

Optimum Personal Care
 Landscape Improvements
 Sugar Land, TX

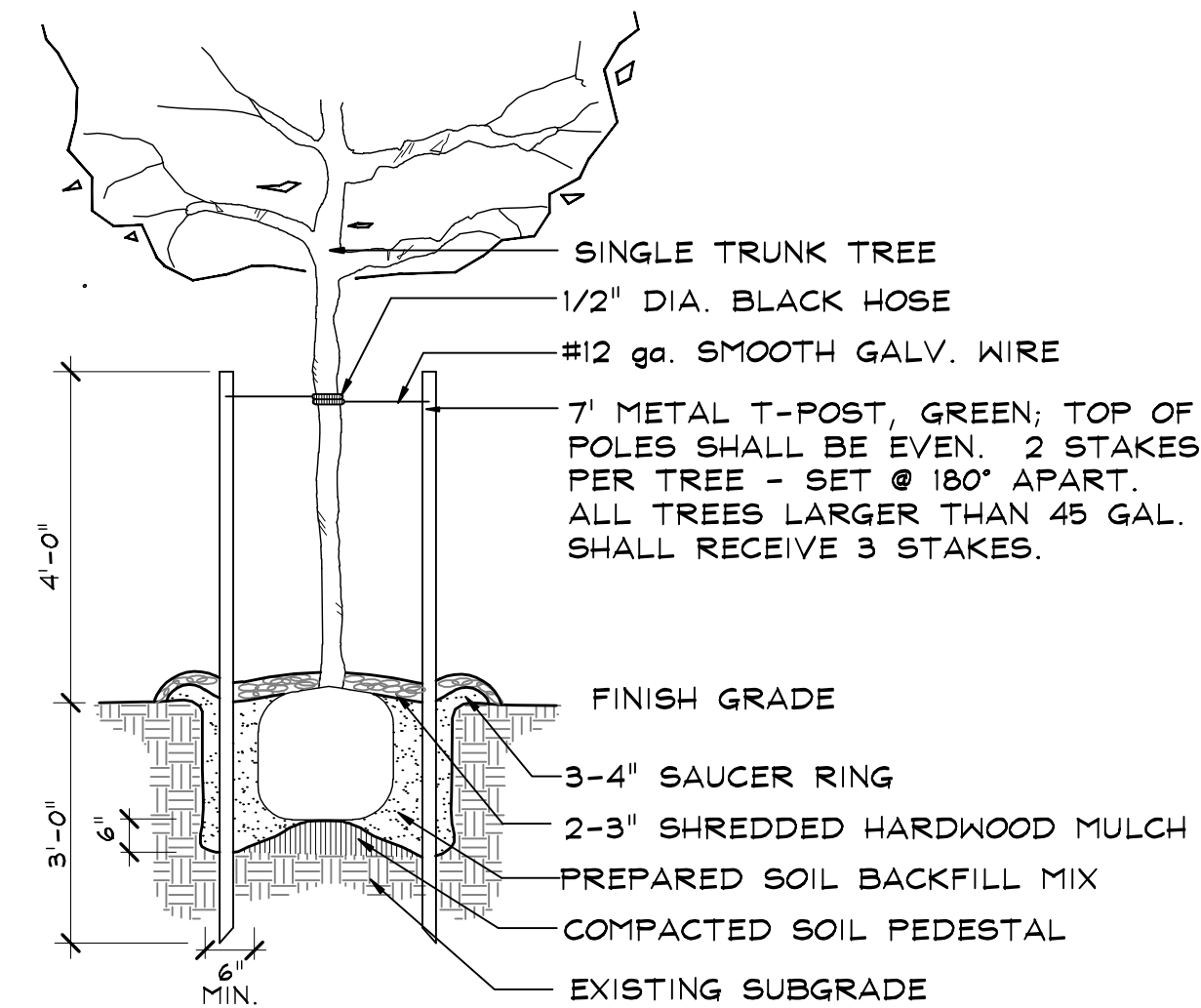
Job No.: 106-01-08
 Scale: 1" = 20' - 0"
 Date: April 18, 2013
 Revised:

Site Landscape
 Plan

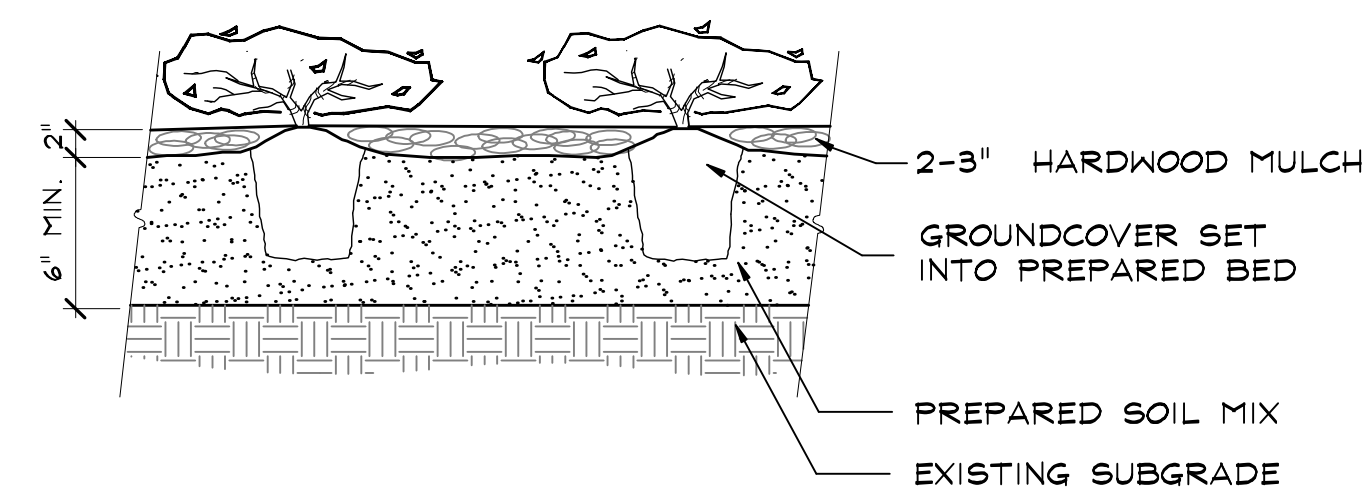


NOTES:

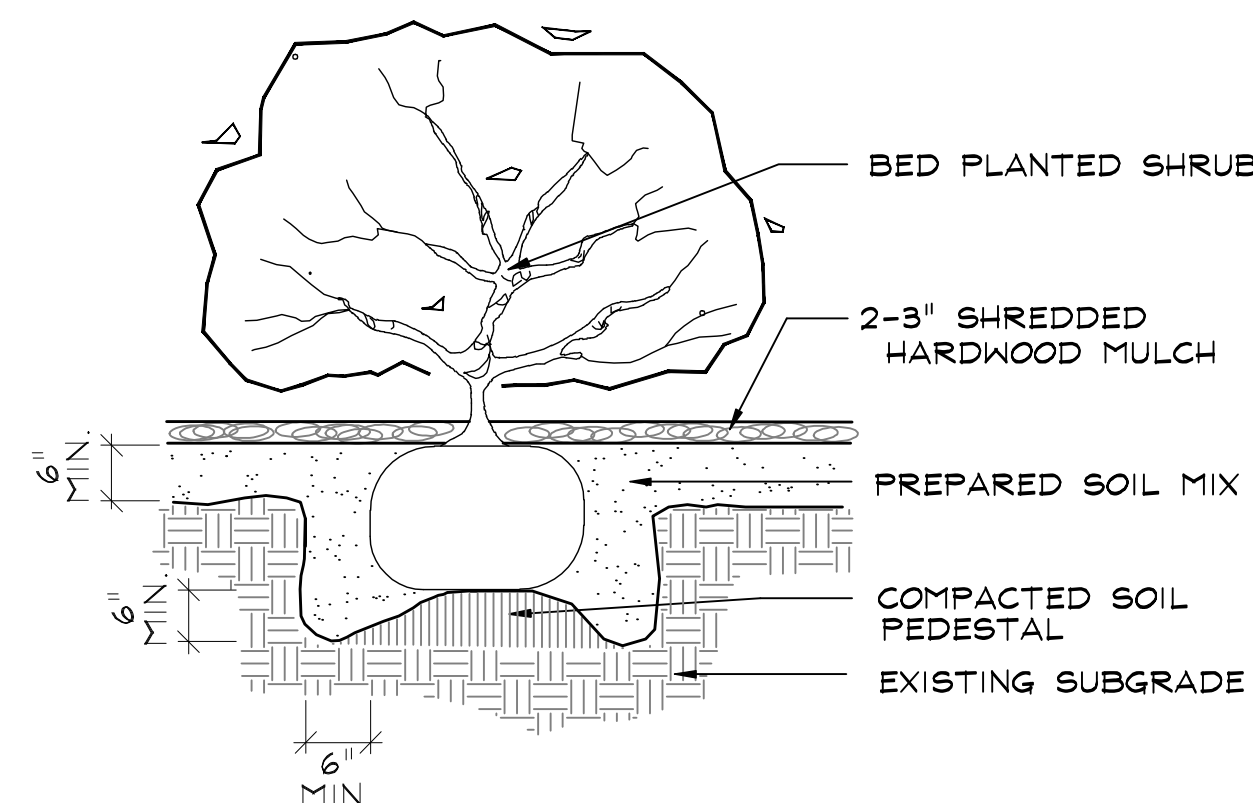
1. CONTRACTOR SHALL APPLY FOR AND PROCURE ALL REQUIRED PERMITS PRIOR TO COMMENCING WORK.
2. CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES PRIOR TO COMMENCING WORK. CONTACT ALL UTILITY COMPANIES MINIMUM 48 HOURS PRIOR TO ANY WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR BECOMING FAMILIAR WITH ALL UNDERGROUND UTILITIES, PIPES, STRUCTURES, ETC. CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY FOR ANY COST INCURRED DUE TO DAMAGE OF THESE UTILITIES.
3. CONTRACTOR SHALL NOT WILLFULLY PROCEED WITH CONSTRUCTION AS DESIGNED WHEN IT IS OBVIOUS THAT UNKNOWN OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY NOT HAVE BEEN FORESEEN IN THE DESIGN. SUCH CONDITIONS SHALL BE BROUGHT UP TO THE OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY NECESSARY CHANGES DUE TO FAILURE TO GIVE SUCH NOTIFICATION.
4. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER SUBCONTRACTORS ON THE JOBSITE AS REQUIRED TO COMPLETE CONSTRUCTION.
5. CONTRACTOR TO PROVIDE SAMPLES OF EACH SHRUB AND GROUND COVER SPECIES OR NURSERY SOURCE FOR APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. ALL PLANTS ARE TO BE SPECIMEN QUALITY, FULL POT AND HEAD, SYMMETRICAL FOLIAGE AND BRANCHING STRUCTURE. SHRUBS SHALL BE FULL TO GROUND. PLANT MATERIAL OF THE SAME SPECIES SHALL BE OBTAINED FROM THE SAME SOURCE. MATERIAL SHALL BE SHIPPED DIRECTLY FROM NURSERY AND NOT FROM CONTRACTOR'S HOLDING YARD AFTER AN EXTENDED PERIOD. LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY AND ALL PLANT MATERIAL THAT DOES NOT MEET SATISFACTORY EXPECTATIONS OF LANDSCAPE ARCHITECT.



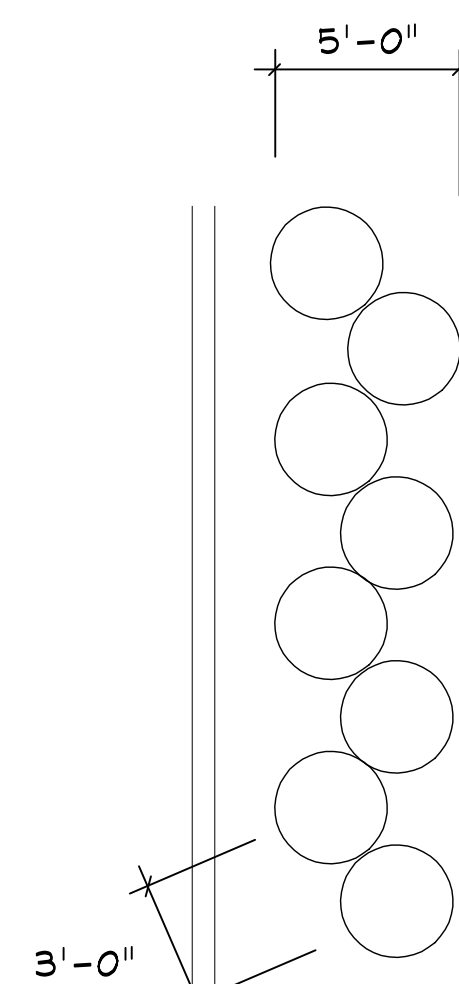
C - TREE PLANTING
SCALE: NTS



B - GROUND COVER PLANTING
SCALE: NTS



A - SHRUB PLANTING
SCALE: NTS



D - SHRUB SCREENING DETAIL
SCALE: NTS

PLANT LIST

SYMBOL	QTY	COMMON NAME	SCIENTIFIC NAME	SIZE	REMARKS
(+)	28	LIVE OAK	<i>Quercus virginiana</i>	45gal	2.5" cal.; 10-12'ht; 7-8'sprd; specimen; CONTAINER GROWN
(*)	2	CRAPEMYRTLE	<i>Lagerstroemia x faurei 'Tuscarora'</i>	30gal	8-10'ht; 5-6'sprd.; Multi trunk, min. 3 canes
(⊙)	11	WAXMYRTLE	<i>Myrica cerifera</i>	10gal	48" ht.; 48" sprd. Full, rooted.
(⊙)	4	NEEDLEPOINT HOLLY	<i>Ilex cornuta 'Needle Point'</i>	7gal	36" ht.; 24" sprd. Full, rooted. PYRAMIDAL
(○)	290	WAX LIGUSTRUM	<i>Ligustrum japonicum</i>	3gal	30" ht.; 24" sprd. Full, rooted.
(⊙)	95	INDIAN HAWTHORN	<i>Raphiolepis indica 'Clara'</i>	3gal	20" ht.; 20" sprd. Full, rooted.
(○)	50	RED DRIFT ROSE	<i>Rosa 'Meigalpio'</i>	3gal	18" ht.; 18" sprd. Full, rooted.
(⊙)	44	PINK DRIFT ROSE	<i>Rosa 'Meijacos'</i>	3gal	18" ht.; 18" sprd. Full, rooted.
(⊙)	16	FOXTAIL FERN	<i>Asparagus meyeri 'Foxtail Fern'</i>	3gal	18" ht.; 18" sprd. Full, rooted.
(○)	38	KNOCKOUT ROSE DOUBLE PINK	<i>Rosa 'Pink Double Knock Out - Raatkopink'</i>	3gal	24" ht.; 24" sprd. Full, rooted.
(⊙)	48	KNOCKOUT ROSE	<i>Rosa 'Radrazz'</i>	3gal	24" ht.; 24" sprd. Full, rooted.
(○)	218	BOXWOOD	<i>Buxus sempervirens</i>	3gal	24" ht.; 12" sprd. Full, rooted.
(⊙)	12	BOUGAINVILLEA	<i>Bougainvillea glabra</i>	3gal	18" ht.; 18" sprd. Full, rooted. TRAINED TO ARBOR
(*)	76	FOXTAIL FERN	<i>Asparagus meyeri 'Foxtail Fern'</i>	1gal	12" ht.; 12" sprd. Full, rooted.
(*)	200	MONDO GRASS	<i>Ophiopogon japonicus</i>	1gal	8" ht.; 8" sprd. Full, rooted.
(*)	129	DIANELLA	<i>Dianella caerulea</i>	1gal	12" ht.; 12" sprd. Full, rooted.
(*)	110	AGAPANTHUS	<i>Agapanthus africanus 'Peter Pan'</i>	1gal	12" ht.; 12" sprd. Full, rooted.
(*)	240	SEASONAL COLOR	Seasonally Appropriate	4"pot	Full, 9" o.c.
(*)		ST AUGUSTINE	<i>Stenotaphrum secundatum</i>	sod	

CITY OF SUGAR LAND TABULATIONS

LAKE VIEW DRIVE = 348' /50
7 TREES REQUIRED
7 TREES PROVIDED
(7) LIVE OAK

PARKING CALCULATION:
48 PARKING SPOTS
3 TREES @ 486 SF LANDSCAPE AREA
(4) LIVE OAKS PROVIDED
902 SF LANDSCAPE AREA PROVIDED

Job No.: 106-01-08

Scale:

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PLANTING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and all applicable specification sections, apply to this section.

1.02 DESCRIPTION OF WORK

A. This Section specifies the requirements for providing planting materials and their installation as indicated and scheduled. For grass installation refer to Section – Sodding

1.03 QUALITY ASSURANCE

A. Installer: Installation of planting work shall be performed by a single firm specializing in landscape and planting work. Contractor shall be licensed by the Texas Association of Nurserymen, shall possess an agricultural certificate, shall be a licensed pest applicator, and shall have not less than 5 years of experience in this type of work.

B. Quality Control

1. Trees, Shrubs, and Groundcovers:

a. Provide plants of quantity, size, genus, species and variety shown and scheduled for planting work and complying with recommendations and requirements of ANSI Z60.1 "American Standard for Nursery Stock." Provide healthy, vigorous stock, grown in recognized nursery in accordance with good horticultural practice and free of disease, insects, eggs, larvae and defects such as knots, sun-scald, injuries, abrasions, or disfigurement.

b. Label each plant with securely attached waterproof tag bearing legible designation of botanical and common name.

2. Compliance: Ship planting materials with Certificates of Inspection as required by governing authorities. Comply with all applicable local, state, and federal requirements regarding materials, methods of work, and disposal of excess and waste materials.

3. Substitutions: Do not make substitutions unless approved in writing by Landscape Architect. If specified planting material is not obtainable, submit proof of non-availability to Landscape Architect together with proposal for use of equivalent material. Contractor shall submit proposal in a timely manner as to not impact project completion or installation of other work.

4. Analysis and Standards: All packaged products shall be delivered in original manufacturer's sealed containers. For unpackaged materials, submit analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.

5. Inspection: Notify Landscape Architect at least 2 weeks prior to installation, of location where materials that have been selected for planting may be inspected, either at place of growth or the site prior to planting. Plant material will be inspected for compliance with requirements for genus, species, variety, size and quality. Landscape Architect retains right to further inspect trees for size and conditions of balls and root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work. Contractor shall remove rejected trees immediately from site and replace with specified materials. Plant material not installed in accordance with Contract will be rejected.

C. Reference standards Applicable to this section:

1. ANSI: American National Standards Institute
- a. Z60.1: Nursery Stock
2. Association of Official Agriculture Chemists
3. FS: Federal Specifications and Standards
- a. Q-P-166E: Peat, Moss; Peat, Humus; and Peat, Reed-Sedge
4. NBS: National Bureau of Standards
- a. PS23: Perlite Product Standard

1.04 SUBMITTALS

A. Work Schedule: Contractor shall submit a work schedule for all planting work prior to purchase and installation of plant material.

B. Certification:

1. Submit, for landscape Architect's review and approval, manufacturer's or vendor's certified analysis of soil amendments. Submit other data substantiating that materials comply with specified and indicated requirements.
2. Fertilizer certification shall be submitted for landscape Architect's review and approval as to the chemical analysis of the fertilizer, a listing of the elements contained therein and their percentages.
3. Maintenance Instructions: Submit typewritten instructions, including manufacturer's recommendations and instructions recommending procedures to be established by Owner for maintenance of planting work. Submit instructions prior to expiration of contractor's required maintenance period.

D. Submittals: Contractor shall submit in writing materials used on jobsite. Provide company name of product or nursery.

1.05 DELIVERY, STORAGE AND HANDLING

A. Packaged Materials: Deliver packaged materials in fully labeled original containers showing weight, analysis and names of manufacturer. Protect materials from deterioration during delivery, and while stored at site.

B. Plants:

1. Do not drop stock during delivery.
2. Materials shall not be pruned prior to installation unless otherwise approved by Landscape Architect in writing. Do not bend or bind-tie trees and shrubs in such a manner as to damage bark, break branches or destroy natural shape. Provide protective covering during delivery.
3. Deliver plants after preparation for planting has been completed and plant immediately. If planting is delayed more than 7 hours after delivery, set plants in shade, protect from weather and mechanical damage. Keep roots moist by covering with mulch, burlap or other acceptable means of retaining moisture, and water as needed.
4. Do not remove container grown stock from containers before time of planting and water immediately after delivery and prior to planting.

1.06 JOB CONDITIONS

A. Work Scheduling: Proceed with and complete planting work in a timely manner, working within seasonal limitations for each kind of planting work required.

B. Planting time

1. Correlate planting with specified maintenance periods to provide maintenance from date of Substantial Completion.
2. Plan to frost-tender trees only after danger of frost is past or sufficiently before frost season to allow for establishment before first frost. Do not plant in frozen ground.
3. Plant trees, shrubs and groundcover after final grades are established and prior to planting of lawns, unless otherwise directed by Landscape Architect in writing. If planting occurs after lawn work, protect lawn areas and promptly repair damage to awns resulting from planting operations.

A. Utilities: Refer to engineering drawings and coordinate with Utility Contractor for location of utilities. Contractor shall be responsible for damage to existing utilities and structures.

B. Security: The Owner will not assume any responsibility for security of any materials, equipment, etc. during construction of the project until project acceptance.

C. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions beyond the scope of this contract, or obstructions, notify Landscape Architect of such conditions, immediately and before planting.

D. Pollution Control: Control dust caused by planting operations. Dampen surfaces as necessary. Comply with pollution control regulations of governing authorities.

1.07 SUBSTANTIAL COMPLETION AND FINAL ACCEPTANCE

A. Substantial Completion notice for planting work will be issued by landscape Architect only for entire planting and landscape work.

B. Substantial Completion notice will be issued only after Owner and Landscape Architect inspect and approve all required planted materials and grassed areas.

C. Final acceptance will be determined after the maintenance period and when all plant materials are alive and healthy and grass areas are established.

D. Final acceptance notice will be issued only after Owner and Landscape Architect inspect and approve all planting work as in accordance with the Contract Documents.

1.08 SPECIAL PROJECT WARRANTY

A. Contractor shall furnish written warranty of trees, shrubs and groundcover for 12 months after date of final acceptance, against defects including death and unsatisfactory growth, except for defects resulting from neglect by Owner or abuse or damage by others. (Machine moved trees installed by others under a separate contract shall be warranted by others.)

B. Remove and replace shrubs and groundcover found to be dead or in unhealthy condition during warranty period. Replace shrubs and groundcover which are in doubtful condition at end of warranty period. However, if in the opinion of Owner, such doubtful material may survive, Contractor shall extend the warranty period for a full growing season. Owner will determine which items are in doubtful condition.

C. Another inspection will be conducted by Owner, at end of extended warranty period to determine acceptance or rejection.

PART 2 PRODUCTS

2.01 MATERIALS

A. Fertilizer

1. Granular fertilizer shall be a commercial fertilizer, uniform in composition, free flowing, and suitable for application with approved equipment. Fertilizer which has been exposed to high humidity and moisture, has become caked or otherwise damaged making it unsuitable for use, will not be acceptable. Application shall be Osmocote 13, 13, 13 + Iron by Sierra Chemical, 1-800-492-8255, 1001 Yosemite Dr. Milpitas, CA 95035, or approved equal. Broadcast rototill fertilizer at the rate of 3 lbs. Actual nitrogen per 1000 square feet into prepared planting soil.

A. Sharp Sand: Sand shall be thoroughly washed, coarse grade shape, construction or brick sand, free of clay balls, weeds, and grass. So-called cushion sand, blow sand, or creek silt is not acceptable for substitution where sharp sand is specified.

B. Herbicide

1. Pre-emergent herbicide shall be Eptam 5G by Green Light Co., P. O. Box 471, Missouri City, TX, 77459, (713) 438-6824, or approved equal.

2. Contact herbicide shall be Roundup by Monsanto, 800 N. Lindbergh, St. Louis, Missouri, 63167, (314) 694-1000, or approved equal.

D. Bark Mulch for top dressing: Organic mulch free from deleterious materials and suitable for top dressing of trees, shrubs or plants. Mulch shall be composted, well rotted, shredded hardwood mulch, black or dark brown in color. Enriched Bark Mulch for bed prep shall be as above with additional organic of peat and/or manure.

E. Root Stimulator: Shall be Hi-Yield Root Stimulator 5-12-3, by Voluntary Purchasing Group, P. O. Box 460, Bonham, TX, 75418, (214) 583-5501, or approved equal. Spreader sticker as needed.

F. Fire Ant control: Durzban or 1% Diazanon Granular as manufactured by Green Light Projects Co., San Antonio, TX, 78217 or Logic by PBI Gordon, Kansas City, MO.

G. Insecticide: Lindane with Adjuvant distributed by Escro Distributors, 514 W. 25th, Street, Houston, TX, 77008, (713) 864-7771.

H. Planting Backfill Mix: Shall be 33% topsoil, 33% sharp sand, and 33% enriched bark mulch or approved commercially available planter's soil mix. Add fertilizer as per specifications. Contractor shall submit source or sample to Landscape Architect.

I. Topsoil

1. Provide topsoil which is fertile, friable, natural loam, surface soil, free of subsoil, clay lumps, brush, weeds and other litter, and free of roots, stumps, stones larger than 2 inches in any dimension and other extraneous or toxic matter harmful to plant growth.

2. Obtain topsoil only from naturally, well-drained sites where topsoil occurs in a depth of not less than 4 inches. Topsoil shall not be collected from sites that are infested with growth of, or the reproductive parts of noxious weeds, especially nut grass. Topsoil shall not be stripped, collected or deposited while wet. Topsoil shall not be excessively acid or alkaline or contain toxic substances which may be harmful to plant growth. Topsoil shall be without admixture of subsoil.

2.02 PLANT MATERIALS

A. Shrubs and Groundcover: Provide specimen quality plant material as described in Construction Documents. Each individual species of plant material shall be obtained and provided from a single source.

PART 3 EXECUTION

3.01 PREPARATION

A. Grading

1. Strip existing vegetation and soil in areas to receive planting and grass to depth shown on drawings. Backfill with topsoil and planting backfill mix to depth shown on drawings.

2. Perform grading within Contract limits, including adjacent transition areas, where required, to new elevations, levels, and contours indicated. Provide subgrade surfaces parallel to finished surface grades. Provide uniform levels and slopes.

3. Grade surface to ensure areas drain away from structures and to prevent ponding and pockets of surface drainage. Provide subgrade surfaces free from irregular surface changes. Provide subgrade surface free of exposed boulders or stones exceeding 4 inches in greatest dimension in paved areas; 2 inches lawn areas.

4. Provide adequate drainage of the working area at all times.

5. Fine grade topsoil eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles, and contours of subgrades.

6. Remove stones, roots, weeds, and debris while raking topsoil. Rake surface clean of stones 1 inch or larger in any dimension and of all debris. Place planting backfill mix to depth specified on drawings.

7. All finished grades shall meet line and grade of pavement. Finished grades (top of soil prior to hydromulch) shall be maximum of 1 inch below walkway pavement surface. Grade all slopes from rear of landscape easement or center of medians to walkways and curbs at a minimum of 2 percent slope.

B. Plant Layout: Layout individual tree locations of trees to be machine moved by others and areas for multiple plantings as shown on drawings. In case of conflicts or non-contractual conditions, notify Landscape Architect before proceeding with the work.

A. Preparation of Planting Backfill Mix

1. Mix specified soil amendments and fertilizers with topsoil at rates indicated. Delay mixing of fertilizer if planting will not follow placing of planting soil within 48 hours, unless otherwise directed. Amendments shall be incorporated into soil as a part of the soil preparation process prior to fine grading, fertilizing, and planting. Each amendment material shall be broadcast or spread evenly at the specified rate over the planting area.

Amendments shall be thoroughly incorporated into the topsoil until amendments are pulverized and have become a homogeneous layer of soil ready for planting.

Incorporation and mixing shall be accomplished by mechanical means.

1. For planting beds, mix planting soil prior to backfilling.

D. Fire Ant Control: Fire ants will be controlled with broadcast application of insecticide at a rate of 1-1/2 lbs. bait per acre. Apply after dew has dried and when no rain is expected for 6 hours. Use properly calibrated equipment to assure uniform distribution. Apply to entire area of planting/grassing.

3.02 PLANTING

A. Excavation for Shrubs

1. Excavate pits, beds and trenches with vertical sides and with bottom of excavation slightly raised at center to provide proper drainage.

2. Make excavations at least half again as wide as the ball diameter and equal to the ball depth, plus 3" allowance for setting of ball on a layer of compacted backfill.

3. Dispose of subsoil removed from planting excavations. Do not mix with planting soil or use as backfill.

B. Planting Large Shrubs

1. Set stock on layer of compacted planting soil mixture, plumb and in center of pit at same elevation as adjacent finished planting grades. Place fertilizer tablets evenly spaced in hole at specified rate. Place additional backfill mix around base and sides of ball and work each layer to settle backfill and eliminate voids and air pockets. When excavation is approximately 2/3 full, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Dish top of backfill to allow for mulching.

2. Prune, thin and shape shrubs in accordance with standard horticultural practice. Prune shrubs to retain natural character. Remove and replace excessively pruned or misformed stock resulting from improper pruning.

C. Planting Shrubs, Groundcover and Seasonals

1. Excavate hole as necessary to accommodate root ball. Place fertilizer tablet(s) or granular fertilizer in hole according to recommended rate. Backfill hole with planting backfill mix. Water after planting to remove voids and place additional prepared soil to cover root ball if necessary.

2. Mulch entire planting bed areas with 2-3 inches bark mulch spread consistently and evenly across root balls and entire planting bed areas.

3.03 CLEANUP AND PROTECTION

A. During planting work, keep pavements clean and work area in an orderly condition. Sweep site and remove trash at end of each workday as necessary.

B. Protect planting work and materials from damage due to planting operations, operations by other contractors and trades and trespassers. Maintain protection during installation periods. Treat, repair or replace damaged plantings as directed by Landscape Architect.

C. Stockpile, haul from site, and legally dispose of waste materials and debris. Accumulation will not be permitted. Maintain haul and disposal routes clear, clean and free of debris. On-site burning of combustible cleared materials will not be permitted.

D. Upon completion of work, clean areas within Contract limits; remove tools, supplies and equipment. Wash down curbs and pavement areas as directed by Landscape Architect to ensure a clean surface. Provide site clean and free of materials and suitable for use as intended.

3.04 MAINTENANCE

A. Contractor shall correctly maintain the planting work throughout the installation process and throughout the landscape maintenance period as specified in Section 02493, Exterior Landscape Maintenance.

3.05

A. While planting work is completed and at the completion of maintenance period, Owner will make an inspection to determine acceptability.

B. When inspected planting work does not comply with the Contract Document requirements, replace rejected work and continue specified maintenance until reinspected by Owner and found to be acceptable. Contractor shall remove rejected plants and materials promptly from site.

END OF SECTION

SODDING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and all applicable specification sections, apply to this section.

1.02 DESCRIPTION

A. Provide sodding as specified and as indicated.

1.03 SUBMITTALS

A. Sod Certification: Certification shall be submitted from the sod nursery as to the grass species, the average date for the first freeze in the fall and the date of stripping. Certification shall accompany the production of the sod.

B. Fertilizer Certification: Certification shall be submitted from the fertilizer manufacturer as to the chemical analysis of the fertilizer, a listing of the elements contained therein and their percentages. Certification shall also indicate that the fertilizer is in accordance with the requirements of the Texas Fertilizer Law.

1.04 PRODUCT HANDLING

A. Sod Delivery: Sod shall be delivered on pallets with the root system protected from exposure to wind and sun. Stripping and delivery shall be timed so that sod will be placed within 48 hours of stripping.

B. Fertilizer Delivery: Fertilizer shall be delivered in the manufacturer's unopened containers, labeled to indicate the manufacturer's name and product identification. Containers shall be stored protected from ground contact and from the elements.

1.05 JOB CONDITIONS

A. Sod shall be placed during the period between the last freeze in the spring and 6 weeks prior to the average date for the first freeze in the fall according to the National Weather Service for the area in which the work is located.

1.06 GUARANTEE

A. A written guarantee shall be provided guaranteeing the sodded areas are in a healthy, vigorous, undamaged condition for a period of 90 days beginning on the date of final acceptance. Guarantee shall provide for filling, leveling, and repairing eroded areas, or resodding areas exhibiting lack of healthy growth.

PART 2 PRODUCTS

2.01 SOD

A. Sod shall be nursery grown Common Bermuda sod having a healthy, virile root system of dense, thickly matted roots throughout the soil of the sod for a minimum thickness of 1 inch. Sod shall be free of noxious weeds and undesirable native grasses. Soil attached to the sod shall be free of stones and debris.

B. Sod shall have been mowed within 7 days of being stripped. Sod shall be provided in rectangular pads of not less than 12 inches nor more than 24 inches. Dry sod will be rejected.

2.02 TOPSOIL

A. Provide topsoil which is fertile, friable, natural loam, surface soil, free of subsoil, clay lumps, brush, weeds and other litter, and free of roots, stumps, stones larger than 2" in any dimension and other extraneous or toxic matter harmful to plant growth.

B. Obtain topsoil only from naturally, well-drained sites where topsoil occurs in a depth of not less than 4". Topsoil shall not be collected from sites that are infested with growth of or the reproductive parts of noxious weeds, especially nut grass. Topsoil shall not be stripped, collected or deposited while wet. Topsoil shall not be excessively acid or alkaline or contain toxic substances which may be harmful to plant growth. Topsoil shall be without admixture of subsoil.

2.03 FERTILIZER

A. Fertilizer shall be granulated fertilizer with an analysis of 16-8-8 + iron, unless otherwise indicated. The figures in the analysis represent the percent of nitrogen, phosphoric acid and potash nutrients respectively.

B. Fertilizer shall be uniform in composition and dry. Fertilizer shall be furnished in unopened containers, labeled to indicate the analysis of the contents. Caked or otherwise damaged material will be rejected.

PART 3 EXECUTION

3.01 INSPECTION

A. Surfaces indicated to be sodded shall be inspected to verify that all preceding work in the area has been completed. Sodding shall not start until all preceding work has been completed.

3.02 SODDING

A. Preparation

1. Strip existing vegetation and 1 inch of existing soil from all areas to receive sod not stripped and graded under previous work or contract.

2. After stripping, loosen soil to a depth of 1-1/2 inches prior to laying sod. Remove all stones, roots, vegetation, rubbish, debris and other foreign matter 1" in diameter or larger from the 2" of soil. No foreign matter may be buried on site. Hand rake to achieve smooth grade.

3. Fertilizer shall be uniformly spread over the topsoil at the average rate of 400 lbs. per acre and shall be raked into the topsoil to a full 2-inch depth.

4. Immediately prior to placing sod, the fertilized topsoil substrate shall be lightly moistened.

B. Installation

1. All sod shall be carefully laid in parallel rows in a smooth manner, alternating all sod joints. Fit sod strips tightly together so that no joints are visible and tamp firmly. Cut pieces of sod to fill any voids left.

2. Water sod immediately after planting, slowly but thoroughly, to secure at least six (6) inches penetration into the soil below the sod. Do not allow the blades of grass to wilt. The sodded area shall be rolled to form a thoroughly even, solid mat. Any voids left in black sodding shall be filled with cut sod pieces and/or topsoil.

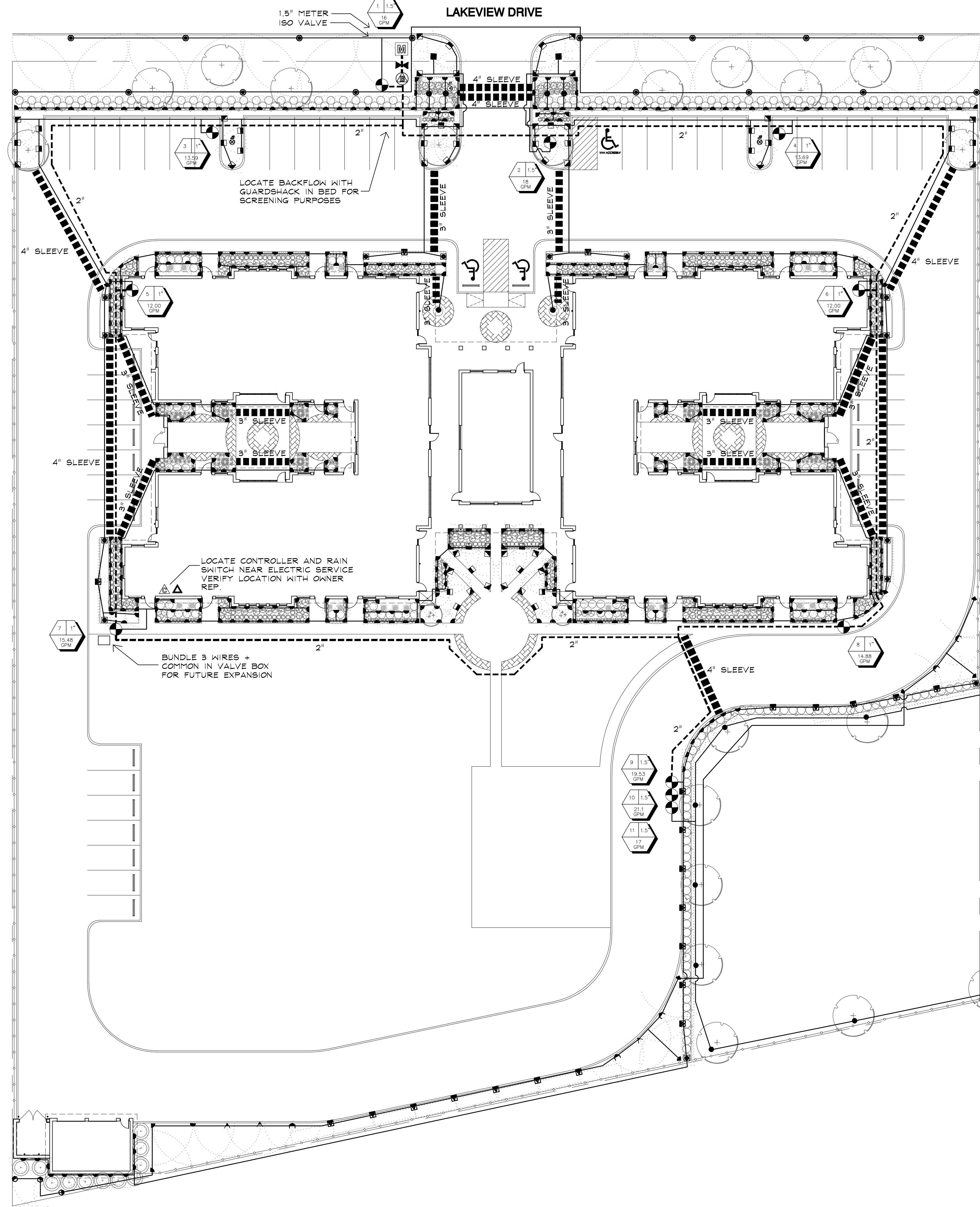
3. Follow the completion of the installation, the sod shall be watered in an amount and as often as necessary to maintain healthy growth of the grass.

4. Treat entire areas of sod for fire ants with Durzban as per manufacturer's instructions.

3.03 MAINTENANCE OF SODDED AREAS

A. Contractor shall correctly maintain the sodded areas throughout the installation. Contractor shall be responsible for care and maintenance of entire project.

END OF SECTION



ALL LAWN AREAS SHOULD BE 1804 POP-UPS AND BED AREAS SHOULD BE 1812 POP-UPS EXCEPT WHERE NOTED.

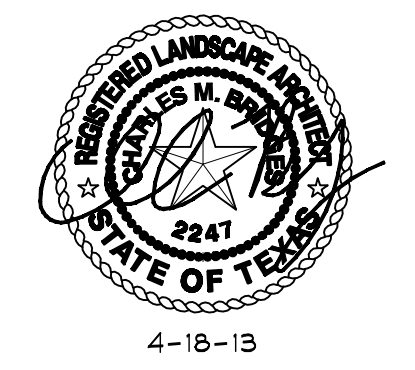
PIPE SIZING CHART:

CLASS 200 PVC LATERAL LINES (1/2" IS SCH. 40)

SIZE	GALLONS
1/2"	0 - 6
3/4"	6.1 - 10
1"	10.1 - 17
1 1/4"	17.1 - 26
1 1/2"	26.1 - 36
2"	36.1 - 55

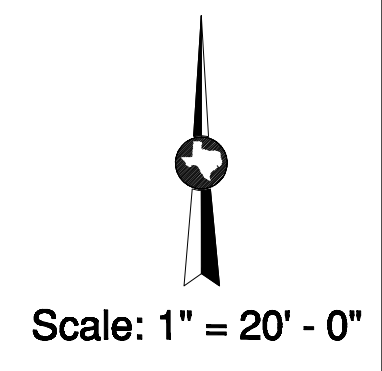
Symbol	Description	Part #	Pressure	Flow	Radius
▲	Rain Bird 5H	5H	30	0.2	5
▼	Rain Bird 5Q	5Q	30	0.1	5
■	Rain Bird 8H	8H	30	0.52	8
◆	Rain Bird 8Q	8Q	30	0.26	8
●	Rain Bird 10F	10F	30	1.58	10
◐	Rain Bird 10H	10H	30	0.79	10
◑	Rain Bird 10Q	10Q	30	0.39	10
⊙	Rain Bird 12F	12F	30	2.6	12
▽	Rain Bird 12H	12H	30	1.3	12
▽	Rain Bird 12Q	12Q	30	0.65	12
●	Rain Bird 15F	15F	30	3.7	15
▲	Rain Bird 15H	15H	30	1.85	15
▼	Rain Bird 15Q	15Q	30	0.92	15
▲ ^{180°}	Rain Bird 15T	15T	30	1.23	15
■	Rain Bird 15SST	15SST	30	1.21	30
■	Rain Bird 15EST	15EST	30	0.61	15
●	Rain Bird 1404 Bubbler				
○	Hunter PGJ		40		
⊙	Febco 765 - 2"	765 - 2"			
⊙	Rain Bird 100-PEB	100-PEB			
▲	Hunter ICC-1800-M	ICC-1800-M			
⊙	Nibco isolation valve				
▲	Hunter MINI-CLIK	MINI-CLIK			
▬▬▬▬▬	Schedule 40 irrigation sleeve				
⊙	1.5 inch meter				
▬▬▬▬▬	Lateral - Class 200				
▬▬▬▬▬	Mainline - Sch 40 2"				

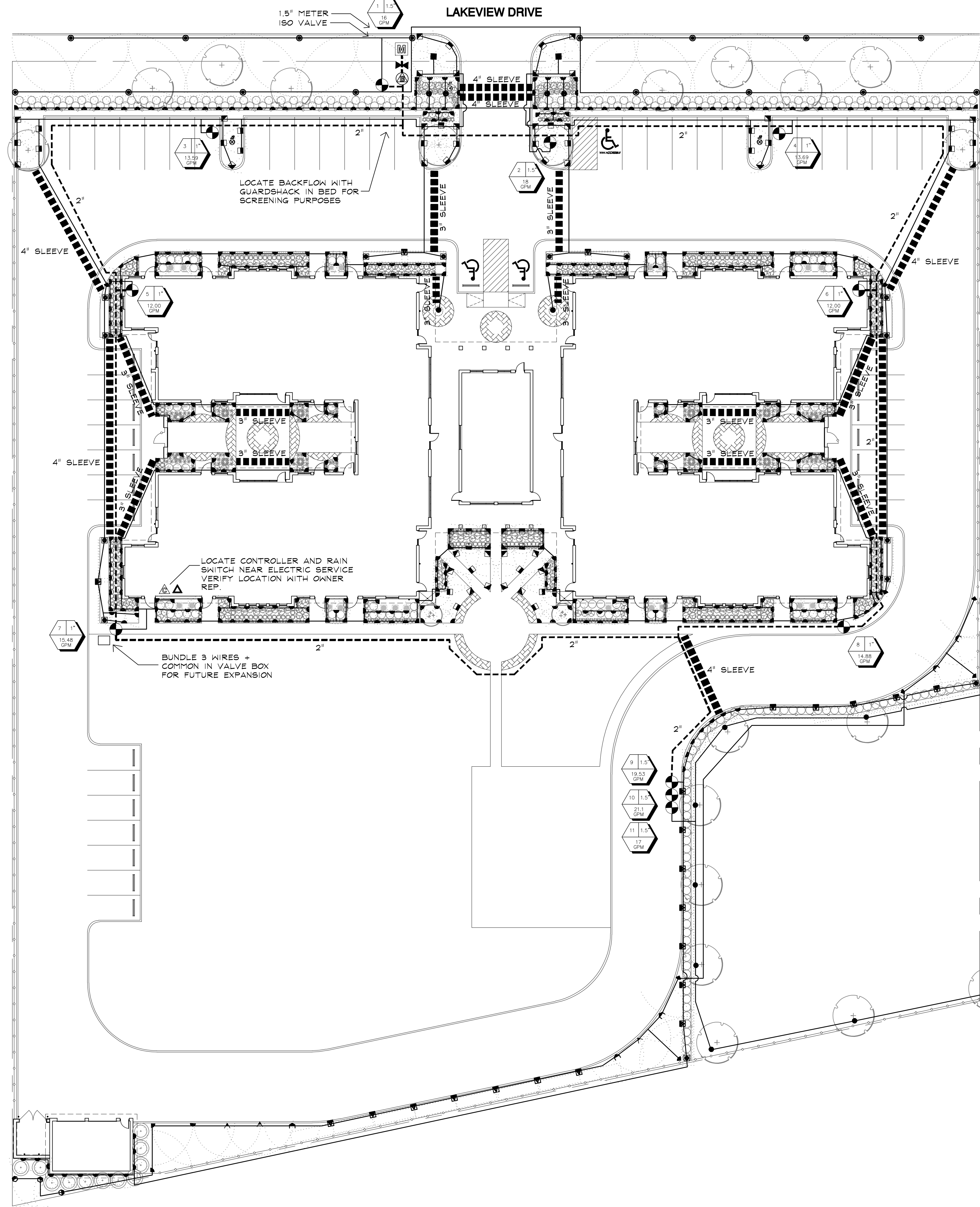
SEE SHEET IR-2 FOR NOTES AND DETAILS



Optimum Personal Care
Landscape Improvements
Sugar Land, TX

Job No.: _____
Scale: 1" = 20' - 0"
Date: April 18, 2013
Revised: _____
Site Irrigation Plan





ALL LAWN AREAS SHOULD BE 1804 POP-UPS AND BED AREAS SHOULD BE 1812 POP-UPS EXCEPT WHERE NOTED.

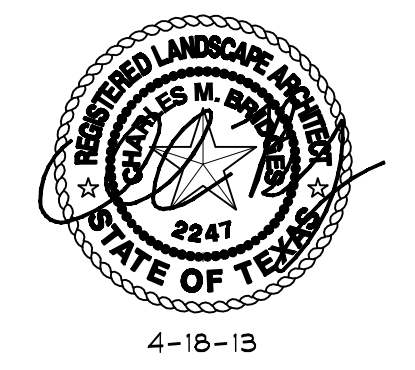
PIPE SIZING CHART:

CLASS 200 PVC LATERAL LINES (1/2" IS SCH. 40)

SIZE	GALLONS
1/2"	0 - 6
3/4"	6.1 - 10
1"	10.1 - 17
1 1/4"	17.1 - 26
1 1/2"	26.1 - 36
2"	36.1 - 55

Symbol	Description	Part #	Pressure	Flow	Radius
▲	Rain Bird 5H	5H	30	0.2	5
▼	Rain Bird 5Q	5Q	30	0.1	5
■	Rain Bird 8H	8H	30	0.52	8
◆	Rain Bird 8Q	8Q	30	0.26	8
●	Rain Bird 10F	10F	30	1.58	10
◐	Rain Bird 10H	10H	30	0.79	10
◑	Rain Bird 10Q	10Q	30	0.39	10
⊙	Rain Bird 12F	12F	30	2.6	12
▽	Rain Bird 12H	12H	30	1.3	12
▽	Rain Bird 12Q	12Q	30	0.65	12
●	Rain Bird 15F	15F	30	3.7	15
▲	Rain Bird 15H	15H	30	1.85	15
▼	Rain Bird 15Q	15Q	30	0.92	15
▲ ^{180°}	Rain Bird 15T	15T	30	1.23	15
■	Rain Bird 15SST	15SST	30	1.21	30
■	Rain Bird 15EST	15EST	30	0.61	15
●	Rain Bird 1404 Bubbler				
○	Hunter PGJ		40		
⊙	Febco 765 - 2"	765 - 2"			
●	Rain Bird 100-PEB	100-PEB			
▲	Hunter ICC-1800-M	ICC-1800-M			
▼	Nibco isolation valve				
▲	Hunter MINI-CLIK	MINI-CLIK			
▬▬▬▬▬	Schedule 40 irrigation sleeve				
⊙	1.5 inch meter				
▬▬▬▬▬	Lateral - Class 200				
▬▬▬▬▬	Mainline - Sch 40 2"				

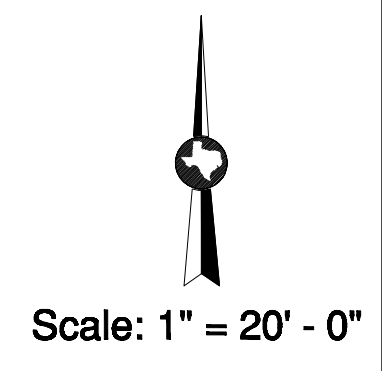
SEE SHEET IR-2 FOR NOTES AND DETAILS



Optimum Personal Care
Landscape Improvements
Sugar Land, TX

Job No.: _____
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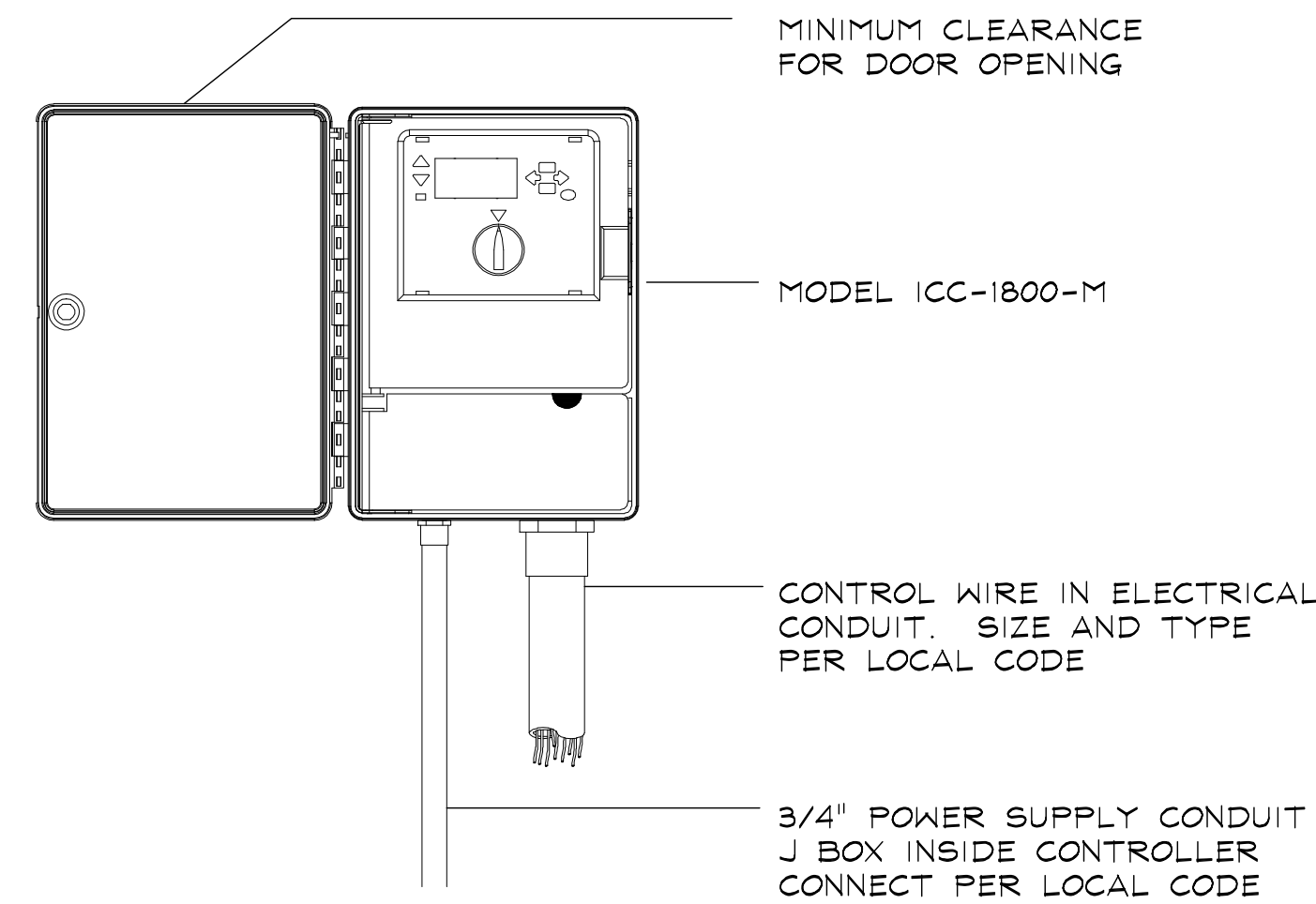
Site Irrigation Plan



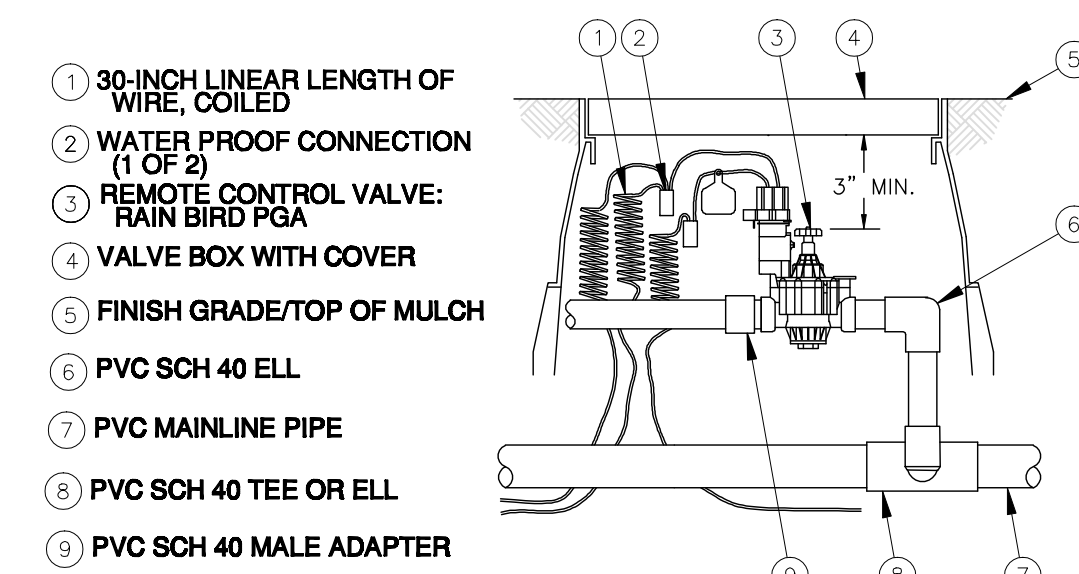
IR-1

IRRIGATION NOTES:

1. THE CONTRACTOR SHALL NOTIFY PERTINENT UTILITY COMPANIES 48 HOURS PRIOR TO CONSTRUCTION FOR CURRENT UTILITY LOCATIONS. EXTREME CARE SHALL BE EXERCISED IN EXCAVATING AND WORKING NEAR EXISTING UTILITIES. CONTRACTOR SHALL VERIFY THE LOCATION AND CONDITION OF UTILITIES AND BE RESPONSIBLE FOR DAMAGE TO UTILITIES.
2. THE CONTRACTOR SHALL AT ALL TIMES PROTECT HIS WORK FROM DAMAGE AND THEFT, AND REPLACE ALL DAMAGED OR STOLEN PARTS UNTIL THE WORK IS ACCEPTED IN WRITING BY OWNER.
3. THE CONTRACTOR SHALL NOT WILLFULLY INSTALL THE SPRINKLER SYSTEM AS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT OBSTRUCTIONS, GRADE DIFFERENCES OR DIFFERENCES IN THE AREA'S DIMENSIONS EXIST THAT MIGHT NOT HAVE BEEN IN THE DESIGN. SUCH OBSTRUCTIONS OR DIFFERENCES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT. IN THE EVENT THIS NOTIFICATION IS NOT PERFORMED, THE IRRIGATION CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY REVISIONS NECESSARY.
4. THE CONTRACTOR SHALL CLEARLY MARK EXPOSED EXCAVATIONS AND MATERIALS AND EQUIPMENT. COVER OR BARRICADE TRENCHES WHEN CONTRACTOR IS NOT ON SITE.
5. FOR PURPOSES OF CLARITY, SOME IRRIGATION LINES AND VALVES MAY BE SHOWN OUTSIDE OF PROPERTY OR IN PAVED AREAS. LOCATE ALL LINES AND VALVES IN PLANTING AREA UNLESS OTHERWISE NOTED.
6. ADJUST ARC OF IRRIGATION HEADS FOR EVEN COVERAGE. HEAD LAYOUT SHALL BE AS PER PLANS.
7. AVOID EXISTING OR FUTURE LOCATION OF TREE BALLS WHEN LAYING PIPE.
8. THE CONTRACTOR SHALL STAKE CONTROLLER AND BACKFLOW PREVENTER LOCATIONS FOR APPROVAL BY LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE PRIOR TO THEIR INSTALLATION.
9. PATCH AND REPAIR ANY AND ALL DAMAGE DONE TO EXISTING PLANT MATERIAL AND GRADING DURING INSTALLATION OF THIS WORK.
10. CONTRACTOR SHALL PROVIDE ORIGINAL AND 2 COPIES OF DOUBLE CHECK ASSEMBLY CERTIFICATION TO THE OWNER AT COMPLETION OF PROJECT.
11. IRRIGATION CYCLES SHALL BE SET TO TAKE PLACE PRIOR TO SUNRISE AND NOT TO INTERFERE WITH BUSINESS UNLESS OTHERWISE INSTRUCTED BY THE OWNER, EXCEPT DURING VISITS OF GROUNDS MAINTENANCE PERSONNEL DURING SUCH VISITS THE IRRIGATION SYSTEM MAY BE OPERATED AS DESIRED BY THOSE PERSONNEL.
12. DO NOT PROGRAM CONTROLLERS OPERATING ON THE SAME WATER METER TO WATER DURING THE SAME TIME PERIOD SO AS TO PREVENT OVER-DRAFT OF WATER METERS. DO NOT SWITCH CONTROLLER TO "OFF" AT ANY TIME, EXCEPT AS REQUIRED FOR TESTING AND FOR MAINTENANCE OPERATIONS.
13. COMPLETE SPRINKLER SYSTEM SERVICING SHALL BE PERFORMED AS REQUIRED TO MAINTAIN SPRINKLERS IN CORRECT OPERATING CONDITION INCLUDING ALL REQUIRED LABOR. CHECK SHALL INCLUDE VISUAL INSPECTION OF ALL ACCESSIBLE COMPONENTS OF THE IRRIGATION SYSTEM INCLUDING BUT NOT LIMITED TO CONTROLLERS, REMOTE CONTROL VALVES, QUICK COUPLERS, AND HEADS.
14. ADJUST THE SPRINKLERS TO AVOID DAMAGE TO WINDOWS, BUILDING AND SIGN WALLS ALSO ADJUST HEADS TO KEEP WATER OFF THE STREET. MAKE REPAIRS AND ALTERATIONS TO THE SPRINKLING SYSTEM AND WATER LINES. ALL SPRINKLER REPAIRS SUCH AS CLEANING OF HEADS OR BREAKS CAUSED BY THE CONTRACTOR SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
15. THE DISTRICT MUST BE NOTIFIED TO DO A VISUAL INSPECTION OF THE PIPE AND FITTINGS FROM THE METER TO ALL THE CONTROL VALVES BEFORE THE LINES ARE COVERED.

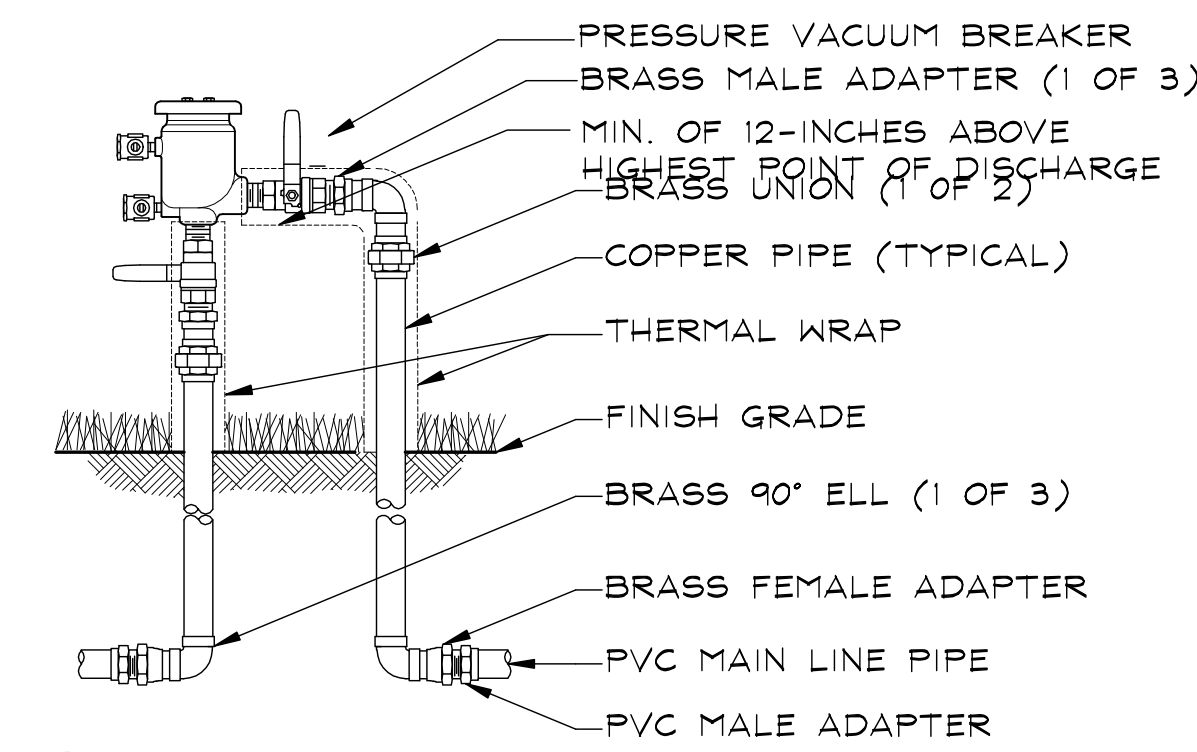


(H) - HUNTER ICC CONTROLLER



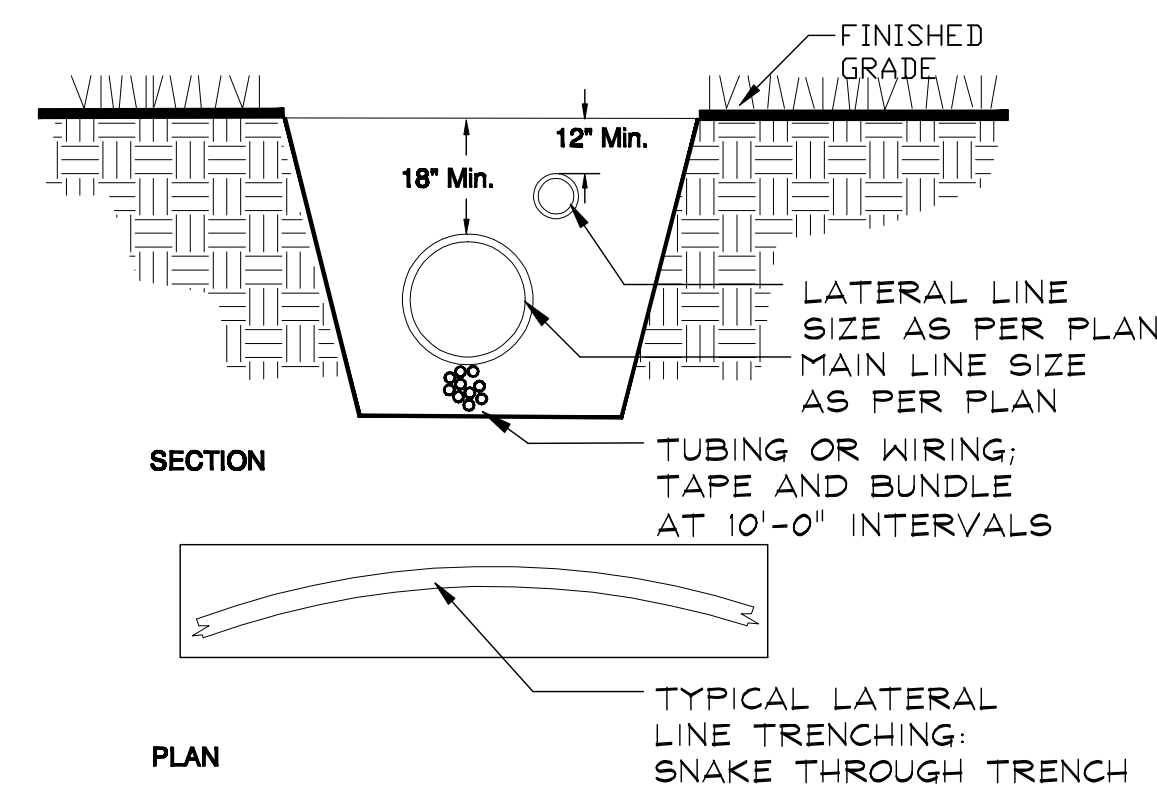
Rainbird Control Valve

(G) - IRRIGATION CONTROL VALVE

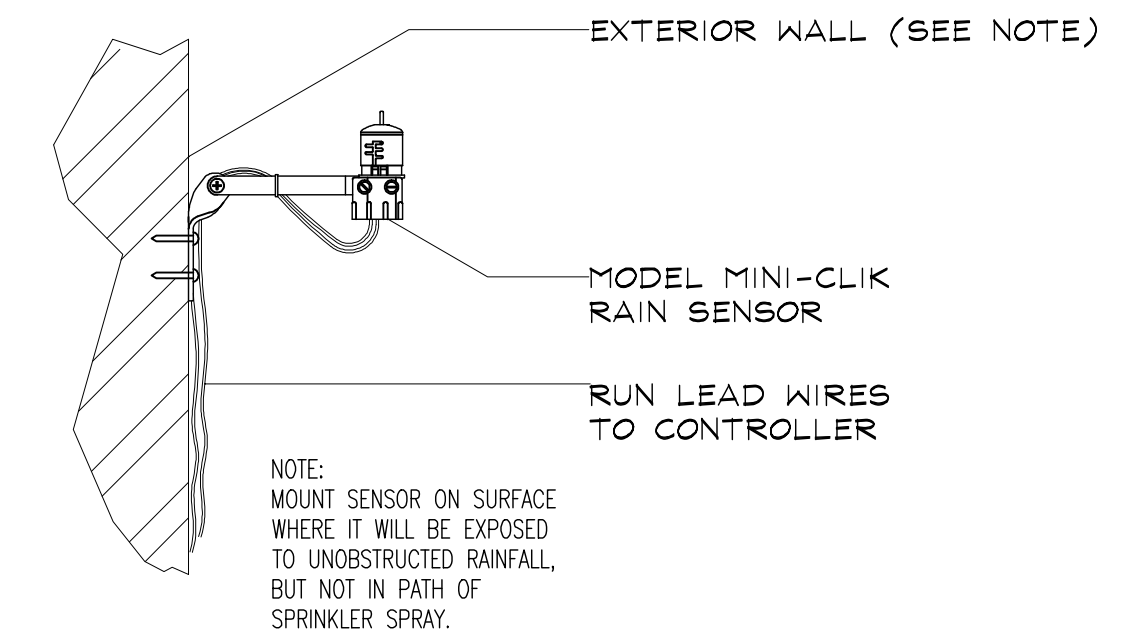


NOTE:
1. INSTALL BACK FLOW PREVENTER AS REQUIRED BY LOCAL CODES AND HEALTH DEPARTMENT. VERIFY LOCAL REQUIREMENTS PRIOR TO INSTALLATION. DOUBLE CHECK VALVE ASSEMBLY MAY BE REQUIRED

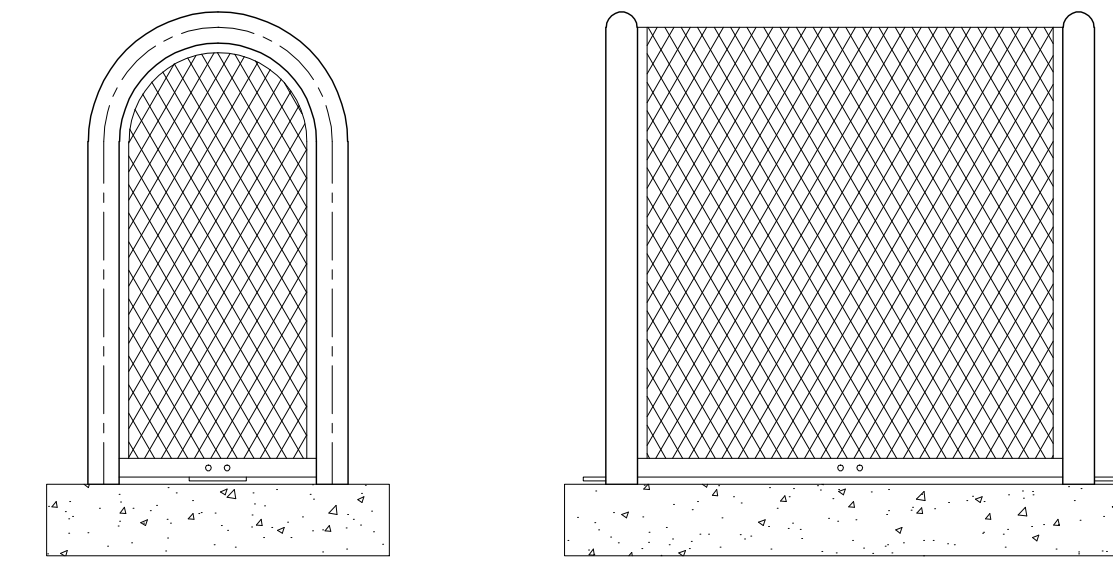
(F) - FEBCO #765 PVB (PRESSURE VACUUM BREAKER)



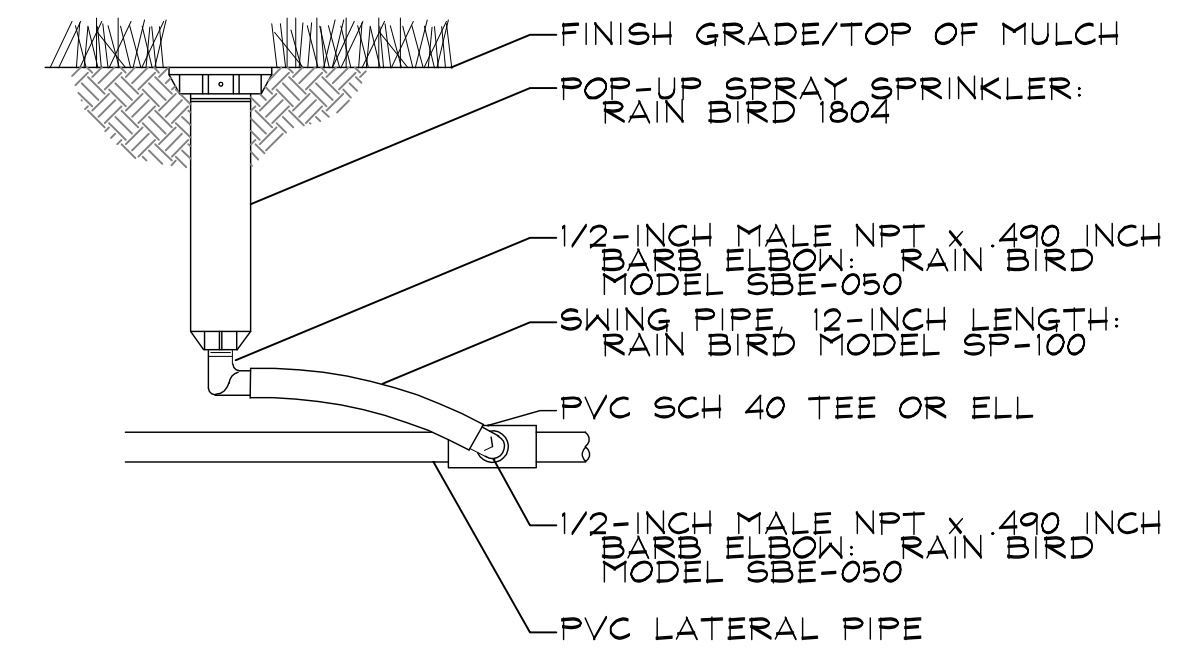
(E) - TRENCH DETAIL



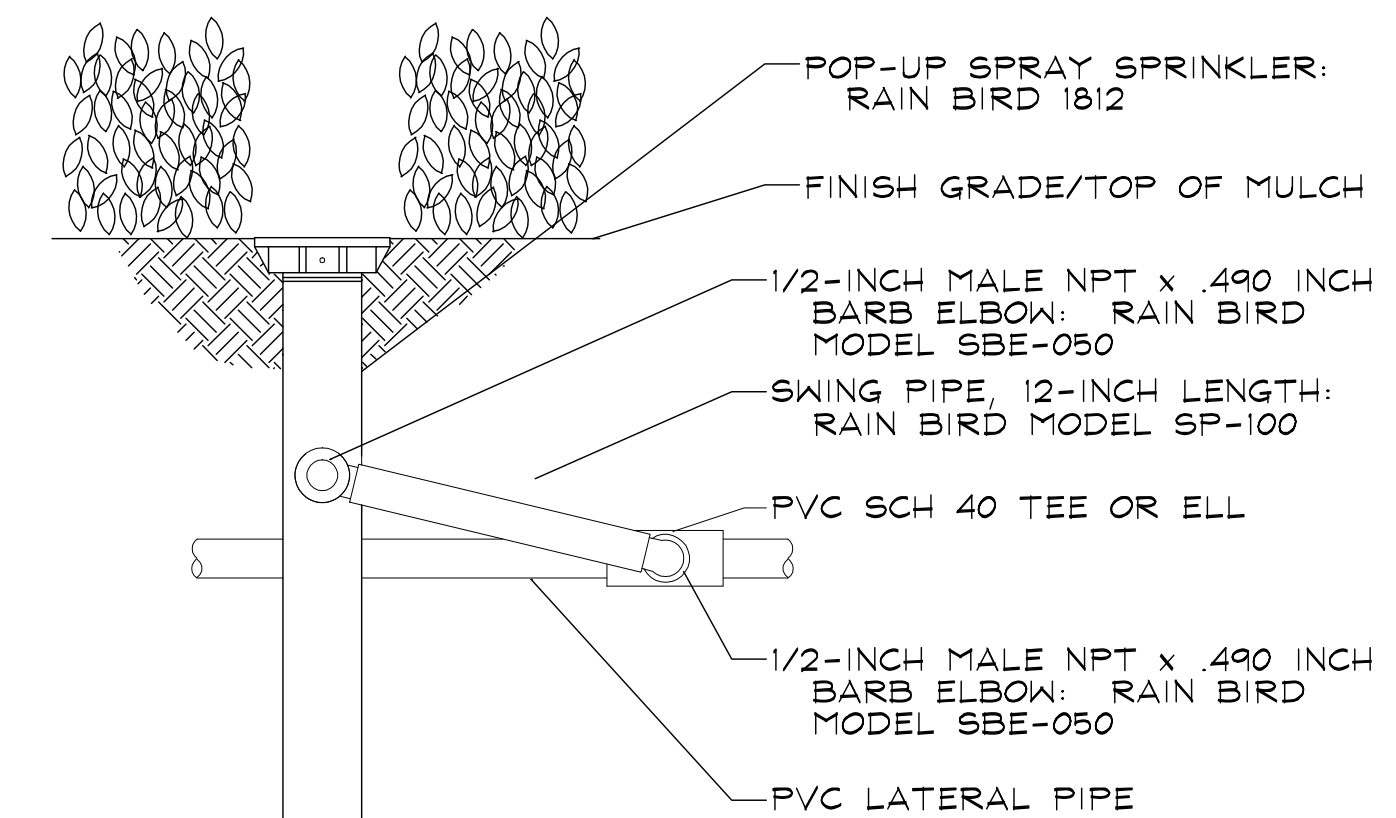
(D) - HUNTER MINI-CLIK RAIN SENSOR



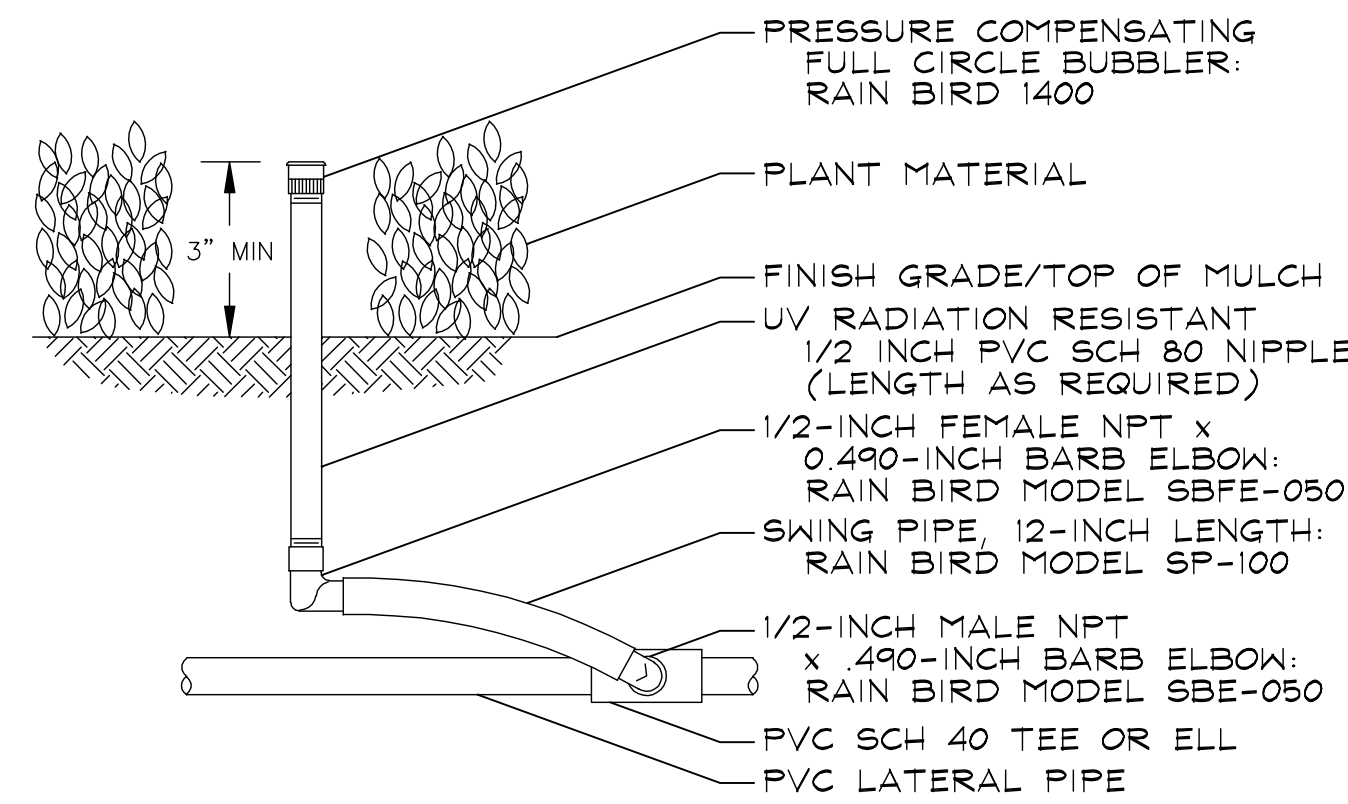
(C) - BACKFLOW ENCLOSURE GUARDSHACK



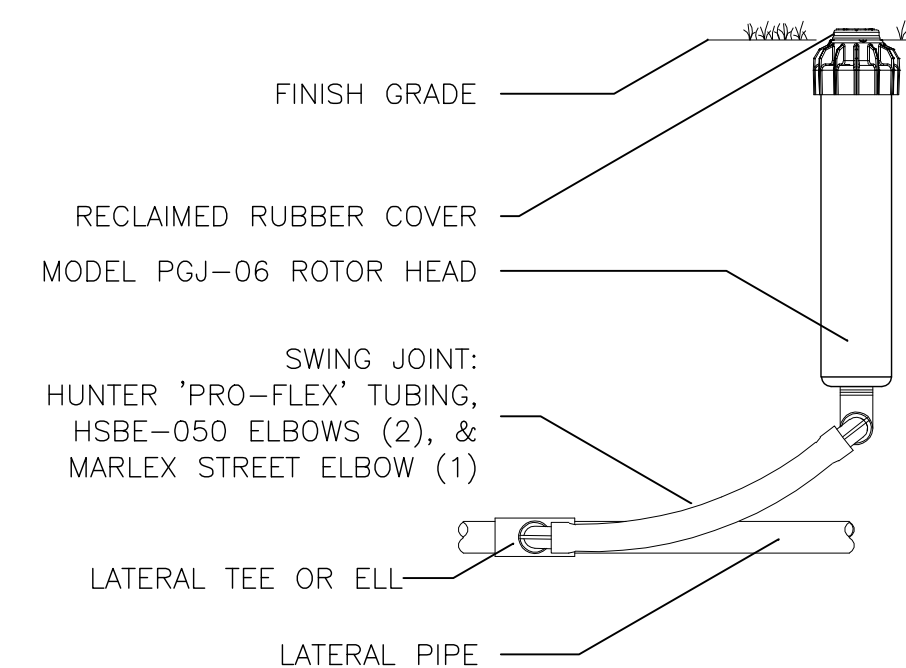
(B) - 4" POP-UP SPRAY



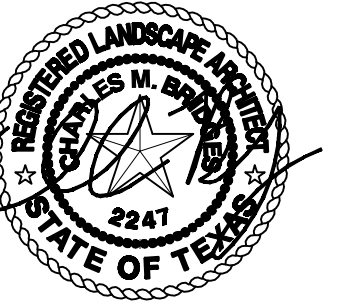
(A) - 12" POP-UP SPRAY



(I) - BUBBLER - RAIN BIRD 1404



(H) - PGJ ROTOR



Job No.:

Scale: 1" = 20' - 0"

April 18, 2013

Revised:

IRRIGATION SYSTEM

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and all applicable specification sections, apply to this section.

1.02 DESCRIPTION

A. This Section specifies the requirements for providing the irrigation system as indicated on the Drawings.

B. Contractor shall provide irrigation system as a complete system including but not limited to: heads, valves, valve boxes, control wire splice boxes, control wiring, electric controller, piping circuits, vacuum breaker, water meters and all accessories, including electric power source coordination and installation.

1.03 QUALITY ASSURANCE

A. Available Manufacturers: Subject to compliance with specified requirements, manufacturers offering products which may be incorporated in the Work are included in the specifications or denoted on the Drawings.

B. Installer: Installation of Irrigation System shall be performed under the direction of a State of Texas licensed irrigator with not less than 5 years experience in this type of work.

C. Reference Standards Applicable to this Section:

1. ANSI: American National Standards Institute
 - a. Z55.1: Gray Finishes for Industrial Apparatus and Equipment
2. ASTM: American Society for Testing and Materials
 - a. B88: Specifications or Seamless Copper water tube.
 - b. D 1785: Specifications for Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80 and 120.
 - c. D 2241: Specification for Poly Vinyl Chloride (PVC) Pressure Rated Pipe (SDR Series)
 - d. D 2466: Specification for Poly Vinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 80.
 - e. D 2564: Specification for Solvent Cements for Poly Vinyl Chloride (PVC) Plastic Pipe and Fittings.
 - f. F 690: Practice for Underground Installation of Thermoplastic Pressure Piping Irrigation Systems.

3. AWWA: American Water Works Association
 - a. C 500: Gate Valves, 3 inches through 48 inches NPS, for Water
 - b. C 506: Backflow Prevention Devices, Reduced Pressure Principle and Double Check Valve Types
4. IAMPO: International Association of Plumbing Mechanical Officials
 - a. UBC: Uniform Building Code
5. NEMA: National Electrical Manufacturer's Association
 - a. 250: Enclosures for Electrical Equipment (1000 Volts Maximum)
6. NFPA: National Fire Protection Association
 - a. NFPA 70 (NEC): National Electrical Code
7. Uniform Plumbing Code
8. NSF: National Sanitation Foundation
 - a. No. 14 Plastic Piping System Components and Related Materials

9. Local municipal Plumbing Code

1.04 SUBMITTALS

A. Product Data

1. Submit manufacturer's technical data, specifications, shop drawings, and installation instructions for sprinkler heads, automatic valves, controllers, backflow preventers, connections, details, and related items.

2. Submit manufacturer's operating instructions and a schedule indicating length of time each valve is to be open to produce a given amount of precipitation.

3. Submit maintenance instructions on all items requiring manufacturer's standard detail submittal.

B. Spares and Special Tools: Provide Owner with four (4) spare sprinkler heads of each size and type, two (2) wrenches for each type of head cover and two (2) wrenches for removal and installation of each type of head. In addition, see Section 2.17E.

C. Water: potable water to be supplied by Owner. Contractor shall make provisions for all connections required.

1.05 PRODUCT DELIVERY AND HANDLING

A. Materials shall be delivered in manufacturer's unopened packaging labeled to indicate manufacturer's name and product identification. Insure that packaging and labeling remain intact until installation. Materials shall be stored protected from the elements, including direct sunlight.

B. Pipes shall be handled so as to prevent being damaged and to maintain their straightness. Pipe ends shall be wrapped. Pipes shall be stored on beds the full length of the pipes. Damaged or dented pipes or fittings shall not be used.

1.06 DEFINITIONS

A. Irrigation Main: Irrigation main is the piping from the water source to control valves. Irrigation main is that pipe which is on the pressure side of irrigation control valves.

B. Irrigation Lateral Lines: Irrigation lateral line is the piping from the control valves to the irrigation heads. Lateral line is that pipe which is on the non-pressure side of irrigation control valves.

PART 2 PRODUCTS

2.01 PIPES

A. Markings: Thermoplastic pipes should be marked in accordance with ASTM D 1785 and ASTM D 2241 as applicable and shall bear the NSF mark in accordance with NSF 14.

B. Irrigation Main Pipe: ASTM D 2231, PVC, 1120 or 1220, Schedule 40.

C. Irrigation Lateral Line Pipe

1. Pipes ¾ inch diameter and larger: ASTM D 2231, PVC, 1120 or 1220 SDR 21.0, 200 PSI.

2. Pipes ½ inch diameter: ASTM D 2241, PVC, 1120 or 1220, SDR 13.5, 3.5 PSI.

2.02 SETTINGS FOR THREADED JOINTS

A. ASTM D 2466, PVC, Schedule 80.

2.03 SEALANT FOR THREADED JOINTS

A. Rector Seal Liquid Teflon by Rector Seal Corp., 2830 Produce Row,

Houston, Texas 77023, (713) 928-6423, or approved equal.

2.04 SLEEVES UNDER PAVING FOR CONTROL WIRE AND IRRIGATION LINES

A. ASTM D 2466, PVC, Schedule 40, sized as shown on drawings.

2.05 IRRIGATION SPRINKLERS

A. Pop-Up Spray Sprinklers as specified on drawings.

1. Shall be heavy-duty plastic pop-up to specified height with appropriate nozzle as indicated on Drawings.

2. Irrigation head body, stem, nozzle, and screen shall be constructed of heavy duty plastic.

3. Head shall have wiper seal for cleaning debris as it retracts into case.

4. Plastic nozzles shall have matched precipitation rate with an adjusting screw capable of regulating the radius and flow.

5. Head shall have stainless steel retroactive spring.

6. Head shall have filter screen under nozzle.

7. Head shall have side and bottom inlet on racking system for easy alignment of pattern on 6 inch and 12 inch pop-ups.

8. The nozzles on pop-up spray head body shall be as shown on Drawings and shall be capable of covering the radius as designated on Drawings. Nozzles in same series shall have matched precipitation rates.

9. Heads shall be connected to irrigation lateral lines by swing joints as indicated. Flexible PVC cant be accepted as a swing joint with permission from Landscape Architect.

B. Gear Driven Sprinklers as specified on drawings.

1. The pop-up sprinklers shall be a gear driven sprinkler. The part circle sprinklers shall have an infinitely adjustable arc of coverage from 40 to 360.

2. The sprinkler case and internal assembly, except for the arm spring, bearing spring, wiper seal and bearing washers, shall be constructed of durable plastic.

3. The sprinkler shall have an adjustable nozzle-retainer/range adjustment screw for distance and distribution control and shall be capable of full or part circle operation as noted on Drawings.

4. The sprinkler shall have a 4" pop-up stroke, turbine bypass valve, fine mesh filter screen, and the gear drive shall be sealed in oil.

5. Plastic nozzles shall be as per irrigation legend.

2.06 ELECTRIC REMOTE CONTROL VALVES

A. Electric remote control valves shall be as specified on Drawings.

1. Remote control valves shall be normally closed, 24 volt AC 60 Cycle, solenoid actuated glove pattern diaphragm. Valve pressure rating shall be 200 psi minimum.

2. Valve body and bonnet shall be constructed of heavy-duty glass-filled nylon. Diaphragm shall be nylon reinforced rubber. Solenoid coil shall be encapsulated in molded epoxy.

3. Valve shall be actuated by a low power, 2.0 watt 24 volt AC Solenoid.

4. Valve shall have a flow control stem with wheel handle for regulating or shutting off flow of water and a bleed plug for manual operation.

5. All valve integral parts shall be removable from top of valve without disturbing the valve installation.

2.07 REMOTE CONTROL VALVE TIES

A. Remote control valve ties shall be plastic tags with wire to attach numbered tag to valve.

2.08 VALVE BOXES

A. Valve boxes shall be heavy duty plastic 17 inch by 11-¾ inch by 12-inch depth, black with green cover. Valve box shall be Series 1419, non-hinged, non-bolt cover, by Carson Industries, Inc., 1925 Street, La Verne, CA 91750. (213) 732-6265, or approved equal.

2.09 CONTROL WIRE SPLICE BOXES

A. Control wire splice boxes shall be heavy duty plastic 10 inch diameter by 10 ¼ inch deep, black with black cover, No. 910-12B, by Carson Industries, Inc. or approved equal.

2.10 GRAVEL BACKFILL

A. Gravel backfill for valve boxes and control wire splice boxes shall be ¾-inch diameter pea gravel.

2.11 IRRIGATION CONTROL WIRE

A. Wire: Solid copper wire, NEC type UF, UL listed for direct burial in ground. Minimum size: No. 14 AWG.

B. Splicing Material: Scotchlok connector with No. 3570/Scotchlok Connector Sealing Packs by Electro-Products Division/3M, Minneapolis, Minnesota, Rain Bird Snap-Tites by Rain Bird Sprinkler Manufacturing Corporation, or approved equal. Use separate packs for each splice.

2.12 GATE VALVES

A. Gate Valves shall be PVC Ball Valves, size as noted on drawings.

2.13 QUICK COUPLING VALVES

A. Quick coupling valves shall have heavy-duty brass construction, durable thermoplastic rubber cover, stainless steel internal valve springs, one-piece body design, as indicated on drawings.

B. Provide four valve keys with ¾ inch swivel hose ends.

2.14 BACKFLOW PREVENTER

A. Backflow Preventers shall be bronze and copper, pressure vacuum breaker assembly Febco No. 765 by Febco Sales, Inc. (CMB Industries), P.O. Box 8070, Fresno, CA 93747 (209) 252-0791, or approved equal. Size as per drawings.

2.15 CONTROLLER

A. Controller shall be as indicated on drawings.

2.16 CONTROLLER ENCLOSURE

A. Controller enclosure shall be painted, galvanized NEMA enclosure as provided by Lemuer or approved equal. Enclosure to be vented, lockable with accessible bottom, panel.

PART 3 EXECUTION

3.01 SYSTEM DESIGN

A. Design Pressure: Pressure shall be as indicated on Drawings, and as measured at last head in circuit.

B. Location of Heads: Design location is represented as accurately as possible. Make minor adjustments on site with approval of Landscape Architect as necessary to ensure consistent and even spacing where applicable. Set all heads minimum 6" from back of curb and 4" from edge of concrete walls.

3.02 TRENCHING AND BACKFILLING

A. General: Contractor shall comply with Section 02221 Trenching & Trench Backfill and Section 02200 Earthwork of these Specifications.

Excavate straight and true with bottom uniformly sloped to low points. Protect existing lawns and plantings. Remove and replant as necessary to complete installation. Replace damaged lawn areas and plants with new products to restore to existing installation's original condition.

B. Minimum Cover: Provide 18-inch minimum cover over top of installed irrigation main piping. Provide 12-inch minimum cover over top of installed irrigation lateral line piping. Provide 2 inches of earth between parallels and wire. Parallels shall be laid side-by-side, not stacked.

C. Backfill: Backfill with clean material from excavation after obtaining landscape Architect's approval. Remove organic material, as well as rocks and debris larger than 1 inch in diameter. Place acceptable backfill in 6 inch lifts, compacting each lift.

D. Existing Lawns: Where trenching is required across existing lawns, (or in event of changes or repairs after new lawn has been established), uniformly cut strips a sod 6 inches wider than trench. Remove sod in rolls of suitable size for handling and keep moistened until replanted.

1. Backfill trench to with 6 inches of finished grade and compact. Continue fill with acceptable topsoil; and compact to bring sod even with existing lawn.

2. Replant sod within 2 days after removal, roll and water generously.

3. Resod and restore to original condition all sod areas not in healthy condition equal to adjoining lawns 30 days after replanting.

3.03 INSTALLATION

A. General: Unless otherwise indicated, Contractor shall comply with requirements of the Uniform Plumbing Code, latest edition, City of Houston Plumbing Code, and

ASTM F 690.

B. Pipes

1. Piping Mains and Laterals: Lay out sprinkler mainlines and perform line adjustments and site modifications to laterals prior to excavation. Lay pipe on solid subbase, uniformly sloped without humps or depressions.

2. PVC Pipe Assembly

- a. Cut PVC pipe square and de-burr. Clean pipe and fittings using primer and cleaner as recommended by the PVC pipe manufacturer. Use tinted primer to aid in visual inspection.
- b. Apply a thin even flow coat of PVC solvent cement to inside of the fitting and pipe mating surface. Cure joints as recommended by the manufacturer and keep pipe and fitting out of service during curing period. Construct watertight joints equal or greater in strength than the pipe. Do not tap pipe at fittings.

3. Install plastic pipe in dry weather, when temperature is above 40 degrees F. and in accordance with manufacturer's written instructions. Allow joint to cure at least 24 hours at temperature above 40 degrees F. before testing.

4. Plastic pipe shall be snaked in the trenches in a manner to provide for expansion and contraction as recommended by pipe manufacturer.

C. Sleeves Under Paving: The majority of sleeves under paving are existing as shown on drawings. Where boring is required for new sleeves (refer to drawings), it shall be a "wet bore." Install sleeves 12" beyond edge of pavement. Perform trench and backfill in accordance with these specifications.

D. Irrigation Heads

1. Flush irrigation lines with full head of water and install heads after hydrostatic test is completed.

2. Install heads at manufacturer's recommended heights.

3. Locate part-circle heads to maintain a minimum distance of 4 inches from walls and 2 inches from other boundaries, unless otherwise indicated.

4. Check for uniformity of coverage and pattern correctness. Adjust for 100% coverage where required.

E. Electric Remote Control Valves

1. Adjust automatic control valves to provide flow rate at rated operating pressure required for each irrigation section.

2. Install valves in valve boxes, arranged for easy adjustment and removal. Locate valves to ensure ease of access for maintenance such that no physical interference with other elements of the project exist.

F. Remote Control Valve Tags: One Remote Control Valve Tag shall be attached to stem of each electric remote control valve. Tags shall be numbered sequentially. Numbers shall correspond to station numbers in electric controller. Provide tags and corresponding numbers for wires pulled for future valves.

G. Valve Boxes: Install valve boxes to cover electric remote control valves. Install two valves maximum in valve box where possible. Top of Valve box shall be flush with finished grade. Bury minimum 2 bricks under base of each box as support.

H. Control Wire Splice Boxes: Install control wire splice box to cover any splice in control wire. Top of valve box shall be flush with finished grade. Bury minimum 2 bricks under base of each box as support. Install control wire splice box to cover wires pulled for future valves.

I. Gravel Backfill: Backfill valve boxes and control wire splice boxes with gravel, minimum 6-inch depth.

J. Irrigation Control Wires

1. Provide 24-volt system for control of automatic circuit-section valves of underground irrigation system. Provide unit capacity to suit number of circuits indicated.

2. Install control wires with irrigation mains and laterals in common trench where possible. Lay control wire to side of pipe. Provide looped slack at valves and snake wire in trench to allow for contraction. Tie wires in bundles at 10-foot intervals. Line Splices will be allowed on runs of 500 Ft. or more. Splices shall be made and placed in control wire splice boxes.

3. Common ground wire shall be white. No other wires shall be white.

4. Supply one extra wire, for each direction of run, to valve, which is located the greatest distance from the controller. Extra wire shall be green. Leave two loops of wire at each valve location.

5. Color of wire from controller to control valve shall be consistent to each valve.

6. Solder splices and protect with splicing material specified. Provide 12 inch long expansion loop within 3 feet of each wire connection and splice on runs of wire 100 feet or longer.

K. Quick Coupling Valves

1. Connect quick coupling valves to irrigation mains by installing a Schedule 40 galvanized joint as per drawing.

2. Swing joints at quick couplers shall have threaded fittings with liquid Teflon sealant.

L. Backflow Preventers

1. Make required connection to water supply according to local codes and manufacturer's written instructions.

2. Install pressure type backflow devices at required grade in accordance with the Houston Plumbing Code. Exposed mainline and mainline risers above PVC pipe main elevation shall be copper. Install one brass union in riser downstream of device.

M. Irrigation Controller

1. Install controllers within lockable NEMA enclosure, Re: drawings. Wire complete and operable.

3.04 TESTING

A. General: Notify Landscape Architect 48 hours in advance when testing will be conducted. Conduct tests in presence of Landscape Architect.

B. Hydrostatic Test: Test irrigation main line, before backfilling trenches, to a hydrostatic pressure of not less than 100 psi for 1 hour. Piping may be tested in sections to expedite work, remove and repair or replace piping and connections which do not pass hydrostatic testing. System shall not lose more than 1 ½ gallons of water in 1 hour.

C. Operational Testing: Perform operational testing after hydrostatic testing is completed, backfill is in place and Irrigation heads are adjusted to final position.

1. Demonstrate to Landscape Architect that system meets coverage requirements, is a specified and indicated, and that automatic controls function properly.

2. Coverage requirements are based on operation of one circuit at a time. After completion of grading, sodding and rolling of grass areas, carefully adjust lawn sprinkler heads so they will be flush with or not more than ½ inch above finished grade. Set shrub sprinkler heads no more than ½ inch above top of mulch.

3.05 MAINTENANCE

A. Contractor shall correctly maintain the irrigation system during the installation process and throughout the landscaping maintenance service period. Specified in Section 02493, Exterior Landscape Maintenance.

B. Contractor shall provide "As Built" Drawings showing dimensioned location of valves, meters, vacuum breakers, controllers, and mainline. Contractor shall request reproducible mylors form the Landscape Architect in preparation of "As Built" Drawings.



Job No.:

Scale:

1" = 20' - 0"

Revised:

April 18, 2013