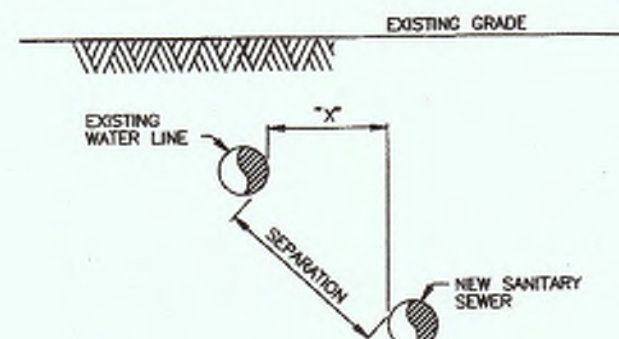


- INSTALLATION REQUIREMENTS**
1. If "Y" is greater than 6" and "X" is less than 2', USE MINIMUM 15 FT. JOINT OF PRESSURE-RATED PIPE PER COH STANDARD DRAWING.
  2. If "Y" is greater than 2' and "X" is less than 8', USE GRAVITY SEWER PIPE IN COSENT-STABILIZED SAND EMBEDMENT.
  3. If "Y" is greater than 8', USE STANDARD EMBEDMENT AND NORMAL JOINT SPACING.



- INSTALLATION REQUIREMENTS**
1. If "X" is less than 8" AND SEPARATION IS LESS THAN 8', USE PRESSURE-RATED PIPE MIN TO MIN. "X" MUST BE AT LEAST 4 FT.
  2. If "X" IS GREATER THAN OR EQUAL TO 8' AND SEPARATION IS 8' OR GREATER, USE STANDARD PIPE AND EMBEDMENT.

INSTALLING SANITARY SEWERS CROSSING OR PARALLEL TO WATER LINES

TABLE 02730-04  
SEWER LINE CROSSING BELOW WATER LINE WITHIN 2 FT SEPARATION

GRAVITY SANITARY SEWER PIPE SIZE	PRESSURE-RATED PIPE SIZE & TYPE (NOTE 2)	ADAPTERS REQUIRED
6" TO 12" (ASTM D3034)	SAME SIZE ASTM D2241, SDR 26	ASTM D3034 TO D2645 (SEWER TO D.W.M.) ADAPTER COUPLING
10" (ASTM D3034)	14" LINED DUCTILE IRON OR AMMA CROS, D205	NONE REQUIRED
18" AND 24"	SAME SIZE AMMA CROS, PRESSURE-RATED FRP OR LINED DUCTILE IRON, MANHOLE TO MANHOLE	NONE REQUIRED
21" AND 27"	PRESSURE PIPE NOT AVAILABLE, SEE CASING ALTERNATIVE	NOT APPLICABLE
30" AND LARGER	SAME SIZE PRESSURE-RATED FRP OR LINED DUCTILE IRON, MANHOLE TO MANHOLE	NOT APPLICABLE
CASING ALTERNATIVE: ANY SIZE AND TYPE	INSTALL AS CASING PIPE MIN 15 FT JOINT OF PRESSURE PIPE AT LEAST 2 NOMINAL SIZES LARGER THAN SAN. SEWER COVER PIPE. GROUT ANNUAL SPACE WITH TUNNEL GROUT	NOT APPLICABLE

- NOTES:**
1. SANITARY SEWER MUST BE BELOW WATER LINE UNLESS OTHERWISE SPECIFIED. WHEN WATERLINE IS BELOW THE SANITARY SEWER PROVIDE MINIMUM 2 FT SEPARATION AND INSTALL PIPE SAME AS FOR SEWER BELOW WATER.
  2. WHEN PRESSURE-RATED PIPE IS REQUIRED, PROVIDE PIPE WITH MINIMUM 150 PSI PRESSURE RATING.
  3. ADAPTERS MUST BE FACTORY MOLDED OR FABRICATED, WITH RING STIFFENED AT LEAST EQUAL TO THE ADJOINING SANITARY SEWER PIPE AND USING RESILIENT GASKET OR SEAL MATERIAL. FLEXIBLE RUBBER "BOOT" TYPE ADAPTERS WILL NOT BE ACCEPTED.
  4. INSTALL FORCE MAINS SAME AS FOR GRAVITY SEWER, USING SPECIFIED PRESSURE PIPE.
  5. "Y" MUST ALWAYS BE GREATER THAN OR EQUAL 6".
  6. "X" MUST BE GREATER THAN OR EQUAL TO 4 FT.
  7. ALTERNATIVES MAY BE SHOWN ON THE DRAWINGS OR DESCRIBED IN THE SPECIFICATIONS.
  8. SEPARATION REQUIREMENTS SHOWN HERE DO NOT APPLY TO SURFACE CONNECTIONS - REFER TO PLUMBING CODE FOR APPLICABLE REQUIREMENTS.

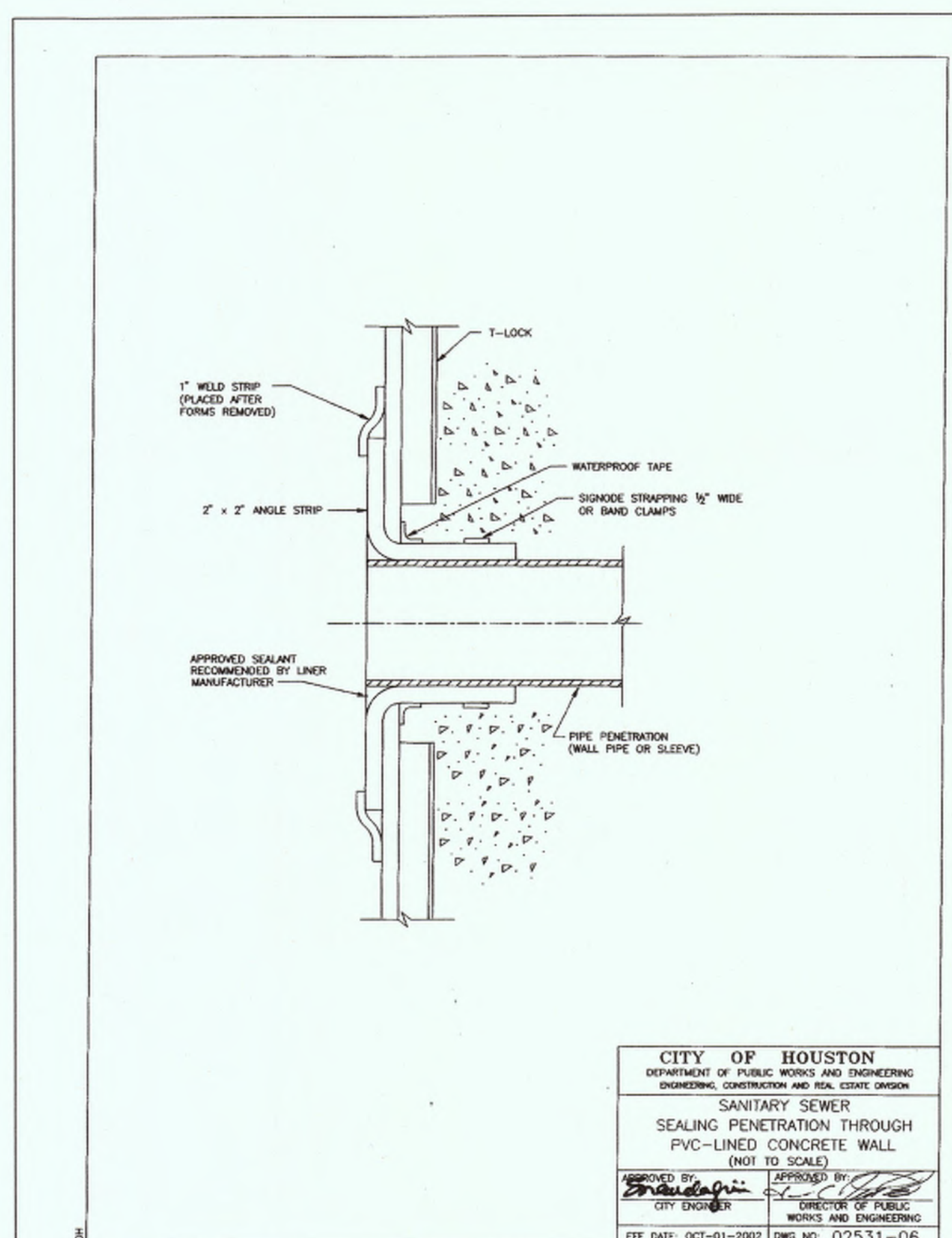
**CITY OF HOUSTON**  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING  
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

**SANITARY SEWER**  
INSTALLING SANITARY SEWERS  
CROSSING OR PARALLEL TO WATER LINES  
(NOT TO SCALE)

APPROVED BY: *[Signature]*  
CITY ENGINEER

APPROVED BY: *[Signature]*  
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: OCT-01-2002 DWG NO: 02531-05



**CITY OF HOUSTON**  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING  
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

**SANITARY SEWER**  
SEALING PENETRATION THROUGH  
PVC-LINED CONCRETE WALL  
(NOT TO SCALE)

APPROVED BY: *[Signature]*  
CITY ENGINEER

APPROVED BY: *[Signature]*  
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: OCT-01-2002 DWG NO: 02531-06

*Chad Walker* 1/12/2018  
DATE

HARRIS COUNTY MUNICIPAL UTILITY DISTRICT NO. 131 ENGINEER  
APPROVAL CAN BE REVOKED, SUSPENDED, OR MODIFIED AT ANY TIME, BUT, IN ANY EVENT, IT EXPIRES AUTOMATICALLY AFTER ONE YEAR.

\*OUR APPROVAL DOES NOT INCLUDE A DETERMINATION THAT THE ONSITE PRIVATE UTILITIES WERE DESIGNED PROPERLY. WE REVIEWED THE PLANS SOLELY FOR GENERAL COMPLIANCE WITH THE DISTRICT'S RATE ORDER.

TO ARRANGE FOR LINE 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 signature does not fulfill your obligation to call 811.

**VERIFICATION OF PRIVATE UTILITY LINES**

N/A DATE: \_\_\_\_\_  
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
Signature valid for 6 months.

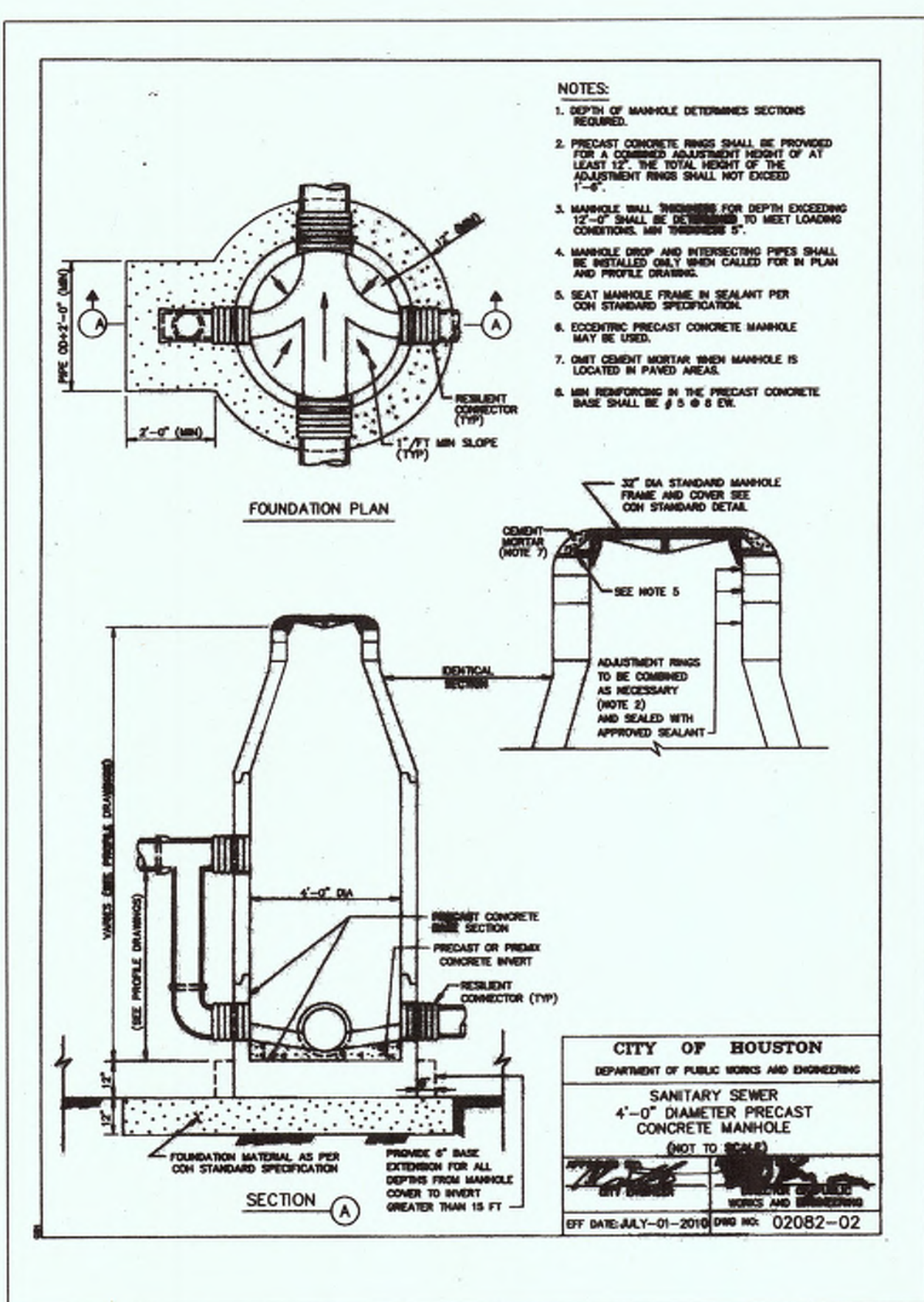
N/A DATE: \_\_\_\_\_  
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY.  
(This signature verifies existing underground facilities-not to be used for conflict verification.)  
Signature Valid for six months.

N/A DATE: \_\_\_\_\_  
APPROVED FOR AT&T TEXAS / SPRINT UNDERGROUND CONDUIT FACILITIES ONLY  
SIGNATURE VALID FOR ONE YEAR.

APP. REVISIONS DATE

APP.	REVISIONS	DATE
1	VOID SHEETS 1-15 ADD SHEETS 1A-16A ADD SHEETS 16-18 PER MUD	12/14/17

NO CHANGE  
AMM Contractors, LLC  
**AS-BUILT**  
By: *[Signature]* Date: 12/10/18



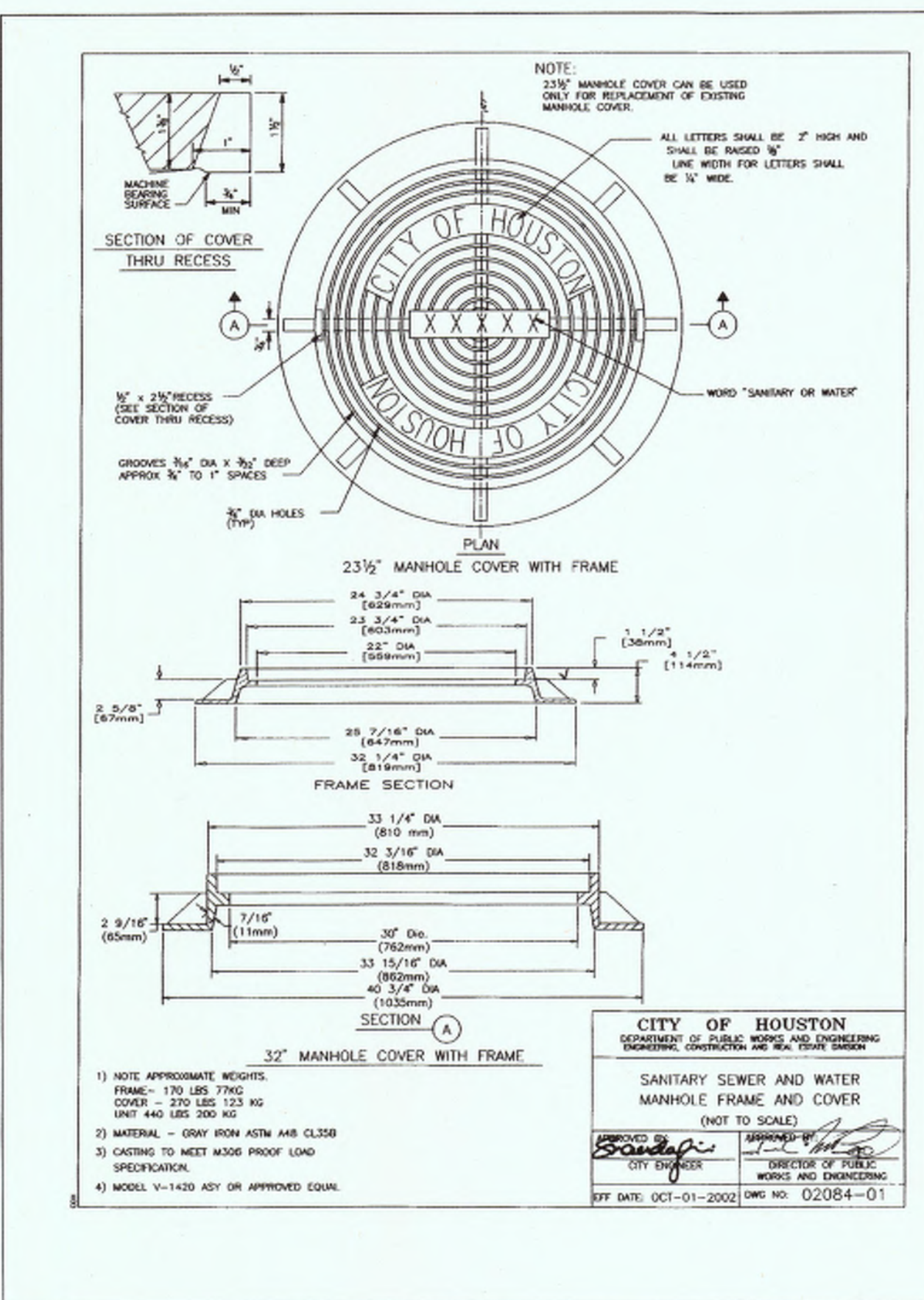
**CITY OF HOUSTON**  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING  
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

**SANITARY SEWER**  
4'-0" DIAMETER PRECAST  
CONCRETE MANHOLE  
(NOT TO SCALE)

APPROVED BY: *[Signature]*  
CITY ENGINEER

APPROVED BY: *[Signature]*  
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JULY-01-2010 DWG NO: 02082-02



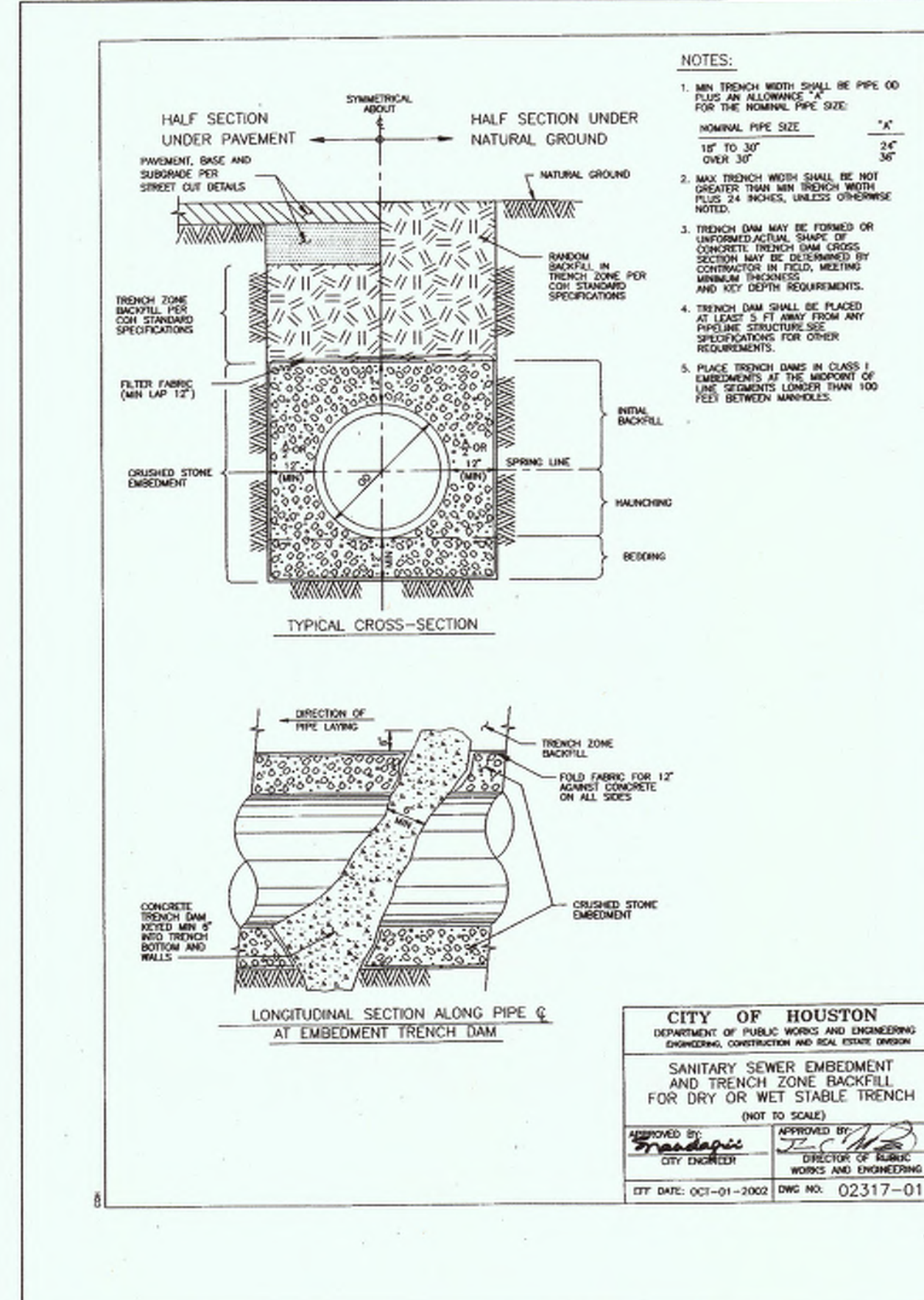
**CITY OF HOUSTON**  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING  
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

**SANITARY SEWER AND WATER**  
MANHOLE FRAME AND COVER  
(NOT TO SCALE)

APPROVED BY: *[Signature]*  
CITY ENGINEER

APPROVED BY: *[Signature]*  
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: OCT-01-2002 DWG NO: 02084-01



**CITY OF HOUSTON**  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING  
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

**SANITARY SEWER EMBEDMENT**  
AND TRENCH ZONE BACKFILL  
FOR DRY OR WET STABLE TRENCH  
(NOT TO SCALE)

APPROVED BY: *[Signature]*  
CITY ENGINEER

APPROVED BY: *[Signature]*  
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: OCT-01-2002 DWG NO: 02317-01

**ALJLindsey**  
Civil Engineers  
5629 FM 1960 W., Suite 314  
Houston, TX 77069  
281.301.5955  
FRN F-11526

**STATE OF TEXAS**  
PATRICK L. CARRIGAN  
95617  
REGISTERED PROFESSIONAL ENGINEER  
12 DECEMBER 2017

**CUTTEN PARK UTILITIES**

**CONSTRUCTION DETAILS**  
(3 OF 4)

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

**CITY OF HOUSTON**  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER	TRAFFIC & TRANSPORTATION
<i>[Signature]</i> 12/14/17	
<i>[Signature]</i> 12-18-17	

FILE NO: \_\_\_\_\_ FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

HORIZ : N/A  
VERT : N/A

SHEET NO. 13A OF 17

