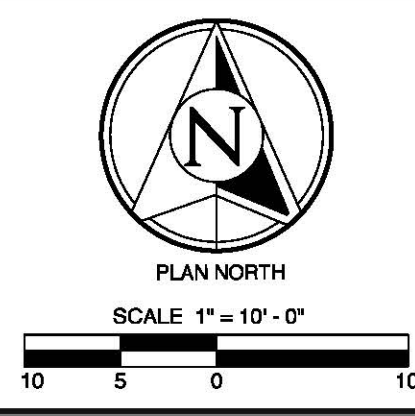


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 DATE: 10/06/2022
 LANDSCAPE ARCHITECT: Kyle M. Bruno
 REGISTRATION: 3211



LANDSCAPE DEVELOPMENT
 Monument Sign Layout
 Tomball Business and Technology Park
 29201 Quinn Rd., Suite B, Tomball, Texas 77375

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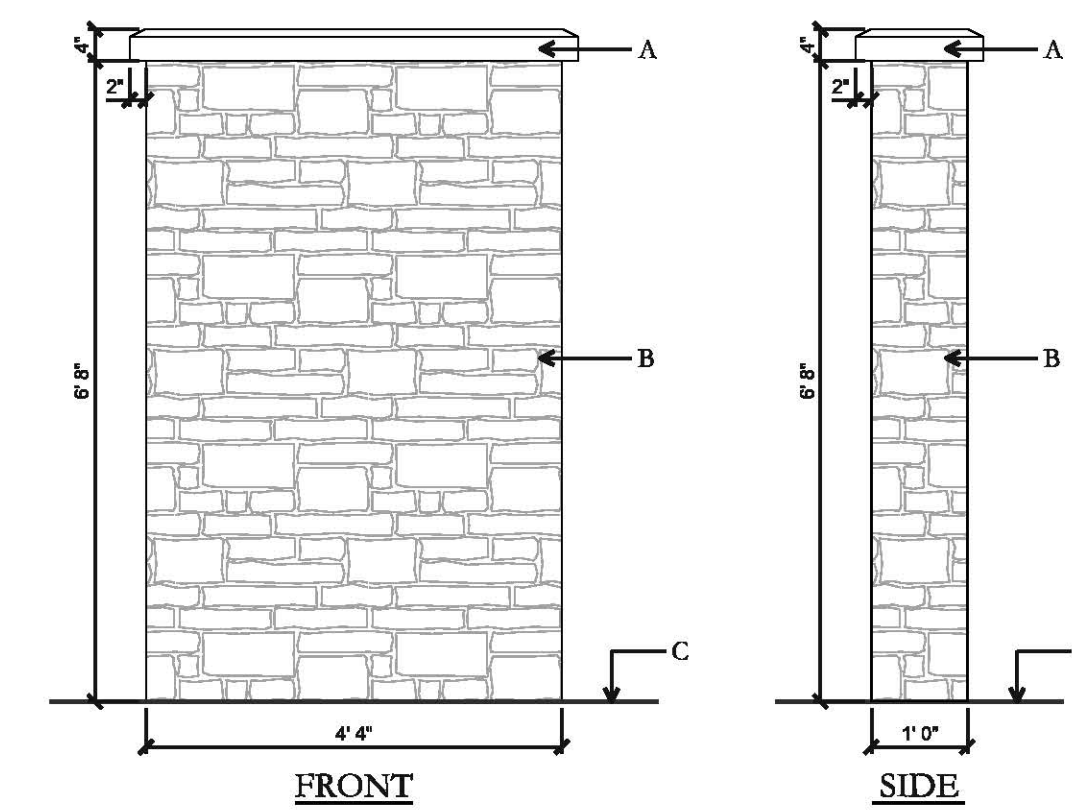
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LANDSCAPE DEVELOPMENT

Monument Sign Details & Elevations

Tomball Business and Technology Park

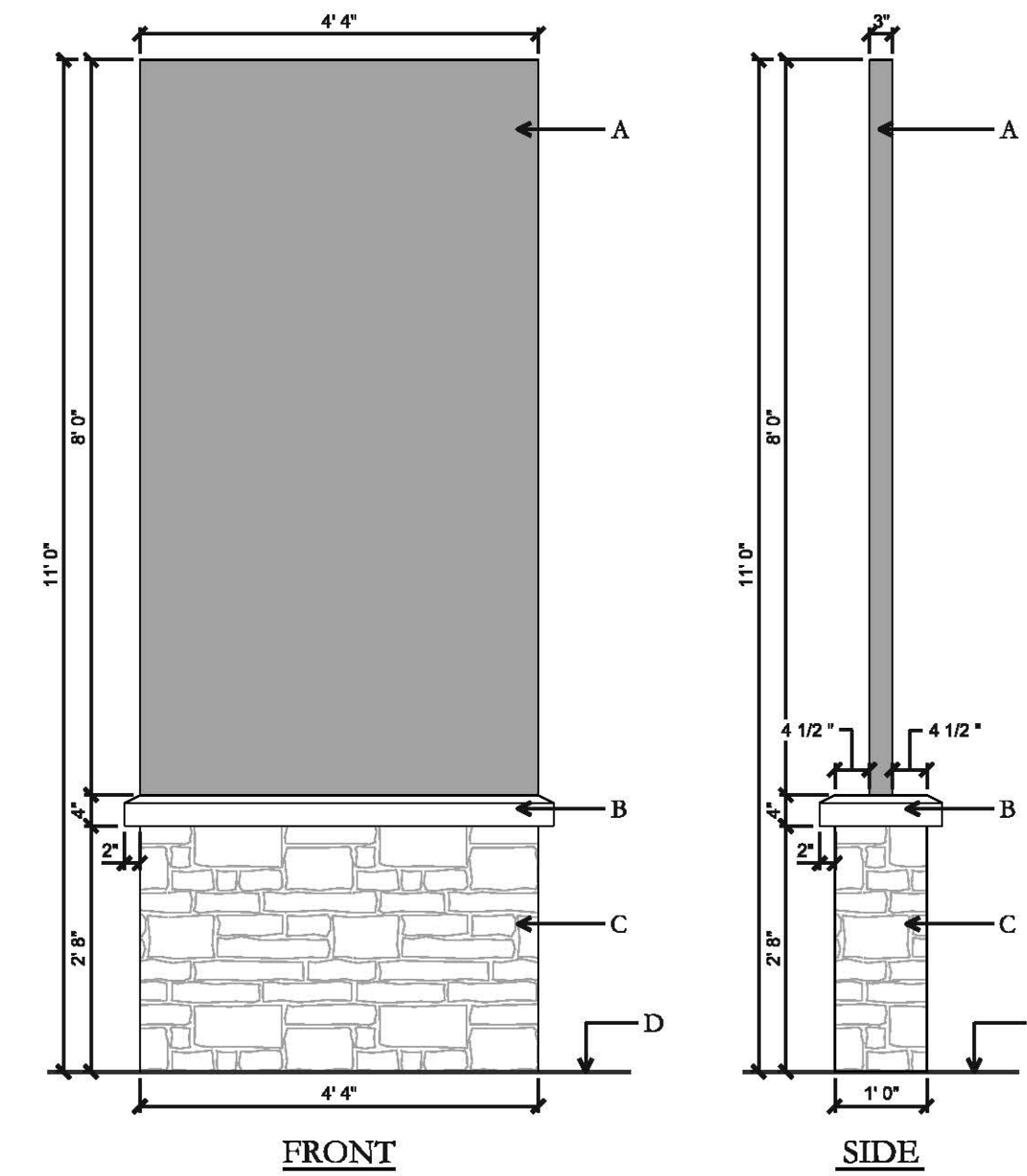
29201 Quinn Rd., Suite B, Tomball, Texas 77375



3 MASONRY MONUMENT WALL ELEVATIONS

SCALE: 1/2" = 1' 0"

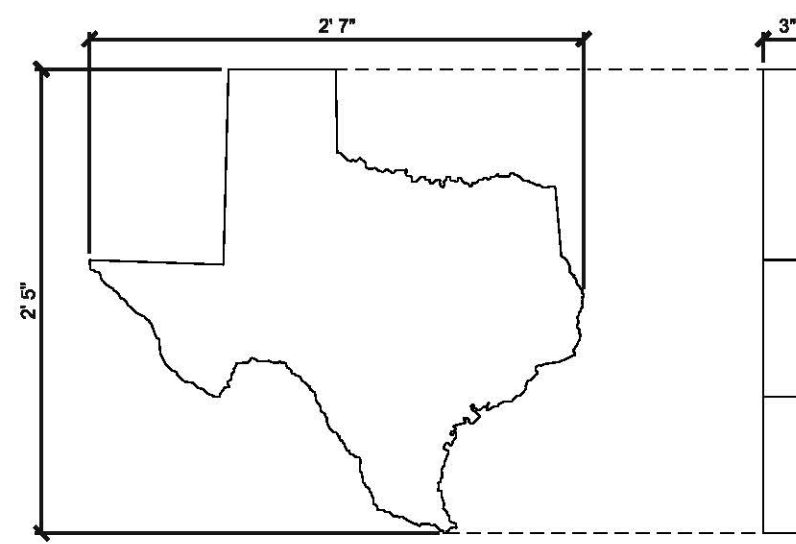
- GENERAL NOTES:**
- ALL MATERIALS TO MATCH EXISTING MONUMENT SIGN. CONTRACTOR TO VERIFY MATERIALS & COLORS BEFORE CONSTRUCTION.
- CONSTRUCTION NOTES:**
- CAST STONE LEDGE CAP, REF. SHEET L102 / #5
 - STONE VENEER TO MATCH EXISTING MONUMENT. CONTRACTOR TO VERIFY MATERIAL.
 - FINISHED GRADE



2 METAL CABINET MONUMENT WALL ELEVATIONS

SCALE: 1/2" = 1' 0"

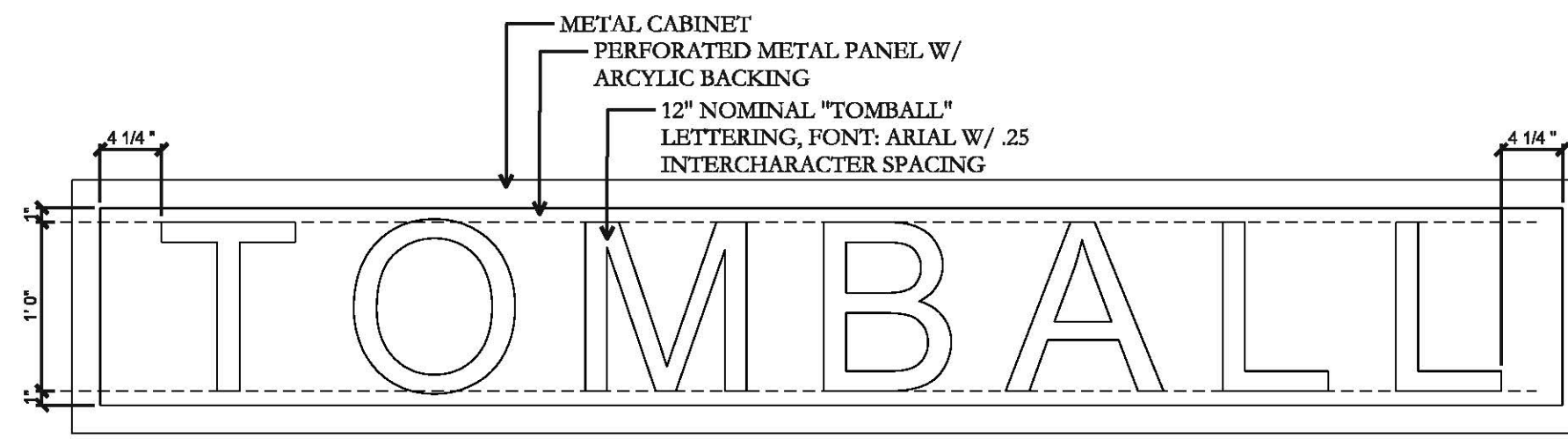
- GENERAL NOTES:**
- CONTRACTOR TO PROVIDE SHOP DRAWINGS OF METAL CABINET, INCLUDING LIGHTING, TO CONTRACTOR BEFORE CONSTRUCTION.
 - ALL MATERIAL TO MATCH EXISTING MONUMENT SIGN. CONTRACTOR TO VERIFY MATERIALS & COLORS BEFORE CONSTRUCTION.
 - CONTRACTOR TO PROVIDE ALL ELECTRICAL DRAWINGS & SPECIFICATIONS FOR LIGHTING THE MONUMENT.
 - LIGHTING ELEMENTS TO MATCH EXISTING MONUMENT.
- CONSTRUCTION NOTES:**
- METAL CABINET, PAINTED, REF. SHEET L102 / #2
 - CAST STONE LEDGE CAP, REF. SHEET L102 / #6
 - STONE VENEER TO MATCH EXISTING MONUMENT. CONTRACTOR TO VERIFY MATERIAL.
 - FINISHED GRADE



5 "TEXAS" LOGO EXHIBIT

SCALE: 1" = 1' 0"

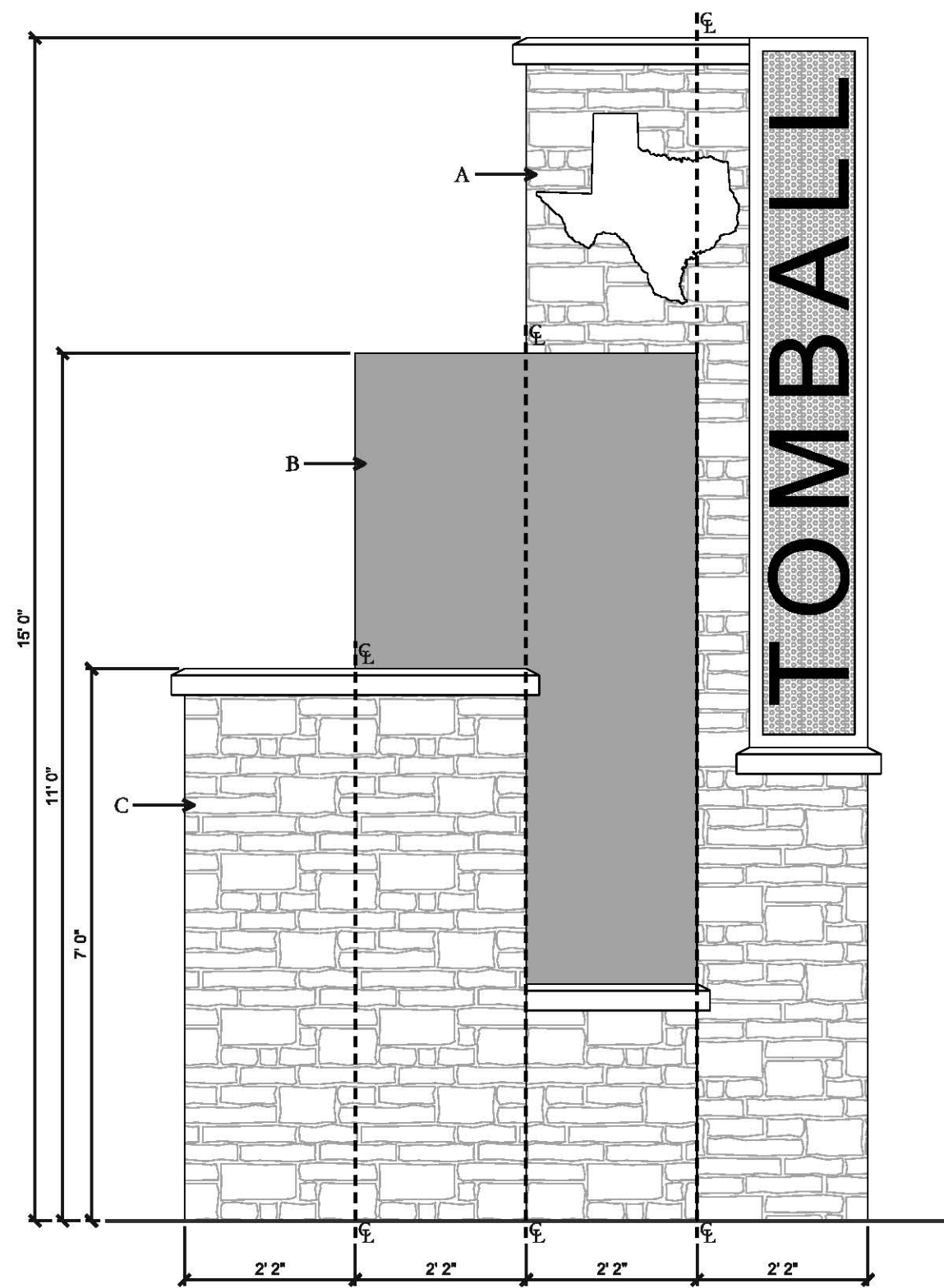
- GENERAL NOTES:**
- "TEXAS" LOGO TO BE REVERSE CHANNEL, PIN-MOUNTED, INTERIOR LIGHTED, REF. SHEET L103 / #5
 - COLOR TO MATCH EXISTING. CONTRACTOR TO VERIFY COLOR TO LANDSCAPE ARCHITECT



4 "TOMBALL" LETTERING EXHIBIT

SCALE: 1" = 1' 0"

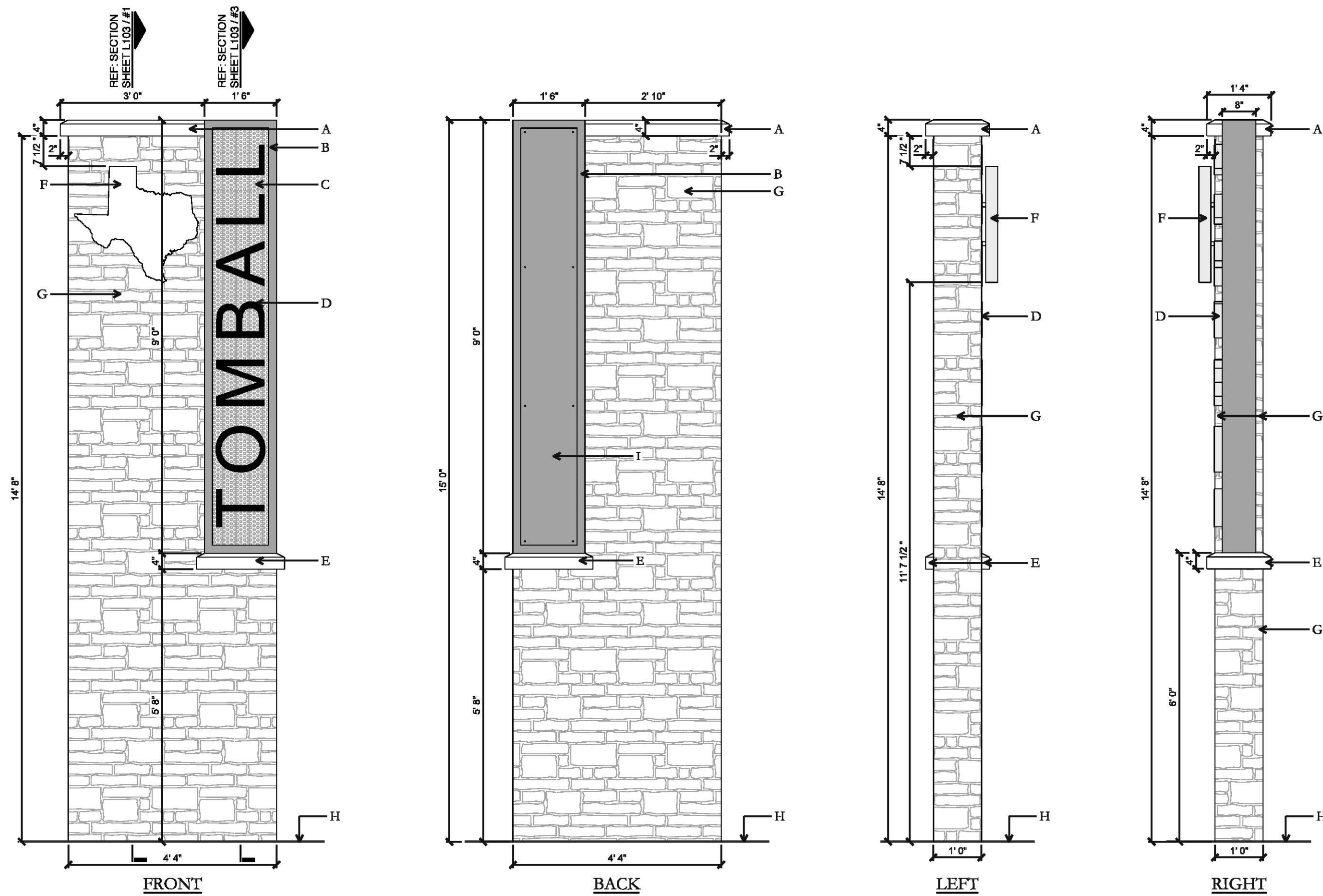
- GENERAL NOTES:**
- SIGN MANUFACTURER TO PROVIDE SHOP DRAWINGS TO CONTRACTOR & LANDSCAPE ARCHITECT.
 - LETTER COLOR "BLUE" TO MATCH EXISTING MONUMENT



7 MONUMENT SIGN FRONT ELEVATION

SCALE: 1/2" = 1' 0"

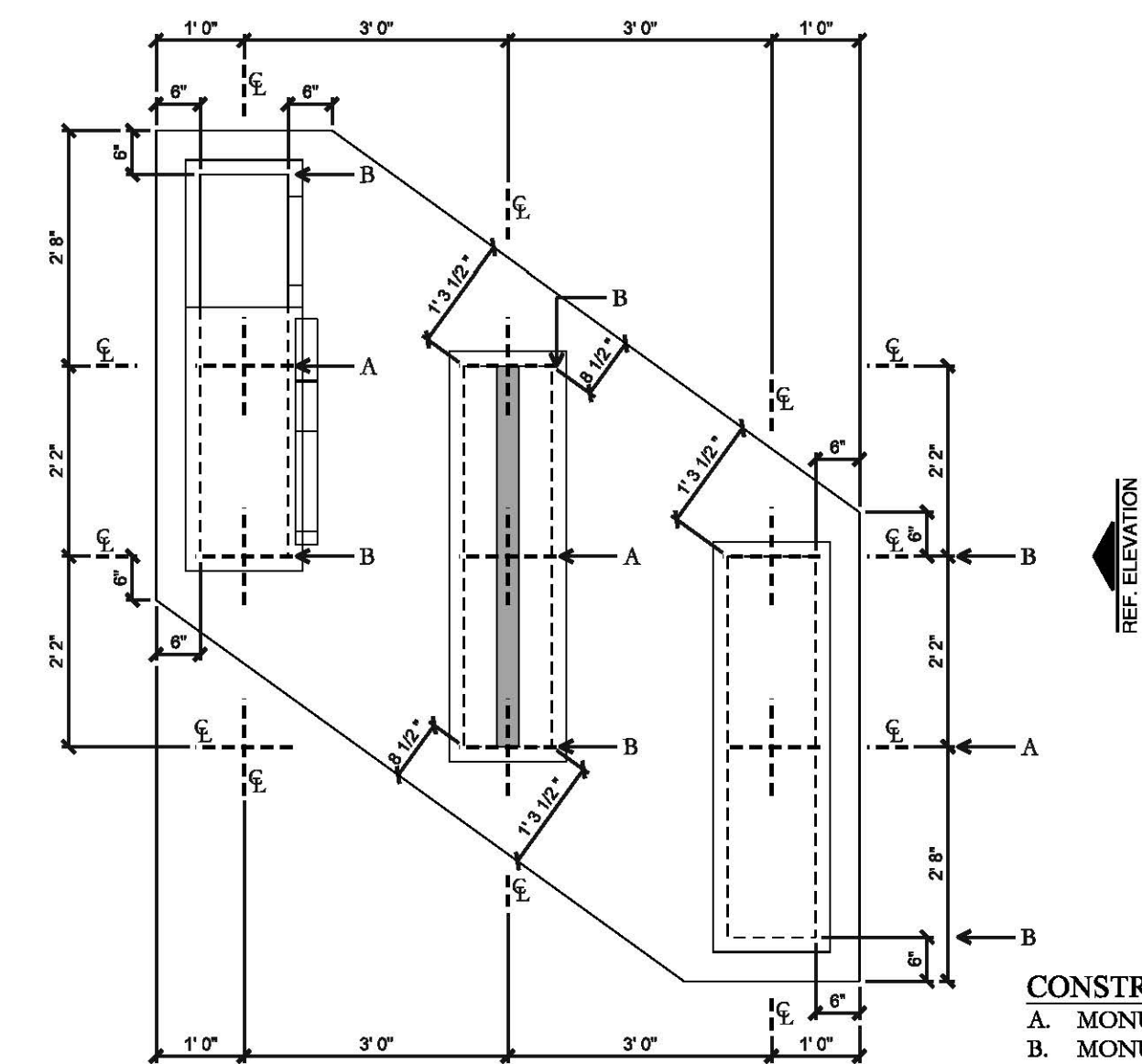
- CONSTRUCTION NOTES:**
- "TOMBALL" MONUMENT WALL, POSITIONED IN THE BACK, REF. #1 FOR ELEVATIONS
 - METAL CABINET MONUMENT WALL, POSITIONED IN THE MIDDLE, REF. #2 FOR ELEVATIONS
 - MASONRY MONUMENT WALL, POSITIONED IN THE FRONT, REF. #3 FOR ELEVATIONS



1 "TOMBALL" MONUMENT WALL ELEVATIONS

SCALE: 1/2" = 1' 0"

- GENERAL NOTES:**
- CONTRACTOR TO PROVIDE SHOP DRAWINGS OF METAL CABINET, INCLUDING LIGHTING, TO CONTRACTOR BEFORE CONSTRUCTION.
 - ALL MATERIAL CHOICES TO MATCH EXISTING MONUMENT SIGN. CONTRACTOR TO VERIFY MATERIALS & COLORS BEFORE CONSTRUCTION.
 - CONTRACTOR TO PROVIDE ALL ELECTRICAL DRAWINGS & SPECIFICATIONS FOR LIGHTING THE MONUMENT.
 - LIGHTING ELEMENTS TO MATCH EXISTING MONUMENT.
- CONSTRUCTION NOTES:**
- CAST STONE CAP, REF. SHEET L103 / #8
 - C CHANNEL, PAINTED, REF. SHEET L102 / #3
 - PERFORATED METAL
 - 12" DIMENSIONAL LETTERS, ARIAL FONT, PAINTED PER CITY SPECIFICATIONS
 - CAST STONE LEDGE CAP, REF. SHEET L103 / #7
 - REVERSE CHANNEL "TEXAS" LOGO, INTERIOR LIGHTED, REF. SHEET L102 / #9
 - STONE VENEER TO MATCH EXISTING MONUMENT. CONTRACTOR TO VERIFY MATERIAL.
 - FINISHED GRADE
 - ACCESS PANEL TO METAL CABINET



6 MONUMENT SIGN ALIGNMENT LAYOUT

SCALE: 1/2" = 1' 0"

- CONSTRUCTION NOTES:**
- MONUMENT CENTER ALIGNMENT
 - MONUMENT EDGE ALIGNMENT

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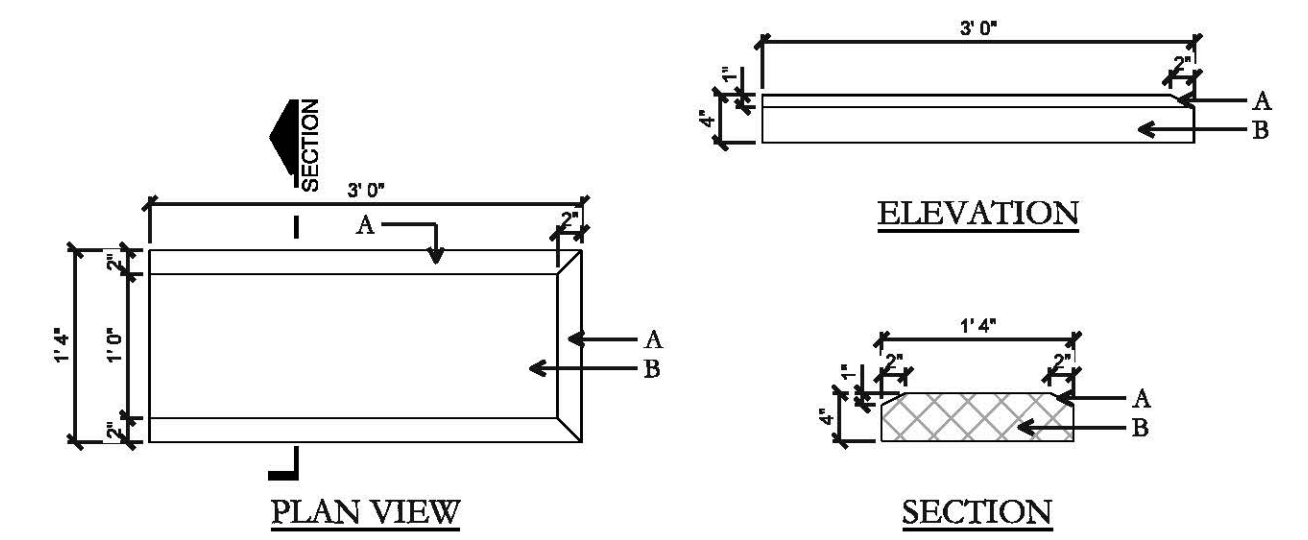
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LANDSCAPE DEVELOPMENT

Monument Sign Details

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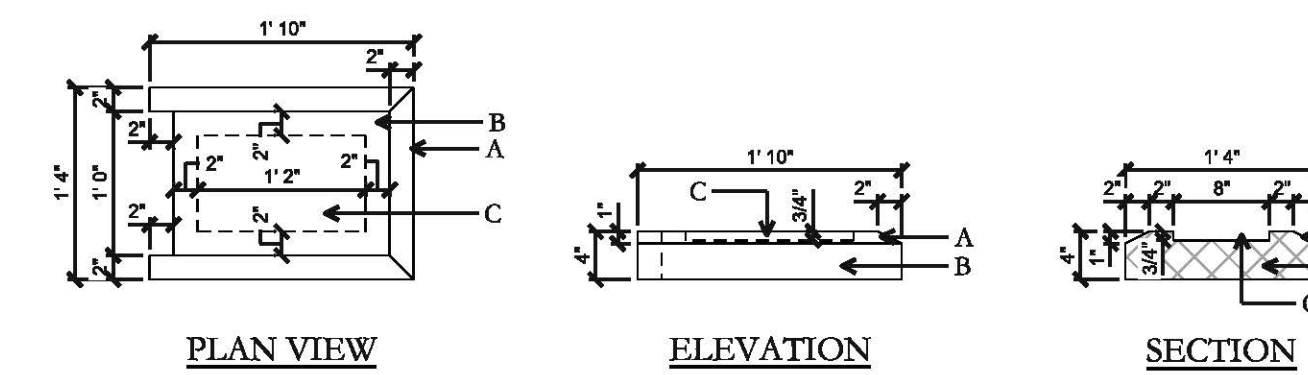
SHEET NUMBER:
L103



GENERAL NOTES:
 1. CAST CONCRETE SHALL BE NATURAL CONCRETE COLOR
 4. CAST STONE TO HAVE SMOOTH TEXTURE FINISH
 5. AT INSTALLATION CONTRACTOR TO PROVIDE A SLIGHT PITCH TO PROVIDE POSITIVE DRAINAGE

CONSTRUCTION NOTES:
 A CHAMFERED EDGE PER DIMENSIONS
 B. PRE-CAST CONCRETE CAP

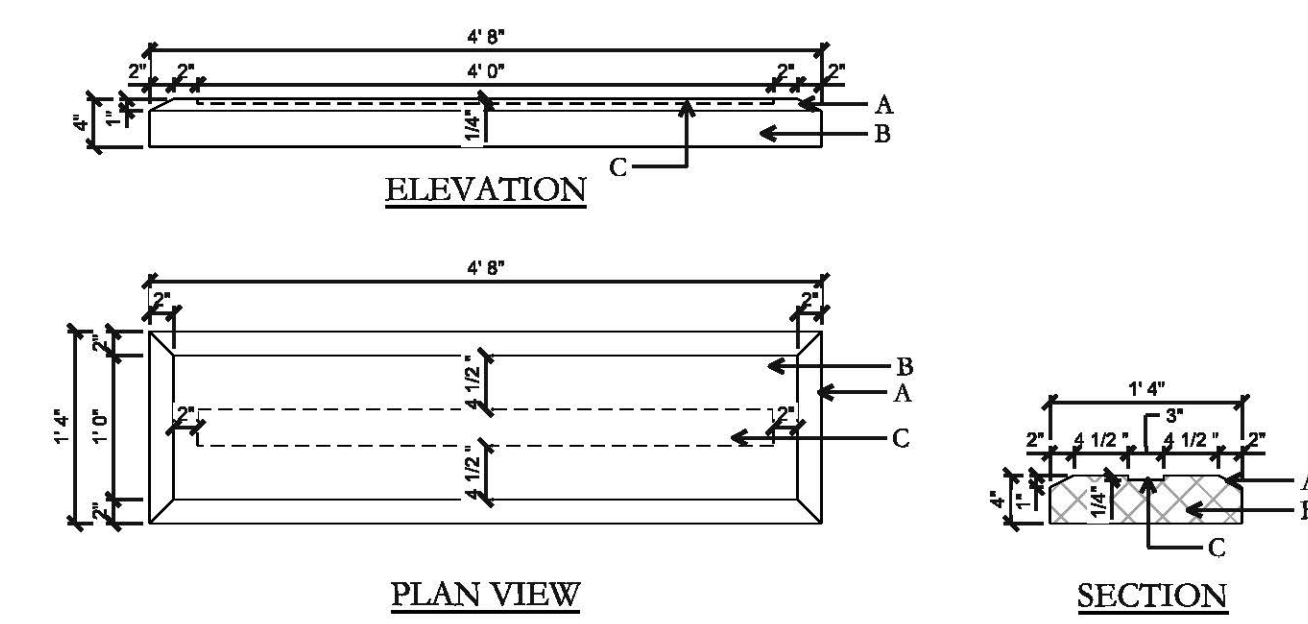
4 MONUMENT "TOMBALL" - CAST STONE CONCRETE CAP LAYOUT SCALE: 3/4" = 1' 0"



GENERAL NOTES:
 1. CAST CONCRETE SHALL BE NATURAL CONCRETE COLOR
 4. CAST STONE TO HAVE SMOOTH TEXTURE FINISH
 5. AT INSTALLATION CONTRACTOR TO PROVIDE A SLIGHT PITCH TO PROVIDE POSITIVE DRAINAGE

CONSTRUCTION NOTES:
 A CHAMFERED EDGE PER DIMENSIONS
 B. PRE-CAST CONCRETE CAP
 C. RECESSED CHANNEL FOR MOUNTED BRACKET

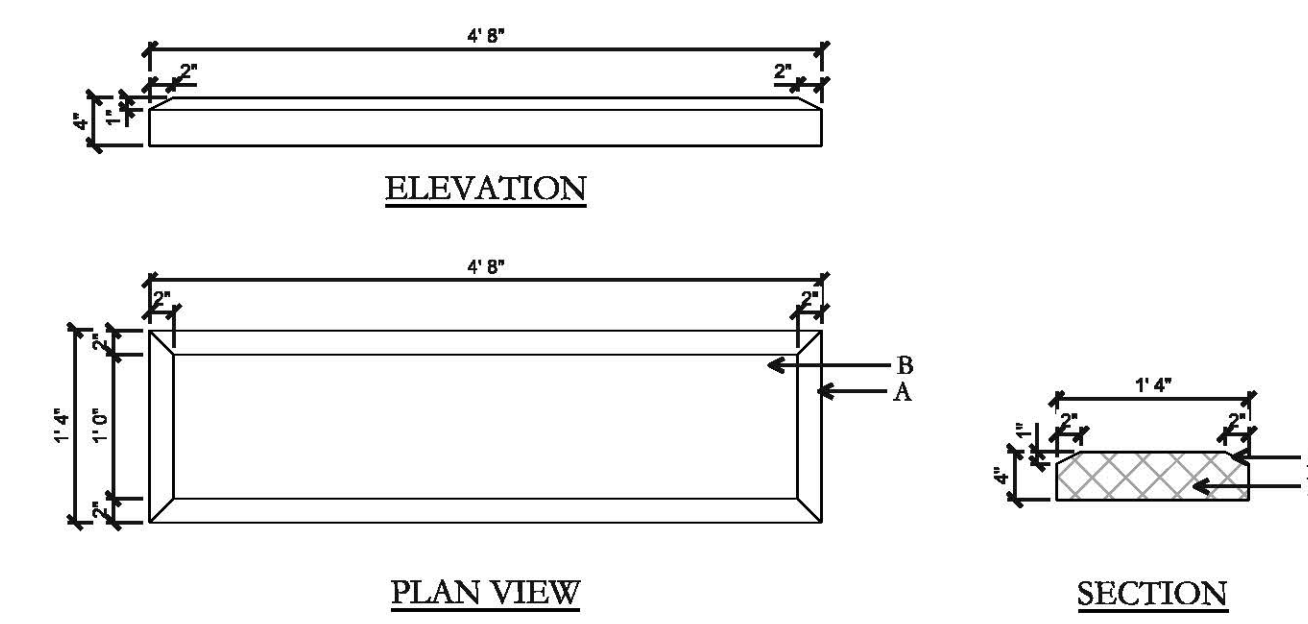
3 MONUMENT "TOMBALL" - CAST STONE CONCRETE CAP LAYOUT SCALE: 3/4" = 1' 0"



GENERAL NOTES:
 1. CAST CONCRETE SHALL BE NATURAL CONCRETE COLOR
 4. CAST STONE TO HAVE SMOOTH TEXTURE FINISH
 5. AT INSTALLATION CONTRACTOR TO PROVIDE A SLIGHT PITCH TO PROVIDE POSITIVE DRAINAGE

CONSTRUCTION NOTES:
 A CHAMFERED EDGE PER DIMENSIONS
 B. PRE-CAST CONCRETE CAP
 C. RECESSED CHANNEL FOR MOUNTED BRACKET

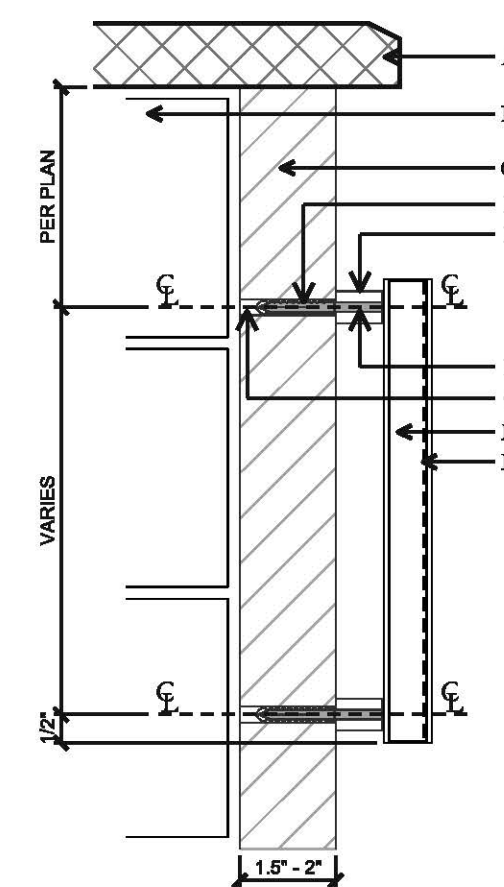
2 MONUMENT METAL PANEL- CAST STONE CONCRETE CAP LAYOUT SCALE: 3/4" = 1' 0"



GENERAL NOTES:
 1. CAST CONCRETE SHALL BE NATURAL CONCRETE COLOR
 4. CAST STONE TO HAVE SMOOTH TEXTURE FINISH
 5. AT INSTALLATION CONTRACTOR TO PROVIDE A SLIGHT PITCH TO PROVIDE POSITIVE DRAINAGE

CONSTRUCTION NOTES:
 A CHAMFERED EDGE PER DIMENSIONS
 B. PRE-CAST CONCRETE CAP

1 MONUMENT MASONRY PANEL- CAST STONE CONCRETE CAP LAYOUT SCALE: 3/4" = 1' 0"



GENERAL NOTES:
 1. CONTRACTOR TO PROVIDE LIGHTING PLANS TO MATCH EXISTING MONUMENT SIGN

CONSTRUCTION NOTES:
 A. SIGN CAP (PER DETAILS)
 B. CMU BLOCK (PER DETAILS)
 C. STONE VENEER (PER DETAILS)
 D. PIN-MOUNT PLUG
 E. 1" PIN-MOUNT SPACES
 F. PIN-MOUNT WELDED TO LETTERING
 G. PIN-MOUNT DRILLED PILOT HOLE
 H. REVERSE CHANNEL "TEXAS" LOGO
 I. LED LIGHTING STRIP

5 PIN-MOUNT INSTALLATION DIAGRAM - REVERSE CHANNEL LOGO

GENERAL CONSTRUCTION NOTES

CAST-IN-PLACE CONCRETE

- ALL CONCRETE SHALL BE 3000 PSI, NORMAL WEIGHT, 28 DAY STRENGTH WITH A 4 TO 6 INCH SLUMP. THE CEMENT SHALL BE TYPE 1 AND SHALL CONFORM TO ASTM C150. AGGREGATES SHALL CONFORM TO ASTM C33.
- ALL MIXING, TRANSPORTING, PLACING, AND CURING OF CONCRETE SHALL COMPLY WITH ACI 318.
- CONCRETE SHALL NOT BE PLACED IN RAINING OR FREEZING WEATHER.
- CHLORIDES SHALL NOT BE USED.
- MAXIMUM AGGREGATE SIZE = 1".

CONCRETE REINFORCING STEEL

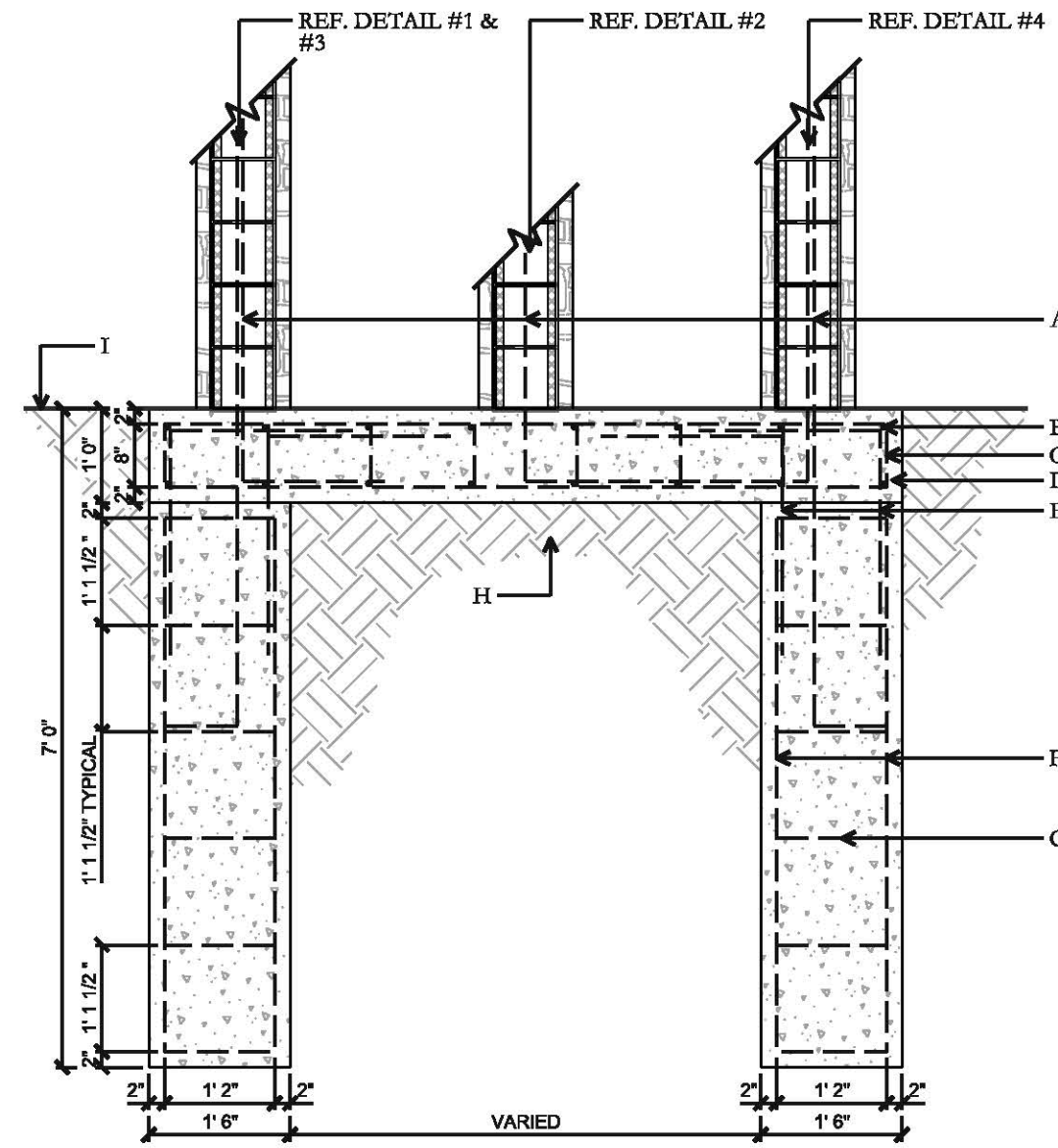
- ALL REINFORCEMENT SHALL CONFORM TO ASTM A615 60 GRADE AND DEFORMED PER ASTM A905. PROVIDE 3B BAR DIAMETER LAP SPLICES FOR ALL CONTINUOUS BARS UNLESS NOTED OTHERWISE.
 - PROVIDE THE FOLLOWING MINIMUM COVER FOR CONCRETE CAST IN PLACE REINFORCEMENT:
 - CONCRETE CAST AGAINST EARTH AND PERMANENTLY EXPOSED TO EARTH: 3 INCHES
 - CONCRETE EXPOSED TO EARTH OR WEATHER:
 - (A) BARS LARGER THAN NO. 5: 2 INCHES
 - (B) BARS NO. 5 AND SMALLER: 1-1/2 INCHES
 - CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
 - SLABS, WALLS AND JOISTS
 - (A) BARS LARGER THAN NO. 11: 1-1/2 INCHES
 - (B) BARS NO. 11 AND SMALLER: 3/4 INCHES
 - BEAMS AND COLUMNS: 1-1/2 INCHES
 - SHELLS AND FOLDED PLATES
 - (A) BAR LARGER THAN NO. 5: 3/4 INCHES
 - (B) BARS NO. 5 AND SMALLER: 1/2 INCHES
- ALL REINFORCING STEEL SHALL BE CLEAN AND FREE OF GREASE.

DRILLED PIERS

- PIERS NOT SPECIFICALLY LOCATED ON THE PLAN SHALL BE CENTERED ON WALL OR BEAM.
- PIER REINFORCING AND CONCRETE SHALL BE PLACED IMMEDIATELY OR TO WITHIN A MAXIMUM OF 8 HOURS AFTER DRILLING IS COMPLETE.
- STEEL CASING IS REQUIRED WHEN MORE THAN 2 INCHES OF STANDING WATER IS PRESENT AT THE BOTTOM OF THE SHAFTS PRIOR TO PLACEMENT OF STEEL AND CONCRETE.
- PROVIDE 64 BAR DIAMETER LAP SPLICES IN ALL VERTICAL PIER REINFORCING AS REQUIRED.
- PROVIDE PIER TO GRADE BEAM DOWELS TO MATCH SIZE, QUANTITY, AND LOCATION OF LONGITUDINAL PIER REINFORCING. MIN DOWEL PROJECTION INTO PIER = 30 BAR DIA. MIN DOWEL PROJECTION INTO BEAM = TOP LONGITUDINAL GRADE BEAM REINFORCING. PROVIDE STANDARD HOOK AT TERMINAL END OF DOWEL IN GRADE BEAM.

STRUCTURAL CONCRETE MASONRY UNIT

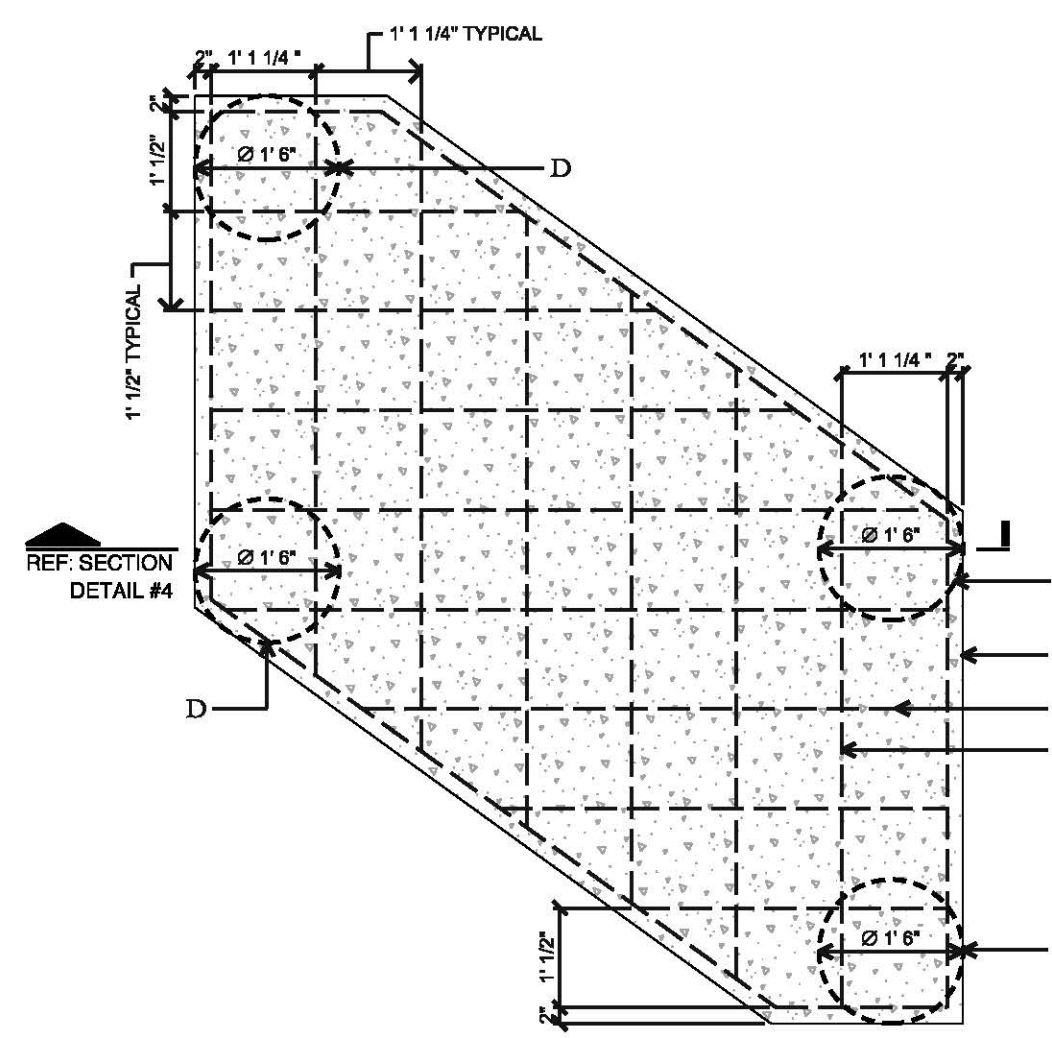
- CONCRETE MASONRY UNITS SHALL BE HOLLOW LOAD-BEARING TYPE N-1 CONFORMING TO ASTM C90 AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 1900 PSI.
- CONCRETE MASONRY UNITS SHALL HAVE A MINIMUM PRISM STRENGTH OF 1500 PSI AT 28 DAYS.
- MORTAR SHALL BE ASTM C270, TYPE S, WITH A MINIMUM COMPRESSIVE STRENGTH OF 1800 PSI IN ACCORDANCE WITH ASTM C780. MASONRY CEMENT IS PROHIBITED.
- COARSE GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AND A MAXIMUM AGGREGATE SIZE OF 1/2" IN ACCORDANCE WITH ASTM C476. REFER TO DETAILS FOR WALL REINFORCING BAR SIZE AND SPACING.
- REINFORCE HORIZONTAL JOINTS WITH GALVANIZED LADDER-TYPE STEEL IN ACCORDANCE WITH ANSI/ASTM A82. SIDE AND CROSS RODS SHALL BE 9 GA MINIMUM.
- HORIZONTAL REINFORCEMENT SHALL BE SPACED AT 16" MAXIMUM. PROVIDE A 16" LAP AT SPLICES.
- JOINT REINFORCING SHALL BE DISCONTINUOUS AT CONTROL AND EXPANSION JOINTS.
- LAP VERTICAL REINFORCING BARS AT 72 BAR DIAMETERS.
- LAP HORIZONTAL REINFORCING BARS AT 48 BAR DIAMETERS.
- PLACE GROUT USING LOW-LIFT METHOD, 6'-8" MAXIMUM LIFTS.



7 MONUMENT SLAB & PIERS DETAIL SCALE: 1/2" = 1' 0"

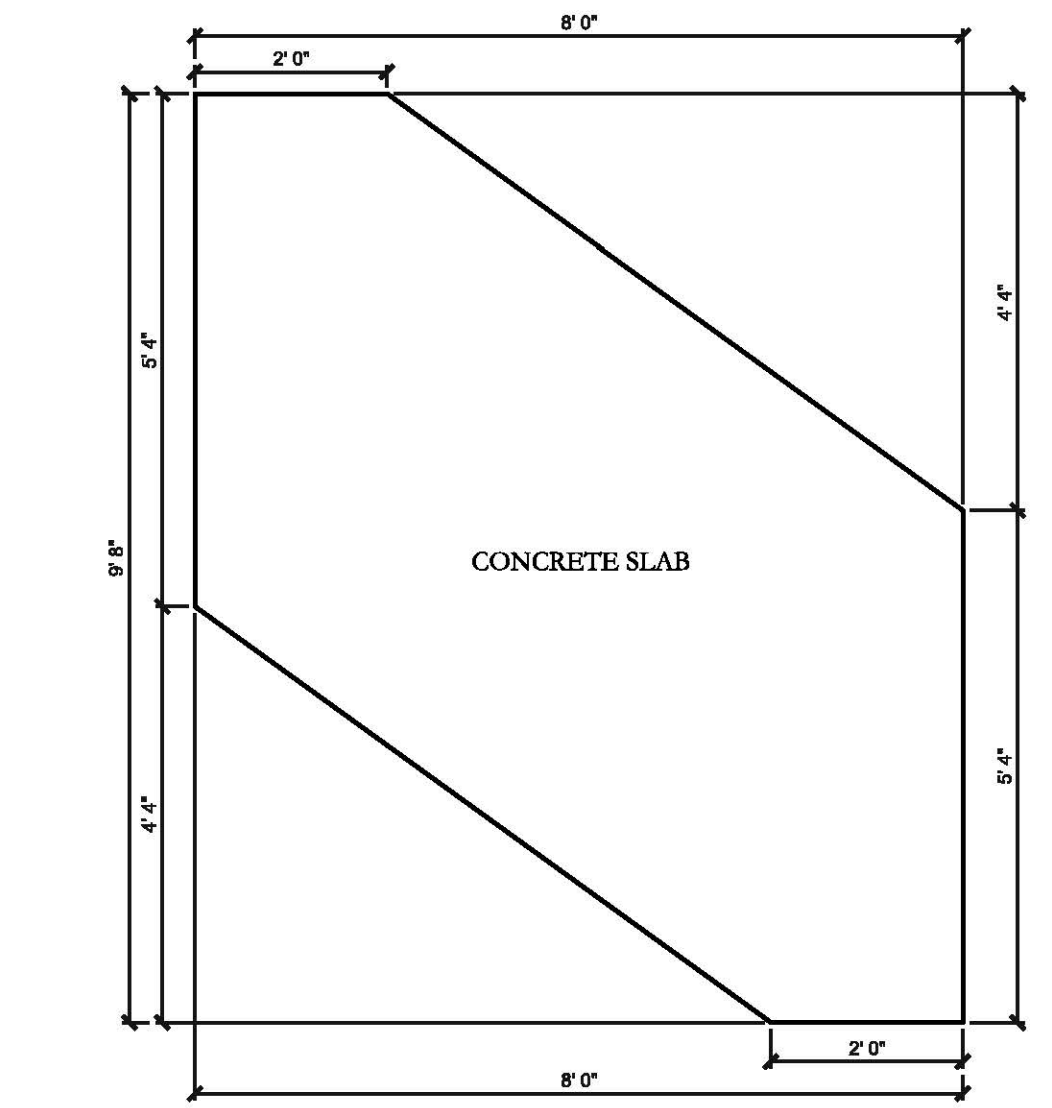
- GENERAL NOTES:**
- VERTICAL BAR POSITIONERS MUST BE PROVIDED AT THE TOP AND BOTTOM OF EACH VERTICAL BAR & AT INTERVALS NOT EXCEEDING 8". POSITIONERS SHALL BE MIN. 9 GA. DIAMETER PREFABRICATED FROM COLD-DRAWN STEEL WIRE CONFORMING TO ASTM A 1064, ASTM A82 & SHALL BE HOT-DIP GALVANIZED PER STM A 153.
 - BARS MUST BE IN CONTACT & TIED TOGETHER OVRR SPLICE LENGTH

- CONSTRUCTION NOTES:**
- #5 REBAR VERTICAL TIE, EVERY OTHER VOID, VERTICAL SPLICE TO BE MIN. 50% THE HEIGHT OF THE MONUMENT STRUCTURE & 12" WITHIN PIER, BOTH TIED IN PLACE (REF. NOTE #1)
 - #5 REBAR, TOP & BOTTOM, CONTINUOUS THROUGHOUT
 - #5 REBAR STIRRUP, REF. MONUMENT SLAB STEEL LAYOUT FOR SPACING
 - CONCRETE SLAB, REF. CONCRETE NOTES FOR SPECIFICATIONS
 - (4) #5 REBAR VERTICAL, FRONT & BACK, LEFT & RIGHT
 - UNDISTURBED SUBGRADE
 - (6) #5 REBAR, FRONT & BACK
 - UNDISTURBED SUBSURFACE SOIL.
 - FINISHED GRADE



6 MONUMENT SLAB STEEL LAYOUT SCALE: 1/2" = 1' 0"

- CONSTRUCTION NOTES:**
- CONCRETE SLAB, REF. CONCRETE NOTES FOR SPECIFICATIONS
 - #5 REBAR, TOP & BOTTOM, CONTINUOUS THROUGHOUT
 - #5 REBAR, TOP & BOTTOM, CONTINUOUS THROUGHOUT
 - 18" DRILLED PIER, REF. SHEET L102 / #4



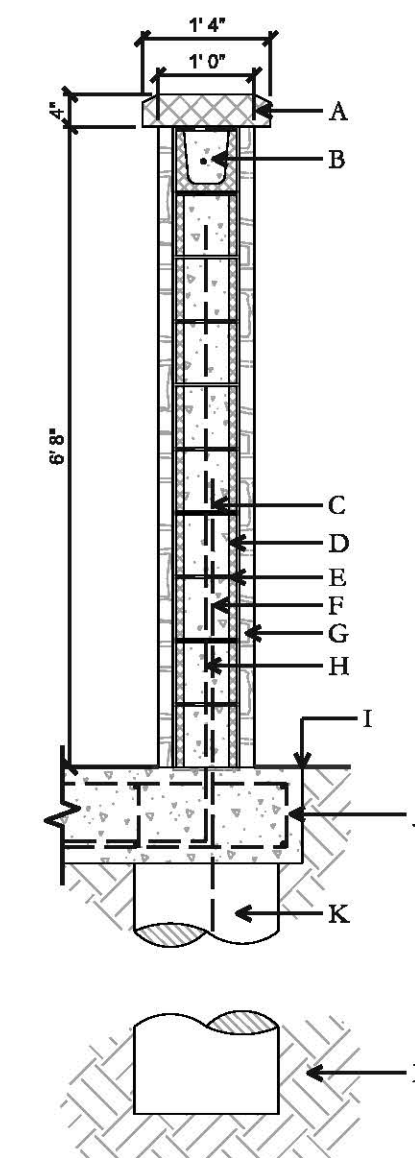
5 MONUMENT SLAB LAYOUT SCALE: 1/2" = 1' 0"

GENERAL NOTES:

- CONTRACTOR TO IDENTIFY & VERIFY MATERIALS TO MATCH EXISTING MONUMENT SIGN.
- MONUMENT SIGN MATERIALS & COLOR TO MATCH IDENTICAL TO EXISTING MONUMENT SIGN
- CONTRACTOR IS RESPONSIBLE FOR ALL LIGHTING ELEMENTS FOR MONUMENT SIGN
- SIGN MANUFACTURER TO PROVIDE SHOP DRAWINGS FOR ALL METAL CABINET COMPONENTS

CONSTRUCTION NOTES:

- CAST STONE CONCRETE CAP, REF. SHEET L103 / #1
- CMU BOND BEAM W/ #5 REBAR CONTINUOUS THROUGHOUT
- #5 REBAR, VERTICAL SPLICE CONTINUOUS THROUGH PIER, REF. DETAIL #7
- 8X8 STANDARD CMU BLOCK
- HORIZONTAL JOINT REINFORCING @ 16" O.C. (VERTICAL SPACING)
- CONCRETE FILLED VOIDS WHERE REBAR IS INSTALLED
- VENEER STONE TO MATCH EXISTING MONUMENT
- #5 REBAR REINFORCING VERTICALS @ 24" O.C. (VERTICAL SPACING) SPLICED @ BOTTOM BAR OF SLAB
- FINISHED GRADE
- CONCRETE FOUNDATION W/ REBAR REINFORCEMENT, REF. DETAIL 7
- CONCRETE PIER W/ REBAR REINFORCEMENT, REF. DETAIL 7
- UNDISTURBED SUBSURFACE SOIL



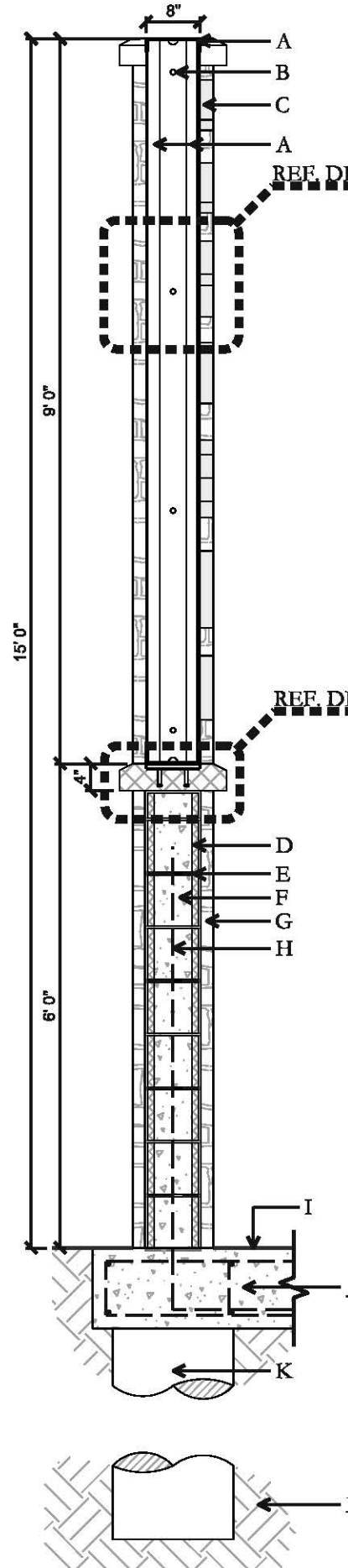
4 MASONRY MONUMENT WALL SECTION SCALE: 1/2" = 1' 0"

GENERAL NOTES:

- CONTRACTOR TO IDENTIFY & VERIFY MATERIALS TO MATCH EXISTING MONUMENT SIGN.
- MONUMENT SIGN MATERIALS & COLOR TO MATCH IDENTICAL TO EXISTING MONUMENT SIGN
- CONTRACTOR IS RESPONSIBLE FOR ALL LIGHTING ELEMENTS FOR MONUMENT SIGN
- SIGN MANUFACTURER TO PROVIDE SHOP DRAWINGS FOR ALL METAL CABINET COMPONENTS

CONSTRUCTION NOTES:

- 8C X 11.5 C CHANNEL WELDED FRAME, PAINTED TO MATCH EXISTING MONUMENT
- (4) SS EXP BOLT, SPACED EVENLY
- 12" NOMINAL DIMENSION "TOMBALL" LETTERING, REF. SHEET L102 / #4
- 8X8 STANDARD CMU BLOCK
- HORIZONTAL JOINT REINFORCING @ 16" O.C. (VERTICAL SPACING)
- CONCRETE FILLED VOIDS WHERE REBAR IS INSTALLED
- VENEER STONE TO MATCH EXISTING MONUMENT
- #5 REBAR REINFORCING VERTICALS @ 24" O.C. (VERTICAL SPACING) SPLICED @ BOTTOM BAR OF SLAB
- FINISHED GRADE
- CONCRETE FOUNDATION W/ REBAR REINFORCEMENT, REF. DETAIL 7
- CONCRETE PIER W/ REBAR REINFORCEMENT, REF. DETAIL 7
- UNDISTURBED SUBSURFACE SOIL



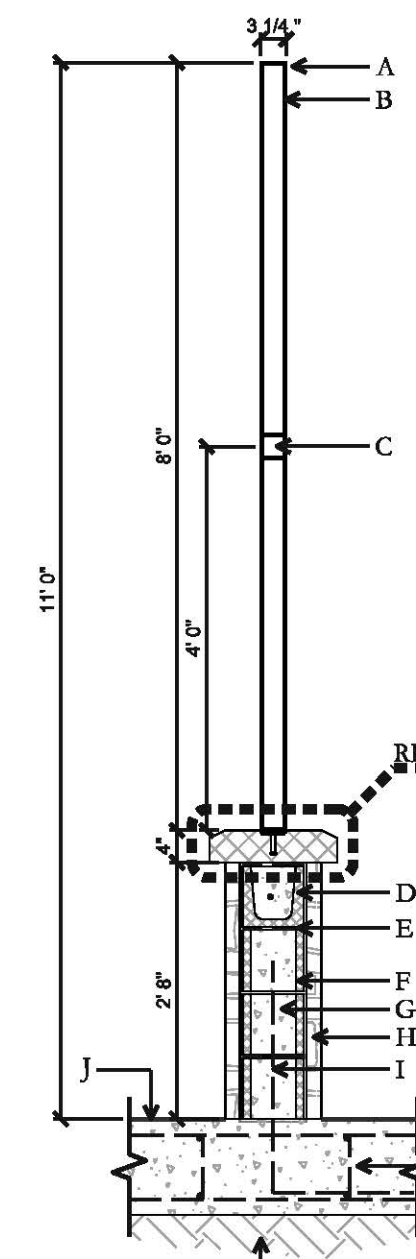
3 "TOMBALL" MONUMENT WALL SECTION SCALE: 1/2" = 1' 0"

GENERAL NOTES:

- CONTRACTOR TO IDENTIFY & VERIFY MATERIALS TO MATCH EXISTING MONUMENT SIGN.
- MONUMENT SIGN MATERIALS & COLOR TO MATCH IDENTICAL TO EXISTING MONUMENT SIGN
- CONTRACTOR IS RESPONSIBLE FOR ALL LIGHTING ELEMENTS FOR MONUMENT SIGN
- SIGN MANUFACTURER TO PROVIDE SHOP DRAWINGS FOR ALL METAL CABINET COMPONENTS

CONSTRUCTION NOTES:

- 3C X 3.5 C CHANNEL WELDED FRAME, PAINTED TO MATCH EXISTING MONUMENT
- 3/16 ALUMINUM PANEL, PAINTED TO MATCH EXISTING
- 3" X 3" ALUMINUM TUBE REINFORCEMENT
- CMU BOND BEAM W/ #5 REBAR CONTINUOUS THROUGHOUT
- HORIZONTAL JOINT REINFORCING @ 16" O.C. (VERTICAL SPACING)
- 8X8 STANDARD CMU BLOCK
- CONCRETE FILLED VOIDS WHERE REBAR IS INSTALLED
- VENEER STONE TO MATCH EXISTING MONUMENT
- #5 REBAR REINFORCING VERTICALS @ 24" O.C. (VERTICAL SPACING) SPLICED @ BOTTOM BAR OF SLAB
- FINISHED GRADE
- CONCRETE FOUNDATION W/ REBAR REINFORCEMENT, REF. DETAIL 7
- UNDISTURBED SUBSURFACE SOIL



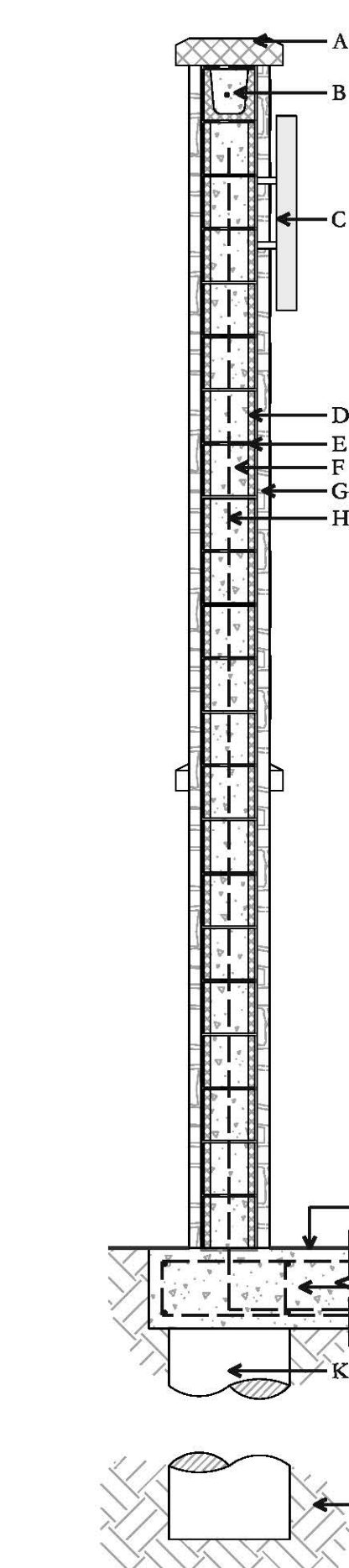
2 METAL CABINET MONUMENT WALL SECTION SCALE: 1/2" = 1' 0"

GENERAL NOTES:

- CONTRACTOR TO IDENTIFY & VERIFY MATERIALS TO MATCH EXISTING MONUMENT SIGN.
- MONUMENT SIGN MATERIALS & COLOR TO MATCH IDENTICAL TO EXISTING MONUMENT SIGN
- CONTRACTOR IS RESPONSIBLE FOR ALL LIGHTING ELEMENTS FOR MONUMENT SIGN
- SIGN MANUFACTURER TO PROVIDE SHOP DRAWINGS FOR REVERSE CHANNEL "TEXAS" LOGO, INCLUDING LIGHTING ELEMENTS

CONSTRUCTION NOTES:

- CAST STONE CONCRETE CAP, REF. SHEET L103 / #4
- CMU BOND BEAM W/ #5 REBAR CONTINUOUS THROUGHOUT
- REVERSE CHANNEL "TEXAS" LOGO, PIN-MOUNTED, PAINTED TO MATCH EXISTING MONUMENT SIGN LOGO
- 8X8 STANDARD CMU BLOCK
- HORIZONTAL JOINT REINFORCING @ 16" O.C. (VERTICAL SPACING)
- CONCRETE FILLED VOIDS WHERE REBAR IS INSTALLED
- VENEER STONE TO MATCH EXISTING MONUMENT
- #5 REBAR REINFORCING VERTICALS @ 24" O.C. (VERTICAL SPACING) SPLICED @ BOTTOM BAR OF SLAB
- FINISHED GRADE
- CONCRETE FOUNDATION W/ REBAR REINFORCEMENT, REF. DETAIL 7
- CONCRETE PIER W/ REBAR REINFORCEMENT, REF. DETAIL 7
- UNDISTURBED SUBSURFACE SOIL



1 "TOMBALL" MONUMENT WALL SECTION SCALE: 1/2" = 1' 0"



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LANDSCAPE DEVELOPMENT
 Structural Details
Tomball Business and Technology Park
 29201 Quinn Rd., Suite B, Tomball, Texas 77375
 SHEET NUMBER:
S101

TREE SCHEDULE

SYMBOL	QTY.	ABV.	BOTANICAL NAME / COMMON	CALIPER	HEIGHT	WIDTH	SIZE	NOTES
	6	(LP)	PINUS TAEDEA / LOBLOLLY PINE	3"	12' - 14'	5'	65 GAL.	MATCHED, WELL ROOTED
	7	(VI)	VITEX AGNUS-CASTUS / VITEX	1 1/4" - 1 1/2"	8' - 9'	3' - 4'	50 GAL.	MATCHED, WELL ROOTED, MULTI

PLANTING SCHEDULE

SYMBOL	QTY.	ABV.	BOTANICAL NAME / COMMON	HEIGHT	WIDTH	SIZE	NOTES
SHRUBS							
	14	(MS)	SALVIA FARINACEA / MEALY BLUE SAGE	20"	18"	3 GAL.	FULL, WELL ROOTED, 24" O.C.
	27	(BI)	DIETES BICOLOR / BICOLOR IRIS	16"	8"	3 GAL.	FULL, WELL ROOTED, 24" O.C.
	24	(DKO)	ROSA 'DOUBLE KNOCK OUT' / DOUBLE KNOCKOUT ROSE	24"	22"	7 GAL.	FULL, WELL ROOTED, 30" O.C., FLOWER COLOR: RED DOUBLE BLOOM
	17	(SL)	LIGUSTRUM SINENSIS 'SUNSHINE' / SUNSHINE LIGUSTRUM	24"	24"	7 GAL.	FULL, WELL ROOTED, 36" O.C.
	21	(DWM)	MYRICA PUSILLA / DWARF WAX MYRTLE	24"	24"	7 GAL.	FULL, WELL ROOTED, 48" O.C.
SOD							
	2,375 SF	(BER)	CYNODON DACTYLON / BERMUDA GRASS				SOLID SOD

PLANTING LEGEND

SYMBOL / NOTATION	DESCRIPTION
	PROPOSED EVERGREEN TREE (PER PLAN)
	PROPOSED DECIDUOUS TREE (PER PLAN)
	STEEL EDGING - PER PLAN - REFERENCE DETAIL
	LIMIT OF SOD
	SHRUBS (PER PLAN)
	PROPOSED SOD (PER PLAN)

GENERAL LANDSCAPE NOTES

GENERAL NOTES & SPECIFICATIONS:

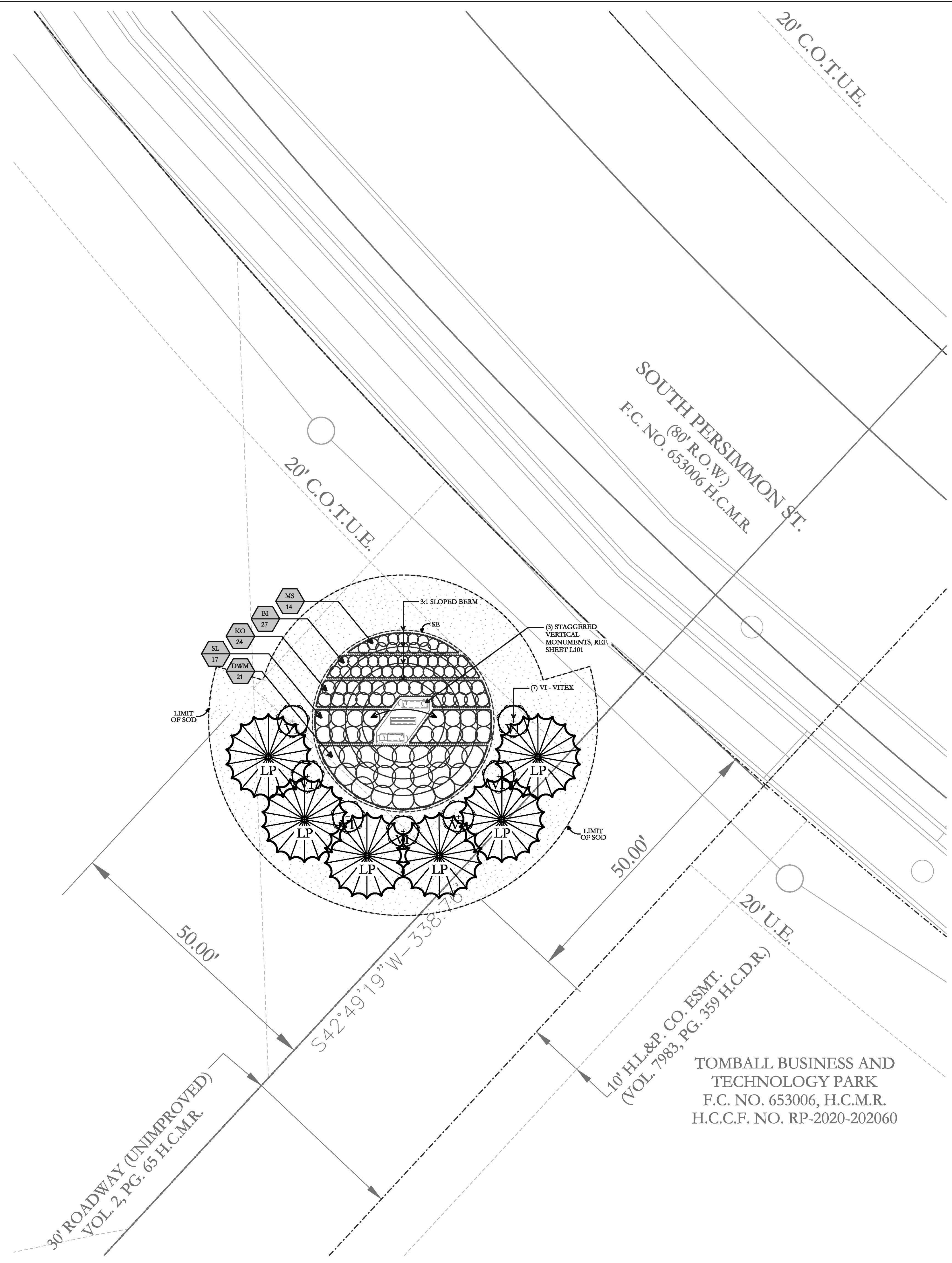
- NOTES PROVIDED HEREIN ARE FOR GENERAL REFERENCE IN CONJUNCTION WITH, AND AS A SUPPLEMENT TO THE DETAILS, ADDENDA AND CHANGE ORDERS ASSOCIATED WITH THE CONTRACT DOCUMENTS.
- CONTRACTOR SHALL BECOME FAMILIAR WITH THE LOCATION OF ALL EXISTING AND FUTURE UNDERGROUND SERVICES AND IMPROVEMENTS WHICH MAY CONFLICT WITH WORK TO BE DONE. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION.
- THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL MATERIALS, LABOR, AND EQUIPMENT TO COMPLETE ALL LANDSCAPING WORK IN STRICT ACCORDANCE WITH THE PLANTING PLAN, PLANT LIST, AND ALL ITEMS DESCRIBED IN THESE SPECIFICATIONS UNLESS OTHERWISE NOTED. THIS INCLUDES BUT IS NOT LIMITED TO FERTILIZER, MULCH, STAKES, TIES, GUY WIRES, CABLES, AND ALL OTHER NECESSARY EQUIPMENT TO COMPLETE THIS WORK.
- IF THE PLANTING PLAN DOES NOT AGREE WITH THE PLANT LIST THE QUANTITIES INDICATED GRAPHICALLY ON THE PLANTING PLANS SHALL GOVERN.
- IF THE PLANTING SCHEDULE DOES NOT AGREE WITH THE PLANT IDENTIFICATION TAG ON THE PLAN THE CONTRACTOR IS TO CALL THE LANDSCAPE ARCHITECT TO VERIFY PLANT IDENTIFICATION.
- ALL SUBSTITUTIONS OR ALTERATIONS TO THE LANDSCAPE AND IRRIGATION PLANS OR SPECIFICATIONS MUST BE SUBMITTED, IN WRITING, TO THE LANDSCAPE ARCHITECT FOR APPROVAL.

LANDSCAPE STANDARDS:

- CONTRACTOR SHALL LAY OUT PLANT MATERIAL PER PLAN AND FACE TO GIVE BEST APPEARANCE OR RELATION TO ADJACENT PLANTS, STRUCTURES OR VIEWS.
- THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2014) SPECIFICATIONS SHALL GOVERN PLANT QUALIFICATIONS, GRADES, AND STANDARDS.
- PLANT MATERIAL SHALL NOT BE INSTALLED IN AREA WHICH WILL CAUSE HARM TO ADJACENT STRUCTURES, SUCH AS OVERHEAD POWER, BUILDINGS, PAVEMENTS AND UNDERGROUND UTILITY APPURTENANCES. NOTIFY THE GENERAL CONTRACTOR SHOULD CONFLICTS ARISE.
- ALL SUBSTITUTIONS OF PLANT MATERIALS SHALL BE SUBMITTED TO LANDSCAPE ARCHITECT IN WRITTEN FORM FOR APPROVAL PRIOR TO INSTALLATION.
- ALL NEWLY PLANTED MATERIAL SHALL BE THOROUGHLY SOAKED WITH WATER WITHIN 3 HOURS OF PLANTING.
- CONTRACTOR SHALL IMPORT COMPOSTED SOIL, LIVING EARTH TECHNOLOGY, OR APPROVED EQUAL, FREE OF WEEDS, RHIZOMES, ROCKS, STICKS, AND OTHER DELETERIOUS MATERIAL. CONTRACTOR SHALL BRING TO FINISH GRADE WITH 3" MIN. OF TOPSOIL IN ALL LAWN AREAS AND 3" MIN. TOPSOIL IN ALL PLANTING BEDS AND TILL TO A DEPTH OF 8". FINE GRADING SHALL BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO PLANTING OPERATIONS.
- CONTRACTOR SHALL LOOSEN COMPACTED SUBSOILS BY TILLING AND IMPORTING NEW TOPSOIL AS REQUIRED TO RESTORE GRADES AND MAINTAIN POSITIVE DRAINAGE AWAY FROM STRUCTURES.
- INSTALL 3" DEPTH HARD WOOD MULCH IN ALL PLANTER BEDS.
- ALL PLANT BEDS SHALL BE TOP-DRESSED WITH A MINIMUM OF 3 INCHES OF HARDWOOD MULCH.
- A 3" LAYER OF MULCH SHALL BE PROVIDED AROUND THE BASE OF THE PLANTED TREE. THE MULCH SHALL BE PULLED BACK 4" FROM THE TRUNK OF THE TREE.
- TREE PLANTING SHALL COMPLY WITH DETAILS HEREIN AND THE INTERNATIONAL SOCIETY OF ARBORICULTURE (ISA) STANDARDS.
- TREE PITS SHALL BE TESTED FOR WATER PERCOLATION. IF WATER DOES NOT DRAIN OUT OF TREE PIT WITHIN 24-HOURS, THE TREE SHALL BE MOVED OR DRAINAGE SHALL BE PROVIDED.
- NATIVE SITE TOPSOIL IS TO BE PROTECTED FROM EROSION OR STOCKPILED. NATIVE SITE TOPSOIL SHALL BE LABORATORY TESTED BY AND ACCREDITED LABORATORY AND AMENDED PER SAID LABORATORY'S RECOMMENDATIONS.

MAINTENANCE STANDARDS:

- THE OWNER SHALL BE RESPONSIBLE FOR THE ESTABLISHMENT, MAINTENANCE, AND VIGOR OF PLANT MATERIAL IN ACCORDANCE WITH THE DESIGN INTENT AND AS APPROPRIATE FOR THE SEASON OF THE YEAR.
- LANDSCAPE AND OPEN AREAS SHALL BE FREE OF TRASH, LITTER AND WEEDS.
- NO PLANT MATERIAL SHALL BE ALLOWED TO ENCR OACH ON R.O.W., SIDEWALKS OR EASEMENTS TO THE EXTENT THAT VISION OR ROUTE OF TRAVEL FOR VEHICULAR, PEDESTRIAN, OR BICYCLE TRAFFIC IS IMPEDED.
- TREE MAINTENANCE SHALL BE IN ACCORDANCE WITH THE STANDARDS OF THE INTERNATIONAL SOCIETY OF ARBORICULTURE.
- TREE STAKING MATERIALS, IF USED, SHALL BE REMOVED AFTER (1) GROWING SEASON, NO MORE THAN (1) YEAR AFTER INSTALLATION (STEEL TREE STAKES, WIRES, AND HOSES ARE PROHIBITED).



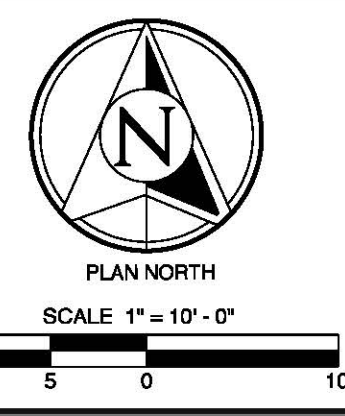
1923 VICTORIA GARDEN DR. RICHMOND, TX 77406
 KYLE@BRUNOLANDDESIGN.COM 409.382.0698

NO.	DATE	REVISION
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DATE: 10/06/2022
 LANDSCAPE ARCHITECT: Kyle M. Bruno
 REGISTRATION: 3211



LANDSCAPE DEVELOPMENT

Planting Plan

Tomball Business and Technology Park

29201 Quinn Rd., Suite B, Tomball, Texas 77375

TOMBALL BUSINESS AND TECHNOLOGY PARK
 F.C. NO. 653006, H.C.M.R.
 H.C.C.F. NO. RP-2020-202060

SHEET NUMBER:
L301

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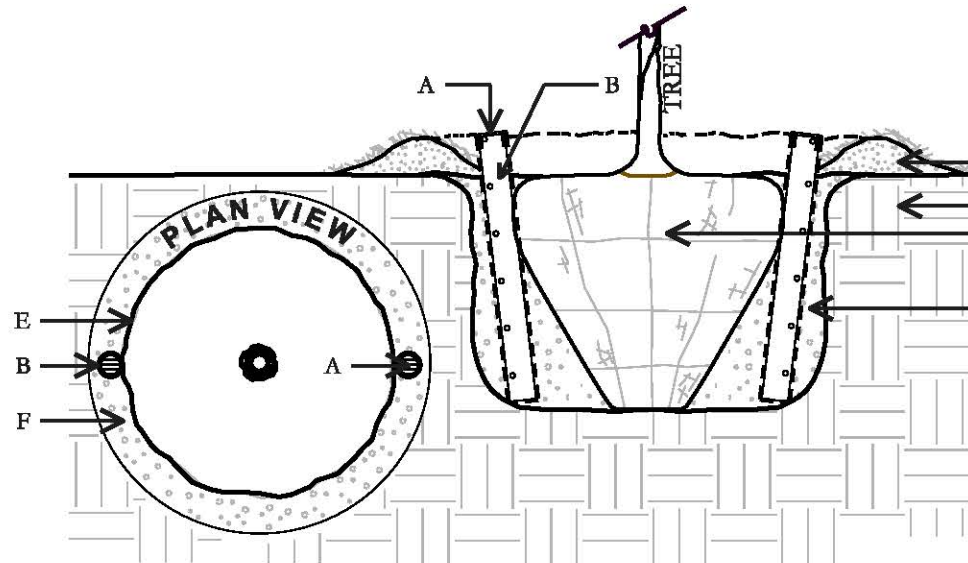
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LANDSCAPE DEVELOPMENT

Planting Details, Schedule & Specifications

Tomball Business and Technology Park

29201 Quinn Rd., Suite B, Tomball, Texas 77375



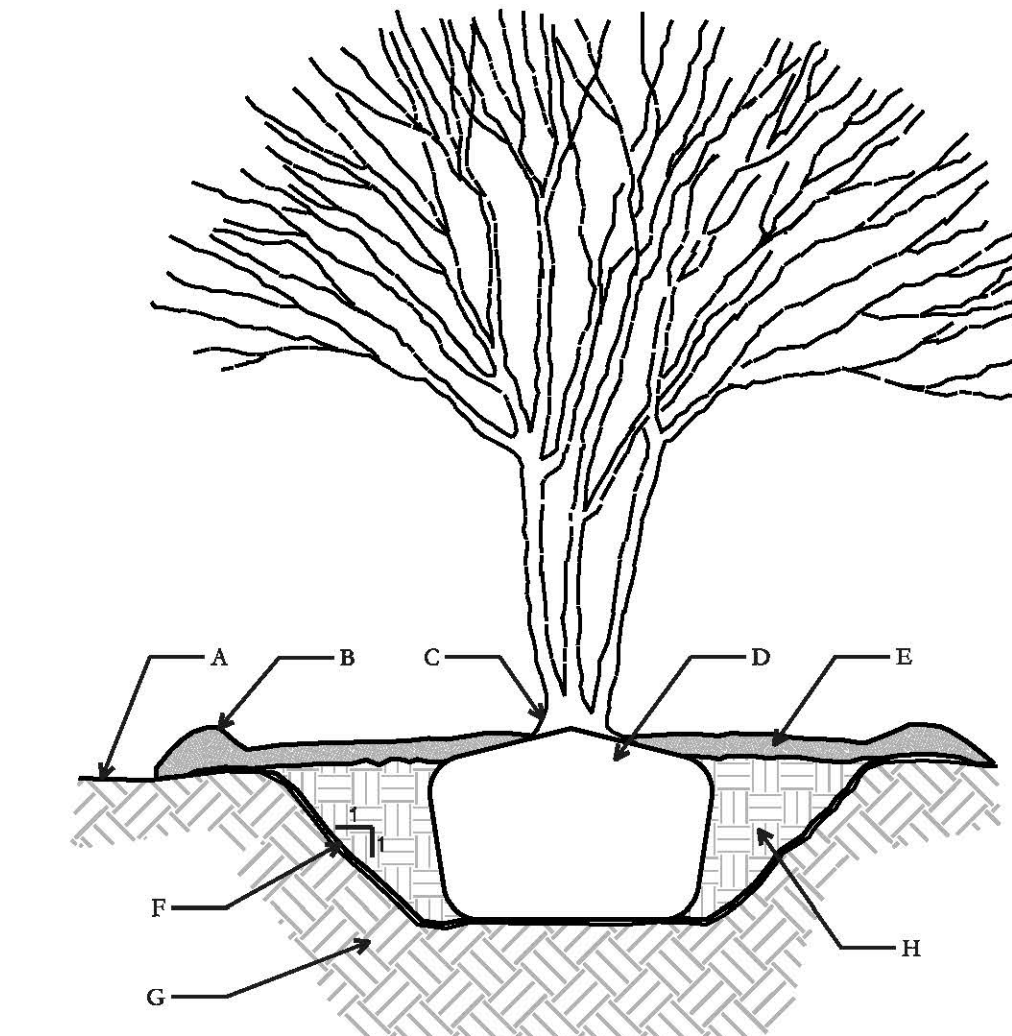
9 WATERING TUBE DETAIL - 2 TUBES SECTION

CONSTRUCTION NOTES:

1. MINIMUM PIPE QUANTITY IS (2) FOR TREES BETWEEN 45 GAL. & UP TO 100 GAL.
2. SITE TUBES SHALL BE PLACED AT THE BOTTOM OF THE TREE WELL BEFORE BACKFILLING.
3. ENSURE FILTER FABRIC IS SECURELY WRAPPED AROUND PIPE, UNDER DRAINAGE GRATE, & TIED AT THE BOTTOM BACKFILL AROUND PIPE & MULCH LEVEL TO DRAIN GRATE.

GENERAL NOTES:

- A. 4" ROUND PLASTIC DRAINAGE GRATE
- **TUCK FILTER FABRIC UNDER DRAIN GRATE TO HOLD FABRIC IN PLACE (MIN. 4")
- B. 4" SDR PERFORATED PVC PIPE W/ FILTER FABRIC DRAIN-SLEEVE(S)
- C. WATER WELL / SAUCER
- D. UNDISTURBED SOIL
- E. TREE / ROOTBALL (AS SPECIFIED)
- F. BACKFILL (AS SPECIFIED)



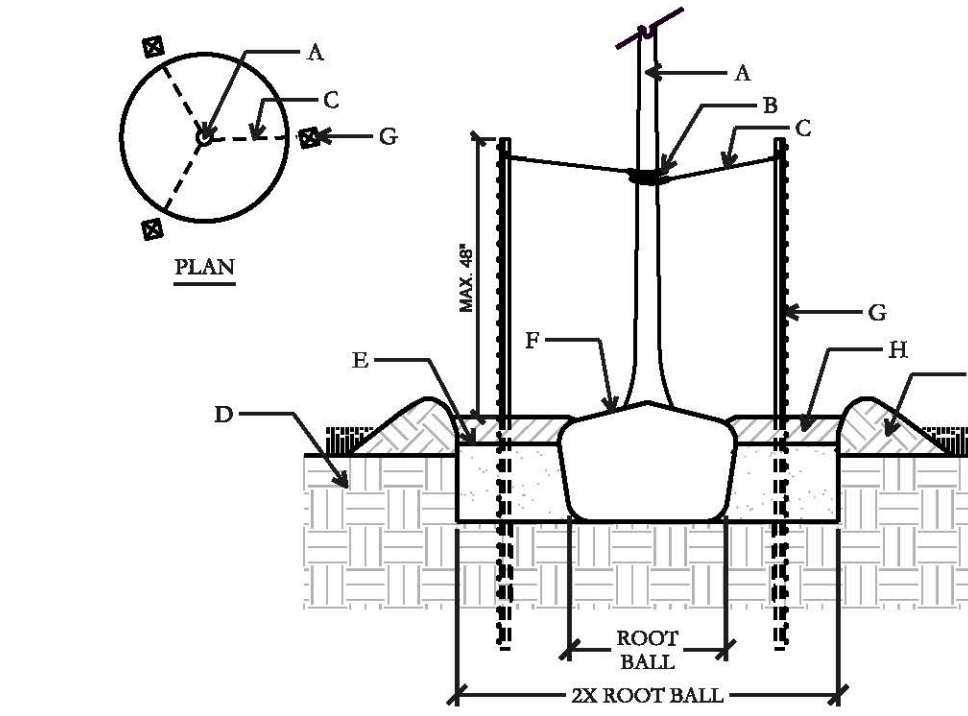
4 TYPICAL MULTI TRUNK TREE PLANTING SECTION

CONSTRUCTION NOTES:

1. TREES SHALL BE OF QUALITY PRESCRIBED IN SPECIFICATIONS
2. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS RELATED TO THIS DETAIL
3. REFER TO DETAIL FOR TREE STAKING
4. REFER TO DETAIL FOR WATERING TUBES
5. REFER TO DETAIL FOR ROOT PRUNING

GENERAL NOTES:

- A. FINISHED GRADE
- B. WATERING SAUCER AROUND EDGE OF PIT - 4" HIGH
- C. TRUNK FLARE SHALL REMAIN VISIBLE
- D. TOP OF ROOTBALL AT THE SURFACE, AS SHOWN
- E. MULCH LAYER AS SPECIFIED
- F. 1:1 SLOPE FOR EDGE OF HOLE
- G. UNDISTURBED NATIVE SOIL
- H. PLANTING MIX AS SPECIFIED



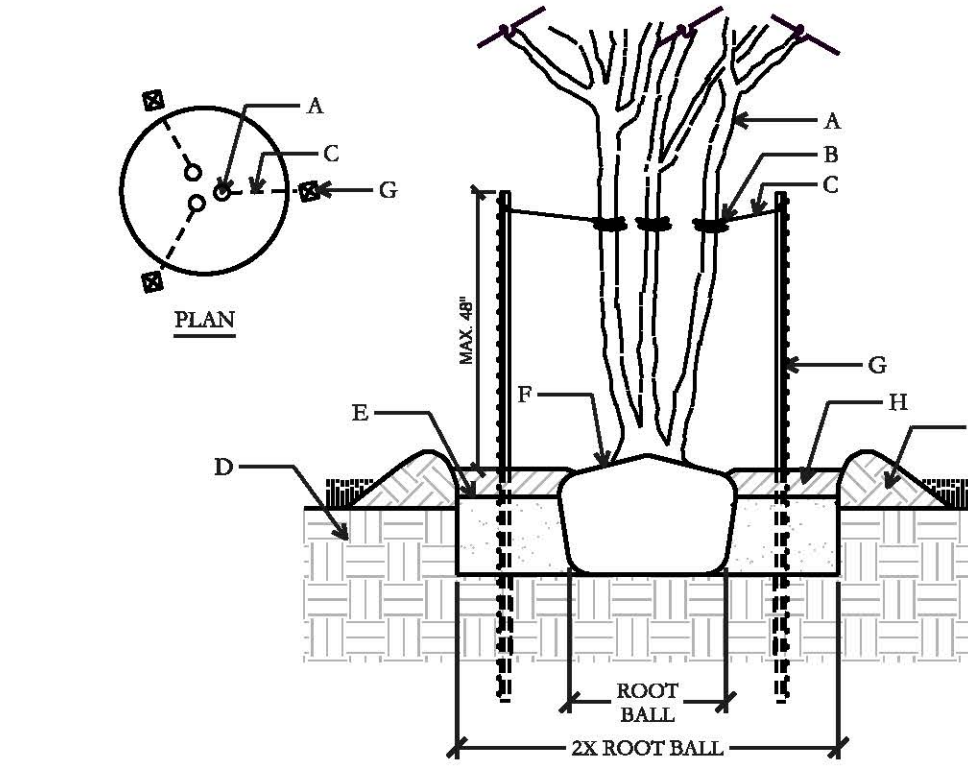
8 T-POSTS - SINGLE TRUNK STAKING DETAIL SECTION

CONSTRUCTION NOTES:

1. TREES SHALL BE OF QUALITY PRESCRIBED IN SPECIFICATIONS
2. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS
3. REFER TO DETAIL FOR TREE STAKING

GENERAL NOTES:

- A. TREE TRUNK**
- **DO NOT CUT CENTRAL LEADER)
- B. BLACK RUBBER TIE
- C. TREE GUY
- D. UNDISTURBED NATIVE SOIL
- E. FINISHED GRADE
- F. TOP OF ROOTBALL AT THE SURFACE
- GUY ANCHOR POINTS**
- **#8 STEEL TEE POST - QUANTITY OF POSTS PER SPECIFICATION)
- H. MULCH LAYER AS SPECIFIED
- I. 4" EARTHEN WATERING RING



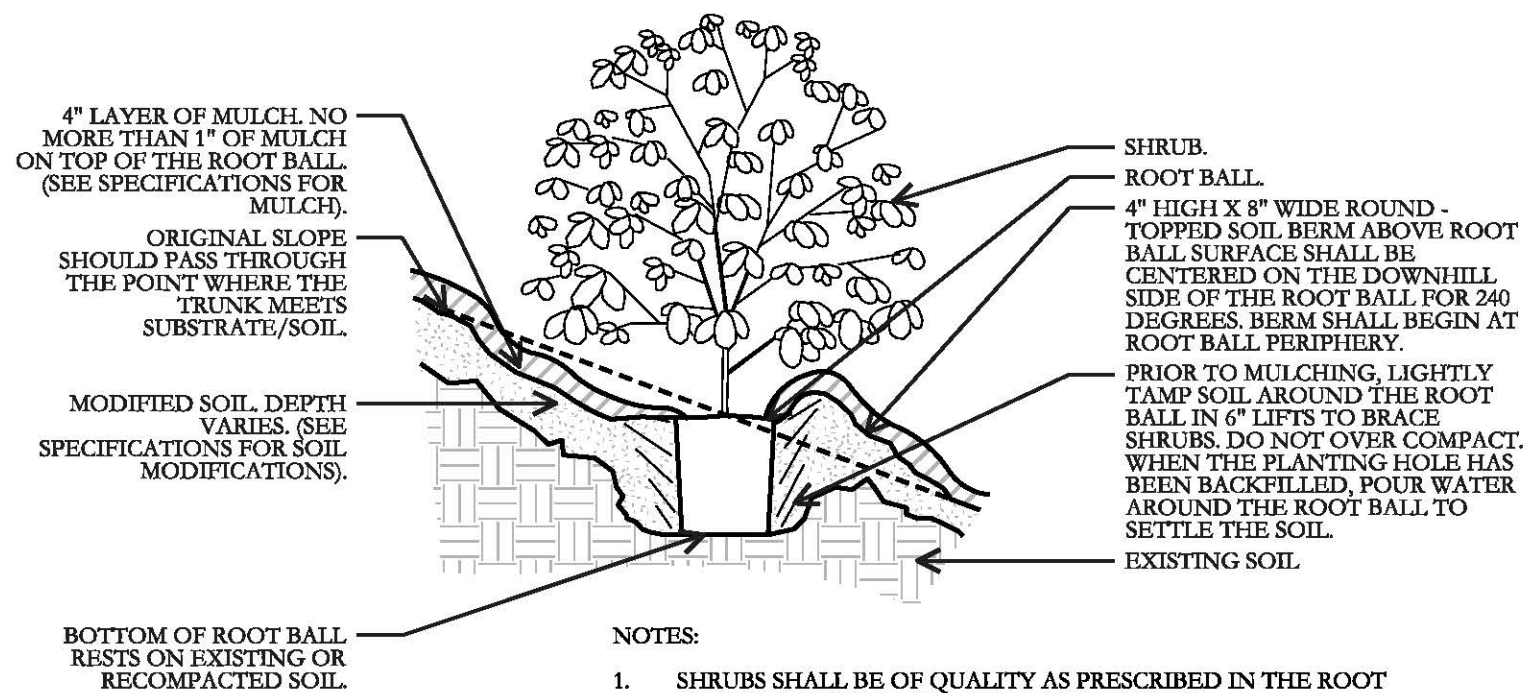
7 TEE POSTS - MULTI-TRUNK STAKING DETAIL SECTION

CONSTRUCTION NOTES:

1. TREES SHALL BE OF QUALITY PRESCRIBED IN SPECIFICATIONS
2. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS
3. REFER TO DETAIL FOR TREE STAKING

GENERAL NOTES:

- A. TREE TRUNKS**
- **DO NOT CUT MAIN LEADERS)
- B. BLACK RUBBER TIE
- C. TREE GUY
- D. UNDISTURBED NATIVE SOIL
- E. FINISHED GRADE
- F. TOP OF ROOTBALL AT THE SURFACE
- **TRUNK FLARE SHALL REMAIN VISIBLE)
- G. GUY ANCHOR POINTS**
- **#8 STEEL TEE POST - QUANTITY OF POSTS PER SPECIFICATION)
- H. MULCH LAYER AS SPECIFIED
- I. 4" EARTHEN WATERING RING

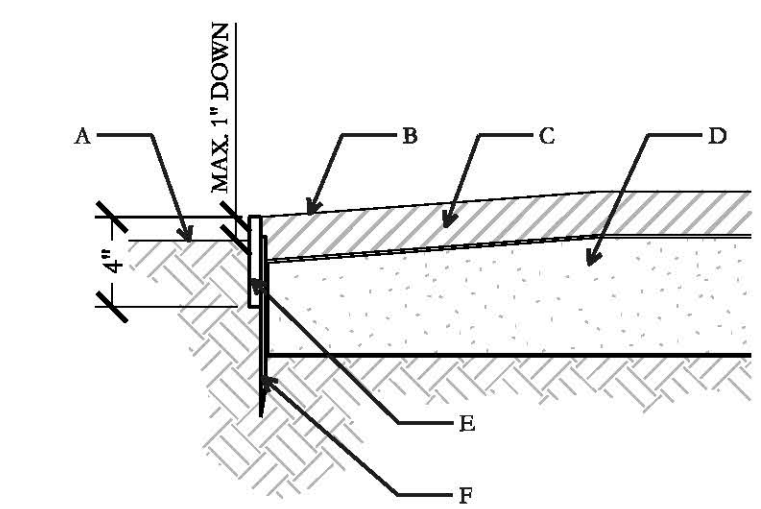


3 SHRUB ON SLOPE 5% (20:1) TO 50% (2:1) - MODIFIED SOIL SECTION

CONSTRUCTION NOTES:

1. SHRUBS SHALL BE OF QUALITY AS PRESCRIBED IN THE ROOT OBSERVATIONS DETAIL AND SPECIFICATION.
2. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS RELATED TO THIS DETAIL.

NOTES:
1. SHRUBS SHALL BE OF QUALITY AS PRESCRIBED IN THE ROOT OBSERVATIONS DETAIL AND SPECIFICATION.
2. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS RELATED TO THIS DETAIL.



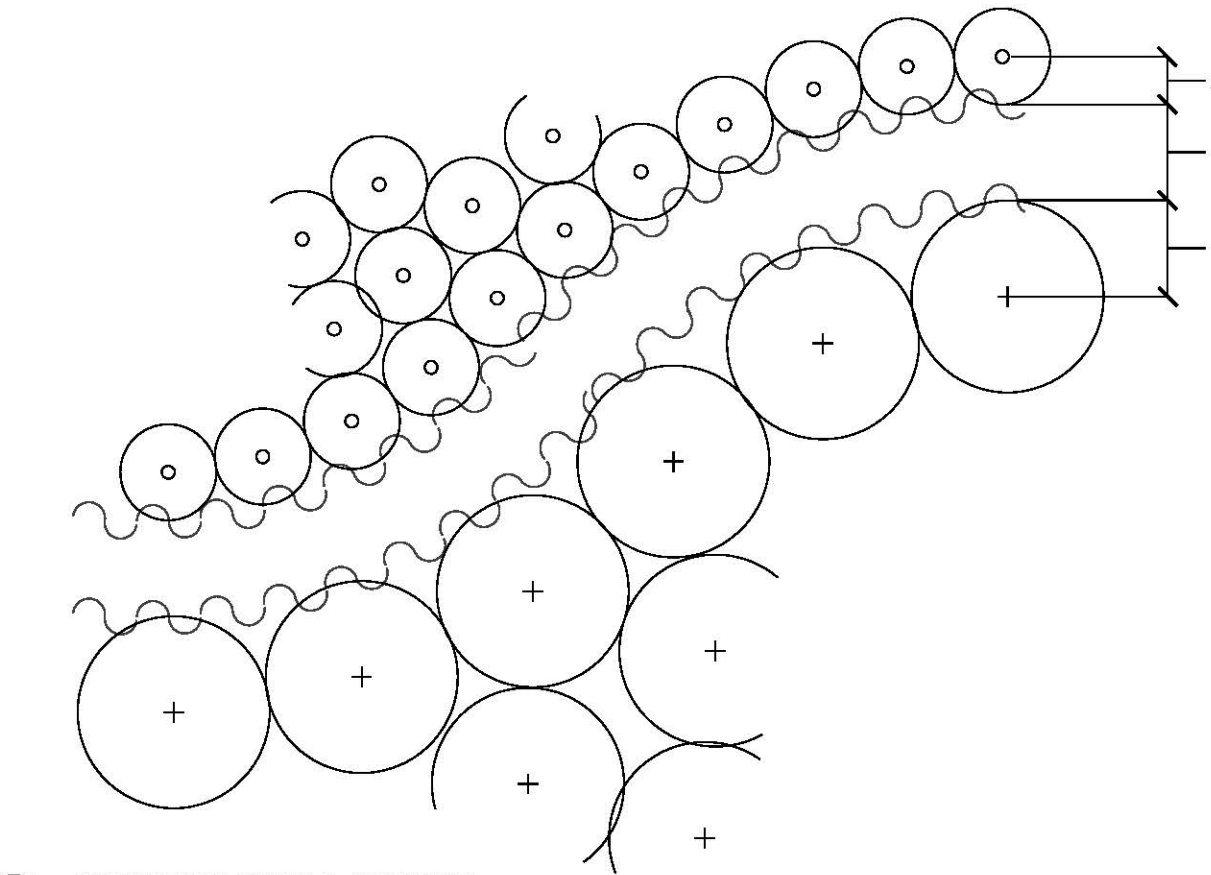
6 TYPICAL STEEL EDGING - BED EDGING DETAIL SECTION

CONSTRUCTION NOTES:

1. MINIMUM REQUIREMENTS FOR STEEL EDGING INSTALLATIONS
2. INSTALL EDGING SYSTEM AS PER MANUFACTURER'S RECOMMENDATION

GENERAL NOTES:

- A. FINISHED GRADE
- B. TAPER PLANTING BED DOWN TO TOP OF EDGING
- C. MULCH LAYER (AS SPECIFIED)
- D. PLANTING MIX (AS SPECIFIED)
- E. 4" X 3/16" (7 GAUGE) GREEN STEEL EDGING (PER PLAN)
- F. STEEL EDGING STAKES @ DESIGNATED SPACES, LOCATE ON PLANTING SIDE OF EDGE



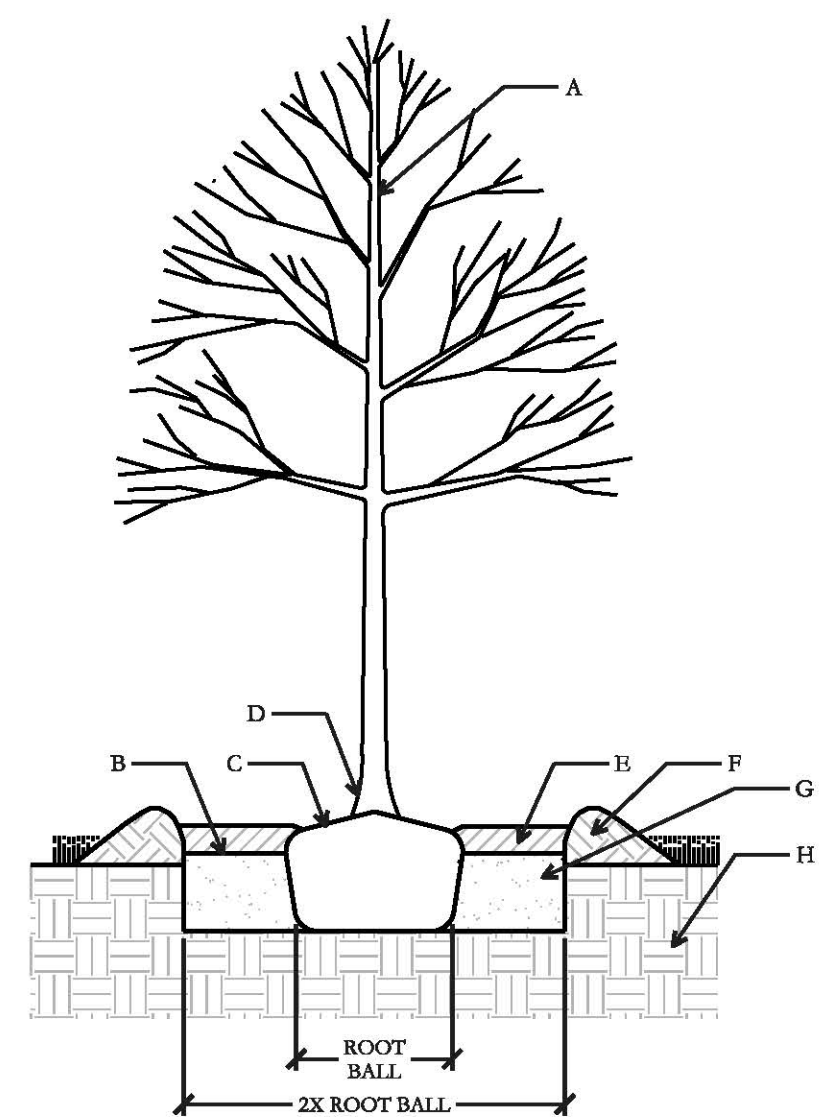
2 CURVED BED LAYOUT PLAN VIEW

CONSTRUCTION NOTES:

1. CONTRACTOR SHALL PLANT PERIMETER OF PLANTING ALONG CURVE. CONTRACTOR SHALL THEN PLANT REMAINDER OF BED TRIANGULAR AT SPECIFIED SPACING.
2. TRIANGULAR SPACING IS PREFERRED. USE SQUARE SPACING ONLY IN SMALL RECTILINEAR AREAS
3. REFER TO DETAIL FOR ROOT PRUNING

GENERAL NOTES:

- A. 1/2 SPACING AS SHOWN ON PLANT LIST
- B. 6" ZONE TO SEPARATE ADJACENT PLANT TYPES ALONG CURVE
- C. 1/2 SPACING AS SHOWN ON PLANTING LIST



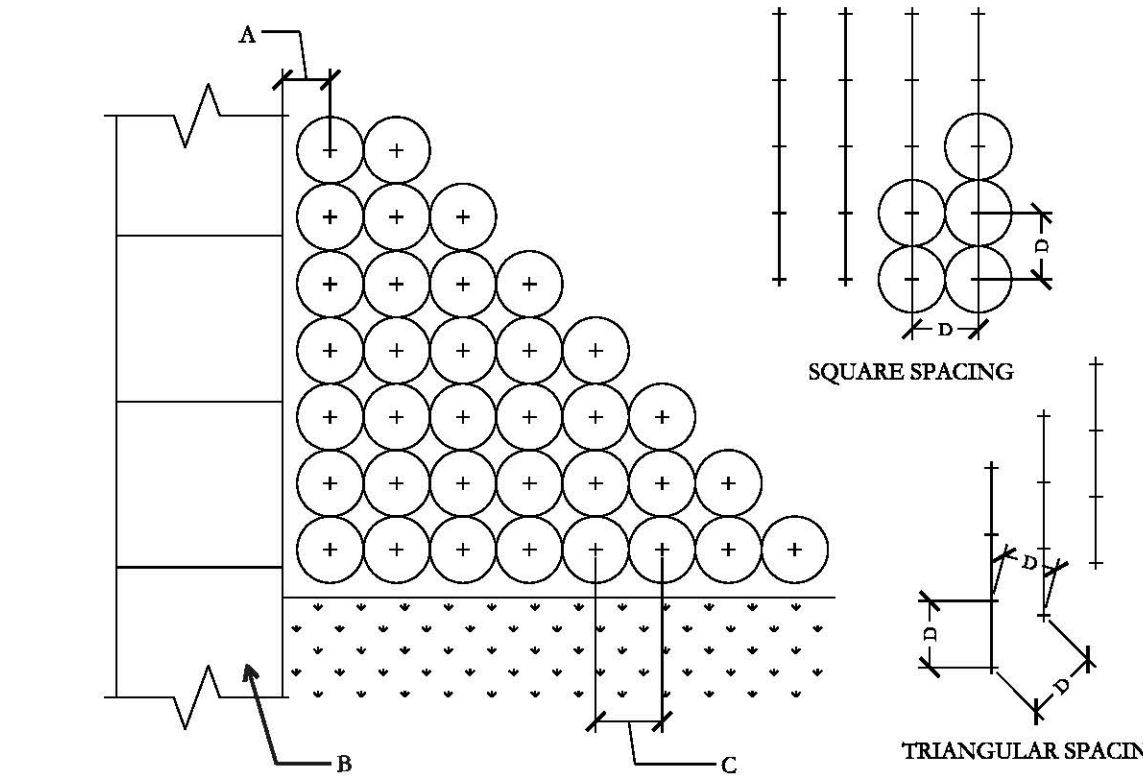
5 TYPICAL TREE PLANTING SECTION

CONSTRUCTION NOTES:

1. TREES SHALL BE OF QUALITY PRESCRIBED IN SPECIFICATIONS
2. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS RELATED TO THIS DETAIL
3. REFER TO DETAIL FOR TREE STAKING
4. REFER TO DETAIL FOR WATERING TUBES
5. REFER TO DETAIL FOR ROOT PRUNING

GENERAL NOTES:

- A. DO NOT CUT CENTRAL LEADER
- B. FINISHED GRADE
- C. TOP OF ROOTBALL AT THE SURFACE
- D. TRUNK FLARE SHALL REMAIN VISIBLE
- E. MULCH LAYER AS SPECIFIED
- F. 4" EARTHEN WATERING RING
- G. PLANTING MIX AS SPECIFIED
- H. UNDISTURBED NATIVE SOIL



1 TYPICAL SHRUB AND GROUNDCOVER PLANTING PLAN/SECTION

CONSTRUCTION NOTES:

1. TRIANGULAR SPACING IS PREFERRED. USE SQUARE SPACING ONLY IN SMALL RECTILINEAR AREAS
2. "D" EQUALS THE SPACING DISTANCE AS SPECIFIED ON THE PLANT LEGEND
3. REFER TO DETAIL FOR ROOT PRUNING

GENERAL NOTES:

- A. 1/2 SPACING AS SHOWN ON PLANT LIST
- B. CONCRETE SIDEWALK
- C. SPACING AS SHOWN ON PLANTING LIST
- D. REMOVE ALL LABELS & TAGS
- E. SHALL BE 1" HIGHER THAN FINISHED GRADE WHEN PLANTED
- F. MULCH/GRAVEL LAYER AS SPECIFIED
- G. PLANTING MIX AS SPECIFIED
- H. REMOVE CONTAINER AND PRUNE ANY CIRCLING ROOTS
- I. TOP OF MULCH SHALL BE 1/2" BELOW SIDE WALK
- J. UNDISTURBED NATIVE SOIL
- K. 1/2 ROOTBALL DIAMETER

IRRIGATION LEGEND AND SCHEDULE

SYM	DESCRIPTION	MANUFACTURER	MODEL	SIZE / NOZZLE	NOTES
C	AUTOMATIC CONTROLLER	HUNTER	HC-608	N/A	INSTALL PER MANUFACTURER'S STANDARDS.
RS	RAIN SENSOR	HUNTER	RAIN CLIK SENSOR	N/A	INSTALL PER MANUFACTURER'S STANDARDS.
	DRIP IRRIGATION CONTROL VALVE	HUNTER	ICZ-101	1"	INSTALL PER DETAIL IN JUMBO VALVE BOX w/ BOLT DOWN LID. ROUT AND PAINT VALVE NUMBER ON LID.
	DRIP IRRIGATION (LANDSCAPE BEDS)	HUNTER	HDI-06-18	N/A	INSTALL PER DETAIL w/ 40 PSI AT OUTFLOW OF DRIP ZONE VALVE.
	TREE BUBBLERS	HUNTER	AFB	1.00 GPM	INSTALL PER MANUFACTURER'S DETAIL. REFER TO TREE BUBBLER DETAIL.
	REMOTE CONTROL VALVE	HUNTER	ICV-101G	Refer to Plan for Size	INSTALL PER DETAIL IN 10" ROUND PENTEK VALVE BOX WITH BOLT DOWN LID. ROUT AND PAINT VALVE NUMBER ON LID.
	LAWN PGP LOW ANGLE ROTOR	HUNTER	PGP LOW ANGLE ROTOR	Red Nozzle Rack Refer to Plan for Nozzle Number	INSTALL PER DETAIL w/ 30 PSI AT BASE OF HEAD. INSTALL HUNTER SJ-712 SWING JOINTS ON ALL ROTORS. ADJUSTABLE ARC WITH RED NOZZLE RACK.
M	WATER METER	---	PER CITY	Refer to Plan for Size	INSTALLED BY GENERAL CONTRACTOR
	DOUBLE CHECK VALVE	Pebeco	850-BV Series	Refer to Plan for Size	FURNISH AND INSTALL PER LOCAL CODE BY LICENSED IRRIGATION CONTRACTOR.
I	ISOLATION VALVE	Nibco	*T-113	Line Size	INSTALL PER DETAIL IN 12"x17" PENTEK VALVE BOX WITH BOLT DOWN LID.
M	MASTER VALVE	Hunter	ICV-101G	Refer to Plan for Size	INSTALL PER DETAIL IN 12"x17" PENTEK VALVE BOX WITH BOLT DOWN LID.
---	IRRIGATION SLEEVE	---	SCH. 40 w/ 12 GA. FULL WIRE IN SLEEVE	Refer to Plan for Size	DRIVEWAY SLEEVES INSTALLED BY GENERAL CONTRACTOR. SIDEWALK SLEEVES INSTALLED BY IRRIGATION CONTRACTOR.
---	IRRIGATION MAIN LINE	---	SCH. 40	Refer to Plan for Size	18" INSTALLATION DEPTH.
---	IRRIGATION LATERAL LINE	---	CLASS 200	Refer to Plan for Size	12" INSTALLATION DEPTH STANDARD. 18" INSTALLATION DEPTH UNDER PAVING.
◆	DRIP IRRIGATION ZONE IDENTIFIER (GRAPHIC USE ONLY)				

<p>SPRAY IRRIGATION (SOD)</p> <p>Valve No. → XX GPM → 3 1"</p> <p>GPM → XX GPM → 3 1"</p> <p>Valve Size → 3 1"</p>	<p>DRIP IRRIGATION (BEDS)</p> <p>Valve No. → XX GPM → 3 1"</p> <p>GPM → XX GPM → 3 1"</p> <p>Drip Area → XX SF → 3 1"</p> <p>Valve Size → 3 1"</p>	<p>BUBBLER IRRIGATION (TREES)</p> <p>Valve No. → XX GPM → 3 1"</p> <p>GPM → XX GPM → 3 1"</p> <p>Tree Count → XX TREES → 3 1"</p> <p>Valve Size → 3 1"</p>
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IRRIGATION HEAD LEGEND, COUNT & NOTES

SYMBOL	QUANTITY	OPERATING PRESSURE	DESCRIPTION & NOTES
Ⓢ	6	30 PSI	HUNTER PGP LOW ANGLE 4LA GRAY NOZZLE; ADJUSTABLE ARC
Ⓜ	4	N/A	HUNTER ICV-101G VALVES (INCLUDES MASTER VALVE)
Ⓢ	1	N/A	HUNTER ICZ-101 VALVES

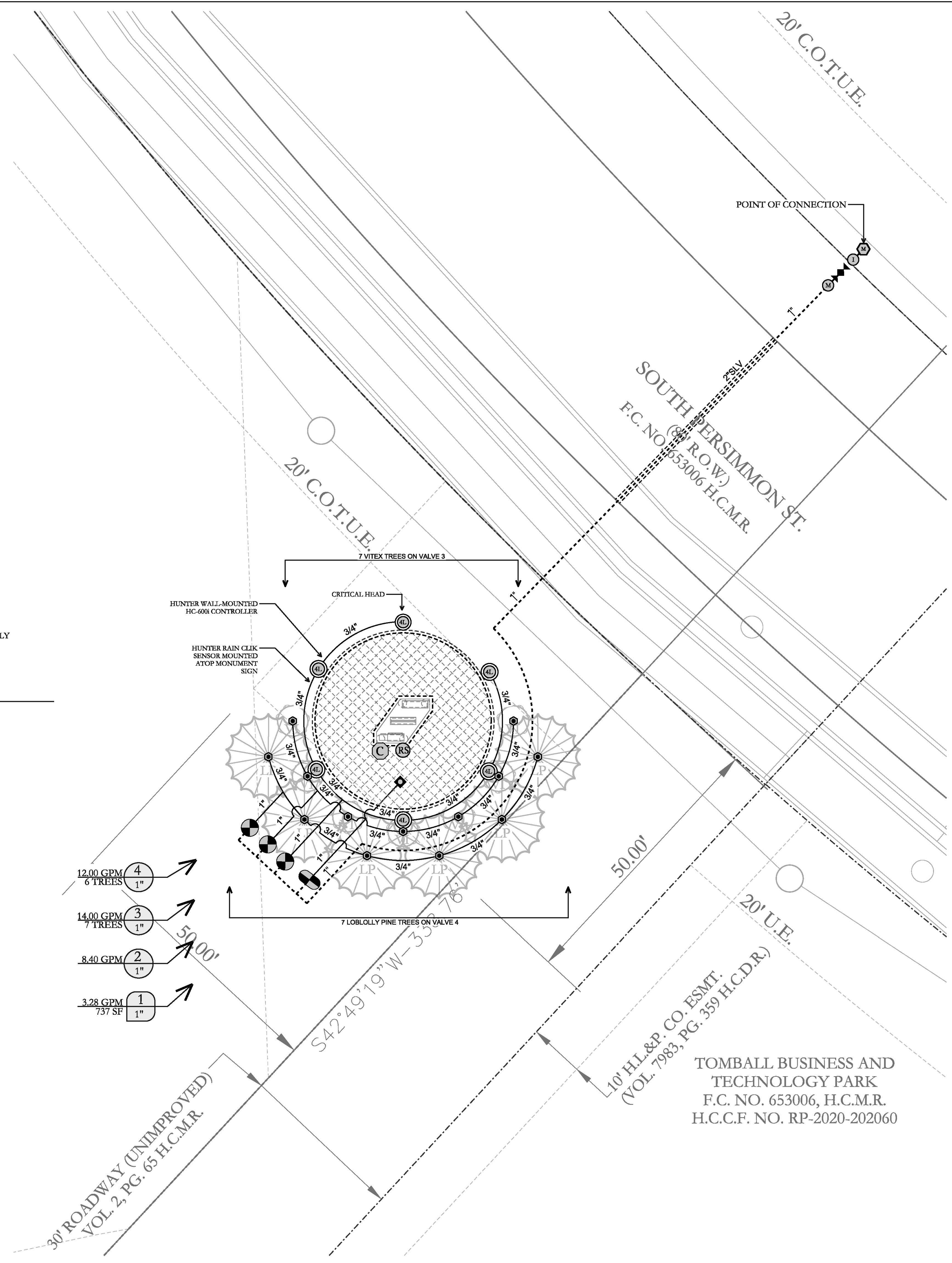
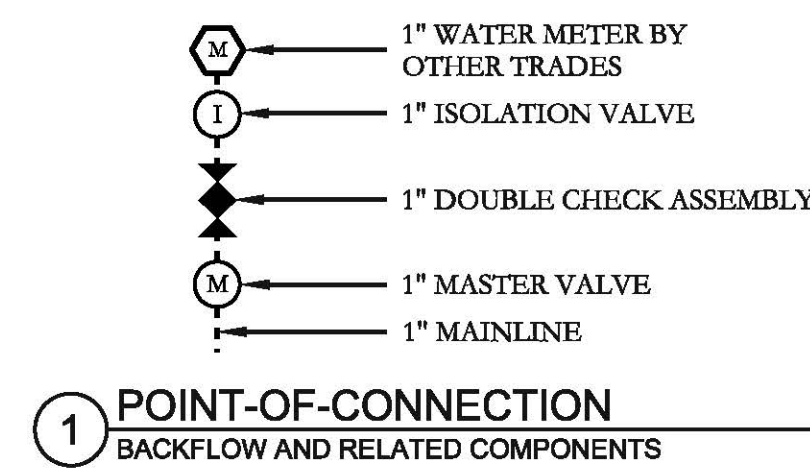
QUANTITIES PROVIDED ARE FOR CONTRACTOR ASSISTANCE ONLY. ACCURACY IS NOT GUARANTEED AND ALL QUANTITIES MUST BE VERIFIED.

HYDRAULIC CALCULATION NOTES

TEN DAYS PRIOR TO COMMENCING WORK, VERIFY STATIC PRESSURE. IF STATIC PRESSURE IS LESS THAN THE ASSUMED STATIC PRESSURE DO NOT START WORK UNTIL NOTIFIED IN WRITING TO PROCEED BY OWNER. IF CONTRACTOR PROCEEDS WITH WORK WITHOUT AUTHORIZATION FROM OWNER, THE CONTRACTOR SHALL BE FINANCIALLY RESPONSIBLE TO CORRECT, MODIFY OR REPAIR ANY ITEMS OR MATERIALS THAT MAY BE REQUIRED TO PROVIDE A FULLY FUNCTIONING AND OPERATIONAL IRRIGATION SYSTEM IN COMPLIANCE WITH THE PLANS AND SPECIFICATIONS. HYDRAULIC CALCULATIONS FOR THIS SYSTEM ARE BASED ON THE STATIC PRESSURE AS STATED ABOVE. THE STATIC PRESSURE SHOWN IS AN ASSUMED PRESSURE, A PRESSURE MEASURED AT THE SITE, OR AN ESTIMATED PRESSURE PROVIDED BY THE COUNTY OR CITY. THE OWNER UNDERSTANDS THIS PROJECT MAY NOT PROVIDE 100% COVERAGE AT ALL TIMES.

HYDRAULIC CALCULATION POINT-OF-CONNECTION (CRITICAL HEAD)

ITEM	SIZE	PSI	NOTES
SERVICE	1"	0.26	TYPE "K" COPPER 10 LN. FT. (8.40 GPM)
WATER METER	1"	0.55	(8.40 GPM)
BALL VALVE	1"	1.00	(8.40 GPM)
BACKFLOW PREVENTER	1"	6.00	(8.40 GPM)
MASTER VALVE	1"	2.75	(8.40 GPM)
MAIN LINE	"	0.98	193 LINEAR FEET (8.40 GPM)
ZONE VALVE (#2)	1"	2.75	(8.40 GPM)
LATERAL PIPING	3/4" - 1"	0.84	
CRITICAL HEAD	N/A	30.00	
TOTAL LOSS		(-)45.13	
ASSUMED STATIC PRESSURE		55.00	
PRESSURE DIFFERENTIAL		(-)9.87	



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SCALE 1" = 10' - 0"

LANDSCAPE DEVELOPMENT
Irrigation Plan, Schedule, & Calculations
Tomball Business and Technology Park
29201 Quinn Rd., Suite B, Tomball, Texas 77375

TOMBALL BUSINESS AND TECHNOLOGY PARK
F.C. NO. 653006, H.C.M.R.
H.C.C.F. NO. RP-2020-202060

IRRIGATION NOTES

IRRIGATION NOTES AND SPECIFICATIONS

- 1. THIS IRRIGATION DESIGN IS BASED ON THE PLANNING PLAN PROVIDED WITH THIS SET.
2. IRRIGATION CONTRACTOR MUST VERIFY THE FOLLOWING:
2.1. PROVIDE A COMPLETE, FUNCTIONING AUTOMATIC IRRIGATION SYSTEM INCLUDING LABOR, MATERIALS, FEES, TAXES, EQUIPMENT, AND OTHER COSTS INCIDENTAL TO ACCOMPLISHING WORK.
2.2. BE LICENSED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) AS A LICENSED IRRIGATION CONTRACTOR.
2.2.1. ADDITIONAL CERTIFICATION FROM THE IRRIGATION ASSOCIATION AS A CERTIFIED IRRIGATION CONTRACTOR IS PREFERRED.
2.3. HOLD CURRENT LICENSES/CERTIFICATIONS THAT ARE IN GOOD STANDING.
2.4. ACQUIRE WRITTEN APPROVAL FROM THE LICENSED IRRIGATOR FOR MATERIAL SUBSTITUTES PRIOR TO BEGINNING INSTALLATIONS.
3. ALL STATE OF TEXAS LAWS, RULES AND ALL LOCAL CODES/ORDINANCES AREA MADE PART OF THESE PLANS AND SPECIFICATIONS WHETHER SHOWN OR NOT. THESE LAWS AND ORDINANCES WILL SUPERSEDE THE PLANS, DETAILS, AND/OR SPECIFICATIONS FOR THIS PROJECT. THE IRRIGATION CONTRACTOR IS CAUTIONED THAT HE/SHE IS TO INCLUDE ANY AND ALL COST NECESSARY TO MEET OR EXCEED THE LAWS OF THE STATE OF TEXAS AND LOCAL CODES CONCERNING LANDSCAPE IRRIGATION.
4. ALL PRODUCTS SHOULD BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL CABLES, CONDUITS, PIPING, AND ANY OTHER UTILITIES OR STRUCTURES THAT MAY BE ENCOUNTERED EITHER ABOVE OR BELOW GROUND. ALL NECESSARY PRECAUTIONS MUST BE TAKEN BY THE CONTRACTOR TO PREVENT ANY DAMAGE TO THESE EXISTING UTILITIES AND IMPROVEMENTS. IN THE EVENT THAT SUCH DAMAGE SHOULD OCCUR FROM THE CONTRACTOR'S OPERATIONS, THE CONTRACTOR SHALL REPAIR OR REPLACE DAMAGED UTILITIES TO THEIR ORIGINAL CONDITION AT NO ADDITIONAL EXPENSE TO THE OWNER.
6. FORTY-EIGHT (48) HOURS BEFORE IRRIGATION CONSTRUCTION BEGINS, IRRIGATION CONTRACTOR MUST CALL THE UTILITY LOCATING SERVICE TO LOCATING EXISTING UNDERGROUND UTILITIES AND/OR OBSTACLES PRIOR TO BEGINNING WORK. ANY DAMAGE TO UTILITIES AND/OR FINISHES FROM INFERIOR WORKMANSHIP BY THE IRRIGATION CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
7. IRRIGATION PLANS ARE DESIGNED ACCORDING TO THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) SUBCHAPTER F: STANDARDS FOR DESIGNING, INSTALLING, AND MAINTAINING LANDSCAPE IRRIGATION SYSTEMS (34-60-344.65)

WORK

- 1. THE SCOPE OF WORK FOR THIS PROJECT IS SHOWN IN THE PLANS, NOTES, SCHEDULE AND DETAILS.
2. ALL WORK SPECIFIED ON THESE PLANS REQUIRES PROVIDING ALL COMPONENTS NECESSARY FOR IRRIGATION SYSTEM INSTALLATION AND TESTING IN ORDER TO PROVIDE AN EFFICIENT AND OPERATIONAL IRRIGATION SYSTEM THAT COMPLIES WITH IRRIGATION PLANS, SPECIFICATIONS, SCHEDULE AND DETAILS. THIS INCLUDES, BUT IS NOT LIMITED TO, PROVIDING ALL REQUIRED MATERIALS (I.E. BACKFLOW PREVENTERS, PUMPS, PIPES, VALVES, FITTINGS, CONTROLLERS, WIRING, GROUNDING, CLOTH, ETC.), LAYING OUT PIPING, PROVIDING PUBLIC PROTECTION, AND ASSEMBLY, INSTALLATION AND TESTING OF ALL PIPING, FITTINGS, VALVES, SPRINKLER DEVICES, CONTROLLERS, BACKFLOW PREVENTERS, INLET AND DISCHARGE PIPING, MANUAL DRAIN VALVES, VALVE BOXES, WATER METERS AND ALL OTHER PERTINENT COMPONENTS AS SPECIFIED. THE CONTRACTOR SHALL PERFORM ALL TRENCHING, EXCAVATING, BORING, BACKFILLING, COMPACTING AND INSTALLATION, ELECTRICAL WORK, CLEAN-UP AND ANY OTHER WORK NECESSARY FOR COMPLETING THE PROJECT.
3. ALL IRRIGATED AREAS ARE DESIGNED TO PROVIDE 100% COVERAGE USING A FULLY AUTOMATIC IRRIGATION SYSTEM COMPLETE WITH RAIN/FREEZE SENSORS. THE RAIN/FREEZE SENSORS SHOULD BE INSTALLED IN AN UNOBSTRUCTED AREA APPROVED BY OWNER.
4. IRRIGATION ZONES ARE PRIORITIZED BASED ON HYDRAULIC CONCERNS AND PUBLIC SAFETY. PIPING IS DIAGRAMMATIC AND SHOWN FOR CLARITY ONLY. ADJUST AS REQUIRED FOR EXISTING UTILITIES, OBSTRUCTIONS, TREE ROOT BALLS, ETC. PIPING AND VALVES SHOWN IN PAVING FOR CLARITY ONLY AND SHALL BE INSTALLED IN ADJACENT LANDSCAPE AREA WITHIN PROPERTY LINES. COORDINATE WITH THE CITY OR ENTITY INSPECTING THE IRRIGATION SYSTEM AND DETERMINE THE LOCAL RULES AND CODES TO ABIDE BY REGARDING MAINLINE AND LATERAL PIPING LOCATIONS.
6. THE IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AND/OR REPLACEMENT OF ALL ITEMS DAMAGED BY THEIR WORK.
7. THE IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO PLANT MATERIAL DUE TO SYSTEM FAILURE FROM INFERIOR WORKMANSHIP FOR THE DURATIONS OF THE INSTALLATION OF PLANT MATERIAL AND MAINTENANCE PERIOD FOLLOWING INSTALLATION.
8. THE IRRIGATION CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE IRRIGATION SYSTEM WITH THE LANDSCAPE CONTRACTOR TO ENSURE ALL PLANT MATERIAL WILL BE WATERED IN ACCORDANCE WITH THE INTENT OF THE PLANS AND SPECIFICATIONS.
9. THE IRRIGATION CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL NECESSARY TO HAND DIG WITHIN ALL EXISTING TREE CANOPIES AT NO ADDITIONAL COST TO THE OWNER. THE IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE TO STAKE AND RECEIVE APPROVAL FROM ALL DISCIPLINES PRIOR TO ANY TRENCHING AND HAND DIGGING IN AREAS OF EXISTING TREE COVERAGE OR ANY ADDITIONAL AREAS THAT MIGHT BE QUESTIONABLE.
10. ALL MATERIAL SHALL BE THE BRANDS AND TYPES NOTED ON THE PLAN OR AS SPECIFIED HEREIN, OR APPROVED EQUAL.
11. ALL IRRIGATION EQUIPMENT, NOT OTHERWISE DETAILED ON THESE PLANS, SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS, AND ACCORDING TO LOCAL AND STATE LAWS.

SLEEVES

- 1. IF PIPING UNDER OR THROUGH HARDSCAPES SUCH AS ROADWAYS, WALKS, PATIOS, WALLS, ETC., THE PIPES MUST BE SLEEVED WITH SCHEDULE 40 PVC PIPE.
2. CONTRACTOR TO COORDINATE WITH THE GENERAL CONTRACTOR FOR SLEEVE AND CONDUIT REQUIREMENTS. IRRIGATION SLEEVES SHALL BE AS FOLLOWS:
2.1. SLEEVES INTENDED FOR LATERAL LINES ARE TO BE TWO SIZES LARGER THAN THE PIPE IT IS CARRYING AND ARE TO BE NO MORE THAN A DEPTH OF TWO FEET BELOW TOP OF CURB. SLEEVES SHOULD EXTEND A MINIMUM OF 2'-0" BEYOND EACH CURB.
2.2. SLEEVES INTENDED FOR THE MAINLINE ARE TO BE TWO SIZES LARGER THAN THE PIPE IT IS CARRYING AND ARE TO BE NO MORE THAN A DEPTH OF TWO FEET BELOW TOP OF CURB. SLEEVES SHOULD EXTEND A MINIMUM OF 2'-0" BEYOND EACH CURB.
3. NO SLEEVES SHALL HAVE TURNS OR FITTINGS THAT PREVENT A PIPE FROM BEING MANUALLY PUSHED/PULLED THROUGH AFTER IT IS INSTALLED.
4. LOCATE EACH END OF IRRIGATION SLEEVES DIMENSIONALLY ON THE RECORD "AS BUILT" DRAWINGS.

PIPING

- 1. PIPE LOCATIONS ARE SHOWN DIAGRAMMATICALLY ON THE PLAN AND SHALL BE ADJUSTED IN THE FIELD. WHEN LAYING MAINLINE PIPING, ENSURE THAT IT IS A MAXIMUM OF 18 INCHES AWAY FROM EITHER THE BACK OF CURB, FRONT OF WALK, BACK OF WALK, OR OTHER HARDSCAPE AREAS TO ALLOW FOR EASE OF LOCATING AND PROTECTION FROM DAMAGE. INSTALL ALL LATERAL PIPE NEAR PAVEMENT EDGES OR ALONG BUILDING EDGES WHEN POSSIBLE.
2. ALL PIPING TO BE INSTALLED WITHIN PROPERTY LINES.
3. PIPE SIZES SHALL CONFORM TO THOSE SHOWN ON THE IRRIGATION PLAN. NO SUBSTITUTIONS OF SMALLER PIPE SIZES SHALL BE PERMITTED; HOWEVER, SUBSTITUTIONS OF LARGER SIZES MAY BE APPROVED. ALL DAMAGED OR REJECTED PIPE SHALL BE REMOVED AT THE TIME OF DAMAGE OR REJECTION.
4. ALL PROPOSED MAINLINE SHALL BE SCHEDULE 40 PVC PIPE.
5. ALL PVC PIPE AND FITTINGS ARE TO BE PRIMED WITH PURPLE PVC PRIMER SOLVENT (COMPATIBLE WITH CEMENT) BEFORE APPLYING PVC CEMENT (HEAVY DUTY) IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE.
6. ALL P.V.C MAINLINES, LATERAL LINES, DRIP LINES SHALL RECEIVE AS FOLLOWS:
6.1. 18" MINIMUM COVER FOR MAIN LINES
6.2. 18" MINIMUM COVER FOR PIPING LOCATED UNDER PAVING
6.3. 12" MINIMUM COVER FOR LATERAL LINES
6.4. 2-3" MINIMUM COVER FOR DRIPLINE WITH MULCH AS PER SPECIFICATION.
7. THE MINIMUM DISTANCE BETWEEN THE MAINLINE AND LATERAL LINE FITTINGS (EXCEPT FOR REDUCER BUSHINGS) SHALL BE 18".
8. ALL LATERAL LINES SHALL BE 3/4" CLASS 200 PVC UNLESS OTHERWISE NOTED ON PLANS.

TRENCHING

- 1. SHOULD BE STRAIGHT AND VERTICAL. TRENCHES WITH SMOOTH, FLAT OR SLOPING BOTTOMS. TRENCH WIDTH AND DEPTH SHOULD ALLOW FOR VERTICAL AND HORIZONTAL SEPARATION BETWEEN PIPING AS SHOWN IN TRENCHING DETAIL ON IRRIGATION DETAILS SHEET.
2. WHEN TRENCHING, MEASURES SHOULD BE TAKEN TO PROTECT EXISTING LANDSCAPED AREAS, AND ANY DAMAGED MATERIAL IS TO BE REPLACED BY THE CONTRACTOR. REPLACEMENT MATERIALS SHALL BE THE IDENTICAL GENUS, SPECIES AND SIZE AS THE DAMAGED MATERIAL. FINAL DETERMINATION AS TO WHAT NEEDS TO BE REPLACED AND THE APPROVAL OF REPLACEMENTS SHALL BE MADE BY THE OWNER OR THE OWNER'S REPRESENTATIVE.
3. IN AREAS WHERE TREES ARE PRESENT, TRENCH LINES WILL BE ADJUSTED ON THE SITE TO ELIMINATE OR MINIMIZE ANY DAMAGE TO TREE ROOTS. HAND TRENCHING AND EXCAVATION UNDER TREE ROOTS MAY BE REQUIRED.
4. IF THE CONTRACTOR ENCOUNTERS ROCK OR OTHER UNFAVORABLE TRENCHING CONDITIONS, NO ADDITIONAL COMPENSATION WILL BE PAID. WHEN MATERIAL FROM THE EXCAVATION OR TRENCHING IS UNSUITABLE FOR USE AS BACKFILL, ADDITIONAL BACKFILL MATERIAL SUITABLE FOR THIS PURPOSE SHALL BE BROUGHT IN AT THE EXPENSES OF THE CONTRACTOR. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE AND DISPOSE OF ALL UNSUITABLE MATERIALS REMOVED FROM THE TRENCH THAT CANNOT BE USED IN THE BACKFILL OPERATION.

VALVES

- 1. THE MINIMUM HORIZONTAL DISTANCE OF 36" SHALL BE MAINTAINED BETWEEN ANY VALVES THAT ARE INSTALLED SIDE BY SIDE.
2. WHERE SERVICE TEES ARE INSTALLED ON THE MAINLINE FOR INSTALLATION OF THE ELECTRIC VALVES AND/OR QUICK COUPLING VALVES, THE CONTRACTOR SHALL LIMIT THE NUMBER OF

IRRIGATION NOTES (CONT.)

THESE PER SERVICE TEE. DO NOT INSTALL MORE THAN A TOTAL OF EITHER THREE ELECTRIC VALVES OR FOUR SERVICE TEES ON TWO ELECTRIC VALVES AND ONE QUICK COUPLER VALVE AT EACH TEE. THE MINIMUM DISTANCE BETWEEN FITTINGS SHALL BE 18" AS REFERENCED IN THE ABOVE NOTES.
3. ZONE VALVES LABELED AS "OPEN" ARE INTENDED FOR THE USE OF SUPPLYING HUNTER APB-ADJ TREE BUBBLERS ON EACH PROPOSED TREE. IRRIGATION CONTRACTOR SHALL FIELD VERIFY THAT THESE ZONES DO NOT EXCEED 30 GALLONS PER MINUTE. THE IRRIGATION CONTRACTOR SHALL STAKE EACH TREE BUBBLER HEAD LOCATION AND RECEIVE APPROVAL FROM THE OWNER AND/OR THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.

QUICK COUPLING VALVES

- 1. INSTALL QUICK COUPLING VALVES IN 12"x17" PENTEK VALVE BOXES PER DETAIL SHOWN. CONNECT QUICK COUPLING VALVES TO MAINLINE PIPE WITH LASCO UNFITTED 6.8MM SWING JOINTS PER DETAIL SHOWN, #1722-22. SUPPLY OWNER WITH THREE COUPLER KEYS WITH SWIVEL HOSE BIBB EACH, #33DK-10AND #5H-0 RESPECTIVELY. VALVES TO BE INSTALLED SO THAT THE TOP OF THE QUICK COUPLER IS 2" BELOW BOTTOM OF VALVE BOX LID. PURPLE LID SHALL READ "NON-POTABLE, NOT SAFE FOR DRINKING" IN ENGLISH AND SPANISH.

CONTROLLER & SENSORS

- 1. THE OWNER AND/OR LICENSED IRRIGATOR SHALL DETERMINE THE FINAL CONTROLLER LOCATION. THE IRRIGATION CONTRACTOR SHALL MAKE FINAL ELECTRICAL CONNECTION OF CONTROLLER PER LOCAL ELECTRICAL CODE. PROVIDE ALL NECESSARY FUSE BOXES, CONDUIT, FITTINGS, CONNECTORS OR OTHER ELECTRICAL DEVICES TO MAKE CONNECTION. OWNER SHALL PROVIDE ELECTRICAL SERVICE WITHIN 10 LINEAR FEET OF CONTROLLER LOCATION UNLESS NOTED OTHERWISE ON DRAWINGS.
2. CONNECT REMOTE SENSORS TO CONTROLLER WITH GROUND WIRE IN SERIES PRIOR TO CONNECTING TO REMOTE CONTROL VALVES.

POINT-OF-CONNECTION

- 1. POINT OF CONNECTION MUST BE ABLE TO DELIVER A MINIMUM OF 30 GPM AT 40 PSI DOWNSTREAM OF ANY TAP. DOUBLE CHECK VALVE ASSEMBLY CONNECTED TO A POTABLE WATER SUPPLY.
2. CONTRACTOR TO VERIFY THAT THESE CONDITIONS STATED ABOVE CAN BE MET PRIOR TO ORDERING MATERIALS OR INSTALLATION. IF THE CONDITIONS CANNOT BE MET, THE CONTRACTOR MUST NOTIFY THE IRRIGATION DESIGNER PRIOR TO COMMENCEMENT OF WORK. IF THE CONTRACTOR FAILS TO NOTIFY THE IRRIGATION DESIGNER, THE CONTRACTOR PROCEEDS AT THEIR OWN RISK AND BECOMES RESPONSIBLE FOR ANY FUTURE WORK NEEDED TO ENSURE THAT THE SYSTEM IS OPERATING PROPERLY.

ELECTRICAL & WIRING

- 1. IRRIGATION CONTRACTOR TO PROVIDE ELECTRICAL SUPPLY FOR ALL IRRIGATION PUMPS, CONTROLLERS, SENSORS, PUMP START RELAYS, ETC. CONTRACTOR TO COORDINATE WITH LOCAL UTILITIES FOR THE INSTALLATION OF, AND CONNECTION TO, SITE AVAILABLE POWER SUPPLIES FOR REQUIRED ELECTRICAL COMPONENTS AS SET FORTH IN THE IRRIGATION PLANS.
3. ALL ELECTRICAL WORK IS TO COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC) AND ANY, AND ALL, OTHER APPLICABLE CODES, LAWS AND REGULATIONS.
4. A LICENSED ELECTRICIAN SHALL PERFORM ALL ELECTRICAL CONNECTIONS.
5. POWER FOR EACH CONTROLLER SHALL BE A DEDICATED 120 VOLT, 20 AMP CIRCUIT UNLESS OTHERWISE SPECIFIED ON THE PLANS. IF APPLICABLE, POWER FOR THE PUMPS(S) IS TO ACCORDING TO PUMP SPECIFICATIONS INDICATED IN PLANS.
6. ALL IRRIGATION WIRING IS PROPOSED, NOT EXISTING.
7. EXTEND ONE EXTRA CONTROL WIRE TO FARTHEST VALVE, ROUTED PARALLEL TO COMMON GROUND WIRE WITH INSTALLATION OF LEAD AND COMMON WIRES.
8. CONTROL WIRE SHALL BE DIRECT BURIAL, 24 VOLT, SINGLE CONDUCTOR, SOLID COPPER, PLASTIC INSULATED CABLE, RATED FOR DIRECT BURIAL APPLICATIONS, UF, UL, APPROVED, 14 GAUGE, MINIMUM LEAD AND COMMON GROUND RETURN WIRE UNLESS NOTED OTHERWISE ON PLANS. COLOR OF INSULATION AS FOLLOWS:
8.1. LEAD WIRE: ANY COLOR (SAME COLOR), EXCEPT WHITE OR ORANGE
8.2. COMMON GROUND WIRE: WHITE (COLOR)
8.3. EXTRA CONTROL WIRE: ORANGE (COLOR)
9. WIRE SPLICES SHALL BE KING ONE-STEP #7 TAP) OR 3M-DRY PERMANENT AND WATERPROOF. INSTALL ALL WIRE SPLICES IN 10" ROUND PENTEK VALVE BOXES.

PROCESS

- 1. LAYOUT IRRIGATION SYSTEM LATERAL LINES AND MAINLINES PRIOR TO INSTALLATION, AND MAKE CHANGES NEEDED, TAKING INTO ACCOUNT ALL SITE OBSTRUCTIONS AND LIMITATIONS.
2. STAKE ALL SPRINKLER HEAD LOCATIONS, ADJUST LOCATION AND MAKE NECESSARY MODIFICATIONS TO NOZZLE TYPES, ETC. REQUIRED TO ENSURE 100% HEAD TO HEAD COVERAGE.
2.1. SPRAY HEADS & ROTORS SHALL BE INSTALLED 4" FROM SIDEWALKS OR CURBED ROADWAYS, 12" FROM BUILDING FOUNDATIONS, AND 36" FROM UNCURBED ROADWAYS.
2.2. SHRUB HEADS SHALL BE INSTALLED ON 3/4" SCHEDULE 40 PVC RISERS. THE RISERS SHALL BE SET AT A MINIMUM OF 18" OFF SIDEWALKS, ROADWAY CURBING, BUILDING FOUNDATIONS, AND/OR ANY OTHER HARDSCAPED AREAS. SHRUB HEADS SHALL BE INSTALLED TO A STANDARD HEIGHT OF 4" BELOW MAINTAINED HEIGHT OF PLANTS AND SHALL BE INSTALLED A MINIMUM OF 6" WITHIN PLANTED MASSES TO BE LESS VISIBLE AND OFFER PROTECTION. PAINT ALL SHRUB RISERS WITH FLAT BLACK OR FOREST GREEN PAINT UNLESS IRRIGATION SYSTEM WILL REUSE WATER; IN THIS CASE, RISERS SHALL BE PURPLE PVC AND SHALL NOT BE PAINTED.
3. LOCATE VALVES PRIOR TO INSTALLATION AND ENSURE THAT THEIR LOCATION PROVIDES EASY ACCESS AND THAT THERE IS NOT INTERFERENCE WITH PHYSICAL STRUCTURES, PLANTS, TREES, POLES, ETC. VALVE BOXES MUST BE PLACED A MINIMUM OF 12" AND A MAXIMUM OF 15" FROM THE EDGE OF PAVEMENT, CURBS, ETC. AND THE TOP OF THE BOX MUST BE 2" ABOVE FINISHED GRADE. VALVE BOXES SHALL NEVER BE INSTALLED IN SPORTS FIELDS.
4. LABEL EACH VALVE WITH A WATERPROOF TAG INSIDE OF THE VALVE BOX. THIS LABEL SHOULD BE AT LEAST 2" TALL AND INCLUDE THE VALVE ID NUMBER THAT IS LEGIBLE.

INSTALLATION & COMPLETION

- 1. SOLVENT WELDED PIPE
1.1. PVC PLASTIC PIPE SHALL BE SQUARELY BURRS LEFT FROM CUTTING SHALL BE WIPED OFF WITH A CLEAN DRY CLOTH. UTILIZING A CLEANER/PRIMER, THOROUGHLY CLEAN THE MATING PIPE END AND THE FITTING SOCKET WITH A CLEAN, DRY CLOTH. APPLY A UNIFORM COAT OF SOLVENT CEMENT TO THE OUTSIDE OF THE PIPE END WITH A NON-SYNTHETIC BRUSH OR DAUBER. IN LIKE MANNER, APPLY A THIN COATING OF SOLVENT CEMENT TO THE INSIDE OF THE FITTING SOCKET. RE-APPLY A LIGHT COAT OF SOLVENT CEMENT TO THE PIPE END AND QUICKLY INSERT IT INTO THE FITTING TO THE FULL DEPTH OF THE FITTING SOCKET. ROTATE THE PIPE OR FITTING APPROXIMATELY 1/4 TURN TO INSURE EVEN DISTRIBUTION OF THE SOLVENT CEMENT. HOLD IN POSITION FOR APPROXIMATELY 30 SECONDS. Wipe off any excess solvent cement that forms as a bead around the OUTER SHOULDER. CARE SHOULD BE TAKEN SO AS NOT TO USE AN EXCESS AMOUNT OF SOLVENT CEMENT THAT COULD CAUSE BURRS OR OBSTRUCTIONS TO FORM ON THE INSIDE OF THE PIPE JOINT. SOLVENT WELDED JOINTS SHALL BE ALLOWED TO CURE FOR AT LEAST 24 HOURS BEFORE PRESSURE IS APPLIED TO THE SYSTEM.
2. PIPE AND FITTING INSTALLATION
2.1. INSTALLATION OF PLASTIC PIPE AND FITTINGS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES AND AS MENTIONED IN THE SPECIFICATIONS. MANUFACTURER'S RECOMMENDED PROCEDURES FOR MAKING SOLVENT WELD FITTINGS SHALL BE STRICTLY ADHERED TO. ONLY SOLVENT CEMENTS, CLEANERS, AND PRIMERS OR LUBRICANTS RECOMMENDED OR SUPPLIED BY THE PIPE MANUFACTURER SHALL BE USED.
2.2. THE CONTRACTOR IN HANDLING, LOADING, UNLOADING, AND STORING OF PVC PIPE AND FITTINGS SHALL EXERCISE CAUTION. ALL PVC PIPE SHALL BE STORED AND TRANSPORTED IN A VEHICLE WITH A BED OR RACK LONG ENOUGH TO ALLOW THE PIPE TO LIE FLAT WITHOUT SUBJECTING IT TO UNDUCE BENDING OR CONCENTRATED EXTERNAL LOAD AT ANY POINT. ANY SECTION OF PIPE THAT HAS BEEN DENTED OR DAMAGED OR IN ANY OTHER WAY FOUND TO BE DEFECTIVE, EITHER BEFORE OR AFTER INSTALLATION SHALL BE REPLACED WITH SOUND PIPE WITHOUT ADDITIONAL EXPENSE TO THE OWNER.
2.3. BEFORE INSTALLATION, THE INSIDE OF THE PIPE SHALL BE CLEANED OF ALL DIRT AND FOREIGN MATTER AND SHALL BE KEPT IN A CLEAN CONDITION DURING AND AFTER INSTALLATION OF PIPE. WHEN WORK IS NOT IN PROGRESS, OPEN ENDS OF PIPE AND FITTINGS SHALL BE SECURED CLOSED SO THAT NO TRENCH WATER, EARTH OR OTHER FOREIGN SUBSTANCES WILL ENTER THE PIPE OR FITTINGS WHERE PIPE ENDS ARE LEFT FOR FUTURE EXPANSION OR CONNECTIONS, THEY SHALL BE VALVED OFF AND CAPPED AS DIRECTED. THESE FUTURE EXPANSION POINTS WILL BE NOTED ON THE AS BUILT DRAWINGS.
2.4. ALL PVC PIPE AND FITTINGS SHALL BE ASSEMBLED TO PERMIT THE PIPE OR FITTINGS TO BE JOINTED AT THE TRUE PARALLEL POSITION OF THE FITTINGS. PLACEMENT OF PIPE IN CURVING TRENCHES THAT CAUSE EXCESSIVE BENDING AND STRESS ON PIPE AND FITTINGS WILL NOT BE PERMITTED. SYSTEM SHALL BE DESIGNED AND INSTALLED SO THAT NO FITTINGS ARE WITHIN TWO TIMES THE PIPE DIAMETER OF EACH OTHER. FOR EXAMPLE, ON A ONE-INCH DIAMETER PIPE, NO FITTINGS ARE WITHIN TWO INCHES OF EACH OTHER.
2.5. BEFORE INSTALLING THE PIPE, ALL DEBRIS AND LARGE ROCKS SHALL BE REMOVED FROM THE TRENCHES. IF THE SOIL IS EXTREMELY ROCKY, THE TRENCHES SHALL BE BEDDED WITH DIRT OR SAND AS OUTLINED IN OTHER PORTIONS OF THESE SPECIFICATIONS. THE FULL LENGTH OF EACH SECTION OF THE PIPE SHALL REST SOLIDLY UPON THE PIPE BED, WITH RECESSES EXCAVATED TO ACCOMMODATE BELLS, JOINTS AND COUPLINGS.

IRRIGATION NOTES (CONT.)

- 2.6. PIPE SHALL NOT BE LAID IN WATER OR WHEN TRENCH OR WEATHER CONDITIONS ARE UNSUITABLE FOR THE WORK. ANY TRENCH OR EXCAVATION SHALL BE PUMPED OUT OR OTHERWISE ACCUMULATE IN THE TRENCHES OR EXCAVATION SHALL BE PUMPED OUT AND THEREAFTER REMOVED AS NECESSARY TO KEEP THE BOTTOM OF THE TRENCH OR EXCAVATION FREE AND CLEAR OF WATER DURING THE PROGRESS OF THE WORK. PIPE SHALL NOT BE LAID WHEN THE TEMPERATURE IS 32°F OR BELOW.
2.7. THE MINIMUM HORIZONTAL DISTANCE BETWEEN LINES IN THE SAME TRENCH SHALL BE 4". DO NOT STACK LINES IN THE SAME TRENCH.
2.8. AFTER ALL SPRINKLER PIPING, RISERS, VALVES, THRUST BLOCKS ETC., HAVE BEEN INSTALLED AND PARTIALLY BACKFILLED AS SPECIFIED IN OTHER PARTS THESE SPECIFICATIONS, THE CONTROL VALVE SHALL BE OPENED AND A FULL HEAD WATER USED TO FLUSH OUT THE SYSTEM. AFTER THE SYSTEM IS THOROUGHLY FLUSHED, RISERS SHALL BE CAPPED OFF AND THE SYSTEM PRESSURE TESTED IN ACCORDANCE WITH THE TESTING PORTION OF THESE SPECIFICATIONS. AT THE CONCLUSION OF THE PRESSURE TEST, THE HEADS SHALL BE INSTALLED AND THE BACKFILL OPERATION COMPLETED.
3. SPRINKLER INSTALLATION
3.1. SPRINKLER HEADS SHALL BE OF THE TYPE AND MAKE SPECIFIED AND SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS. SPRINKLER HEADS SHALL BE INSTALLED WITH A MINIMUM 6" SPACE BETWEEN THE EDGE OF THE SPRINKLER HEAD AND CURBS, WALLS, DRIVEWAYS, BUILDING WALLS, ETC. HEADS SHALL BE INSTALLED IN THE VERTICAL POSITION AND BACKFILLED AND COMPACTED TO NFAR ORIGINAL DENSITY. ALL SPRINKLERS WILL BE INSTALLED ON A PREVIOUSLY APPROVED FLEX TYPE OR SWING TYPE RISER.
3.2. SPRINKLER HEAD SPACING SHALL NOT EXCEED THE MANUFACTURER'S RECOMMENDED SPACING AND SHALL BE IN THE LOCATION AND CONFIGURATION AS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL VERIFY TURF AREA DIMENSION WHILE STAKING SPRINKLER HEAD LOCATION. SPRINKLER HEADS SHALL BE SPACED TO ACHIEVE MAXIMUM UNIFORM COVERAGE.
3.3. AFTER ALL PIPING AND RISERS ARE IN PLACE AND CONNECTED AND BEFORE INSTALLATION OF THE SPRINKLER HEADS, ALL CONTROL VALVES FOR A GIVEN SECTION SHALL BE FULLY OPENED AND A FULL HEAD OF WATER SHALL BE USED TO FLUSH OUT THE SYSTEM. IF WATER PRESSURE WITHOUT THE HEADS INSTALLED IS NOT SUFFICIENT TO PROVIDE ADEQUATE WATER FLOW FROM END RISERS, THE CONTRACTOR SHALL CAP OFF ENOUGH HEADS CLOSEST TO THE WATER SOURCE TO PROVIDE ADEQUATE FLUSHING OF THE END RISER ASSEMBLIES.
4. BACKFILLING
4.1. DO NOT DIRECTLY BURY THE VALVES. INSTALL A VALVE BOX FOR EASY ACCESS TO VALVES. WAIT UNTIL YOU ARE BACKFILLING THE TRENCH TO SET THE VALVE BOX.
4.2. UPON COMPLETION OF A PARTICULAR SECTION OF THE IRRIGATION SYSTEM, AND AFTER SUFFICIENT TIME HAS ELAPSED FOR THE CURING OF SOLVENT WELDED JOINTS, PARTIAL BACKFILLING CAN BEGIN, LEAVING ALL JOINTS, RISERS AND CONNECTIONS EXPOSED FOR VISUAL INSPECTIONS DURING THE HYDROSTATIC TESTING. ONLY UPON SUCCESSFUL COMPLETION OF THE HYDROSTATIC TEST CAN THE BACKFILL OPERATION BE COMPLETED FOR ANY ONE PARTICULAR SECTION OF THE IRRIGATION SYSTEM.
4.3. BACKFILL MATERIAL SHALL BE FREE FROM ROCKS OR OTHER DEBRIS OVER ONE (1) INCH IN DIAMETER, BRUSH, SOD, FROZEN MATERIAL OR OTHER UNSUITABLE SUBSTANCES THAT MAY DAMAGE PIPE DURING THE BACKFILLING OPERATIONS.
4.4. IN THE EVENT THAT THE MATERIAL FROM THE EXCAVATION OR TRENCHING IS FOUND TO BE UNSUITABLE FOR USE IN BACKFILL, THE MATERIAL SHALL BE REMOVED FROM THE SITE AND PROPERLY DISPOSED. BACKFILLING SHALL BE STOPPED IMMEDIATELY. THE CONTRACTOR SHALL THEN, AT NO ADDITIONAL COST TO THE OWNER, ARRANGE FOR, PURCHASE, AND FURNISH SUITABLE BACKFILL MATERIAL CONSISTING OF FINE, LOAM, SANDY CLAY, SAND OR OTHER APPROVED MATERIALS FREE OF LARGE CLODS OF EARTH OR SHARP STONES AND CAPABLE OF ATTAINING THE SAME RELATIVE DENSITY OF THE SURROUNDING GROUND.
4.5. BACKFILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 6" IN DEPTH AND SHALL BE THOROUGHLY TAMPED, OR WATER COMPACTED TO NEAR ORIGINAL DENSITY OR SO THAT NO SETTLING WILL RESULT. BACKFILL SHALL BE PLACED TO THE ORIGINAL GROUND LEVEL. IF SETTLEMENT OF TRENCHES OCCURS WITHIN ONE (1) YEAR FROM DATE OF COMPLETION, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REFILL TRENCHES AND RE-SEED OR SOD THE REPAIRED AREAS.
5. TESTING
5.1. MAINLINE TEST
5.1.1. UPON COMPLETION OF THE IRRIGATION SYSTEM'S MAINLINE, THE ENTIRE MAINLINE SHALL BE TESTED FOR A ONE-HOUR PERIOD AT 100 PSI, OR THE MAXIMUM PSI AVAILABLE IF LESS THAN 100 PSI, UNLESS OTHERWISE NOTED. PRIOR TO TESTING, THE MAINLINE SHALL BE PARTIALLY BACKFILLED, LEAVING ALL JOINTS AND CONNECTIONS EXPOSED FOR VISUAL INSPECTION. ALL DIRT SHALL BE FLUSHED FROM THE SYSTEM AND THE LINE FILLED WITH WATER TO REMOVE AIR. THE MAINLINE SHALL BE BROUGHT TO SYSTEM OPERATING PRESSURE AND TEMPORARY VALVE SHALL BE INSTALLED AT THE END OF THE MAINLINE TO PERMIT AIR PRESSURE TO BE APPLIED TO THE MAIN. A PRESSURE OF 100 PSI, OR THE MAXIMUM PSI AVAILABLE IF LESS THAN 100 PSI, MUST BE RETAINED FOR A ONE-HOUR PERIOD. ANY LEAKS RESULTING IN THE ONE-HOUR PRESSURE TEST SHALL BE REPAIRED AND THE SYSTEM RETESTED UNTIL THE SYSTEM PASSES THE TEST.
5.2. LATERAL LINE TEST
5.2.1. UPON COMPLETION OF THE LATERAL PIPING SECTIONS, EACH LATERAL SYSTEM SHALL BE PRESSURE TESTED FOR ONE HOUR AT 100 PSI, OR THE MAXIMUM PSI AVAILABLE IF LESS THAN 100 PSI. ON SYSTEMS USING FLEX NIPPLES, OR SWING JOINTS, THE LATERAL SYSTEM SHALL BE BROUGHT TO INSTALLATION PRESSURE AND TEMPORARY VALVE OR SWING JOINTS. PRIOR TO TESTING, THE LATERAL LINES SHALL BE PARTIALLY BACKFILLED LEAVING JOINTS AND CONNECTIONS EXPOSED FOR VISUAL INSPECTION. ALL AIR AND DIRT SHALL BE FLUSHED FROM THE SYSTEM AND ALL OPEN FITTINGS SHALL BE CAPPED. THE TESTING PROCEDURE SHALL BE THE SAME AS USED FOR THE MAIN LINE. IF AFTER ONE HOUR OF TESTING AT 100 PSI, OR THE MAXIMUM PSI AVAILABLE IF LESS THAN 100 PSI, PRESSURE HAS BEEN RETAINED, THE SPRINKLER HEADS, FLEX NIPPLES AND/OR SWING JOINTS SHALL BE INSTALLED, AND THE BACKFILL OPERATION COMPLETED. ANY LEAKS RESULTING FROM THE HYDROSTATIC TEST SHALL BE REPAIRED AND THE SYSTEM RETESTED UNTIL THE SYSTEM PASSES THE TEST.
5.3. ADJUSTING SYSTEM
5.3.1. AFTER COMPLETION OF TESTING AND INSTALLATION, THE CONTRACTOR SHALL ADJUST ALL VALVES FOR THE PROPER OPERATING PRESSURE AND ADJUST ALL SPRINKLERS AND BUBBLERS FOR UNIFORM COVERAGE AND EVEN FLOW. CONTRACTOR SHALL WIRE THE CONTROLLER (VALVE/STATION) AS RECOMMENDED BY THE MANUFACTURER. THE VALVE NUMBER WILL BE INDICATED ON THE CONTROLLER PANEL. FOR EACH STATION, CONTRACTOR WILL PROGRAM CONTROLLER TO PROVIDE OPTIMUM SPRINKLER SYSTEM PERFORMANCE.
5.4. BACKFLOW PREVENTER TESTING
5.4.1. THE BACKFLOW PREVENTION DEVICE SHALL BE TESTED FOLLOWING INSTALL TO MEET OR EXCEED THE TEXAS STATE TESTING REQUIREMENTS, AND BE APPROVED BY A LICENSED BACKFLOW TECHNICIAN PRIOR TO FINAL ACCEPTANCE.
5.5. OPERATIONAL TESTING
5.5.1. ONCE THE MAINLINE AND THE LATERAL LINES HAVE PASSED THEIR TESTS, AND THE SYSTEM IS COMPLETELY OPERATIONAL, A COVERAGE TEST AND DEMONSTRATION OF THE SYSTEM IRRIGATION CONTRACTOR MUST FURNISH AND DEMONSTRATE TO THE OWNER, OR THE OWNER'S REPRESENTATIVE, THAT PROPER COVERAGE IS OBTAINED AND THE SYSTEM WORKS AUTOMATICALLY FROM THE CONTROLLER. THIS DEMONSTRATION REQUIRES EACH ZONE TO BE TURNED ON, IN THE PROPER SEQUENCE AS SHOWN ON THE PLANS, FROM THE CONTROLLER. EACH ZONE WILL BE INSPECTED FOR PROPER COVERAGE AND FUNCTION. THE DETERMINATION OF PROPER COVERAGE AND FUNCTION IS AT THE SOLE DISCRETION OF THE OWNER OR THE OWNER'S REPRESENTATIVE.
6. INSPECTION
6.1. THE FOLLOWING INSPECTIONS SHALL BE THE MINIMUM REQUIRED INSPECTIONS DURING THE COURSE OF CONSTRUCTION. ADDITIONAL INSPECTIONS SHALL BE MADE AT ANY TIME AT THE DISCRETION OF THE OWNER OR OWNER'S REPRESENTATIVE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE INSPECTOR, IN WRITING, 48 HOURS IN ADVANCE OF EACH REQUIRED INSPECTION. THE SEQUENCE OF REQUIRED INSPECTIONS SHALL NOT BE CHANGED FROM THE SEQUENCE LISTED BELOW. THE CONTRACTOR SHALL NOT PROCEED WITH WORK OF THE NEXT SEQUENCE UNTIL THE INSPECTOR HAS REVIEWED THE WORK OF PREVIOUS SEQUENCE. THE CONTRACTOR SHALL ATTACH A COPY OF THE WRITTEN INSPECTION APPROVALS TO ALL APPLICATIONS FOR PAYMENT.
6.1.1. INSPECT STAKED LOCATIONS OF MAINLINE, VALVES, LATERALS SPRINKLER HEADS.
6.1.2. INSPECT AND PRESSURE TEST MAINLINE INSTALLATION AND LATERAL LINES.
6.1.3. INSPECT AND PRESSURE TEST LATERAL LINES.
6.1.4. INSPECT AND PRESSURE TEST AUTOMATIC VALVES AND LATERAL IRRIGATION INSTALLATION.
6.1.5. INSPECT AUTOMATIC CONTROLLER INSTALLATION AND OPERATION.
6.1.6. INSPECT SPRINKLER AND BUBBLER HEAD PLACEMENT, COVERAGE AND OPERATING PRESSURE PRIOR TO TESTING.
6.1.7. INSPECT AT END OF MAINTENANCE PERIOD.
7. FINALIZATION
7.1. WHEN THE CONTRACTOR IS SATISFIED THAT THE SYSTEM IS OPERATING PROPERLY, THAT IT IS BALANCED AND ADJUSTED, THAT ALL WORK AND CLEAN-UP IS COMPLETED HE SHALL ISSUE NOTICE OF COMPLETION TO THE OWNER OR OWNER'S REPRESENTATIVE. REQUESTING A FINAL INSPECTION. THE OWNER OR OWNER'S REPRESENTATIVE WILL RESPOND TO THE NOTICE OF COMPLETION BY THE CONTRACTOR AND SHALL APPEAR AT THE AGREED UPON TIME. AT THAT TIME THE CONTRACTOR SHALL DEMONSTRATE THE OPERATION OF EACH SYSTEM IN ITS ENTIRETY. IN JUDGING THE WORK, NO ALLOWANCE FOR DEVIATION FROM THE ORIGINAL DRAWINGS AND SPECIFICATIONS WILL BE MADE UNLESS PRIOR APPROVAL HAS BEEN OBTAINED.
7.2. ANY INCONSISTENCY TO THE SPECIFICATIONS OR THE DRAWINGS SHALL BE NOTED BY THE OWNER OR OWNER'S REPRESENTATIVE, AND A WRITTEN COPY OF REQUIRED CORRECTIONS SHALL BE GIVEN TO THE CONTRACTOR. ANY WORK DEEMED NOT ACCEPTABLE SHALL BE REWORKED TO THE COMPLETE SATISFACTION OF THE OWNER OR OWNERS REPRESENTATIVE.

IRRIGATION NOTES (CONT.)

- 8. OPERATIONAL INSTRUCTION
8.1. AFTER THE SYSTEM HAS BEEN TESTED AND ACCEPTED, THE CONTRACTOR SHALL INSTRUCT THE OWNER OR OWNER'S REPRESENTATIVE IN THE OPERATION AND MAINTENANCE OF THE SYSTEM.
8.2. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH TWO (2) KEYS FOR THE FOLLOWING:
1.2.1. GLOBE OR BALL VALVES.
1.2.2. VALVE BOXES.
1.2.3. VALVE MARKERS.
1.2.4. CONTROLLERS.
1.2.5. ANY LOCKING ASSEMBLIES IN NEED OF KEY ACCESS.
8.3. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH TWO COPIES OF A MAINTENANCE MANUAL. THE MAINTENANCE MANUAL SHALL INCLUDE COPIES OF THE APPROVAL SUBMITTALS, CONTROLLER OPERATIONS MANUALS AND MANUFACTURERS WARRANTIES ON ALL IRRIGATION PRODUCTS.
9. CLEAN UP
9.1. THE CONTRACTOR SHALL CONTINUOUSLY KEEP A NEAT AND ORDERLY AREA IN WHICH THEY ARE INSTALLING THE SYSTEM. DISPOSAL OF RUBBISH AND WASTE MATERIAL RESULTING FROM THE INSTALLATION SHALL BE CONTINUAL. UPON COMPLETION OF THE SYSTEM, THE CONTRACTOR SHALL REMOVE FROM THE OWNER'S PROPERTY AT HIS OWN EXPENSE, ALL TEMPORARY STRUCTURES, RUBBISH WASTE MATERIAL, TOOLS AND EQUIPMENT RESULTING FROM OR USED IN THE INSTALLATION OF THE SYSTEM. EXISTING LANDSCAPED AND HARDSCAPED AREAS THAT ARE DAMAGED AS A RESULT OF THE INSTALLATION OF THE IRRIGATION SYSTEM WILL BE REPAIRED BY THE CONTRACTOR TO ORIGINAL CONDITION. TURF AREAS DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES WILL BE REPLACED WITH SOD.
10. GUARANTEE
10.1. FOR A PERIOD OF ONE (1) YEAR FROM FINAL ACCEPTANCE OF THE SYSTEM, THE CONTRACTOR WILL PROMPTLY FURNISH AND INSTALL, WITHOUT COST TO OWNER, ANY AND ALL PARTS OR MATERIALS, WHICH PROVE DEFECTIVE IN MATERIAL OR WORKMANSHIP. DAMAGE DUE TO IRRIGATION SYSTEM LINE BREAKS SHALL BE REPAIRED AND BROUGHT TO ORIGINAL CONDITION BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER.
10.2. FOR A PERIOD OF ONE (1) YEAR FROM FINAL ACCEPTANCE OF THE SYSTEM, THE CONTRACTOR SHALL REPAIR ANY SETTLEMENT OF TRENCHES BY ONE OF THE FOLLOWING METHODS:
10.2.1. BRING TO GRADE BY TOP-DRESSING (RAKING TOPSOIL INTO THE GRASS).
10.2.2. BRING TO GRADE WITH TOPSOIL AND SEED.
10.2.3. REMOVE EXISTING SOD, FILL DEPRESSION WITH TOPSOIL, AND REPLACE WITH NEW SOD TO MATCH EXISTING SOD.
10.2.4. REPAIR BY ANY OF THE ABOVE METHODS MUST RESULT IN A SMOOTH, LEVEL AREA. MAINTENANCE OF REPAIRED AREAS SHALL BE THE RESPONSIBILITY OF THE OWNER.



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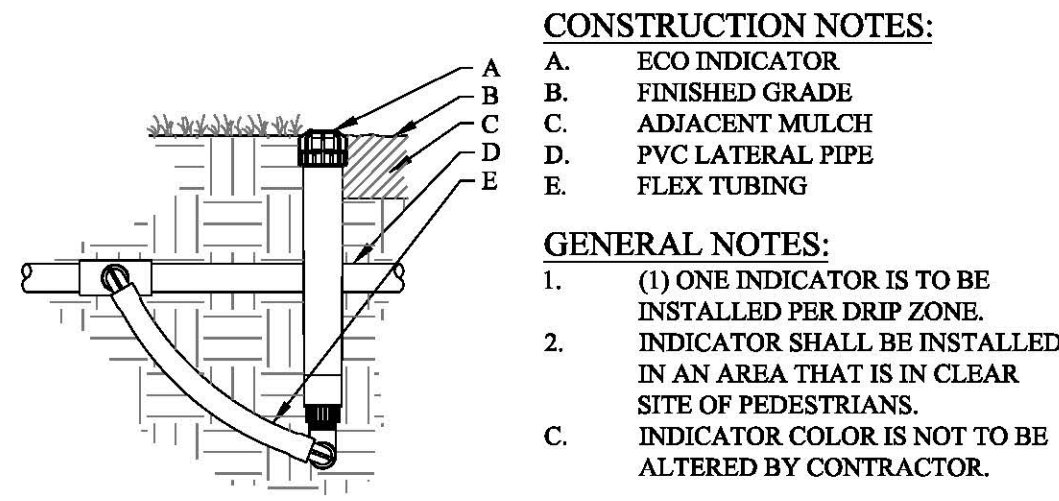
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LANDSCAPE DEVELOPMENT

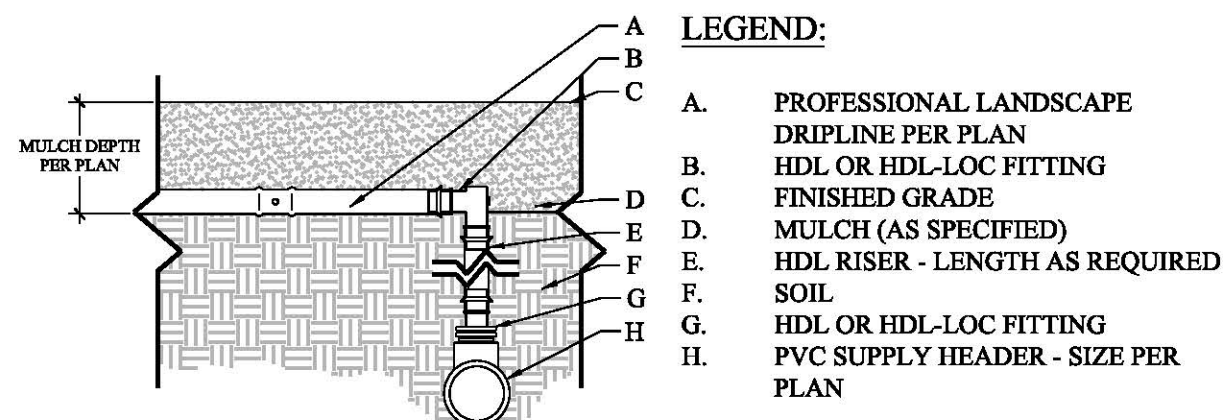
Irrigation Notes

Tomball Business and Technology Park

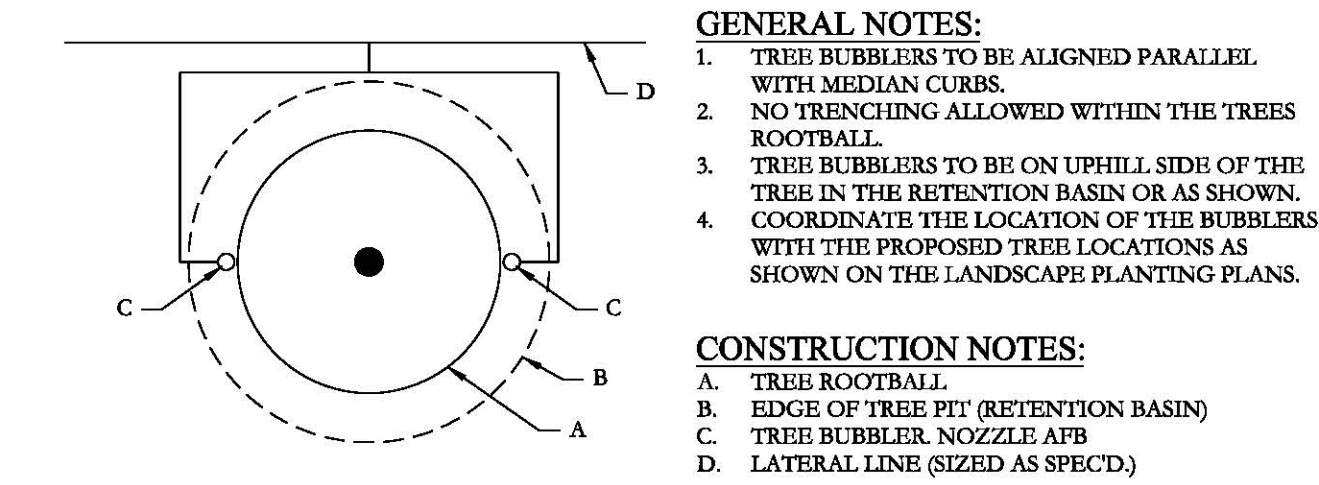
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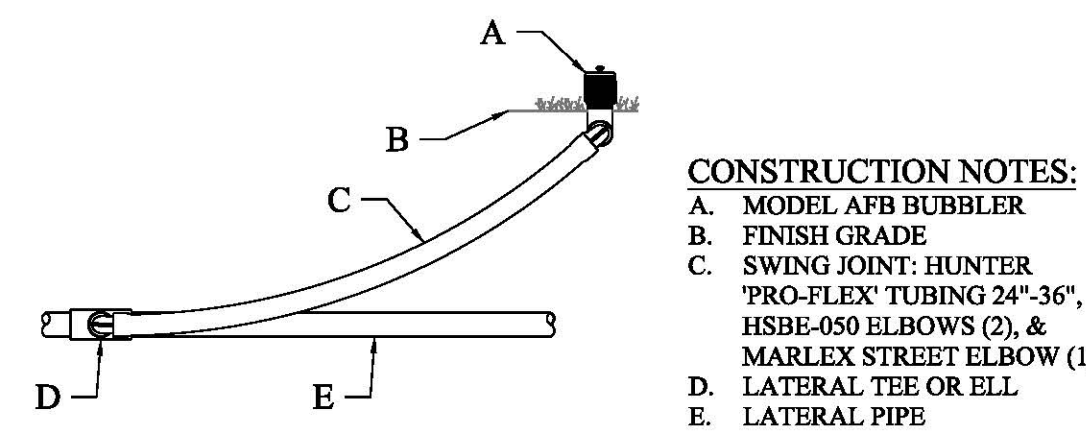
16 ECO INDICATOR - FLEX TUBING
NOT TO SCALE



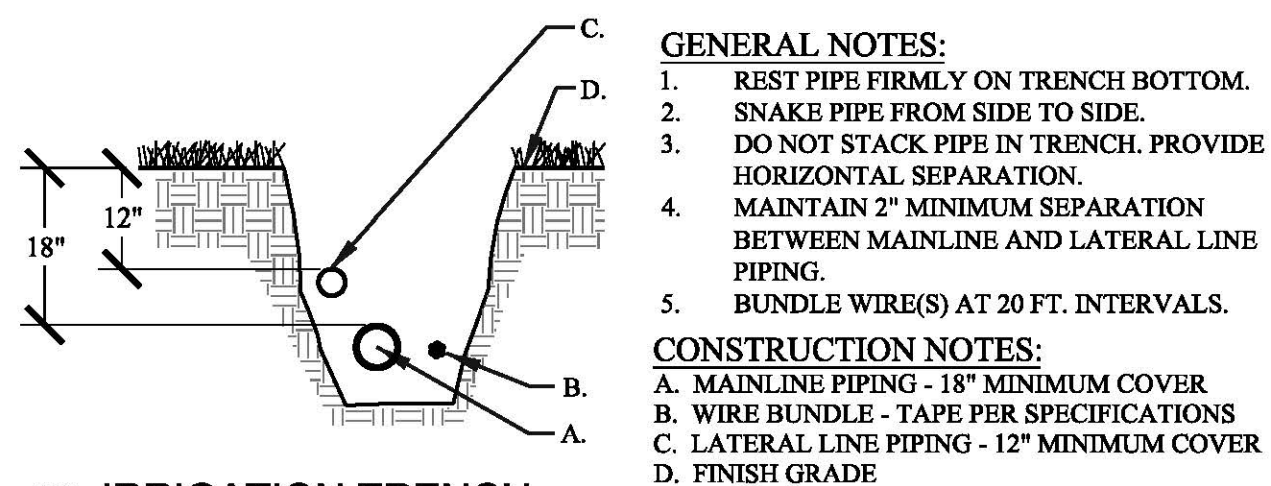
15 CONNECTION W/ DRIPLINE ELBOW
LANDSCAPE DRIPLINE NOT TO SCALE



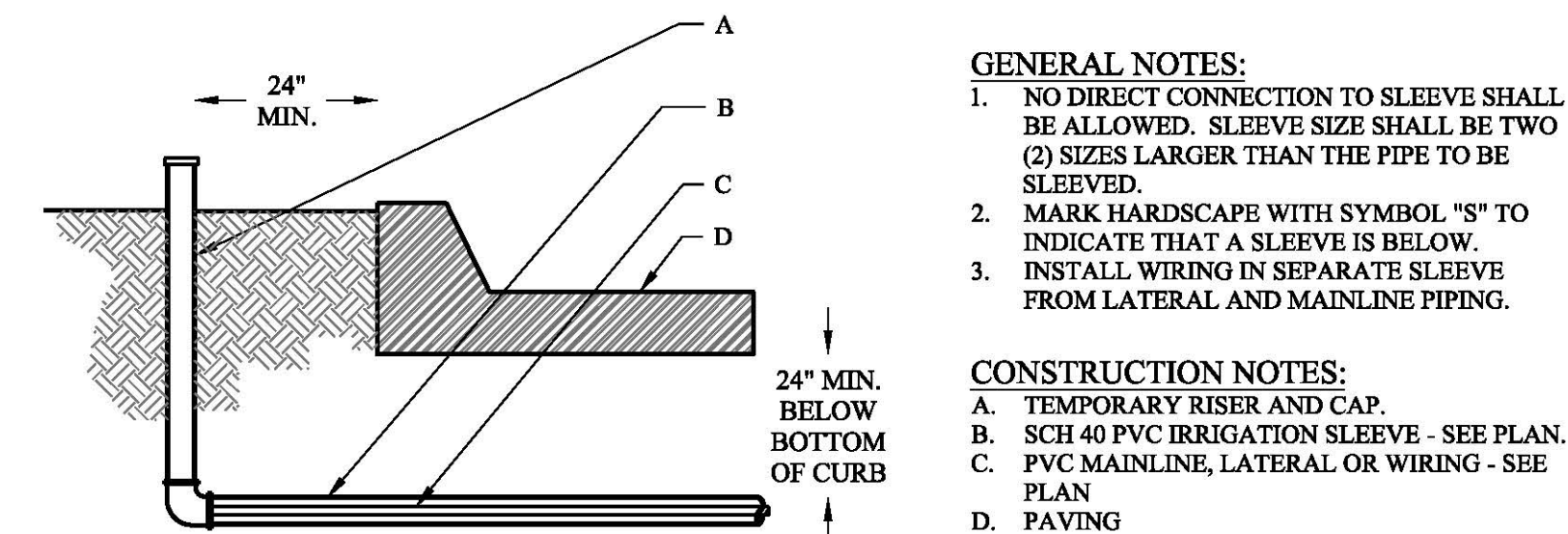
14 TREE BUBBLER PLAN
NOT TO SCALE



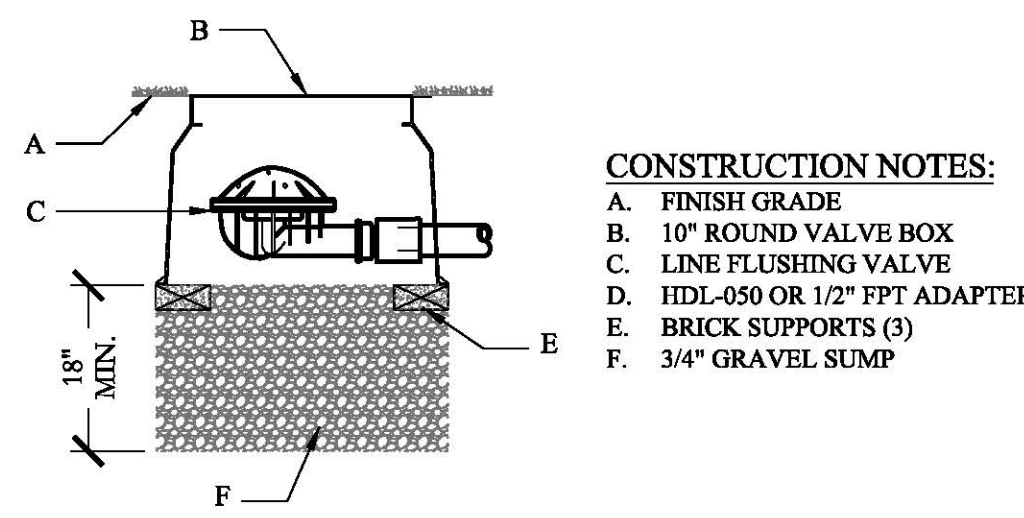
13 AFB BUBBLER
NOT TO SCALE



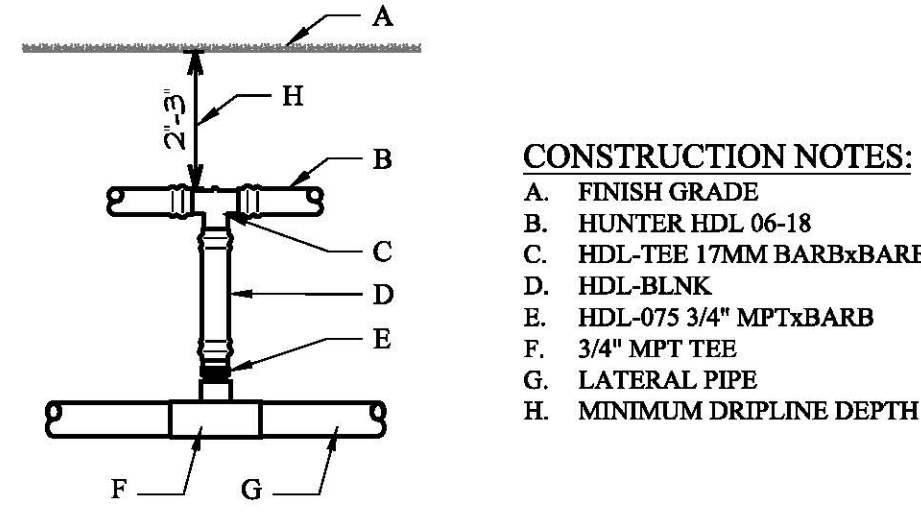
12 IRRIGATION TRENCH
NOT TO SCALE



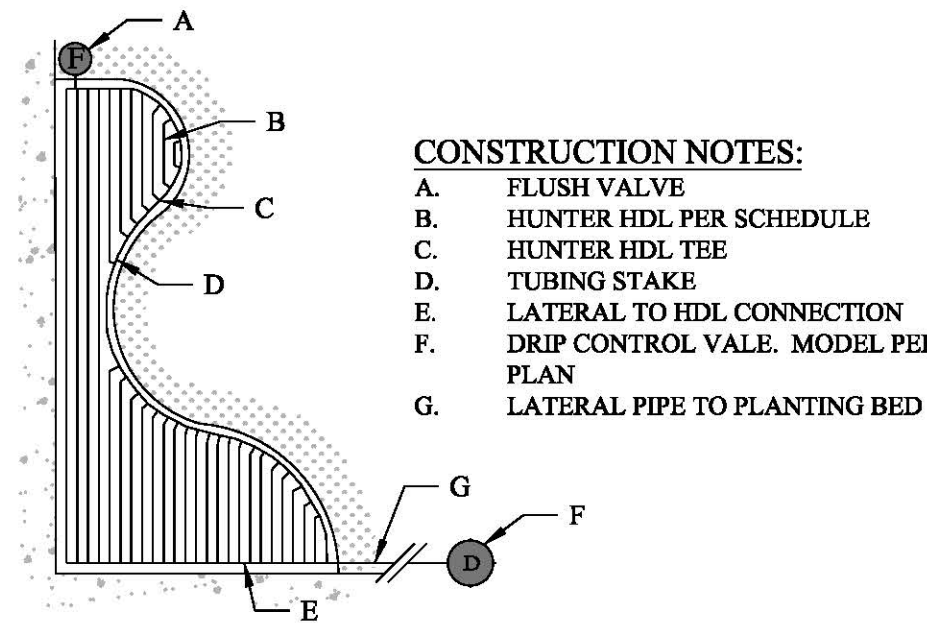
11 IRRIGATION SLEEVES
NOT TO SCALE



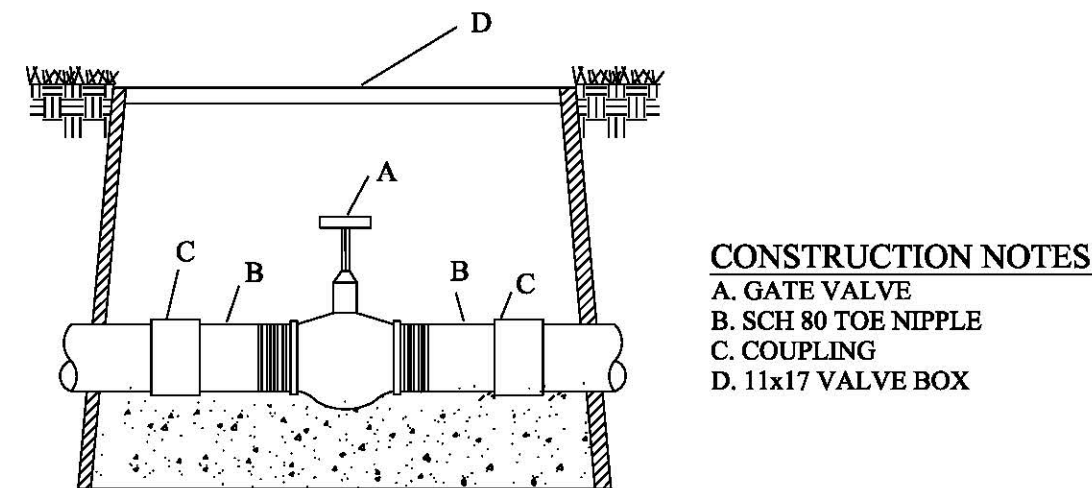
10 DRIP IRRIGATION - FLUSH VALVE
NOT TO SCALE



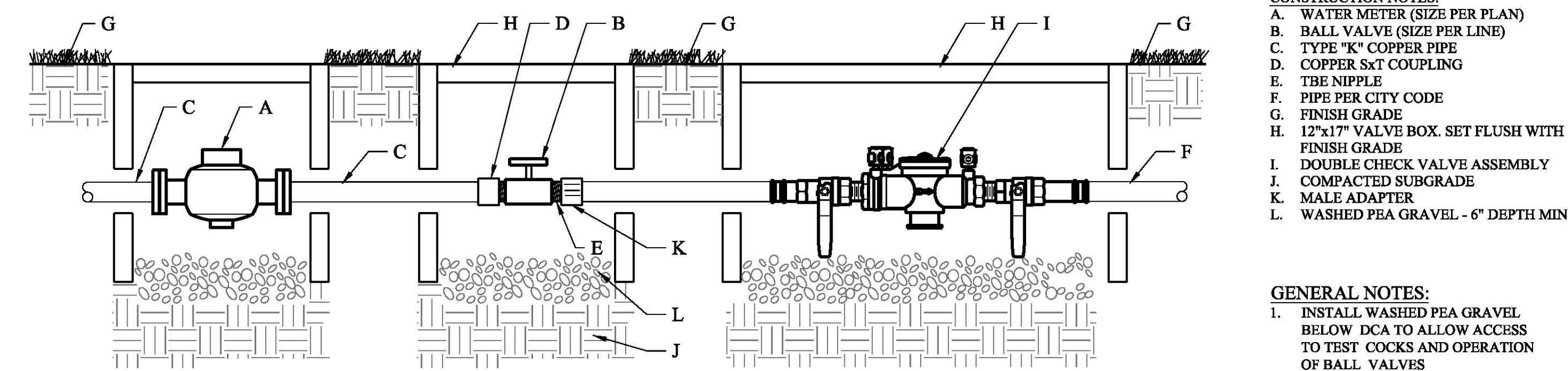
9 BELOW GRADE START CONNECTION
NOT TO SCALE



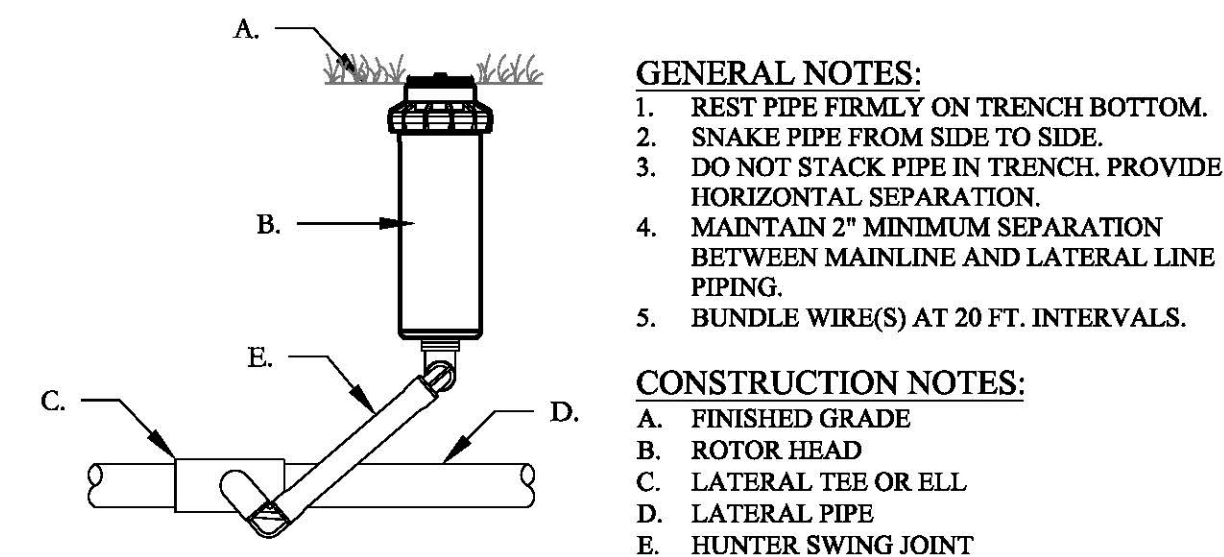
8 DRIP IRRIGATION - BED
NOT TO SCALE



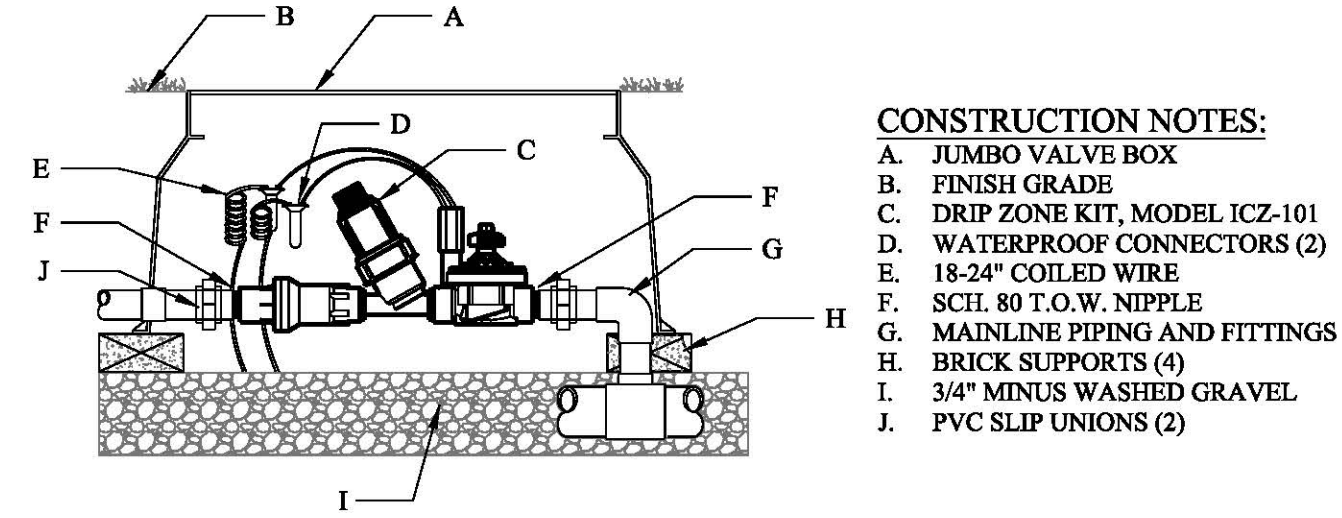
7 GATE VALVE
NOT TO SCALE



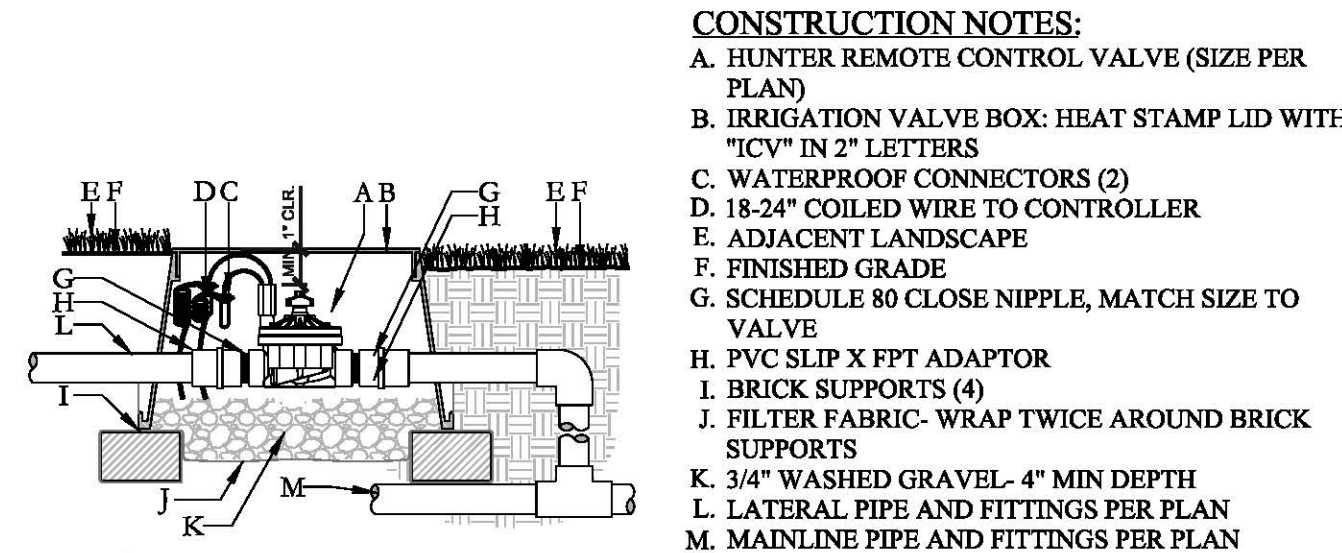
6 BACKFLOW PREVENTER CONNECTION
NOT TO SCALE



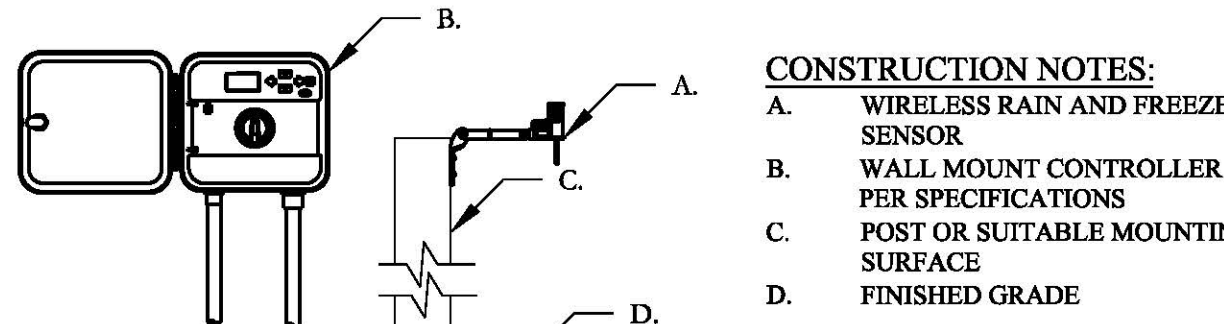
5 ROTOR HEAD
NOT TO SCALE



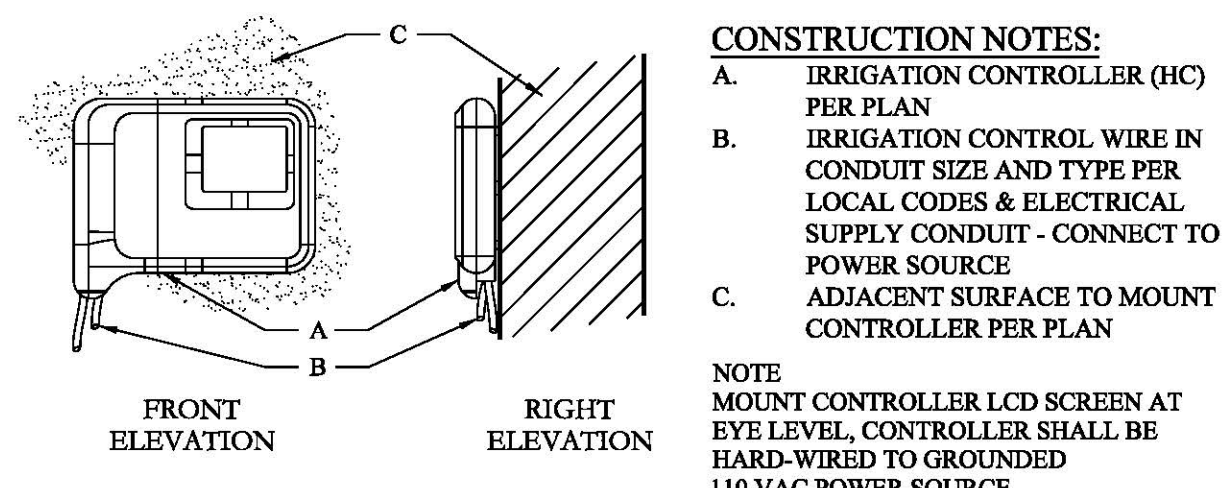
4 DRIP CONTROL ZONE VALVE
NOT TO SCALE



3 ICV IN-LINE VALVE
(SIZE PER PLAN) NOT TO SCALE



2 WIRELESS RAIN AND FREEZE CLIK
NOT TO SCALE



1 HC CONTROLLER
NOT TO SCALE

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