



**REVIEW BY FORT BEND COUNTY
COMMISSIONERS COURT**

**Fort Bend County
Engineering Department**
301 Jackson Suite 401
Richmond, Texas 77469
281.633.7500
Permits@fortbendcountytx.gov

☒ Right of Way Permit
☒ Commercial Driveway Permit
Permit No: 2018-24131

Applicant: Gonzalez Construction Enterprise, Inc.

Job Location Site: Canyon Fields Drive, Richmond, TX 77406

Bond No. **Date of Bond:** 7/30/2015 **Amount:** \$50,000.00

The above applicant came to make use of certain Fort Bend County property subject to, "The 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, of the Minutes of the Commissioners Court of Fort Bend County, Texas, to the extent that such order is not inconsistent with Chapter 181, Vernon's Texas Statutes and Codes Annotated.

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, submit notification to Permit Administrator thru MyGovernmentOnline.org portal.
3. This permit expires one (1) year from date of permit if construction has not commenced.
4. This permit applies to work performed within right-of-ways owned and maintained by Fort Bend County only, and it is the responsibility of the applicant to acquire all other necessary permits.

On this 13th day of November, 2018, Upon Motion of Commissioner Meyers, seconded by Commissioner Morales, 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.

Signature

By:

Sean Eglinton
County Engineer

Presented to Commissioners Court and approved.

Date Recorded 11-16-18 Comm. Court No. 14D

N/A

By:

Drainage District Engineer/Manager

Clerk of Commissioners Court

By:

Kinda Willis
Deputy



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

**Fort Bend County
Engineering Department**
301 Jackson Suite 401
Richmond, Texas 77469
281.633.7500
Permits@fortbendcountytx.gov

- ☒ Right of Way Permit
☒ Commercial Driveway Permit

Permit No: 2018-24131

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.

(1) COMPLETE APPLICATION FORM:

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

(2) BOND:

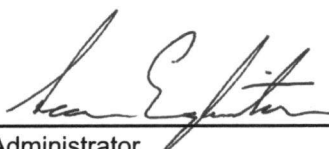
- ☐ County Attorney, approval when applicable.
- ☒ Perpetual bond currently posted. Bond No: [REDACTED] Amount: \$50,000.00
- ☐ Performance bond submitted. Bond No: _____ Amount: _____
- ☐ Cashier's Check Check No: _____ Amount: _____

(3) DRAINAGE DISTRICT APPROVAL (WHEN APPLICABLE):

Drainage District Approval

Date

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



Permit Administrator

11/5/2018

Date

CONSTRUCTION PLANS
FOR
WATER, DRAINAGE
AND PAVING IMPROVEMENTS
FOR
MIRANDOLA LANE EXTENSION
LOCATED IN
FORT BEND COUNTY MUD No. 132
FORT BEND COUNTY, TEXAS

INDEX OF DRAWINGS

SHEET NO. DESCRIPTION

1. COVER SHEET
2. CONSTRUCTION NOTES
3. LAYOUT SHEETS
4. OVERALL DRAINAGE LAYOUT
5. PAVING, DRAINAGE, AND WATER LAYOUT
6. PAVEMENT MARKING & SIGNAGE LAYOUT
7. STORM CALCULATIONS (SHEET 1 OF 2)
8. STORM CALCULATIONS (SHEET 2 OF 2)
9. PLAN AND PROFILE SHEETS
10. MIRANDOLA LANE STA. 25+50.00 TO 35+00.00
11. MIRANDOLA LANE STA. 35+00.00 TO 45+00.00
12. IRIS HEIGHTS DRIVE, STORM LINE "A" & WATER LINE "A"
13. RANCHO BELLA PKWY LEFT TURN LANE AND WATER LINE "B" & WATER LINE "C"
14. MISCELLANEOUS AND DETAIL SHEETS
15. *TxDOT - PEDESTRIAN FACILITIES CURB RAMPS (PED 18)
16. DRAINAGE DETAILS
17. PAVING DETAILS
18. PAVING MARKING DETAILS
19. WATER MAIN DETAILS
20. BEDDING DETAILS AND FORT BEND COUNTY SIDEWALK AND DRIVEWAY DETAILS
21. POLLUTION PREVENTION PLAN LAYOUT
22. POLLUTION PREVENTION DETAILS
23. TRAFFIC CONTROL DETAILS
24. JUNCTION BOX PLAN & SECTIONS
25. JUNCTION BOX DETAILS

ETJ Detention Plans Information	
1. Storm Water Detention Plans	
Is Provided In:	Sendero Detention Pond Phase 2 (ILMS: 16129834)
Engineering Firm:	Costello Inc.
Date:	February 14, 2017
Signed By:	Mr. Jon R. VanderWilt
2. Storm Water Drainage Design Report	
Report Title:	Update to the 586.4 acre Phase 1 Analysis of the Drainage Analysis for the Development of the 932-acre Sendero Tract
Date:	October 27, 2015
Engineering Firm:	Costello Inc.
Acknowledgement By:	Fort Bend County Drainage District
3. City of Houston Drainage Memo	
Memo Title:	Drainage Memorandum for Sendero Sections 7, 8 and 9 and
Date:	July 27, 2018
Sent to:	Ms. Ivy Wang
Project Drainage Area	300.8 Acres
Overall Detention Basin Drainage Area	300.8 Acres
Existing Impervious Cover for Project Area	96.4 Acres
Proposed Impervious Cover for Project Area	113.2 Acres
Increased Impervious Cover for Project Area	16.8 Acres
Final Impervious Cover for Project Area	194.4 Acres
Detention Basin Storage Rate	0.63 acre-feet/acre
Overall Detention Storage Required	163.9 acre-feet
Overall Detention Storage Provided	163.9 acre-feet
Overall Detention Storage Used by Existing Development	92.4 acre-feet
Detention Storage Required for Project Area (provide calculation(s) in drainage memo and plans)	11.8 acre-feet
Detention Storage Provided for Project Area	11.8 acre-feet
Overall Detention Storage Remaining for Future Development	59.7 acre-feet

"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."

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 14, 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, 2015 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

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.

FORT BEND COUNTY

ENGINEER: Richard W. Stolleis
RICHARD W. STOLLEIS, P.E.

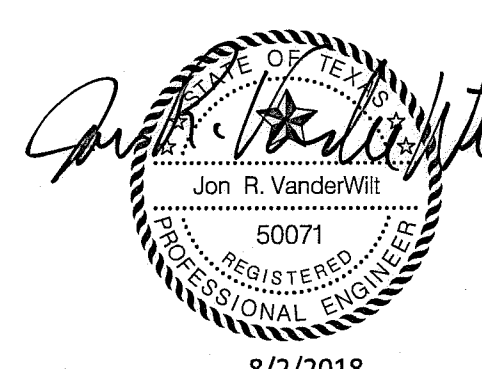
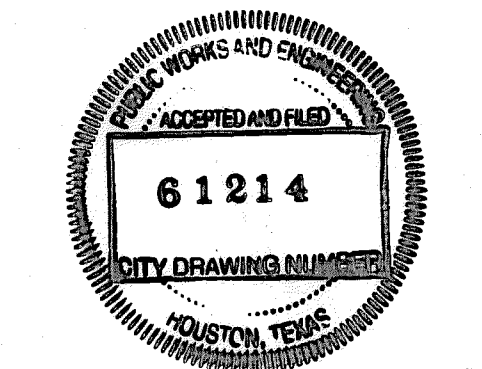
DATE: 10/11/18

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN ONE (1) YEAR FROM DATE OF APPROVAL.

APPROVED: Maya D.
DEVELOPMENT COORDINATOR

DATE: 10/11/18

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

Costello Engineering and Surveying 2107 Claymont Blvd. 3rd Floor Houston, Texas 77042 (713) 783-7788 (713) 783-3386 Fax TEXAS PE BOARD FIRM REGISTRATION No. 280	
SURVEYED BY: COSTELLO, INC.	FB NO.:
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS	
WATER WAS: 10/8/2018 STORM C-11 STREET & BRIDGE 8-2-18	TRAFFIC & TRANSPORTATION STORM WATER QUALITY FACILITIES
CITY ENGINEER	FOR CITY OF HOUSTON USE ONLY CITY DWG NO.:
DIRECTOR OF PUBLIC WORKS <u>Jon R. VanderWilt</u> 8/1/18	

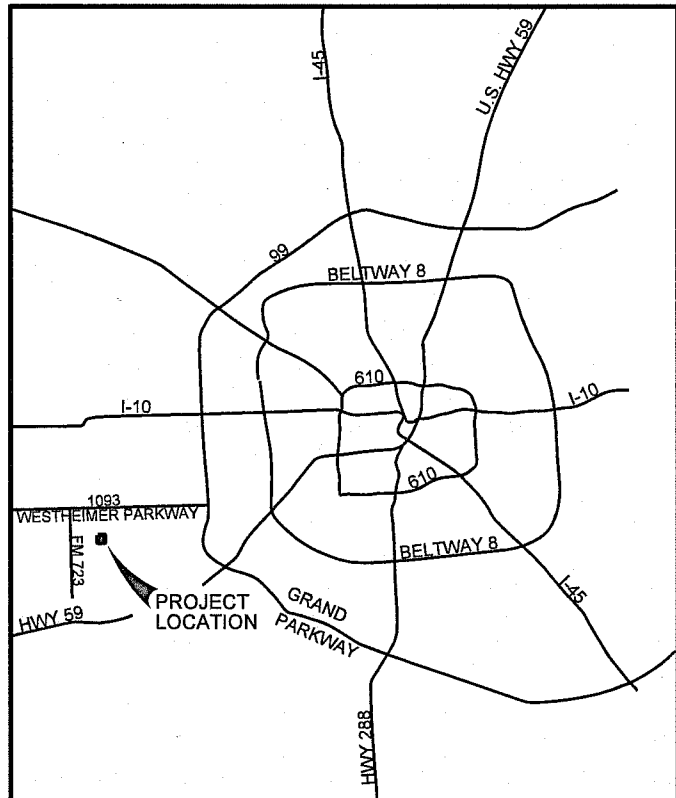


*NO PROPOSED WASTEWATER WORK IS SHOWN ON THIS PLAN SET NOR INCLUDED IN THE WORK SCOPE.

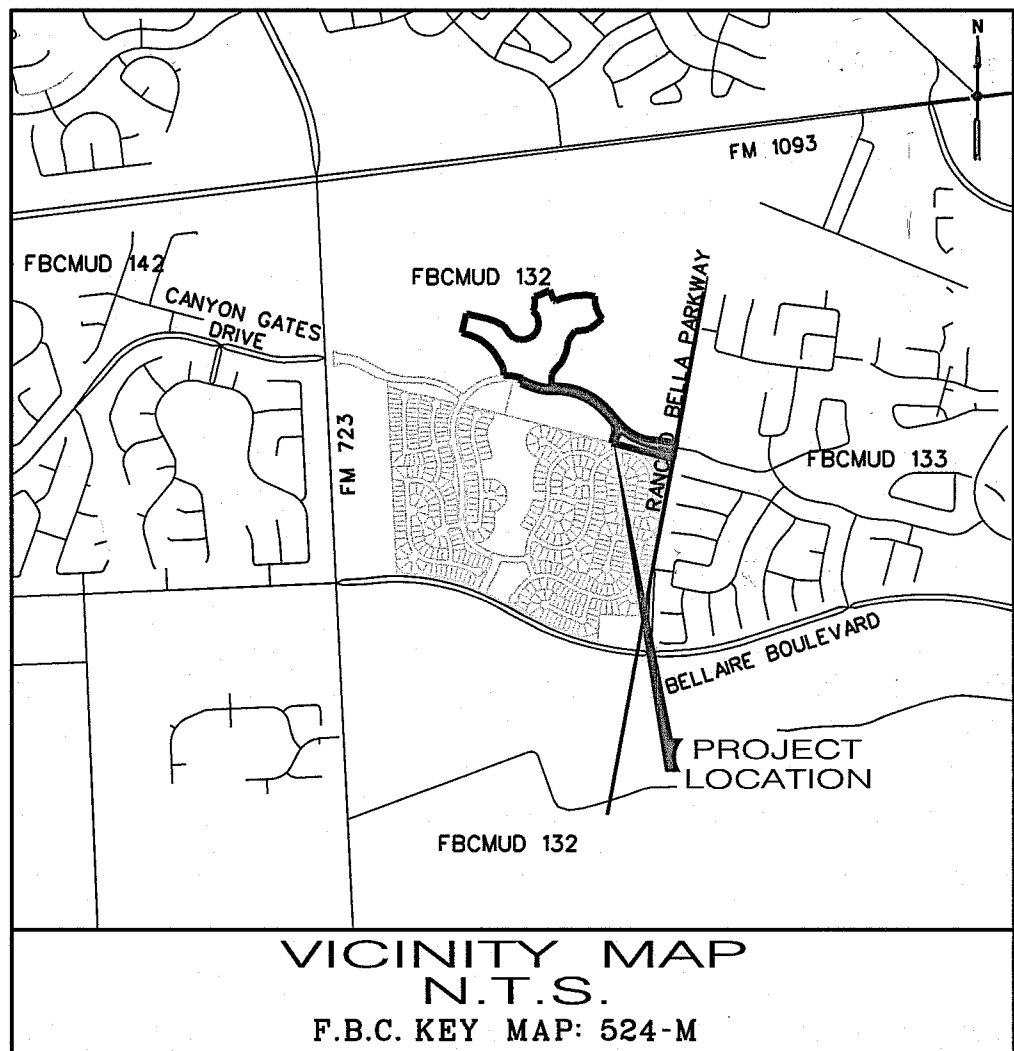
JOB NO. 2004117-CRM-DS-101
ILMS No. 18067921
LOG No. 18-1232
DATE: AUGUST, 2018

SHEET No. 1 OF 20

Location Map



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



VICINITY MAP
N.T.S.
F.B.C. KEY MAP: 524-M

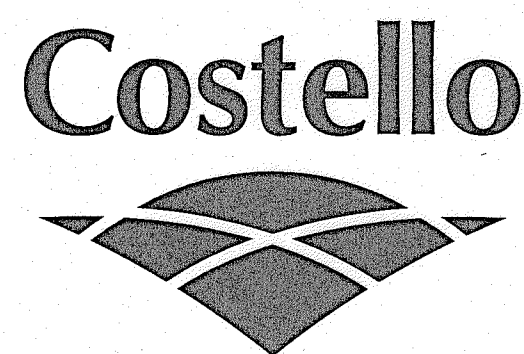
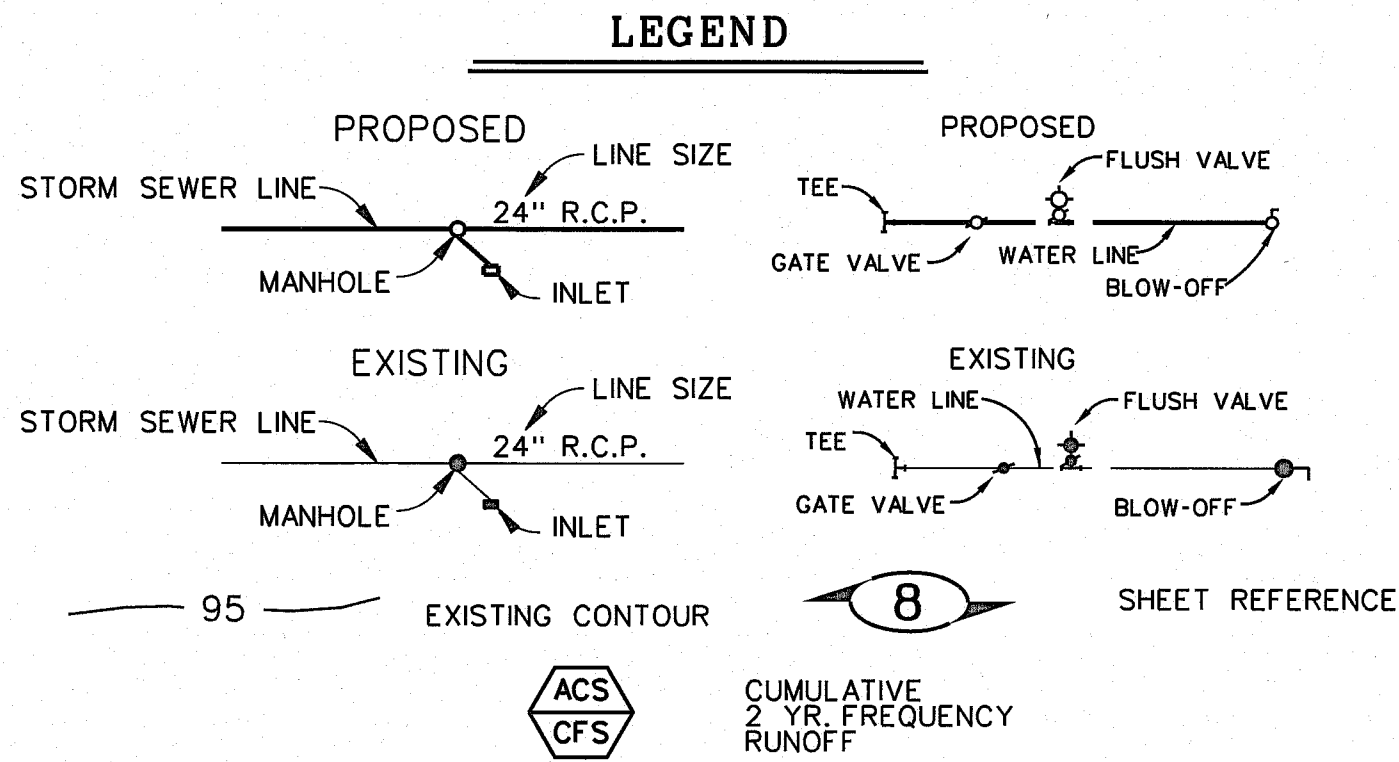
[illegible]

SENDER
DETENTION POND
(BY OTHERS)
(SEE PLANS:
SENDER DETENTION
POND PHASE 3
BY: COSTELLO, INC.)
ILMS No. 18053067
LOG No. 18-0996
COH DWG No. 609619
100-yr. WSE 118.23

Ex. DETENTION POND
(SEE PLANS:
SENDER DETENTION
POND PHASE 2
BY: COSTELLO, INC.)
ILMS No. 16129834
COH DWG No. 57700
100-yr. WSE 118.21

Ex. SENDER
SECTION SIX
(SEE PLANS:
WATER, SEWER, DRAINAGE
& PAVING IMPROVEMENTS
FOR SENDER SECTION SIX
BY: COSTELLO, INC.)
ILMS No. 18015057
LOG No. 18-0272
COH DWG No. 60240

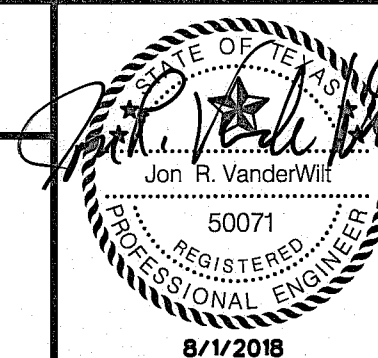
BENCHMARK RM NO. 190045
BRASS DISK LOCATED ON THE NORTHEAST CORNER OF
CINCO RANCH BLVD. CONCRETE BRIDGE OVER UPPER
BUFFALO BAYOU (100-00-00), 0.5 MILES SOUTHWEST OF
THE INTERSECTION OF CINCO RANCH BLVD. AND
WESTHEIMER PARKWAY
ELEV. 115.25 NAVD 1988, 2001 ADJ.
TEMPORARY BENCHMARK 2534-69-1
CUT BOX ON 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 BELLARE BLVD. DIRECTLY ACROSS
FROM PADOVA DR. THE ENTRANCE TO EXISTING SUBDIVISION
LINES 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 BELLARE BLVD.
ELEV. 118.72 NAVD 1988, 2001 ADJ.



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

PAVING, DRAINAGE
AND WATER LAYOUT



APPROVED: *[Signature]*
DEVELOPMENT COORDINATOR
DATE: 10/11/18

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS
WATER: 10/11/2018
WASTEWATER: 10/11/2018
STORM: 10/11/2018
STREET & BRIDGE: 10/11/2018

FILE NO:
DRAWING SCALE
HORZ : 1" = 60'
VERT :
SHEET No: 4 OF 20
CITY DRAWING NUMBER
61214
HOUSTON, TEXAS

① R4-7
24" x 30"

② CW4-2R
48"x48"

③ 12"x18"

④ 12"x18"

⑤ 12"x18"

⑥ SCHOOL
SPEED LIMIT 20
7:00-7:45 AM
2:25-3:10 PM
S4-3 36" x 8"
R2-1 36" x 48"
S4-1a 36" x 48"

⑦ ~~END SCHOOL ZONE~~
S5-2 24" x 30"
S5-2a 24" x 18"
R2-1 36" x 48"

N

LEGEND

- (A) REFL PAV MKR (W) 4" (SLD)(100ML)
- (B) REFL PAV MKR (W) 8" (SLD)(100ML)
- (C) REFL PAV MKR (W) 12" (SLD)(100ML)
- (D) REFL PAV MKR (W) 24" (SLD)(100ML)
- (E) REFL PAV MKR (Y) 4" (SLD)(100ML)
- (F) REFL PAV MKR (Y) 8" (SLD)(100ML)
- (G) REFL PAV MKR (Y) 24" (SLD)(100ML)

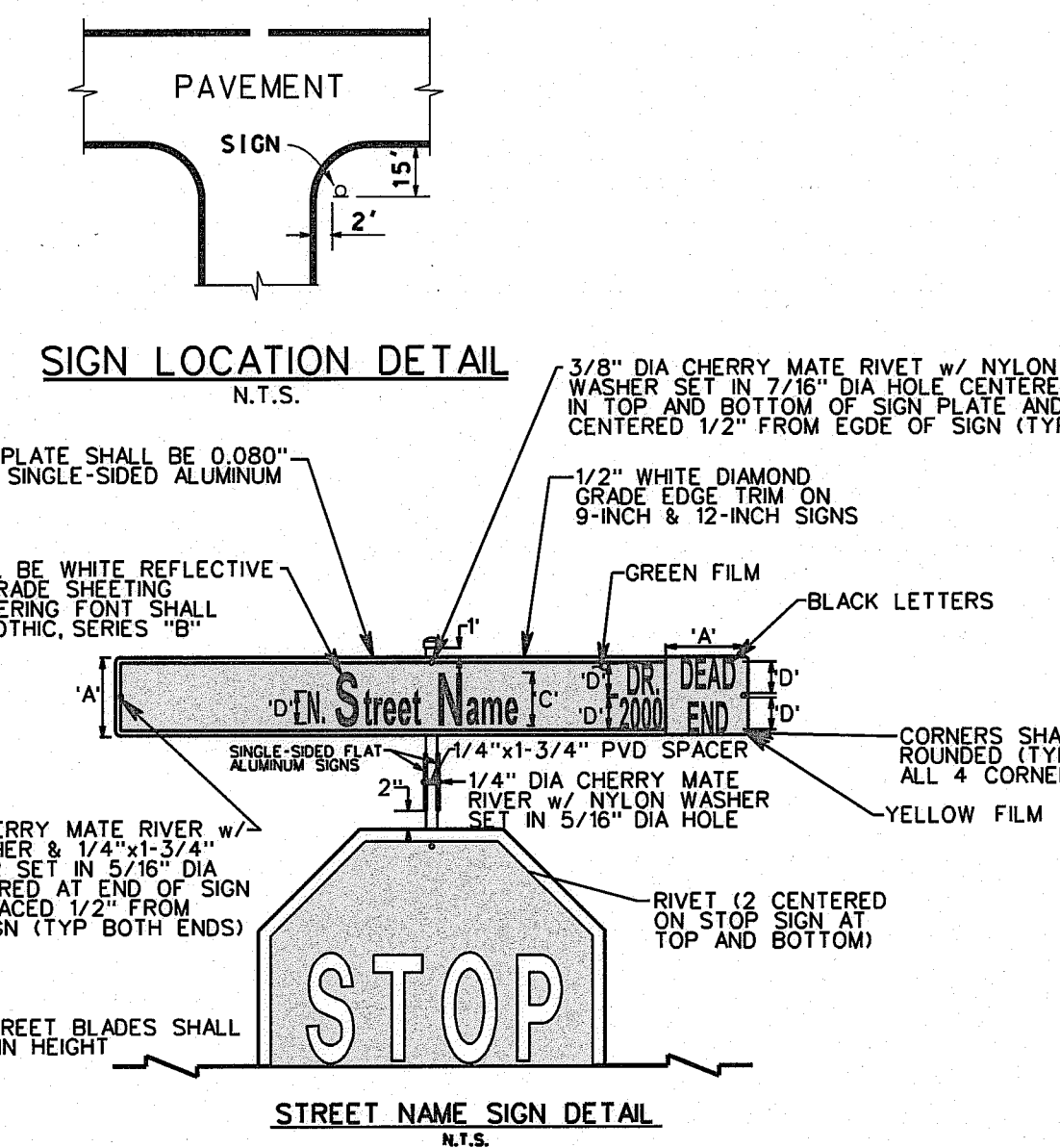
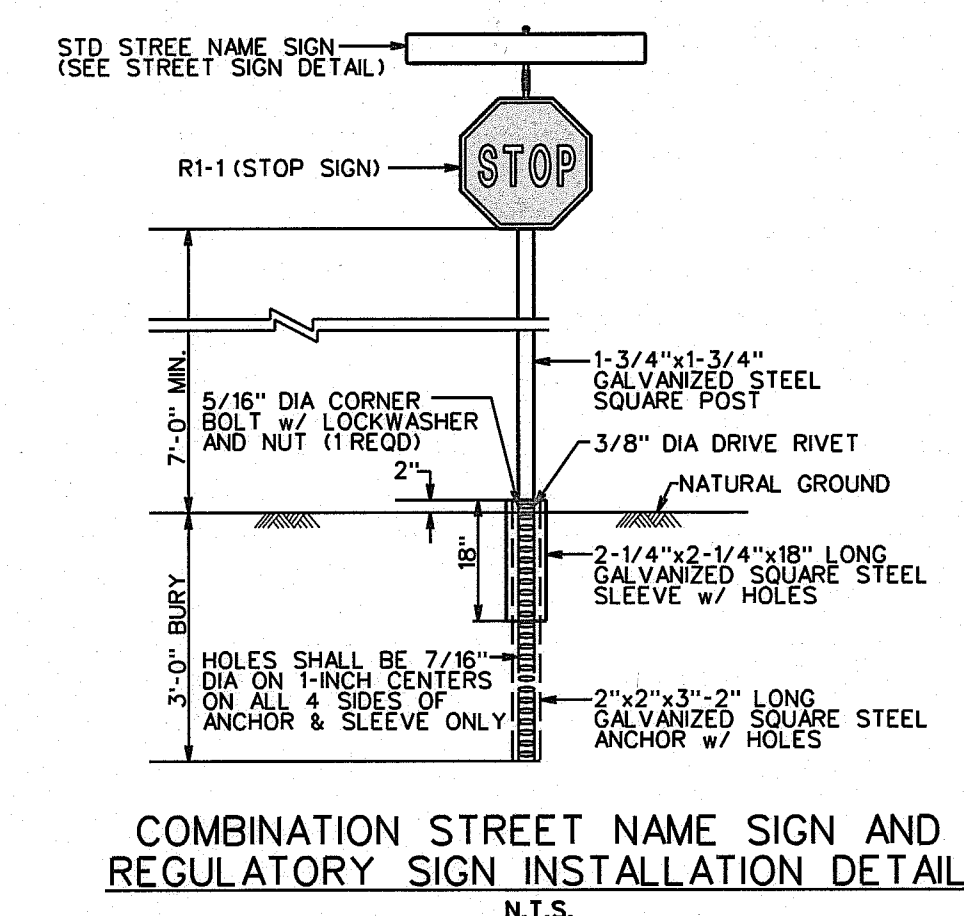
(SEE SHEET 13 FOR DETAILS)

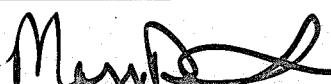
- (H) REFL PAV MKR (W) 4" (BRK) (100ML)
- (J) PREFAB PAV MKR (W) (ARROW)
- (K) PREFAB PAV MKR (W) (WORD)
- (L) REFL PAV MKR TY L-C -R
- (M) REFL PAV MKR TY L-A -A

▶ PROPOSED SMALL ROADSIDE SIGN

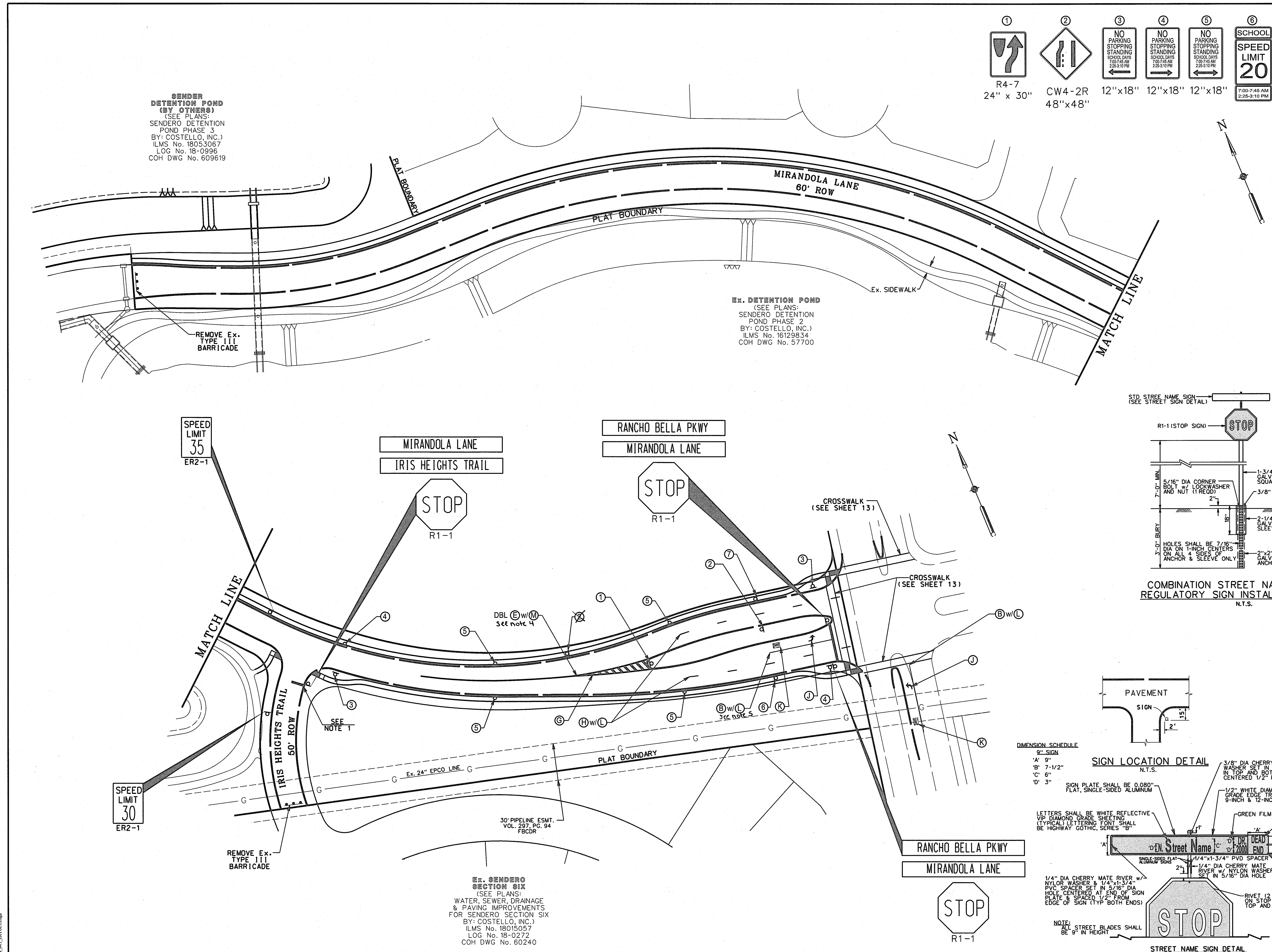
NOTES:

1. SOLID 24-INCH WIDE REFLECTORIZED WHITE STOP BAR PLACED 4-FeET IN ADVANCE OF AND PARALLEL TO CROSSWALKS OR NEAREST EDGE OF INTERSECTING ROADWAY.
2. ALL COMBINATION STREET AND REGULATORY SIGNS SHALL BE LOCATED AT CURB RETURNS UNLESS OTHERWISE NOTED.
3. SEE SHEET 13 FOR PAVING MARKING DETAILS.
4. For spacing, see cross hatching detail on sheet 13.
5. For spacing, see typical median section detail on sheet 13.



TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTREPOINT AT 713-207-2222.	
NOTICE: FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.	
VERIFICATION OF PRIVATE UTILITY LINES	
Date: _____	
CenterPoint Energy/Natural Gas Facilities Verification ONLY. (This signature verifies that you have shown CNP Natural Gas Lines correctly on the map for correct verification). (Gas service lines are not shown). Signature Valid for six months.	
Date: _____	
CenterPoint Energy/UNDERGROUND Electrical/Facilities Verification ONLY. (This signature verifies existing underground facilities - it will not be used for correct verifications). Signature Valid for six months.	
Date: _____	
Approved for AT&T Texas/SWBT Signature Valid for one year.	
APPROVED:  DEVELOPMENT COORDINATOR	
DATE: 10/11/18	

AFTER DATE OF SIGNATURES	
CITY OF HOUSTON	
HOUSTON PUBLIC WORKS	
WATER	TRAFFIC & TRANSPORTATION
WAS C/WATER	STORM WATER QUALITY
STORM	FACILITIES
STREET & BRIDGE	
FILE NO.:	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
HORIZ : 1" = 50'	
VERT : 1" = 50'	
SHEET No. 4.1 of 20	



Costello

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713-783-3580

BTPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

FORT BEND COUNTY MUD 132
MIRANDOLA LANE EXTENSION

PAVEMENT MARKING AND
SIGNAGE LAYOUT

					DESIGNED BY: <u>RLM</u>
					DESIGN CHECKED BY: <u>JRV</u>
					DRAWN BY: <u>RLM</u>
					COGO CHECKED BY: _____
					SURVEY CHECKED BY: _____
					QA/QC BY: _____ DATE: _____
					QA/QC REVISIONS BY: <u>RLM</u>
NO.	REVISION			DATE	BY

STORM SEWER CALCULATIONS
CITY OF HOUSTON CRITERIA
Storm Event: 2-YEAR
Project: Mirandola Lane Extension
Date: August 1, 2018
By: JAP

COH I-D-F Coefficients	
Return Freq (yr)	2
b	75.01
d	16.2
e	0.8315
Peaking Factor	1.00

					RUNOFF COEFFICIENTS (C) FOR DRAINAGE								I=3/(d+T) ^{0.48} e		Q=C*CA*1	
					RESIDENTIAL				Initial T = 30+0.175I+15; A=Drainage Area							
					1/2 ac & Larger Lots	1/2 to 1/4 ac Lots	1/4 ac & Smaller Lots	Townhouse s	Contributing Drainage Area		Incremental Composite Runoff Coefficient "C"	Sum of C*A	Time of Concentration (T)	2-yr Computations		
Street Name	Subdivision	FROM M.H. #	TO M.H. #	Drainage Area Name	0.35	0.45	0.55	0.60	Delta (ac)	Total (ac)			Delta of Trib T	Total	Intensity "I" (in/hr)	Runoff Flow (cfs)
Existing Outfall																
Mirandola	CRM	MH10461	MH10460	B-3					1.30	9.40	0.55	5.17	29.7	41.8	2.56	13.25
Mirandola	CRM	MH10460	MH10459	B-3					0.00	9.40	0.55	5.17	2.4	44.2	2.48	13.25
Mirandola	CRM	MH10459	MH10458	B-3			1.4		1.40	10.80	0.55	5.94	1.9	45.0	2.42	14.36
Mirandola	CRM	MH10458	MH10457	B-3					0.30	11.10	0.55	6.11	29.1	47.1	2.38	15.46
Mirandola	CRM	MH10457	MH10456	B-3					3.80	14.90	0.55	8.20	35.2	48.6	2.34	15.15
Mirandola	CRM	MH10456	MH10455	B-3			0.6		0.60	15.50	0.55	8.53	1.2	49.8	2.30	15.62
Mirandola	CRM	MH10455	MH10404	B-3					11.8	27.30	0.55	15.02	64.0	64.0	1.96	29.39
Mirandola	CRM	MH10404	Fitting	B-3					0.00	27.30	0.55	15.02	0.9	65.0	1.94	29.39
Mirandola	CRM	Fitting	Existing Outfall	B-3					0.00	27.30	0.55	15.02	0.3	65.3	1.93	29.39
Mirandola	CRM	MH 10463	MH 10461	B-3			1.3		1.30	1.30	0.55	0.72	25.5	25.5	3.37	2.41
Mirandola	CRM	MH 10464	MH 10458	B-3			0.3		0.30	0.30	0.55	0.17	23.1	23.1	3.54	0.58
Mirandola	CRM	MH 10451	MH 10452	B-3					1.10	6.20	0.55	3.41	26.0	34.4	2.87	9.80
Mirandola	CRM	MH 10452	MH 10453	B-3					0.00	6.20	0.55	3.41	2.0	36.4	2.78	9.80
Mirandola	CRM	MH 10453	MH 10454	B-3					3.40	9.60	0.55	5.28	34.5	39.1	2.67	14.08
Mirandola	CRM	MH 10454	MH 10455	B-3			0.9		0.90	10.50	0.55	5.78	1.0	40.1	2.63	15.18
Mirandola	CRM	MH 10450	MH 10451	B-3			1.1		1.10	1.10	0.55	0.61	25.2	25.2	3.40	2.05

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

100 Year Inlet Capacity		
Existing Out DP3		
Q (3)	=	47.9 CFS
Q (100)	=	151.2 CFS
Q EXCESS		103.3 CFS

MH 10456	
LOWEST TOP OF CURB =	118.80
THROAT OF INLET =	118.30
MAXIMUM PONDING LEVEL =	119.00
PONDING LEVEL ABOVE CURB=	0.20
MH 10454	
LOWEST TOP OF CURB =	118.78
THROAT OF INLET =	118.28
MAXIMUM PONDING LEVEL =	119.00
PONDING LEVEL ABOVE CURB=	0.22

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

CY Fill

Length Over Grass (ft) = 140
Length Over Pavement (ft) = 1820
Time of Concentration =

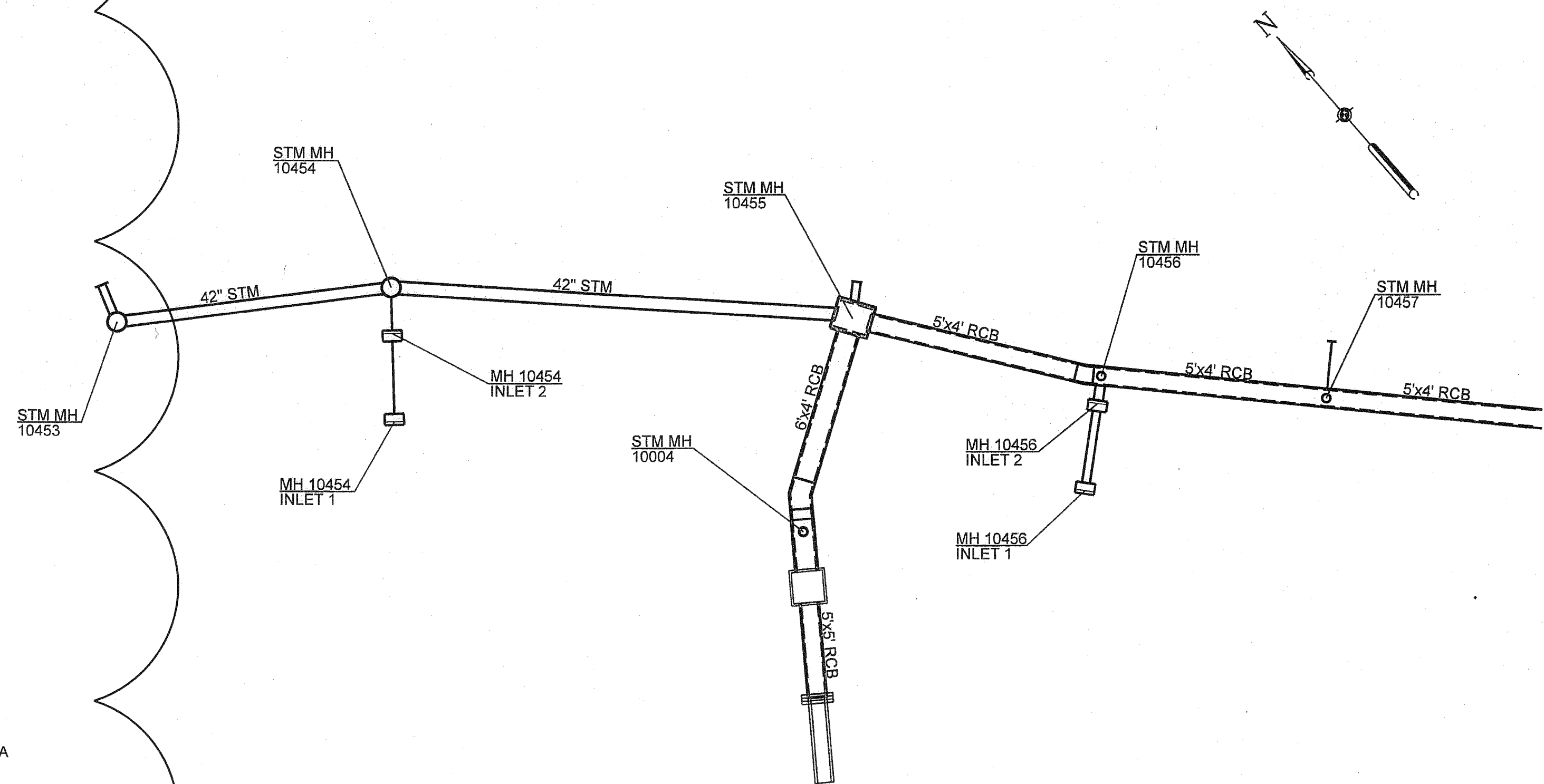
Time of Concentration = 25.00
i 8.06
C 0.85
Area with 0.85
C 0.55
Area with 0.55 27.30
CA 15.02
cf = 1.25 peak factor
Q (100) = 151.2

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
ADEQUATE INLET CAPACITY

Existing Outfall

Existing Structure				Pipe Diameter (inches) or		Pipe Type	X-Sect Area of Pipe/Bo	Actual v	Manning Coefficient	Hydraulic radius	Hyd. Slope	Head Loss	El Hyd Grad		UPSTREAM		DELTA
From	To	Q	Reach	Span (ft)	Height (ft)								Gutter Elevation	Top of Curb	Gutter-HGL		
MH	MH												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	2.53
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	0.013	0.500	5.68	0.85	117.04	116.19	118.28	118.78	1.24
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	118.30	118.80	1.62



APPROVED: *[Signature]*
DEVELOPMENT COORDINATOR
DATE: 10/11/18

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

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

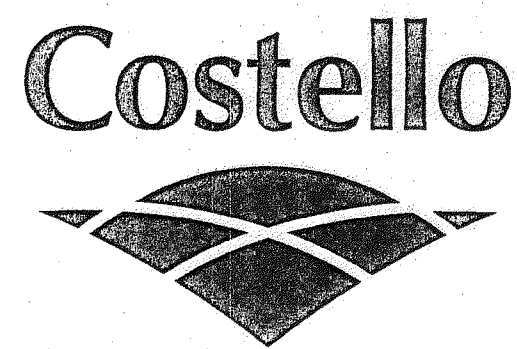
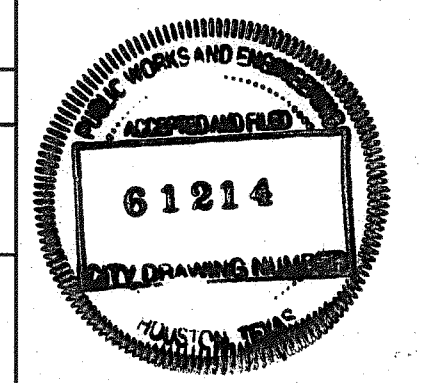
FILE NO: FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

HORIZ : N.T.S.

VERT : N.T.S.

SHEET No: 5.1 of 20



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

STORM CALCULATIONS
(SHEET 2 OF 2)

VERTICAL CURVE DATA • 1
Mirandola Ln.

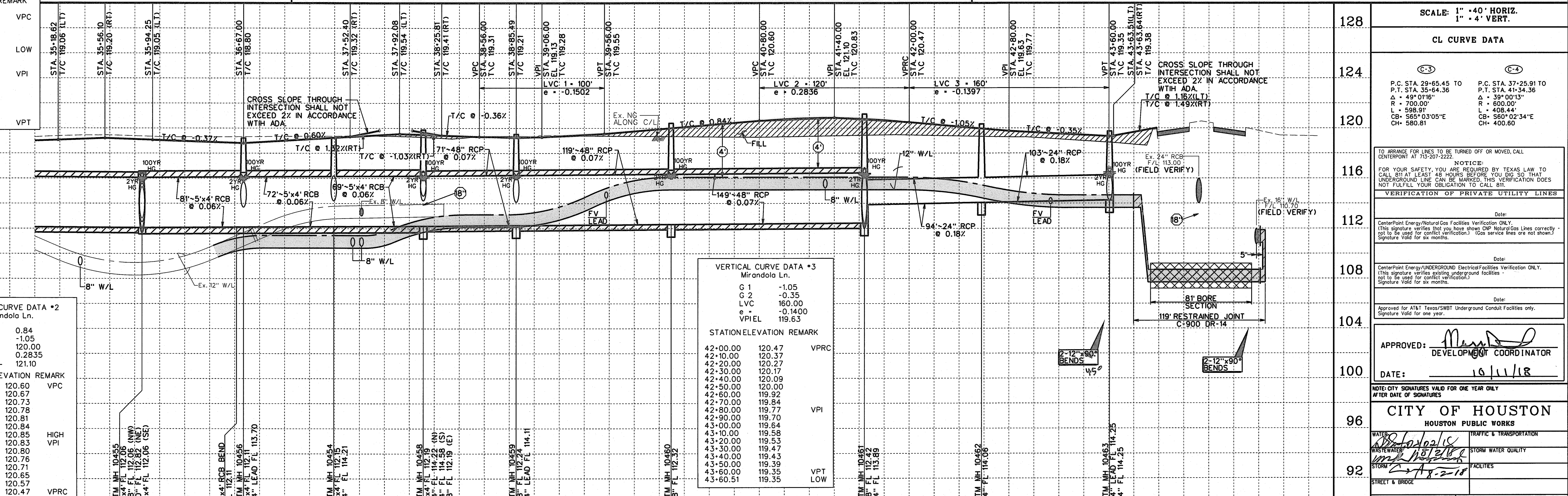
G 1	-0.36
G 2	0.84
LVC	100.00
e =	-0.1500
VPIEL	119.13

104	VERTICAL CURVE	
	Mirandola L	
	G 1	0.8
	G 2	-1.0
	LVC	120
	e =	0.2
	VPI EL	121

[illegible]

		VERTICAL CURTAIN Miranda
		G 1
		G 2
		LVC
		e -
		VPIEL

Engineering and Surveying
2107 CityWest Blvd, 3rd Floor
Houston, Texas 77042
(713) 783-7788 (713) 783-3500
TBPE FIRM REG. No. 2000000001
TBPLS FIRM REG. No. 1000000001



STA
+00.00

NOTES

1. UNLESS OTHERWISE NOTED, ALL STORM SEWERS AND INLET LEADS WILL BE PROPOSED REINFORCED CONCRETE PIPE (C-7.5, CL 8") W/PROPOSED TYPE "C" MANHOLES.
2. ALL CURB ROADWAYS SHALL BE 20" UNLESS OTHERWISE NOTED. MINIMUM SLOPE AROUND CURB RETURN 1.0%.
3. EXIST. TEMP. SWALES WITHIN R.O.W. TO BE MUCKED OUT, PROOF ROLLED & FILLED.
4. ALL B-B INLETS SHALL BE CONSTRUCTED WITH MANHATES.
5. REMOVE EX. WATER LINE AS REQUIRED.
6. REMOVE EX. INLET AND BACKFILL WITH CEMENT STABILIZED SAND TO SUBGRADE. PLUG #4" RCP

① - INDICATES MIN. 1" VERTICAL CLEARANCE

② - INDICATES MIN. 2" VERTICAL CLEARANCE

⑧ - INDICATES MIN. 18" VERTICAL CLEARANCE

④ - INDICATES MIN. 4" VERTICAL CLEARANCE

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL
CENTERTPOINT AT 715-207-2222.

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO
CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT
UNDERGROUND LINES CAN BE MARKED. THIS VERIFICATION DOES
NOT FULFILL YOUR OBLIGATION TO CALL 811.

VERIFICATION OF PRIVATE UTILITY LINES

Date: _____


CenterPoint Energy/Natural Gas Facilities Verification Only.
This signature verifies that you have shown CPN Natural Gas Lines correctly
not to be used for conflict verification.) (Gas service lines are not shown.)
Signature Valid for six months.

Date: _____

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.


Date: _____

Approved for AT&T Texas/SWBT Underground Conduit Facilities only.
Signature Valid for one year.

APPROVED:  DEVELOPMENT COORDINATOR

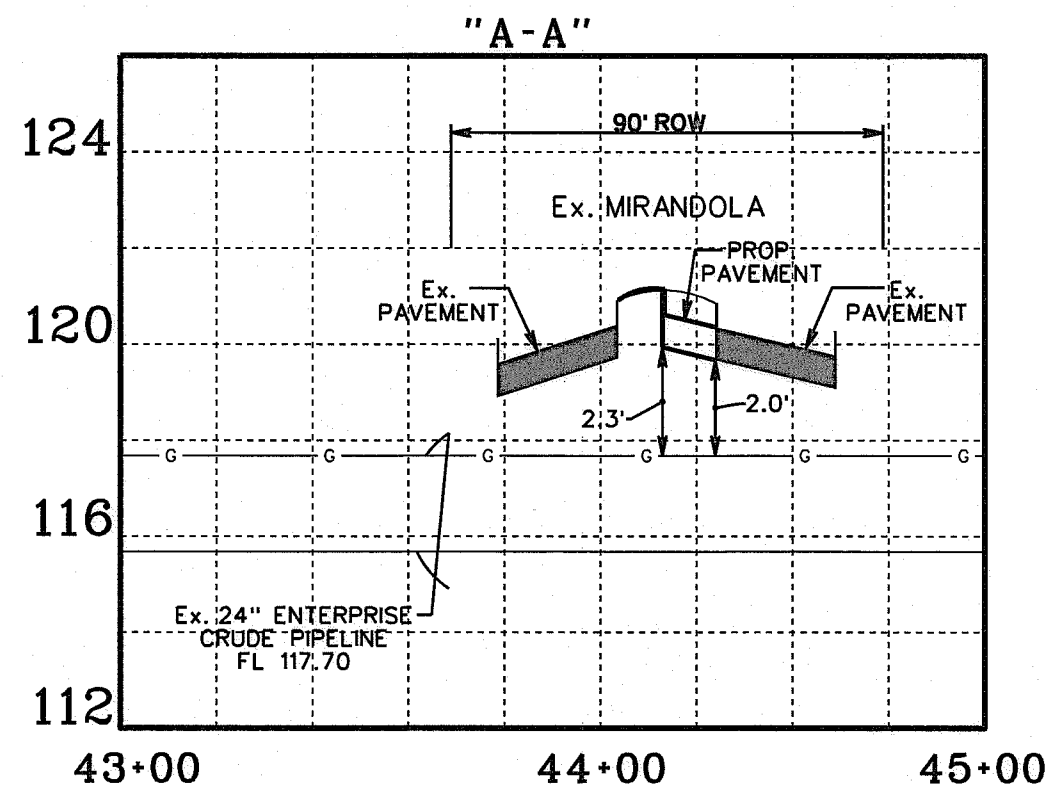
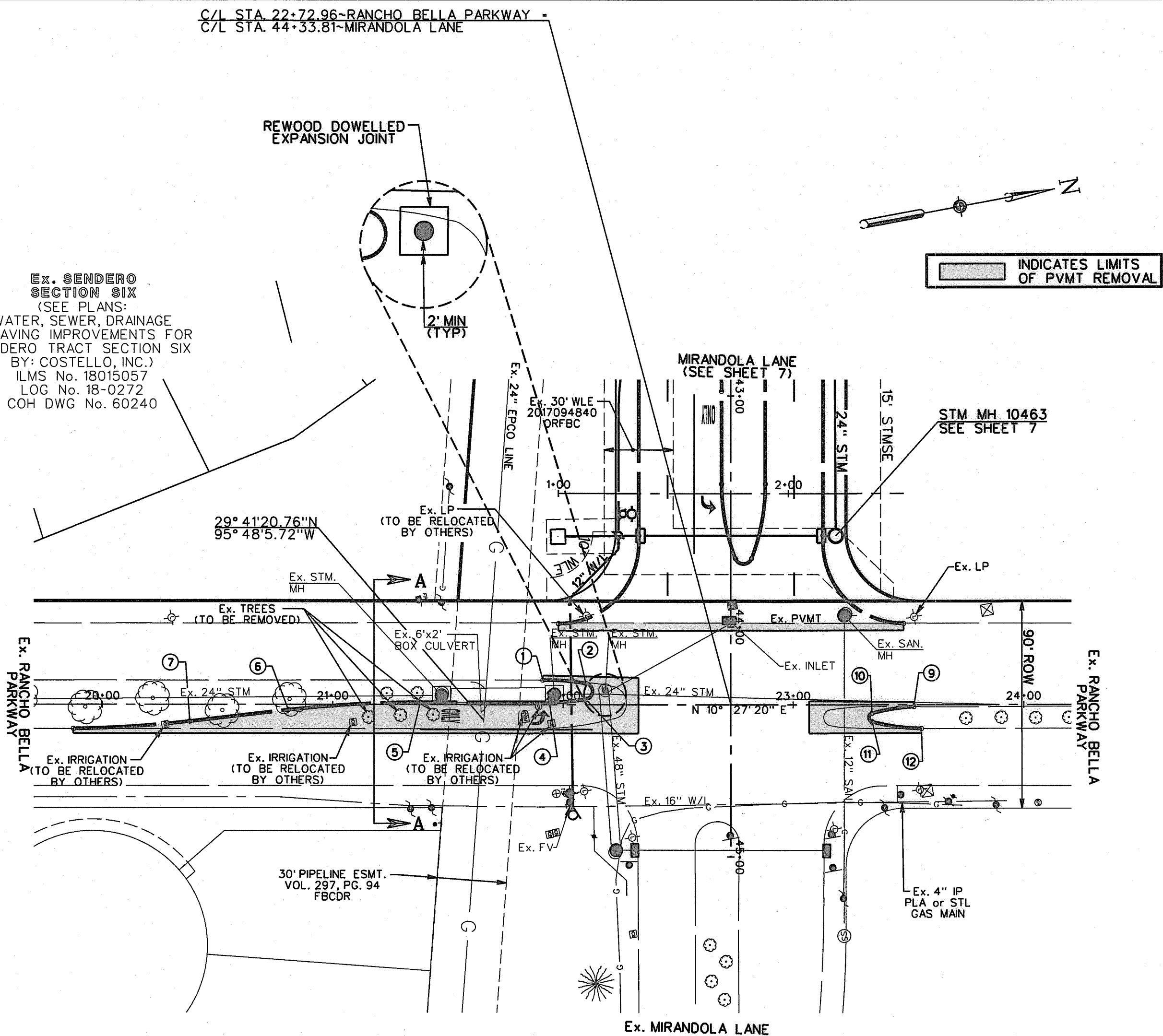
DATE: 10/11/18

TE: CITY SIGNATURES VALID FOR ONE YEAR ONLY TER DATE OF SIGNATURES	
<h1 style="text-align: center;">CITY OF HOUSTON</h1> <h2 style="text-align: center;">HOUSTON PUBLIC WORKS</h2>	
TER <i>8/26/02/18</i> STEWART <i>8/26/02/18</i> <i>with Houston</i> FORM <i>2-8-2-18</i>	TRAFFIC & TRANSPORTATION STORM WATER QUALITY FACILITIES
REET & BRIDGE	

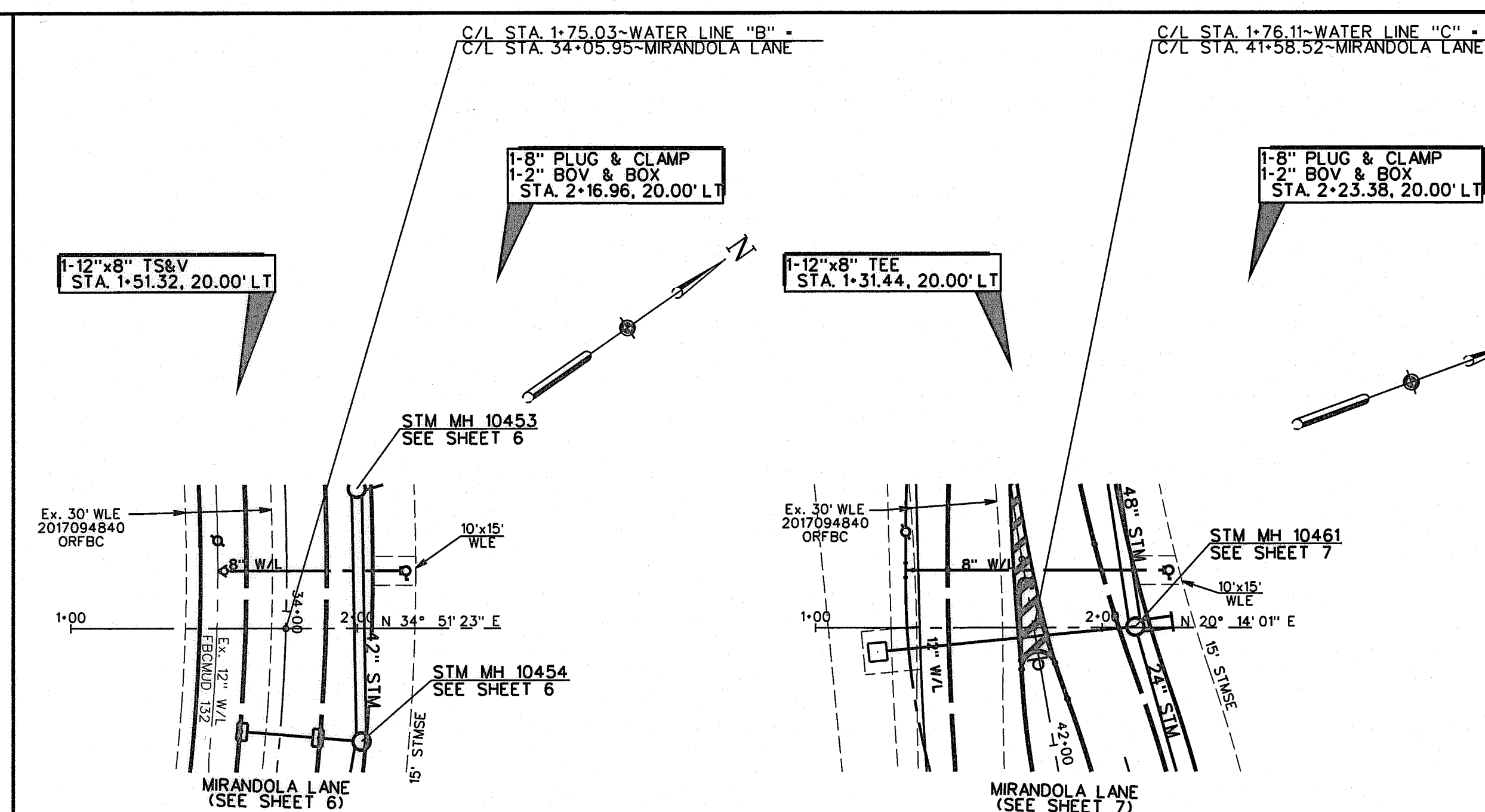
LE NO: DRAWING SCALE ORZ : 1"=40' ERT : 1"=4' SHEET No. 7 OF 20	FOR CITY OF HOUSTON USE ONLY  The seal of the City of Houston, Texas, is circular. It features a central shield with the number "61214". Above the shield is a banner with the text "WORKS OF THE CITY". Below the shield is another banner with the text "CITY DRAWING NUMBER". At the bottom of the seal, it says "HOUSTON, TEXAS".
---	---

WATER, DRAINAGE AND PAVING IMPROVEMENTS FOR MIRANDOLA LANE EXTENSION (JOB No. 2004117-CRM-DS-101)

Ex. SENDERO
SECTION SIX
(SEE PLANS:
WATER, SEWER, DRAINAGE
& PAVING IMPROVEMENTS FOR
SENDERO TRACT SECTION SIX
BY: COSTELLO, INC.)
ILMS No. 18015057
LOG No. 18-0272
COH DWG No. 60240



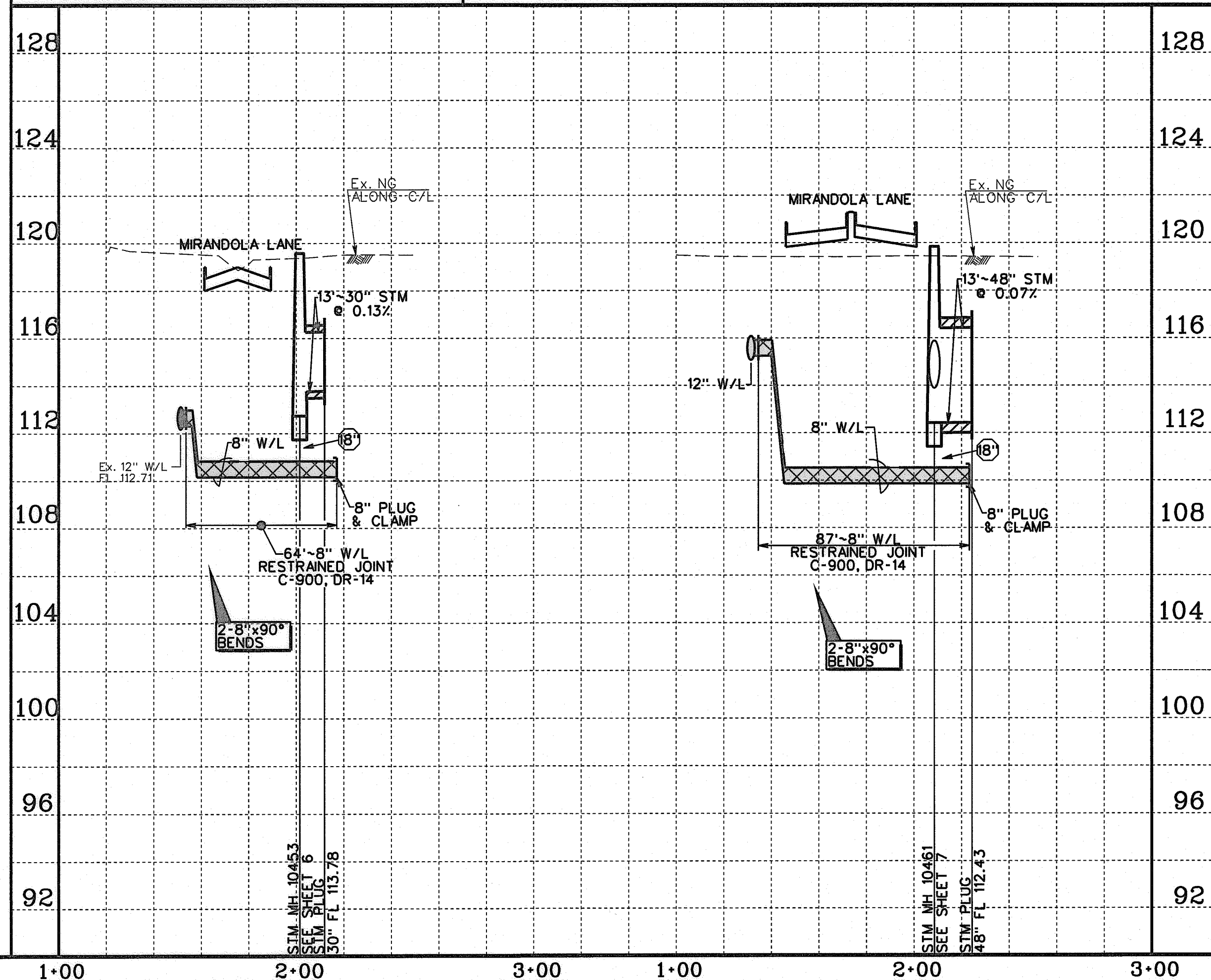
MARK	STATION	OFFSET
1	21-91.18	10.62' LT
2	22-09.91	9.26' LT
3	22-09.91	2.37' LT
4	21-94.07	0.96' LT
5	21-37.99	0.96' LT
6	20-80.78	2.32' RT
7	20-37.96	7.26' RT
8	19-87.45	10.50' RT
9	23-52.40	0.83' RT
10	23-34.32	3.70' RT
11	23-34.32	7.45' RT
12	23-55.70	10.38' RT



BENCHMARK RM NO. 190045
BRASS DISK LOCATED ON THE NORTHEAST CORNER OF
CINCO RANCH BLVD. CONCRETE BRIDGE OVER UPPER
BUFFALO BAYOU (100-00-00) 0.3 MILES SOUTHWEST OF
THE INTERSECTION OF CINCO RANCH BLVD. AND
WESTMEYER 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 BELLARE BLVD. DIRECTLY ACROSS
FROM PADOVA DR. THE ENTRANCE TO EXISTING SUBDIVISION
LINES 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 BELLARE BLVD.
ELEV. 118.72 NAVD 1988, 2001 ADJ.

WATER LINE "B" WATER LINE "C"

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



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

CL CURVE DATA

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

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO
CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT
UNDERGROUND LINES CAN BE MARKED. THIS VERIFICATION DOES
NOT FULFILL YOUR OBLIGATION TO CALL 811.

VERIFICATION OF PRIVATE UTILITY LINES

Date: _____

CenterPoint Energy/Natural Gas Facilities Verification ONLY.
(This signature verifies that you have shown CPE/Natural Gas Lines correctly -
not to be used for conflict verification.) (Gas service lines are not shown.)
Signature Valid for six months.

Date: _____

CenterPoint Energy/Underground Electrical Facilities Verification ONLY.
(This signature verifies existing underground facilities -
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Signature Valid for six months.

Date: _____

Approved for AT&T Texas/SWBT Underground Conduit Facilities only.
Signature Valid for one year.

APPROVED: Mandy
DEVELOPMENT COORDINATOR

DATE: 10/11/18

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER: 10/11/18
WASTEWATER: 10/11/18
STORM: 10/11/18
STREET & BRIDGE: 10/11/18

TRAFFIC & TRANSPORTATION
STORM WATER QUALITY
FACILITIES

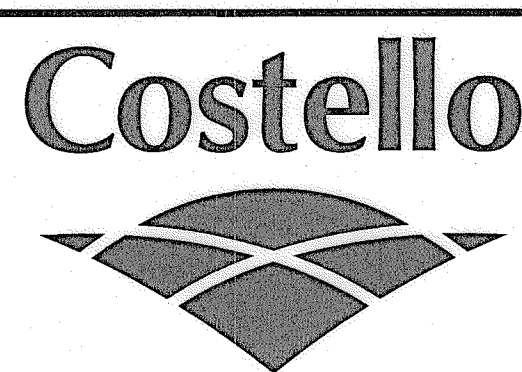
FILE NO: _____ FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
HORZ : 1" = 40'
VERT : 1" = 4'

SHEET No: 9 of 20

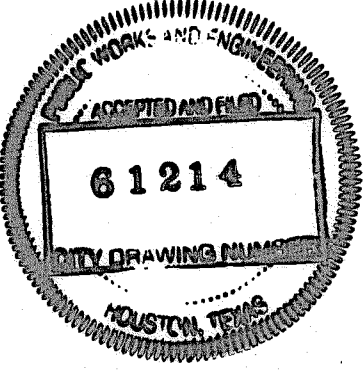
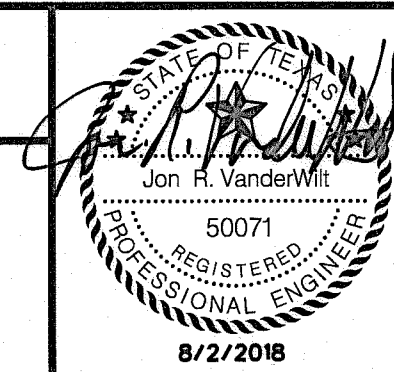
DESIGNED BY: <u>ELM</u>	DATE: _____
DESIGN CHECKED BY: <u>SRV</u>	DATE: _____
DRAWN BY: <u>ELM</u>	DATE: _____
COGO CHECKED BY: _____	DATE: _____
SURVEY CHECKED BY: _____	DATE: _____
QA/QC BY: _____	DATE: _____
QA/QC REVISIONS BY: <u>ELM</u>	DATE: _____

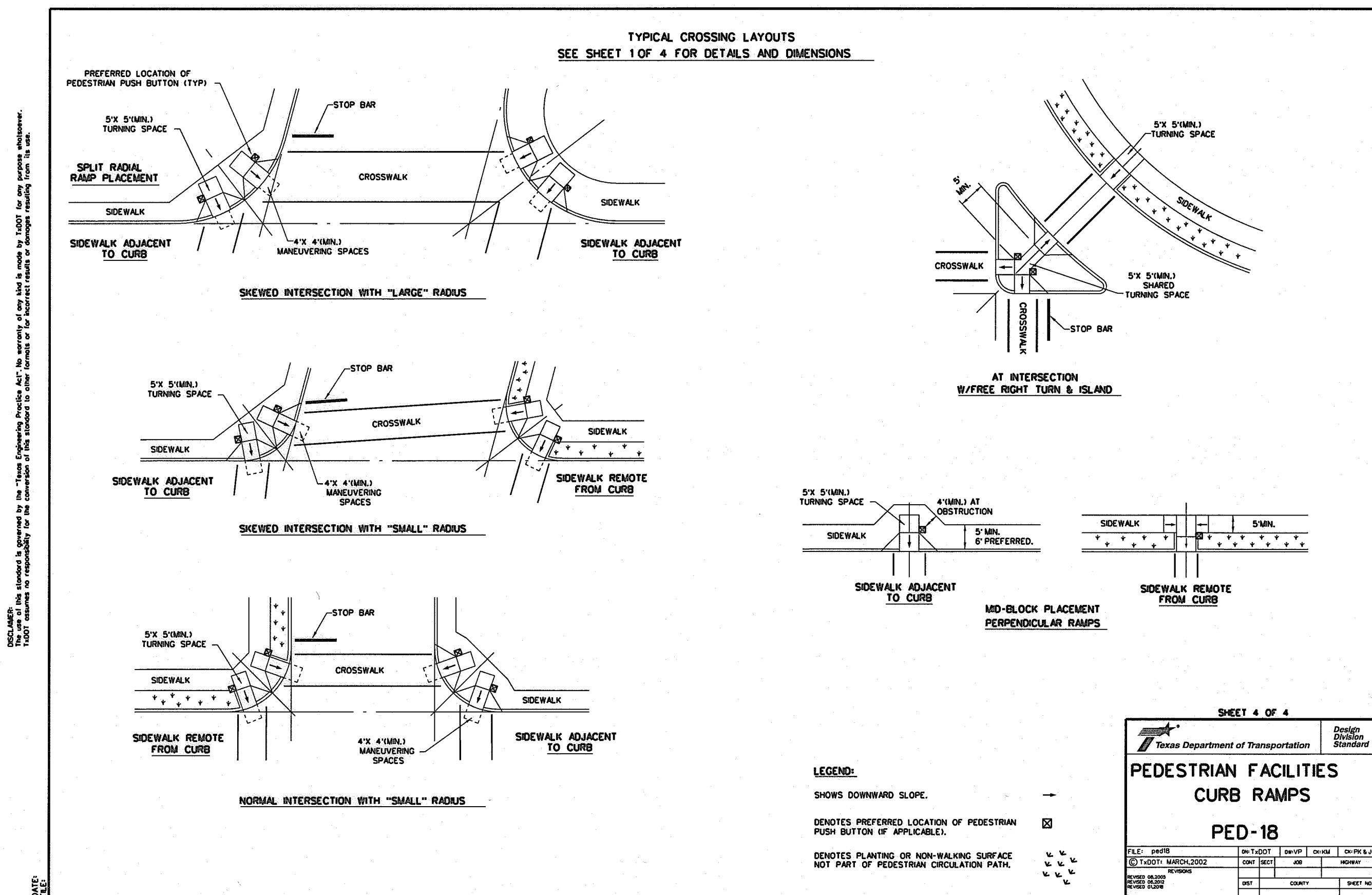
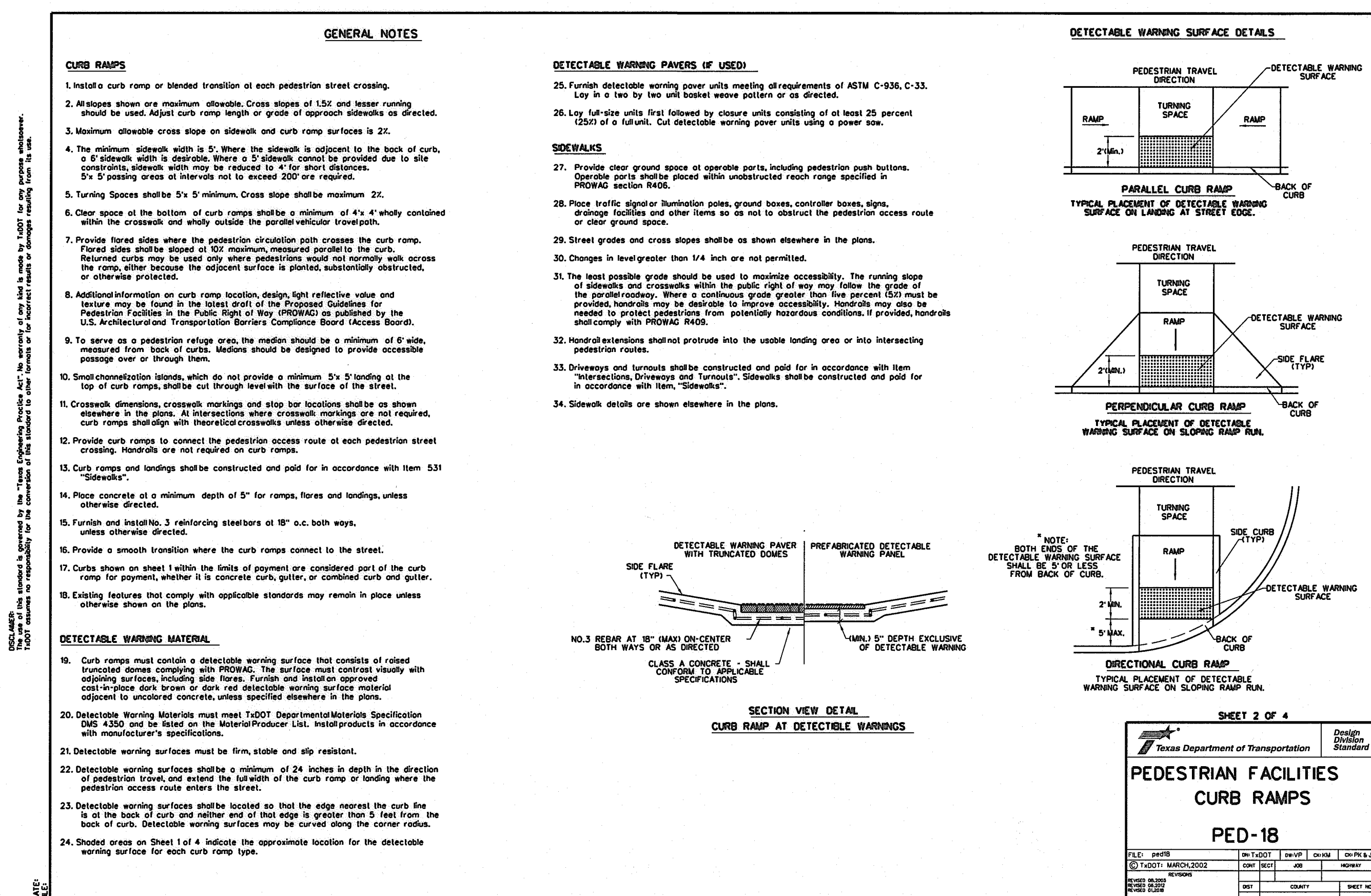
NO.	REVISION	DATE	BY

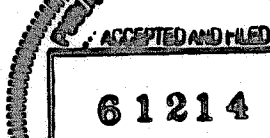


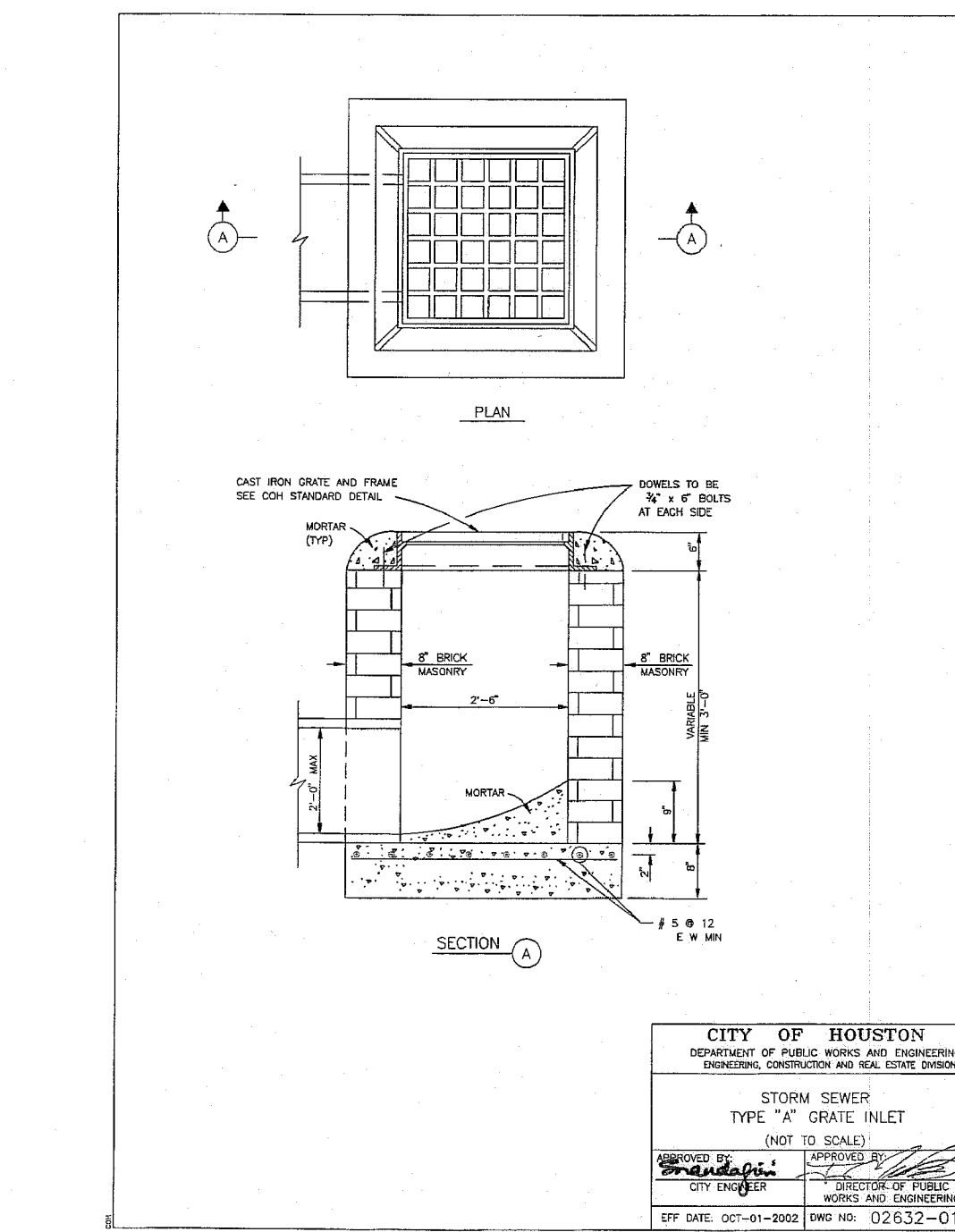
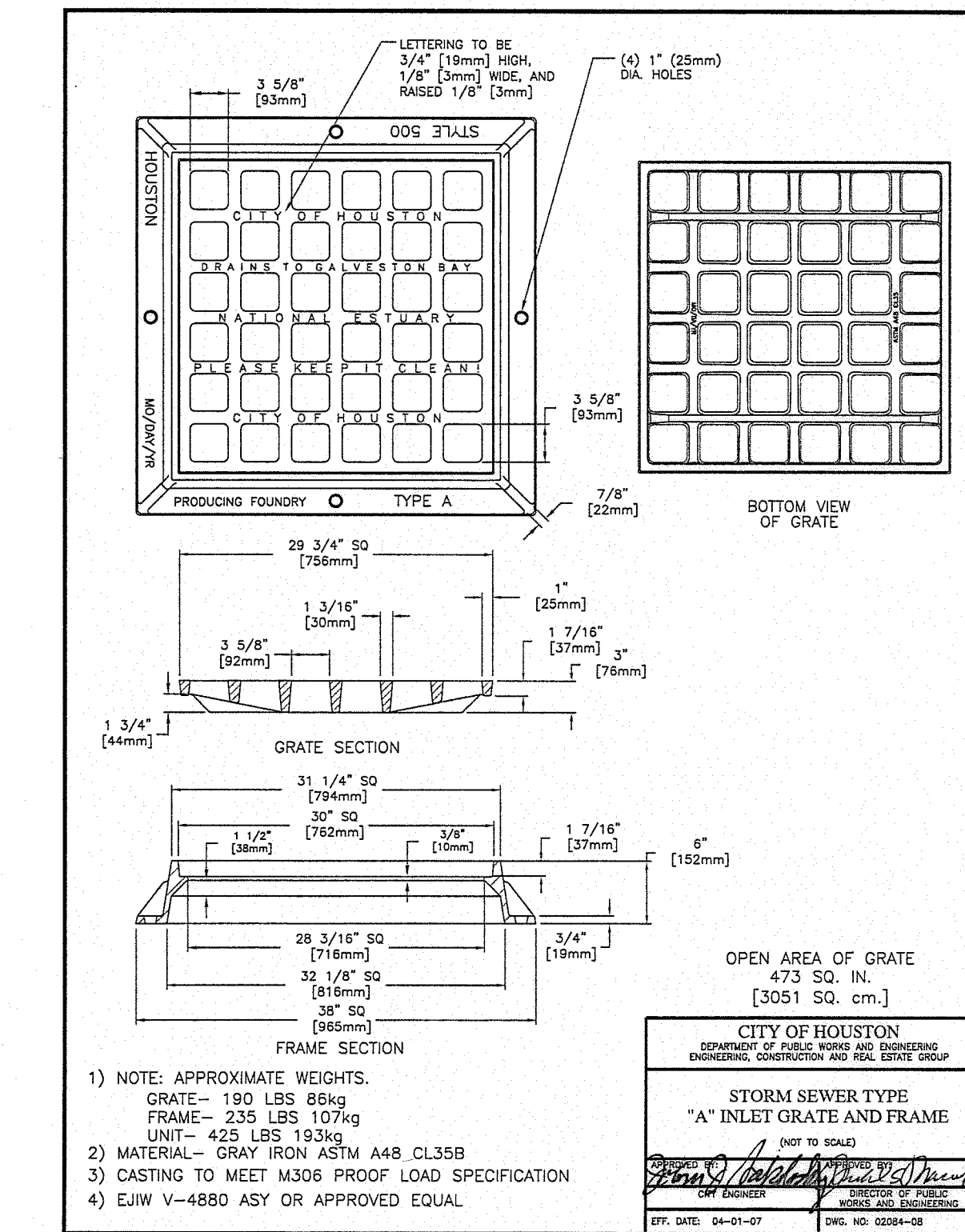
Engineering and Surveying
2107 CityWest Blvd, 3rd Floor
Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax
TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486


FORT BEND COUNTY MUD 132
MIRANDOLA LANE EXTENSION
RANCHO BELLA PKWY
LEFT TURN LANE AND
WATER LINE "B" & WATER LINE "C"

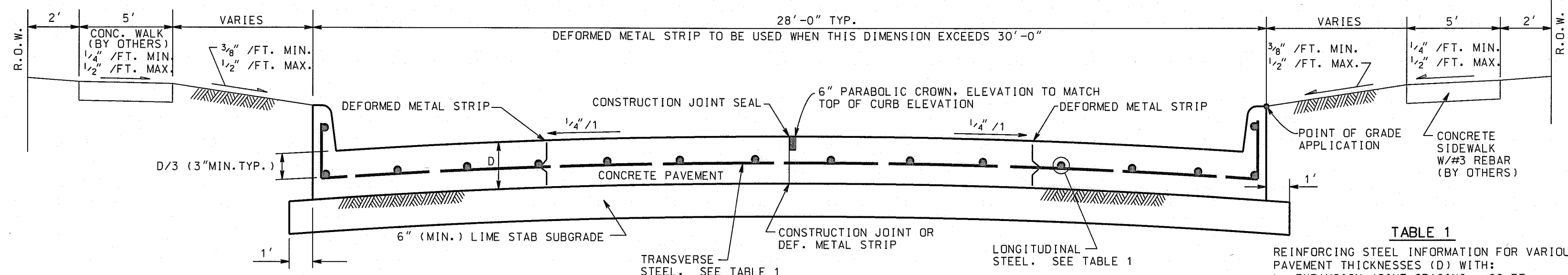




FILE NO:	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
HORIZ : N.T.S.	
VERT :	
SHEET No: 10 OF 20	



APPROVED: _____ DEVELOPMENT COORDINATOR	
DATE: _____ 10/11/18	
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES	
<h1 style="margin: 0;">CITY OF HOUSTON</h1> <h2 style="margin: 0;">HOUSTON PUBLIC WORKS</h2>	
WATER: _____ WASTEWATER: _____ STORM: _____ STREET & BRIDGE: _____	TRAFFIC & TRANSPORTATION STORM WATER QUALITY FACILITIES FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE HORZ : _____ VERT : _____	 <p>The seal is circular with a double-lined border. Inside the border, the words "CITY OF HOUSTON" are written in a circular path at the top, and "PUBLIC WORKS" is at the bottom. In the center of the seal is a rectangular box containing the number "61214". Below this box, the words "CITY DRAWING NUMBER" are printed. At the very bottom of the seal, the words "HOUSTON, TEXAS" are written in a semi-circle.</p>
SHEET No: 11 OF 20	



TYPICAL SINGLE ROADWAY SECTION

TABLE 1
REINFORCING STEEL INFORMATION FOR VARIOUS PAVEMENT THICKNESSES (D) WITH:
L = EXPANSION JOINT SPACING = 60 FT
f_c = 3,500 PSI AND f_y = 60,000 PSI

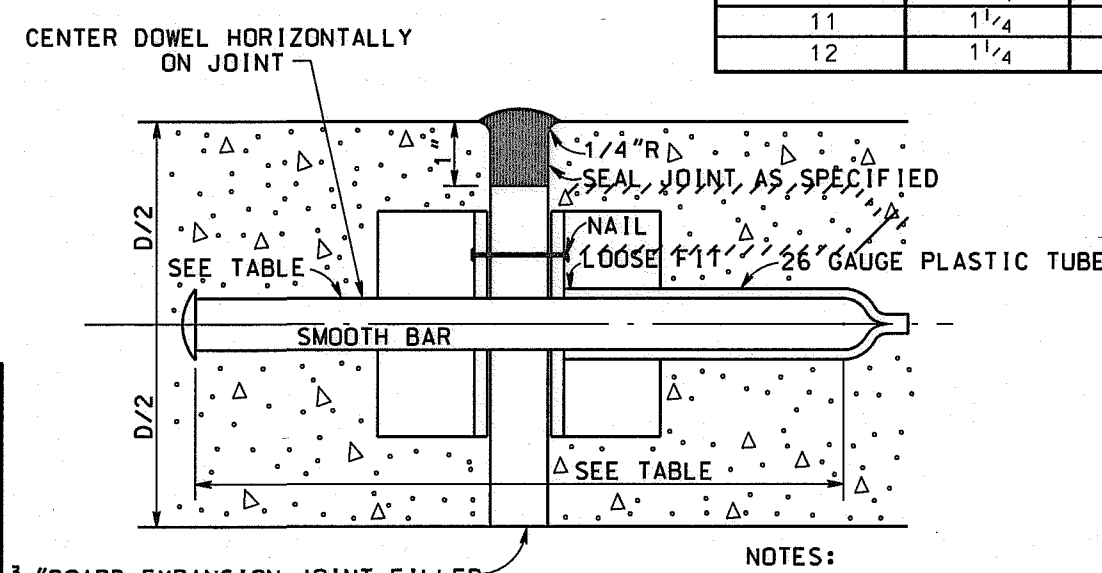
PAVEMENT THICKNESS (D) (IN.)	PAVEMENT WIDTH (FT)	LONGITUDINAL STEEL		TRANSVERSE STEEL	
		NUMBER OF BARS	SPACING (IN.)	NUMBER OF BARS	SPACING (IN.)
6	28	17	20.50	4	36
7	25	17	18.25	4	36
7	35	25	18.25	3	36
7	36	25	17.75	3	36
7	37	25	18.25	3	36
7	41	28	18.25	3	36
7	45	31	17.75	3	36

MINIMUM LAP LENGTHS (L):
A. # 4 BARS: L = 22 INCHES
B. # 5 BARS: L = 27 INCHES
C. # 6 BARS: L = 32 INCHES

PAVEMENT THICKNESS (D) (IN.)

PAVEMENT THICKNESS (D) (IN.)	DIAMETER (IN.)	LENGTH (IN.)	SPACING (IN.)
6	3/4	18	12
7	1	18	12
8	1	18	12
9	1 1/4	18	12
10	1 1/4	18	12
11	1 1/4	18	12
12	1 1/4	18	12

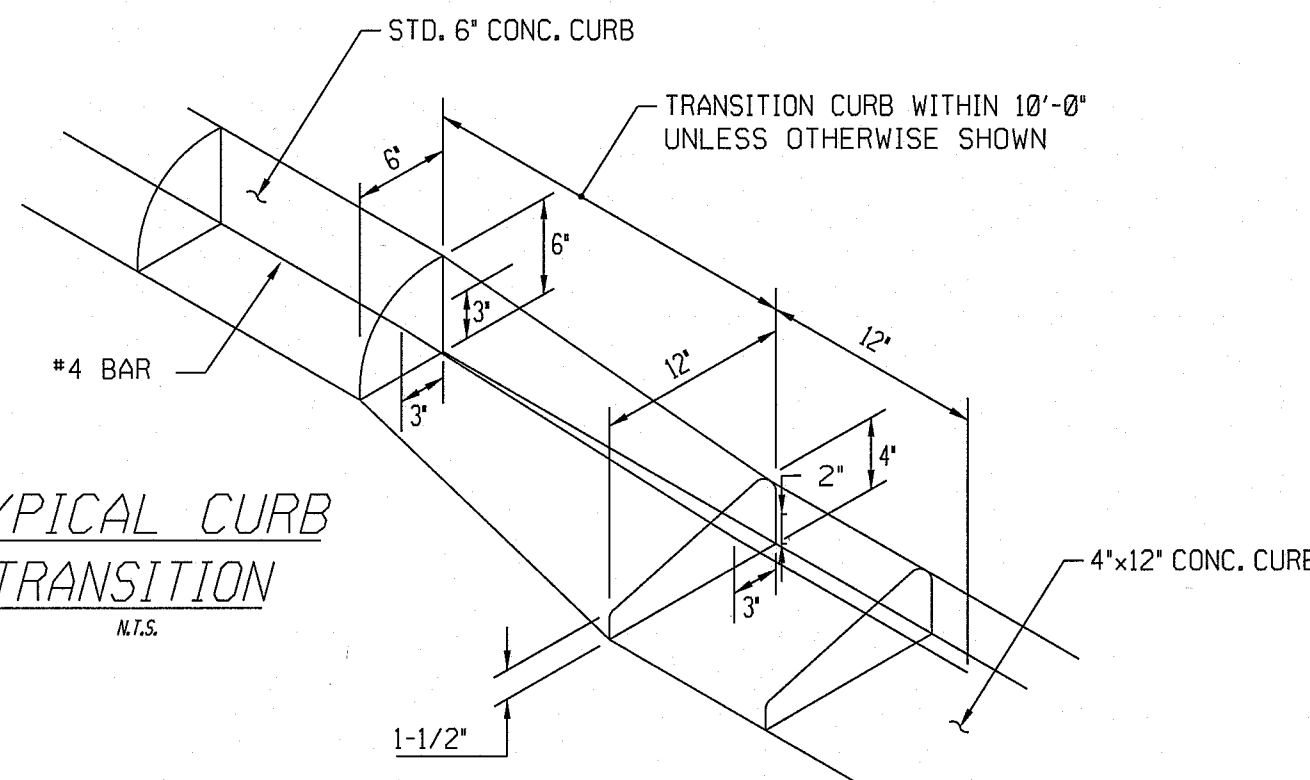
DOWEL SIZES AND SPACINGS



DOWEL TYPE EXPANSION JOINT

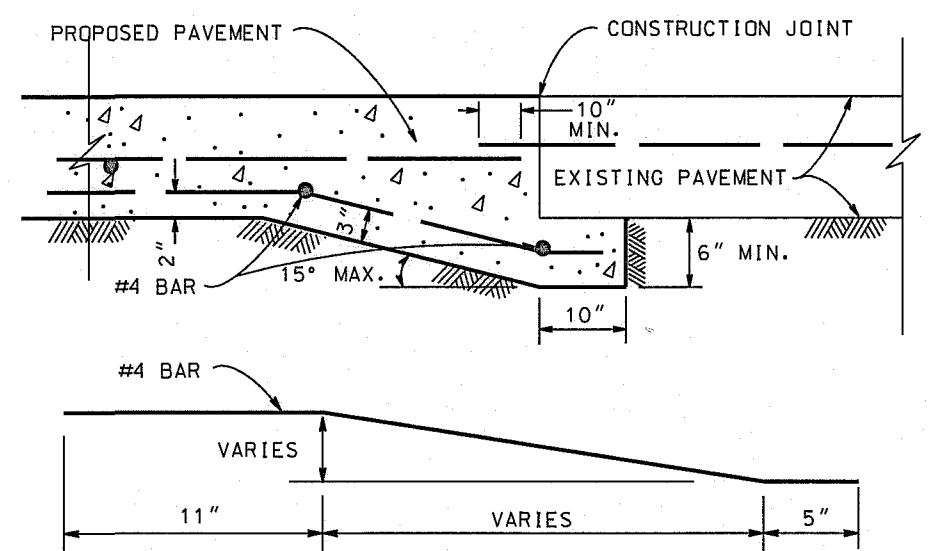
(CANTILEVER TYPE, CAST MALLEABLE IRON LOAD TRANSMISSION UNIT STAR LUG MODEL D-27 OR EQUAL ON 22" C-C ACCEPTABLE AS ALTERNATE)

- 4"x12" MONOLITHIC AND TRANSITION CURB NOTES:
- 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.
 - Transitions from 6-inch concrete curb to 4-inch x 12-inch concrete curb to be accomplished within 10 feet unless otherwise shown. If this 10-foot transition curb is not poured monolithically with the pavement, then reinforcing steel as shown above in typical detail 4-inch x 12-inch transition curb is to be installed.



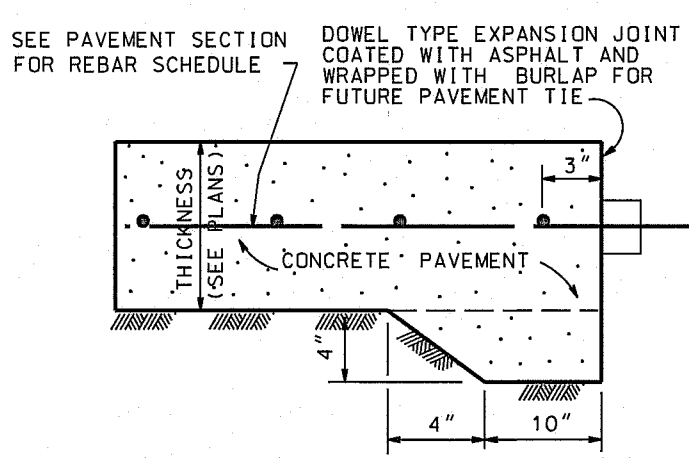
TYPICAL CURB TRANSITION

TYPICAL DETAIL 4"x12" CURB

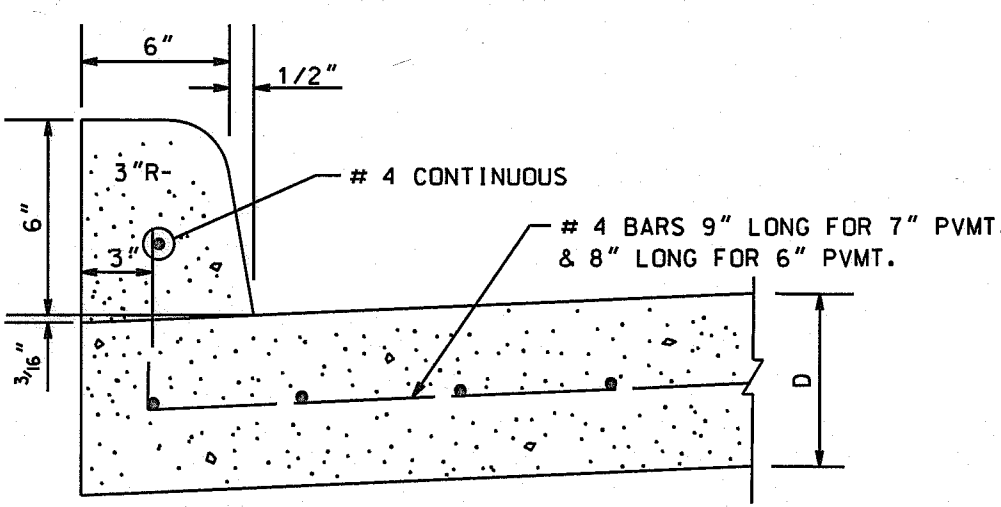


UNDERCUT BAR LAYOUT

PAVEMENT UNDERCUT

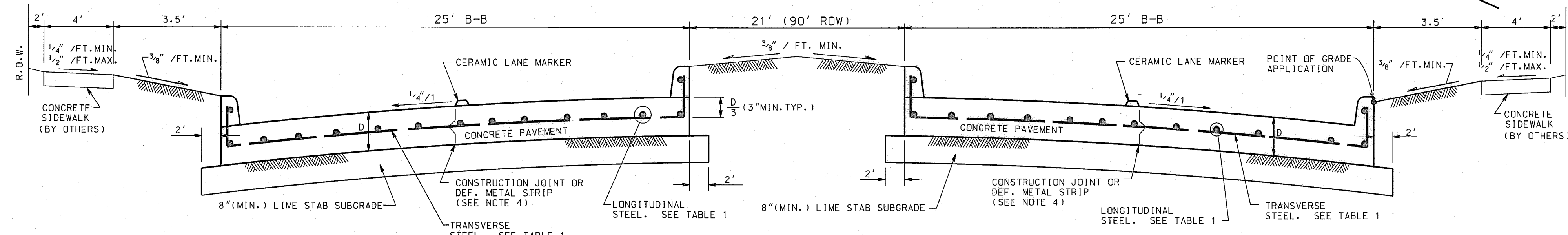


PAVEMENT HEADER

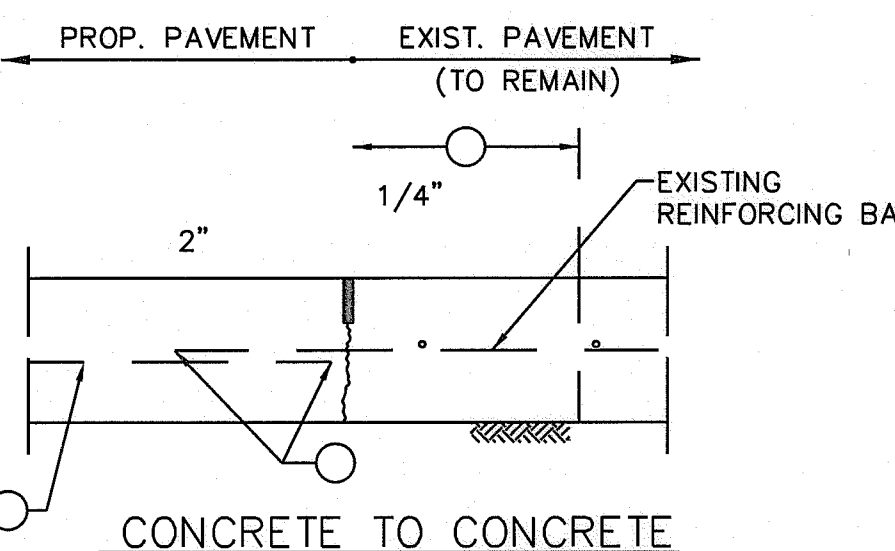


CONCRETE CURB

- NOTES:
- ALL REINFORCING STEEL SHALL CONFORM TO ASTM DESIGNATION A615, GRADE 60. FOR ALL 6" & 7" PAVING, USE 1/2"
 - THE LOCATION OF CONSTRUCTION JOINTS AND DEFORMED METAL STRIPS MAY BE VARIED, WITH THE APPROVAL OF THE CITY ENGINEER, TO SUIT THE PROPOSED CONSTRUCTION METHODS OF THE CONTRACTOR. THE MAXIMUM WIDTH BETWEEN LONGITUDINAL JOINTS SHALL NOT EXCEED 15'-0".
 - ALL EARTHEN AREAS ARE TO BE HYDROMULCHED.
 - CONTRACTOR MAY SAW CUT IN LIEU OF DEFORMED METAL STRIP.



TYPICAL DOUBLE ROADWAY SECTION



CONCRETE TO CONCRETE STANDARD PAVEMENT TIE-IN (SEE NOTES)

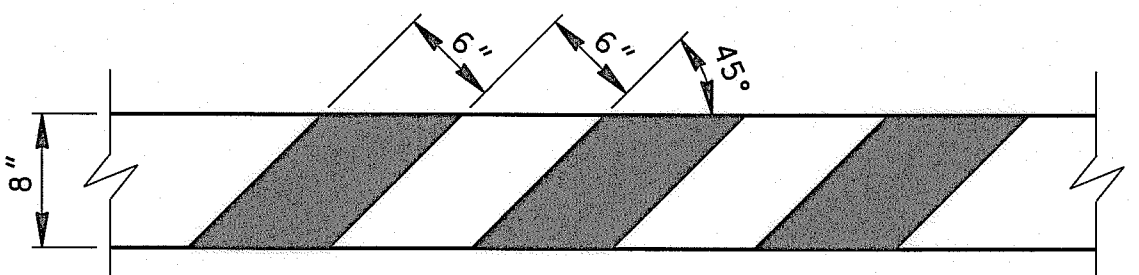
- NOTES FOR TIE-IN:
- REINFORCING CENTERED IN PROPOSED PAVEMENT, 3" CLEAR AT EDGES.
 - SAW-CUT 2" DEEP AND REMOVE 2' EXISTING PAVEMENT OR PAVEMENT WITH CURB. EXPOSE AND CLEAN EXISTING REINFORCING.
 - 24xBAR DIAMETER LAP OR WELD, IF DIRECTED.
 - IF NO EXPOSED REINFORCING STEEL EXISTS, HORIZONTAL DOWELS SHALL BE #5 BARS, GRADE 60, 30" LONG DRILLED AND EMBEDDED 15" INTO THE CENTER OF THE EXIST CONCRETE SLAB WITH EPOXY OR APPROVED EQUAL. DOWELS SHALL BE PLACED 24" CENTER TO CENTER.

DEFORMED METAL STRIP

THE LOCATION OF CONSTRUCTION JOINTS AND DEFORMED STRIPS MAY BE VARIED, WITH THE APPROVAL OF THE ENGINEER, TO SUIT THE PROPOSED CONSTRUCTION METHODS OF THE CONTRACTOR

CONSTRUCTION JOINT SEAL

N.T.S.

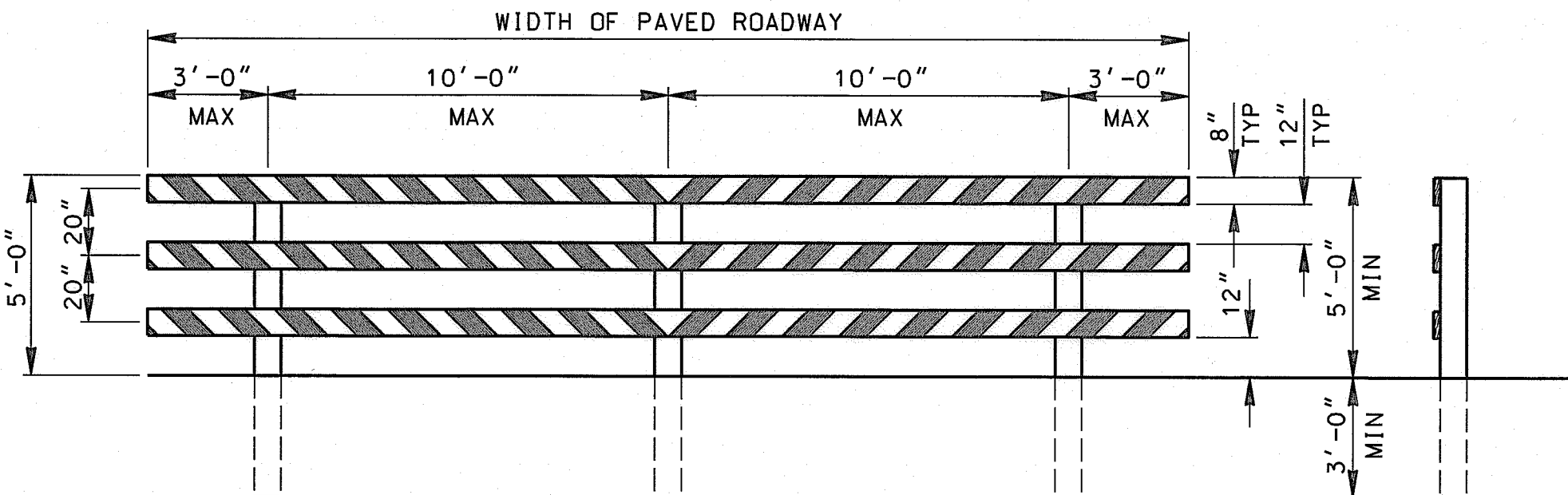


STRIPING FOR BARRICADE

STRIPING SHOULD COVER THE FULL WIDTH OF THE RAIL. STRIPING OF RAILS, PANELS, ETC. SHOULD SLOPE DOWNWARD AT AN ANGLE OF 45 DEGREES IN DIRECTIONS TRAFFIC IS TO PASS.

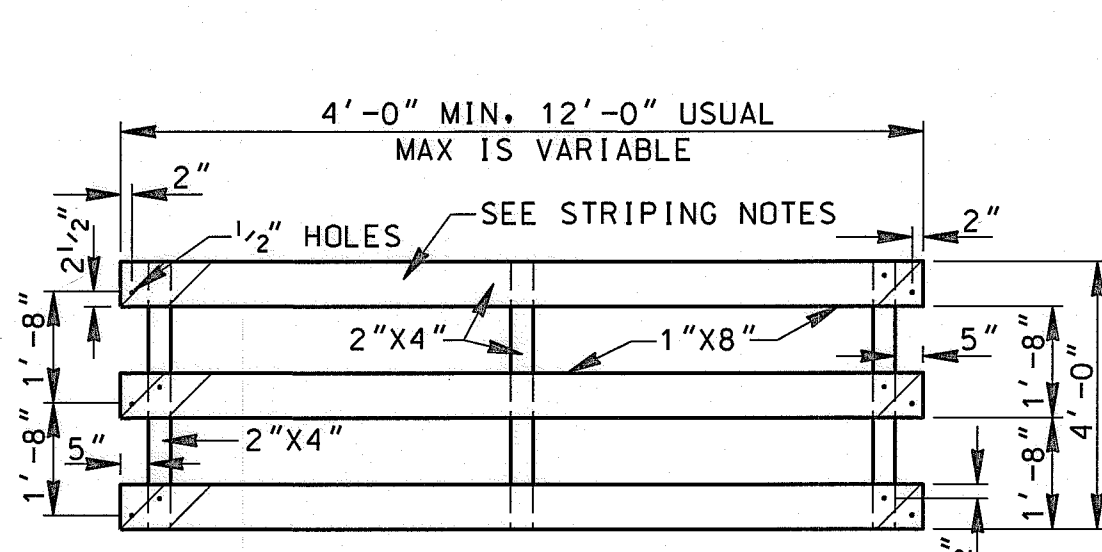
WHERE A BARRICADE EXTENDS ENTIRELY ACROSS A ROADWAY, IT IS DESIRABLE THAT THE STRIPES SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING. WHEN BOTH RIGHT AND LEFT TURNS ARE PROVIDED FOR, THE CHEVRON STRIPING MAY SLOPE DOWNWARD IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE.

FOR ALL TYPES OF BARRICADES WITH RAILS LESS THAN 3'-0" LONG, STRIPES 4" WIDE SHALL BE USED. IDENTIFICATION MARKINGS MAY BE SHOWN ONLY ON BACK SIDE OF BARRICADE RAILS.

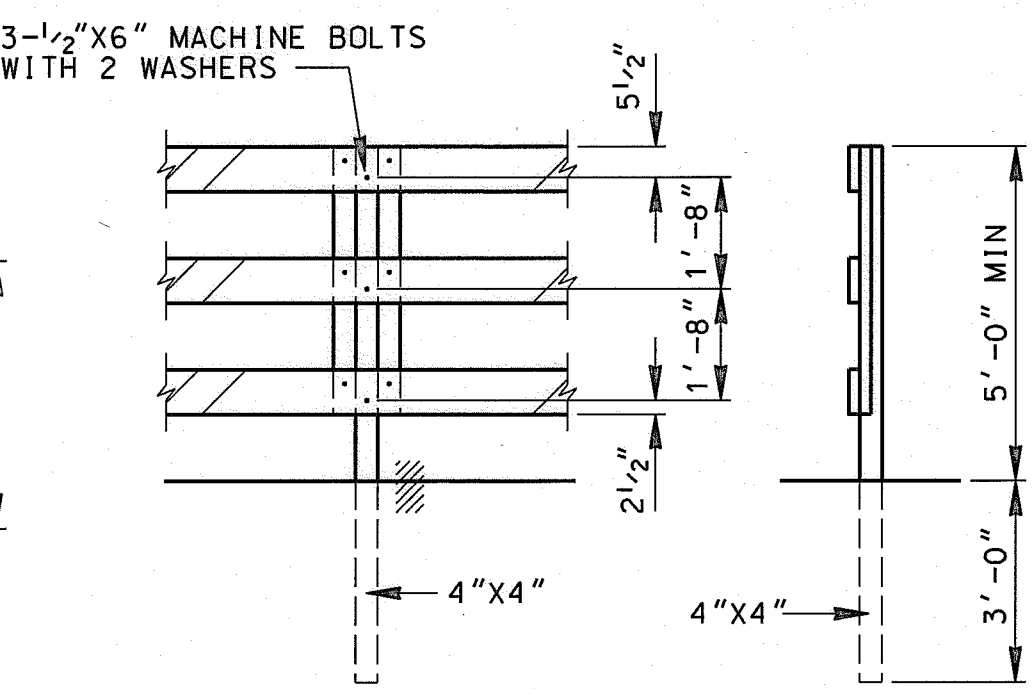


TYPE III BARRICADE FOR END OF ROAD

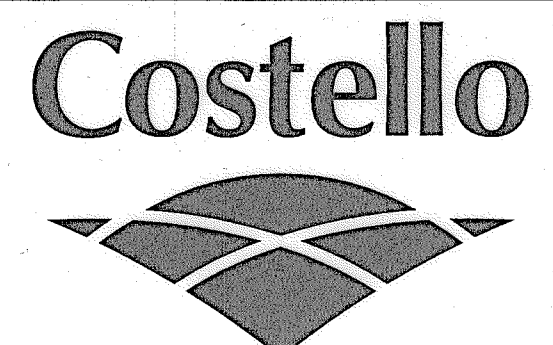
FOR TYPE III BARRICADE FOR END OF ROAD, THE THREE (3) RAILS SHALL BE REFLECTIVE RED AND REFLECTIVE WHITE STRIPES ON SIDE FACING TRAFFIC (HIGH INTENSITY SHEETING ON BARRICADE OR NICKOLITE)



PANEL FOR TYPE III BARRICADE



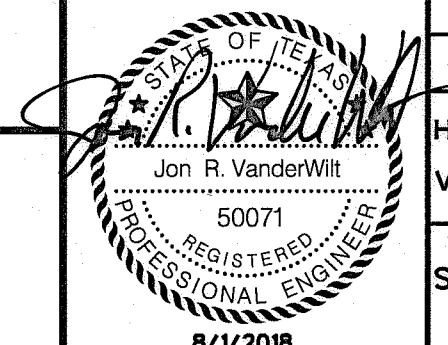
POST FOR TYPE III BARRICADE



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

PAVING DETAILS



APPROVED: *M. D.*
DEVELOPMENT COORDINATOR

DATE: 10/11/18

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

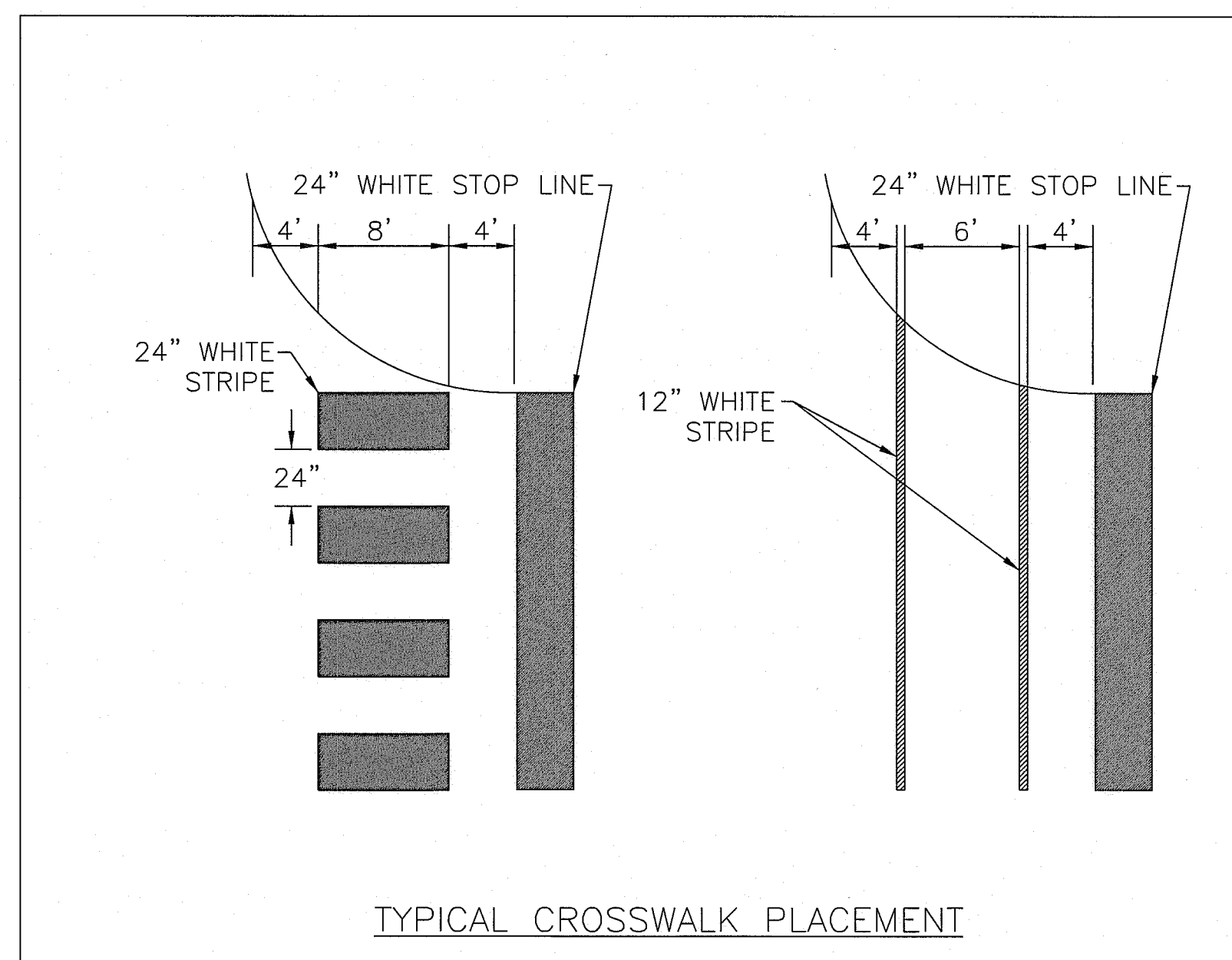
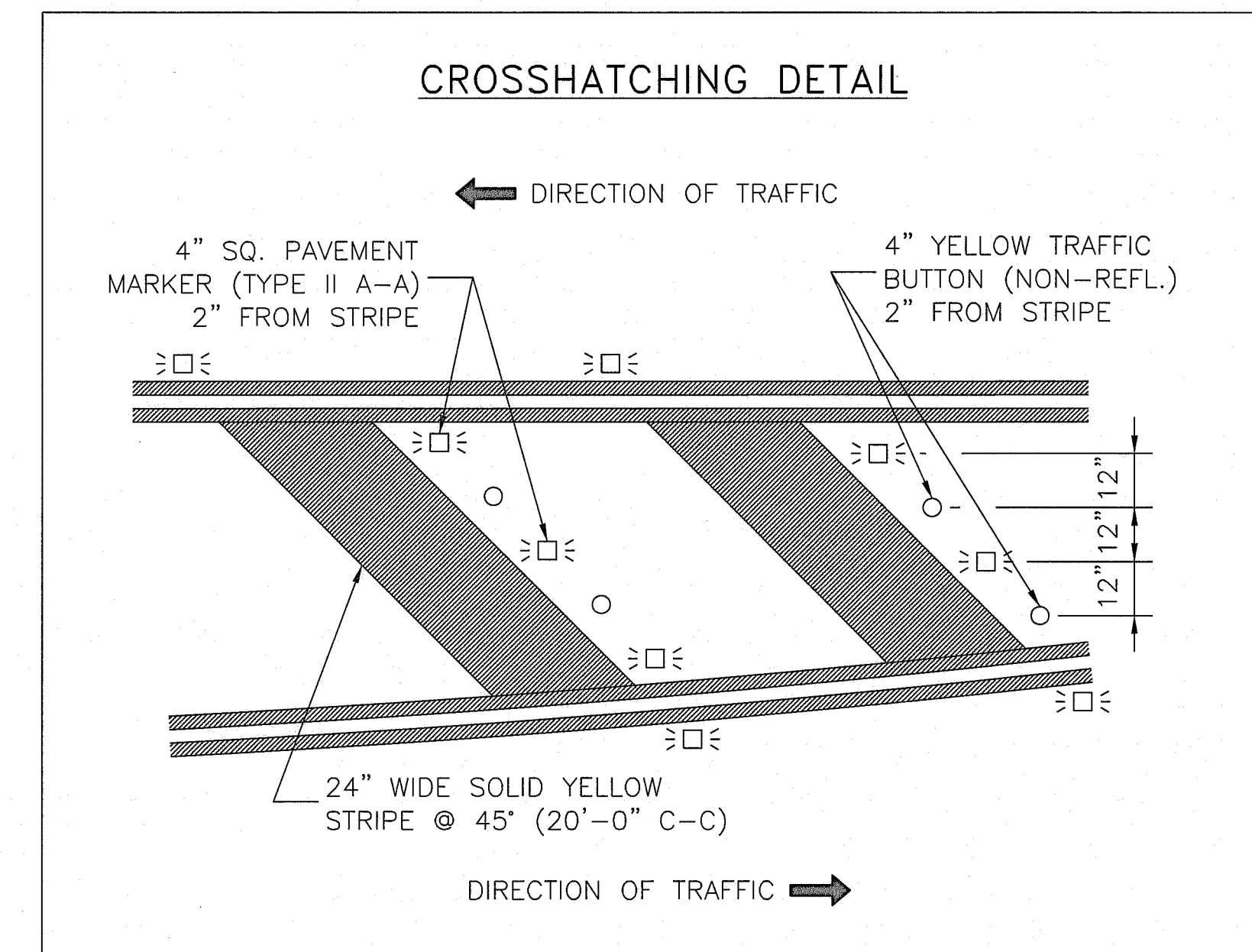
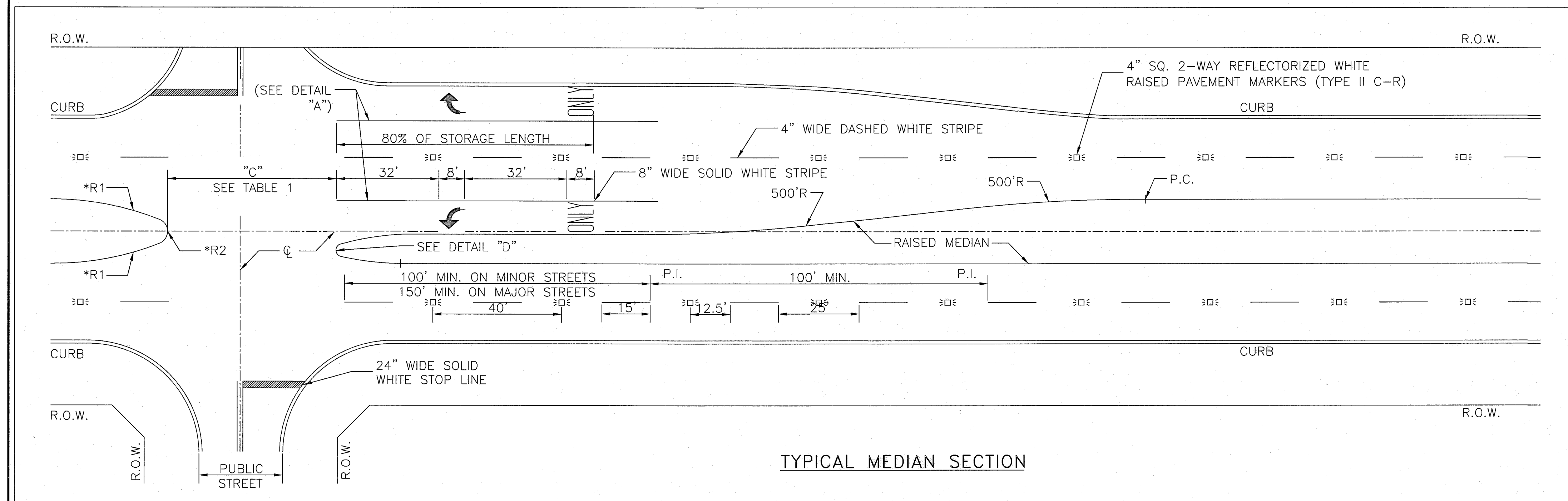
WATER: *10/18/2018* TRAFFIC & TRANSPORTATION
SEWER: *10/18/2018* STORM WATER QUALITY
STREET & BRIDGE: *10/18/2018* FACILITIES

FILE NO: FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
HORZ : N.T.S.
VERT : N.T.S.

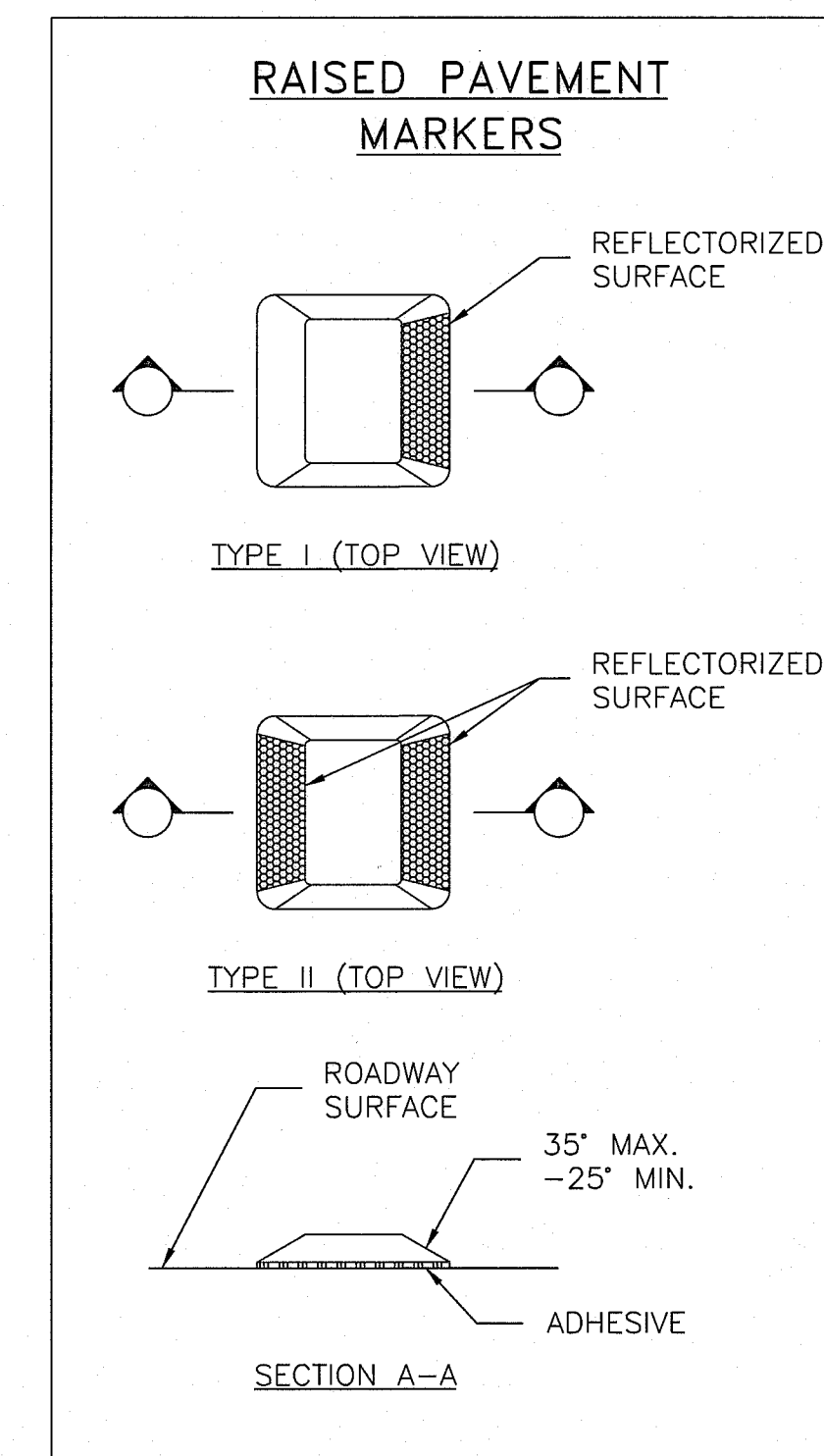
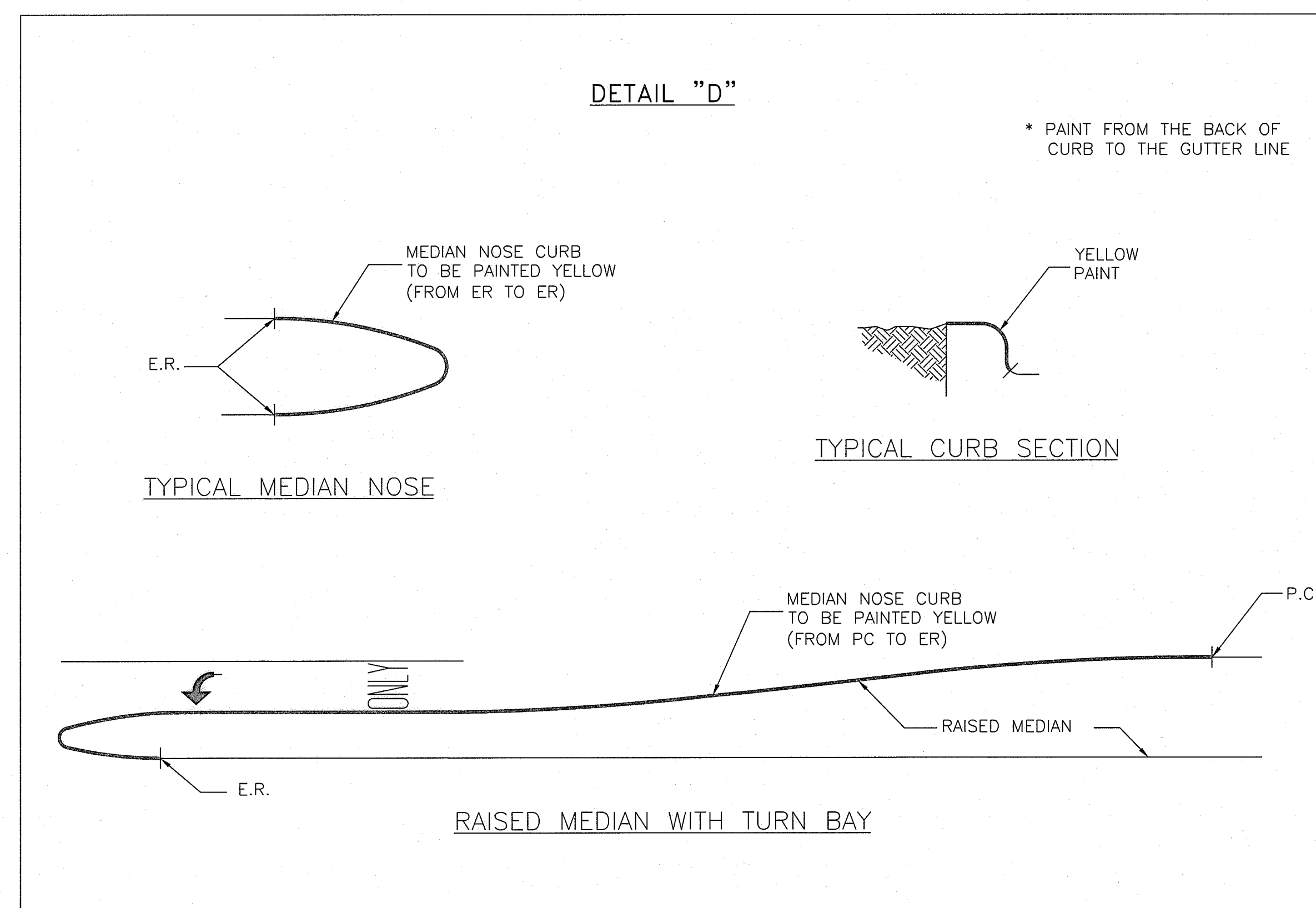
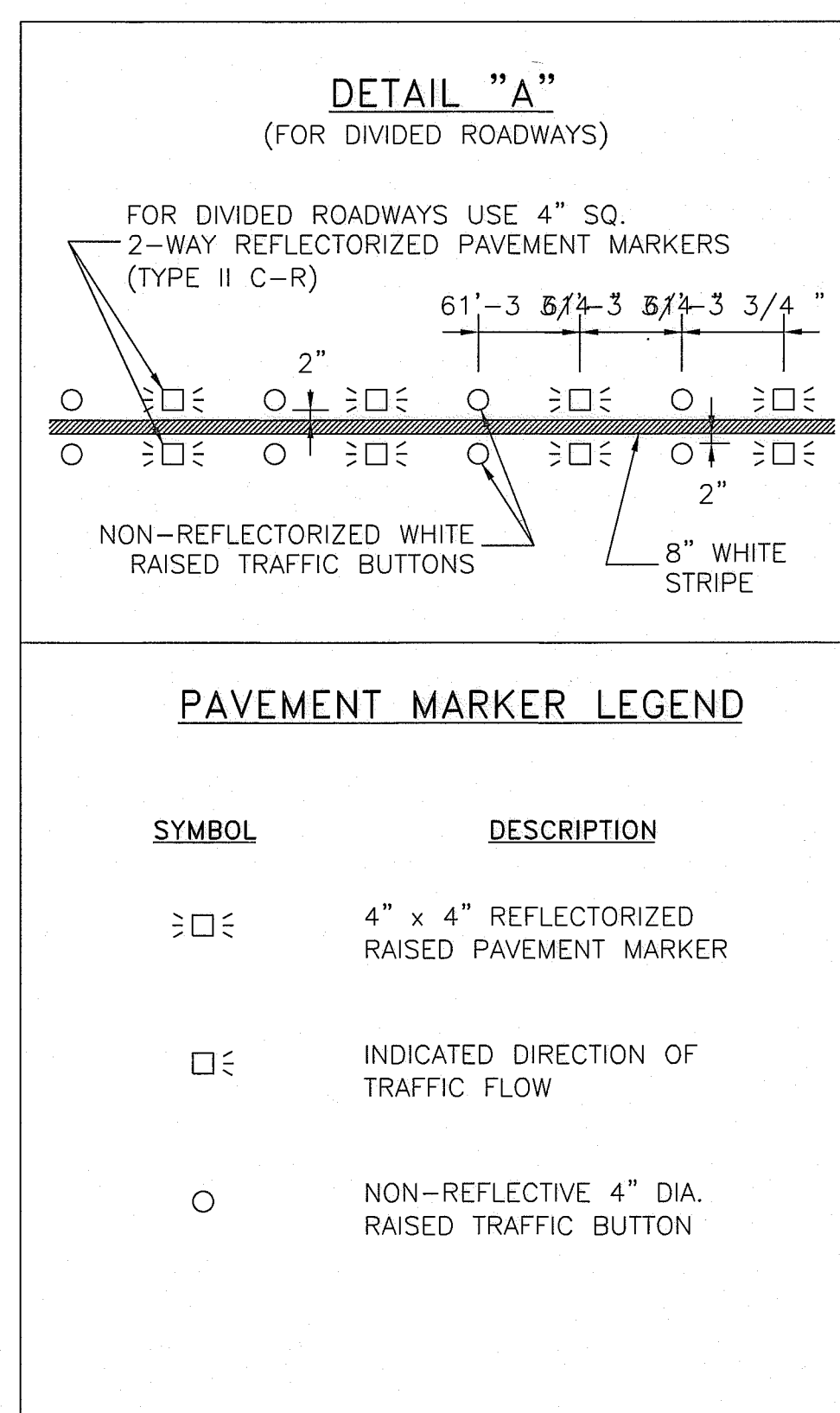
SHEET No: 12 of 20

61214
CITY DRAWING NUMBER



NOTES:

1. 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.
5. OMIT
6. 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.



2503174			
NO.	REVISION	DATE	RV

DESIGNED BY: RLM
DESIGN CHECKED BY: -TRV
DRAWN BY: RLM
COGO CHECKED BY: _____
SURVEY CHECKED BY: _____
QA/QC BY: _____ DATE: _____
QA/QC REVISIONS BY: RLM

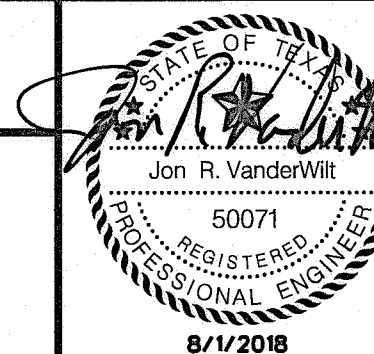


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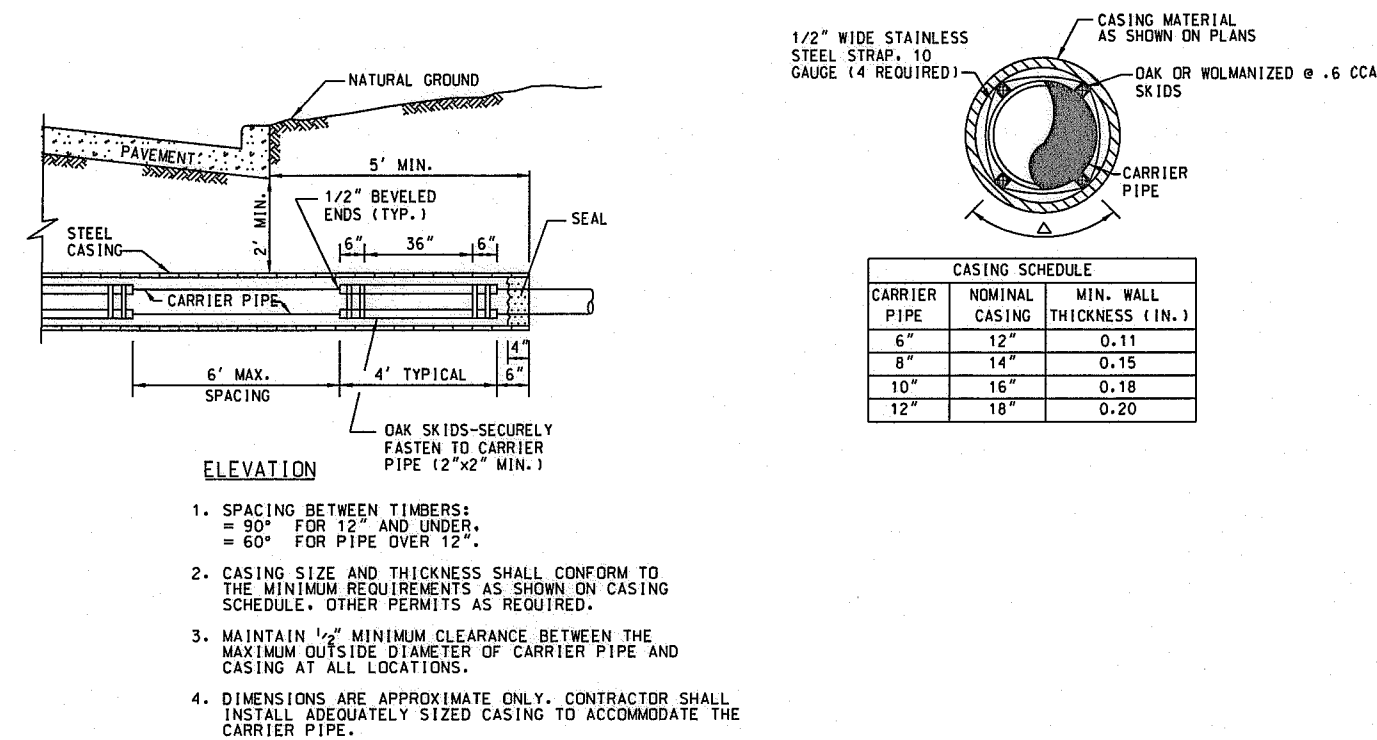
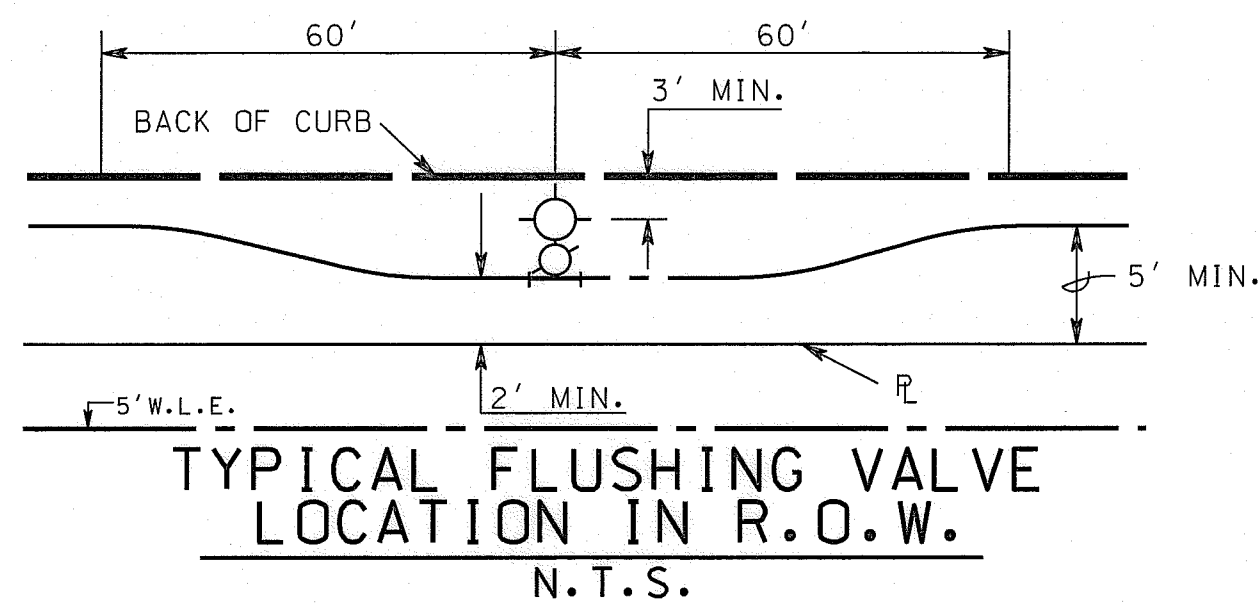
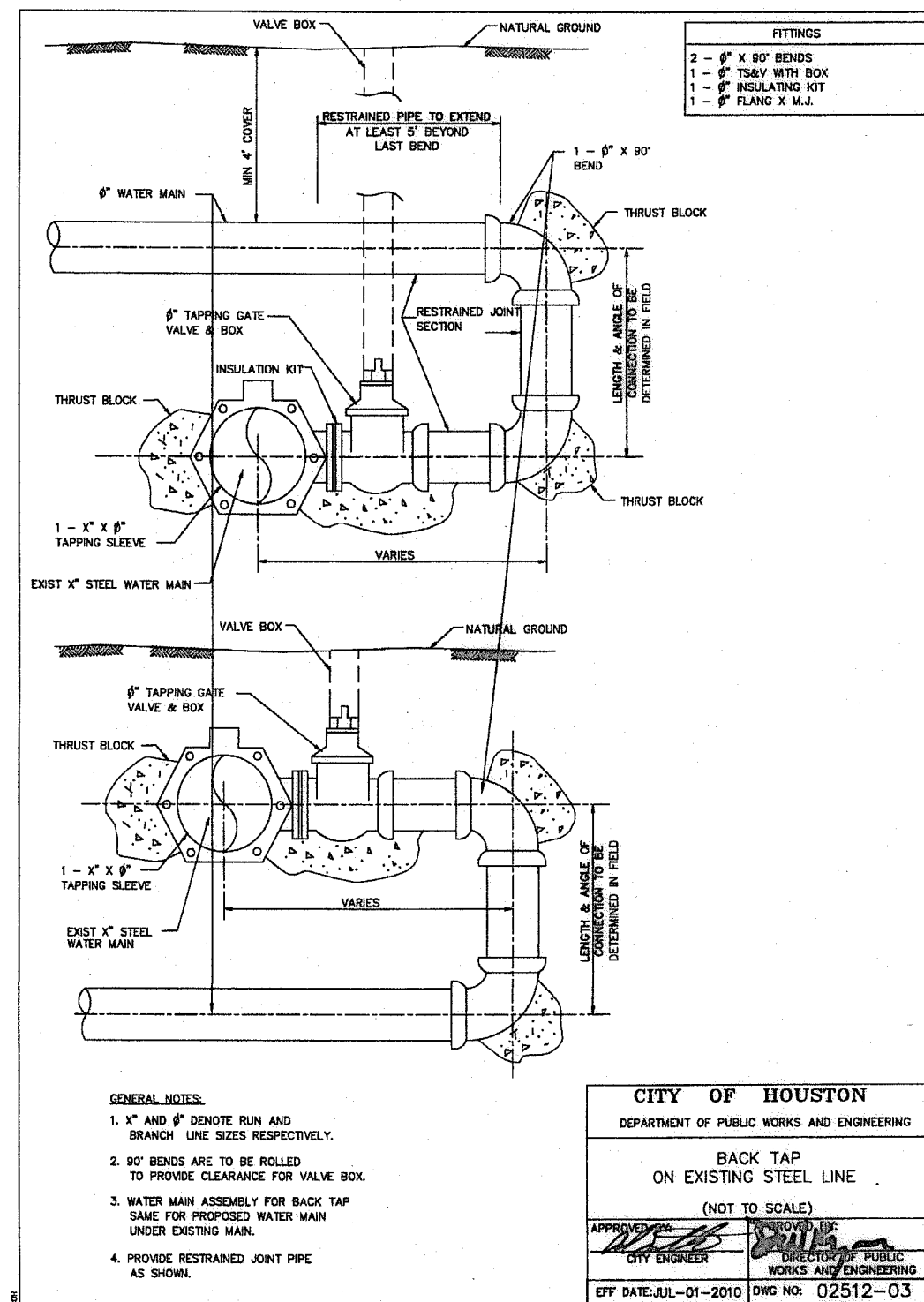
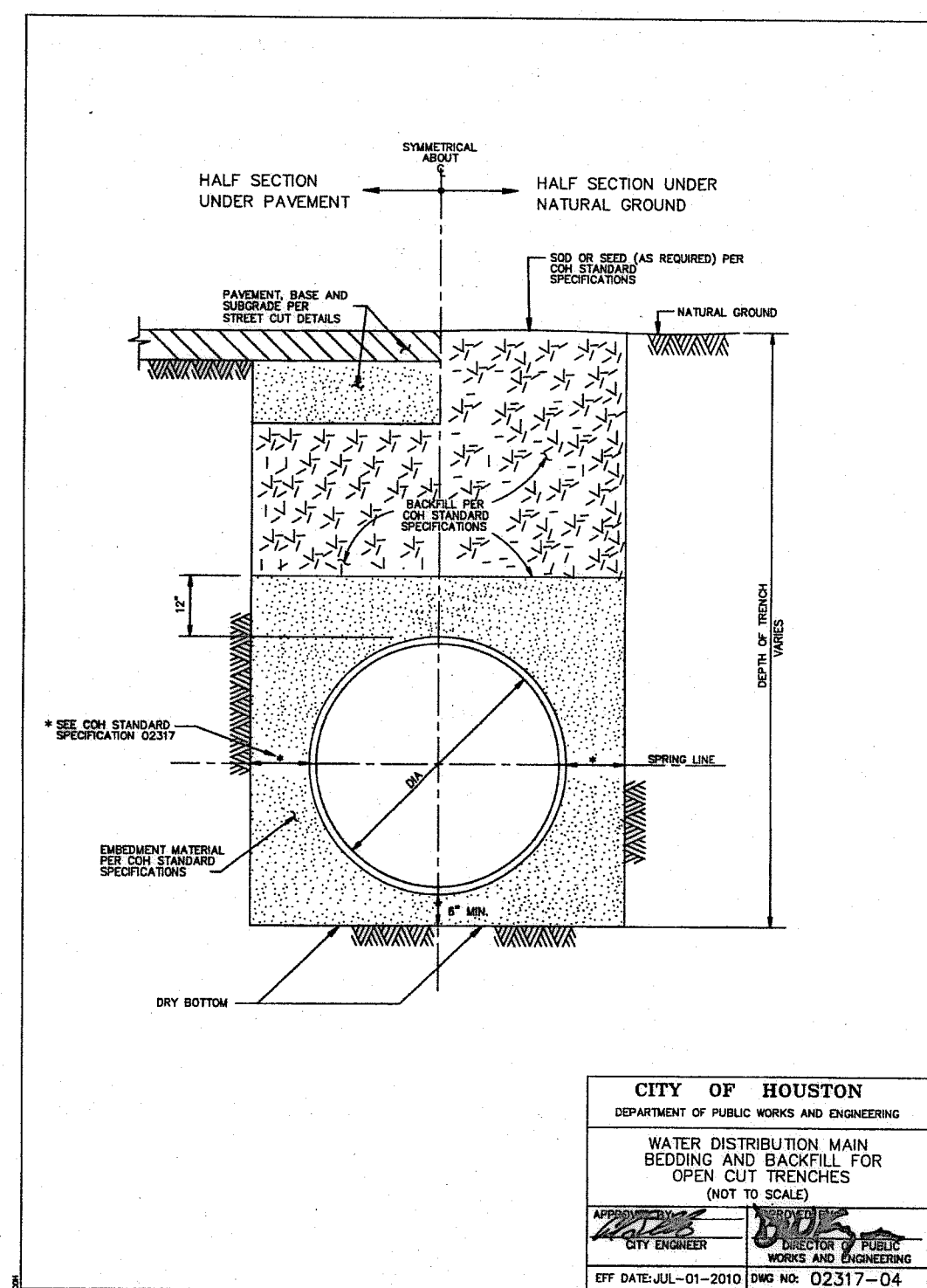
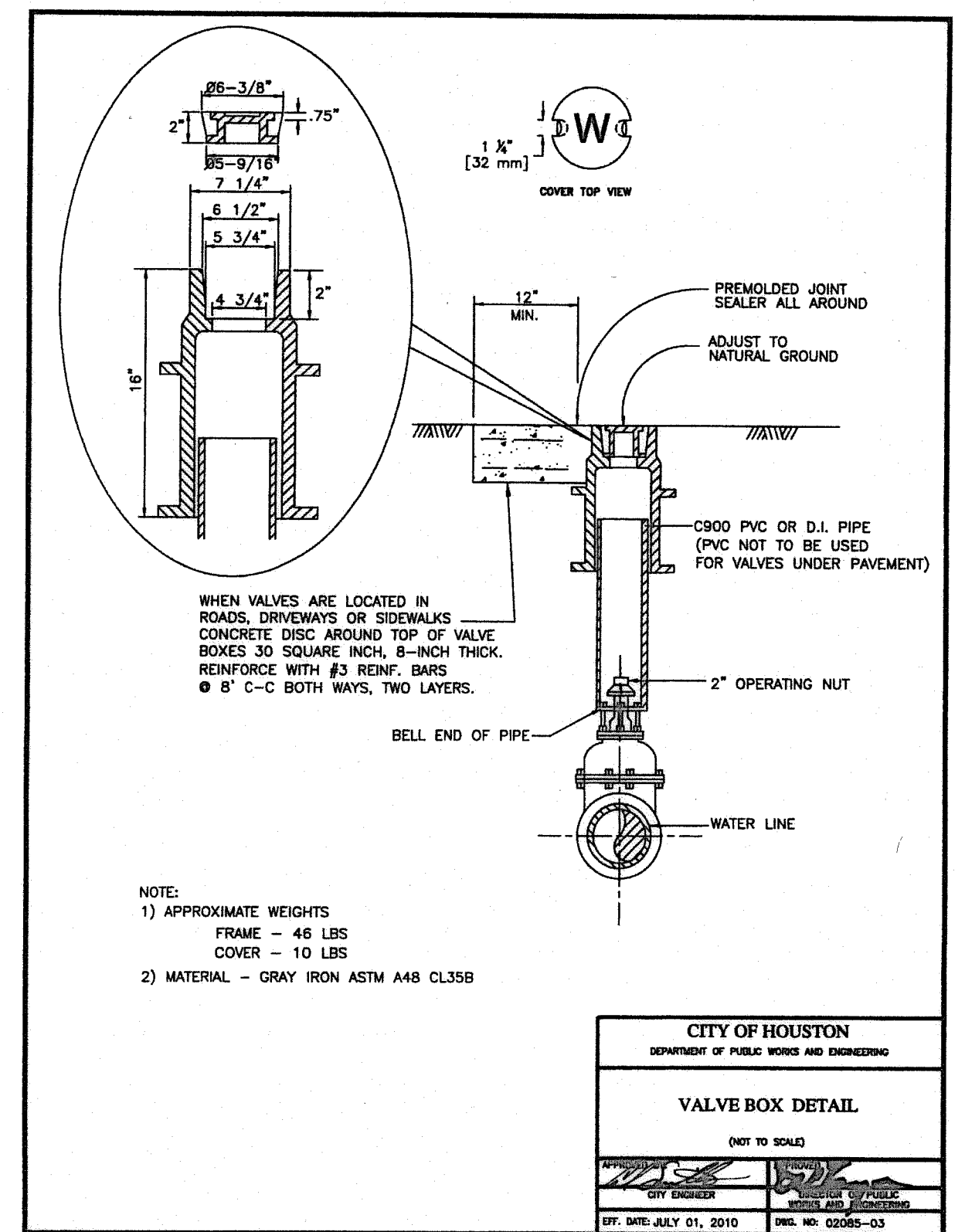
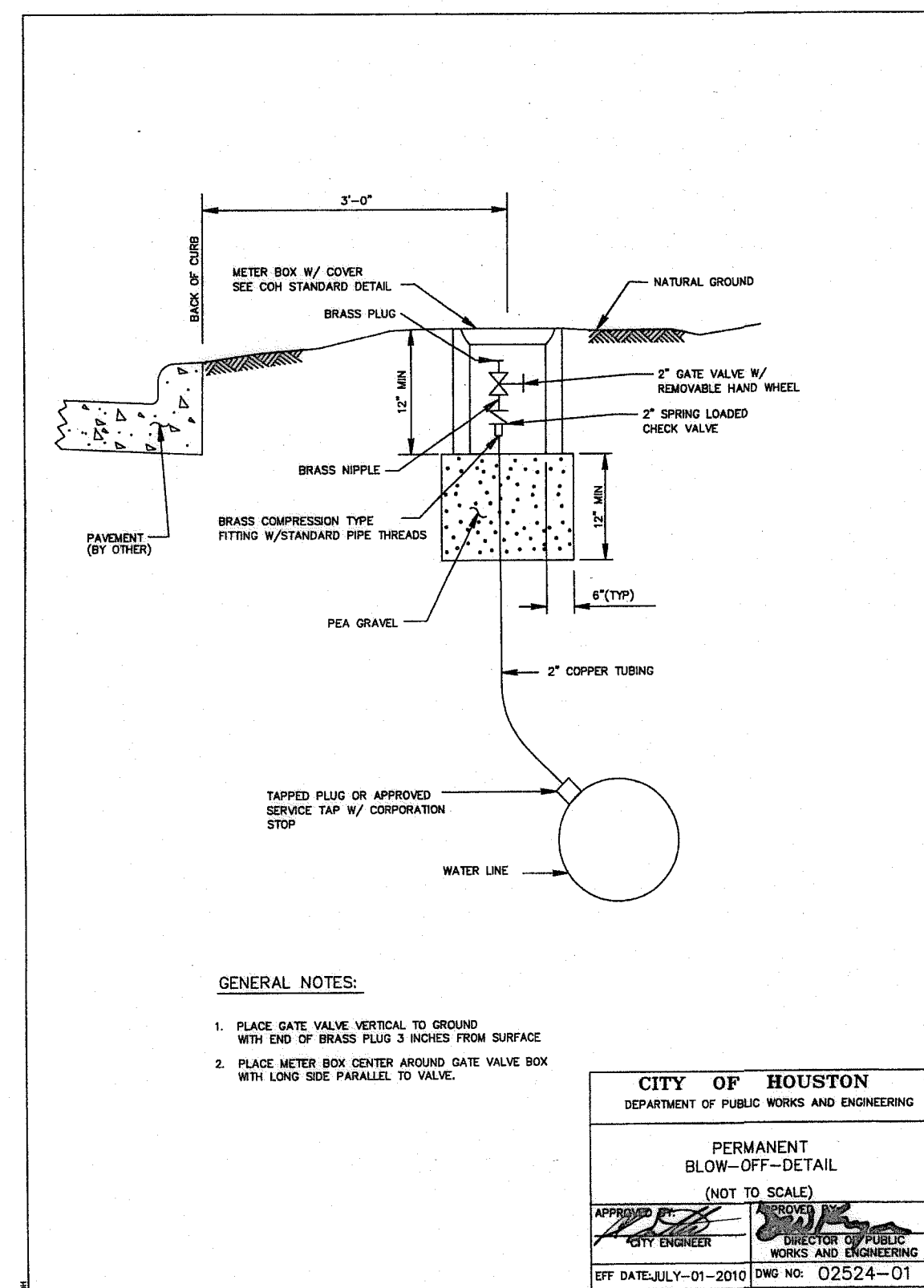
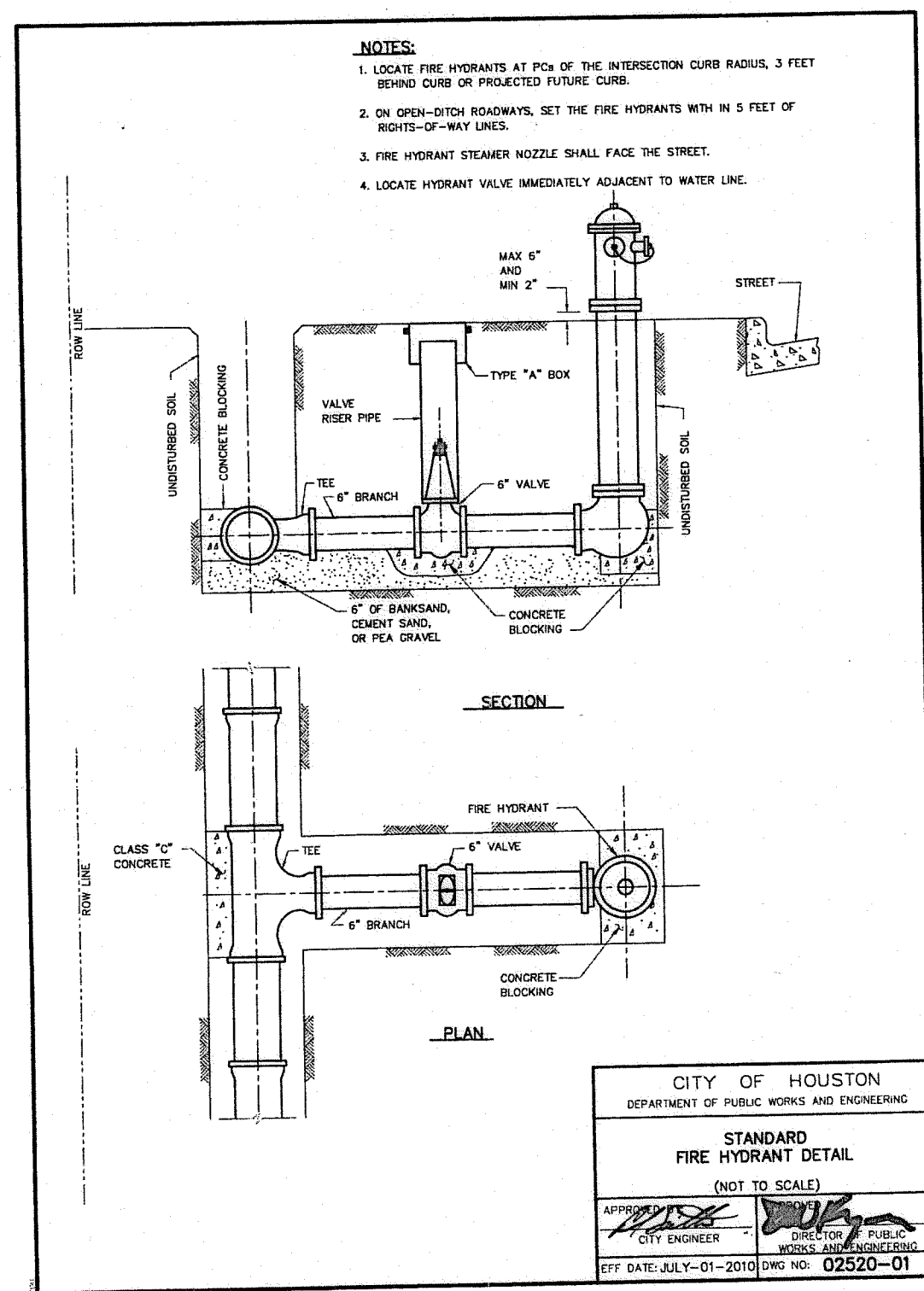
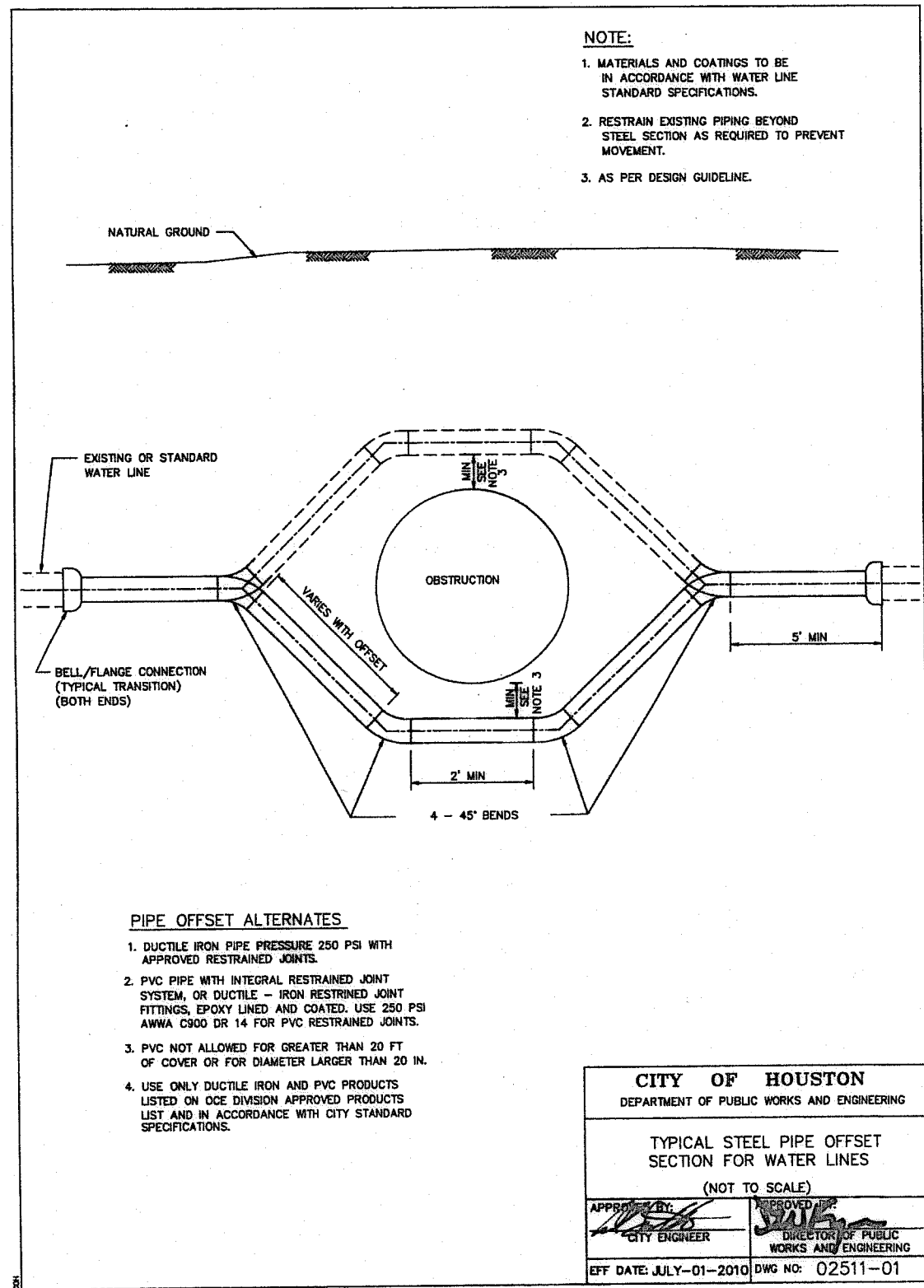
TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

FORT BEND COUNTY MUD 132
MIRANDOLA LANE EXTENSION

PAVING MARKING DETAILS



APPROVED: <i>May 1988</i>	
DEVELOPMENT COORDINATOR	
DATE: <u>10/11/18</u>	
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES	
CITY OF HOUSTON	
HOUSTON PUBLIC WORKS	
WATER: <i>8/2/18</i>	TRAFFIC & TRANSPORTATION
WASTEWATER: <i>8/2/18</i>	STORM WATER QUALITY
STORM: <i>8/2/18</i>	FACILITIES
STREET & BRIDGE	
FILE NO:	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
HORZ : N.T.S.	
VERT : N.T.S.	
SHEET No. 13 OF 20	



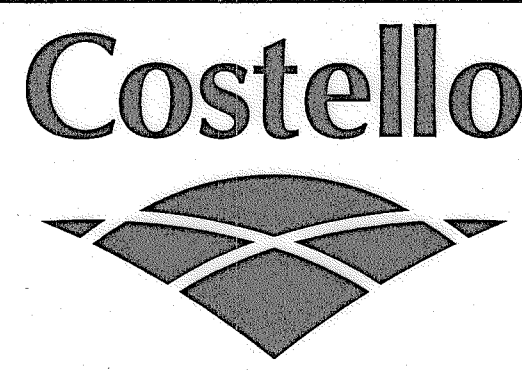
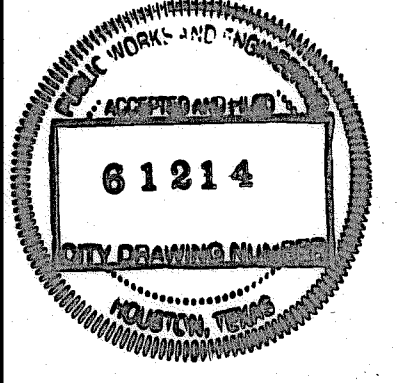
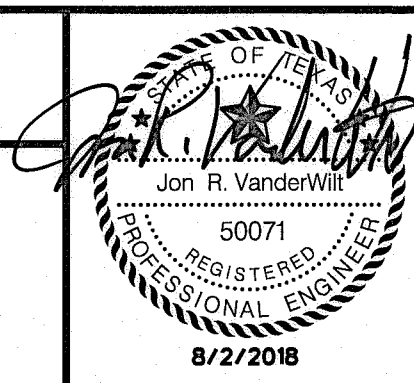
APPROVED: [Signature]
DEVELOPMENT COORDINATOR
DATE: 10/11/18

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

CITY OF HOUSTON HOUSTON PUBLIC WORKS			
WATER	WATER	TRAFFIC & TRANSPORTATION	
WASTEWATER	WASTEWATER	STORM WATER QUALITY	
STORM	STORM	FACILITIES	
STREET & BRIDGE	STREET & BRIDGE		

FILE NO: FOR CITY OF HOUSTON USE ONLY

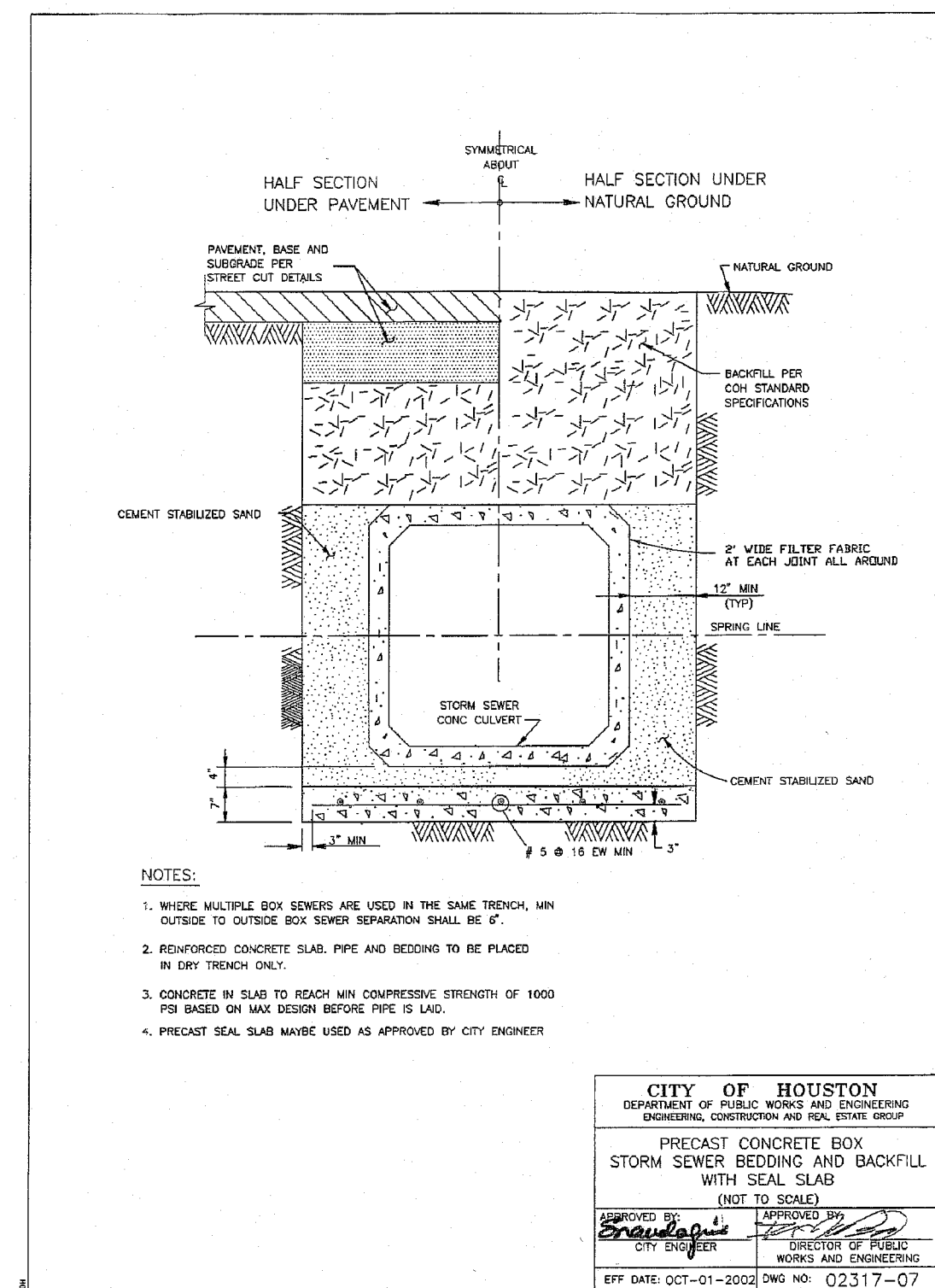
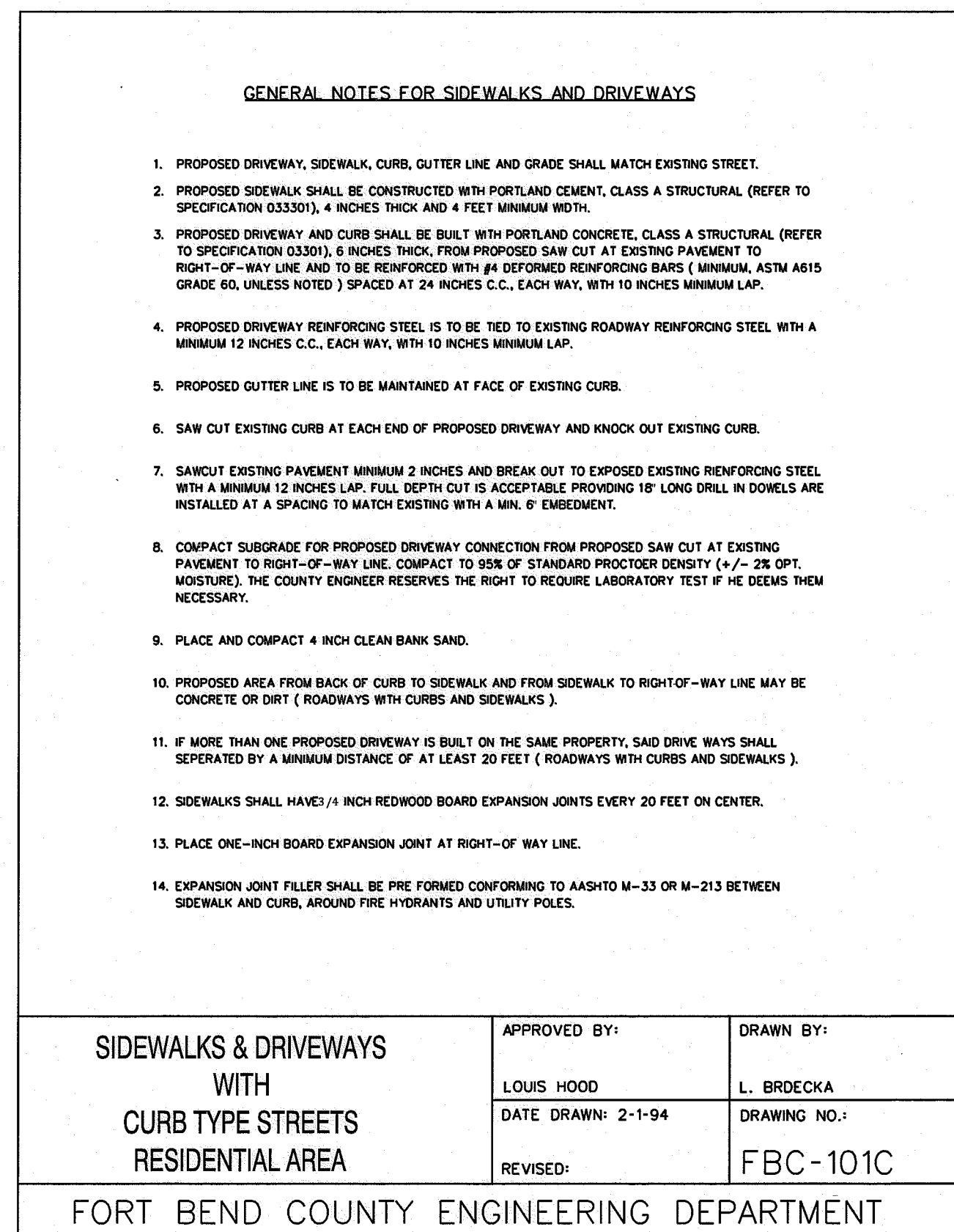
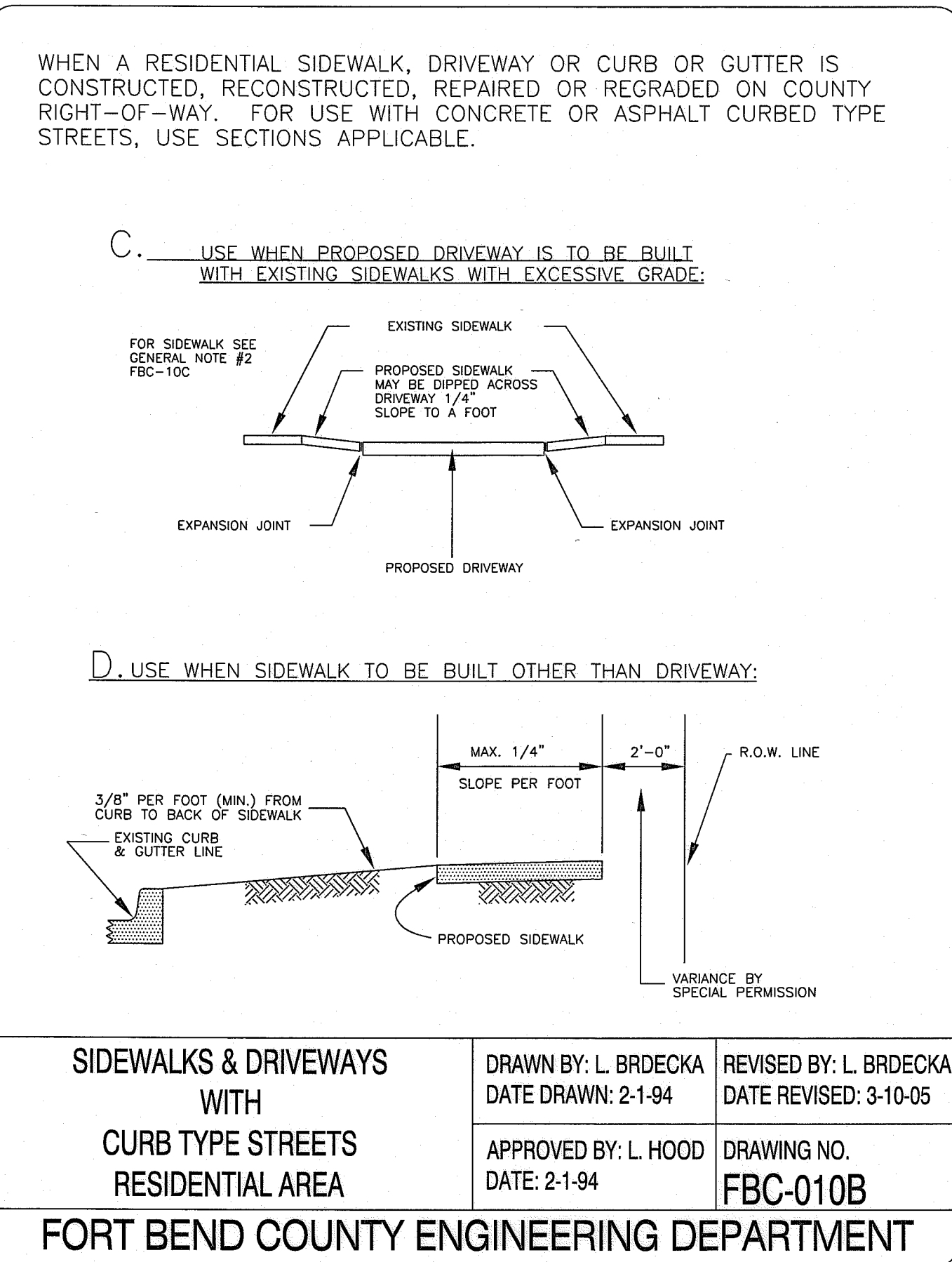
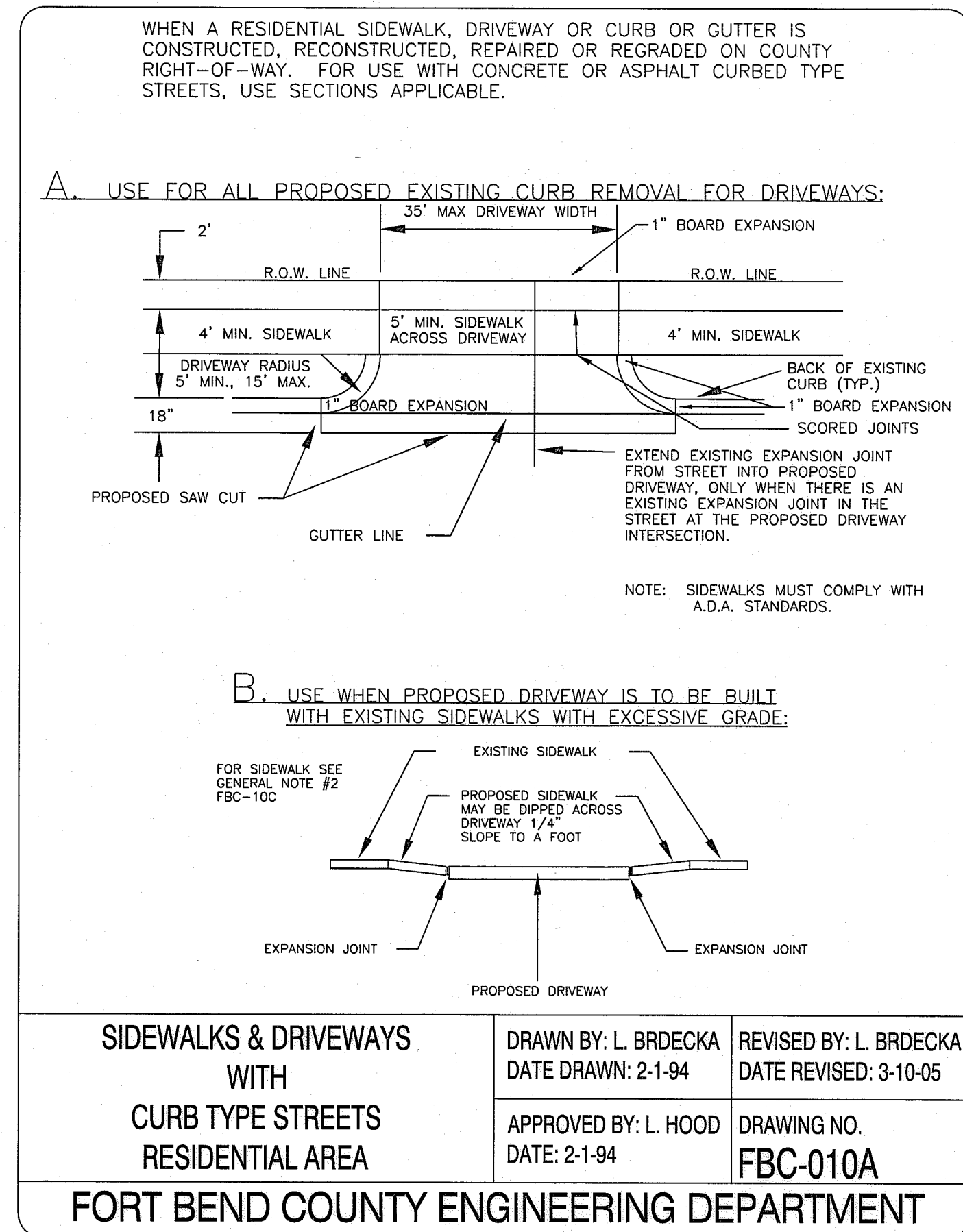
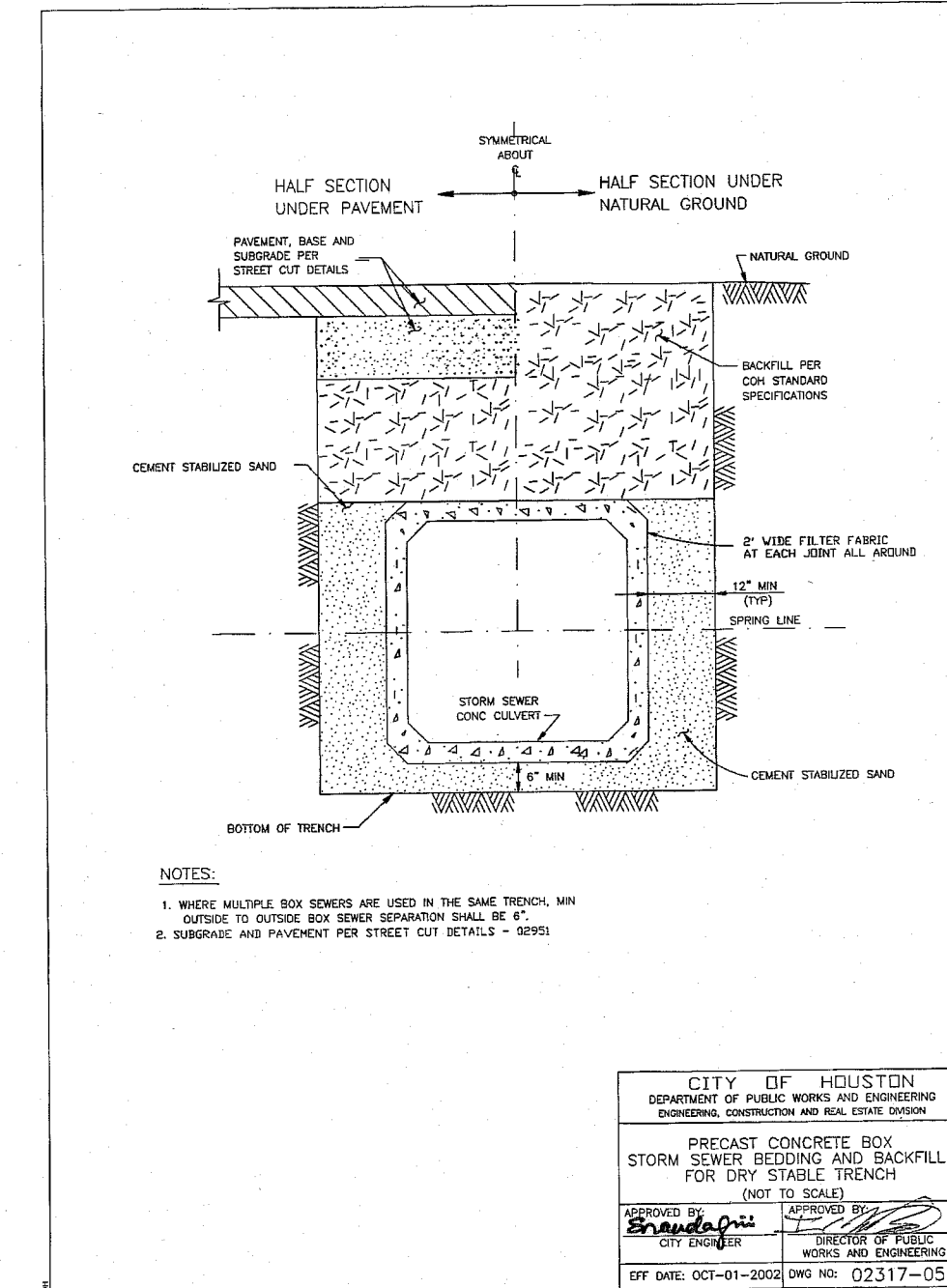
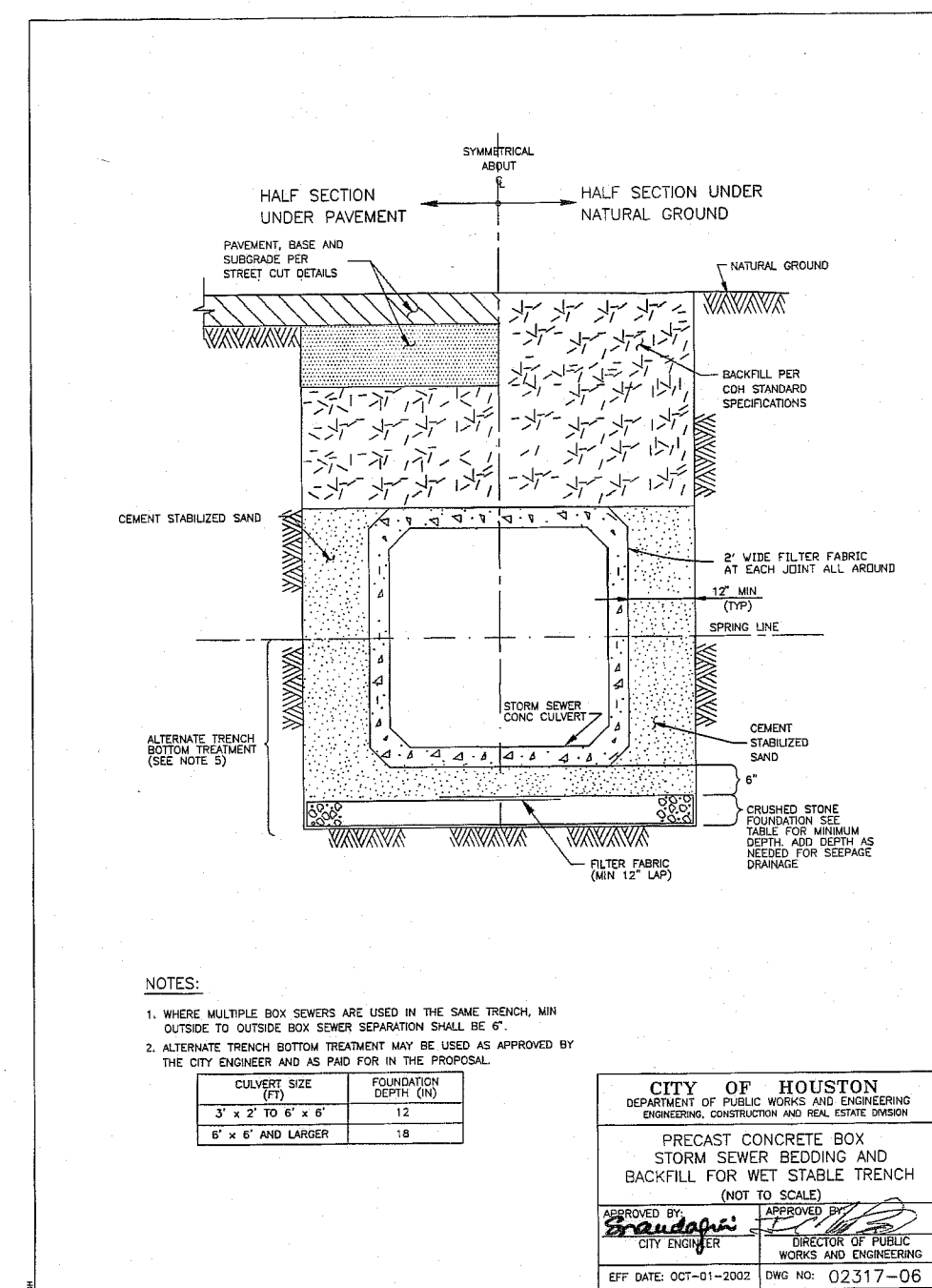
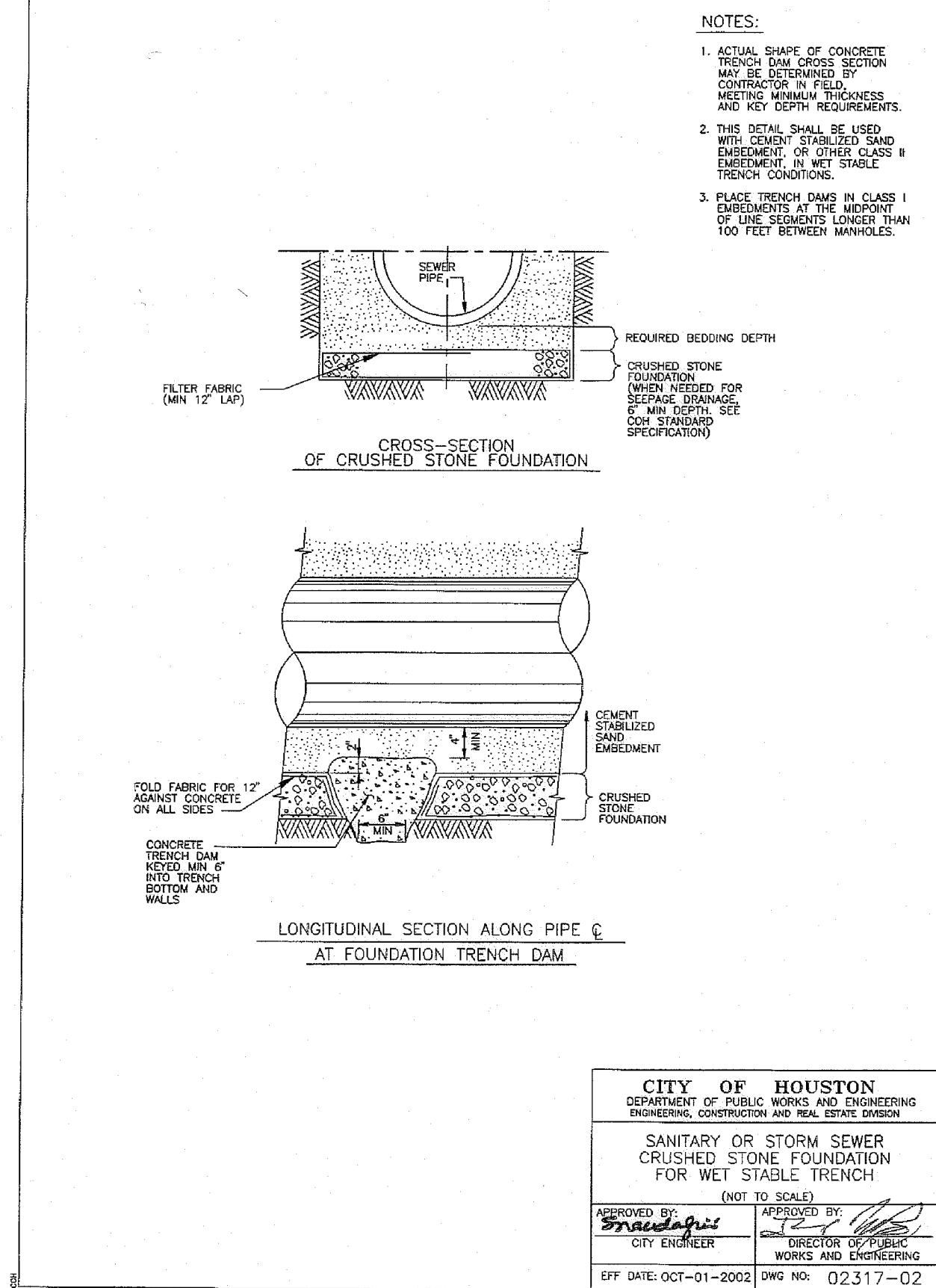
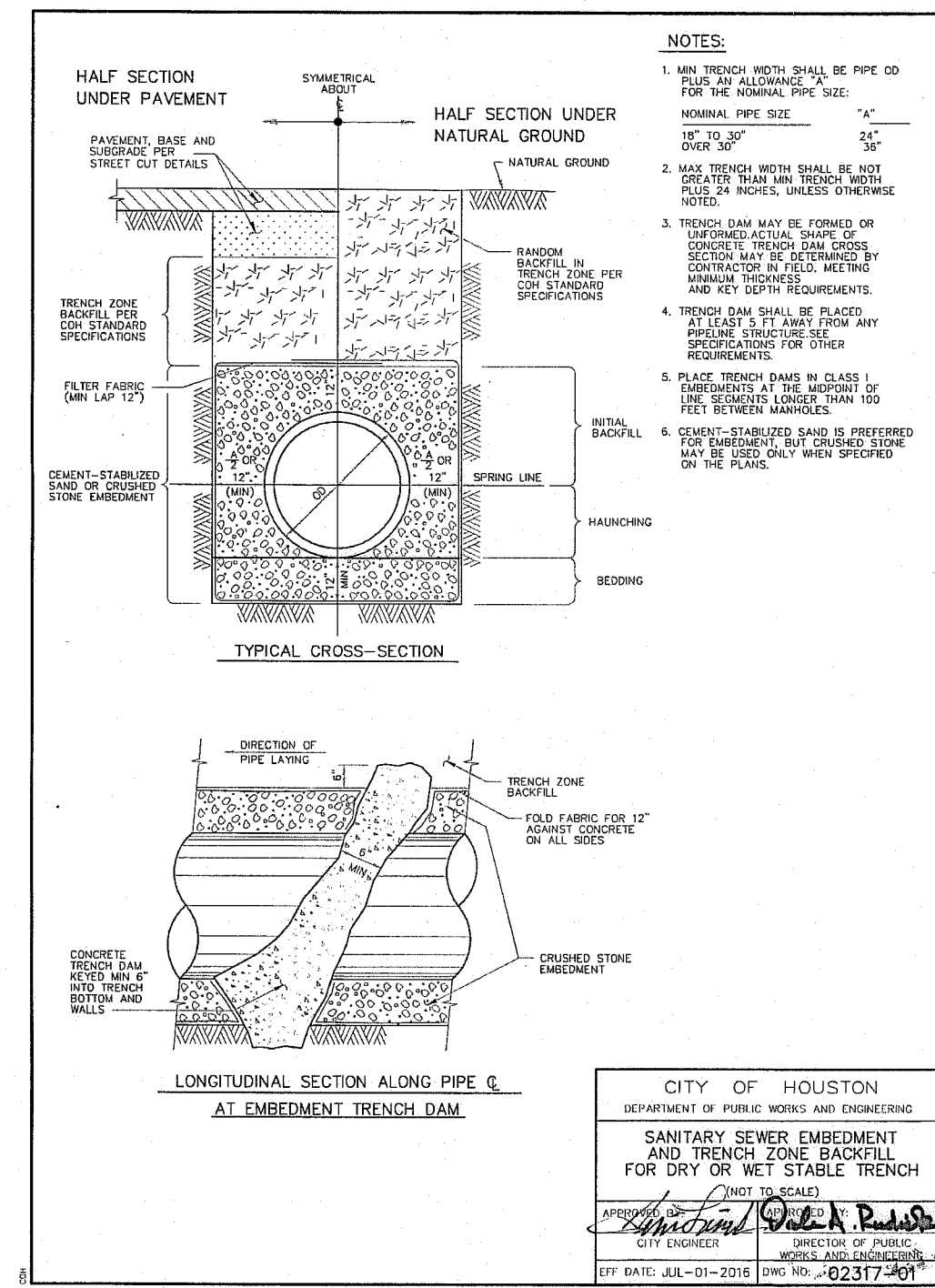
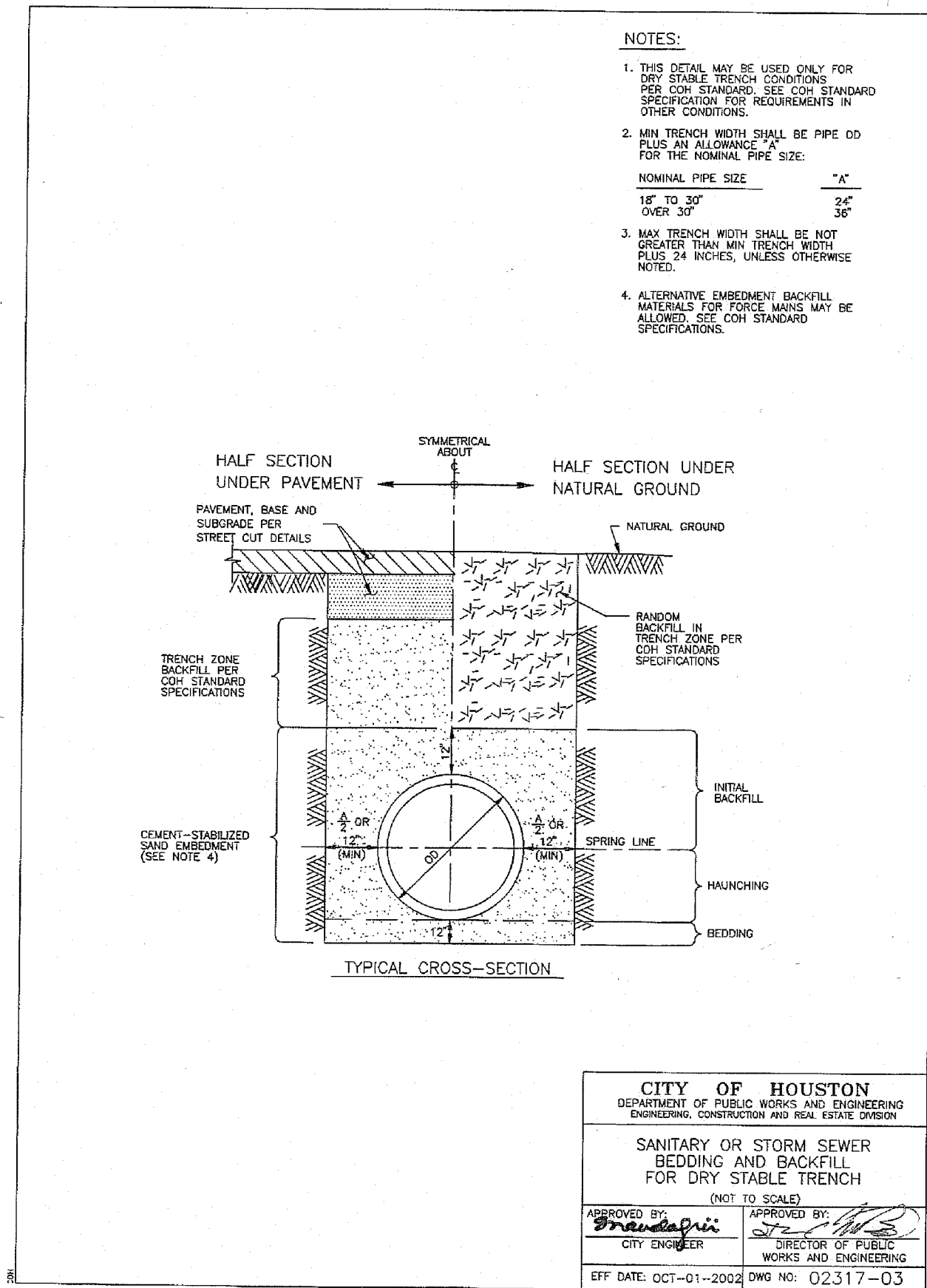
DRAWING SCALE	
HORIZ: N.T.S.	
VERT: N.T.S.	
SHEET No: 14 of 20	



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TBPLS FIRM REG. No. 100486

FORT BEND COUNTY MUD 132
MIRANDOLA LANE EXTENSION

WATER MAIN DETAILS



APPROVED: [Signature]
DEVELOPMENT COORDINATOR

DATE: 10/11/18

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER: [Signature]
SEWER: [Signature]
STORM: [Signature]
STREET & BRIDGE: [Signature]

TRAFFIC & TRANSPORTATION
STORM WATER QUALITY
FACILITIES

FILE NO: [Blank]
FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
HORIZ: N.T.S.
VERT: N.T.S.

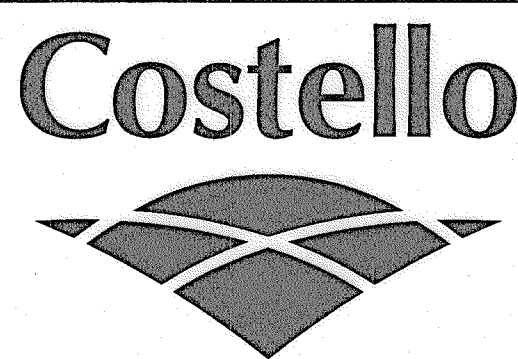
SHEET NO: 15 OF 20

61214
CITY DRAWING NUMBER
HOUSTON, TEXAS

WATER, DRAINAGE AND PAVING IMPROVEMENTS FOR MIRANDOLA LANE EXTENSION (JOB NO. 2004117-CRM-DS-101)

NO.	REVISION	DATE	BY

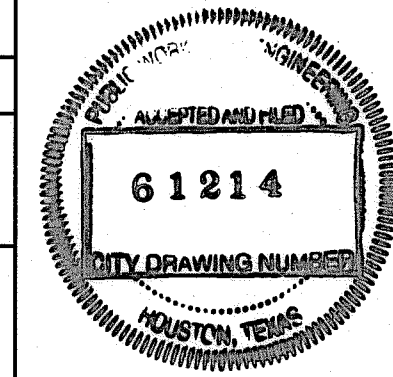
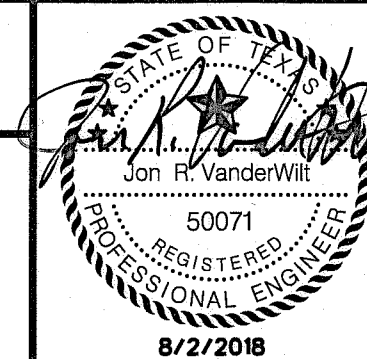
DESIGNED BY: [Signature]
DESIGN CHECKED BY: [Signature]
DRAWN BY: [Signature]
COGO CHECKED BY: [Signature]
SURVEY CHECKED BY: [Signature]
QA/QC BY: [Signature]
DATE: [Blank]
QA/QC REVISIONS BY: [Signature]



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FORT BEND COUNTY MUD 132
MIRANDOLA LANE EXTENSION

**BEDDING DETAILS
AND FORT BEND COUNTY
SIDEWALK AND DRIVEWAY DETAILS**



FORT BEND COUNTY MUD 132

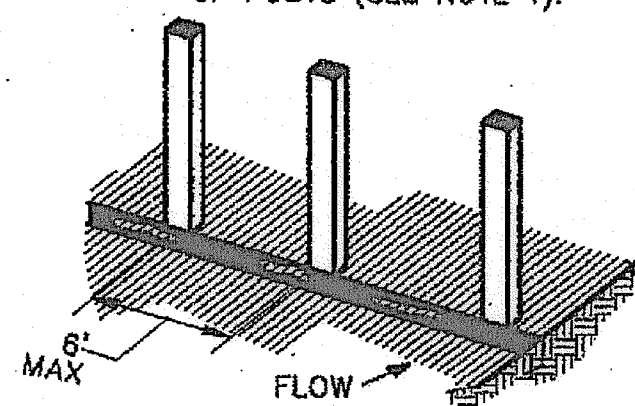
FORT BEND COUNTY MUD 1322



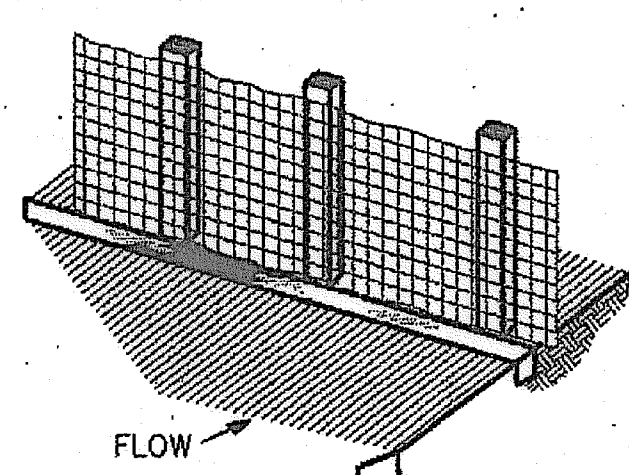
Costello

APPROVED: <u>M. [Signature]</u> DEPARTMENT CHAIRMAN	
DATE: <u>10/11/18</u>	
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES	
<h1 style="text-align: center;">CITY OF HOUSTON</h1> <h2 style="text-align: center;">HOUSTON PUBLIC WORKS</h2>	
WATER <u>10/10/18 02:18</u>	TRAFFIC & TRANSPORTATION
WASTEWATER <u>10/10/18 02:18</u>	STORM WATER QUALITY
STORM <u>10/10/18 02:18</u>	FACILITIES
STREET & BRIDGE	
FILE NO:	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
HORIZ : 1" = 60' VERT :	
SHEET No. 16 OF 20	

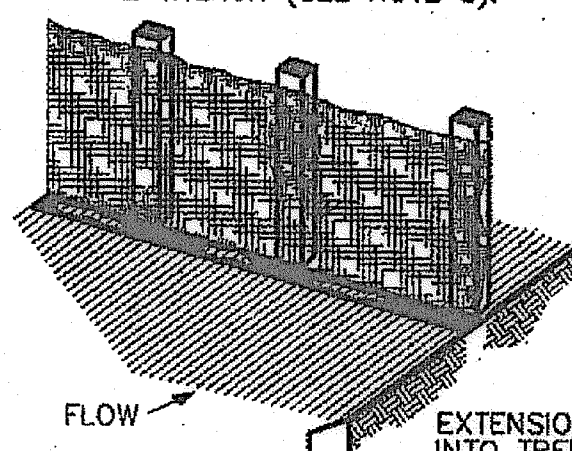
1. SET POSTS AND EXCAVATE 4"x4" TRENCH UPSLOPE ALONG LINE OF POSTS (SEE NOTE 1).



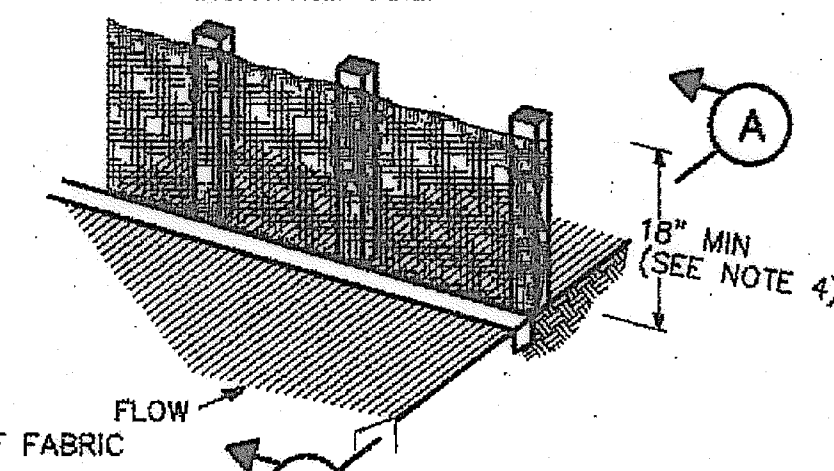
2. SECURE WIRE REINFORCING TO POSTS (SEE NOTE 2).



3. ATTACH FILTER MATERIAL TO WIRE REINFORCING AND EXTEND IT INTO THE TRENCH (SEE NOTE 3).



4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



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09/01/2012

STATE OF TEXAS

WILLIAM E. DUPAL, JR.

89260

LICENSED PROFESSIONAL ENGINEER

William E. Dupal

^AProjects\2004-117 Mirandola JB\DGN\2004-117 S1 Mirandola JB 01.dgn

REVISION			
NO.	REVISION	DATE	BY

DESIGNED BY: WED
DESIGN CHECKED BY: MAW
DRAWN BY: TN
COGO CHECKED BY: _____
SURVEY CHECKED BY: _____
QA/QC BY: MAW DATE: 7/9/18
QA/QC REVISIONS BY: TN

Costello

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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

JUNCTION BOX PLAN & SECTIONS

04/01/2018

STATE OF TEXAS

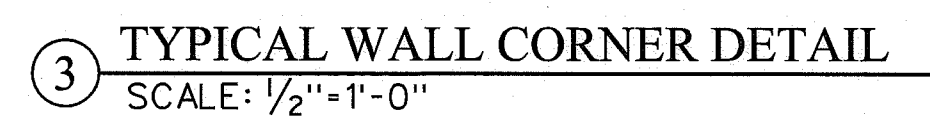
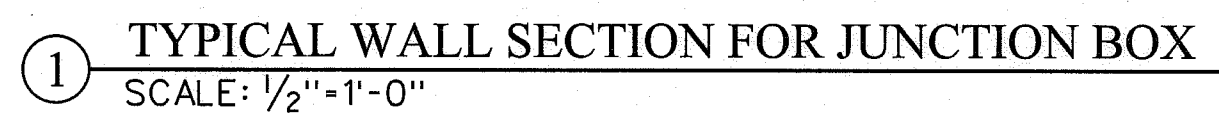
WILLIAM E. DUPAL, JR

89260

PROFESSIONAL ENGINEER

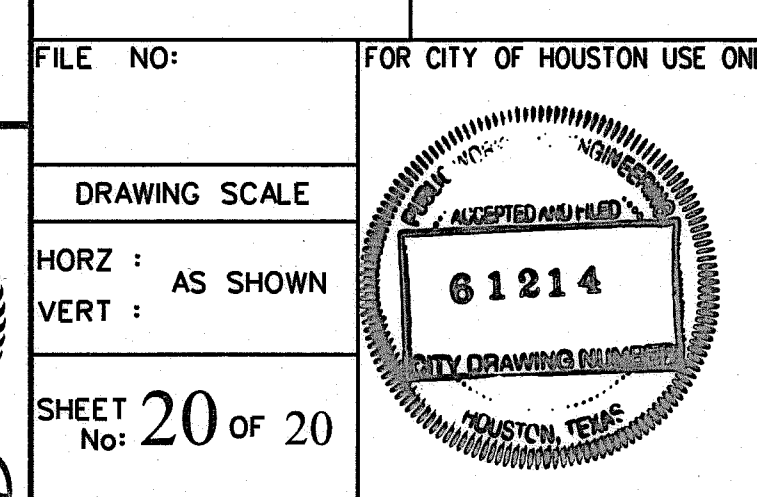
LICENSED

William E. Dupal



5 CONSTRUCTION JOINT KEY DETAILS
N.T.S.

1. CONTRACTOR SHALL CONSTRUCT THE JUNCTION BOX AS PRESENTED ON THE STRUCTURAL DRAWINGS IN ACCORDANCE WITH THE SPECIFICATIONS.
2. THE STRUCTURAL DRAWINGS OF THE SUBJECT JUNCTION BOX SHOW THE WALL, BASE, AND TOP SLAB THICKNESSES AND CORRESPONDING REINFORCING 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 PROFESSIONAL ENGINEER.
3. JUNCTION BOX BEDDING AND BACKFILL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION SECTION TITLED "EXCAVATION AND BACKFILL FOR UTILITIES".
4. THE LAST REVISIONS OF THE FOLLOWING AMERICAN SOCIETY FOR TESTING AND MATERIALS STANDARDS SHALL BE USED FOR REINFORCED CONCRETE MATERIALS:
 - 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)
 - 4.4 "SPECIFICATION FOR DEFORMED AND PLAIN CARBON STEEL BARS FOR CONCRETE REINFORCEMENT" (ASTM A615, GRADE 60)
5. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.
6. ALL REINFORCING STEEL SHALL BE GRADE 60.
7. EXPOSED CORNERS SHALL BE CHAMFERED $\frac{3}{4}$ INCH.
8. CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF TEXAS LAW CONCERNING EXCAVATION, TRENCHING AND SHORING.



S2

FORT BEND COUNTY MUD 132
MIRANDOLA LANE EXTENSION

JUNCTION BOX DETAILS

08/04/2018

STATE OF TEXAS

WILLIAM E. DUPAL, JR.

89260

LICENSED PROFESSIONAL ENGINEER

61214

6 1 2 1 4

HOUSTON, TEXAS

HOUSTON, TEXAS

WATER, DRAINAGE AND PAVING IMPROVEMENTS FOR MIRANDOLA LANE EXTENSION (JOB No. 2004117-CRM-DS-101)

DESIGNED BY: WED
DESIGN CHECKED BY: MAW
DRAWN BY: TN
COGO CHECKED BY: _____
SURVEY CHECKED BY: _____
QA/QC BY: MAW DATE: 7/9/18
QA/QC REVISIONS BY: TN

Costello

Engineering and Surveying
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Houston, Texas 77042
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TBPLS FIRM REG. No. 100486

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