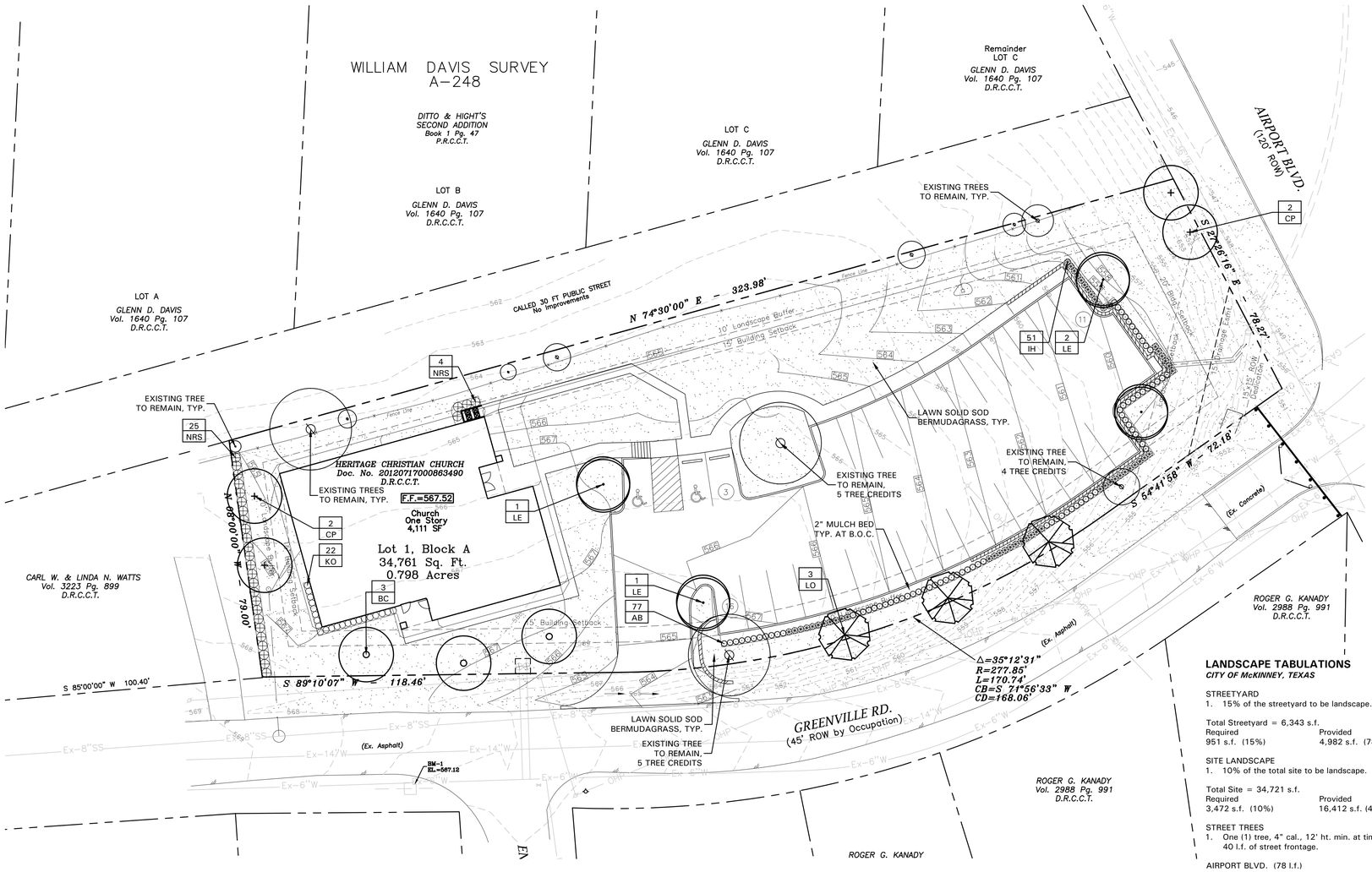


PLANT LIST

SYMBOL	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	REMARKS
	TREES				
BC	*Taxodium distichum*	Bald Cypress	3	4" cal.	container grown, 12' ht., 4' spread, 4' branching ht., matching
CP	*Pistacia chinensis*	Chinese Pistache	4	4" cal.	container grown, 12' ht., 4' spread, 4' branching ht., matching
LE	*Ulmus parvifolia 'Sempervirens'*	Lacebark Elm	4	4" cal.	container grown, 12' ht. min. at time of planting, 6' spread, 6' branching ht., matching
LO	*Quercus virginiana*	Live Oak	3	4" cal.	container grown, 12' ht. min. at time of planting, 6' spread, 6' branching ht., matching
	SHRUBS/GROUNDCOVER				
AB	*Abelia grandiflora 'Edward Goucher'*	Dwarf Abelia 'Edward Goucher	77	7 gal.	container full, 24" spread, 36" ht. at time of planting, 36" o.c.
IH	*Raphiolepsis indica*	Indian Hawthorne	51	7 gal.	container full, 24" spread, 36" ht. at time of planting, 24" o.c.
KO	*Rosa hybrida 'Radtko'*	Double Knock Out Rose	22	5 gal.	container full, 24" spread, 24" ht. at time of planting, 36" o.c.
NRS	*Ilex spp. 'Nellie R. Stevens'*	Nellie R. Stevens Holly	29	7 gal.	container full, 24" spread, 36" ht. at time of planting, 36" o.c.
	Cynodon dactylon	Common Bermudagrass			refer to notes

NOTE: ALL TREES SHALL HAVE STRAIGHT TRUNKS AND BE MATCHING WITHIN VARIETIES.
PLANT LIST IS AN AID TO BIDDERS ONLY. CONTRACTOR SHALL VERIFY ALL QUANTITIES ON PLAN.
ALL HEIGHTS AND SPREADS ARE MINIMUMS. ALL PLANT MATERIAL SHALL MEET OR EXCEED REMARKS AS INDICATED.

LANDSCAPE TABULATIONS

CITY OF McKINNEY, TEXAS

STREETYARD
1. 15% of the streetyard to be landscape.

Total Streetyard = 6,343 s.f.

Required	Provided
951 s.f. (15%)	4,982 s.f. (78%)

SITE LANDSCAPE
1. 10% of the total site to be landscape.

Total Site = 34,721 s.f.

Required	Provided
3,472 s.f. (10%)	16,412 s.f. (47%)

STREET TREES
1. One (1) tree, 4" cal., 12' ht. min. at time of planting, per 40 l.f. of street frontage.

AIRPORT BLVD. (78 l.f.)

Required	Provided
(2) trees, 4" cal., 12' ht.	(2) trees, 4" cal., 12' ht.

GREENVILLE ROAD (360 l.f.)

Required	Provided
(9) trees, 4" cal., 12' ht.	(9) tree credits (6) trees, 4" cal., 12' ht.

PERIMETER TREES
1. One (1) tree, 4" cal., 12' ht. min. at time of planting, per 40 l.f. of property border.

NORTH BORDER (323.90 l.f.)

Required	Provided
(8) trees, 4" cal., 12' ht.	(21) tree credits

WEST BORDER (79 l.f.)

Required	Provided
(2) trees, 4" cal., 12' ht.	(1) existing tree (2) trees, 4" cal., 12' ht.

PARKING LOT (30 spaces)
1. One (1) tree, 4" cal., 12' ht. min. at time of planting, per 10 parking spaces.
2. 36" ht. parking lot screen.

Required	Provided
(3) trees, 4" cal., 12' ht.	(1) existing tree (4) trees, 4" cal., 12' ht.
36" ht. screen	36" ht. evergreen shrubs

SITE TREES
1. 50% of total trees on-site shall be canopy trees.

Total Site Trees = (14)

(14) canopy trees, 4" cal., 12' ht. = 100%

LANDSCAPE NOTES

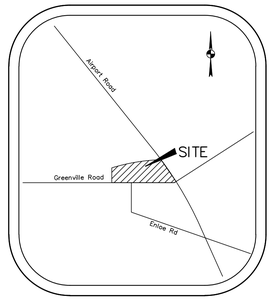
1. CONTRACTOR SHALL VERIFY ALL EXISTING AND PROPOSED SITE ELEMENTS AND NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES. SURVEY DATA OF EXISTING CONDITIONS WAS SUPPLIED BY OTHERS.
2. CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES AND NOTIFY LANDSCAPE ARCHITECT OF ANY CONFLICTS. CONTRACTOR SHALL EXERCISE CAUTION WHEN WORKING IN THE VICINITY OF UNDERGROUND UTILITIES.
3. CONTRACTOR SHALL PROVIDE A MINIMUM 2% SLOPE AWAY FROM ALL STRUCTURES.
4. CONTRACTOR SHALL FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS AS INDICATED. LEAVE AREAS TO RECEIVE TOPSOIL 3" BELOW FINAL FINISHED GRADE IN PLANTING AREAS AND 1" BELOW FINAL FINISHED GRADE IN LAWN AREAS.
5. ALL PLANTING BEDS AND LAWN AREAS SHALL BE SEPARATED BY STEEL EDGING. NO STEEL EDGING SHALL BE INSTALLED ADJACENT TO BUILDINGS, WALKS, OR CURBS. CUT STEEL EDGING AT 45 DEGREE ANGLE WHERE IT INTERSECTS WALKS AND CURBS.
6. TOP OF MULCH SHALL BE 1/2" MINIMUM BELOW THE TOP OF WALKS AND CURBS.
7. ALL LAWN AREAS SHALL BE SOLID SOD BERMUDAGRASS, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
8. ALL REQUIRED LANDSCAPE AREAS SHALL BE PROVIDED WITH AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM WITH RAIN AND FREEZE SENSORS AND EVAPOTRANSPIRATION (ET) WEATHER-BASED CONTROLLERS AND SAID IRRIGATION SYSTEM SHALL BE DESIGNED BY A QUALIFIED PROFESSIONAL AND INSTALLED BY A LICENSED IRRIGATOR.
9. CONTRACTOR SHALL PROVIDE BID PROPOSAL LISTING UNIT PRICES FOR ALL MATERIAL PROVIDED.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED LANDSCAPE AND IRRIGATION PERMITS.
11. CONTRACTOR TO VERIFY WATER RESTRICTIONS WITH THE CITY OF MCKINNEY AT TIME OF PLANTING. SHALL WATER RESTRICTIONS NOT ALLOW FOR HYDROMULCH (CITY OF MCKINNEY DOES NOT ALLOW HYDROMULCH IN STAGE 3 AND 4 WATER RESTRICTIONS), APPROVED ALTERNATIVE FOR GRASSING MUST BE INSTALLED.

MAINTENANCE NOTES

1. THE OWNER, TENANT AND THEIR AGENT, IF ANY, SHALL BE JOINTLY AND SEVERALLY RESPONSIBLE FOR THE MAINTENANCE OF ALL LANDSCAPE.
2. ALL LANDSCAPE SHALL BE MAINTAINED IN A NEAT AND ORDERLY MANNER AT ALL TIMES. THIS SHALL INCLUDE MOWING, EDGING, PRUNING, FERTILIZING, WATERING, WEEDING AND OTHER SUCH ACTIVITIES COMMON TO LANDSCAPE MAINTENANCE.
3. ALL LANDSCAPE AREAS SHALL BE KEPT FREE OF TRASH, LITTER, WEEDS AND OTHER SUCH MATERIAL OR PLANTS NOT PART OF THIS PLAN.
4. ALL PLANT MATERIAL SHALL BE MAINTAINED IN A HEALTHY AND GROWING CONDITION AS IS APPROPRIATE FOR THE SEASON OF THE YEAR.
5. ALL PLANT MATERIAL WHICH DIES SHALL BE REPLACED WITH PLANT MATERIAL OF EQUAL OR BETTER VALUE.
6. CONTRACTOR SHALL PROVIDE SEPARATE BID PROPOSAL FOR ONE YEAR'S MAINTENANCE TO BEGIN AFTER FINAL ACCEPTANCE.

VICINITY MAP

NOT TO SCALE



GENERAL LAWN NOTES

1. CONTRACTOR SHALL COORDINATE OPERATIONS AND AVAILABILITY OF EXISTING TOPSOIL WITH ON-SITE CONSTRUCTION MANAGER.
2. CONTRACTOR SHALL LEAVE LAWN AREAS 1" BELOW FINAL FINISHED GRADE PRIOR TO TOPSOIL INSTALLATION.
3. CONTRACTOR SHALL FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS AS INDICATED ON CIVIL PLANS. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDINGS. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER MAY STAND.
4. ALL LAWN AREAS SHALL BE FINE GRADED, IRRIGATION TRENCHES COMPLETELY SETTLED AND FINISH GRADE APPROVED BY THE OWNER'S CONSTRUCTION MANAGER OR LANDSCAPE ARCHITECT PRIOR TO LAWN INSTALLATION.
5. CONTRACTOR SHALL REMOVE ALL ROCKS 3/4" DIAMETER AND LARGER, DIRT CLODS, STICKS, CONCRETE SPOILS, ETC. PRIOR TO PLACING TOPSOIL AND LAWN INSTALLATION.
6. CONTRACTOR SHALL MAINTAIN ALL LAWN AREAS UNTIL FINAL ACCEPTANCE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: MOWING, WATERING, WEEDING, CULTIVATING, CLEANING AND REPLACING DEAD OR BARE AREAS TO KEEP PLANTS IN A VIGOROUS, HEALTHY CONDITION.
7. CONTRACTOR SHALL GUARANTEE ESTABLISHMENT OF ACCEPTABLE TURF AREA AND SHALL PROVIDE REPLACEMENT FROM LOCAL SUPPLY IF NECESSARY.

SOLID SOD NOTES

1. PLANT SOD BY HAND TO COVER INDICATED AREAS COMPLETELY. ENSURE EDGES OF SOD ARE TOUCHING. TOP DRESS JOINTS BY HAND WITH TOPSOIL TO FILL VOIDS.
2. ROLL GRASS AREAS TO ACHIEVE A SMOOTH, EVEN SURFACE, FREE FROM UNNATURAL UNDULATIONS.
3. WATER SOD THOROUGHLY AS SOD OPERATION PROGRESSES.
4. GRASS SHALL BE ESTABLISHED WITH 100% COVERAGE AND 70% DENSITY WITH AN APPROVED PERENNIAL GRASS PRIOR TO ISSUANCE OF A CO. APPROVED GRASSES INCLUDE BUFFALO, BERMUDAGRASS, AND ZOYSIA.

SCALE: 1" = 20'-0"
0 10 20 40

BELLE FIRMA
4245 North Central Expy
Suite 230
Dallas, Texas 75205
214.865.7192 office

Issue Dates:	Revisions:	Date:
1 04.29.13	1	
2 05.13.13	2	
3 05.22.13	3	
4	4	
5	5	
6	6	

CROSS ENGINEERING CONSULTANTS
131 S. Tennessee St. McKinney, Texas 75069
972.562.4409 Texas P.E. Firm No. P-5935

Drawn By:	Checked By:	Scale:
KAH	KAH	1" = 20'

REGISTERED LANDSCAPE ARCHITECT
ADRIANN HALL
2240
STATE OF TEXAS
05.22.13

LANDSCAPE PLAN

HERITAGE CHRISTIAN CHURCH

William Davis Survey, Abstract No. 248
City of McKinney, Texas

Sheet No. L1.02

Project No. 12128

Heritage Christian Church

SECTION 32 9300 - LANDSCAPE

PART 1 - GENERAL

1.1 REFERENCED DOCUMENTS

A. Refer to Landscape Plans, notes, details, bidding requirements, special provisions, and schedules for additional requirements.

1.2 DESCRIPTION OF WORK

A. Work included: Furnish all supervision, labor, materials, services, equipment and appliances required to complete the work covered in conjunction with the landscaping covered in these specifications and landscaping plans, including:

1. Planting (trees, shrubs and grasses)
2. Bed preparation and fertilization
3. Notification of sources
4. Water and maintenance until final acceptance
5. Guarantee

1.3 REFERENCE STANDARDS

A. American Standard for Nursery Stock published by American Association of Nurserymen: 27 October 1980, Edition; by American National Standards Institute, Inc. (Z60.1) – plant material

B. American Joint Committee on Horticultural Nomenclature: 1942 Edition of Standardized Plant Names.

C. Texas Association of Nurserymen, Grades and Standards

D. Hortis Third, 1976 - Cornell University

1.4 NOTIFICATION OF SOURCES AND SUBMITTALS

A. Samples: Provide representative quantities of sandy loam soil, mulch, bed mix material, gravel and crushed stone. Samples shall be approved by Owner's Authorized Representative before use on the project.

1.5 JOB CONDITIONS

A. General Contractor to complete the following punch list: Prior to Landscape Contractor initiating any portion of landscape installation, General Contractor shall leave planting bed areas three (3") inches below final finish grade of sidewalks, drives and curbs as shown on the drawings. All lawn areas to receive solid sod shall be left one (1") inch below the final finish grade of sidewalks, drives and curbs. All construction debris shall be removed prior to Landscape Contractor beginning any work.

B. Storage of materials and equipment at the job site will be at the risk of the Landscape Contractor. The Owner cannot be held responsible for theft or damage.

1.6 MAINTENANCE AND GUARANTEE

A. Maintenance:

1. The Landscape Contractor shall be held responsible for the maintenance of all work from the time of planting until final acceptance by the Owner. No trees, shrubs, groundcover or grass will be accepted unless they show healthy growth and satisfactory foliage conditions.

2. Maintenance shall include watering of trees and plants, cultivation, weeding spraying, edging, pruning of trees, mowing of grass, cleaning up and all other work necessary of maintenance.

3. A written notice requesting final inspection and acceptance should be submitted to the Owner at least seven (7) days prior to completion. An on-site inspection by the Owner's Authorized Representative will be completed prior to written acceptance.

B. Guarantee:

1. Trees, shrubs and groundcover shall be guaranteed for a twelve (12) month period after final acceptance. The Contractor shall replace all dead materials as soon as weather permits and upon notification of the Owner. Plants, including trees, which have partially died so that shape, size, or symmetry have been damaged, shall be considered subject to replacement. In such cases, the opinion of the Owner shall be final.

a. Plants used for replacement shall be of the same size and kind as those originally planted and shall be planted as originally specified. All work, including materials, labor and equipment used in replacements, shall carry a twelve (12) month guarantee. Any damage, including ruts in lawn or bed areas, incurred as a result of making replacements shall be immediately repaired.

b. At the direction of the Owner, plants may be replaced at the start of the next year's planting season. In such cases, dead plants shall be removed from the premises immediately.

c. When plant replacements are made, plants, soil mix, fertilizer and mulch are to be utilized as originally specified and re-inspected for full compliance with the contract requirements. All replacements are to be included under "Work" of this section.

2. The Owner agrees that for the guarantee to be effective, he will water plants at least twice a week during dry periods and cultivate beds once a month after final acceptance.

3. The above guarantee shall not apply where plants die after acceptance because of injury from storms, hail, freeze, insects, diseases, injury by humans, machines or theft.

4. Acceptance for all landscape work shall be given after final inspection by the Owner provided the job is in a complete, undamaged condition and there is a stand of grass in all lawn areas. At that time, the Owner will assume maintenance on the accepted work.

C. Repairs: Any necessary repairs under the Guarantee must be made within ten (10) days after receiving notice, weather permitting. In the event the Landscape Contractor does not make repairs accordingly, the Owner, without further notice to Contractor, may provide materials and men to make such repairs at the expense to the Landscape Contractor.

1.7 QUALITY ASSURANCE

A. General: Comply with applicable federal, state, county and local regulations governing landscape materials and work.

B. Personnel: Employ only experienced personnel who are familiar with the required work. Provide full time supervision by a qualified foreman acceptable to Landscape Architect.

C. Selection of Plant Material:

1. Make contact with suppliers immediately upon obtaining notice of contract acceptance to select and book materials. Develop a program of maintenance (pruning and fertilization) which will ensure the purchased materials will meet and / or exceed project specifications.

2. Substitutions: Do not make plant material substitutions. If the specified landscape material is not obtainable, submit proof of non-availability to Landscape Architect, together with proposal for use of equivalent material. At the time bids are submitted, the Contractor is assumed to have located the materials necessary to complete the job as specified.

3. Landscape Architect will provide a key identifying each tree location on site. Written verification will be required to document material selection, source and delivery schedules to site.

4. Measurements: Measure trees with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements six inches above ground for trees up to and including 4" caliper size, and twelve inches above ground for larger sizes. Measure main body of all plant material of height and spread dimensions, do not measure from branch or root tip-to-tip.

5. Owner's Authorized Representative shall inspect all plant material with requirements for genus, species, cultivar / variety size and quality.

6. Owner's Authorized Representative retains the right to further inspect all plant material upon arrival to the site and during installation for size and condition of root balls and root systems, limbs, branching habit, insects, injuries and latent defects.

7. Owner's Authorized Representative may reject unsatisfactory or defective material at any time during the process work. Remove rejected materials immediately from the site and replace with acceptable material at no additional cost to the Owner. Plants damaged in transit or at job site shall be rejected.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Preparation:

1. Balled and Burlapped (B&B) Plants: Dig and prepare shipment in a manner that will not damage roots, branches, shape and future development.

2. Container Grown Plants: Deliver plants in rigid container to hold ball shape and protect root mass.

B. Delivery:

1. Deliver packaged materials in sealed containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while stored on site.

2. Deliver only plant materials that can be planted in one day unless adequate storage and watering facilities are available on job site.

3. Protect root balls by heeling in with sawdust or other approved moisture retaining material if not planted within 24 hours of delivery.

4. Protect plants during delivery to prevent damage to root balls or desiccation of leaves. Keep plants moist at all times. Cover all materials during transport.
5. Notify Owner's Authorized Representative of delivery schedule 72 hours in advance job site.

6. Remove rejected plant material immediately from job site.

7. To avoid damage or stress, do not lift, move, adjust to plumb, or otherwise manipulate plants by trunk or stems.

PART 2 - PRODUCTS

2.1 PLANTS

A. General: Well-formed No. 1 grade or better nursery grown stock. Listed plant heights are from tops of root balls to nominal tops of plants. Plant spread refers to nominal outer width of the plant, not to the outer leaf tips. Plants will be individually approved by the Owner's Authorized Representative and his decision as to their acceptability shall be final.

B. Quantities: The drawings and specifications are complimentary. Anything called for on one and not the other is as binding as if shown and called for on both. The plant schedule is an aid to bidders only. Confirm all quantities on plan.

C. Quality and size: Plant materials shall conform to the size given on the plan, and shall be healthy, symmetrical, well-shaped, full branched and well rooted. The plants shall be free from injurious insects, diseases, injuries to the bark or roots, broken ranches, objectionable disfigurements, insect eggs and larvae, and are to be of specimen quality.

D. Approval: All plants which are found unsuitable in growth, or are in any unhealthy, badly shaped or undersized condition will be rejected by the Owner's Authorized Representative either before or after planting and shall be removed at the expense of the Landscape Contractor and replaced with acceptable plant as specified at no additional cost to the Owner.

E. Trees shall be healthy, full-branched, well-shaped, and shall meet the minimum trunk and diameter requirements of the plant schedule. Balls shall be firm, neat, slightly tapered and well wrapped in burlap. Any tree loose in the ball or with a broken root ball at time of planting will be rejected. Balls shall be ten (10") inched in diameter for each one (1") inch of trunk diameter, measured six (6") inched above ball. (Nomenclature confirms to the customary nursery usage. For clarification, the term "multi-trunk" defines a plant having three (3) or more trunks of nearly equal diameter.)

F. Pruning: All pruning of trees and shrubs, as directed by the Landscape Architect prior to final acceptance, shall be executed by the Landscape Contractor at no additional cost to the Owner.

2.2 SOIL PREPARATION MATERIALS

A. Sandy Loam:

1. Friable, fertile, dark, loamy soil, free of clay lumps, subsoil, stones and other extraneous material and reasonably free of weeds and foreign grasses. Loam containing Dallasgrass or Nutgrass shall be rejected.

2. Physical properties as follows:
   a. Clay – between 7-27 percent
   b. Silt – between 15-25 percent
   c. Sand – less than 52 percent

3. Organic matter shall be 3%-10% of total dry weight.

4. If requested, Landscape Contractor shall provide a certified soil analysis conducted by an approved soil testing laboratory verifying that sandy loam meets the above requirements.

B. Organic Material: Compost with a mixture of 80% vegetative matter and 20% animal waste. Ingredients should be a mix of course and fine textured material.

C. Premixed Bedding Soil as supplied by Vital Earth Resources, Gladewater, Texas; Professional Bedding Soil as supplied by Living Earth Technology, Dallas, Texas or Acid Gro Municipal Mix as supplied by Soil Building Systems, Dallas, Texas or approved equal.

D. Sharp Sand: Sharp sand must be free of seeds, soil particles and weeds.

E. Mulch: Double Shredded Hardwood Mulch, partially decomposed, dark brown. Living Earth Technologies or approved equal.

F. Organic Fertilizer: Fertilaid, Sustane, or Green Sense or equal as recommended for required applications. Fertilizer shall be delivered to the site in original unopened containers, each bearing the manufacturer's guaranteed statement of analysis.

G. Commercial Fertilizer: 10-20-10 or similar analysis. Nitrogen source to be a minimum 50% slow release organic Nitrogen (SCU or UF) with a minimum 8% sulfur and 4% iron, plus icronutrients.

H. Peat: Commercial sphagnum peat moss or partially decomposed shredded pine bark or other approved organic material.

2.3 MISCELLANEOUS MATERIALS

A. Steel Edging: 3/16" x 4" x 16' - dark green, DURAEDGE® steel landscape edging manufactured by The J.D. Russell Company under its trade name DURAEDGE Heavy Duty Steel .

B. Staking Material for Shade Trees: refer to details.

C. Gravel: Washed native pea gravel, graded 1 inch to 1-1/2 inch.

D. Filter Fabric: 'Mirafi Mirascape' by Mirafi Construction Products available at Lone Star Products, Inc., (469) 523-0444 or approved equal.

E. River Rock: 'Colorado' or native river rock, 2" - 4" dia.

F. Decomposed Granite: Base material shall consist of a natural material mix of granite aggregate not to exceed 1/8" diameter in size and shall be composed of various stages of decomposed earth base.

PART 3 - EXECUTION

3.1 BED PREPARATION & FERTILIZATION

A. Landscape Contractor to inspect all existing conditions and report any deficiencies to the Owner.

B. All planting areas shall be conditioned as follows:

1. Prepare new planting beds by scraping away existing grass and weeds as necessary. Till existing soil to a depth of six (6") inches prior to placing compost and fertilizer. Apply fertilizer as per Manufacturer's recommendations. Add six (6") inches of compost and till into a depth of six (6") inches of the topsoil. Apply organic fertilizer such as Sustane or Green Sense at the rate of twenty (20) pounds per one thousand (1,000) square feet.

2. All planting areas shall receive a two (2") inch layer of specified mulch.

3. Backfill for tree pits shall be as follows: Use existing top soil on site (use imported topsoil as needed) free from large clumps, rocks, debris, caliche, subsoils, etc., placed in nine (9") inch layers and watered in thoroughly.

C. Grass Areas:

1. Blocks of sod should be laid joint to joint (staggered joints) after fertilizing the ground first. Roll grass areas to achieve a smooth, even surface. The joints between the blocks of sod should be filled with topsoil where they are evidently gaped open, then watered thoroughly.

3.2 INSTALLATION

A. Maintenance of plant materials shall begin immediately after each plant is delivered to the site and shall continue until all construction has been satisfactorily accomplished.

B. Plant materials shall be delivered to the site only after the beds are prepared and areas are ready for planting. All shipments of nursery materials shall be thoroughly protected from the drying winds during transit. All plants which cannot be planted at once, after delivery to the site, shall be well protected against the possibility of drying by wind and Balls of earth of B & B plants shall be kept covered with soil or other acceptable material. All plants remain the property of the Contractor until final acceptance.

C. Position the trees and shrubs in their intended location as per plan.

D. Notify the Owner's Authorized Representative for inspection and approval of all positioning of plant materials.

E. Excavate pits with vertical sides and horizontal bottom. Tree pits shall be large enough to permit handling and planting without injury to balls of earth or roots and shall be of such depth that,when planted and settled, the crown of the plant shall bear the same relationship to the finish grade as it did to soil surface in original place of growth.

F. Shrub and tree pits shall be no less than twenty-four (24") inches wider than the lateral dimension of the earth ball and six (6") inches deeper than it's vertical dimension. Remove and haul from site all rocks and stones over three-quarter (¾") inch in diameter. Plants should be thoroughly moist before removing containers.

G. Dig a wide, rough sided hole exactly the same depth as the height of the ball, especially at the surface of the ground. The sides of the hole should be rough and jagged, never slick or glazed.

H. Percolation Test: Fill the hole with water. If the water level does not percolate within 24 hours, the tree needs to move to another location or have drainage added. Install a PVC stand pipe per tree planting detail as approved by the Landscape Architect if the percolation test fails.

I. Backfill only with 5 parts existing soil or sandy loam and 1 part bed preparation. When the hole is dug in solid rock, topsoil from the same area should not be used. Carefully settle by watering to prevent air pockets. Remove the burlap from the top ⅓ of the ball, as well as all nylon, plastic string and wire. Container trees will usually be root bound, if so follow standard nursery practice of 'root scoring'.

J. Do not wrap trees.

K. Do not over prune.

L. Mulch the top of the ball. Do not plant grass all the way to the trunk of the tree. Leave the area above the top of the ball and mulch with at least two (2") inches of specified mulch.

M. All plant beds and trees to be mulched with a minimum settled thickness of two (2") inches over the entire bed or pit.

N. Obstruction below ground: In the event that rock, or underground construction work or obstructions are encountered in any plant pit excavation work to be done under this section, alternate locations may be selected by the Owner. Where locations cannot be changed, the obstructions shall be removed to a depth of not less than three (3') feet below grade and no less than six (6") inches below the bottom of ball when plant is properly set at the required grade. The work of this section shall include the removal from the site of such rock or underground obstructions encountered at the cost of the Landscape Contractor.

O. Trees and large shrubs shall be staked as site conditions require. Position stakes to secure trees against seasonal prevailing winds.

P. Pruning and Mulching: Pruning shall be directed by the Landscape Architect and shall be pruned in accordance with standard horticultural practice following Fine Pruning, Class I pruning standards provided by the National Arborist Association.

1. Dead wood, suckers, broken and badly bruised branches shall be removed. General tipping of the branches is not permitted. Do not cut terminal branches.

2. Pruning shall be done with clean, sharp tools.

3. Immediately after planting operations are completed, all tree pits shall be covered with a layer of organic material two (2") inches in depth. This limit of the organic material for trees shall be the diameter of the plant pit.

Q. Steel Curbing Installation:

1. Curbing shall be aligned as indicated on plans. Stake out limits of steel curbing and obtain Owners approval prior to installation.

2. All steel curbing shall be free of kinks and abrupt bends.

3. Top of curbing shall be ½" maximum height above final finished grade.

4. Stakes are to be installed on the planting bed side of the curbing, as opposed to the grass side.

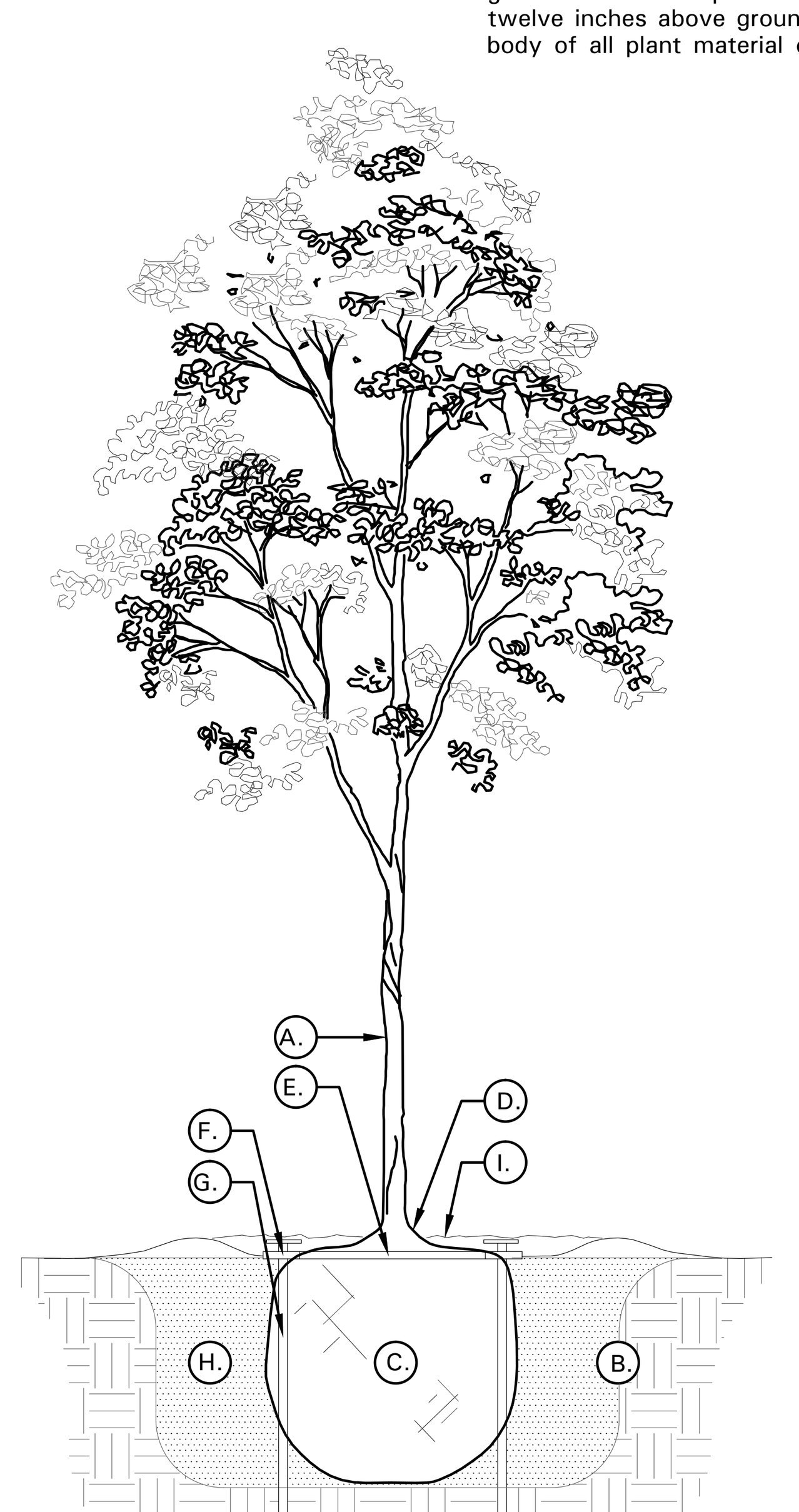
5. Do not install steel edging along sidewalks or curbs.

6. Cut steel edging at 45 degree angle where edging meets sidewalks or curbs.

3.3 CLEANUP AND ACCEPTANCE

A. Cleanup: During the work, the premises shall be kept neat and orderly at all times. Storage areas for all materials shall be so organized so that they, too, are neat and orderly. All trash and debris shall be removed from the site as work progresses. Keep paved areas clean by sweeping or hosing them at end of each work day.

END OF SECTION



01 TREE PLANTING DETAIL
NOT TO SCALE

TREE PLANTING DETAIL LEGEND AND NOTES

A. TREE: TREES SHALL CONFORM WITH LATEST AMERICAN STANDARD FOR NURSERY STOCK. www.anla.org

B. TREE PIT: WIDTH TO BE AT LEAST TWO (2) TIMES THE DIAMETER OF THE ROOT BALL CENTER TREE IN HOLE & REST ROOT BALL ON UNDISTURBED NATIVE SOIL.

C. ROOT BALL: REMOVE TOP ⅓ BURLAP AND ANY OTHER FOREIGN OBJECT; CONTAINER GROWN STOCK TO BE INSPECTED FOR GIRDLING ROOTS.

D. ROOT FLARE: ENSURE THAT ROOT FLARE IS EXPOSED, FREE FROM MULCH, AND AT LEAST TWO INCHES ABOVE GRADE. TREES SHALL BE REJECTED WHEN GIRDLING ROOTS ARE PRESENT & ROOT FLARE IS NOT APPARENT.

E. ROOTBALL ANCHOR RING: REFER TO MANUFACTURER'S GUIDELINES FOR SIZING. PLACE ROOTBALL ANCHOR RING ON BASE OF ROOTBALL, TRUNK SHOULD BE IN THE CENTER OF THE RING.

F. 'U' BRACKET.

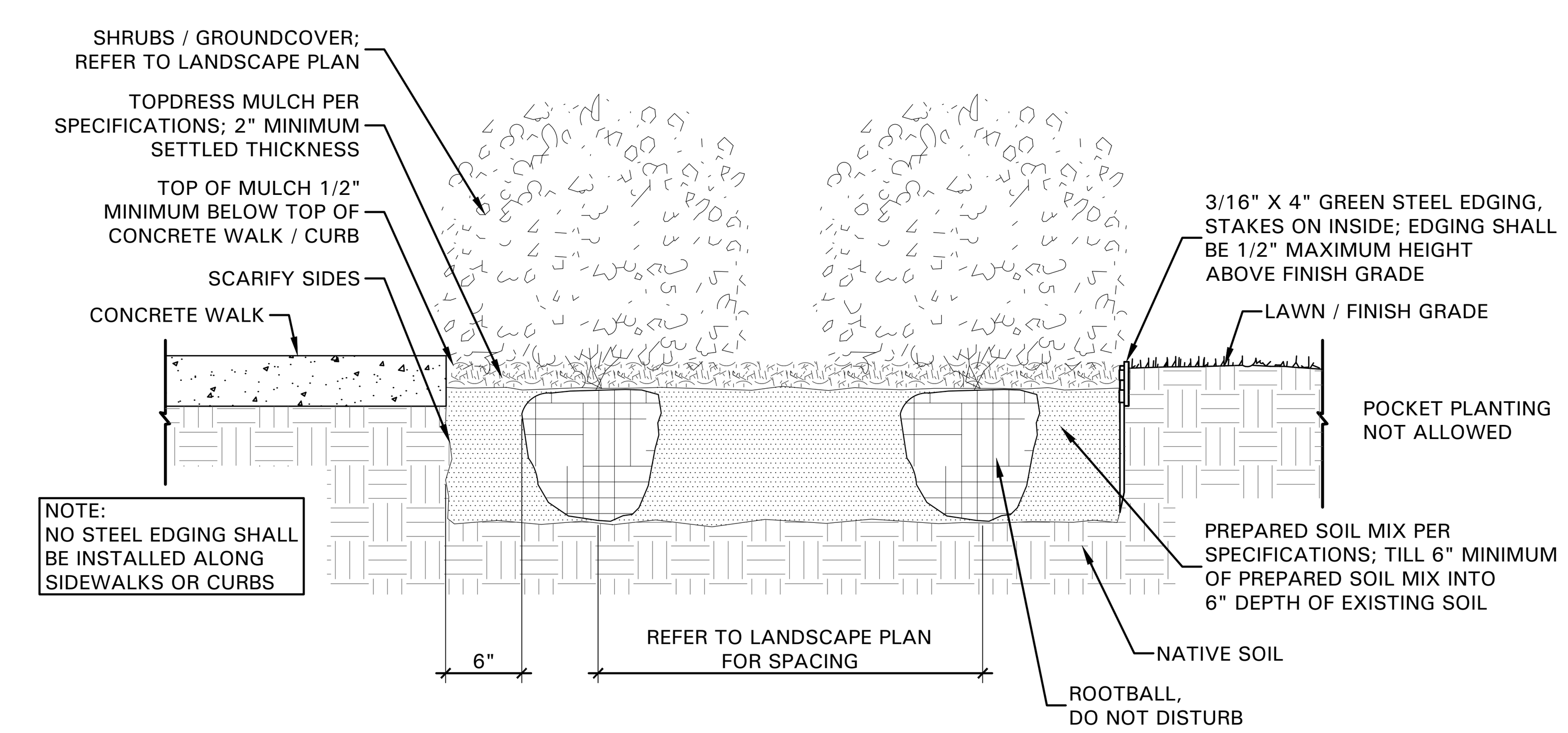
G. 30" - 36" NAIL STAKE: INSTALL NAIL STAKE WITH HAMMER OR MALLET FIRMLY INTO UNDISTURBED GROUND. DRIVE NAIL STAKES FLUSH WITH "U" BRACKET ADJACENT TO ROOTBALL (DO NOT DISTURB ROOTBALL).

H. BACKFILL: USE EXISTING NATIVE SOIL (no amendments) WATER THOROUGHLY TO ELIMINATE AIR POCKETS.

I. MULCH: DOUBLE SHREDDED HARDWOOD MULCH 2 INCH SETTLED THICKNESS, WITH 2" HT. WATERING RING; ENSURE THAT ROOT FLARE IS EXPOSED. BELOW GROUND STAKE SHOULD NOT BE VISIBLE.

J. TREE STAKES:
TREE STAKE SOLUTIONS 'SAFETY STAKE' BELOW GROUND MODEL AVAILABLE FROM:
Tree Stake Solutions
ATTN: Jeff Tuley
(903) 676-6146
jeff@treestakesolutions.com
www.treestakesolutions.com

K. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN A COPY OF THE MANUFACTURER'S SPECIFICATIONS PRIOR TO INSTALLATION OF TREE STAKES. CONTRACTOR SHALL ADHERE TO MANUFACTURER'S INSTALLATION GUIDELINES, SPECIFICATIONS, AND OTHER REQUIREMENTS FOR TREE STAKE INSTALLATION.



02 SHRUB / GROUNDCOVER DETAIL
NOT TO SCALE

RECEIVED
By Kathy Wright at 8:22 am, May 30, 2013

BELLE FIRMA
4245 North Central Expy
Suite 230
Dallas, Texas 75205
214.865.7192 office

Issue Dates:	Revisions:	Date:
1 04.29.13	1	
2 05.13.13	2	
3 05.22.13	3	
4	4	
5	5	
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CROSS ENGINEERING CONSULTANTS
131 S. Tennessee St. McKinney, Texas 75069
972.562.4409 Texas P.E. Firm No. F-5935

Drawn By:	Checked By:	Scale:
KAH	KAH	1" = 20'

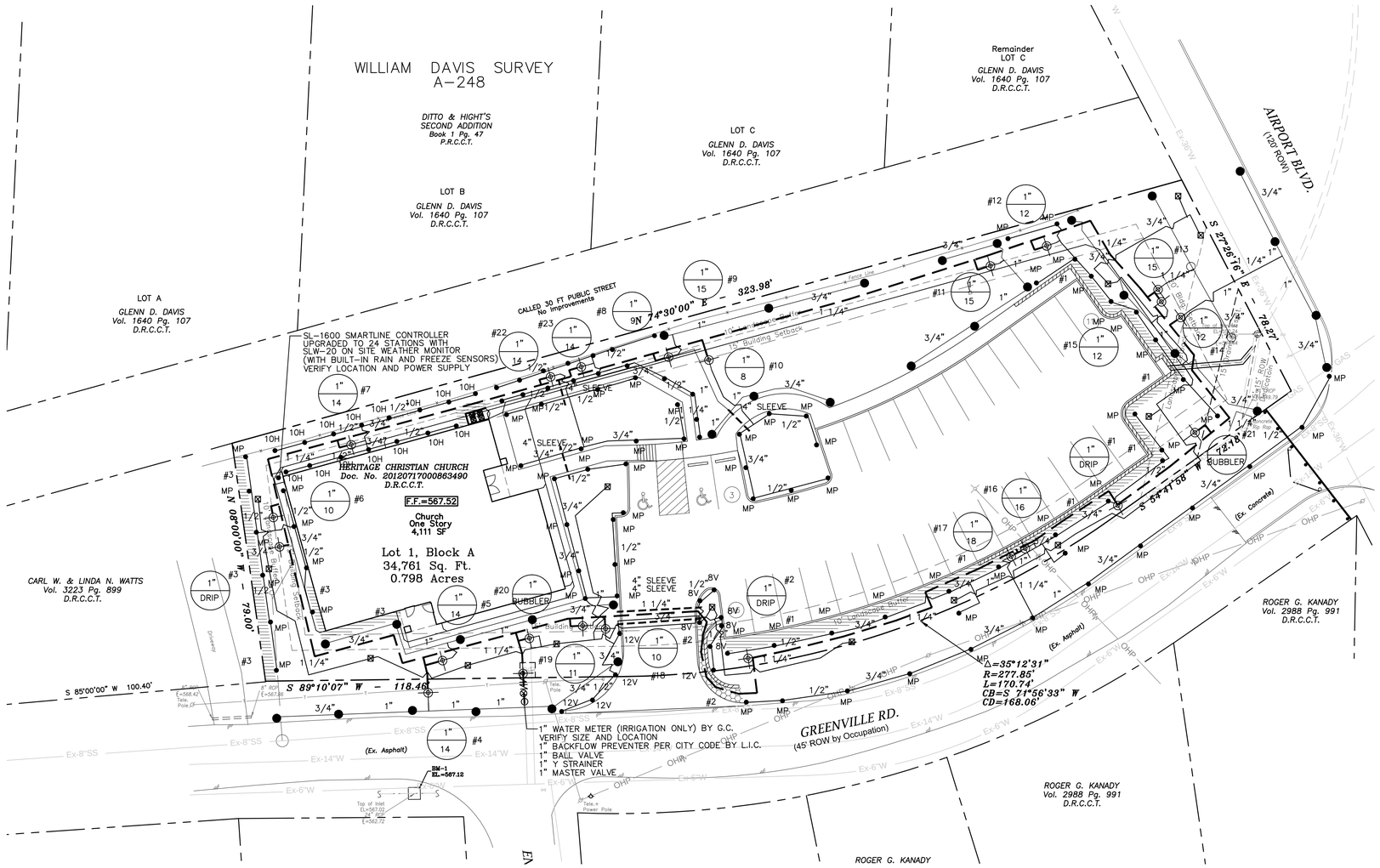
REGISTERED LANDSCAPE ARCHITECT · LORI ANN HAUG · 2246 · STATE OF TEXAS
05.22.13

LANDSCAPE SPECS AND DETAILS
HERITAGE CHRISTIAN CHURCH
William Davis Survey, Abstract No. 248
City of McKinney, Texas

Sheet No.
L1.03

Project No.
12128

Heritage Christian Church



SLEEVING NOTES

1. SLEEVES SHALL BE FURNISHED AND INSTALLED BY GENERAL CONTRACTOR.
2. SLEEVE MATERIAL SHALL BE SCHEDULE 40 PIPE, SIZE AS INDICATED ON PLAN.
3. CONTRACTOR SHALL LAY SLEEVES AND CONDUITS AT TWENTY-FOUR (24") INCHES BELOW FINISH GRADE OF THE TOP OF PAVEMENT.
4. CONTRACTOR SHALL EXTEND SLEEVES ONE (1') FOOT BEYOND EDGE OF ALL PAVEMENT.
5. CONTRACTOR SHALL CAP PIPE ENDS USING PVC CAPS.
6. CONTRACTOR SHALL FURNISH OWNER AND IRRIGATION CONTRACTOR WITH AN 'AS-BUILT' DRAWING SHOWING ALL SLEEVE LOCATIONS.

IRRIGATION NOTES

1. THE IRRIGATION CONTRACTOR SHALL COORDINATE INSTALLATION OF THE IRRIGATION SYSTEM WITH THE LANDSCAPE CONTRACTOR SO THAT ALL PLANT MATERIAL WILL BE WATERED IN ACCORDANCE WITH THE INTENT OF THE PLANS AND SPECIFICATIONS.
2. ALL SPRINKLER EQUIPMENT NUMBERS REFERENCE THE WEATHERMATIC EQUIPMENT CATALOG UNLESS OTHERWISE INDICATED.
3. TEN DAYS PRIOR TO START OF CONSTRUCTION, IRRIGATION CONTRACTOR SHALL VERIFY STATIC WATER PRESSURE. IF STATIC PRESSURE IS LESS THAN 65 P.S.I., NOTIFY THE LANDSCAPE ARCHITECT IMMEDIATELY. DO NOT WORK UNTIL NOTIFIED TO DO SO BY OWNER.
4. SLEEVES SHALL BE FURNISHED AND INSTALLED BY GENERAL CONTRACTOR. SLEEVE MATERIAL SHALL BE SCHEDULE 40, SIZE AS INDICATED ON PLAN. REFER TO SLEEVING NOTES.
5. ALL MAIN LINE AND LATERAL LINE PIPING IN PLANTING AND LAWN AREAS SHALL HAVE A MINIMUM OF 12 INCHES OF COVER. ALL PIPING UNDER PAVING SHALL HAVE A MINIMUM OF 18 INCHES OF COVER. CONTRACTOR TO VERIFY LOCAL FREEZE DEPTHS AND ADJUST DEPTH OF COVER ACCORDINGLY.
6. LAWN SPRAY HEADS SHALL BE WEATHERMATIC LX-4 INSTALLED PER DETAIL SHOWN.
7. ROTOR HEADS SHALL BE WEATHERMATIC TURBO INSTALLED PER DETAIL SHOWN. (WITH BUILT-IN CHECK VALVE)
8. NOZZLES SHALL BE WEATHERMATIC 5500 SERIES. IRRIGATION CONTRACTOR SHALL SELECT THE PROPER ARC AND RADIUS FOR EACH NOZZLE TO ENSURE 100% AND PROPER COVERAGE OF ALL LAWN AREAS AND PLANT MATERIAL. NO WATER SHALL SPRAY ON BUILDING.
9. ALL NOZZLES IN PARKING LOT ISLANDS AND PLANTING BEDS SHALL BE LOW ANGLE NOZZLES TO MINIMIZE OVER SPRAY ON PAVEMENT SURFACES.
10. ELECTRIC CONTROL VALVES SHALL BE WEATHERMATIC 11000 SERIES INSTALLED PER DETAIL SHOWN. SIZE OF VALVES AS SHOWN ON PLAN. VALVES SHALL BE INSTALLED IN VALUE BOXES LARGE ENOUGH TO PERMIT MANUAL OPERATION, REMOVAL OF SOLENOID AND / OR VALVE COVER WITHOUT ANY EARTH EXCAVATION.
11. ALL 24 VOLT VALVE WIRING TO BE UF 14 GAUGE SINGLE CONDUCTOR. ALL WIRE SPLICES ARE TO BE PERMANENT AND WATERPROOF.
12. AUTOMATIC CONTROLLER SHALL BE INSTALLED AT LOCATION SHOWN. POWER (120V) SHALL BE LOCATED IN A JUNCTION BOX WITHIN FIVE (5') FEET OF CONTROLLER. LOCATION BY OTHER TRADES. RAIN AND FREEZE SENSORS SHALL BE INSTALLED WITH EACH CONTROLLER.
13. THE DESIGN PRESSURE IS 65 PSI. 30 PSI FOR ALL SPRAY ZONES. ORDINANCE #110.480 AND 110.482.C. INSTALL IN LINE PRESET PRESSURE REGULATION AFTER EACH ZONE VALVE.
14. ELECTRICAL SPLICES AT EACH VALVE AND CONTROLLER ONLY.
15. IRRIGATION IN TEXAS IS REGULATED BY:
    THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ)
    MC-178 / PO BOX 13087
    AUSTIN, TEXAS 78711-3087
16. TCEQ'S WEBSITE IS WWW.TCEQ.STATE.TX.US.

IRRIGATION LEGEND

- WEATHERMATIC LX-4 POP-UP LAWN HEAD
- WEATHERMATIC TURBO ROTARY FC
- WEATHERMATIC TURBO ROTARY PC
- WEATHERMATIC 106.5 BUBBLER (2 PER TREE, TYP.)
- WEATHERMATIC 11000 SERIES ELECTRIC VALVE
- CONTROLLER, SIZE AS INDICATED
- WATER METER, SIZE AS INDICATED WITH D.C.A., SIZE AS INDICATED
- PVC SCHEDULE 40 SLEEVING
- PVC CLASS 200 MAINLINE
- PVC CLASS 200 LATERAL LINE
- XXX / XXX — VALVE SIZE / GPM
- NETAFIM TECHLINE#TLDL6-1210 (18" LATERAL SPACING, 12" EMIITER SPACING) PVC LATERAL PIPING SIZED AS REQUIRED INSTALL ALL EQUIPMENT ACCORDING TO MANUFACTURERS SPECIFICATIONS
- NETAFIM TECHLINE#TLDL6-1210 (18" LATERAL SPACING, 12" EMIITER SPACING) PVC LATERAL PIPING SIZED AS REQUIRED INSTALL ALL EQUIPMENT ACCORDING TO MANUFACTURERS SPECIFICATIONS
- XXX / DRIP — NETAFIM DISC FILTER #DF100-080 NETAFIM PRESSURE REGULATOR #PRV15025 INSTALL ALL EQUIPMENT ACCORDING TO MANUFACTURERS SPECIFICATIONS

BUBBLER PIPING CHART

NUMBER OF BUBBLERS	SIZE OF PIPE
1 - 5	½"
6 - 10	¾"
11 - 20	1"
21 - 30	1 ¼"
31 - 40	1 ½"

SMARTLINE CERTIFIED DESIGN

1. THIS IRRIGATION DESIGN FEATURES SMARTLINE CONTROLLER AND WEATHER MONITOR TECHNOLOGY AND UTILIZES 'ET' BASED WATER CONSERVATION AUTO ADJUSTING SCHEDULING.
2. THE IRRIGATION CONTRACTOR MUST PROGRAM THE CONTROLLER BY SELECTING THE PROPER SPRINKLER TYPE, PLANT TYPE, SOIL TYPE, SLOPE AND SUN / SHADE EXPOSURE FOR EACH ZONE.
3. THE IRRIGATION CONTRACTOR MUST CONTACT THE IRRIGATION DESIGNER FOR APPROVAL OF CONTROLLER SETTINGS.
4. THE IRRIGATION DESIGNER IS JOHN WINGFIELD (972) 238-1498.
5. ALL EQUIPMENT MUST BE INSTALLED AS SPECIFIED. NO EQUIPMENT SUBSTITUTIONS WILL BE PERMITTED.

ZONE #	PREC. RATE
1	0.19
2	0.19
3	0.19
4	0.78
5	0.72
6	1.10
7	1.85
8	0.66
9	0.75
10	1.25
11	0.74
12	0.95
13	0.75
14	0.75
15	0.63
16	1.12
17	1.08
18	0.99
19	1.08
20	BUBBLER
21	BUBBLER
22	1.08
23	1.74

ALL IRRIGATION EQUIPMENT TO BE LOCATED NO CLOSER THAN 4" TO ANY PAVEMENT AND/OR STRUCTURE

DESIGN PRESSURE – 65 PSI
STATIC PRESSURE – 75 PSI

ELECTRICAL SPLICES AT EACH VALVE AND CONTROLLER ONLY.

IRRIGATION IN TEXAS IS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) MC-178/ P.O.BOX 13087, AUSTIN, TX 78711-3087. TCEQ'S WEBSITE IS: www.tceq.state.tx.us

DETAIL 1

SCALE: 1" = 20'-0"
0 10 20 40

BELLE FIRMA
4245 North Central Expy
Suite 230
Dallas, Texas 75205
214.865.7192 office

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131 S. Tennessee St. McKinney, Texas 75069
972.562.4409 Texas P.E. Firm No. F-5935

Drawn By:	Checked By:	Scale:
JJW	JJW	1" = 20'

STATE OF TEXAS — JOHN JAY WINGFIELD — 851 — LICENSED IRRIGATOR — 05.22.13

IRRIGATION PLAN

HERITAGE CHRISTIAN CHURCH

William Davis Survey, Abstract No. 248
City of McKinney, Texas

Sheet No. L2.01

Project No. 12128

Heritage Christian Church

SECTION 32 8423 - UNDERGROUND IRRIGATION SLEEVES AND UTILITY CONDUITS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide underground irrigation sleeves as indicated on the drawings.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 32 8424 - Irrigation System

1.3 REFERENCED STANDARDS

A. American Society for Testing and Materials:

1. ASTM - D2441 Poly (Vinyl Chloride) (PVC) Plastic Pipe (SD R-PR)

2. ASTM - D2466 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Socket Type, Schedule 40.

3. ASTM - D2564 Solvent Cements for Poly Vinyl Chloride Plastic Pipe and Fittings.

PART 2 - MATERIALS

2.1 DEFINITIONS

A. Sleeve - A pipe within which another pipe is placed for carrying water or other utilities to be installed.

B. Wire Sleeves - A pipe used to carry low voltage irrigation wires for operation of the electric solenoid valves.

2.2 GENERAL

A. Polyvinyl Chloride Pipe (PVC) - Manufactured in accordance with standards noted herein:

1. Marking and Identification - Permanently marked with SDR number, ASTM standard number, and the NSF (National Sanitation Foundation) seal.

2. Solvent - As recommended by manufacturer to make solvent-welded joints. Thoroughly clean pipe and fittings before applying solvent.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coverage - Provide twenty-four inches (24") minimum cover over top of sleeve from finish grade.

B. Sleeve Extensions - Extend sleeves one foot (1') past edge of pavement or concrete walls. Install 90 degree elbow on each sleeve end and add additional length of same size pipe to extend above finish grade by twelve inches (12"). Cap pipe ends using duct tape.

3.2 BACKFILL

A. Compaction - Place backfill over sleeves in six (6") inch lifts. Tamp firmly into place taking care not to damage sleeve. Complete backfill and compaction to prevent any future settlement. Compact to 85% Standard Proctor.

B. Damage - Repair any damage resulting from improper compaction including pavement repair and replacement.

END OF SECTION

SECTION 32 8424 - IRRIGATION SYSTEM

PART 1 - GENERAL

1.1 SCOPE

A. Provide complete sprinkler installation as detailed and specified herein, includes furnishing all labor, materials and equipment for the proper installation. Work includes but is not limited to:

1. Trenching and backfill.

2. Automatic controlled system.

3. Upon completion of installation, supply as-built drawings showing details of construction including location of mainline piping, manual and automatic valves, electrical supply to valves and specifically the exact location of automatic valves.

B. All sleeves as shown on plans shall be furnished by General Contractor. Meter and power source shall be provided by General Contractor.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Refer to Irrigation Plans for controller, head and valve locations.

B. Refer to Landscape Plans, notes, details, bidding requirements, special provisions, and schedules for additional requirements.

C. Section 32 9300 - Landscape

D. Section 32 8423 - Underground Irrigation Sleeve and Utility Conduits

1.3 APPLICABLE STANDARDS

A. America Standard for Testing and Materials (ASTM) – Latest edition.

1. D2241 Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR)

2. D2464 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Thread, Schedule 80

3. D2455 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40

4. D2467 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Socket Type, Schedule 80

5. D2564 Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings

6. D2287 Flexible Poly Vinyl Chloride (PVC) Plastic Pipe

7. F656 Poly Vinyl Chloride (PVC) Solvent Weld Primer

8. D2855 Making Solvent – Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings

1.4 MAINTENANCE AND GUARANTEE

A. Materials and workmanship shall be fully guaranteed for one (1) year after final acceptance.

B. Provide maintenance of system, including raising and lowering of heads to compensate for lawn growth, cleaning and adjustment of heads and raising and lowering of shrub heads to compensate for shrub growth for one (1) year after completion of installation.

C. Guarantee is limited to repair and replacement of defective materials or workmanship, including repair of backfill settlement.

1.5 SUBMITTALS

A. Procedure: Comply with Division I requirements.

B. Product Data: Submit (5) copies of equipment including manufacturer's specifications and literature for approval by Landscape Architect prior to installation.

C. Project Record Documents

1. Comply with Division I requirements.

2. Locate by written dimension, routing of mainline piping, remote control valves and quick coupling valves. Locate mainlines by single dimensions from permanent site features provided they run parallel to these elements. Locate valves, intermediate electrical connections, and quick couplers by two dimensions from a permanent site feature at approximately 70 degrees to each other.

3. When dimensioning is complete, transpose work to mylar reproducible tracings.

4. Submit completed tracings prior to final acceptance. Mark tracings "Record Prints Showing Significant Changes". Date and sign drawings.

5. Provide three complete operation manuals and equipment brochures neatly bound in a hard back three-ring binder. Include product data on all installed materials. Include warranties and guarantees extended to the Owner by the manufacturer of all equipment.

D. Quick Coupler Keys: Provide three (3) coupler keys with boiler drains attached using brass reducer.

E. Controller Keys: Provide three (3) sets of keys to controller enclosure(s).

F. Use of materials differing in quality, size or performance from those specified will only be allowed upon written approval of the Landscape Architect. The decision will be based on comparative ability of material or article to perform fully all of the purposes of mechanics and general design considered to be possessed by the item specified.

G. Bidders desiring to make a substitution for specified sprinklers shall submit manufacturer's catalog sheet showing full specification of each type sprinkler proposed as a substitute, including discharge in GPM maximum allowable operating pressure at sprinkler.

H. Approval of substitute sprinkler shall not relieve Irrigation Contractor of his responsibility to demonstrate that final installed sprinkler system will operate according to intent of original design and specified system.

I. It is the responsibility of the Irrigation Contractor to demonstrate that final installed sprinkler system will operate according to intent of originally designed and specified system. If Irrigation Contractor notes any problems in head spacing or potential coverage, it is his responsibility to notify the Landscape Architect in writing, before proceeding with work. Irrigation Contractor guarantees 100% coverage of all areas to be irrigated.

1.6 TESTING

A. Perform testing required with other trades, including earthwork, paving, plumbing, electrical, etc. to avoid unnecessary cutting, patching and boring.

B. Water Pressure: Prior to starting construction, determine if static water pressure is as stated on Drawings. Confirm findings to Landscape Architect in writing. If static pressure varies from pressure stated on drawings, do not start work until notified to do so by Landscape Architect.

1.7 COORDINATION

A. Coordinate installation with other trades, including earthwork, paving, and plumbing to avoid unnecessary cutting, patching and boring.

B. Coordinate to ensure that electrical power source is in place.

C. Coordinate system installation with work specified in other sections and coordinate with Landscape Contractor to ensure plant material is uniformly watered in accordance with intent shown on drawings.

PART 2 - PRODUCTS

2.1 GENERAL

A. Mainline: Piping from water source to operating valves. This portion of piping is subject to surges, being a closed portion of sprinkler system. Hydrant lines are considered a part of sprinkler main.

B. Lateral Piping: Lateral piping is that portion of piping from operating valve to sprinkler heads. This portion of piping is not subject to surges, being an "open end" portion of sprinkler system.

2.2 POLY VINYL CHLORIDE PIPE (PVC PIPE)

A. PVC pipe shall be manufactured in accordance with commercial standards noted herein.

B. Marking and Identification: PVC pipe shall be continuously and permanently marked with the following information: manufacturer's name, pipe size, type of pipe, and material, SDR number, product standard number, and the NSF (National Sanitation Foundation) seal.

C. PVC Pipe Fittings: Shall be of the same material as the PVC pipe specified and shall be compatible with PVC pipe furnished.

2.3 COPPER TUBING

A. Hard, straight lengths of domestic manufacture only. No copper tube of foreign extrusion or any so-called irrigation tubing (thin wall) shall be used.

2.4 COPPER TUBE FITTINGS

A. Cast brass or wrought copper, sweat - solder type.

2.5 WIRE

A. Type UF with 4-64" insulation which is Underwriter's Laboratory approved for direct underground burial when used in a National Electric Code Class II Circuit (30 volts AC or less).

B. Wire Connectors: Waterproof splice kit connectors. Type DBY by 3M.

2.6 SCHEDULE 80 PVC NIPPLES

A. Composed of Standard Schedule 40 PVC Fittings and PVC meeting noted standards. No clamps or wires may be used. Nipples for heads and shrub risers to be nominal one-half inch diameter by eight inches long, where applicable.

B. Polyethylene nipples six (6") inches long to be used on all pop-up spray heads.

2.7 MATERIALS - See Irrigation Plan

A. Sprinkler heads in lawn area as specified on plan.

B. PVC Pipe: Class 200, SPR 21

C. Copper Tubing (City Connection): Type "M"

D. 24V Wire: Size 14, Type UF

E. Electric valves to be all plastic construction as indicated on plans.

F. Refer to drawing for backflow prevention requirements and flow valve. Coordinate exact location with General Contractor.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

A. Staking: Before installation is started, place a stake where each sprinkler is to be located, in accordance with drawing. Staking shall be approved by Landscape Architect before proceeding.

B. Excavations: Excavations are unclassified and include earth, loose rock, rock or any combination thereof, in wet or dry state. Backfill trenches with material that is suitable for compaction and contains no lumps, clods rock, debris, etc. Special backfill specifications, if furnished, takes precedence over this general specification.

C. Backfill: Flood or hand - tamp to prevent after settling. Hand rake trenches and adjoining area to leave grade in as good or better condition than before installation.

D. Piping Layout: Piping layout is diagrammatic. Route piping around trees and shrubs in such a manner as to avoid damage to plantings. Do not dig within ball of newly planted trees or shrubs.

3.2 PIPE INSTALLATION

A. Sprinkler Mains: Install a four (4") inch wide minimum trench with a minimum of eighteen (18") inches of cover.

B. Lateral Piping: Install a four (4") inch wide minimum trench deep enough to allow for installation of sprinkler heads and valves, but in no case, with less than twelve (12") of cover.

C. Trenching: Remove lumber, rubbish and large rocks from trenches. Provide firm, uniform bearing for entire length of each pipe line to prevent uneven settlement. Wedging or blocking of pipe will not be permitted. Remove foreign matter or dirt from inside of pipe before welding, and keep piping clean by approved means during and after laying of pipe.

3.3 PVC PIPE AND FITTING ASSEMBLY

A. Solvent: Use only solvent recommended by manufacturer to make solvent-welded joints. Thoroughly clean pipe and fittings of dirt, dust and moisture before applying solvent.

B. PVC to metal connection: Work metal connections first. Use a non-hardening pipe dope such as Permatex No. 2 on threaded PVC adapters into which pipe may be welded.

3.4 COPPER TUBING AND FITTING ASSEMBLY

A. Clean pipe and fitting thoroughly and lightly sand pipe connections to remove residue from pipe. Attach fittings to tubing in an approved manner using 50-50 soft solid core solder.

3.5 POP-UP SPRAY HEADS

A. Supply pop-up spray heads in accordance with materials list and plan. Attach sprinkler to lateral piping with a semi-flexible polyethylene nipple not less than three (3") inches or more than six (6") inches long.

3.6 VALVES

B. Supply valves in accordance with materials list and sized according to drawings. Install valves in a level position in accordance with manufacturer's specifications. See plan for typical installation of electric valve and valve box.

3.7 WIRING

A. Supply wire from the automatic sprinkler controls to the valves. No conduit will be required for UF wire unless otherwise noted on the plan. Wire shall be tucked under the piping.

B. A separate wire is required from the control to each electric valve. A common neutral wire is also required from each control to each of the valves served by each particular control.

C. Bundle multiple wires and tape them together at ten (10') foot intervals. Install ten (10") inch expansion coils at not more than one hundred (100') foot intervals. Make splices waterproof.

3.8 AUTOMATIC SPRINKLER CONTROLS

A. Supply in accordance with Irrigation Plan. Install according to manufacturer's recommendations.

3.9 TESTING

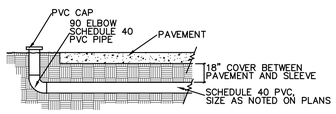
A. Sprinkler Mains: Test sprinkler main only for a period of twelve (12) to fourteen (14) hours under normal pressure. If leaks occur, replace joint or joints and repeat test.

B. Complete tests prior to backfilling. Sufficient backfill material may be placed in trenches between fittings to ensure stability of line under pressure. In each case, leave fittings and couplings open to visual inspection for full period of test.

3.10 FINAL ADJUSTMENT

A. After installation has been completed, make final adjustment of sprinkler system in preparation for Landscape Architect's final inspection. Completely flush system to remove debris from lines and turning on system. Check sprinklers for proper operation and proper alignment for direction of flow. Check each section of spray heads for operating pressure and balance to other sections by use of flow adjustment and top of each valve. Check nozzling for proper coverage. Prevailing wind conditions may indicate that arc of angle of spray should be other than shown on drawings. In this case, change nozzles to provide correct coverage.

END OF SECTION



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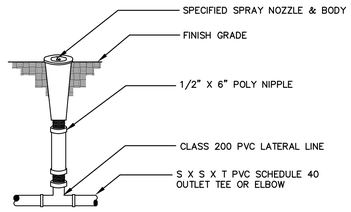
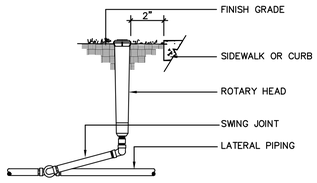
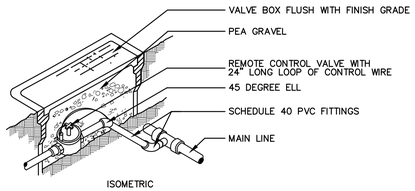
NOT TO SCALE



02 POP-UP LAWN SPRAY ASSEMBLY
NOT TO SCALE



03 ROTARY HEAD
NOT TO SCALE



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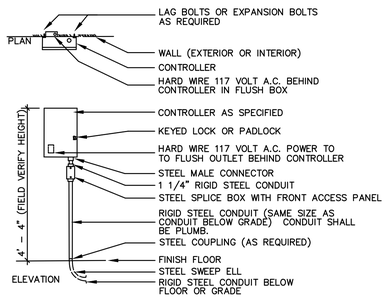
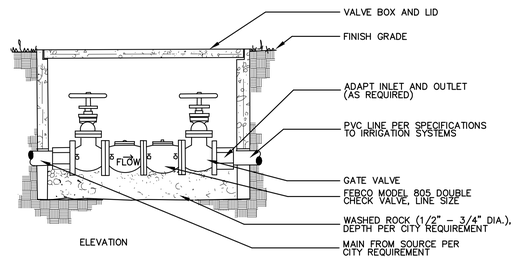


05 WALL MOUNTED CONTROLLER
NOT TO SCALE



06 BACKFLOW PREVENTER
NOT TO SCALE

BELLE FIRMA
4245 North Central Expy
Suite 230
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214.865.7192 office

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972.562.4409 Texas P.E. Firm No. F-5935

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STATE OF TEXAS JOHN JAY WINGFIELD 85151 REGISTERED
05.22.13

IRRIGATION SPECS AND DETAILS

HERITAGE CHRISTIAN CHURCH

William Davis Survey, Abstract No. 248
City of McKinney, Texas

Sheet No. L2.02

Project No. 12128

Heritage Christian Church