REVIEW BY FORT BEND COUNTY COMMISSIONERS COURT

On this 23rd day of February, 2016, Commissioners Court came on to be heard and reviewed the accompanying notice
of Jaho, Inc.
Job Location 18340 University Blvd, Sugar Land, TX 77479
Date 2/11/2016 Bond No. LPM9204965, Permit No. 2016-5519 to make use of certain Fort Bend County property subject to, "A Revised Order Regulating the Laying, Construction, Maintenance, and Repair of Buried Cables, Conduits, and Pole Lines, In, Under, Across or Along Roads, Streets, Highways, and Drainage Ditches in Fort Bend County, Texas, Under the Jurisdiction of the Commissioners Court of Fort Bend County, Texas," as passed by the Commissioners Court of Fort Bend County, Texas the 3rd day of August, 1987, recorded in Volume _____ of the Minutes of the Commissioners Court of Fort Bend County, Texas, to the extent that such order is not inconsistent with Article 1436a, Vernon's Texas Civil Statutes. Upon Motion of Commissioner Meyers, seconded by Commissioner Morrison, duly put and carried, it is ORDERED, ADJUDGED AND DECREED that said notice of said above purpose is hereby acknowledged by the Commissioners Court of Fort Bend County, Texas, and that said notice be placed on record according to the regulation order thereof.

Notes:

1. Evidence of review by the Commissioners Court must be kept on the job site and failure to do so constitutes grounds for job shutdown.
2. Written notices are required:
    a. 48 hours in advance of construction start up, and
    b. when construction is completed and ready for final inspection

    Mail notices to: Permit Administrator
    Fort Bend County Engineering
    301 Jackson Street
    Richmond, Texas 77469
    281-633-7500
3. This permit expires one (1) year from date of permit if construction has not commenced.

By: Charles O. Dy for
County Engineer

By: N/A
Drainage District Engineer/Manager

Presented to Commissioners Court and approved.
Recorded in Volume 2-23-16 - 13T
Minutes of Commissioners Court

Clerk of Commissioners Court
By: Linda White
Deputy

County of Fort Bend

Engineering Department

301 Jackson Street
Richmond, Texas 77469

Johnny Ortega
Permit Administrator

Phone: (281) 633-7500

Permit Application Review Form For
Cable, Conduit, and Pole Line Activity
In Fort Bend County

Permit No. 2016-5519

The following "Notice of Proposed Cable, Conduit, and/or Pole Line activity in Fort Bend County" and accompanying attachments have been reviewed and the notice conforms to appropriate regulations set by Commissioner's Court of Fort Bend County, Texas.

X (1) Complete Application Form:

- X a. Name of road, street, and/or drainage ditch affected.
- X b. Vicinity map showing course of directions
- X c. Plans and specifications

X (2) Bond:

District Attorney, approval when applicable.

X Perpetual bond currently posted.

No: LPM9204965

Amount: $5,000.00

Performance bond submitted.

No:

Amount:

Cashier's Check

No:

Amount:

(3) Verbal permission given for emergencies, to start construction before approved in Commissioner's Court.

Precinct Engineer Acknowledgment — Date

Precinct Commissioner Acknowledgment — Date

(4)

Drainage District Approval when applicable

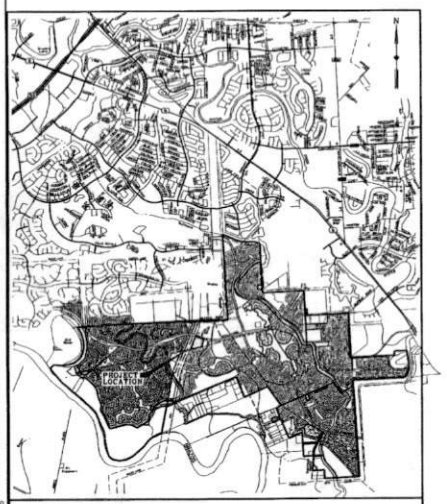
We have reviewed this project and agree it meets minimum requirements.

Johny Ortega CFM

Johnny Ortega CFM/Permit Administrator

2/11/2016
Date

CONSTRUCTION PLANS
FOR
WATER, SEWER, DRAINAGE & PAVING IMPROVEMENTS
FOR
THE VILLAS AT RIVERSTONE
FORT BEND COUNTY MUD No. 128
FORT BEND COUNTY, TEXAS



VICINITY MAP
N.T.S.

GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER
8/18/15

APPROVAL BY THE CITY OF SUGAR LAND WILL BE DEEMED VOID IF CONSTRUCTION HAS NOT BEGUN WITHIN ONE YEAR OF APPROVAL DATE.

CONTRACTOR SHALL NOTIFY THE CITY OF SUGAR LAND AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF WORK.

NO CONSTRUCTION SHALL BEGIN UNTIL COVER SHEET IS SIGNED.

CITY OF SUGAR LAND
APPROVED
DATE 10/12/15

FORT BEND COUNTY ENGINEER
ENGINEER: For County Engineer
DATE: 10/29/15
THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN ONE (1) YEAR FROM THE DATE OF APPROVAL.
APPROVED: DEVELOPMENT COORDINATOR
DATE: 10-16-15

811 Know what's below. Call before you dig.

Costello

Engineering and Surveying
9990 Richmond Avenue, Suite 450 N
Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax
TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

JOB NO. 2015062-02.03

DATE: AUGUST 2015

CONTACT NUMBERS

CITY OF SUGAR LAND - ENGINEERING DEPT	281-275-2700
F.B.C. M.U.D. No. 128 - OPERATOR - SI ENVIRONMENTAL	832-490-1500
F.B.C. M.U.D. No. 128 - ENGINEER - COSTELLO, Inc.	713-783-7788
FORT BEND COUNTY DRAINAGE DISTRICT	281-342-2863

INDEX OF DRAWINGS

P:\Riverstone\THE VILLAS_TR 706\DGN\VILLAS COVER.dgn
8/18/2015

THE VILLAS AT RIVERSTONE - JOB NO. 2015062-02.03
F.B.C. M.U.D. NO. 128

GENERAL NOTES

1. CONTRACTOR SHALL CONTACT THE CITY OF SUGAR LAND ENGINEERING DEPT. (281-275-2780), FORT BEND COUNTY ENGINEERING (CONSTRUCTION@FORTBENDCOUNTYTX.GOV), AND MR. CHAD HABLINSKI (713-783-7788) 48 HOURS PRIOR TO THE START OF ANY CONSTRUCTION.

2. CONTRACTOR SHALL GIVE COSTELLO, INC. (713-783-7788), THREE (3) WORKING DAYS NOTICE FOR CONSTRUCTION CONTROL STAKING, AND 48 HOURS NOTICE IN ADVANCE OF BEGINNING CONSTRUCTION.

3. CONTRACTOR SHALL CONTACT THE FOLLOWING 72 HOURS PRIOR TO ANY WORK ON EXISTING WATER LINES: SIENVIRONMENTAL (832-490-1500).

4. ALL UNSATISFACTORY AND/OR WASTE MATERIALS INCLUDING STRIPPINGS, VEGETATION, ROOTS, CONCRETE, DEBRIS AND EXCESS EXCAVATION SHALL BE HAULED OFF SITE BY THE CONTRACTOR. INCLUDE COST OF THIS WORK, INCLUDING HAUL, IN OTHER ITEMS OF THIS PROJECT. ALL TREES ARE NOT INDICATED ON THE CONSTRUCTION PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE SITE AND DETERMINE THE EXTENT OF TREE REMOVAL REQUIRED.

5. CONTRACTOR SHALL MAINTAIN ADEQUATE DRAINAGE AT ALL TIMES DURING CONSTRUCTION OF PROPOSED IMPROVEMENTS.

6. EXISTING UTILITIES ARE INDICATED IN AN APPROXIMATE MANNER ONLY. ALL EXISTING UTILITIES MAY NOT BE INDICATED. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENTS PRIOR TO CONSTRUCTION OF PROPOSED IMPROVEMENTS. CONTRACTOR SHALL NOTIFY UTILITIES 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONTACT TEXAS ONE- CALL (811)

7. ALL EXISTING LANDSCAPING IRRIGATION, SIDEWALKS, FENCES, UTILITIES AND OTHER EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION WILL BE REPLACED OR REPAIRED TO THEIR ORIGINAL CONDITION BY THE CONTRACTOR AT HIS EXPENSE.

8. ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE CITY OF SUGAR LAND, FORT BEND COUNTY, THE ENGINEER AND THE OWNER.

9. MANHOLE RIM ELEVATIONS SHOWN ON THE PLANS ARE APPROXIMATE. ALL FINAL MANHOLE RIM ELEVATIONS ARE TO BE SET AT 4-INCHES ABOVE FINISHED GRADE IN STREET R.O.W. AND 6" ABOVE NATURAL GROUND WITHIN EASEMENTS. ALL EXISTING MANHOLES WITHIN OR ADJACENT TO THE PROJECT ARE TO BE ADJUSTED TO 4-INCHES ABOVE FINISHED GRADE AFTER FINAL GRADING IS COMPLETE. THIS NOTE SHALL GOVERN SHOULD A CONFLICT ARISE WITH THE ELEVATIONS ON THE PLAN AND PROFILE SHEETS.

10. MAINTAIN A MINIMUM OF 6-INCHES OF CLEARANCE BETWEEN ALL UTILITIES EXCEPT WATER AND SANITARY. WATER AND SANITARY CLEARANCE SHALL BE A MINIMUM OF 12-INCHES.

11. INCLUDE PRICE OF ALL BEDDING AND BACKFILL REQUIRED FOR WATER LINES, SANITARY SEWERS AND STORM SEWERS IN PRICE BID PER LINEAR FOOT OF PIPE.

12. UPON PROJECT COMPLETION AND PRIOR TO FINAL RELEASE OF RETAINAGE, CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF SECTION 01710 "PROJECT RECORD DOCUMENTS" OF THE CONTRACT.

13. DELIVERY TICKETS FOR ALL MATERIALS (E.G., CONCRETE, CEMENT STABILIZED SAND, ETC.) SHALL BE MAINTAINED BY THE CONTRACTOR AND UPON WRITTEN REQUEST, BE MADE AVAILABLE FOR REVIEW BY THE ENGINEER.

14. PRIOR TO FINAL RELEASE OF RETAINAGE, THE CONTRACTOR SHALL PROVIDE A NOTARIZED CERTIFICATION THAT ALL MATERIALS INSTALLED IN THE PROJECT ARE COMPLETE IN PLACE IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS.

15. ALL WATER, SANITARY AND STORM SEWER STUBS ARE TO BE MARKED IN ACCORDANCE WITH THE CITY OF SUGAR LAND DESIGN STANDARD. (SEE DETAIL SHEET).

16. THE CONTRACTOR SHALL CONFINE ALL WORK EFFORTS WITHIN THE DESIGNATED PLAT AREA UNLESS SPECIFICALLY AUTHORIZED BY OWNER. EXTREME CARE SHOULD BE EXERCISED NEAR ADJACENT PROPERTY TO PROTECT ANY EXISTING TREES AND PROPERTY. ONLY THOSE TREES DIRECTLY IN THE PATH OF PAVING OR UTILITIES SHOULD BE CONSIDERED FOR REMOVAL. ONCE CONSTRUCTION STAKING IS COMPLETE, COORDINATE WITH THE OWNER AND THE INSPECTOR TO DETERMINE WHICH TREES, IF ANY, ARE TO BE SAVED. REFERENCE THE TECHNICAL SPECIFICATIONS FOR DAMAGES.

17. ANY CONSTRUCTION WHICH HINDERS TRAFFIC OR REQUIRES TRAFFIC DIVERSION SHALL BE IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. INCLUDE FLAGMEN AS REQUIRED TO CONTROL TRAFFIC FOR MATERIAL AND OR EQUIPMENT DELIVERIES. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING AND OBTAINING CITY OF SUGAR LAND APPROVAL FOR ALL TRAFFIC CONTROL PRIOR TO IMPLEMENTING SAME.

18. THE CONTRACTOR SHALL NOTIFY THE CITY OF SUGAR LAND ENGINEERING DEPARTMENT AND THE ENGINEER IMMEDIATELY IF UNSTABLE SOILS ARE ENCOUNTERED.

19. PRIOR TO EXCAVATION, THE CONTRACTOR SHALL STRIP THE VEGETATION IN ALL AREAS WHERE EXCAVATION IS TO BE PERFORMED, WHERE EXCAVATED MATERIAL IS TO BE PLACED, OR IN ANY LOCATION WHERE CONSTRUCTION MACHINES OR TRUCKS ARE TO BE OPERATING. ALL AREAS PROPOSED TO BE DISTURBED IN ANY FASHION ARE TO BE STRIPPED. STRIPPING IS DEFINED AS THE REMOVAL OF ALL GRASS AND THE ORGANIC ZONE.

20. ALL EXCESS EXCAVATION SHALL BE EVENLY SPREAD AND COMPACTED ON THE PROJECT ON PROPERLY STRIPPED GROUND BY THE CONTRACTOR. ALL SUCH EXCESS EXCAVATED MATERIAL SHALL BE GRADED SMOOTH. INCLUDE THE COSTS FOR THE WORK IN THE CLEARING AND GRUBBING BID ITEM UPON COMPLETION OF UTILITIES. STRIPPINGS SHALL BE SPREAD AND GRADED SMOOTH, IF DIRECTED BY THE ENGINEER (NO SEPARATE PAY).

21. THE CONTRACTOR SHALL CONTACT THE DISTRICT OPERATOR TO ARRANGE FOR THE PURCHASE OF ANY WATER NEEDED FOR CONSTRUCTION. UNAUTHORIZED (UNMETERED) TAPS OF PUBLIC WATER LINE SHALL RESULT IN A DAILY FINE IN ACCORDANCE WITH THE DISTRICT RATE ORDER.

22. THERE WILL BE NO SEPARATE PAYMENT FOR WORK SHOWN ON THESE DRAWINGS UNLESS SPECIFICALLY ESTABLISHED IN THE CONTRACT BID DOCUMENTS.

23. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FROM THE CITY OF SUGAR LAND AND FORT BEND COUNTY.

24. THE UTILITY CONTRACTOR AND PAVING CONTRACTOR SHALL EXECUTE THE REQUIRED POLLUTION PREVENTION PLAN (PPP) AND NOTICE OF INTENT FORM (NOI) FOR THIS PROJECT AND BE RESPONSIBLE FOR CONSTRUCTING AND MAINTAINING ITEMS IDENTIFIED IN THE PPP, AS THE FIRST ITEM OF WORK. THE CONTRACTOR SHALL ERECT ALL PERIMETER SILT FENCES INDICATED ON THE PPP. THE CONTRACTOR SHALL CONSTRUCT INLET PROTECTION BARRIERS AROUND ALL INLETS AS PER PPP AS INLETS ARE CONSTRUCTED.

25. REFERENCE IS MADE IN SUBSEQUENT NOTES AND DETAILS REGARDING THE PLACEMENT OF CEMENT STABILIZED SAND UNDER OR WITHIN 3 FEET OF EXISTING PAVEMENT. BY DEFINITION, THIS MEANS ALL AREAS BENEATH OR WITHIN 3 FEET OF PAVEMENT IN ADDITION TO A LINE STARTING AT 3 FEET FROM PAVEMENT AND EXTENDING AWAY FROM THE PAVEMENT ON A DOWNWARD SLOPE OF ONE FOOT HORIZONTAL TO ONE FOOT VERTICAL.

26. THESE PLANS, PREPARED BY COSTELLO, INC., DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE REGISTERED PROFESSIONAL ENGINEER(S) HEREON DOES NOT EXTEND TO ANY SUCH SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED IN THESE PLANS. THE CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS, INCLUDING THE PLANS AND SPECIFICATIONS REQUIRED BY THE HOUSE BILLS 652 AND 665 ENACTED BY THE TEXAS LEGISLATURE IN THE 70TH LEGISLATURE REGULAR SESSION AND CURRENT OSHA STANDARDS FOR TRENCH SAFETY. DESIGN OF TRENCH SAFETY SYSTEMS, SEALED BY A LICENSED PROFESSIONAL ENGINEER, SHALL BE ACQUIRED BY THE CONTRACTOR PRIOR TO EXECUTION OF THIS WORK.

Continuation of General notes

27. THE CONTRACTOR SHALL COORDINATE WITH THE SOILS LABORATORY AND DIG TEST HOLES TO OBTAIN PROCTOR PRIOR TO COMMENCING WORK (NO SEPARATE PAY).

28. CONTRACTOR SHALL UNCOVER EXISTING UTILITIES AT ALL POINTS OF CROSSING OR CONNECTION TO DETERMINE IF CONFLICTS EXIST BEFORE COMMENCING ANY CONSTRUCTION. NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICT.

29. ALL CONTRACTOR VEHICLES, INCLUDING EMPLOYEE'S VEHICLES, SHALL PARK WITHIN THE PROJECT SITE TO MINIMIZE TRAFFIC ON THE PUBLIC STREETS ADJACENT TO THE WORK SITE ENTRANCE. CONTRACTOR WILL PROVIDE SUFFICIENT PARKING AREAS TO ACCOMMODATE HIS VEHICLES. ANY AREAS DISTURBED OR DESTROYED BY VEHICULAR PARKING WILL BE REPAIRED TO ORIGINAL CONDITION PRIOR TO COMPLETION OF THE PROJECT. NO SEPARATE PAYMENT WILL BE MADE FOR THIS ITEM.

30. IF SITE CONDITIONS ARE MUDDY, THE CONTRACTOR SHALL MAINTAIN A VEHICLE WASHDOWN AREA OF SUFFICIENT SIZE AND IN A LOCATION TO FACILITATE CLEANING ALL CONSTRUCTION VEHICLES PRIOR TO LEAVING THE WORK SITE. CONTRACTOR SHALL PROVIDE THE NECESSARY EQUIPMENT, INCLUDING WATER AND DRAINAGE, TO WASH VEHICLES. VEHICLE WASHDOWN AREA WILL BE PROVIDED DURING RAINY OR MUDDY CONDITIONS FOR THE DURATION OF THE CONTRACT. ALL WASHDOWN WATER FROM SUCH AN OPERATION SHALL NOT ENTER THE STORM SEWER SYSTEM WITHOUT SUCH ENTRANCE LOCATION BEING PROTECTED BY AN APPROPRIATE SILT PROTECTION DEVICE. CONTRACTOR SHALL, ON A DAILY BASIS, CLEAN ALL STREETS IN THE VICINITY OF THE WORK SITE ENTRANCE TO ENSURE THAT NO DIRT FROM THE PROJECT ACCUMULATES IN THE EXISTING STREETS. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK. A PENALTY WILL BE ASSESSED IN ACCORDANCE WITH THE CONTRACT FOR EACH DAY STREETS ARE LEFT UNCLEANED. ALL WORK ASSOCIATED WITH THIS NOTE SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS WORK ITEMS.

31. THE CONTRACTOR SHALL NOT OPERATE EXISTING WATER LINE VALVES UNLESS NECESSITATED BY EMERGENCY. ALL EXISTING WATER LINE VALVES MUST BE OPERATED BY THE DISTRICT OPERATOR.

32. BORE PITS SHALL BE LOCATED NO CLOSER THAN 5-FEET FROM AN EXISTING BACK OF CURB UNDER ANY CIRCUMSTANCE.

33. ALL MATERIALS INSTALLED ON THIS PROJECT MUST COMPLY WITH THE CITY OF SUGAR LAND APPROVED PRODUCT LIST.

34. ALL EXISTING DITCHES PROPOSED FOR FILL (OR THOSE FILLED DURING THE COURSE OF THE PROJECT) SHALL BE COMPLETELY STRIPPED (A MINIMUM OF 6-INCHES) AND MUCKED OUT IN THE PRESENCE OF THE SOILS LABORATORY. REMOVED MATERIAL (STRIPPING AND MUCKING) SHALL BE TEMPORARILY STOCKPILED AND GRADED TO DRAIN. ALL SOIL TO FILL EXISTING DITCHES SHALL BE OBTAINED FROM EXCESS EXCAVATION. ALL FILL SHALL BE PLACED IN MAXIMUM 8-INCH LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR MAXIMUM DRY DENSITY AT +/- 2 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D598. PAYMENT FOR ALL WORK ASSOCIATED WITH THE FILLING OF EXISTING DITCHES SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS BID ITEMS.

35. IN AREAS WHERE THE COVER BETWEEN THE TOP OF A WATER LINE, SANITARY OR STORM SEWER IS LESS THAN THREE (3) FEET, THE UTILITY CONTRACTOR SHALL PLACE ADDITIONAL COMPACTED SOIL OVER THE PIPE AS REQUIRED TO PROVIDE A MINIMUM COVER OF THREE (3) FEET.

36. THE UTILITY CONTRACTOR AND PAVING CONTRACTOR SHALL PERFORM A SITE INSPECTION AT THE END OF THE INITIAL PHASE OF UTILITY CONSTRUCTION AND PRIOR TO PAVING OPERATIONS. THE UTILITY CONTRACTOR SHALL CLEARLY MARK ABOVE GROUND UTILITIES PRIOR TO WALK-THRU WITH PAVING CONTRACTOR. THE UTILITY CONTRACTOR SHALL CORRECT ANY DEFICIENCIES FOUND DURING THE WALK-THRU AND ALL PIPES SHALL BE THOROUGHLY CLEAN. SUCH CORRECTIONS AND CLEANLINESS MUST BE VERIFIED BY THE ENGINEER'S RESIDENT PROJECT REPRESENTATIVE. ANY ITEMS NOT CORRECTED BY UTILITY CONTRACTOR (AND NOT VERIFIED BY ENGINEER'S REPRESENTATIVE) PRIOR TO PAVEMENT CONSTRUCTION SHALL BE RESPONSIBILITY OF THE UTILITY CONTRACTOR TO REPAIR AT THE END OF THE JOB. THE PAVING CONTRACTOR SHALL PROVIDE ANY OBJECTIONS TO UTILITY CONTRACTOR DEFICIENCIES OR CLEANLINESS IN WRITING TO ENGINEER PRIOR TO BEGINNING PAVEMENT WORK. WITHOUT SUCH DOCUMENTATION, ANY DEFICIENCIES LATER IDENTIFIED SHALL BE THE OBLIGATION OF THE PAVING CONTRACTOR TO REPAIR.

37. THE RESPECTIVE CONTRACTOR (UTILITY OR PAVING) SHALL PROVIDE A WATERTIGHT JOB BOARD NEAR THE SITE ENTRANCE FOR POSTING NOI INFORMATION AND THE POLLUTION PREVENTION PLAN. THE RESPECTIVE CONTRACTOR SHALL ALSO PROVIDE THE REQUIRED SANITATION FACILITIES. ALL SUCH AFOREMENTIONED ITEMS MUST BE PROVIDED PRIOR TO BEGINNING WORK. FAILURE TO PROVIDE THE AFOREMENTIONED ITEMS WILL RESULT IN THE WITHHOLDING OF PAY REQUESTS. ALL SUCH ITEMS MUST BE REMOVED UPON PROJECT COMPLETION. (NO SEPARATE PAY).

38. IT IS THE CONTRACTOR'S RESPONSIBILITY (BOTH UTILITY & PAVING) TO CONTACT THE TESTING LABORATORY TO HAVE THE LAB PRESENT DURING ALL BACKFILL, PLACEMENT OF ANY FILL OR ANY OTHER REQUIRED LAB TESTING.

WATER MAIN CONSTRUCTION NOTES

1. ALL WATER LINES 4-INCH TO 12-INCH SHALL HAVE A MINIMUM OF 4 FEET OF COVER FROM TOP OF CURB TO TOP OF PIPE OR FROM NATURAL GROUND TO TOP OF PIPE, WHICHEVER RESULTS IN A DEEPER WATER LINE. WATER LINES NOT LOCATED WITHIN STREET RIGHT-OF-WAY SHALL HAVE 5 FEET OF MINIMUM COVER UNLESS OTHERWISE NOTED ON THE PLANS.

2. WATER MAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF SUGAR LAND DESIGN STANDARDS AS CURRENTLY AMENDED UNLESS A VARIANCE IS OBTAINED. ALL VALVES SHALL OPEN COUNTER CLOCKWISE.

4. ALL WATER LINES 4-INCH TO 12-INCH (EXCEPT STEEL WATER LINES) SHALL BE POLYVINYL CHLORIDE (P.V.C.) CONFORMING TO A.W.W.A SPECIFICATION C-900 AS CURRENTLY REVISED. ALL HYDROSTATIC WATER TESTS SHALL CONFORM TO SAME A.W.W.A. C-900 AS CURRENTLY REVISED.
8"-12" LINES - CLASS 150 DR-18
4"-6" LINES - CLASS 200 DR-14
CONTRACTOR SHALL NOTIFY THE CITY OF SUGAR LAND ENGINEERING DEPARTMENT (281-275-2780), AND THE ENGINEER 24 HOURS PRIOR TO HYDROSTATIC TESTS ON WATER LINES.

5. MAINTAIN A MINIMUM OF 9 FEET OF HORIZONTAL SEPARATION BETWEEN OUTSIDE OF SANITARY SEWER MANHOLES AND WATER LINES.

6. ALL WATER LINES SHALL BE ENCASED WITH BANK SAND AS PER CITY OF SUGAR LAND DETAIL SHEET. WATERLINES WITHIN SIDE LOT EASEMENTS SHALL BE BACKFILLED WITH SELECT MATERIAL (PI BETWEEN 7 AND 20). BEDDING AND BACKFILL SHALL FOR ALL WATER LINES SHALL BE CONSIDERED SUBSIDIARY TO THE PAY ITEM FOR PIPE AND SHALL NOT BE PAID SEPARATELY.

7. WATER LINE TRENCHES UNDER PROPOSED OR FUTURE PAVEMENT OR WITHIN 3 FEET OF THE PROPOSED OR FUTURE BACK OF CURB SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND (2 SACKS OF CEMENT PER TON) TO PAVEMENT SUBGRADE. (NO SEPARATE PAY).

8. FLUSH VALVES SHALL HAVE THREE-WAY NOZZLE ARRANGEMENT, FIVE AND ONE-QUARTER-INCH (5-1/4") COMPRESSION TYPE MAIN VALVE, MECHANICAL JOINT BOOT, AND CONFORM TO THE REQUIREMENTS OF AWWA C502. THE PUMPER NOZZLE SHALL BE THE SUGAR LAND STANDARD OR FOUR AND ONE-EIGHTH INCH (4-1/8") THREADS AND THE HOSE NOZZLES SHALL BE TWO AND ONE-HALF-INCH (2-1/2") THREADS. THE CENTERLINE OF FLUSHING VALVES ARE TO BE LOCATED 3'- 0" FROM THE BACK OF CURB WITH THE TOP OF FLANGE AT THE ELEVATION INDICATED ON THE DETAIL SHEET.

9. ALL FLUSHING VALVES ARE SHOWN WITH MINIMUM 4 FEET OF BURY REGARDLESS OF THE ACTUAL DEPTH OF BURY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ADJUST WATER MAINS AND FURNISH FLUSHING VALVE EXTENSIONS TO OBTAIN PROPER VERTICAL LOCATION OF THE FLUSHING VALVES IN RELATION TO THE TOP OF CURB (SEE DETAIL SHEET). ANY ADJUSTMENT WILL BE CONSIDERED INCIDENTAL TO THE VARIOUS OTHER ITEMS OF WORK. FLUSHING VALVES SHALL BE COLOR CODED ON THE FLUSHING VALVE, BONNET AND CAPS TO MEET CITY OF SUGAR LAND DESIGN STANDARDS.
ALL FLUSH VALVES SHALL BE BLASTED TO WHITE METAL, PRIMED WITH 3 MILS DFT INORGANIC ZINC (CARBO-ZINC 11 OR APPROVED EQUAL) AND FINAL COAT WITH RUST TYPE ENAMAL AS PER SPECIFICATION.

10. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 6 INCHES OF CLEARANCE BETWEEN PROPOSED WATER LINES AND EXISTING AND PROPOSED UTILITIES EXCEPT EXISTING SANITARY. SEE TCEQ NOTES FOR THE MINIMUM CLEARANCE BETWEEN WATER AND SANITARY.

Continuation of Water Main notes

11. ALL GATE VALVES ARE TO BE RESILIENT-SEATED GATE VALVES AS PER A.W.W.A. C-509. VALVES SHALL HAVE A COMPLETE COATING ON ALL IRON PARTS IN THE VALVE INTERIOR TO ELIMINATE CORROSION.

12. WHEREVER POSSIBLE, ALL MAIN LINE GATE VALVES ARE TO BE LOCATED OPPOSITE PAVING CURB RETURNS AS INDICATED ON THE CONSTRUCTION PLANS. GATE VALVES LOCATED ON A MAIN LINE ADJACENT TO A FLUSHING VALVE ARE TO BE 5 FEET FROM THE FLUSHING VALVE TEE.

13. 4-INCH THROUGH 12-INCH WATER LINE FITTINGS SHALL BE DUCTILE IRON COMPACT FITTINGS AS PER A.W.W.A. C-153. ALL FITTINGS SHALL BE POLYETHYLENE WRAPPED AND FURNISHED WITH CEMENT MORTAR LINING AS PER A.W.W.A. C-104 (ANSI/A21.4). ALL FITTINGS SHALL HAVE RESTRAINED JOINTS (MEGALUG OR EQUAL).

14. ALL WATER METER BOXES CONTAINING BLOW-OFF VALVES ARE TO BE LOCATED ALONG THE PROJECTION OF THE LOT LINE INDICATED, AT A POSITION 3 FEET FROM THE BACK OF THE CURB.

15. WATER MAIN FITTINGS SHALL BE SUPPORTED WITH CONCRETE THRUST BLOCKING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY OF THE BLOCKING SO AS TO PREVENT LATERAL MOVEMENT OF SUCH FITTINGS WHEN THE WATER LINE IS PRESSURE TESTED AND PUT INTO OPERATION.

16. STEEL WATER PIPE 8-INCH AND LARGER, SHALL CONFORM TO AWWA C200-12. THE STEEL PIPE SHALL HAVE COAL TAR EXTERIOR COATING IN ACCORDANCE WITH AWWA C203, LIQUID EPOXY INTERIOR COATING IN ACCORDANCE WITH AWWA C210. ALL MATERIAL USED FOR INTERNAL COATING OF STEEL CARRIER PIPE MUST BE NSF 61 LISTED AS SUITABLE FOR CONTACT WITH POTABLE WATER AS REQUIRED BY CHAPTER 290, RULES AND REGULATIONS FOR PUBLIC SYSTEMS, TCEQ, LATEST REVISIONS.

17. THE OPENING AND CLOSING OF ALL VALVES ON EXISTING WATER LINES LINES MUST BE PERFORMED BY THE DISTRICT OPERATOR. THE CONTRACTOR SHALL NOT OPERATE GATE VALVES ON EXISTING LINES EXCEPT DURING AN EMERGENCY.

18. WHENEVER A WATER LINE CROSSES A SANITARY SEWER, ONE JOINT OF WATER LINE SHALL BE CENTERED OVER THE SEWER SUCH THAT THE JOINTS OF THE WATER LINE ARE EQUIDISTANT AND AT LEAST NINE (9) FEET HORIZONTALLY FROM THE CENTERLINE OF THE SEWER. WHENEVER A SANITARY SEWER CROSSES A WATER LINE, ONE JOINT OF THE SEWER SHALL BE CENTERED UNDER THE WATER LINE SUCH THAT THE JOINTS OF THE SEWER ARE EQUIDISTANT AND AT LEAST NINE (9) FEET HORIZONTALLY FROM THE CENTERLINE OF THE WATER. THE SEWER SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND CONTAINING 2 SACKS OF CEMENT PER TON FOR THE TOTAL LENGTH OF ONE JOINT OF SEWER PLUS TWELVE (12) INCHES BEYOND THE JOINT ON EACH END.

19. ALL WATERLINE LEADS OR ENDS OF LINES SHALL BE MARKED IN ACCORDANCE WITH THE DETAIL SHEETS.

20. ALL PLASTIC PIPE MUST BEAR THE NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL AS REQUIRED BY SECTION 290.44(A)(2) OF THE T.C.E.Q. RULES. PIPE SHALL NOT BE LAID IN WATER OR PLACED WHERE IT CAN BE FLOODED WITH WATER OR SEWAGE DURING ITS STORAGE OR INSTALLATION AS REQUIRED BY SECTION 290.44(F)(1) OF THE TCEQ RULES.

21. BEDDING AND BACKFILL FOR ALL WATER LINES SHALL BE CONSIDERED SUBSIDIARY TO PAY ITEM FOR PIPE AND SHALL NOT BE PAID FOR SEPARATELY.

22. WATERLINE MAXIMUM PIPE DEFLECTION:

PIPE SIZE (IN)	RADIUS (FT)
4	100
6	144
8	189
10	231
12	275

SANITARY SEWER CONSTRUCTION NOTES

1. ALL SANITARY SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF SUGAR LAND DESIGN STANDARDS WITH LATEST REVISIONS, AMENDMENTS, AND SPECIAL PROVISIONS THERETO, UNLESS SPECIFIED OTHERWISE ON PLANS OR TECHNICAL SPECIFICATIONS. A 30-DAY MANDREL TEST WILL BE REQUIRED. THE PAVING CONTRACTOR MAY BEGIN PAVING OPERATIONS PRIOR TO THE 30-DAY MANDREL TEST. THE UTILITY CONTRACTOR MAY PULL A MANDREL PRIOR TO THE 30-DAY TEST FOR HIS OWN CONVENIENCE, BUT WILL STILL BE REQUIRED TO PERFORM THE 30-DAY MANDREL TEST. ADDITIONALLY, IN THE CITY INSPECTOR'S PRESENCE, AT THE INITIAL INSPECTION, WATER WILL BE ADDED AT THE UPSTREAM MANHOLE AND RELEASED IN ORDER TO CHECK FOR REVERSE FLOW CONDITIONS. INCLUDE THE COST FOR THESE TESTS WITH THE OTHER ITEMS OF THE BID.

2. ALL BEDDING SHALL BE IN ACCORDANCE WITH CITY OF SUGAR LAND DESIGN STANDARDS. BEDDING AND BACKFILL SHALL BE CONSIDERED SUBSIDIARY TO PAY ITEM FOR PIPE AND SHALL NOT BE PAID FOR DIRECTLY.

3. ALL SANITARY SEWERS UNDER OR WITHIN 3 FEET OF PROPOSED OR FUTURE PAVEMENT SHALL BE BACKFILLED WITH 2 SACKS OF CEMENT STABILIZED SAND PER TON TO PAVEMENT SUBGRADE.

4. SANITARY MANHOLE COVERS SHALL BE NOMINAL 32-INCH CITY OF SUGAR LAND CAST IRON, TRAFFIC BEARING TYPE RING AND COVER WITH THE WORDS " SANITARY SEWER " AND "CITY OF SUGAR LAND" CAST INTO THE COVER.

5. WHENEVER A WATER LINE CROSSES A SANITARY SEWER, ONE JOINT OF WATER LINE SHALL BE CENTERED OVER THE SEWER SUCH THAT THE JOINTS OF THE WATER LINE ARE EQUIDISTANT AND AT LEAST NINE (9) FEET HORIZONTALLY FROM THE CENTERLINE OF THE SEWER. WHENEVER A SANITARY SEWER CROSSES A WATER LINE, ONE JOINT OF THE SEWER SHALL BE CENTERED UNDER THE WATER LINE SUCH THAT THE JOINTS OF THE SEWER ARE EQUIDISTANT AND AT LEAST NINE (9) FEET HORIZONTALLY FROM THE CENTERLINE OF THE WATER. THE SEWER SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND CONTAINING 2 SACKS OF CEMENT PER TON FOR THE TOTAL LENGTH OF ONE JOINT OF SEWER PLUS TWELVE (12) INCHES BEYOND THE JOINT ON EACH END.

6. THE GRAVITY SANITARY SEWER PIPE SHALL BE SDR 26 PVC (PR 160) (OR DR18 AS INDICATED ON THE PLANS) CONFORMING TO ASTM D-2241. RESIN SHALL BE CELL CLASS 12454-B PER ASTM D-784. ALL JOINTS SHALL CONFORM TO ASTM D-3139. JOINTS SHALL BE BELL AND SPIGOT TYPE WITH RUBBER GASKETS CONFORMING TO ASTM F-477. CHEMICALLY WELDED P.V.C. PIPE JOINTS ARE NOT ACCEPTABLE. ALL SANITARY FITTINGS FOR LEADS ARE TO BE PRESSURE RATED.

7. THE CONTRACTOR SHALL NOTIFY THE CITY OF SUGAR LAND AND THE ENGINEER 24 HOURS PRIOR TO ALL AIR TESTS, HYDROSTATIC TESTS AND DEFLECTION TESTS OF SANITARY SEWER LINES AND FOR MANHOLE VACUUM TESTS.

8. ALL SANITARY SEWER MANHOLES SHALL BE COATED AS PER THE SANITARY SEWER MANHOLE DETAIL. THE CONTRACTOR SHALL NOTIFY THE CITY OF SUGAR LAND PUBLIC WORKS DEPARTMENT (281-275-2450), AND THE ENGINEER 24-HOURS PRIOR TO COATING MANHOLES.

9. NO BRICK WILL BE ALLOWED ON SANITARY SEWER MANHOLES. ALL ADJUSTMENTS FOR MANHOLE TOPS MUST BE MADE USING CONCRETE RINGS. PRECAST SANITARY MANHOLES SHALL HAVE RAM-NECK GASKET JOINTS. THE MAXIMUM CHIMNEY HEIGHT IS TWO FEET. TIE-INS TO EXISTING MANHOLES TO BE BY CORE ONLY AND SHALL HAVE MECHANICAL SEALS.

10. ALL SERVICE STUBS AND STACKS ARE TO BE MARKED IN ACCORDANCE WITH THE DETAIL SHEET. IT WILL BEGIN AT THE FLOWLINE OF THE STUB AND EXTEND 2-FEET ABOVE FINISHED GRADE. IT SHALL BE LABELED(SIZE) SEWER LEAD AND BE MAINTAINED PLUMB AND IN GOOD CONDITION THROUGHOUT THE REMAINDER OF THE PROJECT.

11. ALL SANITARY SEWER MANHOLES ARE REQUIRED TO HAVE ECCENTRIC (OFFSET) CONES AS PER THE DETAIL SHEET. THE STATIONING FOR THE SANITARY SEWER MANHOLES IS AT THE CENTERLINE OF THE MANHOLE BASE.

12. ALL SANITARY MANHOLES SHALL BE TESTED FOR LEAKAGE BY PERFORMING A LOW PRESSURE AIR TEST CONFORMING TO T.C.E.Q. RULES.

Continuation of Sanitary Sewer notes

13. ALL EXISTING AND PROPOSED SANITARY SEWER MANHOLES WITHIN THE PROJECT SITE ARE TO BE PROVIDED WITH INFLOW PROTECTORS. THE IN FLOW PROTECTOR SHALL BE "NO FLOW IN-FLOW DISH" AS SUPPLIED BY CONTRACTOR SPECIALTIES & SUPPLY CO., SAN ANTONIO, TEXAS (210) 497-8407 OR APPROVED EQUAL.

14. AT THE OPTION OF THE ENGINEER, ALL SANITARY SEWERS ARE SUBJECT TO BEING LAMPED. ANY SANITARY SEWER WHICH DOES NOT EXHIBIT A "FULL MOON" FROM LAMPING OPERATIONS IS SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

15. WHEN MAKING A CONNECTION TO AN EXISTING SANITARY SEWER MANHOLE OR BUILDING A MANHOLE ON AN EXISTING LINE, THE UTILITY CONTRACTOR SHALL PLUG THE DOWNSTREAM END OF THE PROPOSED SANITARY SEWER LINE. THIS PLUG SHALL REMAIN IN PLACE UNTIL FINAL ACCEPTANCE. INCLUDE COST FOR THIS WORK IN OTHER ITEMS OF THE BID.

16. ALL TIES TO EXISTING MANHOLES SHALL BE MADE BY CORE. MECHANICAL SEALS (LEAK-SEAL OR EQUAL) SHALL ALSO BE REQUIRED.

17. ALL SANITARY MANHOLES WILL BE VACUUMED TESTED AND SANITARY LINES WILL BE WATER TESTED.

18. THE SIX (6") SANITARY MARKER PIPE WILL BE CAPPED. GLUE CAP IS ACCEPTABLE.

STORM SEWER CONSTRUCTION NOTES

1. STORM SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF SUGAR LAND DESIGN STANDARDS AS CURRENTLY AMENDED UNLESS SPECIFIED OTHERWISE ON PLANS OR TECHNICAL SPECIFICATIONS.

2. ALL STORM SEWER PIPE SHALL BE ASTM C-76 CLASS III RCP (SMOOTH WALL WHERE REQUIRED). ALL STORM SEWER SHALL BE INSTALLED, BEDDED AND BACKFILLED IN ACCORDANCE WITH THE CITY OF SUGAR LAND DESIGN STANDARDS AS INDICATED ON THE DETAIL SHEETS. ALL SIZES OF CONCRETE PIPE SHALL BE INSTALLED WITH RUBBER GASKET JOINTS.

3. ALL STORM SEWERS UNDER OR WITHIN 3 FEET OF PROPOSED OR FUTURE PAVEMENT SHALL BE BACKFILLED WITH 2 SACKS OF CEMENT PER TON STABILIZED SAND TO PAVEMENT SUBGRADE.

4. STORM SEWER MANHOLE COVERS SHALL BE STANDARD CITY OF SUGAR LAND OR THE CITY OF SUGAR LAND (NOMINAL 32" DIA.) CAST IRON, TRAFFIC BEARING TYPE RING AND COVER WITH THE WORDS " STORM SEWER " CAST INTO THE COVER, AND SHALL INDICATE THE APPROPRIATE CITY EMBLEM.

5. ALL STORM SEWER INLETS SHALL BE STANDARD CITY OF SUGAR LAND TYPE "H-2", UNLESS OTHERWISED NOTED. THE "H-2" INLET SHOULD NOT HAVE ANY BLOCK OUTS.

6. STORM SEWER MANHOLE COVERS SHALL BE CAST IRON, TRAFFIC BEARING STANDARD CITY OF SUGAR LAND LABELED "STORM SEWER."

7. BEDDING AND BACKFILL IS TO BE CONSIDERED SUBSIDIARY TO PAY ITEMS FOR PIPE AND INLETS AND SHALL NOT BE PAID FOR DIRECTLY. BANK SAND BACKFILL SHALL BE USED FOR ALL STORM SEWER LOCATED IN SIDE LOT EASEMENTS.

8. ALL STORM SEWER MANHOLES SHALL BE STANDARD TYPE "C" UNLESS OTHERWISE NOTED.

9. ALL STORM MANHOLE BOTTOMS WILL HAVE #4 REBAR, ON 12" CENTERS IN BOTH DIRECTIONS.

PAVING CONSTRUCTION NOTES

1. PAVING SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL CITY OF SUGAR LAND REQUIREMENTS.

2. ALL ROAD WIDTHS, CURB RADII, AND CURB ALIGNMENT SHOWN INDICATE BACK OF CURB. T.C. INDICATES TOP OF CURB. T.P. INDICATES TOP OF PAVEMENT.

3. TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT EACH CURB RETURN AND AT A MAXIMUM SPACING OF 60'.

4. TOP 8-INCH SUBGRADE IS TO BE SCARIFIED, LIME STABILIZED WITH MINIMUM 7% LIME BY WEIGHT (UNLESS SPECIFICALLY APPROVED TO USE LESS LIME BY THE CITY AND THE ENGINEER), AND COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY AT +/- TWO PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE TESTING LABORATORY FOR A LIME DETERMINATION IN ORDER TO VERIFY THE MINIMUM REQUIRED LIME PERCENTAGE NECESSARY.

5. ALL CURB RADII SHALL BE 25 FEET UNLESS OTHERWISE NOTED.

6. 6-INCH PAVEMENT SHALL BE REINFORCED CONCRETE WITH NO. 4 BARS BOTH WAYS AT 24 INCHES C-C (8" CONCRETE SHALL BE REINFORCED W/ No. 4 BARS SPACED AT 18-INCHES IN BOTH DIRECTIONS). LAP SPLICES WILL BE STAGGERED IN ADJACENT BARS. CONCRETE SHALL BE MINIMUM 5.5 SACK CEMENT WITH MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS BASED ON ASTM C39. PAVEMENT THICKNESS SHALL BE AS NOTED ON THE PLANS. FOUR (4) CONCRETE CYLINDERS SHALL BE TESTED FOR COMPRESSIVE STRENGTH, SLUMP AND AIR ENTRAINMENT AT LEAST ONCE EVERY 100 CY. THE PAVING CONTRACTOR SHALL SUBMIT THE PROPOSED MIX DESIGN TO THE CITY OF SUGAR LAND AND THE ENGINEER AT LEAST SEVEN (7) DAYS PRIOR TO FIRST SCHEDULED CONCRETE PLACEMENT.

7. ALL FILL MATERIAL SHALL BE PLACED ON PREPARED SURFACES IN LOOSE LAYERS NOT EXCEEDING 8-INCHES THICKNESS AND COMPACTED TO A MINIMUM OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY WITHIN TWO PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D 698.

8. A BLUE REFLECTORIZED BUTTON IS REQUIRED AT ALL FIRE HYDRANT LOCATIONS. THE BUTTON SHALL BE PLACED 12-INCHES OFF THE CENTERLINE OF THE STREET ON THE SAME SIDE AS THE HYDRANT.

9. TRAFFIC SIGNS AND STREET SIGNS SHALL BE INSTALLED PER SIGN DETAIL SHEET.

10. FLINT TRADING THERMOPLASTIC OR APPROVED EQUAL WITH SUPPLEMENTAL REFLECTORS, OR APPROVED ALTERNATE, SHALL BE USED ON ALL MAJOR THOROUGHFARES ON MAJOR COLLECTOR STREETS AND ON ALL LOCAL STREETS WHERE INDICATED ON THE PLANS. ALL RAISED PAVMENT MARKERS SHALL BE APPLIED WITH FLINT TRADING BUNDY ADHESIVE OR APPROVED EQUAL. THERMO-PLASTIC SHALL BE APPLIED WITH PLIOBOND 10 ADHESIVE OR APPROVED EQUAL.

11. JOINT SEALANT MUST BE ELASTOMERIC TYPE, HOT POURED CONFORMING TO TxDOT ITEMS 433 AND TxDOT DEPARTMENTAL MATERIAL SPECIFICATIONS D-9-6310.

12. CURING COMPOUND MUST BE LIQUID MEMBRANE-FORMING CONFORMING TO TxDOT ITEM 526 AND TxDOT DEPARTMENTAL MATERIAL SPECIFICATIONS D-9-8120.

13. THE QUANTITY OF STREET CUT IN THE CONTRACT DOCUMENTS IS BASED UPON EXISTING TOPOGRAPHY PRIOR TO UTILITY CONSTRUCTION. THE PAVING CONTRACTOR SHALL INCLUDE ANY CONSIDERATIONS FOR UTILITY SPOIL AS INCIDENTAL TO OTHER ITEMS IN THE PROJECT. THERE WILL BE NO SEPARATE PAYMENT FOR THE PAVING CONTRACTOR TO HANDLE UTILITY SPOIL ON SITE.

14. THE CONTRACTOR SHALL NOTIFY FORT BEND COUNTY ENGINEERING DEPARTMENT (CONSTRUCTION@FORTBENDCOUNTYTX.GOV), THE CITY OF SUGAR LAND ENGINEERING DEPARTMENT (281-275-2780) AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF WORK, AND 48 HOURS PRIOR TO ALL TESTING OF PAVEMENT SUBGRADE AND PLACEMENT OF CONCRETE.

15. IT IS THE RESPONSIBILITY OF THE PAVING CONTRACTOR TO ARRANGE FOR THE PURCHASE OF ANY CONSTRUCTION WATER. INCLUDE THE PRICE FOR SUCH WATER IN OTHER ITEMS OF THE CONTRACT. THERE WILL BE NO SEPARATE PAY.

16. PRIOR TO INITIAL AND FINAL ACCEPTANCE, THE STREETS WILL BE CLEANED AND FLOODED TO CHECK FOR BIRDBATHS. GRINDING AND SAW CUTTING ARE NOT ACCEPTABLE METHODS OF REPAIR.

17. THE WATER HOSE ON THE CONCRETE TRUCK SHALL NOT BE USED FOR FINISHED CONCRETE.

18. NO EQUIPMENT MAY BE ALLOWED ON NEW CONCRETE UNTIL THE CONCRETE HAS ACHIEVED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
WATER DISTRIBUTION SYSTEM
GENERAL CONSTRUCTION NOTES

1. This water distribution system must be constructed in accordance with the current Texas Commission on Environmental Quality (TCEQ) Rules and Regulations for Public Water Systems 30 Texas Administrative Code (TAC) Chapter 290 Subchapter D. When conflicts are noted with local standards, the more stringent requirement shall be applied. Construction for public water systems must always, at a minimum, meet TCEQ's "Rules and Regulations for Public Water Systems

2. An appointed engineer shall notify in writing the local TCEQ's Regional Office when construction will start. Please keep in mind that upon completion of the water works project, the engineer or owner shall notify the commission's Water Supply Division, in writing, as to its completion and attest to the fact that the work has been completed essentially according to the plans and change orders on file with the commission as required in 30 TAC 290.39(h)(3).

3. All newly installed pipes and related products must conform to American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 61 and must be certified by an organization accredited by ANSI, as required by 30 TAC 290.44(a)(1).

4. Plastic pipe for use in public water systems must bear the National Sanitation Foundation Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 psi or a standard dimension ration of 26 or less, as required by 30 TAC 290.44 (a)(2).

5. No pipe which has been used for any purpose other than conveyance of drinking water shall be accepted or relocated for use in any public drinking water supply, as required by 30 TAC 290.44(a)(3).

6. Water transmission and distribution lines shall be installed in accordance with the manufacturer's instructions. However, the top of the water line must be located below the frost line and in no case shall the top of the water line be less than 24 inches below ground surface, as required by 30 TAC 290.44(a)(4).

7. Pursuant to 30 TAC 290.44(a)(5), the hydrostatic leakage rate shall not exceed the amount allowed or recommended by the most current AWWA formulas for PVC pipe, cast iron and ductile iron pipe. Include the formulas in the notes on the plans.
   - The hydrostatic leakage rate for polyvinyl chloride (PVC) pipe and appurtenances shall not exceed the amount allowed or recommended by the formulas in America Water Works Association (AWWA) C-605 as required in 30 TAC 290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula in use;

     Where: $Q = \frac{LD\sqrt{P}}{148000}$
     - Q = the quantity of makeup water in gallons per hour,
     - L = Length of the pipe section being tested, in feet,
     - D = the nominal diameter of the pipe in inches, and
     - P - the average test pressure during the hydrostatic test in pounds per square inch (psi).
   - The hydrostatic leakage rate for ductile iron (DI) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-600 as required in 30 TAC 290.44(a)(5). Please ensure that the formula for this calculation is correct and the most current formula in use;

     Where: $L = \frac{SD\sqrt{P}}{148000}$
     - L = the quantity of makeup water in gallons per hour,
     - S = Length of the pipe section being tested, in feet,
     - D = the nominal diameter of the pipe in inches, and
     - P - the average test pressure during the hydrostatic test in pounds per square inch (psi).

8. Title 30 TAC 290.44(b) prohibits pipe and pipe fittings which contain more than 8.0 percent lead or solders and flux that contains more than 0.2 percent lead
Please be aware that beginning January 2014, changes to the Safe Drinking Water Act will further reduce the maximum allowable lead content of pipes, pipe fittings, plumbing, fittings, and fixtures to 0.25 percent. Projects constructed after December 2013 must comply with the maximum allowable lead content of 0.25 percent.

9. The system must be designed to maintain a minim pressure of 35 psi at all points within the distribution network at flow rates of at least 1.5 gallons per minute per connection. When the system is intended to provide firefighting capability, it must also be designed to maintain a minimum pressure of 20 psi under combined fire and drinking water flow conditions as required by 30 TAC 290.44(d)

10. The contractor shall install appropriate air release devices in the distribution system at all points where topography or other factors may create air locks in the lines. All vent openings to the atmosphere shall be covered with 16-mesh or finer, corrosion resistant screening material or an acceptable equivalent as required by 30 TAC 290.44(d)(1).

11. Pursuant to 30 TAC 290.44(d)(4), accurate water meters shall be provided. Service Connections and meter locations should be shown on the plans.

12. Pursuant to 30 TAC 290.44(d)(5), sufficient valves and blowoffs to make repairs. The engineering report shall establish criteria for this design.

13. Pursuant to 30 TAC 290.44(d)(6), the system shall be designed to afford effective circulation of water with a minimum of dead ends. All dead-end mains shall be provided with acceptable flush valves and discharge piping. All dead-end lines less than two inches in diameter will not require flush valves if they end at a customer service. Where dead-ends are necessary as a stage in the growth of the system, they shall be located and arranged to ultimately connect the ends to provide circulation.

14. The contractor shall maintain a minimum separation distances in all directions of nine feet between the proposed waterline and wastewater collection facilities including manholes and septic tank drainfields. If this distance cannot be maintained, the contractor must immediately notify the project engineer for further direction. Separation distances, installation methods, and materials utilized must meet 30 TAC 290.44(e)(1-4) of the current rules.

15. Pursuant to 30 TAC 290.44(e)(5), The separation distance from a potable waterline to a wastewater main or lateral manhole or cleanout shall be a minimum of nine feet. Where the nine-foot separation distance cannot be achieved, the potable waterline shall be encased in a joint of at least 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at five-foot intervals with spacers or be filled to the springline with washed sand. The encasement pipe shall be centered on the crossing and both ends sealed with cement grout or manufactured sealant.

16. Pursuant to 30 TAC 290.44(e)(6), fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater line, wastewater lateral, or wastewater service line regardless of construction.

17. Pursuant to 30 TAC 290.44(e)(7), suction mains to pumping equipment shall not cross wastewater mains, wastewater laterals, or wastewater service lines. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater main, wastewater lateral, or wastewater service line.

18. Pursuant to 30 TAC 290.44(e)(8), waterlines shall not be installed closer than ten feet to septic tank drain fields.

19. Pursuant to 30 TAC 290.44(f)(1), the contractor shall not place the pipe in water where it can be flooded with water or sewage during its storage or installation.

20. Pursuant to 30 TAC 290.44(f)(2), when waterlines are laid under any flowing or intermittent stream or semi-permanent body of water the water main shall be installed in a separate watertight pipe encasement. Valves must be provided on each side of the crossing with facilities to allow the underwater portion of the system to be isolated and tested.

21. The contractor shall disinfect the new water mains in accordance with AWWA Standard C-651 and then flush and sample the lines before being placed into service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure which shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed water line shall be required or at the next available sampling point beyond 1,000 feet as designed by the design engineer in accordance with 30 TAC 290.44(f)(3).

FORT BEND COUNTY GENERAL NOTES

1. FORT BEND COUNTY MUST BE INVITED TO THE PRE-CONSTRUCTION MEETING.

2. CONTRACTOR SHALL NOTIFY FORT BEND COUNTY ENGINEERING DEPARTMENT 48 HOURS PRIOR TO COMMENCING CONSTRUCTION AND 24 HOURS PRIOR TO ANY PAVING OPERATIONS AT Construction@fortbendcountytx.gov

3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FROM FORT BEND COUNTY PRIOR TO COMMENCING CONSTRUCTION OF ANY IMPROVEMENTS WITHIN COUNTY ROAD RIGHT OF WAYS.

4. ALL PAVING IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FORT BEND COUNTY "RULES, REGULATIONS AND REQUIREMENTS RELATING TO THE APPROVAL AND ACCEPTANCE OF IMPROVEMENTS IN SUBDIVISIONS" AS CURRENTLY AMENDED.

5. ALL ROAD WIDTHS, CURB RADII AND CURB ALIGNMENT SHOWN INDICATES BACK OF CURB.

6. A CONTINUOUS LONGITUDINAL REINFORCING BAR SHALL BE USED IN THE CURBS.

7. ALL CONCRETE PAVEMENT SHALL BE 5 1/2 SACK CEMENT WITH A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS. TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT EACH CURB RETURN AND AT A MAXIMUM SPACING OF 60 FEET.

8. ALL WEATHER ACCESS TO ALL EXISTING STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.

9. 4"x12" REINFORCED CONCRETE CURB SHALL BE PLACED IN FRONT OF SINGLE FAMILY LOTS ONLY. ALL OTHER AREAS SHALL BE 6" REINFORCED CONCRETE CURB.

10. AT ALL INTERSECTION LOCATIONS, TYPE 7 RAMPS SHALL BE PLACED IN ACCORDANCE WITH TXDOT PED-12A STANDARD DETAIL SHEET. A.D.A. HANDICAP RAMPS SHALL BE INSTALLED WITH STREET PAVING AT ALL INTERSECTIONS AND COMPLY WITH CURRENT A.D.A. REGULATIONS.

11. CURB HEADERS ARE REQUIRED AT CURB CONNECTIONS TO HANDICAP RAMPS, WITH NO CONSTRUCTION JOINT WITHIN 5' OF RAMPS.

12. ALL INTERSECTIONS UTILIZING TRAFFIC CONTROL MEASURES SHALL HAVE A.D.A. WHEEL CHAIR RAMPS INSTALLED.

13. GUIDELINES ARE SET FORTH IN THE TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", AS CURRENTLY AMENDED, SHALL BE OBSERVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE FLAGMEN, SIGNING, STRIPING AND WARNING DEVICES, ETC., DURING CONSTRUCTION BOTH DAY AND NIGHT.

14. ALL R1-1 STOP SIGNS SHALL BE 30"x30" WITH DIAMOND GRADE SHEETING. STREET NAME SIGNS SHALL BE UPPER AND LOWER CASE LETTERS WITH DIAMOND GRADE SHEETING.

15. A BLUE DOUBLE REFLECTORIZED BUTTON SHALL BE PLACED AT ALL FIRE HYDRANT LOCATIONS. THE BUTTON SHALL BE PLACED 12 INCHES OFF OF THE CENTERLINE OF THE STREET ON THE SAME SIDE AS THE HYDRANT.

16. WHEN A RESIDENTIAL SIDEWALK, DRIVEWAY, CURB OR GUTTER IS CONSTRUCTED, RECONSTRUCTED, REPAIRED OR REGRADED ON COUNTY RIGHT OF WAY, THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING THE REQUIREMENTS SPECIFIED ON THE FORT BEND COUNTY ENGINEERING DEPARTMENTS 325 DETAIL TITLED SIDEWALKS & DRIVEWAYS ON CURB TYPE STREETS. RESIDENTIAL AREAS, THE CONTRACTOR IS ALSO RESPONSIBLE FOR OBTAINING ANY PERMITS THROUGH FORT BEND COUNTY.

Additional General notes

1. ALL DISTURBED AREAS I.E. THE ENTIRE PROJECT) SHALL RECEIVE "TURF ESTABLISHMENT" IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS. MEASUREMENT AND PAYMENT FOR THIS WORK SHALL BE IN ACCORDANCE WITH THE PROPOSAL AND UNIT PRICE SECTIONS OF THE CONTRACT. PRIOR TO COMMENCING WORK ON TURF ESTABLISHMENT, THE ENTIRE POND AREA SHALL RECEIVE A MINIMUM 3-INCH LAYER OF TOPSOIL. THE ELEVATIONS INDICATED ON THE PLANS ARE FINISHED ELEVATION (AFTER PLACEMENT OF TOPSOIL).

2. PRIOR TO PLACEMENT OF FILL ON FILL AREAS, THE AREA TO BE FILLED SHALL BE COMPLETELY STRIPPED. A MINIMUM OF 3 INCHES AND PROOFROLLED IN THE PRESENCE OF THE TESTING LAB. ALL FILL SHALL BE PLACED IN MAXIMUM 8 INCH LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR MAXIMUM DRY DENSITY WITHIN +/2 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698. AFTER COMPLETION OF FILL, ALL EXCESS STRIPPINGS (EXCLUDING HEAVY BRUSH AND TREES) SHALL BE EVENLY SPREAD OVER FILL AREAS AND GRADED TO DRAIN. THE ELEVATION SHOWN ON THE PLANS ARE ELEVATIONS AFTER CUT & FILL OPERATIONS ARE CONCLUDED AND THE STRIPPINGS ARE SPREAD OVER THE SITE. THE ELEVATIONS SHOULD BE FINISHED PRODUCT.

APPROVED: [signature]
DEVELOPMENT COORDINATOR
FORT BEND COUNTY
ENGINEERING DEPARTMENT
DATE: 10-16-15

WINDSTREAM COMMUNICATION

NOTE: THE LOCATIONS OF WINDSTREAM COMMUNICATION UTILITIES ARE NOT SHOWN. THE CONTRACTOR SHALL CONTACT WINDSTREAM COMMUNICATION TO DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.

CAUTION: UNDERGROUND GAS FACILITIES

LOCATION OF RELIANT ENERGY ENTEX MAIN LINES (TO INCLUDE UNIT GAS TRANSMISSION AND/OR INDUSTRIAL GAS SUPPLY CORPORATION WHERE APPLICABLE) ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATOR COMMITTEE AT (713) 223-4567 OR 1-800-669-8344 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK AND AGREE TO BE FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

NOTE: WHEN THERE ARE CONFLICTS BETWEEN THE GENERAL NOTES, FORT BEND COUNTY GENERAL NOTES AND THE CITY OF SUGAR LAND STANDARD NOTES, THE MORE STRINGENT NOTES SHALL APPLY.

NO.	REVISION	DATE	BY

DESIGNED BY: ____
DESIGN CHECKED BY: ____
DRAWN BY: ____
COGO CHECKED BY: ____
SURVEY CHECKED BY: ____
QA/QC BY: ____ DATE: ____
QA/QC REVISIONS BY: ____

Costello
Engineering and Surveying
9990 Richmond Avenue, Suite 450 N
Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax
TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

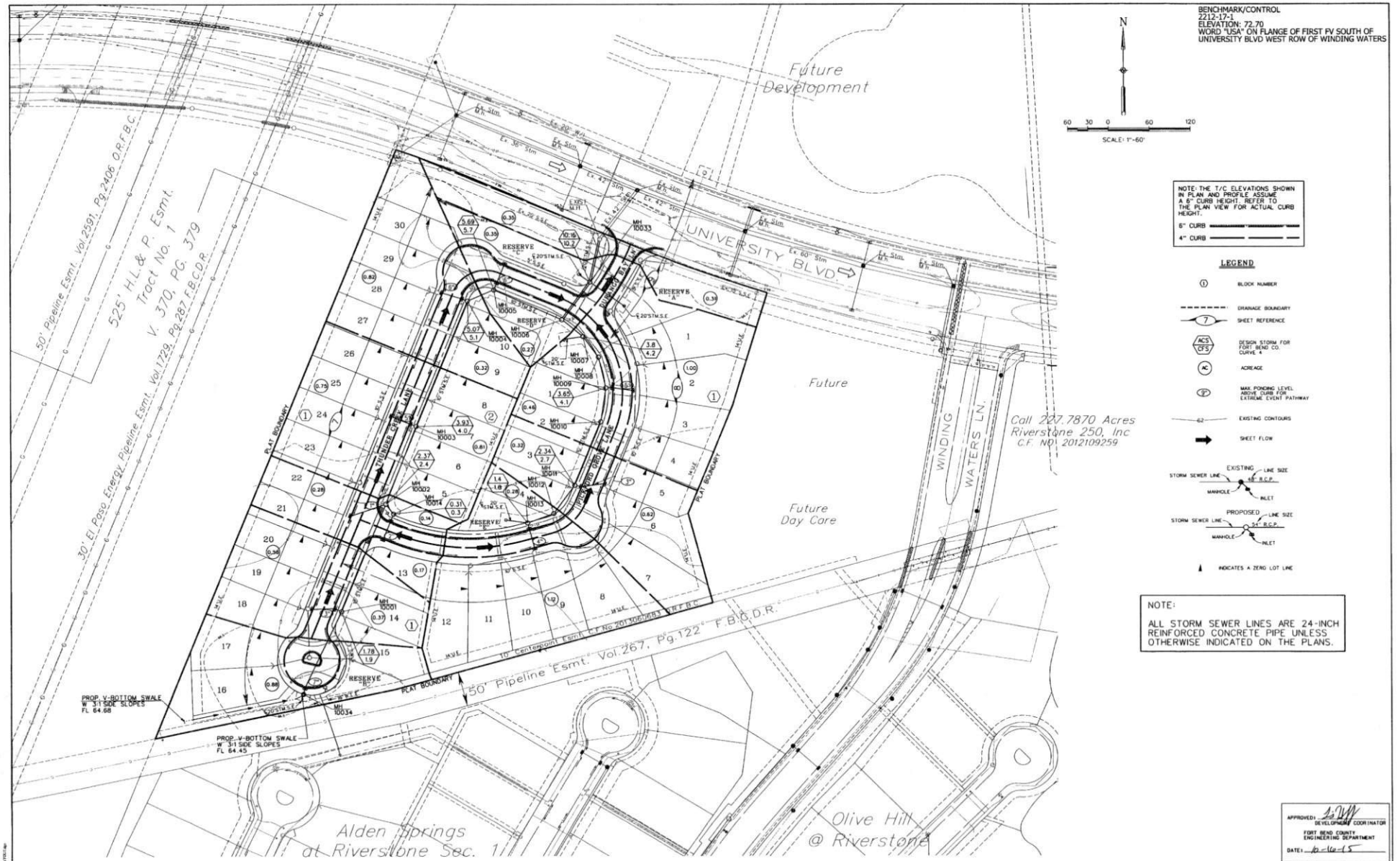
THE VILLAS AT RIVERSTONE

CONSTRUCTION NOTES

STATE OF TEXAS — GUY L. HUMPHREY — 106072 — LICENSED — PROFESSIONAL ENGINEER — 9/15/15

SHEET 2 OF 15 SHEETS
JOB NO. 2015062-02,03

JOB NO. 2015062-02,03



NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

Costello

Engineering and Surveying
9990 Richmond Avenue, Suite 450 N
Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax

TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

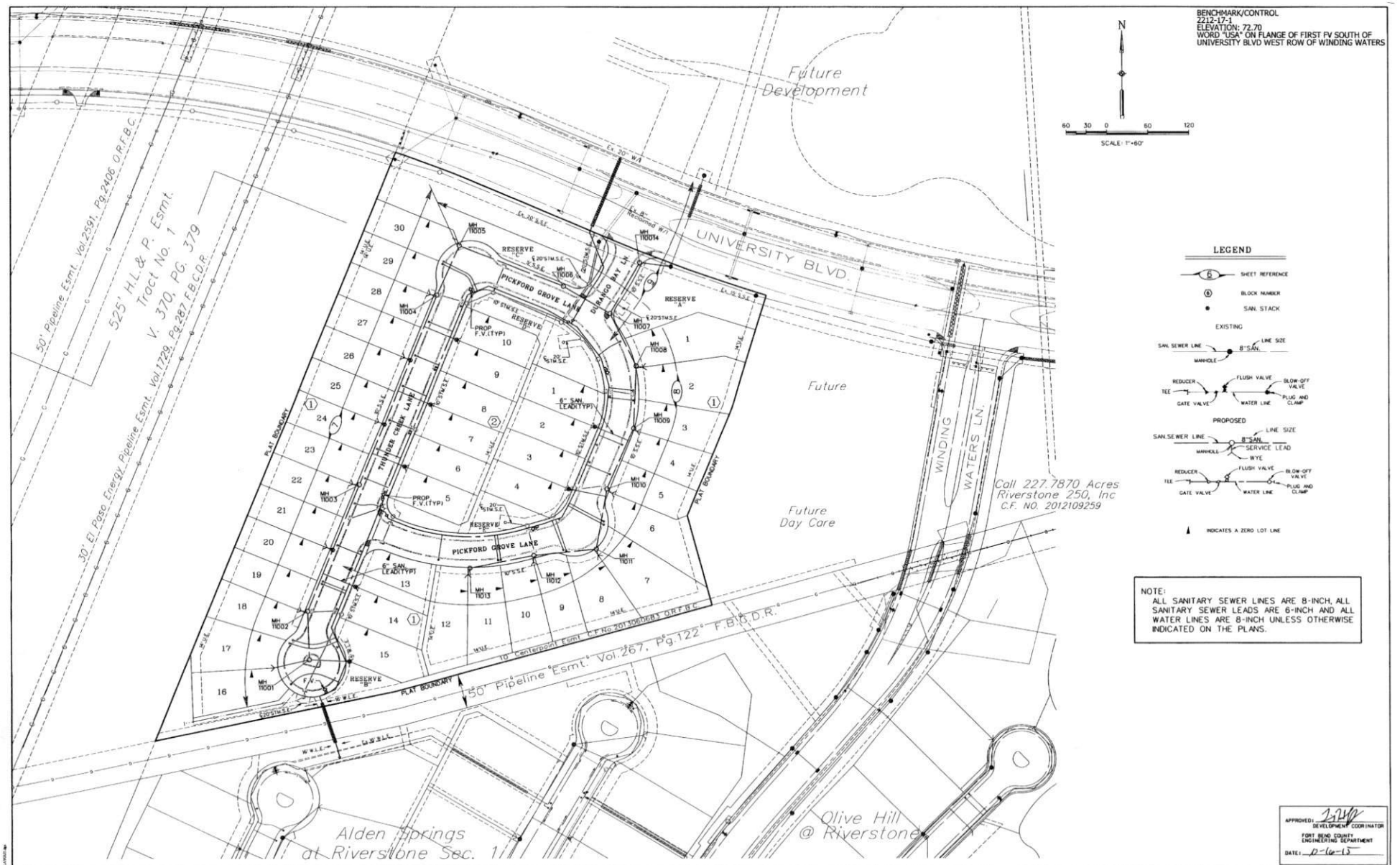
THE VILLAS AT RIVERSTONE

PAVING AND DRAINAGE LAYOUT

STATE OF TEXAS
GUY L. HUMPHREY
100072
LICENSED PROFESSIONAL ENGINEER
1/05/15

SHEET 3
OF 15 SHEETS
JOB NO. 2015062-02,03

JOB NO. 2015062-02,03



NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

Costello

Engineering and Surveying
9990 Richmond Avenue, Suite 450 N
Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax

TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

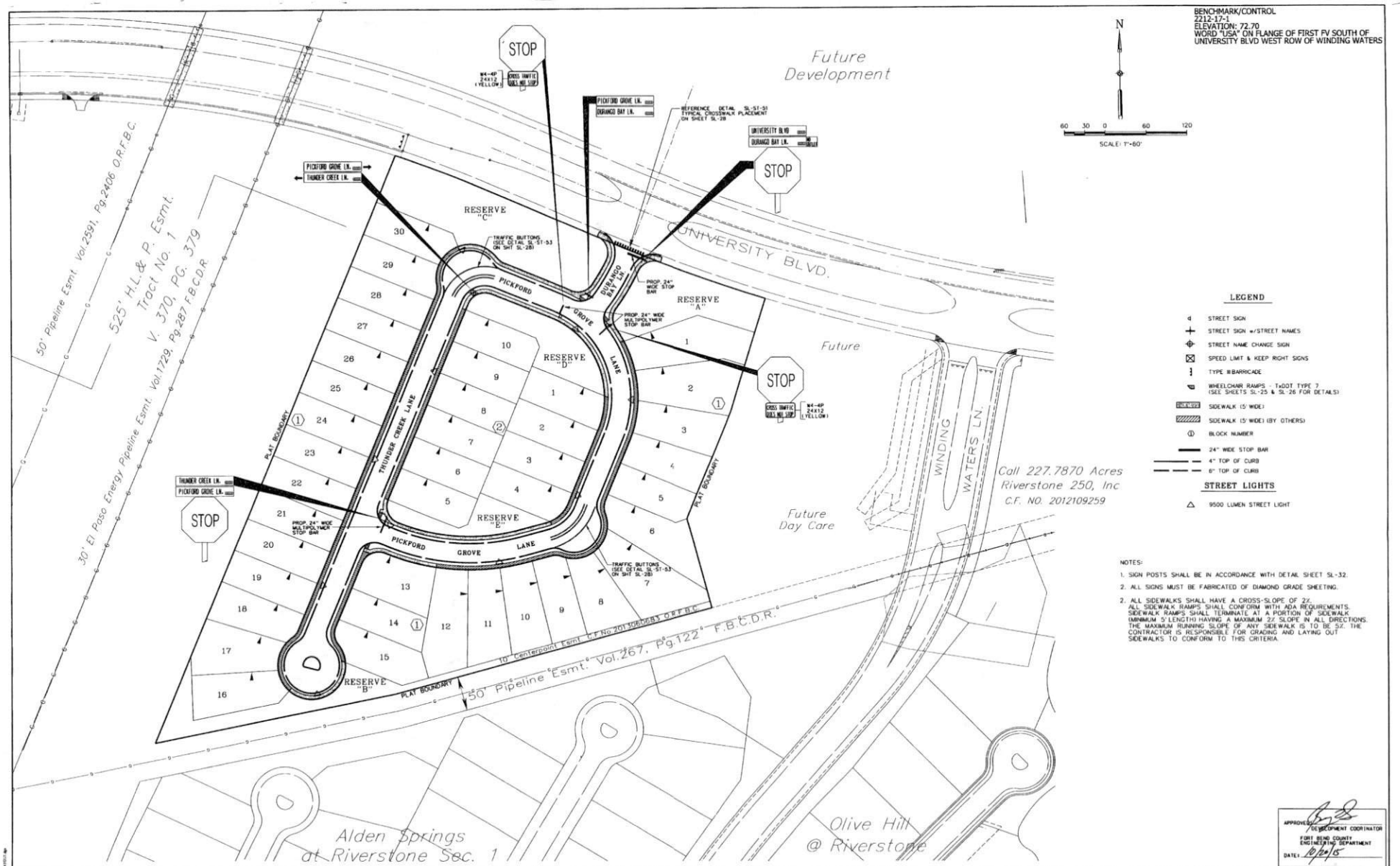
THE VILLAS AT RIVERSTONE

WATER AND SANITARY SEWER LAYOUT

STATE OF TEXAS
GUY L. HUMPHREY
1060/2
LICENSED
PROFESSIONAL ENGINEER
10/15/15

SHEET 4
OF 15 SHEETS
JOB NO. 2015062-02,03

JOB NO. 2015062-02,03



NO.	REVISION	DATE	BY

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TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

THE VILLAS AT RIVERSTONE

TRAFFIC CONTROL, SIDEWALK AND STREET LIGHTING PLAN

STATE OF TEXAS
GUY L HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER
11/5/15

SHEET 5
OF 15 SHEETS
JOB NO. 2015062-02,03

JOB NO. 2015062-02,03

UNIVERSITY BLVD WEST of LJ
SNAKE SLOUGH OUTFALL
DESIGN STORM FOR FORT BEND COUNTY

US MH	DS MH	CRV NO	AREA (ac)	TOTAL (ac)	t	CI	Q (cfs)	REACH (ft)	# CULV	CULV SIZE	n	SLOPE	AREA PIPE	R	ACT V (fps)	SLOPE (ft/ft)	DELTA H	U/S WSEL	D/S WSEL	U/S GUTTER ELEV	U/S FL	D/S FL
EX 54 E I-A	*EX MH 54*	*4*	*5.13*	*5.13*	*5.0*	*1.28*	*6.6*	*103*	*1*	*24*	*0.013*	*0.17%*	*3.14*	*0.50*	*2.1*	*0.0008*	*0.087*	*64.23*	*64.14*		*62.00*	*61.86*
54 E I-B	*EX MH 54*	*4*	*6.40*	*6.40*	*5.0*	*1.28*	*8.2*	*129*	*1*	*24*	*0.013*	*0.17%*	*3.14*	*0.50*	*2.6*	*0.0013*	*0.169*	*64.31*	*64.14*		*61.98*	*61.86*
54 H2-A	*EX MH 54*	*4*	*0.60*	*0.60*	*5.0*	*1.28*	*0.8*	*33*	*1*	*24*	*0.013*	*0.17%*	*3.14*	*0.50*	*0.2*	*0.0000*	*0.000*	*64.14*	*64.14*	*65.79*	*60.99*	*60.69*
54 H2-B	*EX MH 54*	*4*	*0.60*	*0.60*	*5.0*	*1.28*	*0.8*	*66*	*1*	*24*	*0.013*	*0.17%*	*3.14*	*0.50*	*0.2*	*0.0000*	*0.001*	*64.14*	*64.14*	*65.79*	*60.99*	*60.69*
EX MH 54	*EX MH 55*	*4*	*0.00*	*12.73*	*5.8*	*1.25*	*15.9*	*199*	*1*	*36*	*0.013*	*0.10%*	*7.07*	*0.75*	*2.3*	*0.0006*	*0.111*	*64.14*	*64.03*		*59.88*	*59.69*
EX 55 I-1	*EX MH 55*	*4*	*0.39*	*0.39*	*5.0*	*1.28*	*0.4*	*33*	*1*	*24*	*0.013*	*0.17%*	*3.14*	*0.50*	*0.1*	*0.0000*	*0.000*	*64.03*	*64.03*	*65.77*	*60.97*	*60.67*
55 I-2	*EX MH 55*	*4*	*0.31*	*0.31*	*5.0*	*1.28*	*0.4*	*69*	*1*	*24*	*0.013*	*0.17%*	*3.14*	*0.50*	*0.1*	*0.0000*	*0.000*	*64.03*	*64.03*	*65.77*	*60.97*	*60.67*
EX MH 55	*EX MH 56*	*4*	*0.00*	*13.34*	*7.3*	*1.21*	*16.1*	*90*	*1*	*42*	*0.013*	*0.09%*	*9.62*	*0.87*	*1.7*	*0.0003*	*0.023*	*64.03*	*64.01*		*59.19*	*59.12*
I-1 A	I-1 B	4	0.58	0.58	5.0	1.28	0.7	34	1	24	0.013	0.17%	3.14	0.50	0.2	0.0000	0.000	64.27	64.27	65.26	60.46	60.26
I-1 B	MH 10001	4	0.37	0.95	7.4	1.21	1.1	11	1	24	0.013	0.17%	3.14	0.50	0.4	0.0000	0.000	64.27	64.27	65.30	60.26	60.16
I-1 D	I-1 C	4	0.33	0.33	5.0	1.28	0.4	9	1	24	0.013	0.17%	3.14	0.50	0.1	0.0000	0.000	64.27	64.27		60.74	60.72
I-1 C	MH 10001	4	0.50	0.83	7.9	1.20	1.0	124	1	24	0.013	0.17%	3.14	0.50	0.3	0.0000	0.002	64.27	64.27	64.95	60.72	60.51
MH 10001	MH 10002	4	0.00	1.78	14.4	1.08	1.9	170	1	24	0.013	0.17%	3.14	0.50	0.6	0.0001	0.012	64.27	64.26		60.51	60.22
I-2 A	MH 10002	4	0.28	0.28	5.0	1.28	0.4	54	1	24	0.013	0.17%	3.14	0.50	0.1	0.0000	0.000	64.26	64.26	65.48	60.68	60.48
MH 10002	MH 10003	4	0.00	2.37	19.0	1.03	2.4	122	1	24	0.013	0.17%	3.14	0.50	0.8	0.0001	0.014	64.26	64.24		60.22	60.00
I-14 A	I-14 B	4	0.17	0.17	5.0	1.28	0.2	31	1	24	0.013	0.17%	3.14	0.50	0.1	0.0000	0.000	64.26	64.26	65.21	60.41	60.21
I-14 B	MH 10014	4	0.14	0.31	12.5	1.12	0.3	9	1	24	0.013	0.17%	3.14	0.50	0.1	0.0000	0.000	64.26	64.26	65.21	60.21	60.10
MH 10014	MH 10002	4	0.00	0.31	13.8	1.09	0.3	18	1	24	0.013	0.17%	3.14	0.50	0.1	0.0000	0.000	64.26	64.26		60.10	60.07
I-3 A	I-3 B	4	0.75	0.75	5.0	1.28	1.0	31	1	24	0.013	0.17%	3.14	0.50	0.3	0.0000	0.001	64.25	64.24	65.12	60.32	60.12
I-3 B	MH 10003	4	0.81	1.56	6.7	1.23	1.9	9	1	24	0.013	0.17%	3.14	0.50	0.6	0.0001	0.001	64.24	64.24	65.12	60.12	60.02
MH 10003	MH 10004	4	0.00	3.93	21.7	1.02	4.0	198	1	24	0.013	0.17%	3.14	0.50	1.3	0.0003	0.062	64.24	64.18		60.00	59.87
I-4 A	I-4 B	4	0.82	0.82	5.0	1.28	1.0	31	1	24	0.013	0.17%	3.14	0.50	0.3	0.0000	0.001	64.18	64.18	65.11	60.31	60.11
I-4 B	MH 10004	4	0.32	1.14	6.5	1.24	1.4	9	1	24	0.013	0.17%	3.14	0.50	0.5	0.0000	0.000	64.18	64.18	65.12	60.11	60.01
MH 10004	MH 10005	4	0.00	5.07	24.2	1.00	5.1	42	1	24	0.013	0.17%	3.14	0.50	1.6	0.0005	0.021	64.18	64.16		59.87	59.60
I-5 A	I-5 B	4	0.35	0.35	5.0	1.28	0.4	31	1	24	0.013	0.17%	3.14	0.50	0.1	0.0000	0.000	64.16	64.16	65.10	60.30	60.10
I-5 B	MH 10005	4	0.27	0.62	8.6	1.17	0.7	9	1	24	0.013	0.17%	3.14	0.50	0.2	0.0000	0.000	64.16	64.16	65.10	60.10	60.00
MH 10005	MH 10006	4	0.00	5.69	24.7	1.00	5.7	108	1	24	0.013	0.17%	3.14	0.50	1.8	0.0006	0.068	64.16	64.09		59.60	59.41
I-13 A	I-13 B	4	1.12	1.12	5.0	1.28	1.4	31	1	24	0.013	0.17%	3.14	0.50	0.5	0.0000	0.001	64.16	64.16	65.24	60.74	60.54
I-13 B	MH 10013	4	0.28	1.40	6.1	1.25	1.8	9	1	24	0.013	0.17%	3.14	0.50	0.6	0.0001	0.001	64.16	64.16	65.24	60.54	60.44
MH 10013	MH 10011	4	0.00	1.40	6.4	1.24	1.7	93	1	24	0.013	0.17%	3.14	0.50	0.5	0.0001	0.005	64.16	64.15		60.86	60.70
I-11 A	I-11 B	4	0.62	0.62	5.0	1.28	0.8	35	1	24	0.013	0.17%	3.14	0.50	0.3	0.0000	0.000	64.15	64.15	65.30	60.50	60.30
I-11 B	MH 10011	4	0.32	0.94	7.3	1.21	1.1	9	1	24	0.013	0.17%	3.14	0.50	0.4	0.0000	0.000	64.15	64.15	65.30	60.30	60.20
MH 10011	MH 10009	4	0.00	2.34	9.2	1.16	2.7	150	1	24	0.013	0.17%	3.14	0.50	0.9	0.0001	0.022	64.15	64.13		60.70	60.45
I-9A	I-9B	4	1.00	1.00	5.0	1.28	1.3	31	1	24	0.013	0.17%	3.14	0.50	0.4	0.0000	0.001	64.13	64.13	65.10	60.30	60.10
I-9B	MH 10009	4	0.31	1.31	6.3	1.24	1.6	9	1	24	0.013	0.17%	3.14	0.50	0.5	0.0001	0.000	64.13	64.13	65.12	60.10	60.00
MH 10009	MH 10007	4	0.00	3.65	12.1	1.12	4.1	83	1	24	0.013	0.17%	3.14	0.50	1.3	0.0003	0.027	64.13	64.11		60.45	60.31
I-7 B	MH 10007	4	0.15	3.80	5.0	1.28	4.9	28	1	24	0.013	0.17%	3.14	0.50	1.5	0.0005	0.013	64.50	64.45		62.50	62.45
MH 10007	MH 10006	4	0.00	3.80	13.2	1.10	4.2	39	1	24	0.013	0.17%	3.14	0.50	1.3	0.0003	0.013	64.11	64.09		60.31	60.24
MH 10006	MH 10033	4	0.00	9.49	25.7	1.00	9.5	69	1	30	0.013	0.13%	4.91	0.63	1.9	0.0005	0.037	64.09	64.06		59.41	59.32
I-33 A	MH 10033	4	0.35	0.35	5.0	1.28	0.4	20	1	24	0.013	0.17%	3.14	0.50	0.1	0.0000	0.000	64.20	64.17		62.20	62.17
I-33 B	MH 10033	4	0.31	0.31	5.0	1.28	0.4	61	1	24	0.013	0.17%	3.14	0.50	0.1	0.0000	0.000	64.06	64.06		61.50	61.40
MH 10033	EX MH 73	4	0.00	10.15	26.3	1.00	10.2	63	1	30	0.013	0.13%	4.91	0.63	2.1	0.0006	0.039	64.06	64.02		59.32	59.24
EX MH 73	EX MH 56	4	0.69	10.15	26.8	1.00	10.2	87	1	42	0.013	0.09%	9.62	0.87	1.1	0.0001	0.009	64.02	64.01		59.24	59.12
EX MH 56	EX MH 57	4	0.00	23.49	28.1	1.00	23.5	169	1	42	0.013	0.09%	9.62	0.87	2.4	0.0005	0.092	64.01	63.92		59.12	58.98
EX 57 I-1	EX MH 57	4	0.88	0.88	7.0	1.22	1.1	34	1	30	0.013	0.13%	4.91	0.63	0.2	0.0000	0.000	63.92	63.92	65.61	59.81	59.61
57 I-2	EX MH 57	4	0.89	0.89	7.0	1.22	1.1	66	1	30	0.013	0.13%	4.91	0.63	0.2	0.0000	0.000	63.92	63.92	65.61	59.81	59.61
EX MH 57	EX MH 59	4	0.00	25.26	29.3	1.00	25.3	313	1	72	0.013	0.05%	28.27	1.30	0.9	0.0000	0.013	63.92	63.90		56.48	56.32
EX MH 74	EX MH 59	4	2.81	2.81	5.0	1.28	3.6	96	1	42	0.013	0.09%	9.62	0.87	0.4	0.0000	0.001	63.90	63.90		59.51	59.43
EX MH 59	EX MH 60	4	0.00	28.07	35.1	1.00	28.1	154	1	72	0.013	0.05%	28.27	1.30	1.0	0.0001	0.008	63.90	63.89		56.32	56.24
60 A-ext	EX MH 60	4	0.10	0.10	5.0	1.28	0.1	68	1	24	0.013	0.17%	3.14	0.50	0.0	0.0000	0.000	63.89	63.89		54.22	54.10
EX MH 60	EX RCB Out	4	0.00	28.17	35.1	1.00	28.2	76	1	72	0.013	0.05%	28.27	1.30	1.0	0.0001	0.004	63.89	63.89		50.73	50.69

Total Acreage= 28.17

University Boulevard West of LJ - Snake Slough West Outfall
EXTREME EVENT CALCULATIONS
CI Job No. 2015-062
8/11/2015 GLH

	University
25 YR @ OUTFALL	63.89
LOWEST T/C	65.61
MAX PONDING	65.61

$Q_{100} = C^*C_f^*i^*A$

	UNIVERSITY BLVD	HL&P Esmt	Day Care	The Villas	
C =	0.5	0.5	0.5	0.5	
C_f =	1.25	1.25	1.25	1.25	
LONGEST RUN	550	1056	544	1015	ft
t_c =	6.5	25.1	6.5	15.2	min
i =	10.5	6.5	10.5	7.5	in/hr
A =	3.12	11.53	3.37	10.15	acres
Q_{100} =	20.48	46.84	22.12	47.58	cfs
Q_{100} required in inlets =	20.48	0.00	0.00	47.58	cfs
		Ex. MH 54	*Ex. MH 59*		
$Q_{100\ TOTAL}$ =	137.02				
$Q_{100\ INLETS}$ =	68.06				

U/S MH	D/S MH	Q_{100}	PIPE DIA	LENGTH	HGL U/S	HGL D/S	TOP CURB
Ex MH 54	*Ex MH 55*	*46.84*	*36*	*195*	*65.89*	*64.93*	*65.79*
Ex 55 C I-A	*Ex MH 55*	*0.00*	*24*	*69*	*64.93*	*64.93*	*65.77*
Ex 55 C I-B	*Ex MH 55*	*0.00*	*24*	*69*	*64.93*	*64.93*	*65.77*
Ex MH 55	*Ex MH 56*	*46.84*	*42*	*90*	*64.93*	*64.73*	
Ex MH 56	*Ex MH 57*	*46.84*	*42*	*169*	*64.73*	*64.36*	
EX 57 I-1	*Ex MH 57*	*34.03*	*36*	*34*	*64.45*	*64.36*	*65.61*
EX 57 I-2	*Ex MH 57*	*34.03*	*36*	*68*	*64.54*	*64.36*	*65.61*
Ex MH 57	*Ex MH 59*	*114.90*	*72*	*313*	*64.36*	*64.13*	
Ex MH 59	*EX MH 65*	*137.02*	*72*	*230*	*64.13*	*63.89*	

INLET CAPACITY
q=C*A*√(64.4*(head))

INLET	TYPE	OPEN AREA	C	CONTROL	HEAD	Available q (cfs)
Ex 55 C I-A	*H-2*	*3.67*	*0.8*	*Gutter*	*0.34*	*13.74*
Ex 55 C I-B	*H-2*	*3.67*	*0.8*	*Gutter*	*0.34*	*13.74*
EX 57 I-1	*C-3 (1-10' & 1-5' xt)*	*8.33*	*0.8*	*Gutter*	*0.50*	*37.81*
EX 57 I-2	*C-3 (1-10' & 1-5' xt)*	*8.33*	*0.8*	*Gutter*	*0.50*	*37.81*

Q_{100} < 89.36
THEREFORE SYSTEM WORKS

APPROVED: _____ DEVELOPMENT COORDINATOR
FORT BEND COUNTY ENGINEERING DEPARTMENT
DATE: 10-16-15

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

Costello
Engineering and Surveying
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Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax
TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

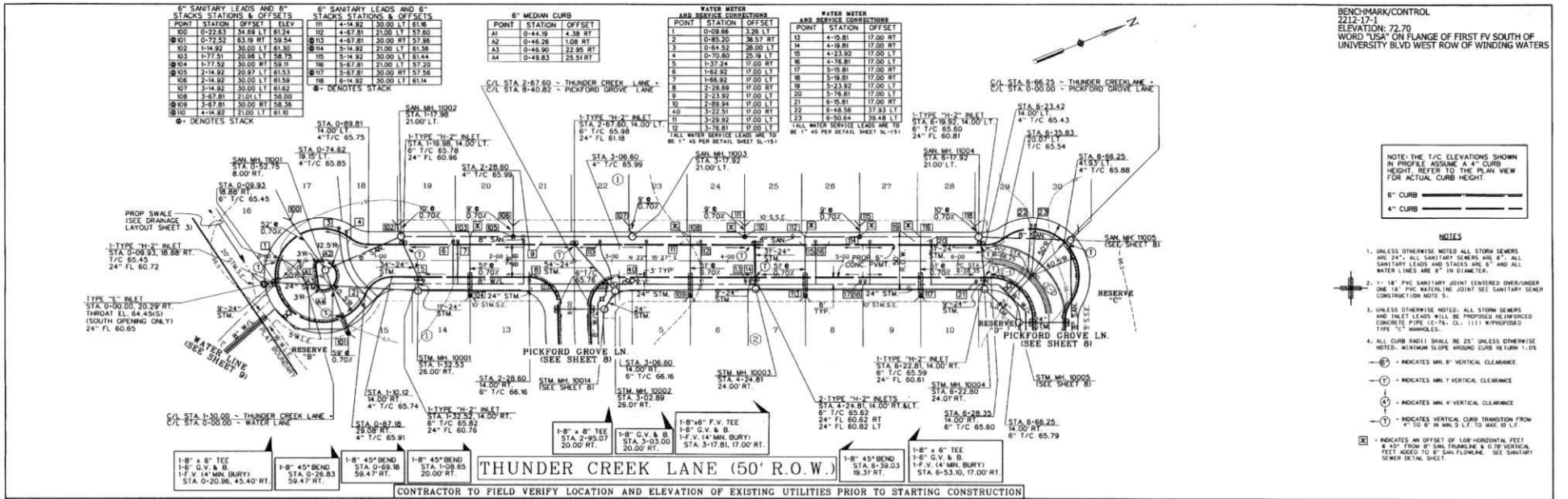
THE VILLAS AT RIVERSTONE

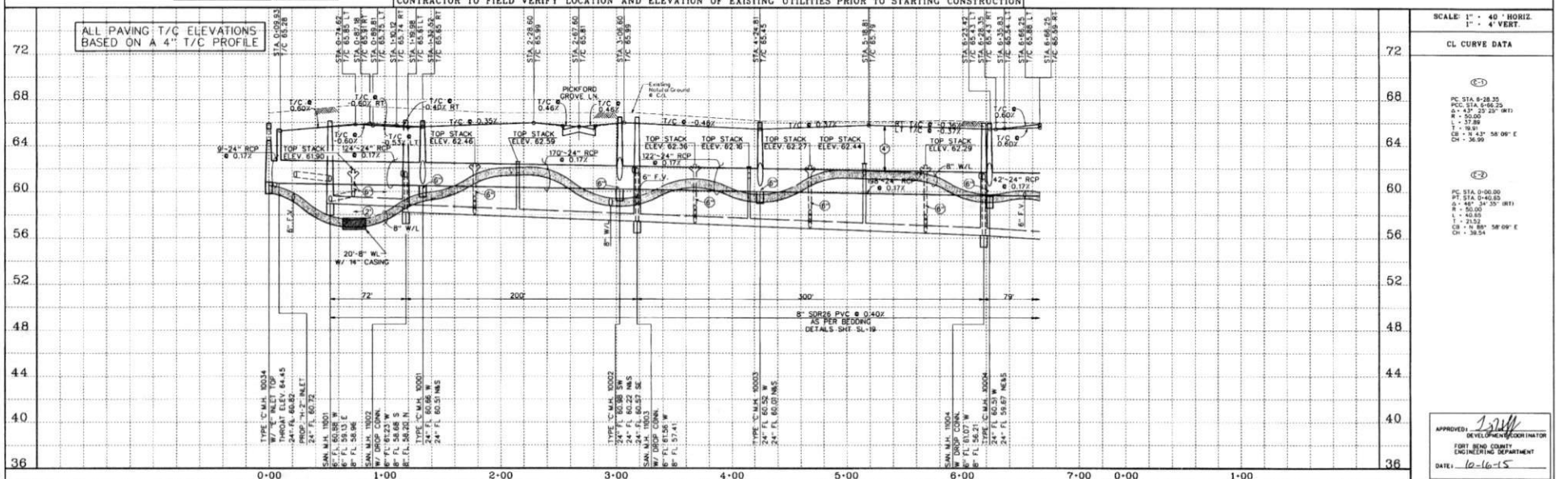
DRAINAGE CALCULATIONS

STATE OF TEXAS — GUY L. HUMPHREY — 100072 — LICENSED PROFESSIONAL ENGINEER — 8/18/15

SHEET 6
OF 15 SHEETS
JOB NO. 2015062-02.03

JOB NO. 2015062-02.03





SCALE: 1" - 40' HORIZ.
1" - 4' VERT.

CL CURVE DATA

C-1
PC STA. 6-28.35
PCC STA. 6+66.25
Δ = 43° 23' 25" (RT)
R = 50.00
L = 37.89
T = 19.91
CB = N 43° 58' 09" E
CH = 36.99

C-2
PC STA. 0+00.00
PT STA. 0+40.65
Δ = 46° 34' 35" (RT)
R = 50.00
L = 40.65
T = 21.52
CB = N 88° 58' 09" E
CH = 39.54

APPROVED: DEVELOPMENT COORDINATOR
FORT BEND COUNTY ENGINEERING DEPARTMENT
DATE: 10-16-15

NO.	REVISION	DATE	BY

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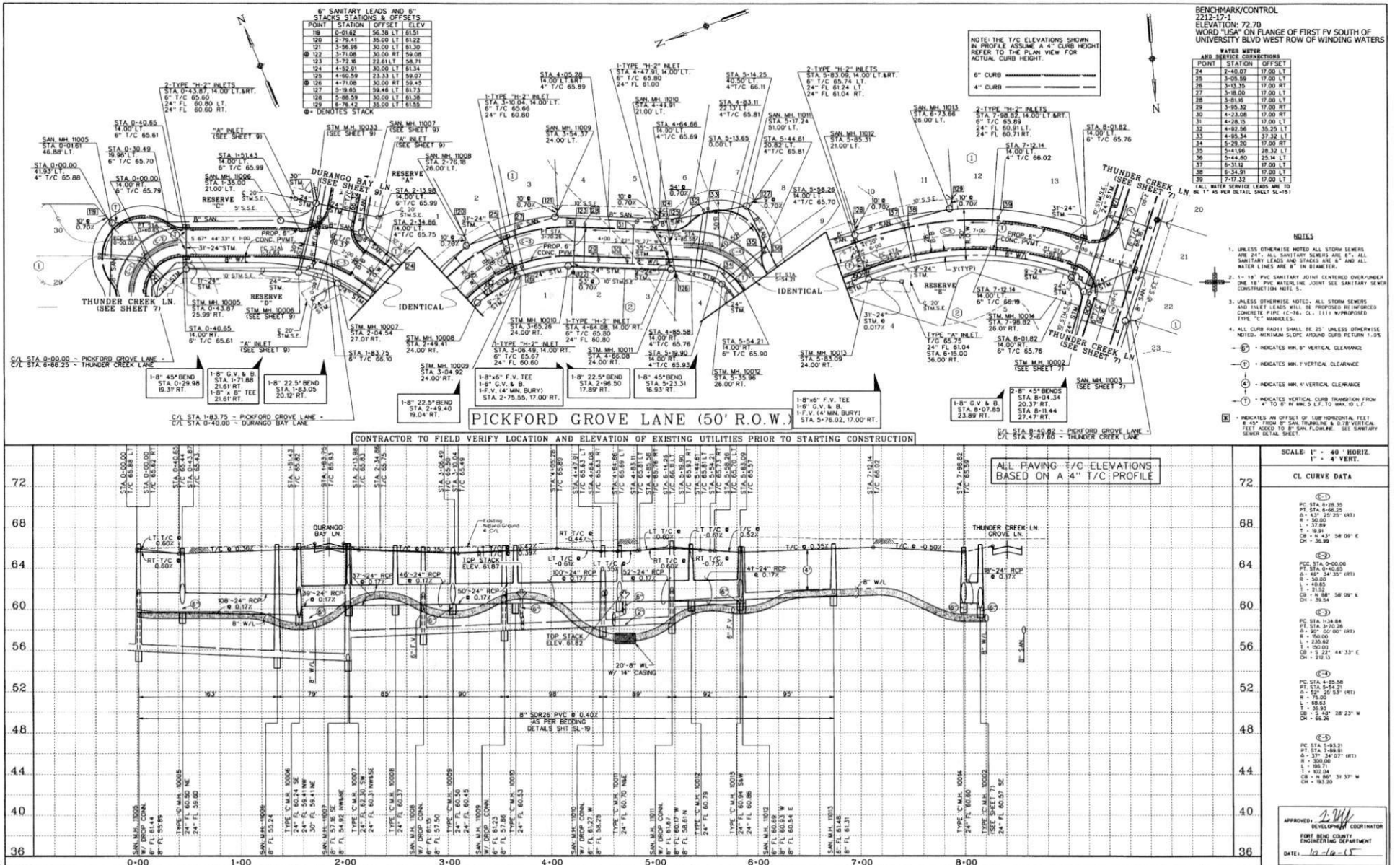
THE VILLAS AT RIVERSTONE

THUNDER CREEK LANE
STA. 0+00 TO STA. 6+66.25

GUY L. HUMPHREY 106072 LICENSED PROFESSIONAL ENGINEER 10/5/15

SHEET 7
OF 15 SHEETS
JOB NO. 2013062-02,03



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TBPLS FIRM REG. No. 100486

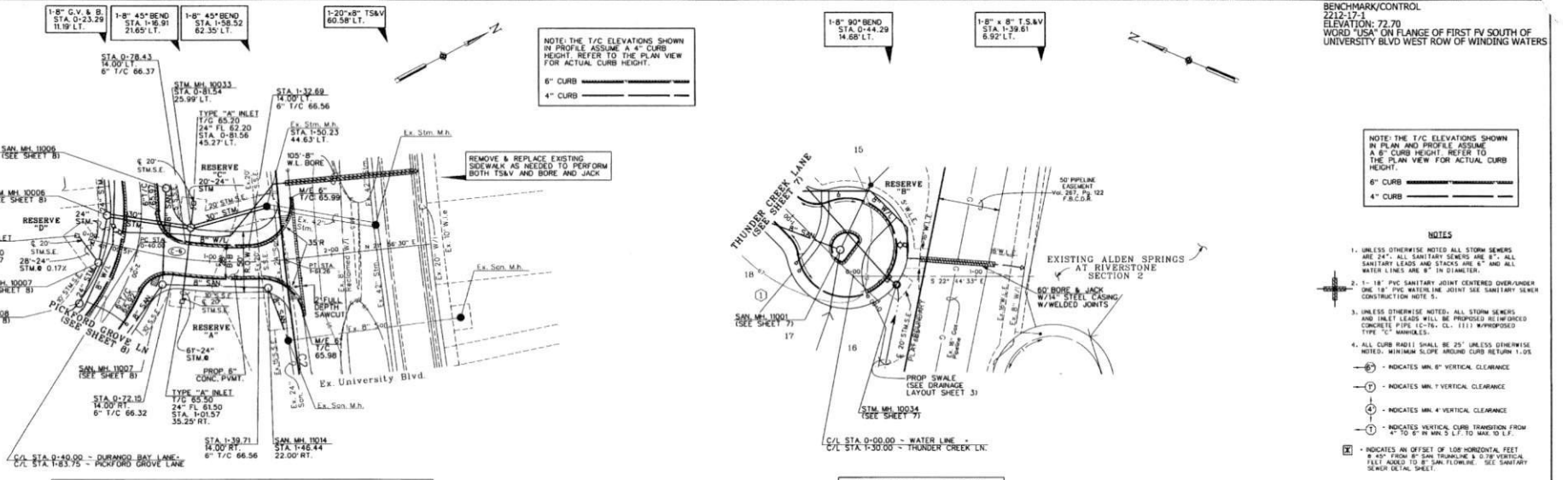
THE VILLAS AT RIVERSTONE

PICKFORD GROVE LANE
STA. 0+00.00 TO STA. 8+40.82

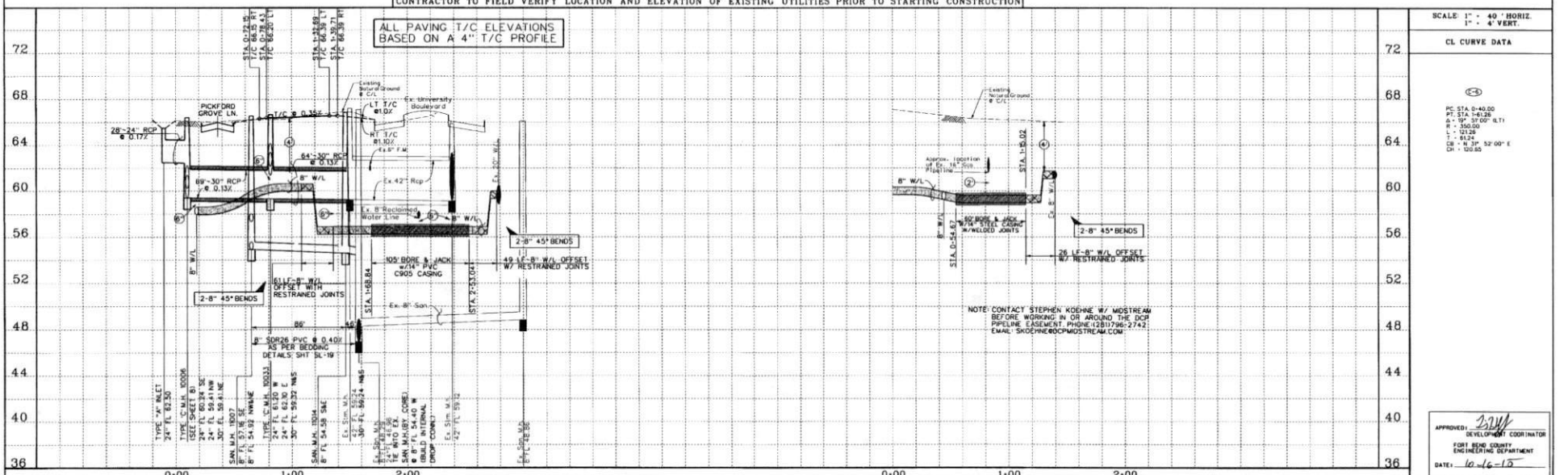
STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER
10/15/15

SHEET 8
OF 15 SHEETS
JOB NO. 2013062-02.03

JOB NO. 2013062-02.03



CONTRACTOR TO FIELD VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO STARTING CONSTRUCTION



SCALE: 1" = 40' HORIZ.
1" = 4' VERT.

CL CURVE DATA

C-6
PC STA 0+40.00
PT STA 1+61.26
Δ = 19° 37' 00" (LT)
R = 350.00
L = 121.26
T = 61.24
CB = N 35° 52' 00" E
CH = 120.65

APPROVED: DEVELOPMENT COORDINATOR
FORT BEND COUNTY ENGINEERING DEPARTMENT
DATE: 10-16-15

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

Costello
Engineering and Surveying
9990 Richmond Avenue, Suite 450 N
Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax
TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

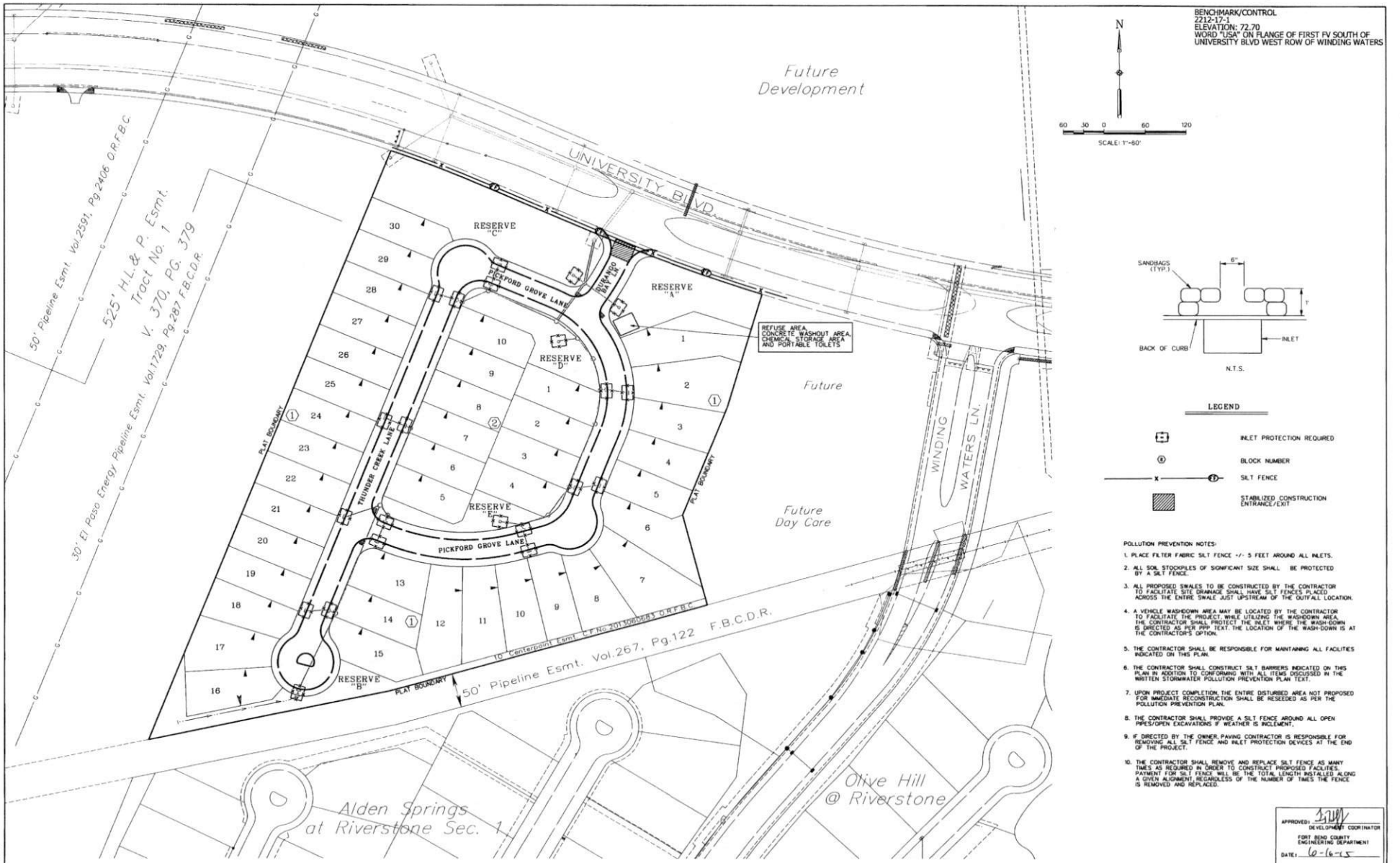
THE VILLAS AT RIVERSTONE

DURANGO BAY LANE STA. 0+00.00 TO 2+81.26 AND WATER LINE

GUY L. HUMPHREY 100072 LICENSED PROFESSIONAL ENGINEER

SHEET 9
OF 15 SHEETS
JOB NO. 2015062-02.03

JOB NO. 2015062-02.03



POLLUTION PREVENTION NOTES:

1. PLACE FILTER FABRIC SILT FENCE +/- 5 FEET AROUND ALL INLETS.
2. ALL SOIL STOCKPILES OF SIGNIFICANT SIZE SHALL BE PROTECTED BY A SILT FENCE.
3. ALL PROPOSED SWALES TO BE CONSTRUCTED BY THE CONTRACTOR TO FACILITATE SITE DRAINAGE SHALL HAVE SILT FENCES PLACED ACROSS THE ENTIRE SWALE JUST UPSTREAM OF THE OUTFALL LOCATION.
4. A VEHICLE WASHDOWN AREA MAY BE LOCATED BY THE CONTRACTOR TO FACILITATE THE PROJECT. WHILE UTILIZING THE WASHDOWN AREA, THE CONTRACTOR SHALL PROTECT THE INLET WHERE THE WASH-DOWN IS DIRECTED AS PER PPP TEXT. THE LOCATION OF THE WASH-DOWN IS AT THE CONTRACTOR'S OPTION.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL FACILITIES INDICATED ON THIS PLAN.
6. THE CONTRACTOR SHALL CONSTRUCT SILT BARRIERS INDICATED ON THIS PLAN IN ADDITION TO CONFORMING WITH ALL ITEMS DISCUSSED IN THE WRITTEN STORMWATER POLLUTION PREVENTION PLAN TEXT.
7. UPON PROJECT COMPLETION, THE ENTIRE DISTURBED AREA NOT PROPOSED FOR IMMEDIATE RECONSTRUCTION SHALL BE RESEEDED AS PER THE POLLUTION PREVENTION PLAN.
8. THE CONTRACTOR SHALL PROVIDE A SILT FENCE AROUND ALL OPEN PIPES/OPEN EXCAVATIONS IF WEATHER IS INCLEMENT.
9. IF DIRECTED BY THE OWNER, PAVING CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SILT FENCE AND INLET PROTECTION DEVICES AT THE END OF THE PROJECT.
10. THE CONTRACTOR SHALL REMOVE AND REPLACE SILT FENCE AS MANY TIMES AS REQUIRED IN ORDER TO CONSTRUCT PROPOSED FACILITIES. PAYMENT FOR SILT FENCE WILL BE THE TOTAL LENGTH INSTALLED ALONG A GIVEN ALIGNMENT, REGARDLESS OF THE NUMBER OF TIMES THE FENCE IS REMOVED AND REPLACED.

APPROVED: _____ DEVELOPMENT COORDINATOR
FORT BEND COUNTY ENGINEERING DEPARTMENT
DATE: 10-16-15

NO.	REVISION	DATE	BY

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DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: _____ DATE: _____
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TBPLS FIRM REG. No. 100486

THE VILLAS AT RIVERSTONE

POLLUTION PREVENTION PLAN

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED PROFESSIONAL ENGINEER
9/24/15

SHEET 10
OF 15 SHEETS
JOB NO. 2015062-02,03

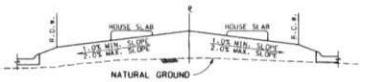
JOB NO. 2015062-02,03

TYPE "A" LOT FLOW DIAGRAM

BENCHMARK/CONTROL
2212-17-1
ELEVATION: 72.70
WORD "USA" ON FLANGE OF FIRST FV SOUTH OF UNIVERSITY BLVD WEST ROW OF WINDING WATERS

LEGEND

60.0	EXISTING CONTOURS
63.0	FINISHED GRADE ELEVATION
62.70	PROPOSED TOP OF CURB ELEVATION
→	LOT FLOW DIRECTION
11 / ⑤	LOT / BLOCK NUMBER
	- INDICATES TREE TO REMAIN
	- INDICATES TREE TO BE REMOVED (BY OTHERS)



TYPE "A" LOT SIDE VIEW
FLOW DIAGRAM
"A-A"
N.T.S.

TYPE "A" LOT SIDE VIEW
FLOW DIAGRAM
ON ALL PERIMETER LOTS
"C-C"

FILL NOTES

1. ALL LOT GRADING SHALL INCLUDE THE ENTIRE WIDTH OF ANY ADJACENT UTILITY EASEMENT.
2. CONTRACTOR SHALL GRADE ALL LOTS TO THE PROPOSED ELEVATIONS SHOWN ON THE PLAN. A TOLERANCE OF 0.10' BELOW OR 0.20' ABOVE THE FRONT AND BACK LOT ELEVATIONS SHOWN ON THE PLAN WILL BE CONSIDERED ACCEPTABLE. ADDITIONAL SOIL MAY BE APPLIED TO THE LOT INTERIOR TO PROVIDE THE LOT WITH MORE ROUNDED VERTICAL CONFIGURATION. HOWEVER, THE FRONT AND BACK LOT ELEVATIONS SHOWN MUST STILL BE HELD.
3. IN THE EVENT THAT AVAILABLE SOIL MATERIAL FOR THE LOT BALANCE IS SUBSTANTIALLY ABOVE OR BELOW THAT REQUIRED, IT IS THE RESPONSIBILITY OF THE PAVING CONTRACTOR TO BALANCE THE LOT GRADING AS EVENLY AS POSSIBLE WITH THE AVAILABLE FILL MATERIAL.
4. CONTRACTOR SHALL GET OWNER OR ENGINEER'S APPROVAL PRIOR TO REMOVING ANY TREES. EXISTING TREES AND HEAVY BRUSH WITHIN THE PROJECT AREA ARE TO BE HAULED OFFSITE. THE CONTRACTOR WILL THEN CLEAR, GRUB AND STOCKPILE STRIPPINGS UPON COMPLETION OF LOT GRADING. ANY STOCKPILED TOPSOIL AND/OR STRIPPINGS MAY BE SPREAD EVENLY OVER THE GRADED LOTS.
5. ALL AREAS TO RECEIVE FILL SHALL BE PROOF-ROLLED TO DETECT ANY SOFT OR POORLY COMPACTED AREAS PRIOR TO RECEIVING FILL. PROOF-ROLLING SHALL BE OBSERVED BY THE SOIL TESTING LABORATORY TO ASSESS THE CONDITION OF THE SOIL. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE SOIL TESTING LABORATORY. ALL WEAK AREAS ARE TO BE REMOVED AND REPLACED WITH MATERIAL OF SIMILAR CLASSIFICATION, MOISTURE AND DENSITY AS ADJACENT SOILS.
6. ALL FILL MATERIAL SHALL BE FREE OF DELETERIOUS MATERIAL. FILL SHALL BE PLACED IN LOOSE LAYERS NOT EXCEEDING 8-INCHES IN THICKNESS, MOISTURE CONDITIONED AND COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY AT MOISTURE CONTENTS WITHIN 2 PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D 698. EACH LAYER OF COMPACTED FILL SHALL BE TESTED TO DETERMINE THE PERCENTAGE OF COMPACTION ACHIEVED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE SOILS TESTING LABORATORY.
7. THE TOPOGRAPHY SHOWN IS AN APPROXIMATION BY THE ENGINEER BASED ON RANDOM FIELD SHOTS. ACTUAL FIELD ELEVATIONS MAY VARY. USE OF THE SHOWN TOPOGRAPHY FOR ESTIMATE PURPOSES WILL BE AT THE CONTRACTORS RISK.
8. CONTRACTOR SHALL NOT DISTURB ADJACENT FACILITIES AND SHALL RESTORE ADJACENT FACILITIES TO THEIR ORIGINAL CONDITION IF DISTURBED.
9. CONTRACTOR SHALL MAKE TWO INDEPENDENT MOBILIZATIONS FOR CLEARING THE SITE. UPON THE FIRST MOBILIZATION, THE CONTRACTOR WILL REMOVE ONLY THOSE TREES NECESSARY TO CUT STREETS. ANY TREES THAT APPEAR TO BE SPECIMEN THAT MAY BE ABLE TO STAY AND CAN WORK WITHIN THE CONFINES OF THE GRADING PLAN WILL REMAIN. IF AT THE END OF THE PROJECT THE TREES LEFT WILL NOT WORK AND/OR THE OWNER WANTS THEM CLEARED ANYWAY, THE CONTRACTOR WILL MOBILIZE CLEARING EQUIPMENT A SECOND TIME TO FINISH THE JOB. UNDER THESE CONDITIONS, ROOTS, HEAVY BRUSH, AND SKULLTOP TREES ARE TO BE REMOVED FROM THE PROJECT SITE AND LEGALLY DISPOSED OF BY THE CONTRACTOR.

APPROVED: _____ DEVELOPMENT COORDINATOR
FORT BEND COUNTY ENGINEERING DEPARTMENT
DATE: 10-16-15

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
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QA/QC BY: _____ DATE:
QA/QC REVISIONS BY:

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TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

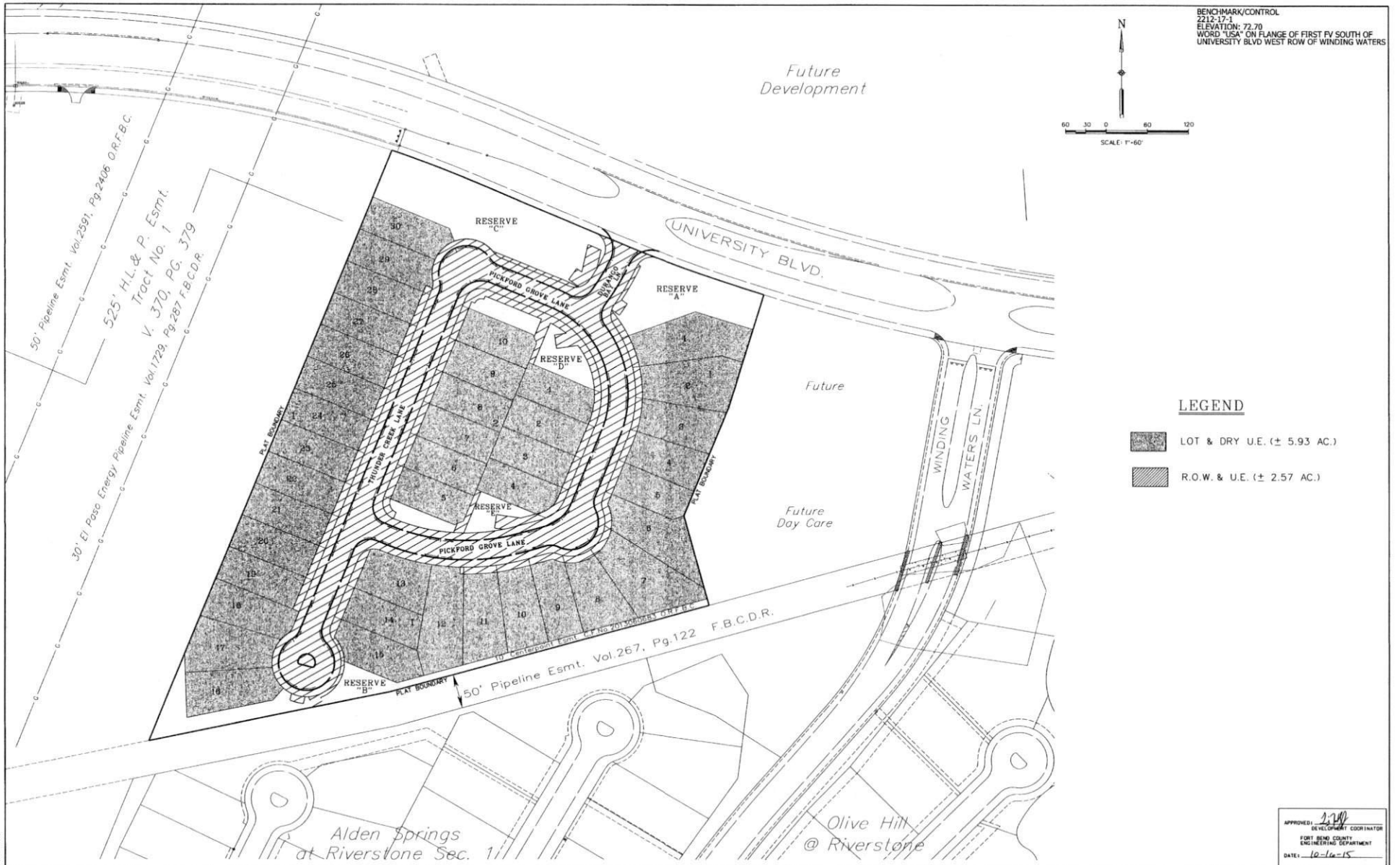
THE VILLAS AT RIVERSTONE

LOT GRADING PLAN

GUY L. HUMPHREY
106072
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

SHEET 11
OF 15 SHEETS
JOB NO. 2015062-02,03

JOB NO. 2015062-02,03



NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

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Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax

TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

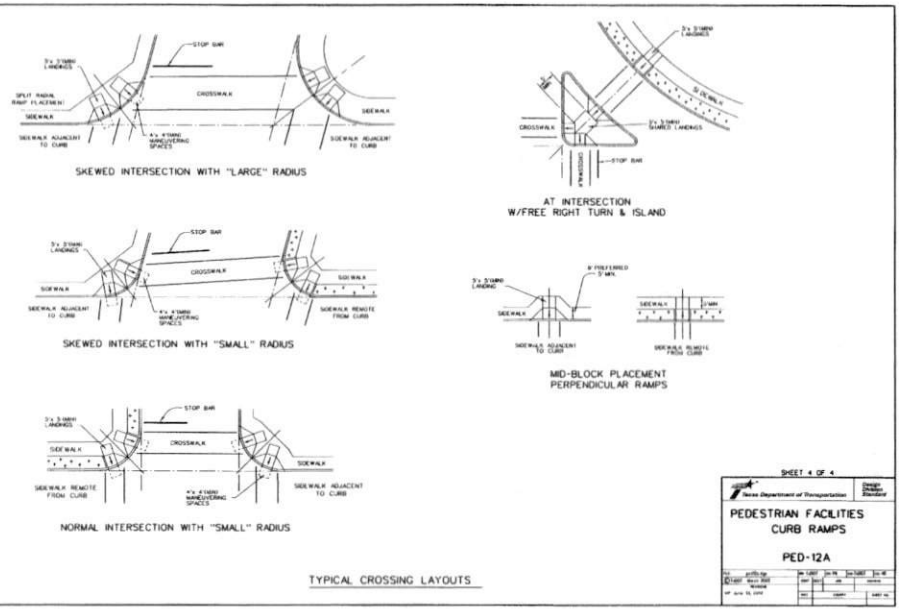
THE VILLAS AT RIVERSTONE

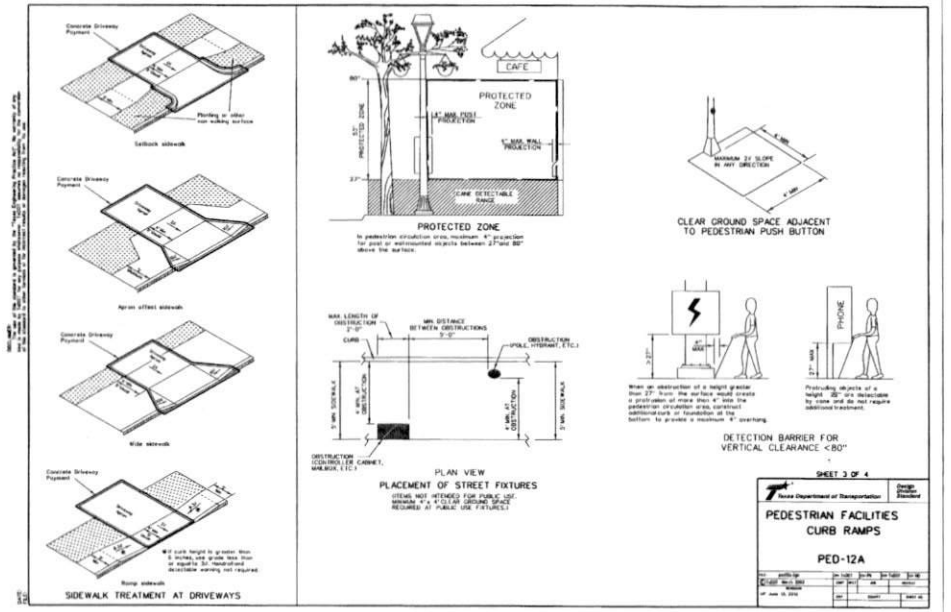
CLEARING PLAN

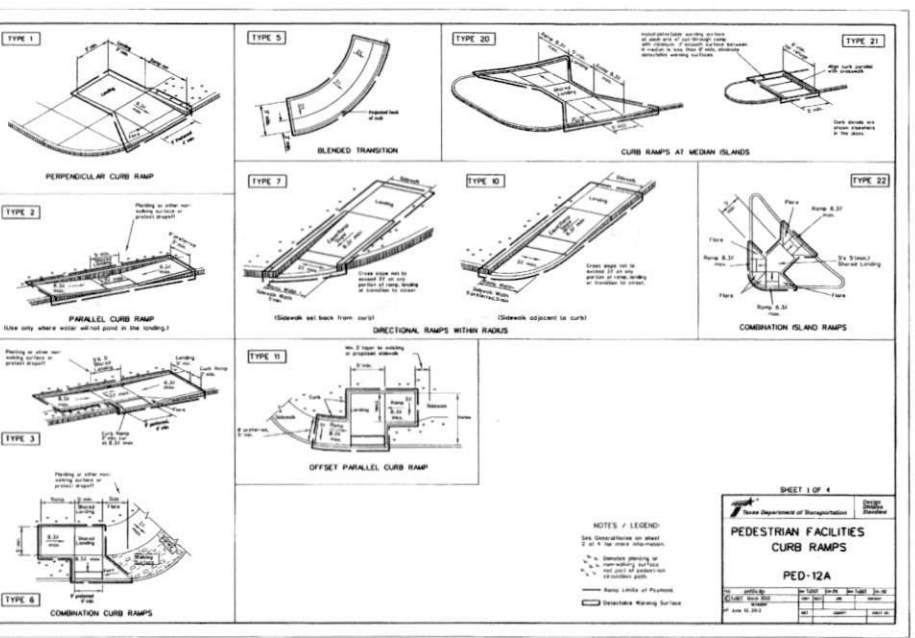
STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED PROFESSIONAL ENGINEER
10/5/15

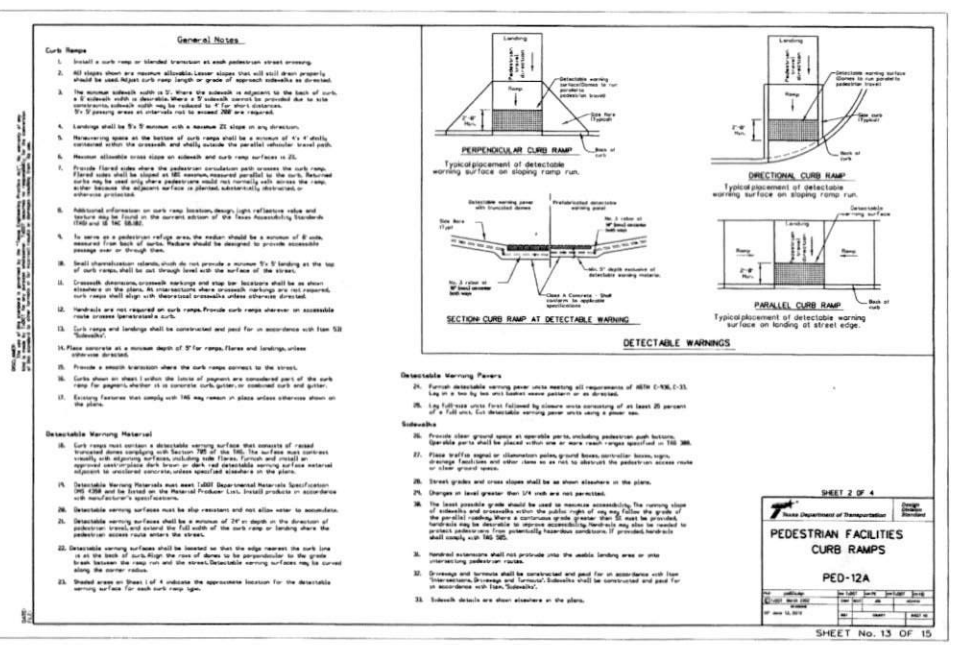
SHEET 12
OF 15 SHEETS
JOB NO. 2015062-02,03

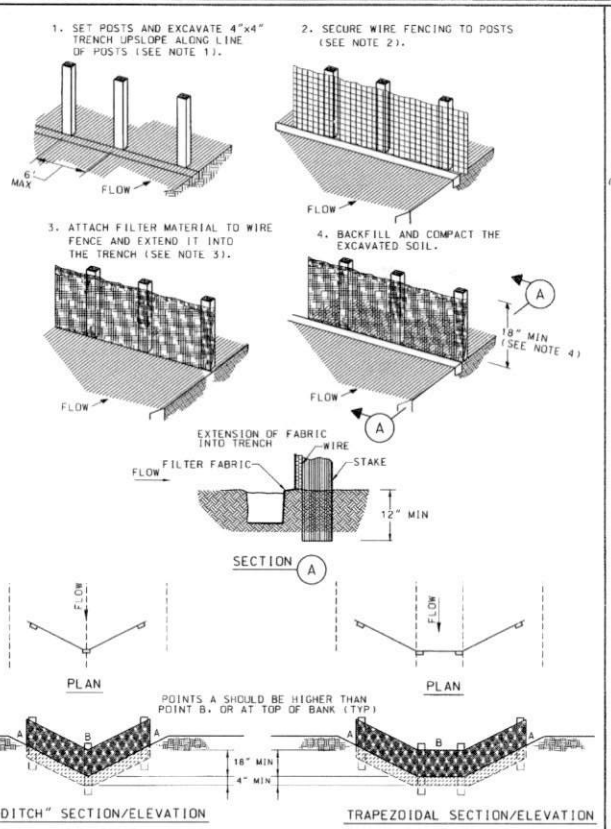
JOB NO. 2015062-02,03


SKEWED INTERSECTION WITH "LARGE" RADIUS
SKEWED INTERSECTION WITH "SMALL" RADIUS
NORMAL INTERSECTION WITH "SMALL" RADIUS
AT INTERSECTION W/FREE RIGHT TURN & ISLAND
MID-BLOCK PLACEMENT PERPENDICULAR RAMPS
TYPICAL CROSSING LAYOUTS
SHEET 4 OF 4
PEDESTRIAN FACILITIES CURB RAMPS
PED-12A


SIDEWALK TREATMENT AT DRIVEWAYS
PROTECTED ZONE
CLEAR GROUND SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON
PLACEMENT OF STREET FIXTURES
DETECTION BARRIER FOR VERTICAL CLEARANCE <80"
SHEET 3 OF 4
PEDESTRIAN FACILITIES CURB RAMPS
PED-12A


TYPE 1
PERPENDICULAR CURB RAMP
TYPE 2
PARALLEL CURB RAMP
TYPE 3
TYPE 6
COMBINATION CURB RAMPS
TYPE 5
BLENDED TRANSITION
TYPE 20
CURB RAMPS AT MEDIAN ISLANDS
TYPE 21
TYPE 7
TYPE 10
DIRECTIONAL RAMPS WITHIN RADIUS
TYPE 22
COMBINATION ISLAND RAMPS
TYPE 11
OFFSET PARALLEL CURB RAMP
NOTES / LEGEND
SHEET 1 OF 4
PEDESTRIAN FACILITIES CURB RAMPS
PED-12A


General Notes
Curb Ramps
Detectable Warning Material
Detectable Warning Pavers
Sidewalks
PERPENDICULAR CURB RAMP
DIRECTIONAL CURB RAMP
PARALLEL CURB RAMP
SECTION-CURB RAMP AT DETECTABLE WARNING
DETECTABLE WARNINGS
SHEET 2 OF 4
PEDESTRIAN FACILITIES CURB RAMPS
PED-12A

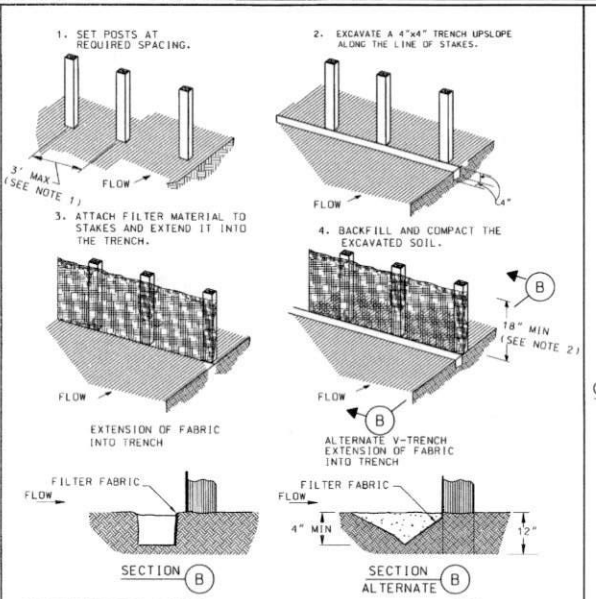


CONSTRUCTION NOTES:

1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE. WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS. AND FOLDED.
6. SEE SECTION 01568 - REINFORCED FILTER FABRIC BARRIER.

SYMBOL

REINFORCED FILTER FABRIC BARRIER

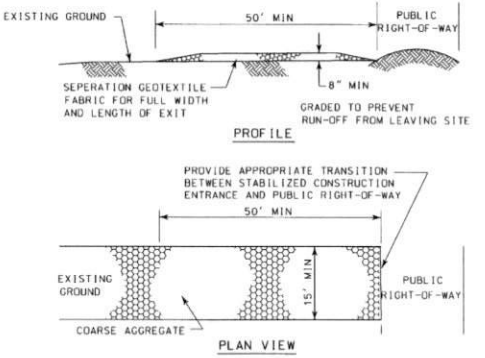


CONSTRUCTION NOTES:

1. 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC FENCE SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS. AND FOLDED.
4. SEE SECTION 01567 - FILTER FABRIC FENCE.

SYMBOL

FILTER FABRIC FENCE

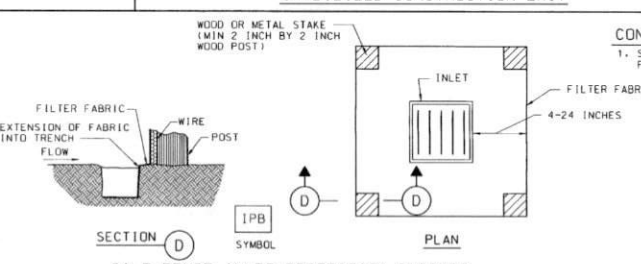


CONSTRUCTION NOTES:

1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS. BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT. UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.
5. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMODATE A TRUCK WASHING AREA. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE TRUCK WASHING AREA.
6. SEE SECTION 01569 - STABILIZED CONSTRUCTION EXIT.
7. STABILIZED CONSTRUCTION EXIT SHALL BE MAINTAINED FREE OF SEDIMENT FOR THE DURATION OF THE PROJECT.

SC
SYMBOL

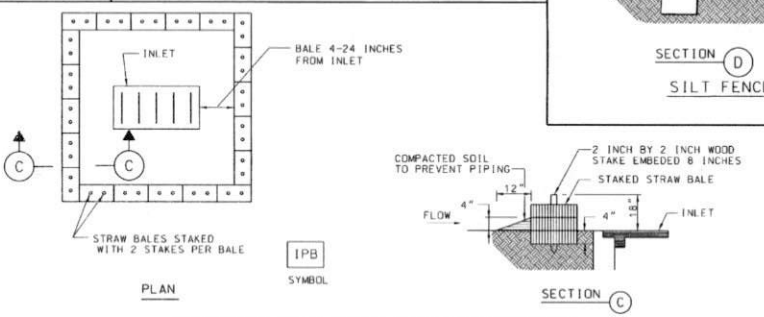
STABILIZED CONSTRUCTION EXIT



CONSTRUCTION NOTE:

1. SEE CONSTRUCTION NOTES FOR RFB.

SILT FENCE INLET PROTECTION BARRIER



STRAW BALE DROP INLET PROTECTION BARRIER

APPROVED: _____ DEVELOPMENT COORDINATOR
FORT BEND COUNTY ENGINEERING DEPARTMENT
DATE: 10-16-15

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
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THE VILLAS AT RIVERSTONE

POLLUTION PREVENTION DETAILS

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER
8/19/15

SHEET 14
OF 15 SHEETS
JOB NO. 2015062-02,03

JOB NO. 2015062-02,03

STATE OF TEXAS
COUNTY OF FORT BEND

WE, RIVERSTONE 250, INC., A TEXAS CORPORATION, ACTING BY AND THROUGH LARRY D. JOHNSON, PRESIDENT AND F.W. REICHERT III, VICE PRESIDENT BEING OFFICERS OF RIVERSTONE 250 INC., A TEXAS CORPORATION, HEREINAFTER REFERRED TO AS OWNERS OF THE 10.0412 ACRE TRACT DESCRIBED IN THE ABOVE AND FOREGOING PLAT OF THE VILLAS AT RIVERSTONE, DOES HEREBY MAKE SUBDIVISION OF SAID PROPERTY ACCORDING TO THE LINES, STREETS, LOTS, BUILDING LINES, AND EASEMENTS THEREON SHOWN AND DESIGNATE SAID SUBDIVISION AS THE VILLAS AT RIVERSTONE, LOCATED IN THE WILLIAM LITTLE SURVEY, A-54, FORT BEND COUNTY TEXAS, AND HEREBY DEDICATES TO THE PUBLIC USE AS SUCH, ALL STREETS AND EASEMENTS SHOWN THEREON FOREVER AND DOES HEREBY WAIVE ANY CLAIMS FOR DAMAGES OCCASIONED BY THE ESTABLISHING OF GRADES AS APPROVED FOR THE STREETS DEDICATED OR OCCASIONED BY ALTERATION OF THE SURFACE OF ANY PORTION OF STREETS TO CONFORM TO SUCH GRADES, AND DOES HEREBY BIND ITSELF, AND ITS SUCCESSORS AND ASSIGNS TO WARRANT AND DEFEND FOREVER THE TITLE TO THE LAND SO DEDICATED.

FURTHER, OWNERS HAVE DEDICATED AND BY THESE PRESENTS DO DEDICATE TO THE USE OF THE PUBLIC FOR PUBLIC UTILITY PURPOSES FOREVER UNOBSTRUCTED AERIAL EASEMENTS. THE AERIAL EASEMENTS SHALL EXTEND HORIZONTALLY AN ADDITIONAL ELEVEN FEET, SIX INCHES (11' 6") FOR TEN FEET (10' 0") PERIMETER GROUND EASEMENTS OR SEVEN FEET, SIX INCHES (7' 6") FOR FOURTEEN FEET (14' 0") PERIMETER GROUND EASEMENTS OR FIVE FEET, SIX INCHES (5' 6") FOR SIXTEEN FEET (16' 0") PERIMETER GROUND EASEMENTS, FROM A PLANE SIXTEEN FEET (16' 0") ABOVE GROUND LEVEL UPWARD, LOCATED ADJACENT TO AND ADJOINING SAID PUBLIC UTILITY EASEMENTS THAT ARE DESIGNATED WITH AERIAL EASEMENTS (U.E. & A.E.) AS INDICATED AND DEPICTED HEREON, WHEREBY THE AERIAL EASEMENTS TOTAL TWENTY -ONE FEET, SIX INCHES (21' 6") IN WIDTH.

FURTHER, OWNERS HAVE DEDICATED AND BY THESE PRESENTS DO DEDICATE TO THE USE OF THE PUBLIC FOR PUBLIC UTILITY PURPOSES FOREVER UNOBSTRUCTED AERIAL EASEMENTS. THE AERIAL EASEMENTS SHALL EXTEND HORIZONTALLY AN ADDITIONAL TEN (10' 0") FOR TEN FEET (10' 0") BACK-TO-BACK GROUND EASEMENTS OR EIGHT FEET (8' 0") FOR FOURTEEN FEET (14' 0") BACK-TO-BACK GROUND EASEMENTS, OR SEVEN FEET (7' 0") FOR SIXTEEN FEET (16' 0") BACK-TO-BACK GROUND EASEMENTS, FROM A PLANE SIXTEEN FEET (16' 0") ABOVE GROUND LEVEL UPWARD, LOCATED ADJACENT TO BOTH SIDES AND ADJOINING SAID PUBLIC UTILITY EASEMENTS THAT ARE DESIGNATED WITH AERIAL EASEMENTS (U.E. & A.E.) AS INDICATED AND DEPICTED HEREON, WHEREBY THE AERIAL EASEMENTS TOTAL THIRTY FEET (30' 0") IN WIDTH.

FURTHER, WE DO HEREBY ACKNOWLEDGE THE RECEIPT OF THE "ORDERS OF REGULATION FOR THE REGULATION OF OUTDOOR LIGHTING IN THE UNINCORPORATED AREAS OF FORT BEND COUNTY, TEXAS" AND DO HEREBY COVENANT AND AGREE AND SHALL COMPLY WITH THIS ORDER AS ADOPTED BY FORT BEND COUNTY COMMISSIONERS COURT ON MARCH 23, 2004, AND ANY SUBSEQUENT AMENDMENTS.

IN TESTIMONY WHEREOF, RIVERSTONE 250, INC., A TEXAS CORPORATION, HAS CAUSED THESE PRESENTS TO BE SIGNED BY LARRY D. JOHNSON, PRESIDENT AND F.W. REICHERT III, ITS VICE PRESIDENT

THIS ______ DAY OF ______________, 2015.

RIVERSTONE 250, INC.,
A TEXAS CORPORATION

BY: ______________________________ ATTEST BY: ______________________________
LARRY D. JOHNSON, PRESIDENT — F.W. REICHERT, VICE PRESIDENT

STATE OF TEXAS
COUNTY OF FORT BEND

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED LARRY D. JOHNSON, PRESIDENT, AND F.W. REICHERT III, VICE PRESIDENT, OF RIVERSTONE 250, INC., A TEXAS CORPORATION, KNOWN TO ME TO BE THE PERSONS WHOSE NAMES ARE SUBSCRIBED TO THE FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT THEY EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATIONS THEREIN EXPRESSED AND IN THE CAPACITY THEREIN AND HEREIN STATED, AND AS THE ACT AND DEED OF SAID CORPORATION.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, THIS ____ DAY OF __________, 2015.

____
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

MY COMMISSION EXPIRES: ____________________

LIEN HOLDERS ACKNOWLEDGMENT AND SUBORDINATION STATEMENT

WE, TRUSTMARK NATIONAL BANK, ARE THE OWNER AND HOLDER OF A LIEN AGAINST THE PROPERTY DESCRIBED IN THE PLAT KNOWN AS THE VILLAS AT RIVERSTONE, SAID LIEN BEING EVIDENCED BY INSTRUMENT OF RECORD IN CLERK'S FILE NUMBER(S) 2012110028 2013019624, OF THE OFFICIAL RECORDS OF FORT BEND COUNTY, TEXAS, DO HEREBY IN ALL THINGS SUBORDINATE OUR INTEREST IN SAID PROPERTY TO THE PURPOSES AND EFFECTS OF SAID PLAT AND THE DEDICATIONS AND RESTRICTIONS SHOWN HEREIN TO SAID PLAT AND WE HEREBY CONFIRM THAT WE ARE PRESENT OWNER OF SAID LIEN AND HAVE NOT ASSIGNED THE SAME NOR ANY PART THEREOF.

TRUSTMARK NATIONAL BANK

BY: ______________________________
BRUCE BARCLAY, SENIOR VICE PRESIDENT

STATE OF TEXAS
COUNTY OF HARRIS

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED BRUCE BARCLAY, SENIOR VICE PRESIDENT, OF TRUSTMARK NATIONAL BANK, KNOW TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATIONS THEREIN EXPRESSED AND IN THE CAPACITY THEREIN AND HEREIN STATED, AND AS THE ACT AND DEED OF SAID CORPORATION.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, THIS ____ DAY OF __________, 2015.

____
NOTARY PUBLIC IN AND
FOR THE STATE OF __________

MY COMMISSION EXPIRES: ____________________

I, MARK D. ARMSTRONG, A REGISTERED PROFESSIONAL LAND SURVEYOR OF THE STATE OF TEXAS, HEREBY CERTIFY THAT THIS SUBDIVISION IS TRUE AND CORRECT; WAS PREPARED FROM AN ACTUAL BOUNDARY SURVEY OF THE PROPERTY MADE ON THE THE GROUND UNDER MY SUPERVISION ACCORDING TO THE STANDARDS OF PRACTICE OF THE TEXAS BOARD OF PROFESSIONAL LAND SURVEYORS; THAT THE PLAT BOUNDARY CORNERS HAVE BEEN TIED TO THE NEAREST STREET INTERSECTION; THAT THE BOUNDARY CORNERS, ANGLE POINTS, POINTS OF CURVATURE/TANGENCY AND OTHER POINTS OF REFERENCE WERE MARKED ON THE GROUND BEFORE I SIGNED AND SEALED THIS DOCUMENT; AND THAT ALL PREVIOUSLY EXISTING PROPERTY MARKERS ARE SUFFICIENTLY DESCRIBED ON THIS DOCUMENT AS FOUND AND ALL SET MARKERS ARE A MINIMUM 5/8-INCH DIAMETER IRON ROD WITH SURVEYOR'S CAP. THE INTERIOR CORNERS OF THIS SUBDIVISION WERE NOT SET AT THE TIME THIS PLAT WAS SIGNED AND SEALED BY ME. THESE CORNERS ARE EXPECTED TO BE SET AFTER CONSTRUCTION OF THE PUBLIC INFRASTRUCTURE AND FINAL GRADING WITHIN THE SUBDIVISION.

____
MARK D. ARMSTRONG, R.P.L.S.
TEXAS REGISTRATION NO.5363

I, CHAD E. HABLINSKI, A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THIS PLAT MEETS ALL REQUIREMENTS OF THE CITY OF SUGAR LAND AND FORT BEND COUNTY.

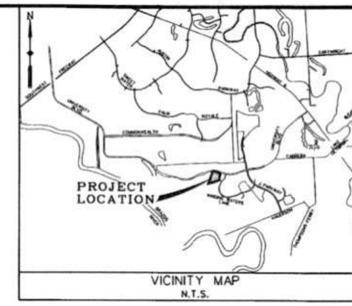
____
CHAD E. HABLINSKI
LICENSED PROFESSIONAL ENGINEER
TEXAS REGISTRATION NO. 85466

THIS IS TO CERTIFY THAT THE PLANNING AND ZONING COMMISSION OF THE CITY OF SUGAR LAND, TEXAS HAS APPROVED THIS PLAT AND SUBDIVISION OF THE VILLAS AT RIVERSTONE, IN CONFORMANCE WITH THE LAWS OF THE STATE OF TEXAS AND THE ORDINANCES OF THE CITY OF SUGAR LAND AS SHOWN HEREON AND AUTHORIZES THE RECORDING OF THIS PLAT.

THIS ________ DAY OF ________________, 2015.

BY: ______________________________ BY: ______________________________
KATHY HUEBNER, CHAIR — GLENDA GUNDERMANN, CITY SECRETARY

1. ELEVATIONS USED FOR DELINEATING CONTOUR LINES ARE BASED ON NGVD 1929 DATUM, 1973 ADJUSTMENT.
SITE TBM: "X" CUT IN CONCRETE AT SOUTH END OF WINDING WATERS LANE APPROXIMATELY 16-FEET WEST OF CENTERLINE OF ROAD. ELEVATION: 65.85, NGVD 1929 DATUM, 1973 ADJUSTMENT.
TO CONVERT TO NAVD 1988 DATUM, 2001 ADJUSTMENT SUBTRACT 1.23' AS ESTABLISHED BY CITY OF SUGAR LAND GEODETIC CONTROL STATION SCR-1 LOCATED AT THE INTERSECTION OF ELKINS ROAD AND SABER RIVER ROAD.
2. ALL BEARINGS REFERENCED TO THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE.
3. THIS PLAT WAS PREPARED TO MEET CITY OF SUGAR LAND AND FORT BEND COUNTY REQUIREMENTS.
4. THIS PLAT WAS PREPARED FROM INFORMATION FURNISHED BY OLD REPUBLIC TITLE G.F. NO. HT073350, EFFECTIVE DATE OCTOBER 6, 2014. THE SURVEYOR HAS NOT ABSTRACTED THE ABOVE PROPERTY.
5. THIS PLAT LIES WHOLLY WITHIN FORT BEND MUNICIPAL UTILITY DISTRICT NO. 128, FORT BEND COUNTY LEVEE IMPROVEMENT DISTRICT NO. 15, FORT BEND SUBSIDENCE DISTRICT, FORT BEND COUNTY DRAINAGE DISTRICT, FORT BEND INDEPENDENT SCHOOL DISTRICT AND THE ETJ OF THE CITY OF SUGAR LAND AND FORT BEND COUNTY.
6. APPROVAL OF THIS PLAT WILL EXPIRE ONE YEAR FROM PLANNING AND ZONING COMMISSION APPROVAL IF NOT RECORDED IN THE REAL PROPERTY RECORDS OF THE COUNTY OF FORT BEND.
7. THE PIPELINES AND/OR PIPELINE EASEMENTS WITHIN THE LIMITS OF THE SUBDIVISION ARE AS SHOWN.
8. ALL LANDSCAPING AND STRUCTURES, INCLUDING FENCES, AT INTERSECTIONS SHALL CONFORM TO THE CITY OF SUGAR LAND AND AASHTO SITE DISTANCE REQUIREMENTS FOR MOTORISTS.
9. NO OWNER OF THE LAND SUBJECT TO AN EASEMENT MAY PLACE, BUILD OR CONSTRUCT ANY PERMANENT BUILDING, STRUCTURE OR OBSTRUCTION OF ANY KIND OVER, UNDER OR UPON THE EASEMENT, PROVIDED THAT SUCH OWNER MAY CROSS OR COVER THE EASEMENT WITH A PAVED DRIVEWAY/PARKING LOT UNDER THE FOLLOWING CONDITIONS. THE DRIVEWAY SHALL BE JOINTED AT THE BOUNDARY LINE OF THE EASEMENT TO LIMIT THE AMOUNT OF PAVING THAT MUST BE REMOVED TO PROVIDE ACCESS, AND THERE SHALL BE NO OBLIGATION OF THE CITY TO REPLACE/REPAIR ANY PAVING REMOVED IN THE EXERCISE OF THIS EASEMENT.
10. WOOD SHINGLES ARE HEREBY PROHIBITED WITHIN THIS SUBDIVISION.
11. SIDEWALKS SHALL BE CONSTRUCTED AS REQUIRED BY SECTION 7.8 OF THE DESIGN STANDARDS OF THE CITY OF SUGAR LAND. PRIOR TO THE CERTIFICATION OF COMPLIANCE OF STREETS WITHIN THE SUBDIVISION BY THE CITY OF SUGAR LAND, SIDEWALKS SHALL BE CONSTRUCTED BY THE DEVELOPER ALONG ALL STREETS WHERE HOUSES WILL NOT FRONT OR SIDE. HOMEBUILDERS SHALL CONSTRUCT SIDEWALKS ALONG STREETS ON WHICH HOMES FRONT AND ALONG STREETS ON WHICH HOMES SIDE.
12. THE VILLAS AT RIVERSTONE LIE WITHIN SHADED ZONE "X", AS PER FLOOD INSURANCE RATE MAPS, MAP NUMBER 48157C0290L DATED APRIL 2, 2014.
13. MASTER NOTE N/A.
14. MASTER NOTE N/A.
15. THE DRAINAGE SYSTEM FOR THIS SUBDIVISION SHALL BE DESIGNED TO MEET THE REQUIREMENTS OF THE CITY OF SUGAR LAND AND THE FORT BEND COUNTY DRAINAGE CRITERIA MANUAL WHICH ALLOWS STREET PONDING DURING INTENSE RAINFALL EVENTS.
16. MASTER NOTE N/A.
17. MASTER NOTE N/A.
18. MASTER NOTE N/A.
19. MASTER NOTE N/A.
20. MASTER NOTE N/A.
21. MASTER NOTE N/A.
22. MASTER NOTE N/A.
23. MASTER NOTE N/A.
24. ALL BUILDING LINE TRANSITIONS SHALL BE AT 45 DEGREE ANGLES TO THE STRAIGHT SIDE LOT LINE WHERE THE TRANSITION OCCURS.
25. DRIVEWAY REQUIREMENTS FOR THE LOCATIONS, WIDTHS AND OFFSET FROM AN INTERSECTION AND ANY EXISTING DRIVEWAYS OR PROPOSED DRIVEWAYS, SHALL CONFORM TO CHAPTER FIVE, ARTICLE VIII OF THE DEVELOPMENT CODE OF THE CITY OF SUGAR LAND.
26. ALL LAKE/DETENTION TRACTS, EASEMENTS, OPEN SPACE, OR OTHER COMMON AREAS WITHIN THE BOUNDARIES OF THIS PLAT SHALL BE MAINTAINED BY THE APPLICABLE HOMEOWNERS ASSOCIATION, LEVEE IMPROVEMENT DISTRICT, OR OTHER PERPETUAL PRIVATE ENTITY. HOMEOWNERS ASSOCIATIONS SHALL BE ESTABLISHED IN ACCORDANCE WITH CHAPTER FIVE, ARTICLE IV, SECTION 5-34 OF THE DEVELOPMENT CODE OF CITY OF SUGAR LAND.
27. MASTER NOTE N/A.
28. ALL LOTS AND RESERVES SHALL HAVE MINIMUM SIDE AND REAR BUILDING SETBACKS AS SPECIFIED IN CHAPTER FIVE, ARTICLE III, SECTION 5-25 BUILDING LINES OF THE DEVELOPMENT CODE OF THE CITY OF SUGAR LAND.
29. WITHIN SUGAR LAND'S ETJ ALL GARAGES SHALL BE SET BACK A MINIMUM OF TWENTY (20) FEET FROM THE STREET RIGHT-OF-WAY ON CORNER LOTS, WHEN SAID LOT IS A SIDE LOADING LOT. A SIDE LOADING LOT IS A CORNER LOT WITH A SIDE LOADING GARAGE OR CARPORT.
30. MASTER NOTE N/A.
31. MASTER NOTE N/A.
32. MASTER NOTE N/A.
33. ► INDICATES ZERO LOT LINE SIDE OF THE LOT AND A THREE FOOT MAINTENANCE ACCESS EASEMENT IS DEDICATED IN THE ABUTTING LOT ALONG THE SIDE PROPERTY LINE OF EACH ZERO LOT LINE INDICATED.
34. MASTER NOTE N/A.
35. ALL NUMBERS OMITTED ABOVE ARE CITY OF SUGAR LAND MASTER NOTES THAT DO NOT APPLY TO THIS PROPERTY AND WERE INTENTIONALLY OMITTED.
36. ALL DRAINAGE EASEMENTS TO BE KEPT CLEAR FENCES, BUILDINGS, VEGETATION AND OTHER OBSTRUCTIONS TO THE OPERATION AND MAINTENANCE OF THE DRAINAGE FACILITY.
37. ALL PROPERTY TO DRAIN INTO THE DRAINAGE EASEMENT ONLY THROUGH AN APPROVED DRAINAGE STRUCTURE.
38. THE MINIMUM SLAB ELEVATION SHALL BE 67.5 FEET, ONE FOOT ABOVE TOP OF CURB, OR 1.5 FEET ABOVE NATURAL GROUND, WHICHEVER ELEVATION IS HIGHER. NATURAL GROUND CONTOURS INDICATED ARE PRIOR TO DEVELOPMENT OF THE TRACT.



VICINITY MAP
N.T.S.

I, RICHARD W. STOLLEIS, THE FORT BEND COUNTY ENGINEER, DO HEREBY CERTIFY THAT THE PLAT OF THIS SUBDIVISION COMPLIES WITH ALL OF THE EXISTING RULES AND REGULATIONS OF THIS OFFICE AS ADOPTED BY THE FORT BEND COUNTY COMMISSIONER'S COURT. NO CERTIFICATION IS HEREBY GIVEN AS TO THE EFFECT OF DRAINAGE FROM THIS SUBDIVISION ON THE INTERCEPTING DRAINAGE ARTERY OR PARENT STREAM OR ON ANY OTHER AREA OR SUBDIVISION WITHIN THE WATERSHED.

____
RICHARD W. STOLLEIS, P.E.
FORT BEND COUNTY ENGINEER

APPROVED BY THE COMMISSIONER'S COURT OF FORT BEND COUNTY, TEXAS

THIS ________ DAY OF ______________, 2015.

______________________________ ______________________________
RICHARD MORRISON, COMMISSIONER, PRECINCT 1 — GRADY PRESTAGE, COMMISSIONER, PRECINCT 2

____
ROBERT E. HEBERT
COUNTY JUDGE

______________________________ ______________________________
W.A. "ANDY" MEYERS, COMMISSIONER, PRECINCT 3 — JAMES PATTERSON, COMMISSIONER, PRECINCT 4

STATE OF TEXAS
COUNTY OF FORT BEND

I, LAURA RICHARD, COUNTY CLERK IN AND FOR FORT BEND COUNTY, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT WITH ITS CERTIFICATE OF

AUTHENTICATION WAS FILED FOR RECORDATION IN MY OFFICE

ON ________________________ 2015, A.D., AT _____ . O'CLOCK (A.M. OR P.M.).

IN PLAT NUMBER (S) ______________ OF THE PLAT RECORDS OF SAID COUNTY, WITNESS MY HAND AND SEAL OF OFFICE AT RICHMOND, TEXAS, THE DAY AND DATE LAST ABOVE WRITTEN.

____
LAURA RICHARD, CLERK OF THE COUNTY
FORT BEND COUNTY, TEXAS

BY: ______________________________
DEPUTY

THE VILLAS AT RIVERSTONE

BEING 10.0412 ACRES
LOCATED IN THE
WILLIAM LITTLE SURVEY, A-54,
FORT BEND COUNTY, TEXAS

40 LOTS 2 BLOCKS 5 RESERVES

SCALE: 1"=60' DATE: SEPTEMBER, 2015

OWNER:
RIVERSTONE 250, INC.,
A TEXAS CORPORATION
W. DOUGLAS GOFF, VICE PRESIDENT
TOM P. WILCOX, VICE-PRESIDENT
5005 RIVERWAY, SUITE 500
HOUSTON, TEXAS 77056
PHONE: (713) 960-9977
FAX: (713) 960-9978

PLANNER:
KERRY R. GILBERT & ASSOCIATES, INC.
Land Planning Consultants
23501 CINCO RANCH BLVD., SUITE A-250
KATY, TEXAS 77494
PHONE: (281) 579-0340
FAX: (281) 579-8212

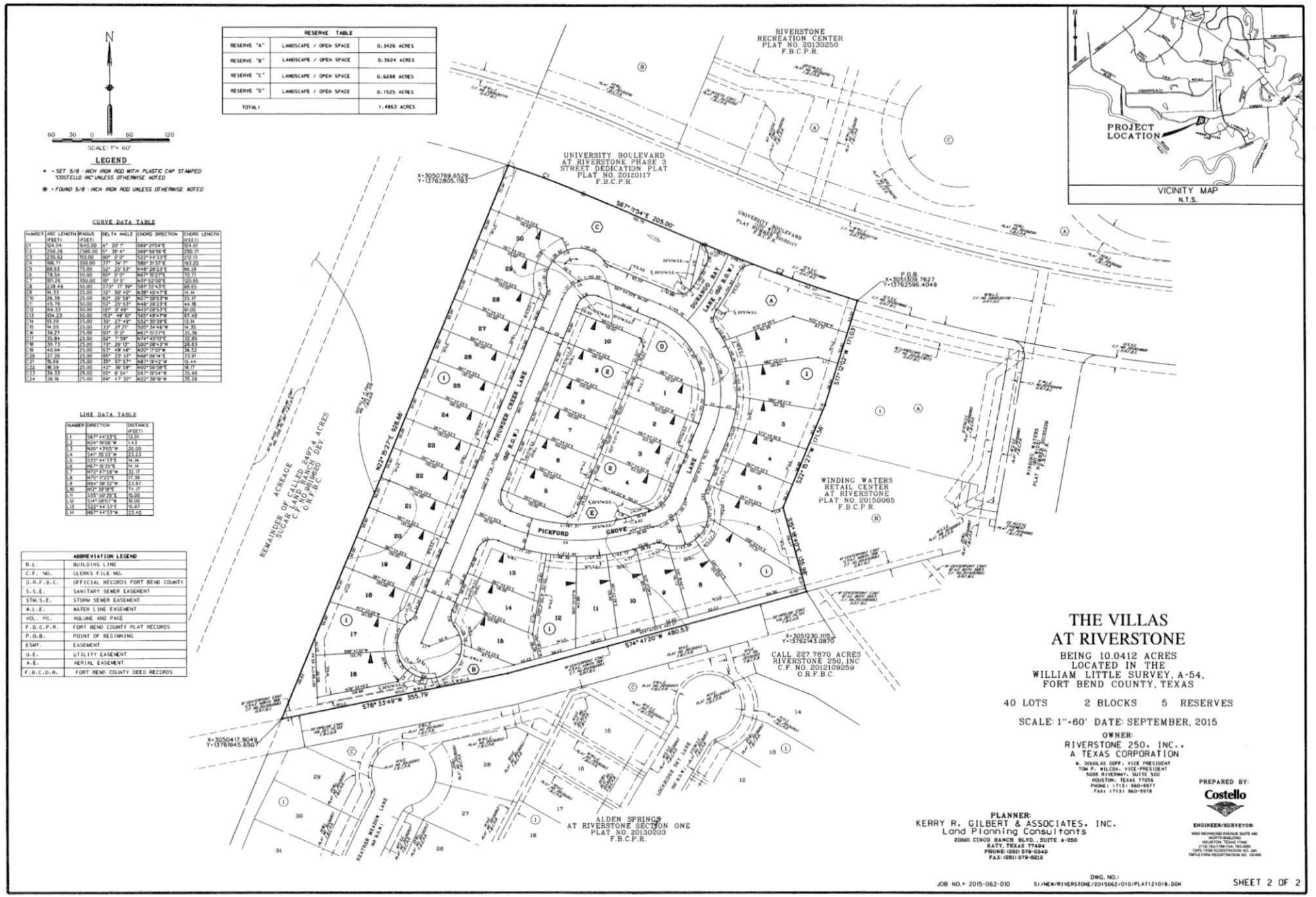
PREPARED BY:
Costello

ENGINEER/SURVEYOR:
9990 RICHMOND AVENUE SUITE 450
NORTH BUILDING
HOUSTON, TEXAS 77042
(713) 783-7788 FAX: 783-3580
TBPE FIRM REGISTRATION NO. 280
TBPLS FIRM REGISTRATION NO. 100486

JOB NO.: 2015-062-010

DWG. NO.: S:/NEW/RIVERSTONE/2015062/010/PLAT121018.DGN

SHEET 1 OF 2



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JOB NO.: 2015-062-010 DWG. NO.: S:/NEW/RIVERSTONE/2015062/010/PLAT121018.DGN

PLOT TIME:

GENERAL NOTES:

1. CONTACT THE ENGINEERING INSPECTORS WITH THE CITY'S ENGINEERING DEPARTMENT AT (281) 275-2780 PRIOR TO STARTING WORK TO SCHEDULE A PRE-CONSTRUCTION MEETING.
2. CONTRACTOR IS RESPONSIBLE FOR HAVING ALL BURIED UTILITIES IDENTIFIED, PROTECTED, REPLACED AND/OR PROPERLY REPAIRED IF DAMAGED. REPAIRS/REPLACEMENT SHALL BE AT CONTRACTOR'S EXPENSE.
3. CONTRACTOR SHALL OBTAIN AND MAINTAIN ON SITE ALL APPLICABLE PERMITS AND AN APPROVED COPY OF THE PLANS AND SPECIFICATIONS. NOTIFY THE CITY'S ENGINEERING DEPARTMENT 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
4. CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE CITY'S ENGINEERING DEPARTMENT 24 HOURS PRIOR TO WEEKDAY WORK REQUIRING INSPECTION INCLUDING, BUT NOT LIMITED TO, LIMING, PAVING OPERATIONS, CONCRETE PLACEMENT, FORMING AND SET-UP, DENSITIES, PIPE INSTALLATION, AND ANY TESTING BY LABORATORIES. THE ENGINEERING DEPARTMENT MAY BE REACHED AT 281-275-2780 OR BY CONTACTING THE ASSIGNED INSPECTOR.
5. ALL SATURDAY WORK SHALL BE REQUESTED, IN WRITING, WITH THE CITY'S ENGINEERING DEPARTMENT AT LEAST 48-HOURS IN ADVANCE. SUNDAY AND HOLIDAY WORK REQUIRES 72 HR. WRITTEN REQUESTS AND MUST BE APPROVED BY THE CITY ENGINEER. FAXES MAY BE SENT TO (281) 275-2771. REQUIRED INSPECTIONS MAY BE SUBJECT TO INSPECTION FEES. NON-NOTIFICATIONS MAY RESULT IN NON-COMPLIANCE, WORK ORDERED STOPPAGE AND DOUBLE INSPECTION FEES.
6. FULL-TIME RESIDENT INSPECTION BY THE PROJECT ENGINEER'S REPRESENTATIVE SHALL BE PROVIDED AT ALL CRITICAL POINTS OF CONSTRUCTION OR AS DEEMED NECESSARY BY THE CITY OF SUGAR LAND.
7. FOLLOW-UP INSPECTIONS OF ALL PUBLIC INFRASTRUCTURE SHALL BE SCHEDULED WITHIN 60 DAYS OF THE INITIAL INSPECTION. a COMPLETE RE-INSPECTION AND A NEW PUNCH LIST MAY BE REQUIRED AFTER THE 60 DAY PERIOD.
8. DESIGN AND CONSTRUCTION SHALL CONFORM TO THE TEXAS COMMISSION OF ENVIRONMENTAL QUALITY RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS, THE CITY OF SUGAR LAND DESIGN MANUAL (ISSUED 2007), AND THE CITY OF SUGAR LAND STANDARD DETAIL SHEETS. THE CITY OF SUGAR LAND DESIGN STANDARDS SHALL BE ACQUIRED (AND USED) FROM THE ENGINEERING DEPARTMENT. THE LATEST REVISIONS AND/OR AMENDMENTS SHALL BE OBSERVED. WHERE CONFLICT MAY ARISE BETWEEN INFORMATION ON APPROVED CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS AND CITY OF SUGAR LAND STANDARDS, THEN THE CITY DESIGN STANDARDS SHALL COVERN.
9. ALL STATIONS ARE CENTERLINE OF STREET RIGHT-OF-WAY UNLESS OTHERWISE NOTED ON THE PLANS. EXCEPT IN SIDE OR BACK LOT EASEMENTS WHERE CENTERLINE IS CENTER OF PIPE. IN EASEMENTS WHERE SANITARY AND STORM SEWER ARE PRESENT PARALLEL, STATIONS SHALL BE BASED ON CENTERLINE OF STORM SEWER PIPING.
10. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. ANY DRAINAGE AREA OR STRUCTURE DISTURBED, DURING CONSTRUCTION, SHALL BE RESTORED TO THE SATISFACTION OF THE CITY OF SUGAR LAND. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH THE REQUIREMENTS OF THE CITY OF SUGAR LAND DESIGN STANDARDS. IF NON-COMPLIANCE OCCURS, CONTRACTOR SHALL REMEDY IMMEDIATELY AT HIS OWN EXPENSE.
11. ANY POLLUTION CONTROL DEVICE, SOD, OR SEEDED AREA DAMAGED, DISTURBED, OR REMOVED SHALL BE REPLACED OR REPAIRED AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR IS RESPONSIBLE FOR WATERING ANY SEED OR SOD WHICH HE HAS INSTALLED UNTIL ADEQUATE GROWTH IS ACHIEVED TO PREVENT EROSION.
12. STORM WATER POLLUTION PROTECTION SHALL BE DESIGNED, CONSTRUCTED, MAINTAINED AND SHALL BE IN TOTAL COMPLIANCE WITH THE STORM WATER QUALITY MANUAL OF THE CITY OF SUGAR LAND.
13. ANY MATERIALS OR WORKMANSHIP NOT MEETING OR EXCEEDING CITY OF SUGAR LAND STANDARDS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND WILL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
14. THE CONTRACTOR SHALL KEEP THE STREETS, RIGHT-OF-WAY, AND WORK AREA CLEAN OF DIRT, MUD, AND DEBRIS AS NEEDED OR AS REQUIRED BY CITY STAFF.
15. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL REQUIRED TRAFFIC SAFETY CONTROL DEVICES UP TO AND INCLUDING FLAGMEN OR POLICE OFFICERS, IF DEEMED NECESSARY BY THE CITY OF SUGAR LAND.
16. THE CONTRACTOR SHALL CONTACT THE CITY OR LOCAL MUD AS APPROPRIATE TO OPERATE EXISTING UTILITIES AND PRIOR TO MAKING TIE-INS.
17. ALL BACKFILL WITHIN PUBLIC RIGHTS-OF-WAY OR EASEMENTS SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY (IN 8 INCH LIFTS) AND TESTED FOR ±2% OPTIMUM MOISTURE BY AN APPROVED LAB.
18. IT IS PERMISSIBLE TO USE A BACKHOE FOR TRENCH EXCAVATION IN LIEU OF A TRENCHING MACHINE.
19. THE CONTRACTOR SHALL NEVER UNLOAD ANY TRACK-TYPE VEHICLE OR EQUIPMENT ON ANY EXISTING PAVEMENT OR CROSS OVER ANY EXISTING PAVEMENT OR CURB.
20. ALL FINISH GRADES ARE TO CONFORM TO A MINIMUM SLOPE OF 6" PER 100 FT. POSITIVE DRAINAGE IS DEPICTED BY ARROWS.
21. CONTRACTOR SHALL UNCOVER EXISTING UTILITIES AT ALL "POINTS OF CROSSING" TO DETERMINE IF CONFLICTS EXIST BEFORE COMMENCING ANY CONSTRUCTION. NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICT.
22. ALL FINISHED GRADES SHALL VARY UNIFORMLY BETWEEN FINISHED ELEVATIONS.
23. ALL TESTING PROCEDURES SHALL CONFORM TO THE CITY OF SUGAR LAND STANDARDS. THE INITIAL TESTING EXPENSE SHALL BE BORNE BY THE OWNER. IF ANY OF THE TESTS DO NOT MEET THE TESTING STANDARDS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE OR REPLACE SUCH MATERIAL SO THE TESTING STANDARDS CAN BE MET. ADDITIONAL TESTING TO MEET COMPLIANCE SHALL BE AT THE CONTRACTOR'S EXPENSE.
24. CONTRACTOR SHALL PROVIDE SHEETING, SHORING, AND BRACING AS NECESSARY TO PROTECT WORKMEN AND EXISTING UTILITIES DURING ALL PHASES OF CONSTRUCTION AS PER O.S.H.A. REQUIREMENTS.
25. ALL MATERIALS AND WORKMANSHIP NOT GOVERNED BY CITY STANDARDS SHALL CONFORM TO THE LATEST VERSION OF THE TXDOT STANDARD SPECIFICATIONS AND THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND ANY REVISIONS THERETO.
26. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING AND PROTECTING ALL MATERIALS AND EQUIPMENT STORED ON THE JOBSITE IN A SAFE AND WORKMAN-LIKE MANNER (DURING AND AFTER WORKING HOURS), UNTIL JOB COMPLETION.
27. THE LOADING AND UNLOADING OF ALL PIPE, VALVES, HYDRANTS, MANHOLES, AND OTHER ACCESSORIES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PRACTICES AND SHALL BE PERFORMED WITH CARE TO AVOID ANY DAMAGE TO THE MATERIAL. THE CONTRACTOR SHALL LOCATE AND PROVIDE THE NECESSARY STORAGE AREAS FOR MATERIAL AND EQUIPMENT.
28. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, EQUIPMENT, AND LABOR FOR EXCAVATION, INSTALLATION, AND COMPLETION OF THE PROJECT AS SHOWN ON THE PLANS AND SPECIAL PROVISIONS TO COMPLY WITH CITY OF SUGAR LAND STANDARDS.
29. NO PRIVATE UTILITIES (I.E. PHONE, CABLE T.V., ELECTRICITY, ETC.) SHALL BE INSTALLED WITHIN 4 FEET BACK OF CURB.
30. PLANS DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE REGISTERED PROFESSIONAL ENGINEER(S) HEREON DOES NOT EXTEND TO ANY SUCH SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED IN THE PLANS. THE CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS, INCLUDING CURRENT OSHA STANDARDS FOR TRENCH SAFETY SYSTEMS, SEALED BY A LICENSED PROFESSIONAL ENGINEER. APPROPRIATE TRENCH SAFETY PLANS SHALL BE SUBMITTED BY THE CONTRACTOR PRIOR TO EXECUTION OF A CONTRACT FOR HIS WORK.
31. FOR TRAFFIC SIGNAL CONSTRUCTION, CONTACT THE CITY OF SUGAR LAND INFORMATION TECHNOLOGY DEPARTMENT TO OBTAIN IP ADDRESSES FOR SIGNAL CABINET EQUIPMENT. ALLOW 5 WORKING DAYS FOR THE ADDRESS. ONCE EQUIPMENT HAS BEEN INSTALLED AND COMMUNICATIONS ESTABLISHED WITH THE TRAFFIC MANAGEMENT CENTER, IT WILL COMMISSION THE COMMUNICATION LINK. ALLOW 10 WORKING DAYS FOR COMMISSIONS.

CAD FILE PATH:
PLOT DATE:

CONCRETE/PAVING NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS AND AUTHORIZATION REQUIRED BY CITY OF SUGAR LAND.
2. CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED PRIOR TO CONSTRUCTION AND WILL REPAIR OR REPLACE ANY DAMAGE AT CONTRACTOR'S EXPENSE.
3. PAVING CONTRACTOR SHALL PROTECT WATER, SEWER, AND DRAINAGE FACILITIES AND WILL REPLACE ANY DAMAGED FACILITIES AT HIS OWN EXPENSE. ALL MANHOLES AND VALVES WITHIN THE PAVEMENT AREA SHALL BE ADJUSTED TO FINISH GRADE BY THE PAVING CONTRACTOR WITH THE USE OF APPROVED BLOCKOUTS.
4. WHEN THE TOP OF CURB OR BOTTOM OF SIDEWALK SLAB ELEVATION VARIES FROM THE NATURAL GROUND, THE PAVING CONTRACTOR SHALL BACKFILL IN LAYERS NOT EXCEEDING 8-INCHES IN DEPTH. EACH LAYER WILL BE COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY. THE DISTURBED AREA SHALL BE SEEDED, SODDED, FERTILIZED, AND/OR SILT BARRIER FENCED WITHIN 10 WORKING DAYS. THE TYPE OF POLLUTION CONTROL WILL BE DETERMINED BY THE APPROVED PLANS AND/OR THE CITY OF SUGAR LAND CITY ENGINEER.
5. ALL PAVING SHALL BE IN ACCORDANCE WITH THE CITY OF SUGAR LAND DESIGN STANDARDS, APPROVED PLANS AND SPECIFICATIONS WITH THE LATEST REVISIONS OR AMENDMENTS. IN THE EVENT OF A CONFLICT, THE CITY OF SUGAR LAND DESIGN STANDARDS GOVERNS.
6. PAVING CONTRACTOR SHALL PROVIDE AND MAINTAIN SILT PROTECTION FENCES ON ALL STAGE I CURB INLETS. THE PAVING CONTRACTOR SHALL MAINTAIN ANY OTHER POLLUTION CONTROLS ESTABLISHED, I.E., ADDITIONAL SILT BARRIERS, SAND BAGS, ETC., FOR THE DURATION OF THE PROJECT. ANY DAMAGED OR MISSING DEVICES SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
7. EXISTING PAVEMENTS, CURBS, SIDEWALKS, DRIVEWAYS, ETC., DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO THE CITY OF SUGAR LAND STANDARDS AT THE CONTRACTOR'S EXPENSE.
8. CONDITION OF THE WORK AREA (INCLUDING ROADS, RIGHT-OF-WAYS, ETC.) UPON COMPLETION OF THE JOB SHALL BE AS GOOD OR BETTER THAN THE CONDITION PRIOR TO STARTING THE WORK.
9. ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.
10. REDWOOD AND KEYWAYS SHALL NOT INTERSECT WITHIN 2 FEET OF AN INLET.
11. AT INITIAL AND FINAL INSPECTIONS THE PAVEMENT WILL BE FLOODED TO CHECK FOR BIRDBATHS AND CRACKS. FLOODING OF STREETS SHALL OCCUR 1 HOUR PRIOR TO INSPECTION.
12. ALL CONCRETE PLACED SHALL BE UNIFORMLY SPRAYED WITH A MEMBRANE CURING COMPOUND AS DESCRIBED IN ITEM 526 IN THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. IMPROPER APPLICATION WILL RESULT IN THE REJECTION OF THE CONCRETE.
13. SIX (6) INCH, 5.5 SK. 3500 PSI @ 28 DAYS, REINFORCED WITH #4 REBAR, 24" C.C. EACH WAY IS THE MINIMUM ACCEPTABLE CONSTRUCTION FOR LOCAL STREETS.
14. SEVEN (7) INCH, 5.5 SK. 3500 PSI @ 28 DAYS, REINFORCED WITH #4 REBAR, 18" C.C. EACH WAY IS THE MINIMUM ACCEPTABLE PAVEMENT CONSTRUCTION FOR COLLECTOR STREETS.
15. EIGHT (8) INCH, 5.5 SK, 3500 PSI @ 28 DAYS, REINFORCED WITH #4 18" C.C. EACH WAY IS THE MINIMUM ACCEPTABLE FOR ARTERIAL STREETS.
16. WHEN CONCRETE PAVEMENT INTERSECTS THICKER PAVEMENT, THE THICKER PAVEMENT SHALL BE CONSTRUCTED TO THE ENDS OF ALL CURB RETURNS.
17. ALL RETURNS SHALL HAVE A MIN. 25 FT. RADIUS AT THE FACE OF CURB UNLESS OTHERWISE NOTED.
18. ALL INTERSECTIONS SHALL BE CONSTRUCTED WITH WHEELCHAIR RAMPS IN ACCORDANCE WITH THE TEXAS ACCESSIBILITY STANDARD, THE AMERICAN DISABILITIES ACT, AND THE CITY OF SUGAR LAND STANDARDS (LATEST REVISIONS). (NO BLOCKOUTS)
19. CONCRETE SIDEWALKS SHALL BE CONSTRUCTED WITHIN EACH STREET RIGHT-OF-WAY IN ACCORDANCE WITH CITY OF SUGAR LAND. THE A.D.A., AND THE T.A.S. STANDARDS (LATEST REVISIONS).
20. CRACKS LARGER THAN 1/16-INCH ARE NOT ACCEPTABLE IN NEW PAVEMENT. CRACKS 1/16-INCH OR LESS SHALL BE ADDRESSED ON AN INDIVIDUAL BASIS BY DRILL AND EPOXY INJECTION, SUBJECT TO APPROVAL OR REJECTION.
21. PROPER TESTING AND LAB DOCUMENTATION IS REQUIRED. FAILURE TO MEET THE MINIMUM PAVEMENT REQUIREMENTS WILL RESULT IN THE REJECTION OF SAID PAVEMENT. IMMEDIATE REMOVAL AND REPLACEMENT OF SUBSTANDARD PAVEMENT SECTIONS WILL BE NECESSARY TO SATISFY THESE REQUIREMENTS.
22. 4-CONCRETE CYLINDERS, SLUMP, AND AIR ENTRAINMENT TESTS ARE REQUIRED FOR EACH 100 CUBIC YARDS OF CONCRETE PAVING WITH A MINIMUM OF ONE SET OF 4 PER PLACEMENT. THE CITY OF SUGAR LAND RESERVES THE RIGHT TO REQUEST ANY ADDITIONAL TESTS AT THE CONTRACTOR'S EXPENSE, IF ANY MATERIAL APPEARS BELOW STANDARDS.
23. NO. 3 REBAR, 18-INCH C.C. E.W. IS THE MINIMUM ACCEPTABLE FOR SIDEWALKS. NUMBER 4-REBAR, 24-INCH C-C EACH WAY IS THE MINIMUM ACCEPTABLE FOR COMMERCIAL APPROACHES, HANDICAP RAMPS, RESIDENTAL APPROACHES AND DRIVEWAYS.
24. COLD WEATHER PRECAUTIONS. CONCRETE PAVEMENT SHALL NOT BE PLACED WHEN THE AMBIENT TEMPERATURE IS 40°F AND FALLING. CONCRETE MAY BE PLACED IF THE AMBIENT TEMPERATURE IS 35° AND RISING. CONTRACTOR SHALL PROVIDE AN APPROVED COVERING MATERIAL (COTTON MATS, POLYETHYLENE SHEETING, ETC.) IN THE EVENT TEMPERATURE SHOULD FALL BELOW 32°F. NO SALT OR OTHER CHEMICALS SHALL BE ADDED TO CONCRETE TO PREVENT FREEZING.
25. HOT WEATHER. NO CONCRETE PAVEMENT MIXTURE SHALL BE PLACED IF THE MIXTURE TEMPERATURE IS ABOVE 95°F. AIR AND WATER REDUCER ARE REQUIRED IF MIXTURE TEMPERATURE REACHES 85°F OR ABOVE.
26. IF NO AIR AND WATER REDUCER HAS BEEN ADDED, NO CONCRETE SHALL BE PLACED IF MORE THAN 60 MINUTES PAST BATCH TIME. IF AIR AND WATER REDUCER HAS BEEN ADDED, NO CONCRETE SHALL BE PLACED IF MORE THAN 90 MINUTES PAST BATCH TIME.
27. STRUCTURE TEMPERATURES AND TIMING FOR CONCRETE PLACEMENT MAY VARY. REFER TO TXDOT STANDARDS ITEM 420 FOR DETAILS.
28. TRANSVERSE EXPANSION JOINTS SHALL BE PLACED AT ALL POINTS OF CURVATURE, POINTS OF TANGENCY AND ALL INTERSECTION CURB RETURN POINTS. MAXIMUM SPACING SHALL BE 200' AND BE SEALED WITH SEALANT CONFORMING TO TXDOT ITEM 360 (& ITEM 438) AND TXDOT DMS-6310, CLASS-2.
29. CONTROL JOINTS SHALL BE PLACED AT 20' C-C.
30. EXPANSION JOINT LAYOUT FOR INTERSECTIONS SHALL BE PROVIDED BY ENGINEER FOR CITY APPROVAL.
31. NO WIRE MESH IS ALLOWED IN ANY CONCRETE WITHIN THE CITY LIMITS OR ETJ.
32. ALL REBAR SHALL BE 100% TIED. OVERLAPS SHALL BE DOUBLE TIED MINIMUM. REINFORCED STEEL BE A MINIMUM 60% COVERAGE.
33. ALL NEW CURB REQUIRES 3,000 P.S.I. @ 28-DAYS. 4 CONCRETE CYLINDERS, SLUMP, AND AIR ENTRAINMENT TESTS ARE REQUIRED FOR EACH 50 CUBIC YARDS OF CONCRETE CURB WITH A MINIMUM OF ONE SET OF 4 PER PLACEMENT.
34. A CITY INSPECTOR MUST BE PRESENT ON ALL PROOF ROLLS, LIME DEPTH CHECKS AND DENSITY TESTS AND MUST BE CONTACTED AT LEAST 24 HOURS PRIOR TO THE TEST.
35. CONCRETE MIX DESIGN MUST BE SENT TO THE CITY FOR APPROVAL A MINIMUM 72 HOURS BEFORE THE FIRST CONCRETE POUR.
36. FOR A REGULAR MIX, SLUMP SHALL BE A MAXIMUM OF 5". FOR A MIX WITH A WATER REDUCER, SLUMP SHALL BE A MAXIMUM OF 6".
37. VEHICLES OF ALL TYPES ARE PROHIBITED FROM DRIVING ON NEW PAVEMENTS SEVEN (7) DAYS AFTER THE CONCRETE POUR AND UNTIL THE CONCRETE HAS REACHED A MINIMUM OF 3,000 PSI. PAVEMENT PROTECTION SUCH AS A DIRT LAYER OF AT LEAST 12" IS REQUIRED FOR TRACK EQUIPMENT AT PAVEMENT CROSSINGS.
38. IN LIEU OF MECHANICALLY CONTROLLED VIBRATORS CONTROLLED BY A SLIP-FORM PAVING MACHINE, HAND MANIPULATED MECHANICAL VIBRATORS SHALL BE USED FOR PROPER CONSOLIDATION OF CONCRETE IN ALL PAVEMENT AREAS (ALONG FORMS, AT JOINTS, ETC.)
39. ALL CONCRETE STREETS AND BRIDGE SURFACES SHALL HAVE A "BAKER BROOM" FINISH, WHILE ALL OTHER CONCRETE PLACEMENT SHALL HAVE A MEDIUM BROOM FINISH.
40. ALL PAVEMENT MARKINGS TO BE DONE IN CONFORMANCE WITH THE LATEST VERSION OF TMUTCD AND TXDOT STANDARD SPECIFICATIONS AND ANY REVISIONS THERETO.
41. REFER TO GENERAL NOTES.

CEMENT STABILIZED SAND:

1. ALL STABILIZED SAND SHALL BE A MINIMUM OF 1.5 SK PER CUBIC YARD.
2. CEMENT STABILIZED SAND (C.S.S.) SHALL ACHIEVE A MINIMUM OF 100 PSI WITHIN 48 HOURS.
3. A MINIMUM OF 2 RANDOM SAMPLES SHALL BE TAKEN EACH WEEK. (FOR SMALLER PROJECTS, ONE SAMPLE MAY SUFFICE WITH CITY OF SUGAR LAND APPROVAL.) THE CITY OF SUGAR LAND RESERVES THE RIGHT TO REQUIRE ADDITIONAL TESTS, AT THE CONTRACTORS EXPENSE IF IT IS DEEMED NECESSARY.
4. ANY C.S.S. NOT MEETING CITY OF SUGAR LAND STANDARDS SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
5. BOTH CEMENT CONTENT AND COMPRESSIVE TESTS SHALL BE CONDUCTED ON C.S.S. SAMPLES.
6. ALL C.S.S. SHALL BE COMPACTED IN MAXIMUM OF 8-INCH LIFTS AND REQUIRED TO REACH A MINIMUM DENSITY OF 95%. 7. REFER TO GENERAL NOTES.

BANK SAND:

1. BANK SAND IS DEFINED AS A WELL-GRADED SAND, FREE OF SILT, CLAY, FRIABLE OR SOLUBLE MATERIALS AND ORGANIC MATER, MEETING THE UNIFIED SOILS CLASSIFICATIONS SYSTEM GROUP SYMBOL SW CRITERIA WITH A PLASTICITY INDEX OF LESS THAN 10. NO MORE THAN 12% OF MATERIAL CAN PASS THE No. 200 SIEVE.

ASPHALT – OILS AND EMULSIONS:

1. CONTRACTOR SHALL VERIFY LINES AND GRADES AND THAT COMPACTED BASE IS READY TO SUPPORT LOADS.
2. BASE MATERIAL SHALL BE DRY AND THOROUGHLY CLEAN OF LOOSE MATERIAL PRIOR TO APPLICATION.
3. OILS & EMULSION SHALL BE DISTRIBUTED EVENLY AND SMOOTHLY UNDER PRESSURE NECESSARY FOR PROPER DISTRIBUTION.
4. MAINTAIN REQUIRED SURFACE CONDITIONS UNTIL ACCEPTED BY THE CITY OF SUGAR LAND.
5. PRIME COAT SHALL BE M.C.-30, M.C.-70 OR E.P.R.1 PRIME AND SHALL COMPLY WITH TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS, AND BRIDGES (1993) AND ITS LATEST REVISIONS.
6. TACK COAT SHALL BE SS-1 AND SHALL COMPLY TO TXDOT S.S.C.H.S. & B. (1993) AND ITS LATEST REVISIONS.
7. M.C.-30 AND M.C.-70 AND EPR-1 PRIME SHALL BE DISTRIBUTED AT A RATE OF .25 TO .35 GALLONS PER SQUARE YARD. AND MAY NOT BE APPLIED WHEN AMBIENT TEMPERATURE IS 50°F AND FALLING. (NOTICE: CUTBACK ASPHALTS MAY NOT BE USED DURING THE PERIOD OF APRIL 16 THROUGH SEPT. 15 AS PER ASTM D-244).
8. EPR-1 MAXIMUM WATER DILUTION IS 3 PARTS WATER TO ONE PART EPR-1.
9. SS-1 TACK COAT SHALL BE APPLIED AT A RATE NOT TO EXCEED 0.06 GAL. PER SQUARE YARD OF SURFACE AREA. CONTACT JOINTS, CURBS, ETC. SHALL BE PAINTED WITH AN EVEN THIN COAT APPLIED BY BRUSH OR BROOM. COATING MATERIAL SHALL BE HEATED TO 125°F TO 180°F WHEN APPLIED. TACK COAT MAY BE APPLIED WHEN AMBIENT TEMPERATURES ARE 40°F AND RISING. TACK COAT MAY NOT BE APPLIED IF AMBIENT AIR IS 50°F AND FALLING.

LIMING SUBGRADE:

1. LIME SHALL BE A "SLURRY" AS PER TXDOT 260 UNLESS SPECIFICALLY RECOMMENDED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY ENGINEER.
2. ALL LIME SLURRIES SHALL BE FURNISHED AT OR ABOVE THE MINIMUM "DRY SOLIDS" CONTENTS AS APPROVED BY THE ENGINEER.
3. SUBGRADES SHALL BE STABILIZED WITH A MINIMUM SIX PERCENT (6%) LIME BY WEIGHT, EIGHT INCHES (8") THICK THE INITIAL MIX TO REDUCE PLASTICITY INDEX (PI) TO 20 OR LESS AS DETERMINED BY THE LIME SERIES. THE FINAL MIX SHALL BE AT SIX INCHES (6") THICK.
4. LIME DRY SOLID CONTENT TESTS SHALL BE CONDUCTED ON SITE, ONCE PER ONE-HUNDRED (100) TONS OF MATERIAL DISTRIBUTED, UNLESS OTHERWISE NOTED.
5. THE SUBGRADE SHALL BE SHAPED AND GRADED TO CONFORM TO THE TYPICAL SECTIONS, AS SHOWN ON THE PLANS, PRIOR TO TREATING THE EXISTING MATERIAL.
6. UNLESS APPROVED BY THE CITY ENGINEER, LIME OPERATIONS SHALL NOT BE STARTED WHEN THE AMBIENT AIR TEMPERATURE IS BELOW 40°F, AND FALLING. LIMING MAY, WITH APPROVAL, BE STARTED WHEN THE AMBIENT AIR TEMPERATURE IS 35°F AND RISING. LIME SHALL NOT BE PLACED WHEN WEATHER CONDITIONS, IN THE ENGINEER'S OPINION, ARE UNSUITABLE.
7. THE SUBGRADE MATERIAL AND SLURRY SHALL BE THOROUGHLY MIXED, BROUGHT TO THE PROPER MOISTURE CONTENT (±2) AND LEFT TO CURE USUALLY 3 DAYS (72 HRS.). MINIMUM AS APPROVED BY THE CITY ENGINEER.
8. AFTER CURING, THE SUBGRADE SHALL BE REMIXED UNTIL PULVERIZATION REQUIREMENTS ARE MET, AS PER TXDOT TEX-101-E, PART III.
   PERCENT MINIMUM PASSING 1-3/4" SIEVE..........100
   PERCENT MINIMUM PASSING 3/4" SIEVE..........85
   PERCENT MINIMUM PASSING No.4 SIEVE..........60
9. SIEVE TESTS SHALL BE CONDUCTED EVERY 150 LF ON ALTERNATING LANES OF TRAFFIC OR EVERY 300 LF ON SINGLE LANES AS REQUIRED. AT LEAST ONE TEST SHALL BE CONDUCTED ON EACH ROADWAY OR CUL-DE-SAC.
10. THE MATERIAL SHALL BE AERATED OR MOISTENED TO + OR -2% OPTIMUM PRIOR TO COMPACTION. COMPACTION TO A MINIMUM 95% DENSITY SHALL BEGIN IMMEDIATELY AFTER ALL PULVERIZATION AND MOISTURE REQUIREMENTS ARE MET. THROUGHOUT THIS ENTIRE OPERATION, THE SURFACE SHALL BE SMOOTH AND IN CONFORMITY WITH THE LINES AND GRADES ON THE PLANS.
11. WHEN THE SUBGRADE FAILS TO MEET DENSITY REQUIREMENTS OR SHOULD IT LOSE THE REQUIRED STABILITY, DENSITY OR FINISH, IT SHALL BE REWORKED IN ACCORDANCE WITH TXDOT SUBARTICLE 260.4(7) "REWORKING A SECTION", WHICH MAY REQUIRE AN ADDITIONAL 25% OF THE SPECIFIED LIME AMOUNT.

LIMING SUBGRADE:

12. THE TREATED SUBGRADE SHALL BE KEPT MOIST AND PREVENTED FROM DRYING. IN THE EVENT OF A ONE-HALF (1/2) INCH RAINFALL AND/OR IF THE MATERIAL BECOMES DRY AND IS NOT IN COMPLIANCE WITH THE ±2% OPTIMUM MOISTURE, DENSITY AND MOISTURE TESTS SHALL BE RETAKEN.
13. LIME DEPTH DETERMINATIONS WILL BE CONDUCTED AT EACH LOCATION OF DENSITY TESTING, LIME- STABILIZED SUBGRADE SHALL BE A MINIMUM OF 6% AT 8" UNLESS OTHERWISE DIRECTED BY CITY ENGINEER. DENSITY TESTING SHALL BE DONE IMMEDIATELY PRIOR TO PLACEMENT OF REINFORCING STEEL. AND SHALL BE COMPACTED TO A MINIMUM OF 95%. LIME DEPTH TESTS SHALL BE CONDUCTED AT EVERY 150 LF OF ROADWAY ON ALTERNATING LANES OR EVERY 300 LF OF SINGLE LANE AT LEAST ONE TEST SHALL BE CONDUCTED ON EACH ROADWAY AND/OR CUL-DE-SAC.
14. NO SUBGRADE SHALL BE COVERED WITH ANOTHER MATERIAL UNLESS APPROVED BY THE CITY OF SUGAR LAND AND LIME DEPTH TESTS HAVE BEEN COMPLETED.

HOT MIX ASPHALTIC BASE COURSE:

1. NO HOT MIX ASPHALTIC BASE MAY BE INSTALLED UNTIL THE SUBGRADE HAS BEEN PROPERLY PREPARED AND TESTED AS PER THE PLANS AND SPECIFICATIONS. THE SUBGRADE SHALL BE INSPECTED AND APPROVED BY THE CITY OF SUGAR LAND BEFORE ANY BASE MATERIALS ARE INSTALLED.
2. HOT MIX ASPHALTIC BASE MATERIALS, HANDLING, AND INSTALLATION SHALL COMPLY WITH TXDOT STANDARDS FOR CONSTRUCTION OF HIGHWAYS, STREETS, AND BRIDGES 1995 (SECTION 02711) AND ITS LATEST REVISIONS.
3. HOT MIX ASPHALTIC MATERIALS SHALL BE AT TEMPERATURES BETWEEN 250°F AND 325°F, WHEN PLACED.
4. MATERIALS MAY NOT BE PLACED IN WET CONDITIONS OR IF THE AMBIENT TEMPERATURE IS BELOW 50°F AND FALLING. MATERIALS MAY BE INSTALLED IF THE AMBIENT TEMPERATURE IS TAKEN IN THE SHADE AND IS 40°F AND RISING.
5. PLACE BASE COURSES 4 INCHES OR GREATER IN THICKNESS IN TWO OR MORE LAYERS, EACH HAVING A COMPACTED THICKNESS OF NOT GREATER THAN 4 INCHES.
6. BASE MATERIAL MAY ONLY BE PLACED AGAINST CLEAN, STRAIGHT EDGES. SAW CUTTING, FULL DEPTH, IS REQUIRED IF EXISTING EDGES ARE ROUGH OR UNEVEN.
7. COMPACTION SHALL BEGIN WHILE MATERIAL IS STILL HOT AND AS SOON AS IT WILL BEAR THE ROLLER OR COMPACTOR WEIGHT WITHOUT UNDUE DISPLACEMENT OR HAIR CRACKING.
8. COMPACT SURFACE UNIFORMLY WITH ROLLERS OR TAMPERS IN LOCATIONS NOT READILY ACCESSIBLE (I.E., ALONG CURBS, WALLS, ETC.).
9. UNLESS OTHERWISE SPECIFIED, COMPACT DENSITY TO NOT LESS THAN 95% MAXIMUM POSSIBLE DENSITY.
10. A CERTIFIED LAB SHALL BE ON SITE AT ALL TIMES TO TEST AND PROPERLY DOCUMENT THE CONSTRUCTION METHODS AND QUALITY OF MATERIALS.
11. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY TO A.S.T.M. ASPHALT INSTITUTE AND CITY OF SUGAR LAND REQUIREMENTS. FAILURE TO COMPLY WILL RESULT IN REJECTION OF SAID MATERIALS AND SUCH SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
12. DO NOT OPEN BASE TO TRAFFIC UNTIL IT CAN BE MAINTAINED IN GOOD CONDITION AND IS CAPABLE OF SUPPORTING VEHICLE WEIGHT WITHOUT DAMAGE OR DEGRADATION.
13. DENSITIES SHALL BE TAKEN AT A MINIMUM OF AT LEAST ONCE PER 300 LF OF DRIVE LANE OR ONCE PER 250 SQ. YD., WHICHEVER MAY APPLY AND SHALL BE STAGGERED RELATIVE TO TESTING SITES IN ABUTTING TRAFFIC LANES. FAILURE TO MEET MINIMUM REQUIREMENTS SHALL RESULT IN THE REPLACEMENT OF SAID MATERIAL AT CONTRACTOR'S EXPENSE.

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DATE: 8/18/15
DESIGN ENGINEER: TBPE FIRM REG. No. 280

CITY OF SUGAR LAND TEXAS

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

GENERAL CONSTRUCTION NOTES I

JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-01

SHEET OF

ASPHALTIC CONCRETE PAVEMENT:

1. ASPHALTIC MATERIAL AND WORKMANSHIP SHALL COMPLY WITH ASTM C 33, ASTM C 131, ASTM C 136, AND TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES (1993) AND ITS LATEST REVISIONS. ASPHALT SHALL BE TYPE D-100 UNLESS SPECIFICALLY NOTED AND APPROVED BY CITY OF SUGAR LAND ENGINEER.
2. CONTRACTOR SHALL VERIFY ELEVATIONS AND GRADES AND THAT BASE COURSE IS READY TO SUPPORT IMPOSED LOADS.
3. APPLY A PRIME COAT AS PER CITY OF SUGAR LAND AND TXDOT STANDARDS. DO NOT APPLY TACK COAT UNTIL PRIMED BASE COURSE HAS CURED AND IS APPROVED BY THE CONSTRUCTION INSPECTOR.
4. TACK COAT SHALL COMPLY TO CITY OF SUGAR LAND AND TXDOT STANDARDS.
5. DO NOT USE CUTBACK ASPHALT APRIL 16 THROUGH SEPTEMBER 15.
6. DO NOT PLACE ASPHALT WHEN AMBIENT TEMPERATURE IS BELOW 50°F AND FALLING. MIXTURE MAY BE PLACED WHEN AMBIENT TEMPERATURE IS 40°F AND RISING.
7. ON PUBLIC ROADS, STREETS, AND RIGHT-OF-WAY, ASPHALT SHALL BE PLACED IN MAXIMUM 2-INCH LIFTS. IN THE EVENT MORE THAN ONE LIFT IS REQUIRED, EACH LIFT SHALL BE COMPACTED, TESTED, AND GIVEN ADEQUATE TIME FOR THE PREVIOUS LIFT TO CURE AND DRY BEFORE THE NEXT LIFT IS PLACED. IF COMPLETELY CURED AND DRIED, A TACK COAT WILL BE REQUIRED BETWEEN LIFTS.
8. A CERTIFIED LAB SHALL BE ON SITE AT ALL TIMES TO TEST AND PROPERLY DOCUMENT THE CONSTRUCTION METHODS AND QUALITY OF MATERIALS.
9. ROLLING PATTERNS SHALL BE ESTABLISHED BY THE CONTRACTOR, AS RECOMMENDED BY THE LAB, TO ACHIEVE THE MAXIMUM COMPACTION. THE SELECTED ROLL PATTERN SHALL BE FOLLOWED UNLESS CHANGES IN THE PLACEMENT OR MIXTURE OCCUR, WHICH AFFECT COMPACTION. COMPACTION OF 95% SHALL BE ACHIEVED.
10. ASPHALT SHALL NOT BE PLACED ON WET BASE.
11. NO "BIRDBATHS" ARE ALLOWED.
12. IF THE SURFACE RAVELS (SEPARATES), FLUSHES, RUTS, OR DETERIORATES IN ANY MANNER PRIOR TO FINAL ACCEPTANCE, THE CONTRACTOR WILL CORRECT THIS CONDITION AT HIS EXPENSE TO THE SATISFACTION OF THE CITY OF SUGAR LAND ENGINEER.
13. THE CONTRACTOR SHALL PROTECT THE PAVEMENT UNTIL DIRECTED BY THE CITY ENGINEER TO OPEN SAID PAVEMENT TO TRAFFIC.
14. RIDE QUALITY SHALL COMPLY WITH TXDOT ITEM 585, "RIDE QUALITY FOR PAVEMENT SURFACES".
15. SPECIAL NOTE: CONTRACTOR, WHILE MAXIMIZING COMPACTION, SHALL USE CAUTION NOT TO "OVER-ROLL" ASPHALT PAVEMENT STRETCHED OR OVER-ROLLED, WHERE COMPACTION IS BROKEN, SHALL NOT BE ACCEPTED AND SHALL BE REPAIRED OR REPLACED TO THE CITY ENGINEER'S SATISFACTION AT THE CONTRACTOR'S EXPENSE.
16. CORE SAMPLES SHALL BE TAKEN RANDOMLY AT A MINIMUM OF EVERY 300 LF PER LANE OF ROADWAY OR ONE PER EVERY 250 SQ YD., WHICHEVER IS APPLICABLE AND SHALL BE STAGGERED RELATIVE TO TESTING SITES IN ABUTTING TRAFFIC LANES.
17. ALL ASPHALTIC CONCRETE PAVEMENT REPAIRS SHALL BE SAW CUT TO FULL ASPHALT DEPTH. REFER TO ASPHALT, STABILIZED BASE, FLEXIBLE BASE, ASPHALT BASE, AND OIL AND EMULSION NOTES. ALL DAMAGED BASE AND SUBGRADES SHALL BE REMOVED AND REPLACED TO THE CITY ENGINEER'S SATISFACTION AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AREA DAMAGED DURING CONSTRUCTION, INCLUDING AREAS OUTSIDE THE DESIGNATED REPAIR.

STABILIZED CRUSHED CONCRETE:

1. TEST AND ANALYSIS OF AGGREGATE AND BINDER MATERIALS WILL BE PERFORMED IN ACCORDANCE WITH ASTMD 1557 AND ASTMD 4318. CEMENT SHALL BE ASTMC 150 TYPE I.
2. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES (1993) AND ITS LATEST REVISIONS AND CITY OF SUGAR LAND STANDARDS.
3. PRIME COAT SHALL BE M.C. 30 OR EPR-1 PRIME.
4. DESIGN MIX FOR MINIMUM AVERAGE COMPRESSIVE STRENGTH OF 200 PSI IN 48 HRS. PROVIDE MINIMUM CEMENT CONTENT OF 2 SK PER TON OF MIX. CEMENT CONTENT MAY BE RAISED AT THE CONTRACTOR'S EXPENSE IF TESTS ON FIELD SAMPLES FALL BELOW 200 PSI.
5. THREE SAMPLES SHALL BE MOLDED EACH DAY FOR EACH 300 TONS OF PRODUCTION. COMPRESSIVE STRENGTH SHALL BE THE AVERAGE OF THREE TESTS FOR EACH PRODUCTION LOT. CONTRACTOR SHALL REPLACE, AT HIS OWN EXPENSE, ANY MATERIAL BELOW MINIMUM REQUIREMENTS.
6. CONTRACTOR SHALL VERIFY LINES, GRADES, AND COMPACTED SUBGRADING AS READY TO RECEIVE MATERIALS PRIOR TO ITS PLACEMENT.
7. CEMENT STABILIZED BASE MAY NOT BE PLACED IF AMBIENT TEMPERATURE IS 40°F AND FALLING. BASE MATERIAL MAY BE PLACED IF AMBIENT TEMPERATURE IS 35°F AND RISING.
8. MATERIAL MAY NOT BE PLACED IN LIFTS EXCEEDING 6 INCHES IN DEPTH. EACH LIFT SHALL HAVE DENSITIES TAKEN.
9. CEMENT STABILIZED BASE MAY NOT BE STORED FOR LONG PERIODS. DELIVERY OF MATERIAL AND UTILIZATION SHOULD BE TIMED ACCORDINGLY. MAXIMUM TIME ALLOWED 3 HRS. FROM BATCH TIME TO HAVING BEEN INSTALLED.
10. CEMENT STABILIZED BASE SHALL NOT BE INSTALLED IN WET OR SOFT AREAS.
11. COMPACT TO MINIMUM DENSITY OF 95 F MAXIMUM DRY DENSITY, UNLESS OTHERWISE INDICATED ON DRAWINGS. MOISTURE SHALL BE BETWEEN + OR - 2% OPTIMUM AS DETERMINED BY ASTMD 698.
12. AFTER COMPACTING FINAL COURSE, BLADE SURFACE TO FINAL GRADE. ANY IRREGULARITIES, WEAK SPOTS, AREAS OF EXCESSIVE WETNESS, OR SURFACE HAIR LINE CRACKING SHALL BE REPAIRED AND/OR REPLACED AT CONTRACTOR'S EXPENSE.
13. A CERTIFIED LAB SHALL BE ON SITE AT ALL TIMES TO TEST AND PROPERLY DOCUMENT THE CONSTRUCTION METHODS AND QUALITY OF MATERIALS.
14. COMPACTION TESTING WILL BE PERFORMED IN ACCORDANCE WITH ASTM D 1556 OR ASTM D 2922 AND ASTM D 3017 AT RANDOMLY SELECTED LOCATIONS AS DIRECTED BY CITY OF SUGAR LAND CONSTRUCTION INSPECTOR.
15. A MINIMUM OF ONE CORE SHALL BE TAKEN AT RANDOM LOCATIONS PER 300 LF PER LANE OF ROADWAY OR ONE PER 250 SQ. YD., WHICHEVER MAY APPLY AND SHALL BE STAGGERED RELATIVE TO TESTING SITES IN ABUTTING TRAFFIC LANES.
16. CURE FOR A MINIMUM OF 7 DAYS BEFORE ADDING ASPHALT PAVEMENT COURSES.
17. COVER SURFACE WITH CURING MEMBRANES AT THE FOLLOWING RATES: MC-30: 0.1 GAL. PER SQ. YD., OR EPR-1 PRIME 0.15 GAL. PER SQ. YD. DO NOT USE CUTBACK ASPHALT APRIL 16 TO SEPTEMBER 15. PROTECT THE MEMBRANE BY ALLOWING MEMBRANE TO FULLY CURE PRIOR TO PERMITTING TRAFFIC TO DRIVE ON IT.
18. UNSTABILIZED CRUSHED CONCRETE MAY NOT BE USED ON PUBLIC STREETS, ROADS, OR RIGHTS-OF-WAY.
19. STABILIZED LIMESTONE BASE MAY BE SUBSTITUTED FOR STABILIZED CRUSHED CONCRETE IF SUBMITTED AND APPROVED BY THE CITY ENGINEER.

STORM SEWER NOTES:

1. STORM SEWERS SHALL BE DESIGNED AND CONSTRUCTED WITH CITY OF SUGAR LAND'S STANDARD CONSTRUCTION SPECIFICATIONS AND IN ACCORDANCE WITH CITY OF SUGAR LAND STANDARD DETAILS SHEET AND LATEST REVISIONS.
2. ALL PIPE STORM SEWERS SHALL BE INSTALLED, BEDDED, AND BACKFILLED IN ACCORDANCE WITH CITY OF SUGAR LAND STANDARD DETAIL DRAWINGS.
3. ALL CEMENT STABILIZED SAND (C.S.S.) SHALL BE 1-1/2 SK PER CUBIC YD. AND MEET MINIMUM C.S.S. STANDARDS COMPACTED TO 95%.
4. ALL STORM SEWERS UNDER AND WITHIN TWO (2) FOOT OF PROPOSED OR FUTURE PAVEMENTS SHALL BE BACKFILLED AND COMPACTED WITH 1-1/2 SK C.S.S. TO BOTTOM OF SUBGRADE.
5. ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES OR INLETS ARE TO BE PLUGGED WITH 8" BRICK WALLS WITH FULL MORTAR HEAD AND BED JOINTS AND GROUTED WITH A MINIMUM OF 1/2-INCH NON-SHRINK GROUT INSIDE AND OUTSIDE, UNLESS OTHERWISE NOTED.
6. AVOID TO MAXIMUM EXTENT, MANHOLES IN HANDICAP RAMPS.
7. ALL STORM SEWER MANHOLES SHALL BE OF SUGAR LAND TYPE "C" UNLESS OTHERWISE NOTED AND SHALL BE LOCATED A MINIMUM OF THREE (3) FEET BACK OF CURB. IF CONFLICT EXISTS, RACK OVER MANHOLE TO MISS PROPOSED CURB.
8. RIM ELEVATIONS SHOWN ON THE PLANS ARE APPROXIMATE ONLY. UTILITY CONTRACTOR SHALL ADJUST RIM ELEVATIONS TO 0.4 FEET ABOVE THE FINISH GRADE AT EACH LOCATION AFTER CONTRACTOR HAS COMPLETED FINAL GRADING. SLOPED FILL SHALL BE ADDED FOR STORM WATER DRAINAGE AWAY FROM RIM.
9. RIM ELEVATIONS SHALL BE PROPERLY ADJUSTED TO GRADE IN PAVEMENT AND SIDEWALKS. APPROVED BLOCKOUTS SHALL BE USED IN PAVEMENT.
10. ALL STORM SEWER MANHOLE COVERS MUST INCLUDE "STORM SEWER" AND "DUMP NO WASTE", "DRAINS TO WATERWAYS" WITH CITY OF SUGAR LAND EMBLEM AS DEPICTED IN THE DETAIL SHEETS.
11. MINIMUM STORM SEWER SIZE SHALL BE 24-INCH DIAMETER. ALL STORM SEWER PIPES 24" AND LARGER ARE TO BE REINFORCED CONCRETE PIPE ASTM C-76 CLASS III, INCLUDING INLET LEADS CROSSING UNDER EXISTING OR PROPOSED PAVEMENTS. ALL INLET LEADS SHALL BE 24" R.C.P. OR LARGER. ALL STORM SEWER PIPE SHALL BE RUBBER GASKETED. ALL CMP PIPE SHALL BE IN ACCORDANCE WITH C.O.S.L. APPROVED PRODUCT LIST AND STANDARD DETAILS.
12. CONTRACTOR SHALL VERIFY NATURAL GROUND SHOTS PRIOR TO MANHOLE CONSTRUCTION.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING LOCATION OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION. DURING THE COURSE OF ANY AND ALL CLEARING, GRUBBING, FILL, GRADING, EXCAVATION OR OTHER CONSTRUCTION, CONTRACTOR SHALL ENSURE THAT STORM DRAINAGE PATHWAYS ARE MAINTAINED AND REMAIN OPEN TO ENSURE POSITIVE DRAINAGE AND THAT SUCH CONVEYANCES ARE NOT IMPEDED OR BLOCKED IN ANY WAY. STORM SEWER INLETS SHALL BE PROTECTED FROM ENTRY OF SILT, TRASH, DEBRIS AND ANY SUBSTANCES DELETERIOUS TO THE STORM SEWER SYSTEM AND/OR WATERWAYS RECEIVING STORM WATER RUNOFF. CONTRACTOR SHALL AT COMPLETION OF WORK, FILL LOW SPOTS AND GRADE ALL RIGHTS-OF-WAY AND UTILITY EASEMENTS AND REGRADE/RESTORE DITCHES AS NECESSARY TO MAINTAIN AND/OR ESTABLISH POSITIVE DRAINAGE.
14. CONTRACTOR TO PROVIDE A MINIMUM OF 6-INCHES CLEARANCE AT UTILITY CROSSINGS AND A MINIMUM OF TWELVE (12) INCHES AT SANITARY SEWER CROSSING.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACKSLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF HIS WORK.
16. ALL DITCHES SHALL BE RESTORED TO PROPOSED ELEVATIONS TO INSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE COMPACTED AND ALL DISTURBED AREAS SHALL BE RESEEDED OR RESODDED WITHIN 10 WORKING DAYS OF EACH OCCURRENCE (NO SEPARATE PAY).
17. THE UTILITY CONTRACTOR SHALL ROUGH CUT ALL ROADSIDE SWALES IN PROPER ALIGNMENT AND SLOPE TO WITHIN 0.2 FT. OF FINISH GRADE. THE PAVING CONTRACTOR, UPON COMPLETION OF PAVING, SHALL COMPLETE FINAL GRADING ALIGNMENT OF SWALES AND RESTORE ALL AREAS WITHIN RIGHT-OF-WAY FOR SEEDING OR SODDING AND FERTILIZATION.
18. ALL STORM SEWERS MUST BE CLEAN/FREE OF DIRT AND DEBRIS AT THE TIME AND INITIAL AND FINAL ACCEPTANCE.
19. REFER TO GENERAL NOTES AND C.S.S. NOTES.

SANITARY SEWER NOTES:

1. SANITARY SEWERS, FORCE MAINS, MANHOLES, LIFT STATIONS AND WASTEWATER TREATMENT PLANTS SHALL BE DESIGNED AND CONSTRUCTED AS PER THE REQUIREMENTS OF THE CITY OF SUGAR LAND DESIGN STANDARDS AND CORRESPONDING STANDARD CONSTRUCTION DETAILS SHEETS AND AS PER THE REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY "DESIGN CRITERIA FOR SEWERAGE SYSTEMS". SHOULD A CONFLICT ARISE BETWEEN INFORMATION DEPICTED ON APPROVED CONSTRUCTION DRAWINGS AND/OR INFORMATION INCLUDED IN PROJECT SPECIFICATIONS, CITY OF SUGAR LAND DESIGN STANDARDS SHALL GOVERN.
2. ALL MATERIALS AND PRODUCTS USED IN THE CONSTRUCTION OF SANITARY SEWERS, FORCE MAINS, MANHOLES, LIFT STATIONS AND WASTEWATER TREATMENT PLANTS SHALL COMPLY WITH THE CITY OF SUGAR LAND DESIGN STANDARDS AND THE CURRENT APPROVED PRODUCTS LIST.
3. STACKS SHALL BE BUILT IN ACCORDANCE WITH THE CITY OF SUGAR LAND STANDARD DETAIL DRAWING REQUIREMENTS. EXACT LOCATION OF THE STACK SHALL BE SUPPLIED TO THE CITY ENGINEER OF SUGAR LAND BY THE PROJECT ENGINEER ON SEALED AS-BUILT DRAWINGS AT COMPLETION OF CONSTRUCTION. ALL STACKS SHALL BE INSTALLED WITHIN 3% OF PLUMB RELATIVE TO VERTICAL PLANE AND WILL BE CAPPED AND TERMINATED AT A DEPTH OF 4 FEET BELOW FINISHED GRADE, UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.
4. EACH SANITARY SEWER SERVICE LEAD STUB, PLUGGED WYE BRANCH OUTLET AND STACK SHALL BE MARKED IN ACCORDANCE WITH THE DETAILS AT THE TIME OF CONSTRUCTION, BEGINNING AT THE INVERT ELEVATION OF THE STUB OR WYE AND AT AN ELEVATION TWO FEET BELOW THE CAPPED TERMINATION POINT OF THE STACK AND EXTENDING TWO FEET ABOVE FINISHED GRADE.
5. SANITARY SEWER MANHOLES SHALL BE CONSTRUCTED AS PER DRAWINGS INCORPORATED IN CITY OF SUGAR LAND STANDARD CONSTRUCTION DETAILS SHEETS. SUCH MANHOLES SHALL BE CONSTRUCTED A MINIMUM OF ONE FOOT FROM BACK OF CURB ON CURB AND GUTTER ROADWAYS AND THREE FEET FROM EDGE OF TRAVELLED ROADWAY ON THOSE THOROUGHFARES HAVING NO CURBING, MEASURED FROM OUTSIDE DIAMETER OF MANHOLE. ALL SANITARY SEWER MANHOLES SHALL INCORPORATE INFLOW PROTECTORS. SANITARY SEWER MANHOLES SHALL NOT BE INSTALLED BENEATH STREETS OR PAVING EXCEPT WHERE SPECIFICALLY AUTHORIZED BY CITY ENGINEER AND SO DESIGNATED ON APPROVED CONSTRUCTION DRAWINGS. BRICK MANHOLES AND FIBERGLASS MANHOLES ARE PROHIBITED. MANHOLES DEEPER THAN EIGHT FEET SHALL HAVE ECCENTRIC CONES.
6. SANITARY SEWER MANHOLE COVERS SHALL BE MINIMUM OF 32 INCHES IN DIAMETER. ALL SUCH MANHOLE COVERS SHALL HAVE THE CITY OF SUGAR LAND EMBLEM AND THE WORDS "SUGAR LAND" AND "SANITARY SEWER" CAST IN RAISED RELIEF AS DEPICTED IN CITY OF SUGAR LAND STANDARD CONSTRUCTION DETAILS SHEETS.
7. MANHOLE RIM ELEVATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY. UTILITY CONTRACTORS SHALL ADJUST RIM ELEVATIONS TO 0.4 FEET ABOVE FINISHED GRADE, AND 0.5 FEET ABOVE NATURAL GROUND WITHIN RIGHTS-OF-WAY AND EASEMENTS AT EACH MANHOLE LOCATION AFTER PAVEMENT CONTRACTOR HAS COMPLETED FINAL GRADING. THE AREA ADJACENT TO SANITARY SEWER MANHOLE LOCATIONS SHALL BE GRADED AWAY FROM SUCH MANHOLES SO AS PREVENT ENTRY OF STORM WATER RUNOFF TO THE SANITARY SEWER SYSTEM.
8. MINIMUM SEPARATION DISTANCES AS REQUIRED BY TCEQ SECTION 317.1.3, APPENDIX E MUST BE MAINTAINED BETWEEN POTABLE WATER LINES AND SANITARY SEWERS, FORCE MAINS, MANHOLES, LIFT STATIONS AND WASTEWATER TREATMENT PLANTS. INSTALLATION OF FIRE HYDRANTS WITHIN NINE FEET OF A SANITARY SEWER SYSTEM IS PROHIBITED. REFER TO THE CITY OF SUGAR LAND INFRASTRUCTURE STANDARDS AND CORRESPONDING STANDARD CONSTRUCTION DETAILS SHEETS FOR CONSTRUCTION REQUIREMENTS OF OTHER INSTALLATIONS WHERE SEPARATION DISTANCES OF GREATER THAN NINE FEET CANNOT BE MAINTAINED.
9. TESTING OF SANITARY SEWERS, FORCE MAINS, MANHOLES, LIFT STATIONS AND WASTEWATER TREATMENT PLANTS SHALL BE CONDUCTED AS NOTED IN SANITARY SEWER CHAPTER OF THE CITY OF SUGAR LAND DESIGN STANDARDS AND AS PER THE REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY "DESIGN CRITERIA FOR SEWERAGE SYSTEMS".
10. ALL SANITARY SEWER PIPING AND BEDDING SHALL BE INSPECTED BY CITY CONSTRUCTION INSPECTOR FOR CONFORMANCE WITH CITY DESIGN STANDARDS PRIOR TO BACKFILLING OF PIPING IN TRENCH. CONTRACTOR SHALL NOT COVER PIPING UNTIL SUCH TIME AS INSPECTOR HAS NOTIFIED CONTRACTOR THAT RESULTS OF PIPING INSPECTION ARE SATISFACTORY AND THAT BACKFILLING MAY BE ACCOMPLISHED. ANY PIPING INSTALLED AND/OR BACKFILLED WITHOUT INSPECTOR'S SPECIFIC APPROVAL SHALL BE UNCOVERED AT INSPECTOR'S DIRECTION AND INSPECTED ACCORDINGLY. CONTRACTOR SHALL NOTIFY INSPECTOR 24-HOURS PRIOR TO INSPECTION.
11. ALL COMMERCIAL DEVELOPMENTS WITH A FAR SIDE SANITARY SERVICE LEAD ACROSS THE STREET SHALL PROVIDE A SIX (6) INCH RISER AND CLEANOUT ON THE PROPERTY SIDE. PUBLIC MAINTENANCE OF THE FAR SIDE LEAD SHALL END AT THIS RISER.

WATER DISTRIBUTION NOTES:

1. WATER MAINS, WATER SERVICE LINES AND ASSOCIATED APPURTENANCES SHALL BE DESIGNED AND CONSTRUCTED AS PER REQUIREMENTS OF THE CITY OF SUGAR LAND DESIGN STANDARDS AND CORRESPONDING STANDARD CONSTRUCTION DETAILS SHEETS AND AS PER THE REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY. SHOULD A CONFLICT ARISE BETWEEN INFORMATION DEPICTED ON APPROVED CONSTRUCTION DRAWINGS AND/OR INFORMATION INCLUDED IN PROJECT SPECIFICATIONS, CITY OF SUGAR LAND DESIGN STANDARDS SHALL GOVERN.
2. ALL MATERIALS AND PRODUCTS USED IN THE CONSTRUCTION OF WATER MAINS, WATER SERVICE LINES AND ASSOCIATED APPURTENANCES SHALL COMPLY WITH THE CITY OF SUGAR LAND DESIGN STANDARDS AND THE CURRENT APPROVED PRODUCTS LIST AS MAINTAINED BY THE CITY'S ENGINEERING DEPARTMENT.
3. ALL GATE VALVES INSTALLED BELOW GRADE SHALL BE OF NON-RISING STEM DESIGN.
4. ALL FIRE HYDRANTS SHALL BE PAINTED AND/OR REPAINTED WITH GEO-GLEN 301 BRIGHT SILVER POLYURETHANE ENAMEL MANUFACTURED BY GEO-GLEN ENTERPRISES, INC. SURFACE PREPARATION SHALL INCLUDE REMOVAL OF OIL, GREASE AND MOISTURE, FOLLOWED BY MEDIA BLASTING TO SSPC-SP15-10-63 SPECIFICATIONS (NEAR WHITE METAL) AS PER MANUFACTURER'S RECOMMENDATIONS. PRIME BARE METAL WITH TP-251 EPOXY PRIMER EPOXY PRIMER OR WITH TP-221, TP-231 OR TP-241 UNIVERSAL PRIMER. 80°F AND 50% RELATIVE HUMIDITY ARE OPTIMAL CONDITIONS FOR APPLICATION OF PRIMER AND OF PAINT. DO NOT APPLY PRIMER AND/OR PAINT WHEN SURFACE TO BE PAINTED IS LESS THAN 5° ABOVE THE DEW POINT IN ORDER TO PREVENT MOISTURE FROM CONDENSING ON THE SURFACE TO BE PRIMED AND/OR PAINTED. A BLUE TRAFFIC BUTTON SHALL BE INSTALLED ON THE STREET 12" OFF THE CENTER LINE FOR EACH HYDRANT.
5. MINIMUM SEPARATION DISTANCES AS REQUIRED BY TCEQ SECTION 317.1.3, 290. APPENDIX E MUST BE MAINTAINED BETWEEN POTABLE WATER LINES AND SANITARY SEWERS, FORCE MAINS, LIFT STATIONS AND WASTEWATER TREATMENT PLANTS. INSTALLATION OF FIRE HYDRANTS WITHIN 9' (FT) OF A SANITARY SEWER SYSTEM IS PROHIBITED. REFER TO C.O.S.L. STANDARDS FOR CONSTRUCTION REQUIREMENTS OF OTHER INSTALLATIONS WHERE DISTANCES ARE GREATHER THAN 9' (NINE) FT. CANNOT BE MAINTAINED.
6. EACH WATER SERVICE LEAD STUB SHALL BE MARKED WITH A PRESSURE TREATED 4 X 4 TIMBER OR PVC PIPE AT THE TIME OF CONSTRUCTION, BEGINNING AT THE INVERT ELEVATION OF THE STUB AND EXTENDING TWO FEET ABOVE FINISHED GRADE. EACH TIMBER MARKER SHALL BE PAINTED BLUE AND LABELED "POTABLE WATER" WITH PIPE SIZE NOTED.
7. TESTING OF WATER MAINS, WATER SERVICE LINES AND ASSOCIATED APPURTENANCES SHALL BE CONDUCTED AS PER REQUIREMENTS OF AWWA C605-94.
8. DISINFECTION OF WATER MAINS, WATER SERVICE LINES AND ASSOCIATED APPURTENANCES SHALL BE CONDUCTED AS PER REQUIREMENTS OF AWWA C651 AND TCEQ. NO CONNECTIONS SHALL BE MADE TO EXISTING WATER LINES UNTIL NEWLY CONSTRUCTED WATER LINES HAVE BEEN THOROUGHLY DISINFECTED, TESTED, FLUSHED, AND SAMPLED AND CONNECTION HAS BEEN AUTHORIZED BY THE CITY ENGINEER.
9. ALL WATER PIPING AND BEDDING SHALL BE INSPECTED BY THE CITY INSPECTOR FOR CONFORMANCE TO DESIGN STANDARDS PRIOR TO BACKFILLING OF PIPING IN TRENCH. CONTRACTOR SHALL NOT COVER PIPING UNTIL SUCH TIME AS INSPECTOR HAS NOTIFIED CONTRACTOR THAT RESULTS OF PIPING INSPECTION ARE SATISFACTORY AND THAT BACKFILLING MAY BE ACCOMPLISHED. ANY PIPING INSTALLED AND/OR BACKFILLED WITHOUT INSPECTOR'S SPECIFIC APPROVAL SHALL BE UNCOVERED AT INSPECTOR'S DIRECTION AND INSPECTED ACCORDINGLY. 24-HOUR NOTICE REQUIRED.
10. ALL MECHANICALLY RESTRAINED FITTINGS MUST BE MEGALUG RESTRAINED JOINTS OR APPROVED EQUAL.
11. THE CITY OF SUGAR LAND MUST HAVE A COPY OF THE BACTERIALOGICAL TEST RESULTS AT LEAST 24 HOURS PRIOR TO THE INITIAL INSPECTION. IF NOT, THEN THE INSPECTION WILL BE RESCHEDULED.

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED PROFESSIONAL ENGINEER

DESIGN ENGINEER: _____ DATE: 8/15/16

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

GENERAL CONSTRUCTION NOTES II

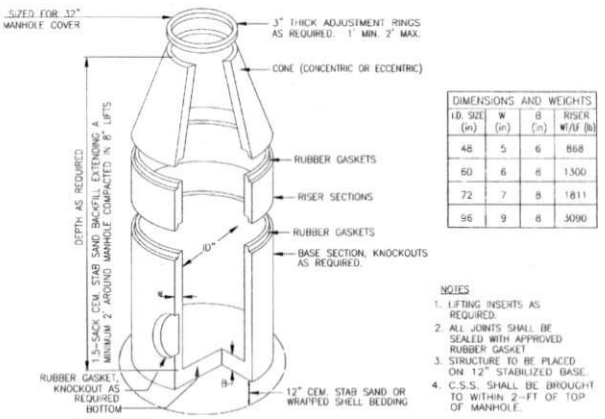
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-02

SHEET OF

PLOT TIME

CAD FILE PATH:
PLOT DATE:



DIMENSIONS AND WEIGHTS			
I.D. SIZE (in)	W (in)	B (in)	RISER #/LF (lb)
48	5	6	868
60	6	8	1300
72	7	8	1811
96	9	8	3090

NOTES

1. LIFTING INSERTS AS REQUIRED.
2. ALL JOINTS SHALL BE SEALED WITH APPROVED RUBBER GASKET
3. STRUCTURE TO BE PLACED ON 12" STABILIZED BASE.
4. C.S.S. SHALL BE BROUGHT TO WITHIN 2'-FT OF TOP OF MANHOLE.

SPECIFICATIONS:

CONCRETE: CLASS 1 CONCRETE WITH A DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. RATES FOR H-20 LOADING.

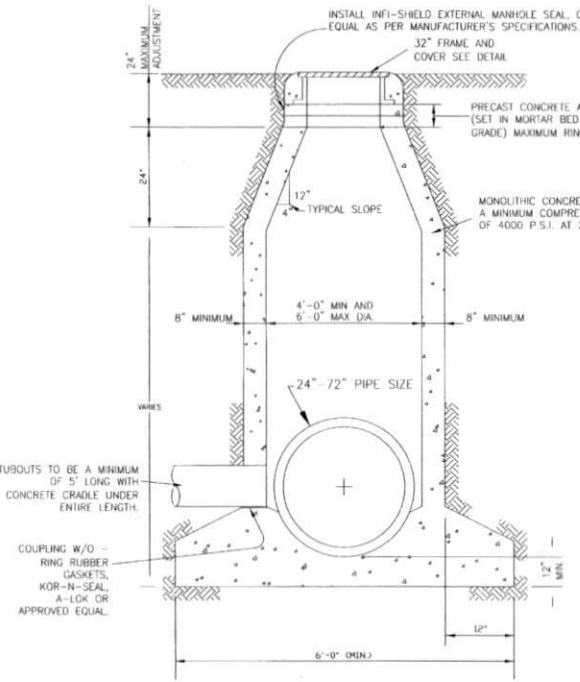
REINFORCEMENT: STRUCTURAL REINFORCEMENT CONFORMING TO ASTM-C-478.

C.I. CASTINGS: CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 35.

PRECAST CONCRETE MANHOLE

N.T.S.

SL-DR-02



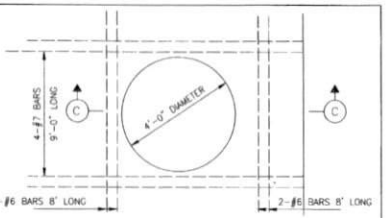
TYPE "C" CAST-IN-PLACE MANHOLE

N.T.S.

NOTES:

1. CONCRETE SHALL BE A MONOLITHIC POUR.
2. #4 REBAR TO BE PLACED IN BASE AND WALLS @ 12" C-C EW.
3. 1-1/2" C.S.S. BACKFILL TO BE PLACED AROUND MANHOLE COMPACTED IN 8" LIFTS (MAX).

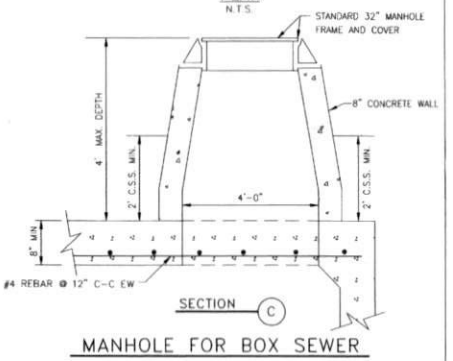
SL-DR-01



STANDARD TYPE "E" INLET MAY BE USED AT TOP OF MANHOLE.

PLAN

N.T.S.



MANHOLE FOR BOX SEWER

N.T.S.

SL-DR-04

GENERAL CONSTRUCTION NOTES:

1. ALL CAST CONCRETE BASES AND WALLS SHALL HAVE # 4 REBAR @ 12" C-C EW
2. CONCRETE SHALL BE 3000 PSI MIN.
3. USE C.S.S. BEDDING AS PER DETAILS. 1-1/2 SK., COMPACTED 8" LIFTS (MAX.) TO 95% STANDARD.

REFER TO:

1. *GENERAL NOTES, C.S.S & CONCRETE NOTES.*
2. *STORM SEWER NOTES*

No.	DATE	REVISION

SEAL: GUY L. HUMPHREY 106072 LICENSED PROFESSIONAL ENGINEER

DESIGN ENGINEER: TBPE FIRM REG. No. 280 DATE 5/15/15

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

STORM SEWER MANHOLE CONSTRUCTION DETAILS

JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-03

SHEET OF

PLOT TIME

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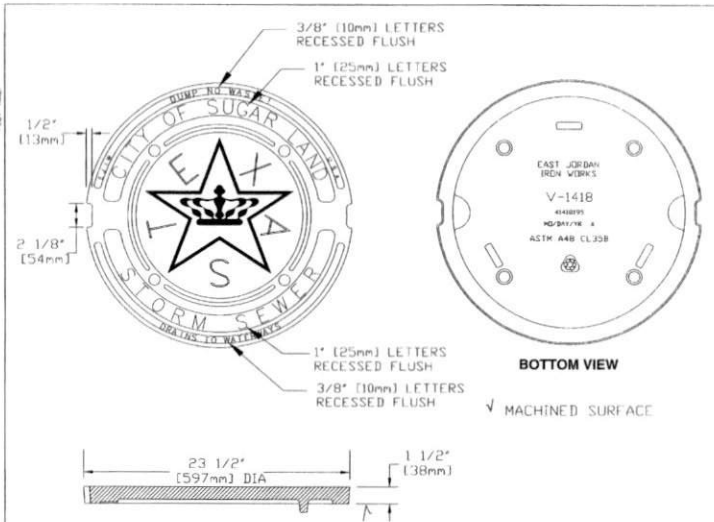
PLOT DATE



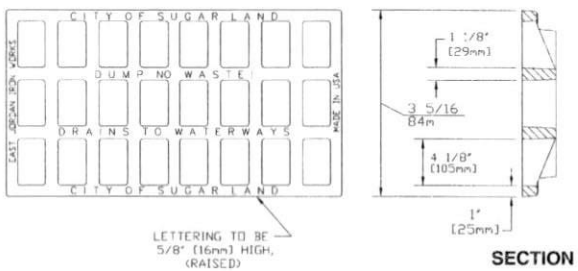
NOTE: 24" MANHOLE COVERS TO BE USED ON INLETS ONLY.

EAST JORDAN IRON WORKS OR APPROVED EQUAL

24" MANHOLE COVER

N.T.S.

SL-DR-05

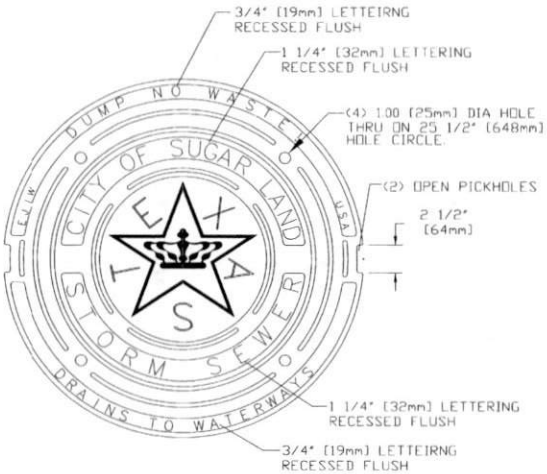


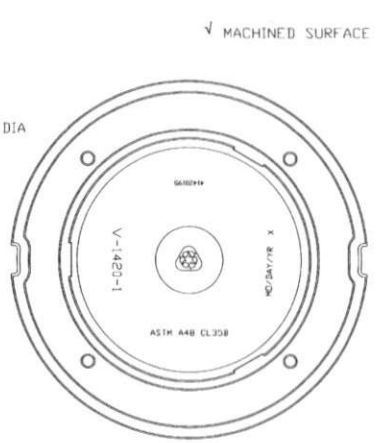
EAST JORDAN IRON WORKS OR APPROVED EQUAL

CATCH BASIN GRATE

N.T.S.

SL-DR-07





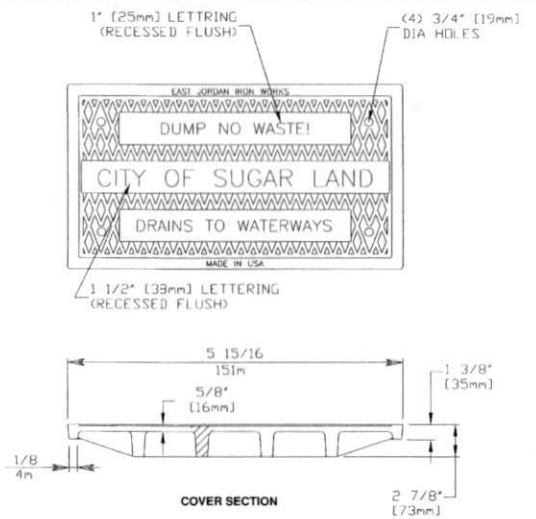
EAST JORDAN IRON WORKS OR APPROVED EQUAL

32" MANHOLE COVER

N.T.S.

NOTE: 32" MANHOLE COVERS TO BE USED ON ALL STORM SEWER MANHOLES

SL-DR-06



EAST JORDAN IRON WORKS OR APPROVED EQUAL

SUGAR LAND COVER

N.T.S.

SL-DR-08

REFER TO:

1. *GENERAL NOTES, C.S.S & CONCRETE NOTES.*
2. *STORM SEWER NOTES*

No.	DATE	REVISION

SEAL: STATE OF TEXAS — GUY L. HUMPHREY — 106072 — LICENSED PROFESSIONAL ENGINEER

DESIGN ENGINEER — DATE 5/31/05

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

STORM SEWER MANHOLE CONSTRUCTION DETAILS

JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-04

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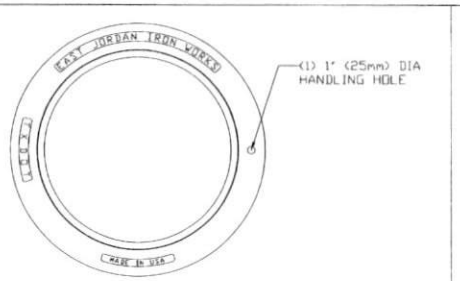
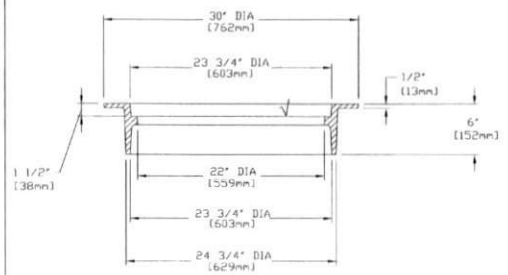
PLOT DATE:



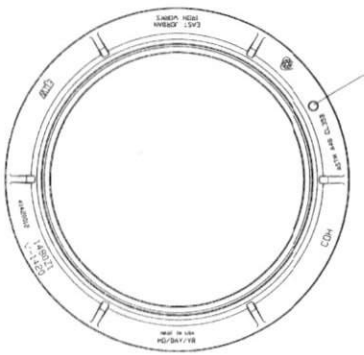


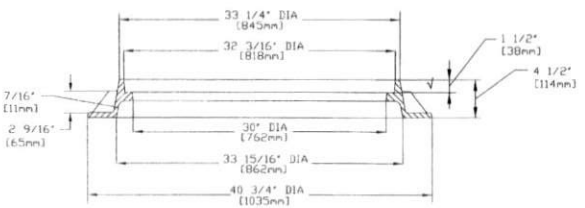
EAST JORDAN IRON WORKS OR APPROVED EQUAL

24" MANHOLE FRAME

N.T.S.

SL-DR-09





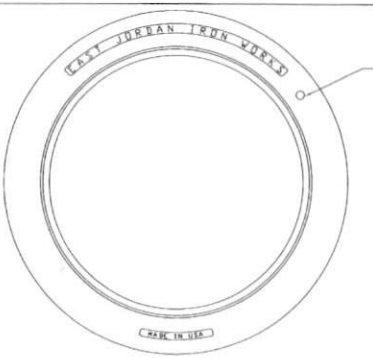
FRAME SECTION

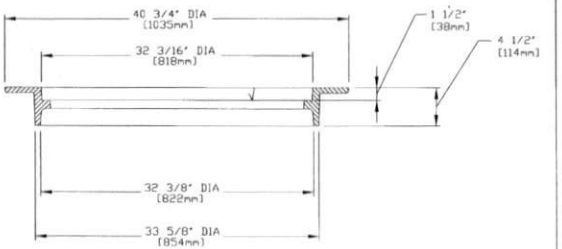
EAST JORDAN IRON WORKS OR APPROVED EQUAL

32" MANHOLE FRAME W/O MUD RING

N.T.S.

SL-DR-10



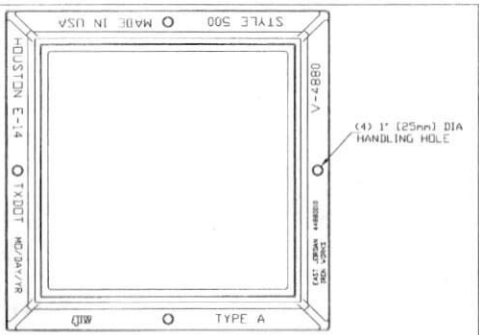


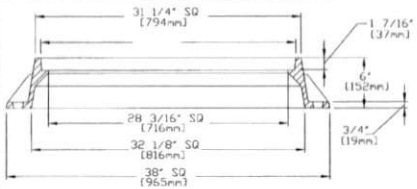
EAST JORDAN IRON WORKS OR APPROVED EQUAL

32" MANHOLE FRAME

N.T.S.

SL-DR-11





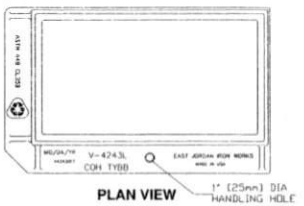
FRAME SECTION

EAST JORDAN IRON WORKS OR APPROVED EQUAL

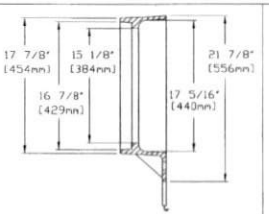
TYPE A INLET FRAME

N.T.S.

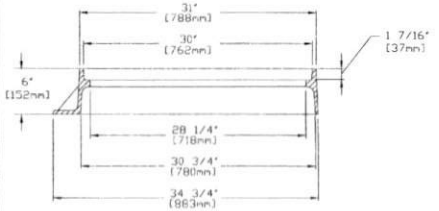
SL-DR-12



PLAN VIEW



SECTION VIEW



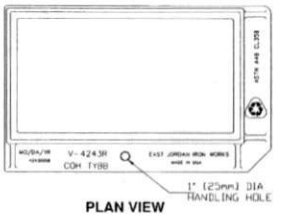
SECTION VIEW

EAST JORDAN IRON WORKS OR APPROVED EQUAL

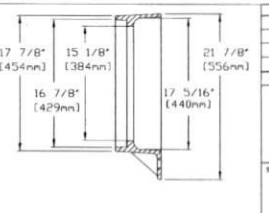
LEFT FRAME

N.T.S.

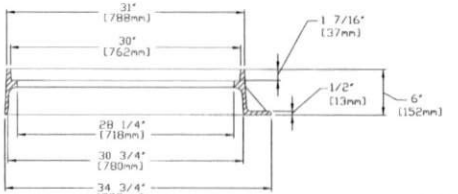
SL-DR-13



PLAN VIEW



SECTION VIEW



SECTION VIEW

EAST JORDAN IRON WORKS OR APPROVED EQUAL

RIGHT FRAME

N.T.S.

SL-DR-14

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER: DATE 8/15/16

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

STORM SEWER
CONSTRUCTION DETAILS

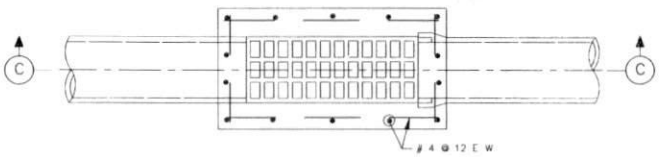
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-05

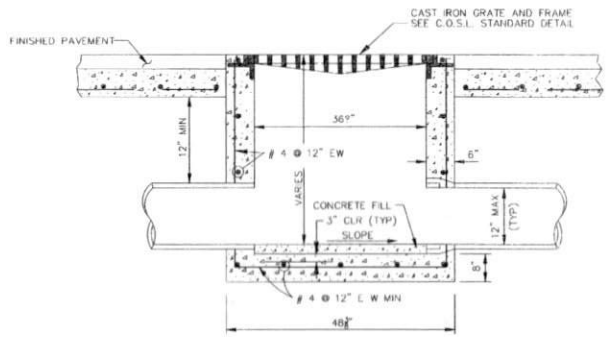
SHEET OF

PLOT TIME:

DRG FILE PATH:
PLOT DATE:



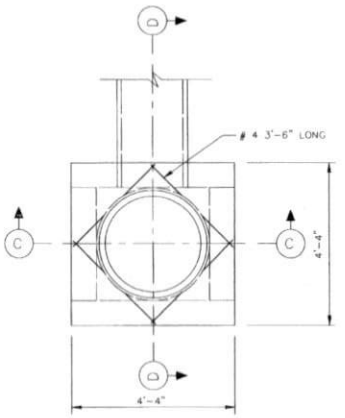
PLAN



SECTION C

SL-DR-24

TYPE "D" INLET



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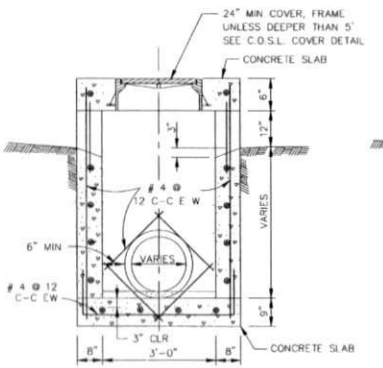
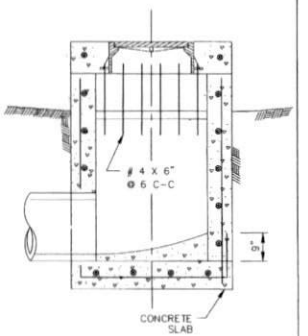


SECTION C



SECTION D

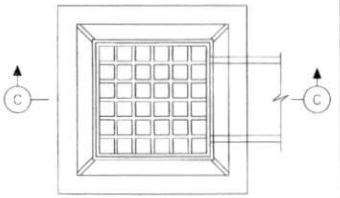
TYPE "E" INLET

N.T.S.

SL-DR-22

TYPE "A" INLET

N.T.S.



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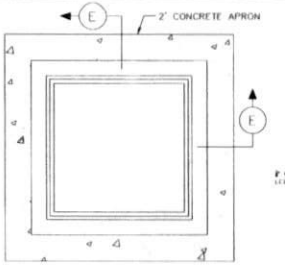

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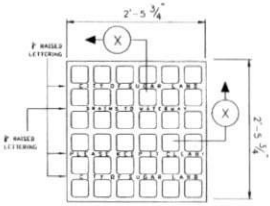
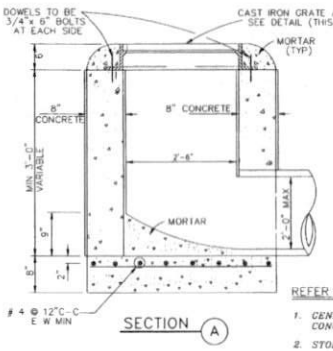
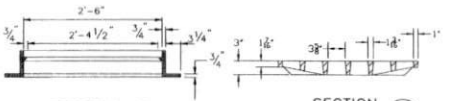


GRATE



SECTION A



SECTION E

SECTION X

GENERAL CONSTRUCTION NOTES:

1. CONCRETE CAST WALLS SHALL HAVE #4 REBAR PLACED @ 12" C-C EW.
2. GRATE LID IS EAST JORDAN IRON WORKS OR APPROVED EQUAL

REFER TO:

1. *GENERAL NOTES, C.S.S. & CONCRETE NOTES.*
2. *STORM SEWER NOTES*

SL-DR-23

NO.	DATE	REVISION

SEAL.

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER: DATE 5/18/16

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND
SSV22
TEXAS

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

STORM SEWER INLET
CONSTRUCTION DETAILS I

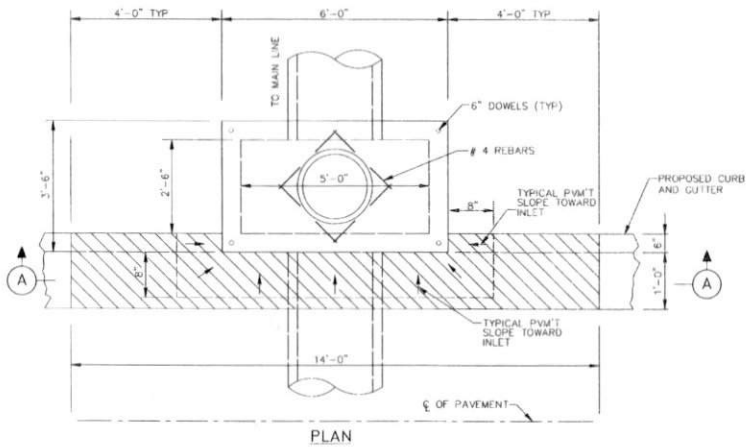
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-07

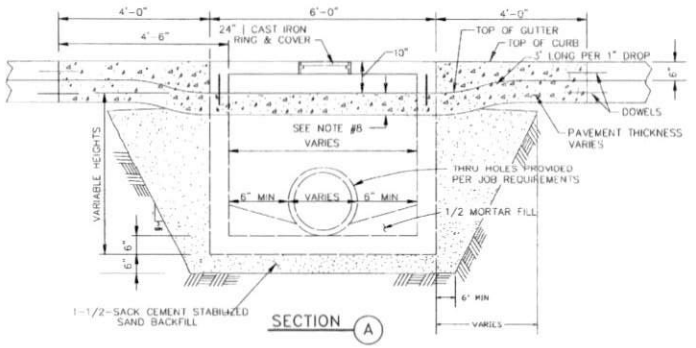
SHEET OF

PLOT TIME

CAD FILE PATH:
PLOT DATE



PLAN

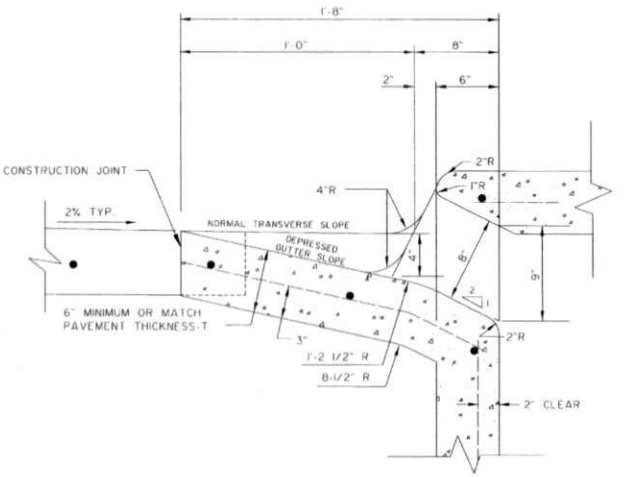


TYPE "H-2" INLET

SL-DR-25

NOTES:

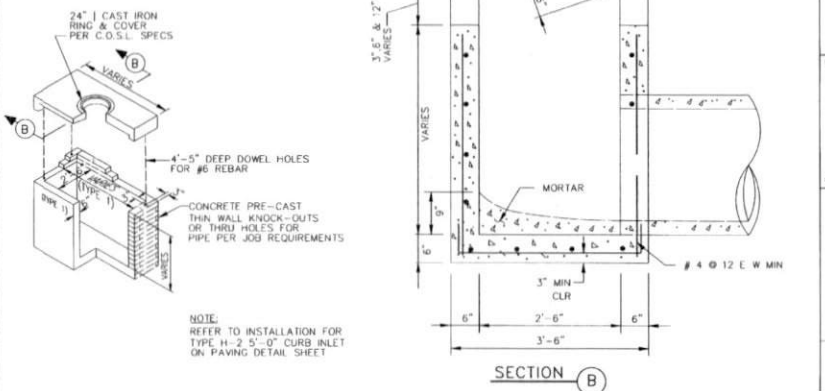
1. INLET WALLS MAY BE EXTENDED USING PRECAST RISER SECTION.
2. INLET TOPS MUST BE SECURED TO THE INLET WALL USING #6 DOWELS DRILLED AND GROUTED A MINIMUM DEPTH OF 5" INTO THE INLET WALL. A PLAN PREPARED BY THE MANUFACTURER MUST BE SUBMITTED FOR APPROVAL PRIOR TO INSTALLATION. THE PLAN SHOULD DETAIL CONNECTIONS AND SEALING OF JOINTS.
3. PRECAST INLET TOPS SHALL NOT UTILIZE MULTIPLE ONE-FOOT SECTIONS TO ACHIEVE GRADE.
4. INLET BACKFILL SHALL BE CEMENT STABILIZED SAND TO THE TOP OF THE INLET FIRST STAGE.
5. GRADE 60 REINFORCEMENT. #4 STEEL REBAR TO CONFORM TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.
6. PRECAST INLET MUST BE CONSTRUCTED TO SPECIFICATIONS REQUIRED BY APPROVED DRAWINGS. (SEE GENERAL NOTES).
7. TOPS POURED-IN-PLACE REQUIRE #4 REBAR @ 12" C-C EACH WAY, 4,500 PSI CONCRETE MINIMUM AND 3" THICK MINIMUM.
8. PAVEMENT DEPTH AT INLET SHALL BE EQUAL TO OR GREATER THAN REQUIRED PAVEMENT DEPTH.
9. DEPRESS GUTTER TO INLET.
10. ALL SIDES OF ALL INLETS MUST BE COMPACTED.
11. REFER TO GEOTECHNICAL REPORTS FOR RECOMMENDED TRENCH SIDE SLOPES.



THROAT DETAIL FOR STANDARD INLETS ON CONCRETE STREETS

SCALE: N.T.S.

SL-DR-40



TYPE "H-2" PRECAST INLET

N.T.S.

SL-DR-26

REFER TO:

1. *GENERAL NOTES*
2. *SEE C.S.S., PAVEMENT NOTES*

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED PROFESSIONAL ENGINEER

DESIGN ENGINEER: DATE 5/19/06

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

STORM SEWER INLET CONSTRUCTION DETAILS II

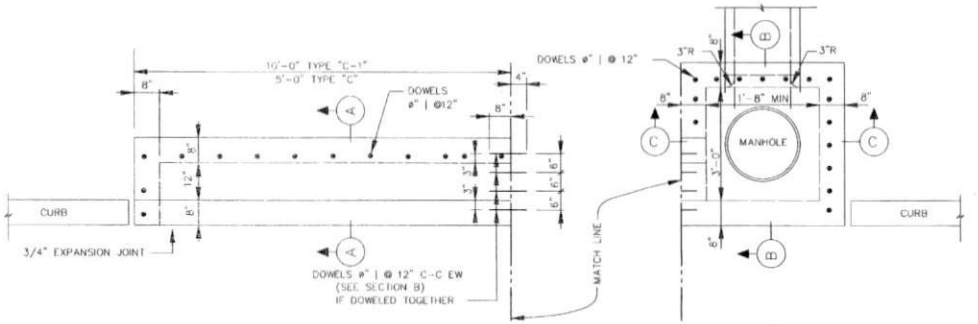
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-08

SHEET OF

PLOT TIME

CAD FILE PATH:
PLOT DATE:



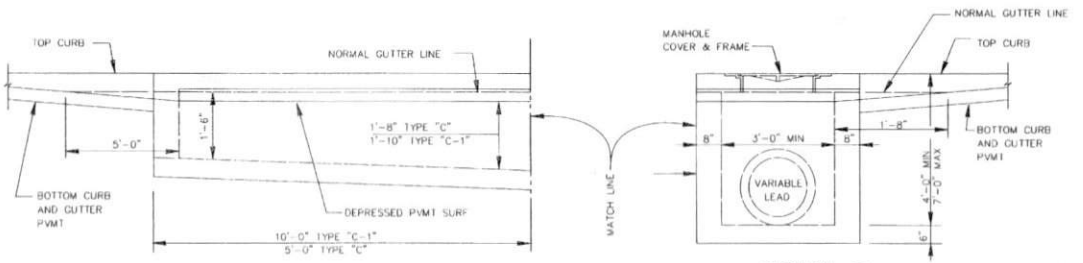
PLAN

GENERAL NOTES:

TYPE "C" INLET WITH ONE EXTENSION
TYPE "C-1" INLET WITH DOUBLE EXTENSION
TYPE "C-2" INLET WITH EXTEN. ON EACH SIDE
TYPE "C-2A" INLET WITH NO EXTENSION

NOTES:

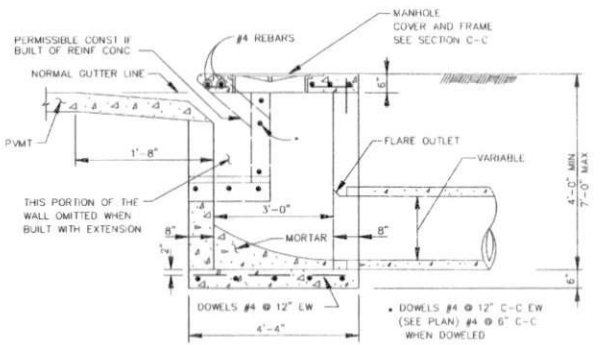
1. FOR TYPE "C-1" INLETS PROVIDE A CENTER 6"X6" COLUMNS IN THE CURB LINE BETWEEN ALL EXTENSIONS.
2. WALLS TO BE 8" IF BUILT WITH REINFORCED CONCRETE. BRICK WALLS ARE NOT ALLOWED.



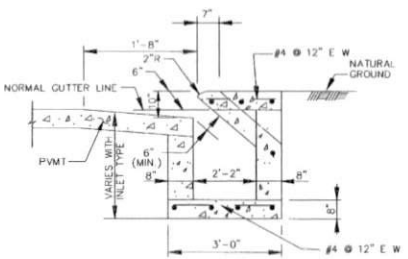
PLAN

SECTION (C)

SL-DR-27



SECTION (B)



SECTION (A)

TYPE "C" INLET

N.T.S.

SL-DR-28

REFER TO:

1. *GENERAL NOTES*
2. *STORM SEWER NOTES*

No.	DATE	REVISION

SEAL: STATE OF TEXAS — GUY L. HUMPHREY — 106072 — LICENSED PROFESSIONAL ENGINEER

DESIGN ENGINEER: DATE 5/19/15

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

STORM SEWER INLET
CONSTRUCTION DETAILS III

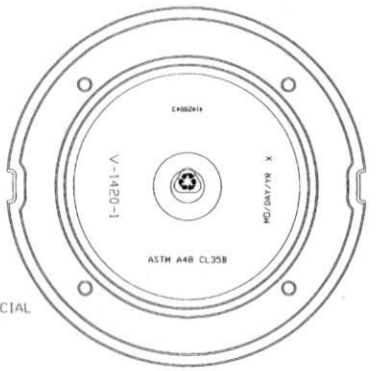
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-09

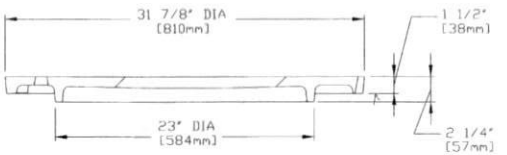
SHEET OF

PLOT TIME:

CAD FILE PATH:
PLOT DATE:



BOTTOM VIEW OF COVER



COVER SECTION

- DUCTILE IRON

EAST JORDAN IRON WORKS OR APPROVED EQUAL

√ MACHINED SURFACE

SL-SS-02

32" MANHOLE COVER

N.T.S.

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER: DATE 5/18/16

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

SANITARY SEWER MANHOLE CONSTRUCTION DETAILS

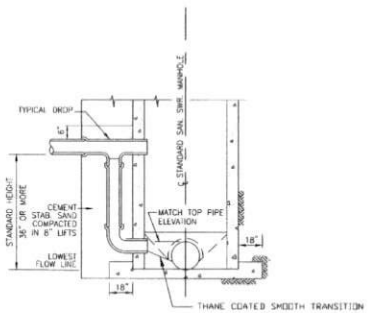
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-13

SHEET OF

PLOT TIME:

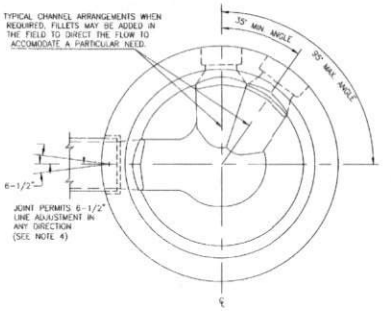
CAD FILE PATH:
PLOT DATE:



STANDARD DROP DETAIL

(SEE C.S.S. NOTES)

SL-SS-05



PIPING CONNECTIONS DETAIL

SL-SS-05

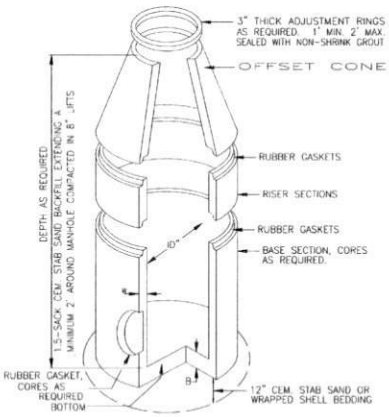
NOTE:

1. INFLUENT AND EXFLUENT PIPING CONNECTIONS TO MANHOLE SHALL BE ALIGNED TO PREVENT REVERSE FLOW.
2. INFLUENT AND EXFLUENT CONNECTIONS ARE LIMITED TO A MAXIMUM 90° INCLUDED ANGLE OF CONVERGENCE.
3. MINIMUM 35° AND MAXIMUM 90° INCLUDED ANGLES MUST BE PROVIDED BETWEEN MULTIPLE INFLUENT CONNECTIONS.
4. ANGLE OF DEFLECTION AT PIPING JOINTS AS PER MANUFACTURE'S RECOMMENDATIONS.

NOTES:

1. CONTRACTOR SHALL CONTACT CITY OF SUGAR LAND ENGINEERING DEPARTMENT AT (281) 275-2780 IF WET SAND OR OTHER UNSTABLE SOIL CONDITIONS, HIGH WATER TABLE AND/OR UNDERGROUND OBSTRUCTIONS ARE ENCOUNTERED.
2. SHOULD A CONFLICT ARISE BETWEEN INFORMATION DEPICTED ON APPROVED CONSTRUCTION DRAWINGS AND INFORMATION INCLUDED IN PROJECT SPECIFICATIONS, CITY OF SUGAR LAND DESIGN STANDARDS SHALL GOVERN.
3. SANITARY SEWER MANHOLES SHALL BE CONSTRUCTED A MINIMUM OF FOUR FOOT FROM BACK OF CURB ON CURB AND GUTTER ROADWAYS AND THREE FEET FROM EDGE OF TRAVELLED ROADWAY ON THOSE THOROUGHFARES HAVING NO CURBING, MEASURED FROM OUTSIDE DIAMETER OF MANHOLE. SANITARY SEWER MANHOLES SHALL NOT BE INSTALLED BENEATH STREET PAVING EXCEPT WHERE SPECIFICALLY AUTHORIZED BY CITY ENGINEER AND SO DESIGNATED ON APPROVED CONSTRUCTION DRAWINGS.
4. ALL SUCH MANHOLE COVERS SHALL HAVE THE CITY OF SUGAR LAND EMBLEM AND THE WORDS "SUGAR LAND" AND "SANITARY SEWER" CAST IN RAISED RELIEF AS DEPICTED IN CITY OF SUGAR LAND STANDARD CONSTRUCTION DETAILS SHEETS. ALL SANITARY SEWER MANHOLES SHALL INCORPORATE INFLOW PROTECTORS.
5. MANHOLE RIM ELEVATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY. CONTRACTORS SHALL ADJUST RIM ELEVATIONS TO 0.4 FEET ABOVE FINISHED GRADE WITHIN RIGHTS-OF-WAY AND EASEMENTS AT EACH MANHOLE LOCATION AFTER FINAL GRADING. ADJUSTMENTS TO MANHOLE RIM ELEVATIONS SHALL BE ACCOMPLISHED BY THE USE OF THROAT RINGS ONLY (MAX. OF 24 INCHES PERMITTED). THE AREA ADJACENT TO SANITARY SEWER MANHOLE LOCATIONS SHALL BE GRADED AWAY FROM SUCH MANHOLES SO AS PREVENT ENTRY OF STORM WATER RUNOFF TO THE SANITARY SEWER SYSTEM.
6. DROP CONNECTIONS ARE REQUIRED WHEN INVERT ELEVATION OF SEWER LINE TO BE CONNECTED EXCEEDS 36 INCHES DISTANCE ABOVE INVERT ELEVATION OF MANHOLE BASE. ALL DROP CONNECTIONS SHALL BE CONSTRUCTED OF SAME MATERIALS AS SEWER AND SHALL BE CONSTRUCTED EXTERIOR TO MANHOLE. PIPE CONNECTIONS TO MANHOLES SHALL BE SO CONSTRUCTED AS TO BE WATERTIGHT AND TO ALIGN UPPER INSIDE PIPE WALL ELEVATIONS OF ALL PIPING CONNECTED TO BASE OF MANHOLE UNIFORMLY, REGARDLESS OF PIPE DIAMETERS. DROP ASSEMBLIES SHALL BE BEDDED IN CEMENT STABILIZED SAND. CEMENT STABILIZED SAND SHALL EXTEND A MINIMUM OF SIX INCHES PAST PIPING LATERALLY FROM BASE OF MANHOLE UPWARD TO A POINT SIX INCHES (MINIMUM) ABOVE THE HORIZONTAL SEWER PIPING WHERE CONNECTED TO THE MANHOLE ABOVE THE VERTICAL DROP.
7. CONNECTIONS TO EXISTING AND/OR NEW SANITARY SEWER MANHOLES CONSTRUCTED OF PRECAST CONCRETE NOT HAVING PRECORED HOLES OF CORRECT DIAMETER, LOCATION AND FIELD CORING ONLY SHALL ACCOMPLISH INVERT ELEVATION. IN NO INSTANCE WILL EITHER MANUAL OR PNEUMATIC CHISELS AND/OR HAMMER DRILLS BE UTILIZED TO BREAK HOLES IN PRECAST CONCRETE MANHOLES, PIPE SEGMENTS OR OTHER PRECAST STRUCTURES SUCH AS LIFT STATIONS.
8. BEDDING AND BACKFILL OF SANITARY SEWER PIPING AND MANHOLES SHALL BE ACCOMPLISHED IN ACCORDANCE WITH CITY OF SUGAR LAND DESIGN STANDARDS. A 1.5-SACK MIX IS REQUIRED FOR ALL CEMENT STABILIZED SAND BEDDING AND SUCH BEDDING SHALL BE INSTALLED IN LIFTS OF EIGHT INCHES MAXIMUM.
9. SOLVENT WELDED JOINTS ARE NOT AN ACCEPTABLE JOINING METHOD FOR SANITARY SEWERS CONSTRUCTED OF PVC PIPING MATERIALS AND LOCATED WITHIN RIGHTS-OF-WAY OR EASEMENTS. RUBBER GASKETED BELL AND SPIGOT SANITARY SEWER JOINTS ARE MANDATORY. BELL (FEMALE) ENDS OF PIPE SHALL BE INSTALLED ON UPSTREAM SIDE WITH SPIGOT (MALE) ENDS ORIENTED DOWNSTREAM.
10. SANITARY SEWER SERVICE LEADS SHALL BE EXTENDED TO RIGHTS-OF-WAY AND/OR EASEMENT LINES AS APPLICABLE AND CAPPED/PLUGGED FOR FUTURE CONNECTIONS. SERVICE LEADS ARE TO BE INSTALLED SO AS TO PASS UNDER POTABLE WATER PIPING AT CROSSINGS WHERE POSSIBLE.
11. EACH SANITARY SEWER SERVICE LEAD STUB, PLUGGED WYE BRANCH OUTLET AND STACK SHALL BE MARKED WITH A PRESSURE TREATED 4 X 4 TIMBER AT THE TIME OF CONSTRUCTION, BEGINNING AT THE INVERT ELEVATION OF THE STUB OR WYE AND AT AN ELEVATION TWO FEET BELOW THE CAPPED TERMINATION POINT OF THE STACK AND EXTENDING TWO FEET ABOVE FINISHED GRADE. EACH TIMBER MARKER SHALL BE PAINTED RED AND LABELED "SANITARY SEWER STUB", "SANITARY SEWER WYE" OR "SANITARY SEWER STACK" AS APPROPRIATE WITH STUB, WYE BRANCH OUTLET OR STACK SIZE NOTED.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING LOCATION OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION. DURING THE COURSE OF ANY AND ALL CLEARING, GRUBBING, FILL, GRADING, EXCAVATION OR OTHER CONSTRUCTION, CONTRACTOR SHALL ENSURE THAT STORM DRAINAGE PATHWAYS ARE MAINTAINED AND REMAIN OPEN TO ENSURE POSITIVE DRAINAGE AND THAT SUCH CONVEYANCES ARE NOT IMPEDED OR BLOCKED IN ANY WAY. STORM SEWER INLETS SHALL BE PROTECTED FROM ENTRY OF SILT, TRASH, DEBRIS AND ANY SUBSTANCES DELETERIOUS TO THE STORM SEWER SYSTEM AND/OR WATERWAYS RECEIVING STORM WATER RUNOFF. CONTRACTOR SHALL AT COMPLETION OF WORK, FILL LOW SPOTS AND GRADE ALL RIGHTS-OF-WAY AND UTILITY EASEMENTS AND REGRADE/RESTORE DITCHES AS NECESSARY TO MAINTAIN AND/OR ESTABLISH POSITIVE DRAINAGE.
13. ALL SANITARY SEWER PIPING AND BEDDING SHALL BE INSPECTED BY CITY CONSTRUCTION INSPECTOR FOR CONFORMANCE WITH CITY INFRASTRUCTURE STANDARDS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROPERLY NOTIFY THE CITY OF ALL CONSTRUCTION ACTIVITIES AND TO CONFORM TO CITY OF SUGAR LAND PUBLIC WORKS DEPARTMENT INSPECTION POLICY.
14. C.S.S. 1' ABOVE PIPE AND 6" BELOW PIPE MINIMUM.
15. SEE GENERAL NOTES AND C.S.S. NOTES.

SL-SS-07



SPECIFICATIONS:

CONCRETE: CLASS 1 CONCRETE WITH A DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. RATES FOR H-20 LOADING.

REINFORCEMENT: STRUCTURAL REINFORCEMENT CONFORMING TO ASTM-C-478.

C.I. CASTINGS: CAST IRON FRAMES AND LIDS ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 35.

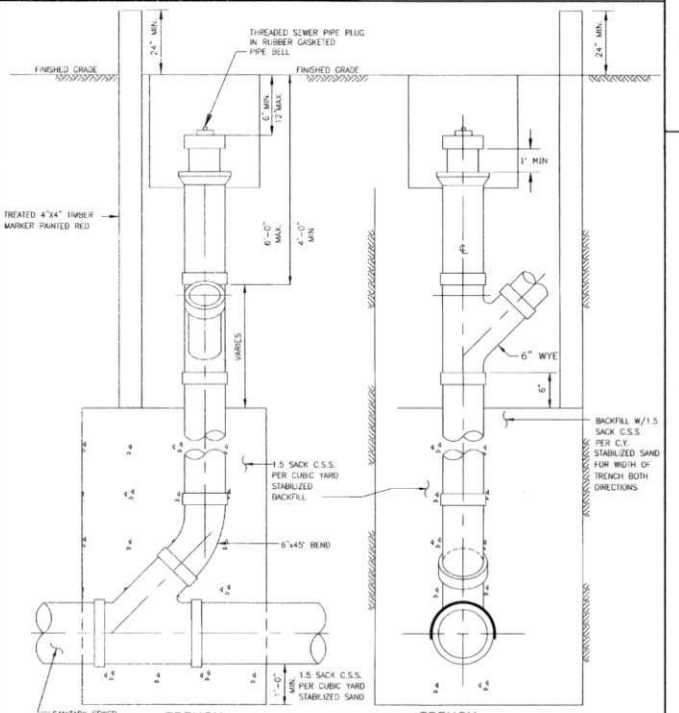
NOTES

1. LIFTING INSERTS AS REQUIRED.
2. ALL JOINTS SHALL BE SEALED WITH APPROVED RUBBER GASKET
3. STRUCTURE TO BE PLACED ON 12" STABILIZED BASE.
4. C.S.S. SHALL BE BROUGHT TO WITHIN 2'-FT OF TOP OF MANHOLE.
5. PRE-CAST MANHOLE SHALL BE IN COMPLIANCE APPROVED PRODUCT LIST.
6. THANE COAT SHALL BE IN COMPLIANCE WITH APPROVED PRODUCT LIST.
7. INVERTS SHALL COMPLY WITH C.O.S.L., DESIGN MANUAL SPECIFICATIONS.
8. INFLOW PROTECTORS REQUIRED ON ALL SANITARY MANHOLES.
9. REFER TO SANITARY MANHOLE LIDS, C.S.S. NOTES, MODIFIED BEDDING DETAILS AND NOTES.

PRECAST SANITARY MANHOLE

N.T.S.

SL-SS-03



TRENCH SIDE VIEW

TRENCH END VIEW

STACK DETAIL

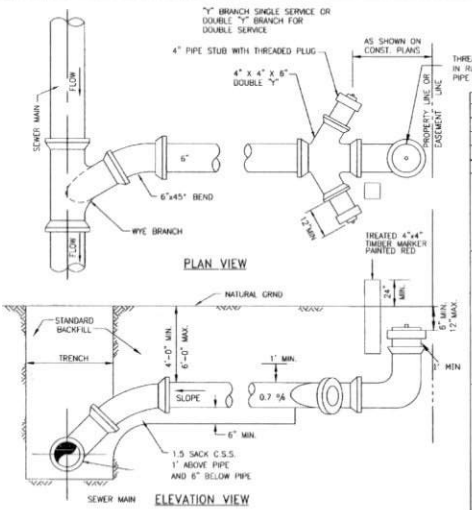
N.T.S.

NOTES:

A.) NO STACKS ON MAINS OVER 16' DEEP OR IN WET SAND CONDITIONS.

B.) ALL STACK CONNECTIONS SHALL BE IN-LINE FITTINGS.

SL-SS-04



SANITARY SEWER SERVICE CONNECTION

N.T.S.

SL-SS-06

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER: DATE 5/19/16

TBPE-FIRM REG. No. 280

CITY OF SUGAR LAND TEXAS

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

SANITARY SEWER CONSTRUCTION DETAILS

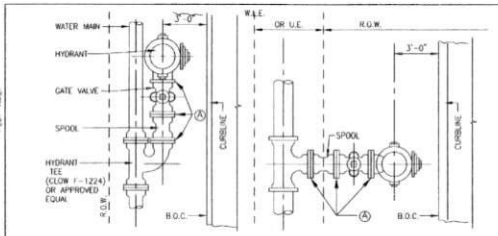
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-14

SHEET OF

PLOT TIME:

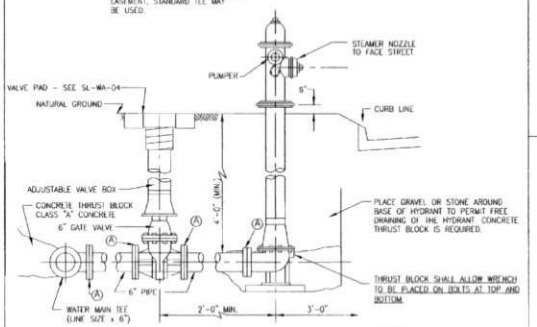
CAD FILE PATH
PLOT DATE:



R.O.W. INSTALLATION
N.T.S.

EASEMENT INSTALLATION
N.T.S.

NOTE:
WHEN WATER LINE IS LOCATED IN EASEMENT, STANDARD TEE MAY BE USED.



FLUSHING VALVE COLOR CODE

MAIN LINE DIAMETER	BONNET, PUMPER CAP AND STEAMER CAP
6 INCHES (AND LESS)	YELLOW
8 INCHES	WHITE
12 TO 16 INCHES	GREEN
GREATER THAN 16 INCHES	ORANGE

FIRE HYDRANT BODY TO BE PAINTED GEO-GLEN 301 BRIGHT SILVER ALUMINUM POLYURETHANE ENAMEL, BY GEO-GLEN ENTERPRISES OR APPROVED EQUAL.

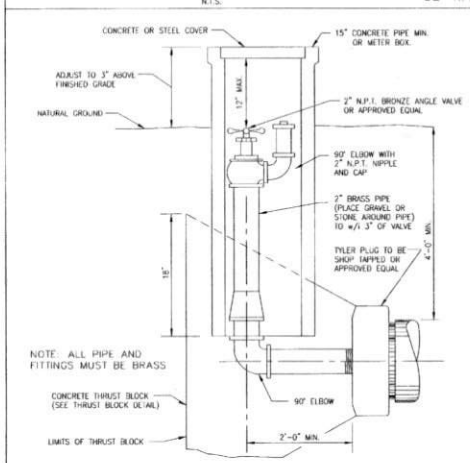
NOTE:
ALL FIRE HYDRANTS SHALL BE MUELLER, KENNEDY, AMERICAN, M & H OR APPROVED EQUAL WITH STEAMER NOZZLE SIZE 4.125" PUMPER 2.5" N.S.T.

ALL FLUSHING VALVES TO BE SAND BLASTED AND PAINTED AS PER C.O.S.L. DESIGN STANDARDS.

Ⓐ =RESTRAINED JOINT

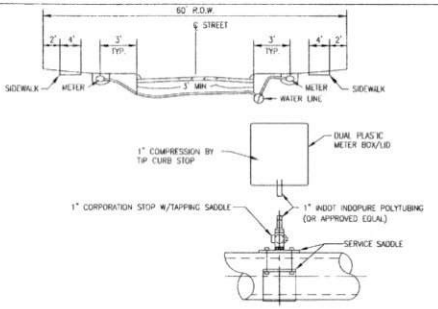
TYPICAL GATE & FIRE HYDRANT INSTALLATION
N.T.S.

SL-WA-01



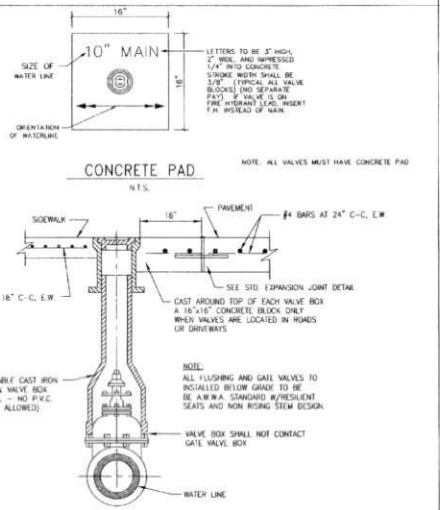
2" BLOW OFF VALVE ASSEMBLY
N.T.S.

SL-WA-02



WATER SERVICE CONNECTION
AND
WATER SERVICE TAPPING ASSEMBLY DETAIL
N.T.S.

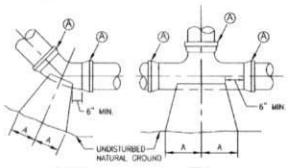
SL-WA-03

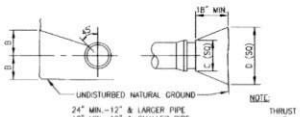


CONCRETE PAD
N.T.S.

VALVE BOX INSTALLATION DETAIL
N.T.S.

SL-WA-04



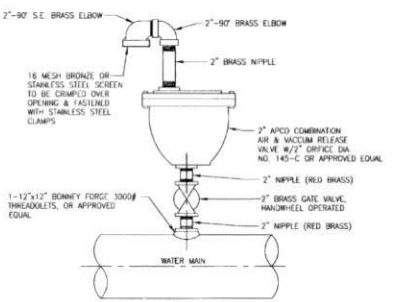


NOTE:
THRUST BLOCKS AT TRENCH FACE MUST HAVE A MINIMUM BEARING SURFACE OF 10 SQ. FEET AND SHALL BE NO SMALLER THAN 1.5 TIMES PIPE DIAMETER.
ALL CONCRETE SHALL BE 5 SACK MIN., 3000 P.S.I.

THRUST BLOCK DETAIL
N.T.S.

Ⓐ =RESTRAINED JOINT

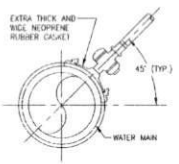
SL-WA-05

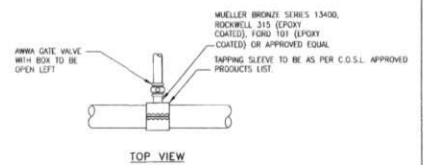


WATER MAIN

AIR RELEASE VALVE DETAIL
N.T.S.

SL-WA-06





TOP VIEW

TAPPING SLEEVE & VALVE DETAIL
N.T.S.

SL-WA-07

CONSTRUCTION NOTES:

1. WATER LINES 12" (IN.) AND LESS SHALL BE AWWA C-900 DR18. WATER LINE GREATER THAN 12" (IN.) IN Ø SHALL BE AWWA C-905 DR 18
2. ALL FLUSHING VALVES AND GATE VALVES TO BE AMERICAN WATER WORKS ASSOC. (AWWA) STANDARD COUNTERCLOCKWISE OPENING WITH NON-RISING STEM DESIGN.
3. ALL DUCTILE IRON PIPE SHALL BE CLASS 50 MORTAR LINED. NO A.C. PIPE WILL BE ALLOWED AND ALL DUCTILE IRON FITTINGS SHALL BE MORTAR LINED PUSHON OR MECHANICAL JOINTS.
4. ALL BACKFILL WITHIN THE R.O.W. SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
5. MINIMUM SPACING BETWEEN TAPS SHALL BE 2' AT ALTERNATING TAP ANGLES.

SL-WA-08

NOTES:
POLYETHYLENE WRAP FOR IRON PIPE

NOTE:

1. POLYETHYLENE FILM SHALL BE USED AS A WRAP TO PROTECT CAST IRON AND OTHER METALS IN A CORROSIVE SOIL ENVIRONMENT.
2. AN 8 MIL POLYETHYLENE FILM WRAP SHALL BE REQUIRED AROUND ALL METAL PIPE AND APPURTENANCES (EXCEPT FIRE HYDRANTS).
3. POLYETHYLENE FILM SHALL BE FURNISHED AND INSTALLED EITHER IN TUBULAR FORM PRIOR TO LOWERING THE PIPE IN TRENCH OR IN SHEET FORM.
4. POLYETHYLENE TUBE ENCASEMENT SHALL CONFORM WITH THE MINIMUM REQUIREMENTS OF "POLYETHYLENE ENCASEMENT FOR GRAY AND DUCTILE CAST-IRON PIPING FOR WATER AND OTHER LIQUIDS", ANSI/AWWA C105, CURRENT REVISION. SOILS WITHIN A PROJECT SHALL BE TESTED IN ACCORDANCE WITH APPENDIX A OF ANSI/AWWA C105 TO ADEQUATELY DETERMINE THE REQUIREMENTS FOR ENCASEMENT.
5. ALL FITTINGS AND PIPE JOINTS WITHIN 10' OF A FITTING SHALL HAVE RESTRAINT JOINTS.

SIZE	90° BEND		45° BEND		22 1/2° BEND		TEES		PLUGS	
	A	B	A	B	A	B	A	B	A	B
2 1/2"	12"	7"	6"	7"	6"	7"	7"	8"	8"	14"
6"	16"	10"	9"	10"	6"	12"	10"	12"	10"	21"
8"	22"	13"	12"	13"	8"	10"	13"	16"	12"	29"
10"	26"	17"	14"	17"	10"	13"	16"	20"	14"	36"
12"	29"	21"	16"	21"	11"	16"	18"	24"	16"	41"
14"	35"	24"	19"	24"	12"	20"	22"	27"	18"	48"
16"	38"	27"	21"	27"	12"	24"	24"	30"	20"	54"
20"	50"	40"	32"	40"	18"	30"	30"	40"	30"	78"
24"	56"	40"	30"	40"	18"	30"	30"	40"	30"	78"
30"	60"	48"	36"	48"	20"	36"	36"	48"	36"	96"

BENDS, TEES & PLUGS
FOR PIPE OF VARIOUS SIZES

SL-WA-08

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER: DATE 5/18/15

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

WATER LINE
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SL-15

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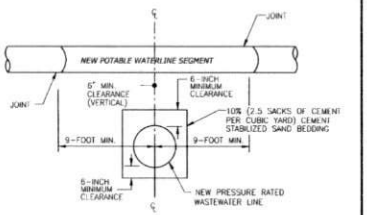
I

NEW POTABLE WATERLINE CROSSING NEW PRESSURE RATED WASTEWATER LINE WITH SEGMENT LENGHTS OF EIGHTEEN (18) FEET OR GREATER, HAVING 6 INCHES OF VERTICAL CLEARANCE AND 4 FEET OF HORIZONTAL CLEARANCE

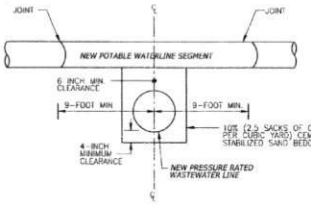


- WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN JOINTS OF THE WASTEWATER LINE
- MINIMUM WASTEWATER PIPE STIFFNESS OF 115 PSI AT 5% DEFLECTION.
- EMBED WASTEWATER LINE IN CEMENT STABILIZED SAND TO AT LEAST 12" INCHES BEYOND EACH JOINT OF CROSSED SECTION OF PIPE.

SL-WA-09

II

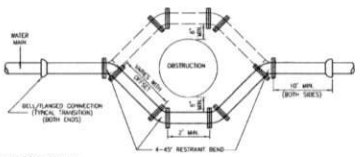
NEW POTABLE WATERLINE CROSSING NEW PRESSURE RATED WASTEWATER LINE



- WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN JOINTS OF THE WASTEWATER LINE
- MINIMUM WASTEWATER PIPE STIFFNESS OF 115 PSI AT 5% DEFLECTION.
- EMBED WASTEWATER LINE IN CEMENT STABILIZED SAND TO AT LEAST 12" INCHES BEYOND EACH JOINT OF CROSSED SECTION OF PIPE.

SL-WA-10

III



FOR A LINE TO PASS OVER AN OBSTRUCTION RATHER THAN UNDER, IT MUST HAVE ADEQUATE COVER AND BE APPROVED BY THE ENGINEERING DEPARTMENT.

NOTES:

1. PIPE MATERIAL SHALL BE AWWA C900 PVC, DR-14, 200 PSI WITH INTEGRAL PVC RESTRAINED JOINTS.
2. OFFSET ASSEMBLY MUST PASS OVER THE OBSTRUCTION AS LONG AS THE MINIMUM CLEARANCE IS MAINTAINED. SPECIFIC APPROVAL FROM THE UTILITIES DEPARTMENT MUST BE GRANTED FOR THE OFFSET TO PASS UNDER THE OBSTRUCTION.
3. MATERIAL AND COATINGS SHALL BE IN ACCORDANCE WITH WATER MAIN STANDARD SPECIFICATIONS.
4. RESTRAIN EXISTING PIPING BEYOND OFFSET SECTION AS REQUIRED TO PREVENT MOVEMENT.
5. ALL PVC PRODUCTS MUST BE LISTED ON CITY OF SUGAR LAND'S APPROVED PRODUCTS LIST.

MIN. PIPE WALL THICKNESS		
4"	–	0.250"
6"	–	0.280"
8"	–	0.322"
12" AND LARGER	–	0.375"

PVC WATER PIPE OFFSET ASSEMBLY

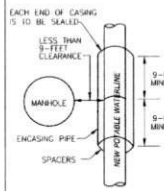
SL-WA-11

GENERAL NOTES:

1. CONTRACTOR SHALL CONTACT CITY OF SUGAR LAND ENGINEERING DEPARTMENT AT (281) 275-2780 IF WET SAND OR OTHER UNSTABLE SOIL CONDITIONS, HIGH WATER TABLE AND/OR UNDERGROUND OBSTRUCTIONS ARE ENCOUNTERED.
2. SHOULD A CONFLICT ARISE BETWEEN INFORMATION DEPICTED ON APPROVED CONSTRUCTION DRAWINGS AND INFORMATION INCLUDED IN PROJECT SPECIFICATIONS, CITY OF SUGAR LAND DESIGN STANDARDS SHALL GOVERN.
3. ALL NEW POTABLE WATER LINES AND SANITARY SEWER FORCE MAINS SHALL BE BEDDED IN COMPACTED BANK SAND A MINIMUM OF 6 INCHES BELOW, ABOVE AND TO EITHER SIDE OF SUCH PIPING.
4. ALL NEW SANITARY SEWER GRAVITY DRAIN LINES SHALL BE BEDDED IN CEMENT STABILIZED SAND CONFORMING TO THE REQUIREMENTS FOR EITHER CLASS "A" STANDARD BEDDING OR CLASS "A-A" BEDDING AS APPLICABLE. USE OF MODIFIED "A" OR MODIFIED "A-A" BEDDING FOR SANITARY SEWER INSTALLATIONS WHERE WET SAND CONDITIONS ARE ENCOUNTERED AND SEPARATION DISTANCE TO POTABLE WATER LINES IS LESS THAN 9 FEET REQUIRES APPROVAL BY CITY ENGINEER.
5. CEMENT STABILIZED BEDDING SHALL BE A MINIMUM 1.5 SACK PER CUBIC YARD C.S.S., INSTALLED IN MAXIMUM LIFTS OF 8 INCHES AND MECHANICALLY TAMPED TO 95% PROCTOR.
6. WHERE REQUIRED, SLEEVING (ENCASEMENT) OF POTABLE WATER PIPING AND/OR SANITARY SEWER GRAVITY DRAIN LINES AND FORCE MAINS SHALL BE PROVIDED. SUCH SLEEVING (ENCASEMENT) SHALL BE CONSTRUCTED OF APPROVED PIPING MATERIALS HAVING A MINIMUM PRESSURE RATING OF 150 PSI AND ANNULAR SPACES AT EACH END SHALL BE SEALED WITH A MATERIAL APPROVED FOR SUCH USE.
7. ALL NEW POTABLE WATER LINES SHALL BE SLEEVED (ENCASED) WHERE A MINIMUM OF 9 FEET SEPARATION DISTANCE TO EXISTING OR PROPOSED SANITARY SEWER MANHOLE, LIFT STATION OR WASTEWATER TREATMENT PLANT CANNOT BE MAINTAINED. SLEEVING SHALL BE A MINIMUM OF 18 FEET IN LENGTH AND CENTERED ON THE POINT OF CLOSEST PROXIMITY.
8. ALL NEW POTABLE WATER LINES SHALL BE SLEEVED (ENCASED) WHERE LESS THAN 2 FEET VERTICAL OR 4 FEET HORIZONTAL CLEARANCE TO EXISTING OR PROPOSED SANITARY SEWER GRAVITY LINES OR FORCE MAINS CANNOT BE MAINTAINED. SLEEVING SHALL BE A MINIMUM OF 18 FEET IN LENGTH AND CENTERED ON THE POINT OF CROSSING. WHERE PIPING IS LAID PARALLEL AND MINIMUM SEPARATION DISTANCES CANNOT BE MAINTAINED, SLEEVING SHALL EXTEND AT LEAST 9 FEET PAST THE POINT WHERE MINIMUM SEPARATION DISTANCES ARE ACHIEVED.
9. ALL NEW POTABLE WATER LINES SHALL BE CONSTRUCTED ABOVE EXISTING OR PROPOSED SANITARY SEWER GRAVITY LINES OR FORCE MAINS WHERE POSSIBLE. WHERE INSTALLATION BENEATH SANITARY SEWER GRAVITY LINES OR FORCE MAINS IS UNAVOIDABLE AT POINTS OF CROSSING, SLEEVING (ENCASEMENT) IS REQUIRED FOR ALL NEW POTABLE WATER LINES CONSTRUCTED OF PVC PIPING MATERIALS, REGARDLESS OF SEPARATION DISTANCE. SLEEVING SHALL BE A MINIMUM OF 18 FEET IN LENGTH AND CENTERED ON THE POINT OF CROSSING.
10. ALL NEW SANITARY SEWER GRAVITY LINES AND/OR FORCE MAINS CONSTRUCTED OF PVC PIPING MATERIALS SHALL BE SLEEVED (ENCASED) WHERE LESS THAN 2 FEET VERTICAL OR 4 FEET HORIZONTAL CLEARANCE TO EXISTING POTABLE WATER PIPING CANNOT BE MAINTAINED. SLEEVING SHALL BE A MINIMUM OF 18 FEET IN LENGTH AND CENTERED ON THE POINT OF CLOSEST PROXIMITY.
11. ALL NEW SANITARY SEWER GRAVITY LINES AND/OR FORCE MAINS SHALL BE CONSTRUCTED BELOW EXISTING POTABLE WATER LINES WHERE POSSIBLE. WHERE INSTALLATION ABOVE POTABLE WATER LINES IS UNAVOIDABLE, SLEEVING (ENCASEMENT) IS REQUIRED FOR ALL SUCH SANITARY SEWER LINES CONSTRUCTED OF PVC PIPING MATERIALS, REGARDLESS OF SEPARATION DISTANCE. SLEEVING SHALL BE A MINIMUM OF 18 FEET IN LENGTH AND CENTERED ON THE POINT OF CROSSING.
12. WHERE NEW SANITARY SEWER SIZING (24 INCH AND GREATER) PRECLUDES THE USE OF PVC PIPING MATERIALS AND SLEEVING (ENCASEMENT) OF THE SANITARY SEWER WOULD OTHERWISE BE REQUIRED BUT IS IMPRACTICAL, THE EXISTING POTABLE WATER PIPING SHALL EITHER BE OFFSET TO PROVIDE THE REQUIRED MINIMUM CLEARANCES OR SLEEVED (ENCASED) IN LIEU OF SLEEVING (ENCASING) THE SANITARY SEWER LINE. SLEEVING SHALL BE A MINIMUM OF 18 FEET IN LENGTH AND CENTERED ON THE POINT OF CROSSING.
13. IN NO INSTANCE SHALL A FIRE HYDRANT BE INSTALLED WITHIN 9 LINEAR FEET OF A SANITARY SEWER SYSTEM.
14. NOTE: SEPARATION DISTANCES ARE MEASURED FROM THE OUTSIDE DIAMETERS OF EACH PIPE AND FROM THE EXTERIOR SURFACES OF MANHOLES, LIFT STATIONS, WASTEWATER TREATMENT PLANTS AND ASSOCIATED APPURTENANCES.
15. REFER TO GENERAL SANITARY, WATER AND C.S.S. NOTES.

SL-WA-18

DETAIL OF WATER LINE CROSSING WASTEWATER FACILITIES WHERE SEPARATION IS LESS THAN 9' (NINE FEET)

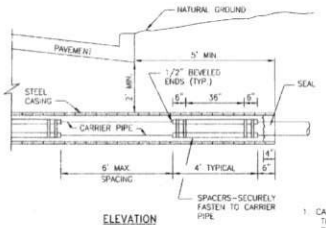


ENCASING PIPE

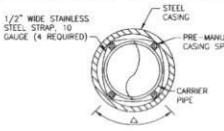
- 150 PSI PRESSURE CLASS PIPE MINIMUM 18 FEET LONG DIAMETER = 2 X WATERLINE DIAMETER
- SPACE AROUND CARRIER PIPE SHALL BE SUPPORTED AT FIVE (5) FOOT (OR LESS INTERVALS WITH SPACERS)
- CENTERED ON CROSSING
- BOTH ENDS SEALED WITH CEMENT GROUT OR A MANUFACTURED WATER TIGHT SEAL

MANHOLE CLEARANCE

SL-WA-12



ELEVATION



CASING SCHEDULE		
CARRIER PIPE	NOMINAL CASING	MIN. WALL THICKNESS (IN.)
6"	12"	0.11
8"	14"	0.15
10"	16"	0.18
12"	18"	0.20

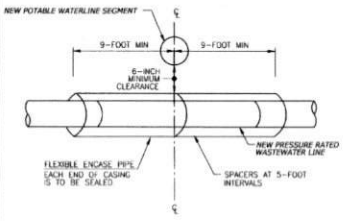
1. CASING SIZE AND THICKNESS SHALL CONFORM TO THE MINIMUM REQUIREMENTS AS SHOWN ON CASING SCHEDULE, OTHER PERMITS AS REQUIRED.
2. MAINTAIN 1" MINIMUM CLEARANCE BETWEEN THE MAXIMUM OUTSIDE DIAMETER OF CARRIER PIPE AND CASING AT ALL LOCATIONS.
3. DIMENSIONS ARE APPROXIMATE ONLY. CONTRACTOR SHALL INSTALL ADEQUATELY SIZED CASING TO ACCOMMODATE THE CARRIER PIPE.

SL-WA-13

IV

ENCASED WASTEWATER LINE

NEW POTABLE WATERLINE CROSSING NEW PRESSURE RATED WASTEWATER LINE WITH SEGMENT LENGHTS OF OF LESS THAN EIGHTEEN (18) FEET

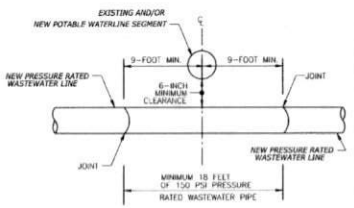


- MINIMUM CASING PIPE STIFFNESS OF 115 PSI AT 5% DELECTION.
- MINIMUM CASING PIPE DIAMETER = 2 X WASTEWATER LINE DIAMETER.
- THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE (F) FOOT (OR LESS). INTERVALS WITH SPACERS
- EACH END CASING IS TO BE SEALED WITH WATER TIGHT NO-SHRINK GROUT OR MANUFACTURED WATER TIGHT SEAL

SL-WA-17

ALTERNATIVE A:

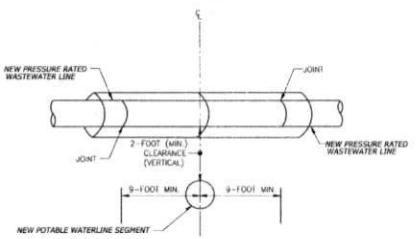
PRESSURE RATED WASTEWATER PIPE



SL-WA-14

ALTERNATIVE B:

EXISTING POTABLE WATERLINE CROSSING EXISTING PRESSURE RATED WASTEWATER LINE

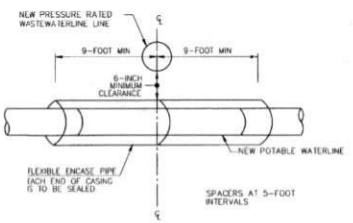


MINIMUM 18' (FEET) OF 150 PSI PRESSURE RATED WASTEWATER PIPE

SL-WA-15

ALTERNATIVE C:

ENCASE NEW POTABLE WATERLINE UNDER A NEW PRESSURE RATED WASTEWATER LINE



- SAME ENCASEMENT CRITERIA AS "ALTERNATIVE B" OR
- NEW WATERLINE (WITHOUT CASING) TO BE CONSTRUCTED OF PVC C-900 (DR-18), DUCTILE IRON WITH MECHANICAL JOINT OR STEEL PIPE WITH WITH WELDED JOINTS.
- BOTH WATERLINE AND WASTEWATER LINE MUST PASS A PRESSURE AND LEAKAGE TEST AS SPECIFIED IN AWWA C600 STANDARDS.

SL-WA-16

No.	DATE	REVISION

SEAL:

STATE OF TEXAS — GUY L. HUMPHREY — 106072 — LICENSED PROFESSIONAL ENGINEER

DESIGN ENGINEER: DATE 8/13/15

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

WATER LINE CROSSING DETAILS

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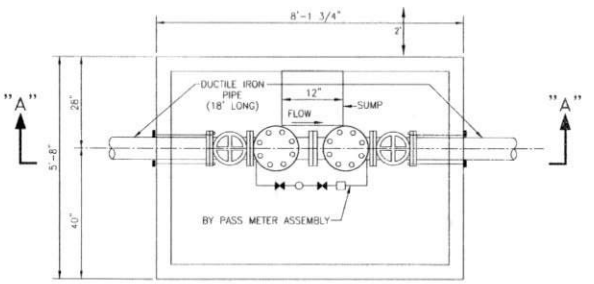
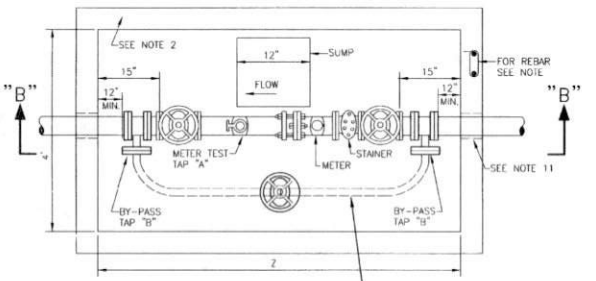


PLAN VIEW



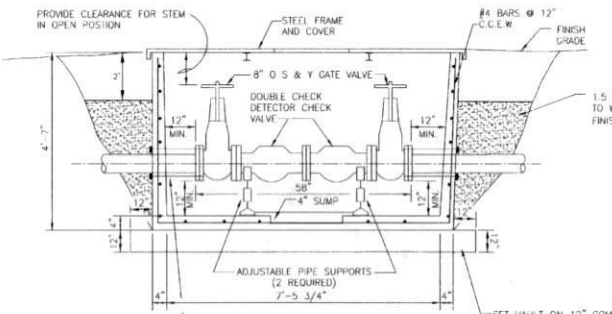
PLAN VIEW

DUCTILE IRON BYPASS FOR 3" AND ABOVE

NOTES:

1. NOTIFY THE ENGINEERING DEPARTMENT AT (281) 275-2780 PRIOR TO CONSTRUCTION OF VAULT OR BY-PASS ASSEMBLY.
2. THE METER VAULT CAN BE EITHER POURED IN PLACE OR PREFABRICATED. CONCRETE SHALL BE SIX INCHES (6") THICK AND BE 3,000 PSI WITH #4 REINFORCEMENT STEEL ON TWELVE INCH (12") CENTERS EACH WAY IF THE VAULT IS POURED IN PLACE. PREFABRICATED VAULTS SHALL BE FOUR INCHES (4") THICK AND BE 4,500 PSI CONCRETE WITH #4 REINFORCEMENT STEEL ON EIGHT INCH (8") CENTERS EACH WAY. THESE ARE MINIMAL SPECIFICATIONS.
3. THE VAULT WILL NOT BE LOCATED IN ANY DRIVE OR PARKING AREAS AND MUST BE LOCATED IN A WATER METER EASEMENT.
4. THE VAULT LID SHALL BE A BILCO LID, TYPE Q-4 SINGLE LEAF DESIGN. ANGLE FRAME IS 1/4-INCH STEEL WITH STRAP ANCHORS BOLTED TO THE EXTERIOR. THE LEAF IS 1/4-INCH STEEL DIAMOND PATTERN PLATE, PIVOTING ON TORSION BARS FOR EASY OPERATION. THE MINIMUM LIVE LOAD CAPACITY IS 150 POUNDS PER SQUARE FOOT. THE SIZE OF THE DOOR IS THREE FEET (3') BY THREE FEET (3').
5. THE LID SHALL BE PAINTED WITH 43-38 TNEMEC DIFFUSED ALUMINUM PAINT OR APPROVED EQUAL, AND CENTERED OVER METER/NO.
6. THE BY-PASS AND METER TEST TAP SHALL BE INSTALLED INSIDE THE VAULT. TAP "A" MUST BE AT LEAST TWO (2) PIPE DIAMETERS DOWNSTREAM OF THE METER. TAPS "B" AND "C" MUST BE MADE AT APPROXIMATE FORTY-FIVE DEGREE (45°) ANGLE ON EACH END OF THE PIPE AND CENTERED TEN INCHES (10") AWAY FROM THE WALL. ALL TAPS SHALL BE TWO INCHES (2") AND SHALL BE HARD PIPED
7. THE STRAINER, METER AND FLEXIBLE COUPLING WILL NOT BE SET UNTIL THE METER VAULT AND TAPS ARE ACCEPTED BY THE DISTRICT OPERATOR. ALL UTILITIES MUST ALSO HAVE BEEN ACCEPTED AND RELEASED BY THE CITY OF SUGAR LAND PUBLIC WORKS DEPARTMENT PRIOR TO METER
8. THE VALVES SHALL BE ANY RESILIENT WEDGE DESIGN GATE VALVE WHICH HAS RECEIVED FORMAL APPROVAL FROM THE CITY OF SUGAR LAND ENGINEERING DEPARTMENT. ALL VALVES SHALL BE FLANGED BOTH ENDS AND HAVE HAND WHEELS.
9. THE METER VAULT SHALL BE SET ON 12" C.S.S. BEDDING AS SHOWN ON DETAIL DRAWINGS. A SUMP FOUR-INCHES (4") DEEP AND TWELVE INCHES (12") IN DIAMETER SHALL BE INSTALLED TO ONE SIDE IN THE CENTER OF THE BOTTOM SLAB. IF PRECAST VAULT IS USED, RAM-NEK SHALL BE USED TO SEAL ALL COLD JOINTS.
10. ALL THE WALL PENETRATIONS SHALL BE MADE WITH A CAST IN PLACE WALL SLEEVE AS APPROVED BY THE CITY OF SUGAR LAND ENGINEERING DEPARTMENT. BREAKING OUT THE WALL USING A JACKHAMMER OR USING KNOCKOUT PANELS WILL NOT BE ALLOWED.
11. A CONCRETE SUPPORT WILL BE INSTALLED UNDER EACH VALVE.
12. DEPTH OF VAULT SHALL BE A MINIMUM OF 4-1/2' AND A MAXIMUM OF 6'
13. ALL PIPING INSIDE THE VAULT SHALL BE DUCTILE IRON WITH FLANGE FITTINGS. ALL PIPING SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF SUGAR LAND ENGINEERING DEPARTMENT
14. THE TYPE OF METER, TURBINE OR COMPOUND, WILL BE DETERMINED BASED ON THE APPLICATION AND APPROVED BY THE ENGINEERING DEPARTMENT.

SL-WA-22



SECTION (A)

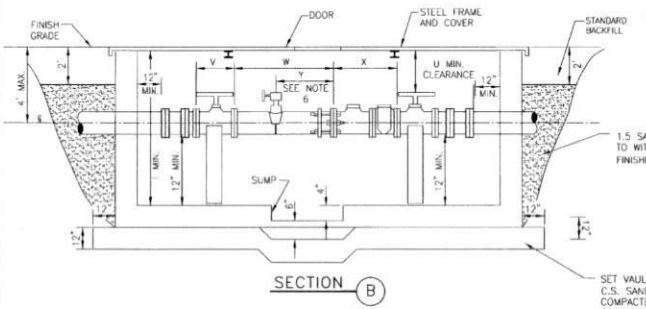
NOTES:

1. SIAMESE CONNECTION MAY BE ALLOWED WITHIN THE VAULT WHEN APPROVED BY THE ENGINEERING DEPARTMENT.
2. FIRE VALVE MAY BE SUBSTITUTED FOR GATE VALVE ON THE CUSTOMER SIDE. SUPPLIED BY PARK EQUIPMENT COMPANY, OR APPROVED EQUAL.

DETECTOR CHECK VALVE

N.T.S.

SL-WA-20



SECTION (B)

SL-WA-21

METER VAULT								
DOMESTIC								
METER SIZE	T	U	V	W	X	Y	Z
3"	4'-6"	25"	8"	11-1/2"	24"	9"	6'-10"
4"	4'-6"	22"	9"	13-1/2"	29"	10"	7'-1"
6"	5'-2"	26"	10-1/2"	13-1/2"	33"	13"	8'-2"

METER VAULT								
METER SIZE	T	U	V	W	X	Y	Z
3"	4'-6"	25"	8"	16-1/2"	19"	9"	6'-10"
4"	4'-6"	22"	9"	19-1/2"	23"	10"	7'-1"
6"	5'-2"	26"	10-1/2"	19-1/2"	27"	13"	8'-2"
8"	6'-0"	31"	11-1/2"	25-1/2"	30"	17"	9'-1"
10"	7'-0"	37"	13"	29-1/2"	41"	21"	10'-7"

3" TO 10" METER

N.T.S.

SL-WA-19

No.	DATE	REVISION

SEAL: STATE OF TEXAS — GUY L. HUMPHREY — 106072 — LICENSED PROFESSIONAL ENGINEER

DESIGN ENGINEER: DATE 5/19/15

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

WATER LINE
METER VAULT DETAILS

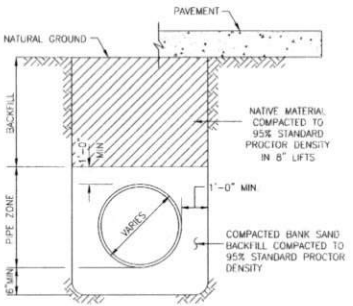
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-17

SHEET OF

PLOT TIME:

CAD FILE PATH:
PLOT DATE:



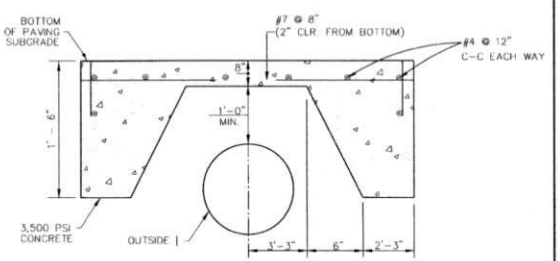
P.V.C. PIPE BEDDING & BACKFILL

N.T.S.

*SEE CONSTRUCTION NOTES

SANITARY FORCE MAIN & WATER LINE BEDDING AND BACKFILL

SL-BB-01



PROTECTIVE SLAB DETAIL

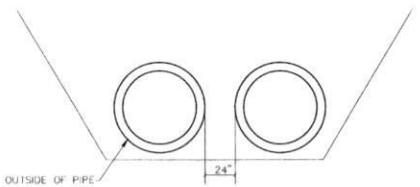
ZERO LOAD TRANSFER CONCRETE SLAB

SL-BB-04

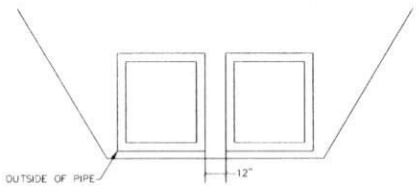
CONSTRUCTION NOTES

1. CONTRACTOR SHALL CONTACT SUGAR LAND ENGINEERING DEPARTMENT IMMEDIATELY IF WET SAND CONDITIONS ARE ENCOUNTERED.
2. LIMESTONE AND RECYCLED CONCRETE DIMENSIONS SHOWN ARE TYPICAL BUT MAY BE VARIED BY ORDER OF CITY ENGINEER.
3. LIMESTONE OR RECYCLED CONCRETE SHALL BE IN ACCORDANCE WITH TXDOT SPECIFICATION No. 248 FLEXIBLE BASE, TYPE A, GRADE 2 AGGREGATE.
4. NO BEDDING SHALL BE INSTALLED IN WET CONDITIONS. WHEN WELL POINTING OR IN WET SAND CONDITIONS, MAINTAIN GROUND WATER 1 (FT) BELOW BOTTOM OF TRENCH FOR A MINIMUM OF 24-HRS AFTER BEDDING AND BACKFILL IS IN PLACE.
5. ALL MATERIALS SHALL BE FROM THE APPROVED PRODUCTS LIST UNLESS SPECIFICALLY APPROVED BY THE CITY ENGINEER.
6. SANITARY SEWER BEDDING FOR WET SAND CONDITIONS SHALL BE AS PER MODIFIED "A".
7. ALL SAND BEDDING FOR WATER LINES SHALL BE CLEAN, MECHANICALLY COMPACTED BANK SAND.
8. REFER TO: MANHOLE DETAILS, SANITARY, C.S.S., GENERAL, WATER CROSSING, WATER DISTRIBUTION DETAILS AND NOTES.
9. ALL BEDDING WILL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
10. A GEOTECHNICAL REPORT MAY BE REQUIRED TO ANALYZE THE BEARING CAPACITY OF EXISTING SOILS AND MAKE A DETERMINATION IF ADDITIONAL BEDDING AND BACKFILL IS APPROPRIATE.

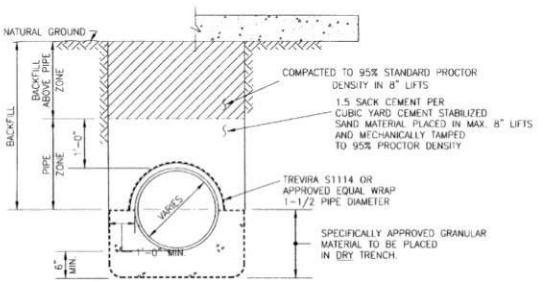
SL-BB-05



PIPE SEPARATION



RCB SEPARATION



MODIFIED "A"

N.T.S.

NOTE: C.S.S. SHALL BE INSTALLED A MIN. 1' ABOVE TOP OF PIPE.

SANITARY SEWER BEDDING AND BACKFILL

SL-BB-03

REFER TO:

1. *GENERAL NOTES*
2. *C.S.S. NOTES*

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER: DATE 9/16/15

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

WATER LINE, SANITARY SEWER FORCE MAIN BEDDING DETAILS

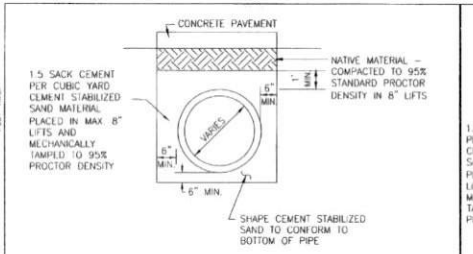
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-19

SHEET OF

PLOT TIME

DAE FILE PATH:
PLOT DATE:

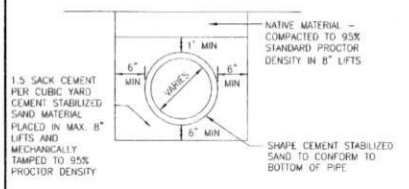


BEDDING DETAIL FOR
CONCRETE CULVERT USED
UNDER ROADWAY PAVEMENT

CLASS "A-A"

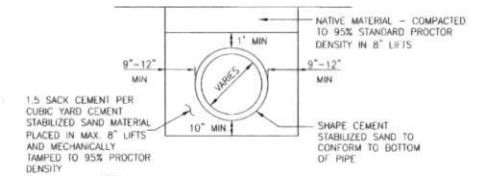
N.T.S.

SL-BB-06



BEDDING DETAIL FOR
REINFORCED CONCRETE PIPE
STORM SEWER
36" DIAMETER & SMALLER

SL-BB-07

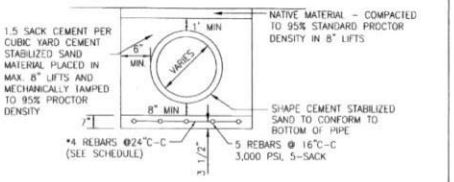


NOTES

1. 1.5-SACK CEMENT PER CUBIC YARD STABILIZED SAND PLACED BEFORE PIPE IS PLACED (10" MINIMUM FOR 42" TO 60", 14" MINIMUM FOR 66" TO 108")

BEDDING DETAIL FOR
REINFORCED CONCRETE PIPE
STORM SEWER
42" TO 108" DIAMETER
WHERE SATISFACTORY SOIL CONDITIONS EXIST

SL-BB-08

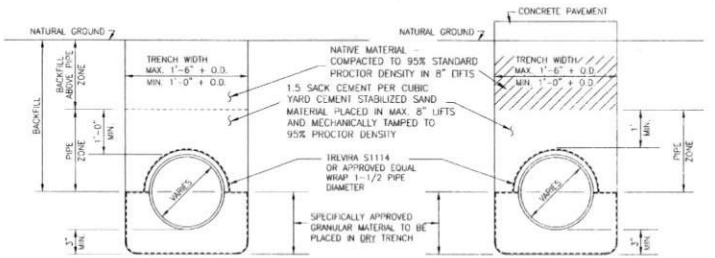


NOTES

1. 1.5-SACK CEMENT PER CUBIC YARD STABILIZED SAND PLACED BEFORE PIPE IS PLACED (8" MINIMUM FOR 42" TO 60", 12" MINIMUM FOR 66" TO 108").

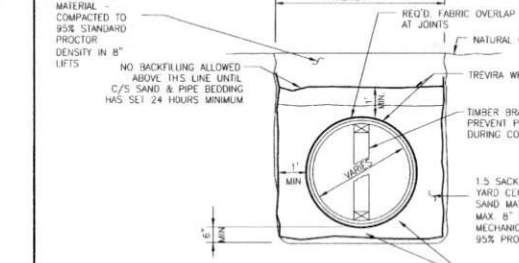
SEAL SLAB
BEDDING DETAIL FOR
REINFORCED CONCRETE PIPE
STORM SEWER
42" TO 108" DIAMETER
WHERE UNSATISFACTORY SOIL CONDITIONS EXIST

SL-BB-09



MODIFIED "A"

N.T.S.



USE FOR SEWERS UNDER EXISTING OR FUTURE ROADS, STREETS, DRIVEWAYS OR OTHER PVMT.

MODIFIED "A-A"

N.T.S.

1. MODOFIED BEDDING TO BE USED IN WET GROUND CONDITIONS FOR NON-COHESIVE MATERIALS WITH A SHEAR STRENGTH LESS THAN 1000 PSI.

SL-BB-10

BEDDING DETAIL FOR STORM SEWER-
CORREGATED METAL PIPE

N.T.S.

SL-BB-11

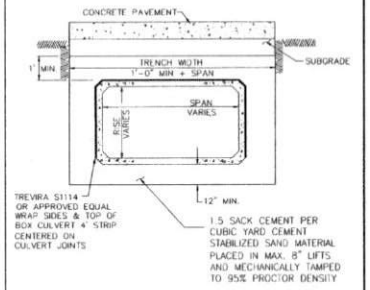
CONSTRUCTION NOTES

1. CONTRACTOR SHALL CONTACT SUGAR LAND ENGINEERING DEPARTMENT IMMEDIATELY IF WET SAND CONDITIONS ARE ENCOUNTERED.
2. SPECIFICALLY APPROVED GRANULAR MATERIAL DIMENSIONS SHOWN ARE TYPICAL BUT MAY BE VARIED BY ORDER OF CITY ENGINEER.
3. SPECIFICALLY APPROVED GRANULAR MATERIAL SHALL BE IN ACCORDANCE WITH TXDOT SPECIFICATION No. 247 FLEXIBLE BASE, TYPE A, GRADE 2 AGGREGATE.
4. NO BEDDING SHALL BE INSTALLED IN WET CONDITIONS. WHEN WELL POINTING OR IN WET SAND CONDITIONS, MAINTAIN GROUND WATER 1' (FT.) BELOW BOTTOM OF TRENCH FOR A MINIMUM OF 24-HRS AFTER BEDDING AND BACKFILL IS IN PLACE.
5. R.C.P. AND BOX CULVERTS SHALL BE INSTALLED WITH APPROVED GASKETS ONLY.
6. MANHOLES SHALL BE PROVIDED WHERE MODIFIED "A" OR MODIFIED "A-A" BEDDING IS USED. STACKS ARE NOT ALLOWED.
7. REFER TO: MANHOLE DETAILS, INLETS, OUTFALL AND END TREATMENT DETAILS, C.S.S., GENERAL NOTES, AND STORM NOTES.
8. SPECIFIC DESIGNS MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER FOR MANHOLE ACCESS TO BOX CULVERTS AS REQUIRED.
9. ALL BACKFILL WITHIN THE R.O.W. SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
10. A GEOTECHNICAL REPORT MAY BE REQUIRED TO ANALYZE THE BEARING CAPACITY OF EXISTING SOILS AND MAKE A DETERMINATION IF ADDITIONAL BEDDING AND BACKFILL IS APPROPRIATE.

TYPICAL SEAL SLAB
BAR SCHEDULE
(OR AS DIRECTED BY ENGINEER)

PIPE SIZE	LGT LAT #4 BARS	NO LONGIT #5 BARS
42"	5'4"	5
48"	6'8"	6
54"	6'8"	6
60"	8'0"	7
66"	8'0"	7
72"	9'4"	8
78"	9'4"	8
84"	9'4"	8
90"	10'8"	9
96"	10'8"	9
102"	12'0"	10
108"	12'0"	10

SL-BB-15

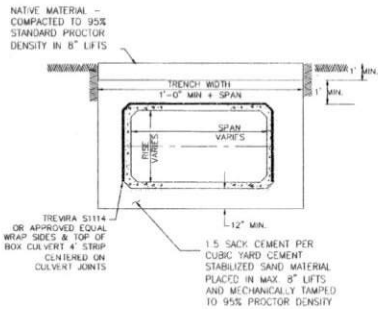


BEDDING DETAIL FOR
REINFORCED CONCRETE BOX
CULVERT UNDER ROADWAY PAVEMENT

NOTES

1. 1.5-SACK CEMENT PER CUBIC YARD STABILIZED SAND PLACED BEFORE PIPE IS PLACED (8" MINIMUM FOR 42" TO 60", 12" MINIMUM FOR 66" TO 108").

SL-BB-12

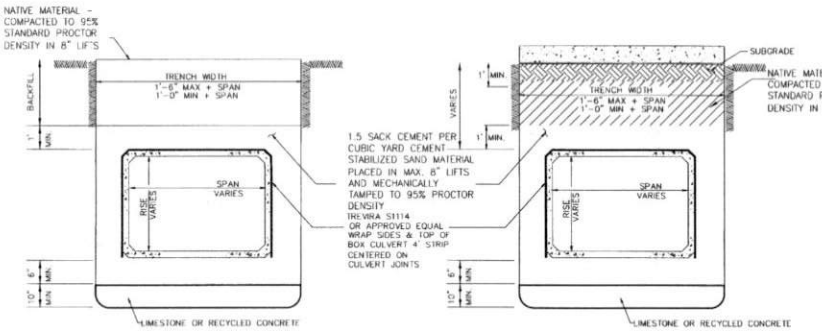


BEDDING DETAIL FOR
REINFORCED CONCRETE BOX
PLACED IN EASEMENT

SL-BB-13

NOTES

1. 1.5-SACK CEMENT PER CUBIC YARD STABILIZED SAND PLACED BEFORE PIPE IS PLACED (8" MINIMUM FOR 42" TO 60", 12" MINIMUM FOR 66" TO 108").



BEDDING DETAIL FOR
REINFORCED CONCRETE BOX CULVERT
W/MODIFIED BEDDING

BEDDING DETAIL FOR
REINFORCED CONCRETE BOX CULVERT
W/MODIFIED BEDDING
UNDER ROADWAY PAVEMENT

SL-BB-14

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER: DATE 5/19/15

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND
TEXAS

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

STORM SEWER PIPE BEDDING
AND BACKFILL DETAILS

JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-20

SHEET OF

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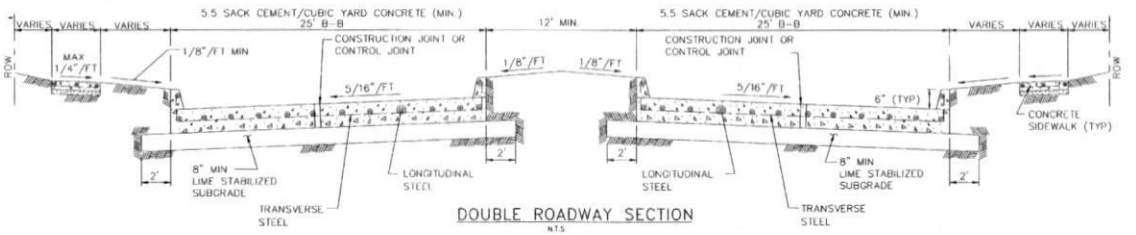
CAD FILE PATH:
PLOT DATE:



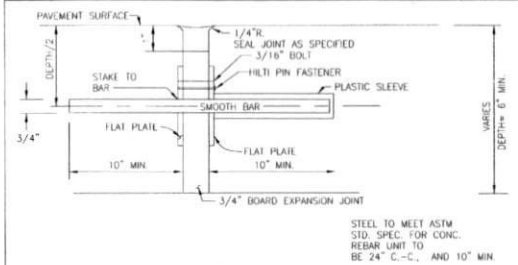
DOUBLE ROADWAY SECTION
N.T.S.

SL-ST-01

CONSTRUCTION NOTES:

1. 6 INCH, 5.5 SACK CEMENT PER CUBIC YARD CONCRETE, 3500 PSI REINFORCED CONCRETE WITH #4 BARS 24 INCHES C-C, E.W. IS THE MINIMUM ACCEPTABLE PAVEMENT CONSTRUCTION FOR LOCAL STREETS.
2. 7 INCH, 5.5 SACK CEMENT PER CUBIC YARD CONCRETE, 3500 PSI REINFORCED CONCRETE WITH #4 BARS 18 INCHES C-C, IS THE MINIMUM ACCEPTABLE PAVEMENT CONSTRUCTION FOR COLLECTOR STREETS.
3. EIGHT (8) INCH, 5.5 SK, 3500 PSI @ 28 DAYS, REINFORCED WITH #4 18" C.C. EACH WAY IS THE MINIMUM ACCEPTABLE FOR ARTERIAL STREETS.
4. HARD AGGREGATE IS NOT ALLOWED IN STREET PAVEMENT MIX. ADMIXTURES REQUIRE CITY OF SUGAR LAND PUBLIC WORKS DEPARTMENT APPROVAL.
5. TRANSVERSE EXPANSION JOINTS SHALL BE PLACED AT ALL POINTS OF CURVATURE, POINTS OF TANGENCY AND ALL INTERSECTION CURB RETURN POINTS. MAXIMUM SPACING SHALL BE 200' AND BE SEALED WITH SEALANT CONFORMING TO TXDOT ITEM 360 (& ITEM 438) AND TXDOT DMS-6310, CLASS-2.
6. TRANSVERSE CONTROL JOINTS ARE REQUIRED AT MAXIMUM SPACING OF 20'-0" C-C, AND VERTICAL CURB JOINTS TO BE SEALED WITH SPECIAL JOINT SEALANT ASTM-D-1190-74 OR AASHTO-M173-80 FOR PAVEMENT 8" THICK AND GREATER. (ELASTONETRIC TYPE HOT POURED)
7. PAVEMENT FINISH SHALL BE BAKER BROOM FINISH. CURING COMPOUND REQUIRED ON ALL CONCRETE.
8. STORM WATER POLLUTION PROTECTION SHALL BE DESIGNED, CONSTRUCTED, MAINTAINED AND SHALL BE IN TOTAL COMPLIANCE WITH THE STORM QUALITY MANUAL OF THE CITY OF SUGAR LAND, CITY ENGINEER'S APPROVAL.
9. REFER TO GENERAL, C.S.S., AND PAVEMENT NOTES.

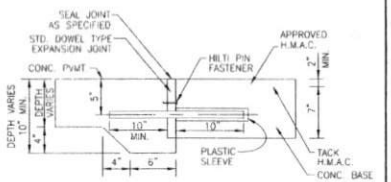
SL-ST-12



STEEL TO MEET ASTM STD. SPEC. FOR CONC. REBAR UNIT TO BE 24" C.-C., AND 10" MIN.

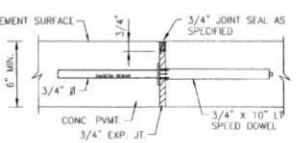
DOWEL TYPE EXPANSION JOINT
N.T.S.

SL-ST-03



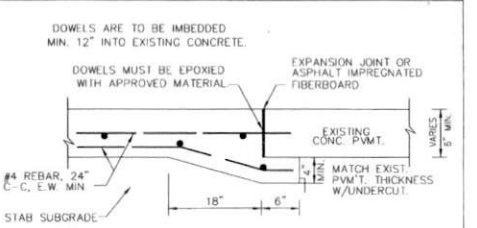
DOWEL TYPE EXPANSION JOINT
N.T.S.
(CONC. PAVING TO CONC. BASE)

SL-ST-06



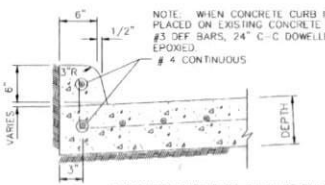
SPEED DOWEL EXPANSION JOINT
N.T.S.

SL-ST-08



UNDERCUT DETAIL WITH HEADER
N.T.S.

SL-ST-09

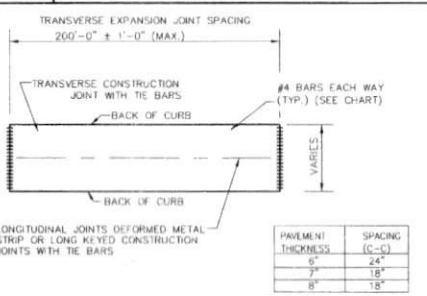


* REDWOOD CURB EARS SHALL BE PLACED AT ALL TRANSVERSE JOINTS IN PAVEMENT.

CONCRETE CURB
N.T.S.

CONSTRUCTION NOTE:
ALL NEW CURB REQUIRES 3,000 P.S.I. @ 28-DAYS.

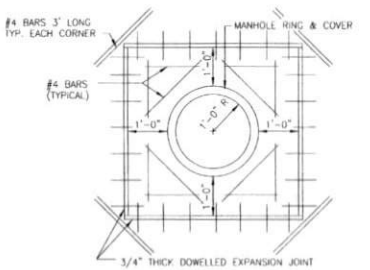
SL-ST-04



PAVEMENT THICKNESS	SPACING (C-C)
6"	24"
7"	18"
8"	18"

PAVING PANEL
N.T.S.

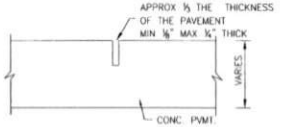
SL-ST-05



3/4" THICK DOWELLED EXPANSION JOINT

MANHOLE BLOCKOUT
N.T.S.
(STORM & SANITARY) IN PAVEMENT

SL-ST-10



CONTROL JOINT
N.T.S.

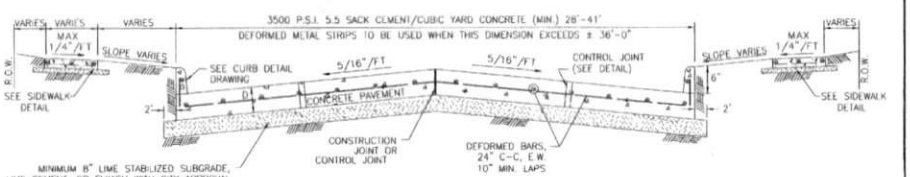
SL-ST-11

No.	DATE	REVISION

SEAL

STATE OF TEXAS
GUY L. HUMPHREY
105072
LICENSED PROFESSIONAL ENGINEER

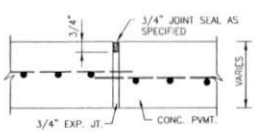
DESIGN ENGINEER: DATE 8/18/15
TBPE FIRM REG. No. 280



SL-ST-02

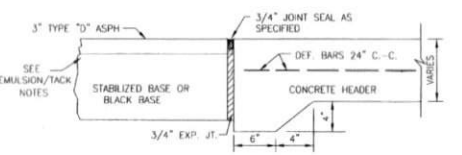
SINGLE ROADWAY SECTION
N.T.S.

NOTES:
1. FOR PVM'T DEPTHS OF 6" USE 1/2" DEFORMED BARS, 24" C-C, 10" LAPS. ALL REINFORCING STEEL SHALL CONFORM TO GRADE 60, A.S.T.M. NO. A615. LAP SPLICES TO BE A MINIMUM OF 10 INCHES. STAGGER SPLICES IN ADJACENT BARS.



CONSTRUCTION JOINT SEAL
N.T.S.

SL-ST-12



PAVING HEADER
(FOR USE IN CONNECTING CONC. PVMT. TO ASPHALT PVMT.)
(PROP. OR EXIST.)

SL-ST-07

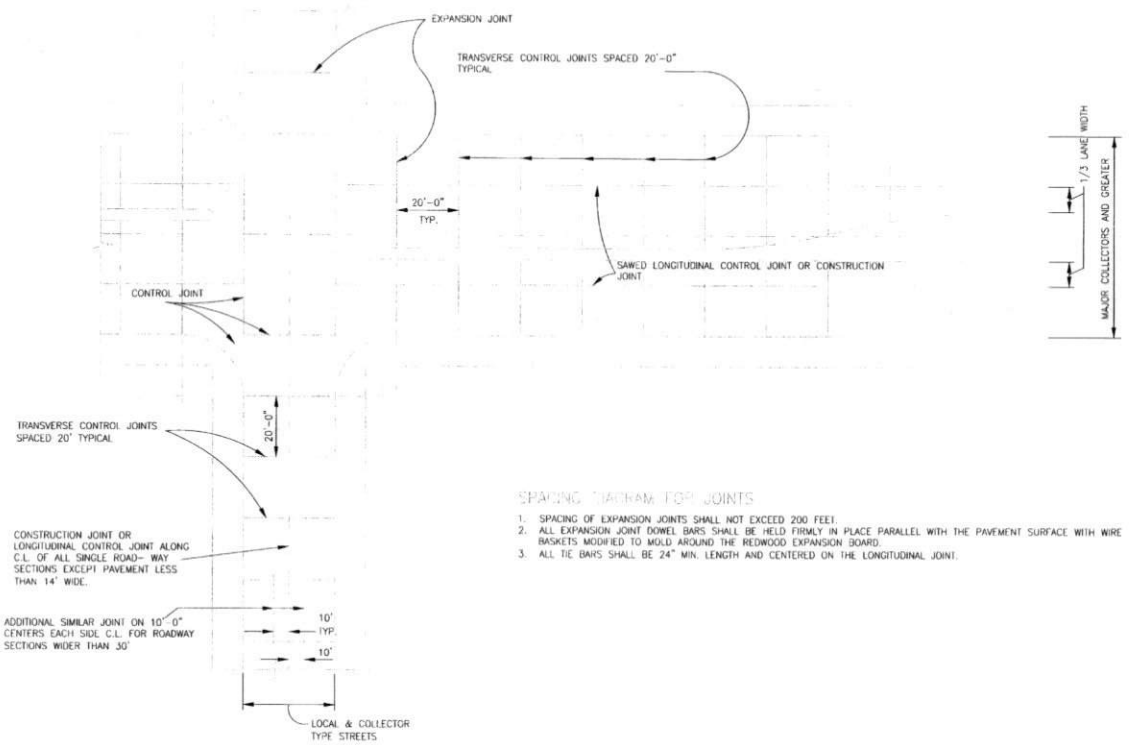
CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:
THE VILLAS AT RIVERSTONE

CONCRETE PAVEMENT CONSTRUCTION DETAILS

JOB No.:	SL-21
DATE:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
SCALE:	SHEET OF

PLOT TIME:
CAD FILE PATH:
PLOT DATE:



SPACING DIAGRAM FOR JOINTS

1. SPACING OF EXPANSION JOINTS SHALL NOT EXCEED 200 FEET.
2. ALL EXPANSION JOINT DOWEL BARS SHALL BE HELD FIRMLY IN PLACE PARALLEL WITH THE PAVEMENT SURFACE WITH WIRE BASKETS MODIFIED TO MOLD AROUND THE REDWOOD EXPANSION BOARD.
3. ALL TIE BARS SHALL BE 24" MIN. LENGTH AND CENTERED ON THE LONGITUDINAL JOINT.

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
108072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER: _____ DATE: 8/14/15

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

CONCRETE PAVEMENT CONSTRUCTION DETAILS

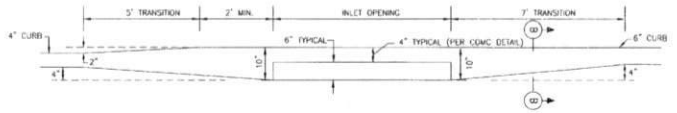
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-22

SHEET OF

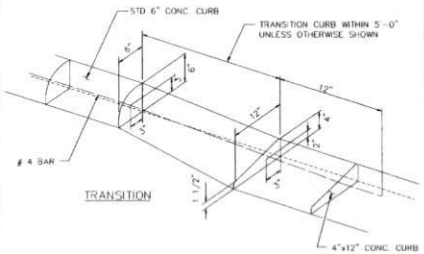
PLOT TIME:

CAD FILE PATH:
PLOT DATE:



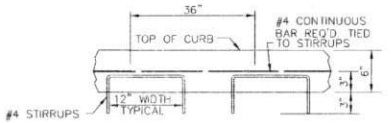
TYPICAL CURB TRANSITION FOR INLET INSTALLATION

SL-ST-13



TYPICAL CURB TRANSITION

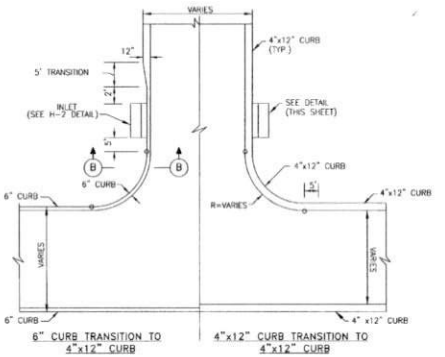
SL-ST-15



TYPICAL CONCRETE CURB REINFORCING

N.T.S.

SL-ST-16



TYPICAL 4"X12" CURB W/INLET TRANSITION FOR CURB RETURNS

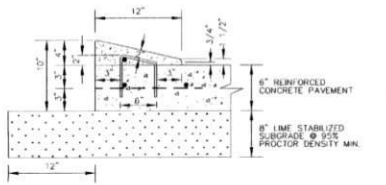
N.T.S.

SL-ST-14

CONSTRUCTION NOTES:

1. 6 INCH, 5.5 SACK CEMENT PER CUBIC YARD CONCRETE, 3500 PSI REINFORCED CONCRETE WITH #4 BARS 24 INCHES C-C, E.W. IS THE MINIMUM ACCEPTABLE PAVEMENT CONSTRUCTION FOR RESIDENTIAL STREETS.
2. 7 INCH, 5.5 SACK CEMENT PER CUBIC YARD CONCRETE, 3500 PSI REINFORCED CONCRETE WITH #4 BARS 24 INCHES C-C, IS THE MINIMUM ACCEPTABLE PAVEMENT CONSTRUCTION FOR COLLECTOR STREETS
3. EIGHT (8) INCH, 5.5 SK, 3500 PSI @ 28 DAYS, REINFORCED WITH #4 18" C.C. EACH WAY IS THE MINIMUM ACCEPTABLE FOR ARTERIAL STREETS.
4. TRANSVERSE EXPANSION JOINTS SHALL BE PLACED AT ALL POINTS OF CURVATURE, POINTS OF TANGENCY AND ALL INTERSECTION CURB RETURN POINTS. MAXIMUM SPACING SHALL BE 200' AND BE SEALED CONFORMING TO TXDOT ITEM 360 (& ITEM 438) AND TXDOT DMS-6310, CLASS-2.
5. TRANSVERSE CONTROL JOINTS ARE REQUIRED AT MAXIMUM SPACING OF 20'-0" C-C, AND VERTICAL CURB JOINTS TO BE SEALED WITH SPECIAL JOINT SEALANT ASTM-D-1190-74 OR AASHTO-M173-60 FOR PAVEMENT 8" THICK AND GREATER. (ELASTONETRIC TYPE HOT POURED)
6. PAVEMENT FINISH SHALL BE BAKER BROOM FINISH. CURING COMPOUND ON ALL CONCRETE.
7. STORM WATER POLLUTION PROTECTION SHALL BE DESIGNED, CONSTRUCTED, MAINTAINED AND SHALL BE IN TOTAL COMPLIANCE WITH THE STORM WATER QUALITY MANUAL OF THE CITY OF SUGAR LAND.
8. UNSTABLE SUBGRADE SHALL BE EXCAVATED AND REPLACED WITH CEMENT STABILIZED SAND.
9. USE 1"x2" REDWOOD STAKES FOR HEADERS.
10. EDGE ALL SIDES WITH EDGING TOOL.
11. DOWEL SHALL BE 3/4" DIAMETER, WITH MINIMUM 8" PENETRATION (BOTH SIDES).
12. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE CITY OF SUGAR LAND OF ANY BIRDBATH PROBLEMS PRIOR TO CONSTRUCTION OF DRIVEWAY.
13. REFER TO GENERAL, C.S.S., AND PAVEMENT NOTES.
14. **1.0 LBS. OF APPROVED POLYPROPYLENE FIBER MESH PER C/Y IN 4"X12" CURBS REQUIRED.**

SL-ST-20

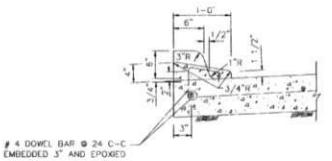


4"x12" MOUNTABLE CONCRETE CURB

NOTES:

1.) 1.0 LBS. OF APPROVED NON-METALLIC FIBER MESH PER C/Y IN 4"X12" CURBS.
2.) #3 RE-BAR STIRRUPS TO BE PLACED AT INTERVALS OF 2' (FT) C-C.
3.) #4 RE-BAR LONGITUDINAL SHALL BE TIED TO EACH STIRRUP.
4.) MOUNTABLE CURB ONLY ALLOWED ON ≤ 41' (FT), UNDIVIDED, RESIDENTIAL ROADWAYS WITHIN SUBDIVISIONS.

SL-ST-17



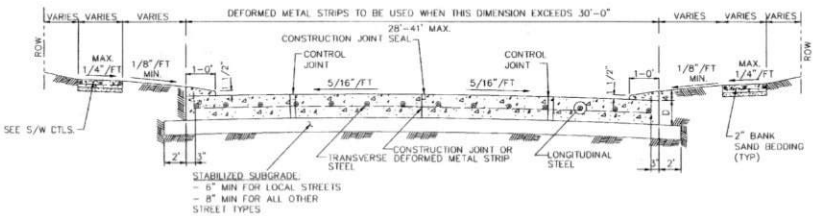
4-INCH x 12-INCH TRANSITION CURB

SL-ST-18

4"x12" MOUNTABLE CONCRETE CURB AND TRANSITION CURB NOTES:

1. 6-INCH CONCRETE CURB TO BE CONSTRUCTED ON ALL ESPLANADES, ISLANDS AND NON-RESIDENTIAL STREETS. RESIDENTIAL STREETS MAY BE CONSTRUCTED WITH EITHER 6-INCH CONCRETE CURB OR 4-INCH x 12-INCH CONCRETE CURB AS NOTED ON PLANS.
2. ALL 4-INCH x 12-INCH CONCRETE CURBS TO BE POURED SEPARATE FROM PROPOSED CONCRETE PAVEMENT.
3. TRANSITIONS FROM 6-INCH CONCRETE CURB TO 4-INCH x 12-INCH CONCRETE CURB TO BE ACCOMPLISHED WITHIN 5 FEET (TYP.), UNLESS OTHERWISE SHOWN. REINFORCING STEEL AS SHOWN IN "4-INCH x 12-INCH TRANSITION CURB" DETAIL IS TO BE INSTALLED.

SL-ST-20



TYPICAL SINGLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH 4"X12" CURB

* SEE 4" x 12" MOUNTABLE CURB DETAIL (THIS SHEET)

SL-ST-19

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER DATE 5/18/15

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

RESIDENTIAL CURB CONSTRUCTION DETAILS

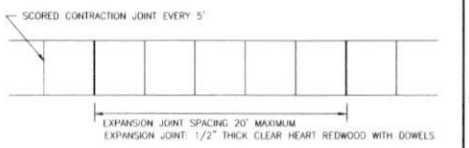
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-23

SHEET OF

PLOT TIME:

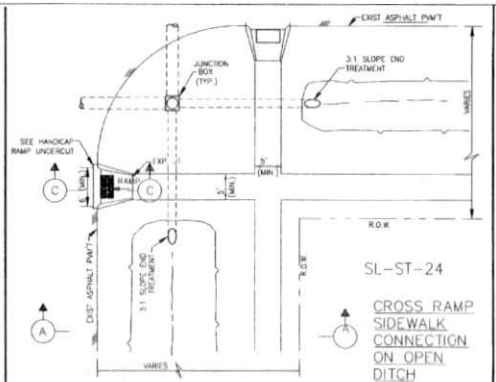
CAD FILE PATH:
PLOT DATE:



SIDEWALK JOINT DETAILS

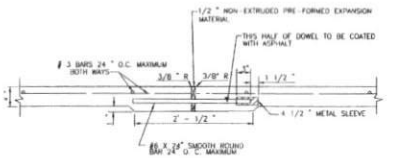
N.T.S.

SL-ST-23



SL-ST-24

CROSS RAMP SIDEWALK CONNECTION ON OPEN DITCH



B-B
EXPANSION JOINT DETAIL

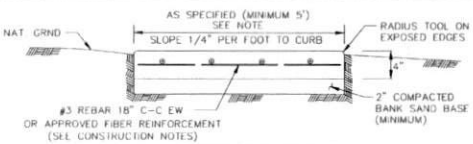
NOTES:

1. EXISTING CURB AND GUTTER TO BE SAW CUT, REMOVED AND REPLACED. DOWEL STEEL FOR MINIMUM REINFORCING OVERLAP OF 10 INCHES (10") DOWELS SHALL BE EIGHTEEN INCHES (18") LONG AND EPOXIED A MINIMUM OF (8") EIGHT INCHES INTO EXISTING PAVEMENT.
2. IF SIDEWALKS ARE NEITHER EXISTING NOR PROPOSED WHERE WHEELCHAIR RAMP ACCESS IS REQUIRED, CONCRETE SIDEWALKS SURFACE 4 1/2" THICK SHALL BE INSTALLED TO PROVIDE ACCESS TO THE PEDESTRIAN PUSH BUTTONS.
3. DETECTABLE WARNINGS REQUIRED BY T.A.S. SECTIONS 4.1 AND 4.7 SHALL COMPLY WITH T.A.S. SECTION 4.29
4. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. DETECTABLE WARNINGS USED ON INTERIOR SURFACE SHALL DIFFER FROM ADJOINING WALKING SURFACES IN RESILIENCY OR SOUND-ON-CANE.
5. DETECTABLE WARNING SURFACE SHALL COVER THE ENTIRE WIDTH AND DEPTH OF RAMP.
6. DETECTABLE WARNINGS SHALL BE INSTALLED WITH PAVERS IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
7. CONCRETE PAVER UNITS SHALL MEET ALL REQUIREMENTS OF ASTM C-936, C-33, AND SHALL BE PLACED IN A TWO BY TWO UNIT BASKET WEAVE PATTERN, UNLESS SHOWN OTHERWISE IN THE PLANS.
8. CONCRETE PAVER UNITS SHALL HAVE A TRUNCATED DOME TOP SURFACE FOR DETECTABLE WARNING TO PEDESTRIANS. DOMES SHALL BE ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL.
9. CONCRETE PAVER UNIT COLOR FOR THE RAMP SHALL BE A CONTRASTING COLOR THAT PROVIDES A LIGHT REFLECTIVE THAT SIGNIFICANTLY CONTRASTS WITH THE ADJACENT SURFACES. ADJACENT SURFACES INCLUDE SIDE FLARES.
10. CONCRETE PAVER UNITS SHALL BE SAW CUT ONLY, AND ANY CUT UNIT SHALL NOT BE LESS THAN 25% A FULL UNIT.

CONSTRUCTION NOTES:

1. THE MAXIMUM WIDTH BETWEEN EXPANSION JOINTS SHALL NOT EXCEED 20'-0"
2. EXPANSION JOINT IS TO BE 1/2" THICK CLEAR HEART REDWOOD WITH DOWELS.
3. SCORED CONTRACTION JOINTS SHALL BE EVERY 5' OR EQUAL TO WIDTH OF SIDEWALK.
4. ALL EARTHEN AREAS ARE TO BE SODDED UNLESS SHOWN OTHERWISE ON DRAWINGS.
5. 4 INCH, 5 SACK CEMENT PER CUBIC YARD CONCRETE, 3000 PSI, REINFORCED CONCRETE WITH #3 BARS, 18 INCHES C-C, FOR SIDEWALKS, #4 BARS, 18" C-C FOR WHEEL CHAIR RAMPS. IS THE MINIMUM ACCEPTED. MINIMUM 3 LONGITUDINAL BARS. FIBER REINFORCING SIDEWALKS-STEEL AND POLYPROPYLENE BLENDED FIBER REINFORCEMENT SYSTEM SUCH AS NOVOMESH 63 AS MANUFACTURED BY S.I. CONCRETE SYSTEMS (OR PRE-APPROVED EQUAL) MAY BE USED AS AN ALTERNATE TO CONVENTIONAL REBAR REINFORCING AT A DOSAGE RATE OF 24 LBS. PER CUBIC YARD OF CONCRETE.
6. USE RADIUS TOOL ON ALL EXPOSED EDGES.
7. TOP OF THE SIDEWALK ELEVATION TO BE TOP OF CURB.
8. MEMBRANE CURING COMPOUND IS REQUIRED AS DESCRIBED IN ITEM 526 IN THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.
9. REFER TO GENERAL NOTES AND CONCRETE/PAVING NOTES.
10. SIDEWALK EXPANSION JOINTS SHALL CONFORM TO STREET EXPANSION JOINT STANDARDS.

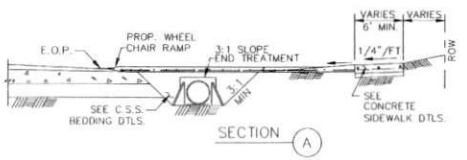
SL-ST-34



CONCRETE SIDEWALK

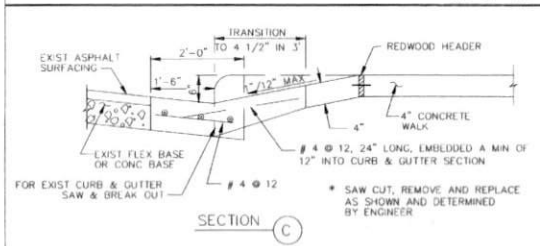
NOTE:
BANK SAND IS DEFINED AS A WELL-GRADED SAND, FREE OF SILT, CLAY, LOAM, FRIABLE OR SOLUBLE MATERIALS AND ORGANIC MATTER, MEETING THE UNIFIED SOILS CLASSIFICATION SYSTEM GROUP SYMBOL SW CRITERIA W/ A PLASTICITY INDEX OF ≤ 10, AND NO MORE THAN 12% MATERIAL CAN PASS THE No. 200 SIEVE.

SL-ST-29



SECTION A

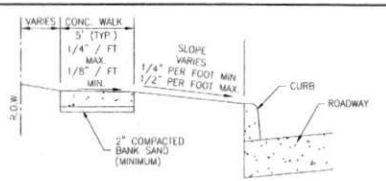
SL-ST-25



SECTION C

HANDICAP RAMP CURB & GUTTER*

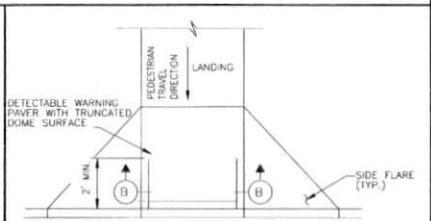
SL-ST-26



NOTE
SEE SIDEWALK, CONC/PAVING, AND GENERAL NOTES

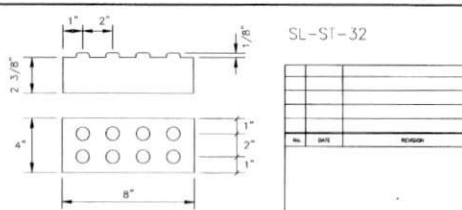
SL-ST-28

TYPICAL SINGLE ROADWAY SIDEWALK



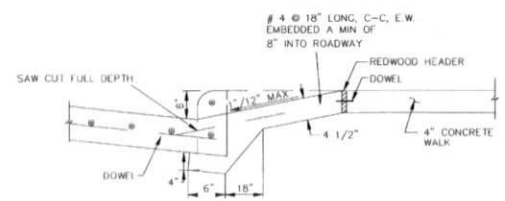
SL-ST-31

TRUNCATED DOME PATTERN CURB RAMP



SL-ST-32

CONCRETE PAVER WITH TRUNCATED DOME SURFACE

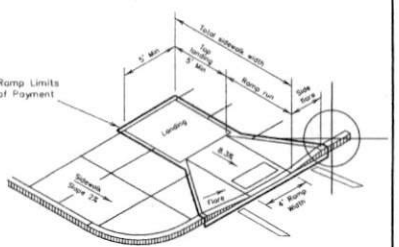


SECTION D

HANDICAP RAMP UNDERCUT

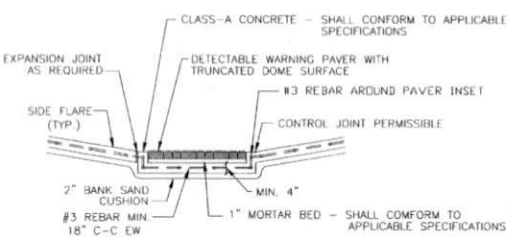
SL-ST-27

1. STANDARD FLARED SINGLE RAMPS ARE ALLOWED AT LOCAL/LOCAL STREET CROSSINGS



WHEELCHAIR RAMP SIDEWALK CONNECTION

SL-ST-30



SECTION B

SL-ST-33

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER: _____ DATE: 5/19/15

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

WHEEL CHAIR RAMP & SIDEWALK DETAILS I

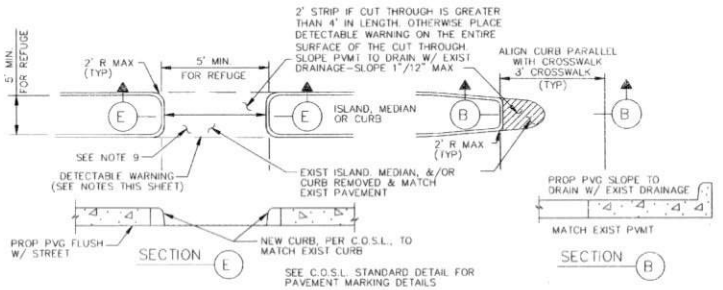
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-25

SHEET OF

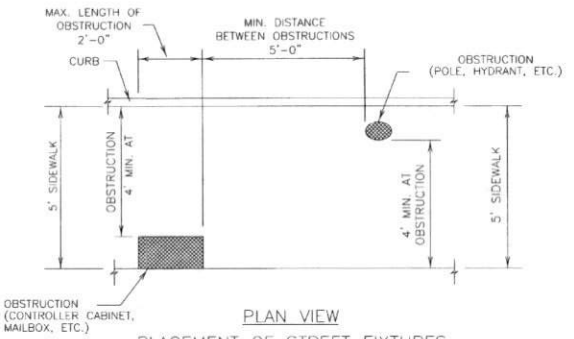
PLOT TIME

CAD FILE PATH
PLOT DATE



FOR ISLAND, MEDIAN, OR CURB MODIFICATIONS FOR CROSSWALKS

SL-ST-35



PLAN VIEW

PLACEMENT OF STREET FIXTURES

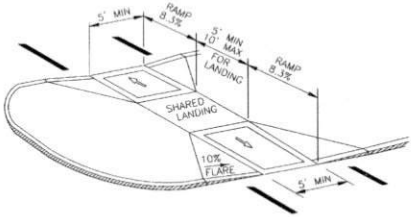
(ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' x 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.)

SL-ST-36

NOTES:

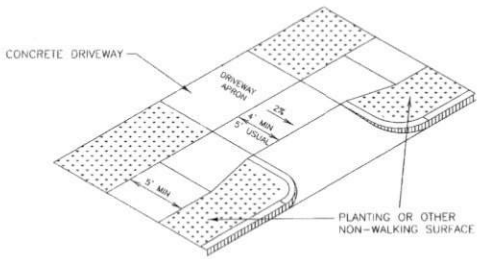
1. ALL SLOPES ARE MAXIMUM ALLOWABLE. THE LEAST POSSIBLE SLOPE THAT WILL STILL DRAIN PROPERLY SHOULD BE USED. RAMP LENGTH OR GRADE OF APPROACH SIDEWALKS MAY BE ADJUSTED AS DIRECTED
2. THE MINIMUM SIDEWALK WIDTH IS 5' (FEET). THE LANDING SHALL BE 5' x 5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. MAXIMUM ALLOWABLE CROSS SLOPE ON SIDEWALK AND RAMP SURFACES IS 2%. USUAL SIDEWALK CROSS SLOPE EQUALS 1.5%. CHANGES IN LEVEL GREATER THAN 1/4" (IN.) ARE NOT PERMITTED.
3. MANEUVERING SPACE AT THE BOTTOM OF CURB RAMPS SHALL BE A MINIMUM OF 5' x 5' WHOLLY CONTAINED WITHIN THE CROSSWALK AND WHOLLY OUTSIDE THE PARALLEL VEHICULAR TRAVEL PATH.
4. ANY PART OF THE ACCESSIBLE ROUTE WITH A SLOPE GREATER THAN 1:20 (5%) SHALL BE CONSIDERED A RAMP. IF A RAMP HAS A RISE GREATER THAN 6" (IN.) OR A HORIZONTAL PROJECTION GREATER THAN 72 INCHES, THEN IT SHALL HAVE HANDRAILS ON BOTH SIDES, WITH THE FOLLOWING EXCEPTIONS:
   A.) HANDRAILS ARE NOT REQUIRED ON CURB RAMPS. CURB RAMPS SHALL BE PROVIDED WHEREVER AN ACCESSIBLE ROUTE CROSSES (PENETRATES) A CURB.
   B.) THE LEAST POSSIBLE GRADE SHOULD BE USED TO MAXIMIZE ACCESSIBILITY. WHERE STRUCTURALLY IMPRACTICAL TO ACHIEVE TEXAS ACCESSIBILITY STANDARDS (TAS) COMPLIANCE, THE RUNNING SLOPE OF SIDEWALKS AND CROSSWALKS, WITHIN THE PUBLIC R.O.W., MAY FOLLOW THE GRADE OF THE PARALLEL ROADWAY WITHOUT INVOKING TEXAS ACCESSIBILITY STANDARDS (TAS) VARIANCES FOR LANDINGS OR HANDRAILS. WHERE A CONTINUOUS GRADE GREATER THAN 5% MUST BE PROVIDED, HANDRAILS MAY BE DESIRABLE ON ONE OR BOTH SIDES OF THE SIDEWALK TO IMPROVE ACCESSIBILITY. HANDRAILS MAY ALSO BE NEEDED TO PROTECT PEDESTRIANS FROM POTENTIALLY HAZARDOUS CONDITIONS.
5. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. OTHERWISE, FLARED SIDES SHALL BE PROVIDED. ALL CONCRETE SURFACES SHALL RECEIVE A LIGHT BROOM FINISH UNLESS NOTED OTHERWISE IN THE PLANS.
6. RAMP TEXTURES MUST CONSIST OF TRUNCATED DOME SURFACES, IN ACCORDANCE WITH ADA AND TEXAS DEPARTMENT OF LICENSING AND REGULATIONS (TDLR). TEXTURES ARE REQUIRED TO BE DETECTABLE UNDERFOOT. TEXTURES ALSO SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES. SURFACES THAT WOULD ALLOW WATER TO ACCUMULATE ARE PROHIBITED.
7. ADDITIONAL INFORMATION ON CURB RAMP LOCATION, DESIGN, LIGHT REFLECTIVE VALUE AND TEXTURE MAY BE FOUND IN THE CURRENT EDITION OF THE TEXAS ACCESSIBILITY STANDARDS (TAS) PREPARED AND ADMINISTERED BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION (TDLR).
8. RAISED MEDIANS SEPARATE OPPOSING DIRECTIONS OF TRAFFIC AND PROVIDE A REFUGE AREA FOR PEDESTRIANS UNABLE TO CROSS THE ENTIRE ROADWAY IN THE ALLOTTED SIGNAL PHASE. TO SERVE AS A REFUGE AREA, THE MEDIAN SHALL BE A MINIMUM OF 5' (FT.) WIDE. MEDIANS SHOULD BE DESIGNED TO PROVIDE ACCESSIBLE PASSAGE OVER OR THROUGH THEM.
9. SMALL CHANNELIZATION ISLANDS, WHICH CAN NOT PROVIDE A MINIMUM 5' x 5' LANDING AT THE TOP OF RAMPS, SHALL BE CUT THROUGH LEVEL WITH THE SURFACE OF THE STREET.
10. CROSSWALK DIMENSIONS, CROSSWALK MARKINGS AND STOP BAR LOCATIONS SHALL BE AS SHOWN IN THE PLANS. AT INTERSECTIONS WHERE CROSSWALK MARKINGS ARE NOT REQUIRED, RAMPS SHALL BE ALIGNED WITH THEORETICAL CROSSWALKS, OR AS DIRECTED BY THE ENGINEER.
11. EXISTING FEATURES THAT COMPLY WITH T.A.S. MAY REMAIN IN PLACE UNLESS OTHERWISE SHOWN ON THE PLANS.
12. TRAFFIC SIGNAL OR ILLUMINATION POLES, GROUND BOXES, CONTROLLER BOXES, SIGNS, DRAINAGE FACILITIES AND OTHER ITEMS SHALL BE PLACED SO NOT TO OBSTRUCT THE ACCESSIBLE ROUTE.

SL-ST-40



CURB RAMPS AT MEDIAN ISLANDS

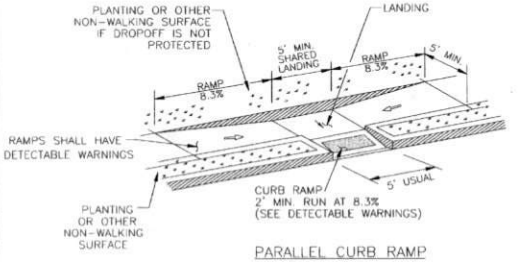
SL-ST-37



SETBACK SIDEWALK

SIDEWALK TREATMENT AT DRIVEWAYS

SL-ST-38



PARALLEL CURB RAMP

SL-ST-39

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER: DATE 5/18/16

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

WHEEL CHAIR RAMP & SIDEWALK DETAILS II

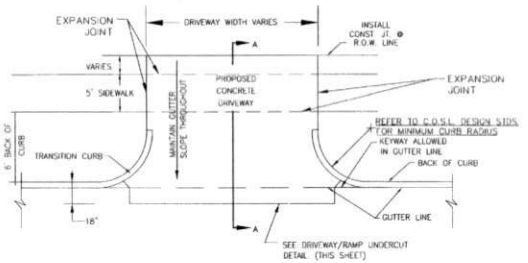
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-26

SHEET OF

PLOT TIME:

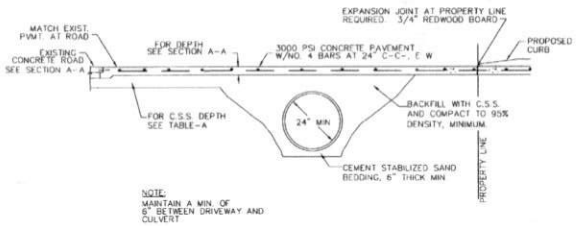
CAD FILE PATH:
PLOT DATE:



6" CONCRETE CURB DRIVEWAY PLAN

N.T.S.

SL-ST-41



CONCRETE APRON DETAIL – DRIVEWAY PROFILE FOR CULVERT DRAINAGE

N.T.S.

SL-ST-42

SL-ST-49

NOTES:

1.) SAW CUT & BREAKOUT NO MORE THAN 72 HOURS PRIOR TO PROPOSED CONCRETE PLACEMENT. NOTIFY SUGAR LAND PRIOR TO CUT.

2.) UNSTABLE SUBGRADE SHALL BE OVER EXCAVATED & REPLACED WITH CONCRETE.

3.) IT IS CONTRACTOR'S RESPONSIBILITY TO NOTIFY SUGAR LAND OF ANY BIRD BATH PROBLEMS PRIOR TO CONSTRUCTION OF DRIVEWAY.

4.) USE 1"x2" TREATED REDWOOD FOR HEADER.

5.) EDGE ALL SIDES WITH EDGING TOOL AND BROOM FINISH

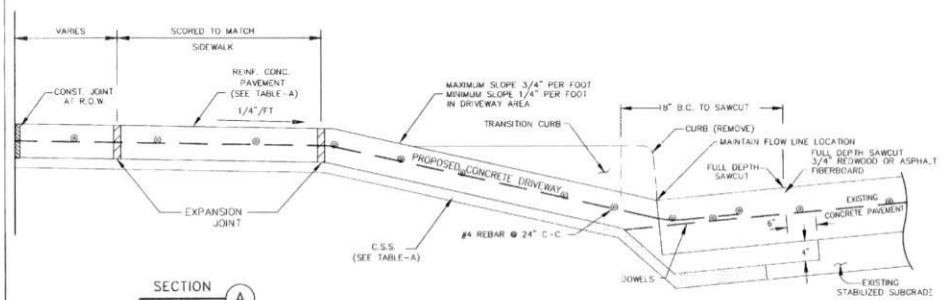
6.) FOR INDUSTRIAL DRIVES, PAVEMENT SHALL HAVE A DEPTH OF 8" (IN).

7.) EXPANSION JOINT AT PROPERTY LINE REQUIRED. 3/4" REDWOOD BOARD WITH No. 4 DOWELS MINIMUM.

8.) MAXIMUM ALLOWABLE DRIVEWAY GRADE IN PULIC R.O.W. IS 5%

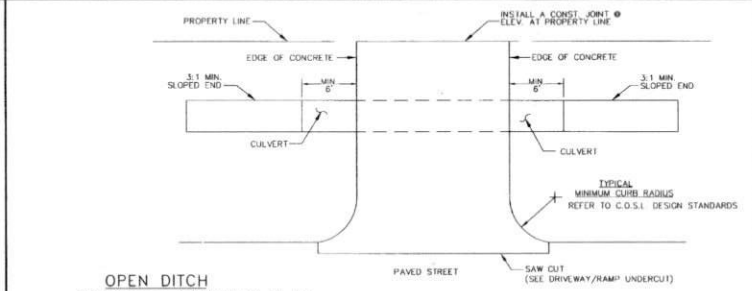
9.) DRIVEWAY GRADE MUST MEET A.D.A. AND T.A.S. SIDEWALK SLOPE, SIDEWALKS MUST BE SCORED TO MATCH ADJACENT SIDEWALK. IF SLOPE IS CONTINUED THROUGH THE R.O.W. LINE, PROVIDE A 3/4" REDWOOD EXPANSION JOINT WITH DOWELS AT R.O.W. LINE.

10.) REFER TO GENERAL , C.S.S., ASPHALT, AND CONCRETE PAVEMENT NOTES.



SECTION (A)

SL-ST-43



OPEN DITCH CONCRETE DRIVEWAY PLAN

(USED ONLY WHEN CONNECTING TO A CONCRETE ROADWAY)

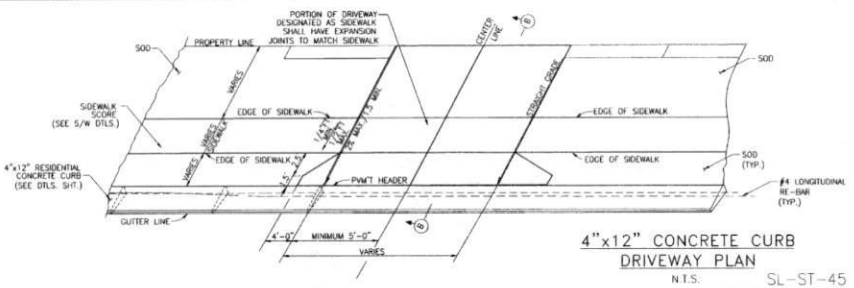
N.T.S.

SL-ST-44

TABLE-A

CEMENT STABILIZED SAND 2-SK/C.Y.	
RESIDENTIAL	4" MINIMUM
COMMERCIAL	6" MINIMUM
INDUSTRIAL	8" MINIMUM
REINFORCED CONCRETE PAVEMENT 3,000 PSI MIN	
RESIDENTIAL	4" MINIMUM
COMMERCIAL	6" MINIMUM
INDUSTRIAL	8" MINIMUM

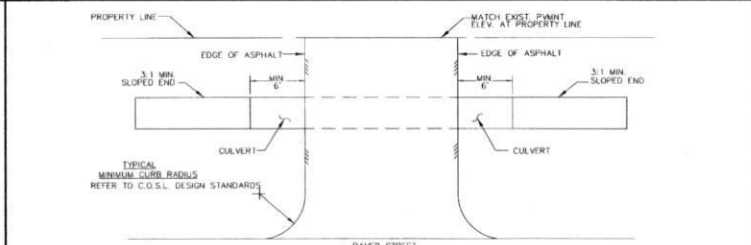
DRIVEWAY PAVEMENT CONSTRUCTION TABLE



4"x12" CONCRETE CURB DRIVEWAY PLAN

N.T.S.

SL-ST-45

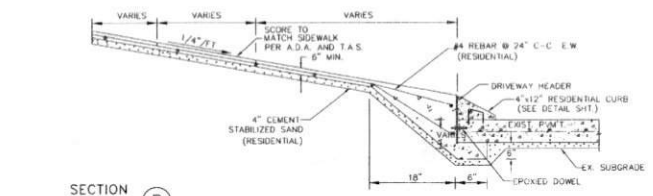


ASPHALT DRIVEWAY PLAN

(USED ONLY WHEN CONNECTING TO AN ASPHALT ROADWAY)

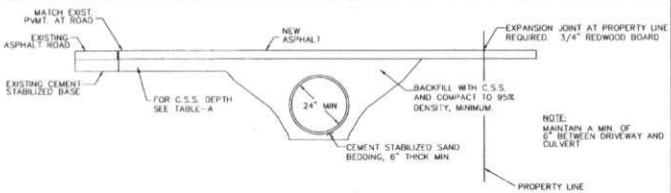
N.T.S.

SL-ST-46



SECTION (B)

SL-ST-47



ASPHALT APRON DETAIL – DRIVEWAY PROFILE FOR CULVERT DRAINAGE

N.T.S.

SL-ST-48

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER: DATE 8/18/15

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND TEXAS

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

DRIVEWAY CONSTRUCTION DETAILS

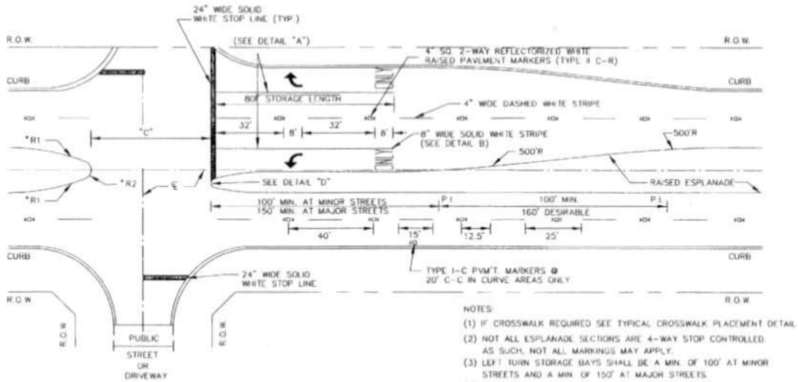
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-27

SHEET OF

PLOT TIME:

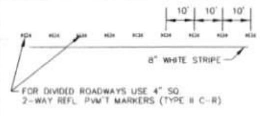
CAD FILE PATH:
PLOT DATE:



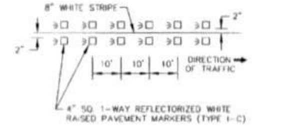
NOTES:

(1) IF CROSSWALK REQUIRED SEE TYPICAL CROSSWALK PLACEMENT DETAIL.
(2) NOT ALL ESPLANADE SECTIONS ARE 4-WAY STOP CONTROLLED. AS SUCH, NOT ALL MARKINGS MAY APPLY.
(3) LEFT TURN STORAGE BAYS SHALL BE A MIN. OF 100' AT MINOR STREETS AND A MIN. OF 150' AT MAJOR STREETS.
(4) REPEAT ARROWS AT APPROX. 1000' INTERVALS WITH TWO-WAY LEFT TURN SECTION.

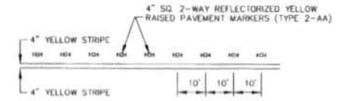
TYPICAL ESPLANADE SECTION SL-ST-50



DETAIL "A" SL-ST-55



DETAIL "B" SL-ST-56



DETAIL "C" SL-ST-57

RADIUS DIMENSIONS

ESPLANADE	*R1	*R2
<8'	N/A	W/2
8'-38'	90'	W/5
>38'	N/A	15'

SL-ST-58

PAVEMENT MARKER LEGEND

SYMBOL	DESCRIPTION
□	4" X 4" REFLECTORIZED RAISED PAVEMENT MARKER
▯□	INDICATES DIRECTION OF TRAFFIC FLOW

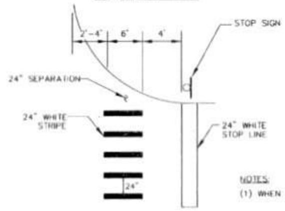
SL-ST-58

NOTES:

1. ALL INTERSECTIONS WHERE A STOP SIGN IS LOCATED SHALL HAVE A STOP BAR. STOP BARS SHALL BE LOCATED WHERE PEDESTRIAN CROSSWALKS ARE PROVIDED, 4' BEHIND CROSSWALKS.
2. STOP BARS SHALL BE 24" WIDE, AND CONSIST OF SOLID WHITE LINES EXTENDING ACROSS APPROACH LANES TO INDICATE THE POINT AT WHICH THE STOP IS INTENDED OR REQUIRED TO BE MADE.
3. ON APPROACH – BEGINNING WITH STOP BAR, INSTALL A 4" WIDE SOLID WHITE LINE FOR 50 FT BACK FROM STOP BAR SKIP 25' AND BEGIN NORMAL LANE LINES.
4. ON EXIT – BEGINNING WITH CROSSWALK, OR 12' FROM CURB LINE OF INTERSECTING STREET, INSTALL A 4" WIDE SOLID WHITE LINE FOR 50 FT AND BEGIN NORMAL LANE LINE.
5. CROSSWALKS SHALL BE A MINIMUM INSIDE WIDTH OF 5'(FT.) AT LOCATIONS WHERE ADDITIONAL VISIBILITY IS REQUIRED, WHERE TRAFFIC CONTROL DEVICES ARE NOT PRESENT, AND IN SCHOOL ZONES CONTINENTAL CROSSWALKS SHALL BE USED.
6. ALL PAVEMENT MARKINGS WITHIN CITY ROW SHALL BE MULTIPOLYMER (GRADES 55 AND ABOVE) IN ACCORDANCE WITH C.O.S.L. APPROVED PRODUCT LIST.
7. PAVEMENT MARKINGS MUST BE SHOWN ON THE APPROVED CONSTRUCTION PLANS. ALL PAVEMENT MARKINGS MUST BE RETRO-REFLECTIVE MATERIAL APPLIED TO THE ROAD SURFACE IN A MOLTEN STATE BY SCREED/EXTRUSION, SUSPENDED EXTRUSION, OR SPRAY MEANS, WITH A SURFACE APPLICATION OF GLASS BEADS.
8. THE COLOR OF RAISED PAVEMENT MARKERS UNDER BOTH DAYLIGHT AND NIGHTTIME CONDITIONS SHALL CONFORM TO THE COLOR OF THE MARKING FOR WHICH THEY SERVE AS A POSITIONING GUIDE OR FOR WHICH THEY SUPPLEMENT OR SUBSTITUTE.
9. ALL TRAFFIC BUTTONS AND MARKERS SHALL BE INSTALLED ADJACENT TO STRIPES (APPROX. 2")
10. ALL BUTTONS SHALL BE INSTALLED WITH AN APPROVED EPOXY.
11. A BLUE REFLECTORIZED BUTTON SET 6" OFF CENTERLINE OF ROADWAY SHALL BE INSTALLED ADJACENT TO ALL FIRE HYDRANTS.
12. PAVEMENT SURFACE AREAS PRIOR TO PLACEMENT OF PAVEMENT MARKINGS, AND/OR RAISED PAVEMENT MARKERS SHALL BE CLEANED IN ACCORDANCE WITH C.O.S.L. STANDARDS. CONCRETE SURFACES SHALL BE CLEANED BY ABRASIVE BLASTING MEDIUM. ASPHALT PAVEMENT SURFACES SHALL BE CLEANED BY BRUSHING, WASHING, COMPRESSED AIR, AND/OR HIGH-PRESSURE WATER. AREAS MUST BE FREE OF CURING MEMBRANCE, DIRT, GREASE, LOOSE AND/OR FLAKING EXISTING MARKERS AND OTHER FORMS OF DEBRIS.
13. ALL ESPLANADE NOSES, AND CURBS IN LEFT TURN BAY'S SHALL BE PAINTED WITH YELLOW REFLECTORIZED PAINT AND SHALL COMPLY WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC DEVICES. A.D.A., T.A.S., AND C.O.S.L. STANDARDS AND ALL REVISIONS THEREOF.
14. ALL ROADWAYS WITHOUT CURB SHALL HAVE A SOLID 4" WHITE REFLECTORIZED STRIPE 12" INSIDE THE EDGE OF PAVEMENT.
15. WITHIN A TANGENT SECTION THE TYPE I-C PAVEMENT MARKERS CAN BE PLACED AT 40' C-C ON ROADWAYS WITHOUT CURB AND GUTTERS.
16. ALL STREET CROSSINGS SHALL COMPLY WITH T.A.S. AND A.D.A., SEE HANDICAP CROSS DETAIL.
17. ALL PAVEMENT MARKINGS, AND/OR RAISED PAVEMENT MARKERS SHALL COMPLY WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC DEVICES, A.D.A., T.A.S., AND C.O.S.L. STANDARDS AND ALL REVISIONS THEREOF.
18. ALL MARKINGS SHALL HAVE A UNIFORM CROSS-SECTION, AND THE DENSITY AND QUALITY OF THE MARKING'S SHALL BE UNIFORM THROUGHOUT THEIR THICKNESS.
19. PAVEMENT MARKING'S PLACED THAT ARE NOT IN ALIGNMENT OR SEQUENCE, AS SHOWN ON THE PLANS OR STATED IN THE PROJECT SPECIFICATION'S SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
20. FOR SKEW INTERSECTIONS AND STREET WIDTHS NOT SHOWN, COORDINATE WITH THE C.O.S.L., ENGINEERING DEPARTMENT (281) 275-2780
21. PRIOR TO PLACING MARKING, CONTACT COSL TO COORDINATE AND REVIEW IN THE FIELD. COORDINATE WITH THE C.O.S.L., ENGINEERING DEPARTMENT (281) 275-2780

SL-ST-61

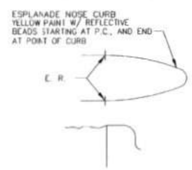
STANDARD TYPE



NOTES:

(1) WHEN POSSIBLE, PLACE CROSSBAR MARKINGS TO AVOID WHEELPATHS

TYPICAL CROSSWALK PLACEMENT SL-ST-51



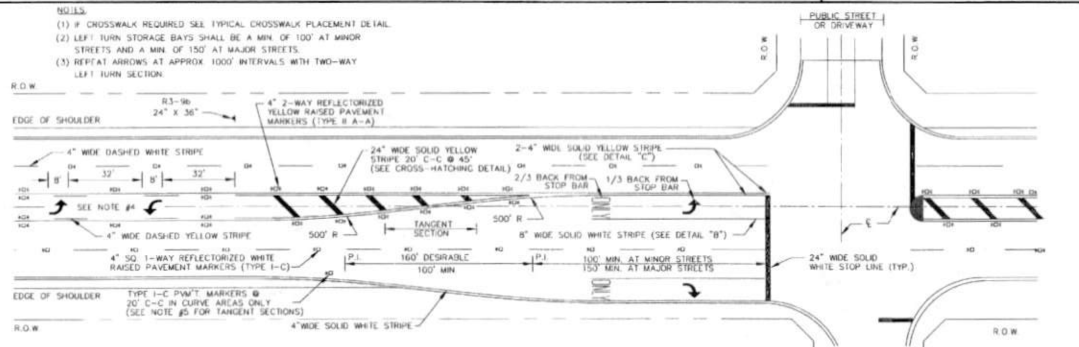
TYPICAL CURB SECTION

PAINT FROM THE BACK OF CURB TO THE GUTTER LINE

DETAIL "D" SL-ST-58

NOTES:

(1) IF CROSSWALK REQUIRED SEE TYPICAL CROSSWALK PLACEMENT DETAIL.
(2) LEFT TURN STORAGE BAYS SHALL BE A MIN. OF 100' AT MINOR STREETS AND A MIN. OF 150' AT MAJOR STREETS.
(3) REPEAT ARROWS AT APPROX 1000' INTERVALS WITH TWO-WAY LEFT TURN SECTION.



TYPICAL TWO-WAY LEFT TURN SECTION SL-ST-52

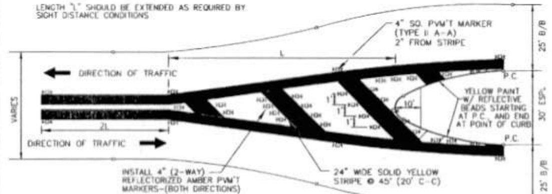
NOTE:

FOR SPEEDS 45 MPH OR MORE L=0.62 WS (L=WS)
FOR SPEEDS LESS THAN 45 MPH $L= WS^2/155$ ($L=WS^2/60$)
S=POSTED, 85TH-PERCENTILE, OR STATUTORY SPEED IN MPH
W= OFFSET DISTANCE IN FEET

MAXIMUM LENGTH OF: L= 100 FT IN URBAN AREAS
L= 200 FT IN RURAL AREAS

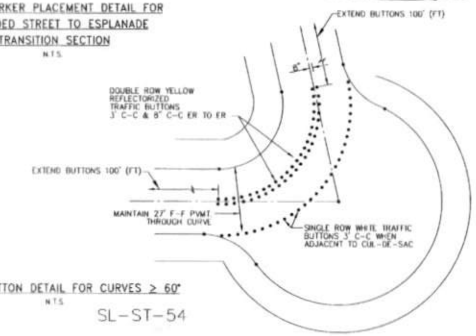
LENGTH "L" SHOULD BE EXTENDED AS REQUIRED BY SIGHT DISTANCE CONDITIONS

SL-ST-53



PVM'T MARKER PLACEMENT DETAIL FOR UNDIVIDED STREET TO ESPLANADE TRANSITION SECTION

N.T.S.

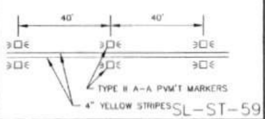


TYPICAL BUTTON DETAIL FOR CURVES ≥ 60°

N.T.S.

SL-ST-54

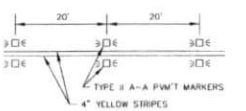
CENTER LINE DETAIL
TANGENT SECTION



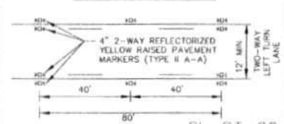
SL-ST-59

SL-ST-59

CENTER LINE DETAIL
CURVE SECTION

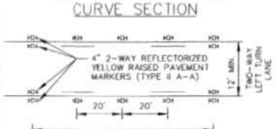


TWO-WAY LEFT TURN
TANGENT SECTION



SL-ST-60

TWO-WAY LEFT TURN
CURVE SECTION



SL-ST-60

NO.	DATE	REVISION

SEAL: STATE OF TEXAS — GUY L. HUMPHREY — 106072 — LICENSED PROFESSIONAL ENGINEER

DESIGN ENGINEER DATE 8/18/15
TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:
THE VILLAS AT RIVERSTONE

PAVEMENT MARKING DETAILS

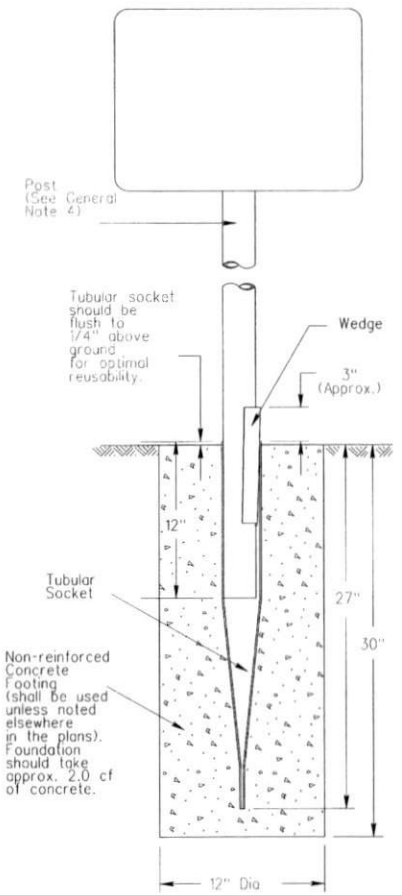
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-28

SHEET OF

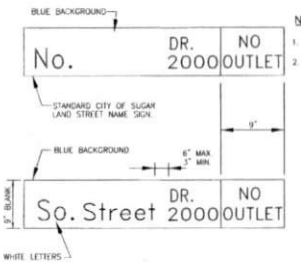
CAD FILE PATH:
PLOT DATE:
PLOT TIME:

Wedge Anchor System



SM RD SGN ASSM TY TWT(X)WA(P)

SL-ST-62



NOTES:
1. HELVETICA BOLD, MEDIUM STYLE; WITH 6" UPPER CASE LETTERS AND 4" LOWER CASE LETTERS.
2. REFER TO C.O.S.L. DESIGN STANDARDS FOR MORE INFO.

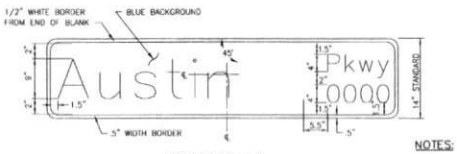
DETAIL OF STANDARD STREET NAME SIGN

SL-ST-66

GENERAL CONSTRUCTION NOTES:

1. SECURELY ATTACH STREET NAME SIGN TO TRAFFIC SIGNAL SUPPORT WIRES WITH MULTI-LEVELING, WIND DUMPING BRACKETS.
2. SUPPORT WIRES SHOULD NOT BE PROHIBITED FROM INDEPENDENT MOVEMENT.
3. INSTALL ONE STREET NAME SIGN APPROXIMATE 2' FROM POLE ABOVE ON-COMING TRAFFIC ON EACH TRAFFIC SIGNAL SPAN.
4. THE FIRST LETTER OF EACH WORD SHALL BE UPPER CASE, SUBSEQUENT LETTERS SHALL BE LOWER CASE, ALL INDIVIDUAL LETTERS FOR EXAMPLE "F.M." SHALL BE UPPER CASE. STREET SUFFIXES & "NO OUTLET" SHALL BE UPPER CASE.
5. ALL SHEETING SHALL BE "DIAMOND GRADE" OR APPROVED EQUAL.
6. USE ANODIZED BLANKS ONLY.
7. STREET SIGN FONTS SHALL BE HELVETICA BOLD, MEDIUM STYLE
8. MINIMUM SIGN THICKNESS: 9" SIGNS = .080", 14" SIGNS = .1875"

SL-ST-68



DETAIL OF SIGN FOR MAST ARM TRAFFIC SIGNAL POLES

NOTES:
1. HELVETICA BOLD, MEDIUM STYLE, WITH 9" UPPER CASE LETTERS AND 6" LOWER CASE LETTERS.
2. REFER TO C.O.S.L. DESIGN STANDARDS FOR MORE INFO.

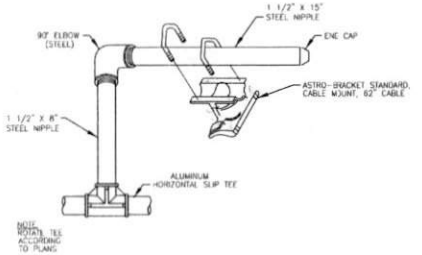
SL-ST-67

SIGN I.D. TAG DETAIL

SL-ST-68

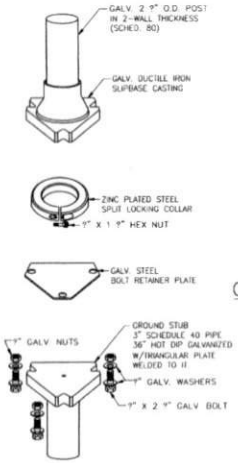
MAST ARM:

1. 2 EACH ASTRO FOR 4 SECTION AND LARGER TRAFFIC SIGNAL HEADS.



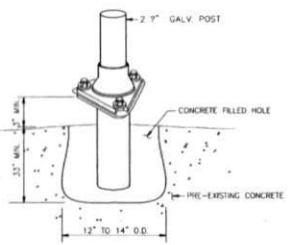
ASTRO BRACKET CABLE MOUNT DETAIL

SL-ST-63



POZ-LOCK SLIPBASE SYSTEM
NTS

SL-ST-64



CONCRETE SIGN PEDESTAL
NTS

SL-ST-65

NOTES:
1.) FILL HOLE TO GROUND LEVEL.
2.) PRESS BASE INTO CENTER OF CONCRETE.
3.) LEVEL BASE 3" ABOVE GROUND.
4.) TIGHTEN (TORQUE) NUTS BETWEEN 60 TO 80 FT/LB MAX.

No.	DATE	REVISION

SEAL:
THE STATE OF TEXAS
GUY L HUMPHREY
106072
LICENSED PROFESSIONAL ENGINEER

DESIGN ENGINEER: _____ DATE 8/15/15
TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:
THE VILLAS AT RIVERSTONE

SIGN CONSTRUCTION DETAILS

JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-32

SHEET OF

PLOT TIME:

CAD FILE PATH:
XREF DATE:

HYPER-CHLORINATED WATER NOTES

1. HYPER-CHLORINATED WATER SHALL NOT BE DISCHARGED TO THE STORM SEWER OR DRAINAGE SYSTEM UNLESS THE CHLORINE CONCENTRATION IS REDUCED TO 4 PPM OR LESS BY CHEMICALLY TREATING THE DECHLORINATE OR BY ONSITE RETENTION UNTIL NATURAL ATTENUATION OCCURS.
2. DISCHARGE OF HIGH FLOW RATE AND VELOCITIES SHALL BE DIRECTED TO VELOCITY DISSIPATION DEVICES.
3. CHLORINE CAN BURN VEGETATION, SO IT SHOULD NOT BE USED TO WATER VEGETATION THAT IS BEING USED FOR STABILIZATION, VEGETATED FILTERS OR BUFFERS, OR OTHER VEGETATION TO BE PRESERVED.
4. HYPER-CHLORINATED WATER MAY BE DISCHARGED TO AN ONSITE RETENTION AREA UNTIL NATURAL ATTENUATION OCCURS. THE AREA MAY BE A DRY STORMWATER RETENTION BASIN, OR A PORTION OF THE SITE MAY BE GRADED TO FORM A TEMPORARY PIT OR BERMED AREA.
5. NATURAL ATTENUATION OF THE CHLORINE MAY BE AIDED BY AERATION. AIR CAN BE ADDED TO THE WATER BY DIRECTING THE DISCHARGE OVER A ROUGH SURFACE BEFORE IT ENTERS THE TEMPORARY RETENTION AREA OR AN AERATION DEVICE CAN BE PLACED IN THE RETENTION AREA.
6. ONSITE DISCHARGE MAY REQUIRE SEVERAL HOURS TO A FEW DAYS BEFORE THE WATER IS SAFE TO DISCHARGE. THE RATE AT WHICH CHLORINE WILL ATTENUATE IS AFFECTED BY SOIL CONDITIONS AND WEATHER CONDITIONS. ATTENUATION WILL OCCUR QUICKEST DURING WARM, SUNNY, AND DRY PERIODS.

SANITARY WASTE NOTES

1. THE CONTRACTOR SHALL PROVIDE AN APPROPRIATE NUMBER OF PORTABLE TOILETS BASED ON THE NUMBER OF EMPLOYEES USING THE TOILETS AND THE HOURS THEY WILL WORK.
2. SANITARY FACILITIES SHALL BE PLACED ON A MINIMUM OF 50 FEET AWAY FROM STORM DRAIN INLETS, CONVEYANCE, CHANNELS OR SURFACE WATERS. IF UNABLE TO MEET THE 50 FOOT REQUIREMENT DUE TO SITE CONFIGURATION, PORTABLE TOILETS SHALL BE A MINIMUM OF 20 FEET AWAY FROM STORM DRAIN INLETS, CONVEYANCE CHANNELS OR SURFACE WATER AND SECONDARY CONTAINMENT SHALL BE PROVIDE IN CASE OF SPILLS.
3. THE LOCATION OF THE PORTABLE TOILETS SHALL BE ACCESSIBLE TO MAINTENANCE TRUCKS WITHOUT DAMAGING EROSION AND SEDIMENT CONTROLS OR CAUSING EROSION OR TRACKING PROBLEMS.
4. SANITARY FACILITIES SHALL BE FULLY ENCLOSED AND DESIGNED IN A MANNER THAT MINIMIZES THE EXPOSURE OF SANITARY WASTE TO PRECIPITATION AND STORMWATER RUNOFF.
5. WHEN HIGH WINDS ARE EXPECTED, PORTABLE TOILETS SHALL BE ANCHORED OR OTHERWISE SECURED TO PREVENT THEM FROM BEING BLOWN OVER.
6. THE COMPANY THAT SUPPLIES AND MAINTAINS THE PORTABLE TOILETS SHALL BE NOTIFIED IMMEDIATELY IF A TOILET IS TIPPED OVER OR DAMAGED IN A WAY THAT THE RESULTS IN A DISCHARGE. DISCHARGED SOLID MATTER SHALL BE VACUUMED INTO A SEPTIC TRUCK BY THE COMPANY THAT MAINTAINS THE TOILETS.
7. THE OPERATOR OF THE MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) SHALL BE NOTIFIED IF A DISCHARGE FROM THE PORTABLE TOILETS ENTERS THE MS4 OR A NATURAL CHANNEL.
8. SANITARY FACILITIES SHALL NOT BE PERMITTED ON PUBLIC SIDEWALKS, STREETS OR INLETS.

DEBRIS AND TRASH NOTES

1. ALL WASTE SOURCES AND STORAGE AREAS SHALL BE LOCATED A MINIMUM OF 50 FEET AWAY FROM INLETS, SWALES, DRAINAGE WAYS, CHANNELS AND OTHER WATERS, IF THE SITE CONFIGURATION PROVIDES SUFFICIENT SPACE TO DO SO. IN NO CASE SHALL MATERIAL AND WASTE SOURCES BE CLOSER THAN 20 FROM INLETS, SWALES, DRAINAGE WAYS, CHANNELS, AND OTHER WATERS.
2. CONSTRUCTION WASTE AND TRASH SHALL BE STORED IN A MANNER THAT MINIMIZES ITS EXPOSURE TO PRECIPITATION AND STORMWATER RUNOFF.
3. WHENEVER POSSIBLE, MINIMIZE PRODUCTION OF DEBRIS AND TRASH.
4. INSTRUCT CONSTRUCTION WORKERS IN PROPER DEBRIS AND TRASH STORAGE AND HANDLING PROCEDURES.
5. SEGREGATE POTENTIAL HAZARDOUS WASTE FROM NON-HAZARDOUS CONSTRUCTION SITE DEBRIS.
6. PROHIBIT LITTERING BY WORKERS AND VISITORS.
7. POLICE SITE DAILY FOR LITTER AND DEBRIS.
8. ENFORCE SOLID WASTE HANDLING AND STORAGE PROCEDURES.
9. IF FEASIBLE, RECYCLE CONSTRUCTION AND DEMOLITION DEBRIS SUCH AS WOOD, METAL, AND CONCRETE.
10. TRASH AND DEBRIS SHALL BE REMOVED FROM THE SITE AT REGULAR INTERVALS THAT ARE SCHEDULED TO EMPTY CONTAINERS WHEN THEY ARE 90 PERCENT FULL OR MORE FREQUENTLY.
11. GENERAL CONSTRUCTION DEBRIS MAY BE HAULED TO A LICENSED CONSTRUCTION DEBRIS LANDFILL.
12. USE WASTE AND RECYCLING HAULERS/FACILITIES APPROVED BY THE LOCAL MUNICIPALITY.
13. CHIPPING OF TREES AND BRUSH FOR USE SUCH AS MULCH IS PREFERRED ALTERNATIVE TO OFFSITE DISPOSAL.
14. NO WASTE, TRASH, OR DEBRIS SHALL BE BURIED, BURNED OR OTHER WISE DISPOSED OF ONSITE.
15. CLEARLY MARK ON ALL DEBRIS AND TRASH CONTAINERS WHICH MATERIALS ARE ACCEPTABLE. FOREMAN AND/OR CONSTRUCTION SUPERVISOR SHALL MONITOR ONSITE SOLID WASTE STORAGE AND DISPOSAL PROCEDURES DAILY.

SPILL AND LEAK RESPONSE NOTES

1. RECORDS OF RELEASES THAT EXCEED THE REPORTABLE QUANTITY (RQ) FOR OIL AND HAZARDOUS SUBSTANCES SHOULD BE MAINTAINED IN ACCORDANCE WITH THE FEDRAL AND STATE REGULATIONS.
2. EMERGENCY CONTACT INFORMATION AND SPILL RESPONSE PROCEDURES SHALL BE POSTED IN A READILY AVAILABLE REA FOR ACCESS BY ALL EMPLOYEES AND SUBCONTRACTORS.
3. SPILL CONTAINMENT KITS SHOULD BE MAINTAINED FOR PETROLEUM PRODUCTS AND OTHER CHEMICALS THAT ARE REGULARLY ONSITE. MATERIALS IN KITS SHOULD BE BASED ON CONTAINMENT GUIDELINES IN THE MATERIALS SAFETY AND DATA SHEETS (MSDSS) FOR THE SUBSTANCE MOST FREQUENTLY ONSITE.
4. SPILL KITS ARE INTENDED FOR RESPONSE TO SMALL SPILLS, TYPICALLY LESS THAN 5 GALLONS, OF SUBSTANCES THAT ARE NOT EXTREMELY HAZARDOUS.
5. SIGNIFICANT SPILLS OR OTHER RELEASES WARRANT IMMEDIATE RESPONSE BY TRAINED PROFESSIONALS.
6. SUSPECTED JOB-SITE CONTAMINATION SHOULD BE IMMEDIATELY REPORTED TO REGULATORY AUTHORITIES AND PROTECTIVE ACTIONS TAKEN.
7. THE CONTRACTOR SHOULD BE REQUIRED TO DESIGNATE A SITE SUPERINTENDENT, FOREMAN, SAFETY OFFICER, OR OTHER SENIOR PERSON WHO IS ONSITE DAILY TO BE THE SPILL AND LEAK RESPONSE COORDINATOR (SLRC) AND MUST HAVE KNOWLEDGE OF AND BE TRAINED IN CORRECT SPILL AND LEAK RESPONSE PROCEDURES.

SUBGRADE STABILIZATION NOTES

1. MINIMIZE THE DISCHARGE OF THE CHEMICAL STABILIZERS BY THE CONTRACTOR LIMITING THE AMOUNT OF STABILIZING AGENT ONSITE TO THAT WHICH CAN BE THOROUGHLY MIXED AND COMPACTED BY THE END OF EACH WORKDAY.
2. STABILIZERS SHALL BE APPLIED AT RATES THAT RESULT IN NO RUN OFF.
3. STABILIZATION SHALL NOT OCCUR IMMEDIATELY BEFORE AND DURING RAINFALL EVENTS.
4. NO TRAFFIC OTHER THAN WATER TRUCKS AND MIXING EQUIPMENT SHALL BE ALLOWED TO PASS OVER THE AREA BEING STABILIZED UNTIL AFTER COMPLETION OF MIXING THE CHEMICAL.
5. AREA ADJACENT AND DOWNSTREAM OF STABILIZED AREAS SHALL BE ROUGHENED TO INTERCEPT CHEMICAL RUNOFF AND REDUCE RUNOFF VELOCITY.
6. GEOTEXTILE FABRICS SUCH AS THOSE USED FOR SILT FENCE SHOULD NOT BE USED TO TREAT CHEMICAL RUNOFF, BECAUSE THE CHEMICALS ARE DISSOLVED IN THE WATER AND WON'T BE AFFECTED BY A BARRIER AND THE SUSPENDED SOLIDS ARE SIGNIFICANTLY SMALLER THAN THE APPARENT OPENING SIZE OF THE FABRIC.
7. IF SOIL STABILIZERS ARE STORED ONSITE, THEY SHALL BE CONSIDERED HAZARDOUS MATERIAL AND SHALL BE MANAGED ACCORDING TO THE CRITERIA OF CHEMICAL MANAGEMENT TO CAPTURE ANY ACCIDENTAL LIME OR CHEMICAL OVERFLOW.
8. THE CONTRACRTOR SHALL INSTALL BMP'S TO ALL INLETS AND OPENINGS CONNECTED TO THE STORM SEWER SYSTEMS TO PREVENT LIME FROM ENTERING THE MS4 SYSTEM.

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER: _____ DATE 9/15/15

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

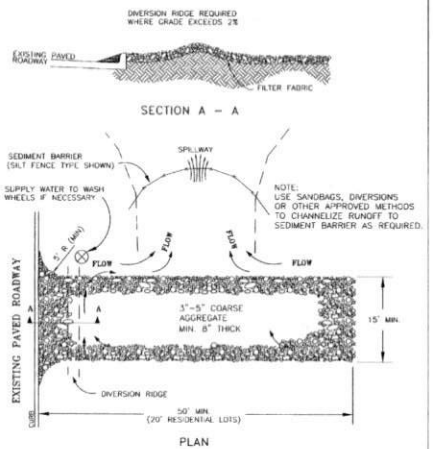
THE VILLAS AT RIVERSTONE

GENERAL EROSION CONTROL NOTES

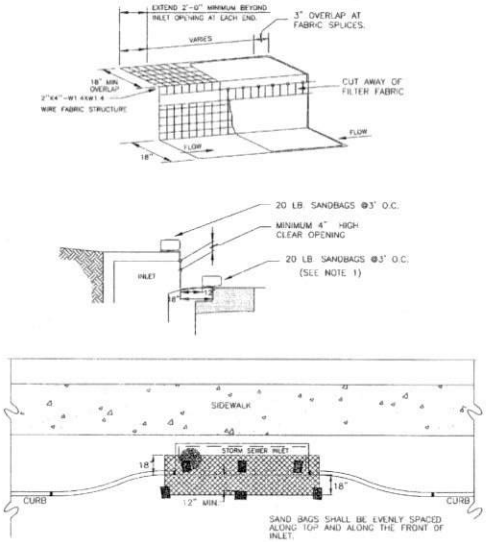
JOB No.: DATE: DESIGNED BY: DRAWN BY: CHECKED BY: SCALE:	SL-33 SHEET OF

PLOT TIME

CAD FILE PATH:
PLOT DATE



TEMPORARY STONE CONSTRUCTION ENTRANCE/EXIT
N.T.S.

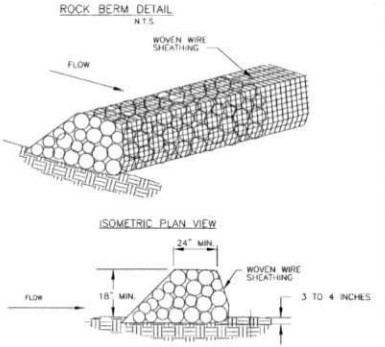


CURB INLET PROTECTION DETAIL
N.T.S.

NOTES:

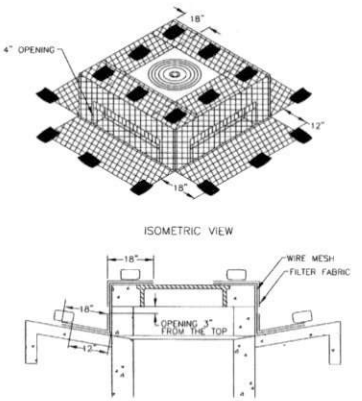
1. A SECTION OF FILTER FABRIC SHALL BE REMOVED AS SHOWN ON THIS DETAIL TO PROVIDE A 4" MINIMUM CLEAR OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
2. INSPECTION SHALL BE MADE BY CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 2".
3. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY REMOVE THE INLET PROTECTION IF THE STORMWATER BEGINS TO OVERTOP THE CURB.
4. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF THE SEDIMENT IS STABILIZED.

INLET OPENING	MINIMUM NUMBER OF SAND BAGS	
	TOP	FRONT
5'	2	3
13'	3	3
15'	3	4
23'	4	4

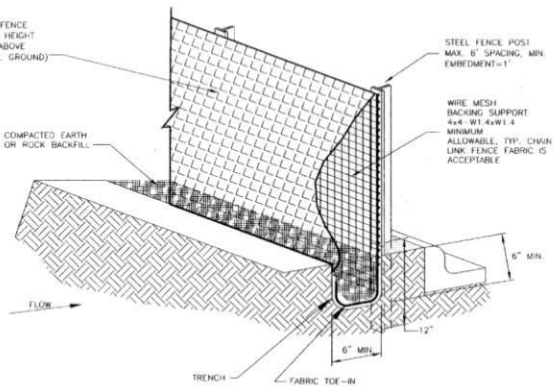


ROCK BERM GENERAL NOTES

1. USE ONLY OPEN GRADED ROCK 4–8 INCHES IN DIAMETER FOR STREAM FLOW CONDITION. USE OPEN GRADED ROCK 3–5 INCHES IN DIAMETER FOR OTHER CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING A MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE SIZE OF 20 GAUGE AND SHALL BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP.
3. THE ROCK BERM SHALL BE INSPECTED EVERY TWO WEEKS OR AFTER EACH 1/2" RAIN EVENT AND SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD OF THE HEIGHT OF THE BERM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF PROPERLY.
5. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.
6. ROCK BERM SHOULD BE USED AS CHECK DAMS FOR CONCENTRATED FLOW AND ARE NOT INTENDED FOR USE IN PERIMETER PROTECTION.



FILTER FABRIC WYE INLET PROTECTION
N.T.S.

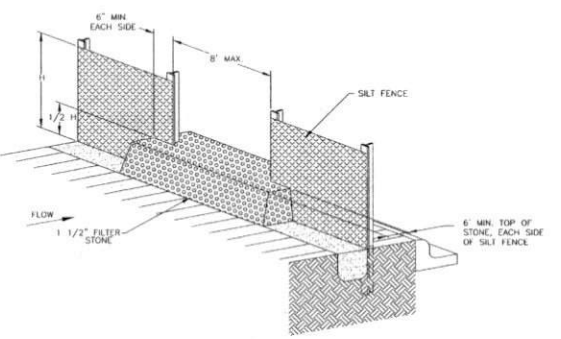


ISOMETRIC PLAN VIEW
N.T.S.

SILT FENCE GENERAL NOTES

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SLEEPING UNDER FENCE.
3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IN TURN IS ATTACHED TO THE STEEL FENCE POST. THERE SHALL BE A 3' FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
5. INSPECTION SHALL BE MADE EVERY TWO WEEKS AND AFTER EACH 1/2" RAINFALL. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.

NOTE: STONE OVERFLOW STRUCTURES OF OTHER OUTLET CONTROL DEVICES SHALL BE INSTALLED AT ALL LOW POINTS ALONG THE FENCE OR EVERY 300 FEET IF THERE IS NO APPARENT LOW POINT.



SILT FENCE
STONE OVERFLOW STRUCTURE
N.T.S.

NO.	DATE	REVISION

SEAL

STATE OF TEXAS
GUY L. HUMPHREY
100072
LICENSED
PROFESSIONAL ENGINEER

DATE 8/18/15

DESIGN ENGINEER TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

EROSION CONTROL DETAILS – 1

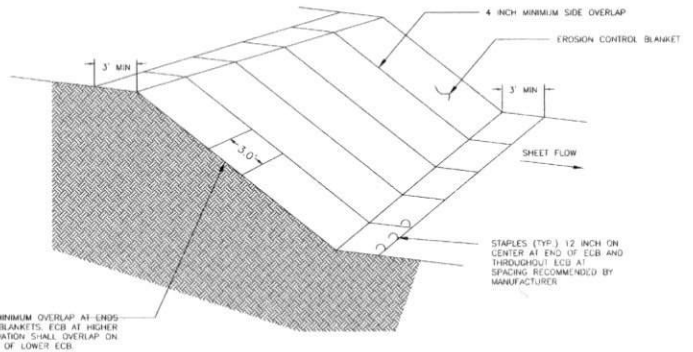
JOB No.:
DATE:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SCALE:

SL-34

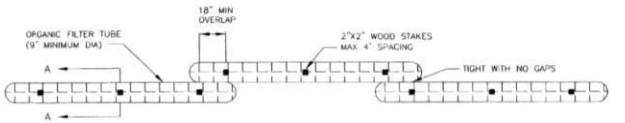
SHEET OF

PLOT TIME

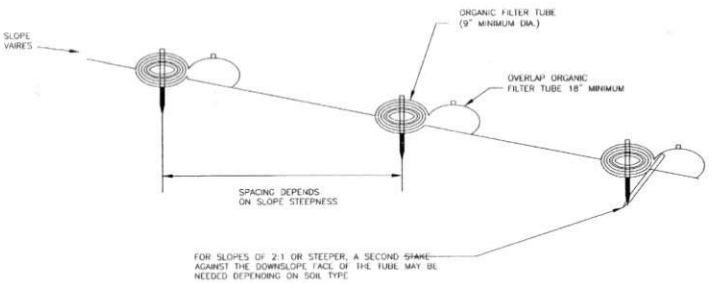
CAD FILE PATH:
PLOT DATE:



EROSION CONTROL BLANKETS
N.T.S.



ORGANIC FILTER TUBE PERIMETER CONTROL PLAN VIEW
N.T.S.

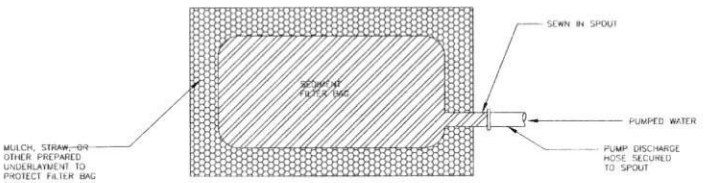


ORGANIC FILTER TUBE PERIMETER CONTROL PROFILE
N.T.S.

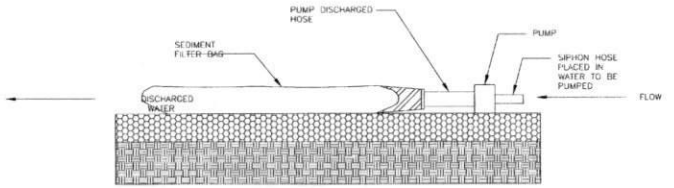
ORGANIC FILTER TUBES NOTES

1. TYPE OF NETTING, FILTER MATERIAL, DIAMETER OF TUBE, AND SPACING OF TUBES SHALL BE SPECIFIED BY THE DESIGNER BASED ON THE FOLLOWING SITE PARAMETERS:
   - SIZE OF CONTRIBUTING DRAINAGE AREA
   - STEEPNESS OF SLOPE
   - GROUND CONDITIONS (SOIL OR PAVEMENT)
2. DESIGNER SHALL SHOW ON THE DRAWINGS THE LOCATIONS WHERE TUBE ARE TO BE TURNED UPSLOPE. UPSLOPE LENGTHS SHALL BE MINIMUM OF 10 FEET.

FILTER TUBE
N.T.S.



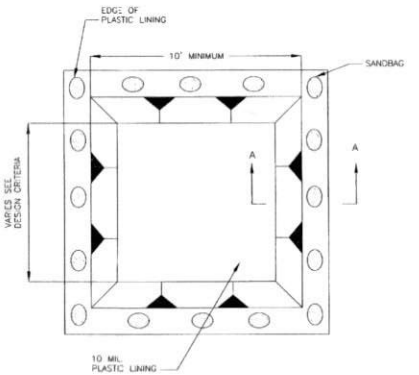
SEDIMENT FILTER BAG PLAN VIEW
N.T.S.



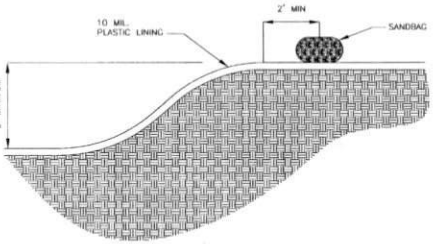
SEDIMENT FILTER BAG PROFILE
N.T.S.

NOTE: A FILTRATION BAG IS NOT REQUIRED IF IF THE DRAINAGE SYSTEM CAN BE ADEQUATELY PROTECTED

DEWATERING CONTROLS
N.T.S.



CONCRETE WASHOUT PLAN VIEW
N.T.S.



CONCRETE WASHOUT SECTION A-A
N.T.S.

CONCRETE WASHOUT NOTES

1. SANDBAGS MAYBE REPLACED BY A SOIL BERM TO ANCHOR THE PLASTIC BAG

CONCRETE WASHOUT AREA
N.T.S.

No.	DATE	REVISION

SEAL:

STATE OF TEXAS
GUY L. HUMPHREY
106072
LICENSED
PROFESSIONAL ENGINEER

DESIGN ENGINEER: _____ DATE: 8/1/16

TBPE FIRM REG. No. 280

CITY OF SUGAR LAND, TEXAS
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

THE VILLAS AT RIVERSTONE

EROSION CONTROL DETAILS - 2

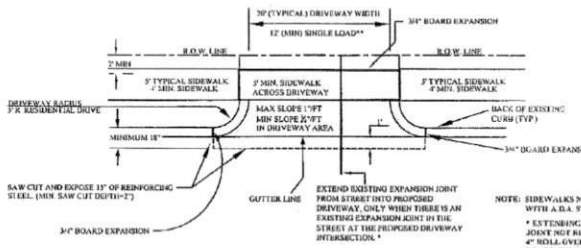
JOB No.:	SL-35
DATE:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
SCALE:	SHEET OF

PLOT TIME:

DAE FILE PATH:
PLOT DATE:

WHEN A RESIDENTIAL SIDEWALK, DRIVEWAY, CURB OR GUTTER IS CONSTRUCTED, RECONSTRUCTED, REPAIRED OR REGRADED ON COUNTY RIGHT-OF-WAY. FOR USE WITH CONCRETE OR ASPHALT CURB TYPE STREETS, USE SECTIONS APPLICABLE.

A. USE FOR ALL PROPOSED EXISTING CURB REMOVAL FOR DRIVEWAYS (PLAN VIEW NOT TO SCALE)

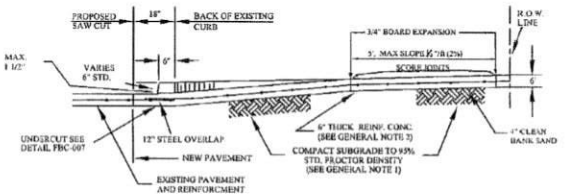


NOTE: SIDEWALKS MUST COMPLY WITH A.D.A. STANDARDS.

* EXTENDING OF EXPANSION JOINT NOT REQUIRED FOR 4" ROLL OVER CURB BUT 1" BOARD EXPANSION JOINT MUST BE PROVIDED BACK OF CURB.

** ANY OTHER SIZE MUST BE APPROVED BY COUNTY ENGINEER

B. USE FOR ALL PROPOSED DRIVES ON CURBED TYPE STREETS



GENERAL NOTES:

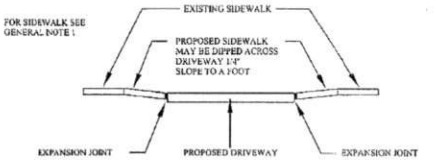
1. COMPACT SUBGRADE FOR PROPOSED DRIVEWAY CONNECTION FROM PROPOSED SAW CUT AT EXISTING PAVEMENT TO R.O.W. LINE. COMPACT TO 95% OF STANDARD PROCTOR DENSITY(+/- 2% OPT. MOISTURE). THE COUNTY ENGINEER RESERVES THE RIGHT TO REQUIRE LABORATORY TESTS TO BE CONDUCTED.
2. PROPOSED DRIVEWAY REINFORCING STEEL IS TO BE #4 DEFORMED REINFORCING BARS (ASTM A615, GRADE 60, UNLESS NOTED) SPACED AT 24" C.C., EACH WAY, WITH 12" MINIMUM LAP FROM PROPOSED SAW CUT TO R.O.W. LINE.
3. PROPOSED DRIVEWAY SHALL BE CONSTRUCTED WITH PORTLAND CEMENT (5 SACKS (3000 PSI) OF CEMENT PER CUBIC YARD OF CONCRETE), CLASS "A" STRUCTURAL (REFER TO SPECIFICTION 03301), 6" THICK, FROM PROPOSED SAW CUT TO R.O.W. LINE.
4. PROPOSED SIDEWALK SHALL BE CONSTRUCTED WITH PORTLAND CEMENT (5 SACKS (3000 PSI) OF CEMENT PER CUBIC YARD OF CONCRETE), CLASS "A" STRUCTURAL (REFER TO SPECIFICTION 03301), 4" THICK.
5. FOR TYPICAL SIDEWALK DETAIL SEE FBC-011.

SIDEWALKS & DRIVEWAYS ON CURB TYPE STREETS RESIDENTIAL AREA	DRAWN BY: L. BRDECKA DATE DRAWN: 2-1-94	REVISED BY: J. NETARDUS DATE REVISED: 4-7-09
	APPROVED BY: L. HOOD DATE: 2-1-94	DRAWING NO. FBC-010A

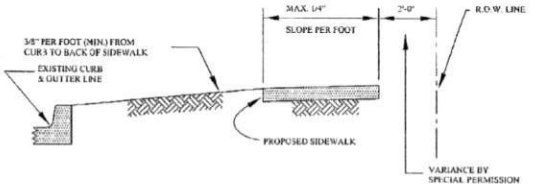
FORT BEND COUNTY ENGINEERING DEPARTMENT

WHEN A RESIDENTIAL SIDEWALK, DRIVEWAY, CURB OR GUTTER IS CONSTRUCTED, RECONSTRUCTED, REPAIRED OR REGRADED ON COUNTY RIGHT-OF-WAY. FOR USE WITH CONCRETE OR ASPHALT CURBED TYPE STREETS, USE SECTIONS APPLICABLE.

C. USE WHEN PROPOSED DRIVEWAY IS TO BE BUILT WITH EXISTING SIDEWALKS WITH EXCESSIVE GRADE:



D. USE WHEN SIDEWALK TO BE BUILT OTHER THAN DRIVEWAY:



GENERAL NOTES:

1. PROPOSED SIDEWALK SHALL BE CONSTRUCTED WITH PORTLAND CEMENT (5 SACKS (3000 PSI) OF CEMENT PER CUBIC YARD OF CONCRETE), CLASS "A" STRUCTUAL (REFER TO SPECIFICATION 03301), 4" THICK AND MINIMUM 4' WIDTH.

SIDEWALKS & DRIVEWAYS ON CURB TYPE STREETS RESIDENTIAL AREA	DRAWN BY: L. BRDECKA DATE DRAWN: 2-1-94	REVISED BY: R. GOMEZ DATE REVISED: 11-1-05
	APPROVED BY: L. HOOD DATE: 2-1-94	DRAWING NO. FBC-010B

FORT BEND COUNTY ENGINEERING DEPARTMENT

GENERAL NOTES FOR SIDEWALKS AND DRIVEWAYS

1. PROPOSED DRIVEWAY, SIDEWALK, CURB, GUTTER LINE AND GRADE SHALL MATCH EXISTING STREET.
2. PROPOSED SIDEWALK SHALL BE CONSTRUCTED WITH PORTLAND CEMENT, CLASS A STRUCTURAL (REFER TO SPECIFICATION 03301), 4 INCHES THICK AND 4 FEET MINIMUM WIDTH.
3. PROPOSED DRIVEWAY AND CURB SHALL BE BUILT WITH PORTLAND CEMENT CONCRETE, CLASS A STRUCTURAL (REFER TO SPECIFICATION 03301), 6 INCHES THICK, FROM PROPOSED SAW CUT AT EXISTING PAVEMENT TO RIGHT-OF-WAY LINE AND TO BE REINFORCED WITH #4 DEFORMED REINFORCING BARS (MINIMUM, ASTM A615 GRADE 60, UNLESS NOTED) SPACED AT 24 INCHES C.C., EACH WAY, WITH 10 INCHES MINIMUM LAP.
4. PROPOSED DRIVEWAY REINFORCING STEEL IS TO BE TIED TO EXISTING ROADWAY REINFORCING STEEL WITH A MINIMUM 12 INCHES LAP.
5. PROPOSED GUTTER LINE IS TO BE MAINTAINED AT FACE OF EXISTING CURB.
6. SAW CUT EXISTING CURB AT EACH END OF PROPOSED DRIVEWAY AND KNOCK OUT EXISTING CURB.
7. SAW CUT EXISTING PAVEMENT MINIMUM 2 INCHES AND BREAK OUT TO EXPOSE EXISTING REINFORCEMENT STEEL. AT LEAST 12 INCHES AT PROPOSED DRIVEWAY INTERSECTION. FULL DEPTH CUT IS ACCEPTABLE PROVIDING 15" LONG SPALL IN BOWLS ARE INSTALLED AT 4 SPACING TO MATCH EXISTING WITH A MIN. 6" EMBEDMENT.
8. COMPACT SUBGRADE FOR PROPOSED DRIVEWAY CONNECTION FROM PROPOSED SAW CUT AT EXISTING PAVEMENT TO RIGHT-OF-WAY LINE. COMPACT TO 95% OF STANDARD PROCTOR DENSITY (+/- 2% OPT. MOISTURE). THE COUNTY ENGINEER RESERVES THE RIGHT TO REQUIRE LABORATORY TESTS IF HE DEEMS THEM NECESSARY.
9. PLACE AND COMPACT 4 INCH CLEAN BANK SAND.
10. PROPOSED AREA FROM BACK OF CURB TO SIDEWALK AND FROM SIDEWALK TO RIGHT-OF-WAY LINE MAY BE CONCRETE OR GRIT (ROADWAYS WITH CURBS AND SIDEWALKS).
11. IF MORE THAN ONE PROPOSED DRIVEWAY IS BUILT ON THE SAME PROPERTY, SAID DRIVE WAYS SHALL SEPERATED BY A MINIMUM DISTANCE OF AT LEAST 20 FEET (ROADWAYS WITH CURBS AND SIDEWALKS).
12. SIDEWALKS SHALL HAVE 3/4 INCH PREMOLDED BOARD EXPANSION JOINTS EVERY 30 FEET ON CENTER
13. PLACE ONE-INCH BOARD EXPANSION JOINT AT RIGHT-OF-WAY LINE.
14. EXPANSION JOINT FILLER SHALL BE PRE FORMED CONFORMING TO AASHTO M-33 OR M-213 BITUMEN SIDEWALK AND CURB, AROUND FIRE HYDRANTS AND UTILITY POLES.

CONSTRUCTION NOTES FOR SIDEWALKS & DRIVEWAYS ON CURB TYPE STREETS RESIDENTIAL AREA	APPROVED BY: LOUIS E. HOOD, P.E.	DRAWN BY: L. BRDECKA
	DATE DRAWN: 10-4-95 REVISED:4-7-09	DRAWING NO.: FBC-010C

FORT BEND COUNTY ENGINEERING DEPARTMENT

APPROVED:
FORT BEND COUNTY ENGINEERING DEPARTMENT
DATE: 10-6-15

SIDEWALKS & DRIVEWAYS ON CURB TYPE STREETS RESIDENTIAL AREA		
FBC -010A, B & C		
JOB NO.:	DATE:	EXHIBIT NO.:

W:\Users\Arch\04 Riverstone\20150\02 Stonebrook Sec 2\FBC Sidewalk & Driveways Detail.dgn
8/19/2015 9:39:50 AM

Davis, DeWayne

From: Shawn Byron <sbyron@kgadeforest.com>
Sent: Tuesday, February 02, 2016 10:22 AM
To: Davis, DeWayne
Cc: landscape@kgadeforest.com
Subject: StoneCreek Estates Lighting
Attachments: County Comments.pdf; StoneCreek Estates Electrical.pdf; StonecreekEstatesRecCenter Lighting Cutsheets.pdf

DeWayne,

Attached is the revised drawings for the lighting and electrical for the StoneCreek Estates Recreation Center. I have provided the revised drawings, lighting cutsheets, and the original county comments. I believe that we have addressed the maximum of 3.0fc, have added a more defined limit of work, and added the 20ft buffer line on the photometric drawings. Please let me know if you have any questions and/or comments. I believe this is the last item that is needed prior to receiving final approval through Fort Bend County.

Shawn Byron
KGA DeForest Design, LLC
LANDSCAPE ARCHITECTURE
23501 Cinco Ranch Blvd., Suite A-250
Katy, TX 77494
Phone: 281.646.1602 Fax: 281.646.1641
Email: sbyron@kgadeforest.com

PERPETUAL BOND COVERING CABLE, CONDUIT AND/OR POLE LINE ACTIVITY IN, UNDER, ACROSS OR ALONG FORT BEND COUNTY ROADS (AUTHORIZED)

BOND NO. [redacted]

THE STATE OF TEXAS §

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF FORT BEND §

THAT WE, Jaho, Inc., 2003 Wilson Road, Humble, Texas 77396 Whose address is the Principal, and Fidelity and Deposit Company of Maryland, a Corporation existing under and by virtue of the laws of the stated of Maryland and authorized to do an indemnifying business in the State of Texas, and whose principal office is located at 1400 American Lane, Tower I, 18th Floor, Schaumburg, IL 60196, whose officer residing in the State of Texas, authorized to accept service in all suits and actions brought within said State is Tracy Haley and whose address is Zurich North America, 12222 Merit Dr., 8th Floor, Dallas TX 75251, hereinafter called the Surety, are held and firmly bound onto, Robert E. Herbert, County Judge of Fort Bend County, Texas, or his successors in office, in the full sum of Five Thousand and No/100------ Dollars ($ 5,000.00) current, lawful money of the United Stated of America, to be paid to said Robert E. Hebert, County Judge of Fort Bend County, Texas, or his successors in office, to which payment well and truly to be made and done, we, the undersigned, bind ourselves and each of us, our heirs, executors, administrator, successors, assigns, and legal representatives, jointly and severally, by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT, WHEREAS, the above bounden principal contemplates laying, constructing, maintaining and/or repairing one or more cables, conduits, and/or pole lines in, under, across and/or along roads, streets and highways in the County of Fort Bend, and the State of Texas, under the jurisdiction of the Commissioners' Court of Fort Bend County, Texas, pursuant to the Commissioners' Court order adopted on the 1st day of December, A.D. 1980, recorded in Volume 13, of the Commissioners' Court Minutes of Fort Bend County, Texas, regulating same, which Commissioners' Court order is hereby referred to and made a part hereof for all purposes as though fully set out herein.

AND WHEREAS, the principal desires to provide Fort Bend County with a perpetual bond covering all such cable, conduit and/or pole line activity;

NOW, THEREFORE, if the above bounden principal shall faithfully perform all its cable, conduit and/or pole line activity (including, but not limited to the laying, constructing, maintaining and/or repair of cables, conduits and/or pole lines) in, under, across and/or along roads, streets and highways in the County of Fort Bend and State of Texas, under the jurisdiction of the Commissioners Court of Fort Bend County, Texas, pursuant to and in accordance with minimum requirements and conditions of the above mentioned Commissioners' Court order set forth and specified to be by said principal done and performed, at the time and in the manner therein specified, and shall pay over and make good and reimburse Fort Bend County, all loss and damages which Fort Bend County may sustain by reason of any failure or default on the part of said principal, then this obligation shall be null and void otherwise to remain in full force and effect.

This bond is payable at the County Courthouse in the County of Fort Bend and State of Texas.

It is understood that at any time Fort Bend County deems itself insecure under this bond, it may require further and/or additional bonds of the principal.

EXECUTED this 4th day of February, 20 16.

Jaho, Inc.
PRINCIPAL

BY

Greg J. Pollard
Vice President

Fidelity and Deposit Company of Maryland
SURETY

BY Jessica Richmond, Attorney-in-Fact

ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by **THOMAS O. MCCLELLAN, Vice President,** in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint **Philip N. BAIR, Eric S. FEIGHL and Jessica RICHMOND, all of Houston, Texas, EACH** its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings, EXCEPT bonds on behalf of Independent Executors, Community Survivors and Community Guardians.** and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said **ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND**, this 25th day of November, A.D. 2015.

ATTEST:

ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND

By: _____
Secretary
Eric D. Barnes

_____
Vice President
Thomas O. McClellan

State of Maryland
County of Baltimore

On this 25th day of November, A.D. 2015, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **THOMAS O. MCCLELLAN, Vice President, and ERIC D. BARNES, Secretary,** of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

_____
Maria D. Adamski, Notary Public
My Commission Expires: July 8, 2019

EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify of revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this 4th day of February, 2016.

FIDELITY AND DEPOSIT COMPANY OF MARYLAND — INCORPORATED — 1890

ZURICH AMERICAN INSURANCE COMPANY — INCORPORATED — 1998

COLONIAL AMERICAN CASUALTY AND SURETY COMPANY — SEAL

Gerald F. Haley

Gerald F. Haley, Vice President