

REVIEW BY FORT BEND COUNTY COMMISSIONERS COURT

Fort Bend County Engineering Department 301 Jackson Suite 401

301 Jackson Suite 401 Richmond, Texas 77469 281.633.7500 Permits@fortbendcountytx.gov

	Priveway Permit									
Permit No: 2018-24	131									
Applicant: Gonzalez Construction Enterprise, Inc.	TV 77400									
Job Location Site: Canyon Fields Drive, Richmond,	1 × 7/406									
Bond No. Date of Bond: 7/30/	2015 Amount: \$50,000.00									
	sed by the Commissioners Court of Fort Bend County, t Bend County, Texas, to the extent that such order is not									
j										
grounds for job shutdown. 2. Written notices are required: a. 48 hours in advance of construction so the second process of the sec	 Evidence of review by the Commissioners Court must be kept on the job site and failure to do so constitutes grounds for job shutdown. Written notices are required: a. 48 hours in advance of construction start up, and b. When construction is completed and ready for final inspection, submit notification to Permit Administrator thru MyGovernmentOnline.org portal. This permit expires one (1) year from date of permit if construction has not commenced. 									
	d carried, it is ORDERED, ADJUDGED AND DECREED that said the Commissioners Court of Fort Bend County, Texas, and									
By: County Engineer	Presented to Commissioners Court and approved. Date Recorded 11-16-18 Comm. Court No.									
N/A By: Drainage District Engineer/Manager	Clerk of Commissioners Court By: Deputy Deputy									



Permit Administrator

PERMIT APPLICATION REVIEW FORM FOR CABLE, CONDUIT, AND POLE LINE ACTIVITY IN FORT BEND COUNTY

Fort Bend County Engineering Department 301 Jackson Suite 401

301 Jackson Suite 401 Richmond, Texas 77469 281.633.7500 Permits@fortbendcountytx.gov

Date

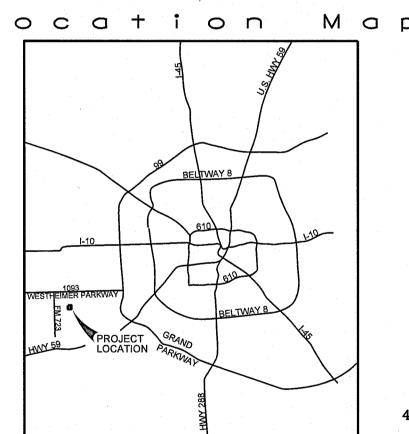
MEND COLOR	nt of Way Permit	
	nmercial Driveway Per	mit
	: 2018-24131	
T CITILE 140.	2010-24101	
The following "Notice of Proposed Cable, Condu attachments have been reviewed and the notic of Fort Bend County, Texas.		
(1) COMPLETE APPLICATION FORM:		
X a. Name of road, street, and/or	drainage ditch affected	I.
X b. Vicinity map showing course of		
X c. Plans and specifications		
(2) BOND:		
County Attorney, approval wher applicable.	1	
X Perpetual bond currently posted.	Bond No:	Amount: \$50,000.00
Performance bond submitted.	Bond No:	Amount:
Cashier's Check	Check No:	Amount:
(3) DRAINAGE DISTRICT APPROVAL (WHE	N APPLICABLE):	
Drainage District Approval	•	Date
We have reviewed this project and agree it m	neets minimum require	ements.
15/		11/5/2018

CONSTRUCTION PLANS WATER, DRAINAGE AND PAVING IMPROVEMENTS MIRANDOLA LANE EXTENSION

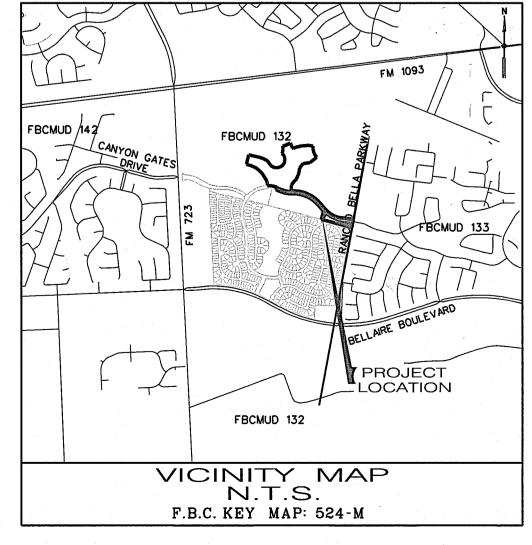
LOCATED IN FORT BEND COUNTY MUD No. 132 FORT BEND COUNTY, TEXAS

INDEX OF DRAWINGS

SHEET NO. DESCRIPTION



LAMBERT TILE 4353 A,B 4354 C,D ZIP CODE 77406



,											
		ETJ Detention Plans Information									
1. Storm Water De											
Is Provided in		ndero Detention Pond Phase 2 (ILN	IS: 16129	834)							
Engineering		stello Inc.									
Date:		oruary 14, 2017									
Signed By:		. Jon R. VanderWilt									
2. Storm Water Dr											
Report Title:		Update to the 586.4 acre Phase 1 Analysis for the Development of t	Analysis o he 932-a	of the Drainage cre Sendero Trac							
Date: October 27, 2015											
Engineering Firm: Costello Inc.											
Acknowledgement By: Fort Bend County Drainage District											
3. City of Houston	Drainage N	vlemo									
Memo Title: Drainage Memorandum for Sendero Sections 7, 8 and 9 and											
Date: July 27, 2018											
Sent to:		Ms. Ivy Wang									
Project Drainage A			300.8	Acres							
Overall Detention			300.8	Acres							
Existing Impervio	us Cover fo	r Project Area	96.4	Acres							
Proposed Impervi	ous Cover 1	for Project Area	113.2	Acres							
Increased Impervi			16.8	Acres							
Final Impervious C			194.4	Acres							
Detention Basin S				acre-feet/acre							
Overall Detention	Storage Re	eqired	163.9	acre-feet							
Overall Detention	Storage Pr	ovided	163.9	acre-feet							
		sed by Existing Development	92.4	acre-feet							
Detention Storage calculation(s) in di	Required rainage me	for Project Area (provide mo and plans)	11.8	acre-feet							
Detention Storage	Provided 1	for Project Area	11.8	acre-feet							
		emaining for Future Development	59.7	acre-feet							
				L							

"PLEASE SEE PROJECT MEMO FROM MR. JON VANDERWILT THAT IS DATED AUGUST 1, 2018 THAT STATES THAT CONSTRUCTION WILL NOT OCCUR UNTIL THE REQUIRED EASEMENTS HAVE BEEN GRANTED AND RECORDED IN THE OFFICIAL RECORDS OF FORT BEND COUNTY."

LAYOUT SHEETS OVERALL DRAINAGE LAYOUT PAVING, DRAINAGE, AND WATER LAYOUT PAVEMENT MARKING & SIGNAGE LAYOUT STORM CALCULATIONS (SHEET 1 OF 2) 5.1 STORM CALCULATIONS (SHEET 2 OF 2) PLAN AND PROFILE SHEETS MIRANDOLA LANE STA. 25.50.00 TO 35.00.00 MIRANDOLA LANE STA. 35.00.00 TO 45.00.00 IRIS HEIGHTS DRIVE, STORM LINE "A" & WATER LINE "A" RANCHO BELLA PKWY LEFT TURN LANE AND WATER LINE "B" & WATER LINE "C" MISCELLANEOUS AND DETAIL SHEETS *TxDOT - PEDESTRIAN FACILITIES CURB RAMPS (PED 18) PAVING DETAILS 13. PAVING MARKING DETAILS WATER MAIN DETAILS BEDDING DETAILS AND FORT BEND COUNTY SIDEWALK AND DRIVEWAY DETAILS POLLUTION PREVENTION PLAN LAYOUT 17. POLLUTION PREVENTION DETAILS TRAFFICE CONTROL DETAILS JUNCTION BOX PLAN & SECTIONS JUNCTION BOX DETAILS

FLOOD INSURANCE RATE MAP # 48751C0110L BFE ELEVATION 88.5 (Brazes) 92.31 (Jones Creek) THIS SITE IS IN ZONE X-UNSHADED

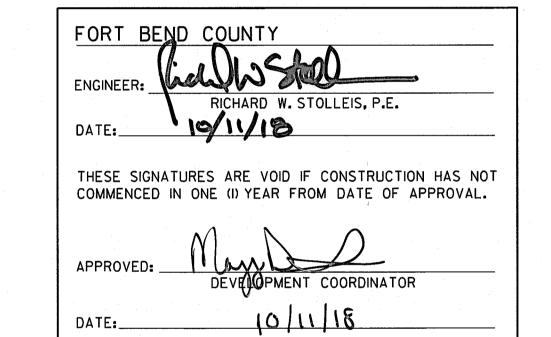


Gall before you dig. *NO PROPOSED WASTEWATER WORK IS

SHOWN ON THIS PLAN SET NOR INCLUDED IN THE WORK SCOPE.

> JOB NO. 2004117-CRM-DS-10 ILMS No. 18067921 LOG No. 18-1232

DATE: AUGUST, 2018



NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

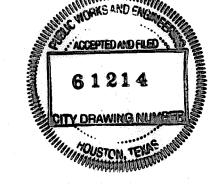
ostello	Engineering and Surveying 2107 CityWest Blvd, 3rd Floor Houston, Texas 77042 (713) 783-7788 (713) 783-3580, Fa TEXAS PE BOARD FIRM REGISTRATION No. 280	Jon R. VanderWilt 50071
VEYED BY:	COSTELLO, INC.	8/2/2018

OF HOUSTON

DEPARTMENT OF	F PUBLIC WORKS
WATER	TRAFFIC & TRANSPORTATION
Str 102/02/18	
enry Marie 8/2/16	STORM WATER QUALITY
STORM 2-2-18	FACILITIES
STREET & BRIDGE	

FOR CITY OF HOUSTON USE ONLY CITY DWG NO .:

DIRECTOR OF PUBLIC WORKS



ALL BEARINGS ARE BASED ON THE TEXAS STATE PLANE COORDINATE GRID SYSTEM, SOUTH CENTRAL ZONE. CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS OFFICE OF THE CITY ENGINEER, 48 HOURS BEFORE STARTING WORK ON THIS PROJECT. PHONE No. 832-394-9098.

ETJ DETENTION PLANS INFORMATION 1. STORM WATER DETENTION PLANS
IS PROVIDED IN: DETENTION POND PHASE 2 IMPROVEMENTS FOR SENDERO ENGINEERING FIRM: COSTELLO, INC.
DATE AND SIGNED BY: FEBRUARY 2, 2017; JON R. VANDERWILT

2. STORM WATER DRAINAGE DESIGN REPORT
REPORT TITLE: 152.2 AC SENDERO TRACT PHASE 1A-2
DRAINAGE ANALYSIS UPDATE

DATE: OCTOBER 27, 2016
ENGINEERING FIRM: COSTELLO, INC.
DATE OF ACKNOWLEDGEMENT BY: FORT BEND COUNTY DRAINAGE DISTRICT

3. INCREASED IMPERVIOUS COVER = 62.86 ACRES DETENTION RATE REQUIRED = 0.59 ACRE-FEET/ACRE DETENTION RATE PROVIDED = 0.62 ACRE-FEET/ACRE

CITY ENGINEER

- OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713-223-4567/811 OR 800-344-8377 AND LONE STAR NOTIFICATION CENTER AT 800-669-8344 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION.
- THE CONSTRUCTION PLANS DO NOT SHOW ALL OF THE UNDERGROUND TELEPHONE LINES, ELECTRICAL LINES, GAS SERVICE LINES OR CABLE TELEVISION LINES. LOCATION OF THESE LINES IS THE RESPONSIBILITY OF THE CONTRACTOR.
- OVERHEAD LINES EXIST ON THE PROPERTY. WE HAVE NOT ATTEMPTED TO SHOW ALL LINES ON THE PLANS SINCE THEY ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE, FORBIDS ALL ACTIVITIES IN WHICH PERSONS OR THINGS MAY COME WITHIN 6 FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES. CONTRACTORS AND OWNERS ARE LEGALLY RESPONSIBLE FOR SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT ENERGY AT (713)207-2222.
- CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER AND STORM DRAINAGE LINES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING'S STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING REFERENCED ABOVE, AT NO ADDITIONAL COST.
- CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING IN WRITING PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY FORT BEND COUNTY ENGINEER'S OFFICE 48 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION VIA EMAIL AT CONSTRUCTION@FORTBENDCOUNTYTX.GOV. PROVIDE THE FORT BEND COUNTY ENGINEER'S OFFICE WITH WRITTEN NOTIFICATION 48 HOURS BEFORE BEGINNING CONSTRUCTION.
- 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. THE LOCATION OF SUCH PARKING MUST MEET THE APPROVAL OF THE OWNER. PARKING IS NOT ALLOWED UNDER THE DRIP LINE OF TREES. ANY AREAS DISTURBED OR DESTROYED BY VEHICULAR PARKING WILL BE REPAIRED TO ORIGINAL CONDITION PRIOR TO COMPLETION OF THE PROJECT.
- THE CONTRACTOR SHALL CLEAN ALL STREETS IN THE VICINITY OF THE WORK SITE ENTRANCE, ON A DAILY BASIS, TO ENSURE THAT NO DIRT FROM THE PROJECT ACCUMMULATES IN THE EXISTING
- ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO EXISTING CONDITIONS OR BETTER.
- D. CONTRACTOR SHALL COMPLY WITH LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION.
- CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL APPLICABLE CITY, COUNTY, STATE AND FEDERAL PERMITS, INCLUDING PERMITS REQUIRED BY "REGULATIONS OF FORT BEND COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT" PRIOR TO STARTING CONSTRUCTION.
- 2. CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED BY FORT BEND COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITY AND/OR CULVERTS WITHIN COUNTY ROAD RIGHT-OF-WAY.
- 3. ALL UNSATISFACTORY AND/OR WASTE MATERIALS INCLUDING VEGETATION, ROOTS, CONCRETE, AND DEBRIS SHALL BE HAULED OFF SITE BY THE CONTRACTOR. INCLUDE COST OF THIS WORK. INCLUDING HAUL, IN OTHER ITEMS OF THE WORK.
- CONTRACTOR SHALL CONFINE ALL WORK EFFORTS WITHIN THE DESIGNATED AREA UNLESS SPECIFICALLY AUTHORIZED BY THE OWNER. EXTREME CARE SHOULD BE EXERCISED NEAR ADJACENT PROPERTY TO PROTECT ANY EXISTING TREES, FENCES, LANDSCAPING AND OTHER EXISTING FEATURES.
- ALL EXISTING LANDSCAPING, SIDEWALKS, FENCES, UTILITIES AND OTHER EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION WILL BE REPLACED OR REPAIRED TO THEIR ORIGINAL CONDITION BY THE CONTRACTOR.
- 6. ALL CONSTRUCTION WHICH HINDERS TRAFFIC OR REQUIRES TRAFFIC DIVERSION SHALL BE IN CONFORMANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- THE CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF EXISTING ABOVE AND BELOW GROUND IMPROVEMENTS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL SYSTEM AT 811 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION. CONTRACTOR SHALL UNCOVER EXISTING UTILITIES AT ALL "POINTS OF CROSSING" WITH PROPOSED UNDERGROUND LINES OR EXISTING UNDERGROUND LINES THAT ARE TO BE REMOVED TO DETERMINE IF CONFLICTS EXIST BEFORE BEGINNING ANY CONSTRUCTION. NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICTS. THE CONTRACTOR SHALL NOT MAKE ANY FIELD MODIFICATIONS WITHOUT PRIOR APPROVAL OF THE
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PURCHASING ANY WATER NEEDED FOR CONSTRUCTION OR TESTING. THE PURCHASE OF WATER FOR CONSTRUCTION OR TESTING WILL BE CONSIDERED INCIDENTAL TO THE VARIOUS OTHER ITEMS OF THE WORK.

REVISION

ENGINEER, COSTELLO INC. 713-783-7788, FAX 713-783-3580.

GENERAL CONSTRUCTION NOTES CONT

- ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF FORT BEND COUNTY, THE CITY OF HOUSTON, THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, FORT BEND COUNTY MUNICIPAL 11. ALL WATER LINES TO HAVE A 4' MINIMUM COVER TO FINISHED UTILITY DISTRICT NO. 132 AND THE ENGINEER.
- 20. MAINTAIN A MINIMUM OF 12" CLEARANCE BETWEEN ALL UTILITIES. 21. INCLUDE PRICE OF ALL BEDDING AND BACKFILL REQUIRED FOR WATER LINES, SANITARY SEWERS, AND STORM SEWERS IN PRICE BID PER LINEAR FOOT OF PIPE.
- 22. UPON PROJECT COMPLETION AND PRIOR TO RELEASE OF RETAINAGE, CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF PROJECT'S RECORD DOCUMENTS OF THE PROJECT MANUAL.
- 23. DELIVERY TICKETS FOR ALL MATERIALS (E.G., CONCRETE, CEMENT STABILIZED SAND, ETC.) SHALL BE MAINTAINED BY THE CONTRACTOR AND UPON REQUEST, BE MADE AVAILABLE FOR REVIEW BY THE ENGINEER.
- 24. THE CONTRACTOR SHALL STRIP THE VEGETATION IN ALL AREAS DESIGNATED FOR EITHER EXCAVATION OR FILL. TREES AND HEAVY BRUSH ARE TO BE REMOVED FROM THE PROJECT SITE. THE STRIPPINGS SHALL BE TEMPORARILY STOCKPILED ONSITE OR AT A LOCATION TO BE COORDINATED WITH THE OWNER. THE STRIPPINGS SHALL BE USED TO PROVIDE A MINIMUM 3-INCH LAYER OF TOPSOIL ON THE SLOPES AND HIGH BANK AREAS OF THE POND AND ON THE FILL AREAS PRIOR TO TURF ESTABLISHMENT.
- STRIP THE ORGANIC MATERIAL FROM FILL AREAS AND PROOF ROLL WITH SUITABLE EQUIPMENT AND OBSERVE THE SUBGRADE DURING PROOF ROLLING TO DETECT ANY WET, SOFT OR PUMPING AREAS. TREAT WET, SOFT OR PUMPING AREAS WITH SUITABLE DRYING OR STABILIZING AGENTS OR REMOVE UNSUITABLE MATERIAL AND REPLACE IT WITH COMPACTED FILL MATERIAL.
- THE FILL ELEVATIONS SHOWN ON THE PLANS ARE FINISHED GRADE ELEVATIONS AFTER PLACEMENT OF TOPSOIL.
- 27. ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM 8" LOOSE LIFTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY WITHIN +/-2 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT (ASTM
- 28. TURF SHALL BE ESTABLISHED IN ALL AREAS DISTURBED BY THE CONTRACTOR AND HIS WORK. THE PROJECT WILL NOT BE CONSIDERED COMPLETE UNTIL A PERENIAL VEGETATIVE COVER HAS BEEN ESTABLISHED IN THE FILL AREAS, UNLESS SUBSEQUENT 8. CONSTRUCTION IS UNDERWAY OR BEGINNING IN 2 - 3 WEEKS.
- 29. THE CONTRACTOR SHALL PROVIDE A WATERTIGHT JOB BOARD NEAR THE SITE ENTRANCE FOR POSTING NOI INFORMATION AND THE POLLUTION PREVENTION PLAN BEFORE BEGINNING WORK. THE JOB BOARD MUST BE REMOVED WHEN THE CONTRACTOR HAS COMPLETED THE WORK.
- 30. IT IS THE CONTRACTOR'S RESPONSIBLITY TO CONTACT THE OWNER'S TESTING LABORATORY TO HAVE THE LAB PRESENT DURING ALL BACKFILL, PLACEMENT OF ANY FILL OR ANY OTHER REQUIRED LAB TESTING
- 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 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 SUBMITTED BY THE CONTRACTOR PRIOR TO PROCEEDING WITH THE WORK.

CITY OF HOUSTON HOUSTON PUBLIC WORKS WATER CONSTRUCTION NOTES

- WATER LINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL,
- STANDARD SPECIFICATION, AND CONSTRUCTION DETAILS. ALL 4" THROUGH 12" WATER LINES TO BE AWWA C-900 PVC DR-18 BLUE PRESSURE RATED WATER MAIN WITH 2" AND SMALLER WATER SERVICE LINE TO BE CONTINUOUS TYPE K COPPER TUBING
- PER COH STANDARD SPECIFICATION SECTION 02503. CONCRETE THRUST BLOCKS SHALL BE PROVIDED AS NECESSARY TO PREVENT PIPE MOVEMENT. USE RESTRAINED JOINTS WHERE PREVENTING MOVEMENT OF 16" OR GREATER PIPE IS NECESSARY
- DUE TO THRUST. ALL WATER LINES UNDER PROPOSED OR FUTURE PAVING AND TO A POINT OF ONE(1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE ENCASED IN BANK SAND TO 12" OVER PIPE AND BACKFILLED WITH CEMENT STABILIZED SAND TO WITHIN ONE(1) FOOT OF SUBGRADE.
- ALL WATER LINE AND SEWER LINE CROSSINGS SHALL BE CONSTRUCTED PER CITY OF HOUSTON AND TCEQ REGULATIONS.
- 9. 4" THROUGH 12" FITTINGS SHALL BE CEMENT MORTAR LINED COMPACT DUCTILE IRON PRESSURE FITTINGS PER ANSI A21.53, OR
- PUSH ON FITTINGS PER ANSI A21 10 PRESSURE RATED AT 250 PSI. 10. HYDROSTATIC TESTING ALL WATER PIPE SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON STANDARD CONSTRUCTION SPECIFICATIONS. TESTS ARE TO BE PERFORMED ON THE ENTIRE FOOTAGE OF WATER PIPE LINE INCLUDED IN THE PROJECT.

DESIGNED BY: RLM

DRAWN BY: RLM

COGO CHECKED BY:

QA/QC BY:

DATE

SURVEY CHECKED BY:

DESIGN CHECKED BY: TRU

QA/QC REVISIONS BY: **2LM**

DATE:

CITY OF HOUSTON

HOUSTON PUBLIC WORKS WATER CONSTRUCTION NOTES CONT

- GRADE AND MINIMUM 12" CLEARANCE TO OTHER UTILITIES AT CROSSING UNLESS OTHERWISE NOTED ON PLANS. ALL WATER LINE INSTALLED OVER 8' DEEP SHALL UTILIZE RESTRAINED JOINT FITTINGS.
- 12. CONTRACTOR SHALL KEEP WATER PIPE CLEAN AND CAP (OR ALL PAVEMENT WIDTHS, CURB RADII, AND CURB ALIGNMENT SHOWN OTHERWISE EFFECTIVELY COVERED) OPEN PIPE ENDS TO EXCLUDE INDICATE BACK OF CURB. "TC" INDICATES TOP OF CURB. "TP" INSECTS, ANIMALS OR OTHER SOURCES OF CONTAMINATION FROM INDICATES TOP OF PAVEMENT. UNFINISHED PIPE LINES AT TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.

ADDITIONAL WATER MAIN CONSTRUCTION NOTES

- PROVIDE CONCRETE THRUST BLOCKING TO PREVENT MOVEMENT OF BURIED LINES UNDER PRESSURE AT BENDS, CAPS, VALVES, ETC. BLOCKING SHALL BE PORTLAND CEMENT CONCRETE. PLACE THRUST BLOCK BETWEEN UNDISTURBED GROUND AND THE FITTING. ANCHOR FITTING TO THRUST BLOCK SO THAT PIPE AND FITTING 5 JOINT ARE ACCESSIBLE FOR REPAIRS. CONTRACTOR IS RESPONSIBLE FOR THE ADEQUACY OF THE BLOCKING.
- MAINTAIN A MINIMUM OF 9 FEET OF HORIZONTAL CLEARANCE BETWEEN THE OUTSIDE OF SANITARY SEWER MANHOLES AND WATER LINES.
- ALL WATER LINES SHALL BE ENCASED WITH BANK SAND AS PER THE BEDDING DETAILS SHOWN ON THE CONSTRUCTION PLANS.
- THE CENTERLINE OF FLUSHING VALVES TO BE LOCATED 3'-0" FROM BACK OF CURB WITH THE BASE AT THE ELEVATION INDICATED ON THE DETAIL SHEET. (DRAWING NO. 02520-01).
- 5. FLUSH VALVES ARE TO HAVE A MINIMUM OF 4 FEET OF BURY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ADJUST WATER LINES AND APPURTENANCES TO OBTAIN THE PROPER VERTICAL LOCATION OF FLUSH VALVES IN RELATION TO THE TOP OF CURB AFTER PAVEMENT CONSTRUCTION.
- WHENEVER POSSIBLE, ALL MAIN LINE GATE VALVES ARE TO BE LOCATED OPPOSITE PAVING CURB RETURNS OR ON LOT LINES AS INDICATED ON THE CONSTRUCTION PLANS.
- INSTALL AT LEAST TWO JOINTS OF PIPE BETWEEN THE GATE VALVE AND THE PLUG ON DEAD-END LINES.
- CONTRACTOR SHALL MINIMIZE DOWN TIME OF THE EXISTING WATER LINES WHEN MAKING ADJUSTMENTS AND CONNECTIONS TO THE LINES. CONTACT THE WATER SYSTEM OPERATOR, EDP, LLC 832-467-1599, IN ADVANCE TO PLAN WITH THEM FOR ANY WATER SERVICE INTERRUPTION TO EXISTING CUSTOMERS.
- THE OPENING AND CLOSING OF WATER VALVES ON THE EXISTING SYSTEM SHALL ONLY BE PERFORMED BY THE WATER SYSTEM OPERATOR, EDP, LLC 832-467-1599.
- ALL WATER MAIN BLOW-OFF VALVES ARE TO BE LOCATED AT A

LOT LINE, 3-FEET FROM THE STREET RIGHT-OF-WAY.

STORM SEWER CONSTRUCTION NOTES

- STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (C-76, CLASS III), AND SHALL BE INSTALLED, BEDDED, AND BACK FILLED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWINGS Nos. 2317-02, 02317-03, 02317-05, 02317-06 AND 02317-07 AS
- ALL STORM SEWER CONSTRUCTED IN SIDELOT EASEMENT SHALL BE RCP (C-76, CLASS III) AND SHALL BE EMBEDDED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING Nos 02317-02, 02317-03, 02317-05, 02317-06 AND 02317-07 AS
- ALL SEWER UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT 1 FOOT BACK OF PROPOSED OR FUTURE CURB SHALL BE BACKFILLED WITH 2 SACKS PER TON OF STABILIZED SAND TO WITHIN 1 FOOT OF SUBGRADE. THE REMAINING DEPTH OF TRENCH NOT LOCATED UNDER OR WITHIN 1 FOOT OF PAVEMENT SHALL BE BACKFILLED WITH SUITABLE EXCAVATED MATERIAL.
- ALL TRENCH BACKFILL SHALL BE IN 8" LIFTS, WITH TESTS TAKEN AT 100 FOOT INTERVALS IN EACH LIFT, AND MECHANICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMACTION TEST (ASTM D-698/AASHTO T99).
- CIRCULAR ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINT CONFORMING TO ASTM C443 AND ASTM C877 RESPECTIVELY.
- ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 24" AND LARGER RCP (C-76, CLASS III).
- ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES AND INLET LEADS ARE TO BE PLUGGED WITH 8" BRICK WALLS UNLESS OTHERWISE NOTED.
- MINIMUM HORIZONTAL CLEARANCE BETWEEN ANY STORM PIPE AND 2 BOX SHALL BE AT LEAST 48-INCHES FROM EXTERIOR OF THE APPURTENANCES. MINIMUM VERTICAL CLEARANCE BETWEEN ANY
- MAINTAINING, AND RESTORING ANY BACK-SLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF THIS WORK.
- ALL DITCHES SHALL BE GRADED TO PROPOSED ELEVATIONS TO INSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED.
- 12. ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.

PAVING CONSTRUCTION NOTES

1. PAVING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST FORT BEND COUNTY RULES, REGULATIONS AND REQUIREMENTS AND AMENDMENTS. MATERIALS FURNISHED SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY FORT BEND COUNTY. THE OWNER'S FINAL ACCEPTANCE OF THE COMPLETE WORK SHALL BE CONTINGENT UPON FORT BEND COUNTY'S FORMAL ACCEPTANCE OF STREETS FOR MAINTENANCE.

CONTROL DEVICES SHALL BE OBSERVED.

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.

SHALL BE MAINTAINED AT ALL TIMES.

10. AT ALL INTERSECTION LOCATIONS, TYPE 7 RAMPS SHALL BE

CURB HEADERS ARE REQUIRED AT CURB CONNECTIONS TO

HANDICAP RAMPS, WITH NO CONSTRUCTION JOINT WITHIN 5' OF

ALL INTERSECTIONS UTILIZING TRAFFIC CONTROL MEASURES SHALL

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 FLAGMAN, SIGNING, STRIPING AND WARNING

ALL R1-1 STOP SIGNS SHALL BE 30"x 30" WITH DIAMOND GRADE

SHEETING PER TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL

w/ REFLECTIVE GREEN BACKGROUND. STREET NAMES SHALL BE

UPPER AND LOWERCASE LETTERING WITH UPPERCASE LETTERS OF

6" MINIMUM AND LOWERCASE LETTERS OF 4.5" MINIMUM. THE

LETTERS SHALL BE REFLECTIVE WHITE. STREET NAMES SIGNS

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

THE PROJECT AND ALL PARTS THEREOF SHALL BE SUBJECT TO

INSPECTION FROM TIME TO TIME BY INSPECTORS DESIGNATED BY

FORT BEND COUNTY. NO SUCH INSPECTIONS SHALL RELIEVE THE

CONTRACTOR OF ANY OF ITS OBLIGATIONS HEREUNDER. NEITHER

FAILURE TO INSPECT NOR FAILURE TO DISCOVER OR REJECT ANY

OF THE WORK AS NOT IN ACCORDANCE WITH THE DRAWINGS AND

SPECIFICATIONS, REQUIREMENTS AND SPECIFICATIONS OF FORT

BEND COUNTY OR ANY PROVISION OF THIS PROJECT SHALL BE

CONSTRUED TO IMPLY AN ACCEPTANCE OF SUCH WORK OR TO

RELIEVE THE CONTRACTOR OF ANY OF ITS OBLIGATIONS

NOTE: FORT BEND COUNTY NOTES SUPERSEDE ANY CONFLICTING

DEVICES, ETC., DURING CONSTRUCTION - BOTH DAY AND NIGHT.

15. STREET NAME SIGNAGE SHALL BE ON A 9" HIGH SIGN FLAT BLADE

HAVE A.D.A. WHEELCHAIR RAMPS INSTALLED.

SHALL BE MOUNTED ON STOP SIGN POST.

SIDE AS THE HYDRANT.

HEREUNDER.

REINFORCED CONCRETE CURB

DEVICES.

- 3. GUIDELINES SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC
- TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT EACH CURB RETURN AND AT A MAXIMUM SPACING OF 60 FEET. IF THIS NOTE CONFLICTS WITH SPECIFICATIONS OR THE CONSTRUCTION PLANS, THIS NOTE SHALL GOVERN.
- BEFORE STABILIZING THE SUBGRADE FOR AREAS THAT ARE TO BE PAVED, PROOF ROLL WITH SUITABLE EQUIPMENT AND OBSERVE THE SUBGRADE DURING PROOF ROLLING TO DETECT ANY WET, SOFT OR PUMPING AREAS. TREAT WET, SOFT OR PUMPING AREAS WITH SUITABLE DRYING OR STABILIZING AGENTS OR REMOVE UNSUITABLE MATERIAL AND REPLACE IT WITH COMPACTED FILL MATERIAL. PAYMENT FOR REMOVING AND REPLACING MATERIAL WILL BE PAID FOR BY THE UNIT PRICE FOR EXCAVATION AND COMPACTED FILL.
- ALL CURB RADII SHALL BE 25' UNLESS OTHERWISE NOTED. MINIMUM SLOPE AROUND CURB RETURN IS 1.0%.
- 6-INCH PAVEMENT SHALL BE REINFORCED CONCRETE WITH NO. 4 BARS AT 20.5" LONGITUDINALLY AND 36" TRANSVERSELY. THE CONCRETE MIX DESIGN SHALL COMPLY WITH EITHER OF THE FOLLOWING OPTIONS:
- 4% A MIX DESIGN CONTAINING 5 SACKS OF CEMENT PER CUBIC YARD WITH NO FLY ASH OR
- 4 A MIX DESIGN CONTAINING FLY ASH AND CEMENT THAT HAS CEMENTITIOUS CONTENT OF NOT LESS THAN 6 SACKS PER CUBIC YARD. THE FLY ASH SHALL NOT EXCEED 25% BY WEIGHT.
- A BLUE REFLECTORIZED BUTTON IS REQUIRED AT ALL FLUSH VALVE LOCATIONS. BUTTON SHALL BE PLACED 12-INCHES FROM THE CENTERLINE OF THE STREET ON THE SAME SIDE AS THE FLUSH VALVE.
- 9. STREET NAME SIGNS SHALL BE ON 9" HIGH SIGN FLAT BLADE w/ REFLECTIVE GREEN BACKGROUND. STREET NAMES SIGNS SHALL HAVE A HIGH INTENSITY GREEN BACKGROUND WITH UPPER AND LOWERCASE LETTERING. UPPERCASE LETTERS SHALL BE A MINIMUM OF 6" IN HEIGHT AND LOWERCASE LETTERS SHALL BE A MINIMUM OF 4.5" IN HEIGHT. STREET NAME SIGNS SHALL BE MOUNTED ON STOP SIGN POSTS. STOP SIGNS ARE TO BE 30"X 30" DIAMOND GRADE R1-1 AS PER TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. POST TO BE LOCATED 15-FEET OFF APPROACHING CURB. THE EDGE OF THE WIDEST SIGN SHALL BE 2-FEET FROM THE BACK OF CURB. THE BOTTOM OF THE LOWEST SIGN SHALL BE 7-FEET FROM NATURAL GROUND OR FINISHED GRADE. SIGN SHALL BE MOUNTED ON 2-1/2-INCH ID GALVANIZED STEEL POSTS. USE VANDAL-PROOF NUTS AND BOLTS.
- WHERE PROPOSED PAVEMENT ENDS AT A CONSTRUCTION JOINT, EXTEND BARS 15-INCHES, COAT WITH ASPHALT AND WRAP WITH BURLAP. AT EXPANSION JOINTS EXTEND DOWELS 5-INCHES, COAT AND WRAP WITH BURLAP.
- FOR CONNECTION TO EXISTING PAVEMENT, EXPOSE AND CLEAN EXISTING REBAR AT PAVEMENT HEADER OR JOINT. IF EXISTING REINFORCING IS ABSENT OR IS IN UNSATISFACTORY CONDITION, DRILL AND EPOXY GROUT NO. 4 BARS AT 20.5-INCHES ON CENTERS A MINIMUM OF 12-INCHES INTO THE EXISTING PAVEMENT. EXTEND STEEL A MINIMUM OF 12-INCHES INTO PROPOSED PAVEMENT AND TIE REBAR TO PROPOSED PAVEMENT REBAR. REMOVE EXISTING TYPE III BARRICADE IF PRESENT.
- CURB SHALL BE 6-INCH CURB OR 4-INCH BY 12-INCH CURB AS
- THE CROSS SLOPE OVER THE PAVEMENT IN CUL-DE-SACS SHALL

INDICATED ON THE CONSTRUCTION PLANS.

NOT BE LESS THAN 5 INCH PER FOOT FROM CURB TO CURB. IRRIGATION SLEEVES ARE TO BE 2 FEET BELOW THE PAVEMENT SUBGRADE, BEDDING AND BACKFILL SHALL BE CEMENT STABILIZED SAND (2 SACKS OF CEMENT PER TON OF SAND (DRY WEIGHT)) TO WITHIN 6-INCHES OF THE SUBGRADE. MARK SLEEVES BY TURNING UP A 90-DEGREE BEND. EXTEND 6-INCH PIPE 24-INCHES ABOVE FINISHED GRADE AND CAP THE END.

FORT BEND COUNTY CONSTRUCTION - GENERAL NOTES

- FORT BEND COUNTY MUST BE INVITED TO THE PRE-CONSTRUCTION MEETING.
- CONTRACTOR SHALL NOTIFY FORT BEND COUNTY ENGINEERING THE LIMITS OF THE PAVING AT
- ALL ROAD WIDTHS, CURB RADII AND CURB ALIGNMENT SHOWN INDICATES BACK OF CURB.
- A CONTINUOUS LONGITUDINALE REINFORCING BAR SHALL BE USED
- ALL CONCRETE PAVEMENT SHALL BE 5 SACKS OF CEMENT PER CUBIC YARD 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.

EORT BEND COUNTY CONSTRUCTION - GENERAL NOTES CONT AT&T TEXAS/SWBT FACILITIES

- ALL WEATHER ACCESS TO ALL EXISTING STREETS AND DRIVEWAYS 1. THE LOCATIONS OF THE AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. 4"x12" REINFORCED CONCRETE CURB SHALL BE PLACED IN FRONT HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL OF SINGLE FAMILY LOTS ONLY. ALL OTHER AREAS SHALL BE 6" DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
 - 2. THE CONTRACTOR SHALL CALL 1-800-344-8377 (TEXAS 811) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
 - 3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.
 - 4. WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES, THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.
 - 5. THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE
 - 6. PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER ROOSEVELT LEE JR. AT (713)567-4552 OR E-MAIL HIM AT RL7259@ATT.COM, IF THERE ARE QUESTIONS ABOUT BORING OR EXCAVATING NEAR OUR AT&T TEXAS/SWBT FACILITIES.

CENTERPOINT ENERGY

CAUTION: UNDERGROUND GAS FACILITIES

THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713)945-8036 OR (713(945-8037 (7:00 AM TO 4:30 PM) FOR

STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION

WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON PIPING

FOR EMERGENCIES REGARDING GAS LINES CALL (713)659-3552 OR (713)207-4200.

THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED

BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE

WARNING: OVERHEAD ELECTRICAL LINES

UNDERGROUND FACILITIES.

OVERHEAD LINES MAY EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES HAS NOT BEEN SHOWN ON THESE DRAWINGS AS THE LINES ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE FORBIDS ACTIVITIES THAT OCCUR IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES, SPECIFICALLY:

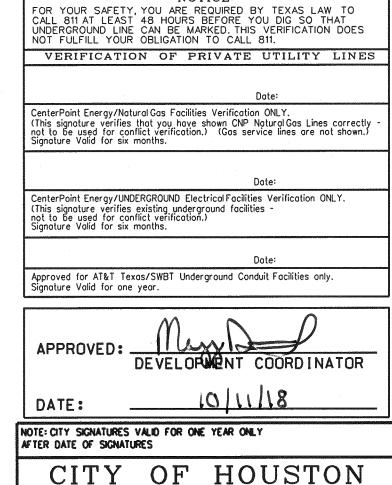
ANY ACTIVITY WHERE PERSON OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES; AND

OPERATING A CRANE, DERRICK, POWER SHOVEL, DRILLING RIG, PILE DRIVER, HOISTING EQUIPMENT, OR SIMILAR APPARATUS WITHIN 10 FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES.

PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS, UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT (713)207-2222.

ACTIVITIES ON/OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY

NO APPROVAL TO USE, CROSS OR OCCUPY CENTERPOINT FEE OR EASEMENT PROPERTY IS GIVEN. IF YOU NEED TO USE CENTERPOINT PROPERTY, PLEASE CONTACT OUR SURVEYING & RIGHT-OF-WAY DIVISION AT (713)207-6348 OR (713)207-5769.



HOUSTON PUBLIC WORKS

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-2222.

61214

FOR CITY OF HOUSTON USE ONL'

Costello

Engineering and Surveying 2107 CityWest Blvd, 3rd Floor Houston, Texas 77042 (713) 783-7788 (713) 783-3580, Fax

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

FORT BEND COUNTY MUD 132

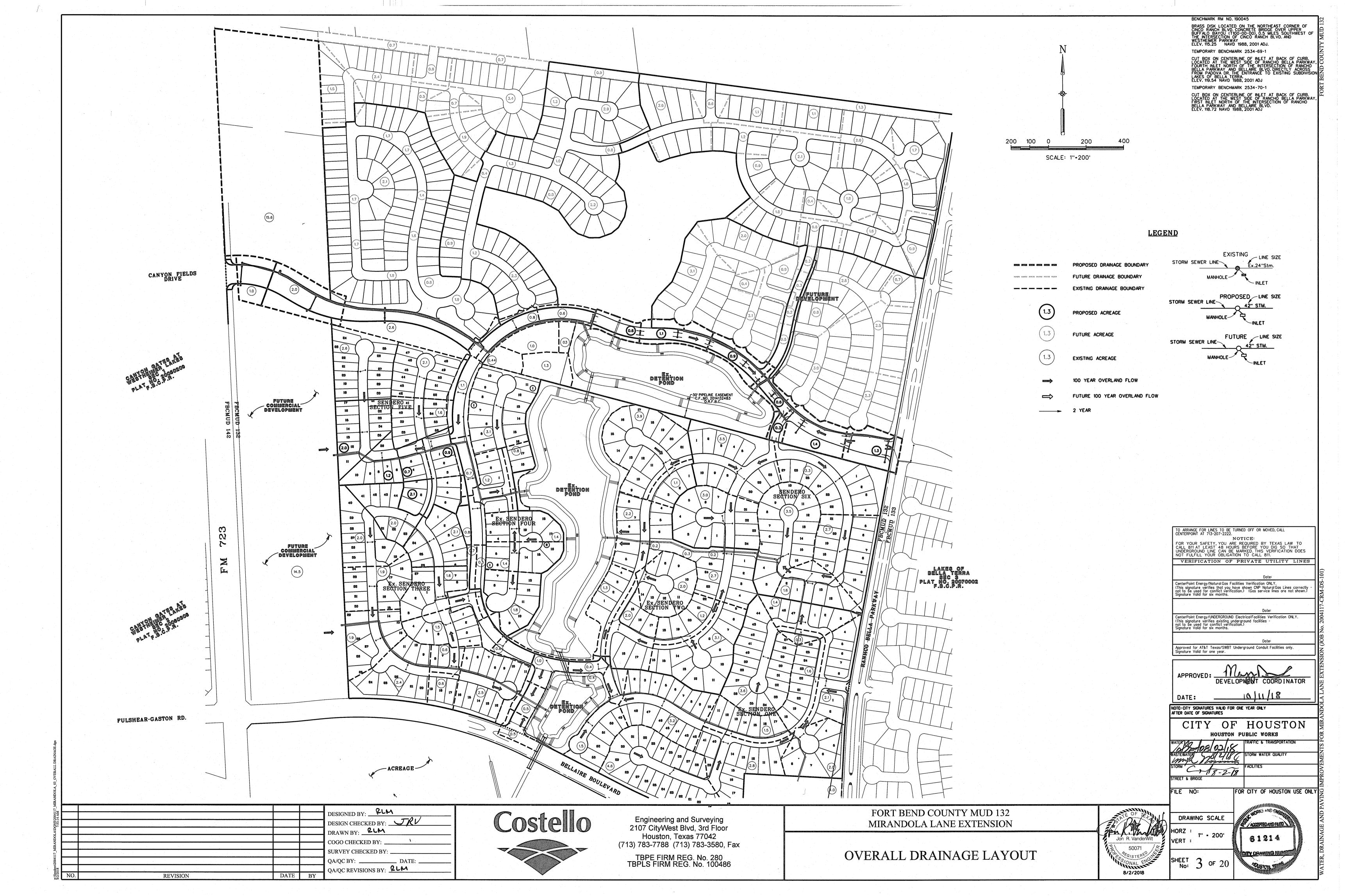
MIRANDOLA LANE EXTENSION

CONSTRUCTION NOTES

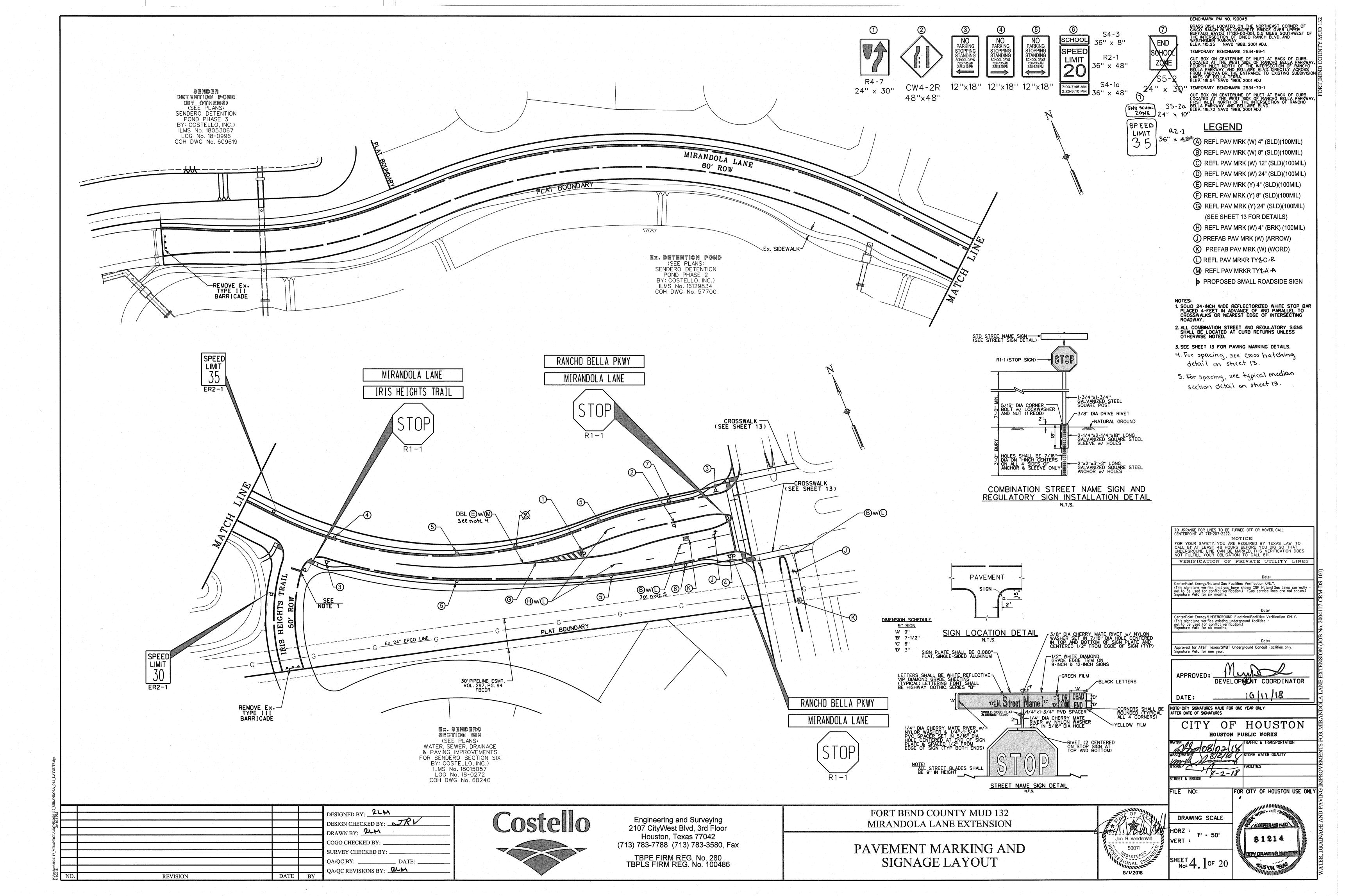
Jon R. VanderWilt 50071

DRAWING SCALE - ACCEPTED MO FLAD SHEET 7 of 20

DEPARTMENT 48 HOURS PRIOR TO COMMENCING CONSTRUCTION STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR AND 48 HOUR NOTICE TO ANY CONSTRUCTION ACTIVITY WITHIN ALL WATER VALVES SHALL BE SUPPLIED AND INSTALLED IN PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER ACCORDANCE WITH THE LATEST EDITION OF AWWA C-500 AND CONSTRUCTION@FORTBENDCOUNTYTX.GOV. SHALL BE OF THE RESILIENT SEAT TYPE. STORM PIPE AND BOX SHALL BE AT LEAST 18-INCHES FROM CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS ALL WATER LINES TO BE DISINFECTED IN CONFORMANCE WITH EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE REQUIRED FROM FORT BEND COUNTY PRIOR TO COMMENCING AWWA C-651 AND THE TEXAS STATE DEPARTMENT OF HEALTH AT EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER LEAST ONE BACTERIOLOGICAL SAMPLE SHALL BE COLLECTED FOR CONSTRUCTION OF ANY IMPROVEMENTS WITHIN COUNTY ROAD APPURTENANCES. RIGHTS-OF-WAY. EVERY 1,000 LINEAR FEET OF WATER LINE AND SHALL BE ADJUST MANHOLE COVERS TO GRADE CONFORMING TO REPEATED IF CONTAMINATION PERSISTS. ALL PAVING IMPROVEMENTS SHALL BE CONSTRUCTED IN REQUIREMENTS OF SECTION 02086-ADJUSTING MANHOLES, INLETS. ALL BELOW GRADE VALVES SHALL BE GASKETED, HUB END GATE ACCORDANCE WITH FORT BEND COUNTY "RULES, REGULATIONS, AND VALVE BOXES TO GRADE. VALVES WITH A CAST IRON BOX, EXCEPT WHERE FLANGES ARE AND REQUIREMENTS RELATING TO THE APPROVAL ANDACCEPTANCE CALLED OUT ON THE PLANS. 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, OF IMPROVEMENTS IN SUBDIVISIONS" AS CURRENTLY AMENDED.



STM MH 6.2 10451 9.80 STM MH 6.2 10452 9.80 SENDER
DETENTION POND
(BY OTHERS)
(SEE PLANS:
SENDERO DETENTION
POND PHASE 3
BY: COSTELLO, INC.)
ILMS No. 18053067
LOG No. 18-0996
COH DWG No. 609619
100-yr. WSE 118.23 27.3 STM MH 29.39 10455 future sendero section 14.9 STM MH 19.15 10457 8" W/L 32; MIRANDOLA LAND3;00 (WATER LINE "A") 60' ROW 1.3 STM MH 2.41 10463 STM MH 10.8 10459 14.36 BRICK PLUG STM MH 10462 444 Ex. 5'x5' RCB-Ex. 20' WLE 2018078251 ORFBC EX. DETENTION POND
(SEE PLANS:
SENDERO DETENTION
POND PHASE 2
BY: COSTELLO, INC.)
ILMS No. 16129834
COH DWG No. 57700
160-yr. WSE 118.21 Ex. 30' WLE -2017094840 ORFBC LEGEND ex. Sendero Section Six (SEE PLANS:
WATER, SEWER, DRAINAGE
& PAVING IMPROVEMENTS
FOR SENDERO SECTION SIX
BY: COSTELLO, INC.)
ILMS No. 18015057
LOG No. 18-0272
COH DWG No. 60240 LINE SIZE FLUSH VALVE STORM SEWER LINE TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-2222. FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE CAN BE MARKED. THIS VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811. EXISTING VERIFICATION OF PRIVATE UTILITY LINES WATER LINE FLUSH VALVE STORM SEWER LINE CenterPoint Energy/Natural Gas Facilities Verification ONLY.
(This signature verifies that you have shown CNP Natural Gas Lines correctly not to be used for conflict verification.) (Gas service lines are not shown.) Signature Valid for six months. SHEET REFERENCE —— 95 —— EXISTING CONTOUR CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities -not to be used for conflict verification.) Signature Valid for six months. ACS CFS CUMULATIVE 2 YR. FREQUENCY RUNOFF Approved for AT&T Texas/SWBT Underground Conduit Facilities only. Signature Valid for one year. DEVELOPMENT COORDINATOR NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES CITY OF HOUSTON HOUSTON PUBLIC WORKS RM C) A 8-2-18 FOR CITY OF HOUSTON USE ONLY DESIGNED BY: _ RLM Costello FORT BEND COUNTY MUD 132 Engineering and Surveying 2107 CityWest Blvd, 3rd Floor DRAWING SCALE DESIGN CHECKED BY: ______ MIRANDOLA LANE EXTENSION DRAWN BY: PLM Houston, Texas 77042 61214 COGO CHECKED BY: (713) 783-7788 (713) 783-3580, Fax PAVING, DRAINAGE SURVEY CHECKED BY: ___ TBPE FIRM REG. No. 280 TBPLS FIRM REG. No. 100486 AND WATER LAYOUT QA/QC BY: ___ DATE: QA/QC REVISIONS BY: RLM REVISION



Qwelr=Cwelr*WPrmt*HAVG
Where WPrmt = Width of Pavement STORM SEWER CALCULATIONS COH I-D-F Coefficients Fixed Curb Height @ Inlet (ft) 0.50 CITY OF HOUSTON CRITERIA Return Freq (yr) 2 to F/C; Havs = Avg Depth @ Allowable HGL above T/C Return Freq (yr) 100 V_{MAX} in Pipe = 12.00 Storm Event : 2-YEAR **b:** 75.01 b: 125.40 Project : Mirandola Lane Extension **d**: 16.2 d: 21.8 Date : August 1, 2018 e: 0.8315 e: 0.7500 V_{MAX} @ Outfall Starting TW (Soffit) SWE= 112.00 Cwelr = 2.10 Allowable HGL Height Above T/C Peaking Factor 1.00 By:JAP Peaking Factor C: 1.00 @ Location RUNOFF COEFFICIENTS (C) FOR DRAINAGE i=b/(d+Tc)^e Q=C;*C*A*i 0.50 Check HGL or Act
Gutter
HGL Depth
Above(+) / vs.
Below(-) Nat Grnd
T/C @
DO/S High ROW
Inlet location Elevations at Pipe Size, Length & Type Input Data Pipe Hydraulic Data & Design Capacities **Actual Depth Pipe Elevation Data** 2-yr Design Computations D/S High Point in Street RESIDENTIAL Initial T. = 10A^0.1761 + 15 ; A=Drainage Area levations @ Inlet Location 100-Year Analysis Calculations in Gutter to Pass Q100 - Q2 @ D/S High (Method 2 Only) Actual Velocity (VACT) (%) 1/2 ac & 1/2 to 1/4 Smaller Pipe Diameter Hydraulic Grade Above(+) / Below(-) T/C @ Inlets (ft) Natural | Above(+) Hydraulic Contributing Drainage Area Concentration 2-yr Computations S X-Sect | Flowline | Design | Design | Coefficien | Area | Hydraulic | Design | Velocity | Capacity | Capacit Pipe Flowline Elevation Actual Gradient Slope (Nacr) (fps) (%) 100-yr Analysis Check Line Elevation U/S D/S Contributing Drainage Area

Composite Runoff Coefficient (ac) (ac) Composite (ac) Composite Cefficient (ac) (ac) Coefficient (ac) (ac) Coefficient (ac) Coeffi Ground / Below(-)

Gutter R.O.W. @ Inlets

(ft) (ft) (ft) Time of (inches) Ground @ low Computations Elevation
 Pipe
 M.H.
 Elevation
 Pipe Soffitt Elevation

 Reach
 Drop
 @
 U/S
 D/S

 (ft)
 (ft)
 U/S M.H.
 (ft)
 (ft)
 (ft)
 Larger Lots Lots Lots Concentration R.O.W. Delta or Intensity Runoff (ft) Trib T. Total "i" (in/hr) Flow @ D/S High Point **Existing Outfall** 5.17 29.7 41.8 2.56 CRM MH 10461 MH 10460 1.30 9.40 0.55 0.013 12.57 1.000 0.070 3.0 38.00 0.10 0.00 112.42 112.32 116.42 116.32 1.05 0.009 0.013 116.33 116.32 **119.59** 119.09 **119.81** -2.757 **119.85** 119.52 **120.07** 27.5 33.7 6.17 31.88 -3.197 Method 1 - OK Method 1 - OK Mirandola CRM MH 10460 MH 10459 0.00 9.40 0.55 5.17 2.4 44.2 2.48 13.25 0.013 12.57 1.000 0.070 3.0 38.00 | 0.08 0.00 | 112.32 112.24 | 116.32 116.24 1.05 0.009 0.010 116.25 116.24 | **119.09** 118.59 **119.31** -2.340 | **119.54** 119.21 **119.76** | 1.0 34.7 31.88 2.54 0.049 0.06 116.30 116.24 Method 1 - OK Mirandola 5.94 0.013 12.57 1.000 0.070 3.0 38.00 0.05 0.00 112.24 112.19 116.24 116.19 1.14 0.010 0.007 116.20 116.19 118.95 118.45 119.17 -2.253 119.54 119.21 119.76 0.8 35.5 MH 10459 MH 10458 1.4 1.9 46.0 2.42 14.36 Method 1 - OK 0.013 19.50 1.160 0.060 3.1 60.28 | 0.04 0.00 | 112.19 112.15 | 116.19 116.15 | 0.75 0.003 0.002 116.15 | 119.54 119.04 119.76 -2.888 | 119.54 119.21 119.76 | 26.0 35.9 Mirandola MH 10458 MH 10457 29.1 47.1 2.38 14.56 5.99 36.57 1.88 0.022 0.02 116.17 116.15 Method 1 - OK Mirandola CRM MH 10457 MH 10456 3.80 14.90 0.55 35.2 48.6 2.34 19.15 19.50 1.160 0.060 3.1 60.28 | 0.04 0.000 112.15 112.11 | 116.15 116.11 | 0.98 0.006 0.004 116.12 116.11 | 119.32 118.82 119.54 -2.704 | 119.22 118.89 119.44 | 28.0 36.5 | 5.94 48.71 2.50 0.039 0.03 116.14 116.11 Method 1 - OK CRM MH 10456 MH 10455 8.53 Mirandola 0.60 15.50 0.55 1.2 49.8 2.30 19.62 0.013 19.50 1.160 0.060 3.1 60.28 0.05 0.000 112.11 112.06 116.11 116.06 1.01 0.006 0.005 116.07 116.06 **118.80** 118.30 **119.02** -2.232 **119.22** 118.89 **119.44** 0.5 37.0 5.91 50.36 2.58 0.042 Method 1 - OK 0.013 23.32 1.250 0.060 3.2 75.77 | 0.04 0.000 112.06 112.02 | 116.06 116.02 Mirandola CRM MH 10455 MH 10004 11.8 27.30 0.55 15.02 64.0 64.0 1.96 3.64 0.075 1.26 0.009 0.006 116.03 116.02 **119.22** 118.72 **119.44** -2.693 **119.22** 118.89 **119.44** 40.5 40.5 5.65 84.87 0.05 116.07 116.02 Method 1 - OK Mirandola CRM MH 10004 Fitting 15.02 0.9 65.0 1.94 6 X 4 RCB 0.013 23.32 1.250 0.060 3.2 75.77 0.01 0.000 112.02 112.00 116.02 116.00 1.26 0.009 0.002 116.00 116.00 **119.22** 118.72 **119.44** -2.721 **119.22** 118.89 **119.44** 0.3 40.9 5.63 84.87 3.64 0.075 0.02 116.01 116.00 -3.206 Method 1 - OK Method 1 - OK 0.00 27.30 0.55 15.02 0.3 65.3 1.93 5.62 84.87 3.46 0.065 0.02 112.02 112.00 1.20 0.008 0.003 112.00 112.00 119.22 118.72 119.44 -6.717 119.22 118.89 119.44 0.1 41.0 Mirandola CRM Fitting Existing Outfall 5 X 5 RCB 0.013 24.50 1.300 0.050 3.0 74.59 0.02 5.980 106.02 106.00 111.02 111.00 -7.197 Method 1 - OK Method 1 - OK CRM MH 10463 MH 10461 1.3 1.30 1.30 0.55 0.72 25.5 25.5 3.37 2.41 0.013 3.14 0.500 0.180 3.1 9.60 0.35 0.00 114.25 113.89 116.25 115.89 0.77 0.011 0.022 116.36 116.33 119.35 118.85 119.57 -2.495 Mirandola **120.83** 120.50 **121.05** 25.5 25.5 6.96 4.97 1.58 0.048 0.10 116.49 116.39 -2.861 Method 1 - OK -4.341 OK Method 1 - OK CRM MH 10464 MH 10458 0.3 0.013 3.14 0.500 0.180 3.1 9.60 0.12 0.00 114.70 114.58 116.70 116.58 0.19 0.001 0.000 116.58 116.58 **119.80** 119.30 **120.02** -2.720 **119.54** 119.21 **119.76** 23.1 23.1 7.23 1.19 0.38 0.003 0.00 116.58 116.58 Method 1 - OK CRM MH 10451 MH 10452 3.41 26.0 34.4 2.87 42 RCP 0.013 9.62 0.875 0.090 3.1 30.18 0.11 0.50 113.00 112.89 116.50 116.39 1.02 0.009 0.012 116.40 116.39 | **119.05** 118.55 **119.27** -2.148 | **119.56** 119.23 **119.78** 25.6 30.1 6.48 22.11 2.30 0.048 0.06 116.45 116.39 Method 1 - OK Mirandola CRM MH 10452 MH 10453 0.00 6.20 0.55 3.41 2.0 36.4 2.78 9.80 163 42 RCP 0.013 9.62 0.875 0.090 3.1 30.18 0.15 0.00 112.89 112.74 116.39 116.24 1.02 0.009 0.015 116.26 116.24 119.47 118.97 119.69 -2.715 119.56 119.23 119.78 0.9 31.0 6.40 22.11 2.30 0.048 0.08 116.34 116.26 Method 1 - OK Mirandola CRM MH 10453 MH 10454 3.40 9.60 0.55 5.28 34.5 39.1 2.67 42 RCP | 0.013 | 9.62 | 0.875 | 0.090 | 3.1 | 30.18 | 0.08 | 0.00 | 112.74 | 112.66 | 116.24 | 116.16 | 1.46 | 0.020 | 0.017 | 116.18 | 119.11 | 118.61 | 119.22 | 118.89 | 119.44 | 29.4 | 32.2 | 6.29 | 33.23 | 3.45 | 0.109 | 0.10 | 116.26 | 116.17 | 14.08 -2.847 Method 1 - OK -2.957 Method 1 - OK Mirandola CRM MH 10454 MH 10455 0.9 0.90 10.50 0.55 5.78 1.0 40.1 2.63 15.18 48 RCP 0.013 12.57 1.000 0.070 3.0 38.00 0.10 0.50 112.16 112.06 116.16 116.06 1.21 0.011 0.017 116.08 116.06 118.80 118.30 119.02 -2.221 118.89 119.44 0.4 32.6 6.26 36.14 2.88 0.063 0.09 116.17 116.07 -2.633 Method 1 - OK Method 1 - OK

0.06 0.00 113.85 113.79 115.85 115.79

119.56 119.23 **119.78** 25.2 25.2

6.99 4.23

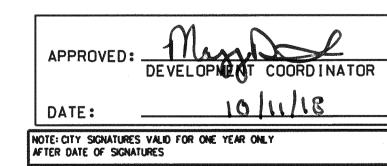
1.35 0.035 0.01 116.46 116.45

-2.489 Method 1 - OK

-3.099 OK

Method 1 - OK

Dat	Y CRITERIA		nsion		Ε	DRAINA DEVELOPI	FICIENTS AGE AREA MENT TYF ILY RESIDE	PES				L	Return Free Peaking F	d: e: 0.8	3 69.35 10.9 .8060 1.00	25 106.05 12.4 0.7862 1.10 =C/*C*A*i	Pipe Size	Referer	ences 2YR T		**************************************	a Hydrauli	c Data & D	esian Can	nacitios			Pin	e Elevation I	Jata		V _{MAX} in Pipe = 10.00 V _{MAX} @ CGMP 4.00	1.0	S	② Outfall = Static WSE		H	Fixed Curb leight Inlet (ft) 0.50	ion l		Elevations S High Point	s at in Street	Return Peaking I	e: 0	100 46.18 15.1 .7851 1.25		is Calculatio	ne.			Allowable 100	yr HGL Heigh @ Location	1.00	Check HGL or Act Gutter	Cweir:	wit* Have 1.5 • Width of Pavement Avg Depth @ IL above T/C
Street Name Existing Outfall	Subdivision Section	FROM M.H.#	то М.Н.	Drain Are Nan	> 1, lage aci	./2 1/4 re 1/2			Contributi Drainage A Delta To (ac) (a	otal Coe	emental nposite unoff ifficient "C"	Sum of	Time of Concentra (T.) Delta or		ear Comp	outations Runoff Flow	Reach o	Pipe Di (inc	or Height F	Ma	nning's X fficient ,	-Sect	flo draulic D	owline (Design D	QDES) F	Fall in Pipe M. Reach Dro (ft) (ft	H. Pipe	e Flowline levation @ H. D/S M.H	Pipe Soff	itt Elevation D/S (ft)	Actual Velocit (VACT) (fps)	Hydraulic	esign Comp Headlos S (ft)	Hydraulic Gr Elevati		Top of Curb G	Natu	Above(+ und / Below(Gutter W. @ Inlets	+)	of b Gutter	Natural Ground @ R.O.W.	100-Y Time Concent Delta or Trib T _c	of ration Fi	100-yea ow Comput ensity R	r ations Ac	Hydra Gradio Ocity /Act) (ps) (Shyte (ps)	ulic ient	Hydraulic Line Elevat oss U/S (ft)	ne 📗	@ Inlets	0-yr Analysis Check @ let Location	@ D/S High	Depth vs. Nat Grnd @ ROW Locations	@ D/S High (Method 2	100-yr Analysis Check @ D/S High Point
Mirandola Mirandola	CRM CRM	MH 1046	51 MH 104	60 B-3	3 0.0	00 0. 00 0.	.00	0.00 0.00	1.3 9.4 - 9.4		0.55	5.17 5.17	12.4 1.4			22.63 22.63	149 119	April 1999 April 1990	48 I	RCP (0.013 1 0.013 1	2.57 1 2.57 1	1.000 O).070).070	3.0 3 3.0 3	8.00 8.00	0.10 0.0 0.08 0.0	0 112.4 0 112.3	2 112.32 2 112.24	116.42 116.32		1.80 1.80	0.025 0.025	0.037 0.030	116.36 116.27	116.32 116.24	119.59 1 119.09 1	19.09 119 .18.59 119 .	. 81 -2.733	119. 119.	.85 119.52 .54 119.21	120.07	11.0 0.5	13.8 1 14.2 1	.0.42 6 .0.29 6	57.37 5. 57.37 5.	.36 0.22 .36 0.22	20 0.33 20 0.26		117.09 116.83	-2.171 M -1.998 M	ethod 1 - OK ethod 1 - OK	-2.431 -2.448	OK OK		Method 1 - OK Method 1 - OK
Mirandola Mirandola Mirandola Mirandola	CRM CRM CRM	MH 10458 MH 10458 MH 10453	59 MH 104 58 MH 104 57 MH 104	58 B-3 57 B-3 56 B-3	3 0.0 3 0.0 3 0.0		.00	1.40 0.00 0.00	1.4 10.8 0.3 11.3 3.8 14.9	10 0 90 0		5.94 6.11 8.20 8.53	1.1 13.6 16.1	23.0 4. 23.9 3.	.05	24.43 24.74 32.51	71 69 72	5 X	X 4 I	RCB (0.013 1 0.013 1 0.013 1	2.57 1 9.50 1 9.50 1	1.000 0 1.160 0 1.160 0	0.070 0.060 0.060	3.0 3 3.1 6 3.1 6	8.00 0.28 0.28	0.05 0.0 0.04 0.0 0.04 0.0	0 112.2 0 112.1 00 112.1	4 112.19 9 112.15 5 112.11	116.15	116.15 116.11	1.94 1.27 1.67	0.029 0.010 0.017	0.021 0.007 0.013	116.21 116.16 116.12	116.19 116.15 116.11	118.95 1 119.54 1 119.32 1	18.45 119 .19.04 119 .18.82 119 .	-2.239 -76 -2.883 -54 -2.696	119. 119. 119.	.54 119.21 .54 119.21 .22 118.89	119.76 119.76 119.44	0.4 11.5 12.4	14.6 1 14.8 1 15.1 1	.0.19 7 .0.14 7 .0.06 10	75.69 6. 77.39 3. 03.10 5.	.02 0.27 .97 0.09 .29 0.17	78 0.20 99 0.07 76 0.13	116.63 116.56	116.56 116.44	-2.907 M -2.756 M	ethod 1 - OK ethod 1 - OK ethod 1 - OK	-2.907 -2.656	OK OK		Method 1 - Ok Method 1 - Ok Method 1 - Ok
Mirandola Mirandola Mirandola	CRM CRM CRM	MH 1045! MH 10004 Fitting	55 MH 100 55 MH 100 94 Fitting xisting O	955 B-3 904 B-3 B-3 utfal B-3	3 0.0	00 0. 00 0.	.00 .00	0.60 0.00 0.00 0.00	0.6 15.1 11.8 27.3 - 27.3 - 27.3	30 0 30 0).55).00	15.02 15.02 15.02	34.7 0.6	34.7 3. 35.2 3.	.19	33.27 47.91 47.91 47.91	70 22 35	6 X	X 4 I	RCB (0.013 1 0.013 2 0.013 2 0.013 2	3.32 1 3.32 1 4.50 1	1.250 0 1.250 0 1.250 0).060).060).060).050	3.1 6 3.2 7 3.2 7 3.0 7	5.77 5.77 4.59	0.05 0.00 0.04 0.00 0.01 0.00 0.02 1.00	00 112.0 00 112.0 00 112.0 00 106.0	1 112.06 6 112.02 2 112.00 2 106.00	116.11 116.06 116.02 111.02	116.02 116.00	2.05 2.05 1.96	0.018 0.024 0.024 0.021	0.015 0.017 0.005 0.007	116.08 116.04 116.00 112.01	116.06 116.02 116.00 112.00	118.80 1 119.22 1 119.22 1 119.22 1	18.30 119 . 18.72 119 . 18.72 119 . 18.72 119 .	.02 -2.222 .44 -2.683 .44 -2.717 .44 -6.713	119. 119. 119. 119.	.22 118.89 .22 118.89 .22 118.89 .22 118.89	119.44 119.44 119.44 119.44	18.6 0.2 0.0	18.8	9.23 1° 9.19 1° 9.18 1°	73.20 7. 73.20 7. 73.20 7.	.47 0.18 .43 0.31 .43 0.31 .07 0.27	38 0.15 14 0.22 14 0.07 70 0.09		116.07 116.00	-2.934 M -3.154 M	ethod 1 - OK ethod 1 - OK ethod 1 - OK ethod 1 - OK	-2.934 -3.154	OK OK OK		Method 1 - Ol Method 1 - Ol Method 1 - Ol Method 1 - Ol
Mirandola	CRM	MH 1046	63 MH 104	61 B-3	3 0.0	00 0.	.00	1.30	1.3 1.3	30 0).55	0.72	10.0	10.0 5.	.98	4.27	197		24	RCP	0.013	3.14	0.500 0	0.180	3.1	9.60	0.35 0.0	0 114.2	5 113.89	116.25	115.89	1.36	0.036	0.070	116.43	116.36	119.35 1	18.85 119	. 57 -2.423	3 120.	.83 120.50	121.05	10.0	10.0	.1.63 1	10.40 3	.31 0.21	11 0.42	117.84	117.42	-1.515 M	ethod 1 - OK	-2.995	ОК		Method 1 - O
Mirandola	CRM	MH 10464	54 MH 104	58 B-3	3 0.0	00 0.	.00	0.30	0.3 0.	30 0).55	0.17	10.0	10.0 5.	.98	0.99	67		24	RCP	0.013	3.14	0.500 0).180	3.1	9.60	0.12 0.0	0 114.7	0 114.58	116.70	116.58	0.31	0.002	0.001	116.58	116.58	119.80 1	19.30 120 .	. 02 -2.719	119.	.54 119.21	. 119.76	10.0	10.0	.1.63	2.40 0	.76 0.01	11 0.01	116.64	116.63	-3.160 M	ethod 1 - OK	-2.900	ОК		Method 1 - Ok
Mirandola Mirandola Mirandola Mirandola	CRM CRM CRM CRM	MH 10453 MH 10453 MH 10453 MH 10454	51 MH 104 52 MH 104 53 MH 104 54 MH 104	52 B-3 53 B-3 54 B-3	3 0.0	00 0. 00 0.	.00	0.00 0.00 0.00 0.90	1.1 6.3 - 6.3 3.4 9.1 0.9 10.1	20 0 60 0).55	3.41 3.41 5.28 5.78		15.7 4. 17.2 4.	.93 .71	17.41 17.41 24.89 26.79	125 163 88 148		42 42 42 48	RCP (0.013	9.62 (9.62 (9.62 (2.57 1	0.875 0 0.875 0 0.875 0 0.875 0	0.090 0.090 0.090 0.070	3.1 3 3.1 3 3.1 3 3.0 3	0.18 0.18 0.18 8.00	0.11 0.5 0.15 0.0 0.08 0.0 0.10 0.5	0 112.8 0 112.7	0 112.89 9 112.74 4 112.66 6 112.06	116.39 116.24	116.24 116.16	1.81 1.81 2.59 2.13	0.030 0.030 0.061 0.035	0.037 0.049 0.054 0.051	116.43 116.29 116.21 116.11	116.39 116.24 116.16 116.06	119.05 1 119.47 1 119.11 1 118.80 1	18.55 119 .18.97 119 .18.61 119 .18.30 119 .	. 69 -2.681 . 33 -2.396	119. 119. 119. 119.	.56 119.23 .56 119.23 .22 118.89	3 119.78 3 119.78 9 119.44 9 119.44	10.18 0.4 12.30 0.2	12.8	.1.02 4 .0.88 4 .0.71 7 .0.65 7	16.96 4 16.96 4 70.70 7 76.90 6	.88 0.21 .88 0.21 .35 0.49 .12 0.28	18 0.27 18 0.36 94 0.43 37 0.42	117.50	117.14 116.71	-1.970 M -1.965 M	ethod 1 - OK ethod 1 - OK ethod 1 - OK ethod 1 - OK	-2.060 -2.075	OK OK OK		Method 1 - OK Method 1 - OK Method 1 - OK Method 1 - OK
Mirandola	CRM	MH 10450	50 MH 104	951 B-3	3 0.0	00 0.	.00	1.10	1.1 1.	10 0).55	0.61	10.0	10.0 5.	.98	3.61	31	Management of the second of th	24	RCP (0.013	3.14).500 C).180	3.1	9.60	0.06 0.0	0 113.8	5 113.79	115.85	115.79	1.15	0.026	0.008	116.44	116.43	118.95 1	18.45 119	. 17 -2.015	119.	.56 119.23	119.78	10.0	10.0	.1.63	8.80 2	.80 0.15	51 0.05	117.82	117.77	-1.131 M	ethod 1 - OK	-1.741	ОК		Method 1 - Ol



CITY OF HOUSTON

FOR CITY OF HOUSTON USE ONL

DRAWING SCALE

SHEET 5 OF 20

M					OLAA
40 A					DESIGNED BY: RLM
10:39					DESIGN CHECKED BY:
					DRAWN BY: RUM
					COGO CHECKED BY:
1					SURVEY CHECKED BY:
					QA/QC BY: DATE:
8/2/2018					QA/QC BY: DATE: QA/QC REVISIONS BY:
8/2/2(NO.	REVISION	DATE	BY	

Mirandola

CRM MH 10450 MH 10451

1.1

1.10 1.10 0.55 0.61 25.2 25.2 3.40 2.05



24 RCP 0.013 3.14 0.500 0.180 3.1 9.60

Engineering and Surveying 2107 CityWest Blvd, 3rd Floor Houston, Texas 77042 (713) 783-7788 (713) 783-3580, Fax TBPE FIRM REG. No. 280 TBPLS FIRM REG. No. 100486

STORM CALCULATIONS (SHEET 1 OF 2)

FORT BEND COUNTY MUD 132

Storm Sewer Collection System - 100-Year Frequency Design and Calculations per FBC Fort Bend County MUD 132

100 Year Inlet Capacity Existing Out DP3 47.9 CFS Q (3) 151.2 CFS Q (100) Q EXCESS 103.3 CFS MH 10456 LOWEST TOP OF CURB = 118.80 THROAT OF INLET = 118.30 119.00 0.20 MAXIMUM PONDING LEVEL = PONDING LEVEL ABOVE CURB= MH 10454 118.78 LOWEST TOP OF CURB = THROAT OF INLET = 118.28 MAXIMUM PONDING LEVEL = 119.00 PONDING LEVEL ABOVE CURB= 0.22

Length Over Grass (ft) = Length Over Pavement (ft) = 1820 Time of Concentration =

Time of Concentration = 8.06 Area with 0.85

> 27.30 Area with 0.55 CA 15.02 cf = 1.25 peak factor Q (100)= 151.2

С

Type "B-B"-Mod 5.43 sq. ft

INLET#	INLET TYPE	Q (3)	Hydraulic Grade Line	AVAILABLE HEAD (=Max Ponding-Throat)	CALCULATED INLET CAPACITY	ASSUMED INLET CAPACITY	% per INLET
MH 10456 Inlet 1	Type "B-B"-Mod	0.38	116.35	0.70	29.2	26.0	25%
MH 10456 Inlet 2	Type "B-B"-Mod	0.38	116.24	0.70	29.2	26.0	25%
MH 10454 Inlet 1	Type "B-B"-Mod	0.95	116.35	0.72	29.6	27.0	25%
MH 10454 Inlet 2	Type "B-B"-Mod	0.95	116.24	0.72	29.6	27.0	25%

TOTAL FLOWS TAKEN IN BY INLETS:

117.5 CFS > 105.9 CFS REQUIRED

CY Fill

ADEQUATE INLET CAPACITY

From	То			(i	nche	meter s) or	Pipe Type	X-Sect Area	Actual			Hyd.	Head	El Hyd	Grad	UPSTF Gutter	REAM Top	DELTA
МН	МН	Q R	each	Span (ft)	х	Height (ft)		of Pipe/Bo	V	Manning Coefficent	Hydraulic radius	Slope	Loss	US	DS	Elevation	of Curb	Gutter-HGL
MH 10456 Inlet 1	MH 10456 Inlet 2	26.0	28			30	RCP	4.91	5.30	0.013	0.625	0.40	0.11	116.35	116.24	118.30	118.80	1.95
MH 10456 Inlet 2	MH 10456	52.0	8			36	RCP	7.07	7.36	0.013	0.750	0.61	0.05	116.24	116.19	118.30	118.80	2.06
MH 10456	MH 10455	52.8	81	5	X	4	RCB	19.50	2.71	0.015	1.160	0.06	0.05	116.24	116.19	118.30	118.80	2.06
MH 10455	MH 10004	131.6	70	6	X	4	RCB	23.32	5.64	0.015	1.250	0.24	0.17	116.19	116.02	118.72	119.22	
Fitting	Existing Outfall	131.6	35	5	X	5	RCB	24.50	5.37	0.015	1.300	0.21	0.07	112.07	112.00	118.72	119.22	6.65
MH 10454 Inlet 1	MH 10454 Inlet 2	27.0	28			24	RCP	3.14	8.58	0.013	0.500	1.42	0.40	117.44	117.04	118.28	118.78	0.84
MH 10454 Inlet 2	MH 10454	53.9	15			24	RCP	3.14	17.16		0.500	5.68	0.85	117.04	116.19		118.78	
MH 10454	MH 10455	78.8	148			48	RCP	12.57	6.27	0.013	1.000	0.30	0.45	116.68	116.24		118.80	

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

DESIGNED BY: QLM DESIGN CHECKED BY: REVISED STORM CALCULATION DRAWN BY: **PLM** COGO CHECKED BY: _ QA/QC REVISIONS BY: RLM DATE BY REVISION

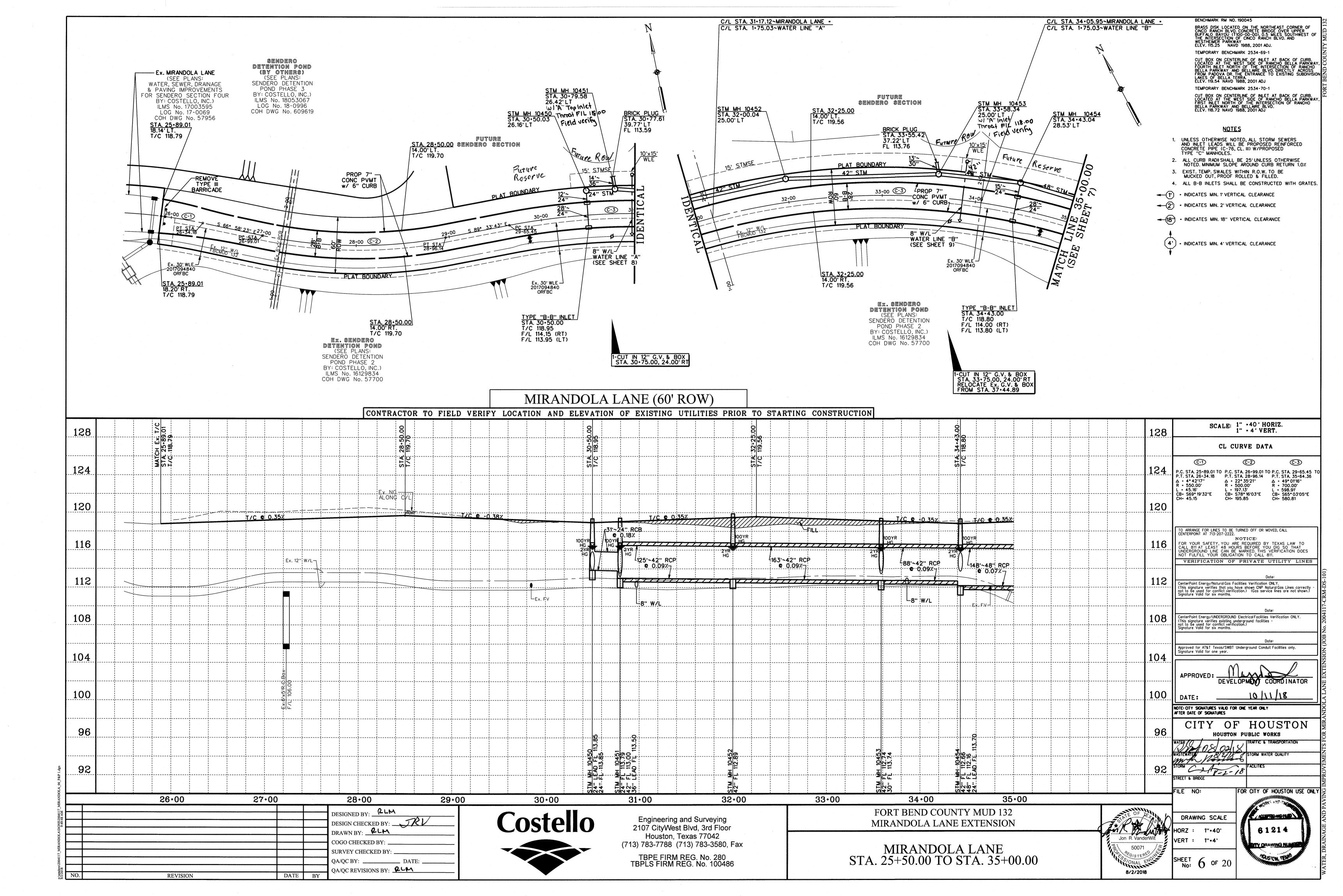


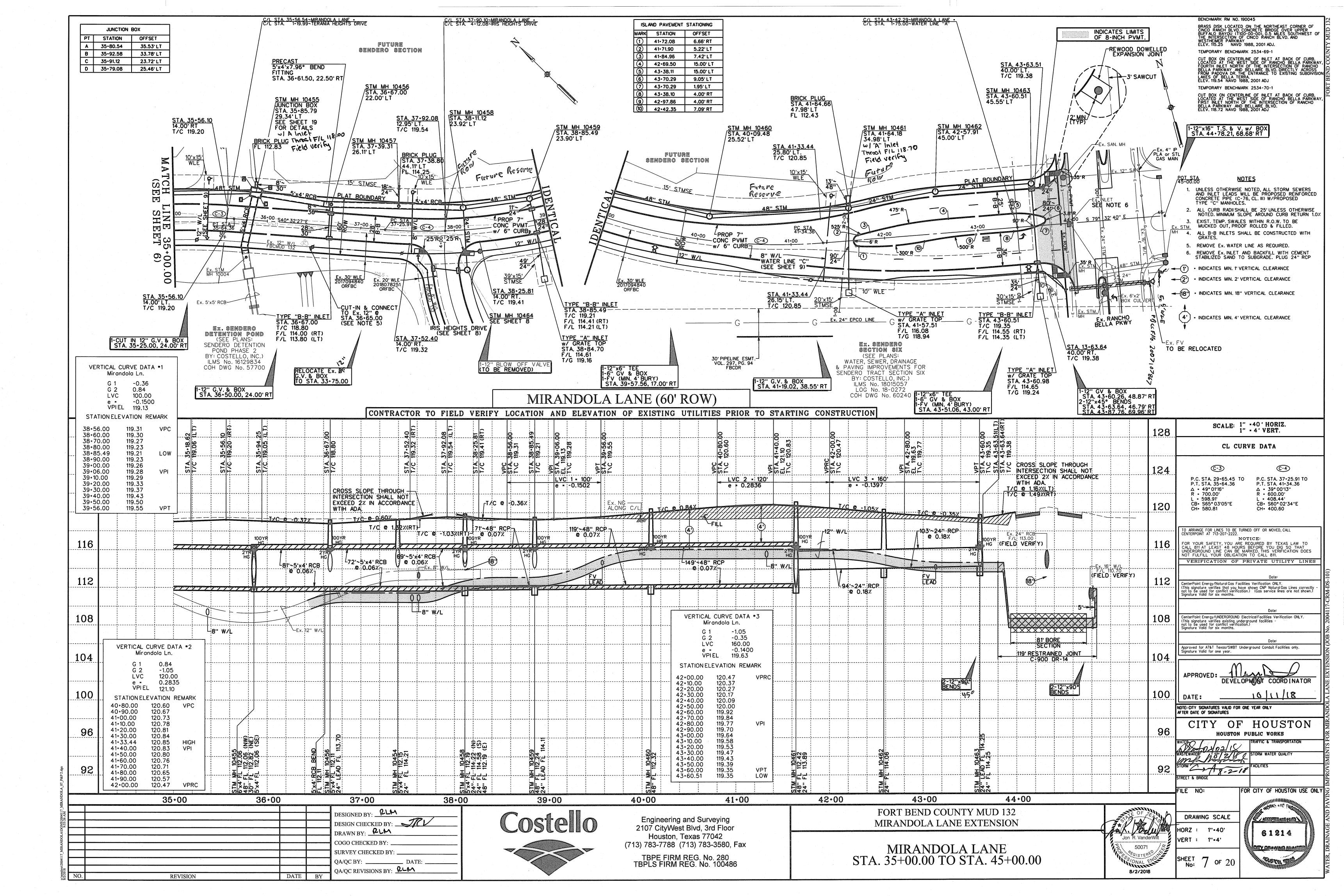
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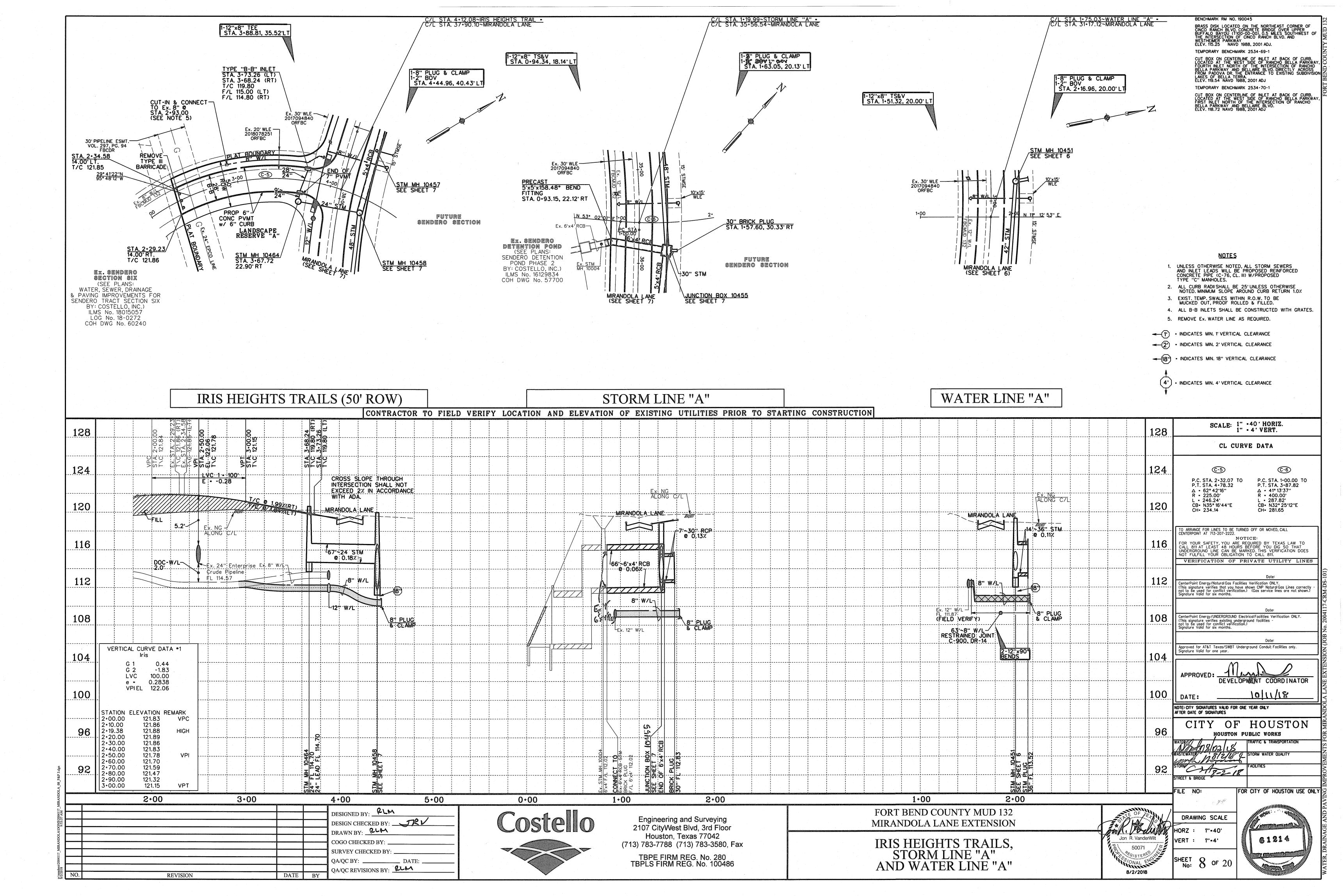
STM MH / 10453

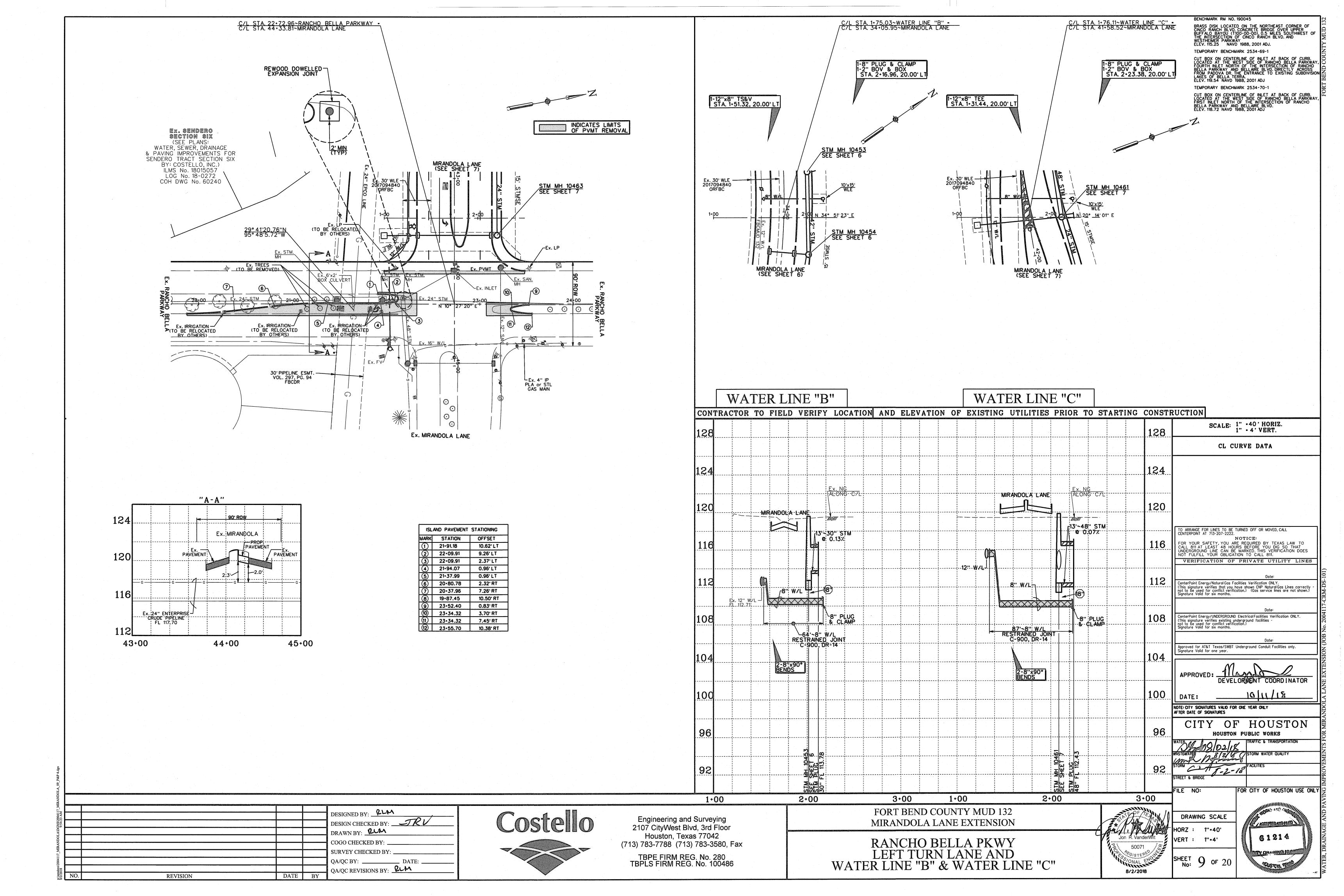
STORM CALCULATIONS (SHEET 2 OF 2)

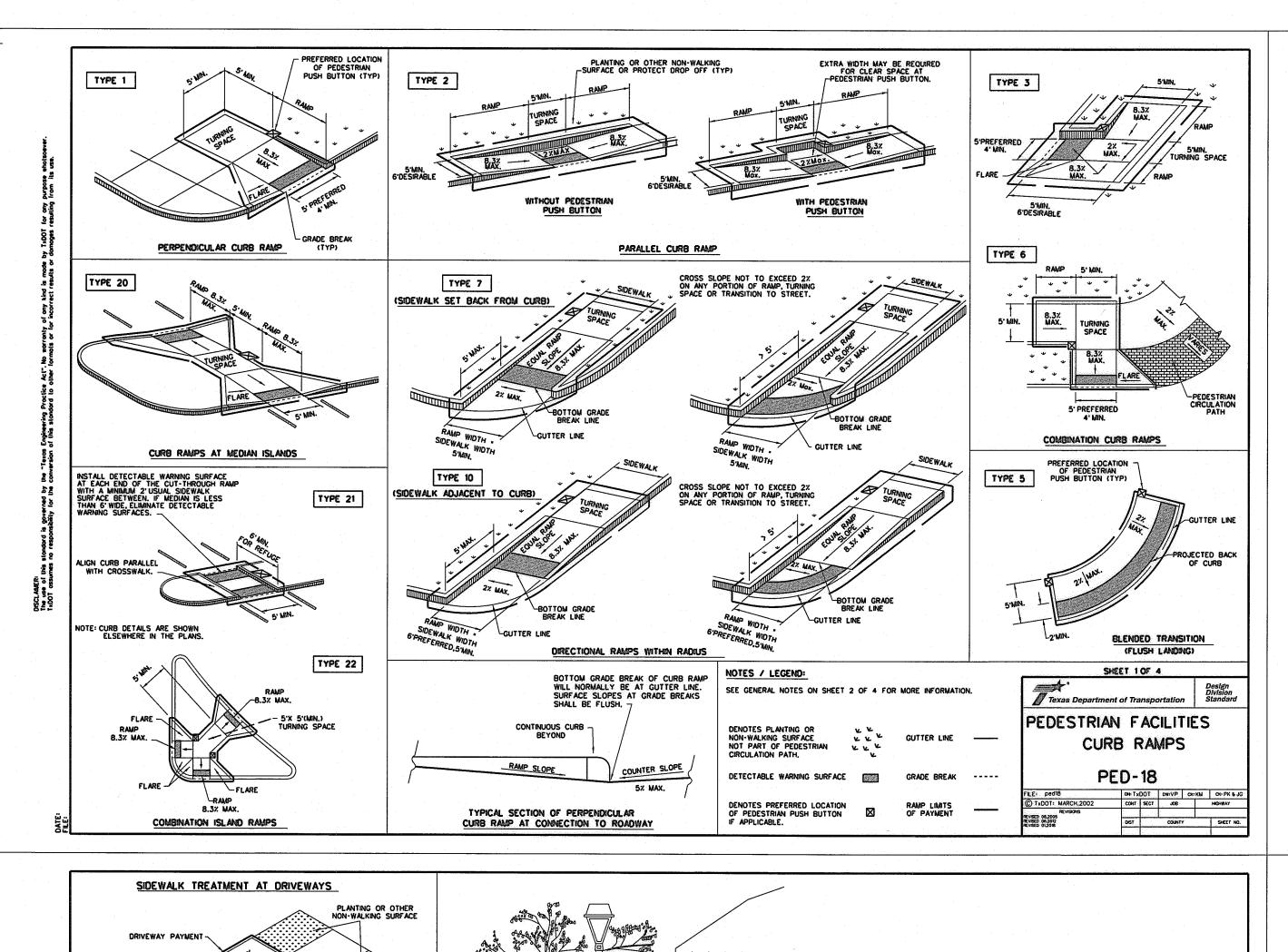
FORT BEND COUNTY MUD 132

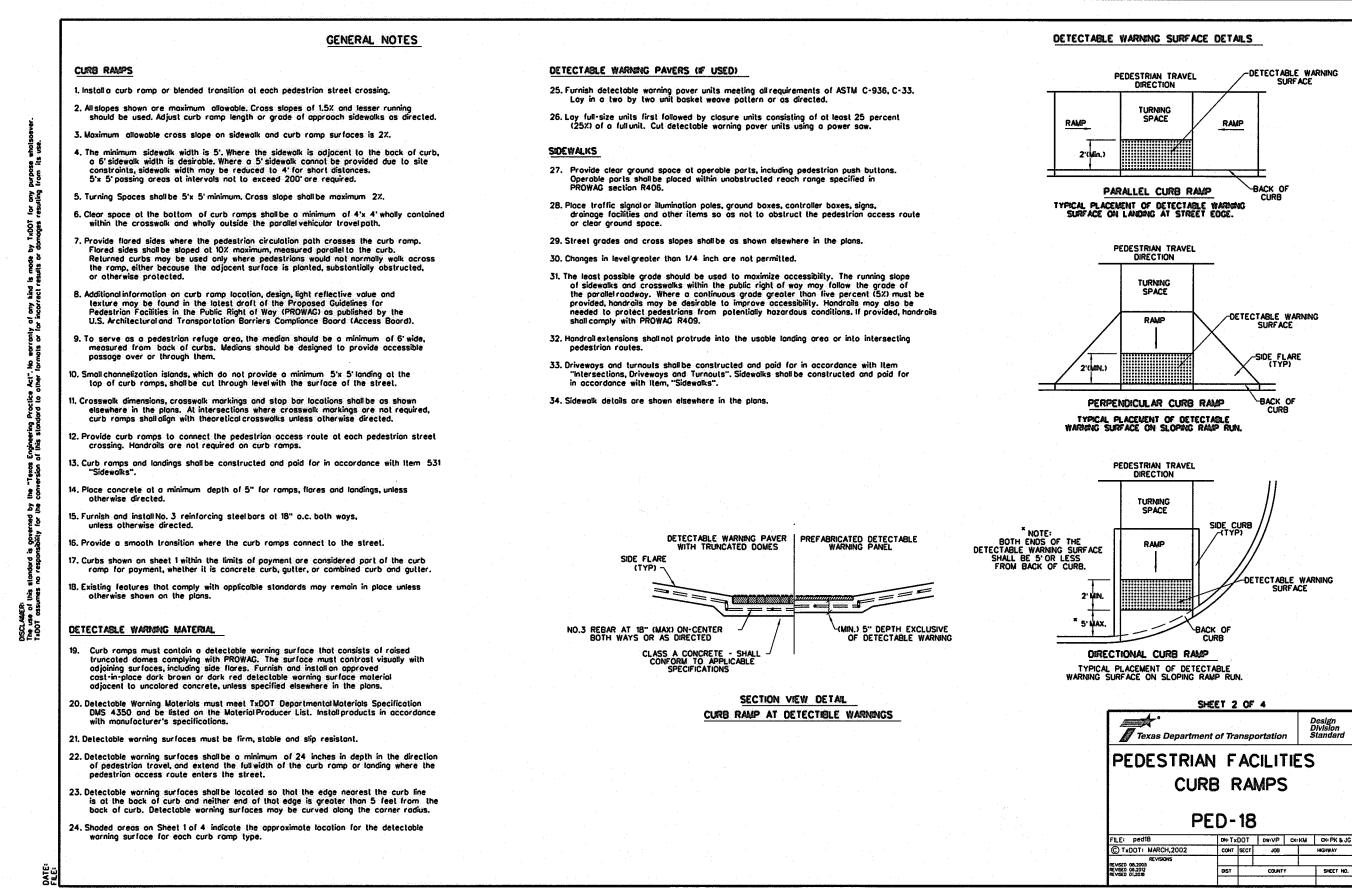


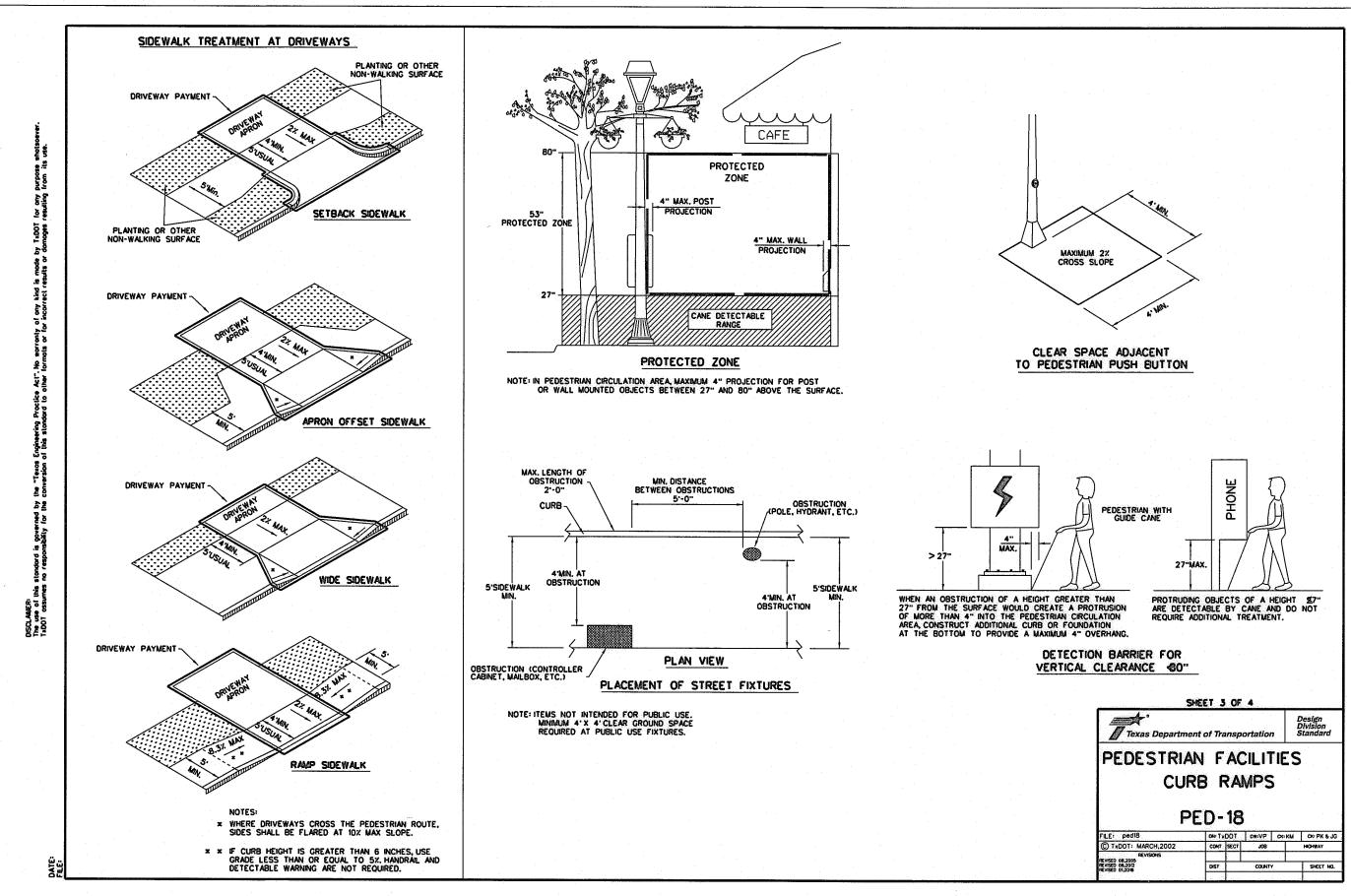


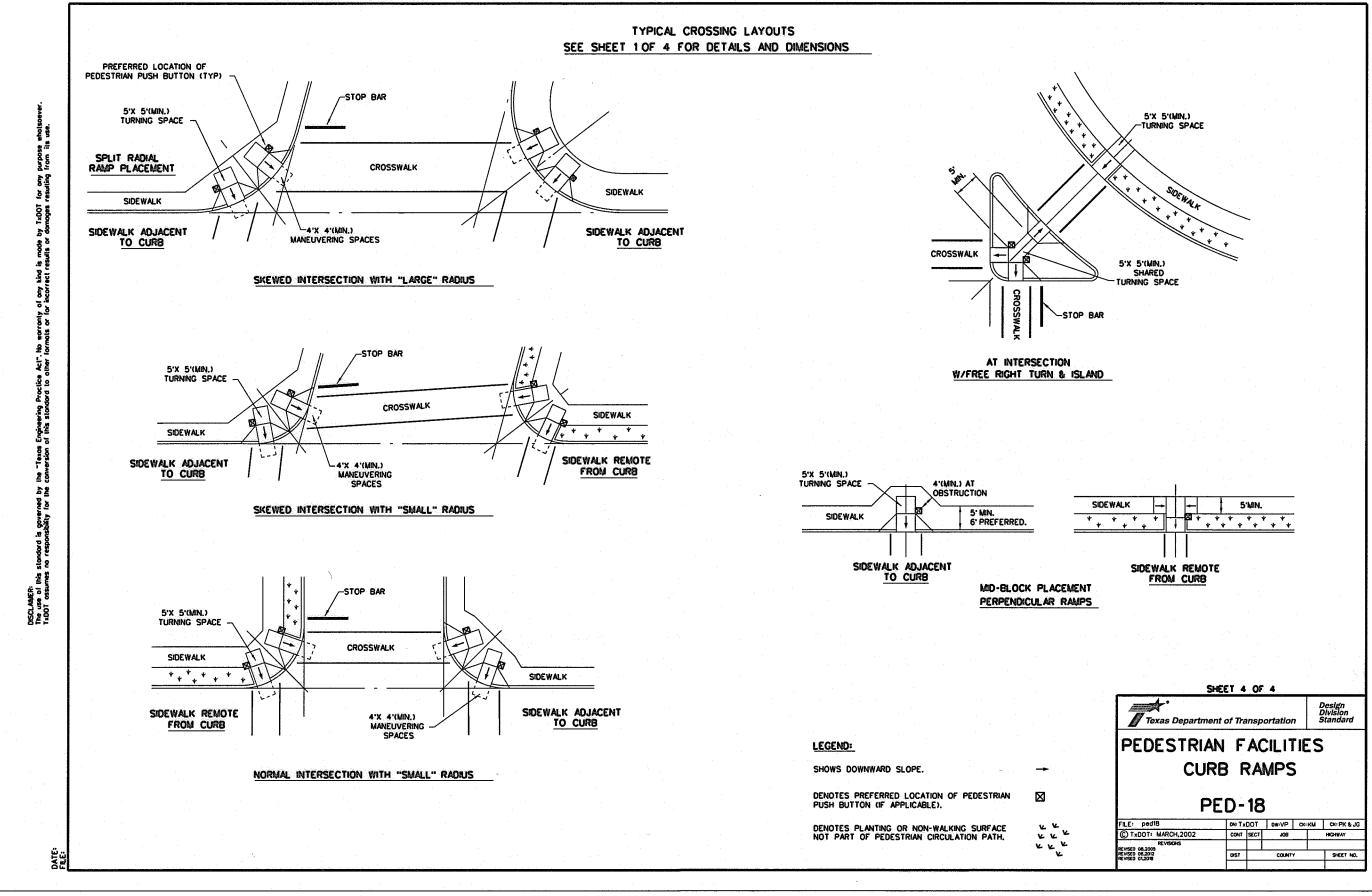


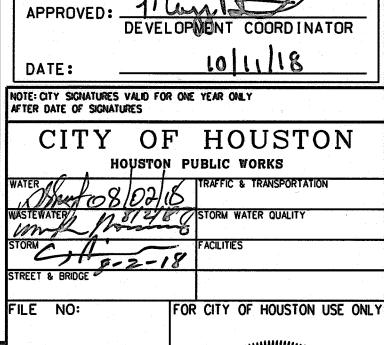








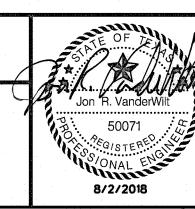






Engineering and Surveying 2107 CityWest Blvd, 3rd Floor Houston, Texas 77042 (713) 783-7788 (713) 783-3580, Fax TBPE FIRM REG. No. 280 TBPLS FIRM REG. No. 100486 FORT BEND COUNTY MUD 132 MIRANDOLA LANE EXTENSION

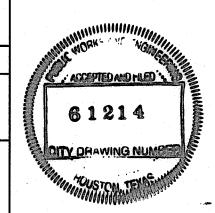
*TxDOT - PEDESTRIAN FACILITIES CURB RAMPS (PED 18)

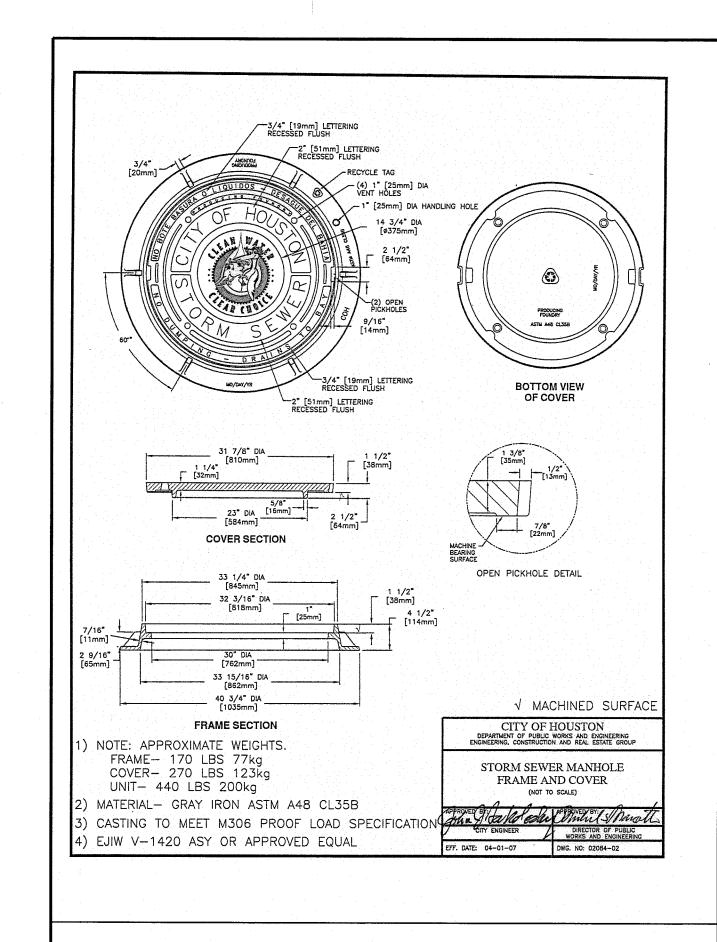


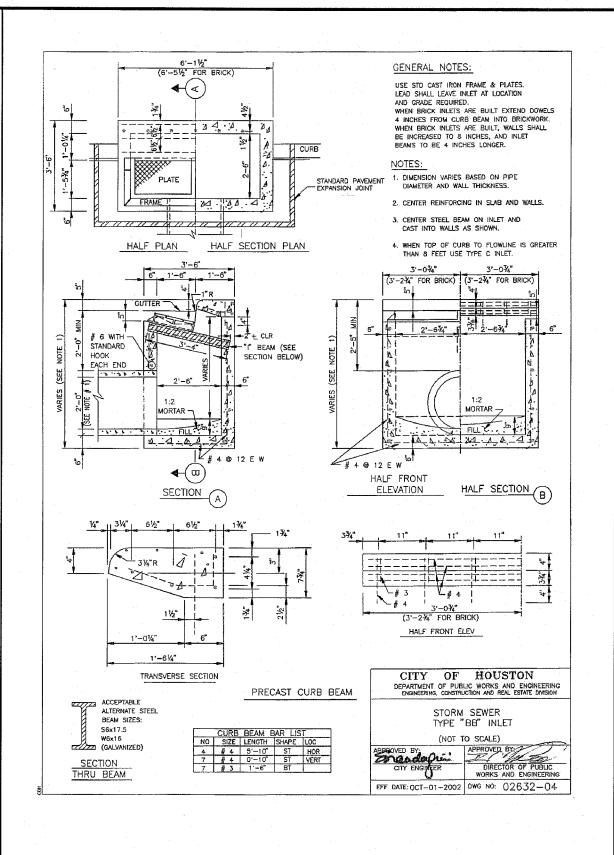
DRAWING SCALE

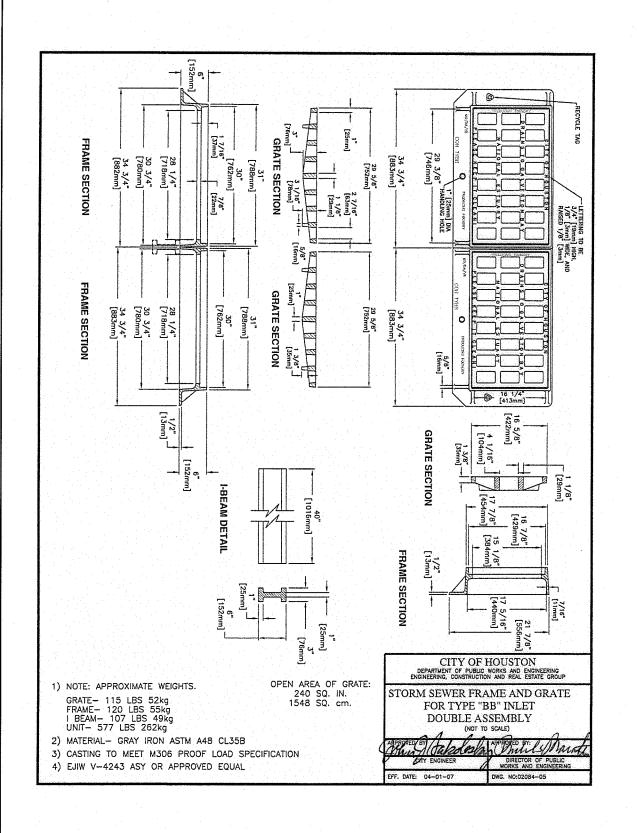
HORZ:
VERT:

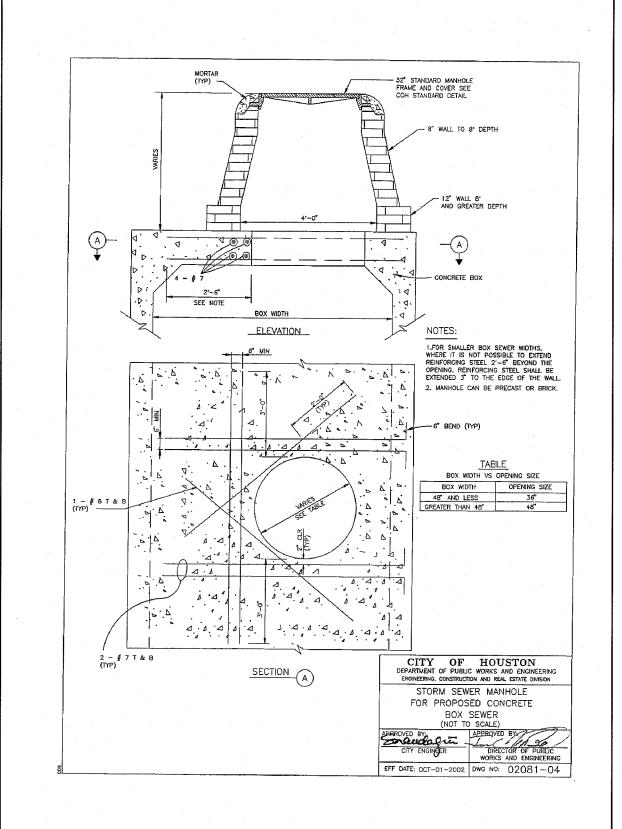
SHEET 10 OF 20

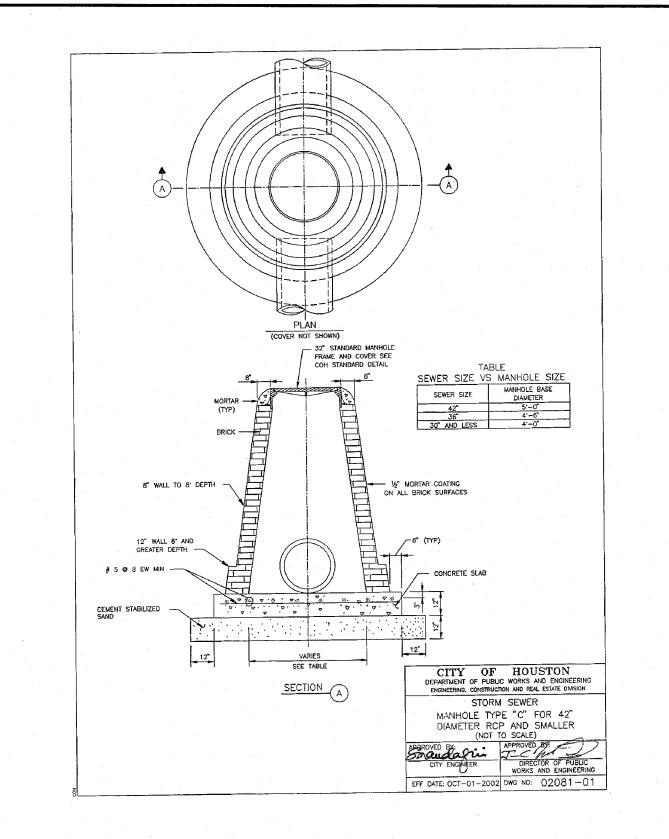


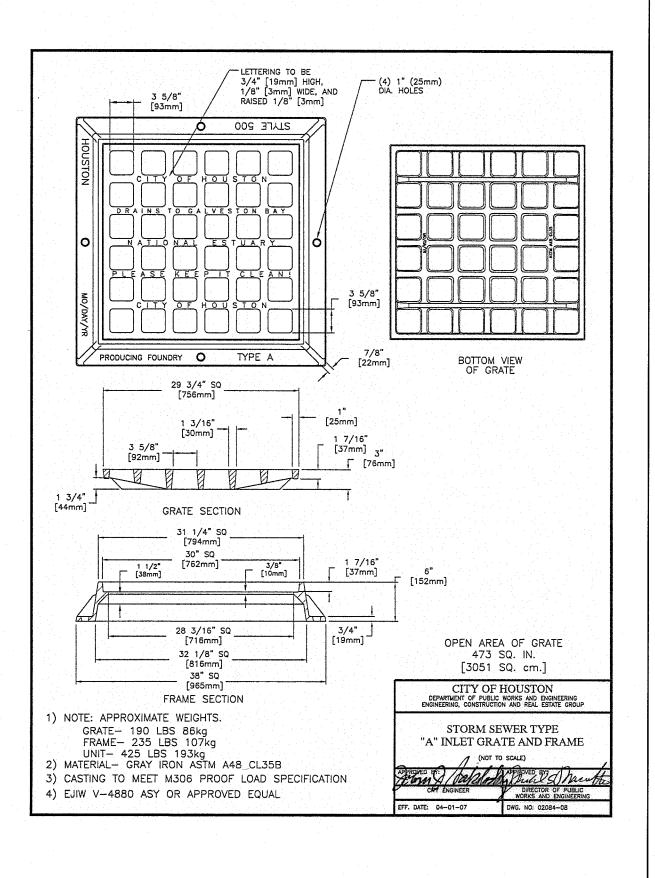


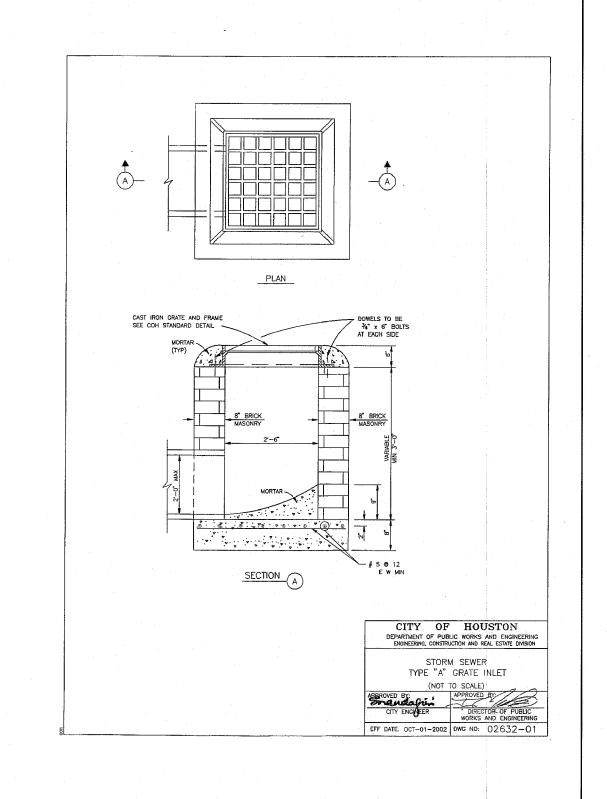


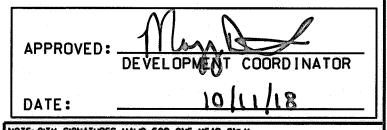












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CITY OF HOUSTON

FOR CITY OF HOUSTON USE ONL

DESIGNED BY: RLM DRAWN BY: PLM COGO CHECKED BY: SURVEY CHECKED BY: __ DATE: QA/QC REVISIONS BY: RLM

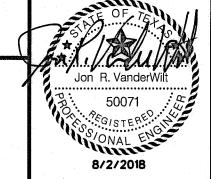
REVISION

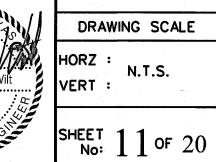


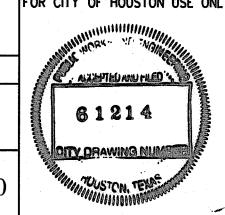
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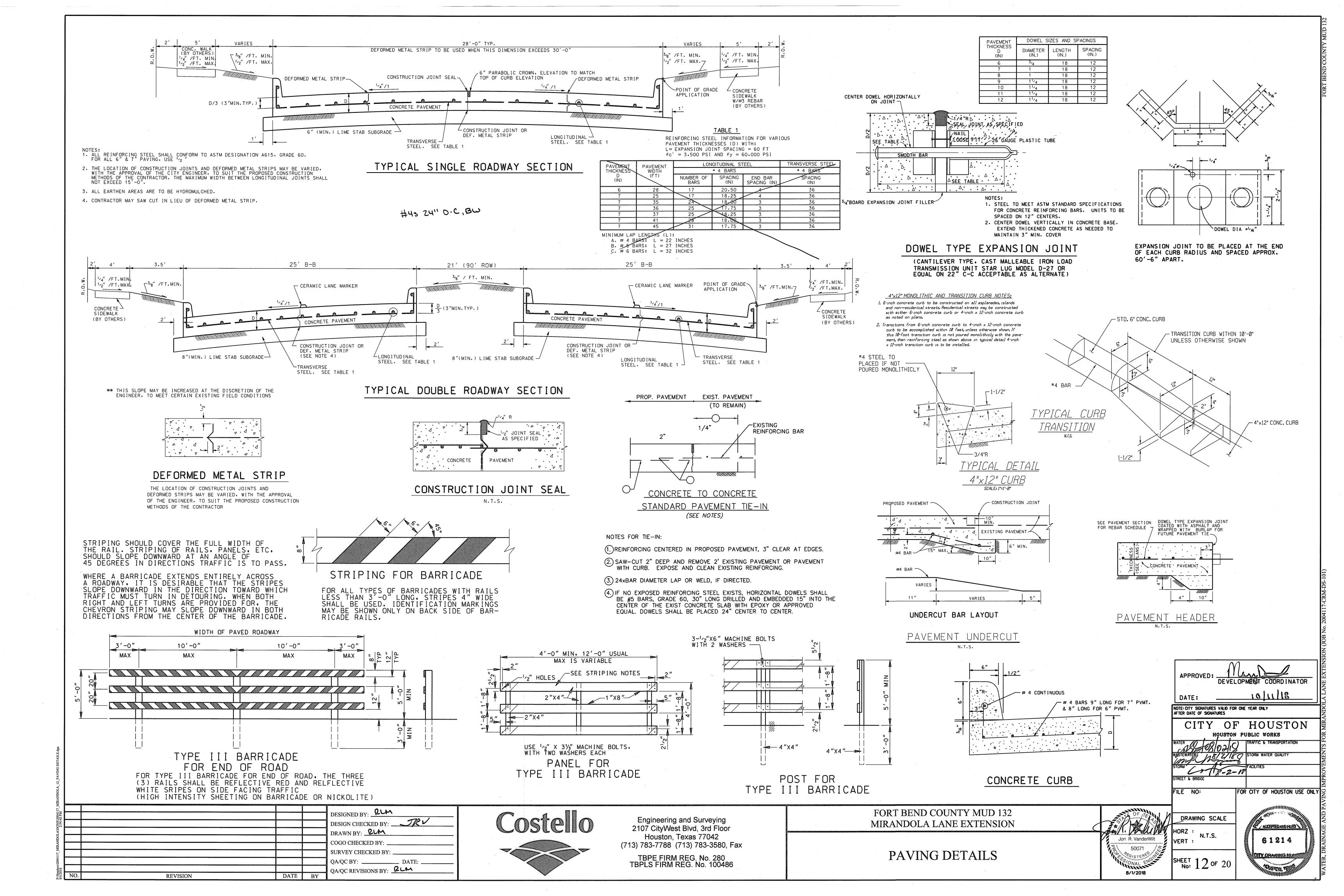
DRAINAGE DETAILS

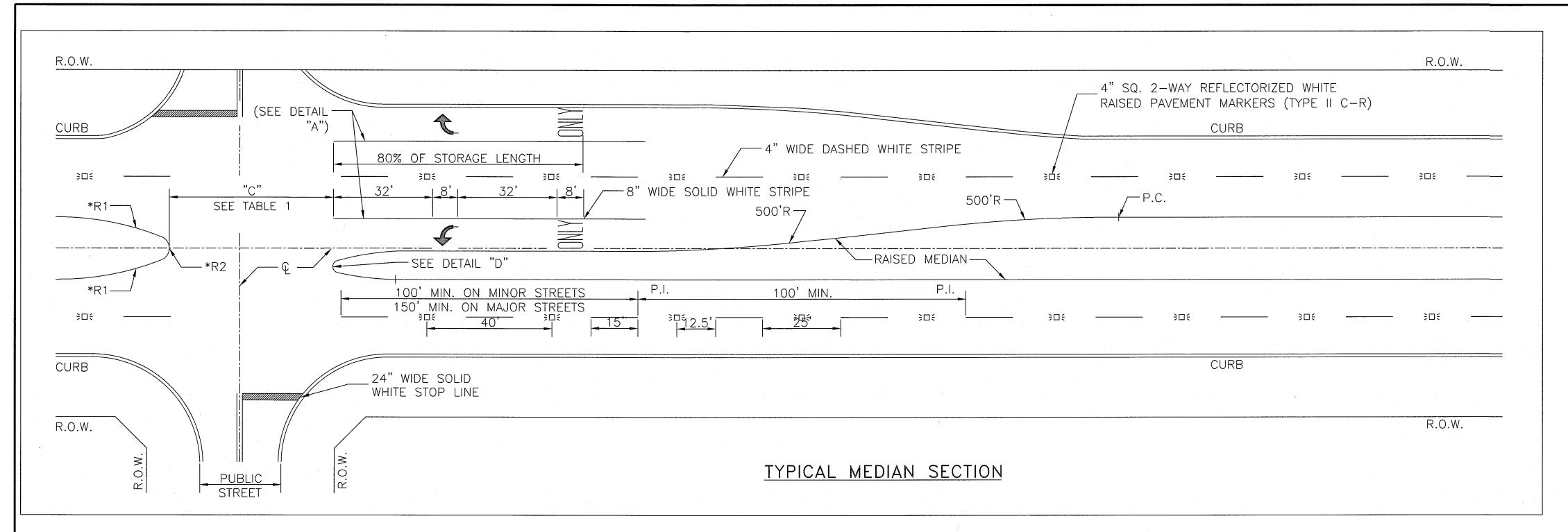
FORT BEND COUNTY MUD 132

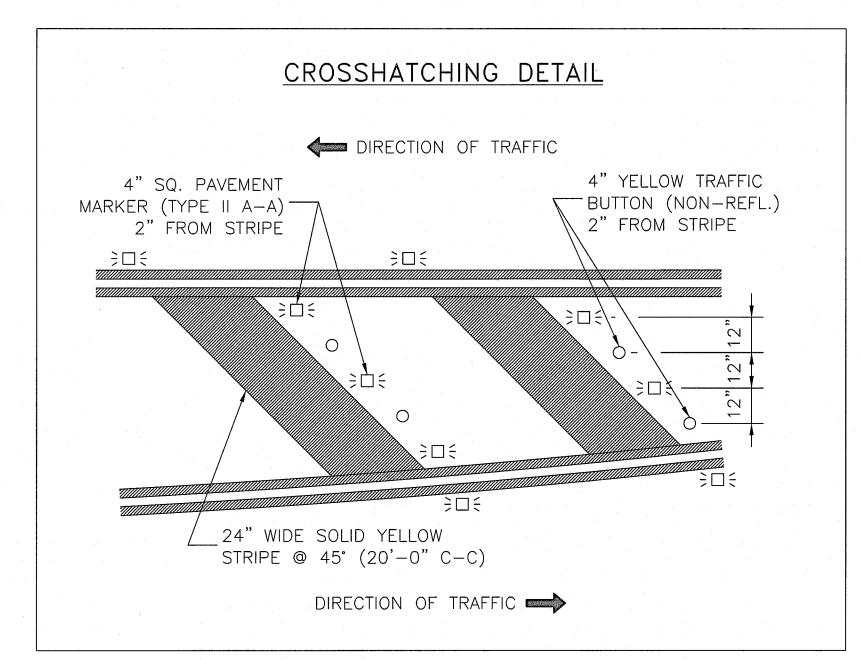


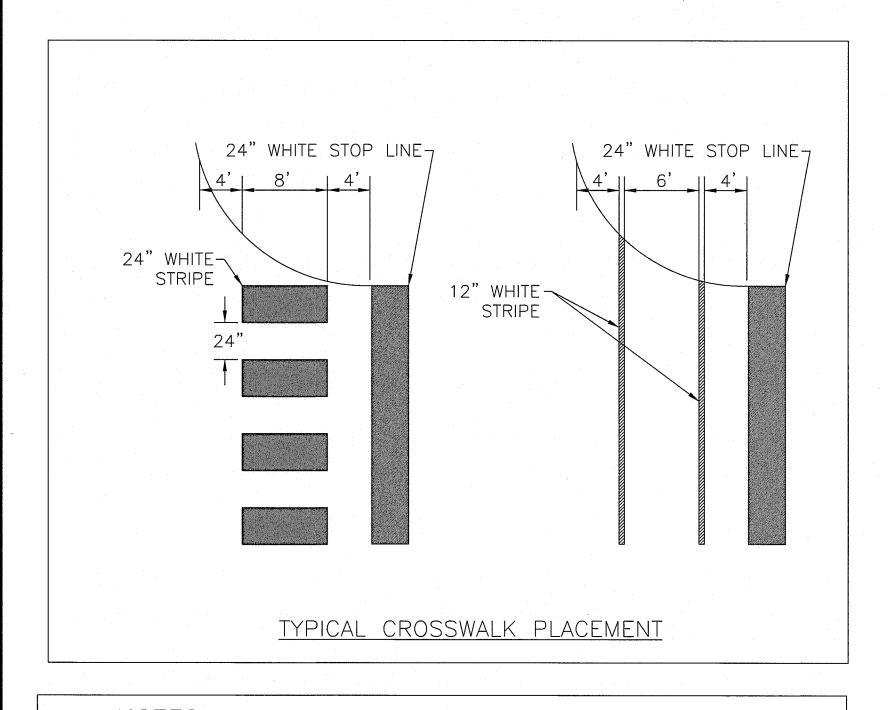










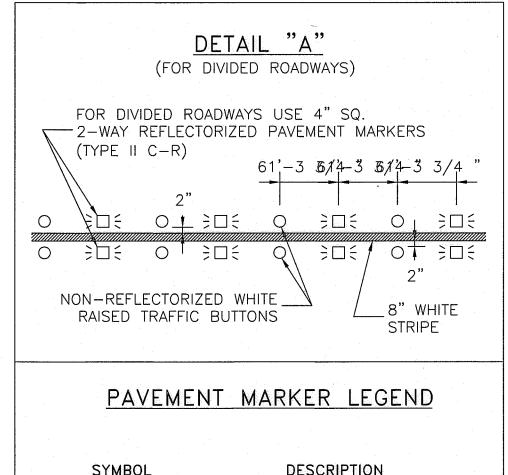


NOTES:

- ALL PAVEMENT MARKINGS SHALL CONFORM TO THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (TMUTCD).
- 2. ALL TRAFFIC BUTTONS AND MARKERS SHALL BE INSTALLED
- ADJACENT TO STRIPES (APPROXIMATELY 2").

 3. LEFT TURN STORAGE BAYS SHALL BE A MIN. OF 100' ON MINOR
- STREETS AND A MIN. 150' ON MAJOR STREETS.

 4. REPEAT ARROWS AT APPROXIMATELY 1000' INTERVALS WITHIN TWO-WAY LEFT TURN SECTION.
- OMIT
 WHEN PAVEMENT MARKINGS EXTEND INTO OR CONTINUE THROUGH AN INTERSECTION AREA, THEY SHALL BE THE SAME COLOR AND AT LEAST THE SAME WIDTH AS THE LINE MARKINGS THEY EXTEND.
- 7. WHEN CROSSWALK MARKINGS ARE USED WITHIN AN ESTABLISHED SCHOOL ZONE AREA, CONTINENTAL TYPE MARKINGS SHALL BE USED.
- 8. ADDITIONAL SET OF "WORD" AND "ARROW" PAVEMENT MARKINGS SHALL BE USED WHEN TURN LANE STORAGE LENGTH IS 160 FEET OR GREATER.

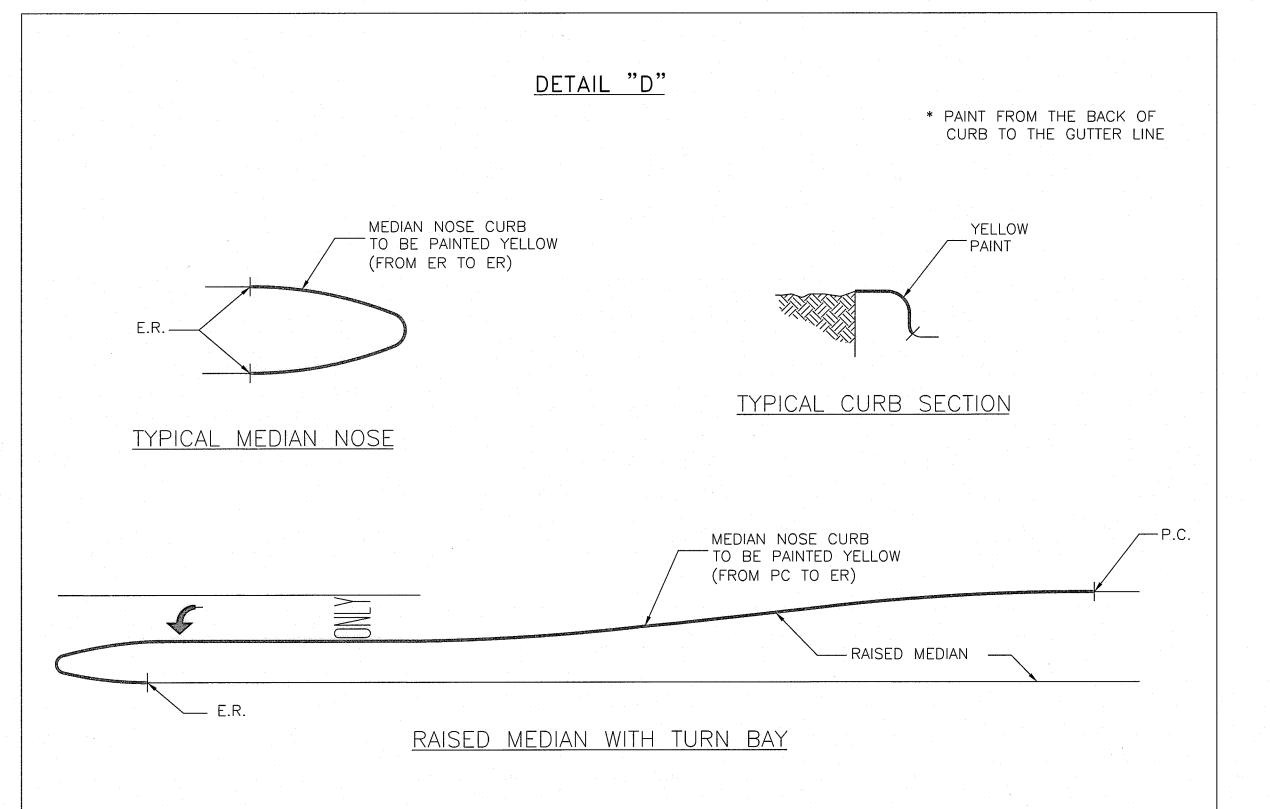


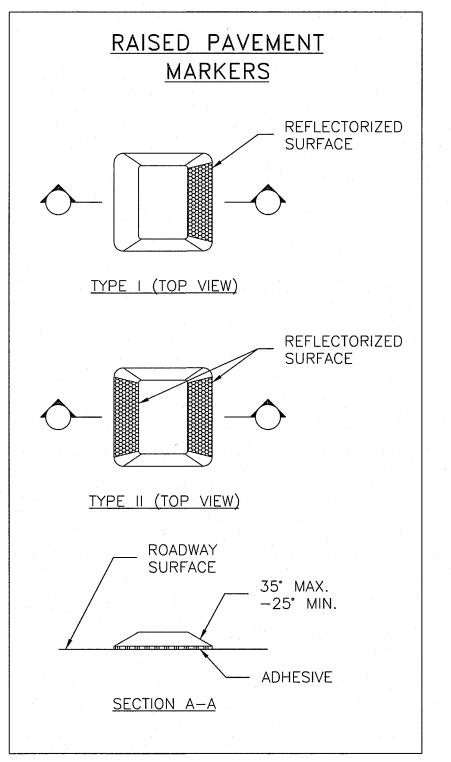
SYMBOL	DESCRIPTION
÷□€	4" x 4" REFLECTORIZED RAISED PAVEMENT MARKEF

O NON-REFLECTIVE 4" DIA.
RAISED TRAFFIC BUTTON

TRAFFIC FLOW

INDICATED DIRECTION OF

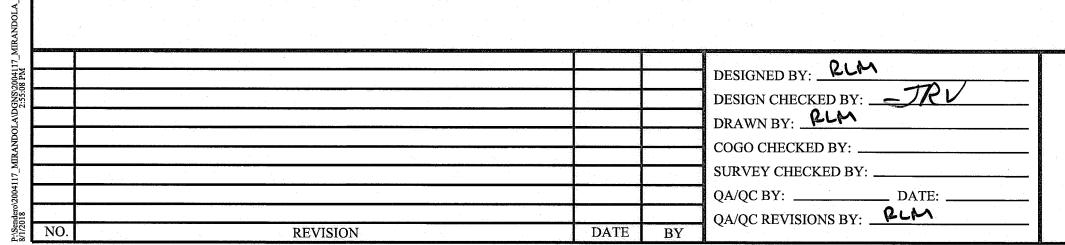




DEVELORMENT COORDINATOR

10/11/18

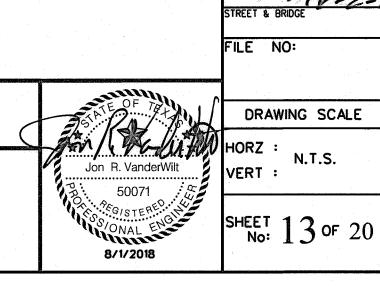
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PAVING MARKING DETAILS

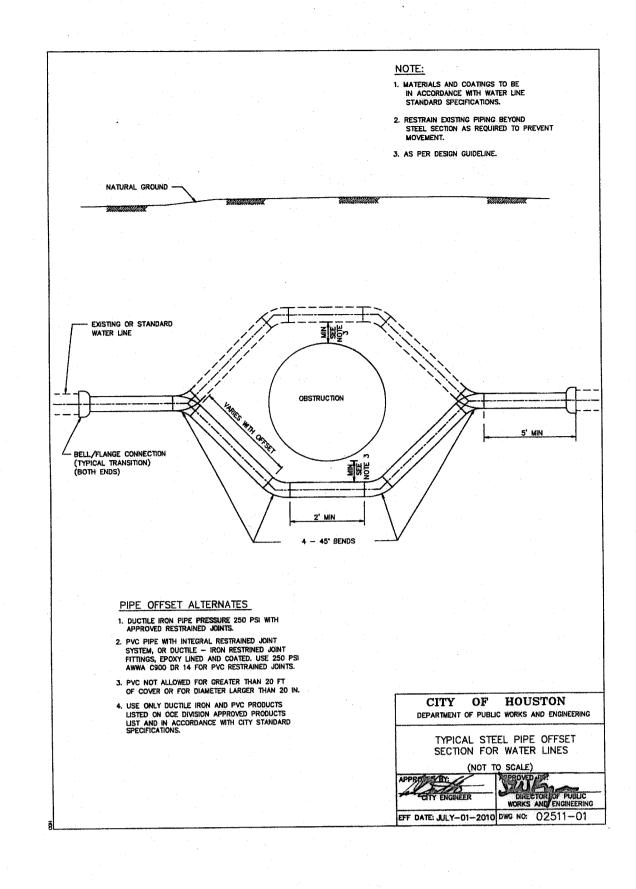


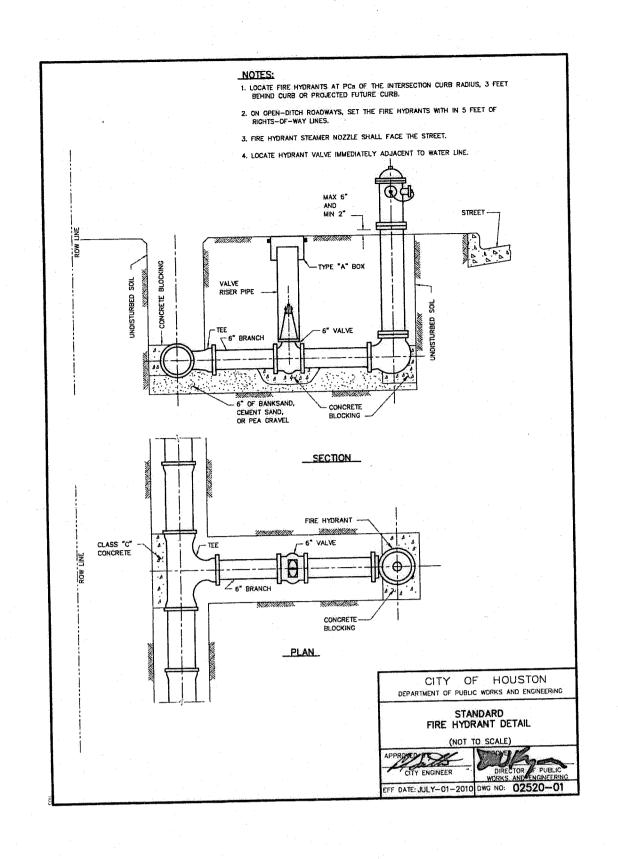
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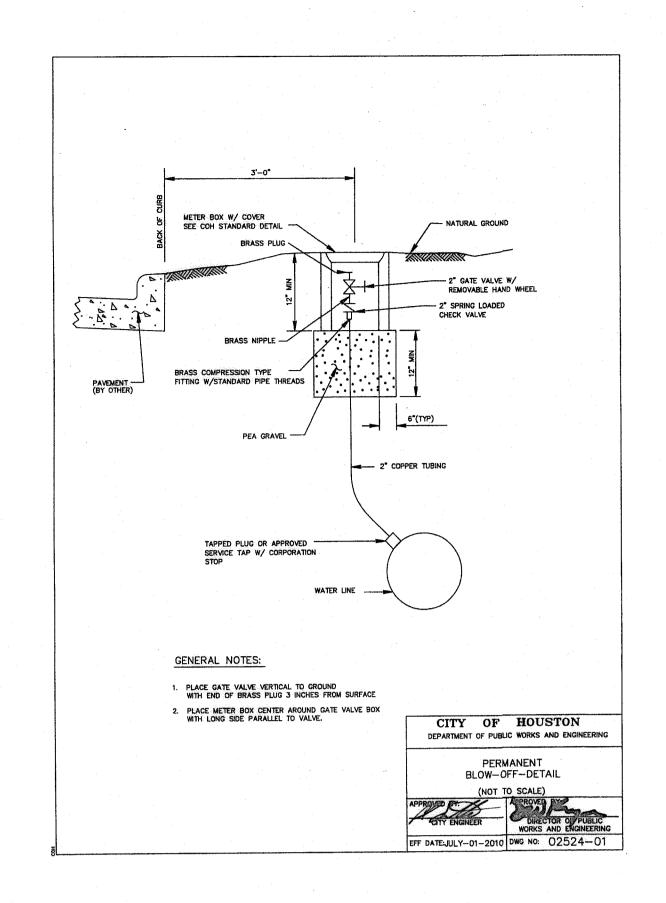
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

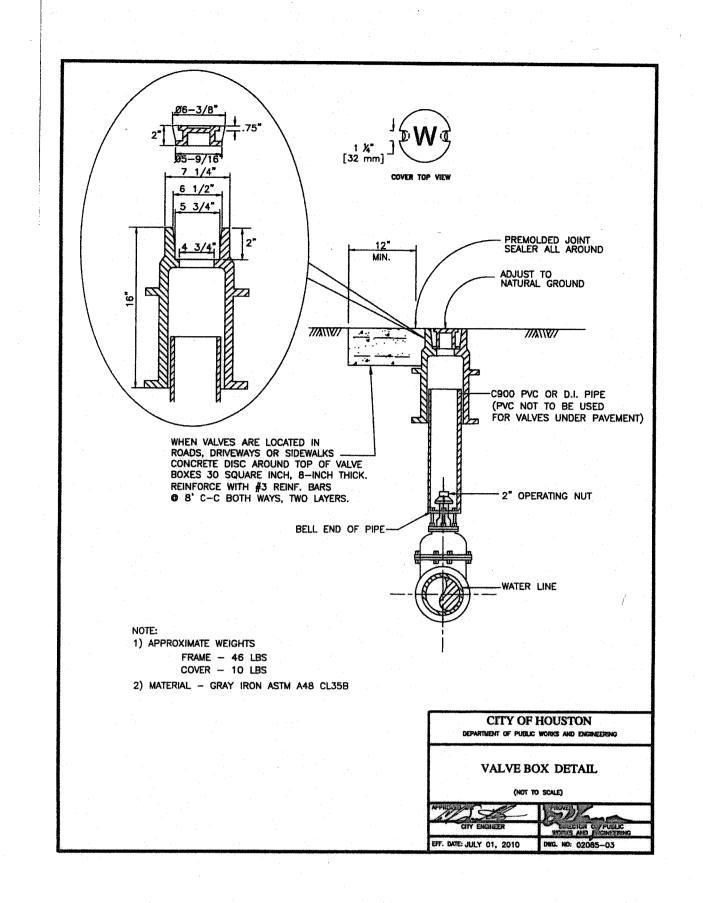
CITY OF HOUSTON

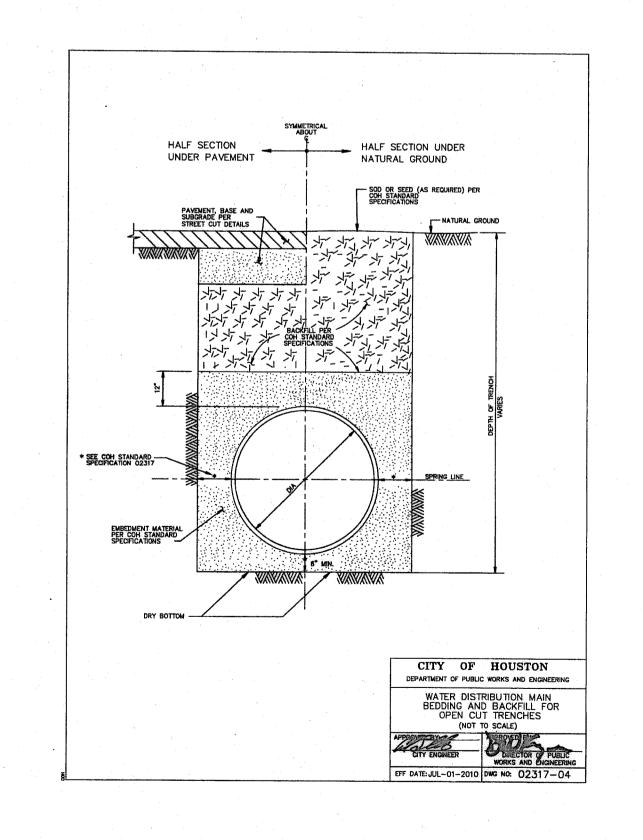
HOUSTON PUBLIC WORKS

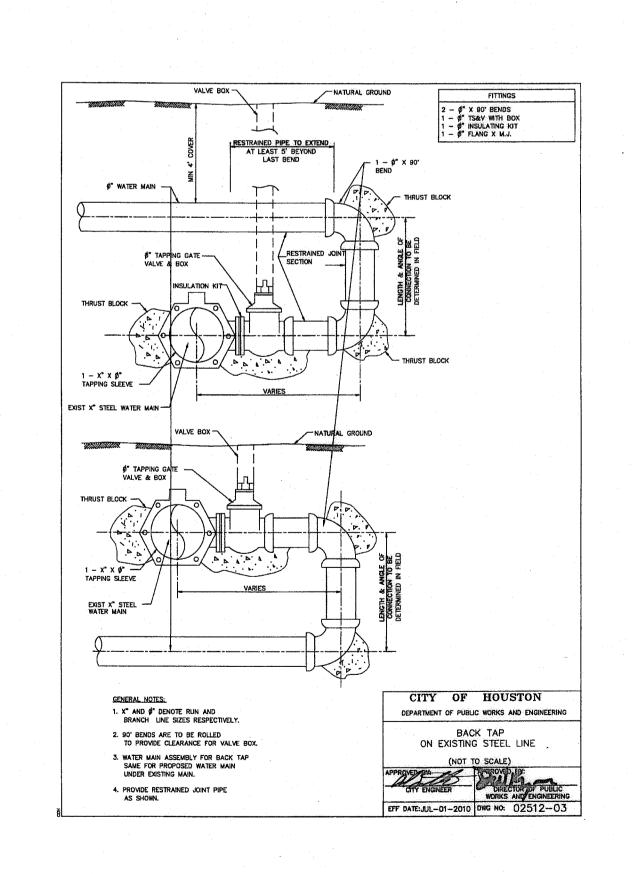


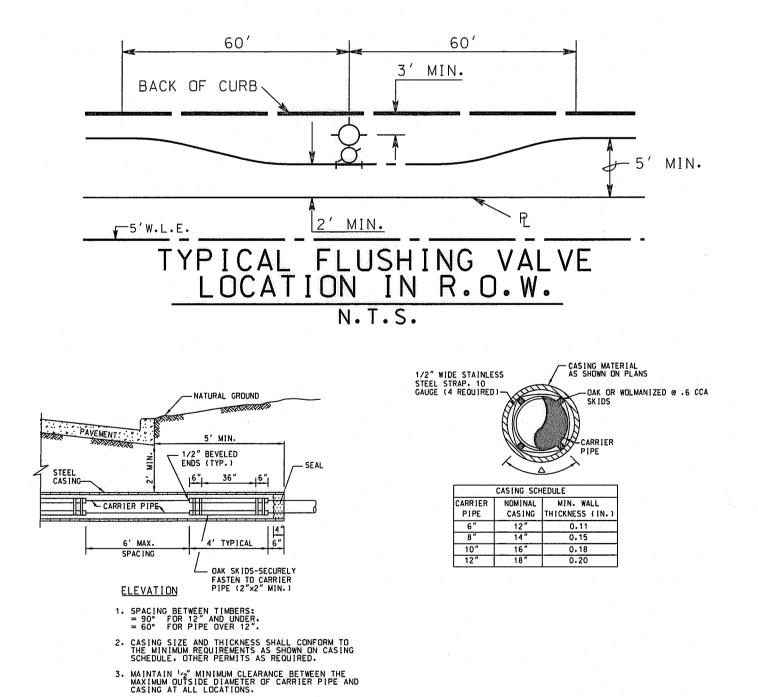


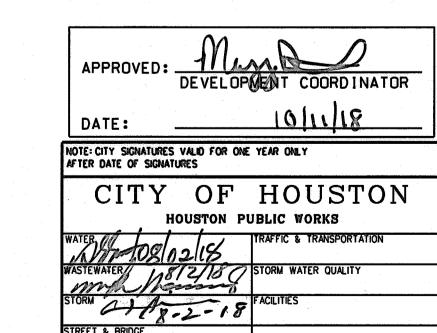












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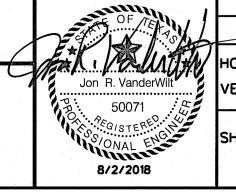


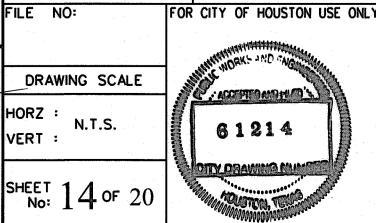
Engineering and Surveying 2107 CityWest Blvd, 3rd Floor Houston, Texas 77042 (713) 783-7788 (713) 783-3580, Fax TBPE FIRM REG. No. 280 TBPLS FIRM REG. No. 100486

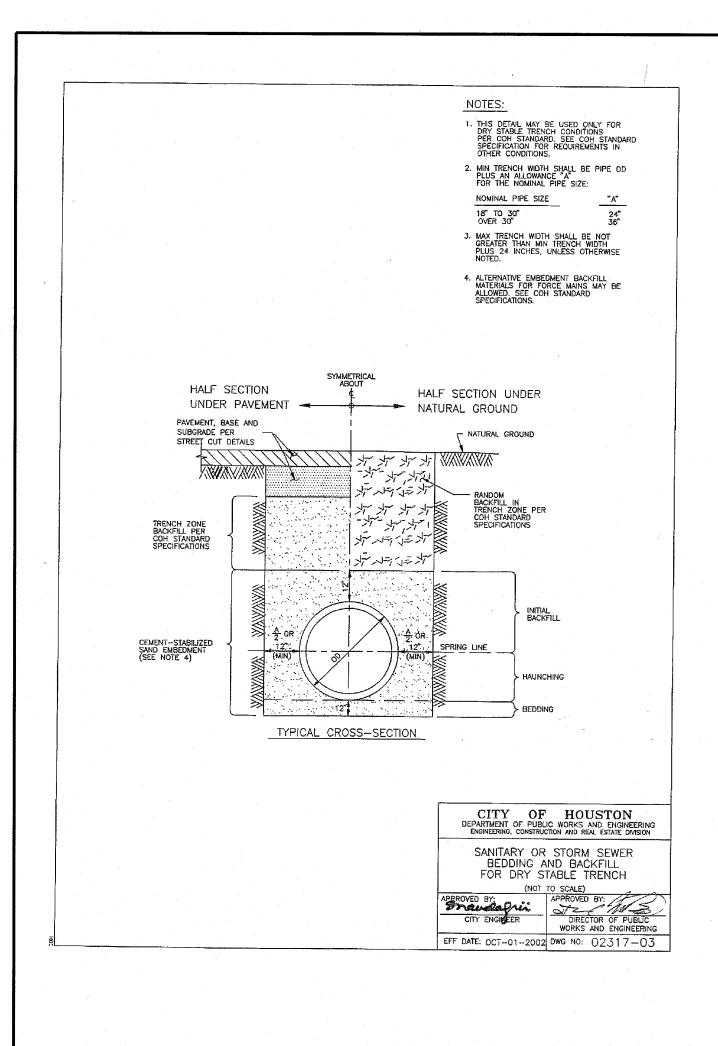
4. DIMENSIONS ARE APPROXIMATE ONLY. CONTRACTOR SHALL INSTALL ADEQUATELY SIZED CASING TO ACCOMMODATE THE CARRIER PIPE.

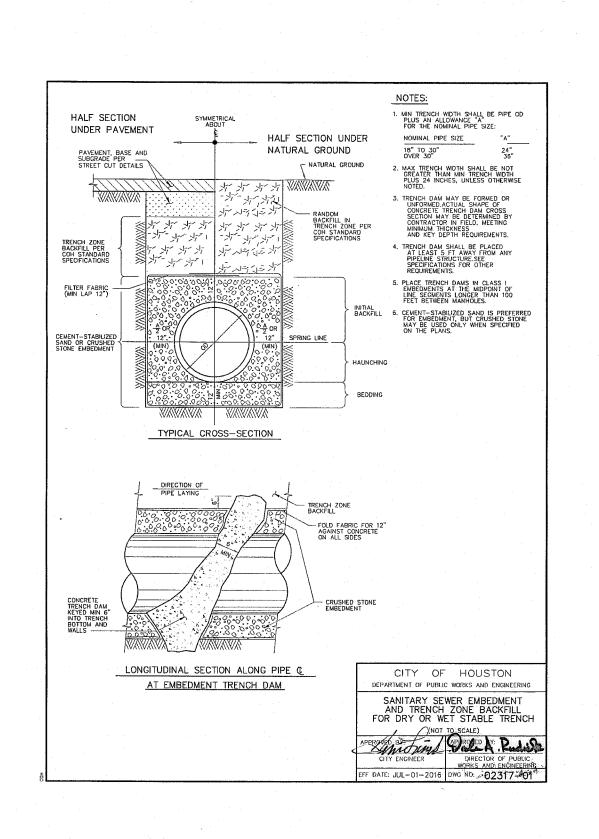
> FORT BEND COUNTY MUD 132 MIRANDOLA LANE EXTENSION

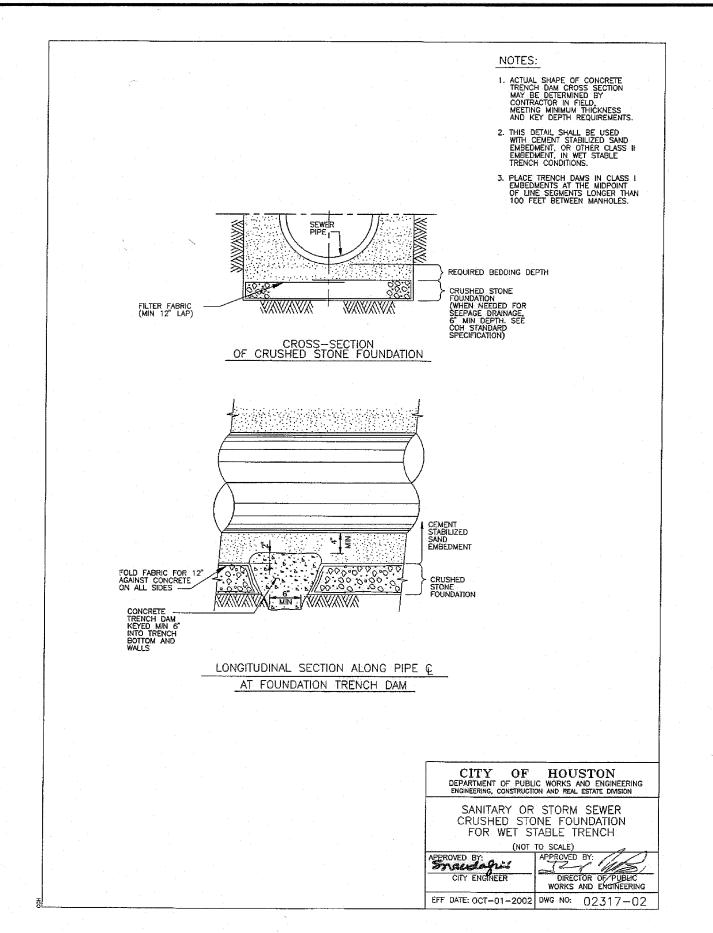
WATER MAIN DETAILS

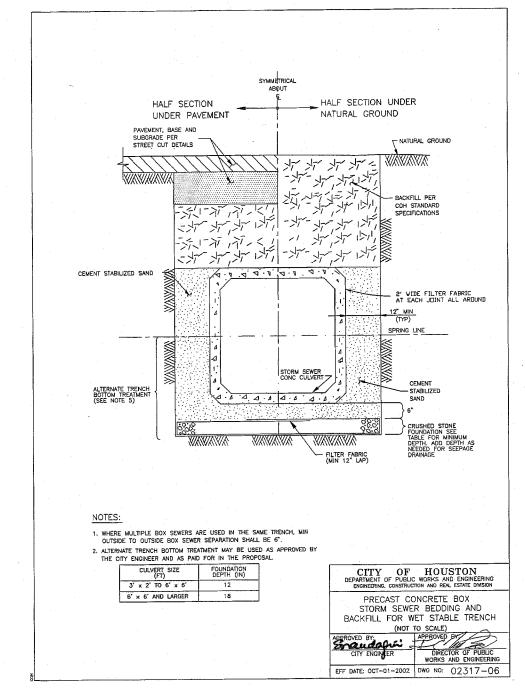


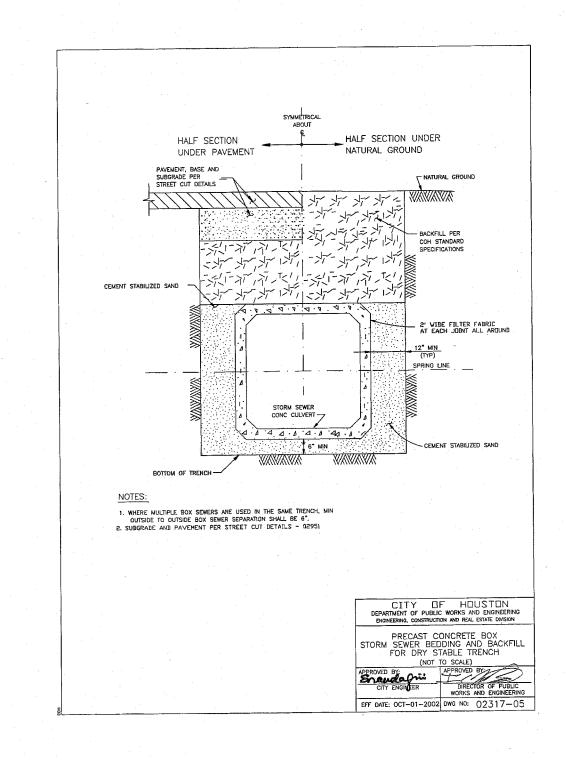


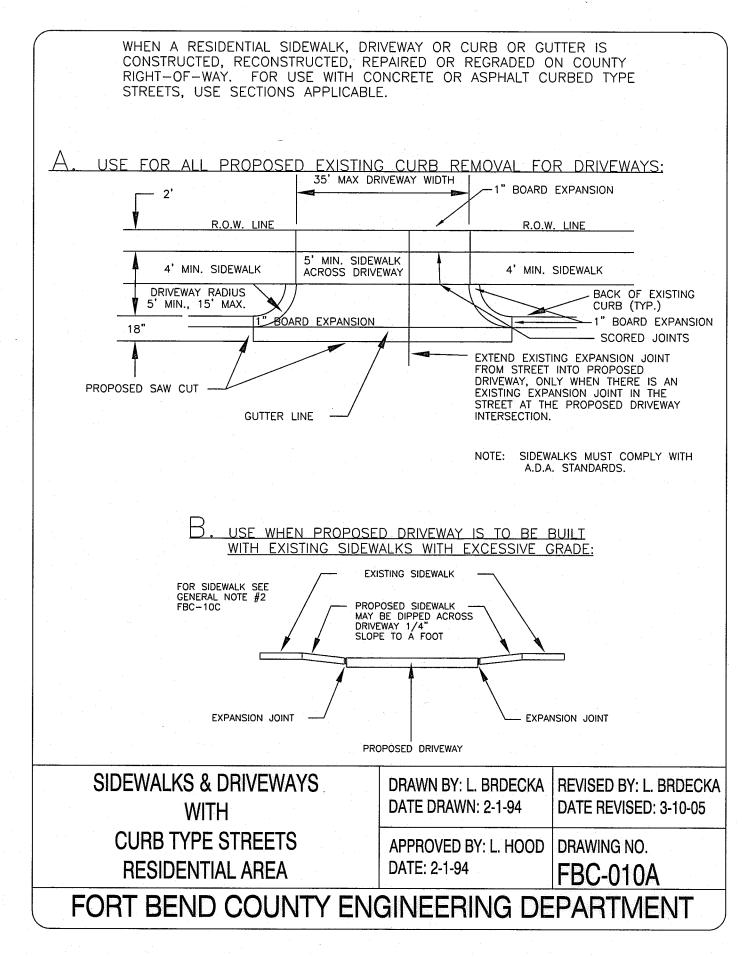


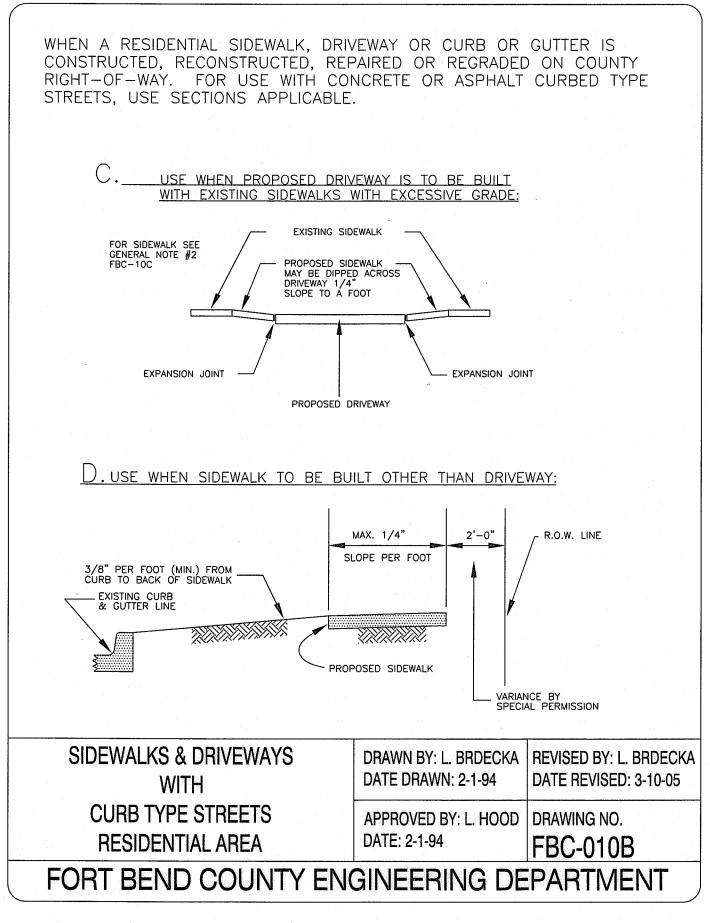


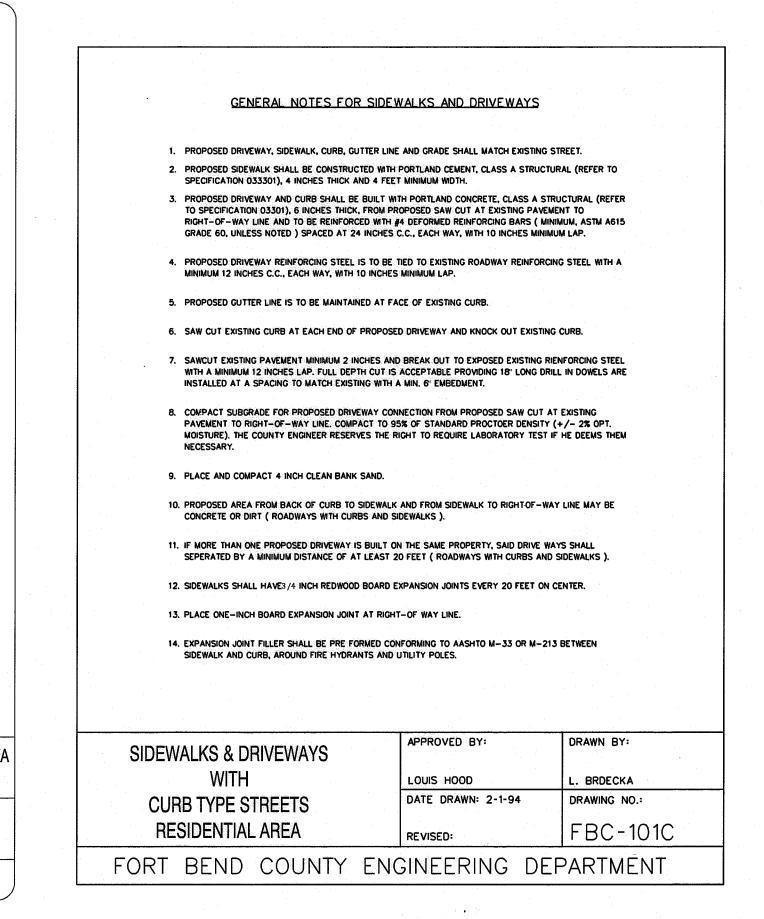


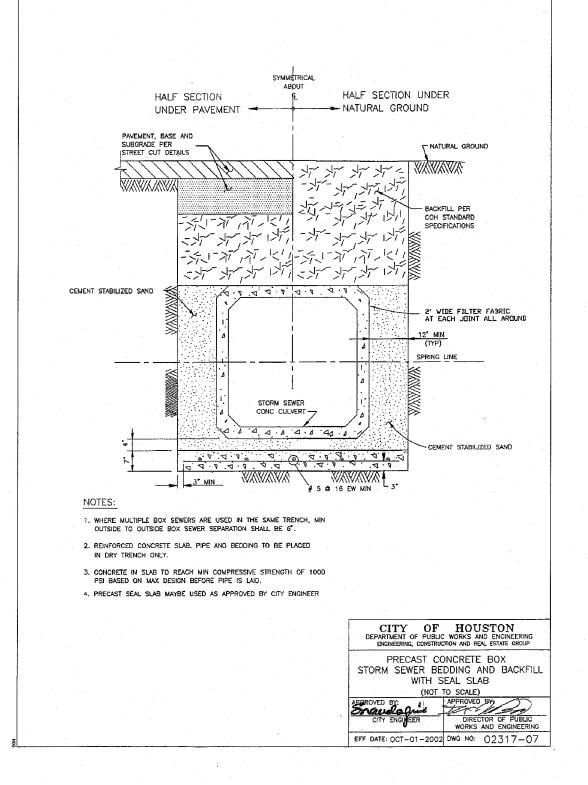


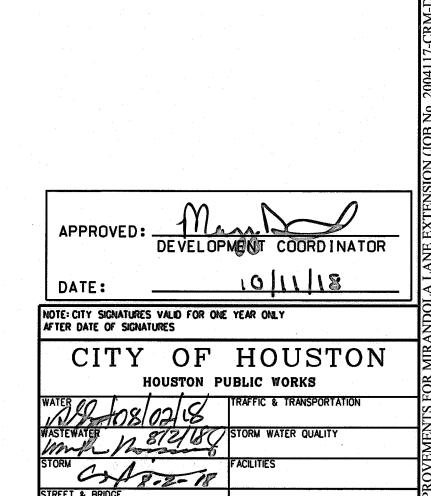












Service Contract to the	INTERNATION OF THE PROPERTY OF	CONTRACTOR OF THE STATE OF THE	
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REVISION

DATE BY



Engineering and Surveying 2107 CityWest Blvd, 3rd Floor Houston, Texas 77042 (713) 783-7788 (713) 783-3580, Fax TBPE FIRM REG. No. 280 TBPLS FIRM REG. No. 100486 FORT BEND COUNTY MUD 132 MIRANDOLA LANE EXTENSION

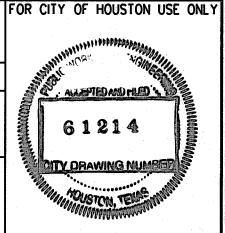
BEDDING DETAILS AND FORT BEND COUNTY SIDEWALK AND DRIVEWAY DETAILS



DRAWING SCALE

HORZ:
VERT:

SHEET 15 OF 20



BENCHMARK RM NO. 190045

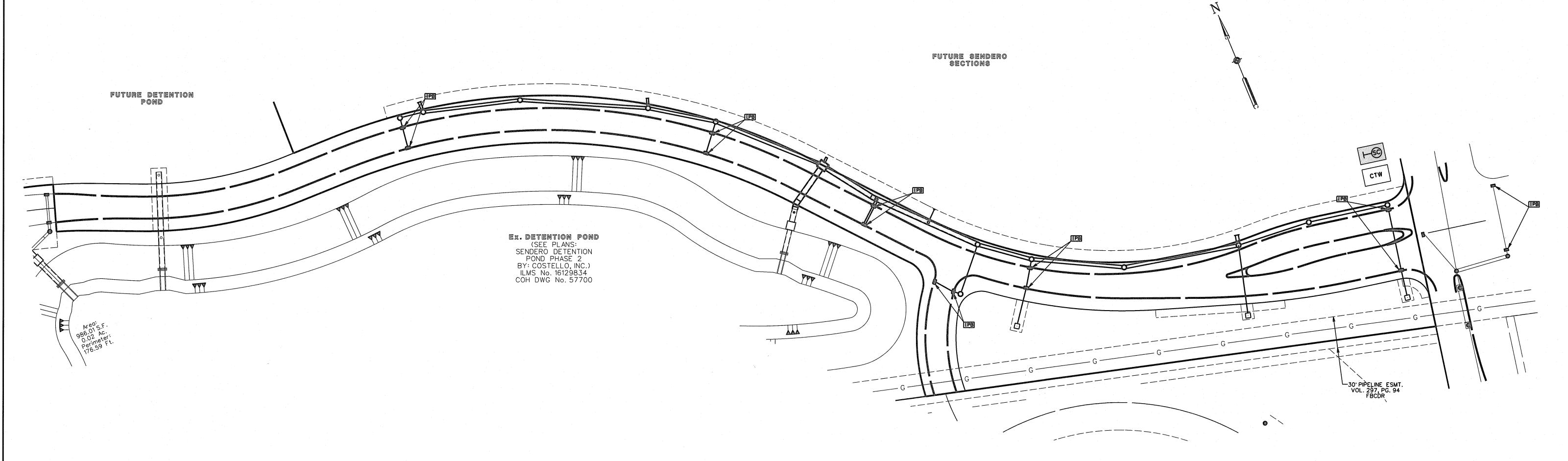
BRASS DISK LOCATED ON THE NORTHEAST CORNER OF CINCO RANCH BLVD. CONCRETE BRIDGE OVER UPPER BUFFALO BAYOU (T100-00-00), 0.5 MILES SOUTHWEST OF THE INTERSECTION OF CINCO RANCH BLVD. AND WESTHEIMER PARKWAY ELEV. 115.25 NAVD 1988, 2001 ADJ.

TEMPORARY BENCHMARK 2534-69-1

CUT BOX ON CENTERLINE OF INLET AT BACK OF CURB. LOCATED AT THE WEST SIDE OF RANCHO BELLA PARKWAY, FOURTH INLET NORTH OF THE INTERSECTION OF RANCHO BELLA PARKWAY AND BELLAIRE BLVD. DIRECTLY ACROSS FROM PADOVA DR. THE ENTRANCE TO EXISTING SUBDIVISION LAKES OF BELLA TERRA. ELEV. 119.54 NAVD 1988, 2001 ADJ

TEMPORARY BENCHMARK 2534-70-1

CUT BOX ON CENTERLINE OF INLET AT BACK OF CURB. LOCATED AT THE WEST SIDE OF RANCHO BELLA PARKWAY, FIRST INLET NORTH OF THE INTERSECTION OF RANCHO BELLA PARKWAY AND BELLAIRE BLVD. ELEV. 118.72 NAVD 1988, 2001 ADJ



(IPB) **×− (RFB) ←** (I—(SC)

INLET PROTECTION BARRIER

REINFORCED FILTER FABRIC BARRIER A MINIMUM OF 2' BEHIND BACK OF CURB

STABILIZED CONSTRUCTION ACCESS

CTW CONCRETE TRUCK WASH

NOTES:

1. PLACE FILTER FABRIC SILT FENCE +/- 5 FEET AROUND ALL INLETS.

2. ALL SOIL STOCKPILES OF SIGNIFICANT SIZE SHALL BE ENCOMPASSED BY A SILT FENCE.

- 3. ALL PROPOSED SWALES TO BE CONSTRUCTED BY THE CONTRACTOR FOR MAINTAINING SITE DRAINAGE SHALL HAVE SILT FENCES PLACED ACROSS THE ENTIRE SWALE JUST UPSTREAM OF THE OUTFALL LOCATION.
- 4. A VEHICLE WASH-DOWN AREA FOR THE PROJECT MAY BE LOCATED BY THE CONTRACTOR. WHEN IN USE BY THE CONTRACTOR. THE INLET WHERE THE WASH-DOWN WATER IS DIRECTED SHALL BE PROTECTED. THE LOCATION OF THE WASH-DOWN IS AT THE CONTRACTOR'S OPTION.
- 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL SWPPP FEATURES INDICATED ON THIS PLAN.
- 6. ESTABLISH TURF ON ALL AREA'S DISTURBED DURING CONSTRUCTION UNLESS CONSTRUCTION IS SCHEDULED TO CONTINUE WITHIN 14 DAYS.
- 7. UPON PROJECT COMPLETION AND FINAL STABILIZATION. ALL SILT FENCE SHALL BE REMOVED AND DISPOSED OF.

APPROVED:	DEVELORMENT COORDINATOR		
DATE:	DEVELOR	10/11	1
OTE: CITY SIGNATURES FTER DATE OF SIGNAT		E YEAR ONLY	

NOTE: CITY SIGNATURES VALID FOR AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER TRAFFIC & TRANSPORTATION
WASTEWATER
STORM STORM WATER QUALITY
STORM FACILITIES
STREET & BRIDGE

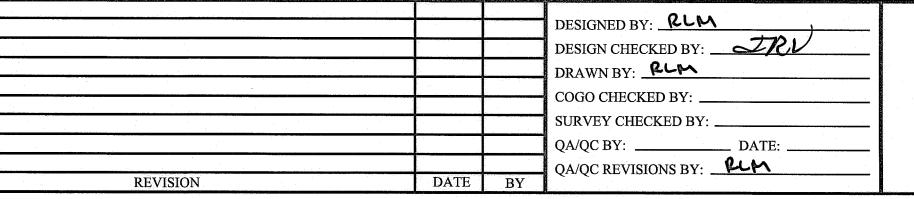
LE NO:

SHEET 16 OF 20

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

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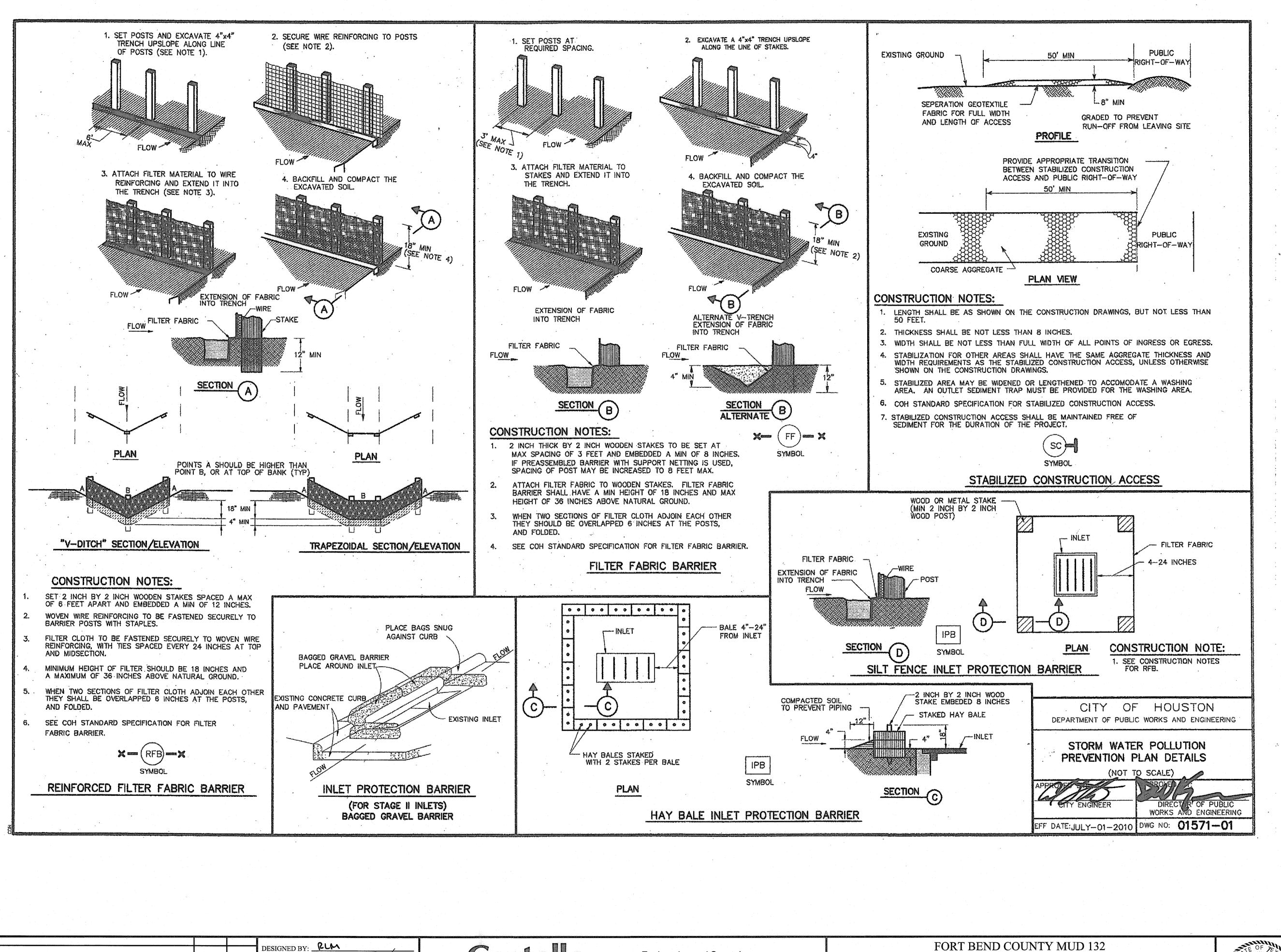




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TBPE FIRM REG. No. 280 TBPLS FIRM REG. No. 100486 POLLUTION PREVENTION PLAN LAYOUT

FORT BEND COUNTY MUD 132



Engineering and Surveying

2107 CityWest Blvd, 3rd Floor

Houston, Texas 77042

(713) 783-7788 (713) 783-3580, Fax

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

Costello

DESIGN CHECKED BY: RV

___ DATE: .

DRAWN BY: PLM

COGO CHECKED BY:

DATE BY

REVISION

SURVEY CHECKED BY:

QA/QC REVISIONS BY: RLM

HOUSTON PUBLIC WORKS ORN C> 18-2-18 FOR CITY OF HOUSTON USE ONL' 61214 SHEET 17 OF 20

CITY OF HOUSTON

FORT BEND COUNTY MUD 132 MIRANDOLA LANE EXTENSION

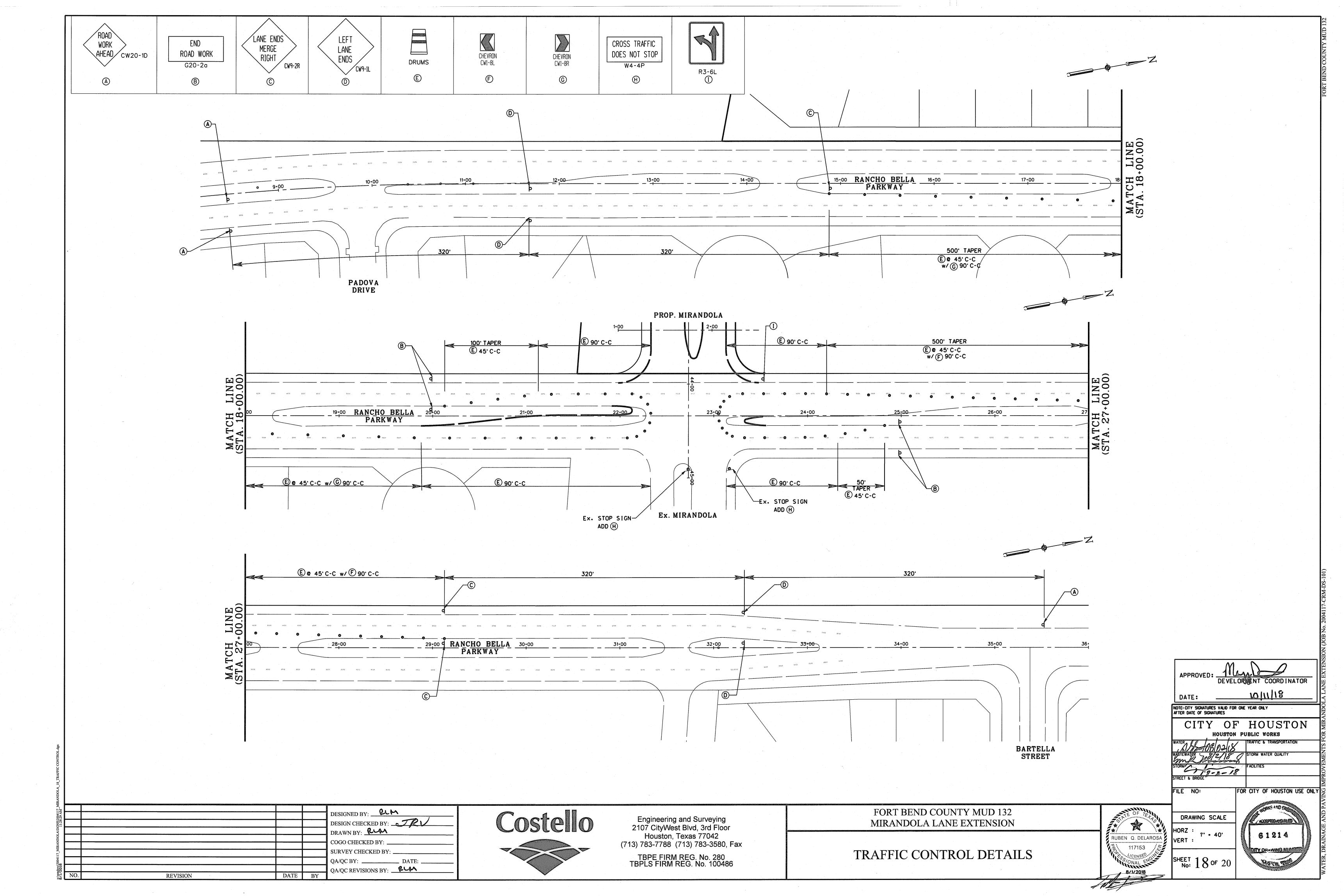
POLLUTION PREVENTION DETAILS

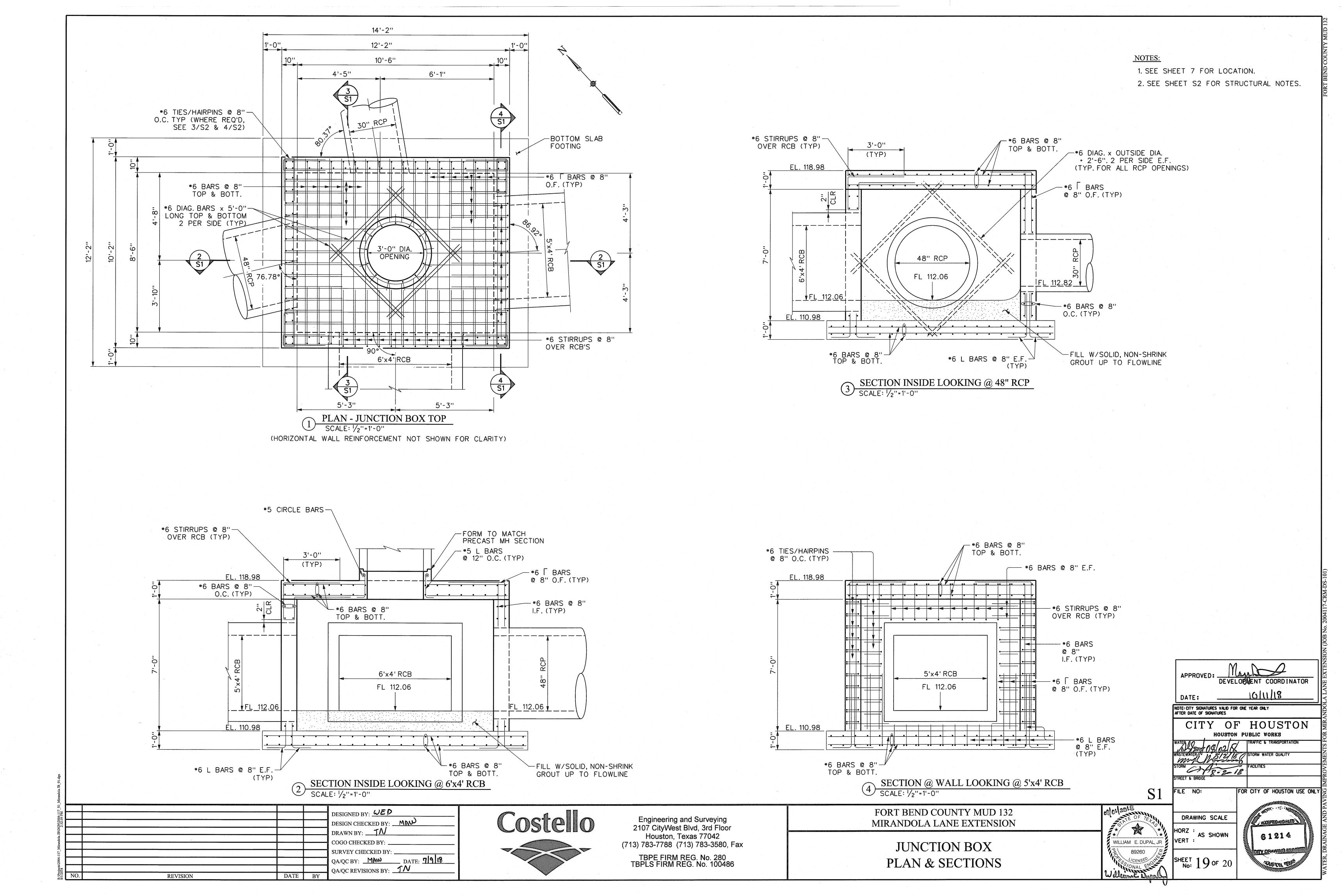
Jon R. VanderWilt

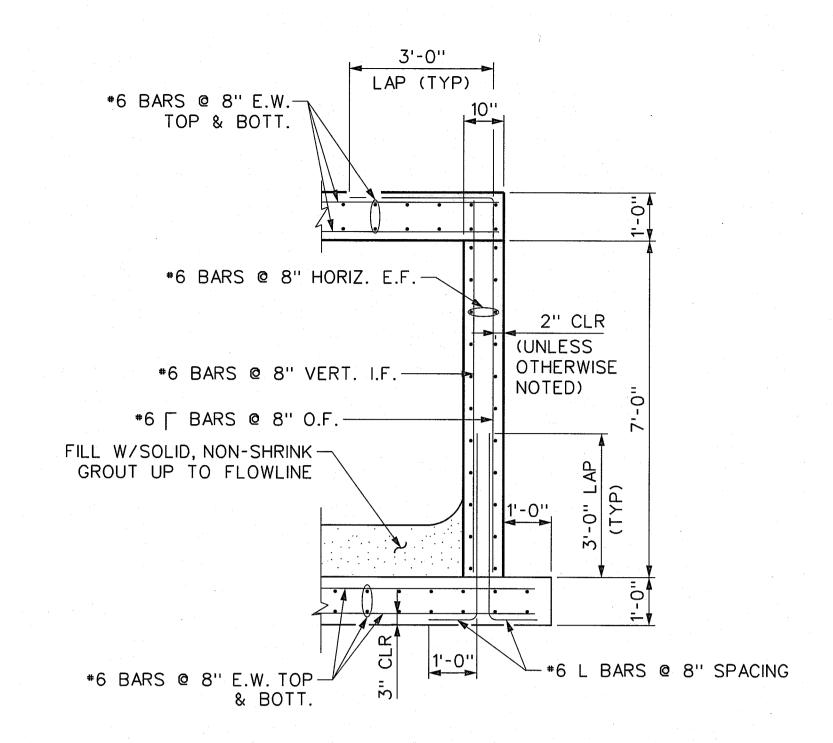
DRAWING SCALE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

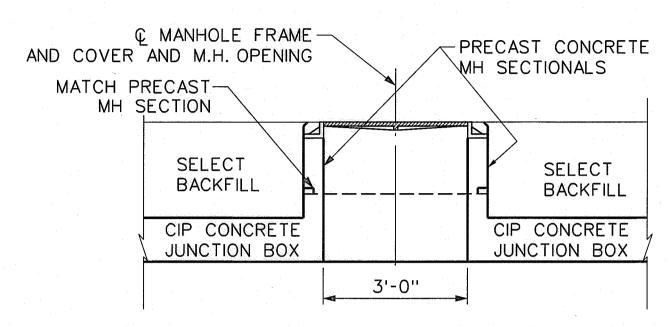
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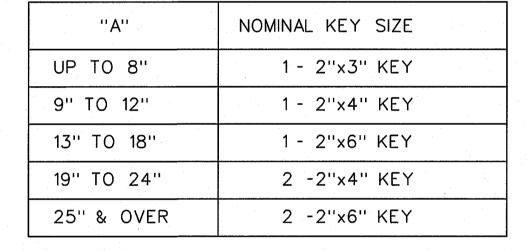


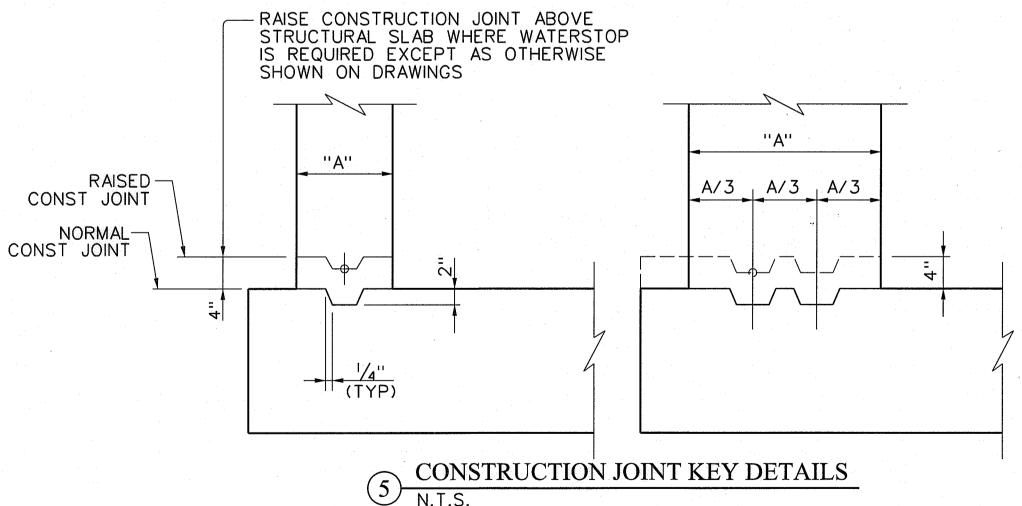


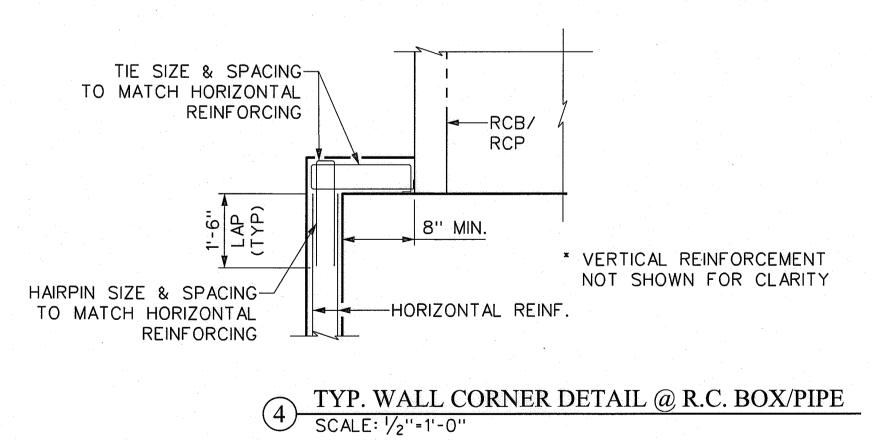
TYPICAL WALL SECTION FOR JUNCTION BOX SCALE: 1/2"=1'-0"



MANHOLE OPENING AT JUNC. BOX 2 MANHOLE OPT







TO MATCH HORIZONTAL REINFORCING

QA/QC BY: MAW DATE: 7918

DESIGNED BY: WED

DRAWN BY: __**T**\/

COGO CHECKED BY:

DESIGN CHECKED BY: MAN

Engineering and Surveying 2107 CityWest Blvd, 3rd Floor Houston, Texas 77042 (713) 783-7788 (713) 783-3580, Fax TBPE FIRM REG. No. 280 TBPLS FIRM REG. No. 100486

WILLIAM E. DUPAL, JR 89260

STRUCTURAL NOTES:

PROFESSIONAL ENGINEER.

4,000 PSI AT 28 DAYS.

6. ALL REINFORCING STEEL SHALL BE GRADE 60.

7. EXPOSED CORNERS SHALL BE CHAMFERED 3/4 INCH.

MATERIALS:

AND BACKFILL FOR UTILITIES".

1. CONTRACTOR SHALL CONSTRUCT THE JUNCTION BOX AS PRESENTED

ON THE STRUCTURAL DRAWINGS IN ACCORDANCE WITH THE SPECIFICATIONS.

WALL, BASE, AND TOP SLAB THICKNESSES AND CORRESPONDING REINFORCING

2. THE STRUCTURAL DRAWINGS OF THE SUBJECT JUNCTION BOX SHOW THE

STEEL. A PRECAST CONCRETE FABRICATOR MAY PROVIDE AN ALTERNATE

DESIGN THROUGH THE SHOP DRAWING SUBMITTAL PROCESS. THESE SHOP DRAWING AND SUPPORTING DOCUMENTS SHALL BE SEALED BY A TEXAS

3. JUNCTION BOX BEDDING AND BACKFILL SHALL BE IN ACCORDANCE WITH

THE REQUIREMENTS OF THE SPECIFICATION SECTION TITLED "EXCAVATION

4. THE LAST REVISIONS OF THE FOLLOWING AMERICAN SOCIETY FOR TESTING

4.1 "SPECIFICATION FOR CONCRETE AGGREGATES" (ASTM C33)

4.2 "SPECIFICATION FOR PORTLAND CEMENT" (ASTM C150)

4.3 "SPECIFICATION FOR READY-MIX CONCRETE" (ASTM C94)

5. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF

8. CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF

TEXAS LAW CONCERNING EXCAVATION, TRENCHING AND SHORING.

AND MATERIALS STANDARDS SHALL BE USED FOR REINFORCED CONCRETE

4.4 "SPECIFICATION FOR DEFORMED AND PLAIN CARBON STEEL BARS

FOR CONCRETE REINFORCEMENT" (ASTM A615, GRADE 60)

FOR CITY OF HOUSTON USE ONLY DRAWING SCALE 61214 AS SHOWN SHEET 20 of 20

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON

DATE:

DEVELOPMENT COORDINATOR

JUNCTION BOX DETAILS

FORT BEND COUNTY MUD 132

MIRANDOLA LANE EXTENSION

1'-6" LAP (TYP) * VERTICAL REINFORCEMENT NOT SHOWN FOR CLARITY -HORIZONTAL REINF. NOTE: USE TIES WHEN HORIZONTAL REINF. LAP LENGTH IS LESS THAN 1'-6". TYPICAL WALL CORNER DETAIL 3 SCALE: 1/2"=1'-0"

REVISION

-HAIRPIN SIZE & SPACING

Costello