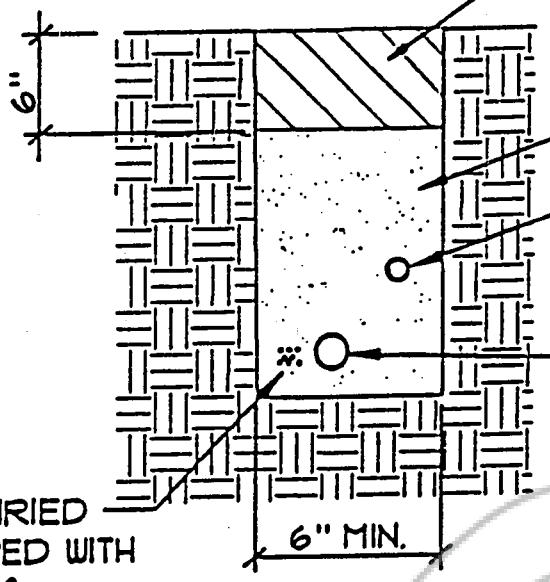


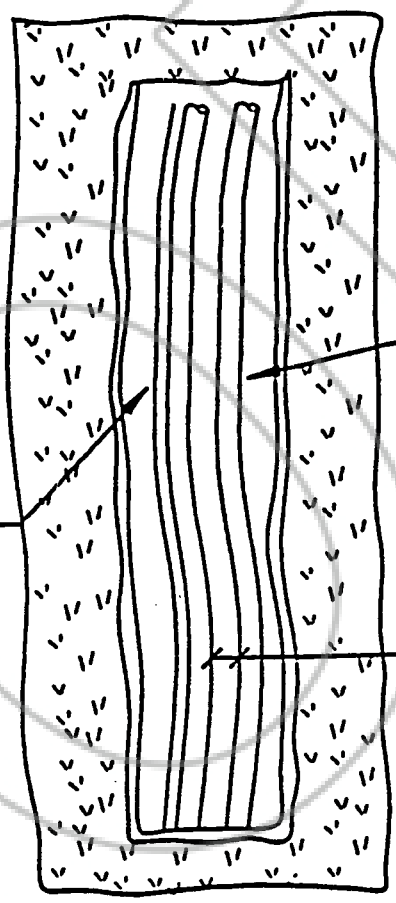
BACKFILL TO BE WATERED DOWN, NATIVE ROCK FREE SOIL, COMPACTED TO 90% RELATIVE COMPACTION, AND GRADED FLUSH

BACKFILL WITH ROCK FREE NATIVE SOIL

LATERAL LINE TO BE PVC SCH. 40 18" DEEP MINIMUM. 3" MINIMUM OF SAND ON ALL SIDES OF PIPE.

MAINLINE PIPE TO BE A MIN. OF 36" DEEP. PVC SCH 40 OR AS NOTED ON PLANS.

CONTROL WIRING TO BE BURIED UNDER MAIN LINE AND TAPED WITH PVC TAPE AT 15' INTERVALS MAIN LINE TO BE A MINIMUM OF 24" DEEP.



ALL PLASTIC PIPING TO BE SNAKED IN TRENCHES AS SHOWN

TAPE AND BUNDLE WIRING AT 5' INTERVALS - ALL WIRE RUNS LESS THAN 500' SHALL HAVE NO SPLICES.

3" MINIMUM HORIZONTAL SEPARATION BETWEEN PIPES

TRENCH DETAIL - LATERAL AND/OR MAINLINE

NOT TO SCALE (WITH WIRING)

400505

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BK 1196 PG 118

MANUAL SHUT OFF VALVE
BRASS INLINE GLOBE VALVE
SIZED SAME AS MAINLINE.
W/CROSS TOP

E KING TECHNOLOGY
IE STEP, CONNECTORS
ROVIDE 3' OF COILED WIRE EXTRA
EACH BOX.

CH 80 PVC NIPPLE, SIZE AS REQUIRED

CLEAR BOX
OM NIPPLE

'C SCH 40
IP & THREAD
OUPLER

4" OR 1"
BING

OX VALVE
KTENSIONS
S NEEDED

RESSURE REGULATOR
SPECIFIED (PRESSURE RATING
N PLAN SHEET)

RE STRAINER W/ DRAIN VALVE - AMAID 39-0-13
MANUAL FLUSH VALVE @ 155 MESH SCREEN

ANUAL FLUSH VALVE
TH MIN. OF 1 INCH
LEARANCE AT BASE

BROOKS BOX No. 1730 W/BOLT DOWN LID
LABELED 'IRRIGATION' (OR EQUAL)

BOX TO BE LEVEL AND
FLUSH WITH GRADE

SEE LEGEND FOR MODEL AND SIZE.

SCH. 80 PVC NIPPLE

PVC SCH 80 NIPPLE &
ELBOW, SAME SIZE AS VALVE

MAIN LINE PVC SCH. 40
MINIMUM DEPTH 36"

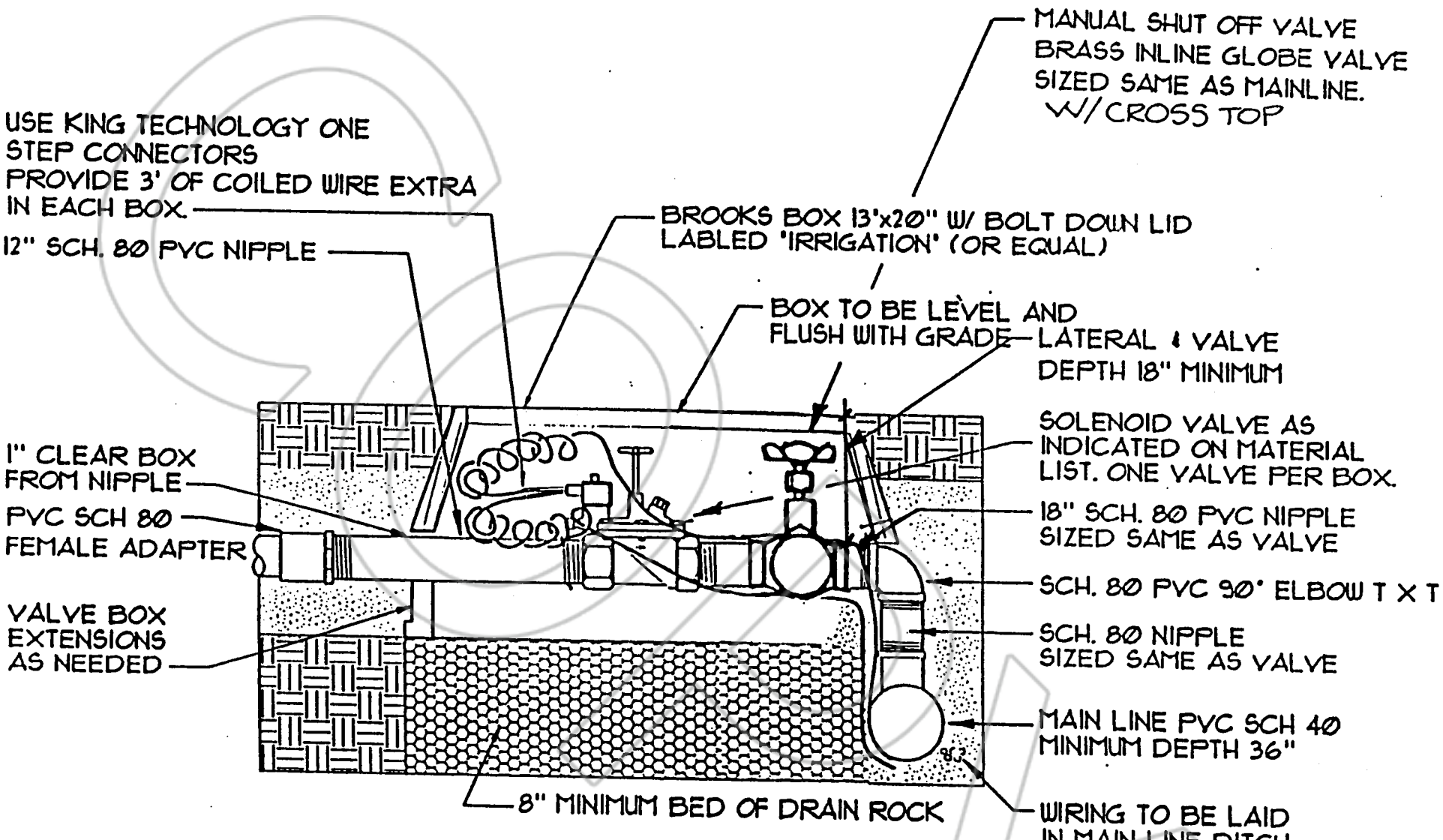
WIRING TO BE LAID IN MAIN
LINE DITCH AND TAPED 15' O.C.

8' MINIMUM BED OF DRAIN ROCK

1" TO 3/4" ADAPTER

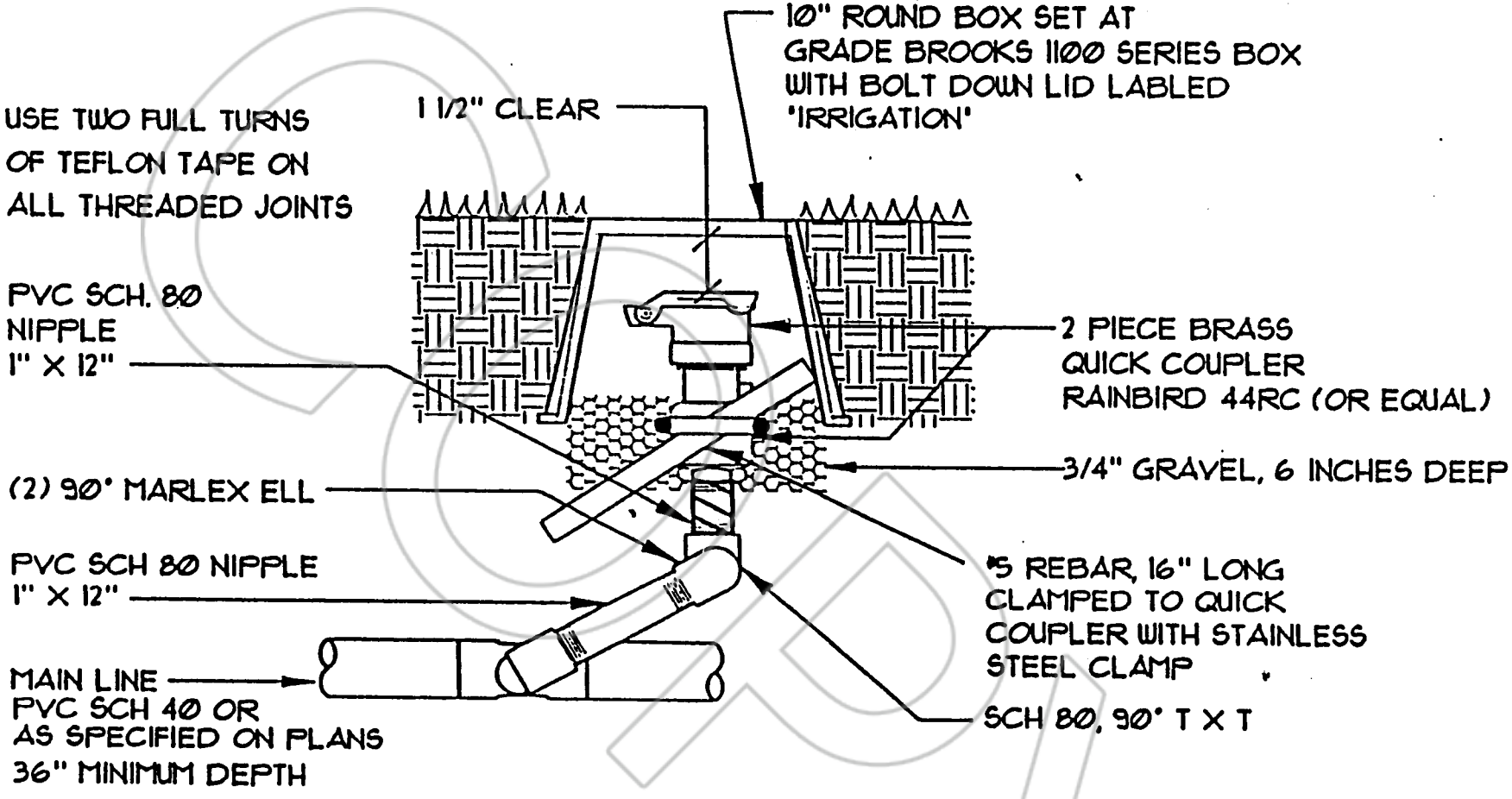
DRIP VALVE DETAIL

NOT TO SCALE



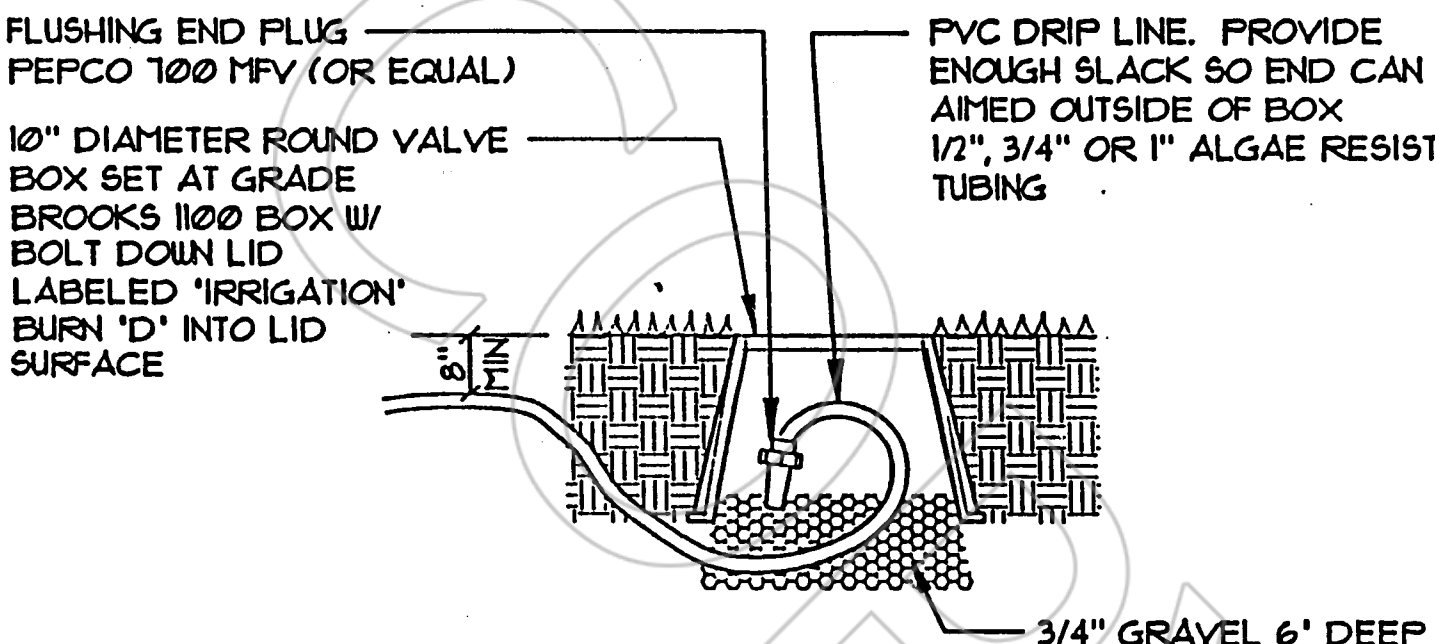
ELECTRIC CONTROL VALVE DETAIL

NOT TO SCALE



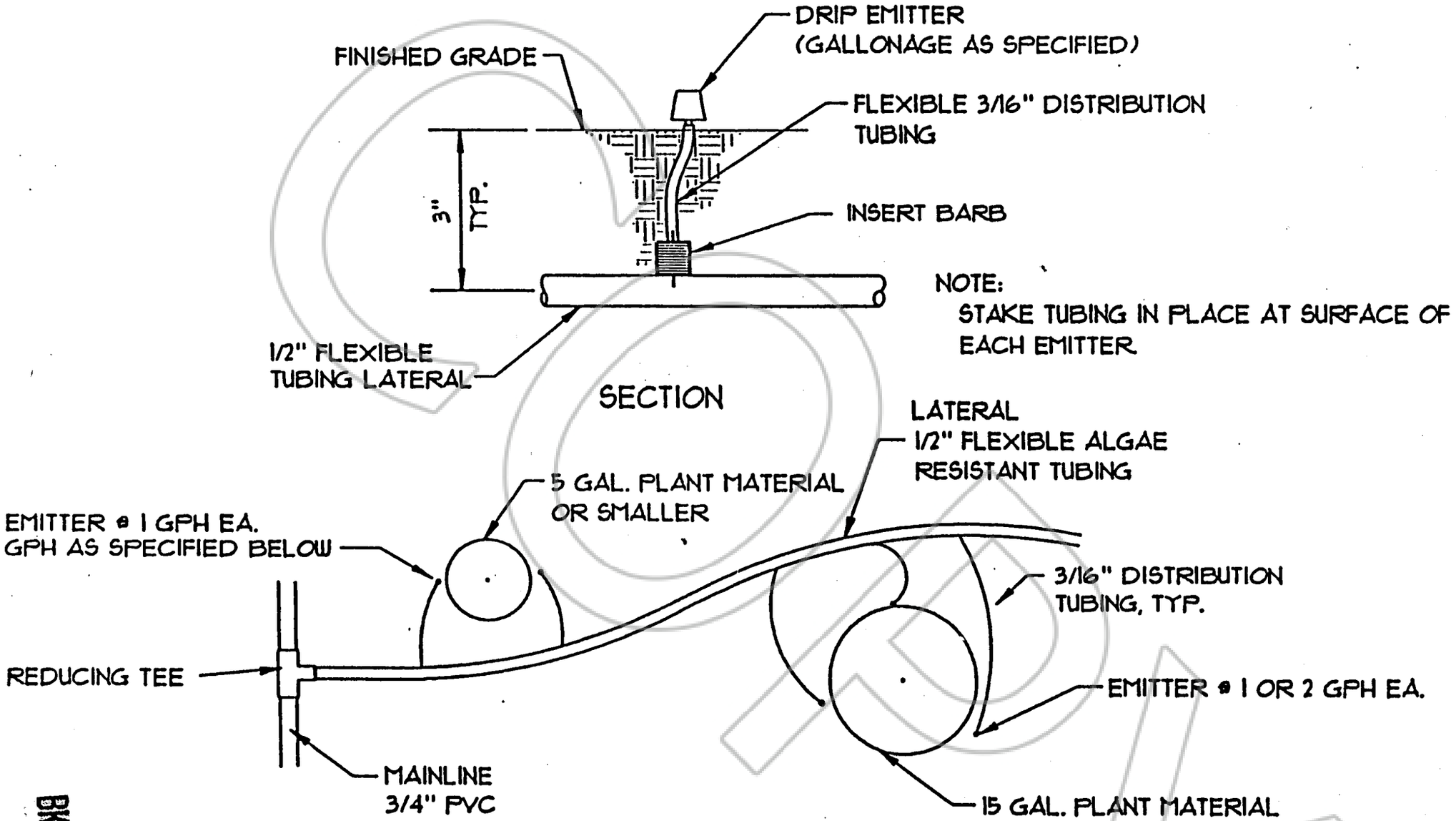
QUICK COUPLING VALVE

NOT TO SCALE



FLUSHING END PLUG

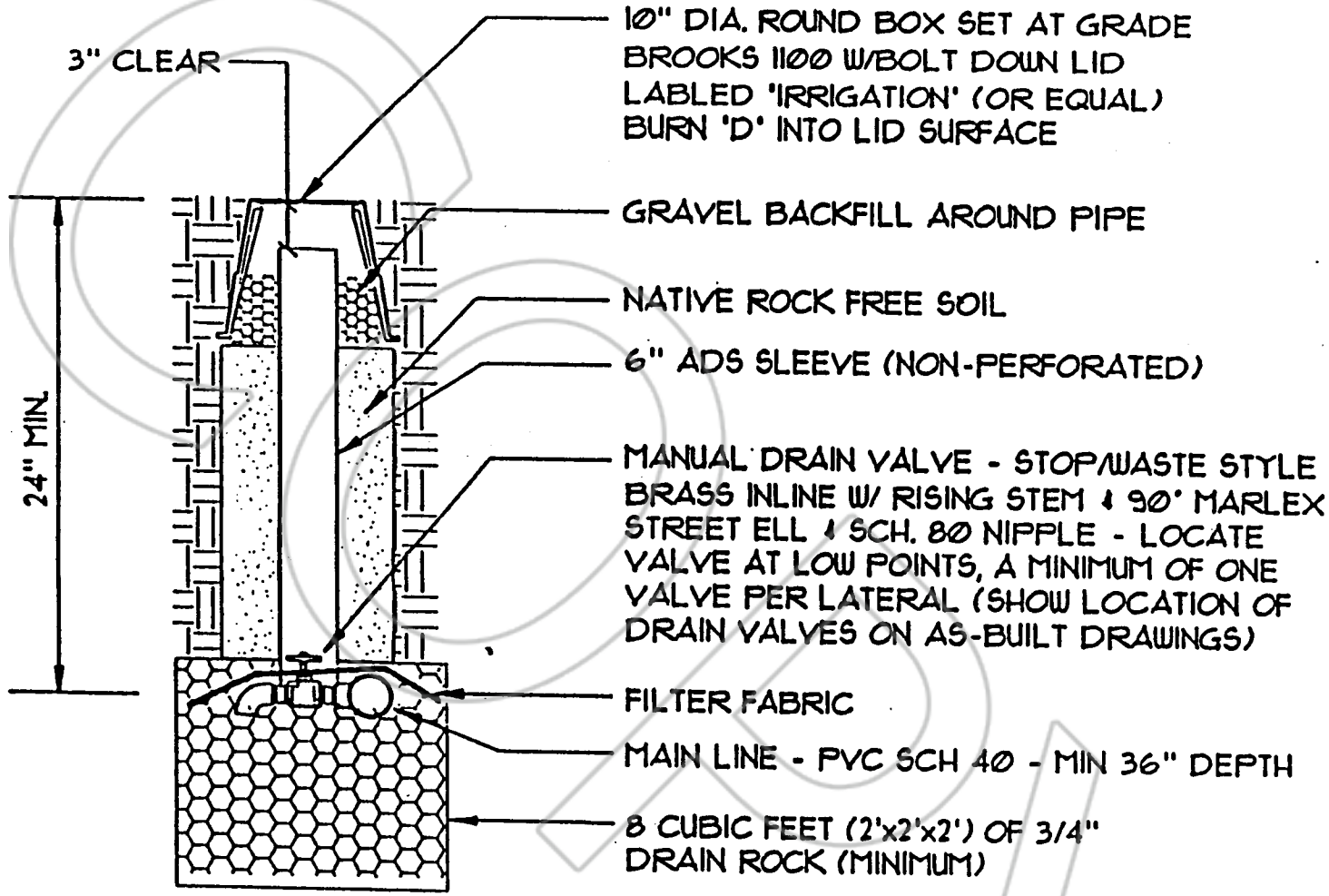
NOT TO SCALE



DRIP EMITTER

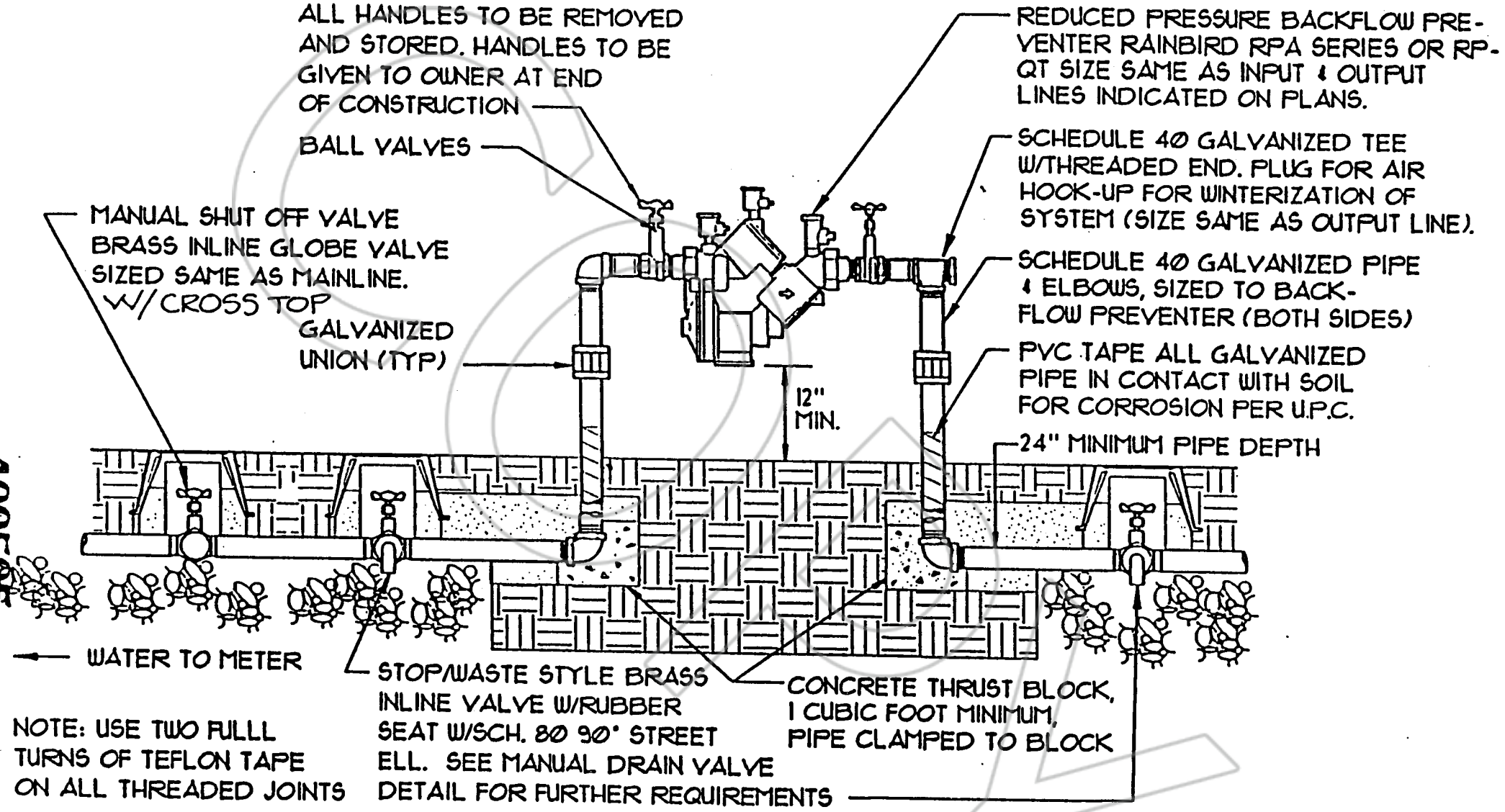
NOT TO SCALE

BK 1196 PG 122



MANUAL DRAIN VALVE

NOT TO SCALE



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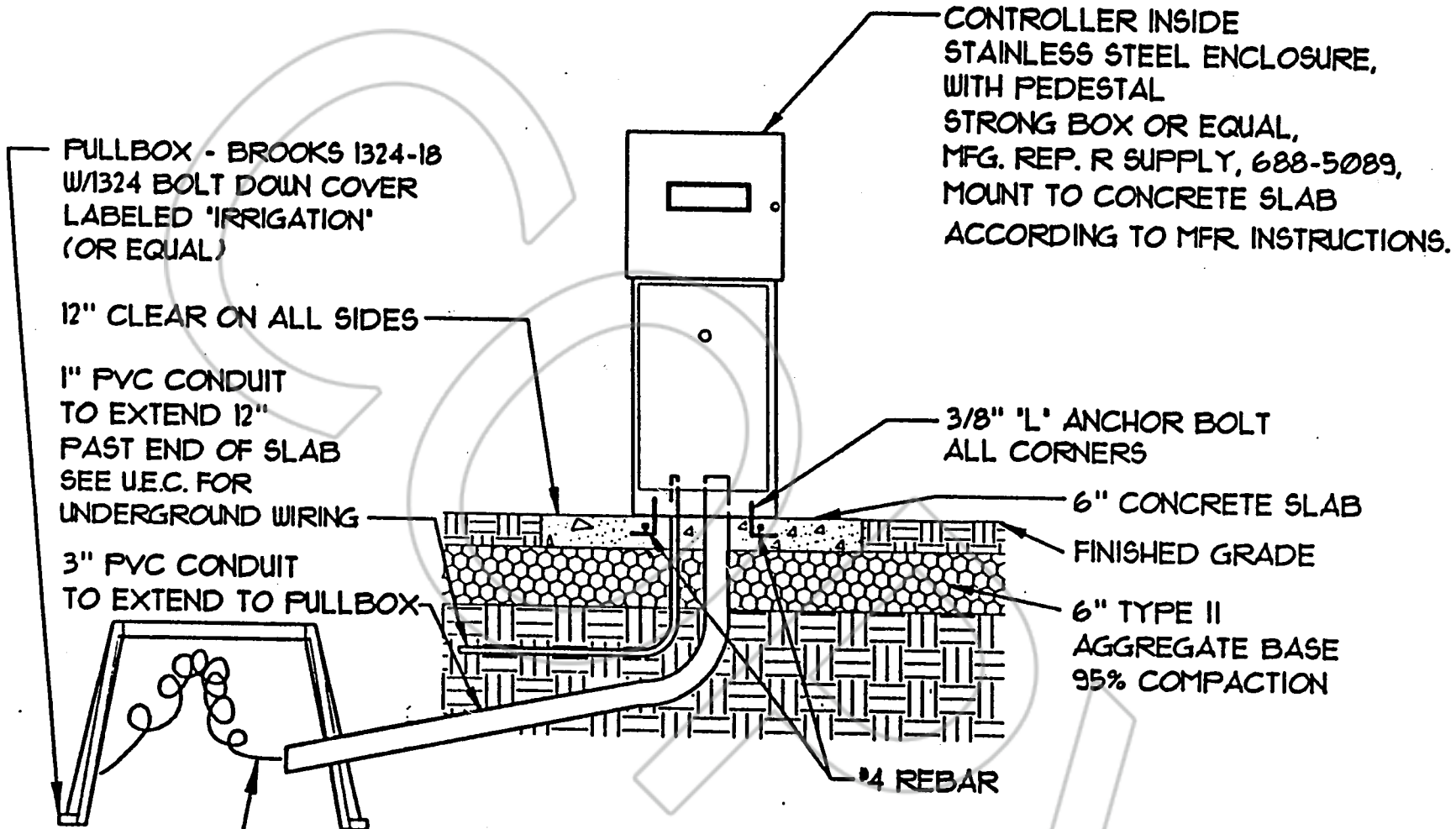
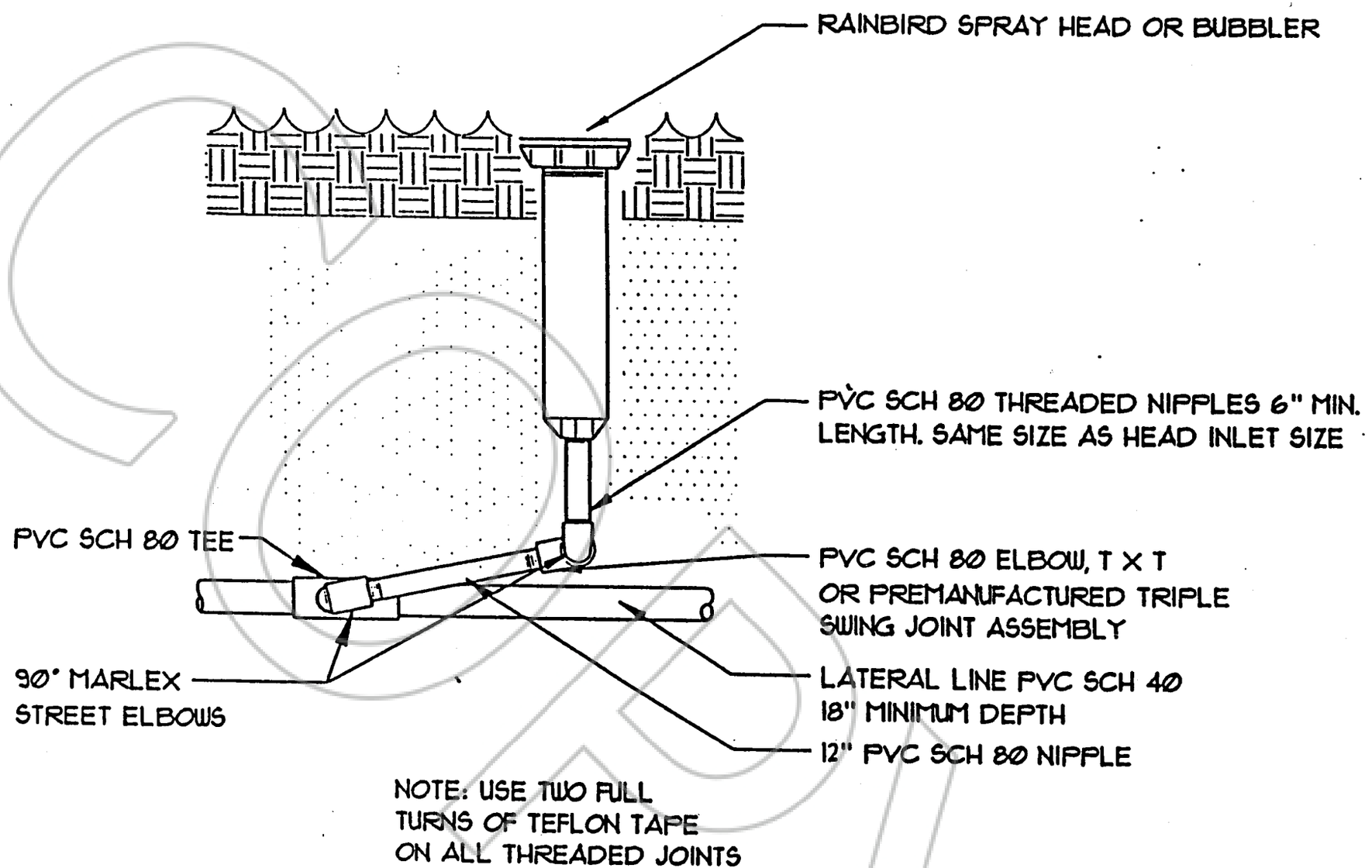
BACKFLOW PREVENTER

NOT TO SCALE



PEDESTAL MOUNT CONTROLLER DETAIL

NOT TO SCALE



SHRUB SPRAY OR BUBBLER HEAD DETAIL

NOT TO SCALE

SECTION 02810 - UNDERGROUND SPRINKLER SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

The general provisions of the Contract, including General and Special Conditions apply to the work specified in this Section.

1.02 WORK INCLUDED

A. Automatic controls including controller, valves, and all interconnecting wiring.

B. Spray irrigation installation.

C. Drip irrigation installation for trees and shrubs.

1.03 REFERENCES

A. ASTM D2241 - Poly Vinyl Chloride (PVC) Plastic Pipe (SDRS-PR)

B. ASTM D2564 - Solvent Cement for Poly Vinyl Chloride (PVC) Plastic Pipe and Fittings

C. ASTM D1785 - Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80 and 120

D. ASTM D2466 - Poly Vinyl Chloride (PVC) Plastic Pipe fittings, Schedules 40

E. ASTM A53 - Steel Pipe, Welded or Seamless

F. ASTM A234 - Fabricated Steel Fittings

1.04 SUBMITTALS

A. Provide owner with complete "as built" drawing of irrigation system with all revisions field located to within 2'± of actual in place location.

B. Provide owner with complete Operation and Maintenance manuals with instructions covering full operation care and maintenance of system and controls with manufacturers parts catalogs.

C. Instruct Owner's designated maintenance personnel in proper operation of system.

1.05 PROTECTION

Protect trees, shrubs, structures and features installed or remaining as part of landscaping from damage.

PART 2 - PRODUCTS

2.01 PIPING MATERIALS

A. Pipe and Fittings:
Sprinkler irrigation piping shall be virgin high impact polyvinyl chloride plastic pipe, and shall be continuously and permanently marked with the following information: Manufacturer's name, type of plastic, material, IPS size, NSF approval and code number. There shall be absolutely no substitutions of pipe and fittings without written request and approval by the Architect. Fittings shall be Lasco, Sloane, or equal.

B. Mainline Pipe and Fittings:
Use rigid, unplasticised polyvinyl chloride (PVC), ASTM D-1785 SCH.40 pipe with an integral belled end suitable for solvent welding.

C. Lateral Pipe and Fittings:
Use rigid, unplasticised polyvinyl chloride (PVC) ASTM D-2241 CL.200 with an integral belled end suitable for solvent welding.

2.02 VALVES

A. Gate Valves:
Bronze, non-rising stem, inside screw, threaded ends, cross top.

B. Remote Control Valve:
24 VAC electrical heavy duty, 200 PSI-rated globe style valve with operating range of 20 to 200 PSI and 25 to 200 GPM.

2.03 AUTOMATIC CONTROLLERS

A. Controllers:
Unit shall be complete with transformer, housing, self-contained starting cycle, immediate cycle repeat and shall be capable of automatic or manual operation.

B. Controller Enclosure:
Controller enclosure shall be cold rolled steel construction with a heavy duty continuous stainless steel hinge, a three-point locking mechanism, flush mounted access handle, and side louvers at top and bottom for cross ventilation. The enclosure unit shall include a stainless steel mounting template and hardware from the manufacturer. It shall be a minimum of 24 inches in width. A removable interior backboard for installation of the controllers shall be provided.

Painting of the entire enclosure unit shall consist of a multi-step coating system which includes metal preparation, rust inhibitive prime coat, and a two part ultraviolet light insensitive epoxy finish having total dry film thickness of not less than 5 mils. Final finish shall be a satin finish pale earth green color.

2.04 WIRING

All wiring from existing controller wires to control valves shall be AWG-UF type suitable for direct burial. Wire shall be run alongside of sprinkler piping throughout its entire length. All wiring to be bundled & taped every 15 feet. Do NOT tape to PVC pipe. Connections at control valves shall be laid together and twisted with King Technology Connectors or equal. Follow manufacturer's recommendations in sizing wire. In most cases, a size 14 wire should be acceptable.

2.05 EMITTERS

A. Emmiters shall be pressure compensating.

B. All plant material shall receive the specified G.P.H. as shown on the plan.

C. Emitters shall be wire stapled in place at the plant basin as shown on the plans.

D. Flush all drip irrigation laterals and tubing prior to installing emitters and placing end plugs.

PART 3 - EXECUTION

3.01 PREPARATION

A. Ensure sleeves are installed under all paving. All sleeves shall be schedule 40 PVC at two times the outside diameter of the internal lateral or mainline. Sleeve shall be extended a minimum of 12" beyond proposed paving surface or surfaces and staked to mark.

3.02 TRENCHING

A. Trench for sprinkler system to ensure proper grades and slopes to drain to low points.

B. Keep trenches free of debris, material, or obstructions that may damage pipe.

3.03 INSTALLATION

A. Install piping, valve and controls in accordance with manufacturer's written instructions.

B. Solvent welded joints shall be made with solvent supplied by the manufacturer of the pipe. Care shall be exercised to clean both pipe and fitting to be joined. After the joint is made, excess solvent shall be wiped from the pipe and fitting, and the joint shall not be moved for a period of 15 minutes. No water shall be introduced into the system for a period of 12 hours.

C. Piping shall be installed to provide drainage. Slope exterior piping to drain toward drain valves.

D. On all threaded connections two full turns of Teflon tape shall be applied to the male thread.

E. Fittings shall be used on all bends in excess of 20 degrees. Where fittings are not used on lesser bends, the trench shall be of sufficient width to allow for an even bend.

F. Plastic pipe shall be laid to allow for expansion and contraction. Caution shall be exercised to support all plastic fittings and connections.

G. Use threaded Schedule 80 nipples for risers to each outlet to facilitate easy replacement.

H. Install control wiring providing a 3' (250mm) extension coil at each valve to which controls are connected and at 100' (30m) intervals. Bury wire beside pipe. Tie surplus of 3' of wire at all changes of direction greater than 30° bundle and tape 10" of wire at 15' intervals. Provide one additional valve wire to each electric valve, color coded a different color.

I. Backfill lateral lines using rock and debris free native soil to a depth of six inches over piping. Fill remainder of trenches to top of subgrade elevation with sub-soil. Settle backfilled trenches by flooding w/water to a depth of 3 inches.

J. Backfill mainline with debris free sand to a minimum depth of six inches over piping. Fill remainder of trench to top of subgrade with sub-soil.

K. Replace plantings or structures damaged by installation of sprinkler system.

3.04 TESTS

Test sprinkler system for leakage before piping is covered, to 100 psi (690 KPa) at highest or furthest (whichever is most critical) point of system being tested, for period of 24 hours. System is acceptable if no leakage or loss of pressure for duration of test period occurs.

Upon completion of all landscape installation including all plant material and rock mulch the contractor shall verify all drip irrigation is operating as intended and that all plant material is receiving water at the rate specified on the plans.

Provide a backflow certification certifying backflow prevention device is operating correctly.

3.05 CLEANING

Upon completion of work, remove excess debris, materials, equipment, apparatus, tools and the like and leave premises clean, neat and orderly.

3.06 SPARE PARTS

A. Submit the following spare parts:

1. Two valve keys for manual valves.

2. Two quick coupler valve key and two swivel hose ELL.

END OF SECTION 02810

SECTION 02900 - LANDSCAPING

PART 1 - GENERAL

1.1 DESCRIPTION

The general provisions of the Contract, including General and Special Conditions and the requirements of Division 1 apply to the work specified in this Section.

1.2 WORK INCLUDED

A. Planting and fertilizing trees and shrubs

B. Staking trees

C. Grass seeding and fertilizer

D. Revegetation area seeding

E. Maintaining all planting

1.3 REFERENCES

A. Federal, State and County laws of inspection for plant disease and insect control.

B. Latest edition of Horticulture Standards.

C. American Association of Nurserymen

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver packaged material in original containers showing analysis of mixture, percentage of pure seed, year of production, net weight, date of packaging and location of packaging. Damaged packages are not acceptable.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis and name of manufacturer.

C. Balled and Burlapped Plants:

1. Dig and prepare for shipment in manner that will not damage roots, branches, shapes and future development after replanting.
2. Ball with firm, natural balls of soil.
3. Wrap ball firmly with burlap or strong cloth and tie: ANSI Z60.1.
4. Ball size and ratios: ANSI Z60.1.

1.5 EXISTING CONDITIONS

Beginning work means acceptance of existing conditions.

1.6 SUBSTITUTIONS

Do not make substitutions. If specified landscape material is not obtainable, submit to the Landscape Architect proof of non-availability and proposal for use of equivalent material.

1.7 GUARANTEE

A. Guarantee all plant material through one full growing season after all plants are installed and Notice of Completion is filed. The Contractor shall inspect the site monthly to generally determine conditions of all plantings. If any changes in the overall maintenance program are required to improve the condition to an acceptable standard, the Contractor must notify the Owner in writing; otherwise, the Contractor accepts full responsibility for the condition of the plantings and must honor his guarantee for the one-year period.

B. Replacement plants under this guarantee shall be granted for one full growing season from date of installation.

C. Repair damage to other plants during plant replacements at no cost to the Owner.

PART 2 - PRODUCTS

2.1 GROWING MEDIA

A. Topsoil Turf Area - Obtain topsoil from local sources which is friable loam free from subsoil, roots, grass, weeds, stones and foreign matter; acidity range (pH) of 5.5 to 7.5 containing a minimum of 6% and a maximum of 25% organic matter. Supply agricultural test results for approval prior to application.

B. Soil Amendments and Fertilizers - Turf Area

1. Prepared planting soil mix shall be 1/2 native material and 1/2 approved topsoil.
2. Fertilizer: Use 21 gram Agriform plant tabs, or equal, on all plant material container stock. Set evenly around ball at extremities or pit at half the depth of the pit.

C. Revegetation Area - Scarify areas to be seeded and fertilize

2.2 SEED PRODUCTS AND APPLICATION RATES

A. Turf Area Seed Mix: Ballfield Mix "Four A"

Bartitia Kentucky Bluegrass	20%
Baron Kentucky Bluegrass	20%
Pinnacle Perennial Ryegrass	30%
Barclay Perennial Ryegrass	30%

B. Mulch - Conwed 2,000 or Silva Fiber (40 lbs/7,000 sq. ft.)

C. Fertilizer - 16-25-12 (6.2 lbs/1,000 sq. ft.)

D. Application times - Apply seed mix between April 1st and May 15th or between September 1st and October 15th.

E. Suggested source for Ballfield "4A" seed mix:

Agrono-tec Seed Co.
21420 Bundy Canyon Road
Lake Elsinore, CA 92530
(714) 674-0-635

F. Revegetation Seed Mix
The seed mixture shall be applied at a rate of 7 lbs. per acre. The percent of seed per species should be relatively equal per pound of seed mix.

Equal percent per pound of:
California Poppy *(Eschscholzia californica)*
Silvery Lupine *(Lupinus argenteus)*
Idaho Fescue *(Festuca idahoensis)*
Pine Bluegrass *(Poa secunda)*
Bottlebrush Squirreltail *(Elyinus elymoides)*
Sulphur-Flowered Buckwheat *(Eriogonum umbellatum)*

This area will be established via hydromulching. It is preferable to plant in early Spring/Summer (May 15th-June 15th). Irrigation will need to be supplied daily, (possibly 2-3 times a day) until the plant material has germinated. Watering times per day may vary depending on the weather. Following germination, the seedlings will require irrigation 2-3 times a week.

G. Fertilize with 16-25-12 at a rate of 6.2 lbs./1000 S.F.

H. Mulch-Conwed 2000 or Silva Fiber (40 lbs./7000 S.F.)

I. Suggested source of seed mixes:
Albers of Nevada
2205 Glendale Ave., Sparks, NV 89431
(702) 358-2077

2.3 TREES AND SHRUBS

A. Well-formed and shaped, true to type, and free from disease, insects and defects such as knots, sun-scald, windburn, injuries, abrasions or disfigurements.

B. All plants must be true to botanical and common name, and variety as established by the American Joint Committee on Horticulture Nomenclature and Standardized Plant Names.

C. Nursery grown stock: ANSI Z60.
1. Contain grown stock:
   a. Growing in container for a minimum of 90 days before delivery.
   b. Not root-bound or with root system hardened-off.

2.4 WRAPPING MATERIALS

A. Two thicknesses of creped paper cemented together with bituminous material.

B. Width of wrapping material: 8" to 10"

C. Twine for typing: lightly tarred medium or coarse sisal yard: or duct tape.

2.5 GUYING AND STAKING MATERIAL

A. Stakes for tree support

1. Construction grade redwood.
2. Minimum nominal size: 2"x2"; or 2-1/2" in diameter by 9' long and pointed at one end.

B. Guying wire: Annealed, galvanized iron or steel 12ga. wire.

C. Hose type and size: 2 ply 3/4" reinforced rubber or plastic.

2.6 RIVER ROCK MULCH, BOULDERS AND LANDSCAPE FABRIC

A. River rock shall be 8" to 12" diameter all round river rock.

B. Medium boulders shall be 24" to 36" boulders.

C. Landscape fabric shall be nonwoven, water permeable, polyethylene weed barrier fabric.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify final grades have been established prior to beginning planting operations.

B. Inspect trees and shrubs for injury, insect infestation, and for improper pruning.

C. Do not begin planting or wrapping trees until deficiencies are corrected or plants replaced.

3.2 PREPARATION

A. Protect existing underground improvements from damage.

B. Remove foreign materials, plants, roots, stones and debris from site. Do not bury foreign material.

C. Cultivate to depth of 3". Repeat cultivation areas where equipment has compacted subgrade.

D. Stake out locations for plants.

E. Do not begin excavation until stake out of plant locations is acceptable to Landscape Architect.

3.3 EXCAVATION FOR PLANTING

A. Pits and trenches:

1. Shape:
   Plant pits to be square or circular with roughed-up sides and bottom.
2. Size:
   a. For trees:
      1) Depth: Minimum 2' from finish grade and increased as necessary to accommodate ball or roots and at least 6" compacted topsoil below ball or roots.
      2) Width or diameter: 3 times greater than diameter of ball.

   b. For Shrubs:
      1) Depth: Minimum 16" increased as necessary to accommodate ball roots and at least 6" of topsoil below ball.
      2) Minimum width or diameter: 1' greater than diameter of ball.

3.4 PLANTING

A. General

1. Center plant for pit or trench.
2. Face for best effect.
3. Set plant plumb and hold rigidly in position until soil has been tamped firmly around ball or roots.
4. Use only planting soil for backfill.

5. Place sufficient planting soil under plant to bring top of root ball level to finish grade of surrounding soil.
6. Backfill pit with planting soil until 2/3 full and water each layer thoroughly to settle soil.
7. After soil settles, fill pit with planting soil mix, water and leave pit surfaced even with finish grade of surrounding ground.
8. Watering basin:
   a. Construct a topsoil berm 4" above finish grade, forming a watering basin with a level bottom around each plant.
   b. Size: 2' greater than diameter of ball or spread of roots if bare-rooted.

3.5 MULCHING

A. Mulch planting pits, trenches and areas within 2 days after planting.

B. Cover watering basin or bed evenly with 3" of shredded bark mulch material.

C. Water thoroughly immediately after mulching.

D. Hose down planting areas with fine spray to wash leaves of plants.

3.6 GUYING AND STAKING OF TREES

Stake all trees as per details on the drawing.

3.7 PRUNING

Prune minimum necessary to remove injured twigs and branches, deadwood, and sucker growth.

3.8 WRAPPING

A. Spirally wrap trees from the bottom of the truck to top height of the second branch.

B. Overlap wrapping approximately 2" (5mm).

3.9 LAWN AND REVEGETATION SEEDING

A. Soil Preparation: After rough grading is completed, apply 6", approved topsoil over entire area to be seeded. Apply 4" approved topsoil to irrigated revegetation

areas. Thoroughly mix topsoil into the top 4 - 6" of subsoils. Bring to even grade. Rake out rock and debris.

B. Installation: Lawn seed shall be drill seeded followed with mulch and fertilizer applied in hydromulch solution. Revegetation mix shall be drill seeded and fertilized or broadcast and fertilized. Wet seeded areas thoroughly.

C. Watering: The Contractor is responsible for the watering of the entire sports field seeded area and irrigated revegetation area from the completion of the seeding process until the area is accepted in writing by the Owner or his designated representative. The revegetation area shall be thoroughly watered once per week for a minimum of five weeks.

D. Additional Fertilizing: The Contractor shall apply the following applications of fertilizer to the entire seeded area, in addition to the application at the time of the initial seeding:

Fertilizer 16-25-10

Application Rate	6.2 lbs/1,000 sq.ft.
Additional Application #1	30 days after seeding
Additional Application #2	60 days after seeding

E. Mowing Schedule: turf mowing operation will be the responsibility of the owner.

F. Do not mow the revegetation seed areas.

3.10 MAINTENANCE

A. Maintain surfaces and supply additional topsoil where necessary including areas affected by erosion.

B. Maintain trees, shrubs and other plants by pruning, cultivating and weeding for healthy growth.

C. Restore or replace damaged wrappings.

D. Tighten and repair stake and guy supports, and reset trees and shrubs to proper grade or vertical position as required.

E. Spray as required to keep trees and shrubs free of insects and disease.

F. Replace, within 14 days all dead plants and those not in a vigorous thriving condition. Replacements shall be the same kind and size as originally planted and shall be planted and mulched as specified.

3.11 LAWN AND REVEGETATION AREAS - Seed Area Guarantee

A. The Contractor shall notify the Owner or his designated representative 90 days after the seed area has been seeded, to request a final inspection. The Owner or his representative will inspect the work and issue a Certificate of Acceptance if the work conforms with the requirements of this section.

B. Before the Owner or his representative issues a Certificate of Acceptance, the inspection required must produce conclusive evidence that the seeded areas are in a thriving condition, having been properly seeded, having produced an acceptable rate of germination. The seed area will be considered to have produced an acceptable rate of germination if, during the final inspection the Owner or his representative can select any 12 square foot area of the work and find no portion of that area to have more than 10% (25% for revegetation areas) soil visible.

C. If the work fails to pass the final inspection, whether due to improper watering, unacceptable rate of germination, the lack of appearance of a thriving condition, or any other obvious condition, the contractor shall take appropriate action to correct the deficiency causing the work to be unacceptable. The appropriate work needed to correct the deficiency shall be completed before the Certificate of Acceptance and final payment is issued.

D. If it is necessary for the contractor to reseed areas which prevented the certificate of Acceptance from being issued subsequent to the final inspection, the Contractor shall reseed the area(s) in question and continue to maintain and water the entire area seeded for a period of at least 30 days beyond the initial 60 day guarantee period at no extra charge.

3.12 RESTORATION

Restore any pavement, concrete, planted areas and structures damaged during execution of work to this Section.

3.13 LANDSCAPE ESTABLISHMENT PERIOD

The Contractor shall maintain the landscape, including trees, shrubs and turf, performing typical maintenance functions (mowing, trimming, fertilization, sweeping, blowing, trash pickup, etc) necessary to provide a safe and usable public park up to final completion.

END OF SECTION 02900

SECTION 02510

ASPHALT CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

This work shall consist of preparation of subgrade, placement of base material, and paving of pathway with asphaltic concrete in accordance with the Plans and Specifications.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Earthwork, Section 02220

1.3 REFERENCE STANDARD

A. All work included in this section shall conform to the requirements of the "Standard Specifications for Public Works Construction, 1992".

PART 2 - PRODUCTS/MATERIALS

2.1 The Contractor shall submit in writing, for approval, a current job mix formula prepared by an approved materials testing laboratory conforming to the requirements of Section 320 of the current edition of the Standard Specifications as amended.

The Contractor shall not proceed until the job mix formula is approved for this project.

2.2 Pathway seal coat shall consist of the application of 0.08 to 0.11 gallons per square yard of asphalt emulsion SS-1h cut with 50 percent (50%) water conforming to ASTM D 977.

2.3 Aggregate base shall be Type 2, Class B.

PART 3 - EXECUTION

3.1 SUBGRADE

A. Subgrade shall be scarified moisture conditioned and graded and compacted to 90% or higher relative compaction while conforming to the elevations required.

3.2 STRUCTURAL FILL AND AGGREGATE BASE

A. Aggregate base and structural fill shall be graded to required contours and compacted to 95% relative density.

A. Paving execution shall conform with SSPWC Section 320 as amended.

3.4 FOG SEAL

A. Fog seal material and application shall conform to Section 317 of the Standard Specifications, latest edition, as amended.

3.5 PAVEMENT STRIPING

A. Striping lines shall be accurately located and marked by snapping chalked line on the surface. Standard dimensions shall be used. Lines shall be painted with Plexicolor Line Paint or approved equal. No oil base paint will be permitted.

B. The area shall be protected from traffic during all operations and shall not be opened for use for at least 24 hours after the finished surface has dried completely.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

This work shall consist of preparation of subgrade and placement of concrete for mow strip, flatwork, footings, etc. in accordance with the Plans and Specifications.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Concrete Formwork; Section 03100

B. Concrete Reinforcement; Section 03200

1.3 SUBMITTALS

A. Concrete Mix Design - A concrete mix design shall be submitted to the Engineer a minimum of one week prior to scheduled concrete placement. The concrete mix shall be designed by an approved independent testing laboratory utilizing ACI 211.1 trial batch method with at least 3 points batched and plotted on a water/cement ratio vs compressive strength curve. The concrete mix design including preparation of trial batches shall have been performed within 12 months of submittal.

B. Aggregate Tests - Test results of aggregates shall be submitted showing conformance to all the requirements of ASTM C-33. Aggregate test results submitted must have been performed by an approved independent testing laboratory within 12 months of submittal.

1.4 STRUCTURAL REQUIREMENTS

A. All Concrete exposed to freeze-thaw environments shall meet the following requirements:

Minimum 28 day compressive strength 4,000 psi
Minimum cement content (sacks per cubic yard) 6 - 8
Maximum water content (gallons per sack of cement) 5
Air Content 6% ± 1-1/2%
Max Slump 4"

B. Foundation Concrete not exposed to freeze-thaw environments shall meet the following requirements:

Minimum 28 day comprehensive strength 3,000 psi
Minimum cement content (sacks per cubic yard) 5 - 6.5
Maximum water content (gallons per sack of cement) 6.75
Air Content 4% - 7%
Max Slump 4"

400505

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A. All repairs to defective concrete shall be repaired as directed by the Engineer at no additional cost to the Owner.

1.7 FOUNDATION PREPARATION

A. Foundation preparation shall be performed prior to all concrete placement. See the geotechnical investigation for all requirements. Foundation preparation shall be in strict accordance with the geotechnical investigation.

PART TWO - REFERENCE STANDARD

2.1 STANDARDS

A. "Standard Specifications for Public Works Construction," 1992, Sections 311 and other related sections.

B. ACI 318 - Building Code Requirements for Reinforced Concrete.

C. ACI 301 - Specifications for Structural Concrete for Buildings.

PART THREE - PRODUCTS

3.1 MATERIALS

A. Concrete

1. Cement: Type II, low alkali conforming to ASTM C150; all cement used shall be from the same source stated in the approved mix design.

2. Water: Water for mixing shall be fresh, clean, and potable.

3. Fine Aggregates: Shall meet the requirements specified in ASTM C33. Aggregates which show a variation in fineness modulus greater than 0.20 more or less than the value used in the mix design shall be rejected.

4. Coarse Aggregates: Shall meet the requirements specified in ASTM C33; grading shall conform to requirements for size number 67 as specified in ASTM C33.

5. Air-entraining admixtures: Shall meet the requirements of ASTM C260.

6. Water Reducing Admixtures: Shall meet the requirements of ASTM C494 Type A, B, E or F.

7. Synthetic Fiber Reinforcing: Shall be incorporated in all exterior concrete used for slabs on grade. Fibers shall be 100 percent virgin polypropylene, fibrillated fibers as manufactured by Fibermesh Company (or approved equal). Fibers shall be added to the concrete in strict accordance with the manufacturer's written instructions.

B. Accessories

1. Bonding agent: polymer-resin emulsion, latex emulsion, two-component epoxy resin, or approved equal.

2. Vapor barrier: conforming to ASTM D2103, 10 mil-thick clear polyethylene film.

3. Nonshrink grout: premixed compound with nonmetallic aggregate, cement, and water reducing and plasticizing agents; capable of minimum compressive strength of 7,000 pounds per square inch (psi) in 28 days.

4. Form-release agent: colorless material which will not stain concrete, absorb moisture, impair natural bonding, or change color characteristics of finish coating.

C. Aggregate Base

This material shall conform to a Type 2 Class B aggregate base as specified in Section 200.01.03 of the Standard Specifications for Public Works Construction, 1992 Edition.

3.2 MIXES

A. Design concrete mix in accordance with Section 202.08.01 of the Standard Specifications, latest edition, as amended.

B. Add an air-entraining agent to the mix for exterior concrete.

C. Concrete slump shall be 1-inch to 4-inches in accordance with ACI 301 unless otherwise specified on the plans or directed by the Engineer.

D. Admixtures shall be introduced in the quantities and according to the methods recommended by the admixture manufacturer.

3.3 OTHER

A. ASTM D1751 Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.

B. ASTM 02103 Polyethylene Film and Sheeting.

PART FOUR - EXECUTION

4.1 INSPECTION

A. The Contractor shall not place any concrete until the subgrade, aggregate base and reinforcement has been reviewed by the Engineer. Any unsatisfactory work shall be corrected by the Contractor and reviewed by the Engineer prior to placement of the concrete.

4.2 INSTALLATION

A. Placement

1. Notify the Engineer 24 hours prior to placing concrete.

2. Place concrete in accordance with ACI 301.

3. Concrete shall be conveyed and placed in such a manner that there will be no separation of ingredients in accordance with ACI 304 (latest amendment).

4. Concrete shall be placed continuously until each section or item is completed. In slabs, a uniform joint shall be placed at each interruption in the pour.

5. All concrete shall be placed within 90 minutes of batch time. After 90 minutes, the concrete will be rejected.

6. All concrete shall be mechanically vibrated with concrete vibrators.

7. The Contractor shall maintain records of concrete placement operations, including the date, location of placement, quantity, concrete and air temperatures, and test samples taken.

8. Ensure that reinforcement, inserts, embedded parts, formed expansion and contraction joints, plumbing, and drains are not disturbed during concrete placement.

9. Prepare previously placed concrete.

a. Clean with steel brush.

b. Apply bonding agent in accordance with manufacturer's instructions.

10. Place concrete continuously between predetermined construction and control joints. Do not interrupt successive pours, causing cold joints.

11. Maintain concrete cover around reinforcing as follows:

	Min. Cover (Inches)
Cast against earth	3
Exposed to earth or weather:	
Bars, Number 6 through Number 18	2
Bars, Number 5 and smaller	1-1/2
Not exposed to earth or weather:	
Slabs, walls, and joists:	
Bars, Number 14 and 18	1-1/2
Bars, Number 11 and smaller	3/4
Beams, girders, and columns:	
Principal reinforcement, ties, stirrups, and spirals	1-1/2

12. Slabs on grade: compact concrete, screed, and prepare for specified finish.

a. Place concrete continuously so that each unit of operations will be monolithic in construction.

b. Forms shall remain in place for at least 12 hours after concrete placement.

13. Where control joints are to be saw-cut, saw-cut joints after the concrete has developed adequate strength to prevent particles of aggregate from being pulled out of the sides of the cut.

14. Fill joints where slabs on grade abut vertical surfaces with joint filler. Extend joint filler from bottom of slab to within 1/2-inch of slab surface.

B. Construction Joints

1. Unless otherwise shown on drawings or indicated in the Specifications, each footing shall be considered as a single unit of operation and shall be monolithic in construction.

2. Where construction joints are absolutely unavoidable, locate joints as or near midpoints of spans where approved by the Engineer.

3. Provide appropriate keys in construction joints, plumb and level whether horizontal or vertical.

4. Isolation joints shall be preformed expansion filler strips conforming to ASTM D1751.

5. Control joints shall be 1/8-inch maximum wide, finished flush with surface.

   a. Joints may be saw-cut or made with preformed insert strips.

   b. Depth shall be 1/4 total slab thickness unless otherwise shown on the drawings.

6. Construction joints shall conform to ACI 301.

   a. Joints shall be of formed metal, wood or premolded strips.

   b. Joints shall be located as shown on the drawings.

7. Locate all joints where shown on the drawings or as directed by the Engineer. There shall be a maximum spacing of 12 feet between control joints unless otherwise approved by the Engineer.

C. Finishes

1. Finishing of Formed Surfaces

   a. General

      1. After removal of forms, give the concrete surfaces one or more of the finishes specified below where so indicated on the Plans or in these Specifications.

      2. Revise the finishes as needed to secure the approval of the Engineer.

   b. As-Cast Finish

      1. Rough Form Finish

         a. Leave surfaces with the texture imparted by forms, except patch tie holes and defects.

         b. Remove fins exceeding 1/4 inch in height.

2. Smooth form finish

a. Coordinate as necessary to secure form construction using smooth, hard, uniform surfaces, with number of seams kept to a practical minimum and in a uniform and orderly pattern. Form ties will not be allowed in concrete designated to have a smooth form finish. Plywood forms, if used in construction requiring a smooth finish, shall be sanded and shall not leave any texture in the concrete.

b. Patch all defects.

c. Remove fins completely.

c. Unspecified finish: If the finish of formed surfaces is not specifically called out elsewhere in the Contract Documents, provide the following finishes as applicable.

1. Rough form finish

a. For all concrete surfaces not exposed to public view.

2. Smooth form finish

a. For all concrete surfaces exposed to public view.

2. Finishing Slabs

a. Scratched finish: After the concrete has been placed, consolidated, struck off, and leveled, roughen the surface with stiff brushes or rakes before the final set.

b. Floated finish:

1. After the concrete has been placed, consolidated, struck off, and leveled, do not work the concrete further until ready for floating.

2. Begin floating when the water sheen has disappeared and when the surface has stiffened sufficiently to permit the operation.

3. During or after the first floating, check the planeness of the surface with a ten foot straightedge applied at not less than two different angles.

4. Cut down high spots and fill low spots, and produce a surface with the required tolerance throughcut.

5. Refloat the slab immediately to a uniform sandy texture.

c. Troweled finish

1. Provide a floated finish as described above, followed by a power troweling and then a hand troweling.

a. Produce an initial surface which is relatively free from defects, but which still may show some trowel marks.

b. Provide hand troweling when a ringing sound is produced as the trowel is moved over the surface.

c. Thoroughly consolidate the surface by hand troweling.

2. Provide a finished surface essentially free from trowel marks, uniform in texture and appearance, and with the required tolerance.

a. On surfaces intended to support floor coverings, use grinding or other means as necessary and remove all defects of such magnitude as would show through the floor covering.

d. Broom finish

1. Provide a floated finish as described above.

2. While the surface is still plastic, provide a textured finish by drawing a fiber bristle broom uniformly over the surface.

3. Unless otherwise directed by the Engineer, provide the texturing in one direction only.

4. Provide "light," "medium," or "coarse" texturing as directed by the Engineer or otherwise called for on the Drawings.

e. Unspecified finish: If the finish of slab surfaces is not specifically called for elsewhere in the Contract Documents, provide the following finishes as applicable:

1. Scratched finish

a. For surfaces scheduled to receive bond-applied cementitious applications.

2. Floated finish

a. For surfaces intended to receive roofing.

3. Troweled finish

a. For floors intended as walking surfaces;

b. Floors scheduled to receive floor coverings or waterproof membrane;

4. Broom finish

a. Exterior pedestrian ramps.

5. Non-slip finish

a. Platforms, steps, and landings;

b. Exterior pedestrian ramps.

4.3 CURING AND PROTECTION

A. Beginning immediately after placement, protect concrete from premature drying, excessively hot and cold temperatures, and mechanical injury.

B. Preservation of moisture

1. Unless otherwise directed by the Engineer, apply one of the following procedures to concrete not in contact with forms, immediately after completion of placement and finishing.

a. Ponding or continuous sprinkling;

b. Application of absorptive mats or fabric kept continuously wet;

c. Application of sand kept continuously wet;

d. Continuous application of steam (not exceeding 150 degrees F) or mist spray;

e. Application of waterproof sheet materials;

f. Application of other moisture-retaining covering as approved by the Engineer.

g. Application of a curing agent approved by the Engineer.

h. Curing compound shall not be used on: surfaces that are to receive bituminous membrane waterproofing, adhesive for application of other materials, concrete fill, concrete setting beds, and surfaces that are to be painted or to receive epoxy coatings.

2. Where forms are exposed to the sun, minimize moisture loss by keeping the forms wet until they can be removed safely.

3. Cure concrete by preserving moisture as specified above for at least seven days.

4. Keep surfaces free of traffic during the curing period.

C. Polyethylene Film:

1. Spread polyethylene film over slab areas.

2. Lap edges and ends 3-inches and seal with pressure sensitive polyester tape.

3. Maintain in place with plywood sheets for seven days.

D. Temperature, wind, and humidity:

1. Cold weather

a. Comply with the requirements of ACI Standard 306 "Cold Weather Concreting".

b. When the mean daily temperature outdoors is less than 40 degrees F, maintain the temperature of the concrete between 50 degrees F and 70 degrees F for the required curing period.

c. When necessary, provide proper and adequate heating system capable of maintaining the required heat without injury due to concentration of heat.

d. Do not use combustion heaters during the first 24 hours unless precautions are taken to prevent exposure of the concrete to exhaust gases which contain carbon dioxide.

2. Hot weather

a. Comply with the requirements of ACI Standard 305 "Hot Weather Concreting".

b. When necessary, provide wind breaks, fog spraying, shading, sprinkling, ponding, or wet covering with a light colored material, applying as quickly as concrete hardening and finishing operations will allow.

3. Rate of temperature change: Keep the temperature of the air immediately adjacent to the concrete during and immediately following the curing period as uniform as possible and not exceeding a change of

five degrees F in any one hour period, or 50 degrees F in any 24 hour period.

E. Protection from mechanical injury

1. During the curing period, protect the concrete from damaging mechanical disturbances such as heavy shock, load stresses, and excessive vibration.

2. Protect finished concrete surfaces from damage from construction equipment, materials, and methods, by application of curing procedures, and by rain and running water.

3. Do not load self-supporting structures in such a way as to overstress the concrete.

F. Patching

1. Allow Engineer to inspect concrete surfaces immediately upon removal of forms. Patch imperfections as directed by the Engineer and standards of the industry.

2. Excessive honeycomb or embedded debris in concrete is not acceptable.

G. Defective Concrete

1. Modify or replace concrete not conforming to required levels and lines, details, and elevations.

2. Repair or replace concrete which is not properly placed or is not of the specified type.

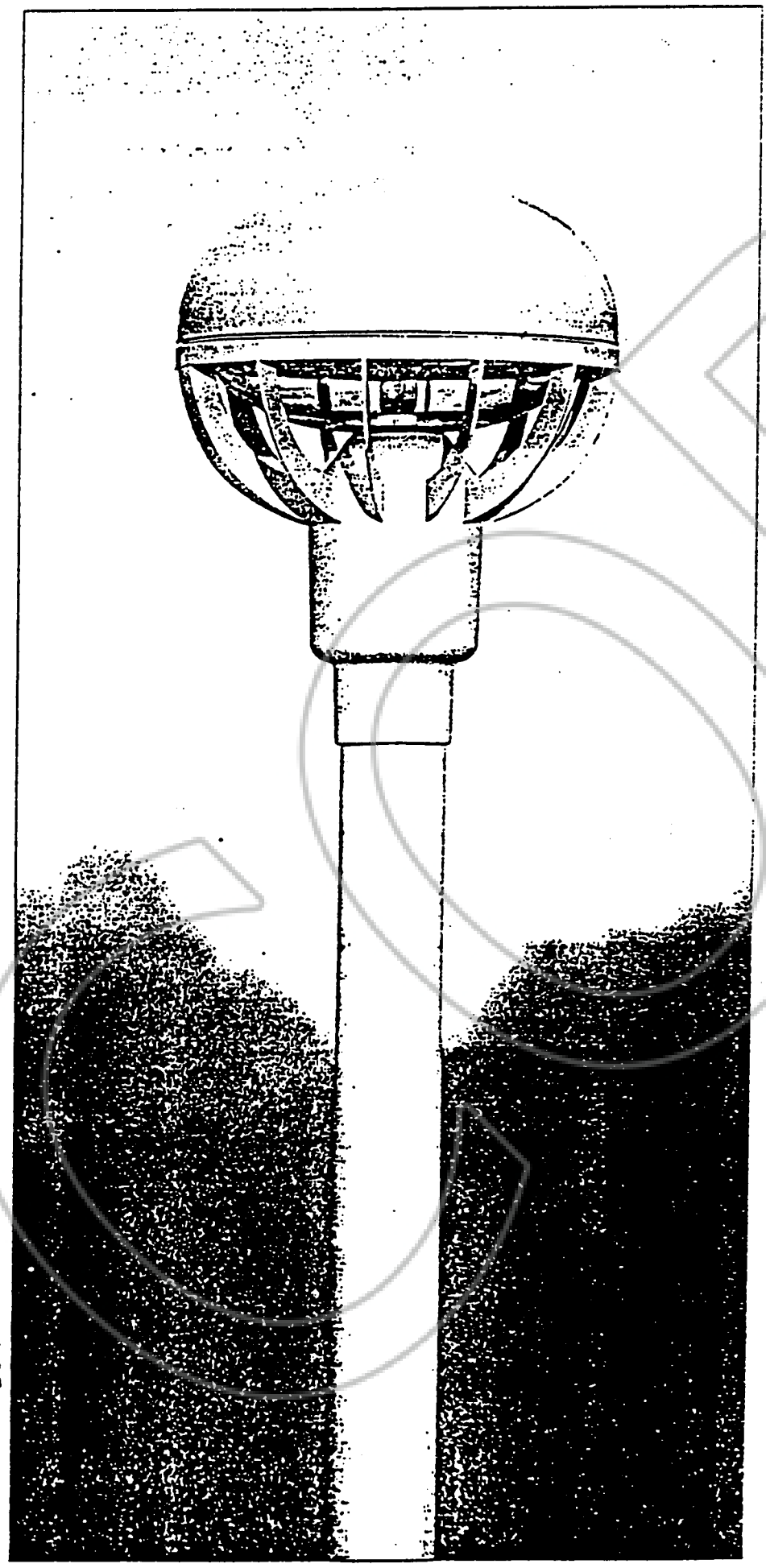
END OF SECTION

ARCHITECTURAL AREA LIGHTING

SL VG

CATALOG # SL VG PT5-150HPS-120-PR4-4RD

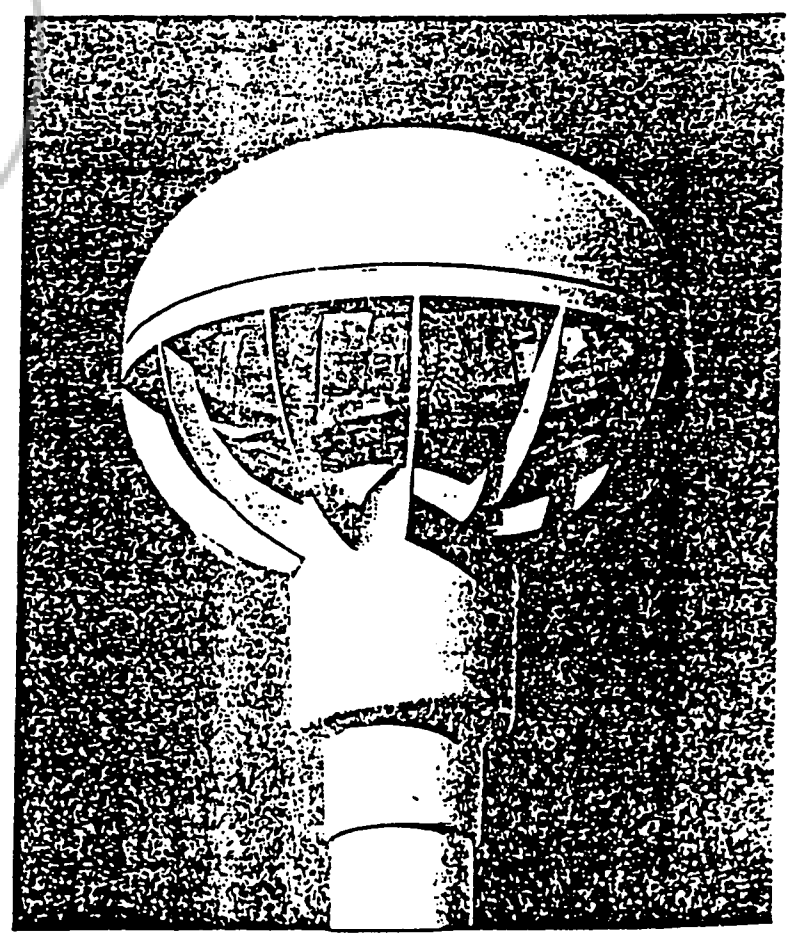
VANDAL GUARD



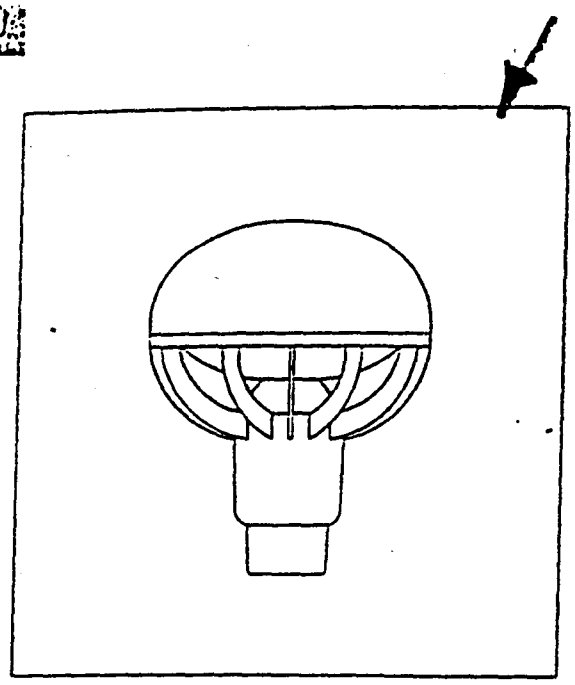
SL VG PT3 PR4-4R12

The SL VG Vandal Guard fixture is the new standard for vandal resistant lighting. The small size and pure forms of the Vandal Guard make it a perfect compliment to any site lighting design such as parks, schools and pedestrian areas. A high performance reflector system delivers higher levels of illumination, at lower wattages, than old style vandal fixtures. A segmented, specular and semi-specular optical system combined with a vertical lamp orientation delivers better quality lighting while saving energy. The optical system is sealed to the housing to eliminate any degradation in performance due to dirt or other contaminates.The lens is formed, one piece acrylic that will not discolor over time. The housing and cage are a one piece high strength casting. The Vandal Guard can be post top or arm mounted. Sixteen powder coat finishes are standard, and custom color matches are available.

All fixtures carry a two year limited warranty.



SL VG PT5 PR4-4R10

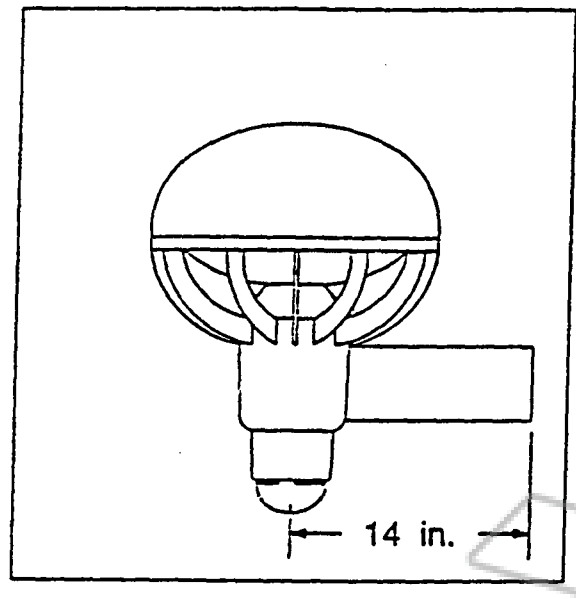


SL VG PT

DIMENSIONS: 20" high X 16.5" dia.

WEIGHT: 36 pounds

EPA: 1.43



SL VG AM

DIMENSIONS: 22" high X 16.5" dia.

WEIGHT: 42 pounds

EPA: 1.86

OPTIONS

FS1	Single weather proof fuse holder and fuse
HSS	House side shield
LXN	Polycarbonate lens in lieu of acrylic
RBC	Cast aluminum receptacle base welded to the pole with a weatherproof cover
GFI	GFCI duplex receptacle with cast base welded to pole and gasketed, and self closing cover
PCR	Twist lock receptacle for a photocell (by others)
WPS	Wall mounting plate for AM (arm) versions
•	Consult factory for special tenons and adapters for existing poles

ORDERING INFORMATION

CATALOG NUMBERS

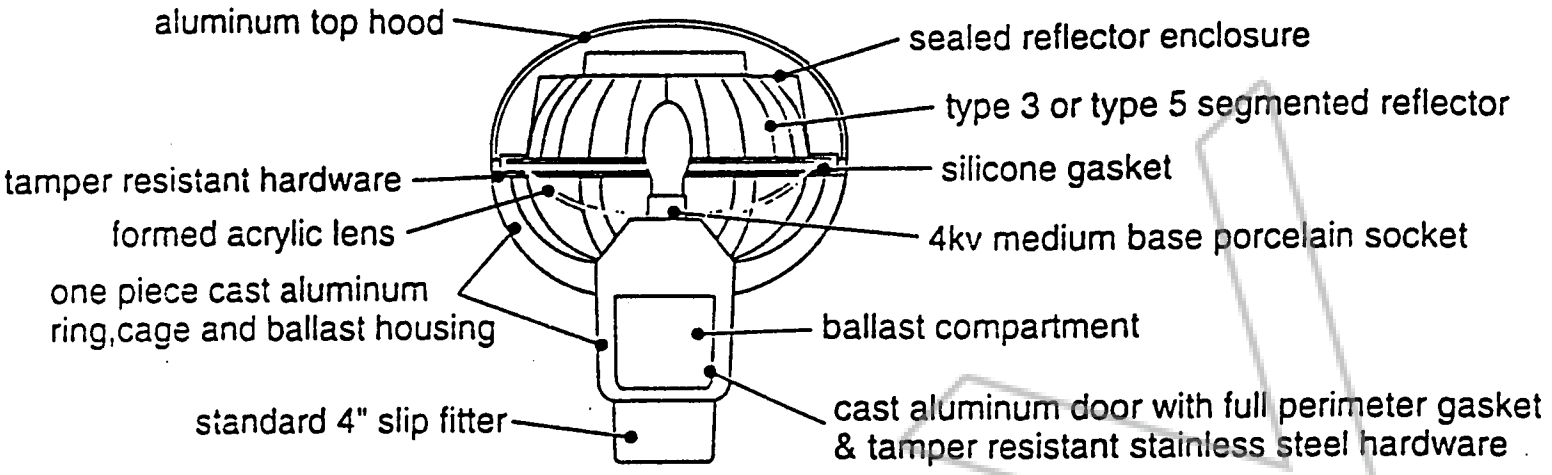
		METAL HALIDE			HPS		
		70	100	175	70	100	150
SL VG PT3	post top mount, type 3 distribution	•	•	•	•	•	•
SL VG PT5	post top mount, type 5 distribution	•	•	•	•	•	•
SL VG AM3	with arm, type 3 distribution	•	•	•	•	•	•
SL VG AM5	with arm, type 5 distribution	•	•	•	•	•	•

* ED-17 lamps only

* Consult the factory for special size tenons or mounting arrangements for new or existing poles.

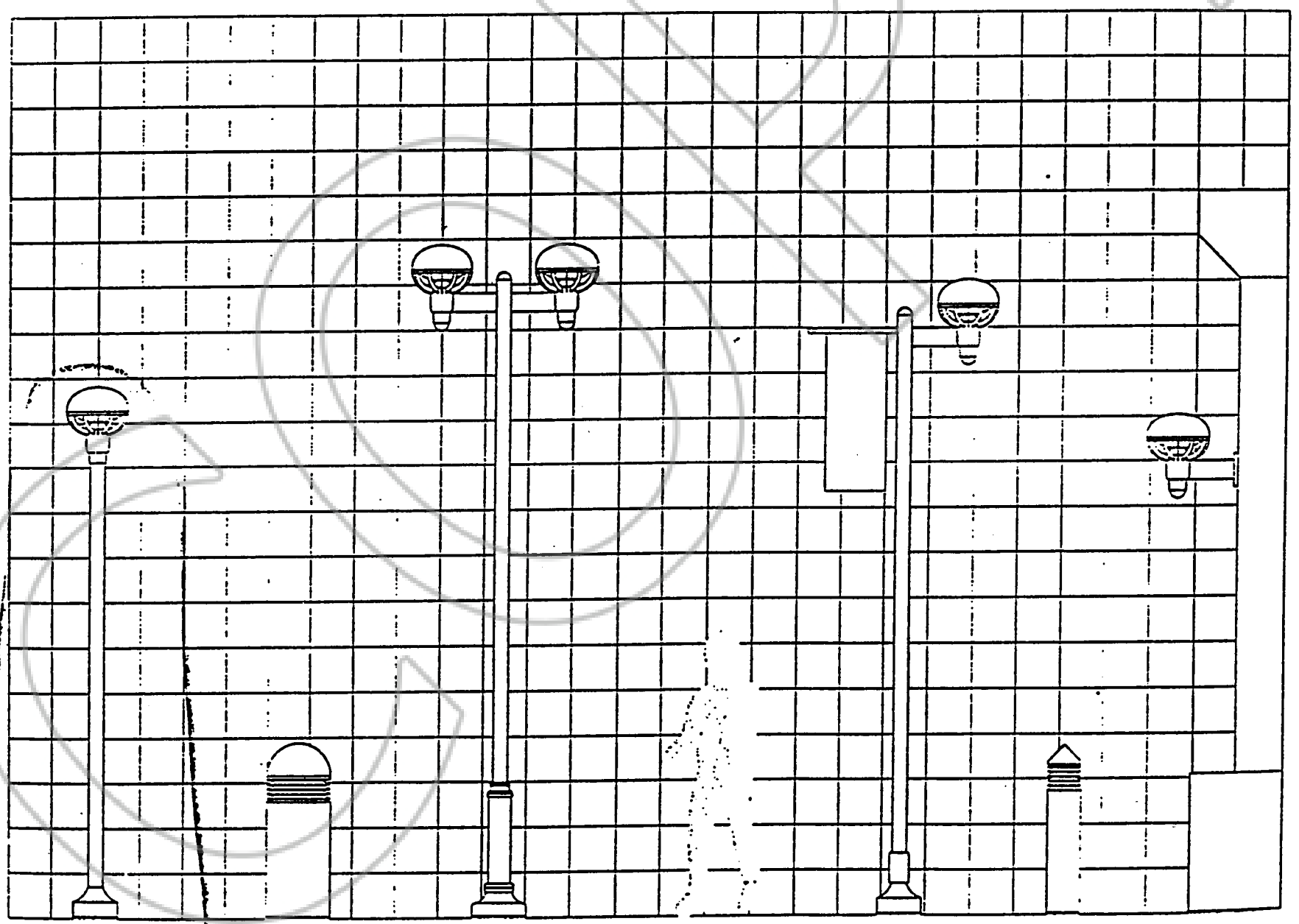
EXAMPLES

FIXTURE	LAMP	VOLTAGE	ARM	BASE-POLE	COLOR	OPTIONS
SL VG AM3	100HPS	277	•	•	TQR	WPS
SL VG PT5	150HPS	120	•	PR4-4R10-125	BLK	BC2-4
SL VG PT3	175MH	120	•	DB6-4R14-226	WHT	GFI
2-SL VG AM5	175MH	277	•	PR5-5R14-188	MGY	BANNER ARMS



SCALE: 1/4"=1'

TYPICAL CONFIGURATIONS



HEAD	SL VG-PT	CB18R	2-SL VG-AM	SL VG-AM	CB9S	SL VG-AM
ARM	•	•	•	•	•	•
POLE	PR4-4R10	•	DB6-4R14	PR4-4R13	•	•
OPTIONS	BC1-4	•	•	BANNER ARM BC2-4	•	WPS

SPECIFICATIONS

• HOUSING
Housing shall be cast aluminum. Aluminum shall be certified as pure #356 alloy, free of any porosity, foreign materials or cosmetic fillers. Castings shall be of uniform wall thickness with no warping or mold shifting. Minimum wall thickness shall be 3/16". The top ring, cage and ballast housing shall be a one piece, high strength casting. Electrical components are mounted in the fixture within a sealed compartment. The ballast compartment shall be sealed with a cast aluminum cover and a silicone gasket. All hardware shall be tamper resistant stainless steel.
The lens shall be one piece molded acrylic, sealed in the housing with silicone gaskets to prevent dust, insect or moisture contamination.
• ELECTRICAL
All electrical components shall be U.L. listed. Ballasts are high power factor rated for -20° starting. Ballast shall be mounted to the cast housing for maximum heat dissipation. Medium base porcelain sockets shall be 4KV rated, mounted base up in the housing. The electrical assembly shall be prewired with quick disconnects for installation and servicing.
• REFLECTOR MODULE
The optical assembly shall consist of an outer housing of spun aluminum that is completely sealed to prevent dust, insect or moisture contamination. The reflector module shall consist of segmented, specular and semispecular Alzak® panels precisely formed and positioned within the housing.
The reflector module shall be rotatable on ninety degree increments for proper field positioning.
• MOUNTING
Post top mounting: the housing shall slip a four inch O.D. pole and be secured to the pole with three stainless steel set screws.
Arm mounting: the arm shall be 6063 T-6 extruded aluminum, circumferentially welded to the fixture housing. The arm shall have an internal, cast aluminum end plate welded inside the arm. The plate shall be tapped to accept two 3/8-16 bolts for pole mounting.
• FINISH
Fixture finish shall consist of cleaning, degreasing and rinsing, followed by a protective chromate primer, deionized water rinse, oven dry off and top coated with a TGIC free, thermoset polyester powder coat finish with a minimum thickness of 2.5 mils.
• RELAMPING
Four captive, stainless steel, allen head screws are loosened to remove the top for relamping.
• CERTIFICATION
Fixtures shall be listed with ETL Testing Laboratories for wet location use.
• WARRANTY
Fixture shall carry a limited warranty of two years.
Ballast components shall carry the ballast manufacturer's limited warranty.

PHOTOMETRICS

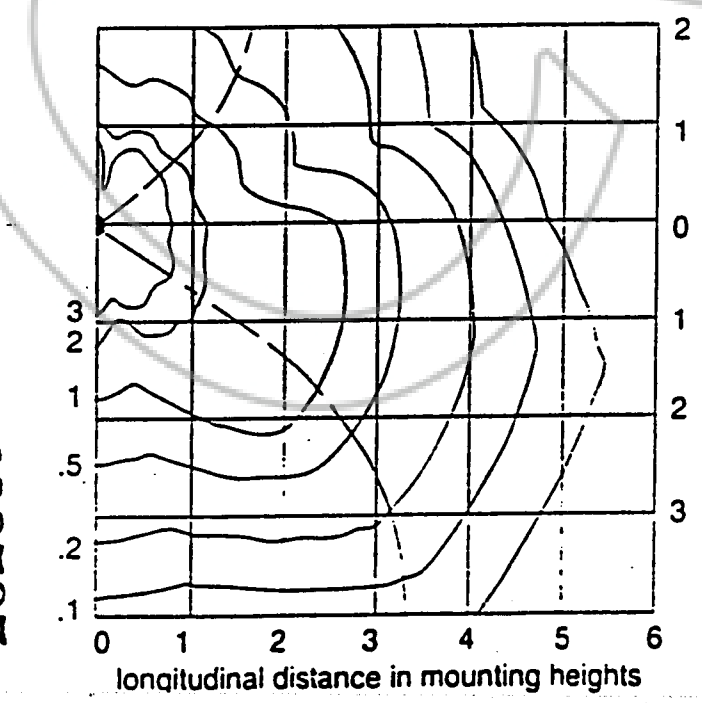
IES formatted disks available. Testing performed by a certified testing laboratory.

Conversion factors		Mounting height			
Lamp type	Lumens	12'	14'	16'	18'
70 w MH, clear	5000	.42	.31	.24	.19
100 w MH, clear	8500	.72	.53	.41	.32
175 w MH, clear	14000	1.19	.88	.67	.53
70 w HPS clear	6400	.54	.40	.31	.24
100 w HPS clear	9500	.81	.59	.45	.36
150 w HPS clear	16000	1.36	1.00	.77	.60

Conversion factors		Mounting height			
Lamp type	Lumens	12'	14'	16'	18'
70 w MH, clear	5000	.36	.26	.20	.16
100 w MH, clear	8500	.61	.45	.34	.27
175 w MH, clear	14000	1.00	.73	.56	.44
70 w HPS clear	6400	.46	.34	.26	.20
100 w HPS clear	9500	.68	.50	.38	.30
150 w HPS clear	16000	1.14	.84	.64	.51

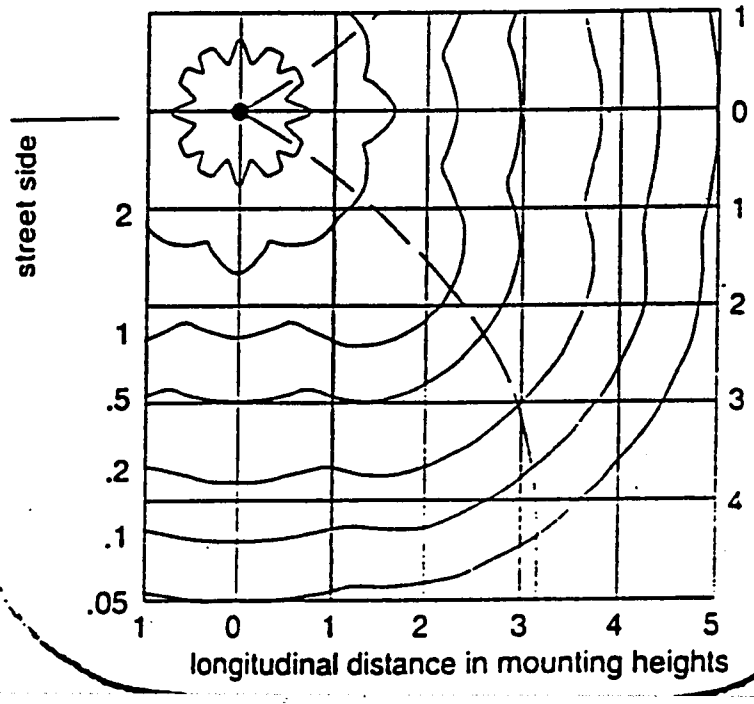
SL VG PT3-150HPS ED-17

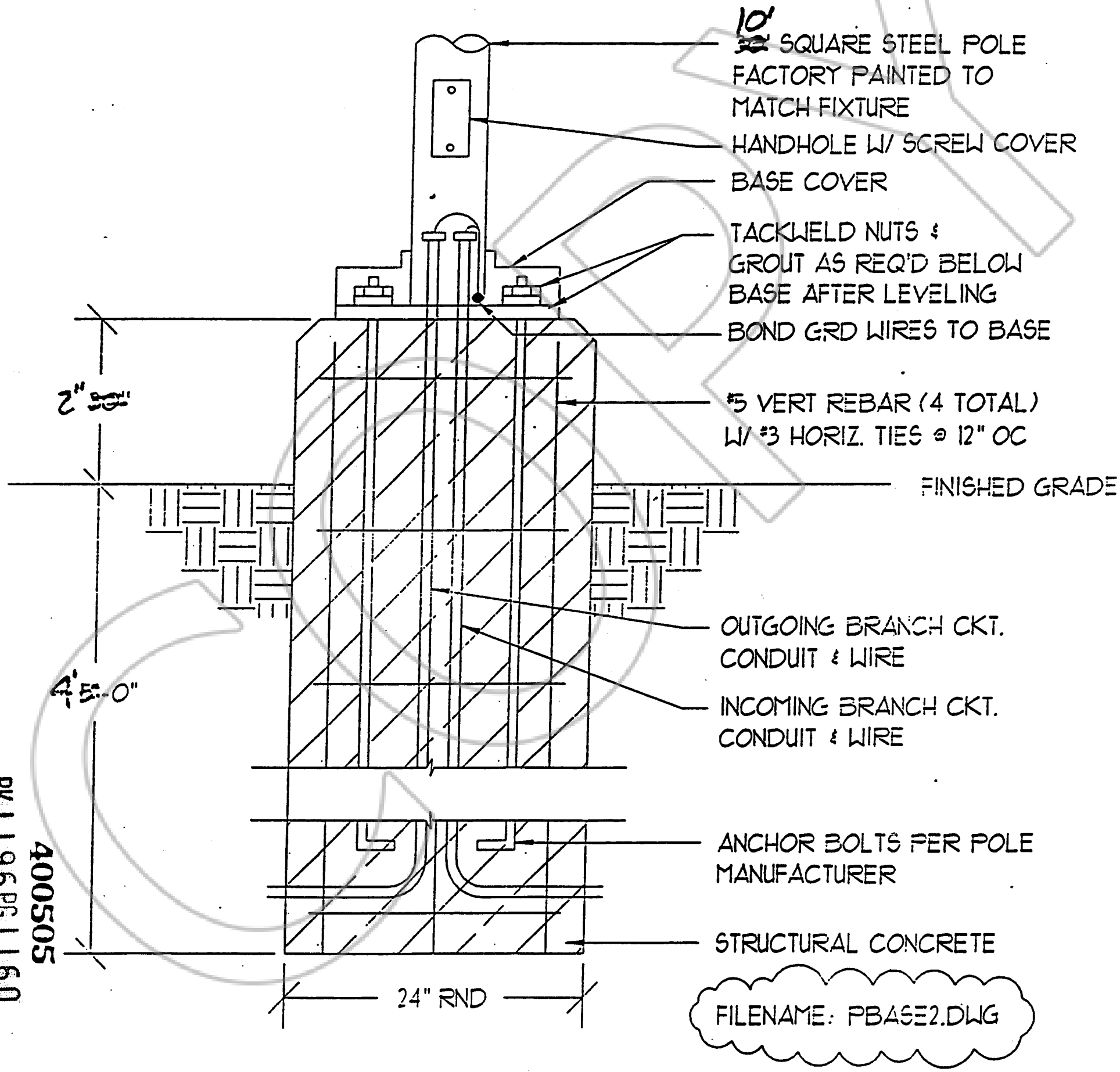
Horizontal footcandles
150 w HPS ED-17 14' mounting height



SL VG PT5-175MH ED-17

Horizontal footcandles
175 w MH ED-17 12' mounting height





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400505

B POLE BASE DETAIL TYPE ~~E~~ FIXTURE

SECTION 16502
EXTERIOR LIGHTING FIXTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and the general provisions of the Contract, including General and Supplementary Conditions and General Requirements (if any), apply to work specified in this section.

B. The requirements of Division 16 sections govern the work specified in this section, where applicable.

C. Refer to Section 16503 for requirements for lighting poles and standards.

1.2 DESCRIPTION OF WORK

A. The extent of exterior lighting fixture work is indicated by drawings and in schedules and by the requirements of this section.

B. The types of exterior lighting fixtures required for the project include the following:

1. High Intensity Discharge:

a. Metal halide.
b. High pressure sodium.

C. The applications of exterior lighting fixtures required for the project include the following:

1. Outdoor area lighting.
2. Outdoor security lighting.

1.3 QUALITY ASSURANCE

A. Manufacturers: Firms regularly engaged in the manufacture of exterior lighting fixtures of types and ratings required whose products have been in satisfactory use in similar service for not less than 5 years.

B. Installer: A firm with at least 3 years of successful installation experience on projects with exterior lighting fixture work similar to that required for the project.

C. NFPA Compliance: Comply with National Electrical Code (NFPA No. 70) as applicable to installation and construction of exterior lighting fixtures.

D. NEMA Compliance: Comply with applicable portions of National Electrical Manufacturers Association standards pertaining to outdoor lighting equipment.

E. ANSI Compliance: Comply with applicable American National Standards Institute standards pertaining to lamp materials and lamp ballasts.

F. UL Labels: Provide exterior lighting fixtures which have been listed and labeled by Underwriters' Laboratories.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's data on exterior lighting fixtures, including photometric data. Also submit certification of experience described in ¶1.3 A. and B.

B. Shop Drawings: Submit dimensioned drawings of exterior lighting fixture installations, ~~including but not necessarily limited to, layout, special relationship to associated panelboards, and connections to panelboards.~~ Submit fixture shop drawings in booklet form with a separate sheet for each fixture, assembled in luminaire "type" alphabetical order with the proposed fixture and accessories clearly indicated on each sheet.

C. In addition to the normal shop drawing requirements, a complete computer calculation of the overall site shall be made and submitted with other shop drawings. The computer readout shall be at a 1" = 100' scale showing building, fence, roadway and walkway outlines and shall be on a single sheet with footcandle readings every 50 feet (or 1/2 inch.)

1. Average maintained footcandles shall be [5] [3] with an average maximum-to-minimum ratio of less than 8. [Critical areas are the exercise yard, where 5 footcandles must be maintained, and the perimeter, where an average of 2 footcandles is required at 50 feet beyond the outside fence line.] Pole locations shall not be altered. Use a light loss factor of [.81] [.85 and a lumen level of 140,000]. A combination of symmetric and asymmetric [cutoff] distributions shall be used to produce the most even illumination practicable [without unnecessary light leakage to adjoining residential neighborhood].

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver exterior lighting fixtures individually wrapped in factory-fabricated, fiberboard-type containers.

B. Handle exterior fixtures carefully to prevent breakage, denting and scoring of fixture finishes. Do not install damaged lighting fixtures; replace and return damaged units to equipment manufacturer.

C. Store exterior lighting fixtures in a clean, dry space. Store in original cartons and protect from dirt and debris, physical damage, weather and construction traffic.

PART 2 - PRODUCTS

2.1 EXTERIOR LIGHTING FIXTURES - GENERAL

A. Provide lighting fixtures of sizes, types, and ratings indicated; complete with but not necessarily limited to: housings, lamps, lampholders, reflectors, ballasts, starters, and wiring.

The following is from a City of Reno spec:

B. Fixture Type A:

1. The street lights shall be a twin arm unit. Pole and bracket arm assembly sections shall be a one-piece, welded assembly from base casting through the heavy fixture fitter. Slip fit and/or setscrew mounting of the bracket arm assembly to pole will NOT be permitted.

2. Cast aluminum base is to be .250- to .188-inch wall and fitted with matching cast aluminum door held with stainless steel, recessed, Allen Head, tamper-resistant screws. Floor base is to be .750-inch thick; the outside diameter of the base is to be 11½ inches. Four (4) galvanized foundation bolts are to be located inside the base. Base section is to be 41 inches high.

3. The shaft will be 4-inch diameter--.125-inch wall of 6061-T-6 structural-grade aluminum, welded both inside and outside to the cast base. The top of the shaft is to be 12'-0" off grade.

4. Banner arms, two pair, 20 inches long, are to be on each side of the pole, parallel to fixture arms, one at 8'-3" and one at 11'-3", above grade and painted to match pole. The detachable banner arms shall be held with 1/2" x 20" stainless steel bolts threaded through pm castings welded to the side of the pole and threaded through the pole wall.

5. The bracket arms are to be a modified tee shape, 2 foot outside diameter with .125-inch wall. Top of the tee is to be 17'-6" above grade. The horizontal section is to extend 14 inches to each side and then turn down on a radius of 14 inches. The bottom of the globe is to be 14'-0" above grade. Grade is to be 6061-T-6 aluminum. The shaft section of the bracket arm shall extend into the shaft section of fluted shaft at least 18 inches. It shall be internally fastened at that point without visible appearance of any fastening device. The bracket arm shaft section shall then be circumferentially welded to the fluted section at the point of intersection.

6. The cast fitter, .250-inch wall thickness, shall contain the ballast assembly.

7. The reflector-acorn assembly shall attach to the fitter with four (4) stainless steel setscrews with an interference fit. The reflector shall have a welded metal ring for acorn fitter attachment. The entire assembly is to be fitted with neoprene gaskets. The underside of the reflector is to be finished in high reflectivity white enamel.

8. The acorn shape globe will be of polycarbonate 12 inches to 12 inches.

9. A glass refractor will be in each fixture. Light distribution of Type III or V as required.

10. The luminaire is to be manufactured by the pole manufacturer and to be UL listed as an assembly fixture.

11. The exterior of the assembly will first have a two-part catalytic primer followed by a matte black base coat. The final finish is a hand-applied verde green to look like oxidized brass.

12. Each luminaire shall contain a multi-tap ballast suitable for a 175 watt metal halide medium base lamp. Voltage as shown on the plans, CWA design.

13. Lamp is to be clear metal halide, designation MS-175/BU/MED.

14. Each pole shall be individually cartoned after being shock pad wrapped.

15. Assembly is to be Catalog # 2-1910/MRRT/RE/175 MH/4900-T-14 AG/2BA, manufactured by Sternberg Lanterns or equal approved by the City of Reno.

C. Fixture Type B: Lighted bollard is to be 42 inches high in the same pattern and color as the street light assembly. Catalog #3901-LB-70HM-VG, manufactured by Sternberg Lanterns or equal approved by the City of Reno.

2.2 BALLASTS

A. Provide HID lamp ballasts capable of operating lamps of type and rating indicated, auto-regulator type, high power factor 90% minimum, core and coil assembly encapsulated in non-melt resin; install capacitor outside ballast encapsulation for easy field replacement and enclose assembly in drawn aluminum alloy housing(s) unless otherwise specified.

B. Provide compact fluorescent ballasts which are encased and potted, high power factory types, rated for lamps starting to -20°F.

C. Provide [HID] lamp ballasts [and transformers] of the rating, type and make as recommended by the lamp manufacturer, which properly match the lamps to the power line by providing the appropriate voltages and impedances for which the lamps are designed.

2.3 100-FOOT TOWER LUMINAIRES

A. The luminaires shall be as shown on the drawings for use with a 24,000-hour, 140,000-lumen, 1,000-watt base up High Pressure Sodium (HPS) lamp. The maximum weight of the luminaire shall be 70 pounds, and its projected area shall not exceed 3.1 square feet.

B. The luminaire shall be of the open, ventilated design with an optical system consisting of prismatic glass or polished aluminum reflector.

C. The luminaire ballast shall be enclosed within a die-cast copper-free aluminum housing which integrally attaches to luminaire bracket entry and lamp support assembly. The housing shall be weather tight and shall pass the 1984 rain test in accordance with UL 1572. It shall also be UL listed to operate in 40°C ambient temperature and must be capable of starting and operating in temperatures to -40°F. The assembly shall include a gasketed side-entry slipfitter designed for 2 inch pipe with provision for 3 degree adjustment for leveling the luminaire. A terminal block shall be provided to simplify wiring and provide positive electrical connections.

D. The copper wound ballast shall operate the 1,000 watt HPS lamp at 277 volts with the following operating characteristics: Starting current less than operating current; operating line current, 3.9 amps; primary lamp extinguishing voltage, 240 volts; input wattage, 1065 watts; secondary open circuit voltage, 400 volts; and have its power factor over ninety percent (90%). It shall operate under a minimum ambient temperature of -40°F and shall provide lamp wattage regulation of ±10% for a line voltage variation of ±13%. All ballast components shall be mounted to a single die-cast aluminum plate which shall be completely removable as a unitized assembly without removing the luminaire from the mounting arm. All ballast components shall be factory tested and pre-wired to the quick disconnect.

E. 100-foot tower luminaires, poles and lowering device shall be the sole responsibility of a single manufacturer as described in Section 16503.

2.4 MANUFACTURERS

A. Provide products by or equal to the type indicated on the drawings in the fixture schedule.

PART 3 - EXECUTION

3.1 INSPECTION

A. Installer must examine the areas and conditions under which exterior lighting fixtures are to be installed and notify the [Architect/Engineer/Owner/Contracting Officer] in writing of conditions detrimental to the proper completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.2 INSTALLATION

A. Install exterior lighting fixtures of types indicated, where shown and at indicated heights, in accordance with lighting fixture manufacturer's written instructions and with recognized industry practices to ensure that fixtures comply with requirements and serve intended purposes. Comply with NEMA standards and requirements of National Electrical Code pertaining to installation of exterior lighting fixtures and with applicable portions of NECA's "Standard of Installation."

B. Fasten fixtures securely to indicated structural support and check to ensure that fixtures are plumb.

3.3 ADJUST AND CLEAN

A. Clean exterior lighting fixtures of dirt and debris upon completion of installation.

B. Protect installed fixtures from damage during remainder of construction period..

3.4 FIELD QUALITY CONTROL

A. Upon completion of installation of exterior lighting fixtures and after branch supply circuitry has been energized, apply electrical energy to demonstrate capability and compliance with requirements. Where possible, correct malfunctioning units at site, then retest to demonstrate compliance; otherwise, remove and replace with new units and proceed with retesting.

B. Replace defective and burned-out lamps for a period of one year following the date of substantial completion.

C. At the time of substantial completion, replace lamps in exterior lighting fixtures which are observed to be noticeably dimmed after Contractor's use and testing, as judged by the [Architect/Engineer/~~Owner~~/Contracting Officer]. Furnish stock or replacement lamps amounting to 10% (but not less than one lamp in each case) of each type and size lamp used in each type fixture. Deliver replacement stock as directed to [Owner/~~Government~~]'s storage space.

1. Refer to Division-1 sections for the replacement/restoration of lamps in exterior lighting fixtures where used for temporary lighting prior to time of substantial completion.

END OF SECTION 16502

SECTION 16503
LIGHTING POLES AND STANDARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and the general provisions of the Contract, including General and Supplementary Conditions and General Requirements (if any), apply to work specified in this section.

B. The requirements of Division 16 sections govern the work specified in this section, where applicable.

1.2 DESCRIPTION OF WORK

A. The extent of lighting poles and standards work is indicated by drawings and in schedules and by the requirements of this section.

B. The types of lighting poles and standards required for the project include the following:

1. Automobile parking lot lighting.
2. Pedestrian way lighting.
3. Site and walkway lighting.
4. Building entrances.
5. Vehicle traffic lighting.
6. General yard lighting.
7. Football field lighting.

C. Excavation and backfilling for poles and standards and foundations are specified in Section 16010.

D. Concrete for embedding poles and for pole foundations and footings are specified in Section 16010.

E. Refer to Division 2 sections for excavation and backfilling required in connection with electrical poles and standards (not work of this section).

F. Refer to Division 3 sections for concrete work required in connection with electrical poles and standards.

G. Refer to Section 16502 for exterior lighting fixtures (luminaires) required in connection with electrical poles and standards (not work of this section).

H. Refer to Section 16120 for cable, wire and connectors required in conjunction with electrical poles and standards (not work of this section).

1.3 QUALITY ASSURANCE

A. Manufacturers: Firms regularly engaged in the manufacture of poles and standards of the types and sizes required whose products have been in satisfactory use in similar service for not less than 5 years.

B. Installer: A firm with at least 3 years of successful installation experience on projects with electrical installation work similar to that required for the project.

C. NEC Compliance: Comply with National Electrical Code (NFPA No. 70) as applicable to location and installation of poles and standards.

D. NEMA Compliance: Comply with applicable portions of National Electrical Manufacturers Association standards pertaining to lighting poles and standards.

1.4 SUBMITTALS

A. Manufacturer's Data: Submit manufacturer's data on lighting poles and standards, including certified dimension drawings for fabricated poles and standards (including mast arms, if any). ~~Yard light calculations as required by Section 16502 shall accompany pole submittal.~~ Also submit certification of experience described in ¶1.3 A. and B.

B. Video: A VHS video format cassette shall accompany normal submittal data. The video shall demonstrate complete raising, lowering and latching methods used on 100-foot tower to be supplied.

C. A single, 100-foot tower assembly shall be erected as a prototype as described under PART 3 of this specification section.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Handle metal lighting standards carefully to prevent breakage, denting and scoring of the finish.

PART 2 - PRODUCTS

2.1 FABRICATED POLES AND STANDARDS

A. Metal Lighting Standards: Provide metal raceway-type lighting poles and standards of the size and type indicated, comprised of shaft and bracket, equipped with a grounding connection readily accessible from handhole or transformer base access door, and constructed of the following materials and additional construction features:

1. Material: Painted square steel.
2. Configuration: Anchor-base type with handhole and cover where indicated.

B. Metal Lighting Standard Accessories: Provide accessories for metal lighting standards, including anchor bolts, as recommended by the standard manufacturer of size and material needed to meet erection and loading application requirements.

2.2 100-FOOT TOWERS WITH LOWERING DEVICES

A. The high mast lighting system to be furnished in this project shall consist of a pole, a lowering device, a portable winch or hydraulic lowering unit and power unit, and luminaires (see Exterior Lighting Fixtures, Section 16502). All components of the high mast lighting system shall be supplied as one manufacturer's responsibility. Multiple-manufacturer purchase by Contractor with unit assembly at site causing multiple-manufacturer responsibility will not be accepted. It shall conform to the following specifications.

B. Poles:

1. Poles shall be 100 feet high and shall include shaft, handhole, support plate, anchor base, anchor bolts, nuts and circuit breaker.

2. Shaft shall consist of sections of round tapered steel tube, hot dipped galvanized in accordance with ASTM A123. The sections of steel tapered tube shall telescope such that the upper section slipfits the section below by a minimum of 2 inches less than 1.5 times the upper section inside diameter. Steel shaft shall have a minimum yield strength of 55,000 psi. Pole sections shall be fabricated from material per ASTM A595, GR.A. No field welding shall be permitted in the assembly of the pole.

3. Shaft shall be provided with proper size and reinforced handhole for installing, maintaining and servicing of the lowering device and/or electrical connections. A handhole cover shall be provided which shall be attached to the bar frame with a minimum of four (4) tamperproof hexhead bolts.

4. Anchor bolts shall be in accordance with pole manufacturer's recommendations as detailed on the drawings and specifications.

5. Design criteria for the pole shall be based on AASHTO 1975 Standard Specifications. The pole, complete with lowering device and luminaires in place, shall be capable of withstanding a sustained wind velocity of not less than 80 mph with gusts up to 130%.

6. Contractor is to provide weep holes under the base of the poles to prevent accumulation of condensation moisture.

C. Lowering Device: A lowering means shall be provided to service the light fixture. Lowering may be provided using a head ring with wench-operated cable lowering mechanism or by means of a fixed light ring and hydraulic lowering of the entire pole. All lowering methods shall include a portable lowering power unit. Light rings shall be locked in place when fully raised and shall provide a security latching method which will prevent accidental lowering or freefall of the light assembly.

2.3 MANUFACTURERS

A. Provide products by or equal to the type indicated on the drawings in the Fixture Schedule.

OR

B. For high-mast poles, provide products by one of the following:

1. General Electric Company.
2. Quality Lighting Company.
3. Holophane.
4. Union Metal Corporation.
5. Valmont Industries.

PART 3 - EXECUTION

3.1 INSPECTION

A. Installer must examine the areas and conditions under which lighting poles and standards are to be installed and notify the [Architect/Engineer/Owner/Contracting Officer] in writing of conditions detrimental to the proper completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.2 INSTALLATION

A. Prior to installation of the 100-foot tower assemblies, a single unit shall be installed complete as a prototype. The single tower shall be in complete working order and shall be tested in the presence of the [Architect/Engineer/Owner/Contracting Officer] for approval prior to any further installations. The prototype shall be latched and unlatched 20 consecutive times and shall be lowered and raised the total distance four times.

B. Install lighting poles and standards where shown in accordance with the manufacturer's written instructions and with recognized industry practices to ensure that the poles and standards comply with the requirements and serve the intended purposes. Comply with requirements of NEMA standards for installation of electrical poles and standards.

C. In order to protect finish, use belt slings or rope (not chain or cable) to raise and set finished poles or standards.

D. Set poles and standards plumb. Support adequately during backfilling or anchoring to foundations.

E. Provide sufficient space encompassing the hand access and cable entrance holes for installation of cables from underground where indicated.

F. Grout around the pole base plate and concrete base for smooth, complete finish.

3.3 GROUNDING

A. Provide positive equipment ground for each pole and standard installation where indicated.

3.4 FIELD SUPERVISION (100-FOOT TOWERS)

A. A representative of the manufacturer of the high mast lighting system shall be present to supervise the assembly and installation of the pole, lowering device and luminaires. A minimum of five (5) days' supervision shall be provided.

B. The representative shall supervise the initial lowering and raising of the lowering device in each pole and also conduct a one-hour training session for maintenance personnel after installation of the high mast lighting system, at a time to be selected by the [Owner/Government].

C. The cost of training session and manufacturer's representative shall be included in the high mast lighting system price.

3.5 TESTING

A. In addition to prototype testing as described above, the Contractor shall demonstrate each assembly in the presence of the [Architect/Engineer/Owner/Contracting Officer], latching and unlatching four times and complete-distance raising and lowering one time. Demonstration shall include operation of the luminaires.

B. Test all wiring to ensure it is free of shorts and properly connected.

END OF SECTION 16503

REQUESTED BY
DOUGLAS COUNTY
IN OFFICIAL RECORDS OF
DOUGLAS CO., NEVADA

'96 NOV -7 A11 :26

LINDA SLATER
RECORDER
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CERTIFIED COPY

The document to which this certificate is attached is a full, true and correct copy of the original on file and on record in my office.

DATE: October 24, 1996

B. REED Clerk of the 9th Judicial District Court of the State of Nevada, in and for the County of Douglas.

By Carol F. Pudlock Deputy

SEAL